

2000C HIGH SPEED TSB SYSTEM
(REV. C)

BINARY TAPES	24261-60001
	24261-60002
	24261-60003
SOURCE TAPES	24261-80001
	24261-80002
	24261-80003
	24261-80004
	24261-80005
	24261-80006
	24261-80007
	24261-80008
	24261-80009
	24261-80010
	24261-80011
	24161-80012
	24261-80013
	24261-80014
	24261-80015
	24261-80016
	24261-80017
	24261-80018
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ASMB,A,B,L

TSB SYSTEM - 2000C(HS) VERSION.C

** NO ERRORS*

ASMB,A,B,L TSB SYSTEM - 2000C(HS) VERSION C
 ORG 2002B

0001

0002 02002

0003*

0004* LINKAGE INFORMATION USED BY THE TSB LOADER AND THE

0005* MAG TAPE DUMP.

0006*

0007 02002 075000

0008 02003 072034

0009 02004 000023

0010 02005 061130

0011 02006 061132

0012 02007 001571

0013 02010 177224

0014 02011 001224

0015 02012 070342

0016 02013 114460

0017 02014 031234

0018 02015 000103

DEF LIBRA SYSTEM LIBRARY PROGRAM ORIGIN
 DEF COM6 => SYSTEM LIBRARY DISC ADDRESSES
 ABS TTY01-TTY00 LENGTH OF A TTY TABLE
 DEF TTY00+?DISC ADDRESS OF USER DISC ADDRESS
 DEF TTY00+?ID ADDRESS OF ID-NAME
 DEF LNAME ADDRESS OF USER-DEPENDENT ITEMS
 ABS USER-PROGB=1 LENGTH OF SWAP AREA
 DEF USER CORE ADDRESS OF SWAP AREA
 DEF TSB SYSTEM STARTING ADDRESS
 JSB POWIN,I TO GO INTO LOC 4.
 DEF GMQB MESSAGE BUFFER GETTER
 ABS SSLPL=LIBRA NUMBER OF LIBRARY PROGRAMS

0020	00000		A	EQU	0	A REGISTER ADDRESS
0021	00001		B	EQU	1	B REGISTER ADDRESS
0022	00000		DEATH	EQU	0	
0023	00017		FTEL	EQU	15	FILE TABLE ENTRY LENGTH
0024	00002			ORG	2	
0025	00002	102002		HLT	2	FOR SYSTEM
0026	00003	024002		JMP	*-1	PROTECTION
0027	00004	103004		HLT	4,C	CHANGED BY LOADER.
0028	00005	102005		HLT	5	PARITY ERROR.
0029	00006	107706		CLC	6,C	
0030	00007	114476	DMA	JSB	?ADIN,I	
0031	00010	114464	CH1	JSB	R14DR,I	COMMUNICATION FROM 2114
0032	00011	102011	CH2	HLT	11B	
0033	00012	114466	?SC	JSB	T35DR,I	CONSOLE LINK
0034	00013	102013		HLT	13B	
0035	00014	102014		HLT	14B	
0036	00015	102015		HLT	15B	
0037	00016	114472	CLOCK	JSB	CLKDR,I	CLOCKLINK
0038	00030			ORG	30B	
0039	00030	000000	LTEMP	BSS	16	TEMPS USED BY NONRESIDENT FUNCS.
0040	00050	000000	MOVES	BSS	1	SOURCE AND DESTINATION
0041	00051	000000	MOVED	BSS	1	FOR MOVEW ROUTINE.
0042	00052	000000	ID	BSS	1	USED FOR RESULTS OF GETID ROUTIN
0043	00053	000000	MID	BSS	1	
0044	00054	000000	T35Cp	BSS	1	T35 BUFFER PNTR FOR LIBR,PROGS.
0045	00055	000000	T35LC	BSS	1	RESULT OF T35CH ROUTINE.
0046	00056	000000	PBPTR	BSS	1	POINTER TO END OF CURRENT PROGRA
0048	00057	000000	TIMER	BSS	1	POINTS TO CLOCK OF ACTIVE USER.
0049	00060	000000	SBHED	BSS	1	
0050	00061	000000	SCHL	BSS	1	
0051	00062	000000	TTG	BSS	1	
0052	00063	000000	SCHID	BSS	1	
0053	00064	000000	SCHP	BSS	1	
0054	00065	000000	SCNT	BSS	1	
0055	00066	000000	SCHPR	BSS	1	
0056	00067	000000	CMA	BSS	1	
0057	00070	000000	CMB	BSS	1	
0058	00071	000000	CME	BSS	1	
0059	00072	000000	WORD	BSS	1	WORD COUNT TO DISC ROUTINE.
0060	00073	000000	SVCH2	BSS	1	
0061	00074	000000	TCNT	BSS	1	
0062	00075	000000	IDLCP	BSS	1	
0063	00076	000000	IDLNP	BSS	1	

0065*

0066*
0067*

0068* BEGINNING OF EQUIPMENT TABLE

0069*

0070* THE NEXT SET OF CARDS CONSTITUTE THE RESIDENT INFO ABOUT
0071* DISC RESIDENT TABLES. THESE CARDS MUST BE ORIGINATED AT 100B,
0072* THEY ARE INITIALIZED BY THE VARIOUS LOADERS, AND THEIR
0073* CONTENTS ARE WRITTEN ON DISC BY THE SLEEP ROUTINE.

0074 00100 ORG 100B

0075 00100 000000 IDEC BSS 9

0076*

0077*

0078*

0079 00111 000000 NIOT BSS 1

0080 00112 000000 ADLOC BSS 1

0081 00113 000000 ADLEN BSS 1

0082 00114 000000 NDIRT BSS 1

0083 00115 000000 DADLC BSS 8

0084 00125 000000 DADLN BSS 8

0085 00135 000000 ?IBL BSS 4

0086 00141 000000 DKTBL BSS 8

0087 00151 000000 TRAX BSS 16

0088 00171 000000 SYSID BSS 5

0089 00176 000000 MAGSC BSS 1

0090 00177 000000 NPORT BSS 1

0091 00200 000000 YEAR BSS 1

0092 00201 000000 DATIM BSS 2

0093*

0094*

0095*

0096 00203 000000 HDATE BSS 1

0097 00204 000000 SLEPT BSS 1

0098*

0099*

0100*

0101*

0102*

0103 00205 000000 LDBSA BSS 1

0104 00206 000000 LSTDA BSS 1

0105 00207 000000 DATLN BSS 1

0106 00210 000000 MHAD BSS 1

0107 00211 000000 GMQBP BSS 1

0108 00212 000000 DISCA BSS 1

0109 00213 000000 DISCB BSS 1

0110 00214 000000 MBUSY BSS 1

0111 00215 000000 MWORD BSS 1

0112 00216 000000 DREDP BSS 1

0113*

0114*

0115*

0116*

0117*

0118 00217 03125: DISCZ DEF ZDISC

0119*

ID TABLE HEADERS

1) FIRST ID ON TRACK

2) DRUM ADDRESS

3) USEFUL LENGTH

NUMBER OF ID TRACKS

ADT DRUM ADDRESS

ADT LENGTH IN -WORDS

NUMBER OF DIR TRAX PER DISK

DISC ADT DRUM ADDRESS

DISC ADT LENGTHS IN -WORDS

DRUM SELECT CODE TABLE

DISC SELECT CODE / UNIT TABLE

AVAILABLE TRACK TABLE

SYSTEM IDENTIFICATION

MAG TAPE SELECT CODE

-NUMBER OF AVAILABLE PORTS

A NUMBER FROM 0 TO 99

REPRESENTS TIME OF YEAR, FIRST

WORD CONTAINS HOUR OF YEAR, SECOND

IS # OF 100MS UNITS IN HR -

36000.

LAST HIBERNATE DATE

0 SEZ SLEPT, -1 SEZ NO

END OF THE EQUIPMENT TABLE

END OF AREA THAT MUST CORRESPOND WITH THE LOADER

0121*						
0122*	2114		SEND DRIVER OPCODES			
0123*						
0124	00220	000000	OCR	OCT	000000	OUTPUT CHARACTER
0125	00221	020000	STE	OCT	020000	START TIMING ENTER
0126	00222	040000	GTC	OCT	040000	GET CHARACTER
0127	00223	060000	PHO	OCT	060000	PHONES TIME
0128**			SPE	OCT	10000	BAUD RATE INFO
0129	00224	120000	SBP	OCT	120000	SAVE BUFFER POINTER
0130	00225	140000	RBP	OCT	140000	RESTORE BUFFER POINTER
0131	00224		FBP	EQU	SBP	FREE SAVED SPACE
0132	00226	160000	INI	OCT	160000	INITIALIZE SYSTEM
0133	00227	160001	UIR	OCT	160001	USER IS RUNNING
0134	00230	160002	UNR	OCT	160002	USER NOT RUNNING
0135	00231	160003	IWT	OCT	160003	INPUT WAIT
0136	00232	160004	HUU	OCT	160004	HANG USER UP
0137	00233	160005	ULO	OCT	160005	USER LOGGED ON
0138	00234	160006	ECO	OCT	160006	ECHO=ON
0139	00235	160007	ECF	OCT	160007	ECHO=OFF
0140	00236	160010	TPO	OCT	160010	TAPE MODE ON
0141	00237	160011	ILI	OCT	160011	ILLEGAL INPUT?
0142	00240	160012	NUC	OCT	160012	NEW USER CALLED
0143	00241	160013	KAU	OCT	160013	KILL ALL OUTPUT
0144	00242	160014	ALI	OCT	160014	ALLOW INPUT
0145	00243	160015	OWT	OCT	160015	OUTPUT WAIT
0146	00244	160016	IBF	OCT	160016	IS BUFFER FULL?
0147	00245	160017	PSC	OCT	160017	LINE PRINTER SELECT CODE
0148	00246	160020	LPR	OCT	160020	LINE PRINTER REQUEST
0149	00247	160021	LPD	OCT	160021	LINE PRINTER DISCONNECT
0150	00250	160022	LPS	OCT	160022	LINE PRINTER STATUS
0151	00251	160023	BKS	OCT	160023	BACKSPACE IN BUFFER
0152**			CHS	OCT	160024	CHAR. SIZE INFO
0153**			STP	OCT	160025	SUBTYPE INFO
0154**			WSP	OCT	160026	WHAT BAUD RATE?
0155	00252	160027	WCS	OCT	160027	WHAT CHAR. SIZE?
0156	00253	160030	WTP	OCT	160030	WHAT TERMINAL TYPE?
0157**			TKOTK	OCT	160031	TELEKLUDGE LP OUTPUT
0158	00254	160032	ABT	OCT	160032	USER IS BEING ABORTED
0159*						
0160*	THE FOLLOWING		VARIABLES ARE SYSTEM STATUS VARIABLES			
0161*						
0162	00255	000000	PRIST	NOP		LP INDICATOR
0163	00256	000000	LFLAG	NOP		
0164	00257	000000	MAIN	NOP		INDICATES USER IN CORE, 0 IF NONE
0165	00260	000000	LIB	NOP		INDICATES LIBRARY PROG. IN CORE
0166	00261	000000	ENDRM	NOP		= -1 IF DRUM BUSY, 0 IF NOT
0167	00262	000000	HQDIS	NOP		= 0 UNLESS HEAD OF QUEUE DISCONNECTED
0168	00263	000000	T35FG	NOP		PSEUDO=FLAG; MUST BE 10 WORDS
0169*						BEFORE T35CL
0170	00264	000000	TIMEF	NOP		= 1 WHEN CURRENT PROG IS TIMED.
0171*						
0172	24000		ULEN	EQU	10240	LENGTH OF USER AREA
0173	75000		LIBRA	EQU	75000B	SYSTEM LIBRARY PROGRAM ADDRESS
0174	00265	000000	LCHCR	NOP		
0175	00266	000267	READY	DEF	**1	

0176	00267	005122		OCT 5122	LF-R
0177	00270	042501		ASC 2, EADY	
	00271	042131			
0178	00272	000273	MLINK DEF **1		POINTS TO BASIC QUEUE ENTRY.
0179	00273	000273	DEF *		LINK TO HEAD OF QUEUE.
0180	00274	077777	OCT 77777		MAX. PRIORITY USED FOR Q INSERTS
0181	00274		INF EQU MLINK+2		
0182*	TTY ENTRY FOR TTY35				
0183	00275	000000	T35CL NOP		PSEUDO CLOCK,
0184	00276	000000	T35RS NOP		RESTART ADDRESS
0185	00277	000000	T35ST NOP		STATUS
0186	00300	000000	T35LK NOP		LINK
0187	00301	000000	T35PR NOP		PRIORITY
0188	00302	000300	T35LN DEF T35LK		
0189	00303	171422	T35B2 ABS T35BF+T35BF		CHAR POINTER TO TTY35 BUFFER
0190	00304	171532	T35ND ABS T35BF+T35BF+72		POINTS TO END OF BUFFER
0191	00305	074611	T35B1 DEF T35BF		POINTS TO WORD ADDRESS OF BUFFER
0192	00047		MESLN EQU 39		LENGTH OF OPERATOR MESSAGES
0193	00352		MESBN EQU MESLN+MESLN+MESLN+MESLN+MESLN		
0194	00306	000000	MSQCT OCT 0		MESSAGE COUNTER
0195	00307	056572	MSQP1 DEF MSQHD+MESBN=MESLN		
0196	00310	056267	MSQP3 DEF MSQHD		
0197	00311	056641	MSQND DEF MSQHD+MESBN		LIMITS
0198	00312	056267	MSQBG DEF MSQHD		OF MESSAGE QUEUE
0199*					
0200***	CONSTANTS AND TEMPORARIES IN ASR-35 DRIVER,				
0201*	5				
0202	00313	000000	T35F1 NOP		SYSTEM
0203	00314	000000	T35F2 NOP		CONSOLE
0204	00315	000000	T35F3 NOP		FLAGS
0205*					
0206*					
0207**	GENERAL USE CONSTANTS				
0208	SUP				
0209*					
0210	00316	177706	D72 OCT -72		
0211	00316		M72B EQU 072		
0212	00317	177740	M32 DEC -32		
0213	00320	177746			DEC -26
0214	00321	177747			DEC -25,-24,-23,-22,-21,-20,-19,-18,-17,-16
0215	00333	177761			DEC -15,-14,-13,-12,-11,-10,-9,-8,-7,-6,-5,-4
0216	00347	177775			DEC -3,-2,-1
0217	00352	000000			DEC 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
0218	00373	000021			DEC 17,18,19,20,21,22,23,24,25,26,27,28,29,30
0219	00411	000037			DEC 31,32,33,34,35,36,37,38,39,40,41,42,43,44
0220	00427	000055			DEC 45,46,47,48,49,50,51
0221	00436	000072	,58 DEC 58		
0222	00436		872 EQU ,58		
0223	00437	000144	,100 DEC 100		
0224	00440	000110	,72 DEC 72		
0225	00441	000177	B177 OCT 177		
0226	00442	000200	B200 OCT 200		
0227	00443	000377	B377 OCT 377		
0228	00444	000400	B400 OCT 400		
0229	00445	001000	B1000 OCT 1000		

0230	00446	020000	B20M	OCT	20000		
0231	00447	030000	B30M	OCT	30000		
0232	00222		BIT14	EQU	GTC		
0233	00353		XABOR	EQU	.,+1		
0234	00354		XINPT	EQU	.,+2		
0235	00355		XOUTW	EQU	.,+3		
0236	00356		XSYNT	EQU	.,+4		
0237	00350		XDISC	EQU	.,-2		
0238	00347		XENTO	EQU	.,-3		
0239	00346		XPUN	EQU	.,-4		
0240				UNS			
0241	00450	037753	XEC3I	DEF	XEC3		
0242	00451	040055	XEC5I	DEF	XEC5		

0244*

0245*

0246** LANGUAGE PROCESSOR CONSTANTS AND ADDRESSES

0247*

0248	00452	001601	DFILT	DEF	FLSIS
0249	00453	033027	SBJTB	DEF	#FSC
0250	00454	031731	SYNTA	DEF	SYNTAX
0251	00455	033463		DEF	#SBCK
0252	00456	001130	D600	DEC	600
0253	00457	033304		DEF	#FRCR
0254	00460	060417	POWIN	DEF	POW
0255	00461	033335		DEF	#FPOP
0256	00462	025224	LWAUS	DEF	USER+ULEN
0257	00463	034131		DEF	#VROP
0258	00464	063334	R14DR	DEF	R14CM
0259	00465	033603		DEF	#ARID
0260	00466	060735	T35DR	DEF	?TT2
0261	00467	034503		DEF	#PGIN
0262	00470	053316	MCBOP	DEF	MCBOS
0263	00471	034600		DEF	#TBSR
0264	00472	070026	CLKDR	DEF	CLKIN
0265	00473	034470		DEF	#GTPF
0266	00474	053337	ANOT	DEF	NOT
0267	00475	035211		DEF	#LPCK
0268	00476	060052	?ADIN	DEF	DINT
0269	00477	034735		DEF	#RPCK
0270	00500	063307	S14SC	DEF	S14SH
0271	00500		S14LP	EQU	S14SC
0272	00501	034713		DEF	#LTR
0273	00502	000777	B777	UCT	777
0274	00503	034725		DEF	#STOP
0275	00504	175000	#LIBI	DEF	LIBRA,I
0276	00505	034210		DEF	#CRST
0277	00506	075000	#LIB#	DEF	LIBRA
0278	00507	034747		DEF	#DGCK
0279	00510	053504	AJAB	DEF	TAB
0280	00511	034761		DEF	#LTCK
0281	00512	000151	DTRAX	DEF	TRAX
0282	00513	035202		DEF	#SBPU
0283	00514	071457	SCHEN	DEF	SCHEQ
0284	00515	034771		DEF	#SYCK
0285	00516	071433	SCHIN	DEF	SCHIQ
0286	00517	043621		DEF	#FINC
0287	00520	000030	DLTEM	DEF	LTEMP
0288	00521	052716		DEF	#NMCK
0289	00522	060713	TTY35	DEF	?TT35
0290	00523	053116		DEF	#MB10
0291	00524	034307	ACCSA	DEF	ACCST
0292	00525	053264		DEF	#DB10
0293	00526	034400	ACC5A	DEF	ACC55
0294	00527	053146		DEF	#NRML
0295	00530	025230	LULEN	DEF	LIBUS+ULEN
0296	00531	053201		DEF	#PACK
0297	00532	074435	SCHLB	DEF	SCHLQ
0298	00533	052667		DEF	#OVFL

LINKAGE FOR INPUT REQUEST.

0299	00534	074656	ABCK	DEF	ABCHK	
0300	00535	034240		DEF	#DLPR	
0301	00536	003230	L1024	DEF	LIBUS+1024	
0302	00537	034421		DEF	#FDPS	
0303	00540	072035	FUSS	DEF	COM6+1	POINTER TO DISC ADDRESS OF FUSS.
0304	00541	036732		DEF	#SSYM	
0305	00542	020000	P8192	DEC	8192	
0306	00543	037002		DEF	#ASYM	
0307	00544	001645	ERSCA	DEF	ERSEC	
0308	00545	036450		DEF	#DCMP	
0309	00546	061126	DTTY0	DEF	TTY00	
0310	00547	036574		DEF	#PNST	
0311	00550	062266	DTT32	DEF	TTY32	
0312	00551	035170		DEF	#CUSP	
0313	00552	102501	LIA1	LIA	1	
0314	00553	033607		DEF	#STRI	
0315	00554	041655	EXITA	DEF	EXIT	
0316	00555	033635		DEF	#RSTO	
0317	00556	040031	XEC1A	DEF	XEC1	
0318	00557	033647		DEF	#GTST	
0319	00560	042614	FRET	DEF	FOR10	
0320	00561	042371		DEF	#FORM	
0321	00562	001230	LIBD	DEF	LIBUS	
0322	00563	043541		DEF	#STST	
0323	00564	033360	FOPBS	DEF	QUOTE-2	
0324	00565	044010		DEF	#SBFX	
0325	00566	101230	LIBDI	DEF	LIBUS,1	
0326	00567	043420		DEF	#PSTR	
0327	00570	020040	ASCBB	ASC	1,	
0328	00571	051165		DEF	#FLOT	
0329	00572	074025	T35CH	DEF	T35CQ	
0330	00573	044657		DEF	#TRST	
0331	00574	030060	ASC00	ASC	1,00	
0332	00575	043341		DEF	#CMPR	
0333	00576	071612	OUTCH	DEF	#OUTC	
0334	00577	043322		DEF	#PCHK	
0335	00600	001364	FSCHA	DEF	FSCH	
0336	00601	042342		DEF	#FTCH	
0337	00602	001777	B1777	OCT	1777	
0338	00603	042020		DEF	#STDP	
0339	00604	000000	LOGCT	NOP		NUMBER OF ELEMENTS IN LOGGR
0340	00605	042111		DEF	#FDAT	
0341	00606	072236	LOGP1	DEF	LOGGR+63	POINTERS TO FIRST AND
0342	00607	043563		DEF	#FSCH	
0343	00610	177700	D100	OCT	-100	
0344	00611	043741		DEF	#PSHS	
0345	00612	002000	B2000	OCT	2000	
0346	00613	045165		DEF	#ARIN	
0347	00614	003000	B3000	OCT	3000	
0348	00615	043642		DEF	#BNOP	
0349	00616	010000	RPOP	OCT	10000	
0350	00617	043635		DEF	#STTP	
0351	00620	072236	LOGP2	DEF	LOGGR+63	LAST ENTRIES IN LOGGR
0352	00621	043651		DEF	#OPCK	
0353	00622	012000	LBOP	OCT	12000	

0354	00623	043703		DEF	#RSCK	
0355	00624	013000	LPOP	OCT	13000	
0356	00625	044726		DEF	#FAD	
0357	00626	072137	LOGBG	DEF	LOGGR	POINTS TO BEGINNING OF LOGGR
0358	00627	044733		DEF	#FSB	
0359	00630	072237	LOGND	DEF	LOGGR+64	POINTS TO END OF LOGGR
0360	00631	045036		DEF	#FMP	
0361	00632	022000	MULOP	OCT	22000	
0362	00633	045101		DEF	#FDV	
0363	00634	070043	DCLC1	DEF	CLC1	
0364	00635	044702		DEF	#UNPK	
0365	00636	047000	DIMOP	OCT	47000	
0366	00637	045224		DEF	#FLUN	
0367	00640	070047	DCLC2	DEF	CLC2	
0368	00641	044021		DEF	#IFIX	
0369	00642	051000	REMOP	OCT	51000	
0370	00643	050010		DEF	#ENOT	
0371	00644	001705	ERS32	DEF	ERSEC+32	
0372	00645	050026		DEF	#NMOT	
0373	00646	055000	NXTOP	OCT	55000	
0374	00647	050345		DEF	#GTDG	
0375	00650	060000	ENDOP	OCT	60000	
0376	00651	050437		DEF	#OTLN	
0377	00652	062000	DATOP	OCT	62000	
0378	00653	050417		DEF	#EDLM	
0379	00654	025063	LW97	DEF	USER+ULEN_97	
0380	00655	042347		DEF	#STPT	
0381	00656	065000	PRTOP	OCT	65000	
0382	00657	051531		DEF	#EXP	
0383	00660	070000	FILOP	OCT	70000	
0384	00661	051655		DEF	#LOG	
0385	00662	100001	ONEI	DEF	1,I	
0386	00663	051074		DEF	#CHEB	
0387	00664	077000	OPMSK	OCT	77000	
0388	00665	051147		DEF	#IENT	
0389	00666	070613	DEH	DEF	EH	
0390	00667	051172		DEF	#PWR2	
0391	00670	100003	INTFL	OCT	100003	
0392	00671	042244		DEF	#INCL	
0393	00672	100017	PDFFL	OCT	100017	
0394	00673	050475		DEF	#GTCR	
0395	00674	176550	MLIBD	ABS	-LIBUS	
0396	00675	050467		DEF	#BKSP	
0397	00676	000135	?ATBL	DEF	?TBL	
0398	00677	050451		DEF	#OTCR	
0399	00700	100777	OPDMK	OCT	100777	
0400	00701	050370		DEF	#OTIN	
0401	00702	002000	PBUFF	DEF	PROGB+1	
0402	00703	052613		DEF	#MCOT	
0403	00704	106240	D36K	ABS	30000+6000	
0404	00705	052650		DEF	#OTST	
0405	00706	174003	OFUP	OCT	174003	
0406	00707	042365		DEF	#SINI	
0407	00710	071713	SCOM1	DEF	COM1	
0408	00711	034513		DEF	#BLDI	

0409	00712	072022	SCUM5	DEF	COM5=1
0410	00713	047303		DEF	#RDIM
0411	00714	160010	M8184	DEC	=8184
0412	00715	047252		DEF	#VCHK
0413	00716	154360	MAXSN	DEC	=10000
0414	00717	045415		DEF	#SERR
0415	00720	000105	E	OCT	105
0416	00721	052676		DEF	#CHOU
0417	00722	000073	B73	OCT	73
0418	00723	045405		DEF	#MOVE
0419	00724	000074	D60	DEC	60
0420	00725	034545		DEF	#RECR
0421	00726	073000	LETOP	OCT	73000
0422	00727	034566		DEF	#FILR
0423	00730	000140	.140	OCT	140
0424	00731	042043		DEF	#VLF1
0425	00732	176000	M2000	OCT	176000
0426	00733	044057		DEF	#RQST
0427	00734	000077	B77	OCT	77
0428	00735	044355		DEF	#FILS
0429	00736	004000	B4000	OCT	4000
0430	00737	044471		DEF	#GTTY
0431	00740	125007	PDFBS	JMP	PDFTB=1,I
0432	00741	044534		DEF	#WRBU
0433	00742	045000	COMOP	OCT	45000
0434	00743	035040		DEF	#ALCO
0435	00744	016000	SCOMM	OCT	16000
0436	00745	037057		DEF	#RSTP
0437	00746	044000	IMGOP	OCT	44000
0438	00747	043530		DEF	#FENC
0439	00750	177000	M512	DEC	=512
0440	00751	056000		DEF	#MTG1
0441	00752	177667	M73	DEC	=73
0442	00753	056010		DEF	#DTL1
0443	00754	053515	PDFNS	DEF	PRDFS
0444	00755	056022		DEF	#RUND
0445	00756	134213	STBAS	DEF	SYNTB=42B,I
0446	00757	056064		DEF	#OTBL
0447	00760	001652	IHB	DEF	HB
0448	00761	056072		DEF	#OTCL
0449	00762	177400	M256	DEC	=256
0450	00763	056103		DEF	#DSCH
0451	00764	177600	M128	DEC	=128
0452	00765	056124		DEF	#MCHR
0453	00766	177640	M96	OCT	=140
0454	00767	056150		DEF	#EVEP
0455	00770	060012	DRUM	DEF	LDRUM
0456	00771	033667		DEF	#USCK
0457	00772	000100	B100	OCT	100
0458	00773	035014		DEF	#PFSH
0459	00774	053474	ATHEN	DEF	THEN
0460	00775	054006		DEF	#FRMT
0461	00776	043000	USEOP	OCT	43000
0462	00777	041027		DEF	#EPRU
0463	01000	154000	MULEN	ABS	=ULEN

0464	01001	035220		DEF #SLCK
0465	01002	021230	L8192	DEF LIBUS+8192
0466	01003	073270		DEF #LCDL
0467	01004	001562	FCUCA	DEF FCUC
0468	01005	043600		DEF #FCUC
0469	01006	042203	FDT4A	DEF FDATA
0470	01007	051751		DEF #EDAB

0471*

0472** FUNCTION EXECUTION ENTRY ADDRESSES

0473*

0474	01010	050524	PDFTB	DEF ETAB
0475	01011	050611		DEF ELIN
0476	01012	050554		DEF ESPA
0477	01013	051301		DEF ETAN
0478	01014	051417		DEF EATN
0479	01015	051527		DEF EEXP
0480	01016	051653		DEF ELOG
0481	01017	050661		DEF EABS
0482	01020	052010		DEF ESQR
0483	01021	050664		DEF EINT
0484	01022	050744		DEF ERND
0485	01023	051017		DEF ESGN
0486	01024	001032	LDVSR	DEF DVSR
0487	01025	051030		DEF ETYP
0488	01026	050700		DEF ETIM
0489	01027	051212		DEF ESIN
0490	01030	051210		DEF ECOS
0491	01031	052076		DEF EBRK

'LEN' IS DONE IN A SPECIAL WAY

0493	01032	023420	DVSR	DEC 10000
0494	01033	001750		DEC 1000
0495	01034	000144		DEC 100
0496	01035	000012		DEC 10
0497	01036	100000	MNEG	OCT 100000
0498	01037	000376		OCT 376
0499	01040	040000	HALF	DEC 0.5
	01041	000000		

0500	00610	M64	EQU	D100
0501	00762	HIMSK	EQU	M256
0502	00351	EOF	EQU	.-1
0503	00350	EOR	EQU	.-2
0504	01036	BIT15	EQU	MNEG
0505	00612	A000	EQU	B2000

0506*

0507* THE FOLLOWING CONSTANTS ARE MASKS FOR THE BIT-FLAG WORD
0508* IN EACH USER'S TTY TABLE

0509*

0510	00353	TERR	EQU	.+1	TAPE ERROR
0511	00354	CFLAG	EQU	.+2	COMPILE MODE
0512	00356	HFLAG	EQU	.+4	SHELLO IS RUNNING
0513	00362	TAPEF	EQU	.+8	USER IN TAPE MODE
0514	00372	UNABT	EQU	.+16	UNABLE TO ABORT
0515	00412	OUTWT	EQU	.+32	OUTPUT BUFFER FULL
0516	00772	COM14	EQU	B100	COMMUNICATION FROM 2114

0517 00442 ABTRY EQU B200
 0518 00444 DFCHK EQU B400
 0519 00445 CHNFG EQU B1000
 0520 00612 ENDST EQU B2000
 0521 00736 MBUST EQU B4000
 0522 00610 PBFLG EQU RPOP
 0523 00446 CBFLG EQU B20M

ABORT ATTEMPT
 CHECK FOR DIRTY FILES
 CHAIN RUNNING
 ENDRM POSITIVE
 MBUSY POSITIVE
 ABORT CAPABILITY DISABLED
 "BREAK" COMMAND GIVEN

0524*

0525** ERROR JUMP TABLE

0526*

0527	01042	001474	SERRS	DEF	SERR
0528				REP	35
0529	01043	001474		DEF	SERR
0529	01044	001474		DEF	SERR
0529	01045	001474		DEF	SERR
0529	01046	001474		DEF	SERR
0529	01047	001474		DEF	SERR
0529	01050	001474		DEF	SERR
0529	01051	001474		DEF	SERR
0529	01052	001474		DEF	SERR
0529	01053	001474		DEF	SERR
0529	01054	001474		DEF	SERR
0529	01055	001474		DEF	SERR
0529	01056	001474		DEF	SERR
0529	01057	001474		DEF	SERR
0529	01060	001474		DEF	SERR
0529	01061	001474		DEF	SERR
0529	01062	001474		DEF	SERR
0529	01063	001474		DEF	SERR
0529	01064	001474		DEF	SERR
0529	01065	001474		DEF	SERR
0529	01066	001474		DEF	SERR
0529	01067	001474		DEF	SERR
0529	01070	001474		DEF	SERR
0529	01071	001474		DEF	SERR
0529	01072	001474		DEF	SERR
0529	01073	001474		DEF	SERR
0529	01074	001474		DEF	SERR
0529	01075	001474		DEF	SERR
0529	01076	001474		DEF	SERR
0529	01077	001474		DEF	SERR
0529	01100	001474		DEF	SERR
0529	01101	001474		DEF	SERR
0529	01102	001474		DEF	SERR
0529	01103	001474		DEF	SERR
0529	01104	001474		DEF	SERR
0529	01105	001474		DEF	SERR
0530	01106	001474	RERRS	DEF	SERR
0531				REP	49
0532	01107	001474		DEF	SERR
0532	01110	001474		DEF	SERR
0532	01111	001474		DEF	SERR
0532	01112	001474		DEF	SERR
0532	01113	001474		DEF	SERR
0532	01114	001474		DEF	SERR

0532	01115	001474	DEF	SERR
0532	01116	001474	DEF	SERR
0532	01117	001474	DEF	SERR
0532	01120	001474	DEF	SERR
0532	01121	001474	DEF	SERR
0532	01122	001474	DEF	SERR
0532	01123	001474	DEF	SERR
0532	01124	001474	DEF	SERR
0532	01125	001474	DEF	SERR
0532	01126	001474	DEF	SERR
0532	01127	001474	DEF	SERR
0532	01130	001474	DEF	SERR
0532	01131	001474	DEF	SERR
0532	01132	001474	DEF	SERR
0532	01133	001474	DEF	SERR
0532	01134	001474	DEF	SERR
0532	01135	001474	DEF	SERR
0532	01136	001474	DEF	SERR
0532	01137	001474	DEF	SERR
0532	01140	001474	DEF	SERR
0532	01141	001474	DEF	SERR
0532	01142	001474	DEF	SERR
0532	01143	001474	DEF	SERR
0532	01144	001474	DEF	SERR
0532	01145	001474	DEF	SERR
0532	01146	001474	DEF	SERR
0532	01147	001474	DEF	SERR
0532	01150	001474	DEF	SERR
0532	01151	001474	DEF	SERR
0532	01152	001474	DEF	SERR
0532	01153	001474	DEF	SERR
0532	01154	001474	DEF	SERR
0532	01155	001474	DEF	SERR
0532	01156	001474	DEF	SERR
0532	01157	001474	DEF	SERR
0532	01160	001474	DEF	SERR
0532	01161	001474	DEF	SERR
0532	01162	001474	DEF	SERR
0532	01163	001474	DEF	SERR
0532	01164	001474	DEF	SERR
0532	01165	001474	DEF	SERR
0532	01166	001474	DEF	SERR
0532	01167	001474	DEF	SERR
0533	01170	001474	FERRS	DEF SERR
0534			REP	14
0535	01171	001474	DEF	SERR
0535	01172	001474	DEF	SERR
0535	01173	001474	DEF	SERR
0535	01174	001474	DEF	SERR
0535	01175	001474	DEF	SERR
0535	01176	001474	DEF	SERR
0535	01177	001474	DEF	SERR
0535	01200	001474	DEF	SERR
0535	01201	001474	DEF	SERR
0535	01202	001474	DEF	SERR

0535	01203	001474		DEF SERR
0535	01204	001474		DEF SERR
0535	01205	001474		DEF SERR
0535	01206	001474		DEF SERR
0536	01207	001474	WERRS	DEF SERR
0537				REP 9
0538	01210	001474		DEF SERR
0538	01211	001474		DEF SERR
0538	01212	001474		DEF SERR
0538	01213	001474		DEF SERR
0538	01214	001474		DEF SERR
0538	01215	001474		DEF SERR
0538	01216	001474		DEF SERR
0538	01217	001474		DEF SERR
0538	01220	001474		DEF SERR

0002	01221	001224	USE	DEF	USER
0003	01222	101224	USEI	DEF	USER,I
0004	01224			ORG	1224B
0005	01224		USER	EQU	*
0006	01224	000000	AREG	NOP	
0007	01225	000000	BREG	NOP	
0008	01226	000000	EREG	NOP	
0009	01227	000000	PREG	NOP	
0010	01230		LIBUS	EQU	*
0011*					
0012**	SUBROUTINE RETURN ADDRESSES				
0013*					
0014	01230	000000	FSC	NOP	
0015	01231	124453		JMP	*=JTD,I
0016	01232	000000	SBCK	NOP	
0017	01233	124455		JMP	*=JTD,I
0018	01234	000000	FRCUR	NOP	
0019	01235	124457		JMP	*=JTD,I
0020	01236	000000	FPOP	NOP	
0021	01237	124461		JMP	*=JTD,I
0022	01240	000000	VAROP	NOP	
0023	01241	124463		JMP	*=JTD,I
0024	01242	000000	ARRID	NOP	
0025	01243	124465		JMP	*=JTD,I
0026	01244	000000	PRGIN	NOP	
0027	01245	124467		JMP	*=JTD,I
0028	01246	000000	TBSRH	NOP	
0029	01247	124471		JMP	*=JTD,I
0030	01250	000000	GETPF	NOP	
0031	01251	124473		JMP	*=JTD,I
0032	01252	000000	LPCK	NOP	
0033	01253	124475		JMP	*=JTD,I
0034	01254	000000	RPCK	NOP	
0035	01255	124477		JMP	*=JTD,I
0036	01256	000000	LTR	NOP	
0037	01257	124501		JMP	*=JTD,I
0038	01260	000000	STROP	NOP	
0039	01261	124503		JMP	*=JTD,I
0040	01262	000000	CHRST	NOP	
0041	01263	124505		JMP	*=JTD,I
0042	01264	000000	DIGCK	NOP	
0043	01265	124507		JMP	*=JTD,I
0044	01266	000000	LETCK	NOP	
0045	01267	124511		JMP	*=JTD,I
0046	01270	000000	SBPUD	NOP	
0047	01271	124513		JMP	*=JTD,I
0048	01272	000000	SYMCK	NOP	
0049	01273	124515		JMP	*=JTD,I
0050	01274	000000	FINCH	NOP	
0051	01275	124517		JMP	*=JTD,I
0052	01276	000000	NUMCK	NOP	
0053	01277	124521		JMP	*=JTD,I
0054	01300	000000	MBY10	NOP	
0055	01301	124523		JMP	*=JTD,I
0056	01302	000000	DBY10	NOP	

0057	01303	124525		JMP	*-JTD,I
0058	01304	000000	NORML	NOP	
0059	01305	124527		JMP	*-JTD,I
0060	01306	000000	.PACK	NOP	
0061	01307	124531		JMP	*-JTD,I
0062	01310	000000	OVFLW	NOP	
0063	01311	124533		JMP	*-JTD,I
0064	01312	000000	DELPR	NOP	
0065	01313	124535		JMP	*-JTD,I
0066	01314	000000	FNDPS	NOP	
0067	01315	124537		JMP	*-JTD,I
0068	01316	000000	SSYMT	NOP	
0069	01317	124541		JMP	*-JTD,I
0070	01320	000000	ASYMT	NOP	
0071	01321	124543		JMP	*-JTD,I
0072	01322	000000	DCMPL	NOP	
0073	01323	124545		JMP	*-JTD,I
0074	01324	000000	PRNST	NOP	
0075	01325	124547		JMP	*-JTD,I
0076	01326	000000	CUSP	NOP	
0077	01327	124551		JMP	*-JTD,I
0078	01330	000000	STRID	NOP	
0079	01331	124553		JMP	*-JTD,I
0080	01332	000000	RSTOP	NOP	
0081	01333	124555		JMP	*-JTD,I
0082	01334	000000	GETST	NOP	
0083	01335	124557		JMP	*-JTD,I
0084	01336	000000	FORMX	NOP	
0085	01337	124561		JMP	*-JTD,I
0086	01340	000000	STSTR	NOP	
0087	01341	124563		JMP	*-JTD,I
0088	01342	000000	SBFIX	NOP	
0089	01343	124565		JMP	*-JTD,I
0090	01344	000000	PSTR	NOP	
0091	01345	124567		JMP	*-JTD,I
0092	01346	000000	FLOAT	NOP	
0093	01347	124571		JMP	*-JTD,I
0094	01350	000000	TRSTR	NOP	
0095	01351	124573		JMP	*-JTD,I
0096	01352	000000	CUMPR	NOP	
0097	01353	124575		JMP	*-JTD,I
0098	01354	000000	PCHK	NOP	
0099	01355	124577		JMP	*-JTD,I
0100	01356	000000	FETCH	NOP	
0101	01357	124601		JMP	*-JTD,I
0102	01360	000000	SETDP	NOP	
0103	01361	124603		JMP	*-JTD,I
0104	01362	000000	FDATA	NOP	
0105	01363	124605		JMP	*-JTD,I
0106	01364	000000	FSCH	NOP	
0107	01365	124607		JMP	*-JTD,I
0108	01366	000000	PSHST	NOP	
0109	01367	124611		JMP	*-JTD,I
0110	01370	000000	ARINV	NOP	
0111	01371	124613		JMP	*-JTD,I

0112	01372	000000	BINOP	NOP	
0113	01373	124615		JMP	*=JTD,I
0114	01374	000000	STTOP	NOP	
0115	01375	124617		JMP	*=JTD,I
0116	01376	000000	OPCHK	NOP	
0117	01377	124621		JMP	*=JTD,I
0118	01400	000000	RSCHK	NOP	
0119	01401	124623		JMP	*=JTD,I
0120	01402	000000	.FAD	NOP	
0121	01403	124625		JMP	*=JTD,I
0122	01404	000000	.FSB	NOP	
0123	01405	124627		JMP	*=JTD,I
0124	01406	000000	.FMP	NOP	
0125	01407	124631		JMP	*=JTD,I
0126	01410	000000	.FDV	NOP	
0127	01411	124633		JMP	*=JTD,I
0128	01412	000000	UNPAK	NOP	
0129	01413	124635		JMP	*=JTD,I
0130	01414	000000	.FLUN	NOP	
0131	01415	124637		JMP	*=JTD,I
0132	01416	000000	IFIX	NOP	
0133	01417	124641		JMP	*=JTD,I
0134	01420	000000	ENOUT	NOP	
0135	01421	124643		JMP	*=JTD,I
0136	01422	000000	NUMOT	NOP	
0137	01423	124645		JMP	*=JTD,I
0138	01424	000000	GETDG	NOP	
0139	01425	124647		JMP	*=JTD,I
0140	01426	000000	OUTLN	NOP	
0141	01427	124651		JMP	*=JTD,I
0142	01430	000000	EDELM	NOP	
0143	01431	124653		JMP	*=JTD,I
0144	01432	000000	SETPT	NOP	
0145	01433	124655		JMP	*=JTD,I
0146	01434	000000	.EXP	NOP	
0147	01435	124657		JMP	*=JTD,I
0148	01436	000000	.LOG	NOP	
0149	01437	124661		JMP	*=JTD,I
0150	01440	000000	.CHEB	NOP	
0151	01441	124663		JMP	*=JTD,I
0152	01442	000000	.IENT	NOP	
0153	01443	124665		JMP	*=JTD,I
0154	01444	000000	.PWR2	NOP	
0155	01445	124667		JMP	*=JTD,I
0156	01446	000000	INCAL	NOP	
0157	01447	124671		JMP	*=JTD,I
0158	01450	000000	GETCR	NOP	
0159	01451	124673		JMP	*=JTD,I
0160	01452	000000	BCKSP	NOP	
0161	01453	124675		JMP	*=JTD,I
0162	01454	000000	OUTCR	NOP	
0163	01455	124677		JMP	*=JTD,I
0164	01456	000000	OUTIN	NOP	
0165	01457	124701		JMP	*=JTD,I
0166	01460	000000	MCOUT	NOP	

0167	01461	124703		JMP	*-JTD,I
0168	01462	000000	OUTST	NOP	
0169	01463	124705		JMP	*-JTD,I
0170	01464	000000	SINIT	NOP	
0171	01465	124707		JMP	*-JTD,I
0172	01466	000000	BLDIN	NOP	
0173	01467	124711		JMP	*-JTD,I
0174	01470	000000	REDIM	NOP	
0175	01471	124713		JMP	*-JTD,I
0176	01472	000000	VCHK	NOP	
0177	01473	124715		JMP	*-JTD,I
0178	01474	000000	SERR	NOP	
0179	01475	124717		JMP	*-JTD,I
0180	01476	000000	CHOUF	NOP	
0181	01477	124721		JMP	*-JTD,I
0182	01500	000000	MOVER	NOP	
0183	01501	124723		JMP	*-JTD,I
0184	01502	000000	RECRF	NOP	
0185	01503	124725		JMP	*-JTD,I
0186	01504	000000	FILRF	NOP	
0187	01505	124727		JMP	*-JTD,I
0188	01506	000000	VLFIL	NOP	
0189	01507	124731		JMP	*-JTD,I
0190	01510	000000	RQSTR	NOP	
0191	01511	124733		JMP	*-JTD,I
0192	01512	000000	FILST	NOP	
0193	01513	124735		JMP	*-JTD,I
0194	01514	000000	GTTYP	NOP	
0195	01515	124737		JMP	*-JTD,I
0196	01516	000000	WRBUF	NOP	
0197	01517	124741		JMP	*-JTD,I
0198	01520	000000	ALCOM	NOP	
0199	01521	124743		JMP	*-JTD,I
0200	01522	000000	RSTPT	NOP	
0201	01523	124745		JMP	*-JTD,I
0202	01524	000000	FENCH	NOP	
0203	01525	124747		JMP	*-JTD,I
0204	01526	000000	MTG1	NOP	
0205	01527	124751		JMP	*-JTD,I
0206	01530	000000	DTL1	NOP	
0207	01531	124753		JMP	*-JTD,I
0208	01532	000000	ROUND	NOP	
0209	01533	124755		JMP	*-JTD,I
0210	01534	000000	OUTBL	NOP	
0211	01535	124757		JMP	*-JTD,I
0212	01536	000000	OUTCL	NOP	
0213	01537	124761		JMP	*-JTD,I
0214	01540	000000	USRCH	NOP	
0215	01541	124763		JMP	*-JTD,I
0216	01542	000000	MCHAR	NOP	
0217	01543	124765		JMP	*-JTD,I
0218	01544	000000	EVEXP	NOP	
0219	01545	124767		JMP	*-JTD,I
0220	01546	000000	USTCK	NOP	
0221	01547	124771		JMP	*-JTD,I

0222	01550	000000	PFSRH	NOP	
0223	01551	124773		JMP	*=JTD,I
0224	01552	000000	FRMAT	NOP	
0225	01553	124775		JMP	*=JTD,I
0226	01554	000000	EPRUS	NOP	
0227	01555	124777		JMP	*=JTD,I
0228	01556	000000	STLCK	NOP	
0229	01557	125001		JMP	*=JTD,I
0230	01560	000000	LCOLP	NOP	
0231	01561	125003		JMP	*=JTD,I
0232	01562	000000	FCUC	NOP	
0233	01563	125005		JMP	*=JTD,I
0234	01564	000000	EDABR	NOP	
0235	01565	125007		JMP	*=JTD,I
0236	00556		JTD	EQU	FSC=SBJTB+1
0237*					
0238**	GENERAL USAGE INFORMATION				
0239*					
0240	01566	000000	RNDX1	BSS	1
0241	01567	000000	RNDX2	BSS	1
0242	01570	000000	.LNUM	BSS	1
0243	01571	000000	LNAME	BSS	1
0244	01572	000000	CHRCT	BSS	1
0245	01573	000040	BLANK	OCT	40
0246	01574	000000	SBPTR	BSS	1
0247	01575	000000	SYMTB	BSS	1
0248	01576	000000	VALTB	BSS	1
0249	01577	002000	SPRUG	DEF	PROGB+1
0250	01600	000000	VLFLG	BSS	1
0251	01601	000000	FLSTS	BSS	4
0252	01605	000000	FILPT	BSS	1
0253	01606	000000	FILCT	BSS	1
0254	01607	000000	USES	BSS	1
0255	01610	000000	NUMPT	BSS	1
0256	01611	000000	ENOUF	NOP	
0257	01612	000000	ATIM	BSS	1
0258	01613	000000	TEMP	BSS	9
0259	01624	000000	XTEMP	BSS	2
0260	01626	000000	YTEMP	BSS	2
0261	01630	000000	UTEMP	BSS	2
0262	01632	000000	X2TMP	BSS	2
0263	01634	000000	ATMP	BSS	2
0264	01636	000000	BTMP	BSS	2
0265	01640	000000	DTMP	BSS	2
0266	01642	000000	BIN01	BSS	1
0267	01643	000000	BIN02	BSS	1
0268	01644	125372		JMP	BINOP,I
0269	01645	000000	ERSEC	BSS	64
0270	01745	000000	CC	BSS	1
0271	01746	000000	CC1	BSS	1
0272	01747	000000	CC2	BSS	1
0273	01750	000000	CONTR	BSS	1
0274	01751	000000	DP	BSS	1
0275	01752	000000	DPFLG	BSS	1
0276	01753	000000	EDSTA	BSS	1

30-BIT RANDOM
INTEGER.

0277	01754	000000	EFLAG	BSS	1
0278	01755	000000	EST	BSS	1
0279	01756	000000	FFLG	BSS	1
0280	01757	000000	FSP	BSS	1
0281	01760	000000	IFSS	BSS	1
0282	01761	000000	IFSTR	BSS	1
0283	01762	000000	NCH	BSS	1
0284	01763	000000	NUM1	BSS	1
0285	01764	000000	NUM2	BSS	1
0286	01765	000000	PC1	BSS	1
0287	01766	000000	PC2	BSS	1
0288	01767	000000	SAD	BSS	1
0289	01770	000000	SBD	BSS	1
0290	01771	000000	PMASK	BSS	1
0291	01772	000000	RETCO	BSS	1
0292	01773	000000	ASINP	BSS	1
0293	01774	050000	DEFOP	OCT	50000
0294	01775	054000	FOROP	OCT	54000
0295	01776	000000	REPCT	BSS	1
0296	02000		ORG	USER+5548	
0297	01777		PROGB	EQU	*-1
0298	01036		FLGBT	EQU	MNEG
0299	01422		GFLAG	EQU	NUMOT
0300	01645		PINTG	EQU	ERSEC
0301	01266		SIGN	EQU	LETCK
0302	01316		MANT1	EQU	SSYMT
0303	01320		MANT2	EQU	ASYMT
0304	01322		EXP	EQU	DCMPL
0305	01324		EXPON	EQU	PRNST
0306	01336		FFLAG	EQU	FORMX
0307	01360		NMTMP	EQU	SETDP
0308	01362		NMPTR	EQU	FDATA
0309	01616		NUMBF	EQU	TEMP+3
0310	01356		DIGCT	EQU	FETCH
0311	01300		NT0	EQU	MBY10
0312	01310		OCTMP	EQU	OVFLW
0313	01400		LT0	EQU	RSCHK
0314	01430		LT1	EQU	EDELM
0315	01274		LT2	EQU	FINCH
0316	01432		LT3	EQU	SETPT
0317	01440		LT4	EQU	.CHEB
0318	01442		LT5	EQU	.IENT
0319	01444		LT6	EQU	.PWR2
0320	01434		LT7	EQU	.EXP
0321	01552		LT8	EQU	FRMAT
0322	01446		OT1	EQU	INCAL
0323	01452		OT3	EQU	BCKSP
0324	01470		OT4	EQU	REDIM
0325	01374		DGCNT	EQU	STTOP
0326	01512		SOURC	EQU	FILST
0327	01514		DEST	EQU	GTTYP
0328	01500		TAP0	EQU	MOVER
0329	01474		TAP1	EQU	SERR
0330	01474		MVEND	EQU	SERR
0331	01476		CU1	EQU	CHOUF

0332*

0333** SYNTAX INFORMATION TEMPORARIES

0334*

0335	01576	ERRCT	EQU	VALTB
0336	01620	SBUFA	EQU	TEMP+5
0337	01472	SYNTQ	EQU	VCHK
0338	01617	SSTAK	EQU	TEMP+4
0339	01402	MAXCR	EQU	.FAD
0340	01404	TABLE	EQU	.FSB
0341	01406	LNGTH	EQU	.FMP
0342	01410	SMBGN	EQU	.FDV
0343	01434	SLENG	EQU	.EXP
0344	01440	COUNT	EQU	.CHEB
0345	01442	TBLPT	EQU	.IENT
0346	01444	TSPTR	EQU	.PWR2
0347	01306	SBTQ	EQU	.PACK
0348	01414	ENTVR	EQU	.FLUN
0349	01414	CDFLG	EQU	.FLUN
0350	01621	PFLAG	EQU	TEMP+6

0351*

0352** COMPILE INFORMATION TEMPORARIES

0353*

0354	01234	FLINK	EQU	FRCUR
0355	01504	FILTB	EQU	FILRF
0356	01242	STEND	EQU	ARRID
0357	01230	SPTR	EQU	FSC
0358	01236	NSPTR	EQU	FPOP
0359	01240	STYPE	EQU	VAROP
0360	01613	STMP1	EQU	TEMP
0361	01614	STMP2	EQU	TEMP+1
0362	01613	VTMP1	EQU	TEMP
0363	01614	VTMP2	EQU	TEMP+1
0364	01615	VTMP3	EQU	TEMP+2
0365	01616	VTMP4	EQU	TEMP+3
0366	01617	VTMP5	EQU	TEMP+4
0367	01617	COMSN	EQU	TEMP+4
0368	01620	STPTR	EQU	TEMP+5
0369	01620	COMPT	EQU	TEMP+5
0370	01621	STCT1	EQU	TEMP+6
0371	01615	STCT2	EQU	TEMP+2
0372	01616	STCT3	EQU	TEMP+3
0373	01621	DCFLG	EQU	TEMP+6
0374	01552	INFST	EQU	FRMAT

0375*

0376** EXECUTION INFORMATION TEMPORARIES

0377*

0378	01232	FCORE	EQU	SBSCK
0379	01502	FCNTR	EQU	RECRF
0380	01240	RTRNG	EQU	VAROP
0381	01242	RTNST	EQU	ARRID
0382	01246	FORQ	EQU	TBSRH
0383	01250	FORST	EQU	GETPF
0384	01330	TMPST	EQU	STRID
0385	01332	OPDST	EQU	RSTOP
0386	01466	OPTRQ	EQU	BLDIN

0387	01334	PRGCT	EQU	GETST
0388	01262	DCCNT	EQU	CHRST
0389	01244	NXTDT	EQU	PRGIN
0390	01613	TEMP1	EQU	TEMP
0391	01252	TEMP2	EQU	LPCK
0392	01254	TEMP3	EQU	RPCK
0393	01256	TEMP4	EQU	LTR
0394	01272	TEMP5	EQU	SYMCK
0395	01260	TEMP6	EQU	STRQP
0396	01500	GTMP	EQU	MOVER
0397	01430	FVT	EQU	EDELM
0398	01422	EFN0	EQU	NUMOT
0399	01424	EFN1	EQU	GETDG
0400	01426	EFN2	EQU	OUTLN
0401	01366	EFN3	EQU	PSHST
0402	01460	INITF	EQU	MCOUT
0403	01422	IFCNT	EQU	NUMOT
0404	01422	RSPTR	EQU	NUMOT
0405	01500	MCNT	EQU	MOVER
0406	01354	INTMP	EQU	PCHK
0407	01552	STRLN	EQU	FRMAT
0408	01472	EOL	EQU	VCHK
0409	01460	EOPF	EQU	MCOUT
0410	01574	BS1	EQU	SBPTR
0411	01350	BS2	EQU	TRSTR
0412	01352	BS3	EQU	COMPR
0413	01312	MT0	EQU	DELPR
0414	01314	MT1	EQU	FNDPS
0415	01624	MT2	EQU	XTEMP
0416	01625	MT3	EQU	XTEMP+1
0417	01340	MOP	EQU	STSTR
0418	01364	MEXIT	EQU	FSCH
0419	01634	MMT0	EQU	ATMP
0420	01635	MMT1	EQU	ATMP+1
0421	01636	MMT2	EQU	BTMP
0422	01637	MMT3	EQU	BTMP+1
0423	01640	MMT4	EQU	DTMP
0424	01641	MMT5	EQU	DTMP+1
0425	01632	MMT6	EQU	X2TMP
0426	01633	MMT7	EQU	X2TMP+1
0427	01376	MMT8	EQU	OPCHK
0428	01516	ID0	EQU	WRBUF
0429	01362	ID1	EQU	FDATA
0430	01472	RD0	EQU	VCHK
0431	01400	VT0	EQU	RSCHK
0432	01624	SCALR	EQU	XTEMP
0433	01626	MAXE	EQU	YTEMP
0434	01630	TOL	EQU	UTEMP
0435	01344	PIVEL	EQU	PSTR
0436	01440	EST1	EQU	.CHEB
0437	01442	EST2	EQU	.IENT
0438	01444	EST3	EQU	.PWR2
0439	01620	A1	EQU	TEMP+5
0440	01621	C1	EQU	TEMP+6
0441	01622	A2	EQU	TEMP+7

0442	01623	C2	EQU TEMP+8
0443	01310	EXP2	EQU OVFLW
0444	01402	FD0	EQU .FAD
0445	01264	TT1	EQU .DIGCK
0446	01266	TT2	EQU LETCK
0447	01616	TT3	EQU TEMP+3
0448	01617	TT4	EQU TEMP+4
0449	01646	RQ1	EQU ERSEC+1
0450	01651	RQ2	EQU ERSEC+4
0451	01647	RQ3	EQU ERSEC+2
0452	01650	RQ4	EQU ERSEC+3
0453	01652	RQ5	EQU ERSEC+5
0454	01236	FBASE	EQU FPOP
0455	01653	EORFL	EQU ERSEC+6
0456	01234	FILE#	EQU FRCUR
0457	01352	RCRD#	EQU COMPR
0458	01516	VL0	EQU WRBUF
0459	01654	DADRR	EQU ERSEC+7
0460	01655	FILT	EQU ERSEC+8
0461	01400	MPT	EQU RSCHK
0462	01376	NQT	EQU OPCHK
0463	01406	TNULL	EQU .FMP
0464	01410	TPRME	EQU .FDV
0465	01470	PS0	EQU REDIM
0466	01464	PS1	EQU SINIT
0467	01434	CP0	EQU .EXP
0468	01344	CP1	EQU PSTR
0469	01402	TRFCH	EQU .FAD
0470	01404	TRS0	EQU .FSB
0471	01440	RT0	EQU .CHEB
0472	01442	RT1	EQU .IENT
0473	01436	LBTMP	EQU .LOG
0474	01376	CTMP	EQU OPCHK
0475	01645	EC	EQU ERSEC
0476	01646	FST	EQU ERSEC+1
0477	01650	SFLG	EQU ERSEC+3
0478	01651	EXPW	EQU ERSEC+4
0479	01652	HB	EQU ERSEC+5
0480	01730	HBP	EQU ERSEC+51
0481	01731	LCH	EQU ERSEC+52
0482	01732	NAD	EQU ERSEC+53
0483	01733	NBD	EQU ERSEC+54
0484	01734	NBLK	EQU ERSEC+55
0485	01735	NHBW	EQU ERSEC+56
0486	01740	NUMW1	EQU ERSEC+59
0487	01741	NUMW2	EQU ERSEC+60
0488	01742	SNFLG	EQU ERSEC+61
0489	01743	TOTDG	EQU ERSEC+62
0490	01744	DCTR	EQU ERSEC+63
0491	01472	ELCNT	EQU VCHK
0492	01552	ORDNO	EQU FRMAT
0493	01556	ASBFP	EQU STLCK
0494	01470	ASTYP	EQU REDIM

46 WORD BUFFER

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0002 30000          ORG 30000B
0003*
0004 30000 000000  DIREC BSS 560
0005 31051          DIREL EQU *-7      => LAST ENTRY
0006 31060          DIREU EQU *        => BEYOND TABLE
0007* DLOOK SEARCHES THE DIRECTORY FOR A PARTICULAR ENTRY.  THE
0008* DESIRED ENTRY IS DEFINED BY LTEMP(0:3).
0009*
0010* IF THE ENTRY IS FOUND, DLOOK RETURNS TO P+1, THE FOLLOWING VARIA-
0011* BLES ARE SET:
0012*     (LTEMP+4)=POINTER TO DIREC ENTRY.
0013*     (LTEMP+5)=MEMORY ADDRESS OF ENTRY.
0014* THE APPROPRIATE DIRECTORY TRACK IS IN CORE.
0015*
0016* IF THE ENTRY IS NOT FOUND, DLOOK RETURNS TO P+2. THE POINTERS
0017* ARE SET TO POINT AT THE LAST ENTRY LESS THAN THE GIVEN ENTRY.

0019 31060 000000  DLOOK NOP          ENTRY POINT,
0020 31061 067224          LDB DIRDL      SET LTEMP+4 TO POINT AT FIRST
0021 31062 074034  DLOOK3 STB LTEMP+4  DIRECTORY TRACK,
0022 31063 160034          LDA LTEMP+4,I TEST FOR EMPTY TRACK,
0023 31064 002002          SZA
0024 31065 027071          JMP DLOOK1  NOT EMPTY.
0025 31066 064034  DLOOK2 LDB LTEMP+4  BUMP BACK TO
0026 31067 044343          ADB #-7      NEXT TRACK.
0027 31070 027062          JMP DLOOK3
0028 31071 006004  DLOOK1 INB          COMPARE FIRST TRACK ENTRY
0029 31072 060520          LDA DLTEM      TO DESIRED ENTRY.
0030 31073 017176          JSB DIRCM
0031 31074 027066          JMP DLOOK2  NOT ON THIS TRACK,
0032 31075 000000          NOP          FOUND THE RIGHT TRACK.
0033 31076 160034          LDA LTEMP+4,I
0034 31077 003004          CMA,INA      SET UP INITIAL POINTER FOR
0035 31100 040562          ADA LIBD      TRACK SCAN.
0036 31101 040336          ADA #-12
0037 31102 070035          STA LTEMP+5
0038 31103 060034          LDA LTEMP+4  GET DIRECTORY
0039 31104 040360          ADA +6      DRUM ADDRESS
0040 31105 160000          LDA 0,I
0041 31106 053223          CPA DIRWD      CHECK FOR THIS TRACK IN CORE,
0042 31107 027127          JMP DLOOK4  TRACK ALREADY IN CORE.
0043 31110 063223          LDA DIRWD      CHECK FOR DIR. TRACK IN CORE.
0044 31111 002003          SZA,RSS      SKIP IF 30.
0045 31112 027116          JMP DLOOKB  OTHERWISE, JUST READ IN NEW TRACK
0046 31113 064562          LDB LIBD      OUTGOING CORE ADDRESS.
0047 31114 117225          JSB DRUMW,I  WRITE PREVIOUS TRACK OUT
0048 31115 027173          JMP DLOOK9  GOOF: GO TRY TO SALVAGE
0049 31116          DLOOKB EQU *
0050 31116 160034          LDA LTEMP+4,I GET LENGTH OF THIS DIR TRACK
0051 31117 070072          STA WORD      SET UP DRUM TRANSFER LENGTH
0052 31120 060034          LDA LTEMP+4  GET DIRECTORY
0053 31121 040360          ADA +6      DRUM ADDRESS
0054 31122 073233          STA DLO10     SAVE POINTER TO IT
0055 31123 160000          LDA 0,I
0056 31124 064566          LDB LIBDI

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0057 31125 117225      JSB DRUMW,I   READ DIRECTORY
0058 31126 117227      JSB SICKW,I   CAN'T: GO GIVE UP GRACEFULLY
0059* NOW SEARCH DIRECTORY FOR DESIRED ENTRY, A BINARY SEARCH IS USED,
0060* WITH LTEMP(14:15) USED AS POINTERS TO THE FIRST AND LAST OF ALL
0061* UNTESTED ENTRIES,
0062*
0063 31127 060562      DLOK4 LDA LIBD      SET POINTER TO BEGINNING OF
0064 31130 070046      STA LTEMP+14    DIRECTORY.
0065 31131 060520      LDA DLTEM       TEST LAST ENTRY IN TRACK.
0066 31132 064035      LDB LTEMP+5
0067 31133 017176      JSB DIRCM
0068 31134 027137      JMP DLOK5       LAST ENTRY TOO BIG--START CHOP.
0069 31135 037060      ISZ DLOOK      TOO SMALL--IT'S THE ONE.
0070 31136 127060      JMP DLOOK,I    LAST ENTRY IS IT.
0071*
0072 31137 060035      DLOK5 LDA LTEMP+5  SET END POINTER.
0073 31140 070047      STA LTEMP+15
0074 31141 060046      LDA LTEMP+14    COMPUTE DIFFERENCE BETWEEN FIRST
0075 31142 003004      DLOK6 CMA,INA   AND LAST ENTRIES.
0076 31143 040047      ADA LTEMP+15
0077 31144 001100      ARS
0078 31145 006400      CLB
0079 31146 100400      DIV ,+12       DIVIDE BY TWO.
0080 31147 000366      MPY ,+12       ROUND TO A
0081 31150 100200      MPY ,+12       MULTIPLE
0082 31151 000365      OF TWELVE
0083 31152 040046      ADA LTEMP+14    GET ADDRESS OF MIDDLE ENTRY.
0084 31153 070035      STA LTEMP+6     SET INTO RESULT LOCATION.
0085 31154 064520      LDB DLTEM       SETUP FOR JSB DIRCM.
0086 31155 050046      CPA LTEMP+14    TEST FOR ONLY 2 ENTRIES LEFT.
0087 31156 027166      JMP DLOK8       THERE ARE--WE'VE GOT THE RESULT.
0088*
0089 31157 017176      JSB DIRCM       TEST MIDWAY ENTRY.
0090 31160 027163      JMP DLOK7       TOO SMALL--GO RESET LTEMP(14).
0091 31161 027137      JMP DLOK5       TOO BIG--GO RESET LTEMP(15).
0092 31162 127060      JMP DLOOK,I    EQUAL--RETURN.
0093*
0094 31163 060035      DLOK7 LDA LTEMP+5  RESET LTEMP(14).
0095 31164 070046      STA LTEMP+14
0096 31165 027142      JMP DLOK6
0097*
0098 31166 050562      DLOK8 CPA LIBD     IF LTEMP(14)<>LTEMP, WE KNOW
0099 31167 017176      JSB DIRCM       IT'S LESS, SO WE SKIP TEST.
0100 31170 037060      ISZ DLOOK      LESS THAN ENTRY.
0101 31171 000000      NOP
0102 31172 127060      JMP DLOOK,I    EQUAL TO ENTRY.
0103*
0104 31173 063233      DLOK9 LDA DL010   GET POINTER TO DRUM ADDRESS
0105 31174 064072      LDB WORD       GET LENGTH OF TABLE IN CORE
0106 31175 117226      JSB SALVW,I    GO ATTEMPT TO SALVAGE TRACK

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0106*
0107* DIRCM COMPARES THE 4 WORD ENTRIES POINTED TO BY A AND B.
0108* BIT 15 IS NOT USED, IT RETURNS AS FOLLOWS:
0109*     P+1; A<B
0110*     P+2; A>B
0111*     P+3 A=B
0112 31176 000000 DIRCM NOP
0113 31177 073231     STA DIRC2
0114 31200 060346     LDA .-4     SET COUNTER.
0115 31201 073230     STA DIRC1
0116 31202 077232     STB DIRC5
0117 31203 163232 DIRC3 LDA DIRC5,I   SUBTRACT WORD FROM B
0118 31204 001665     ELA,CLE,ERA
0119 31205 003004     CMA,INA   FROM WORD FROM A.
0120 31206 167231     LDB DIRC2,I
0121 31207 005665     ELB,CLE,ERB
0122 31210 040001     ADA 1
0123 31211 002002     SZA     TEST FOR EQUAL.
0124 31212 027220     JMP DIRC4   NOT EQUAL-GO RETURN.
0125 31213 037232     ISZ DIRC5   BUMP
0126 31214 037231     ISZ DIRC2   POINTERS.
0127 31215 037230     ISZ DIRC1   TEST FOR FINISHED.
0128 31216 027203     JMP DIRC3
0129 31217 037176     ISZ DIRCM   DOUBLE ISZ FOR EQUAL.
0130 31220 002021 DIRC4 SSA,RSS
0131 31221 037176     ISZ DIRCM   ONE ISZ IF A>B
0132 31222 127176     JMP DIRCM,I  NONE IF A<B.
0133 31223 000000 DIRWD OCT 0   TELLS WHAT DIRECTORY TRACK
0134*                                     IS IN CORE WHEN FILES IS RUNNING.
0135 31224 031051 DIRDL DEF DIREL
0136 31225 074231 DRUMW DEF DRUML   DRUM DRIVER LINK
0137 31226 062411 SALVW DEF SALVG
0138 31227 062613 SICKW DEF SICK
0139 31230 000000 DIRC1 BSS 1
0140 31231 000000 DIRC2 BSS 1
0141 31232 000000 DIRC5 BSS 1
0142 31233 000000 DL010 BSS 1   DRUM ADDRESS POINTER SAVE WORD
0143*

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0145*

0146*

0147*

0148*

0149*

0150*

0151*

THIS ROUTINE IS USED TO GET A MESSAGE BUFFER FOR
 THE DISC OR DRUM DRIVER. THE LINK TO IT IS PASSED IN THE
 LINKAGE AREA, AND IS STORED ONTO THE BASE PAGE
 BEFORE THE SYSTEM IS STARTED UP.
 PRIOR TO THAT TIME, THE LOADER USES ITS OWN VERSION.

0152	31234	000000	GMQB	NOP	
0153	31235	060306		LDA MSQCT	CHECK FOR MESSAGE BUFFERS ALL
0154	31236	050357		CPA .+5	BEING USED
0155	31237	127234		JMP GMQB,I	NO SKIP SEZ NO BUFFER
0156	31240	034306		ISZ MSQCT	INCREMENT COUNT
0157	31241	060310		LDA MSQP3	LOAD CURRENT POINTER
0158	31242	064310		LDB MSQP3	ADVANCE POINTER FOR
0159	31243	044421		ADB .+MESLN	NEXT MESSAGE
0160	31244	054311		CPB MSQND	CHECK FOR END OF QUEUE
0161	31245	064312		LDB MSQBG	IF END, START OVER
0162	31246	074310		STB MSQP3	
0163	31247	037234		ISZ GMQB	ADVANCE TO BUFFER PRESENT RETURN
0164	31250	127234		JMP GMQB,I	RETURN

0166* THIS ROUTINE CALLS THE REAL DISK DRIVER, AND WAITS
0167* FOR THE TRANSFER TO BE SUCCESSFULLY COMPLETED,
0168*
0169 31251 000000 ZDISC NOP COME HERE FOR DISC TRANSFER
0170* AND WAIT FOR COMPLETION
0171 31252 114212 JSB DISCA,I CALL NORMAL DRIVER
0172 31253 102030 HLT 30B DRIVER BUSY
0173 31254 102031 HLT 31B DISK NOT PRESENT
0174 31255 060214 LDA MBUSY WAIT FOR COMPLETION
0175 31256 002020 SSA =1 SEZ BUSY
0176 31257 027255 JMP *-2
0177 31260 002003 SZA,RSS 0 SEZ DONE WITHOUT ERRORS
0178 31261 037251 ISZ ZDISC ADVANCE TO NO ERRORS RETURN
0179 31262 127251 JMP ZDISC,I RETURN

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0181 31701          ORG 31701B
0182 31701 000151  .105 DEC 105
0183 31702 045233  TAPEA DEF TAPER
0184 31703 045724  SER7A DEF SERR7
0185 31704 153064  LW200 ABS =10240-USER+200
0186*
0187** CLEAN UP FOR NEW PROGRAM **
0188*
0189 31705 103100  CLNUP CLF 0
0190 31706 060354  LDA CFLAG          SET
0191 31707 003000  CMA                PROGRAM
0192 31710 110257  AND MAIN,I        MODE TO
0193 31711 170257  STA MAIN,I        'UNCOMPILED'
0194 31712 102100  STF 0
0195 31713 064702  LDB PBUFF          INSURE CORRECT
0196 31714 075577  STB SPROG          START-OF--PROGRAM SETTING
0197 31715 006400  CLB                INITIALIZE
0198 31716 075575  STB SYMTB          ERROR FLAG
0199 31717 027743  JMP SYNT1
0200**
0201*** DELETE A PROGRAM STATEMENT ***
0202**
0203*
0204* THE STATEMENT REFERENCED BY THE SEQUENCE NUMBER IN
0205* (B) IS DELETED, EXIT TO EXECUTIVE.
0206*
0207 31720 060055  DELST LDA PBPTR    LOAD SEARCH TERMINATION POINTER
0208 31721 015314  JSB FNDPS          SEARCH FOR STATEMENT
0209 31722 124526  JMP ACC5A,I        NOT
0210 31723 124526  JMP ACC5A,I        FOUND
0211 31724 002400  CLA
0212 31725 006004  INB                (B),I = STATEMENT LENGTH
0213 31726 164001  LDB 1,I            LOAD LENGTH OF OLD STATEMENT
0214 31727 015312  JSB DELPR          DELETE
0215 31730 124526  JMP ACC5A,I        STATEMENT
0216*
0217* *****
0218****
0219*** CHECK SYNTAX OF STATEMENT ***
0220****
0221* *****
0222*
0223* PBPTR POINTS TO THE LAST WORD +1 OF THE PREVIOUS PROGRAM AND
0224* THUS ALSO POINTS TO THE FIRST WORD OF AVAILABLE USER SPACE,
0225* WHERE THE NEW STATEMENT WILL BE TRANSLATED. WHEN AN ERROR
0226* OCCURS UNDER 'TAPE' MODE, THE USER'S TERR BIT IN THE FIRST WORD
0227* OF HIS TTY TABLE IS SET AND HIS COPY OF ERRCT IS BUMPED. IF AN
0228* OUT-OF-STORAGE ERROR OCCURS IN 'TAPE' MODE, SYMTB IS SET TO 1
0229* AND ALL SUBSEQUENT PROGRAM MATERIAL IS REJECTED. IF UPON ENTRY
0230* THE PRIOR PROGRAM IS NULL, ALL FLAGS ARE SET TO NULL; IF THE
0231* PRIOR PROGRAM IS NOT NULL, IT IS PLACED IN 'SOURCE' MODE. SYNTAX
0232* WILL REJECT ADDITIONAL STATEMENTS IF FEWER THAN 200 WORDS OF
0233* USER SPACE ARE AVAILABLE BUT WILL ACCEPT STATEMENT DELETIONS IF
0234* IN 'KEY' MODE.
0235*

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0236	31731	064056	SYNTAX	LDB PBPTR	NULL
0237	31732	054702		CPB PBUFF	PROGRAM?
0238	31733	027705		JMP CLNUP	YES
0239	31734	060353		LDA TERR	NO, ERROR
0240	31735	110257		AND MAIN,I	FLAG
0241	31736	002003		SZA,RSS	SET?
0242	31737	027743		JMP SYNT1	NO
0243	31740	002400		CLA	YES, ERRORS
0244	31741	051576		CPA ERRCT	IMBEDDED IN CODE?
0245	31742	127702		JMP TAPEA,I	NO, FINISH ABORTED ERROR CLEANUP
0246	31743	015464	SYNT1	JSB SINIT	YES, PREPARE PROGRAM
0247	31744	015322		JSB DCML	FOR SYNTAX
0248	31745	006400		CLB	SET LINE NUMBER
0249	31746	174056		STB PBPTR,I	TO ZERO
0250	31747	060056		LDA PBPTR	SET SYNTAX POINTER TO FIRST
0251	31750	071574		STA SBPTR	AVAILABLE WORD OF USER SPACE
0252	31751	071620		STA SBUFA	SAVE POINTER TO SYNTAX BUFFER
0253	31752	043701		ADA .105	AND TO
0254	31753	071617		STA SSTAK	SYNTAX STACK
0255	31754	071472		STA SYNTQ	
0256	31755	006004		INB	DOES 'OUT OF STORAGE'
0257	31756	055575		CPB SYMTB	ERROR EXIST?
0258	31757	127703		JMP SER7A,I	YES
0259	31760	015450		JSB GETCR	NO, EMPTY RECORD?
0260	31761	124526		JMP ACC5A,I	YES
0261	31762	015452		JSB BCKSP	NO
0262*					*
0263**			DETERMINE SEQUENCE NUMBER	**	**
0264*				*	*
0265*					
0266*			A RECORD CONSISTING ONLY OF A SEQUENCE NUMBER WILL CAUSE THE		
0267*			DELETION OF A PREVIOUSLY ACCEPTED STATEMENT REFERENCED BY THAT		
0268*			SEQUENCE NUMBER,		
0269*					
0270	31763	015466		JSB BLDIN	RECORD
0271	31764	175574		STB SBPTR,I	SEQUENCE
0272	31765	035574		ISZ SBPTR	NUMBER
0273	31766	050367		CPA .+15B	NULL STATEMENT?
0274	31767	027720		JMP DELST	YES
0275	31770	035574		ISZ SBPTR	NO, SKIP STATEMENT LENGTH WORD
0276	31771	171574		STA SBPTR,I	SAVE FIRST CHARACTER
0277	31772	060056		LDA PBPTR	ACCEPTABLE AMOUNT
0278	31773	043704		ADA LW200	OF USER SPACE
0279	31774	002021		SSA,RSS	REMAINING?
0280	31775	115042		JSB SERRS,I	NO
0281*					*
0282**			DETERMINE STATEMENT TYPE	**	**
0283*				*	*
0284	31776	060361		LDA .+7	SET MAXIMUM
0285	31777	071402		STA MAXCR	SYMBOL LENGTH
0286	32000	063735		LDA STTYP	STATEMENT-TYPE NAMES
0287	32001	064321		LDB .-25	-(NUMBER OF STATEMENT TYPES)
0288	32002	015246		JSB TBSRH	FIND STATEMENT TYPE
0289	32003	060726		LDA LETOP	NO, ASSUME 'IMPLIED' LET
0290	32004	064341		LDB .-9	DISALLOW


```

0291 32005 077447      STB MSFLG      MULTIPLE STORE
0292 32006 064355      LDB .+3        SET MAXCR TO MOST
0293 32007 075402      STB MAXCR      COMMON VALUE
0294 32010 006400      CLB           TURN OFF
0295 32011 075621      STB PFLAG      'PARAMETER' MODE
0296 32012 101051      LSR 9         RIGHT JUSTIFY OPERATOR CODE
0297 32013 073453      STA SFLAG      TURN OFF STRING AND STORE MODES
0298 32014 073445      STA DFLAG      TURN ON 'SUBSCRIPT' MODE
0299 32015 040756      ADA STBAS     BRANCH TO
0300 32016 124000      JMP 0,I       SYNTAX ROUTINE
0301*
0302***
0303** <LET STATEMENT> SYNTAX **
0304***
0305*
0306 32017 060726      LET0 LDA LETOP      FAKE
0307 32020 171574      STA SBPTR,I   A
0308 32021 015452      JSB BCKSP     'LET'
0309 32022 065574      LETS LDB SBPTR     ENABLE A
0310 32023 077453      STB SFLAG     STRING VARIABLE
0311 32024 037447      ISZ MSFLG     TURN ON 'MULTIPLE STORE' MODE
0312 32025 015230      JSB FSC       ANALYZE FORMULA
0313 32026 037453      ISZ SFLAG     STRING VARIABLE FOUND?
0314 32027 026035      JMP LET1      NO
0315 32030 015272      JSB SYMCK     YES, (B) IS LEFT AT -1
0316 32031 033415      DEF ASSOP-1   DEMAND ASSIGNMENT OPERATOR
0317 32032 115045      JSB SERRS+3,I NOT FOUND
0318 32033 015332      JSB RSTOP     RECORD A STRING OPERAND
0319 32034 026037      JMP EOST      DEMAND END OF STATEMENT
0320 32035 037453      LET1 ISZ SFLAG DID A STORE OCCUR?
0321 32036 115045      JSB SERRS+3,I NO
0322**
0323*** CHECK FOR END OF STATEMENT ***
0324**
0325 32037 050367      EOST CPA .+15B   END OF STATEMENT?
0326 32040 124524      JMP ACCSA,I   YES
0327 32041 115046      JSB SERRS+4,I NO
0328*
0329***
0330** <DIM STATEMENT> SYNTAX **
0331***
0332*
0333 32042 002400      DIMS CLA      FLAG AS DIM STATEMENT
0334*
0335***
0336** <COM STATEMENT> SYNTAX **
0337***
0338*
0339 32043 071414      COMS STA CDFLG     FLAG AS COM STATEMENT
0340 32044 077445      STB DFLAG     TURN ON 'DIM' MODE ( (B)=0 )
0341 32045 061574      LDA SBPTR     ENABLE STRING
0342 32046 073453      STA SFLAG     VARIABLE
0343 32047 015240      JSB VAROP     SEEK VARIABLE OPERAND
0344 32050 115047      JSB SERRS+5,I IMPROPER SUBSCRIPT
0345 32051 026055      COMS0 JMP COMS1     ARRAY OR STRING FOUND

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0346	32052	006400		CLB	SIMPLE VARIABLE
0347	32053	055414		CPB CDFLG	'DIM'?
0348	32054	115047		JSB SERRS+5,I	YES==ERROR
0349	32055	050367	COMS1	CPA .+15B	NO, CARRIAGE RETURN FOLLOWS?
0350	32056	124524		JMP ACCSA,I	YES
0351	32057	007400		CCB	NO
0352	32060	015272		JSB SYMCK	COMMA?
0353	32061	033363		DEF COMMA=1	
0354	32062	115050		JSB SERRS+6,I	NO
0355	32063	026045		JMP COMS+2	YES
0356*					
0357***					
0358**	<DEF STATEMENT> SYNTAX				**
0359***					
0360*					
0361	32064	015256	DEFS	JSB LTR	FIRST TWO
0362	32065	115051		JSB SERRS+7,I	
0363	32066	001727		ALF,ALF	CHARACTERS
0364	32067	031614		IOR TEMP+1	
0365	32070	053375		CPA FN	'FN' ?
0366	32071	002001		RSS	YES
0367	32072	115051		JSB SERRS+7,I	NO
0368	32073	015256		JSB LTR	FOLLOWED BY A LETTER?
0369	32074	115051		JSB SERRS+7,I	NO
0370	32075	061614		LDA TEMP+1	YES,
0371	32076	064436		LDB .58	RECORD
0372	32077	015260		JSB STROP	FUNCTION
0373	32100	061615		LDA TEMP+2	RETRIEVE FOLLOWING CHARACTER
0374	32101	015252		JSB LPCK	DEMAND LEFT PARENTHESIS
0375	32102	031036		IOR FLGBT	SET FLAG FOR
0376	32103	171574		STA SBPTR,I	FORMAL PARAMETER
0377	32104	015249		JSB VAROP	DEMAND A SIMPLE VARIABLE
0378	32105	000000		NOP	NONE
0379	32106	115052		JSB SERRS+8,I	FOUND
0380	32107	015254		JSB RPCK	DEMAND A RIGHT PARENTHESIS
0381	32110	007400		CCB	ASSIGNMENT
0382	32111	015272		JSB SYMCK	OPERATOR
0383	32112	033415		DEF ASSOP=1	NEXT?
0384	32113	115045		JSB SERRS+3,I	NO
0385	32114	060350		LDA =2	YES,
0386	32115	041574		ADA SBPTR	ISOLATE
0387	32116	160000		LDA 0,I	AND SAVE
0388	32117	010502		AND B777	FORMAL
0389	32120	071621		STA PFLAG	PARAMETER
0390	32121	015230		JSB FSC	FETCH DEFINING FORMULA
0391	32122	015270		JSB SBPUD	RECORD END-OF-FORMULA OPERATOR
0392	32123	026037		JMP EOST	DEMAND END OF STATEMENT
0393*					
0394***					
0395**	<IMAGE STATEMENT> SYNTAX				**
0396***					
0397*					
0398	32124	065574	IMAGS	LDB SBPTR	SAVE CURRENT
0399	32125	077457		STB ARYAD	BUFFER POINTER
0400	32126	006400		CLB	

0401	32127	060367	LDA	.,+15B	SET DELIMETER
0402	32130	015262	JSB	CHRST	RECORD STRING CONSTANT
0403	32131	000000	NOP		
0404	32132	061614	LDA	TEMP+1	LENGTH
0405	32133	040752	ADA	M73	
0406	32134	002021	SSA,RSS		>72?
0407	32135	115101	JSB	SERRS+31,I	YES
0408	32136	163457	LDA	ARYAD,I	NO,
0409	32137	041614	ADA	TEMP+1	RECORD
0410	32140	173457	STA	ARYAD,I	LENGTH
0411	32141	124524	JMP	ACCSA,I	
0412*					
0413***					
0414**	<GOTO STATEMENT>	&	<GOSUB STATEMENT>	SYNTAX	**
0415***					**
0416*					
0417	32142	060224	GOTOS	LDA SBP	SAVE
0418	32143	064257		LDB MAIN	
0419	32144	006004		INB	BUFFER
0420	32145	130001		IOR 1,I	
0421	32146	114500		JSB S14SC,I	POINTER
0422	32147	003400		CCA	SET INTCK MODE TO
0423	32150	071422		STA GFLAG	'EXIT ON ERROR'
0424	32151	015244		JSB PRGIN	SEEK SEQUENCE NUMBER
0425	32152	026212		JMP GOTO3	FOUND
0426	32153	007400		CCB	NOT FOUND
0427	32154	045574	GOTO1	ADB SBPTR	BACK UP
0428	32155	075574		STB SBPTR	SYNTAX POINTER
0429	32156	161574		LDA SBPTR,I	ERASE
0430	32157	010664		AND OPMSK	'INTEGER FOLLOWS'
0431	32160	171574		STA SBPTR,I	FLAG
0432	32161	060225		LDA RBP	RESTORE
0433	32162	064257		LDB MAIN	
0434	32163	006004		INB	BUFFER
0435	32164	130001		IOR 1,I	
0436	32165	114500		JSB S14SC,I	POINTER
0437	32166	015230		JSB FSC	SEEK FORMULA
0438	32167	050367		CPA .+15B	END-OF-RECORD?
0439	32170	115053		JSB SERRS+9,I	YES
0440	32171	001727		ALF,ALF	NO, DO
0441	32172	071614		STA TEMP+1	NEXT
0442	32173	015450		JSB GETCR	TWO
0443	32174	115053		JSB SERRS+9,I	CHARACTERS
0444	32175	031614		IOR TEMP+1	FORM
0445	32176	053377		CPA OF	'OF' ?
0446	32177	002001		RSS	YES
0447	32200	115053		JSB SERRS+9,I	NO
0448	32201	060706		LDA OFOP	RECORD
0449	32202	171574		STA SBPTR,I	'OF' AND
0450	32203	015270		JSB SBPUD	ADVANCE POINTER
0451	32204	015460	GOTO2	JSB BLDIN	DEMAND A SEQUENCE NUMBER
0452	32205	175574		STB SBPTR,I	RECORD IT
0453	32206	015270		JSB SBPUD	
0454	32207	050426		CPA .+44	COMMA NEXT?
0455	32210	026204		JMP GOTO2	YES

0456	32211	026037		JMP	EOST	NO, DEMAND END OF STATEMENT
0457	32212	050367	GOTO3	CPA	+.15B	END OF STATEMENT?
0458	32213	026217		JMP	GOTO4	YES
0459	32214	071422		STA	GFLAG	NO, RE=ENABLE BAD INTEGER ERROR
0460	32215	064350		LDB	.-2	
0461	32216	026154		JMP	GOTO1	
0462	32217	060224	GOTO4	LDA	FBP	FREE
0463	32220	064257		LDB	MAIN	
0464	32221	006004		INB		SAVED
0465	32222	130001		IOR	1,I	
0466	32223	114500		JSB	S14SC,I	BUFFER SPACE
0467	32224	124524		JMP	ACCSA,I	ACCEPT STATEMENT
0468*						
0469***						**
0470**	<IF	STATEMENT>	SYNTAX			**
0471***						**
0472*						
0473	32225	035574	IFS	ISZ	SBPTR	FETCH NEXT
0474	32226	015450		JSB	GETCR	CHARACTER
0475	32227	115101		JSB	SERRS+31,I	NONE FOUND
0476	32230	171574		STA	SBPTR,I	FOUND, SAVE IT
0477	32231	063451		LDA	AEND	LOOK
0478	32232	007400		CCB		FOR
0479	32233	015246		JSB	TBSRH	'END'
0480	32234	026240		JMP	IF0	NOT FOUND
0481	32235	015504		JSB	FILRF	FOUND, GET FILE REFERENCE
0482	32236	115102		JSB	SERRS+32,I	NONE FOUND
0483	32237	026265		JMP	IF1+1	FOUND
0484	32240	015452	IF0	JSB	BCKSP	RESTORE
0485	32241	007400		CCB		TO
0486	32242	045574		ADB	SBPTR	ENTRY
0487	32243	075574		STB	SBPTR	STATUS
0488	32244	077453		STB	SFLAG	ENABLE STRING VARIABLE
0489	32245	015230		JSB	FSC	SEEK DECISION FORMULA
0490	32246	037453		ISZ	SFLAG	STRING VARIABLE FOUND?
0491	32247	026265		JMP	IF1+1	NO
0492	32250	071614		STA	TEMP+1	YES, SAVE NEXT CHARACTER
0493	32251	064347		LDB	.-3	MAXCR = 3 FROM FSC
0494	32252	171574		STA	SBPTR,I	MULTICHARACTER
0495	32253	063736		LDA	MREL	RELATIONAL
0496	32254	015246		JSB	TBSRH	OPERATOR?
0497	32255	002001		RSS		NO
0498	32256	026264		JMP	IF1	YES
0499	32257	061614		LDA	TEMP+1	RETRIEVE CHARACTER
0500	32260	064346		LDB	.-4	SINGLE CHARACTER
0501	32261	015272		JSB	SYMCK	RELATIONAL
0502	32262	033431		DEF	RELOS=1	OPERATOR?
0503	32263	115062		JSB	SERRS+16,I	NO
0504	32264	015332	IF1	JSB	RSTOP	YES, RECORD A STRING OPERAND
0505	32265	171574		STA	SBPTR,I	SAVE NEXT CHARACTER
0506	32266	035402		ISZ	MAXCR	BUMP LIMIT TO FOUR CHARACTERS
0507	32267	060774		LDA	ATHEN	LOOK
0508	32270	007400		CCB		FOR
0509	32271	015246		JSB	TBSRH	'THEN'
0510	32272	115054		JSB	SERRS+10,I	NOT FOUND

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0511 32273 015244      JSB PRGIN      DEMAND A SEQUENCE NUMBER
0512 32274 026037      JMP EOST       DEMAND END OF STATEMENT
0513*
0514***
0515** <FOR STATEMENT> SYNTAX **
0516***
0517*
0518 32275 015240  FORS JSB VAROP      SEEK A SIMPLE VARIABLE
0519 32276 000000      NOP           NONE
0520 32277 115052      JSB SERRS+8,I FOUND
0521 32300 007400      CCB          DEMAND AN
0522 32301 015272      JSB SYMCK    ASSIGNMENT
0523 32302 033415      DEF ASSOP=1  OPERATOR
0524 32303 115045      JSB SERRS+3,I NOT FOUND
0525 32304 015230      JSB FSC      RECORD INITIALIZATION FORMULA
0526 32305 001727      ALF,ALF     DO
0527 32306 071614      STA TEMP+1  NEXT
0528 32307 015450      JSB GETCR   TWO
0529 32310 115055      JSB SERRS+11,I CHARACTERS
0530 32311 031614      IOR TEMP+1  FORM
0531 32312 053376      CPA TO      'TO' ?
0532 32313 002001      RSS        YES
0533 32314 115055      JSB SERRS+11,I NO
0534 32315 063740      LDA TOOP    RECORD
0535 32316 171574      STA SBPTR,I 'TO'
0536 32317 015230      JSB FSC     RECORD LIMIT FORMULA
0537 32320 050367      CPA .+15B  END OF STATEMENT?
0538 32321 124524      JMP ACCSA,I YES
0539 32322 171574      STA SBPTR,I NO, IS NEXT
0540 32323 035402      ISZ MAXCR
0541 32324 063461      LDA ASTEP  SYMBOL
0542 32325 007400      CCB
0543 32326 015246      JSB TBSRH  'STEP' ?
0544 32327 115056      JSB SERRS+12,I NO
0545 32330 015230      JSB FSC    YES, RECORD STEP SIZE
0546 32331 026037      JMP EOST   DEMAND END OF STATEMENT
0547*
0548***
0549** <NEXT STATEMENT> SYNTAX **
0550***
0551*
0552 32332 015240  NEXTS JSB VAROP      SEEK SIMPLE VARIABLE
0553 32333 000000      NOP         NOT
0554 32334 115052      JSB SERRS+8,I FOUND
0555 32335 026037      JMP EOST    DEMAND END OF STATEMENT
0556*
0557***
0558** <RETURN STATEMENT>, <END STATEMENT>, **
0559** AND <STOP STATEMENT> SYNTAX **
0560***
0561*
0562 32336 035574  ENDS ISZ SBPTR    RECORD NULL OPERAND
0563 32337 015450      JSB GETCR  END OF STATEMENT?
0564 32340 124524      JMP ACCSA,I YES
0565 32341 115046      JSB SERRS+4,I NO

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0566*

0567***

0568** <DATA STATEMENT> SYNTAX **

0569***

0570*

0571	32342	015270	DATAS	JSB	SBPUD	
0572	32343	002400		CLA		INITIALIZE
0573	32344	071266		STA	SIGN	SIGN
0574	32345	015450		JSB	GETCR	REQUEST A CHARACTER
0575	32346	115057		JSB	SERRS+13,I	END-OF-INPUT CONDITION
0576	32347	006404		CLB,	INB	
0577	32350	050425		CPA	.,+43	'+' ?
0578	32351	026400		JMP	DATA4	YES
0579	32352	007400		CCB		NO
0580	32353	050427		CPA	.,+45	'=' ?
0581	32354	026400		JMP	DATA4	YES
0582	32355	015276	DATA1	JSB	NUMCK	NO, NUMBER?
0583	32356	026373		JMP	DATA3	NO
0584	32357	115060		JSB	SERRS+14,I	BAD EXPONENT
0585	32360	064347		LDB	.,=3	NUMBER,
0586	32361	045574		ADB	SBPTR	MARK
0587	32362	160001		LDA	1,I	PREVIOUS
0588	32363	031036		IOR	FLGBT	OPERATOR AS
0589	32364	170001		STA	1,I	'NUMBER FOLLOWS'
0590	32365	061614		LDA	TEMP+1	RETRIEVE FOLLOWING CHARACTER
0591	32366	007400	DATA2	CCB		COMMA
0592	32367	015272		JSB	SYMCK	
0593	32370	033363		DEF	COMMA=1	NEXT?
0594	32371	026037		JMP	EOST	NO, DEMAND END OF STATEMENT
0595	32372	026342		JMP	DATAS	YES
0596	32373	055266	DATA3	CPB	SIGN	SIGN FOUND? ((B) = 0)
0597	32374	002001		RSS		NO
0598	32375	115061		JSB	SERRS+15,I	YES
0599	32376	015334		JSB	GETST	DEMAND A STRING CONSTANT
0600	32377	026366		JMP	DATA2	
0601	32400	075266	DATA4	STB	SIGN	RECORD SIGN
0602	32401	015450		JSB	GETCR	
0603	32402	115061		JSB	SERRS+15,I	END-OF-INPUT CONDITION
0604	32403	026355		JMP	DATA1	

0605*

0606***

0607** <READ STATEMENT> SYNTAX **

0608***

0609*

0610	32404	015502	READS	JSB	RECRF	READ FROM FILE?
0611	32405	026413		JMP	READ1	NO
0612	32406	050367		CPA	.,+15B	YES, PSEUDO-RESTORE?
0613	32407	124524		JMP	ACCSA,I	YES
0614	32410	050722		CPA	B73	NO, '!' ?
0615	32411	026414		JMP	INPTS	YES
0616	32412	115050		JSB	SERRS+6,I	NO
0617	32413	015462	READ1	JSB	BCKSP	

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0619*
0620***
0621** <INPUT STATEMENT> SYNTAX **
0622***
0623*
0624 32414 065574 INPTS LDB SBPTR ENABLE STRING
0625 32415 077453 STB SFLAG VARIABLE
0626 32416 015240 JSB VAROP SEEK VARIABLE OPERAND
0627 32417 115063 JSB SERRS+17,I NONE FOUND
0628 32420 000000 NOP
0629 32421 007400 CCB
0630 32422 015272 JSB SYMCK COMMA?
0631 32423 033363 DEF COMMA=1
0632 32424 026037 JMP EOST NO, DEMAND END OF STATEMENT
0633 32425 026414 JMP INPTS YES
0634*
0635***
0636** <PRINT STATEMENT> SYNTAX **
0637***
0638*
0639 32426 015270 PRINS JSB SBPUD ADVANCE SYNTAX BUFFER POINTER
0640 32427 015450 JSB GETCR FETCH NEXT CHARACTER
0641 32430 124524 JMP ACCSA,I NONE FOUND
0642 32431 015546 JSB USTCK CHECK FOR USING STATEMENT
0643 32432 026460 JMP PRN01 NONE FOUND
0644 32433 050367 CPA .+15B END OF STATEMENT?
0645 32434 124524 JMP ACCSA,I YES
0646 32435 007400 CCB NO,
0647 32436 015272 JSB SYMCK SEMI=COLON
0648 32437 033365 DEF SEMI=1 FOLLOWS?
0649 32440 115104 JSB SERRS+34,I NO
0650 32441 015270 PRN10 JSB SBPUD ADVANCE SYNTAX BUFFER POINTER
0651 32442 015450 JSB GETCR FETCH NEXT CHARACTER
0652 32443 115050 JSB SERRS+6,I NONE FOUND
0653 32444 171574 STA SBPTR,I SAVE CHARACTER
0654 32445 015550 JSB PFSRH SEARCH FOR PRINT FUNCTION
0655 32446 026451 JMP PRN11 FOUND
0656 32447 077453 STB SFLAG ENABLE STRING VARIABLE
0657 32450 015230 JSB FSC LOOK FOR FORMULA
0658 32451 050367 PRN11 CPA .+15B CARRIAGE RETURN FOLLOWS?
0659 32452 124524 JMP ACCSA,I YES
0660 32453 007400 CCB NO,
0661 32454 015272 JSB SYMCK COMMA?
0662 32455 033363 DEF COMMA=1
0663 32456 115050 JSB SERRS+6,I NO, ERROR
0664 32457 026441 JMP PRN10 YES
0665 32460 015502 PRN01 JSB RECRF WRITE ONTO FILE?
0666 32461 026471 JMP PRIN0=1 NO
0667 32462 007400 CCB YES, SET
0668 32463 075504 STB FILRF IFILE1 FLAG
0669 32464 050367 CPA .+15B NULL WRITE?
0670 32465 124524 JMP ACCSA,I YES
0671 32466 050722 CPA B73 NO, ' ; ' ?
0672 32467 026472 JMP PRIN0 YES
0673 32470 115050 JSB SERRS+6,I NO

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0674	32471	015452		JSB BCKSP	
0675	32472	015270	PRIN0	JSB SBPUD	ADVANCE SYNTAX BUFFER POINTER
0676	32473	015450		JSB GETCR	MORE STATEMENT?
0677	32474	026552		JMP PRIN7	NO
0678	32475	007400		CCB	YES, ENABLE
0679	32476	075621		STB PFLAG	FORMULA AND TAB
0680	32477	050414		CPA .+42B	" ?
0681	32500	002001		RSS	YES
0682	32501	026520		JMP PRIN3	NO
0683	32502	015334	PRIN1	JSB GETST	RECORD A STRING CONSTANT
0684	32503	050367		CPA .+15B	END OF STATEMENT?
0685	32504	124524		JMP ACCSA,I	YES
0686	32505	007400		CCB	NO
0687	32506	075621		STB PFLAG	
0688	32507	050414	PRIN2	CPA .+42B	" ?
0689	32510	026502		JMP PRIN1	YES
0690	32511	064350		LDB .-2	NO
0691	32512	015272		JSB SYMCK	COMMA OR
0692	32513	033363		DEF COMMA=1	SEMICOLON?
0693	32514	006401		CLB,RSS	NO
0694	32515	026472		JMP PRIN0	YES
0695	32516	175574		STB SBPTR,I	ZERO NEXT WORD
0696	32517	015270		JSB SBPUD	
0697	32520	035621	PRIN3	ISZ PFLAG	FORMULA OR TAB PERMITTED?
0698	32521	115050		JSB SERRS+6,I	NO
0699	32522	171574		STA SBPTR,I	YES
0700	32523	007400		CCB	'FILE'
0701	32524	035504		ISZ FILRF	MODE?
0702	32525	026536		JMP PRIN4	NO
0703	32526	075504		STB FILRF	YES, SET FLAG AGAIN
0704	32527	063451		LDA AEND	
0705	32530	015246		JSB TBSRH	'END' ?
0706	32531	026541		JMP PRIN5	NO
0707	32532	015270		JSB SBPUD	YES
0708	32533	015450		JSB GETCR	FETCH NEXT
0709	32534	124524		JMP ACCSA,I	CHARACTER
0710	32535	026507		JMP PRIN2	
0711	32536	015550	PRIN4	JSB PFSRH	SEARCH FOR PRINT FUNCTION
0712	32537	026547		JMP PRIN6	FOUND
0713	32540	026545		JMP PRIN8	NOT FOUND
0714	32541	015452	PRIN5	JSB BCKSP	BACKUP
0715	32542	007400		CCB	TO POINT
0716	32543	045574		ADB SBPTR	FOLLOWING
0717	32544	075574		STB SBPTR	LAST OPERATOR
0718	32545	077453	PRIN8	STB SFLAG	ENABLE STRING VARIABLE
0719	32546	015230		JSB FSC	RECORD FORMULA
0720	32547	050367	PRIN6	CPA .+15B	END OF STATEMENT?
0721	32550	124524		JMP ACCSA,I	YES
0722	32551	026507		JMP PRIN2	NO
0723	32552	035504	PRIN7	ISZ FILRF	'FILE' MODE?
0724	32553	124524		JMP ACCSA,I	NO
0725	32554	115044		JSB SERRS+2,I	YES
0726*					


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0002*
0003***
0004** <MAT STATEMENT> SYNTAX **
0005** **
0006*
0007 32555 015256 MATS JSB LTR FIRST TWO
0008 32556 115064 JSB SERRS+18,I CHARACTERS
0009 32557 015266 JSB LETCK LETTERS?
0010 32560 026677 JMP MATS3 NO
0011 32561 035574 ISZ SBPTR YES,
0012 32562 001727 ALF,ALF RETRIEVE
0013 32563 031614 IOR TEMP+1 FIRST CHARACTER
0014 32564 171574 STA SBPTR,I LOOK
0015 32565 060357 LDA .+5 FOR
0016 32566 071402 STA MAXCR 'INPUT',
0017 32567 063443 LDA MATIO 'READ',
0018 32570 064347 LDB .-3 OR
0019 32571 015246 JSB TB9RH 'PRINT'
0020 32572 115064 JSB SERRS+18,I NONE FOUND
0021 32573 050656 CPA PRTOP IS IT 'PRINT'?
0022 32574 026621 JMP MATS2 YES
0023 32575 053741 CPA INPOP NO, 'INPUT' ?
0024 32576 026605 JMP MATS1-2 YES
0025 32577 015502 JSB RECRF NO, READ FROM FILE?
0026 32600 026604 JMP MATS1-3 NO
0027 32601 050722 CPA B73 YES, '!' ?
0028 32602 026605 JMP MATS1-2 YES
0029 32603 115050 JSB SERRS+6,I NO
0030 32604 015452 JSB BCKSP
0031 32605 002404 CLA,INA TURN ON
0032 32606 073445 STA DFLAG 'MATRIX SUBSCRIPT' MODE
0033 32607 015242 MATS1 JSB ARRID RECORD AN ARRAY
0034 32610 015232 JSB SB8CK RECORD SUBSCRIPT
0035 32611 000000 NOP IF PRESENT
0036 32612 050367 CPA .+15B END OF STATEMENT?
0037 32613 124524 JMP ACCSA,I YES
0038 32614 007400 CCB NO, DEMAND
0039 32615 015272 JSB SYMCK COMMA
0040 32616 033363 DEF COMMA-1
0041 32617 115050 JSB SERRS+6,I NOT FOUND
0042 32620 026607 JMP MATS1
0043 32621 015270 MATS2 JSB SBPUD ADVANCE SYNTAX BUFFER POINTER
0044 32622 015450 JSB GETCR FETCH NEXT CHARACTER
0045 32623 115050 JSB SERRS+6,I NONE FOUND
0046 32624 015546 JSB USTCK CHECK FOR USING STATEMENT
0047 32625 026652 JMP MAT13 NONE FOUND
0048 32626 050367 CPA .+15B CARRIAGE RETURN ?
0049 32627 124524 JMP ACCSA,I YES
0050 32630 007400 CCB SEMI-
0051 32631 015272 JSB SYMCK COLON
0052 32632 033365 DEF SEMI-1 FOLLOWS?
0053 32633 115104 JSB SERRS+34,I NO
0054 32634 015270 MAT12 JSB SBPUD ADVANCE SYNTAX BUFFER POINTER
0055 32635 015450 JSB GETCR FETCH NEXT CHARACTER
0056 32636 115050 JSB SERRS+6,I NONE FOUND

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0057	32637	171574		STA SBPTR, I	SAVE CHARACTER
0058	32640	015550		JSB PFSRH	SEARCH FOR PRINT FUNCTION
0059	32641	002001		RSS	FOUND
0060	32642	015242		JSB ARRID	RECORD AN ARRAY
0061	32643	050367		CPA .+15B	CARRIAGE RETURN FOLLOWS?
0062	32644	124524		JMP ACCSA, I	YES
0063	32645	007400		CCB	NO,
0064	32646	015272		JSB SYMCK	COMMA?
0065	32647	033363		DEF COMMA=1	
0066	32650	115050		JSB SERRS+6, I	NO, ERROR
0067	32651	026634		JMP MAT12	YES
0068	32652	015502	MAT13	JSB RECRF	WRITE ON FILE?
0069	32653	026671		JMP MAT11	NO
0070	32654	050722		CPA B73	YES, ' ; ' ?
0071	32655	007401		CCB, RSS	YES
0072	32656	115050		JSB SERRS+6, I	NO
0073	32657	075504		STB FILRF	NOTE 'FILE' MODE
0074	32660	015242	MAT10	JSB ARRID	RECORD AN ARRAY
0075	32661	050367		CPA .+15B	END OF STATEMENT?
0076	32662	124524		JMP ACCSA, I	YES
0077	32663	064350		LDB .-2	NO, DEMAND
0078	32664	015272		JSB SYMCK	COMMA OR
0079	32665	033363		DEF COMMA=1	SEMICOLON
0080	32666	115050		JSB SERRS+6, I	NOT FOUND
0081	32667	015450		JSB GETCR	END OF STATEMENT?
0082	32670	026673		JMP **3	YES
0083	32671	015452	MAT11	JSB BCKSP	NO
0084	32672	026660		JMP MAT10	
0085	32673	015270		JSB SBPUO	UPDATE POINTER
0086	32674	035504		ISZ FILRF	'FILE' MODE?
0087	32675	124524		JMP ACCSA, I	NO
0088	32676	115044		JSB SERRS+2, I	YES
0089	32677	065574	MATS3	LDB SBPTR	SAVE ADDRESS
0090	32700	077457		STB ARYAD	OF ARRAY OPERAND
0091	32701	061614		LDA TEMP+1	RECORD
0092	32702	171517		STA SSTAK, I	AND SAVE
0093	32703	064430		LDB .+46	THE ARRAY
0094	32704	015260		JSB STROP	IDENTIFIER
0095	32705	061615		LDA TEMP+2	RETRIEVE
0096	32706	007400		CCB	NEXT CHARACTER
0097	32707	015272		JSB SYMCK	AND TEST FOR
0098	32710	033415		DEF ASSOP=1	ASSIGNMENT OPERATOR
0099	32711	115045		JSB SERRS+3, I	NOT FOUND
0100	32712	015256		JSB LTR	LETTER NEXT?
0101	32713	026763		JMP MATS5	NO
0102	32714	015266		JSB LETCK	YES, ANOTHER LETTER?
0103	32715	026773		JMP MATS6	NO
0104	32716	035574		ISZ SBPTR	YES,
0105	32717	001727		ALF, ALF	CONCATENATE
0106	32720	031614		IOR TEMP+1	LETTERS
0107	32721	171574		STA SBPTR, I	AND
0108	32722	063442		LDA MATFN	SEARCH FOR
0109	32723	064345		LDB .-5	AN ARRAY
0110	32724	015246		JSB TBSRH	FUNCTION
0111	32725	115051		JSB SERRS+7, I	NONE FOUND

0112	32726	001727	ALF,ALF	FOUND,
0113	32727	001723	ALF,RAR	CONVERT
0114	32730	030672	IOR PDFFL	TO OPERAND
0115	32731	007400	CCB	COMBINE
0116	32732	045574	ADB SBPTR	WITH
0117	32733	130001	IOR 1,I	OPERATOR
0118	32734	170001	STA 1,I	AND RECORD
0119	32735	010502	AND B777	'INV'
0120	32736	043744	ADA D577	OR
0121	32737	002021	SSA,RSS	'TRN' ?
0122	32740	026750	JMP MATS4	YES
0123	32741	015450	JSB GETCR	NO, END OF STATEMENT?
0124	32742	124524	JMP ACCSA,I	YES
0125	32743	006404	CLB,INB	NO, TURN ON
0126	32744	077445	STB DFLAG	'MATRIX SUBSCRIPT' MODE
0127	32745	015232	JSB SBSCK	DEMAND SUBSCRIPT
0128	32746	115047	JSB SERRS+5,I	NONE FOUND
0129	32747	026037	JMP EOST	DEMAND END OF STATEMENT
0130	32750	002003	MATS4 SZA,RSS	ALLOW INVERSION
0131	32751	171617	STA SSTAK,I	INTO SELF
0132	32752	015450	JSB GETCR	DEMAND
0133	32753	115070	JSB SERRS+22,I	LEFT
0134	32754	015252	JSB LPCK	PARENTHESIS
0135	32755	015242	JSB ARRID	DEMAND ARRAY
0136	32756	015254	JSB RPCK	DEMAND RIGHT PARENTHESIS
0137	32757	065614	LDB TEMP+1	SAME SOURCE AND
0138	32760	155617	CPB SSTAK,I	DESTINATION ARRAYS?
0139	32761	115065	JSB SERRS+19,I	YES
0140	32762	026037	JMP EOST	NO, DEMAND END OF STATEMENT
0141	32763	015452	MATS5 JSB BCKgP	BACK UP AND
0142	32764	015250	JSB GETPF	DEMAND PARENTHESIZED FORMULA
0143	32765	007400	CCB	SEEK
0144	32766	015272	JSB SYMCK	
0145	32767	033423	DEF TIMES=1	1+1
0146	32770	115066	JSB SERRS+20,I	NOT FOUND
0147	32771	015242	JSB ARRID	DEMAND ARRAY
0148	32772	026037	JMP EOST	DEMAND END OF STATEMENT
0149	32773	061614	MATS6 LDA TEMP+1	RECORD
0150	32774	064430	LDB .+46	ARRAY
0151	32775	015260	JSB STROP	OPERAND
0152	32776	061615	LDA TEMP+2	END OF
0153	32777	050367	CPA .+15B	STATEMENT?
0154	33000	124524	JMP ACCSA,I	YES
0155	33001	064347	LDB .-3	NO, SEEK
0156	33002	015272	JSB SYMCK	1+', 1-',
0157	33003	033417	DEF PLUS=1	OR 1+1
0158	33004	115067	JSB SERRS+21,I	NOT FOUND
0159	33005	006400	CLB	SET 1+1 FLAG TO FALSE
0160	33006	050632	CPA MULOP	1+1 ?
0161	33007	027022	JMP MATS9	YES
0162	33010	075621	MATS7 STB PFLAG	NO
0163	33011	015242	JSB ARRID	DEMAND ARRAY
0164	33012	071615	STA TEMP+2	SAVE CHARACTER
0165	33013	035621	ISZ PFLAG	1+1 ?
0166	33014	027020	JMP MATS8	NO

0167	33015	061614		LDA TEMP+1	YES, DOES ARRAY
0168	33016	151617		CPA SSTAK,I	MATCH LEFT-HAND SIDE?
0169	33017	115065		JSB SERRS+19,I	YES
0170	33020	061615	MATS8	LDA TEMP+2	NO, RETRIEVE CHARACTER
0171	33021	026037		JMP EOST	DEMAND END OF STATEMENT
0172	33022	007400	MATS9	CCB	SET '*' FLAG TO TRUE
0173	33023	061614		LDA TEMP+1	DOES ARRAY
0174	33024	151617		CPA SSTAK,I	MATCH LEFT-HAND SIDE?
0175	33025	115065		JSB SERRS+19,I	
0176	33026	027010		JMP MATS7	NO

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0178*
0179***
0180** <FORMULA> SYNTAX CHECKER **
0181***
0182*
0183*
0184* FSC ANALYZES THE INPUT STRING UNDER THE ASSUMPTION
0185* THAT A LEGITIMATE FORMULA IS THERE. EXIT TO ERROR ON
0186* UNRECOGNIZABLE OR OBVIOUSLY INCORRECT INPUT. EXIT TO
0187* (P+1) WHEN CONTINUED INPUT CANNOT BE A PART OF THE
0188* FORMULA AND THE INPUT SCANNED SO FAR FORMS A COMPLETE
0189* FORMULA IN ITSELF (I.E., ... A+B TO .., EXITS AFTER
0190* THE 'B'). ON EXIT (A) HOLDS THE FIRST CHARACTER NOT
0191* PARSED INTO THE FORMULA, (B) = 0, AND SBPTR,I = 0
0192* (END-OF-FORMULA OPERATOR). DURING THE FORMULA PARSE,
0193* SSTAK,I HOLDS THE COUNT OF UNMATCHED LEFT PARENTHESES.
0194* IF THE FIRST SYMBOL ENCOUNTERED IS A STRING VARIABLE,
0195* EXIT TO ERROR IF IT IS NOT ENABLED ELSE RECORD THE
0196* VARIABLE AND ANY FOLLOWING SUBSCRIPT AND EXIT TO (P+1)
0197* WITH THE NEXT CHARACTER IN (A), (B) = -1, AND SFLAG = -1.
0198*
0199 33027 002400 #FSC CLA SET LEFT PARENTHESIS
0200 33030 171617 STA SSTAK,I COUNT TO ZERO
0201 33031 060355 LDA .+3 SET MULTICHARACTER SEARCH
0202 33032 071402 STA MAXCR TO MAXIMUM OF 3 CHARACTERS
0203 33033 003400 FSC1 CCA ENABLE
0204 33034 073455 STA UFLAG UNARY OPERATORS
0205*
0206** LOOK FOR AN OPERAND **
0207*
0208 33035 015240 FSC2 JSB VAROP SEEK VARIABLE OPERAND
0209 33036 027142 JMP FSC7 FIRST CHARACTER NOT A LETTER
0210 33037 027242 JMP FSC13-3 SUBSCRIPTED OR STRING VARIABLE
0211 33040 015266 JSB LETCK SIMPLE VARIABLE. LETTER NEXT?
0212 33041 027245 JMP FSC13 NO
0213*
0214** DOES 'AND', 'OR', 'MAX', OR 'MIN' FOLLOW **
0215** A SIMPLE VARIABLE? **
0216*
0217 33042 064346 LDB .+4
0218 33043 171674 STA SBPTR,I SEARCH FOR
0219 33044 060470 LDA MCBOP 'AND', 'OR',
0220 33045 015246 JSB TBSRH 'MAX', AND 'MIN'
0221 33046 002001 RSS NONE FOUND
0222 33047 027137 JMP FSC6 FOUND
0223*
0224** SEE IF OPERAND IS A FUNCTION RATHER **
0225** THAN A SIMPLE VARIABLE. **
0226*
0227 33050 061615 LDA TEMP+2
0228 33051 001727 ALF,ALF WERE
0229 33052 031614 IOR TEMP+1 TWO LETTERS
0230 33053 053375 CPA FN 'FN' ?
0231 33054 027104 JMP FSC4 YES
0232 33055 171574 STA SBPTR,I NO,

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0233	33056	060754		LDA PDFNS	PREDEFINED
0234	33057	064333		LDB ,=15	
0235	33060	015246		JSB TBSRH	
0236	33061	027202		JMP FSC11	NO
0237	33062	001727		ALF,ALF	YES,
0238	33063	001723		ALF,RAR	BUILD
0239	33064	030672		IOR PDFFL	NAME
0240	33065	071614	FSC3	STA TEMP+1	SAVE FUNCTION
0241	33066	007400		CCB	RETRIEVE
0242	33067	045574		ADB SBPTR	PREVICUS
0243	33070	075574		STB SBPTR	OPERATOR=
0244	33071	160001		LDA 1,I	OPERAND
0245	33072	010664		AND OPMSK	REPLACE
0246	33073	031614		IOR TEMP+1	OPERAND
0247	33074	171574		STA SBPTR,I	WITH FUNCTION
0248	33075	061614		LDA TEMP+1	
0249	33076	053737		CPA LENCN	'LEN' ?
0250	33077	027114		JMP FSC0	YES
0251	33100	064341		LDB ,=9	NO, TURN OFF
0252	33101	077447		STB MSFLG	'MULTIPLE STORE' MODE
0253	33102	015250		JSB GETPF	DEMAND PARENTHSIZED
0254	33103	027245		JMP FSC13	FORMULA
0255	33104	015450	FSC4	JSB GETCR	DOES
0256	33105	115051		JSB SERRS+7,I	LETTER
0257	33106	015266		JSB LETCK	FOLLOW?
0258	33107	115051		JSB SERRS+7,I	NO
0259	33110	040610		ADA D100	YES,
0260	33111	001700		ALF	BUILD
0261	33112	040371		ADA ,+17B	FUNCTION
0262	33113	027065		JMP FSC3	NAME
0263	33114	035574	FSC0	ISZ SBPTR	MOVE TO CORRECT PROGRAM WORD
0264	33115	015450		JSB GETCR	RECORD
0265	33116	115070		JSB SERRS+22,I	LEFT
0266	33117	015252		JSB LPCK	PARENTHESIS
0267	33120	015256		JSB LTR	LETTER NEXT?
0268	33121	115072		JSB SERRS+24,I	NO
0269	33122	050416		CPA ,+44B	YES, FOLLOWED BY 'S' ?
0270	33123	002001		RSS	YES
0271	33124	115072		JSB SERRS+24,I	NO
0272	33125	061614		LDA TEMP+1	RECORD
0273	33126	064425		LDB ,+53B	STRING
0274	33127	015260		JSB STROP	VARIABLE
0275	33130	015450		JSB GETCR	RECORD
0276	33131	115071		JSB SERRS+23,I	RIGHT
0277	33132	015254		JSB RPCK	PARENTHESIS
0278	33133	027162		JMP FSC0	
0279*					*
0280**				CHECK FOR LEFT PARENTHESIS	**
0281*					*
0282	33134	060624	FSC5	LDA LPOP	RECORD
0283	33135	171574		STA SBPTR,I	A '(
0284	33136	136617		ISZ SSTAK,I	COUNT IT
0285	33137	064341	FSC6	LDB ,=9	TURN OFF
0286	33140	077447		STB MSFLG	'MULTIPLE STORE'
0287	33141	027033		JMP FSC1	MODE

0288	33142	015270	FSC7	JSB SBPUD	UPDATE POINTER
0289	33143	050422		CPA .+40	'(' ?
0290	33144	027134		JMP FSC5	YES
0291	33145	053745		CPA B133	NO, '(' ?
0292	33146	027134		JMP FSC5	YES
0293*					
0294**	CHECK FOR A NUMBER **				
0295*					
0296	33147	006400		CLB	SET '+'
0297	33150	075266		STB SIGN	AS SIGN
0298	33151	015276		JSB NUMCK	SEEK A NUMBER
0299	33152	027165		JMP FSC9	NOT FOUND
0300	33153	115060		JSB SERRS+14,I	BAD EXPONENT
0301	33154	065574		LDB SBPTR	RETRIEVE
0302	33155	044347		ADB .-3	PRECEDING
0303	33156	160001		LDA 1,I	OPERATOR
0304	33157	031036		IOR FLGBT	SET FLAG TO SAY
0305	33160	170001		STA 1,I	NUMBER FOLLOWS
0306	33161	061614		LDA TEMP+1	RETRIEVE CHARACTER
0307	33162	064341	FSC8	LDB .-9	TURN OFF
0308	33163	077447		STB MSFLG	'MULTIPLE STORE'
0309	33164	027245		JMP FSC13	MODE
0310*					
0311**	CHECK FOR A UNARY OPERATOR **				
0312*					
0313	33165	037455	FSC9	ISZ UFLAG	UNARY OPERATORS PERMITTED?
0314	33166	115073		JSB SERRS+25,I	NO
0315	33167	067372		LDB UNMNC	YES LOAD UNARY MINUS OPCODE
0316	33170	050425		CPA .+43	'+' ?
0317	33171	027175		JMP ++4	YES
0318	33172	050427		CPA .+45	NO, '-' ?
0319	33173	027176		JMP ++3	YES
0320	33174	115073		JSB SERRS+25,I	NO
0321	33175	067373		LDB UNPLC	CONVERT (B) TO UNARY '+' OPCODE
0322	33176	175574		STB SBPTR,I	RECORD UNARY OPERATOR
0323	33177	064341	FSC10	LDB .-9	TURN OFF
0324	33200	077447		STB MSFLG	'MULTIPLE STORE'
0325	33201	027035		JMP FSC2	MODE
0326*					
0327**	CHECK POSSIBILITY OF 'NOT' RATHER THAN **				
0328**	A SIMPLE VARIABLE **				
0329*					
0330	33202	037455	FSC11	ISZ UFLAG	'NOT' PERMITTED?
0331	33203	027276		JMP FSC14-1	NO
0332	33204	161574		LDA SBPTR,I	YES
0333	33205	001727		ALF,ALF	
0334	33206	171574		STA SBPTR,I	
0335	33207	060474		LDA ANOT	SEEK
0336	33210	007400		CCB	
0337	33211	015246		JSB TBSRH	'NOT'
0338	33212	027276		JMP FSC14-1	'NOT' NOT FOUND
0339	33213	171574		STA SBPTR,I	FOUND
0340	33214	007400		CCB	ERASE
0341	33215	045574		ADB SBPTR	
0342	33216	160001		LDA 1,I	SPURIOUS

0343	33217	010664		AND OPMSK	
0344	33220	170001		STA 1,I	OPERAND
0345	33221	027177		JMP FSC10	
0346*					*
0347**	CHECK FOR RIGHT PARENTHESIS				**
0348*					*
0349	33222	064350	FSC12	LDB ,=2	')' ?
0350	33223	015272		JSB SYMCK	OR
0351	33224	033377		DEF RPARN=1	')' ?
0352	33225	027277		JMP FSC14	NO
0353	33226	060616		LDA RPOP	YES,
0354	33227	171574		STA SBPTR,I	RECORD ')' ?
0355	33230	060423		LDA ,+41	RETRIEVE ')' ?
0356	33231	007400		CCB	MATCHING
0357	33232	145617		ADB SSTAK,I	LEFT
0358	33233	006020		SSB	PARENTHESIS?
0359	33234	027277		JMP FSC14	NO
0360	33235	175617		STB SSTAK,I	YES
0361	33236	015270		JSB SBPUD	UPDATE POINTER
0362	33237	015450		JSB GETCR	FETCH NEXT
0363	33240	027277		JMP FSC14	CHARACTER
0364	33241	027245		JMP FSC13	
0365*					*
0366**	CHECK FOR A BINARY OPERATOR				**
0367*					*
0368	33242	007400		CCB	STRING VARIABLE
0369	33243	057453		CPB SFLAG	JUST FOUND?
0370	33244	125230		JMP FSC,I	YES
0371	33245	050367	FSC13	CPA ,+15B	NO, END OF STATEMENT?
0372	33246	027277		JMP FSC14	YES
0373	33247	073455		STA UFLAG	NO, DISABLE UNARY OPERATORS
0374	33250	071614		STA TEMP+1	SAVE CHARACTER
0375	33251	064343		LDB ,=7	SEARCH
0376	33252	171574		STA SBPTR,I	FOR A
0377	33253	060470		LDA MCBOP	MULTI CHARACTER
0378	33254	015246		JSB TBSRH	BINARY OPERATOR
0379	33255	002001		RSS	NONE FOUND
0380	33256	027137		JMP FSC6	FOUND
0381	33257	061614		LDA TEMP+1	NO, RECOVER A CHARACTER
0382	33260	067447		LDB MSFLG	SINGLE
0383	33261	015272		JSB SYMCK	CHARACTER
0384	33262	033417		DEF PLUS=1	BINARY OPERATOR?
0385	33263	027267		JMP ++4	NO
0386	33264	053742		CPA EXPUP	YES, ' + ' ?
0387	33265	027177		JMP FSC10	YES
0388	33266	027137		JMP FSC6	NO
0389	33267	007400		CCB	ASSIGNMENT
0390	33270	015272		JSB SYMCK	
0391	33271	033415		DEF ASSOP=1	OPERATOR?
0392	33272	027222		JMP FSC12	NO
0393	33273	060350		LDA ,=2	YES, SET FLAG
0394	33274	073453		STA SFLAG	TO SAY
0395	33275	027033		JMP FSC1	STORE OCCURRED


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0397*
0398** END OF FORMULA **
0399*
0400 33276 061615 LDA TEMP+2 RETRIEVE CHARACTER
0401 33277 006400 FSC14 CLB RECORD
0402 33300 175574 STB SBPTR,I END-OF-FORMULA
0403 33301 155617 CPB SSTAK,I ALL LEFT PARENTHESES MATCHED?
0404 33302 125230 JMP FSC,I YES
0405 33303 115071 JSB SERRS+23,I NO
0406**
0407*** SAVE LOCAL VARIABLES OF FSC ***
0408**
0409*
0410* SAVING MSFLG, UFLAG, VAROP, GETPF, AND FSC MAKES FSC A
0411* RE-ENTRANT SUBROUTINE. THEY ARE SAVED ON THE SYNTAX
0412* STACK BELOW THE ACTIVE SYNTAX BUFFER, ON ENTRY (B)
0413* CONTAINS THE NUMBER OF WORDS TO BE SAVED.
0414*
0415 33304 035617 #FRCR ISZ SSTAK SAVE PREVIOUS '(' COUNT
0416 33305 045617 ADB SSTAK SUFFICIENT
0417 33306 007000 CMB USER
0418 33307 044462 ADB LWAUS SPACE
0419 33310 006020 SSB LEFT?
0420 33311 115042 JSB SERRS,I NO
0421 33312 067447 LDB MSFLG YES, SAVE
0422 33313 175617 STB SSTAK,I 'MULTIPLE STORE'
0423 33314 035617 ISZ SSTAK FLAG
0424 33315 067455 LDB UFLAG SAVE
0425 33316 175617 STB SSTAK,I 'UNARY OPERATOR'
0426 33317 035617 ISZ SSTAK FLAG
0427 33320 065240 LDB VAROP SAVE
0428 33321 175617 STB SSTAK,I VAROP
0429 33322 035617 ISZ SSTAK RETURN ADDRESS
0430 33323 065250 LDB GETPF SAVE
0431 33324 175617 STB SSTAK,I GETPF
0432 33325 035617 ISZ SSTAK RETURN ADDRESS
0433 33326 065230 LDB FSC SAVE
0434 33327 175617 STB SSTAK,I FSC
0435 33330 035617 ISZ SSTAK RETURN ADDRESS
0436 33331 003400 CCA DISABLE
0437 33332 043453 ADA SFLAG SFLAG
0438 33333 073453 STA SFLAG VALUE
0439 33334 125234 JMP FRCUR,I
0440**
0441*** RESTORE FSC LOCAL VARIABLES ***
0442**
0443*
0444* INVERSE OF FRCUR. (A) IS SAVED BUT (B) IS NOT.
0445*
0446 33335 071614 #FPOP STA TEMP+1 SAVE (A)
0447 33336 065617 LDB SSTAK RESET
0448 33337 044344 ADB .-6 SYNTAX STACK
0449 33340 075617 STB SSTAK POINTER
0450 33341 006004 INB RESTORE
0451 33342 160001 LDA 1,I 'MULTIPLE STORE'

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0452	33343	073447	STA MSFLG	FLAG
0453	33344	006004	INB	RESTORE
0454	33345	160001	LDA 1,I	'UNARY OPERATOR'
0455	33346	073455	STA UFLAG	FLAG
0456	33347	006004	INB	RESTORE
0457	33350	160001	LDA 1,I	VAROP
0458	33351	071240	STA VAROP	RETURN ADDRESS
0459	33352	006004	INB	
0460	33353	104200	DLD 1,I	RESTORE GETPF
	33354	100001		
0461	33355	071250	STA GETPF	RETURN ADDRESS AND
0462	33356	075230	STB FSC	FSC RETURN ADDRESS
0463	33357	037453	ISZ SFLAG	RESTORE SFLAG VALUE
0464	33360	061614	LDA TEMP+1	RESTORE (A)
0465	33361	125236	JMP FPOP,I	

0467**
 0468*** SINGLE CHARACTER AND/OR FORMULA OPERATORS ***
 0469**

0470*
 0471* BITS 15-9 OF THE OCTAL WORD ARE THE OPERATOR CODE.
 0472* BITS 3-0 ARE THE PRECEDENCE FOR FORMULA OPERATORS.
 0473* THE ASCII WORD IS USED TO RECOGNIZE THE OPERATOR ON
 0474* INPUT AND TO PROVIDE THE PRINT NAME ON OUTPUT. THE
 0475* ORDERING OF THE TABLE FACILITATES SEARCHING.

0476*				
0477	33362	001000	QUOTE OCT 1000	STRING DELIMITER
0478	33363	021040	ASC 1,"	
0479	33364	002000	COMMA OCT 2000	COMMA
0480	33365	026040	ASC 1,,	
0481	33366	003000	SEMI OCT 3000	SEMICOLON
0482	33367	035440	ASC 1,;	
0483	33370	004000	HATCH OCT 4000	HATCH SIGN
0484	33371	021440	ASC 1,#	
0485	33372	015000	UNMNC OCT 15000	
0486	33373	014000	UNPLC OCT 14000	
0487	33374	011000	RBOP OCT 11000	
0488	33375	047106	FN ASC 1,NF	
0489	33376	052117	TO ASC 1,TO	
0490	33377	047506	OF ASC 1,OF	
0491	33400	010001	RPARN OCT 10001	RIGHT PARENTHESIS
0492	33401	024440	ASC 1,)	
0493	33402	011001	OCT 11001	RIGHT BRACKET
0494	33403	056440	ASC 1,]	
0495	33404	012013	LBRAC OCT 12013	LEFT BRACKET
0496	33405	055440	ASC 1,[
0497	33406	013013	OCT 13013	LEFT PARENTHESIS
0498	33407	024040	ASC 1,(
0499	33410	014011	OCT 14011	UNARY PLUS
0500	33411	025440	ASC 1,+	
0501	33412	015011	OCT 15011	UNARY MINUS
0502	33413	026440	ASC 1,=	
0503	33414	016002	SCMMA OCT 16002	SUBSCRIPT SEPARATOR
0504	33415	026040	ASC 1,,	

0505	33416	017002	ASSOP	OCT	17002	ASSIGNMENT OPERATOR
0506	33417	036440		ASC	1, =	
0507	33420	020007	PLUS	OCT	20007	ADDITION
0508	33421	025440		ASC	1, +	
0509	33422	021007		OCT	21007	SUBTRACTION
0510	33423	026440		ASC	1, *	
0511	33424	022010	TIMES	OCT	22010	MULTIPLICATION
0512	33425	025040		ASC	1, /	
0513	33426	023010		OCT	23010	DIVISION
0514	33427	027440		ASC	1, ^	
0515	33430	024012		OCT	24012	EXPONENTIATION
0516	33431	057040		ASC	1, >	
0517	33432	025005	RELOS	OCT	25005	GREATER THAN
0518	33433	037040		ASC	1, <	
0519	33434	026005		OCT	26005	LESS THAN
0520	33435	036040		ASC	1, >	
0521	33436	027005		OCT	27005	UNEQUAL
0522	33437	021440		ASC	1, =	
0523	33440	030005		OCT	30005	EQUAL
0524	33441	036440		ASC	1, =	
0525	33442	053572	MATFN	DEF	MATFS	
0526	33443	053431	MATIO	DEF	IOSTS	
0527	33444	032004		OCT	32004	AND
0528	33445	000000	DFLAG	NOP		
0529	33446	033003		OCT	33003	OR
0530	33447	000000	MSFLG	NOP		
0531	33450	034006		OCT	34006	MINIMUM
0532	33451	053420	AEEND	DEF	EOFOP	
0533	33452	035006		OCT	35006	MAXIMUM
0534	33453	000000	SFLAG	NOP		
0535	33454	036005		OCT	36005	UNEQUAL
0536	33455	000000	UFLAG	NOP		
0537	33456	037005		OCT	37005	GREATER THAN OR EQUAL
0538	33457	000000	ARYAD	NOP		
0539	33460	040005		OCT	40005	LESS THAN OR EQUAL
0540	33461	053501	ASTEP	DEF	STEP	
0541	33462	041011		OCT	41011	NOT

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0003**
0004*** SUBSCRIPT SYNTAX ***
0005**
0006*
0007* SBSCK ASSUMES A PRIOR ARRAY OPERAND REFERENCED THROUGH
0008* THE POINTER ARYAD. ENTRY IS MADE WITH A CHARACTER IN
0009* (A); EXIT TO (P+1) IF THIS CHARACTER IS NOT '(' OR '[',
0010* OTHERWISE ANALYZE THE SUBSCRIPT WHICH MUST FOLLOW,
0011* EXITING TO (P+2). SBSCK HANDLES BOTH SINGLE AND DOUBLE
0012* SUBSCRIPTS. IF DFLAG=0 THE SUBSCRIPT IS FROM A
0013* <DIM STATEMENT> AND THE BOUNDS MUST BE POSITIVE
0014* INTEGERS. IF DFLAG=1 THE SUBSCRIPT RE-DIMENSIONS A
0015* MATRIX AND A COMMA SEPARATES THE TWO BOUNDS OF A
0016* DOUBLE SUBSCRIPT AND AN END-OF-FORMULA OPERATOR
0017* FOLLOWS THE LAST BOUND. OTHERWISE A 'SUBSCRIPT'
0018* COMMA SEPARATES THE TWO PARTS OF A DOUBLE SUBSCRIPT
0019* AND NO END-OF-FORMULA OPERATOR APPEARS. IN ALL CASES,
0020* THE ARRAY OPERAND IS MARKED AS ONE- OR TWO-DIMENSIONAL.
0021* IF THE SUBSCRIPT BELONGS TO A STRING VARIABLE IN A
0022* <DIM STATEMENT>, IT MUST HAVE ONE AND ONLY ONE BOUND
0023* CONSISTING OF A POSITIVE INTEGER NOT LARGER THAN 72.
0024* IN THIS CASE ARYAD HOLDS A DUMMY POINTER SINCE STRING
0025* VARIABLES ARE NOT MARKED WITH DIMENSIONALITY.
0026*
0027 33463 064350 #SBSCK LDB ,=2 '('
0028 33464 015272 JSB SYMCK OR
0029 33465 033403 DEF LBRAC=1 '[' ?
0030 33466 125232 JMP SBSCK,I NO, RETURN TO (P+1)
0031 33467 035232 ISZ SBSCK YES, SET RETURN TO (P+2)
0032 33470 163457 LDA ARYAD,I SET
0033 33471 040350 ADA ,=2 ARRAY TO
0034 33472 173457 STA ARYAD,I SINGLE DIMENSION
0035 33473 060622 LDA LBOP RECORD
0036 33474 171574 STA SBPTR,I '['
0037 33475 037445 ISZ DFLAG BUMP MAGIC FLAG
0038 33476 006404 CLB,INB DIM
0039 33477 057445 CPB DFLAG STATEMENT?
0040 33500 027574 JMP SBSC5 YES
0041 33501 064361 LDB ,+7 NO, SAVE FSC
0042 33502 015234 JSB FRCUR LOCAL VARIABLES
0043 33503 065232 LDB SBSCK SAVE
0044 33504 175617 STB SSTAK,I RETURN
0045 33505 035617 ISZ SSTAK ADDRESS
0046 33506 067457 LDB ARYAD SAVE ARRAY
0047 33507 175617 STB SSTAK,I REFERENCE
0048 33510 035617 ISZ SSTAK RESERVE SPACE FOR '(' COUNT
0049 33511 060341 LDA ,=9 TURN OFF 'STORE
0050 33512 073447 STA MSFLG ALLOWED' MODE
0051 33513 015230 JSB FSC DEMAND SUBSCRIPT
0052 33514 007400 CCB RESTORE
0053 33515 045617 ADB SSTAK
0054 33516 075617 STB SSTAK ARRAY
0055 33517 164001 LDB 1,I
0056 33520 077457 STB ARYAD REFERENCE
0057 33521 067445 LDB DFLAG 'MATRIX SUBSCRIPT'

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0058	33522	054354	CPB	+.2	MODE?	
0059	33523	027567	JMP	SBSC4	YES	
0060	33524	007400	SBSC1	CCB	NO, SEEK	
0061	33525	015272	JSB	SYMCK	'SUBSCRIPT'	
0062	33526	033413	DEF	SCMMA-1	COMMA	
0063	33527	027537	JMP	SBSC3+1	NONE FOUND	
0064	33530	137457	ISZ	ARYAD, I	SET ARRAY AS DOUBLY-SUBSCRIBED	
0065	33531	006404	CLB, INB		DIM	
0066	33532	057445	CPB	DFLAG	STATEMENT?	
0067	33533	027536	JMP	SBSC3	YES	
0068	33534	015230	JSB	FSC	NO, DEMAND SECOND SUBSCRIPT	
0069	33535	002001	RSS			
0070	33536	015244	SBSC3	JSB	PRGIN	DEMAND SECOND BOUND
0071	33537	007400	CCB		RESTORE	
0072	33540	047445	ADB	DFLAG	ORIGINAL	
0073	33541	077445	STB	DFLAG	DFLAG VALUE	
0074	33542	054353	CPB	+.1	'MATRIX SUBSCRIPT' MODE?	
0075	33543	015270	JSB	SBPUD	YES	
0076	33544	064350	LDB	.-2	DEMAND	
0077	33545	015272	JSB	SYMCK	')' OR	
0078	33546	033377	DEF	RPARN-1	'('	
0079	33547	115071	JSB	SERRS+23, I	NOT FOUND	
0080	33550	063374	LDA	RBOP	RECORD	
0081	33551	171574	STA	SBPTR, I	'('	
0082	33552	015270	JSB	SBPUD	UPDATE POINTER	
0083	33553	015450	JSB	GETCR	FETCH NEXT	
0084	33554	000000	NOP		CHARACTER	
0085	33555	006400	CLB		DIM	
0086	33556	057445	CPB	DFLAG	STATEMENT?	
0087	33557	125232	JMP	SBSC, I	YES	
0088	33560	007400	CCB		NO,	
0089	33561	045617	ADB	SSTAK	RESTORE	
0090	33562	075617	STB	SSTAK	THE	
0091	33563	165617	LDB	SSTAK, I	RETURN	
0092	33564	075232	STB	SBSC	ADDRESS	
0093	33565	015236	JSB	FPOP	RESTORE FSC	
0094	33566	125232	JMP	SBSC, I	LOCAL VARIABLES	
0095	33567	007400	SBSC4	CCB		
0096	33570	015272	JSB	SYMCK	COMMA?	
0097	33571	033363	DEF	COMMA-1		
0098	33572	027537	JMP	SBSC3+1	NO	
0099	33573	027530	JMP	SBSC1+4	YES	
0100	33574	015244	SBSC5	JSB	PRGIN	DEMAND DECLARED BOUND
0101	33575	037453	ISZ	SFLAG	STRING VARIABLE?	
0102	33576	027524	JMP	SBSC1	NO	
0103	33577	044752	ADB	M73	YES, DOES BOUND	
0104	33600	006021	SSB, RSS		EXCEED 72?	
0105	33601	115100	JSB	SERRS+30, I	YES	
0106	33602	027537	JMP	SBSC3+1	NO	

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0108**
0109*** RECORD ARRAY IDENTIFIER ***
0110**
0111*
0112* ARRAY IDENTIFIER LEFT IN TEMP+1, ARRAY OPERAND ADDRESS
0113* PUT IN ARYAD. EXIT WITH FOLLOWING CHARACTER IN TEMP+2
0114* AND IN (A).
0115*
0116 33603 015256 #ARID JSB LTR          FETCH IDENTIFIER
0117 33604 115074          JSB SERRS+26,I  NONE FOUND
0118 33605 065242          LDB ARRID          SET
0119 33606 075339          STB STRID          EXIT
0120**
0121*** RECORD STRING IDENTIFIER ***
0122**
0123*
0124* STRING IDENTIFIER LEFT IN TEMP+1, SFLAG SET TO -1.
0125* EXIT WITH FOLLOWING CHARACTER IN (A). EXIT TO ERROR
0126* IF A STRING VARIABLE IS NOT PERMITTED IN THIS CONTEXT.
0127*
0128 33607 050416 #STRI CPA .+44B          'S' ?
0129 33610 027620          JMP STRI1          YES
0130 33611 061574          LDA SBPTR          NO, SET POINTER TO
0131 33612 073457          STA ARYAD          VARIABLE LOCATION
0132 33613 061614          LDA TEMP+1        RECORD
0133 33614 064430          LDB .+56B          ARRAY
0134 33615 015260          JSB STROP          VARIABLE
0135 33616 061615          LDA TEMP+2        RETRIEVE FOLLOWING
0136 33617 125330          JMP STRID,I        CHARACTER
0137 33620 063453 STRI1 LDA SFLAG      STRING VARIABLE
0138 33621 051574          CPA SBPTR          PERMITTED?
0139 33622 003401          CCA,RSS           YES
0140 33623 115075          JSB SERRS+27,I   NO
0141 33624 073453          STA SFLAG          SET FLAG TO 'STRING OCCURRED'
0142 33625 061614          LDA TEMP+1        RECORD
0143 33626 064425          LDB .+53B          STRING
0144 33627 015260          JSB STROP          VARIABLE
0145 33630 061617          LDA SSTAK          SET POINTER TO DUMMY
0146 33631 073457          STA ARYAD          VARIABLE LOCATION
0147 33632 015450          JSB GETCR          FETCH
0148 33633 000000          NOP               NEXT
0149 33634 125330          JMP STRID,I        CHARACTER
0150**
0151*** RECORD A STRING OPERAND ***
0152**
0153*
0154* DEMAND A STRING VARIABLE OR A STRING CONSTANT. EXIT
0155* TO ERROR IF NEITHER IS FOUND, ELSE EXIT WITH THE NEXT
0156* CHARACTER IN (A).
0157*
0158 33635 061574 #RSTO LDA SBPTR          SEEK
0159 33636 073453          STA SFLAG          STRING
0160 33637 015240          JSB VAROP          OPERAND
0161 33640 027644          JMP RSTO1          1ST CHARACTER NOT A LETTER
0162 33641 037453          ISZ SFLAG          STRING VARIABLE?

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0163 33642 115076      JSB SERRS+28,I  NO
0164 33643 125332      JMP RSTOP,I     YES
0165 33644 015270      RST01 JSB SBPUD  DEMAND A
0166 33645 015334      JSB GETST      STRING
0167 33646 125332      JMP RSTOP,I    CONSTANT
0168**                **
0169***  FETCH A STRING CONSTANT ***
0170**                **
0171*
0172*  EXIT TO ERROR IF (A) # " UPON ENTRY, ELSE SAVE CURRENT
0173*  BUFFER POINTER AND PACK THE INPUT STRING INTO THE BUFFER
0174*  FOLLOWING THE INITIAL BUFFER WORD. EXIT TO ERROR IF NO
0175*  CLOSING " IS FOUND. RECORD THE OPENING " ALONG WITH A
0176*  COUNT OF THE STRING CHARACTERS AND EXIT WITH THE NEXT
0177*  CHARACTER IN (A). EXIT TO ERROR IF STRING EXCEEDS
0178*  72 CHARACTERS.
0179*
0180 33647 065574      #GTST LDB SBPTR  SAVE SYNTAX
0181 33650 077457      STB ARYAD      BUFFER POINTER
0182 33651 050414      CPA ,+42B     " ?
0183 33652 006401      CLB,RSS       YES, SET (B) = 0
0184 33653 115076      JSB SERRS+28,I NO
0185 33654 015262      JSB CHRST      RECORD STRING CONSTANT
0186 33655 115077      JSB SERRS+29,I NO CLOSING QUOTE
0187 33656 063362      LDA QUOTE      RECORD CHARACTER COUNT
0188 33657 041614      ADA TEMP+1    ALONG WITH
0189 33660 173457      STA ARYAD,I   OPENING QUOTE
0190 33661 043743      ADA D1111     MORE THAN 72,
0191 33662 002021      SSA,RSS       CHARACTER?
0192 33663 115100      JSB SERRS+30,I YES
0193 33664 015450      JSB GETCR     NO, FETCH
0194 33665 000000      NOP           NEXT
0195 33666 125334      JMP GETST,I   CHARACTER
0196**                **
0197***  CHECK FOR USING STATEMENT ***
0198**                **
0199*
0200*  SCAN THE INPUT STRING FOR A USING OPERATOR. IF NONE FOUND, EXIT
0201*  TO (P+1) WITH THE INPUT STRING AND SYNTAX BUFFER AS UPON ENTRY.
0202*  OTHERWISE, CHECK FOR A LEGAL OPERATOR FOLLOWING THE 'USING' AND
0203*  EXIT TO (P+2) AFTER SAVING IT IN THE SYNTAX BUFFER, WITH (A)
0204*  = THE NEXT CHARACTER.
0205 33667 171574      #USCK STA SBPTR,I  (A) = NEXT CHARACTER
0206 33670 060357      LDA ,+5       5 CHARACTERS
0207 33671 071402      STA MAXCR     ALLOWED
0208 33672 007400      CCB          LOOK
0209 33673 063734      LDA USTMA    LOOK
0210 33674 015246      JSB TBSRH    'USING'
0211 33675 027725      JMP USCK3    NOT FOUND
0212 33676 035546      ISZ USTCK
0213 33677 015256      JSB LTR      NEXT CHARACTER LETTER?
0214 33700 027712      JMP USCK1    NO
0215 33701 050416      CPA ,+44B    YES, 'S' FOLLOW?
0216 33702 002001      RSS         YES
0217 33703 115104      JSB SERRS+34,I NO

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0218	33704	065574	LDB	SBPTR	ENABLE STRING
0219	33705	077453	STB	SFLAG	VARIABLE
0220	33706	015330	JSB	STRID	STORE STRING
0221	33707	015232	JSB	SBCK	
0222	33710	000000	NOP		
0223	33711	125546	JMP	USTCK,I	
0224	33712	050414	USCK1	CPA .+42B	QUOTE?
0225	33713	027722	JMP	USCK2	YES
0226	33714	015452	JSB	BCKSP	SEARCH
0227	33715	007400	CCB		FOR
0228	33716	075422	STB	GFLAG	STATEMENT
0229	33717	015244	JSB	PRGIN	NUMBER
0230	33720	125546	JMP	USTCK,I	FOUND ONE
0231	33721	115104	JSB	SERRS+34,I	NOT FOUND, ERROR
0232	33722	015270	USCK2	JSB SBPUD	ADVANCE BUFFER POINTER
0233	33723	015334	JSB	GETST	RECORD STRING CONSTANT
0234	33724	125546	JMP	USTCK,I	
0235	33725	007400	USCK3	CCB	RESTORE
0236	33726	045574	ADB	SBPTR	BUFFER
0237	33727	075574	STB	SBPTR	POINTER
0238	33730	060355	LDA	+.3	RESET FOR
0239	33731	071402	STA	MAXCR	3 CHARACTERS
0240	33732	015452	JSB	BCKSP	RESTORE INPUT STRING
0241	33733	125546	JMP	USTCK,I	

0243	33734	053346	USTMA	DEF	USTMT
0244	33735	053342	STYTP	DEF	STYPS
0245	33736	053331	MCREL	DEF	MRELS
0246	33737	100337	LENCN	OCT	100337
0247	33740	076000	TUOP	OCT	76000
0248	33741	063000	INPOP	OCT	63000
0249	33742	024000	EXPOP	OCT	24000
0250	33743	176667	D1111	OCT	-1111
0251	33744	177201	D577	OCT	-577
0252	33745	000133	B133	OCT	133

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0254 34000                ORG 340000
0255 34000 000133 00133 OCT 133
0256 34001 177645 0133 OCT =133
0257 34002 032051 DCOM0 DEF COMS0
0258 34003 033453 SFLGA DEF SFLAG
0259 34004 177725 053 OCT =53
0260 34005 177631 M103 DEC =103
0261 34006 032037 EOSTA DEF EOST
0262*** **
0263** <RESTORE STATEMENT> SYNTAX **
0264*** **
0265*
0266 34007 015450 RSTRS JSB GETCR      END OF STATEMENT?
0267 34010 026014          JMP RSTR1      YES
0268 34011 015452          JSB BCKSP      NO, DEMAND
0269 34012 015244          JSB PRGIN      SEQUENCE NUMBER
0270 34013 126006          JMP EOSTA,I  DEMAND END OF STATEMENT
0271 34014 035574 RSTR1 ISZ SBPTR      RECORD DUMMY OPERAND
0272 34015 124524          JMP ACCSA,I
0273*
0274*** **
0275** <FILES STATEMENT> SYNTAX **
0276*** **
0277*
0278 34016 002401 FILES CLA,RSS      SUPPRESS BLANKS
0279*
0280*** **
0281** <REM STATEMENT> SYNTAX **
0282*** **
0283*
0284 34017 060367 REMS LDA ,+15B      DUMMY STATEMENT TERMINATOR
0285 34020 006404          CLB,INB      SET CHARACTER FLAG TO 'LOW HALF'
0286 34021 015262          JSB CHRST      RECORD REMAINDER OF STATEMENT
0287 34022 124524          JMP ACCSA,I  AS A STRING
0288*** **
0289** <CHAIN STATEMENT> SYNTAX **
0290*** **
0291*
0292 34023 015332 CHANS JSB RSTOP      REQUEST STRING OPERAND
0293 34024 007400          CCB
0294 34025 015272          JSB SYMCK      COMMA FOLLOWS?
0295 34026 033363          DEF COMMA=1  A COMMA?
0296 34027 126006          JMP EOSTA,I  NO, DEMAND END-OF-STATEMENT
0297 34030 006400          CLB          DISALLOW
0298 34031 176003          STB SFLGA,I  STRING VARIABLES
0299 34032 015230          JSB FSC      GET A FORMULA FOR LINE NO.
0300 34033 126006          JMP EOSTA,I  DEMAND END-OF-STATEMENT
0301*
0302*** **
0303** <ENTER STATEMENT> SYNTAX **
0304*** **
0305*
0306 34034 015450 ENTRRS JSB GETCR      FETCH FIRST CHARACTER
0307 34035 115105          JSB SERRS+35,I NONE FOUND
0308 34036 035574          ISZ SBPTR

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0309	34037	007400	CCB	
0310	34040	015272	JSB SYMCK	FIRST CHARACTER A '#'?
0311	34041	033367	DEF HATCH-1	
0312	34042	026055	JMP ENTR1	NO
0313	34043	015240	JSB VAROP	YES, SEEK SIMPLE VARIABLE
0314	34044	115105	JSB SERRS+35,I	NONE FOUND
0315	34045	000000	NOP	
0316	34046	050367	CPA .+15B	CR FOLLOWS?
0317	34047	026307	JMP ACCST	YES, ACCEPT STATEMENT
0318	34050	007400	CCB	NO
0319	34051	015272	JSB SYMCK	COMMA?
0320	34052	033363	DEF COMMA-1	
0321	34053	115050	JSB SERRS+6,I	NO
0322	34054	026061	JMP ENTR2	
0323	34055		ENTR1 EQU *	
0324	34055	015452	JSB BCKSP	BACKUP ONE CHARACTER
0325	34056	007400	CCB	RESTORE
0326	34057	045574	ADB SBPTR	BUFFER
0327	34060	075574	STB SBPTR	POINTER
0328	34061		ENTR2 EQU *	
0329	34061	015230	JSB FSC	DEMAND A FORMULA
0330	34062	007400	CCB	
0331	34063	015272	JSB SYMCK	COMMA FOLLOWS?
0332	34064	033363	DEF COMMA-1	
0333	34065	115050	JSB SERRS+6,I	NO
0334	34066	015240	JSB VAROP	DEMAND A SIMPLE VARIABLE
0335	34067	115105	JSB SERRS+35,I	NONE FOUND
0336	34070	000000	NOP	
0337	34071	007400	CCB	
0338	34072	015272	JSB SYMCK	COMMA FOLLOWS?
0339	34073	033363	DEF COMMA-1	
0340	34074	115050	JSB SERRS+6,I	NO
0341	34075	065574	LDB SBPTR	YES, ENABLE
0342	34076	176003	STB SFLGA,I	STRING VARIABLE
0343	34077	015240	JSB VAROP	SEEK VARIABLE OPERAND
0344	34100	115105	JSB SERRS+35,I	NONE FOUND
0345	34101	000000	NOP	
0346	34102	126006	JMP EOSTA,I	DEMNAD END_OF_STATEMENT
0347*				
0348***			**	
0349**	<USING STATEMENT>	SYNTAX	**	
0350***			**	
0351*				
0352	34103	115103	USINS JSB SERRS+33,I	USING ILLEGAL AS FIRST WORD
0353*				
0354***			**	
0355**	<ASSIGN STATEMENT>	SYNTAX	**	
0356***			**	
0357*				
0358	34104	015332	ASNS JSB RSTOP	
0359	34105	007400	CCB	
0360	34106	015272	JSB SYMCK	RECORD
0361	34107	033363	DEF COMMA-1	A COMMA
0362	34110	115050	JSB SERRS+6,I	NOT A COMMA
0363	34111	064354	LDB .+2	DISABLE

0364	34112	176003		STB SFLGA,I	STRING VARIABLE
0365	34113	015230		JSB FSC	RECORD FORMULA
0366	34114	007400	ASNS4	CCB	
0367	34115	015272		JSB SYMCK	RECORD
0368	34116	033363		DEF COMMA-1	A COMMA
0369	34117	115050		JSB SERRS+6,I	NOT A COMMA
0370	34120	015240		JSB VAROP	SEEK A NUMERIC OPERAND
0371	34121	115105		JSB SERRS+35,I	NONE FOUND
0372	34122	000000		NOP	
0373	34123	007400		CCB	
0374	34124	015272		JSB SYMCK	COMMA
0375	34125	033363		DEF COMMA-1	NEXT?
0376	34126	002001		RSS	
0377	34127	015332		JSB RSTOP	DEMAND A STRING OPERAND
0378	34130	126006		JMP EOSIA,I	DEMAND END-OF-STATEMENT

0380** **
 0381*** SEEK A VARIABLE OPERAND ***
 0382** **

0383*
 0384* VAROP SCANS FOR AND RECORDS A VARIABLE OPERAND. IF
 0385* THE FIRST CHARACTER IS NOT A LETTER, EXIT IS TO (P+1)
 0386* WITH THE CHARACTER IN (A). OTHERWISE A VARIABLE
 0387* OPERAND IS RECORDED AND UPON EXIT (A) CONTAINS THE
 0388* FOLLOWING CHARACTER. EXIT IS TO (P+2) AFTER FINDING
 0389* AN ARRAY OR STRING VARIABLE ALONG WITH ANY FOLLOWING
 0390* SUBSCRIPT. IF A STRING VARIABLE IS FOUND AND SFLAG =
 0391* SBPTR, SET SFLAG = -1; IF SFLAG # SBPTR, NO STRING
 0392* VARIABLE IS PERMITTED AT THIS POINT; EXIT TO ERROR.
 0393* AFTER FINDING A SIMPLE VARIABLE EXIT TO (P+3) WITH
 0394* TEMP+2 = (A) AND THE LAST CHARACTER OF THE SIMPLE
 0395* VARIABLE IN TEMP+1. IF INSIDE A <DEF STATEMENT>,
 0396* SIMPLE VARIABLES ARE COMPARED WITH THE PARAMETER AND
 0397* MATCHES ARE MARKED.

0398*
 0399 34131 015256 #VROP JSB LTR LETTER?
 0400 34132 125240 JMP VAROP,I NO, EXIT VIA (P+1)
 0401 34133 035240 ISZ VAROP YES
 0402 34134 050422 CPA .+50B '(' ?
 0403 34135 026155 JMP VAR04 YES
 0404 34136 052000 CPA BB133 NO, '(' ?
 0405 34137 026155 JMP VAR04 YES
 0406 34140 050416 CPA .+44B NO, 'S' ?
 0407 34141 026155 JMP VAR04 YES
 0408 34142 035240 ISZ VAROP NO
 0409 34143 015264 JSB DIGCK DIGIT NEXT?
 0410 34144 026165 JMP VAR01 NO
 0411 34145 061614 LDA TEMP+1 YES, LOAD LETTER,
 0412 34146 044432 ADB .+48 RESTORE DIGIT,
 0413 34147 075614 STB TEMP+1 AND RECORD
 0414 34150 015260 JSB STROP SIMPLE VARIABLE
 0415 34151 015450 JSB GETCR FETCH
 0416 34152 000000 NOP AND SAVE
 0417 34153 071615 STA TEMP+2 NEXT
 0418 34154 026171 JMP VAR02 CHARACTER
 0419 34155 015330 VAR04 JSB STRID RECORD ARRAY OR STRING VARIABLE
 0420 34156 015232 JSB SBsCK FETCH THE SUBSCRIPT
 0421 34157 002001 RSS NO SUBSCRIPT
 0422 34160 125240 JMP VAROP,I EXIT VIA (P+2)
 0423 34161 065240 LDB VAROP WAS VAROP CALLED FOR
 0424 34162 056002 CPB DCOM0 DIM OR COM SYNTAX?
 0425 34163 115047 JSB sERRs+5,I YES--ERROR
 0426 34164 125240 JMP VAROP,I NO--EXIT
 0427 34165 061614 VAR01 LDA TEMP+1 RETRIEVE LETTER,
 0428 34166 064431 LDB .+57B SET 'NO DIGIT',
 0429 34167 015260 JSB STROP AND RECORD
 0430 34170 061615 LDA TEMP+2 SIMPLE VARIABLE
 0431 34171 006400 VAR02 CLB INSIDE A
 0432 34172 055621 CPB PFLAG 'DEF' STATEMENT?
 0433 34173 125240 JMP VAROP,I NO, EXIT VIA (P+3)
 0434 34174 007400 CCB YES,

0435	34175	045574	ADB SBPTR	ISOLATE
0436	34176	160001	LDA 1,I	LATEST
0437	34177	010502	AND B777	OPERAND
0438	34200	051621	CPA PFLAG	IS IT THE PARAMETER?
0439	34201	026204	JMP **+3	YES
0440	34202	061615	VAR03 LDA TEMP+2	NO, RETRIEVE CHARACTER
0441	34203	125240	JMP VAROP,I	AND EXIT VIA (P+3)
0442	34204	160001	LDA 1,I	FLAG
0443	34205	031036	IOR FLGBT	OPERAND
0444	34206	170001	STA 1,I	AS
0445	34207	026202	JMP VAR03	PARAMETER
0446**				**
0447***	PROCESS CHARACTER STRING			***
0448**				**
0449*				
0450*	UPON ENTRY (A) CONTAINS THE STRING DELIMITER AND (B)			
0451*	INDICATES WHETHER THE FIRST CHARACTER IS TO BE STORED			
0452*	IN THE LOWER HALF OF THE CURRENT BUFFER WORD ((B) = 1)			
0453*	OR THE UPPER HALF OF THE NEXT BUFFER WORD ((B) = 0).			
0454*	EXIT TO (P+1) ON EMPTYING THE INPUT STRING. EXIT TO			
0455*	(P+2) ON FINDING THE STRING DELIMITER. BLANKS ARE NOT			
0456*	STRIPPED OUT OF THE INPUT STRING IF (A) ≠ 0 UPON ENTRY. UPON			
0457*	EXIT SBPTR POINTS TO THE FIRST BUFFER WORD NOT CONTAINING PART OF			
0458*	THE STRING WHILE TEMP+1 CONTAINS A COUNT OF THE STRING			
0459*	CHARACTERS BIASED BY THE VALUE OF (B) UPON ENTRY.			
0460*				
0461	34210	075614	#CRST STB TEMP+1	SET CHARACTER FLAG AND COUNTER
0462	34211	071615	STA TEMP+2	NOTE TERMINATOR CHARACTER
0463	34212	064364	LDB .+10	IF (A) ≠ 0
0464	34213	002002	SZA	STOP BLANK
0465	34214	075573	STB BLANK	SUPPRESSION
0466	34215	015450	CHRS1 JSB GETCR	FETCH CHARACTER
0467	34216	026234	JMP CHRS3+1	NONE FOUND
0468	34217	060001	LDA B	ALLOW LOWER CASE
0469	34220	051615	CPA TEMP+2	TERMINATOR?
0470	34221	026233	JMP CHRS3	YES
0471	34222	065614	LDB TEMP+1	NO, COUNT CHARACTER
0472	34223	006014	SLB,INB	AND SELECT WORD HALF
0473	34224	026227	JMP CHRS2	LOW HALF
0474	34225	015270	JSB SBPUD	HIGH HALF, MOVE TO NEXT WORD
0475	34226	001737	ALF,SLA,ALF	POSITION CHARACTER AND SKIP
0476	34227	131574	CHRS2 IOR SBPTR,I	COMBINE WITH PREVIOUS CHARACTER
0477	34230	171574	STA SBPTR,I	
0478	34231	075614	STB TEMP+1	SAVE FLAG/COUNTER
0479	34232	026215	JMP CHRS1	
0480	34233	035262	CHRS3 ISZ CHRST	SET EXIT TO (P+2)
0481	34234	015270	JSB SBPUD	ADVANCE POINTER
0482	34235	064412	LDB .+40B	RESTORE BLANK
0483	34236	075573	STB BLANK	SUPPRESSION
0484	34237	125262	JMP CHRST,I	

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0486**
0487*** DELETE SOME PROGRAM ***
0488**
0489*
0490* THAT PART OF THE PROGRAM REFERENCED BY CORE LOCATIONS
0491* (TEMP+1)+(A) THROUGH (TEMP+1)+(B)-1 INCLUSIVE IS
0492* DELETED BY SLIDING UP ALL OF THE PROGRAM FROM
0493* (TEMP+1)+(B) TO (PBPTR)-1 (I.E., THE REST OF THE
0494* PROGRAM FOLLOWING THE 'GAP'). PBPTR IS THEN
0495* UPDATED TO POINT TO LAST WORD +1 OF THE PROGRAM.
0496*
0497 34240 041614 #DLPR ADA TEMP+1 COMPUTE INITIAL
0498 34241 071615 STA TEMP+2 DESTINATION ADDRESS
0499 34242 045614 ADB TEMP+1 COMPUTE INITIAL SOURCE ADDRESS
0500 34243 054056 DELP1 CPB PBPTR DONE?
0501 34244 026252 JMP DELP2 YES
0502 34245 160001 LDA 1,I NO, TRANSFER
0503 34246 171615 STA TEMP+2,I A WORD
0504 34247 035615 ISZ TEMP+2 BUMP
0505 34250 006004 INB POINTERS
0506 34251 026243 JMP DELP1
0507 34252 061615 DELP2 LDA TEMP+2 UPDATE
0508 34253 070056 STA PBPTR END-OF-PROGRAM
0509 34254 125312 JMP DELPR,I POINTER

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0511**
0512*** STATEMENT SYNTAX ENTRY POINTS ***
0513**
0514 34255 034104 SYNTB DEF ASNS ASSIGN
0515 34256 034103 DEF USINS USING
0516 34257 032124 DEF IMAGS IMAGE
0517 34260 032043 DEF COMS COM
0518 34261 032022 DEF LETS LET
0519 34262 032042 DEF DIMS DIM
0520 34263 032064 DEF DEFS DEF
0521 34264 034017 DEF REMS REM
0522 34265 032142 DEF GOTOS GOTO
0523 34266 032225 DEF IFB IF
0524 34267 032275 DEF FORB FOR
0525 34270 032332 DEF NEXTB NEXT
0526 34271 032142 DEF GOTOB GOSUB
0527 34272 032336 DEF ENDB RETURN
0528 34273 032336 DEF ENDB END
0529 34274 032336 DEF ENDB STOP
0530 34275 032342 DEF DATAS DATA
0531 34276 032414 DEF INPTB INPUT
0532 34277 032404 DEF READS READ
0533 34300 032426 DEF PRINS PRINT
0534 34301 034007 DEF RSTRB RESTORE
0535 34302 032555 DEF MATS MAT
0536 34303 034016 DEF FILEB FILES
0537 34304 034023 DEF CHANS CHAIN
0538 34305 034034 DEF ENTRB ENTER
0539 34306 032017 DEF LET0 'IMPLIED' LET
0540**
0541*** ACCEPT A STATEMENT ***
0542**
0543*
0544* A CORRECT STATEMENT IS ADDED TO THE PROGRAM BUFFER,
0545* IF ITS SEQUENCE NUMBER IS THE HIGHEST SO FAR, ONLY
0546* THE END-OF-PROGRAM POINTER REQUIRES CHANGE, SINCE THE
0547* STATEMENT IS TRANSLATED IMMEDIATELY BELOW THE PREVIOUS
0548* PROGRAM. OTHERWISE THE NEW STATEMENT IS INSERTED INTO
0549* THE PROGRAM IN PROPER SEQUENTIAL POSITION. IF ITS
0550* SEQUENCE NUMBER COINCIDES WITH THAT OF A PREVIOUS
0551* PROGRAM STATEMENT, IT REPLACES IT, WITH SPACE MADE OR
0552* DELETED IN THE PROGRAM AS NECESSARY. EXIT TO EXEC.
0553* IF STATEMENT LENGTH = 0 THE STATEMENT WAS REJECTED DUE TO
0554* A STORAGE OVERFLOW IN TAPE MODE. IF IN KEYBOARD MODE AND
0555* SYMTB = 4 AT LEAST ONE OVER/UNDERFLOW OCCURRED WHILE ANALYZING
0556* THE STATEMENT SO EMIT THE ERROR; OTHERWISE ECHO A LINE FEED.
0557* IF IN TAPE MODE MOVE THE START-OF-RECORD POINTER TO THE START
0558* OF THE NEXT BUFFER AND IF IT IS COMPLETED SYNTAX IT NOW, ELSE
0559* EXIT TO EXEC.
0560*
0561 34307 065620 ACCST LDB SBUFA
0562 34310 006004 INB
0563 34311 061620 LDA SBUFA COMPUTE
0564 34312 003004 CMA,INA STATEMENT
0565 34313 041574 ADA SBPTR LENGTH

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0566	34314	002003	SZA,RSS	UNPROCESSED STATEMENT?
0567	34315	026413	JMP ACCS6	YES
0568	34316	170001	STA 1,I	NO, STORE LENGTH IN STATEMENT
0569	34317	071615	STA TEMP+2	SAVE IT
0570	34320	060056	LDA PBPTR	FIND STATEMENT'S
0571	34321	165620	LDB SBUFA,I	SEQUENTIAL
0572	34322	015314	JSB FNDFS	POSITION
0573	34323	026376	JMP ACCS4	APPEND STATEMENT TO PROGRAM
0574	34324	026350	JMP ACCS2	INSERT STATEMENT INTO PROGRAM
0575	34325	006004	INB	REPLACE PRIOR STATEMENT
0576	34326	160001	LDA 1,I	COMPARE LENGTH
0577	34327	003004	CMA,INA	OF NEW STATEMENT
0578	34330	041615	ADA TEMP+2	WITH THAT OF OLD
0579	34331	002003	SZA,RSS	EQUAL?
0580	34332	026340	JMP ACCS1	YES
0581	34333	002021	SSA,RSS	NO, LONGER?
0582	34334	026351	JMP ACCS2+1	YES
0583	34335	061615	LDA TEMP+2	NO, SHORTER
0584	34336	164001	LDB 1,I	LOAD LENGTH OF OLD STATEMENT
0585	34337	015312	JSB DELPR	DELETE EXTRA LENGTH
0586	34340	065620	ACCS1 LDB SBUFA	LOAD FIRST SOURCE ADDRESS
0587	34341	160001	LDA 1,I	TRANSFER
0588	34342	171614	STA TEMP+1,I	A WORD
0589	34343	035614	ISZ TEMP+1	ADVANCE DESTINATION
0590	34344	006004	INB	AND SOURCE ADDRESSES
0591	34345	055574	CPB SBPTR	DONE?
0592	34346	026400	JMP ACCS5	YES
0593	34347	026341	JMP ACCS1+1	NO
0594	34350	061615	ACCS2 LDA TEMP+2	LOAD SPACE REQUIREMENT
0595	34351	041620	ADA SBUFA	UPDATE POINTER
0596	34352	071620	STA SBUFA	TO NEW STATEMENT
0597	34353	041615	ADA TEMP+2	RESET
0598	34354	065574	LDB SBPTR	END OF STATEMENT
0599	34355	071574	STA SBPTR	POINTER
0600	34356	071615	STA TEMP+2	INITIALIZE DESTINATION ADDRESS
0601	34357	003000	CMA	USER
0602	34360	040462	ADA LWAUS	SPACE
0603	34361	002020	SSA	OVERFLOW?
0604	34362	115042	JSB SERRS,I	YES
0605	34363	061620	LDA SBUFA	NO, UPDATE POINTER
0606	34364	070056	STA PBPTR	TO END-OF-PROGRAM
0607	34365	055614	ACCS3 CPB TEMP+1	EVERYTHING MOVED?
0608	34366	026340	JMP ACCS1	YES
0609	34367	003400	CCA	NO, BACK UP
0610	34370	041615	ADA TEMP+2	SOURCE AND
0611	34371	071615	STA TEMP+2	DESTINATION
0612	34372	044351	ADB .-1	ADDRESSES
0613	34373	160001	LDA 1,I	TRANSFER
0614	34374	171615	STA TEMP+2,I	A WORD
0615	34375	026365	JMP ACCS3	
0616	34376	061574	ACCS4 LDA SBPTR	RESET POINTER TO
0617	34377	070056	STA PBPTR	LAST WORD+1 OF PROGRAM
0618	34400	060362	ACCS5 LDA TAPEF	TAPE
0619	34401	110257	AND MAIN,I	
0620	34402	002002	SZA	MODE?

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0621 34403 026413      JMP ACCS6      YES
0622 34404 065575      LDB SYMTB      NO
0623 34405 071575      STA SYMTB      RESET UNDER/OVERFLOW FLAG
0624 34406 054356      CPB ,+4        UNDER/OVERFLOW ERROR(S)?
0625 34407 115146      JSB RERRS+32,I YES
0626 34410 060364      LDA ,+12B      NO,
0627 34411 015454      JSB OUTCR      OUTPUT A
0628 34412 124514      JMP SCHEN,I    LINE FEED
0629 34413 064257      ACCS6 LDB MAIN  ALLOW
0630 34414 006004      INB
0631 34415 160001      LDA 1,I        MORE
0632 34416 030242      IOR ALI
0633 34417 114500      JSB S14SC,I    INPUT
0634 34420 124514      JMP SCHEN,I

0001**
0002*** FIND A STATEMENT'S SEQUENTIAL POSITION ***
0003**
0004*
0005* UPON ENTRY (A) POINTS TO THE LAST WORD+1 OF THE PROGRAM
0006* AND (B) HOLDS A SEQUENCE NUMBER, IF (B) IS LARGER THAN
0007* ANY SEQUENCE NUMBER IN THE PROGRAM, EXIT TO (P+1) WITH
0008* (B) POINTING TO THE LAST WORD+1 OF THE PROGRAM, IF (B)
0009* FALLS BETWEEN TWO SEQUENCE NUMBERS, EXIT TO (P+2) WITH
0010* (B) POINTING TO THE STATEMENT WITH A LARGER SEQUENCE
0011* NUMBER, IF A STATEMENT IN THE PROGRAM HAS THE SEQUENCE
0012* NUMBER IN (B), EXIT TO (P+3) WITH (B) POINTING TO THIS
0013* STATEMENT (IF IT IS AN EMBEDDED ERROR MESSAGE, STATEMENT
0014* TYPE = 0, DECREMENT THE ERROR COUNT). IN ALL CASES TEMP+1
0015* = (B) UPON EXIT.
0016*
0017 34421 075614      #FDPS STB TEMP+1  SAVE TEST SEQUENCE NUMBER
0018 34422 071616      STA TEMP+3      SAVE TERMINATION POINTER
0019 34423 065577      LDB SPROG       START WITH FIRST WORD OF PROGRAM
0020 34424 055616      FNDP1 CPB TEMP+3  PROGRAM EXHAUSTED?
0021 34425 026466      JMP FNDP3+2     YES, EXIT TO (P+1)
0022 34426 160001      LDA 1,I        NO, IS
0023 34427 003004      CMA,INA        PROGRAM
0024 34430 041614      ADA TEMP+1     SEQUENCE NUMBER
0025 34431 002003      SZA,RSS       THE SAME?
0026 34432 026443      JMP FNDP2      YES, EXIT TO (P+3)
0027 34433 002020      SSA           NO, GREATER?
0028 34434 026465      JMP FNDP3+1   YES, EXIT TO (P+2)
0029 34435 060001      LDA B         NO, CHECK
0030 34436 002004      INA          STATEMENT
0031 34437 160000      LDA A,I      LENGTH AND
0032 34440 044000      ADB A        SET (B) TO
0033 34441 015556      JSB STLCK    POINT TO NEXT
0034 34442 026424      JMP FNDP1    STATEMENT
0035 34443 060001      FNDP2 LDA 1    LOAD
0036 34444 040354      ADA ,+2     STATEMENT
0037 34445 160000      LDA 0,I    ERROR
0038 34446 010664      AND OPMSK
0039 34447 002002      SZA        STATEMENT?
0040 34450 026464      JMP FNDP3   NO
0041 34451 003400      CCA        YES,

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0042 34452 041576      ADA ERRCT      DECREMENT
0043 34453 071576      STA ERRCT      ERROR COUNT
0044 34454 002002      SZA           ONLY ERROR?
0045 34455 026464      JMP FNDP3     NO
0046 34456 103100      CLF 0
0047 34457 060353      LDA TERR     YES==
0048 34460 003000      CMA           SET FLAG
0049 34461 110257      AND MAIN,I   TO SAY
0050 34462 170257      STA MAIN,I   'NO EMBEDDED ERRORS'
0051 34463 102100      STF 0
0052 34464 035314      FNDP3 ISZ FNDPS
0053 34465 035314      ISZ FNDPS
0054 34466 075614      STB TEMP+1  SAVE POINTER TO
0055 34467 125314      JMP FNDPS,I  FINAL STATEMENT SEEN
0056**
0057***  FETCH PARENTHESIZED FORMULA ***
0058**
0059*
0060*  AN END-OF-FORMULA OPERATOR FOLLOWS THE FORMULA
0061*
0062 34470 064357      #GTFP LDB ,+5  SAVE FSC
0063 34471 015234      JSB FRCUR    LOCAL VARIABLES
0064 34472 015270      JSB SBPUD    UPDATE POINTER
0065 34473 015450      JSB GETCR    RECORD
0066 34474 115070      JSB SERRS+22,I LEFT
0067 34475 015252      JSB LPCK     PARENTHESIS
0068 34476 015230      JSB FSC     DEMAND FORMULA
0069 34477 015270      JSB SBPUD    RECORD END-OF-FORMULA OPERATOR
0070 34500 015254      JSB RPCK     RECORD RIGHT PARENTHESIS
0071 34501 015236      JSB FPOP     RESTORE FSC
0072 34502 125250      JMP GETPF,I  LOCAL VARIABLES
0073**
0074***  RECORD AN INTEGER ***
0075**
0076*
0077*  PRGIN FLAGS THE PREVIOUS OPERATOR TO SAY 'INTEGER FOLLOWS'.
0078*  STORE THE INTEGER AND EXIT WITH IT IN (B) AND THE FOLLOWING
0079*  CHARACTER IN (A).
0080*
0081 34503 161574      #PGIN LDA SBPTR,I  SET
0082 34504 030670      IOR INTFL   'INTEGER FOLLOWS'
0083 34505 171574      STA SBPTR,I FLAG
0084 34506 015270      JSB SBPUD   ADVANCE POINTER
0085 34507 015466      JSB BLDIN   BUILD INTEGER
0086 34510 175574      STB SBPTR,I RECORD INTEGER
0087 34511 015270      JSB SBPUD   ADVANCE POINTER
0088 34512 125244      JMP PRGIN,I

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0090**
0091*** BUILD AN INTEGER ***
0092**
0093*
0094* MISSING OR ILLEGAL INTEGER EXITS TO (P+2) OF PRGIN IF GFLAG = -1,
0095* ELSE TO ERROR. A LEGAL INTEGER IS NON-ZERO AND LESS THAN 10000.
0096*
0097 34513 002400 #BLDI CLA INITIALIZE TO
0098 34514 071645 STA PINTG ZERO INTEGER,
0099 34515 015450 JSB GETCR
0100 34516 026535 JMP BLDI2
0101 34517 015264 JSB DIGCK DIGIT?
0102 34520 026535 JMP BLDI2 NO
0103 34521 071646 STA PINTG+1 YES, SAVE IT
0104 34522 061645 LDA PINTG MULTIPLY PREVIOUS
0105 34523 100200 MPY ,+10 INTEGER BY 10
      34524 000364
0106 34525 000040 CLE ADD IN
0107 34526 041646 ADA PINTG+1 NEW DIGIT
0108 34527 006043 SEZ,SZB,RSS OVERFLOW?
0109 34530 026514 JMP #BLDI+1 NO
0110 34531 035422 BLDI1 ISZ GFLAG YES, RETURN ON ERROR?
0111 34532 115043 JSB SERRS+1,I NO
0112 34533 035244 ISZ PRGIN YES, EXIT TO
0113 34534 125244 JMP PRGIN,I (P+2) OF PRGIN
0114 34535 065645 BLDI2 LDB PINTG ZERO
0115 34536 006103 CLE,SZB,RSS INTEGER?
0116 34537 026531 JMP BLDI1 YES
0117 34540 044716 ADB MAXSN NO, INTEGER
0118 34541 002040 SEZ TOO LARGE?
0119 34542 026531 JMP BLDI1 YES
0120 34543 065645 LDB PINTG NO
0121 34544 125466 JMP BLDIN,I
0122**
0123*** SEEK RECORD REFERENCE ***
0124**
0125*
0126* IF THE NEXT CHARACTER IS NOT '#', RESTORE SBPTR AS UPON ENTRY
0127* AND EXIT TO (P+1) WITH THE CHARACTER IN (A). OTHERWISE CHECK
0128* CHARACTER RETURNED IN (A) FROM FILRF. IF IT IS A COMMA OR A
0129* SEMICOLON RECORD IT. EXIT TO (P+2) WITH THE CHARACTER IN (A)
0130* IF IT IS A SEMICOLON. IF A COMMA, PROCESS THE FOLLOWING RECORD
0131* REFERENCE AND EXIT TO (P+2) WITH CHARACTER FOLLOWING IT IN (A)
0132* (IF A SEMICOLON, RECORD IT BEFORE EXITING).
0133*
0134 34545 015504 #RECR JSB FILRF SEEK FILE REFERENCE
0135 34546 026562 JMP RECR1 NONE FOUND
0136 34547 035502 ISZ RECRF FOUND
0137 34550 050426 CPA ,+54B COMMA?
0138 34551 002001 RSS YES
0139 34552 026556 JMP RECR0 NO
0140 34553 064612 LDB B2000 RECORD
0141 34554 175574 STB SBPTR,I COMMA
0142 34555 015230 JSB FSC PROCESS RECORD REFERENCE
0143 34556 064614 RECR0 LDB B3000

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0144 34557 050722          CPA B73          SEMICOLON?
0145 34560 175574          STB SBPTR,I      YES
0146 34561 125502          JMP RECRF,I
0147 34562 007400 RECR1 CCB          RESTORE
0148 34563 045574          ADB SBPTR
0149 34564 075574          STB SBPTR          SBPTR
0150 34565 125502          JMP RECRF,I
0151**
0152*** SEEK FILE REFERENCE ***
0153**
0154*
0155* IF THE NEXT CHARACTER IS NOT A '#' RETURN TO (P+1) WITH IT IN
0156* (A). OTHERWISE RECORD THE FILE REFERENCE AND RETURN TO (P+2)
0157* WITH THE FOLLOWING CHARACTER IN (A),
0158*
0159 34566 035574 #FILR ISZ SBPTR
0160 34567 015450          JSB GETCR          NEXT
0161 34570 125504          JMP FILRF,I
0162 34571 007400          CCB          CHARACTER
0163 34572 015272          JSB SYMCK
0164 34573 033367          DEF HATCH-1      A '#' ?
0165 34574 125504          JMP FILRF,I      NO
0166 34575 015230          JSB F3C          YES, PROCESS FILE REFERENCE
0167 34576 035504          ISZ FILRF
0168 34577 125504          JMP FILRF,I
0169**
0170*** SEARCH TABLE FOR MULTICHARACTER SYMBOL ***
0171**
0172*
0173* UPON ENTRY (A) POINTS TO THE TABLE OF ACCEPTABLE
0174* SYMBOLS, (B) CONTAINS THE NUMBER OF ENTRIES IN THE
0175* TABLE (IN 2'S COMPLEMENT), MAXCR CONTAINS THE MAXIMUM
0176* ACCEPTABLE NUMBER OF CHARACTERS IN THE SYMBOL, AND
0177* SBPTR,I CONTAINS THE FIRST CHARACTER OF THE PROSPECTIVE
0178* SYMBOL IN BITS 7-0 AND EITHER 0 OR THE SECOND CHARACTER
0179* IN BITS 15-8. IF NO ACCEPTABLE SYMBOL IS FOUND, EXIT TO
0180* (P+1) WITH THE HALVES OF SBPTR,I SWAPPED AND THE INPUT
0181* STRING AS UPON ENTRY. ON SUCCESS EXIT TO (P+2) WITH
0182* THE OPERATOR CODE IN BOTH (A) AND SBPTR,I; THE NEW INPUT
0183* STRING BEGINS WITH THE CHARACTER FOLLOWING THE SYMBOL,
0184*
0185 34600 071424 #TBSR STA TABLE      SAVE TABLE ADDRESS
0186 34601 075406          STB LNGTH          SAVE -(NUMBER OF ENTRIES)
0187 34602 060257          LDA MAIN          SAVE
0188 34603 002004          INA
0189 34604 160000          LDA 0,I          BUFFER
0190 34605 030224          IOR SBP
0191 34606 114500          JSB S143C,I      POINTER
0192 34607 061574          LDA SBPTR          SAVE CURRENT
0193 34610 071410          STA SMBGN          SYNTAX BUFFER POINTER
0194 34611 002404          CLA,INA          COUNT FIRST CHARACTER
0195 34612 071434          STA SLENG          OF SYMBOL
0196 34613 161574          LDA SBPTR,I      LEFT JUSTIFY
0197 34614 001727          ALF,ALF          FIRST
0198 34615 171574          STA SBPTR,I      CHARACTER

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0199	34616	010441	AND B177	TWO
0200	34617	002003	SZA, RSS	CHARACTERS?
0201	34620	026637	JMP TSRC4	NO
0202	34621	035434	TSRC1 ISZ SLENG	COUNT NEW CHARACTER
0203	34622	065406	LDB LNGTH	SET COUNTER
0204	34623	075440	STB COUNT	FOR TABLE ENTRIES
0205	34624	061404	LDA TABLE	SET POINTER
0206	34625	071442	TSRC2 STA TBLPT	TO NEXT ENTRY
0207	34626	161442	LDA TBLPT, I	TABLE ENTRY AND
0208	34627	010361	AND .+7	CURRENT SYMBOL
0209	34630	051434	CPA SLENG	OF SAME LENGTH?
0210	34631	026654	JMP TSRC6	YES
0211	34632	040355	TSRC3 ADA .+3	NO, UPDATE
0212	34633	001100	ARS	TABLE
0213	34634	041442	ADA TBLPT	POINTER
0214	34635	035440	ISZ COUNT	MORE ENTRIES?
0215	34636	026625	JMP TSRC2	YES
0216	34637	015450	TSRC4 JSB GETCR	NO, FETCH NEXT CHARACTER
0217	34640	026705	JMP TSR10	NONE FOUND
0218	34641	065434	LDB SLENG	SYMBOL ALREADY
0219	34642	055402	CPB MAXCR	OF MAXIMUM LENGTH?
0220	34643	026705	JMP TSR10	YES
0221	34644	006011	SLB, RSS	NO, EVEN-NUMBERED CHARACTER?
0222	34645	026651	JMP TSRC5	NO
0223	34646	131574	IQR SBPTR, I	YES, FILL LOWER HALF
0224	34647	171574	STA SBPTR, I	OF LAST WORD OF SYMBOL
0225	34650	026621	JMP TSRC1	
0226	34651	015270	TSRC5 JSB SBPUD	ADVANCE SYMBOL POINTER
0227	34652	001727	ALF, ALF	STORE CHARACTER IN
0228	34653	026647	JMP **4	UPPER HALF OF WORD
0229	34654	065442	TSRC6 LDB TBLPT	SET POINTER TO
0230	34655	075444	STB TSPTR	SYMBOL IN TABLE
0231	34656	065410	LDB SMBGN	SET (B) TO
0232	34657	026663	JMP **4	INPUT SYMBOL
0233	34660	055574	TSRC7 CPB SBPTR	ALL OF SYMBOL MATCHED?
0234	34661	026671	JMP TSRC8	YES
0235	34662	006004	INB	NO, ADVANCE
0236	34663	035444	ISZ TSPTR	POINTERS
0237	34664	161444	LDA TSPTR, I	COMPARE NEXT
0238	34665	150001	CPA 1, I	WORD OF SYMBOLS
0239	34666	026660	JMP TSRC7	EQUAL
0240	34667	061434	LDA SLENG	UNEQUAL, TRY
0241	34670	026632	JMP TSRC3	NEXT TABLE SYMBOL
0242	34671	060257	TSRC8 LDA MAIN	FREE
0243	34672	002004	INA	
0244	34673	160000	LDA 0, I	SAVED
0245	34674	030224	IOR FBP	
0246	34675	114500	JSB S14SC, I	BUFFER SPACE
0247	34676	161442	LDA TBLPT, I	LOAD, ISOLATE
0248	34677	010664	AND OPMSK	AND STORE
0249	34700	171410	STA SMBGN, I	OPERATOR CODE
0250	34701	035246	ISZ TBSRH	SET EXIT TO (P+2)
0251	34702	065410	TSRC9 LDB SMBGN	CORRECT SYNTAX
0252	34703	075574	STB SBPTR	BUFFER POINTER
0253	34704	125246	JMP TBSRH, I	

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0254 34705 060257 TSR10 LDA MAIN RESTORE
0255 34706 002004 INA
0256 34707 160000 LDA 0,I BUFFER
0257 34710 030225 IOR RBP
0258 34711 114500 JSB S14SC,I POINTER
0259 34712 026702 JMP TSRC9
0260** **
0261*** FETCH A LETTER ***
0262** **
0263*
0264* EXITS TO (P+1) IF NEXT CHARACTER NOT A LETTER.
0265* OTHERWISE STORES IT IN TEMP+1, STORES FOLLOWING
0266* CHARACTER IN TEMP+2, AND EXITS TO (P+2) WITH
0267* SECOND CHARACTER IN (B).
0268*
0269 34713 015450 #LTR JSB GETCR FIRST
0270 34714 000000 NOP CHARACTER
0271 34715 015266 JSB LETCK A LETTER?
0272 34716 125256 JMP LTR,I NO, EXIT WITH CHARACTER IN (A)
0273 34717 035256 ISZ LTR YES, SET RETURN ADDRESS TO (P+2)
0274 34720 071614 STA TEMP+1 SAVE CHARACTER
0275 34721 015450 JSB GETCR SAVE
0276 34722 000000 NOP SECOND
0277 34723 071615 STA TEMP+2 CHARACTER
0278 34724 125256 JMP LTR,I

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0280**
0281*** STORE AN OPERAND NAME ***
0282**
0283*
0284* OPERANDS ARE STORED AS 9-BIT QUANTITIES, BITS 8-4
0285* HOLD A LETTER (1-32 OCTAL FOR A-Z), BITS 3-0 INDICATE
0286* THE TYPE OF OPERAND: 0 FOR A STRING, 1 AND 2 FOR
0287* SINGLY AND DOUBLY SUBSCRIPTED VARIABLES, 3 FOR A
0288* SUBSCRIPTED VARIABLE WITH DIMENSIONALITY NOT DEFINED
0289* LOCALLY, 4 FOR A SINGLE-LETTER SIMPLE VARIABLE, 5-16
0290* OCTAL FOR A LETTER-DIGIT SINGLE VARIABLE, AND 17 OCTAL
0291* FOR A PROGRAMMER-DEFINED FUNCTION,
0292*
0293 34725 040610 #STOP ADA D100 LETTER = ASCII CODE - 100 OCTAL
0294 34726 046004 ADB D53 DIGIT = ASCII CODE - 53 OCTAL
0295 34727 001700 ALF COMPLETE
0296 34730 030001 IOR 1 OPERAND
0297 34731 131574 IOR SBPTR,I MERGE OPERATOR
0298 34732 171574 STA SBPTR,I AND OPERAND
0299 34733 015270 JSB SBPUD SET POINTER TO
0300 34734 125260 JMP STOP,I FRESH WORD
0301**
0302*** DEMAND A RIGHT PARENTHESIS ***
0303**
0304*
0305* IF (A) HOLDS ')' OR ']' RECORD A ')' AND EXIT
0306* WITH THE FOLLOWING CHARACTER IN (A), ELSE ERROR,
0307*
0308 34735 064350 #RPCK LDB .-2 ')'
0309 34736 015272 JSB SYMCK OR
0310 34737 033377 DEF RPARN-1 ']' ?
0311 34740 115071 JSB SERRS+23,I NO
0312 34741 060616 LDA RPOP YES, RECORD
0313 34742 171574 STA SBPTR,I A ')'
0314 34743 015270 JSB SBPUD RECORD A NULL OPERAND
0315 34744 015450 JSB GETCR FETCH
0316 34745 000000 NOP NEXT
0317 34746 125254 JMP RPCK,I CHARACTER
0318**
0319*** CHECK FOR A DIGIT ***
0320**
0321*
0322* ENTER WITH CHARACTER IN (A). IF NOT A DIGIT, EXIT
0323* TO (P+1) WITH CHARACTER IN (A); ELSE EXIT TO (P+2)
0324* WITH DIGIT (BINARY) IN (A) AND (B).
0325*
0326 34747 064000 #DGCK LDB 0 ASCII
0327 34750 044316 ADB D72 72B OR
0328 34751 006021 SSB,RSS GREATER?
0329 34752 125264 JMP DIGCK,I YES
0330 34753 044364 ADB .+12B NO, ASCII 57B
0331 34754 006020 SSB OR LESS?
0332 34755 125264 JMP DIGCK,I YES
0333 34756 060001 LDA 1 NO, LOAD
0334 34757 035264 ISZ DIGCK DIGIT

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0335 34760 125264      JMP DIGCK,I          INTO (A)
0336**
0337*** CHECK FOR A LETTER ***
0338**
0339*
0340* ENTER WITH CHARACTER IN (A). EXIT TO (P+2) IF A
0341* LETTER, ELSE EXIT TO (P+1). (A) IS NOT CHANGED.
0342*
0343 34761 064000 #LTCK LDB 0          ASCII
0344 34762 046001      ADB 0133        133B OR
0345 34763 006021      SSB,RSS          GREATER?
0346 34764 125266      JMP LETCK,I       YES
0347 34765 044404      ADB .+32B        NO, ASCII 101B
0348 34766 006021      SSB,RSS          OR GREATER?
0349 34767 035266      ISZ LETCK        YES
0350 34770 125266      JMP LETCK,I       NO
0351**
0352*** CHECK FOR SINGLE-CHARACTER OPERATORS ***
0353**
0354*
0355* ENTER WITH CHARACTER IN (A) AND NUMBER OF ACCEPTABLE
0356* OPERATORS IN (B) IN 2'S COMPLEMENT. (P+1)+2 POINTS
0357* TO THE LIST OF ACCEPTABLE OPERATORS. ON A MATCH
0358* EXIT TO (P+3) AFTER RECORDING THE OPERATOR CODE,
0359* WHICH REMAINS IN (A). ON NO MATCH EXIT TO (P+2)
0360* WITH THE CHARACTER IN (A).
0361*
0362 34771 075440 #SYCK STB COUNT      SAVE COUNT OF POSSIBLE MATCHES
0363 34772 001727      ALF,ALF          POSITION
0364 34773 030412      IOR .+32         CHARACTER
0365 34774 165272      LDB SYMCK,I      LOAD
0366 34775 035272      ISZ SYMCK        STARTING
0367 34776 044354 SYMC1 ADB .+2      TABLE ENTRY
0368 34777 150001      CPA 1,I          MATCH?
0369 35000 027006      JMP SYMC2        YES
0370 35001 035440      ISZ COUNT        NO, POSSIBILITIES LEFT?
0371 35002 026776      JMP SYMC1        YES
0372 35003 001727      ALF,ALF          NO,
0373 35004 010441      AND B177         RESTORE
0374 35005 125272      JMP SYMCK,I      CHARACTER
0375 35006 044351 SYMC2 ADB .-1      FETCH
0376 35007 160001      LDA 1,I          AND
0377 35010 010664      AND OPMSK        STORE
0378 35011 171574      STA SBPTR,I     OPERATOR
0379 35012 035272      ISZ SYMCK        CODE
0380 35013 125272      JMP SYMCK,I

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0382**
0383*** SEARCH FOR PRINT FUNCTIONS ***
0384**
0385*
0386* SEARCH THE INPUT STRING FOR A 'TAB', 'LIN' OR 'SPA' FUNCTION.
0387* IF FOUND, RECORD IT AND EXIT TO (P+1). OTHERWISE RESTORE THE
0388* INPUT STRING AND SYNTAX BUFFER POINTER AND EXIT TO (P+2).
0389*
0390 35014 064347 #PFSH LDB .-3 3 POSSIBLE FUNCTIONS
0391 35015 060510 LDA ATAB SEARCH
0392 35016 015246 JSB TBSRH FOR THEM
0393 35017 027032 JMP PFSH1 NONE FOUND
0394 35020 007400 CCB BACKUP
0395 35021 045574 ADB SBPTR BUFFER
0396 35022 075574 STB SBPTR POINTER
0397 35023 001727 ALF,ALF CONSTRUCT
0398 35024 001723 ALF,RAR
0399 35025 130001 IOR B,I FUNCTION
0400 35026 030672 IOR PDFFL
0401 35027 170001 STA B,I OPERAND
0402 35030 015250 JSB GETPF FETCH PARENTHESIZED FORMULA
0403 35031 125550 JMP PFSRH,I
0404 35032 015452 PFSH1 JSB BCKSP BACKUP
0405 35033 007400 CCB TO POINT
0406 35034 045574 ADB SBPTR FOLLOWING
0407 35035 075574 STB SBPTR LAST OPERATOR
0408 35036 035550 ISZ PFSRH EXIT TO
0409 35037 125550 JMP PFSRH,I (P+2)

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0411**
0412***  ALLOCATE COM STORAGE ***
0413**
0414*
0415*  THE BEGINNING OF THE PROGRAM IS SCANNED FOR <COM STATEMENTS>, THE
0416*  AMOUNT OF COM STORAGE NEEDED IS COMPUTED, A POINTER (SPROG) TO
0417*  THE START OF THE PROGRAM IS CREATED AND THE PROGRAM IS SHIFTED TO
0418*  HIGHER CORE TO ALLOW FOR THE COM STORAGE.
0419*
0420  35040 006400 #ALCO CLB          SAY NO COMMON
0421  35041 075514          STB DEST          ALLOCATED YET.
0422  35042 064702          LDB PBUFF
0423  35043 075620          STB STPTR          POINTER TO FIRST STATEMENT
0424  35044 161620 ALC01 LDA STPTR,I      SAVE STATEMENT
0425  35045 071570          STA .LNUM          NUMBER
0426  35046 035620          ISZ STPTR
0427  35047 145620          ADB STPTR,I
0428  35050 075236          STB NSPTR          POINTER TO NEXT STATEMENT
0429  35051 035620          ISZ STPTR
0430  35052 161620          LDA STPTR,I      EXTRACT
0431  35053 010664          AND OPMSK          OPERATOR
0432  35054 050742          CPA COMOP          COM STATEMENT?
0433  35055 027103          JMP ALC02          YES
0434  35056 061514 ALC06 LDA DEST          GET TOTAL COMMON ALLOCATED
0435  35057 002003          SZA,RSS          EXIT IF THERE WERE
0436  35060 125520          JMP ALC0M,I      NO COM STATEMENTS
0437  35061 040702          ADA PBUFF          PROGRAM BEGINNING MOVES BY
0438  35062 071577          STA SPROG          AMOUNT OF COMMON ALLOCATED.
0439  35063 007400          CCB
0440  35064 044056          ADB PBPTR          POINTER TO FIRST
0441  35065 060001          LDA 1             WORD TO BE MOVED
0442  35066 041514          ADA DEST          POINTER TO
0443  35067 071514          STA DEST          FIRST DESTINATION
0444  35070 002004          INA             LOCATION
0445  35071 070056          STA PBPTR          RESET END OF
0446  35072 160001 ALC00 LDA 1,I           PROGRAM POINTER.
0447  35073 171514          STA DEST,I      MOVE A
0448  35074 054702          CPB PBUFF          WORD
0449  35075 125520          JMP ALC0M,I      DONE?
0450  35076 044351          ADB .-1          EXIT
0451  35077 003400          CCA             NO--BUMP
0452  35100 041514          ADA DEST          POINTERS
0453  35101 071514          STA DEST
0454  35102 027072          JMP ALC00          AND LOOP
0455  35103 161620 ALC02 LDA STPTR,I      EXTRACT
0456  35104 010371          AND .+17B        OPERAND
0457  35105 002002          SZA             STRING?
0458  35106 027117          JMP ALC03          NO
0459  35107 035620          ISZ STPTR          YES--
0460  35110 035620          ISZ STPTR          EXTRACT
0461  35111 161620          LDA STPTR,I      LENGTH
0462  35112 002004          INA             COMPUTE
0463  35113 001100          ARS             STORAGE
0464  35114 002004          INA             REQUIRED
0465  35115 035620          ISZ STPTR          BUMP PAST RIGHT BRACKET

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0466 35116 027153          JMP ALC07+1
0467 35117 040346    ALC03  ADA , -4
0468 35120 002020          SSA          SIMPLE VARIABLE?
0469 35121 027124          JMP ALC04          NO
0470 35122 002404          CLA, INA        YES-- ALLOW TWO WORDS
0471 35123 027152          JMP ALC07
0472 35124 035620    ALC04  ISZ STPTR        MUST BE ARRAY
0473 35125 035620          ISZ STPTR
0474 35126 165620          LDB STPTR, I      EXTRACT LENGTH
0475 35127 035620          ISZ STPTR
0476 35130 161620          LDA STPTR, I      GET NEXT
0477 35131 010664          AND OPMSK        OPERATOR
0478 35132 050744          CPA SCOMM        SUBSCRIPT COMMA?
0479 35133 027136          JMP *+3          YES
0480 35134 060001          LDA 1            NO
0481 35135 027145          JMP ALC05+1
0482 35136 060001          LDA 1            COMPUTE
0483 35137 035620          ISZ STPTR        ARRAY
0484 35140 100200          MPY STPTR, I     SIZE
          35141 101620
0485 35142 006002          SZB            TOO BIG?
0486 35143 127157          JMP CUS1A, I     YES
0487 35144 035620    ALC05  ISZ STPTR        BUMP PAST
0488 35145 000066          CLE, ELA
0489 35146 002061          SEZ, SSA, RSS   TOO BIG?
0490 35147 000035          SLA, ERA        NO
0491 35150 127167          JMP CUS1A, I     YES
0492 35151 040354          ADA , +2        ALLOW 4 WORDS FOR DIMENSIONS
0493 35152 001000    ALC07  ALS            DOUBLE EVERYTHING
0494 35153 041514          ADA DEST        UPDATE
0495 35154 071514          STA DEST        POINTER
0496 35155 040437          ADA , 100
0497 35156 015326          JSB CUSP        CHECK FOR STORAGE OVERFLOW
0498 35157 035620          ISZ STPTR
0499 35160 065620          LDB STPTR
0500 35161 055236          CPB NSPTR        END OF STATEMENT
0501 35162 002001          RSS            YES
0502 35163 027103          JMP ALC02        NO
0503 35164 054056          CPB PBPTR        END OF PROGRAM?
0504 35165 027056          JMP ALC06        YES
0505 35166 027044          JMP ALC01        NO
0506*
0507 35167 035176    CUS1A  DEF CUSP1
0508**
0509***  INSURE SPACE FOR NEW ENTRY ***
0510**
0511*
0512*  A CHECK IS MADE THAT THE UNUSED USER SPACE IS AT
0513*  LEAST AS LARGE AS THE NUMBER OF WORDS SPECIFIED BY
0514*  (A).  EXIT TO ERROR IF NOT SO.  (B) IS NOT CHANGED,
0515*  ON NORMAL EXIT (A) CONTAINS ITS ENTRY VALUE + (PBPTR).
0516*
0517 35170 040056    #CUSP  ADA PBPTR        AT LEAST
0518 35171 071476          STA CU1          (A) WORDS
0519 35172 003000          CMA              OF AVAILABLE

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0520 35173 040452      ADA LWAUS      USER
0521 35174 002021      SSA,RSS      SPACE?
0522 35175 027200      JMP **3      YES
0523 35176 015322      CUSP1 JSB DCMPL NO, DECOMPILE
0524 35177 115120      JSB RERRS+10,I OUT OF STORAGE
0525 35200 061476      LDA CU1      RETURN WITH NEW
0526 35201 125326      JMP CUSP,I   VALUE OF PBPTR
0527**
0528*** ADVANCE SYNTAX BUFFER POINTER ***
0529**
0530*
0531* (A) AND (B) REMAIN AS UPON ENTRY
0532*
0533 35202 071306      #SBPU STA SBT0      SAVE (A)
0534 35203 035574      ISZ SBPTR     ADVANCE POINTER
0535 35204 061574      LDA SBPTR     BUFFER
0536 35205 051472      CPA SYNTQ     OVERFLOW?
0537 35206 115101      JSB SERRS+31,I YES
0538 35207 061306      LDA SBT0     NO, RETRIEVE (A)
0539 35210 125270      JMP SBPUD,I
0540**
0541*** DEMAND A LEFT PARENTHESIS ***
0542**
0543*
0544* INSIST CHARACTER IN (A) BE '(' OR '[' , RECORD IT
0545* AS A '(',
0546*
0547 35211 064350      #LPCK LDB .-2      '('
0548 35212 015272      JSB SYMCK     OR
0549 35213 033403      DEF LBRAC-1   '[' ?
0550 35214 115070      JSB SERRS+22,I NO
0551 35215 060624      LDA LPOP     YES, RECORD
0552 35216 171574      STA SBPTR,I  A '('
0553 35217 125252      JMP LPCK,I
0554**
0555*** STATEMENT LENGTH CHECKER ***
0556**
0557*
0558* CHECK THAT (A) (THE STATEMENT LENGTH) IS BETWEEN 3 AND 105.
0559* IF NOT, EXIT TO ERROR.
0560 35220 040347      #SLCK ADA .-3
0561 35221 002020      SSA
0562 35222 115167      JSB RERRS+49,I TOO SMALL
0563 35223 042005      ADA M103
0564 35224 002020      SSA
0565 35225 125556      JMP STLCK,I  OK
0566 35226 115167      JSB RERRS+49,I TOO BIG

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0002 36000          ORG 36000B
0003 36000 011610  .5000 DEC 5000
0004 36001 000364  A.10  DEF  .+10
0005 36002 037025  APTK2 DEF SYMT7
0006 36003 037016  APTK1 DEF SYMT6
0007 36004 041675  DONEA DEF EXIT3
0008 36005 075045  CSVRT DEF CSAV2
0009 36006 067000  MATOP OCT 67000
0010*
0011* *****
0012****
0013***  !COMPILE! THE PROGRAM **
0014****
0015* *****
0016*
0017*
0018* SYMTB=0 IMPLIES THE PROGRAM IS IN 'SOURCE'; ALL OPERANDS ARE IN
0019* SYMBOLIC FORM. SYMTB#0 AND SPTR#0 IMPLIES THE PROGRAM IS 'SEMI-
0020* COMPILED'; VARIABLE OPERANDS ARE POINTERS TO A SYMBOL TABLE AND
0021* STATEMENT REFERENCES ARE REPLACED BY ABSOLUTE POINTERS.
0022* SYMTB = SPTR IMPLIES THE PROGRAM IS 'COMPILED'; THE SYMBOL TABLE
0023* ENTRIES CONTAIN POINTERS TO A VALUE TABLE OR IN THE CASE OF
0024* FUNCTIONS TO THE DEFINING FORMULA, AND A TABLE IS BUILT
0025* CONTAINING INFORMATION FOR EACH FILE IN THE PROGRAM. BEFORE
0026* BUILDING THE SYMBOL TABLE, THE INTERPRETER'S PROGRAM COUNTER
0027* IS SET TO THE STATEMENT REFERENCED BY THE !RUN! COMMAND (THE
0028* LOWEST NUMBERED STATEMENT IS THE DEFAULT CHOICE).
0029*
0030 36007 064702  CMPLE LDB PBUFF          NULL
0031 36010 054056          CPB PBPTR          PROGRAM?
0032 36011 126004          JMP DONEA,I        YES
0033 36012 006404          CLB,INB           INITIALIZE
0034 36013 075334          STB PRGCT         PROGRAM COUNTER
0035 36014 015464          JSB SINIT         SIMPLE
0036 36015 015450          JSB GETCR         'RUN' ?
0037 36016 026025          JMP CMP15         YES
0038 36017 015452          JSB BCKSP         NO
0039 36020 015466          JSB BLDIN         DEMAND AN INTEGER
0040 36021 075334          STB PRGCT         SAVE STARTING STATEMENT NUMBER
0041 36022 050367          CPA  .+15B       END OF RECORD?
0042 36023 002001          RSS             YES
0043 36024 115122          JSB RERRS+12,I   NO
0044 36025 103100  CMP15 CLF 0
0045 36026 160257          LDA MAIN,I       DON'T
0046 36027 030372          IOR UNABT        ALLOW
0047 36030 170257          STA MAIN,I       ABORTS
0048 36031 102100          STF 0
0049 36032 064702          LDB PBUFF
0050 36033 055577          CPB SPROG        NO, COM STORAGE ALLOCATED?
0051 36034 015520          JSB ALCOM        NO--DO IT
0052 36035 061575          LDA SYMTB        GET SYMBOL TABLE POINTER
0053 36036 002003          SZA,RSS          IS PROGRAM COMPILED ?
0054 36037 060056          LDA PBPTR        NO, USE PBPTR
0055 36040 065334          LDB PRGCT        GET STARTING STATEMENT NUMBER
0056 36041 015314          JSB FNOPS        SEEK REFERENCED STATEMENT

```

0057	36042	126004	JMP DONEA,I	NOT WITHIN PROGRAM
0058	36043	000000	NOP	SET
0059	36044	075334	STB PRGCT	PROGRAM COUNTER
0060	36045	060257	CMP14 LDA MAIN	TELL 2114
0061	36046	002004	INA	
0062	36047	160000	LDA 0,I	THAT USER
0063	36050	030227	IOR UIR	
0064	36051	114500	JSB S14LP,I	IS RUNNING
0065	36052	061575	CMP10 LDA SYMTB	PROGRAM
0066	36053	002003	SZA,RSS	UNCOMPILED?
0067	36054	026071	JMP CMP00	YES
0068	36055	051230	CPA SPTR	NO, COMPILED?
0069	36056	002001	RSS	YES
0070	36057	026067	JMP CMP16	NO, MUST BE SEMI-COMPILED
0071	36060	065773	LDB ASINP	
0072	36061	006003	SZB,RSS	ASSIGN STATEMENT SEEN?
0073	36062	027221	JMP VALUE	NO
0074	36063	015522	JSB RSTPT	YES, FAKE SEMI-COMPILED PROGRAM
0075	36064	061575	LDA SYMTB	
0076	36065	071230	STA SPTR	
0077	36066	026434	JMP CMP18	
0078	36067		CMP16 EQU *	
0079	36067	071230	STA SPTR	
0080	36070	026423	JMP CMP17	
0081	36071	071504	CMP00 STA FILTB	
0082	36072	103100	CLF 0	
0083	36073	060354	LDA CFLAG	SET
0084	36074	064273	LDB MLINK+1	
0085	36075	044335	ADB .-?LINK	PROGRAM MODE
0086	36076	130001	IOR 1,I	
0087	36077	170001	STA 1,I	TO 'COMPILED'
0088	36100	102100	STF 0	

```

0090**
0091*** BUILD THE SYMBOL TABLE ***
0092**
0093*
0094* THE PROGRAM IS EXAMINED STATEMENT BY STATEMENT. ALL
0095* VARIABLE OPERANDS ARE REPLACED BY POINTERS (RELATIVE
0096* TO THE START OF THE SYMBOL TABLE) TO TWO WORD ENTRIES.
0097* SYMBOL TABLE ENTRIES KEEP THE SYMBOL IN THE FIRST WORD
0098* AND INFORMATION IN THE SECOND. FOR FUNCTIONS THE
0099* SECOND WORD CONTAINS A POINTER TO THE DEFINING FORMULA
0100* (0 BEFORE FINDING THE <DEF STATEMENT>), FOR SIMPLE
0101* VARIABLES THE SECOND WORD IS USED TO FORM A LINKED LIST
0102* OF UNMATCHED FOR-VARIABLES (OTHERWISE IT IS 0) WITH
0103* FLINK POINTING TO THE INNERMOST NESTED FOR-VARIABLE.
0104* IF THE SIMPLE VARIABLE APPEARS IN A <COM STATEMENT>
0105* THE SECOND WORD IS SET TO -1. FOR ARRAY AND STRING
0106* VARIABLES THE SECOND WORD IS 0 UNLESS THE VARIABLE
0107* APPEARS IN A <DIM STATEMENT>, IN WHICH CASE IT
0108* POINTS TO THE DIMENSIONS IN THE CODE, OR IT APPEARS
0109* IN A <COM STATEMENT>, IN WHICH CASE IT IS THE
0110* NEGATION OF A POINTER TO THE DIMENSIONS.
0111* PROGRAM INTEGERS ARE REPLACED BY A POINTER TO THE
0112* STATEMENT THEY REFERENCE. ON EXIT TO VALUE OR DCML,
0113* SPTR POINTS TO THE FIRST WORD NOT PROCESSED.
0114*
0115 36101 064056          LDB PBPTR          CREATE POINTER
0116 36102 075575          STB SYMTB           TO SYMBOL TABLE
0117*
0118* COUNT NUMBER OF STATEMENTS IN PROGRAM
0119*
0120 36103 002404          CLA,INA           INITIALIZE STATEMENT COUNTER
0121 36104 065577          LDB SPROG
0122 36105 006004          CMP01 INB           MOVE TO
0123 36106 144001          ADB 1,I           NEXT
0124 36107 044351          ADB ,=1           STATEMENT
0125 36110 054056          CPB PBPTR          DONE?
0126 36111 026114          JMP CMP02          YES
0127 36112 002004          INA           NO==BUMP COUNTER
0128 36113 026105          JMP CMP01
0129 36114 006400          CMP02 CL8          DIVIDE # OF STATEMENTS
0130 36115 100400          DIV ,+32          INTO 32 PARTS
0131 36116 000412
0131 36117 007000          CMB           SET 00-1=# OF OVERSIZE GROUPS,
0132 36120 002003          SZA,RSS          BUT IF <32 STATEMENTS USE -#
0133 36121 005004          INB
0134 36122 002004          INA           SET A TO SIZE OF LARGER GROUP
0135 36123 071621          STA STCT1        SET COUNTER
0136 36124 075615          STB STCT2
0137 36125 064544          LDB ERSCA        SET POINTER TO TABLE
0138 36126 075610          STB NUMPT

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0140*
0141* BUILD A TABLE OF 64 WORDS. THE FIRST 32 CONTAIN THE SEQUENCE
0142* NUMBERS OF STATEMENTS WHICH DIVIDE THE PROGRAM INTO 32 ALMOST
0143* EQUAL PARTS. THE SECOND 32 WORDS ARE THE ABSOLUTE ADDRESSES
0144* OF THESE STATEMENTS
0145*
0146 36127 061577          LDA SPROG
0147 36130 044412      CMP03  ADB ,+32
0148 36131 170001          STA 1,I          SET ABSOLUTE ADDRESS INTO TABLE
0149 36132 164000          LDB 0,I          SET SEQUENCE # INTO TABLE
0150 36133 175610          STB NUMPT,I
0151 36134 035610          ISZ NUMPT        BUMP POINTERS
0152 36135 035615          ISZ STCT2       TEST FOR ANY MORE
0153 36136 006401          CLB,RSS        OVERSIZE GROUPS
0154 36137 007400          CCB           COMPUTE SIZE OF NEXT GROUP
0155 36140 045621          ADB STCT1
0156 36141 075621          STB STCT1
0157 36142 007000          CMB
0158 36143 075616          STB STCT3
0159 36144 065610          LDB NUMPT        TEST FOR DONE
0160 36145 054644          CPB ERS32
0161 36146 026155          JMP CMP04
0162 36147 035616          ISZ STCT3       COMPUTE FIRST STATEMENT
0163 36150 002005          INA,RSS        IN NEXT GROUP
0164 36151 026130          JMP CMP03
0165 36152 140000          ADA 0,I
0166 36153 040351          ADA ,=-1
0167 36154 026147          JMP *-5
0168*
0169 36155 002404      CMP04  CLA,INA
0170 36156 071234          STA FLINK        SET FOR QUEUE TO EMPTY
0171 36157 015324          JSB PRNST        INITIALIZE
0172 36160 036405          DEF CMP11       COMPILATION
0173 36161 002041          SEZ,RSS        WAS FLAG BIT SET?
0174 36162 026240          JMP CMPL3       NO
0175*
0176** PROCESS NON-VARIABLE OPERAND **
0177*
0178 36163 040346          ADA ,=4          PROGRAM
0179 36164 002021          SSA,RSS        INTEGER?
0180 36165 026703          JMP PRNS2       NO, MUST BE A PARAMETER
0181 36166 035230      CMPL1  ISZ SPTR   YES, MOVE
0182 36167 065230          LDB SPTR        TO NEXT WORD
0183 36170 055236          CPB NSPTR       STATEMENT FINISHED?
0184 36171 026405          JMP CMP11       YES
0185 36172 064544          LDB ERSCA       BEGIN SEARCH FOR REFERENCED SIMT
0186 36173 160001      CMP05  LDA 1,I    FIRST STATEMENT => SOUGHT STATE.?
0187 36174 003000          CMA
0188 36175 141230          ADA SPTR,I
0189 36176 002024          SSA,INA
0190 36177 026207          JMP CMP06       FOUND ONE
0191 36200 006004          INB
0192 36201 054644          CPB ERS32       TEST FOR DONE
0193 36202 002001          RSS
0194 36203 026173          JMP CMP05

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0195	36204	044411		ADB .+31	
0196	36205	061575		LDA SYMTB	STATEMENT IS IN LAST GROUP
0197	36206	026216		JMP CMP07	
0198	36207	044412	CMP06	ADB .+32	B=> FIRST STATEMNT IN GROUP
0199	36210	002003		SZA,RSS	TEST FOR FOUND
0200	36211	026231		JMP CMP09	
0201	36212	054644		CPB ERS32	TEST FOR NOT THERE
0202	36213	026236		JMP CMPL2	ERROR
0203	36214	160001		LDA 1,I	SET A=> FIRST WORD BEYOND GROUP
0204	36215	044351		ADB .-1	
0205	36216	164001	CMP07	LDB 1,I	
0206	36217	071621		STA STCT1	SAVE END TEST
0207	36220	161230		LDA SPTR,I	GET SEQUENCE NUMBER
0208	36221	006004	CMP08	INB	BUMP STATEMENT POINTER
0209	36222	144001		ADB 1,I	
0210	36223	044351		ADB .-1	
0211	36224	055621		CPB STCT1	TEST FOR DONE
0212	36225	026236		JMP CMPL2	LABEL NOT FOUND--ERROR
0213	36226	150001		CPA 1,I	TEST FOR FOUND
0214	36227	026232		JMP CMP09+1	
0215	36230	026221		JMP CMP08	
0216	36231	164001	CMP09	LDB 1,I	
0217	36232	175230		STB SPTR,I	FOUND--REPLACE INTEFER
0218	36233	035552		ISZ INFST	IN 'USING' STATEMENT?
0219	36234	026166		JMP CMPL1	NO
0220	36235	026703		JMP PRNS2	YES
0221	36236	015322	CMPL2	JSB DCMPL	DECOMPILE
0222	36237	115106		JSB RERRS,I	NON-EXISTENT STATEMENT NUMBER
0223*					*
0224**	PROCESS VARIABLE OPERAND				**
0225*					*
0226	36240	071513	CMPL3	STA STMP1	SAVE SYMBOL
0227	36241	010371		AND .+17B	
0228	36242	050371		CPA .+17B	FUNCTION?
0229	36243	026327		JMP CMPL6	YES
0230	36244	002003		SZA,RSS	NO, STRING VARIABLE?
0231	36245	026350		JMP CMPL9-3	YES
0232	36246	040346		ADA .-4	NO,
0233	36247	002020		SSA	ARRAY?
0234	36250	026353		JMP CMPL9	YES
0235	36251	015316		JSB SSYM	NO, COMPILE
0236	36252	035230		ISZ SPTR	SIMPLE VARIABLE
0237	36253	054742		CPB COMOP	'COMI'?
0238	36254	026320		JMP CMP41	YES
0239	36255	055775		CPB FOROP	NO, FOR-VARIABLE OF 'FOR'?
0240	36256	026301		JMP CMPL4	YES
0241	36257	054646		CPB NXTOP	NO, FOR-VARIABLE OF 'NEXT' ?
0242	36260	002001		RSS	YES
0243	36261	026704		JMP PRNS2+1	NO
0244	36262	065234		LDB FLINK	
0245	36263	006020		SSB	MAKE
0246	36264	007004		CMB,INB	POSITIVE
0247	36265	055614		CPB STMP2	MATCH LATEST <FOR STATEMENT> ?
0248	36266	026271		JMP ++3	YES
0249	36267	015322		JSB DCMPL	NO, DECOMPILE

0250	36270	115107		JSB RERRS+1,I	NEXT NOT PRECEDED BY PROPER FOR
0251	36271	065234		LDB FLINK	
0252	36272	161614		LDA STMP2,I	REMOVE
0253	36273	071234		STA FLINK	VARIABLE
0254	36274	006020		SSB	WAS VARIABLE IN COMMON?
0255	36275	007401		CCB,RSS	NO
0256	36276	006400		CLB	NO
0257	36277	175614		STB STMP2,I	RESET AS SIMPLE VARIABLE
0258	36300	026704		JMP PRNS2+1	
0259	36301	161614	CMPL4	LDA STMP2,I	LOAD SECOND WORD OF TABLE ENTRY
0260	36302	002002		SZA	ALREADY IN FOR-QUEUE?
0261	36303	002007		INA,SZA,RSS	COMMON VARIABLE
0262	36304	026307		JMP CMPL5	
0263	36305	015322		JSB DCMPL	DECOMPILE
0264	36306	115110		JSB RERRS+2,I	NESTED "FOR'S" WITH SAME VARIABLE
0265	36307	065614	CMPL5	LDB STMP2	
0266	36310	161614		LDA STMP2,I	WAS VARIABLE
0267	36311	002020		SSA	IN COMMON?
0268	36312	007004		CMB,INB	YES
0269	36313	061234		LDA FLINK	ADD
0270	36314	171614		STA STMP2,I	TO
0271	36315	075234		STB FLINK	FOR-QUEUE
0272	36316	035240		ISZ STYPE	DESTROY STATEMENT TYPE
0273	36317	026704		JMP PRNS2+1	
0274	36320	061614	CMP41	LDA STMP2	
0275	36321	164000		LDB A,I	GET POINTER
0276	36322	006002		SZB	ALREADY IN COMMON?
0277	36323	026403		JMP CMP10+1	
0278	36324	007400		CCB	FLAG VARIABLE AS
0279	36325	174000		STB A,I	CONTAINED IN COMMON
0280	36326	026704		JMP PRNS2+1	
0281	36327	015316	CMPL6	JSB SSYM	COMPILE FUNCTION NAME
0282	36330	055774		CPB DEFOP	FUNCTION DEFINITION?
0283	36331	002001		RSS	YES
0284	36332	026703		JMP PRNS2	NO
0285	36333	165614		LDB STMP2,I	PREVIOUSLY
0286	36334	006002		SZB	DEFINED?
0287	36335	026345		JMP CMPL8	YES
0288	36336	061614		LDA STMP2	NO
0289	36337	035240		ISZ STYPE	DESTROY STATEMENT TYPE
0290	36340	065230	CMPL7	LDB SPTR	ADVANCE
0291	36341	044355		ADB .+3	PROGRAM
0292	36342	075230		STB SPTR	POINTER
0293	36343	174000		STB 0,I	SAVE
0294	36344	026704		JMP PRNS2+1	POINTER
0295	36345	035230	CMPL8	ISZ SPTR	
0296	36346	015322		JSB DCMPL	DECOMPILE
0297	36347	115111		JSB RERRS+3,I	FUNCTION DEFINED TWICE
0298	36350	015316		JSB SSYM	COMPILE STRING VARIABLE
0299	36351	035613		ISZ STMP1	SET TO ,SINGLY SUBSCRIPTED,
0300	36352	002001		RSS	PROCESS POSSIBLE DECLARATION
0301	36353	015320	CMPL9	JSB ASYMT	COMPILE ARRAY VARIABLE
0302	36354	002300		CCE	SET 'COM' FLAG
0303	36355	054742		CPB COMOP	'COM'?
0304	36356	026362		JMP CMP91	YES

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0305 36357 054636 CPB DIMOP NO, 'DIM'?
0306 36360 002101 CLE,RSS YES==SET 'DIM' FLAG
0307 36361 026703 JMP PRNS2
0308 36362 165614 CMP91 LDB STMP2,I WAS VARIABLE
0309 36363 006002 SZB PREVIOUSLY DIMENSIONED?
0310 36364 026402 JMP CMP10 YES
0311 36365 065230 LDB SPTR NO, SAVE POINTER
0312 36366 044354 ADB .+2 TO DIMENSIONS
0313 36367 002040 SEZ DIMENSIONED IN 'COM' ?
0314 36370 007004 CMB,INB YES--FLAG IT
0315 36371 175614 STB STMP2,I NO
0316 36372 065230 LDB SPTR RESTORE
0317 36373 044354 ADB .+2 POINTER
0318 36374 061613 LDA STMP1 RETRIEVE SYMBOL
0319 36375 002011 SLA,RSS ADVANCE
0320 36376 044354 ADB .+2 POINTER
0321 36377 044354 ADB .+2 PAST
0322 36400 075230 STB SPTR ONE OR TWO
0323 36401 026705 JMP PRNS2+2
0324 36402 035230 CMP10 ISZ SPTR
0325 36403 015322 JSB DCMPL DECOMPILE
0326 36404 115112 JSB RERRS+4,I VARIABLE DEFINED TWICE
0327* *
0328** PROCESS END OF STATEMENT **
0329* *
0330 36405 055575 CMP11 CPB SYMTB END OF PROGRAM?
0331 36406 002001 RSS YES
0332 36407 026607 JMP PRNS1 NO
0333 36410 075230 STB SPTR INSURE CORRECT SETTING FOR SPTR
0334 36411 061240 LDA STYPE LAST STATEMENT
0335 36412 050650 CPA ENDOP AN 'END' ?
0336 36413 026416 JMP CMP12 YES
0337 36414 015322 JSB DCMPL NO, DECOMPILE
0338 36415 115113 JSB RERRS+5,I MISSING 'END'
0339 36416 002404 CMP12 CLA,INA
0340 36417 051234 CPA FLINK ALL FORS MATCHED?
0341 36420 026423 JMP ++3 YES
0342 36421 015322 JSB DCMPL DECOMPILE
0343 36422 115114 JSB RERRS+6,I 'FOR' WITHOUT 'NEXT'
0344 36423 CMP17 EQU *
0345 36423 002400 CLA
0346 36424 071600 STA VLFLG MUST RUN VALUE,
0347 36425 064056 LDB PBPTR SET POINTER TO
0348 36426 075504 STB FILTB END OF SYMBOL TABLE,
0349 36427 060273 LDA MLINK+1 IS CSAVE
0350 36430 040351 ADA .+?STAT=?LINK
0351 36431 160000 LDA 0,I RUNNING
0352 36432 050374 CPA .+5+CSAV=COM2
0353 36433 126005 JMP CSVRT,I YES==EXIT TO IT
0354*
0355* FILCT = 5 AT THIS POINT UNLESS THE PROGRAM CONTAINS A
0356* <FILES STATEMENT>. THE CALL TO SCHLB,I LEAVES VALTB =
0357* FILTB+7*(NUMBER OF FILES REQUESTED). IF NO <FILES STATEMENT>
0358* APPEARS, VALTB = FILTB,
0359*

```

0360	36434		CMP18	EQU *	
0361	36434	061606		LDA	FILCT ANY <FILES
0362	36435	050345		CPA	.-5 STATEMENTS>?
0363	36436	026445		JMP	CMP13 NO
0364	36437	114532		JSB	SCHLB,I REQUEST FILE TABLE
0365	36440	072037		DEF	FILIB
0366	36441	115123		JSB	RERRS+13,I BAD FORMAT OR ILLEGAL NAME
0367	36442	115124		JSB	RERRS+14,I MISSING OR PROTECTED FILE
0368	36443	115120		JSB	RERRS+10,I OUT OF STORAGE
0369	36444	027223		JMP	VALUE+2 SUCCESSFUL REQUEST
0370	36445	065504	CMP13	LDB	FILTB SET VALUE TABLE
0371	36446	075576		STB	VALTB POINTER.
0372	36447	027223		JMP	VALUE+2

```

0374**
0375*** DECOMPILE ALL OR PART OF PROGRAM ***
0376**
0377*
0378* IF CFLAG[I] = 0 PROGRAM IS IN SOURCE, EXIT IMMEDIATELY;
0379* ELSE SET CFLAG[I] = 0 AND DECOMPILE PROGRAM. SPTR POINTS
0380* INITIALLY TO LAST WORD+1 OF COMPILED PROGRAM, ABSOLUTE
0381* ADDRESSES ARE REPLACED BY THE SEQUENCE NUMBERS TO WHICH
0382* THEY POINT. VARIABLE OPERAND POINTERS ARE REPLACED BY
0383* THEIR SYMBOL. PBPTR IS SET TO LAST WORD+1 OF PROGRAM,
0384*
0385 36450 060354 #DCMP LDA CFLAG PROGRAM
0386 36451 064273 LDB MLINK+1
0387 36452 044335 ADB ,=?LINK
0388 36453 110001 AND 1,I COMPILED?
0389 36454 002003 SZA,RSS
0390 36455 026553 JMP DCMP4 NO
0391 36456 103100 CLF 0 YES
0392 36457 120001 XOR 1,I SET PROGRAM MODE
0393 36460 170001 STA 1,I TO 'UNCOMPILED'
0394 36461 102100 STF 0
0395 36462 060056 LDA PBPTR NULL
0396 36463 050702 CPA PBUFF PROGRAM?
0397 36464 026551 JMP DCMP3+2 YES
0398 36465 061230 LDA SPTR SPTR=0 TO FLAG
0399 36466 002003 SZA,RSS SEMI-COMPILED ?
0400 36467 061575 LDA SYMTB YES==RESET IT TO CORRECT VALUE
0401 36470 071230 STA SPTR SET TERMINATION
0402 36471 071504 STA FILTB ADDRESS
0403 36472 015324 JSB PRNST INITIALIZE
0404 36473 036607 DEF PRNS1 DECOMPILATION
0405 36474 006441 CLB,SEZ,RSS WAS FLAG BIT SET?
0406 36475 026515 JMP DCMP2 NO
0407*
0408** PROCESS NON-VARIABLE OPERAND **
0409*
0410 36476 040346 ADA ,=4 PROGRAM
0411 36477 002021 SSA,RSS INTEGER?
0412 36500 026703 JMP PRNS2 NO
0413 36501 035230 DCMP1 ISZ SPTR YES, MOVE TO
0414 36502 065230 LDB SPTR NEXT WORD
0415 36503 055504 CPB FILTB DONE?
0416 36504 026547 JMP DCMP3 YES
0417 36505 055236 CPB NSPTR NO, STATEMENT DONE?
0418 36506 026610 JMP PRNS1+1 YES
0419 36507 161230 LDA SPTR,I NO, REPLACE
0420 36510 160000 LDA 0,I ABSOLUTE ADDRESS
0421 36511 171230 STA SPTR,I WITH SEQUENCE NUMBER
0422 36512 035552 ISZ INFST IN <USING STATEMENT>?
0423 36513 026501 JMP DCMP1 NO
0424 36514 026703 JMP PRNS2 YES
0425*
0426** PROCESS VARIABLE OPERAND **
0427*
0428 36515 040351 DCMP2 ADA ,=1 COMPUTE

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0429	36516	101117	RRR 15	SYMBOL TABLE
0430	36517	045575	ADB SYMTB	ADDRESS
0431	36520	161230	LDA SPTR, I	EXTRACT
0432	36521	010664	AND OPMSK	OPERATOR
0433	36522	130001	IOR 1, I	REPLACE OPERATOR=
0434	36523	171230	STA SPTR, I	OPERAND PAIR IN CODE
0435	36524	065240	LDB STYPE	
0436	36525	054636	CPB DIMOP	'DIM' ?
0437	36526	026532	JMP DCMP6	YES
0438	36527	054742	CPB COMOP	NO, 'COM'?
0439	36530	002001	RSS	YES
0440	36531	026703	JMP PRNS2	NO
0441	36532	065230	DCMP6 LDB SPTR	
0442	36533	006004	INB	
0443	36534	055504	CPB FILTB	DONE?
0444	36535	026547	JMP DCMP3	YES
0445	36536	006004	INB	NO
0446	36537	010371	AND .+178	STRING
0447	36540	040346	ADA .-4	SIMPLE
0448	36541	002021	SSA, RSS	VARIABLE?
0449	36542	026703	JMP PRNS2	YES
0450	36543	040356	ADA .+4	NO, STRING
0451	36544	002003	SZA, RSS	VARIABLE?
0452	36545	002004	INA	YES, SET TO SINGLE SUBSCRIPT MOD
0453	36546	026375	JMP CMP10=5	
0454	36547	061575	DCMP3 LDA SYMTB	SET ACTIVE USER AREA POINTER
0455	36550	070056	STA PBPTR	TO LAST WORD+1 OF PROGRAM
0456	36551	002400	CLA	ZERO
0457	36552	071575	STA SYMTB	POINTER
0458	36553	170634	DCMP4 STA DCLC1, I	BLOCK CLOCK
0459	36554	064702	LDB PBUFF	
0460	36555	055577	CPB SPROG	COMMON ALLOCATED?
0461	36556	026570	JMP DCMP5	NO
0462	36557	054056	CPB PBPTR	YES, NULL PROGRAM?
0463	36560	026570	JMP DCMP5	YES
0464	36561	075514	STB DEST	NO
0465	36562	061577	LDA SPROG	SET UP
0466	36563	075577	STB SPROG	POINTERS
0467	36564	064056	LDB PBPTR	FOR MOVE
0468	36565	015500	JSB MOVER	REMOVE COMMON AREA
0469	36566	065514	LDB DEST	RESET END-OF-
0470	36567	074056	STB PBPTR	PROGRAM POINTER
0471	36570	114534	DCMP5 JSB ABCK, I	ABORT ATTEMPT DURING COMPILE?
0472	36571	160640	LDA DCLC2, I	NO--UNBLOCK
0473	36572	170634	STA DCLC1, I	CLOCK
0474	36573	125322	JMP DCMP1, I	

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0002**
0003*** PROCESS NEXT STATEMENT OF PROGRAM ***
0004**
0005*
0006* USED BY COPLE AND DCPL TO SCAN THROUGH THE PROGRAM,
0007* A 'JSB PRNST' INITIALIZES THE SCAN: (P+1) IS A POINTER
0008* TO THE CODE FOR HANDLING THE END-OF-STATEMENT CONDITION;
0009* ,LNUM HOLDS THE SEQUENCE NUMBER OF THE STATEMENT BEING
0010* PROCESSED; SPTR POINTS TO THE WORD OF THE PROGRAM BEING
0011* PROCESSED. PRNST HANDLES <REM STATEMENT>, <DATA STATEMENT>,
0012* STRING CONSTANTS, NULL OPERANDS, NUMERICAL CONSTANTS, AND
0013* <FILES STATEMENT>. OTHER CASES EXIT TO (P+2). PRNST IS
0014* RE-ENTERED DIRECTLY, LEAVING THE INITIALIZED EXIT ADDRESSES
0015* UNCHANGED THROUGHOUT PROCESSING OF THE PROGRAM.
0016*
0017 36574 161324 #PNST LDA PRNST,I SET POINTER TO
0018 36575 071242 STA STEND END-OF-STATEMENT
0019 36576 035324 ISZ PRNST PROCESSING ROUTINE
0020 36577 060452 LDA DFILT INITIALIZE POINTER TO
0021 36600 071605 STA FILPT <FILES STATEMENT> TABLE
0022 36601 002400 CLA INITIALIZE
0023 36602 071617 STA COMSN COM FLAG
0024 36603 071607 STA USESN AND USING FLAG
0025 36604 060345 LDA ,=5 INITIALIZE <FILES
0026 36605 071606 STA FILCT STATEMENT> COUNTER
0027 36606 065577 LDB SPROG INITIAL PROGRAM POINTER
0028 36607 075230 PRNS1 STB SPTR SET PROGRAM POINTER TO STATEMENT
0029 36610 161230 LDA SPTR,I SAVE STATEMENT
0030 36611 071570 STA ,LNUM SEQUENCE NUMBER
0031 36612 035230 ISZ SPTR COMPUTE
0032 36613 145230 ADB SPTR,I LENGTH
0033 36614 075236 STB NSPTR SAVE POINTER TO NEXT STATEMENT
0034 36615 035230 ISZ SPTR EXTRACT
0035 36616 161230 LDA SPTR,I STATEMENT
0036 36617 010664 AND OPMSK TYPE
0037 36620 071240 STA STYPE SAVE IT
0038 36621 050742 CPA COMOP 'COM' ?
0039 36622 026625 JMP ++3 YES
0040 36623 075617 STB COMSN NO--CLEAR COM FLAG.
0041 36624 026635 JMP PRNS4
0042 36625 065617 LDB COMSN NON-COM
0043 36626 006003 SZB,RSS STATEMENT SEEN?
0044 36627 026704 JMP PRNS2+1 NO
0045 36630 065230 LDB SPTR YES, RESET
0046 36631 044350 ADB ,=2 STATEMENT
0047 36632 075230 STB SPTR POINTER
0048 36633 015322 JSB DCPL ERROR
0049 36634 115160 JSB RERRS+42,I 'COM' OUT OF ORDER
0050 36635 050642 PRNS4 CPA REMOP 'REM' ?
0051 36636 026705 JMP PRNS2+2 YES
0052 36637 050652 CPA DATOP NO, DATA?
0053 36640 026705 JMP PRNS2+2 YES
0054 36641 050746 CPA IMGOP NO, IMAGE?
0055 36642 026705 JMP PRNS2+2 YES
0056 36643 050660 CPA FILOP NO, <FILES STATEMENT> ?

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0057	36644	002001		RSS	YES
0058	36645	026662		JMP PRNS5	NO
0059	36646	065230		LDB SPTR	
0060	36647	044350		ADB ,=2	
0061	36650	035606		ISZ FILCT	TOO MANY <FILES STATEMENTS>?
0062	36651	026655		JMP ++4	NO
0063	36652	075230		STB SPTR	YES--RESET STATEMENT POINTER
0064	36653	015322		JSB DCML	
0065	36654	115150		JSB RERRS+34,I	EXTRA <FILES STATEMENT>
0066	36655	006004		INB	
0067	36656	175605		STB FILPT,I	SAVE POINTER TO <FILES STATEMENT
0068	36657	035605		ISZ FILPT	
0069	36660	065236		LDB NSPTR	SKIP OVER REST
0070	36661	026705		JMP PRNS2+2	OF STATEMENT
0071	36662	065230	PRNS5	LDB SPTR	
0072	36663	052006		CPA MATOP	'MATI' STATEMENT?
0073	36664	006005		INB,RSS	YES, BUMP TO NEXT WORD
0074	36665	026670		JMP ++3	NO
0075	36666	160001		LDA B,I	EXTRACT
0076	36667	010664		AND OPMSK	OPERATOR
0077	36670	050656		CPA PRTOP	'PRINT' STATEMENT?
0078	36671	006005		INB,RSS	YES, BUMP TO NEXT WORD
0079	36672	026701		JMP PRNS6	NO
0080	36673	160001		LDA 1,I	EXTRACT
0081	36674	010664		AND OPMSK	OPERATOR
0082	36675	050776		CPA USEUP	'USING' STATEMENT?
0083	36676	003401		CCA,RSS	YES, SET (A)
0084	36677	002001		RSS	NO
0085	36700	071607		STA USESN	SET 'USING SEEN' FLAG
0086	36701	071552	PRNS6	STA INFST	SET INTEGER FOLLOWS FLAG
0087	36702	002001		RSS	
0088*					*
0089**	PROCESS NEXT WORD OF STATEMENT				**
0090*					*
0091	36703	035230	PRNS2	ISZ SPTR	MOVE TO
0092	36704	065230		LDB SPTR	NEXT WORD
0093	36705	055504		CPB FILTB	DECOMPILE FINISHED?
0094	36706	026547		JMP DCMP3	YES
0095	36707	055236		CPB NSPTR	NO, STATEMENT FINISHED?
0096	36710	125242		JMP STEND,I	YES
0097	36711	161230		LDA SPTR,I	NO, ISOLATE
0098	36712	010664		AND OPMSK	OPERATOR
0099	36713	050445		CPA B1000	" ?
0100	36714	026724		JMP PRNS3	YES
0101	36715	121230		XOR SPTR,I	NO, GET OPERAND
0102	36716	002003		SZA,RSS	NULL OPERAND?
0103	36717	026703		JMP PRNS2	YES
0104	36720	001265		RAL,CLE,ERA	NO, PUT FLAG BIT IN (E)
0105	36721	002003		SZA,RSS	NUMBER?
0106	36722	026340		JMP CMPL7	YES
0107	36723	125324		JMP PRNST,I	NO
0108	36724	121230	PRNS3	XOR SPTR,I	EXTRACT LENGTH
0109	36725	040355		ADA ,+3	COMPUTE
0110	36726	001100		ARS	POINTER
0111	36727	041230		ADA SPTR	TO CLOSING

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0112 36730 071230      STA SPTR          QUOTE
0113 36731 026704      JMP PRNS2+1
0114**
0115*** 'COMPILE' A SYMBOL ***
0116**
0117*
0118* ENTER WITH A SYMBOLIC NAME IN STMP1 AND SEARCH THE
0119* SYMBOL TABLE FOR A MATCHING ENTRY, IF NO ENTRY IS
0120* FOUND, APPEND A NEW TWO WORD ENTRY WITH THE SYMBOL
0121* IN THE FIRST WORD AND 0 IN THE SECOND, THE SYMBOL IN
0122* THE PROGRAM IS REPLACED WITH THE ORDINAL NUMBER OF
0123* ITS SYMBOL TABLE ENTRY, EXIT WITH THE NEW PROGRAM
0124* WORD IN (A), A POINTER TO THE SECOND WORD OF THE
0125* TABLE ENTRY IN STMP2, AND THE STATEMENT TYPE IN (B).
0126*
0127 36732 060356      #SSYM LDA .+4      INSURE SPACE
0128 36733 015326      JSB CUSP          FOR NEW ENTRY
0129 36734 061613      LDA STMP1        RETRIEVE SYMBOL
0130 36735 065575      LDB SYMTB
0131 36736 054056      SYMT1 CPB PBPTR  SYMBOL TABLE EXHAUSTED?
0132 36737 026756      JMP SYMT3        YES
0133 36740 150001      CPA 1,I          NO, IS NEXT SYMBOL A MATCH?
0134 36741 026766      JMP SYMT5        YES
0135 36742 044354      ADB .+2          NO, MOVE
0136 36743 026736      JMP SYMT1        TO NEXT ENTRY
0137*
0138** HANDLE UNMATCHED ARRAY SYMBOL **
0139*
0140 36744 051613      SYMT2 CPA STMP1  "DON'T KNOW" SYMBOL?
0141 36745 002001      RSS             YES
0142 36746 026756      JMP SYMT3        NO, MAKE NORMAL TABLE ENTRY
0143 36747 034056      ISZ PBPTR        ALLOCATE SPACE
0144 36750 034056      ISZ PBPTR        FOR NEW ENTRY
0145 36751 061614      LDA STMP2        WAS A SINGLE OR DOUBLE
0146 36752 002006      INA,SZA         SUBSCRIPTED ENTRY FOUND?
0147 36753 026761      JMP SYMT4        YES, INCLUDE POINTER IN ENTRY
0148 36754 170001      STA 1,I          NO, SAVE SPACE FOR LATER ENTRY
0149 36755 044354      ADB .+2          WITH NUMBER OF DIMENSIONS
0150*
0151** CREATE A NEW TABLE ENTRY **
0152*
0153 36756 034056      SYMT3 ISZ PBPTR  ALLOCATE SPACE
0154 36757 034056      ISZ PBPTR        FOR NEW ENTRY
0155 36760 002400      CLA             INITIALIZE
0156 36761 006004      SYMT4 INB        SECOND
0157 36762 170001      STA 1,I          WORD
0158 36763 044351      ADB .-1          PUT SYMBOL
0159 36764 061613      LDA STMP1        IN FIRST
0160 36765 170001      STA 1,I          WORD
0161*
0162** 'COMPILE' PROGRAM WORD **
0163*
0164 36766 006004      SYMT5 INB        COMPUTE
0165 36767 075614      STB STMP2
0166 36770 007000      CMB             RELATIVE

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0167	36771	045575	ADB SYMTB	
0168	36772	007004	CMB,INB	ADDRESS
0169	36773	005100	BRS	
0170	36774	161230	LDA SPTR,I	REPLACE SYMBOL
0171	36775	010664	AND OPMSK	IN PROGRAM
0172	36776	030001	IOR 1	WITH RELATIVE
0173	36777	171230	STA SPTR,I	ADDRESS
0174	37000	065240	LDB STYPE	LOAD STATEMENT TYPE
0175	37001	125316	JMP SSYMT,I	

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0177**
0178*** PROCESS ARRAY SYMBOL ***
0179**
0180*
0181* ENTER WITH AN ARRAY NAME IN STMP1, IF A MATCHING
0182* SYMBOL TABLE ENTRY EXISTS, PROCEED AS IN SSYM. ELSE IF
0183* THE ARRAY IS SINGLY OR DOUBLY SUBSCRIPTED (LAST FOUR
0184* BITS OF NAME ARE 0001 OR 0010): EXIT IS TO ERROR ON
0185* FINDING A CONFLICTING ENTRY; ON FINDING ONLY A "DON'T
0186* KNOW" ENTRY (LAST FOUR BITS 0011), PROCEED AS IN SSYM,
0187* PLACING THE APPROPRIATE ENTRY IN THE TWO WORDS ABOVE
0188* THE "DON'T KNOW" ENTRY AND SETTING A POINTER TO ITS
0189* SECOND WORD INTO THE SECOND WORD OF THE "DON'T KNOW"
0190* ENTRY. IF THE SYMBOL IS AN UNMATCHED "DON'T KNOW"
0191* ARRAY NAME, APPEND A SYMBOL TABLE ENTRY: IF A SINGLY
0192* OR DOUBLY SUBSCRIPTED VERSION OF THE ARRAY HAS BEEN
0193* PREVIOUSLY FOUND, PLACE A POINTER TO THE SECOND WORD
0194* OF THE PREVIOUS ENTRY INTO THE SECOND WORD OF THE NEW
0195* "DON'T KNOW" ENTRY; OTHERWISE LEAVE TWO WORDS ABOVE
0196* THE NEW ENTRY.
0197*
0198 37002 061320 #ASYM LDA ASYMT SET RETURN
0199 37003 071316 STA SSYM ADDRESS
0200 37004 003400 CCA SET MATCH
0201 37005 071614 STA STMP2 FLAG FALSE
0202 37006 062003 LDA APTR1 INITIALIZE
0203 37007 071320 STA ASYMT SEARCH LOOP
0204 37010 060356 LDA .+4 INSURE SPACE
0205 37011 015326 JSB CUSP FOR NEW ENTRY
0206 37012 065575 LDB SYMTB
0207 37013 061613 LDA STMP1 RETRIEVE SYMBOL
0208 37014 030355 IOR .+3 SET ARRAY SYMBOL
0209 37015 027030 JMP SYMT7+3 TO "DON'T KNOW"
0210 37016 040350 SYMT6 ADA .+2 MATCH AS
0211 37017 150001 CPA 1,1 'SINGLE SUBSCRIPT'?
0212 37020 027033 JMP SYMT8 YES
0213 37021 002004 INA NO, MATCH AS
0214 37022 150001 CPA 1,1 'DOUBLE SUBSCRIPT'?
0215 37023 027033 JMP SYMT8 YES
0216 37024 002004 INA NO, MATCH AS
0217 37025 150001 SYMT7 CPA 1,1 "DON'T KNOW"?
0218 37026 027047 JMP SYMT9 YES
0219 37027 044354 ADB .+2 NO, MORE SYMBOL
0220 37030 054056 CPB PBPTR TABLE ENTRIES?
0221 37031 026744 JMP SYMT2 NO
0222 37032 125320 JMP ASYMT,1 YES
0223 37033 051613 SYMT8 CPA STMP1 DOES ENTRY MATCH SYMBOL?
0224 37034 026766 JMP SYMT5 YES
0225 37035 030355 IOR .+3 NO, IS SYMBOL OF
0226 37036 051613 CPA STMP1 TYPE "DON'T KNOW"?
0227 37037 027042 JMP .+3 YES
0228 37040 015322 JSB DCMP NO, DECOMPILE
0229 37041 115121 JSB RERRS+11,1 SUBSCRIPT CONFLICT
0230 37042 075614 STB STMP2 SAVE POINTER TO ENTRY
0231 37043 066002 LDB APTR2 CONTINUE SEARCH

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0232	37044	075320		STB ASYMT	FOR POSSIBLE
0233	37045	065614		LDB STMP2	"DON'T KNOW"
0234	37046	027027		JMP SYMT7+2	ENTRY
0235	37047	051613	SYMT9	CPA STMP1	DOES ENTRY MATCH SYMBOL?
0236	37050	026766		JMP SYMT5	YES
0237	37051	006004		INB	NO, NEW ENTRY TO BE MADE
0238	37052	060001		LDA 1	SET POINTER TO
0239	37053	044350		ADB ,*2	NEW ENTRY INTO
0240	37054	174000		STB 0,I	"DON'T KNOW" ENTRY
0241	37055	002400		CLA	MAKE NEW
0242	37056	026762		JMP SYMT4+1	ENTRY
0243**					**
0244***	RESTORE	SYMBOL	TABLE	POINTERS	***
0245**					**
0246*					
0247*	USED	BY	CSAVE	TO	RESTORE
0248*	BEFORE	VALUE	HAS	BEEN	RUN,
0249*	STATEMENTS	ARE	PLACED	IN	THE
0250*	ENTRIES	IN	THE	SYMBOL	TABLE,
0251*	TO	THE	CORRESPONDING	KNOWN	ONE
0252*	ENTRIES	IS	SET	TO	ZERO.
0253*					
0254	37057	065577	#RSTP	LDB SPROG	INITIALIZE PROGRAM
0255	37060	075230		STB SPTR	POINTER
0256	37061	055575		CPB SYMTB	FINISHED PROGRAM SCAN?
0257	37062	027147		JMP RSTP5	YES
0258	37063	035230		ISZ SPTR	NO--COMPUTE
0259	37064	145230		ADB SPTR,I	NEXT STATEMENT
0260	37065	075236		STB NSPTR	POINTER
0261	37066	035230		ISZ SPTR	
0262	37067	161230		LDA SPTR,I	EXTRACT
0263	37070	010664		AND OPMSK	OPERATOR
0264	37071	050742		CPA COMOP	'COM'?
0265	37072	027077		JMP RSTP1+1	YES
0266	37073	050636		CPA DIMOP	NO, 'DIM'?
0267	37074	002001		RSS	YES
0268	37075	027060		JMP #RSTP+1	NO
0269	37076	006400	RSTP1	CLB	
0270	37077	075621		STB DCFLG	SET COM-DIM FLAG
0271	37100	161230	RSTP2	LDA SPTR,I	COMPUTE
0272	37101	010700		AND OPDMK	POINTER
0273	37102	040351		ADA ,*1	INTO
0274	37103	001000		ALS	SYMBOL
0275	37104	041575		ADA SYMTB	TABLE
0276	37105	071613		STA STMP1	
0277	37106	160000		LDA 0,I	EXTRACT
0278	37107	010371		AND ,+17B	SYMBOL
0279	37110	040346		ADA ,*4	SIMPLE
0280	37111	002020		SSA	VARIABLE?
0281	37112	027125		JMP RSTP4	NO
0282	37113	003400		CCA	YES
0283	37114	065613		LDB STMP1	FLAG
0284	37115	006004		INB	AS 'IN
0285	37116	170001		STA 1,I	COMMON'
0286	37117	065230		LOB SPTR	UPDATE

0287	37120	006004	RSTP3	INB	STATEMENT
0288	37121	075230		STB SPTR	POINTER
0289	37122	055236		CPB NSPTR	END OF STATEMENT?
0290	37123	027060		JMP #RSTP+1	YES
0291	37124	027100		JMP RSTP2	NO
0292	37125	065230	RSTP4	LDB SPTR	SET POINTER
0293	37126	044354		ADB .+2	TO DIMENSION
0294	37127	061621		LDA DCFLG	
0295	37130	002002		SZA	'COMI'?
0296	37131	007004		CMB, INB	YES==COMPLEMENT POINTER
0297	37132	061613		LDA STMP1	STORE
0298	37133	002004		INA	IN SYMBOL
0299	37134	174000		STB 0, I	TABLE
0300	37135	065230		LDB SPTR	FINISHED
0301	37136	044356		ADB .+4	
0302	37137	055236		CPB NSPTR	STATEMENT?
0303	37140	027060		JMP #RSTP+1	YES
0304	37141	044351		ADB .-1	NO, TWO-
0305	37142	160001		LDA 1, I	
0306	37143	010664		AND OPMSK	DIMENSIONAL?
0307	37144	050744		CPA SCOMM	
0308	37145	044354		ADB .+2	YES==BUMP PAST SECOND DIMENSION
0309	37146	027120		JMP RSTP3	NO
0310*					
0311*					SCAN SYMBOL TABLE FOR 'DON'T KNOW' ENTRIES AND
0312*					DEFAULT DIMENSION ENTRIES
0313*					
0314	37147	065575	RSTP5	LDB SYMTB	INITIALIZE TABLE POINTER
0315	37150	055504		CPB FILTB	FINISHED SYMBOL TABLE SCAN?
0316	37151	027215		JMP RSTP9	YES
0317	37152	075613		STB STMP1	NO==SAVE POINTER
0318	37153	160001		LDA 1, I	DON'T
0319	37154	010371		AND .+17B	KNOW
0320	37155	050355		CPA .+3	ENTRY?
0321	37156	027175		JMP RSTP7	YES
0322	37157	040347		ADA .-3	NO, STRING
0323	37160	002021		SSA, RSS	OR ARRAY?
0324	37161	027172		JMP RSTP6	NO
0325	37162	006004		INB	YES
0326	37163	160001		LDA 1, I	DEFAULT
0327	37164	003004		CMA, INA	
0328	37165	041575		ADA SYMTB	DIMENSIONS?
0329	37166	002021		SSA, RSS	
0330	37167	027172		JMP RSTP6	NO
0331	37170	002400		CLA	YES==STORE A ZERO
0332	37171	170001		STA 1, I	IN SYMBOL TABLE
0333	37172	065613	RSTP6	LDB STMP1	BUMP TO
0334	37173	044354		ADB .+2	NEXT SYMBOL
0335	37174	027150		JMP RSTP5+1	
0336*					
0337*					PROCESS 'DON'T KNOW' ENTRY
0338*					
0339	37175	075614	RSTP7	STB STMP2	
0340	37176	065575		LDB SYMTB	IS THERE
0341	37177	003400		CCA	A MATCHING

0342	37200	141614	ADA	STMP2,I	TWO-DIMENSIONAL
0343	37201	150001	CPA	1,I	ENTRY?
0344	37202	027210	JMP	RSTP8	YES
0345	37203	040351	ADA	.-1	NO, MATCHING ONE-
0346	37204	150001	CPA	1,I	DIMENSIONAL ENTRY?
0347	37205	027210	JMP	RSTP8	YES
0348	37206	044354	ADB	.*+2	NO-BUMP TO
0349	37207	027177	JMP	RSTP7+2	NEXT SYMBOL
0350	37210	006004	RSTP8	INB	LINK 'DON'T
0351	37211	061613	LDA	STMP1	KNOW: ENTRY
0352	37212	002004	INA		WITH MATCHING
0353	37213	174000	STB	0,I	KNOWN ONE
0354	37214	027172	JMP	RSTP6	
0355	37215	002400	RSTP9	CLA	SET STORAGE
0356	37216	071600	STA	VLFLG	UNALLOCATED FLAG
0357	37217	074056	STB	PBPTR	RESET END-OF-PROGRAM POINTER
0358	37220	125522	JMP	RSTPT,I	

```

0360**
0361*** BUILD THE VALUE TABLE ***
0362**
0363*
0364* IF NO VALUE TABLE EXISTS, ONE IS BUILT FROM THE SYMBOL
0365* TABLE AND INITIALIZED; IF IT ALREADY EXISTS, IT IS
0366* INITIALIZED. IN BUILDING THE VALUE TABLE, EACH ENTRY
0367* IN THE SYMBOL TABLE IS CHECKED: FOR FUNCTIONS THE
0368* EXISTENCE OF A DEFINING FORMULA IS CHECKED; FOR SIMPLE
0369* VARIABLES TWO WORDS ARE ALLOCATED AND SET TO 'UNDEFINED'
0370* AND A POINTER TO THEM IS PLACED IN THE SECOND WORD OF
0371* THE SYMBOL TABLE ENTRY; FOR ARRAYS FOUR WORDS ARE
0372* ALLOCATED FOR THE DECLARED AND DYNAMIC DIMENSIONS,
0373* THE DIMENSIONS ARE INITIALIZED EITHER FROM A
0374* <DIM STATEMENT> IN THE PROGRAM OR THE DEFAULT
0375* DIMENSIONS, ARRAY SPACE IS ALLOCATED AT TWO WORDS PER
0376* ARRAY ELEMENT CONTIGUOUS WITH THE DIMENSIONS, THE
0377* ELEMENTS ARE INITIALIZED TO 'UNDEFINED,' AND A
0378* POINTER TO THE FIRST ELEMENT IS PLACED IN THE SECOND
0379* WORD OF THE SYMBOL TABLE ENTRY; FOR STRINGS FOLLOW THE
0380* PATTERN FOR ARRAYS WITH ONE WORD HOLDING THE PHYSICAL
0381* DIMENSION IN BITS 15-8 AND THE DYNAMIC DIMENSION IN
0382* BITS 7-0 (DIMENSION HERE MEANS LENGTH AS NUMBER OF
0383* CHARACTERS), STRING SPACE IS ALLOCATED ONE WORD PER
0384* TWO CHARACTERS, AND THE DYNAMIC LENGTH IS INITIALIZED
0385* TO ZERO. FOR "DON'T KNOW" ARRAY ENTRIES, THE SECOND
0386* WORD OF THE SYMBOL TABLE ENTRY IS COPIED FROM THE
0387* ASSOCIATED SINGLY OR DOUBLY SUBSCRIPTED ENTRY (OR
0388* EXIT TO ERROR IF NONE EXISTS).
0389* FOR VARIABLES WHICH HAVE BEEN DECLARED IN A <COM
0390* STATEMENT>, STORAGE IS ALLOCATED IN THE COMMON AREA
0391* WHICH RESIDES AHEAD OF THE PROGRAM. FOR ARRAYS AND
0392* STRINGS, THIS AREA IS LEFT UNDISTURBED IF THE DIMENSIONS
0393* DECLARED IN THE <COM STATEMENT> MATCH THOSE FOUND IN
0394* THE COMMON AREA, AND THE DYNAMIC DIMENSIONS ARE CONSISTENT
0395* IF A VALUE TABLE ALREADY EXISTS, VARIABLES IN COMMON ARE
0396* LEFT UNTOUCHED, VALUES OF SIMPLE VARIABLES AND ARRAY
0397* ELEMENTS ARE SET TO 'UNDEFINED' AND DYNAMIC ARRAY
0398* DIMENSIONS ARE SET TO DECLARED DIMENSIONS; THE DYNAMIC
0399* LENGTHS OF STRINGS ARE SET TO ZERO. EXIT TO XEC IF
0400* PROCESSING IS SATISFACTORILY COMPLETED.
0401*
0402 37221 065232 VALUE LDB FCORE INSURE CORRECT
0403 37222 074056 STB PBPTR SETTING FOR PBPTR
0404 37223 064702 LDB PBUFF INITIALIZE
0405 37224 075620 STB COMPT COMMON POINTER
0406 37225 065575 LDB SYMTB SET (B) TO
0407 37226 002001 RSS SYMBOL TABLE
0408 37227 006004 VALU1 INB SYMBOL TABLE
0409 37230 055504 CPB FILTB EXHAUSTED?
0410 37231 027662 JMP VAL99 YES
0411 37232 160001 LDA 1,I NO, LOAD SYMBOL
0412 37233 006004 INB POINT (B) TO VALUE TABLE POINTER
0413 37234 002003 SZA,RSS NULL SYMBOL?
0414 37235 027555 JMP VAL14 YES

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0415	37236	010371		AND .+178	NO
0416	37237	050371		CPA .+178	FUNCTION?
0417	37240	027301		JMP VALU4	YES
0418	37241	002003		SZA,RSS	NO, STRING VARIABLE?
0419	37242	027557		JMP VAL15	YES
0420	37243	040346		ADA .-4	NO,
0421	37244	002020		SSA	ARRAY?
0422	37245	027306		JMP VALU5	YES
0423*					*
0424**	INITIALIZE	SIMPLE VARIABLE			**
0425*					*
0426	37246	061600		LDA VLFLG	SIMPLE VARIABLE
0427	37247	002003		SZA,RSS	STORAGE ALLOCATED?
0428	37250	027263		JMP VALU3	NO
0429	37251	160001		LDA 1,I	YES
0430	37252	003004		CMA,INA	VARIABLE
0431	37253	040001		ADA 1	IN
0432	37254	002021		SSA,RSS	COMMON?
0433	37255	027227		JMP VALU1	YES
0434	37256	160001		LDA 1,I	NO
0435	37257	071613	VALU2	STA VTMP1	SAVE POINTER TO VALUE
0436	37260	003400		CCA	SET
0437	37261	171613		STA VTMP1,I	VALUE TO
0438	37262	027227		JMP VALU1	UNDEFINED
0439	37263	160001	VALU3	LDA 1,I	VARIABLE
0440	37264	002020		SSA	IN COMMON?
0441	37265	027274		JMP VAL31	YES
0442	37266	060354		LDA .+2	NO--ALLOCATE
0443	37267	015326		JSB CUSP	STORAGE
0444	37270	070056		STA PBPTR	FOR VALUE
0445	37271	040350		ADA .-2	PUT VALUE POINTER
0446	37272	170001		STA 1,I	INTO SYMBOL TABLE
0447	37273	027257		JMP VALU2	
0448	37274	061620	VAL31	LDA COMPT	ALLOCATE STORAGE
0449	37275	170001		STA 1,I	IN COMMON
0450	37276	040354		ADA .+2	UPDATE COMMON
0451	37277	071620		STA COMPT	POINTER
0452	37300	027227		JMP VALU1	
0453*					*
0454**	CHECK FUNCTION				**
0455*					*
0456	37301	160001	VALU4	LDA 1,I	WAS FUNCTION
0457	37302	002002		SZA	DEFINED?
0458	37303	027227		JMP VALU1	YES
0459	37304	015322		JSB DCMP	NO, DECOMPILE
0460	37305	115115		JSB RERRS+7,I	UNDEFINED FUNCTION
0001*					*
0002**	INITIALIZE	ARRAY			**
0003*					*
0004	37306	050351	VALU5	CPA .-1	IS ARRAY TYPE "DON'T KNOW" ?
0005	37307	027546		JMP VAL13	YES
0006	37310	075613		STB VTMP1	NO, SAVE POINTER TO SYMBOL TABLE
0007	37311	002004		INA	SAVE INFORMATION ON
0008	37312	071614		STA VTMP2	NUMBER OF DIMENSIONS
0009	37313	061600		LDA VLFLG	STORAGE

0010	37314	002002	SZA	ALLOCATED?
0011	37315	027400	JMP VAL12	YES
0012	37316	160001	LDA 1,I	NO
0013	37317	002020	SSA	IN COMMON?
0014	37320	027422	JMP VAL51	YES
0015	37321	165613	LDB VTMP1,I	NO, LOAD POINTER TO DIMENSIONS
0016	37322	060056	LDA PBPTR	SET POINTER TO
0017	37323	071615	STA VTMP3	DIMENSION ENTRY
0018	37324	060356	LDA .+4	ALLOCATE
0019	37325	015326	JSB CUSP	SPACE
0020	37326	070056	STA PBPTR	FOR ENTRY
0021	37327	171613	STA VTMP1,I	SYMBOL TABLE POINTER TO ARRAY
0022	37330	006003	SZB,RSS	DEFAULT DIMENSIONS?
0023	37331	027403	JMP VAL11	YES
0024	37332	160001	LDA 1,I	NO, LOAD ROW DIMENSION
0025	37333	044354	ADB .+2	BUMP POINTER
0026	37334	035614	VALU6 ISZ VTMP2	TWO DIMENSIONAL?
0027	37335	006405	CLB,INB,RSS	NO, SET COLUMN DIMENSION TO 1
0028	37336	164001	LDB 1,I	YES, LOAD COLUMN DIMENSION
0029	37337	171615	STA VTMP3,I	PUT
0030	37340	035615	ISZ VTMP3	DECLARED DIMENSIONS
0031	37341	175615	STB VTMP3,I	IN VALUE TABLE
0032	37342	035615	VALU7 ISZ VTMP3	PUT
0033	37343	171615	STA VTMP3,I	DYNAMIC DIMENSIONS
0034	37344	035615	ISZ VTMP3	IN
0035	37345	175615	STB VTMP3,I	VALUE TABLE
0036	37346	100200	MPY VTMP3,I	COMPUTE NUMBER OF ARRAY ELEMENTS
	37347	101615		
0037	37350	006003	SZB,RSS	TOO
0038	37351	002020	SSA	LARGE?
0039	37352	027401	JMP VAL10	YES
0040	37353	071616	STA VTMP4	SAVE POSITIVE
0041	37354	003004	CMA,INA	AND NEGATIVE
0042	37355	071614	STA VTMP2	COUNT
0043	37356	065615	LDB VTMP3	HAS
0044	37357	006004	INB	ARRAY BEEN
0045	37360	054056	CPB PBPTR	ALLOCATED?
0046	37361	027371	JMP VALU9	NO
0047	37362	003400	VALU8 CCA	INITIALIZE
0048	37363	170001	STA 1,I	ARRAY ELEMENT
0049	37364	044354	ADB .+2	TO 'UNDEFINED'
0050	37365	035614	ISZ VTMP2	DONE?
0051	37366	027362	JMP VALU8	NO
0052	37367	065613	LDB VTMP1	YES
0053	37370	027227	JMP VALU1	
0054	37371		VALU9 EQU *	
0055	37371	042000	ADA .5000	ARRAY
0056	37372	002020	SSA	TOO LARGE?
0057	37373	027401	JMP VAL10	YES
0058	37374	061616	LDA VTMP4	NO
0059	37375	001000	ALS	ALLOCATE
0060	37376	015326	JSB CUSP	SPACE
0061	37377	070056	STA PBPTR	FOR ARRAY
0062	37400	027362	JMP VALU8	
0063	37401	015322	VAL10 JSB DCMP	DECOMPILE

0064	37402	115116		JSB RERRS+8,I	ARRAY TOO LARGE
0065	37403	060364	VAL11	LDA .+10	LOAD (A) WITH 10
0066	37404	066001		LDB A,10	LOAD (B) WITH
0067	37405	027334		JMP VALU6	ADDRESS OF 10
0068	37406	160001	VAL12	LDA 1,I	IS ARRAY
0069	37407	003004		CMA,INA	
0070	37410	040001		ADA 1	IN COMMON?
0071	37411	002021		SSA,RSS	
0072	37412	027227		JMP VALU1	YES
0073	37413	161613		LDA VTMP1,I	NO--LOAD
0074	37414	040346		ADA .+4	
0075	37415	071615		STA VTMP3	DECLARED
0076	37416	161615		LDA VTMP3,I	
0077	37417	035615		ISZ VTMP3	DIMENSIONS
0078	37420	165615		LDB VTMP3,I	
0079	37421	027342		JMP VALU7	
0080	37422	165613	VAL51	LDB VTMP1,I	SET
0081	37423	007004		CMB,INB	DIMENSION
0082	37424	075617		STB VTMP5	POINTER
0083	37425	175613		STB VTMP1,I	POSITIVE
0084	37426	061620		LDA COMPT	SET
0085	37427	071615		STA VTMP3	POINTER
0086	37430	040356		ADA .+4	IN SYMBOL
0087	37431	171613		STA VTMP1,I	TABLE
0088	37432	160001		LDA 1,I	PHYSICAL ROW DIMENSION
0089	37433	151615		CPA VTMP3,I	SAME AS DECLARED DIMENSION?
0090	37434	002001		RSS	YES
0091	37435	027504		JMP VAL52	NO
0092	37436	044354		ADB .+2	B=> SECOND DIMENSION
0093	37437	061614		LDA VTMP2	TWO
0094	37440	050350		CPA .-2	DIMENSIONAL?
0095	37441	006405		CLB,INB,RSS	NO--SET COLUMN DIMENSION TO 1
0096	37442	164001		LDB 1,I	YES--LOAD COLUMN DIMENSION
0097	37443	035615		ISZ VTMP3	PHYSICAL COLUMN DIMENSION
0098	37444	155615		CPB VTMP3,I	SAME AS DECLARED DIMENSION
0099	37445	002001		RSS	YES
0100	37446	027504		JMP VAL52	NO
0101	37447	161620		LDA COMPT,I	COMPUTE SIZE OF
0102	37450	100200		MPY VTMP3,I	ARRAY AS DECLARED
		37451			
0103	37452	006003		SZB,RSS	TOO
0104	37453	002020		SSA	LARGE?
0105	37454	027504		JMP VAL52	YES
0106	37455	071616		STA VTMP4	NO--SAVE SIZE
0107	37456	042000		ADA .5000	TOO
0108	37457	002020		SSA	LARGE?
0109	37460	027504		JMP VAL52	YES
0110	37461	035615		ISZ VTMP3	NO
0111	37462	161615		LDA VTMP3,I	COMPUTE SIZE
0112	37463	035615		ISZ VTMP3	AS SPECIFIED BY
0113	37464	100200		MPY VTMP3,I	DYNAMIC DIMENSIONS
		37465			
0114	37466	006003		SZB,RSS	TOO
0115	37467	002020		SSA	LARGE?
0116	37470	027504		JMP VAL52	YES

0117	37471	003007		CMA, INA, SZA, RSS	
0118	37472	027504		JMP VAL52	CHEESE IT! DYNAMIC DIM = 0
0119	37473	041616		ADA VTMP4	DYNAMIC SIZE
0120	37474	002020		SSA	> DECLARED SIZE
0121	37475	027504		JMP VAL52	YES
0122	37476	161613		LDA VTMP1, I	= COMPT+4
0123	37477	041616		ADA VTMP4	
0124	37500	041616		ADA VTMP4	UPDATE
0125	37501	071620		STA COMPT	COMMON POINTER
0126	37502	065613		LDB VTMP1	RESTORE (B)
0127	37503	027227		JMP VALU1	
0128	37504	065617	VAL52	LDB VTMP5	=> ROW DIMENSION
0129	37505	160001		LDA 1, I	
0130	37506	044354		ADB .+2	=> COLUMN DIMENSION
0131	37507	035614		ISZ VTMP2	TWO-DIMENSIONAL?
0132	37510	006405		CLB, INB, RSS	NO--LOAD DEFAULT DIMENSION
0133	37511	164001		LDB 1, I	PUT
0134	37512	171620		STA COMPT, I	DECLARED
0135	37513	035620		ISZ COMPT	DIMENSIONS IN
0136	37514	175620		STB COMPT, I	COMMON AREA
0137	37515	035620		ISZ COMPT	PUT
0138	37516	171620		STA COMPT, I	DYNAMIC
0139	37517	035620		ISZ COMPT	DIMENSIONS IN
0140	37520	175620		STB COMPT, I	COMMON AREA
0141	37521	100200		MPY COMPT, I	COMPUTE NUMBER OF ARRAY ELEMENTS
		37522			
0142	37523	006003		SZB, RSS	TOO
0143	37524	002020		SSA	LARGE?
0144	37525	027401		JMP VAL10	YES
0145	37526	003004		CMA, INA	NO--SAVE COMPLEMENT
0146	37527	071614		STA VTMP2	OF NUMBER OF ELEMENTS
0147	37530	003004		CMA, INA	ARRAY
0148	37531	042000		ADA .5000	TOO
0149	37532	002020		SSA	LARGE?
0150	37533	027401		JMP VAL10	YES
0151	37534	035620		ISZ COMPT	NO
0152	37535	065620		LDB COMPT	INITIALIZE
0153	37536	003400		CCA	ALL
0154	37537	170001	VAL53	STA 1, I	ELEMENTS
0155	37540	044354		ADB .+2	TO
0156	37541	035614		ISZ VTMP2	UNDEFINED
0157	37542	027537		JMP VAL53	
0158	37543	075620		STB COMPT	UPDATE COMMON POINTER
0159	37544	065613		LDB VTMP1	RESTORE (B)
0160	37545	027227		JMP VALU1	
0161	37546	061600	VAL13	LDA VLFLG	STORAGE
0162	37547	002002		SZA	ALLOCATED?
0163	37550	027227		JMP VALU1	YES
0164	37551	160001		LDA 1, I	NO, GET
0165	37552	160000		LDA 0, I	AND STORE
0166	37553	170001		STA 1, I	POINTER TO
0167	37554	027227		JMP VALU1	VALUE TABLE
0168	37555	015322	VAL14	JSB DCMPL	DECOMPILE
0169	37556	115117		JSB RERRS+9, I	NUMBER OF DIMENSIONS NOT KNOWN

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0171*
0172** INITIALIZE STRING VARIABLE **
0173*
0174 37557 075613 VAL15 STB VTMP1      SAVE (B)
0175 37560 061600      LDA VLFLG      STORAGE
0176 37561 002002      SZA              ALLOCATED?
0177 37562 027612      JMP VAL17      YES
0178 37563 160001      LDA 1,I        NO
0179 37564 002020      SSA              IN COMMON?
0180 37565 027625      JMP VAL18      YES
0181 37566 165613      LDB VTMP1,I    NO, SAVE LENGTH POINTER
0182 37567 060056      LDA PBPTR      SET POINTER TO
0183 37570 071615      STA VTMP3      LENGTH ENTRY
0184 37571 002004      INA              MORE
0185 37572 050462      CPA LWAUS      USER SPACE?
0186 37573 115120      JSB RERRS+10,I NO
0187 37574 070056      STA PBPTR      YES, SET POINTER TO STRING
0188 37575 171613      STA VTMP1,I    INTO SYMBOL TABLE ENTRY
0189 37576 006003      SZB,RSS        DEFAULT LENGTH?
0190 37577 002405      CLA,INA,RSS    YES, SET (A) = 1
0191 37600 160001      LDA 1,I        NO, LOAD DECLARED LENGTH
0192 37601 001727      ALF,ALF        STORE PHYSICAL LENGTH
0193 37602 171615      STA VTMP3,I    ALONG WITH ZERO
0194 37603 001727      ALF,ALF        LOGICAL LENGTH
0195 37604 002004      INA              ALLOCATE
0196 37605 001100      ARS              SPACE
0197 37606 015326      JSB CUSP        FOR
0198 37607 070056      STA PBPTR      STRING
0199 37610 065613 VAL16 LDB VTMP1    RESTORE
0200 37611 027227      JMP VALU1      (B)
0201 37612 160001 VAL17 LDA 1,I
0202 37613 003004      CMA,INA        STRING
0203 37614 040001      ADA 1          IN
0204 37615 002021      SSA,RSS        COMMON?
0205 37616 027227      JMP VALU1      YES
0206 37617 007400      CCB              NO==RESET
0207 37620 145613      ADB VTMP1,I    LOGICAL LENGTH
0208 37621 160001      LDA 1,I
0209 37622 010762      AND M256
0210 37623 170001      STA 1,I        TO ZERO
0211 37624 027610      JMP VAL16
0212 37625 003004 VAL18 CMA,INA        SET POINTER POSITIVE
0213 37626 071615      STA VTMP3      => DIMENSION INFORMATION
0214 37627 061620      LDA COMPT      SET VALUE
0215 37630 002004      INA              POINTER IN
0216 37631 170001      STA 1,I        SYMBOL TABLE
0217 37632 161620      LDA COMPT,I    EXTRACT PHYSICAL
0218 37633 001727      ALF,ALF        LENGTH FROM
0219 37634 010443      AND B377        COMMON AREA
0220 37635 151615      CPA VTMP3,I    SAME AS DECLARED LENGTH?
0221 37636 002001      RSS            YES
0222 37637 027650      JMP VAL20      NO
0223 37640 161620      LDA COMPT,I    LOGICAL
0224 37641 010443      AND B377
0225 37642 003004      CMA,INA        LENGTH <=

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0226	37643	141615		ADA VTMP3,I	
0227	37644	002020		SSA	PHYSICAL LENGTH?
0228	37645	027650		JMP VAL20	NO
0229	37646	161615		LDA VTMP3,I	LOAD PHYSICAL LENGTH
0230	37647	027654		JMP VAL19	
0231	37650	161615	VAL20	LDA VTMP3,I	RESET PHYSICAL LENGTH TO
0232	37651	001727		ALF,ALF	DECLARED LENGTH AND
0233	37652	171620		STA COMPT,I	LOGICAL LENGTH TO ZERO
0234	37653	001727		ALF,ALF	
0235	37654	002004	VAL19	INA	UPDATE
0236	37655	001100		ARS	
0237	37656	002004		INA	COMMON
0238	37657	041620		ADA COMPT	
0239	37660	071620		STA COMPT	POINTER
0240	37661	027227		JMP VALU1	
0241	37662		VAL99	EQU *	
0242	37662	061600		LDA VLFLG	HAS STORAGE
0243	37663	002002		SZA	BEEN ALLOCATED?
0244	37664	027675		JMP VAL98	YES
0245	37665	061607		LDA USESN	NO, ANY 'PRINT
0246	37666	002003		SZA,RSS	USING' STATEMENTS?
0247	37667	027675		JMP VAL98	NO
0248	37670	060056		LDA PBPTR	YES,
0249	37671	071760		STA IFSS	ALLOCATE
0250	37672	060440		LDA .72	SPACE FOR
0251	37673	015326		JSB CUSP	FORMAT
0252	37674	070056		STA PBPTR	STACK
0253	37675		VAL98	EQU *	
0254	37675	002404		CLA,INA	SAY STORAGE
0255	37676	071600		STA VLFLG	ALLOCATED
0256	37677	060056		LDA PBPTR	POINTER TO END
0257	37700	071232		STA FCORE	OF FIXED TABLES

0259*

0260* *****

0261****

0262** EXECUTE THE PROGRAM ***

0263****

0264* *****

0265*

0266*

0267* THE CORE-RESIDENT FILE BUFFERS FOLLOW THE VALUE TABLE; ONE
 0268* RECORD-SIZED BLOCK OF CORE IS ALLOCATED FOR EACH FILE REQUESTED
 0269* IN THE <FILES STATEMENT>. FIVE STACKS EXIST DURING EXECUTION;
 0270* SINCE STACK POINTERS ARE ASSUMED TO REFERENCE THE TOPMOST
 0271* ENTRY IN THEIR STACK THEY ARE INITIALLY SET ONE ENTRY BELOW
 0272* THE PHYSICAL START OF THE STACK; THUS THE FIRST ENTRY ADVANCES
 0273* A STACK POINTER TO THE FIRST WORD OF ITS STACK SPACE. GOSUBS
 0274* QUEUE THEIR RETURN ADDRESSES IN THE RETURN STACK, WHICH HAS A
 0275* FIXED LENGTH OF NINE WORDS ALLOCATED IMMEDIATELY FOLLOWING
 0276* THE FILE BUFFERS. THE FOR-STACK (SIX-WORD ENTRIES) CONTAINS
 0277* ALL INFORMATION PERTAINING TO ACTIVE FOR-NEXT LOOPS; INITIALLY
 0278* EMPTY, ITS CORE SPACE IS ALLOCATED DYNAMICALLY AS NEEDED. THE
 0279* TEMPORARY STACK HOLDS INTERMEDIATE RESULTS DURING FORMULA
 0280* EVALUATION; IT IS INITIALIZED TO HOLD TEN TEMPORARIES AND
 0281* EXPANDS DYNAMICALLY AS NECESSARY. THE OPERAND AND OPERATOR
 0282* STACKS FOLLOW WITH THEIR ONE-WORD ENTRIES OCCUPYING ALTERNATE
 0283* LOCATIONS, EXPANDING INTO FREE USER SPACE ON A DEMAND BASIS.
 0284* THE TOP OF THE OPERATOR STACK, ALWAYS AT LEAST ONE WORD AHEAD
 0285* OF THE OPERAND STACK, IS PBPTR SO THAT ALL ACTIVE USER SPACE
 0286* IS KEPT WITHIN THE SWAP REGION. SINCE ALL STACKS EXCEPT THE
 0287* RETURN STACK EXPAND DYNAMICALLY, STATIC AND DYNAMIC NESTING
 0288* OF FORMULAS AND FOR-NEXT LOOPS IS FREELY PERMITTED UP TO
 0289* THE EXHAUSTION OF USER SPACE.

0290*

0291**

0292*** INITIALIZE EXECUTION ***

0293**

0294*

0295* PRINT THE PROGRAM NAME, INITIALIZE FILE STATUS INFORMATION
 0296* IN THE FILE TABLE AND NOTIFY USER OF ANY REQUESTED FILES
 0297* WHICH ARE READ-ONLY. ALLOCATE A 64 WORD BUFFER FOR EACH FILE.
 0298* ALLOCATE RUN-TIME STACKS, INITIALIZE POINTERS TO THE DATA BLOCK,
 0299* AND MOVE TO A FRESH TELETYPE LINE.

0300*

0301	37701	002400	XEC	CLA	BLOCK
0302	37702	170634		STA DCLC1,I	CLOCK
0303	37703	114534		JSB ABCK,I	ABORT ATTEMPT DURING COMPILE?
0304	37704	160640		LDA DCLC2,I	NO--UNBLOCK
0305	37705	170634		STA DCLC1,I	CLOCK
0306	37706	160257		LDA MAIN,I	
0307	37707	010445		AND CHNFG	
0308	37710	071252		STA TEMP2	SAVE CHAIN FLAG
0309	37711	002003		SZA,RSS	WAS THIS PROGRAM CHAINED TO?
0310	37712	027720		JMP XEC01	NO
0311	37713	103100		CLF 0	YES
0312	37714	120257		XOR MAIN,I	CLEAR
0313	37715	170257		STA MAIN,I	CHAIN FLAG

0314	37716	102100		STF 0	
0315	37717	027734		JMP XEC0	DON'T PRINT NAME
0316	37720	060364	XEC01	LDA ,+12B	ECHO
0317	37721	015454		JSB OUTCR	LINE FEED
0318	37722	061571		LDA LNAME	
0319	37723	071430		STA LT1	
0320	37724	002004		INA	NULL
0321	37725	160000		LDA 0,I	
0322	37726	002003		SZA,RSS	NAME?
0323	37727	027734		JMP XEC0	YES
0324	37730	006400		CLB	NO
0325	37731	075274		STB LT2	OUTPUT
0326	37732	060347		LDA ,=3	PROGRAM
0327	37733	015462		JSB OUTST	NAME
0328	37734	002400	XEC0	CLA	ZERO
0329	37735	071502		STA FCNTR	FILE COUNTER
0330	37736	071242		STA RTNST	AND MESSAGE FLAG
0331	37737	071611		STA ENOUF	TURN OFF OVER/UNDERFLOW
0332	37740	071773		STA ASINP	SET NO ASSIGN PROCESSED
0333	37741	066504		LDB FILTB	LOAD ADDRESS OF FILE TABLE
0334	37742	055576	XEC2	CPB VALTB	DONE?
0335	37743	027777		JMP XEC4	YES
0336	37744	035502		ISZ FCNTR	NO, COUNT FILE
0337	37745	061252		LDA TEMP2	
0338	37746	002002		SZA	WAS THIS PROGRAM CHAINED TO?
0339	37747	027753		JMP XEC3	YES
0340	37750	160001		LDA 1,I	READ
0341	37751	002020		SSA	ONLY?
0342	37752	124451		JMP XEC5I,I	YES
0343	37753	061036	XEC3	LDA BIT15	NO
0344	37754	044356		ADB ,+4	SET NULL
0345	37755	170001		STA B,I	RECORD ADDRESS
0346	37756	044347		ADB ,=3	GET RECORD
0347	37757	160001		LDA B,I	SIZE AND
0348	37760	001423		ALR,RAK	CLEAR BITS 14 AND 15
0349	37761	170001		STA B,I	AND STICK BACK IN FILE TABLE
0350	37762	044361		ADB ,+7	ALLOCATE
0351	37763	015326		JSB CUSP	BUFFER FOR
0352	37764	070056		STA PBPTR	THE FILE
0353	37765	170001		STA 1,I	SET
0354	37766	006004		INB	'RECORD FULL'
0355	37767	170001		STA 1,I	CONDITION
0356	37770	006004		INB	SET
0357	37771	002400		CLA	'NO EOF EXIT'
0358	37772	170001		STA 1,I	CONDITION
0359	37773	044356		ADB ,+4	POINT TO MASK
0360	37774	170001		STA 1,I	CLEAR PROTECT MASK
0361	37775	006004		INB	POINT TO NEXT ENTRY
0362	37776	027742		JMP XEC2	
0363	37777	061502	XEC4	LDA FCNTR	ARE THERE
0364	40000	002003		SZA,RSS	ANY FILES?
0365	40001	026007		JMP XEC9	NO
0366	40002	060444		LDA DFCHK	YES, SET
0367	40003	103100		CLF 0	POSSIBLE DIRTY
0368	40004	130257		IOR MAIN,I	FILES BIT IN

0369	40005	170257		STA MAIN,I	
0370	40006	102100		STF 0	TTY TABLE
0371	40007	061252	XEC9	LDA TEMP2	
0372	40010	002002		SZA	WAS THIS PROGRAM CHAINED TO?
0373	40011	026020		JMP XEC8	YES
0374	40012	060367		LDA .+15B	NO, OUTPUT A
0375	40013	015454		JSB OUTCR	CARRIAGE RETURN
0376	40014	060364		LDA .+12B	AND
0377	40015	015454		JSB OUTCR	TWO
0378	40016	060364		LDA .+12B	LINE FEEDS
0379	40017	015454		JSB OUTCR	
0380	40020	064056	XEC8	LDB PBPTR	
0381	40021	044351		ADB .-1	SET POINTERS TO
0382	40022	075240		STB RTRNQ	TOP AND BOTTOM
0383	40023	075242		STB RTNST	OF RETURN STACK
0384	40024	044356		ADB .+4	SET
0385	40025	075246		STB FORQ	EXECUTION
0386	40026	015432		JSB SETPT	POINTERS
0387	40027	065577		LDB SPROG	SET POINTERS TO
0388	40030	015360		JSB SETDP	FIRST <DATA STATEMENT>
0389*				*	
0390**				EXECUTE STATEMENT	**
0391*				*	
0392*				*	
0393*				SAVE SEQUENCE NUMBER FOR POSSIBLE USE BY ERROR ROUTINE.	
0394*				ADVANCE PROGRAM COUNTER TO NEXT STATEMENT AND BRANCH TO	
0395*				CODE FOR EXECUTION OF CURRENT STATEMENT.	
0396*				*	
0397	40031	065334	XEC1	LDB PRGCT	SAVE CURRENT
0398	40032	160001		LDA 1,I	SEQUENCE
0399	40033	071570		STA LNUM	NUMBER
0400	40034	060001		LDA B	
0401	40035	002004		INA	CHECK
0402	40036	160000		LDA A,I	STATEMENT
0403	40037	015556		JSB STLCK	LENGTH
0404	40040	060001		LDA 1	COMPUTE
0405	40041	002004		INA	ADDRESS
0406	40042	144000		ADB 0,I	OF NEXT
0407	40043	075334		STB PRGCT	STATEMENT
0408	40044	002004		INA	SET INTRA-
0409	40045	071613		STA TEMP1	STATEMENT POINTER
0410	40046	161613		LDA TEMP1,I	COMPUTE
0411	40047	010664		AND OPMSK	BRANCH
0412	40050	001727		ALF,ALF	ADDRESS
0413	40051	001300		RAR	FOR CURRENT
0414	40052	043770		ADA XECBR	STATEMENT TYPE
0415	40053	071234		STA FILE#	SET 'NO FILE' FLAG
0416	40054	124000		JMP 0,I	BRANCH TO APPROPRIATE ROUTINE
0417*				*	
0418**				OUTPUT READ-ONLY WARNING	**
0419*				*	
0420	40055	075240	XEC5	STB RTRNQ	SAVE (B)
0421	40056	064273		LDB MLINK+1	
0422	40057	044341		ADB .+?ID-?LINK	
0423	40060	160001		LDA 1,I	GET ID

0424	40061	010732	AND	M2000	IS IT
0425	40062	050612	CPA	A000	AN 'A'?
0426	40063	026107	JMP	XEC7	YES
0427	40064	035242	ISZ	RTNST	NO, FIRST TIME THROUGH?
0428	40065	115217	JSB	WERRS+8,I	YES, EMIT MESSAGE
0429	40066	003400	CCA		SET FLAG FOR
0430	40067	071242	STA	RTNST	MESSAGE SUPPRESSION
0431	40070	060415	LDA	,+43B	OUTPUT
0432	40071	015454	JSB	OUTCR	A 'A'
0433	40072	061502	LDA	FCNTR	OUTPUT
0434	40073	040340	ADA	,-10	
0435	40074	002020	SSA		FILE #>9?
0436	40075	026103	JMP	XEC6	NO
0437	40076	060433	LDA	,+61B	YES
0438	40077	015454	JSB	OUTCR	OUTPUT A '1'
0439	40100	061502	LDA	FCNTR	OUTPUT
0440	40101	040420	ADA	,+46B	SECOND
0441	40102	002001	RSS		DIGIT
0442	40103	040436	XEC6	ADA	.58
0443	40104	015454	JSB	OUTCR	OUTPUT SINGLE DIGIT
0444	40105	060412	LDA	,+40B	OUTPUT
0445	40106	015454	JSB	OUTCR	BLANK
0446	40107	065240	XEC7	LDB	RTRNQ
0447	40110	124450	JMP	XEC3I,I	RETRIEVE (B)

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0002*
0003***
0004** EXECUTE <LET STATEMENT> **
0005*** **
0006*
0007 40111 002404 ELET CLA,INA ALLOW STRING CONSTANT
0008 40112 071472 STA EOL IN FORMULA
0009 40113 015336 JSB FORMX EVALUATE
0010 40114 026031 JMP XEC1 FORMULA
0011*
0012***
0013** EXECUTE <IF STATEMENT> **
0014*** **
0015*
0016 40115 035613 EIF1 ISZ TEMP1 EVALUATE
0017 40116 015506 JSB VLFIL FILE REQUEST
0018 40117 035236 ISZ FBASE TRANSFER
0019 40120 035613 ISZ TEMP1 EOF LABEL
0020 40121 165613 LDB TEMP1,I TO
0021 40122 175236 STB FBASE,I FILE TABLE
0022 40123 026031 JMP XEC1
0023 40124 104200 EIF DLD TEMP1,I EOF
    40125 101613
0024 40126 054650 CPB ENDOP
0025 40127 002020 SSA OPERATOR?
0026 40130 002405 CLA,INA,RSS NO
0027 40131 026115 JMP EIF1 YES
0028 40132 071472 STA EOL ALLOW STRING CONSTANT
0029 40133 015356 JSB FETCH EVALUATE DECISION FORMULA
0030 40134 002003 SZA,RSS RESULTANT 'TRUE' ?
0031 40135 026031 JMP XEC1 NO
0032*
0033***
0034** EXECUTE <GO TO STATEMENT> **
0035*** **
0036*
0037 40136 006401 EGOTO CLB,RSS SET FLAG TO 'GOTO' MODE
0038*
0039***
0040** EXECUTE <GOSUB STATEMENT> **
0041*** **
0042*
0043 40137 007400 EGOSB CCB SET FLAG TO
0044 40140 075500 STB GTMP 'GOSUB' MODE
0045 40141 065613 LDB TEMP1 COMPUTE SIMPLE BRANCH
0046 40142 006004 INB 'ADDRESS' ADDRESS
0047 40143 161613 LDA TEMP1,I SIMPLE
0048 40144 010700 AND OPDMK BRANCH
0049 40145 050670 CPA INTFL STATEMENT?
0050 40146 026161 JMP EGOS1 YES
0051 40147 015356 JSB FETCH NO, COMPUTE
0052 40150 015342 JSB SBFIX BRANCH INDEX
0053 40151 026031 JMP XEC1 UNSUITABLE RESULT
0054 40152 045613 ADB TEMP1 COMPUTE
0055 40153 006004 INB 'ADDRESS'

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PAGE 0107 #10 STATEMENT EXECUTION PROCESSORS

0056	40154	060001		LDA 1	ADDRESS
0057	40155	003000		CMA	WITHIN
0058	40156	041334		ADA PRGCT	STATEMENT
0059	40157	002020		SSA	RANGE?
0060	40160	026031		JMP XEC1	NO
0061	40161	164001	EGOS1	LDB 1,I	YES, LOAD BRANCH ADDRESS
0062	40162	035500		ISZ GTMP	<GOTO STATEMENT> ?
0063	40163	026032		JMP XEC1+1	YES
0064	40164	061334		LDA PRGCT	NO, STACK
0065	40165	035242		ISZ RTNST	RETURN
0066	40166	171242		STA RTNST,I	ADDRESS
0067	40167	061242		LDA RTNST	NESTING
0068	40170	040340		ADA ,=10	10
0069	40171	051240		CPA RTRNQ	DEEP?
0070	40172	116125		JSB RERRS+15,I	YES
0071	40173	026032		JMP XEC1+1	NO
0072*					
0073***				**	
0074**	EXECUTE	<FOR STATEMENT>		**	
0075***				**	
0076*					
0077	40174	055250	EFOR0	CPB FORST	TOP ENTRY?
0078	40175	026231		JMP EFOR5+1	YES
0079	40176	071422		STA EFN0	NO, SAVE (A)
0080	40177	075514		STB DEST	SET DESTINATION ADDRESS
0081	40200	065250		LDB FORST	COMPUTE MOVE
0082	40201	044360		ADB ,+6	TERMINATION ADDRESS
0083	40202	061514		LDA DEST	COMPUTE
0084	40203	040360		ADA ,+6	SOURCE ADDRESS
0085	40204	015500		JSB MOVER	DELETE FOR=TABLE ENTRY
0086	40205	061422		LDA EFN0	RETRIEVE (A)
0087	40206	026230		JMP EFOR5	
0088	40207	161613	EFOR	LDA TEMP1,I	EXTRACT
0089	40210	010502		AND B777	AND SAVE THE
0090	40211	071430		STA FVT	FOR-VARIABLE
0091	40212	001000		ALS	COMPUTE
0092	40213	041575		ADA SYMTB	ADDRESS
0093	40214	040351		ADA ,=1	OF ITS
0094	40215	160000		LDA 0,I	VALUE
0095	40216	065250		LDB FORST	LOAD POINTER TO FOR=STACK
0096	40217	055246	EFOR1	CPB FORQ	AT BOTTOM OF FOR=STACK?
0097	40220	026225		JMP EFOR2	YES
0098	40221	150001		CPA 1,I	NO, ENTRY FOR THIS FOR-VARIABLE?
0099	40222	026174		JMP EFOR0	YES
0100	40223	044344		ADB ,=6	NO, CHECK
0101	40224	026217		JMP EFOR1	LOWER ENTRY
0102	40225	065250	EFOR2	LDB FORST	MOVE TO SPACE
0103	40226	044360		ADB ,+6	FOR ENTRY
0104	40227	015432		JSB SETPT	RESET EXECUTION POINTERS
0105	40230	171250	EFOR5	STA FORST,I	SAVE ADDRESS OF VALUE IN ENTRY
0106	40231	015336		JSB FORMX	INITIALIZE FOR-VARIABLE
0107	40232	061250		LDA FORST	SAVE POINTERS TO
0108	40233	002004		INA	ENTRY FOR
0109	40234	071422		STA EFN0	LIMIT VALUE
0110	40235	040354		ADA ,+2	AND

0111	40236	071424		STA EFN1	STEP SIZE
0112	40237	040354		ADA .+2	SAVE ADDRESS OF
0113	40240	065334		LDB PRGCT	FOLLOWING STATEMENT
0114	40241	174000		STB 0,I	IN ENTRY
0115	40242	015356		JSB FETCH	COMPUTE AND SAVE
0116	40243	104400		DST EFN0,I	LIMIT VALUE
	40244	101422			
0117	40245	061513		LDA TEMP1	IMPLICIT
0118	40246	051334		CPA PRGCT	STEP SIZE?
0119	40247	026304		JMP EFOR6	YES
0120	40250	015356		JSB FETCH	NO, COMPUTE STEP SIZE
0121	40251	104400	EFOR3	DST EFN1,I	AND SAVE VALUE
	40252	101424			
0122	40253	006400		CLB	SET SIGN FLAG
0123	40254	002020		SSA	TO -1 FOR
0124	40255	007400		CCB	NEGATIVE STEP SIZE,
0125	40256	075426		STB EFN2	0 FOR POSITIVE STEP SIZE
0126	40257	035334		ISZ PRGCT	LOAD
0127	40260	065334		LDB PRGCT	TYPE WORD OF
0128	40261	006004	EFOR4	INB	STATEMENT FOLLOWING
0129	40262	160001		LDA 1,I	THE <FOR STATEMENT>
0130	40263	071366		STA EFN3	SAVE IT
0131	40264	044351		ADB .-1	COMPUTE POINTER
0132	40265	144001		ADB 1,I	TO ITS SUCCESSOR
0133	40266	010664		AND OPMSK	<NEXT
0134	40267	050646		CPA NXTOP	STATEMENT> ?
0135	40270	002001		RSS	YES
0136	40271	026261		JMP EFOR4	NO
0137	40272	021366		XOR EFN3	SAME
0138	40273	051430		CPA FVT	FOR-VARIABLE?
0139	40274	002001		RSS	YES
0140	40275	026261		JMP EFOR4	NO
0141	40276	044351		ADB .-1	SET PROGRAM COUNTER
0142	40277	075334		STB PRGCT	PAST <NEXT STATEMENT>
0143	40300	165250		LDB FORST,I	LOAD
0144	40301	104200		DLD 1,I	INITIAL VALUE OF
	40302	100001			
0145	40303	026346		JMP ENEX3	FOR-VARIABLE
0146	40304	061040	EFOR6	LDA HALF	LOAD
0147	40305	064354		LDB .+2	DEFAULT
0148	40306	026251		JMP EFOR3	OF 1.0
0149*					
0150***					**
0151**				EXECUTE <NEXT STATEMENT>	**
0152***					**
0153*					
0154	40307	161613	ENEXT	LDA TEMP1,I	EXTRACT
0155	40310	010502		AND B777	FOR-VARIABLE
0156	40311	001000		ALS	COMPUTE
0157	40312	041575		ADA SYMTB	ADDRESS
0158	40313	040351		ADA .-1	OF ITS
0159	40314	160000		LDA 0,I	VALUE
0160	40315	065250		LDB FORST	LOAD POINTER TO FOR-STACK
0161	40316	055246	ENEX1	CPB FORQ	BOTTOM OF STACK?
0162	40317	026031		JMP XEC1	YES, IGNORE STATEMENT

0163	40320	150001		CPA 1,I	NO, MATCHING ENTRY?
0164	40321	026324		JMP ENEX2	YES
0165	40322	044344		ADB .-6	NO,CHECK
0166	40323	026316		JMP ENEX1	LOWER ENTRY
0167	40324	071424	ENEX2	STA EFN1	SAVE FOR VARIABLE VALUE ADDRESS
0168	40325	055250		CPB FORST	TOP ENTRY OF FOR-STACK?
0169	40326	026331		JMP ++3	YES
0170	40327	015432		JSB SETPT	NO, RESET
0171	40330	065250		LDB FORST	EXECUTION POINTERS
0172	40331	006004		INB	SAVE ADDRESS
0173	40332	075422		STB EFN0	OF LIMIT VALUE
0174	40333	044354		ADB .+2	
0175	40334	060350		LDA .-2	SET SIGN FLAG TO SAY
0176	40335	071426		STA EFN2	POSITIVE STEP SIZE
0177	40336	104200		DLD 1,I	LOAD STEP SIZE
	40337	100001			
0178	40340	002020		SSA	POSITIVE?
0179	40341	035426		ISZ EFN2	NO, RESET SIGN FLAG
0180	40342	015402		JSB .FAD	ADD STEP SIZE
0181	40343	101424		DEF EFN1,I	TO VALUE OF FOR-VARIABLE
0182	40344	104400		DST EFN1,I	SAVE NEW VALUE
	40345	101424			
0183	40346	015404	ENEX3	JSB .FSB	SUBTRACT
0184	40347	101422		DEF EFN0,I	LIMIT VALUE
0185	40350	035426		ISZ EFN2	IF STEP SIZE POSITIVE,
0186	40351	001600		ELA	INVERT SIGN OF RESULT
0187	40352	002020		SSA	LIMIT VALUE EXCEEDED?
0188	40353	026300		JMP ENEX4	YES
0189	40354	061250		LDA FORST	NO, LOAD ADDRESS
0190	40355	040357		ADA .+5	OF STATEMENT
0191	40356	164000		LDB 0,I	FOLLOWING THE
0192	40357	026032		JMP XEC1+1	<FOR STATEMENT>
0193	40360	065250	ENEX4	LDB FORST	REMOVE
0194	40361	044344		ADB .-6	ENTRY FROM
0195	40362	015432		JSB SETPT	FOR-STACK
0196	40363	026031		JMP XEC1	SKIP PAST <NEXT STATEMENT>
0197*					
0198***				**	
0199**	EXECUTE	<RETURN STATEMENT>		**	
0200***				**	
0201*					
0202	40364	061242	ERTRN	LDA RTNST	RETURN STACK
0203	40365	051240		CPA RTRNQ	EMPTY?
0204	40366	115126		JSB RERRS+16,I	YES
0205	40367	164000		LDB 0,I	NO, POP
0206	40370	040351		ADA .-1	RETURN ADDRESS
0207	40371	071242		STA RTNST	FROM STACK
0208	40372	026032		JMP XEC1+1	
0209*					
0210***				**	
0211**	EXECUTE	<INPUT STATEMENT>		**	
0212***				**	
0213*					
0214	40373	002400	EINPT	CLA	TURN OFF
0215	40374	071500		STA MCNT	MATRIX INPUT COUNTER

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0216	40375	071460	EINP1	STA	INITF	SAVE ADDRESS FLAG
0217	40376	002400		CLA		REQUEST
0218	40377	071472		STA	SYNTQ	FIRST
0219	40400	015446		JSB	INCAL	INPUT RECORD
0220	40401	035422	EINP2	ISZ	IFCNT	COUNT INPUT QUANTITY
0221	40402	003400		CCA		MATRIX
0222	40403	051460		CPA	INITF	INPUT?
0223	40404	026415		JMP	EINP3	YES
0224	40405	015336		JSB	FORMX	NO, EVALUATE NEXT ADDRESS
0225	40406	165332		LDB	OPDST, I	IS IT A
0226	40407	006020		SSB		STRING VARIABLE?
0227	40410	026521		JMP	EIN13	YES
0228	40411	061332		LDA	OPDST	NO,
0229	40412	040350		ADA	.-2	UNSTACK
0230	40413	071332		STA	OPDST	ADDRESS
0231	40414	075574		STB	SBPTR	SAVE DESTINATION ADDRESS
0232	40415	002400	EINP3	CLA		SET SIGN
0233	40416	071266		STA	SIGN	TO POSITIVE
0234	40417	071354		STA	INTMP	FLAG REQUEST FOR NUMBER
0235	40420	026424		JMP	EINP4	
0236	40421	075266		STB	SIGN	RESET SIGN TO POSITIVE
0237	40422	015446		JSB	INCAL	
0238	40423	035422		ISZ	IFCNT	FETCH
0239	40424	015450	EINP4	JSB	GETCR	FIRST
0240	40425	026422		JMP	*-3	CHARACTER
0241	40426	007400		CCB		TURN OFF
0242	40427	075474		STB	SERR	OVER/UNDERFLOW FLAG
0243	40430	050427		CPA	.*+45	!+! ?
0244	40431	026506		JMP	EIN11	YES
0245	40432	006404		CLB, INB		NO
0246	40433	050425		CPA	.*+43	!+! ?
0247	40434	026506		JMP	EIN11	YES
0248	40435	015276	EINP5	JSB	NUMCK	NO, NUMBER?
0249	40436	026471		JMP	EINP7	NO
0250	40437	026475		JMP	EINP8	BAD EXPONENT
0251	40440	064412	EINP6	LDB	.*+40B	TURN ON
0252	40441	075573		STB	BLANK	BLANK SUPPRESSION
0253	40442	035500		ISZ	MCNT	MATRIX COMPLETED?
0254	40443	002001		RSS		NO
0255	40444	127773		JMP	MIDEN, I	YES
0256	40445	065613	EINP0	LDB	TEMP1	<INPUT STATEMENT>
0257	40446	055334		CPB	PRGCT	SATISFIED?
0258	40447	026512		JMP	EIN12	YES
0259	40450	035474		ISZ	SERR	DID OVER/UNDERFLOW OCCUR?
0260	40451	026456		JMP	EINP9	YES
0261	40452	050367		CPA	.*+15B	NO, END OF INPUT RECORD?
0262	40453	026400		JMP	EINP2-1	YES
0263	40454	050426		CPA	.*+54B	NO, COMMA NEXT?
0264	40455	026465		JMP	EIN10	YES
0265	40456	115207	EINP9	JSB	WERRS, I	NO
0266	40457	065422		LDB	IFCNT	OUTPUT NEXT
0267	40460	006004		INB		ITEM
0268	40461	015456		JSB	OUTIN	NUMBER
0269	40462	060367		LDA	.*+15B	OUTPUT
0270	40463	015454		JSB	OUTCR	CARRIAGE RETURN

0271	40464	026400		JMP EINP2-1	
0272	40465	015450	EIN10	JSB GETCR	END OF INPUT RECORD?
0273	40466	026456		JMP EINP9	YES
0274	40467	015452		JSB BCKSP	NO
0275	40470	026401		JMP EINP2	
0276	40471	050414	EINP7	CPA ,+42B	" ?
0277	40472	026475		JMP EINP8	YES
0278	40473	055266		CPB SIGN	NO, SIGN FOUND?
0279	40474	026424		JMP EINP4	NO, IGNORE CHARACTER
0280	40475	115207	EINP8	JSB WERRS,I	YES
0281	40476	065422		LDB IFCNT	OUTPUT
0282	40477	015456		JSB OUTIN	ITEM NUMBER
0283	40500	060367		LDA ,+15B	OUTPUT
0284	40501	015454		JSB OUTCR	CARRIAGE RETURN
0285	40502	006400		CLB	NUMBER
0286	40503	055354		CPB INTMP	REQUESTED?
0287	40504	026421		JMP EINP4-3	YES
0288	40505	025535		JMP EIN14	NO
0289	40506	075266	EIN11	STB SIGN	SAVE SIGN
0290	40507	015450		JSB GETCR	
0291	40510	026475		JMP EINP8	OUT-OF-DATA ERROR
0292	40511	026435		JMP EINP5	
0293	40512	050367	EIN12	CPA ,+15B	END OF RECORD?
0294	40513	002401		CLA,RSS	YES
0295	40514	115216		JSB WERRS+7,I	NO
0296	40515	071572		STA CHRCT	ZERO CHARACTER COUNT
0297	40516	060364		LDA ,+12B	OUTPUT A
0298	40517	015454		JSB OUTCR	LINE FEED
0299	40520	026031		JMP XEC1	
0300	40521	007000	EIN13	CMB	EXTRACT
0301	40522	160001		LDA 1,I	PHYSICAL
0302	40523	001727		ALF,ALF	LENGTH OF
0303	40524	010443		AND B377	DESTINATION STRING
0304	40525	003000		CMA	SET IT AS END
0305	40526	141330		ADA TMPST,I	OF UNSPECIFIED
0306	40527	071410		STA TPRME	DESTINATION STRING
0307	40530	003400		CCA	PREPARE
0308	40531	015344		JSB PSTR	DESTINATION STRING
0309	40532	065406		LDB TNULL	SAVE LENGTH
0310	40533	075354		STB INTMP	ALLOWANCE
0311	40534	026537		JMP **3	
0312	40535	015446	EIN14	JSB INCAL	
0313	40536	035422		ISZ IFCNT	FETCH
0314	40537	015450		JSB GETCR	FIRST
0315	40540	026535		JMP **3	CHARACTER
0316	40541	007400		CCB	TURN OFF
0317	40542	075474		STB SERR	OVER/UNDERFLOW FLAG
0318	40543	050414		CPA ,+42B	" ?
0319	40544	002001		RSS	YES
0320	40545	015452		JSB BCKSP	NO, STRING BEGINS HERE
0321	40546	006400	EIN17	CLB	TURN OFF
0322	40547	075573		STB BLANK	BLANK SUPPRESSION
0323	40550	063772		LDA FINCA	POINT TO INPUT BUFFER
0324	40551	015350		JSB TRSTR	TRANSFER STRING
0325	40552	006400		CLB	ALL REQUESTED

0326	40553	055406		CPB TNULL	CHARACTERS TRANSFERRED?
0327	40554	026600		JMP EIN21	YES
0328	40555	055464		CPB PS1	NO, TRANSFER LENGTH SPECIFIED?
0329	40556	026574		JMP EIN20	NO
0330	40557	071354		STA INTMP	YES, SAVE (A)
0331	40560	003400		CCA	FINISH
0332	40561	071410		STA TPRME	
0333	40562	041406		ADA TNULL	TRANSFER
0334	40563	071406		STA TNULL	
0335	40564	060600		LDA FSCHA	WITH BLANKS
0336	40565	015350		JSB TRSTR	
0337	40566	061354		LDA INTMP	RESTORE (A)
0338	40567	050367	EIN18	CPA ,+15B	TRANSFER ENDED BY END-OF-INPUT?
0339	40570	026440		JMP E1NP6	YES
0340	40571	015450	EIN19	JSB GETCR	NO, WAS A "
0341	40572	000000		NOP	EXIT WITH
0342	40573	026440		JMP E1NP6	NEXT CHARACTER
0343	40574	165260	EIN20	LDB TEMP6,I	SET LOGICAL
0344	40575	045406		ADB TNULL	TO ACTUAL
0345	40576	175260		STB TEMP6,I	STRING LENGTH
0346	40577	026567		JMP EIN18	
0347	40600	055464	EIN21	CPB PS1	LENGTH OF TRANSFER SPECIFIED?
0348	40601	026607		JMP EIN15	NO
0349	40602	015450	EIN16	JSB GETCR	YES
0350	40603	026440		JMP E1NP6	IMPLIED CLOSING QUOTE
0351	40604	050414		CPA ,+42B	" ?
0352	40605	026571		JMP EIN19	YES
0353	40606	026602		JMP EIN16	NO, LOOK FOR " OR END-OF-INPUT
0354	40607	015450	EIN15	JSB GETCR	END-OF-INPUT NEXT?
0355	40610	026440		JMP E1NP6	YES
0356	40611	050414		CPA ,+42B	NO, CLOSING " ?
0357	40612	026571		JMP EIN19	YES
0358	40613	061354		LDA INTMP	NO, DESTINATION STRING EXCEEDED
0359	40614	071406		STA TNULL	RESTORE
0360	40615	061574		LDA SBPTR	DESTINATION STRING
0361	40616	071272		STA TEMP5	PARAMETERS
0362	40617	060412		LDA ,+40B	SET TO
0363	40620	071573		STA BLANK	SKIP BLANKS
0364	40621	026475		JMP E1NP8	
0365*					
0366***				**	
0367**	EXECUTE	<READ STATEMENT>	**		
0368***				**	
0369*					
0370	40622	015506	EREAD	JSB VLFIL	LOOK FOR FILE REQUEST
0371	40623	026640		JMP EREA1	FILE REQUEST FOUND
0372	40624	015336		JSB FORMX	EVALUATE DESTINATION ADDRESS
0373	40625	161332		LDA OPDST,I	STRING
0374	40626	002020		SSA	VARIABLE?
0375	40627	026644		JMP EREA2	YES
0376	40630	071574		STA SBPTR	NO, SAVE AND
0377	40631	061332		LDA OPDST	UNSTACK
0378	40632	040350		ADA ,=2	DESTINATION
0379	40633	071332		STA OPDST	ADDRESS
0380	40634	006404		CLB,INB	FETCH

0381	40635	015362		JSB FDATA	NUMBER
0382	40636	104400		DST SBPTR,I	STORE NUMBER
		40637			
0383	40640	061613	EREA1	LDA TEMP1	END OF
0384	40641	051334		CPA PRGCT	STATEMENT?
0385	40642	026031		JMP XEC1	YES
0386	40643	026624		JMP EREAD+2	NO
0387	40644	064354	EREA2	LDB .+2	PREPARE
0388	40645	015362		JSB FDATA	SOURCE STRING
0389	40646	003400		CCA	PREPARE
0390	40647	015344		JSB PSTR	DESTINATION STRING
0391	40650	060600		LDA FSCHA	
0392	40651	015350		JSB TRSTR	TRANSFER STRING
0393	40652	026640		JMP EREA1	
0001*					
0002***					**
0003**	EXECUTE	<PRINT STATEMENT>			**
0004***					**
0005*					
0006	40653	002404	EPRIN	CLA,INA	FLAG AS 'PRINT'
0007	40654	015554		JSB EPRUS	CHECK FOR USING STATEMENT
0008	40655	002400		CLA	FLAG AS
0009	40656	071756		STA FFLG	NON-FORMATTED
0010	40657	015506		JSB VLFIL	VALIDATE FILE REQUEST
0011	40660	027017		JMP EPR13	
0012	40661	026671		JMP EPRI2+1	NO FILE REQUEST FOUND
0013	40662	061234	EPRI1	LDA FILE#	FILE
0014	40663	002021		SSA,RSS	MODE?
0015	40664	026670		JMP EPRI2	YES
0016	40665	002400		CLA	NO, EXECUTE COMMA
0017	40666	051472		CPA EOL	UNLESS PRECEDED BY
0018	40667	015430		JSB EDELM	A 'TAB' (EOL = 1)
0019	40670	003401	EPRI2	CCA,RSS	TURN OFF 'END-OF-LINE' FLAG
0020	40671	002400		CLA	TURN ON
0021	40672	071472		STA EOL	'END-OF-LINE' FLAG
0022	40673	161613	EPRI3	LDA TEMP1,I	EXTRACT
0023	40674	010700		AND OPDMK	NEXT OPERAND
0024	40675	002002		SZA	NULL?
0025	40676	026722		JMP EPRI5	NO, BEGINS FORMULA
0026	40677	035613		ISZ TEMP1	YES
0027	40700	065613	EPRI4	LDB TEMP1	STATEMENT
0028	40701	055334		CPB PRGCT	FINISHED?
0029	40702	027014		JMP EPR12	YES
0030	40703	161613		LDA TEMP1,I	NO, EXTRACT
0031	40704	010664		AND OPMSK	NEXT OPERATOR
0032	40705	050612		CPA B2000	COMMA?
0033	40706	026662		JMP EPRI1	YES
0034	40707	050614		CPA B3000	NO, SEMICOLON?
0035	40710	026670		JMP EPRI2	YES
0036	40711	050445		CPA B1000	NO, " ?
0037	40712	026746		JMP EPRI8	YES
0038	40713	050650		CPA ENDOP	NO, 'END' ?
0039	40714	027006		JMP EPR11	YES
0040	40715	002003		SZA,RSS	NO, NULL?
0041	40716	026673		JMP EPRI3	YES

0042	40717	003400		CCA	NO, MUST BE FORMULA
0043	40720	041613		ADA TEMP1	RESET TO PRIOR
0044	40721	071613		STA TEMP1	NULL OPERAND
0045	40722	003400	EPRI5	CCA	TURN OFF
0046	40723	071472		STA EOL	'ITAB' FLAG
0047	40724	015336		JSB FORMX	EVALUATE FORMULA
0048	40725	165332		LDB OPDST,I	IS IT A
0049	40726	006020		SSB	STRING VARIABLE?
0050	40727	026747		JMP EPRI8+1	YES
0051	40730	015376		JSB OPCHK	NO, UNSTACK VALUE ADDRESS
0052	40731	061234		LDA FILE#	TO BE WRITTEN
0053	40732	002021		SSA,RSS	ON A FILE?
0054	40733	026742		JMP EPRI7	YES
0055	40734	035472		ISZ EOL	NO, A 'ITAB' ?
0056	40735	026700		JMP EPRI4	YES (EOL = 1 NOW)
0057	40736	104200		DLD 1,I	NO, OUTPUT
	40737	100001			
0058	40740	015420		JSB ENOUT	A NUMBER
0059	40741	026700		JMP EPRI4	
0060	40742	075574	EPRI7	STB SBPTR	SAVE VALUE ADDRESS
0061	40743	064350		LDB .-2	WRITE NUMBER
0062	40744	015512		JSB FILST	ON FILE
0063	40745	026700		JMP EPRI4	
0064	40746	015340	EPRI8	JSB STSTR	STACK STRING CONSTANT
0065	40747	060350		LDA .-2	PREPARE
0066	40750	015344		JSB PSTR	PRINT
0067	40751	071256		STA TEMP4	STRING
0068	40752	075410		STB TPRME	
0069	40753	064347		LDB .-3	PRESET TO WRITE ON FILE
0070	40754	061234		LDA FILE#	TO BE WRITTEN
0071	40755	002021		SSA,RSS	ON A FILE?
0072	40756	026744		JMP EPRI7+2	YES
0073	40757	002400		CLA	NO, TURN ON
0074	40760	071472		STA EOL	'END-OF-LINE' FLAG
0075	40761	061406		LDA TNULL	ENOUGH
0076	40762	003004		CMA,INA	SPACE
0077	40763	041572		ADA CHRCT	ON
0078	40764	043774		ADA M74	CURRENT
0079	40765	002021		SSA,RSS	LINE?
0080	40766	015426		JSB OUTLN	NO
0081	40767	027003		JMP EPRI0	YES
0082	40770	015364	EPRI9	JSB FSCH	FETCH
0083	40771	060412		LDA .+40B	CHARACTER
0084	40772	050370		CPA .+16B	PSUEDO LINE FEED?
0085	40773	060364		LDA .+12B	YES
0086	40774	050371		CPA .+17B	PSUEDO CARRIAGE RETURN?
0087	40775	002001		RSS	YES
0088	40776	027002		JMP EPRI0-1	NO
0089	40777	060367		LDA .+15B	OUTPUT
0090	41000	015454		JSB OUTCR	CARRIAGE RETURN
0091	41001	002400		CLA	AND A NULL
0092	41002	015454		JSB OUTCR	OUTPUT CHARACTER
0093	41003	035400	EPRI0	ISZ TNULL	MORE STRING?
0094	41004	026770		JMP EPRI9	YES
0095	41005	026700		JMP EPRI4	NO

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0096 41006 071653  EPR11 STA EORFL      FILE
0097 41007 015514          JSB GTTYP
0098 41010 050355          CPA .+3      FULL?
0099 41011 026677          JMP EPRI4-1   YES
0100 41012 007400          CCB          NO, WRITE
0101 41013 026744          JMP EPRI7+2   END-OF-FILE
0102 41014 035472  EPR12 ISZ EOL      'END-OF-LINE' FLAG SET?
0103 41015 015426          JSB OUTLN    YES
0104 41016 026031          JMP XEC1     NO
0105 41017 044342  EPR13 ADB .-8     SET BUFFER
0106 41020 160001          LDA B,I     DIR-
0107 41021 031036          IOR BIT15   TY
0108 41022 170001          STA B,I     BIT
0109 41023 065613          LDB TEMP1   NULL
0110 41024 055334          CPB PRGCT   PRINT?
0111 41025 026031          JMP XEC1     YES
0112 41026 026670          JMP EPRI2    NO
0113*
0114**
0115** EXECUTE <PRINT USING STATEMENT> **
0116** **
0117*
0118* EXIT TO (P+1) IF NO USING OPERATOR FOUND, OTHERWISE PREPARE
0119* FORMAT SPECIFICATION STRING AND CALL FORMATTED OUTPUT ROUTINE.
0120*
0121 41027 071756  #EPRU STA FFLG      SAVE FORMAT FLAG
0122 41030 065613          LDB TEMP1
0123 41031 160001          LDA B,I
0124 41032 050656          CPA PRTOP   NULL OPERAND?
0125 41033 006005          INB,RSS    YES
0126 41034 125554          JMP EPRUS,I NO, CAN'T BE USING STATEMENT
0127 41035 055334          CPB PRGCT   END OF STATEMENT?
0128 41036 125554          JMP EPRUS,I YES
0129 41037 160001          LDA B,I    NO, 'USING'
0130 41040 010664          AND OPMSK  OPERATOR
0131 41041 050776          CPA USEOP  NEXT?
0132 41042 002001          RSS       YES
0133 41043 125554          JMP EPRUS,I NO, EXIT
0134 41044 120001          XOR B,I    GET OPERAND
0135 41045 075613          STB TEMP1  SAVE POINTER
0136 41046 002021          SSA,RSS   INTEGER FOLLOWS?
0137 41047 027065          JMP EPRU1  NO
0138 41050 006004          INB
0139 41051 164001          LDB B,I    GET ADDRESS OF IMAGE STATEMENT
0140 41052 044354          ADB .+2   => LENGTH WORD
0141 41053 160001          LDA B,I
0142 41054 010664          AND OPMSK  GET OPERATOR
0143 41055 050746          CPA IMGOP  IMAGE?
0144 41056 002001          RSS       YES
0145 41057 115154          JSB RERRS+38,I NO, ERROR
0146 41060 035613          ISZ TEMP1  BUMP TO POINT
0147 41061 035613          ISZ TEMP1  TO FIRST OPERAND
0148 41062 002400          CLA
0149 41063 071762          STA NCH
0150 41064 015552          JSB FRMAT  CALL FORMATTER

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0151	41065	002003	EPRU1	SZA,RSS	NULL OPERAND?
0152	41066	027135		JMP EPRU4	YES
0153	41067	015336		JSB FORMX	NO, FETCH
0154	41070	060350		LDA ,+2	STRING
0155	41071	015344		JSB PSTR	OPERAND
0156	41072	161260		LDA TEMP6,I	GET
0157	41073	010443		AND B377	LENGTH
0158	41074	002003		SZA,RSS	NULL STRING?
0159	41075	026031		JMP XEC1	YES
0160	41076	003004		CMA,INA	NO, SAVE
0161	41077	071552		STA STRLN	=LENGTH
0162	41100	065330		LDB TMPST	
0163	41101	044354		ADB ,+2	
0164	41102	160001		LDA B,I	GET FIRST SUBSCRIPT
0165	41103	003004		CMA,INA	NEGATE IT
0166	41104	006004		INB	
0167	41105	134001		ISZ B,I	SECOND SUBSCRIPT EXIST?
0168	41106	027112		JMP EPRU2	YES
0169	41107	002400		CLA	NO, SET
0170	41110	071762		STA NCH	CHARACTER COUNT
0171	41111	027125		JMP EPRU3	
0172	41112	140001	EPRU2	ADA B,I	COMPUTE DIFFERENCE
0173	41113	002003		SZA,RSS	NULL STRING?
0174	41114	026031		JMP XEC1	YES
0175	41115	002020		SSA	NO, NEGATIVE?
0176	41116	115162		JSB RERRS+44,I	YES
0177	41117	071762		STA NCH	NO, SAVE DIFFERENCE
0178	41120	003400		CCA	
0179	41121	140001		ADA B,I	SECOND
0180	41122	041552		ADA STRLN	SUBSCRIPT
0181	41123	002021		SSA,RSS	VALID?
0182	41124	115162		JSB RERRS+44,I	NO
0183	41125	044351	EPRU3	ADB ,+1	YES
0184	41126	160001		LDA B,I	FIRST
0185	41127	041552		ADA STRLN	SUBSCRIPT
0186	41130	002021		SSA,RSS	VALID?
0187	41131	115162		JSB RERRS+44,I	NO
0188	41132	160001		LDA B,I	YES, LOAD IT
0189	41133	065260		LDB TEMP6	=> FIRST WORD OF STRING
0190	41134	015552		JSB FRMAT	CALL FORMATTER
0191	41135	006004	EPRU4	INB	=> 1ST WORD OF STRING
0192	41136	160001		LDA B,I	UPDATE
0193	41137	010700		AND OPDMK	
0194	41140	002004		INA	INTRA-
0195	41141	001100		ARS	
0196	41142	041613		ADA TEMP1	STATEMENT
0197	41143	040354		ADA ,+2	
0198	41144	071613		STA TEMP1	POINTER
0199	41145	002400		CLA	
0200	41146	071762		STA NCH	
0201	41147	015552		JSB FRMAT	CALL FORMATTER

0202*

0203***

0204** EXECUTE <RESTORE STATEMENT>

0205***

**
**
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0206*					
0207	41150	161613	ERSTR	LDA TEMP1,I	LOAD FLAG WORD
0208	41151	035613		ISZ TEMP1	ADVANCE STATEMENT POINTER
0209	41152	065577		LDB SPROG	SET (B) TO START OF PROGRAM
0210	41153	002020		SSA	'LABELLED RESTORE'
0211	41154	165613		LDB TEMP1,I	YES, RESET (B) TO STATEMENT
0212	41155	015360		JSB SETUP	SET DATA POINTERS
0213	41156	026031		JMP XEC1	
0214*					
0215***					**
0216**	EXECUTE	<ENTER STATEMENT>			**
0217***					***
0218*					
0219	41157	161613	EENTR	LDA TEMP1,I	=> FIRST OPERATOR
0220	41160	010700		AND OPDMK	
0221	41161	002002		SZA	IS '#' PRESENT?
0222	41162	027214		JMP EENT3	NO
0223	41163	065613		LDB TEMP1	
0224	41164	006004		INB	
0225	41165	160001		LDA B,I	GET NEXT OPERATOR
0226	41166	010664		AND OPMSK	
0227	41167	050736		CPA B4000	'#'?
0228	41170	002001		RSS	YES
0229	41171	027214		JMP EENT3	NO
0230	41172	075613		STB TEMP1	
0231	41173	015336		JSB FORMX	EVALUATE ADDRESS
0232	41174	165332		LDB OPDST,I	
0233	41175	075574		STB SBPTR	=> SYMBOL
0234	41176	061332		LDA OPDST	UNSTACK
0235	41177	040350		ADA *-2	
0236	41200	071332		STA OPDST	ADDRESS
0237	41201	064257		LDB MAIN	
0238	41202	006004		INB	=> USERS TTY # IN TELETYPE TABLE
0239	41203	160001		LDA 1,I	GET TTY # AND
0240	41204	001727		ALF,ALF	RIGHT JUSTIFY
0241	41205	015346		JSB FLOAT	CONVERT TO FLOATING POINT
0242	41206	171574		STA SBPTR,I	STORE
0243	41207	035574		ISZ SBPTR	TTY
0244	41210	175574		STB SBPTR,I	NUMBER
0245	41211	061613		LDA TEMP1	ENTER STATEMENT
0246	41212	051334		CPA PRGCT	FINISHED?
0247	41213	026031		JMP XEC1	YES
0248	41214	015356	EENT3	JSB FETCH	NO -> FETCH ALLOWED TIME
0249	41215	015416		JSB IFIX	CONVERT
0250	41216	000000		NUP	TO
0251	41217	060001		LDA 1	SECONDS
0252	41220	010443		AND B377	MASK TO 8 BITS
0253	41221	002003		SZA,RSS	IF 0, SET
0254	41222	002004		INA	TO 1
0255	41223	071612		STA ATIM	
0256	41224	060257		LDA MAIN	DOES THIS USER
0257	41225	002004		INA	HAVE THE
0258	41226	050255		CPA PRIST	LINE PRINTER?
0259	41227	115220		JSB WERRS+9,I	YES -> RELEASE IT
0260	41230	060373		LDA *-21B	OUTPUT

0261	41231	015454	JSB	OUTCR	AN X-ON
0262	41232	060221	LDA	STE	START
0263	41233	031612	IOR	ATIM	ENTER
0264	41234	114516	JSB	SCHIN,I	TIMING
0265	41235		ENTRT	EQU *	
0266	41235	027253	JMP	EENT6	INPUT ENTERED
0267	41236	015336	JSB	FORMX	TIMEOUT OCCURED
0268	41237	165332	LDB	OPDST,I	=> RESPONSE
0269	41240	075574	STB	SBPTR	TIME
0270	41241	061332	LDA	OPDST	UNSTACK
0271	41242	040350	ADA	,=2	
0272	41243	071332	STA	OPDST	ADDRESS
0273	41244	060762	LDA	M256	SET
0274	41245	015346	JSB	FLOAT	RESPONSE
0275	41246	171574	STA	SBPTR,I	TIME
0276	41247	035574	ISZ	SBPTR	TO
0277	41250	175574	STB	SBPTR,I	=256
0278	41251	127252	JMP	**+1,I	
0279	41252	041425	DEF	EEN18	
0280	41253		EENT6	EQU *	
0281	41253	006400	CLB		DONIT SUPPRESS
0282	41254	075573	STB	BLANK	BLANKS
0283	41255	015450	JSB	GETCR	FIRST
0284	41256	000000	NOP		CHARACTER A
0285	41257	064412	LDB	,+40B	SUPPRESS
0286	41260	075573	STB	BLANK	BLANKS
0287	41261	050355	CPA	,+3	CONTROL C?
0288	41262	124554	JMP	EXITA,I	YES
0289	41263	015452	JSB	BCKSP	NO
0290	41264	015336	JSB	FORMX	EVALUATE ADDRESS
0291	41265	165332	LDB	OPDST,I	
0292	41266	075574	STB	SBPTR	=> RESPONSE TIME
0293	41267	075422	STB	RSPTR	
0294	41270	061332	LDA	OPDST	UNSTACK
0295	41271	040350	ADA	,=2	
0296	41272	071332	STA	OPDST	ADDRESS
0297	41273	064257	LDB	MAIN	
0298	41274	044371	ADB	,+7RTIM	GET RESPONSE
0299	41275	160001	LDA	1,I	TIME
0300	41276	015346	JSB	FLOAT	
0301	41277	171574	STA	SBPTR,I	STORE
0302	41300	035574	ISZ	SBPTR	IT
0303	41301	175574	STB	SBPTR,I	
0304	41302	015336	JSB	FORMX	EVALUATE ADDRESS
0305	41303	165332	LDB	OPDST,I	IS IT A
0306	41304	006020	SSB		STRING VARIABLE?
0307	41305	027341	JMP	EEN10	YES
0308	41306	061332	LDA	OPDST	NO,
0309	41307	040350	ADA	,=2	UNSTACK
0310	41310	071332	STA	OPDST	ADDRESS
0311	41311	075574	STB	SBPTR	SAVE DESTINATION ADDRESS
0312	41312	002400	CLA		SET SIGN
0313	41313	071266	STA	SIGN	TO POSITIVE
0314	41314	015450	JSB	GETCR	FETCH FIRST CHARACTER
0315	41315	027414	JMP	EEN17	NONE FOUND--ERROR

0316	41316	007400	CCB	TURN OFF
0317	41317	075611	STB ENOUF	OVER/UNDERFLOW FLAG
0318	41320	050427	CPA ,+55B	'-1?
0319	41321	027326	JMP EENT7	YES
0320	41322	006404	CLB,INB	NO
0321	41323	050425	CPA ,+53B	'+1?
0322	41324	002001	RSS	YES
0323	41325	027331	JMP EENT8	NO
0324	41326	075266	EENT7 STB SIGN	SET SIGN
0325	41327	015450	JSB GETCR	GET NEXT CHARACTER
0326	41330	027414	JMP EEN17	NONE FOUND
0327	41331	015276	EENT8 JSB NUMCK	NUMBER?
0328	41332	000000	NOP	NO--ERROR
0329	41333	027414	JMP EEN17	BAD EXPONENT--ERROR
0330	41334	035611	ISZ ENOUF	DID OVER/UNDERFLOW OCCUR?
0331	41335	027414	JMP EEN17	YES--ERROR
0332	41336	050367	EENT9 CPA ,+15B	NO, CARRIAGE RETURN FOLLOWS?
0333	41337	027425	JMP EEN18	YES
0334	41340	027414	JMP EEN17	NO--ERROR
0335	41341	007000	EEN10 CMB	EXTRACT
0336	41342	160001	LDA 1,I	PHYSICAL
0337	41343	001727	ALF,ALF	LENGTH OF
0338	41344	010443	AND B377	DESTINATION STRING
0339	41345	003000	CMA	SET IT AS END
0340	41346	141330	ADA TMPST,I	OF UNSPECIFIED
0341	41347	071410	STA TPRME	DESTINATION STRING
0342	41350	003400	CCA	PREPARE
0343	41351	015344	JSB PSTR	DESTINATION STRING
0344	41352	065406	LDB TNULL	SAVE LENGTH
0345	41353	075354	STB INTMP	ALLOWANCE
0346	41354	006400	CLB	TURN OFF
0347	41355	075573	STB BLANK	BLANK SUPPRESSION
0348	41356	063771	LDA FENCA	POINT TO ENTER CHAR ROUTINE
0349	41357	015350	JSB TRSTR	TRANSFER STRING
0350	41360	006400	CLB	ALL REQUESTED
0351	41361	055406	CPB TNULL	CHARACTERS TRANSFERRED?
0352	41362	027401	JMP EEN14	YES
0353	41363	055464	CPB PS1	NO, TRANSFER LENGTH SPECIFIED?
0354	41364	027375	JMP EEN13	NO
0355	41365	071354	STA INTMP	YES--SAVE (A)
0356	41366	003400	CCA	FINISH
0357	41367	071410	STA TPRME	
0358	41370	041406	ADA TNULL	TRANSFER
0359	41371	071406	STA TNULL	
0360	41372	060600	LDA FSCHA	WITH BLANKS
0361	41373	013350	JSB TRSTR	
0362	41374	027425	JMP EEN18	
0363	41375	165260	EEN13 LDB TEMP6,I	SET LOGICAL
0364	41376	045406	ADB TNULL	TO ACTUAL
0365	41377	175260	STB TEMP6,I	STRING LENGTH
0366	41400	027425	JMP EEN18	
0367	41401	055464	EEN14 CPB PS1	LENGTH OF TRANSFER SPECIFIED?
0368	41402	027406	JMP EEN16	NO
0369	41403	015450	EEN15 JSB GETCR	YES
0370	41404	027425	JMP EEN18	CARRIAGE RETURN

0371	41405	027403		JMP EEN15	LOOK FOR CARRIAGE RETURN
0372	41406	015450	EEN16	JSB GETCR	END-OF-INPUT NEXT?
0373	41407	027425		JMP EEN18	YES
0374	41410	061354		LDA INTMP	NO--DESTINATION STRING EXCEEDED
0375	41411	071406		STA TNULL	RESTORE
0376	41412	061574		LDA SBPTR	DESTINATION STRING
0377	41413	071272		STA TEMP5	PARAMETERS
0378	41414	161422	EEN17	LDA RSPTR,I	TAKE
0379	41415	035422		ISZ RSPTR	ARITHMETIC
0380	41416	165422		LDB RSPTR,I	INVERSE OF
0381	41417	015370		JSB ARINV	RESPONSE TIME
0382	41420	175422		STB RSPTR,I	STORE
0383	41421	007400		CCB	IN
0384	41422	045422		ADB RSPTR	VALUE
0385	41423	170001		STA 1,I	TABLE
0386	41424	075611		STB ENOUF	CLEAR OVER/UNDERFLOW FLAG
0387	41425	002400	EEN18	CLA	ZERO CHARACTER
0388	41426	071572		STA CHRCT	COUNTER
0389	41427	060412		LDA .+40B	RESTORE
0390	41430	071573		STA BLANK	BLANK SUPPRESSION
0391	41431	002400		CLA	OUTPUT A
0392	41432	015454		JSB OUTCR	NULL.
0393	41433	026031		JMP XEC1	

0394*
 0395***
 0396** EXECUTE <ASSIGN STATEMENT> **
 0397*** **
 0398*

0399	41434		EASN	EQU *	
0400	41434	060347		LDA .-3	
0401	41435	071442		STA LT5	
0402	41436	071773		STA ASINP	SET FLAG TO SAY ASSIGN OCCURRED
0403	41437	067767		LDB ASBFA	
0404	41440	063766		LDA DBLNK	
0405	41441		EASN0	EQU *	
0406	41441	170001		STA B,I	BLANK OUT 3 WORDS
0407	41442	006004		INB	
0408	41443	035442		ISZ LT5	
0409	41444	027441		JMP EASN0	
0410	41445	002404		CLA,INA	ALLOW STRING
0411	41446	071472		STA EOL	CONSTANT
0412	41447	015336		JSB FORMX	EVALUATE STRING
0413	41450	060350		LDA .-2	
0414	41451	015344		JSB PSTR	PREPARE STRING OPERAND
0415	41452	071256		STA TEMP4	SAVE SOURCE POINTER
0416	41453	002400		CLA	INITIALIZE TO
0417	41454	071470		STA ASTYP	LOCAL LIBRARY
0418	41455	054351		CPB .-1	NULL STRING?
0419	41456	027514		JMP EASN0	YES
0420	41457	075410		STB TPRME	SAVE STRING LENGTH
0421	41460	065256		LDB TEMP4	GET FIRST
0422	41461	004065		CLE,ERB	
0423	41462	160001		LDA B,I	CHARACTER
0424	41463	002041		SEZ,RSS	
0425	41464	001727		ALF,ALF	OF STRING

0426	41465	010443	AND B377	
0427	41466	006404	CLB, INB	SET FOR PUBLIC LIBRARY
0428	41467	050416	CPA, +44B	'S'?
0429	41470	027474	JMP EAS01	YES
0430	41471	050424	CPA, +62B	NO, '*1?
0431	41472	006005	INB, RSS	YES, SET FOR GROUP LIBRARY
0432	41473	027477	JMP EAS00	NO
0433	41474		EAS01 EQU *	
0434	41474	075470	STB ASTYP	SAVE LIBRARY TYPE
0435	41475	035256	ISZ TEMP4	BUMP SOURCE POINTER
0436	41476	035410	ISZ TPRME	BUMP LENGTH
0437	41477		EAS00 EQU *	
0438	41477	061410	LDA TPRME	
0439	41500	040361	ADA, +7	
0440	41501	002020	SSA	LENGTH > 6?
0441	41502	002400	CLA	YES, SET TO 6
0442	41503	040343	ADA, -7	NO
0443	41504	071410	STA TPRME	
0444	41505	071405	STA TNULL	
0445	41506	063767	LDA ASBFA	POINTER TO
0446	41507	071556	STA ASBFP	NAME BUFFER
0447	41510	001000	ALS	
0448	41511	071272	STA TEMP5	DESTINATION STRING POINTER
0449	41512	061004	LDA FCUCA	UPPER CASE CHARACTERS ONLY
0450	41513	015350	JSB TRSTR	MOVE NAME
0451	41514	015356	EAS02 JSB FETCH	EVALUATE NUMERIC OPERAND
0452	41515	015342	JSB SBFIX	ROUND TO INTEGER
0453	41516	064445	LDB B1000	
0454	41517	075552	STB ORDNO	SAVE SPECIFIED ORDINAL NUMBER
0455	41520	015336	JSB FORMX	LEAVE NEXT VARIABLE ON TOP OF ST
0456	41521	161332	LDA OPDST, I	SAVE ADDRESS OF USER VARIABLE
0457	41522	071635	STA ATMP+1	
0458	41523	060356	LDA, +4	DEFAULT
0459	41524	015346	JSB FLOAT	RETURN CODE
0460	41525	104400	DST ATMP+1, I	TU NON-EXISTENT FILE
	41526	101635		
0461	41527	015376	JSB OPCHK	UNSTACK VALUE ADDRESS
0462	41530	061552	LDA ORDNO	DOES
0463	41531	003000	CMA	REQUESTED
0464	41532	041502	ADA FCNTR	FILE
0465	41533	003021	CMA, SSA, RSS	EXIST?
0466	41534	026031	JMP XEC1	NO, DONE
0467	41535	006400	EASN1 CLB	
0468	41536	061552	LDA ORDNO	LOCATE
0469	41537	100200	MPY, +FTEL	CORRECT
	41540	000371		
0470	41541	041504	ADA FILTB	FCB
0471	41542	040357	ADA, +5	
0472	41543	071236	STA FBASE	DISC ADDRESS AND SAVE IT
0473	41544	040355	ADA, +3	
0474	41545	164000	LDB 0, I	GET CURRENT BUFFER ADDRESS
0475	41546	040343	ADA, -7	
0476	41547	160000	LDA 0, I	
0477	41550	001423	ALR, RAR	CLEAR BITS 15 AND 14
0478	41551	003004	CMA, INA	

0479	41552	040001	ADA	1	
0480	41553	071647	STA	RQ3	
0481	41554	015516	JSB	WRBUF	WRITE OUT RECORD
0482	41555	061236	LDA	FBASE	RESTORE
0483	41556	040345	ADA	,-5	FCB
0484	41557	071236	STA	FBASE	POINTER
0485	41560	006400	CLB		
0486	41561	174000	STB	0,I	INITIALIZE
0487	41562	040370	ADA	,+14	
0488	41563	174000	STB	0,I	INITIALIZE PROTECTMASK TO 0
0489	41564	075772	STB	RETCO	INITIALIZE RETURN CODE
0490	41565	114532	JSB	SCHLB,I	CALL IN
0491	41566	072040	DEF	ASNIB	ASSIGN OVERLAY
0492	41567	027653	JMP	EASN5	ASSIGNED FILE RECORD SIZE TOO LA
0493	41570	027651	JMP	EASN4	FILE DOESN'T EXIST
0494	41571	035772	ISZ	RETCO	'READ ONLY' = GROUP OR A000
0495	41572	035772	ISZ	RETCO	'READ ONLY' = IN USE
0496	41573	061613	EASN2 LDA	TEMP1	
0497	41574	051334	CPA	PRGCT	END OF STATEMENT ?
0498	41575	027644	JMP	EASN3	YES
0499	41576	160000	LDA	0,I	TEST FOR A COMMA
0500	41577	010664	AND	OPMSK	
0501	41600	050612	CPA	B2000	COMMA FOLLOWING?
0502	41601	002001	RSS		
0503	41602	027644	JMP	EASN3	NO
0504	41603	002404	CLA,INA		ALLOW
0505	41604	071472	STA	EOL	STRING CONSTANT
0506	41605	015336	JSB	FORMX	YES, EVALUATE STRING OPERAND
0507	41606	060350	LDA	,-2	PREPARE
0508	41607	015344	JSB	PSTR	SOURCE
0509	41610	071256	STA	TEMP4	STRING
0510	41611	075410	STB	TPRME	
0511	41612	063767	LDA	ASBFA	
0512	41613	071556	STA	ASBFP	GET CHARACTER
0513	41614	001000	ALS		POINTER TO
0514	41615	071272	STA	TEMP5	PASSWORD BUFFER
0515	41616	060347	LDA	,-3	
0516	41617	071442	STA	LT5	
0517	41620	065556	LDB	ASBFP	
0518	41621	063766	LDA	DBLNK	
0519	41622	170001	STA	1,I	FILL PASSWORD
0520	41623	006004	INB		BUFFER WITH
0521	41624	035442	ISZ	LT5	BLANKS
0522	41625	027622	JMP	*-3	
0523	41626	060343	LDA	,-7	SET LENGTH (IN CHARACTERS)
0524	41627	071406	STA	TNULL	OF PASSWORD BUFFER
0525	41630	060600	LDA	FSCHA	
0526	41631	015350	JSB	TRSTR	MOVE PASSWORD TO BUFFER
0527	41632	061556	LDA	ASBFP	
0528	41633	002004	INA		
0529	41634	104200	DLD	0,I	
	41635	100000			
0530	41636	141556	ADA	ASBFP,I	ADD WORD1 AND WORD2
0531	41637	020001	XOR	1	EXCLUSIVE OR = WORD3
0532	41640	030225	IOR	RBP	INCLUSIVE OR BITS 14 AND 15

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0533	41641	065236		LDB FBASE	
0534	41642	044370		AOB .+14	
0535	41643	170001		STA 1,I	STORE PROTECTMASK IN FCB
0536	41644	061772	EASN3	LDA RETCD	
0537	41645	015346		JSB FLOAT	FLOAT RETURN CODE AND
0538	41646	104400		DST ATMP+1,1	STORE IN USER VARIABLE
		41647			
0539	41650	026031		JMP XEC1	DONE
0540	41651	060355	EASN4	LDA .+3	SET RETURN CODE FOR NON-EXISTENT
0541	41652	027645		JMP EASN3+1	
0542	41653	060357	EASN5	LDA .+5	SET RETURN CODE FOR RECORD SIZE
0543	41654	027645		JMP EASN3+1	

0545*

0546***

0547** COMPLETE EXECUTION **

0548***

0549*

0550	41655	EXIT	EQU *	
0551	41655		CLF 0	
0552	41656		LDA MAIN,I	INHIBIT
0553	41657		IOR UNABT	
0554	41660		STA MAIN,I	ABORTS
0555	41661		STF 0	
0556	41662		LDA FCNTR	SET COUNTER TO
0557	41663		CMA	1'S COMPLEMENT OF
0558	41664		STA FCNTR	NUMBER OF FILES
0559	41665		INA	SAVE 2'S COMPLEMENT FOR
0560	41666		STA FRMAT	LCD'S FILE COUNT
0561	41667		LDA FCORE	LOAD FIRST BUFFER ADDRESS
0562	41670		LDB FILTB	LOAD POINTER TO
0563	41671		ADB .+5	FIRST DISC ADDRESS (LOW WORD)
0564	41672	EXIT0	ISZ FCNTR	MORE FILES?
0565	41673		JMP EXIT2	YES
0566	41674		JSB LCDLP	UPDATE LAST CHANGE DATE
0567	41675	EXIT3	CLB	OUTPUT
0568	41676		STB DCLC1,I	
0569	41677		JSB ABCK,I	
0570	41700		LDA DCLC2,I	
0571	41701		STA DCLC1,I	
0572	41702		LDA EXIT1	
0573	41703		STA LT1	COMPLETION
0574	41704		LDA MAIN,I	
0575	41705		AND HFLAG	
0576	41706		SZA	MESSAGE UNLESS
0577	41707		CCA,RSS	SHELLO PROGRAM
0578	41710		LDA .-4	
0579	41711		LDB MAIN	DOES USER
0580	41712		INB	HAVE LP?
0581	41713		CPB PRIST	
0582	41714		RSS	
0583	41715		JMP EXIT4	NO,
0584	41716		LDA EXT1A	YES,
0585	41717		STA LT1	RELEASE IT AND
0586	41720		LDA .-10	PRINT MESSAGE
0587	41721		CLB	
0588	41722		STB PRIST	
0589	41723	EXIT4	CLB	
0590	41724		STB LT2	
0591	41725		JSB OUTST	
0592	41726		LDA MAIN	TELL 2114
0593	41727		INA	
0594	41730		LDA 0,I	THAT USER IS
0595	41731		IOR UNR	
0596	41732		JSB S14LP,I	FINISHED RUNNING
0597	41733		LDA .+4	CLEAR PBFLG AND CBFLG
0598	41734		LDB MAIN	
0599	41735		JSB EDABR	BITS.

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0600	41736	124514		JMP	SCHEN,I	
0601	41737	041737	EXT1A	DEF	*	
0602	41740	011423		OCT	11423	
0603	41741	006412		OCT	6412	
0604	41742	046120		ASC	3,LP FRE	
	41743	020106				
	41744	051105				
0605	41745		EXT1	EQU	*	
0606	41745	042412		OCT	42412	
0607	41746	006412		OCT	6412	
0608	41747	042117		ASC	2,DONE	
	41750	047105				
0609	41751	006412		OCT	6412	
0610	41752	075236	EXIT2	STB	FBASE	WRITE
0611	41753	071547		STA	RQ3	OUT
0612	41754	015516		JSB	WRBUF	RECORD
0613	41755	065236		LDB	FBASE	GET RECORD
0614	41756	044365		ADB	.,+FTEL=4	SIZE OF NEXT FILE
0615	41757	160001		LDA	1,I	
0616	41760	001423		ALR	RAR	CLEAR BITS 14 AND 15
0617	41761	003004		CMA	INA	
0618	41762	044361		ADB	.,+7	GET END OF FILE BUFFER
0619	41763	140001		ADA	1,I	COMPUTE FILE BUFFER STARTING ADD
0620	41764	044347		ADB	.,-3	POINT B TO FIRST DISC ADDRESS
0621	41765	027672		JMP	EXIT0	
0623	41766	020040	DBLNK	OCT	20040	
0624	41767	001741	ASBFA	DEF	ERSEC+60	
0625	41770	142246	XECBR	DEF	XECTB=42B,I	
0626	41771	001524	FENCA	DEF	FENCH	
0627	41772	001274	FINCA	DEF	FINCH	
0628	41773	046174	MIOEN	DEF	MIO7	
0629	41774	177666	M74	DEC	=74	
0630	41775	041745	EXIT1	DEF	EXT1	

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0002 42000                ORG 42000B
0003 42000 142664  ARBAS DEF FOJT=12B,I
0004 42001 177712  D66  OCT  =66
0005 42002 041675  EXT3A DEF EXIT3
0006 42003 000000  ITEMP BSS 1
0007 42004 177670  M72  DEC  =72
0008 42005 000111  ,73  DEC  73
0009*
0010**
0011*** EXECUTE <CHAIN STATEMENT> ***
0012**
0013*
0014 42006 114532  ECHAN JSB SCHLB,I  CALL SYSTEM TO EXECUTE DISC ROUT
0015 42007 072041                DEF CHLIB
0016 42010 115155                JSB RERRS+39,I
0017 42011 115166                JSB RERRS+48,I
0018 42012 115156                JSB RERRS+40,I
0019 42013 115157                JSB RERRS+41,I
0020 42014 115165                JSB RERRS+47,I
0021 42015 126002                JMP EXT3A,I  NULL PROGRAM OR BAD LINE NUMBER
0022 42016 126017                JMP ++1,I  GO COMPILE IT
0023 42017 036052                DEF CML0
0024**
0025*** SET POINTERS TO DATA STATEMENT ***
0026**
0027*
0028* STARTING WITH THE STATEMENT REFERENCED BY (B) UPON
0029* ENTRY, FIND THE NEXT <DATA STATEMENT> AND SET THE DATA
0030* BLOCK POINTERS APPROPRIATELY, IF NO <DATA STATEMENT>
0031* IS FOUND, SET THE POINTERS TO THE 'OUT OF DATA'
0032* CONFIGURATION AND EXIT WITH (A) = -1.
0033*
0034 42020 055575  #STDP CPB SYMTB  PROGRAM EXHAUSTED?
0035 42021 026037                JMP SETD2  YES, SET 'OUT OF DATA' CONDITION
0036 42022 044354                ADB .+2  NO,
0037 42023 160001                LDA 1,I  STATEMENT
0038 42024 044351                ADB .-1  OF
0039 42025 010664                AND OPMSK  TYPE
0040 42026 050652                CPA DATOP  'DATA'?
0041 42027 026033                JMP SETD1  YES
0042 42030 144001                ADB 1,I  NO, COMPUTE
0043 42031 044351                ADB .-1  ADDRESS OF
0044 42032 026020                JMP #STOP  NEXT STATEMENT
0045 42033 160001  SETD1 LDA 1,I  LOAD STATEMENT LENGTH
0046 42034 006004                INB  SET
0047 42035 003004                CMA,INA  DATA
0048 42036 002005                INA,RSS  COUNTER
0049 42037 003400  SETD2 CCA  TO
0050 42040 071262                STA DCCNT  1-STATEMENT LENGTH
0051 42041 075244                STB NXTDT  SET POINTER ONE WORD
0052 42042 125360                JMP SETDP,I  ABOVE FIRST DATA CONSTANT
0053**
0054*** VALIDATE A FILE REQUEST ***
0055**
0056*

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0057* EXIT TO (P+2) IF (TEMP1)+1 DOES NOT BEGIN A FILE REFERENCE;
0058* ELSE EVALUATE THE FILE REFERENCE AND VERIFY ITS CORRESPONDENCE
0059* WITH A REQUESTED FILE, IF A RECORD REFERENCE IS ALSO PRESENT,
0060* EVALUATE IT AND CALL FOR ITS SWAPPING INTO THE CORE BUFFER,
0061*
0062 42043 065613 #VLF1 LDB TEMP1 IS
0063 42044 006004 INB
0064 42045 055334 CPB PRGCT NEXT
0065 42046 026053 JMP VLF10
0066 42047 160001 LDA 1,I OPERATOR
0067 42050 010664 AND OPMSK
0068 42051 050736 CPA B4000 A '#' ?
0069 42052 026055 JMP VLF11 YES
0070 42053 035506 VLF10 ISZ VLFIL NO, EXIT
0071 42054 125506 JMP VLFIL,I TO (P+2)
0072 42055 007400 VLF11 CCB SET
0073 42056 161613 LDA TEMP1,I VL0 = 0
0074 42057 010664 AND OPMSK FOR
0075 42060 050656 CPA PRTOP 'PRINT',
0076 42061 006400 CLB ELSE
0077 42062 075516 STB VL0 VL0 = -1
0078 42063 035613 ISZ TEMP1 EVALUATE
0079 42064 015356 JSB FETCH FILE REFERENCE
0080 42065 015342 JSB SBFIX 15-BIT INTEGER?
0081 42066 115151 JSB RERRS+35,I NO
0082 42067 075234 STB FILE# YES, SAVE IT
0083 42070 161613 LDA TEMP1,I NEXT
0084 42071 010664 AND OPMSK OPERATOR
0085 42072 050612 CPA B2000 A COMMA?
0086 42073 026105 JMP VLF13 YES
0087 42074 007400 CCB NO, USE NULL RECORD
0088 42075 075352 VLF12 STB RCRD#
0089 42076 006020 SSB NULL RECORD?
0090 42077 064350 LDB ,=2 YES, DO NOT ADJUST FILE POINTER
0091 42100 061234 LDA FILE#
0092 42101 035516 ISZ VL0 WRITE REQUEST?
0093 42102 003000 CMA YES
0094 42103 015510 JSB RQSTR VALIDATE FILE/RECORD REQUEST
0095 42104 125506 JMP VLFIL,I
0096 42105 015356 VLF13 JSB FETCH EVALUATE RECORD REFERENCE
0097 42106 015342 JSB SBFIX 15-BIT INTEGER?
0098 42107 064274 LDB INF NO, LOAD IMPOSSIBLE RECORD
0099 42110 026075 JMP VLF12 YES
0100** **
0101*** FETCH DATA ITEM ***
0102** **
0103*
0104* UPON ENTRY (B) = 1 IF A NUMBER IS REQUESTED OR (B) = 2 IF A
0105* STRING IS REQUESTED. FDATA FILLS THE REQUEST FROM A FILE IF
0106* ONE IS REFERENCED BY THE CALLER, ELSE FROM THE DATA BLOCK.
0107* TYPE MATCH IS CHECKED. NUMBERS RETURN IN (A) AND (B); STRINGS
0108* ARE PREPARED AS SOURCE STRINGS. FDATA MOVES TO NEW FILE
0109* RECORDS OR <DATA STATEMENT>S AS NECESSARY.
0110*
0111 42111 061234 #FDAT LDA FILE# READ FROM

```


0112	42112	002021	SSA,RSS	FILE?
0113	42113	026164	JMP FDAT3	YES
0114	42114	035262	ISZ DCCNT	NO, DATA IN CURRENT STATEMENT?
0115	42115	026125	JMP FDAT1	YES
0116	42116	075272	STB TEMP5	NO, SAVE (B)
0117	42117	065244	LDB NXTDT	MOVE TO NEXT
0118	42120	015360	JSB SETDP	<DATA STATEMENT>
0119	42121	065272	LDB TEMP5	RETRIEVE (B)
0120	42122	035262	ISZ DCCNT	DATA FOUND?
0121	42123	002001	RSS	YES
0122	42124	115133	JSB RERRS+21,I	NO, OUT OF DATA
0123	42125	035262	FDAT1 ISZ DCCNT	INCREMENT COUNTER
0124	42126	161244	LDA NXTDT,I	CORRECT
0125	42127	035244	ISZ NXTDT	
0126	42130	005300	RBR	TYPE OF
0127	42131	020001	XOR 1	
0128	42132	002020	SSA	DATA?
0129	42133	115134	JSB RERRS+22,I	NO
0130	42134	006021	SSB,RSS	YES, STRING?
0131	42135	026144	JMP FDAT2	YES
0132	42136	104200	DLN NXTDT,I	NO, LOAD NUMBER
	42137	101244		
0133	42140	035244	ISZ NXTDT	UPDATE
0134	42141	035244	ISZ NXTDT	POINTER
0135	42142	035262	ISZ DCCNT	
0136	42143	125362	JMP FDATA,I	
0137	42144	161244	FDAT2 LDA NXTDT,I	LOAD STRING LENGTH
0138	42145	035244	ISZ NXTDT	SET
0139	42146	065244	LDB NXTDT	START-OF-STRING
0140	42147	005000	BLB	CHARACTER
0141	42150	075256	STB TEMP4	ADDRESS
0142	42151	010443	AND B377	SET
0143	42152	003000	CMA	TRANSFER STRING
0144	42153	071410	STA TPRME	LENGTH
0145	42154	003004	CMA,INA	UPDATE
0146	42155	001100	ARS	
0147	42156	064000	LDB 0	
0148	42157	041244	ADA NXTDT	DATA
0149	42160	071244	STA NXTDT	
0150	42161	045262	ADB DCCNT	
0151	42162	075262	STB DCCNT	POINTERS
0152	42163	125362	JMP FDATA,I	
0153	42164	061236	FDAT3 LDA FBASE	GET
0154	42165	040357	ADA ,+5	
0155	42166	160000	LDA 0,I	PROTECT
0156	42167	071771	STA PMASK	MASK
0157	42170	075272	STB TEMP5	SAVE DATA REQUEST TYPE
0158	42171	065352	LDB RCRD#	GET TYPE
0159	42172	075653	STB EORFL	OF NEXT ITEM
0160	42173	015514	JSB GTTYP	IN FILE
0161	42174	051272	CPA TEMP5	MATCHING TYPES?
0162	42175	026213	JMP FDAT5	YES
0163	42176	050356	CPA ,+4	NO, END-OF-RECORD?
0164	42177	026203	JMP FDAT4	YES
0165	42200	050355	CPA ,+3	NO, END-OF-FILE?

0166	42201	002001	RSS	YES
0167	42202	115134	JSB RERRS+22,I	NO, TYPE MISMATCH
0168	42203	035236	FDAT4 ISZ FBASE	LOAD
0169	42204	165236	LDB FBASE,I	EOF/EOR ADDRESS
0170	42205	006003	SZB,RSS	NULL?
0171	42206	115153	JSB RERRS+37,I	YES, UNPROTECTED EOF/EOR
0172	42207	075334	STB PRGCT	NO
0173	42210	065250	LDB FORST	CLEAN UP
0174	42211	015432	JSB SETPT	EXECUTION STACKS
0175	42212	124556	JMP XEC1A,I	
0176	42213	165236	FDAT5 LDB FBASE,I	LOAD DATA ADDRESS
0177	42214	002011	SLA,RSS	STRING?
0178	42215	026227	JMP FDATA	YES
0179	42216	104200	OLD 1,I	NO, LOAD NUMBER
	42217	100001		
0180	42220	021771	XOR PMASK	MASK
0181	42221	101100	SWP	
0182	42222	021771	XOR PMASK	DATA
0183	42223	101100	SWP	
0184	42224	135236	ISZ FBASE,I	ADJUST RECORD POINTER
0185	42225	135236	ISZ FBASE,I	PAST DATA
0186	42226	125362	JMP FDATA,I	
0187	42227	160001	FDAT6 LDA 1,I	LOAD STRING HEADER
0188	42230	006004	INB	SET
0189	42231	005000	BLS	SOURCE
0190	42232	075256	STB TEMP4	ADDRESS
0191	42233	005100	BRS	
0192	42234	010443	AND B377	SET
0193	42235	003000	CMA	TRANSFER
0194	42236	071410	STA TPRME	LENGTH
0195	42237	003004	CMA,INA	ADJUST
0196	42240	001100	ARS	RECORD POINTER
0197	42241	044000	ADB 0	PAST
0198	42242	175236	STB FBASE,I	STRING
0199	42243	125362	JMP FDATA,I	

```

0201**
0202*** REQUEST AN INPUT RECORD ***
0203**
0204*
0205* SERVICES REQUESTS FOR TELETYPE INPUT. IF (A) = 0 EMIT A '?'
0206* AND 'X-ON' ELSE EMIT A LINE FEED, TWO '?', AND AN 'X-ON'.
0207*
0208 42244 072003 #INCL STA ITEMP SAVE FLAG
0209 42245 060257 LDA MAIN DOES THIS USER
0210 42246 002004 INA HAVE THE
0211 42247 050255 CPA PRIST LINE PRINTER?
0212 42250 115220 JSB WERRS+9,I YES - RELEASE IT
0213 42251 062003 LDA ITEMP RESTORE FLAG
0214 42252 002002 SZA INITIAL REQUEST?
0215 42253 026303 JMP INCL2 NO
0216 42254 061572 LDA CHRCT YES
0217 42255 042004 ADA M72 LINE
0218 42256 002020 SSA FULL?
0219 42257 026264 JMP INCL1 NO
0220 42260 060367 LDA .+15B YES, OUTPUT
0221 42261 015454 JSB OUTCR CARRIAGE RETURN
0222 42262 060364 LDA .+12B AND
0223 42263 015454 JSB OUTCR LINE FEED
0224 42264 060734 INCL1 LDA B77 OUTPUT
0225 42265 015454 JSB OUTCR '?'
0226 42266 060373 LDA .+21B OUTPUT
0227 42267 015454 JSB OUTCR AN X-ON
0228 42270 002400 CLA RESET
0229 42271 071572 STA CHRCT OUTPUT CHARACTER COUNTER
0230 42272 071422 STA IFCNT AND INPUT ITEM COUNTER
0231 42273 060231 LDA IWT
0232 42274 114516 JSB SCHIN,I REQUEST INPUT RECORD
0233 42275 015450 JSB GETCR FIRST
0234 42276 026303 JMP INCL2 CHARACTER A
0235 42277 050355 CPA .+3 'CONTROL C' ?
0236 42300 124554 JMP EXITA,I YES, TERMINATE EXECUTION
0237 42301 015452 JSB BCKSP NO, RETURN
0238 42302 125446 JMP INCL,I TO CALLER
0239 42303 060364 INCL2 LDA .+12B OUTPUT A
0240 42304 015454 JSB OUTCR LINE FEED
0241 42305 060734 LDA B77 AND
0242 42306 015454 JSB OUTCR A '?'
0243 42307 026264 JMP INCL1
0244**
0245*** EXECUTION BRANCH TABLE ***
0246**
0247 42310 041434 XECTB DEF EASN ASSIGN
0248 42311 040031 DEF XEC1 USING
0249 42312 040031 DEF XEC1 IMAGE
0250 42313 040031 DEF XEC1 COM
0251 42314 040111 DEF ELET LET
0252 42315 040031 DEF XEC1 DIM
0253 42316 040031 DEF XEC1 DEF
0254 42317 040031 DEF XEC1 REM
0255 42320 040136 DEF EGOTO GOTO

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0256	42321	040124	DEF EIF	IF
0257	42322	040207	DEF EFUR	FOR
0258	42323	040307	DEF ENEXT	NEXT
0259	42324	040137	DEF EGOSB	GOSUB
0260	42325	040364	DEF ERTRN	RETURN
0261	42326	041655	DEF EXIT	END
0262	42327	041655	DEF EXIT	STOP
0263	42330	040031	DEF XEC1	DATA
0264	42331	040373	DEF EINPT	INPUT
0265	42332	040622	DEF EREAD	READ
0266	42333	040653	DEF EPRIN	PRINT
0267	42334	041150	DEF ERSTR	RESTORE
0268	42335	046023	DEF EMAT	MAT
0269	42336	040031	DEF XEC1	FILES
0270	42337	042006	DEF ECHAN	CHAIN
0271	42340	041157	DEF EENTR	ENTER
0272	42341	040111	DEF ELET	'IMPLIED' LET
0273**			**	
0274***	FETCH FORMULA VALUE		***	
0275**			**	
0276*				
0277*	RETURN WITH THE RESULT IN (A) AND (B)			
0278*				
0279	42342	015336	#FTCH JSB FORMX	EVALUATE FORMULA
0280	42343	015376	JSB OPCHK	UNSTACK ADDRESS
0281	42344	104200	DLD 1,I	LOAD RESULT
	42345	100001		
0282	42346	125356	JMP FETCH,I	
0283**			**	
0284***	SET EXECUTION POINTERS		***	
0285**			**	
0286*				
0287*	SETS POINTERS TO THOSE STACKS WHOSE LOCATION MAY CHANGE			
0288*	DURING EXECUTION, USUALLY DUE TO INITIATION OR COMPLETION			
0289*	OF FOR-LOOPS.			
0290*				
0291	42347	075250	#STPT STB FORST	SET TOP OF FOR-STACK
0292	42350	044356	ADB ,+4	SET POINTER TO TOP
0293	42351	075330	STB TMPST	OF TEMPORARY STACK
0294	42352	044376	ADB ,+20	SET POINTER TO TOP
0295	42353	075332	STB OPDST	OF OPERAND STACK
0296	42354	044355	ADB ,+3	SET POINTER TO BOTTOM
0297	42355	075466	STB OPTRQ	OF OPERATOR STACK
0298	42356	007000	CMB	OUT
0299	42357	044462	ADB LWAUS	OF
0300	42360	006020	SSB	STORAGE?
0301	42361	115120	JSB RERRS+10,I	YES
0302	42362	065466	LDB OPTRQ	NO, SET POINTER TO TOP
0303	42363	074056	STB PBPTR	OF OPERATOR STACK
0304	42364	125432	JMP SETPT,I	
0305**			**	
0306***	INITIALIZE FOR PROGRAM MODIFICATION		***	
0307**			**	
0308	42365	060412	#SINI LDA ,+40B	TURN ON
0309	42366	071573	STA BLANK	BLANK SUPPRESSION

0310 42367 071422
0311 42370 125464

STA GFLAG
JMP SINIT,I

TURN OFF INTEGER ERROR SUPPRESS

```

0313**
0314*** EVALUATE A FORMULA ***
0315**
0316*
0317* ENTER WITH TEMP1 POINTING TO THE FIRST OPERAND OF THE
0318* FORMULA. OPERATORS AND THE ADDRESSES OF OPERANDS ARE
0319* STACKED SEPARATELY. OPERAND ADDRESSES ARE STACKED AS
0320* SOON AS THE OPERAND IS SCANNED. AN OPERATOR IS NOT
0321* STACKED WHILE THE OPERATOR ON TOP OF THE STACK HAS EQUAL
0322* OR HIGHER PRECEDENCE, INSTEAD THE LATTER IS UNSTACKED
0323* AND EXECUTED; THUS AN OPERATOR FORCES EXECUTION OF THOSE
0324* PREVIOUSLY STACKED, DOWN TO THE LATEST ONE STACKED WHICH
0325* HAS A LOWER PRECEDENCE. THE OPERATOR STACK IS INITIALIZED
0326* WITH AN END-OF-FORMULA (LOWEST PRECEDENCE) OPERATOR. THE
0327* ACTION OF OPERATORS IS IN GENERAL TO COMBINE THE TOP TWO
0328* OPERANDS STACKED. THE ADDRESS OF THE PARTIAL RESULT THUS
0329* OBTAINED REPLACES THE ADDRESSES OF ITS CONSTITUENT OPERANDS
0330* ON THE STACK (VALUES OF PARTIAL RESULTS ARE KEPT ON THE
0331* TEMPORARY STACK). UPON EXIT TEMP1 POINTS TO THE FIRST PROGRAM
0332* WORD WHOSE OPERATOR DOES NOT MANIPULATE THE STACK (THIS
0333* MAY BE AN END-OF-FORMULA, 'THEN', 'OF', ETC.).
0334*
0335 42371 015366 #FORM JSB PSHST STACK
0336 42372 006400 CLB BEGINNING-OF-FORMULA
0337 42373 174056 STB PBPTR,I OPERATOR
0338*
0339** PROCESS NEXT OPERAND **
0340*
0341 42374 161613 FORM1 LDA TEMP1,I EXTRACT
0342 42375 035613 ISZ TEMP1 NEXT
0343 42376 010700 AND OPDMK OPERAND
0344 42377 002003 SZA,RSS NULL OPERAND?
0345 42400 026441 JMP FORM2 YES
0346 42401 035332 ISZ OPDST NO, BUMP POINTER
0347 42402 035332 ISZ OPDST TO OPERAND STACK
0348 42403 002020 SSA VARIABLE OPERAND?
0349 42404 026517 JMP FORM6 NO
0350*
0351** STACK NON-FUNCTION VARIABLE OPERAND ADDRESS **
0352*
0353*
0354* THE ADDRESSES STACKED ARE AS FOLLOWS; FOR SIMPLE VARIABLES,
0355* A POINTER TO THE VALUE; FOR ARRAYS, THE BASE ADDRESS; FOR
0356* STRING VARIABLES, THE NEGATION OF THE BASE ADDRESS.
0357*
0358 42405 040351 ADA ,-1 COMPUTE
0359 42406 001000 ALS POINTERS
0360 42407 041575 ADA SYMTB TO SYMBOL
0361 42410 064000 LDB 0 TABLE
0362 42411 006004 INB ENTRY
0363 42412 160000 LDA 0,I PROGRAMMER.
0364 42413 010371 AND .+17B DEFINED
0365 42414 050371 CPA .+17B FUNCTION?
0366 42415 026551 JMP FORM8 YES
0367 42416 164001 LDB 1,I NO, LOAD VALUE POINTER

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0368	42417	002002	SZA	STRING VARIABLE?
0369	42420	026440	JMP FORM2=1	NO
0370	42421	061613	LDA TEMP1	YES, END
0371	42422	051334	CPA PRGCT	OF FORMULA?
0372	42423	026430	JMP FORM0	YES
0373	42424	161613	LDA TEMP1,I	NO,
0374	42425	010664	AND OPMSK	FOLLOWED BY
0375	42426	050622	CPA LBOP	SUBSCRIPT?
0376	42427	026437	JMP FORM2=2	YES
0377	42430	075256	FORM0 STB TEMP4	NO
0378	42431	015400	J9B RSCHK	CREATE TEMPORARY
0379	42432	002400	CLA	RECORD
0380	42433	007400	CCB	
0381	42434	104400	DST TMPST,I	(0,-1)
	42435	101330		
0382	42436	065256	LDB TEMP4	RETRIEVE AND
0383	42437	007004	CMB,INB	NEGATE STRING ADDRESS
0384	42440	175332	STB OPDST,I	STACK ADDRESS
0385*			*	
0386**	PROCESS NEXT OPERATOR		**	
0387*			*	
0388	42441	061613	FORM2 LDA TEMP1	FORMULA
0389	42442	051334	CPA PRGCT	EXHAUSTED?
0390	42443	026457	JMP FORM3	YES
0391	42444	161613	LDA TEMP1,I	NO,
0392	42445	010664	AND OPMSK	EXTRACT
0393	42446	001727	ALF,ALF	NEXT
0394	42447	064000	LDB 0	OPERATOR
0395	42450	050354	CPA ,+2	STRING CONSTANT?
0396	42451	026651	JMP FOR13	YES
0397	42452	040332	ADA ,=208	NO, NON=FORMULA
0398	42453	002020	SSA	OPERATOR?
0399	42454	006400	CLB	YES
0400	42455	042001	ADA D66	NO, NON=FORMULA
0401	42456	002021	SSA,RSS	OPERATOR?
0402	42457	006400	FORM3 CLB	YES
0403	42460	002400	CLA	NO
0404	42461	006003	SZB,RSS	END=OF=FORMULA?
0405	42462	026466	JMP **4	YES
0406	42463	044564	ADB FOPBS	NO, LOAD OPERATOR
0407	42464	160001	LDA 1,I	INFORMATION WORD
0408	42465	010443	AND B377	SAVE
0409	42466	071252	STA TEMP2	PRIORITY
0410	42467	120001	XOR 1,I	SAVE
0411	42470	001100	ARS	INTERNAL
0412	42471	071254	STA TEMP3	NAME
0413*			*	
0414**	STACK PRESENT OR EXECUTE PREVIOUS OPERATOR		**	
0415*			*	
0416	42472	160056	FORM4 LDA PBPTR,I	DOES OPERATOR
0417	42473	010443	AND B377	ON TOP
0418	42474	003000	CMA	OF STACK
0419	42475	041252	ADA TEMP2	HAVE HIGHER
0420	42476	002020	SSA	PRIORITY?
0421	42477	026507	JMP FORM5	YES

0422	42500	061252	LDA TEMP2	NO
0423	42501	050365	CPA ,+13B	CORRECT
0424	42502	002404	CLA,INA	STACK PRIORITY
0425	42503	031254	IOR TEMP3	ADD NAME
0426	42504	015366	JSB PSHST	STACK
0427	42505	170056	STA PBPTR,I	OPERATOR
0428	42506	026374	JMP FORM1	
0429	42507	160056	FORM5 LDA PBPTR,I	POP
0430	42510	064350	LDB ,=2	OPERATOR
0431	42511	044056	ADB PBPTR	FROM TOP
0432	42512	074056	STB PBPTR	OF STACK
0433	42513	001727	ALF,ALF	BRANCH
0434	42514	010443	AND B377	TO
0435	42515	042000	ADA ARBAS	APPROPRIATE
0436	42516	124000	JMP 0,I	ROUTINE
0437*				*
0438**	STACK CONSTANT OR PARAMETER ADDRESS			**
0439*				*
0440*				
0441*	FOR NUMERICAL CONSTANTS STACK A POINTER TO THE VALUE			
0442*	EMBEDDED IN THE PROGRAM, FOR PARAMETERS STACK THE			
0443*	PARAMETER ADDRESS.			
0444*				
0445	42517	001666	FORM6 ELA,CLE,ERA	ERASE FLAG BIT
0446	42520	002002	SZA	CONSTANT?
0447	42521	026526	JMP FORM7	NO
0448	42522	065613	LDB TEMP1	YES,
0449	42523	035613	ISZ TEMP1	STACK
0450	42524	035613	ISZ TEMP1	ADDRESS
0451	42525	026440	JMP FORM2=1	
0452	42526	071252	FORM7 STA TEMP2	PRE-
0453	42527	010371	AND ,+17B	DEFINED
0454	42530	050371	CPA ,+17B	FUNCTION?
0455	42531	026534	JMP **3	YES
0456	42532	165466	LDB OPTRQ,I	NO, STACK
0457	42533	026440	JMP FORM2=1	PARAMETER ADDRESS
0458*				
0459*	FOR FUNCTIONS RECURSION ON FORMX EVALUATES THE PARAMETER			
0460*	AND, FOR PROGRAMMER DEFINED FUNCTIONS, THE VALUE,			
0461*	FUNCTION VALUES ARE LEFT ON THE TEMPORARY STACK AND A			
0462*	POINTER THERETO IS PLACED ON THE OPERAND STACK,			
0463*	'LEN' IS HANDLED IN A SPECIAL WAY.			
0464*				
0465*				*
0466**	EVALUATE PRE-DEFINED FUNCTION			**
0467*				*
0468	42534	021252	XOR TEMP2	IDENTIFY
0469	42535	001727	ALF,ALF	
0470	42536	001700	ALF	FUNCTION
0471	42537	050367	CPA ,+15B	'LEN' ?
0472	42540	026630	JMP FOR12	YES
0473	42541	040740	ADA PDFBS	NO, STACK
0474	42542	015366	JSB PSHST	JUMP TO
0475	42543	170056	STA PBPTR,I	ENTRY POINT
0476	42544	061336	LDA FORMX	SAVE FORMX

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0477	42545	171332	STA OPDST,I	RETURN ADDRESS
0478	42546	015336	JSB FORMX	EVALUATE ARGUMENT
0479	42547	015374	JSB STTOP	BRANCH TO
0480	42550	124056	JMP PBPTR,I	SUBROUTINE

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0001*
0002** EVALUATE PROGRAMMER-DEFINED FUNCTION **
0003*
0004 42551 160001 FORM8 LDA 1,I          LOAD ADDRESS OF FORMULA
0005 42552 015366          JSB PSHST          SAVE VALUE OF
0006 42553 065330          LDB TMPST          CURRENT POINTER TO
0007 42554 174056          STB PBPTR,I        TEMPORARY STACK
0008 42555 015366          JSB PSHST          SAVE ADDRESS OF
0009 42556 170056          STA PBPTR,I        DEFINING FORMULA
0010 42557 061336          LDA FORMX          SAVE FORMX
0011 42560 171332          STA OPDST,I        RETURN ADDRESS
0012 42561 015336          JSB FORMX          EVALUATE ARGUMENT
0013 42562 161332          LDA OPDST,I        SWAP
0014 42563 165466          LDB OPTRQ,I        OLD AND NEW
0015 42564 175332          STB OPDST,I        ARGUMENT
0016 42565 171466          STA OPTRQ,I        ADDRESSES
0017 42566 051330          CPA TMPST          PROTECT PARAMETER
0018 42567 015400          JSB RSCHK          ON TEMPORARY STACK
0019 42570 061613          LDA TEMP1          SWAP ADDRESSES
0020 42571 164056          LDB PBPTR,I        OF CURRENT
0021 42572 075613          STB TEMP1          AND FUNCTION
0022 42573 170056          STA PBPTR,I        FORMULAS
0023 42574 015336          JSB FORMX          EVALUATE FUNCTION
0024 42575 165332          LDB OPDST,I        POP
0025 42576 060350          LDA .-2            OPERAND
0026 42577 041332          ADA OPDST          STACK,
0027 42600 071332          STA OPDST          SAVING
0028 42601 161332          LDA OPDST,I        RESULT ADDRESS
0029 42602 171466          STA OPTRQ,I        AND ADDRESS OF
0030 42603 175332          STB OPDST,I        OLD PARAMETER
0031 42604 160056          LDA PBPTR,I        RESTORE
0032 42605 071613          STA TEMP1          FORMULA POINTER
0033 42606 060056          LDA PBPTR          POP
0034 42607 040350          ADA .-2            OPERATOR
0035 42610 070056          STA PBPTR          STACK
0036 42611 160056          LDA PBPTR,I        RESTORE ORIGINAL
0037 42612 071330          STA TMPST          TEMPORARY STACK POINTER
0038 42613 015374          JSB STTOP          LOAD FUNCTION RESULT
0039*
0040** RECORD RESULT OF FUNCTION **
0041*
0042*
0043* PRE-DEFINED FUNCTIONS RETURN TO THIS POINT WITH THEIR
0044* RESULT IN (A) AND (B).
0045*
0046 42614 104400 FOR10 DST TMPST,I    SAVE RESULT
0047 42615 101330          LDA OPDST,I        RESTORE FORMX
0048 42617 071336          STA FORMX          RETURN ADDRESS
0049 42620 061330          LDA TMPST          RECORD LOCATION
0050 42621 171332          STA OPDST,I        OF RESULT
0051 42622 064056          LDB PBPTR          POP
0052 42623 044350          ADB .-2            FUNCTION
0053 42624 074056          STB PBPTR          ADDRESS
0054 42625 035613          ISZ TEMP1          OF RESULT

```

```

0055 42626 035613      ISZ TEMP1      ON TOP OF
0056 42627 026441      JMP FORM2      OPERAND STACK
0057*
0058** EVALUATE 'LEN' **
0059*
0060 42630 015400  FOR12 JSB RSCHK      CREATE SPACE ON TEMPORARY STACK
0061 42631 161613      LDA TEMP1,I    FIND
0062 42632 010700      AND OPDMK      STRING'S
0063 42633 040351      ADA ,-1        SYMBOL
0064 42634 001000      ALS           TABLE
0065 42635 041575      ADA SYMTB      ENTRY
0066 42636 002004      INA           LOAD ADDRESS
0067 42637 160000      LDA 0,I       OF STRING
0068 42640 040351      ADA ,-1       EXTRACT
0069 42641 160000      LDA 0,I       STRING
0070 42642 010443      AND B377      LENGTH
0071 42643 015346      JSB FLOAT     STACK
0072 42644 104400      DST TMPST,I   STRING LENGTH
0073 42645 101330
0073 42646 061330      LDA TMPST     STACK ADDRESS
0074 42647 171332      STA OPDST,I   OF RESULT
0075 42650 026625      JMP FOR12-3
0076*
0077** PROCESS STRING CONSTANT **
0078*
0079*
0080* WHEN STRING CONSTANTS ARE STACKED, AN APPROPRIATE
0081* ENTRY IS PLACED ON THE TEMPORARY STACK SO THAT ALL
0082* STRING OPERANDS HAVE THE SAME FORM: A NEGATED BASE
0083* ADDRESS ON THE OPERAND STACK AND A TWO WORD ENTRY ON
0084* THE TEMPORARY STACK CONTAINING THE START-OF-STRING
0085* AND END-OF-STRING DESIGNATORS BIASED BY -1 (DEFAULT
0086* START-OF-STRING DESIGNATORS HAVE A STACK VALUE OF 0,
0087* DEFAULT END-OF-STRING DESIGNATORS HAVE A STACK VALUE
0088* OF -1). IN THE CASE OF SUBSCRIPTED STRING VARIABLES,
0089* THE TEMPORARY IS CREATED WHEN THE ']' IS SCANNED; THE
0090* ENTRY FOR NON-SUBSCRIPTED STRING OPERANDS IS CREATED
0091* WHEN THEY ARE SCANNED.
0092*
0093 42651 002404  FOR13 CLA,INA      PRINT STATEMENT
0094 42652 051472      CPA EQL        STRING CONSTANT?
0095 42653 015340      JSB STSTR     NO, STACK STRING CONSTANT
0096 42654 026457      JMP FORM3     EXECUTE END-OF-FORMULA

```

```

0098*
0099** RECORD RESULT OF OPERATION **
0100*
0101*
0102* OPERATORS CREATING INTERMEDIATE RESULTS RETURN TO HERE.
0103*
0104 42655 035332 FOR14 ISZ OPDST STACK
0105 42656 035332 ISZ OPDST TEMPORARY
0106 42657 104400 DST TMPST,I RESULT
      42660 101330
0107 42661 061330 LDA TMPST SAVE
0108 42662 171332 STA OPDST,I ADDRESS ON
0109 42663 026472 JMP FORM4 OPERAND STACK
0110*
0111** EXIT FORMULA EVALUATOR **
0112*
0113*
0114* THIS WORD IS ACTUALLY PART OF THE FORMULA OPERATOR JUMP
0115* TABLE. THE WORDS BETWEEN IT AND FOJT CORRESPOND TO
0116* OPERATORS WHICH ARE NOT EXECUTED, SO CODE IS INSERTED HERE
0117* TO UTILIZE THIS SPACE.
0118*
0119 42664 101336 DEF FORMX,I
0120**
0121*** SET LOGICAL VALUES ***
0122**
0123 42665 002400 FALSE CLA LOAD
0124 42666 006400 CLB ZERO
0125 42667 026655 JMP FOR14
0126 42670 061040 TRUE LDA HALF LOAD
0127 42671 064354 LDB .+2 1.0
0128 42672 026655 JMP FOR14
0129**
0130*** EXECUTE UNARY = ***
0131**
0132 42673 015374 EUMIN JSB STTOP UNSTACK AND LOAD TOP OF STACK
0133 42674 015370 JSB ARINV NEGATE IT
0134 42675 026655 JMP FOR14 STORE IT
0135**
0136*** FORMULA OPERATOR JUMP TABLE ***
0137**
0138 42676 042726 FOJT DEF ELBRC (
0139 42677 042374 DEF FORM1 (
0140 42700 042472 DEF FORM4 UNARY +
0141 42701 042673 DEF EUMIN UNARY =
0142 42702 042735 DEF ESCMA SUBSCRIPT COMMA
0143 42703 043011 DEF ESTR ASSIGNMENT OPERATOR
0144 42704 043120 DEF EFAD +
0145 42705 043123 DEF EFSB -
0146 42706 043126 DEF EFMP *
0147 42707 043131 DEF EFDV /
0148 42710 043134 DEF EPWR ↑
0149 42711 043235 DEF EGTRT >
0150 42712 043241 DEF ELST <
0151 42713 043257 DEF ENEQL #

```

0152	42714	043247	DEF EEQL	#
0153	42715	000000	NOP	UNUSED
0154	42716	043304	DEF EAND	AND
0155	42717	043312	DEF EIOR	OR
0156	42720	043272	DEF EMIN	MIN
0157	42721	043263	DEF EMAX	MAX
0158	42722	043257	DEF ENEQL	<>
0159	42723	043243	DEF EGORE	>#
0160	42724	043253	DEF ELORE	<#
0161	42725	043320	DEF ENOT	NOT
0162	**		**	
0163	***	EXECUTE LEFT BRACKET	***	
0164	**		**	
0165	*			
0166	*	LOAD A DEFAULT SECOND SUBSCRIPT AND ENTER THE CODE FOR		
0167	*	A SUBSCRIPT COMMA,		
0168	*			
0169	42726	061332	ELBRC LDA OPDST	LOAD
0170	42727	040350	ADA #-2	=1
0171	42730	160000	LDA 0,I	FOR A
0172	42731	007400	CCB	STRING,
0173	42732	002021	SSA,RSS	0
0174	42733	006400	CLB	FOR
0175	42734	026745	JMP ESCM1	AN ARRAY
0176	**		**	
0177	***	EXECUTE SUBSCRIPT COMMA	***	
0178	**		**	
0179	*			
0180	*	BOTH SUBSCRIPTS ARE ROUNDED TO INTEGERS AND TESTED TO BE		
0181	*	POSITIVE. FOR STRINGS, THE TWO INTEGERS ARE SAVED ON THE		
0182	*	TEMPORARY STACK AS A PSEUDO-ENTRY LATER USED BY PSTR. FOR		
0183	*	ARRAYS, THE SUBSCRIPTS ARE CHECKED AND IF WITHIN THE CURRENT		
0184	*	BOUNDS THEY ARE COMBINED WITH THE BASE ADDRESS OF THE ARRAY.		
0185	*	THE ARRAY ELEMENT ADDRESS THEN REPLACES THE BASE ADDRESS ON		
0186	*	THE OPERAND STACK. UNSUITABLE SUBSCRIPTS EXIT TO THE ERROR		
0187	*	ROUTINE.		
0188	*			
0189	42735	015376	ESCM1 JSB OPCHK	UNSTACK
0190	42736	104200	DLD 1,I	SECOND SUBSCRIPT
		42737	100001	
0191	42740	015342	JSB SBFIX	ROUND TO INTEGER
0192	42741	115127	JSB RERRS+17,I	UNSUITABLE RESULT
0193	42742	060056	LDA PBPTR	UNSTACK
0194	42743	040350	ADA #-2	THE
0195	42744	070056	STA PBPTR	'('
0196	42745	075256	ESCM1 STB TEMP4	SAVE RESULT
0197	42746	015374	JSB STTOP	POP FIRST SUBSCRIPT
0198	42747	015342	JSB SBFIX	ROUND TO INTEGER
0199	42750	115127	JSB RERRS+17,I	UNSUITABLE RESULT
0200	42751	175330	STB TMPST,I	STORE IN TEMPORARY STACK
0201	42752	161332	LDA OPDST,I	STRING
0202	42753	002021	SSA,RSS	VARIABLE?
0203	42754	026762	JMP ESCM2	NO, ARRAY VARIABLE
0204	42755	061330	LDA TMPST	YES,
0205	42756	002004	INA	SAVE

0206	42757	065256		LDB TEMP4	SECOND SUBSCRIPT IN
0207	42760	174000		STB 0,I	TEMPORARY STACK
0208	42761	026374		JMP FORM1	
0209	42762	040350	ESCM2	ADA .-2	LOAD COLUMN
0210	42763	104200		DL0 0,I	AND ROW BOUNDS
	42764	100000			
0211	42765	003004		CMA,INA	IS SPECIFIED
0212	42766	141330		ADA TMPST,I	ROW
0213	42767	002021		SSA,RSS	LEGAL?
0214	42770	115127		JSB RERRS+17,I	NO
0215	42771	075272		STB TEMP5	YES
0216	42772	007004		CMB,INB	IS SPECIFIED
0217	42773	045256		ADB TEMP4	COLUMN
0218	42774	006021		SSB,RSS	LEGAL?
0219	42775	115127		JSB RERRS+17,I	NO
0220	42776	161330		LDA TMPST,I	YES, COMPUTE ROW
0221	42777	100200		MPY TEMP5	DISPLACEMENT
	43000	001272			
0222	43001	041256		ADA TEMP4	ADD COLUMN DISPLACEMENT
0223	43002	001000		ALS	DOUBLE FOR CORE WORDS
0224	43003	141332		ADA OPDST,I	STORE ACTUAL
0225	43004	171332		STA OPDST,I	ELEMENT ADDRESS
0226	43005	061330		LDA TMPST	POP UNUSED
0227	43006	040350		ADA .-2	TEMPORARY
0228	43007	071330		STA TMPST	STACK
0229	43010	026374		JMP FORM1	ENTRY
0230**			**		
0231**	EXECUTE STORE		**		
0232**			**		
0233*					
0234*	IN ORDER TO ALLOW MULTIPLE ASSIGNMENT STATEMENTS, NO				
0235*	ASSIGNMENT CAN TAKE PLACE UNTIL THE RIGHT-HAND FORMULA				
0236*	IS EVALUATED; I.E. ONLY AN END-OF-FORMULA OPERATOR CAN				
0237*	FORCE AN ASSIGNMENT OPERATOR OFF OF THE STACK. ASSIGNMENTS				
0238*	MAY BE NUMERICAL TO NUMERICAL TYPE OPERAND, IN WHICH CASE				
0239*	THE ASSIGNED QUANTITY IS SAVED FOR POSSIBLE ADDITIONAL				
0240*	ASSIGNMENTS; OR STRING TO STRING OPERAND. IN THE LATTER				
0241*	CASE AN INTERMEDIATE STRING IS NECESSARY IF THE HEAD OF				
0242*	THE DESTINATION STRING LIES IN THE TAIL OF THE ACTUAL				
0243*	SOURCE STRING.				
0244*					
0245	43011	065252	ESTR	LDB TEMP2	NEXT OPERATOR AN
0246	43012	006002		SZB	END-OF-FORMULA?
0247	43013	027112		JMP ESTR5	NO
0248	43014	055254		CPB TEMP3	YES, FIRST STORE OF FORMULA?
0249	43015	027030		JMP ESTR2	YES
0250	43016	161332	ESTR1	LDA OPDST,I	NO, SET
0251	43017	071260		STA TEMP6	DESTINATION ADDRESS
0252	43020	104200		DL0 TEMP3,I	TRANSFER
	43021	101254			
0253	43022	104400		DST TEMP6,I	THE NUMBER
	43023	101260			
0254	43024	061332		LDA OPDST	UNSTACK
0255	43025	040350		ADA .-2	DESTINATION
0256	43026	071332		STA OPDST	OPERAND

0257	43027	026472	JMP FORM4	
0258	43030	161332	ESTR2 LDA OPDST, I	STRING
0259	43031	002020	SSA	OPERANDS?
0260	43032	027036	JMP ESTR3	YES
0261	43033	015376	JSB OPCHK	NO, UNSTACK SOURCE
0262	43034	075254	STB TEMP3	AND SAVE VALUE ADDRESS
0263	43035	027016	JMP ESTR1	
0264	43036	060350	ESTR3 LDA .-2	PREPARE
0265	43037	015344	JSB PSTR	SOURCE
0266	43040	071256	STA TEMP4	STRING
0267	43041	075410	STB TPRME	
0268	43042	003400	CCA	PREPARE
0269	43043	015344	JSB PSTR	DESTINATION STRING
0270	43044	064056	LDB PBPTR	SAVE CORE
0271	43045	075440	STB EST1	POINTER
0272	43046	061256	LDA TEMP4	TRANSFER
0273	43047	003000	CMA	TO
0274	43050	041272	ADA TEMP5	HIGHER
0275	43051	002020	SSA	CORE?
0276	43052	027105	JMP ESTR4	NO
0277	43053	041410	ADA TPRME	YES,
0278	43054	040354	ADA .+2	OVERLAPPING
0279	43055	002021	SSA, RSS	TRANSFER?
0280	43056	027105	JMP ESTR4	NO
0281	43057	061272	LDA TEMP5	YES, SAVE
0282	43060	071442	STA EST2	DESTINATION ADDRESS
0283	43061	006004	INB	SET DESTINATION
0284	43062	005000	BLS	ADDRESS TO START
0285	43063	075272	STB TEMP5	OF FREE CORE
0286	43064	061406	LDA TNULL	SAVE TRANSFER
0287	43065	071444	STA EST3	LENGTH
0288	43066	003004	CMA, INA	ALLOCATE
0289	43067	001100	ARS	SPACE FOR
0290	43070	015326	JSB CUSP	INTERMEDIATE
0291	43071	070056	STA PBPTR	STRING
0292	43072	060600	LDA FSCHA	
0293	43073	015350	JSB TRSTR	TRANSFER STRING TO FREE CORE
0294	43074	061444	LDA EST3	RESTORE TRANSFER
0295	43075	071406	STA TNULL	LENGTH
0296	43076	071410	STA TPRME	RESET ACTUAL SOURCE LENGTH
0297	43077	061440	LDA EST1	SET SOURCE
0298	43100	002004	INA	ADDRESS TO
0299	43101	001000	ALS	INTERMEDIATE
0300	43102	071256	STA TEMP4	STRING
0301	43103	061442	LDA EST2	RESTORE ORIGINAL
0302	43104	071272	STA TEMP5	DESTINATION STRING
0303	43105	060600	ESTR4 LDA FSCHA	
0304	43106	015350	JSB TRSTR	COMPLETE TRANSFER
0305	43107	061440	LDA EST1	RESTORE FREE
0306	43110	070056	STA PBPTR	CORE POINTER
0307	43111	026507	JMP FORM5	EXECUTE END-OF-FORMULA
0308	43112	034056	ESTR5 ISZ PBPTR	DEFER
0309	43113	034056	ISZ PBPTR	EXECUTION
0310	43114	063117	LDA BASSO	
0311	43115	170056	STA PBPTR, I	

PAGE 0143 #13 FORMULA EVALUATION ROUTINES

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0312 43116 026500          JMP FORM4+6
0313*
0314 43117 007402  BASSO OCT 7402
0315**
0316*** EXECUTE + ***
0317**
0318 43120 015372  EFAD  JSB BINOP
0319 43121 015402          JSB .FAD
0320 43122 026655          JMP FOR14
0321**
0322*** EXECUTE - ***
0323**
0324 43123 015372  EFSB  JSB BINOP
0325 43124 015404          JSB .FSB
0326 43125 026655          JMP FOR14
0327**
0328*** EXECUTE * ***
0329**
0330 43126 015372  EFMP  JSB BINOP
0331 43127 015400          JSB .FMP
0332 43130 026655          JMP FOR14
0333**
0334*** EXECUTE / ***
0335**
0336 43131 015372  EFDV  JSB BINOP
0337 43132 015410          JSB .FDV
0338 43133 026655          JMP FOR14
0339**
0340*** EXECUTE ↑ ***
0341**
0342*
0343** REAL POWER **
0344*
0345*
0346* EXIT TO ERROR IF BASE IS NEGATIVE. ELSE COMPUTE
0347* RESULT AS ET(POWER*LN(BASE)).
0348*
0349 43134 165332  EPWR  LDB OPDST,I  LOAD
0350 43135 104200          DLD 1,I          POWER
      43136 100001
0351 43137 015416          JSB IFIX        INTEGER?
0352 43140 027143          JMP ++3         NO
0353 43141 102301          SOS           YES, 16-BIT?
0354 43142 027156          JMP IPWR        YES
0355 43143 015372          JSB BINOP       NO, UNSTACK
0356 43144 002001          RSS           ARGUMENTS
0357 43145 015354          JSB PCHK        CHECK ARGUMENTS
0358 43146 002020          SSA           NEGATIVE BASE?
0359 43147 115144          JSB RERRS+30,I YES
0360 43150 065642          LDB BIN01       NO, LOAD BASE ADDRESS
0361 43151 015436          JSB .LOG        TAKE NATUAL LOG
0362 43152 015406          JSB .FMP        MULTIPLY
0363 43153 101643          DEF BIN02,I     BY POWER
0364 43154 015434          JSB .EXP        EXPONENTIATE
0365 43155 026655          JMP FOR14

```



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0366*
0367** INTEGER POWER **
0368*
0369*
0370* MULTIPLY BASE REPEATEDLY, USING POWERS-OF-TWO METHOD
0371* TO SPEED PROCESS. IF POWER IS NEGATIVE, TAKE RECIPROCAL
0372* FOR FINAL RESULT.
0373*
0374 43156 075264 IPWR STB TT1 SAVE SIGN
0375 43157 006020 SSB FORM ABSOLUTE
0376 43160 007004 CMB,INB VALUE OF POWER
0377 43161 075266 STB TT2 SAVE IT
0378 43162 015372 JSB BINOP UNSTACK
0379 43163 002001 RSS ARGUMENTS
0380 43164 015354 JSB PCHK CHECK ARGUMENTS
0381 43165 065642 LDB BIN01 STORE
0382 43166 071642 STA BIN01
0383 43167 075643 STB BIN02 BASE
0384 43170 061040 LDA HALF INITIALIZE
0385 43171 071615 STA TT3 RESULT
0386 43172 060354 LDA .+2 TO
0387 43173 071617 STA TT4 1.0
0388 43174 065266 IPWR1 LDB TT2 DIVIDE POWER
0389 43175 004031 SLB,BRS BY 2
0390 43176 027215 JMP IPWR4 ODD POWER
0391 43177 075266 STB TT2 EVEN POWER
0392 43200 006002 IPWR2 SZB ZERO?
0393 43201 027226 JMP IPWR5 NO
0394 43202 061264 LDA TT1 YES
0395 43203 002020 SSA POSITIVE POWER?
0396 43204 027210 JMP IPWR3 NO
0397 43205 061616 LDA TT3 YES, RETURN
0398 43206 065617 LDB TT4 WITH
0399 43207 026655 JMP FOR14 RESULT
0400 43210 061040 IPWR3 LDA HALF TAKE
0401 43211 064354 LDB .+2 RECIPROCAL
0402 43212 015410 JSB .FDV FOR
0403 43213 001616 DEF TT3 FINAL
0404 43214 026655 JMP FOR14 RESULT
0405 43215 075266 IPWR4 STB TT2 SAVE POWER
0406 43216 061642 LDA BIN01 LOAD
0407 43217 065643 LDB BIN02 BASE
0408 43220 015406 JSB .FMP MULTIPLY BY
0409 43221 001616 DEF TT3 RESULT SO FAR
0410 43222 071616 STA TT3 SAVE NEW
0411 43223 075617 STB TT4 PARTIAL
0412 43224 065266 LDB TT2 RESULT
0413 43225 027200 JMP IPWR2
0414 43226 061642 IPWR5 LDA BIN01 SQUARE
0415 43227 065643 LDB BIN02
0416 43230 015406 JSB .FMP BASE
0417 43231 001642 DEF BIN01
0418 43232 071642 STA BIN01 RECORD
0419 43233 075643 STB BIN02 NEW
0420 43234 027174 JMP IPWR1 BASE

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0002**          **
0003*** EXECUTE > ***
0004**          **
0005 43235 015352 EGTRT JSB COMPR COMPARE OPERANDS
0006 43236 002020      SSA      < ?
0007 43237 026665      JMP FALSE YES
0008 43240 027260      JMP ENEQL+1 NO
0009**          **
0010*** EXECUTE < ***
0011**          **
0012 43241 015352 ELST JSB COMPR COMPARE OPERANDS
0013 43242 003001      CMA,RSS REVERSE COMPARISON SENSE
0014**          **
0015*** EXECUTE >= ***
0016**          **
0017 43243 015352 EGURE JSB COMPR COMPARE OPERANDS
0018 43244 002020      SSA      < ?
0019 43245 026665      JMP FALSE YES
0020 43246 026670      JMP TRUE NO
0021**          **
0022*** EXECUTE = ***
0023**          **
0024 43247 015352 EEQL JSB COMPR COMPARE OPERANDS
0025 43250 002002      SZA      = ?
0026 43251 026665      JMP FALSE NO
0027 43252 026670      JMP TRUE YES
0028**          **
0029*** EXECUTE <= ***
0030**          **
0031 43253 015352 ELORE JSB COMPR COMPARE OPERANDS
0032 43254 002020      SSA      >= ?
0033 43255 026670      JMP TRUE NO
0034 43256 027250      JMP EEQL+1 YES
0035**          **
0036*** EXECUTE # OR <> ***
0037**          **
0038 43257 015352 ENEQL JSB COMPR COMPARE OPERANDS
0039 43260 002002      SZA      # ?
0040 43261 026670      JMP TRUE NO
0041 43262 026665      JMP FALSE YES
0042**          **
0043*** EXECUTE 'MAX' ***
0044**          **
0045 43263 015372 EMAX JSB BINOP SUBTRACT THE
0046 43264 015404      JSB ,FSB TOP TWO OPERANDS
0047 43265 002021      SSA,RSS TOP OPERAND LARGER?
0048 43266 027276      JMP ARG1 NO
0049 43267 104200 ARG2 DLD BINO2,I YES, RETRIEVE
      43270 101543      JMP FOR14 ITS VALUE
0050 43271 026655
0051**          **
0052*** EXECUTE 'MIN' ***
0053**          **
0054 43272 015372 EMIN JSB BINOP SUBTRACT THE
0055 43273 015404      JSB ,FSB TOP TWO OPERANDS

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0056 43274 002021          SSA,RSS          TOP OPERAND LARGER?
0057 43275 027267          JMP ARG2          NO
0058 43276 035332  ARG1  ISZ OPDST          YES,
0059 43277 035332          ISZ OPDST          RETRIEVE
0060 43300 165332          LDB OPDST,I      VALUE OF
0061 43301 104200          DLD 1,I          NEXT-TO-TOP
                   43302 100001
0062 43303 026657          JMP FOR14+2      OPERAND
0063**
0064*** EXECUTE 'AND' ***
0065**
0066 43304 015372  EAND  JSB BINOP          UNSTACK
0067 43305 002001          RSS              OPERANDS
0068 43306 002003          SZA,RSS          TOP OPERAND ZERO?
0069 43307 026665          JMP FALSE        YES
0070 43310 161643          LDA BIN02,I     NO, CHECK
0071 43311 027260          JMP ENEQL+1     NEXT-TO-TOP OPERAND
0072**
0073*** EXECUTE 'OR' ***
0074**
0075 43312 015372  EIOR  JSB BINOP          UNSTACK
0076 43313 002001          RSS              OPERANDS
0077 43314 002002          SZA              TOP OPERAND NON-ZERO?
0078 43315 026670          JMP TRUE        YES
0079 43316 161643          LDA BIN02,I     NO, CHECK
0080 43317 027260          JMP ENEQL+1     NEXT-TO-TOP OPERAND
0081**
0082*** EXECUTE 'NOT' ***
0083**
0084 43320 015374  ENOT  JSB STTOP          LOAD TOP OPERAND
0085 43321 027250          JMP EEQL+1      GO TO CHECK
0086**
0087*** INSURE VALID POWERING ***
0088**
0089.
0090* INSURES THAT ATB HAS ACCEPTABLE ARGUMENTS. A*B=0 IS A NON-
0091* RECOVERABLE ERROR. A#0 AND B<0 PRINTS A WARNING MESSAGE AND
0092* RETURNS THE MAXIMUM POSITIVE NUMBER AS THE RESULT.
0093*
0094 43322 075642  #PCHK STB BIN01          LOAD HIGH PART
0095 43323 165643          LDB BIN02,I     OF POWER
0096 43324 002002          SZA              BASE ZERO?
0097 43325 027336          JMP PCHK1       NO
0098 43326 006003          SZB,RSS         YES, POWER ZERO?
0099 43327 115143          JSB RERRS+29,I YES
0100 43330 006021          SSB,RSS         NO, POWER POSITIVE?
0101 43331 026665          JMP FALSE        YES
0102 43332 115211          JSB WERRS+2,I  NO
0103 43333 060274          LDA INF         USE POSITIVE
0104 43334 064350          LDB ,=2        INFINITY
0105 43335 026655          JMP FOR14       FOR RESULT
0106 43336 006003  PCHK1 SZB,RSS         POWER ZERO?
0107 43337 026670          JMP TRUE        YES, TAKE RESULT AS 1.0
0108 43340 125354          JMP PCHK,I     NO

```

```

0110**
0111*** COMPARE TOP OPERANDS OF STACK ***
0112**
0113*
0114* ON EXIT (A) IS NEGATIVE IF THE TOP OPERAND OF THE
0115* STACK IS GREATER THAN THE NEXT-TO-TOP OPERAND,
0116* POSITIVE IF IT IS LESS, AND ZERO IF THEY ARE EQUAL.
0117*
0118 43341 161332 #CMPR LDA OPDST,I STRING
0119 43342 002020 SSA ARGUMENTS?
0120 43343 027347 JMP COMP1 YES
0121 43344 015372 JSB BINOP NO, COMPARE
0122 43345 015404 JSB ,FSB NUMERICAL
0123 43346 125352 JMP COMPR,I OPERANDS
0124 43347 060350 COMP1 LDA ,=2 PREPARE
0125 43350 015344 JSB PSTR COMPARISON
0126 43351 071256 STA TEMP4 STRING
0127 43352 075410 STB TPRME
0128 43353 061406 LDA TNULL SAVE SPECIFIED
0129 43354 071434 STA CP0 LENGTH
0130 43355 060350 LDA ,=2 PREPARE
0131 43356 015344 JSB PSTR TEST STRING
0132 43357 075344 STB CP1 SAVE ACTUAL LENGTH
0133 43360 035330 ISZ TMPST RESERVE SPACE
0134 43361 035330 ISZ TMPST FOR RESULT
0135 43362 035434 COMP2 ISZ CP0 MORE SPECIFIED STRING?
0136 43363 027366 JMP COMP3 YES
0137 43364 006400 CLB NO, LOAD A
0138 43365 027371 JMP COMP4 NULL CHARACTER
0139 43366 015364 COMP3 JSB FSCH LOAD NEXT
0140 43367 060412 LDA ,+40B COMPARISON
0141 43370 064000 LDB 0 CHARACTER
0142 43371 035406 COMP4 ISZ TNULL MORE SPECIFIED TEST STRING?
0143 43372 027402 JMP COMP6 YES
0144 43373 002400 CLA NO, LOAD NULL CHARACTER
0145 43374 007004 COMP5 CMB,INB COMPARE
0146 43375 040001 ADA 1 CHARACTERS
0147 43376 002003 SZA,RSS EXIT ON NOT EQUAL
0148 43377 006003 SZB,RSS OR BOTH NULL
0149 43400 125352 JMP COMPR,I CHARACTERS
0150 43401 027362 JMP COMP2
0151 43402 061344 COMP6 LDA CP1 MORE ACTUAL
0152 43403 002006 INA,SZA TEST STRING?
0153 43404 027407 JMP COMP7 YES
0154 43405 060412 LDA ,+40B NO, LOAD A BLANK
0155 43406 027374 JMP COMP5
0156 43407 071344 COMP7 STA CP1
0157 43410 061272 LDA TEMP5 EXTRACT
0158 43411 000065 CLE,ERA
0159 43412 160000 LDA 0,I NEXT
0160 43413 002041 SEZ,RSS
0161 43414 001727 ALF,ALF TEST
0162 43415 010443 AND B377
0163 43416 035272 ISZ TEMP5 CHARACTER
0164 43417 027374 JMP COMP5

```

```

0166**
0167*** PREPARE STRING OPERAND **
0168**
0169*
0170* THE STRING ADDRESS ON TOP OF THE OPERAND STACK IS COMBINED
0171* WITH THE SUBSCRIPTS IN A PSEUDO-ENTRY ON THE TEMPORARY STACK
0172* TO FORM A STRING OPERAND. (A) = -2 UPON ENTRY FOR A SOURCE
0173* STRING; (A) = -1 FOR A DESTINATION STRING. THE ADDRESS OF
0174* THE FIRST CHARACTER OF THE STRING OPERAND IS LEFT IN TEMP5;
0175* FOR SOURCE STRINGS (A) = TEMP5 UPON EXIT. THE REQUESTED
0176* STRING LENGTH (IN CHARACTERS) IS LEFT IN TNULL; FOR SOURCE
0177* STRINGS THE ACTUAL STRING LENGTH (WHICH MAY BE LESS THAN THE
0178* REQUESTED LENGTH) IS IN (B) UPON EXIT. THE FOLLOWING
0179* CONDITIONS EXIT TO ERROR: NEGATIVE STRING LENGTH, REQUESTED
0180* DESTINATION STRING WOULD EXCEED PHYSICAL STRING BOUNDARY, OR
0181* REQUESTED DESTINATION STRING WOULD PRODUCE A STRING QUANTITY
0182* WITH TWO UNCONNECTED PARTS. THE LOGICAL LENGTH OF A
0183* DESTINATION STRING IS ADJUSTED AS NEEDED.
0184*
0185 43420 071470 #PSTR STA PS0 SAVE MODE FLAG
0186 43421 015376 JSB OPCHK UNSTACK OPERAND
0187 43422 075464 STB PS1 SET FLAG POSITIVE
0188 43423 005000 BLS SAVE ADDRESS OF FIRST
0189 43424 075272 STB TEMP5 CHARACTER OF STRING
0190 43425 005100 BRS SAVE
0191 43426 044351 ADB =1 POINTER TO
0192 43427 075260 STB TEMP6 STRING LENGTH
0193 43430 065330 LDB TMPST LOAD
0194 43431 044354 ADB ,+2 START-OF-STRING
0195 43432 160001 LDA 1,I DESIGNATOR
0196 43433 071400 STA MPT SAVE IT
0197 43434 041272 ADA TEMP5 RECORD CHARACTER ADDRESS
0198 43435 071272 STA TEMP5 OF START-OF-STRING
0199 43436 071574 STA SBPTR SAVE ADDRESS
0200 43437 006004 INB LOAD
0201 43440 160001 LDA 1,I END-OF-STRING DESIGNATOR
0202 43441 002006 INA,SZA SPECIFIED?
0203 43442 027455 JMP PSTR2 YES
0204 43443 003400 CCA NO
0205 43444 051470 CPA PS0 'SOURCE' MODE?
0206 43445 027451 JMP PSTR1 NO
0207 43446 161260 LDA TEMP6,I YES, LOAD STRING'S
0208 43447 010443 AND B377 LOGICAL LENGTH
0209 43450 027455 JMP PSTR2
0210 43451 071464 PSTR1 STA PS1 SET FLAG TO -1
0211 43452 061410 LDA TPRME COMPUTE
0212 43453 003000 CMA END-OF-STRING
0213 43454 041400 ADA MPT DESIGNATOR
0214 43455 071376 PSTR2 STA NQT SAVE IT
0215 43456 003000 CMA IS LENGTH
0216 43457 041400 ADA MPT OF SPECIFIED STRING
0217 43460 002021 SSA,RSS NEGATIVE?
0218 43461 115130 JSB RERRS+18,I YES
0219 43462 071406 STA TNULL
0220 43463 042005 ADA .73 >72?

```

0221	43464	002020	SSA	
0222	43465	115132	JSB RERRS+20,I	
0223	43466	161260	LDA TEMP6,I	DOES
0224	43467	010443	AND B377	START-OF-STRING
0225	43470	003000	CMA	CHARACTER
0226	43471	035470	ISZ PS0	RELATE TO
0227	43472	002004	INA	PREVIOUS
0228	43473	041400	ADA MPT	VALUE
0229	43474	002021	SSA,RSS	OF STRING?
0230	43475	027514	JMP PSTR3	NO
0231	43476	161260	LDA TEMP6,I	YES, EXTRACT
0232	43477	035470	ISZ PS0	END-OF-
0233	43500	001727	ALF,ALF	PERMITTED-STRING
0234	43501	010443	AND B377	DESIGNATOR
0235	43502	003000	CMA	COMPUTE DIFFERENCE FROM
0236	43503	041376	ADA NQT	END OF SPECIFIED STRING -1
0237	43504	006404	CLB,INB	'SOURCE'
0238	43505	055470	CPB PS0	MODE?
0239	43506	027521	JMP PSTR5	NO
0240	43507	065406	LDB TNULL	YES, SPECIFIED SOURCE STRING
0241	43510	002004	INA	CONTAINED WITHIN
0242	43511	002021	SSA,RSS	DEFINED SOURCE STRING?
0243	43512	044000	ADB 0	NO, CORRECT LENGTH
0244	43513	027517	JMP PSTR4	OF ACTUAL SOURCE STRING
0245	43514	035470	PSTR3 ISZ PS0	'SOURCE' MODE?
0246	43515	115131	JSB RERRS+19,I	NO
0247	43516	007400	CCB	YES, SET ACTUAL LENGTH TO 0
0248	43517	061272	PSTR4 LDA TEMP5	LOAD START-OF-STRING
0249	43520	125344	JMP PSTR,I	CHARACTER ADDRESS
0250	43521	002021	PSTR5 SSA,RSS	PHYSICAL STORAGE OVERFLOW?
0251	43522	115132	JSB RERRS+20,I	YES
0252	43523	035464	ISZ PS1	END-OF-STRING SPECIFIED?
0253	43524	027532	JMP PSTR7	YES
0254	43525	161260	PSTR6 LDA TEMP6,I	NO,
0255	43526	010762	AND M256	RESET
0256	43527	031376	IOR NQT	LOGICAL LENGTH
0257	43530	171260	SIA TEMP6,I	OF STRING
0258	43531	125344	JMP PSTR,I	
0259	43532	161260	PSTR7 LDA TEMP6,I	IS NEW
0260	43533	010443	AND B377	DESTINATION
0261	43534	003000	CMA	STRING
0262	43535	041376	ADA NQT	LONGER
0263	43536	002021	SSA,RSS	THAN OLD?
0264	43537	027525	JMP PSTR6	YES
0265	43540	125344	JMP PSTR,I	NO
0266**			**	
0267***	STACK STRING CONSTANT		***	
0268**			**	
0269*			*	
0270*	SEE NOTE AT FOR ₁₃ OF ROUTINE FORMX			
0271*			*	
0272	43541	035332	#STST ISZ OPDST	STACK
0273	43542	035332	ISZ OPDST	NEGATIVE
0274	43543	061613	LDA TEMP1	OF
0275	43544	003000	CMA	STRING

0276	43545	171332	STA UPDST, I	ADDRESS
0277	43546	161613	LDA TEMP1, I	COMPUTE
0278	43547	010443	AND B377	STRING
0279	43550	007400	CCB	LENGTH
0280	43551	044000	ADB 0	=1
0281	43552	040355	ADA ,+3	UPDATE
0282	43553	001100	ARS	INTRA=STATEMENT
0283	43554	041613	ADA TEMP1	POINTER
0284	43555	071613	STA TEMP1	PAST STRING
0285	43556	015400	JSB RSCHK	CREATE TEMPORARY
0286	43557	002400	CLA	RECORD
0287	43560	104400	DST TMPST, I	(0, (8))
	43561	101330		
0288	43562	125340	JMP STSTR, I	
0289**			**	
0290***			***	
			FETCH SOURCE CHARACTER	
0291**			**	
0292*				
0293*			CHARACTER ADDRESS IN TEMP4, SOURCE CHARACTER COUNT	
0294*			IN TPRME (IN 1'S COMPLEMENT), EXIT TO (P+1) ON NO	
0295*			MORE CHARACTERS (TPRME = -1) ELSE EXIT TO (P+2) WITH	
0296*			NEXT CHARACTER IN (A).	
0297*				
0298	43563	061410	#FSCH LDA TPRME	MORE
0299	43564	002007	INA, SZA, RSS	CHARACTERS?
0300	43565	125364	JMP FSCH, I	NO
0301	43566	071410	STA TPRME	YES, UPDATE CHARACTER COUNT
0302	43567	061256	LDA TEMP4	LOAD CHARACTER
0303	43570	000065	CLE, ERA	ADDRESS
0304	43571	160000	LDA 0, I	EXTRACT
0305	43572	002041	SEZ, RSS	NEXT
0306	43573	001727	ALF, ALF	CHARACTER
0307	43574	010443	AND B377	
0308	43575	035256	ISZ TEMP4	UPDATE CHARACTER ADDRESS
0309	43576	035364	ISZ FSCH	
0310	43577	125364	JMP FSCH, I	
0311**			**	
0312***			***	
			FETCH SOURCE CHARACTER (UPPER CASE)	
0313**			**	
0314*				
0315*			SAME AS FSCH, EXCEPT LOWER CASE CHARACTERS ARE CONVERTED TO	
0316*			UPPER CASE. USED BY CHAIN AND ASSIGN STATEMENTS.	
0317*				
0318	43600	061410	#FCUC LDA TPRME	MORE
0319	43601	002007	INA, SZA, RSS	CHARACTERS?
0320	43602	125562	JMP FCUC, I	NO
0321	43603	071410	STA TPRME	YES, UPDATE CHARACTER COUNT
0322	43604	061256	LDA TEMP4	LOAD CHARACTER
0323	43605	000065	CLE, ERA	ADDRESS
0324	43606	160000	LDA A, I	EXTRACT
0325	43607	002041	SEZ, RSS	NEXT
0326	43610	001727	ALF, ALF	CHARACTER
0327	43611	010443	AND B377	
0328	43612	040766	ADA M96	
0329	43613	002021	SSA, RSS	LOWER CASE

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0330	43614	040317	ADA	M32	NO
0331	43615	040730	ADA	.140	YES
0332	43616	035256	ISZ	TEMP4	UPDATE CHARACTER ADDRESS
0333	43617	035562	ISZ	FCUC	
0334	43620	125562	JMP	FCUC,I	
0335**				**	
0336***			FETCH INPUT CHARACTER	***	
0337**				**	
0338*					
0339*			EXITS NORMALLY TO (P+2) WITH NEXT INPUT CHARACTER IN (A).		
0340*			IF THE CHARACTER IS A " OR THE INPUT RECORD IS EMPTY,		
0341*			EXIT TO TRSTR,I (THE ONLY CALLER WHO CAN ENCOUNTER THIS		
0342*			CONDITION).		
0343*					
0344	43621	035274	#FINC	ISZ	FINCH
0345	43622	015450	JSB	GETCR	FETCH NEXT CHARACTER
0346	43623	125350	JMP	TRSTR,I	NONE IN BUFFER
0347	43624	060001	LDA	B	ALLOW LOWER CASE
0348	43625	050414	CPA	+.42B	" ?
0349	43626	125350	JMP	TRSTR,I	YES, TERMINAL EXIT
0350	43627	125274	JMP	FINCH,I	NO


```

0352**
0353***  FETCH ENTER CHARACTER  ***
0354**
0355*
0356*  SAME AS FINCH EXCEPT IT DOES NOT CHECK FOR A QUOTE
0357*
0358  43630 035524 #FENC ISZ FENCH
0359  43631 015450      JSB GETCR      FETCH NEXT CHARACTER
0360  43632 125350      JMP TRSTR,I    NONE IN BUFFER
0361  43633 060001      LDA B          ALLOW LOWER CASE
0362  43634 125524      JMP FENCH,I    CHARACTER FOUND
0363**
0364***  FETCH TOP OF STACK  ***
0365**
0366*
0367*  EXIT WITH TOP OPERAND IN (A) AND (B) AFTER UNSTACKING
0368*  IT. CREATE EMPTY SPACE ON TEMPORARY STACK FOR FUTURE
0369*  INTERMEDIATE RESULT.
0370*
0371  43635 015376 #STTP JSB OPCHK      UNSTACK OPERAND
0372  43636 015400      JSB RSCHK      CREATE SPACE FOR TEMPORARY
0373  43637 104200      DLD 1,I        LOAD TOP OPERAND
          43640 100001
0374  43641 125374      JMP STTOP,I
0375**
0376***  EXECUTE A BINARY OPERATOR  ***
0377**
0378*
0379*  ON ENTRY (P+1) CONTAINS A SUBROUTINE CALL FOR A BINARY
0380*  OPERATION. THE TOP TWO OPERANDS ON THE STACK ARE
0381*  UNSTACKED AND VERIFIED AS NOT BEING 'UNDEFINED.' THE
0382*  APPROPRIATE SUBROUTINE IS CALLED WITH THE TOP ARGUMENT'S
0383*  ADDRESS IN BIN02 AND THE NEXT-TO-TOP ARGUMENT'S VALUE IN
0384*  (A) AND (B). EXIT IS TO (P+2) WITH THE RESULT IN (A)
0385*  AND (B).
0386  43642 161372 #BNOP LDA BINOP,I    SAVE
0387  43643 071642      STA BIN01      SUBROUTINE
0388  43644 035372      ISZ BINOP      CALL
0389  43645 015376      JSB OPCHK      SAVE ADDRESS OF
0390  43646 075643      STB BIN02      TOP OPERAND
0391  43647 015374      JSB STTOP      FETCH NEXT OPERAND
0392  43650 025642      JMP BIN01      EXECUTE SUBROUTINE
0393**
0394***  VERIFY LEGITIMACY OF OPERAND  ***
0395**
0396*
0397*  THE VALUE REFERENCED BY THE TOP OF THE OPERAND STACK
0398*  IS CHECKED. EXIT TO ERROR IF VALUE IS 'UNDEFINED.'
0399*  ELSE REMOVE OPERAND ADDRESS FROM STACK AND REMOVE VALUE
0400*  FROM TOP OF TEMPORARY STACK, IF IT IS THERE. EXIT
0401*  WITH OPERAND ADDRESS IN (B).
0402*
0403  43651 165332 #OPCK LDB OPDST,I    STRING
0404  43652 006020      SSB            OPERAND?
0405  43653 027676      JMP OPCH3-1    YES

```

0406	43654	160001	LDA 1,I	NO, HIGH PART OF
0407	43655	001222	RAL,RAL	IS
0408	43656	002004	INA	OPERAND
0409	43657	001310	RAR,SLA	NORMALIZED?
0410	43660	027670	JMP OPCH1	YES
0411	43661	051036	CPA BIT15	WAS FIRST WORD ZERO
0412	43662	006005	INB,RSS	YES
0413	43663	115135	JSB RERRS+23,I	NO==ERROR
0414	43664	160001	LDA 1,I	SECOND
0415	43665	002002	SZA	WORD ZERO?
0416	43666	115135	JSB RERRS+23,I	NO==ERROR
0417	43667	044351	ADB .-1	YES==RESTORE OPERAND ADDRESS
0418	43670	055330	OPCH1 CPB TMPST	TEMPORARY?
0419	43671	027677	JMP OPCH3	YES
0420	43672	061332	OPCH2 LDA OPDST	NO,
0421	43673	040350	ADA .-2	UNSTACK
0422	43674	071332	STA OPDST	OPERAND
0423	43675	125376	JMP OPCHK,I	ADDRESS
0424	43676	007004	CMB,INB	SET ADDRESS TRUE
0425	43677	061330	OPCH3 LDA TMPST	UNSTACK
0426	43700	040350	ADA .-2	TEMPORARY
0427	43701	071330	STA TMPST	OPERAND
0428	43702	027672	JMP OPCH2	
0429**				**
0430***	ALLOCATE AN ENTRY ON THE TEMPORARY STACK			***
0431**				**
0432*				
0433*	(B) IS UNCHANGED UPON EXIT. ON STACK OVERFLOW,			
0434*	THE OPERATOR AND OPERAND STACKS ARE MOVED TO HIGHER			
0435*	CORE TO MAKE ROOM FOR FIVE MORE TEMPORARY ENTRIES.			
0436*				
0437	43703	061330	#RSCK LDA TMPST	ADVANCE
0438	43704	040354	ADA .+2	POINTER TO
0439	43705	071330	STA TMPST	NEXT ENTRY
0440	43706	002004	INA	STACK
0441	43707	051466	CPA OPTRO	OVERFLOW?
0442	43710	002001	RSS	YES
0443	43711	125400	JMP RSCHK,I	NO
0444	43712	075440	STB RT0	SAVE (B)
0445	43713	064056	LDB PBPTR	LOAD SOURCE ADDRESS
0446	43714	060364	LDA .+10	ALLOCATE SPACE FOR
0447	43715	015326	JSB CUSP	FIVE MORE
0448	43716	070056	STA PBPTR	TEMPORARIES
0449	43717	071442	STA RT1	SAVE DESTINATION ADDRESS
0450	43720	160001	RSCH1 LDA 1,I	TRANSFER
0451	43721	171442	STA RT1,I	A WORD
0452	43722	055330	CPB TMPST	DONE?
0453	43723	027731	JMP RSCH2	YES
0454	43724	003400	CCA	NO, DECREMENT
0455	43725	041442	ADA RT1	DESTINATION
0456	43726	071442	STA RT1	AND SOURCE
0457	43727	044351	ADB .-1	ADDRESSES
0458	43730	027720	JMP RSCH1	
0459	43731	061332	RSCH2 LDA OPDST	CORRECT
0460	43732	040364	ADA .+10	

0461	43733	071332		STA OPDST	STACK
0462	43734	061466		LDA OPTRQ	
0463	43735	040364		ADA .+10	POINTERS
0464	43736	071466		STA OPTRQ	
0465	43737	065440		LDB RT0	RESTORE (B)
0466	43740	125400		JMP RSCHK,I	
0467**					**
0468***				PUSH DOWN OPERATOR STACK	***
0469**					**
0470*					
0471*				ALLOCATE AN ENTRY ON THE OPERATOR STACK.	(A) IS
0472*				NOT CHANGED.	
0473*					
0474	43741	064056	#PSHS	LDB PBPTR	ADVANCE
0475	43742	044354		ADB .+2	STACK POINTER
0476	43743	007000		CMB	USER
0477	43744	044462		ADB LWAUS	SPACE
0478	43745	006020		SSB	OVERFLOW?
0479	43746	115120		J9B RERRS+10,I	YES
0480	43747	034056		ISZ PBPTR	NO, ALLOCATE
0481	43750	034056		ISZ PBPTR	STORAGE
0482	43751	125366		JMP PSHST,I	

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```

0002 44000          ORG 44000B
0003 44000 140000  UNNRM OCT 140000
0004 44001 077600  SMSK  OCT 77600
0005 44002 176736  SERRA ABS =SERRS
0006 44003 177734  RERRA ABS SERRS=RERRS
0007 44004 177716  FERRA ABS RERRS=FERRS
0008 44005 177761  WERRA ABS FERRS=WERRS
0009 44006 072133  DSERR DEF DSERA
0010 44007 062613  SICKL DEF SICK
0011**
0012*** ROUND NUMBER TO INTEGER ***
0013**
0014*
0015* ENTER WITH NUMBER IN (A) AND (B). EXIT TO (P+2) IF
0016* INTEGER FORM (ROUNDED AS NEEDED) IS POSITIVE AND NOT
0017* LARGER THAN 15 BITS, ELSE EXIT TO (P+1). ON EXIT TO
0018* (P+2), (B) HOLDS THE INTEGER BIASED BY -1.
0019*
0020 44010 015416  #SBFX JSB IFIX          TRUNCATE NUMBER
0021 44011 125342          JMP SBFIX,I          NUMBER TOO LARGE
0022 44012 002002          SZA                  INTEGER OVERFLOW?
0023 44013 125342          JMP SBFIX,I          YES
0024 44014 002041          SEZ,RSS             NO, ROUNDING BIT?
0025 44015 044351          ADB ,-1            NO, BIAS INTEGER BY -1
0026 44016 006021          SSB,RSS             YES, POSITIVE RESULT?
0027 44017 035342          ISZ SBFIX          YES
0028 44020 125342          JMP SBFIX,I          NO

```

0030**

**

0031*** INTEGERIZE A NUMBER ***

0032**

**

0033*

0034* ENTER WITH A FLOATING POINT NUMBER IN (A) AND (B).

0035* IF EXPONENT EXCEEDS 23, NUMBER HAS INTEGER SIGNIFICANCE;

0036* EXIT TO (P+1). ALL OTHER CASES EXIT TO (P+2) WITH 32-BIT

0037* INTEGER RIGHT JUSTIFIED IN (A) AND (B). ON EXIT (O) = 0

0038* IF NUMBER IS EXACTLY REPRESENTABLE AS A 16-BIT INTEGER.

0039* IF EXPONENT IS NEGATIVE, TRUNCATE TO 0 OR -1 APPROPRIATELY

0040* AND LET (O) = 1. OTHERWISE RIGHT JUSTIFY INTEGER AND EXIT

0041* WITH LAST BIT LOST IN (E).

0042*

0043	44021	071260	#IFIX	STA	TEMP6	SAVE (A)
0044	44022	102101		STO		SET 'NOT ONE-WORD INTEGER' MODE
0045	44023	015414		JSB	.FLUN	UNPACK (B)
0046	44024	002020		SSA		NEGATIVE EXPONENT?
0047	44025	026050		JMP	IFIX3	YES
0048	44026	040332		ADA	.-16	NO, EXPONENT
0049	44027	002020		SSA		← 15?
0050	44030	103101		CLO		YES
0051	44031	040342		ADA	.-8	NO, EXPONENT
0052	44032	002021		SSA	RSS	← 23?
0053	44033	125416		JMP	IFIX,1	NO, ALL SIGNIFICANCE IS INTEGER
0054	44034	040342		ADA	.-8	YES, MOVE BINARY POINT TO END OF
0055	44035	071322		STA	EXP	(B) AND SAVE SHIFT COUNT
0056	44036	061260		LDA	TEMP6	RETRIEVE (A)
0057	44037	026044		JMP	IFIX2	
0058	44040	000071	IFIX1	CLE	SLA,ARS	SHIFT (A) RIGHT
0059	44041	002200		CME		SHIFT
0060	44042	004035		SLB	ERB	(B) RIGHT
0061	44043	102101		STO		LOST A 1
0062	44044	035322	IFIX2	ISZ	EXP	ALL SHIFTS DONE?
0063	44045	026040		JMP	IFIX1	NO
0064	44046	035416		ISZ	IFIX	YES
0065	44047	125416		JMP	IFIX,1	
0066	44050	061260	IFIX3	LDA	TEMP6	RETRIEVE (A)
0067	44051	002120		CLE	SSA	TRUNCATE
0068	44052	003401		CCA	RSS	TO
0069	44053	002401		CLA	RSS	-1
0070	44054	007401		CCB	RSS	OR
0071	44055	006400		CLB		0
0072	44056	026046		JMP	IFIX3-2	

```

0074**
0075*** REQUEST A RECORD ***
0076**
0077*
0078* UPON ENTRY (A) HOLDS A FILE NUMBER (POSITIVE FOR A READ
0079* REQUEST, NEGATIVE FOR A WRITE REQUEST) AND (B) SPECIFIES
0080* VALIDATION OF THE FILE'S EXISTENCE ( (B) = -2) OR THE FILE
0081* RECORD TO BE PUT IN THE FILE BUFFER ( (B) = -1 REQUESTS
0082* THE RECORD WHICH FOLLOWS THE ONE CURRENTLY IN THE BUFFER,
0083* (B) >= 0 REQUESTS RECORD (B)+1 ). EXIT TO ERROR IF THE
0084* FILE DOES NOT EXIST OR A WRITE REQUEST IS GIVEN FOR A
0085* READ-ONLY FILE. EXIT TO THE END-OF-FILE CODE IF THE
0086* REQUESTED RECORD DOES NOT EXIST. OTHERWISE, THE DIRTY
0087* BIT IS EXAMINED TO DETERMINE IF THE FILE BUFFER SHOULD
0088* BE WRITTEN BACK TO DISC.
0089* A READ REQUEST READS THE REQUESTED RECORD INTO THE BUFFER;
0090* A WRITE REQUEST MERELY INITIALIZES THE BUFFER TO 'EMPTY'.
0091* THE FILE TABLE IS UPDATED TO REFLECT THE CHANGES,
0092*
0093 44057 075651 #RQST STB RQ2 SAVE RECORD REFERENCE
0094 44060 007400 CCB GET 1'S COMPLEMENT
0095 44061 002020 SSA OF FILE NUMBER AND
0096 44062 006401 CLB,RSS SET RQ1 = -1 FOR A
0097 44063 003000 CMA READ REQUEST OR 0
0098 44064 075646 STB RQ1 FOR A WRITE REQUEST
0099 44065 041502 ADA FCNTR DOES REQUESTED
0100 44066 003021 CMA,SSA,RSS FILE EXIST?
0101 44067 115151 JSB RERRS+35,I NO
0102 44070 041502 ADA FCNTR YES
0103 44071 100200 MPY ,+FTEL SET POINTER
0104 44072 000371
0104 44073 041504 ADA FILTB TO FILE TABLE
0105 44074 071236 STA FBASE ENTRY
0106 44075 161236 LDA FBASE,I LOAD NUMBER OF RECORDS
0107 44076 002003 SZA,RSS DOES FILE EXIST?
0108 44077 115151 JSB RERRS+35,I
0109 44100 065236 LDB FBASE
0110 44101 044356 ADB ,+4
0111 44102 075236 STB FBASE
0112 44103 007500 CCB,CLE
0113 44104 002020 SSA READ-ONLY FILE?
0114 44105 055646 CPB RQ1 YES, READ REQUEST?
0115 44106 001575 ELA,CLE,SLA,ERA YES, CLEAR BIT 15 AND SKIP
0116 44107 115152 JSB RERRS+36,I NO
0117 44110 065651 LDB RQ2 FILE VALIDATION
0118 44111 054350 CPB ,-2 ONLY?
0119 44112 026351 JMP RQST9 YES
0120 44113 035651 ISZ RQ2 NO, RECORD SPECIFIED?
0121 44114 026146 JMP RQST2 YES
0122 44115 165236 LDB FBASE,I NO, GET HIGH OLD RECORD ADDRESS
0123 44116 055036 CPB BIT15 NULL RECORD?
0124 44117 026146 JMP RQST6 YES
0125 44120 035236 ISZ FBASE NO, COMPUTE
0126 44121 165236 LDB FBASE,I RECORD'S
0127 44122 035236 ISZ FBASE DISTANCE

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0128	44123	035236	ISZ FBASE	FROM
0129	44124	007000	CMB	FIRST
0130	44125	145236	ADB FBASE, I	RECORD
0131	44126	007000	CMB	
0132	44127	003400	CCA	GET UPPER
0133	44130	041236	ADA FBASE	WORD OF
0134	44131	160000	LDA A, I	DISC ADDRESS
0135	44132	003003	CMA, SZA, RSS	FILE ON DRUM?
0136	44133	005121	BRS, BRS	YES, 4 SECTORS = 1 RECORD
0137	44134	060343	LDA .-7	GET RECORD
0138	44135	041236	ADA FBASE	COUNT BACK
0139	44136	160000	LDA A, I	INTO A
0140	44137	001665	ELA, CLE, ERA	CLEAR BIT 15
0141	44140	004010	SLB	
0142	44141	044000	ADB A	
0143	44142	005100	BRS	NEW RECORD
0144	44143	006004	INB	NUMBER
0145	44144	026151	JMP RQ8T7	
0146	44145	006400	RQ8T6 CLB	NO RECORD IN CORE
0147	44146	035236	RQ8T2 ISZ FBASE	ADJUST POINTER
0148	44147	035236	ISZ FBASE	TO LOW WORD
0149	44150	035236	ISZ FBASE	OF BASE ADDRESS
0150	44151	003004	RQ8T7 CMA, INA	DOES
0151	44152	040001	ADA 1	RECORD
0152	44153	002020	SSA	EXIST?
0153	44154	026160	JMP **4	YES
0154	44155	035236	ISZ FBASE	NO, CORRECT FBASE
0155	44156	035236	ISZ FBASE	
0156	44157	125006	JMP FDT4A, I	FOR EOF EXIT CHECK
0157	44160	040001	ADA 1	
0158	44161	030353	IOR .+1	COMPUTE RELATIVE
0159	44162	005000	BLS	DISC
0160	44163	002020	SSA	ADDRESS
0161	44164	060001	LDA 1	OF NEW RECORD
0162	44165	007400	CCB	GET HIGH
0163	44166	045236	ADB FBASE	DISC
0164	44167	164001	LDB B, I	ADDRESS
0165	44170	007103	CMB, CLE, SZB, RSS	FILE ON DRUM?
0166	44171	001020	ALS, ALS	YES, 1 RECORD = 4 SECTORS
0167	44172	141236	ADA FBASE, I	COMPUTE LOW DISC ADDRESS
0168	44173	071651	STA RQ2	SAVE IT
0169	44174	007000	CMB	OLD HIGH ADDRESS
0170	44175	002040	SEZ	INCREMENT IF
0171	44176	006004	INB	CARRY FROM
0172	44177	075650	STB RQ4	LOW ADD
0173	44200	064344	LDB .-6	GET
0174	44201	045236	ADB FBASE	NEGATIVE
0175	44202	164001	LDB B, I	OF BUFFER
0176	44203	005423	BLR, RBR	
0177	44204	007004	CMB, INB	SIZE
0178	44205	075652	STB RQ5	SAVE IT
0179	44206	035236	ISZ FBASE	SET POINTER
0180	44207	145236	ADB FBASE, I	TO BEGINNING
0181	44210	035236	ISZ FBASE	
0182	44211	175236	STB FBASE, I	OF RECORD BUFFER

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0183	44212	075647	STB RQ3	SAVE ADDRESS OF BUFFER
0184	44213	065236	LDB FBASE	MOVE TO
0185	44214	044346	ADB .-4	DISC
0186	44215	075236	STB FBASE	ADDRESSES
0187	44216	044351	ADB .-1	IS ANY
0188	44217	164001	LDB B,I	RECORD
0189	44220	055036	CPB BIT15	IN CORE?
0190	44221	026225	JMP RQS15	NO, SKIP COMPARE AND WRITE
0191	44222	151236	CPA FBASE,I	OLD AND NEW RECORDS THE SAME?
0192	44223	026267	JMP RQST3	YES
0193	44224	015516	JSB WRBUF	NO, WRITE OLD RECORD TO DISC
0194	44225		RQS15 EQU *	
0195	44225	035646	ISZ RQ1	READ REQUEST?
0196	44226	026272	JMP RQST4	NO
0197	44227	065652	LDB RQ5	GET NEGATIVE BUFFER SIZE
0198	44230	002404	CLA,INA	CHECK
0199	44231	041236	ADA FBASE	FOR
0200	44232	160000	LDA A,I	DISC
0201	44233	103100	CLF 0	
0202	44234	003002	CMA,SZA	OR
0203	44235	026247	JMP RQST8	DRUM
0204	44236	061651	LDA RQ2	DRUM:
0205	44237	074072	STB WORD	READ IN
0206	44240	065647	LDB RQ3	REQUESTED
0207	44241	045036	ADB BIT15	
0208	44242	114770	JSB DRUM,I	
0209	44243	060261	LDA ENDRM	RECORD
0210	44244	002020	SSA	
0211	44245	026243	JMP *-2	
0212	44246	026262	JMP RQS10	
0213	44247	060355	RQST8 LDA .+3	DISC: GET ADDRESS
0214	44250	040544	ADA ERSCA	OF DOUBLE WORD ADDRESS
0215	44251	074215	STB MWORD	STORE WORD COUNT
0216	44252	065647	LDB RQ3	GET CORE ADDRESS
0217	44253	045036	ADB BIT15	AND READ BIT
0218	44254	114212	JSB DISCA,I	READ
0219	44255	102030	HLT 30B	IN
0220	44256	102031	HLT 31B	REQUESTED
0221	44257	060214	LDA MBUSY	RECORD
0222	44260	002020	SSA	
0223	44261	026257	JMP *-2	
0224	44262		RQS10 EQU *	
0225	44262	002003	SZA,RSS	ANY ERRORS?
0226	44263	026275	JMP RQST5	NO
0227	44264	006400	CLB	YES, CLEAR DRUM DRIVER
0228	44265	074261	STB ENDRM	BUSY WORD
0229	44266	115163	JSB RERRS+45,I	AND GO INDICATE ERROR
0230	44267	035646	RQST3 ISZ RQ1	WRITE REQUEST?
0231	44270	002001	RSS	YES
0232	44271	026342	JMP RQS14	NO, GO FINISH UP
0233	44272	064350	RQST4 LDB EOR	SCRATCH RECORD
0234	44273	175647	STB RQ3,I	WITH END-OF-RECORD MARK
0235	44274	026342	JMP RQS14	GO FINISH UP
0236	44275	065236	RQST5 LDB FBASE	GET
0237	44276	044363	ADB .+9	PROTECT

0238	44277	160001	LDA B,I	MASK
0239	44300	002003	SZA,RSS	IS IT ZERO?
0240	44301	026342	JMP RQS14	YES, SKIP MASKING
0241	44302	071771	STA PMASK	NO, SAVE MASK
0242	44303	044344	ADB .-6	ADJUST FBASE TO
0243	44304	075236	STB FBASE	BUFFER LIMIT POINTER
0244	44305	065647	LDB RQ3	
0245	44306	155236	RQS11 CPB FBASE,I	DONE ?
0246	44307	026337	JMP RQS13	YES
0247	44310	160001	LDA 1,I	NO
0248	44311	050350	CPA EOR	EOR ?
0249	44312	026337	JMP RQS13	
0250	44313	050351	CPA EOF	EOF ?
0251	44314	026337	JMP RQS13	
0252	44315	010762	AND M256	
0253	44316	050445	CPA B1000	STRING ?
0254	44317	026322	JMP ++3	
0255	44320	044354	ADB .+2	SKIP TWO WORDS
0256	44321	026306	JMP RQS11	
0257	44322	160001	LDA 1,I	YES
0258	44323	010443	AND B377	
0259	44324	040355	ADA .+3	
0260	44325	001100	ARS	
0261	44326	040001	ADA 1	
0262	44327	071634	STA ATMP	
0263	44330	006004	RQS12 INB	MASK
0264	44331	055634	CPB ATMP	
0265	44332	026306	JMP RQS11	STRING
0266	44333	160001	LDA 1,I	
0267	44334	021771	XOR PMASK	
0268	44335	170001	STA 1,I	
0269	44336	026330	JMP RQS12	
0270	44337	061236	RQS13 LDA FBASE	RESTORE
0271	44340	040347	ADA .-3	
0272	44341	071236	STA FBASE	FBASE
0273	44342		RQS14 EQU *	
0274	44342	061651	LDA RQ2	
0275	44343	171236	STA FBASE,I	NEW RECORD INTO FILE TABLE
0276	44344	061650	LDA RQ4	
0277	44345	007400	CCB	
0278	44346	045236	ADB FBASE	
0279	44347	075236	STB FBASE	
0280	44350	170001	STA B,I	
0281	44351	065236	RQST9 LDB FBASE	MOVE POINTER
0282	44352	044357	ADB .+5	TO REFERENCE
0283	44353	075236	STB FBASE	RECORD POINTER
0284	44354	125510	JMP RQSTR,I	

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0286**
0287*** STORE ITEM IN FILE ***
0288**
0289*
0290* UPON ENTRY (B) INDICATES WHAT IS TO BE WRITTEN ON THE FILE:
0291* (B) = -1 WRITES AN END-OF-FILE MARK, (B) = -2 WRITES A TWO-
0292* WORD FLOATING POINT NUMBER, (B) = -3 WRITES A STRING. IF
0293* THE RECORD CANNOT ACCOMMODATE THE QUANTITY, A SERIAL WRITE
0294* WILL PLACE IT IN THE FOLLOWING RECORD WHILE A RECORD WRITE
0295* WILL EXIT TO THE END-OF-FILE CODE.
0296*
0297 44355 075655 #FILS STB FILT SAVE REQUEST TYPE
0298 44356 065236 LDB FBASE GET
0299 44357 044357 ADB ,+5 PROTECT
0300 44360 164001 LDB 1,I MASK
0301 44361 075771 STB PMASK
0302 44362 007400 CCB LOAD
0303 44363 045236 ADB FBASE ACTIVE AND LIMIT
0304 44364 104200 DLD 1,I RECORD POINTERS
0305 44366 050001 CPA 1 RECORD FULL?
0306 44367 026457 JMP FILS1 YES
0307 44370 075654 STB DADRR NO, SAVE ACTIVE POINTER
0308 44371 035655 ISZ FILT EOF REQUEST?
0309 44372 026403 JMP FILS2 NO
0310 44373 003400 CCA YES, OVERLAY PREVIOUS
0311 44374 170001 STA 1,I EOR OR EOF WITH EOF MARK
0312 44375 065236 FILS7 LDB FBASE MAKE POINTER TO SECOND WORD OF
0313 44376 044342 ADB ,=8 FILE TABLE ENTRY.
0314 44377 160001 LDA B,I SET BUFFER
0315 44400 031036 IOR BIT15 DIRTY
0316 44401 170001 STA 1,I BIT.
0317 44402 125512 JMP FILST,I
0318 44403 035655 FILS2 ISZ FILT STRING?
0319 44404 026442 JMP FILS6 YES
0320 44405 044354 ADB ,+2 NO
0321 44406 003004 FILS3 CMA,INA COMPARE PROSPECTIVE
0322 44407 040001 ADA 1 ACTIVE POINTER WITH
0323 44410 003004 CMA,INA END-OF-RECORD POINTER
0324 44411 002020 SSA OVERFLOW?
0325 44412 026452 JMP FILS0 YES
0326 44413 175236 STB FBASE,I NO, SAVE NEW ACTIVE POINTER
0327 44414 002003 SZA,RSS RECORD EXACTLY FULL?
0328 44415 026420 JMP FILS4 YES
0329 44416 060350 LDA EOR NO, FOLLOW ENTRY SPACE
0330 44417 170001 STA 1,I WITH EOR MARK
0331 44420 035655 FILS4 ISZ FILT STRING?
0332 44421 026431 JMP FILS5 NO
0333 44422 061406 LDA TNULL YES
0334 44423 003000 CMA COMPUTE AND
0335 44424 030445 IOR B1000 STORE STRING
0336 44425 171654 STA DADRR,I HEADER WORD
0337 44426 060600 LDA FSCHA TRANSFER
0338 44427 015350 JSB TRSTR STRING
0339 44430 026375 JMP FILS7

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0340	44431	104200	FILS5	DLD SBPTR,I	TRANSFER
	44432	101574			
0341	44433	021771		XOR PMASK	MASK
0342	44434	101100		SWP	
0343	44435	021771		XOR PMASK	DATA
0344	44436	101100		SWP	
0345	44437	104400		DST DADRR,I	NUMBER
	44440	101654			
0346	44441	026375		JMP FILS7	
0347	44442	006004	FILS6	INB	COMPUTE
0348	44443	005000		BLS	DESTINATION
0349	44444	075272		STB TEMP5	ADDRESS
0350	44445	007004		CMB,INB	COMPUTE
0351	44446	045406		ADB TNULL	RECORD
0352	44447	007004		CMB,INB	SPACE
0353	44450	005100		BRS	REQUIRED
0354	44451	026406		JMP FILS3	
0355	44452	060350	FILS0	LDA EOR	INSURE EOR MARK
0356	44453	171654		STA DADRR,I	ENDS PRESENT RECORD
0357	44454	060350		LDA ,=2	RESTORE
0358	44455	041655		ADA FILT	REQUEST
0359	44456	071655		STA FILT	TYPE
0360	44457	007400	FILS1	CCB	
0361	44460	055352		CPB RCRD#	SERIAL WRITE?
0362	44461	002001		RSS	YES
0363	44462	125005		JMP FDT4A,I	NO
0364	44463	061234		LDA FILE#	REQUEST
0365	44464	003000		CMA	RECORD
0366	44465	015510		JSB RQSTR	TO WRITE
0367	44466	026355		JMP #FILS+1	
0368**				**	
0369***	GET NEXT FILE ITEM TYPE			***	
0370**				**	
0371*					
0372*	THE NEXT ITEM IN THE FILE, NUMBER, STRING, END-OF-FILE, OR				
0373*	END-OF-RECORD, IS IDENTIFIED AND UPON EXIT (A) =1,2,3, OR 4				
0374*	RESPECTIVELY, EORFL = -1 WILL IGNORE END-OF-RECORD'S AND				
0375*	RETURN WITH THE FIRST OF THE OTHER ITEMS ENCOUNTERED.				
0376*					
0377	44467	061234	GTTY1	LDA FILE#	REQUEST
0378	44470	015510		JSB RQSTR	NEXT RECORD
0379	44471	007400	#GTTY	CCB	LOAD ACTIVE
0380	44472	045236		ADB FBASE	AND LIMIT
0381	44473	104200		DLD 1,I	RECORD POINTERS
	44474	100001			
0382	44475	050001		CPA 1	PHYSICAL END OF RECORD?
0383	44476	026512		JMP GTTY3	YES
0384	44477	160001		LDA 1,I	NO, LOAD WORD
0385	44500	006404		CLB,INB	OF RECORD
0386	44501	050350		CPA EOR	END-OF-RECORD?
0387	44502	026512		JMP GTTY3	YES
0388	44503	050351		CPA EOF	NO, END-OF-FILE?
0389	44504	026530		JMP GTTY4	YES
0390	44505	010762		AND M256	NO
0391	44506	050445		CPA B1000	STRING?

0392	44507	006004		INB	YES, (B) = 2
0393	44510	060001	GTTY2	LDA 1	SET (A) = (B)
0394	44511	125514		JMP GTTY2, I	
0395	44512	065236	GTTY3	LDB FBASE	PHYSICAL
0396	44513	044345		ADB, -5	NULL RECORD
0397	44514	160001		LDA B, I	
0398	44515	051036		CPA BIT15	IN CORE?
0399	44516	026524		JMP GTTY6	YES, SKIP COMPARE
0400	44517	044351		ADB, -1	NO, PHYSICAL
0401	44520	160001		LDA B, I	END
0402	44521	044354		ADB, +2	OF
0403	44522	150001		CPA B, I	FILE?
0404	44523	026532		JMP GTTY5	YES
0405	44524		GTTY6	EQU *	
0406	44524	007400		CCB	NO
0407	44525	055653		CPB EORFL	EOR'S WANTED?
0408	44526	026467		JMP GTTY1	NO
0409	44527	064354		LDB, +2	YES, SET (B) = 4
0410	44530	044354	GTTY4	ADB, +2	(B) = (B) + 2
0411	44531	026510		JMP GTTY2	
0412	44532	060355	GTTY5	LDA, +3	(A) = 3
0413	44533	125514		JMP GTTY2, I	
0414**				**	
0415***				***	
0416**				**	
0417*				*	
0418*					THE BUFFER OF THAT FILE CURRENTLY REFERENCED BY FBASE IS
0419*					WRITTEN TO ITS PLACE ON THE DISC, UNLESS NOTHING HAS BEEN
0420*					WRITTEN INTO THE BUFFER,
0421*					
0422	44534	065236	*WRBU	LDB FBASE	LOAD SECOND
0423	44535	044346		ADB, -4	WORD FROM
0424	44536	160001		LDA B, I	FILE TABLE
0425	44537	001600		ELA	ENTRY (RECORD LENGTH)
0426	44540	002141		SEZ, CLE, RSS	HAS BIT 15 BEEN SET?
0427	44541	125516		JMP WRBUF, I	NO
0428	44542	001500		ERA	YES, CLEAR IT
0429	44543	170001		STA B, I	STORE IT BACK
0430	44544	044355		ADB, +3	GET HIGH CURRENT
0431	44545	160001		LDA B, I	RECORD ADDRESS
0432	44546	051036		CPA BIT15	NULL RECORD?
0433	44547	125516		JMP WRBUF, I	YES, DON'T WRITE RECORD OUT
0434	44550	044364		ADB, +10	GET
0435	44551	160001		LDA B, I	PROTECT MASK
0436	44552	002003		SZA, RSS	IS IT ZERO?
0437	44553	026615		JMP WRBU7	YES, SKIP STRING MASKING
0438	44554	071771		STA PMASK	NO, SAVE MASK
0439	44555	044344		ADB, -6	ADJUST FBASE TO
0440	44556	075236		STB FBASE	BUFFER LIMIT POINTER
0441	44557	065647		LDB RQ3	
0442	44560	155236	WRBU4	CPB FBASE, I	DONE ?
0443	44561	026611		JMP WRBU6	
0444	44562	160001		LDA 1, I	NO
0445	44563	050350		CPA EOR	EOR ?
0446	44564	026611		JMP WRBU6	

0447	44565	050351	CPA	EOF	EOF ?
0448	44566	026611	JMP	WRBU6	
0449	44567	010762	AND	M256	
0450	44570	050445	CPA	B1000	STRING ?
0451	44571	026574	JMP	*+3	
0452	44572	044354	ADB	.+2	SKIP TWO WORDS
0453	44573	026560	JMP	WRBU4	
0454	44574	160001	LDA	1,I	YES
0455	44575	010443	AND	B377	
0456	44576	040355	ADA	.+3	
0457	44577	001100	ARS		
0458	44600	040001	ADA	1	
0459	44601	071634	STA	ATMP	
0460	44602	006004	WRBU5	INB	
0461	44603	055634	CPB	ATMP	
0462	44604	026560	JMP	WRBU4	
0463	44605	160001	LDA	1,I	
0464	44606	021771	XOR	PMASK	
0465	44607	170001	STA	1,I	
0466	44610	026602	JMP	WRBU5	
0467	44611	065236	WRBU6	LDB	FBASE
0468	44612	044347	ADB	.-3	
0469	44613	075236	STB	FBASE	
0470	44614	044363	ADB	.+9	=> PMASK WORD
0471	44615	044335	WRBU7	ADB	.-13
0472	44616	160001	LDA	B,I	=> WORDS/RECORD WORD
0473	44617	030222	IOR	BIT14	
0474	44620	170001	STA	B,I	SET FILE
0475	44621	001423	ALR,RAR		DIRTY BIT
0476	44622	003004	CMA,INA		CLEAR DIRTY BITS AND
0477	44623	044355	ADB	.+3	GET NEG. REC. LENGTH
0478	44624	164001	LDB	B,I	GET HIGH CURRENT
0479	44625	103100	CLF	0	RECORD ADDRESS AGAIN
0480	44626	007002	CMB,SZB		DRUM OR DISC ADDRESS?
0481	44627	026640	JMP	WRBU1	DISC, GO TRANSFER
0482	44630	070072	STA	WORD	DRUM:
0483	44631	161236	LDA	FBASE,I	
0484	44632	065647	LDB	RQ3	WRITE
0485	44633	114770	JSB	DRUM,I	RECORD
0486	44634	060261	LDA	ENDRM	TO
0487	44635	002020	SSA		DRUM
0488	44636	026634	JMP	*-2	
0489	44637	026652	JMP	WRBU2	
0490	44640	070215	WRBU1	STA	MWORD
0491	44641	065647	LDB	RQ3	WRITE
0492	44642	003400	CCA		RECORD
0493	44643	041236	ADA	FBASE	
0494	44644	114212	JSB	DISCA,I	TO
0495	44645	102030	HLT	30B	
0496	44646	102031	HLT	31B	DISC
0497	44647	060214	LDA	MBUSY	
0498	44650	002020	SSA		
0499	44651	026647	JMP	*-2	
0500	44652		WRBU2	EQU	*
0501	44652	002003	SZA	RSS	ANY ERRORS?

0502	44653	125516	JMP	WRBUF,I	
0503	44654	006400	CLB		YES, CLEAR DRUM DRIVER
0504	44655	074261	STB	ENDRM	BUSY WORD
0505	44656	115164	JSB	RERRS+46,I	AND GO INDICATE GOOF
0506**				**	
0507***		TRANSFER A STRING		***	
0508**				**	
0509*					
0510*					THE NUMBER OF CHARACTERS SPECIFIED BY TNULL (IN 1'S
0511*					COMPLEMENT) IS TRANSFERRED FROM THE SOURCE STRING TO
0512*					A DESTINATION STRING BEGINNING WITH THE CHARACTER
0513*					ADDRESSED BY TEMP5.
0514*					
0515	44657	071402	#TRST	STA TRFCH	SAVE SUBROUTINE CALL
0516	44660	035406		ISZ TNULL	MORE TRANSFER STRING?
0517	44661	002001		RSS	YES
0518	44662	125350		JMP TRSTR,I	NO
0519	44663	115402		JSB TRFCH,I	FETCH A SOURCE CHARACTER
0520	44664	060412		LDA .+40B	NONE LEFT, LOAD A BLANK
0521	44665	071404		STA TRS0	SAVE IT
0522	44666	065272		LDB TEMP5	LOAD
0523	44667	004065		CLE,ERB	DESTINATION
0524	44670	160001		LDA 1,I	WORD
0525	44671	002041		SEZ,RSS	SAVE
0526	44672	001727		ALF,ALF	OTHER
0527	44673	010762		AND M256	CHARACTER
0528	44674	031404		IOR TRS0	COMBINE WITH
0529	44675	002041		SEZ,RSS	NEW CHARACTER
0530	44676	001727		ALF,ALF	AND STORE
0531	44677	170001		STA 1,I	WORD
0532	44700	035272		ISZ TEMP5	INCREMENT DESTINATION ADDRESS
0533	44701	026660		JMP #TRST+1	

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0535**
0536*** UNPACK ARGUMENTS FOR ARITHMETIC OPERATIONS ***
0537**
0538 44702 071620 #UNPK STA A1 SAVE HIGH MANTISSA OF ARG 1
0539 44703 002003 SZA,RSS UNPACK
0540 44704 006104 CLE,INB SECOND
0541 44705 015414 JSB .FLUN WORD
0542 44706 075621 STB C1 SAVE LOW MANTISSA OF ARG 1
0543 44707 071322 STA EXP SAVE EXPONENT
0544 44710 161412 LDA UNPAK,I COMPUTE ADDRESS
0545 44711 035412 ISZ UNPAK OF CALLING ROUTINE
0546 44712 164000 LDB 0,I
0547 44713 134000 ISZ 0,I SET CALLING ROUTINE'S RETURN
0548 44714 164001 LDB 1,I LOAD
0549 44715 104200 DLD 1,I ARG 2
      44716 100001
0550 44717 071622 STA A2 SAVE HIGH PART OF ARG 2
0551 44720 002003 SZA,RSS UNPACK
0552 44721 006404 CLB,INB LOW
0553 44722 015414 JSB .FLUN PART
0554 44723 075623 STB C2 SAVE LOW MANTISSA OF ARG 2
0555 44724 071310 STA EXP2 SAVE EXPONENT
0556 44725 125412 JMP UNPAK,I
0557**
0558*** ADD TWO FLOATING POINT NUMBERS ***
0559**
0560 44726 015412 #FAD JSB UNPAK UNPACK THE ARGUMENTS
0561 44727 001402 DEF .FAD
0562 44730 065402 LDB .FAD MOVE
0563 44731 075404 STB .FSB RETURN ADDRESS
0564 44732 026751 JMP ADMU1 ADD THE ARGUMENTS
0565**
0566*** SUBTRACT TWO FLOATING POINT NUMBERS ***
0567**
0568 44733 015412 #FSB JSB UNPAK UNPACK THE ARGUMENTS
0569 44734 001404 DEF .FSB
0570 44735 061622 LDA A2
0571 44736 003000 CMA NEGATE SECOND ARGUMENT
0572 44737 007006 CMB,INB,SZB OVERFLOW FROM LOW MANTISSA?
0573 44740 026746 JMP .FSB1 NO
0574 44741 002025 SSA,INA,RSS YES, ORIGINAL NUMBER NEGATIVE?
0575 44742 002021 SSA,RSS YES, COMPLEMENT NEGATIVE?
0576 44743 026746 JMP .FSB1 NO
0577 44744 001300 RAR YES, SHIFT MANTISSA
0578 44745 035310 ISZ EXP2 AND CORRECT EXPONENT
0579 44746 075623 .FSB1 STB C2 SAVE
0580 44747 071622 STA A2 COMPLEMENT
0581 44750 061310 LDA EXP2
0582*
0583** ADD UNPACKED ARGUMENTS **
0584*
0585 44751 003004 ADMU1 CMA,INA EXP2 IN (A)
0586 44752 041322 ADA EXP COMPUTE EXPONENT DIFFERENCE
0587 44753 002021 SSA,RSS ARG 1 LARGER?
0588 44754 026772 JMP ADMU2 YES

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0589	44755	061620		LDA A1	NO,
0590	44756	065622		LDB A2	
0591	44757	071622		STA A2	SWAP
0592	44760	075620		STB A1	
0593	44761	061621		LDA C1	ARGUMENTS
0594	44762	065623		LDB C2	
0595	44763	071623		STA C2	
0596	44764	075621		STB C1	
0597	44765	061322		LDA EXP	
0598	44766	065310		LDB EXP2	
0599	44767	071310		STA EXP2	
0600	44770	075322		STB EXP	
0601	44771	026751		JMP ADMU1	
0602	44772	040321	ADMU2	ADA .-25	SHIFT
0603	44773	065621		LDB C1	COUNT
0604	44774	003120		CMA,CLE,SSA	>= 25?
0605	44775	027026		JMP ADMU4	YES, IGNORE SMALLER ARGUMENT
0606	44776	040321		ADA .-25	NO, COMPUTE SHIFT COUNT IN
0607	44777	071310		STA EXP2	1'S COMPLEMENT
0608	45000	061622		LDA A2	LOAD SMALLER
0609	45001	065623		LDB C2	MANTISSA
0610	45002	035310	ADMU3	ISZ EXP2	MORE SHIFTS?
0611	45003	027031		JMP ADMU5	YES
0612	45004	045621		ADB C1	NO, ADD
0613	45005	103101		CLO	LOWER MANTISSAS
0614	45006	002040		SEZ	OVERFLOW?
0615	45007	002104		CLE,INA	YES, BUMP (A)
0616	45010	102301		SOS	OVERFLOW?
0617	45011	027016		JMP **5	NO
0618	45012	041620		ADA A1	YES, ADD HIGH MANTISSAS
0619	45013	002021		SSA,RSS	OVERFLOW CORRECTED BY A1 < 0 ?
0620	45014	027027		JMP ADMU4+1	YES
0621	45015	027021		JMP **4	NO, CORRECT OVERFLOW
0622	45016	041620		ADA A1	ADD HIGH MANTISSAS
0623	45017	102301		SOS	OVERFLOW?
0624	45020	027027		JMP ADMU4+1	NO
0625	45021	001500		ERA	YES, SHIFT
0626	45022	005500		ERB	DOWN AND
0627	45023	035322		ISZ EXP	BUMP
0628	45024	027027		JMP ADMU4+1	EXPONENT
0629	45025	002001		RSS	
0630	45026	061620	ADMU4	LDA A1	
0631	45027	015306		JSB .PACK	NORMALIZE AND PACK
0632	45030	125404		JMP .FSB,I	
0633	45031	000071	ADMU5	CLE,SLA,ARS	ARITHMETIC
0634	45032	002200		CME	DOUBLE
0635	45033	005540		ERB,CLE	SHIFT
0636	45034	027002		JMP ADMU3	
0001**					**
0002***	MULTIPLY TWO FLOATING POINT NUMBERS				***
0003**					**
0004	45035	040000	B40M	OCT 40000	
0005	45036	015412	#FMP	JSB UNPAK	UNPACK THE ARGUMENTS
0006	45037	001406		DEF .FMP	
0007	45040	041322		ADA EXP	ADD EXPONENTS

0008	45041	002004	INA	PLUS 1 FOR
0009	45042	071322	STA EXP	NORMALIZATION
0010	45043	005320	RBR	POSITION LOW MANTISSA OF ARG 2
0011	45044	060001	LDA 1	COMPUTE A
0012	45045	100200	MPY A1	CROSS PRODUCT
	45046	001620		
0013	45047	071623	STA C2	SAVE RESULT
0014	45050	061621	LDA C1	POSITION LOW MANTISSA
0015	45051	001300	RAR	OF ARG 1
0016	45052	075621	STB C1	SAVE REST OF PRIOR RESULT
0017	45053	100200	MPY A2	COMPUTE SECOND CROSS PRODUCT
	45054	001622		
0018	45055	045621	ADB C1	ADD
0019	45056	000040	CLE	CROSS
0020	45057	041623	ADA C2	PRODUCTS
0021	45060	002040	SEZ	CORRECT
0022	45061	006004	INB	FOR CARRY
0023	45062	075623	STB C2	SAVE RESULT
0024	45063	061620	LDA A1	COMPUTE PRODUCT OF
0025	45064	100200	MPY A2	HIGH MANTISSAS
	45065	001622		
0026	45066	000065	CLE,ERA	POSITION LOW PART OF RESULT
0027	45067	041623	ADA C2	ADD IN CROSS PRODUCTS
0028	45070	000066	CLE,ELA	POSITION RESULT
0029	45071	002041	SEZ,RSS	CARRY?
0030	45072	027076	JMP **4	NO
0031	45073	102201	SOC	YES, POSITIVE CARRY?
0032	45074	006005	INB,RSS	YES
0033	45075	044351	ADB .-1	NO
0034	45076	101100	SNP	EXCHANGE REGISTERS
0035	45077	015306	JSB .PACK	NORMALIZE
0036	45100	125406	JMP .FMP,I	AND PACK RESULT
0037**				**
0038***	DIVIDE TWO FLOATING POINT NUMBERS			***
0039**				**
0040	45101	015412	#FDV JSB UNPAK	UNPACK THE ARGUMENTS
0041	45102	001410	DEF .FDV	
0042	45103	065622	LDB A2	ZERO
0043	45104	006003	SZB,RSS	DIVISOR?
0044	45105	027161	JMP .FDV2	YES
0045	45106	065620	LDB A1	NO, ZERO
0046	45107	006003	SZB,RSS	DIVIDEND?
0047	45110	027156	JMP .FDV1	YES
0048	45111	003004	CMA,INA	NO, COMPUTE
0049	45112	002004	INA	EXPONENT
0050	45113	041322	ADA EXP	DIFFERENCE
0051	45114	071322	STA EXP	PLUS 1
0052	45115	061621	LDA C1	LOAD DIVIDEND
0053	45116	101022	ASR 2	SHIFT TO PREVENT OVERFLOW
0054	45117	100400	DIV A2	SAVE
	45120	001622		
0055	45121	071310	STA EXP2	QUOTIENT
0056	45122	005100	BRB	DIVIDE REMAINDER BY 2 TO
0057	45123	002400	CLA	PREVENT DIVISION OVERFLOW
0058	45124	100400	DIV A2	DIVIDE REMAINDER AND

0059	45125	001622		STA FD0	SAVE LOW PART OF QUOTIENT
0060	45126	071402		LDB C2	
0061	45130	101043		LSR 3	SCALE TO PREVENT OVERFLOW
0062	45131	002400		CLA	OVERFLOW
0063	45132	100400		DIV A2	COMPUTE C2/A2 = Q
	45133	001622			
0064	45134	003004		CMA,INA	COMPUTE
0065	45135	100200		MPY EXP2	=HIGH QUOTIENT*Q
	45136	001310			
0066	45137	005066		BLS,CLE,ELB	SHIFT SIGN TO (E)
0067	45140	061402		LDA FD0	LOW QUOTIENT
0068	45141	002020		SSA	NEGATIVE?
0069	45142	003401		CCA,RSS	YES, SET (A) = -1 (EXTEND
0070	45143	002400		CLA	NO, SET (A) = 0 SIGN)
0071	45144	003040		CMA,SEZ	IF (E) = 1 SUBTRACT
0072	45145	002004		INA	1 AS EXTENSION
0073	45146	003100		CMA,CLE	OF PRODUCT
0074	45147	045402		ADB FD0	ADD IN LOW QUOTIENT
0075	45150	002040		SEZ	CARRY
0076	45151	002004		INA	INTO (A)
0077	45152	004066		CLE,ELB	POSITION
0078	45153	001600		ELA	REGISTERS
0079	45154	041310		ADA EXP2	ADD HIGH QUOTIENT
0080	45155	002001		RSS	
0081	45156	002400	.FDV1	CLA	SET MANTISSA TO ZERO
0082	45157	015306		JSB .PACK	NORMALIZE AND PACK
0083	45160	125410		JMP .FDV,1	
0084	45161	115212	.FDV2	JSB WERRS+3,I	DIVIDE BY ZERO
0085	45162	061620		LDA A1	
0086	45163	015310		JSB OVFLW	RETURN INFINITY OF
0087	45164	125410		JMP .FDV,I	APPROPRIATE SIGN
0088**					**
0089***				TAKE ARITHMETIC INVERSE	***
0090**					**
0091*					
0092*				ENTER WITH A FLOATING POINT NUMBER IN (A) AND (B),	
0093*				EXIT WITH ITS ARITHMETIC INVERSE IN (A) AND (B),	
0094*					
0095	45165	053035	#ARIN	CPA B40M	A=040000?
0096	45166	002001		RSS	
0097	45167	027172		JMP ARIN2	NO,
0098	45170	054353		CPB +1	YES, B=0000017
0099	45171	027220		JMP ARIN3	YES,
0100	45172	101100	ARIN2	SWP	NO, SWAP REGISTERS,
0101	45173	007100		CMB,CLE	COMPLEMENT HIGH PART
0102	45174	020762		XOR M256	COMPLEMENT LOW PART
0103	45175	040444		ADA B400	FINISH LOW PART
0104	45176	002041		SEZ,RSS	OVERFLOW?
0105	45177	027216		JMP ARIN1	NO
0106	45200	006004		INB	YES, INCREMENT HIGH PART
0107	45201	055036		CPB FLGBT	OVERFLOW?
0108	45202	027206		JMP ++4	YES
0109	45203	056000		CPB UNNRM	NO, NEGATIVE UNNORMALIZED?
0110	45204	002001		RSS	YES

0111	45205	027216		JMP ARIN1	NO
0112	45206	046000		ADB UNNRM	FIX HIGH MANTISSA
0113	45207	000033		SLA,RAR	POSITION EXPONENT
0114	45210	032001		IOR SMSK	FILL IN LEADING BITS IF NEGATIVE
0115	45211	006021		SSB,RSS	POSITIVE?
0116	45212	002005		INA,RSS	YES, INCREMENT EXPONENT
0117	45213	040351		ADA ,=1	NO, DECREMENT EXPONENT
0118	45214	001200		RAL	POSITION
0119	45215	010443		AND B377	EXPONENT
0120	45216	101100	ARIN1	SWP	RESTORE USUAL
0121	45217	125370		JMP ARINV,I	NUMBER ORDER
0122	45220	115215	ARIN3	JSB WERRS+6,I	OUTPUT UNDERFLOW MESSAGE.
0123	45221	002400		CLA	RETURN WITH A=0
0124	45222	006400		CLB	AND B=0.
0125	45223	125370		JMP ARINV,I	
0126**					**
0127***	UNPACK LOW WORD OF NUMBER				***
0128**					**
0129*					
0130*	ENTER WITH LOW WORD OF FLOATING POINT NUMBER IN (B).				
0131*	EXIT WITH EXPONENT IN (A) AND MANTISSA IN (B).				
0132*					
0133	45224	002400	#FLUN	CLA	EXTRACT
0134	45225	101050		LSR 8	EXPONENT
0135	45226	001727		ALF,ALF	IN (A) AND
0136	45227	005727		BLF,BLF	MANTISSA IN (B)
0137	45230	000033		SLA,RAR	NEGATIVE EXPONENT?
0138	45231	032001		IOR SMSK	YES, FILL IN LEADING BITS
0139	45232	125414		JMP .FLUN,I	NO

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0141*
0142* WHILE READING A PROGRAM IN 'TAPE' MODE, ERRONEOUS STATEMENTS
0143* ARE REPLACED WITH ERROR PSUEDO-STATEMENTS. (THESE ARE THREE
0144* WORD 'STATEMENTS': THE STATEMENT NUMBER, THE LENGTH (ALWAYS
0145* 3), AND THE ERROR NUMBER, SINCE BITS 15-9 ARE CLEAR IN WORD
0146* THREE, ERRORS HAVE A STATEMENT TYPE OF 0. ERRCT HOLDS A
0147* COUNT OF THE EMBEDDED ERRORS AND THE USER'S BIT OF TERR IS
0148* SET IF ANY EMBEDDED ERRORS EXIST. ADDITIONALLY, THE 'OUT-OF-
0149* STORAGE' ERROR SETS SYMTB = 1 TO ASSIST SYNTAX. ALL STATEMENTS
0150* WITH A SEQUENCE NUMBER OF ZERO WILL BE COLLAPSED INTO A SINGLE
0151* ERROR AND UNDER/OVERFLOWS IN NUMERICAL CONSTANTS ARE NOT
0152* REPORTED.
0153*
0154**
0155*** OUTPUT TAPE MODE ERRORS ***
0156**
0157*
0158* UPON ENTRY ALL EMBEDDED ERRORS ARE STRIPPED FROM THE PROGRAM
0159* AND STORED BELOW IT AS TWO_WORD QUANTITIES (THE LENGTH WORD
0160* IS DROPPED). FOLLOWING THIS THE ERRORS ARE PRINTED ONE BY
0161* ONE WITH LINE NUMBERS. AFTER PRINTING ALL ERRORS (OR, IF THE
0162* USER ABORTS THE ERROR PRINTING, AFTER THE USER TYPES THE NEXT
0163* LINE) EVERYTHING IS CLEANED UP AND A MESSAGE PRINTED TO SAY
0164* THE LAST RECEIVED INPUT HAS BEEN IGNORED.
0165*
0166 45233 002400 TAPER CLA FIRST
0167 45234 051576 CPA ERRCT ENTRY?
0168 45235 027347 JMP TAPE5 NO
0169 45236 071575 STA SYMTB YES, RESET 'OUT OF STORAGE' FLAG
0170 45237 060056 LDA PBPTR INITIALIZE
0171 45240 071230 STA SPTR
0172 45241 064702 LDB PBUFF PROGRAM
0173 45242 075514 STB DEST
0174 45243 075512 STB SOURC POINTERS
0175*
0176** STRIP OUT EMBEDDED ERRORS **
0177*
0178 45244 006004 TAPE1 INB SET (8)
0179 45245 060001 LDA 1 TO FIRST WORD
0180 45246 144001 ADB 1,I OF NEXT
0181 45247 044351 ADB -1 PROGRAM STATEMENT
0182 45250 002004 INA IS THE
0183 45251 160000 LDA 0,I CURRENT STATEMENT
0184 45252 010664 AND OPMSK OF TYPE
0185 45253 002002 SZA 'ERROR' ?
0186 45254 027244 JMP TAPE1 NO
0187 45255 061512 LDA SOURC YES, LOAD SOURCE ADDRESS
0188 45256 075512 STB SOURC SET SOURCE TO NEW VALUE
0189 45257 044347 ADB -3 JUXTAPOSED
0190 45260 050001 CPA 1 ERRORS?
0191 45261 027265 JMP TAPE2 YES, NO MOVE NEEDED
0192 45262 051514 CPA DEST NO, FIRST ERROR ENCOUNTERED?
0193 45263 027360 JMP TAPE6 YES
0194 45264 015500 JSB MOVER NO, DELETE PRIOR ERROR(S)
0195 45265 064056 TAPE2 LDB PBPTR ENOUGH

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0196	45266	075500	STB	TAP0		
0197	45267	006004	INB		USER SPACE	
0198	45270	054462	CPB	LWAUS		
0199	45271	027363	JMP	TAPE7	TO TRANSFER	
0200	45272	006004	INB			
0201	45273	054462	CPB	LWAUS	ERROR?	
0202	45274	027363	JMP	TAPE7	NO	
0203	45275	074056	STB	PBPTR	YES, APPEND TWO WORDS	
0204	45276	164000	LDB	0,I	TRANSFER	
0205	45277	175500	STB	TAP0,I	LINE NUMBER	
0206	45300	035500	ISZ	TAP0		
0207	45301	040364	ADA	,+2	TRANSFER	
0208	45302	164000	LDB	0,I	ERROR	
0209	45303	175500	STB	TAP0,I	NUMBER	
0210	45304	065512	LDB	SOURC	RETRIEVE POINTER TO STATEMENT	
0211	45305	003400	CGA		DECREMENT	
0212	45306	041576	ADA	ERRCT	ERROR	
0213	45307	071576	STA	ERRCT	COUNTER	
0214	45310	002002	SZA		ALL ERRORS DELETED?	
0215	45311	027244	JMP	TAPE1	NO	
0216	45312	055230	CPB	SPTR	YES, PROGRAM REMAINING?	
0217	45313	027317	JMP	TAPE3	NO	
0218	45314	061512	LDA	SOURC	YES, SLIDE UP	
0219	45315	065230	LDB	SPTR	OVER LAST	
0220	45316	015500	JSB	MOVER	ERROR(S)	
0221*				*		
0222**	OUTPUT ERROR MESSAGES			**		
0223*				*		
0224	45317	063335	TAPE3	LDA	RETAD	SET
0225	45320	071474		STA	SERR	RETURN ADDRESS
0226	45321	062005		LDA	WERRA	FAKE
0227	45322	042004		ADA	FERRA	
0228	45323	003004		CMA,	INA	'WARNING ONLY'
0229	45324	071442		STA	LT5	ERROR MODE
0230	45325	007400	TAPE4	CCB		FORCE
0231	45326	075444		STB	LT6	LINE NUMBER
0232	45327	165230		LDB	SPTR,I	MAKE LINE NUMBER OF
0233	45330	075570		STB	.LNUM	CURRENT ERROR ACCESSIBLE
0234	45331	035230		ISZ	SPTR	LOAD
0235	45332	161230		LDA	SPTR,I	ERROR NUMBER
0236	45333	006400		CLB		EXIT TO
0237	45334	027450		JMP	SERR1+3	ERROR PRINTER
0238	45335	045336	RETAD	DEF	*+1	
0239	45336	062004		LDA	FERRA	RESTORE
0240	45337	003004		CMA,	INA	'WARNING
0241	45340	041442		ADA	LT5	ONLY'
0242	45341	071442		STA	LT5	MODE
0243	45342	035230		ISZ	SPTR	MORE
0244	45343	061230		LDA	SPTR	
0245	45344	050056		CPA	PBPTR	ERRORS?
0246	45345	002001		RSS		NO
0247	45346	027325		JMP	TAPE4	YES
0248	45347	061514	TAPES	LDA	DEST	CORRECT POINTER TO
0249	45350	070056		STA	PBPTR	LAST WORD +1 OF PROGRAM
0250	45351	103100		CLF	0	

0251	45352	060353	LDA TERR	TURN
0252	45353	003000	CMA	ERROR
0253	45354	110257	AND MAIN,I	FLAG
0254	45355	170257	STA MAIN,I	OFF
0255	45356	102100	STF 0	
0256	45357	115147	JSB RERRS+33,I	EMIT PARTING SHOT
0257*				
0258	45360	075514	TAPE6 STB DEST	SET DESTINATION POINTER
0259	45361	060001	LDA 1	TO FIRST ERROR ENCOUNTERED
0260	45362	027265	JMP TAPE2	
0261	45363	071474	TAPE7 STA TAP1	SAVE SOURCE ADDRESS
0262	45364	003004	CMA,INA	COMPUTE SIZE OF AREA
0263	45365	041514	ADA DEST	TO BE RECLAIMED
0264	45366	071500	STA TAP0	AND SAVE IT
0265	45367	041230	ADA SPTR	RESET POINTER TO
0266	45370	071230	STA SPTR	LAST WORD +1 OF PROGRAM
0267	45371	065512	LDB SOURC	SET POINTER TO
0268	45372	045500	ADB TAP0	NEXT STATEMENT
0269	45373	075512	STB SOURC	TO NEW VALUE
0270	45374	061474	LDA TAP1	RETRIEVE SOURCE ADDRESS
0271	45375	064056	LDB PBPTR	RECLAIM
0272	45376	015500	JSB MOVER	SPACE
0273	45377	065514	LDB DEST	SET NEW POINTER TO
0274	45400	074056	STB PBPTR	PROTECTED AREA
0275	45401	061512	LDA SOURC	COMPUTE POINTER TO
0276	45402	040347	ADA .-3	CURRENT ERROR STATEMENT
0277	45403	071514	STA DEST	SET NEW DESTINATION POINTER
0278	45404	027266	JMP TAPE2+1	
0279**				**
0280***			MOVE BLOCK TO LOWER CORE	***
0281**				**
0282*				
0283*			UPON ENTRY (B) POINTS TO THE LAST WORD +1 TO BE MOVED AND	
0284*			(A) POINTS TO THE FIRST WORD TO BE MOVED. DEST POINTS TO THE	
0285*			FIRST WORD OF THE DESTINATION SPACE.	
0286*				
0287	45405	075474	#MOVE STB MVEND	SAVE POINTER TO LAST WORD +1
0288	45406	164000	LDB 0,I	TRANSFER
0289	45407	175514	STB DEST,I	WORD
0290	45410	035514	ISZ DEST	BUMP
0291	45411	002004	INA	POINTERS
0292	45412	051474	CPA MVEND	DONE?
0293	45413	125500	JMP MOVER,I	YES
0294	45414	027406	JMP #MOVE+1	NO

0296**
 0297*** OUTPUT AN ERROR MESSAGE ***
 0298**
 0299*

0300* ERRORS ARE IDENTIFIED, THE APPROPRIATE SECTOR OF DRUM LOADED,
 0301* AND THE MESSAGE PRINTED. IF A SYNTAX ERROR AND IN 'TAPE'
 0302* MODE, THE ERROR IS EMBEDDED IN THE PROGRAM AS A PSUEDO-
 0303* STATEMENT AND THE ERROR FLAGS ADJUSTED AS APPROPRIATE. IF A
 0304* SYNTAX ERROR AND IN 'KEY' MODE, 'ERROR' IS PRINTED AND INPUT
 0305* REQUESTED. THE ERROR MESSAGE IS PRINTED IF THE REPLY IS OTHER
 0306* THAN A SIMPLE CARRIAGE RETURN. IF THE LENGTH WORD OF THE ERROR
 0307* MESSAGE IS POSITIVE THE CURRENT LINE NUMBER IS APPENDED.
 0308*

0309	45415	003400	#SERR	CCA	COMPUTE
0310	45416	041474		ADA SERR	
0311	45417	160000		LDA 0,I	AND SAVE
0312	45420	042002		ADA SERRA	
0313	45421	010502		AND B777	ERROR NUMBER
0314	45422	071432		STA LT3	
0315	45423	042003		ADA RERRA	
0316	45424	071442		STA LT6	SYNTAX
0317	45425	002021		SSA,RSS	ERROR?
0318	45426	027445		JMP SERR1	NO
0319	45427	060362		LDA TAPEF	YES, TAPE
0320	45430	110257		AND MAIN,I	
0321	45431	002002		SZA	MODE?
0322	45432	027701		JMP SERR6	YES
0323	45433	006400		CLB	NO
0324	45434	075274		STB LT2	OUTPUT
0325	45435	063727		LDA ASCER	'ERROR'
0326	45436	071430		STA LT1	AND
0327	45437	060347		LDA .-3	WAIT
0328	45440	015462		JSB OUTST	FOR
0329	45441	060231		LDA IWT	
0330	45442	114516		JSB SCHIN,I	INPUT.
0331	45443	015450		JSB GETCR	CARRIAGE RETURN ONLY?
0332	45444	027552		JMP SERR4	YES

0333*
 0334** PRINT THE MESSAGE **

0335*					
0336	45445	061432	SERR1	LDA LT3	NO
0337	45446	006400		CLB	
0338	45447	075444		STB LT6	LOAD
0339	45450	101105		RRR 5	
0340	45451	075432		STB LT3	OCTANT
0341	45452	042006		ADA DSERR	
0342	45453	164000		LDB 0,I	ADDRESS
0343	45454	061432		LDA LT3	COMPUTE
0344	45455	001222		RAL,RAL	
0345	45456	001200		RAL	
0346	45457	010361		AND .+7	SECTOR
0347	45460	040001		ADA 1	
0348	45461	064610		LDB D100	
0349	45462	103100		CLF 0	
0350	45463	074072		STB WORD	READ

0351	45464	064544		LDB ERSCA	
0352	45465	045036		ADB FLGBT	SECTOR
0353	45466	114770		JSB DRUM,1	
0354	45467	060261		LDA ENDRM	
0355	45470	002020		SSA	DONE?
0356	45471	027467		JMP *-2	NO
0357	45472	002003		SZA,RSS	ANY ERRORS?
0358	45473	027477		JMP SERRB	NO
0359	45474	002400		CLA	YES, CLEAR DRUM DRIVER
0360	45475	070261		STA ENDRM	BUSY WORD
0361	45476	116007		JSB SICKL,I	AND GO DIE GRACEFULLY
0362	45477	061442	SERRB	LDA LT5	
0363	45500	002021		SSA,RSS	EXECUTION ERROR?
0364	45501	027625		JMP SERRB	YES
0365	45502	002400		CLA	NO, OUTPUT
0366	45503	015454		JSB OUTCR	A NULL.
0367	45504	060343		LDA *-7	
0368	45505	071430		STA LT1	OUTPUT
0369	45506	060412		LDA +40B	7
0370	45507	015454		JSB OUTCR	
0371	45510	035430		ISZ LT1	
0372	45511	027506		JMP *-3	BLANKS.
0373	45512	061432	SERR2	LDA LT3	COMPUTE
0374	45513	001727		ALF,ALF	
0375	45514	010402		AND +30B	MESSAGE
0376	45515	001200		RAL	
0377	45516	040544		ADA ERSCA	
0378	45517	071430		STA LT1	ADDRESS
0379	45520	007400		CCB	
0380	45521	160000		LDA 0,I	
0381	45522	002020		SSA	LINE NUMBER?
0382	45523	027526		JMP **3	NO
0383	45524	075444		STB LT6	YES, SET FLAG
0384	45525	003004		CMA,INA	
0385	45526	006400		CLB	OUTPUT
0386	45527	075274		STB LT2	ERROR
0387	45530	015462		JSB OUTST	MESSAGE
0388	45531	035444		ISZ LT6	LINE NUMBER FLAG SET?
0389	45532	027542		JMP SERR3	NO
0390	45533	063733		LDA LINEA	YES
0391	45534	071430		STA LT1	PRINT
0392	45535	006400		CLB	
0393	45536	060345		LDA *-5	" IN LINE "
0394	45537	015462		JSB OUTST	
0395	45540	065570		LDB .LNUM	OUTPUT
0396	45541	015456		JSB OUTIN	LINE NUMBER
0397	45542	061442	SERR3	LDA LT5	'BAD
0398	45543	042004		ADA FERRA	
0399	45544	071442		STA LT5	
0400	45545	042005		ADA WERRA	INPUT
0401	45546	002003		SZA,RSS	ERROR
0402	45547	027563		JMP SERRB	YES
0403	45550	060367		LDA +15B	OUTPUT
0404	45551	015454		JSB OUTCR	CARRIAGE RETURN
0405	45552	060364	SERR4	LDA +12B	OUTPUT

0406	45553	015454		JSB OUTCR	LINE FEED
0407	45554	061442		LDA LT5	RUN
0408	45555	002020		SSA	ERROR?
0409	45556	027614		JMP SER13	YES
0410	45557	042005		ADA WERRA	NO, WARNING
0411	45560	002020		SSA	ONLY?
0412	45561	027565		JMP SERR9	NO, FORMAT ERROR
0413	45562	002400		CLA	YES
0414	45563	071572	SERR8	STA CHRCT	
0415	45564	125474		JMP SERR, I	
0416	45565	006400	SERR9	CLB	
0417	45566	061761		LDA IFSTR	CONVERT
0418	45567	101101		RRR 1	CHARACTER
0419	45570	071430		STA LT1	SAVE POINTER
0420	45571	061762		LDA NCH	SAVE
0421	45572	003004		CMA, INA	NUMBER OF
0422	45573	071762		STA NCH	CHARACTERS
0423	45574	006002		SZB	START WITH RIGHT BYTE?
0424	45575	027605		JMP SER11	YES
0425	45576		SER10	EQU *	
0426	45576	161430		LDA LT1, I	FETCH
0427	45577	001727		ALF, ALF	LEFT
0428	45600	010443		AND B377	CHAR
0429	45601	015454		JSB OUTCR	OUTPUT IT
0430	45602	035762		ISZ NCH	FINISHED ALL CHARS?
0431	45603	002001		R8S	NO
0432	45604	027613		JMP SER12	YES
0433	45605		SER11	EQU *	
0434	45605	161430		LDA LT1, I	FETCH RIGHT
0435	45606	010443		AND B377	CHARACTER
0436	45607	015454		JSB OUTCR	OUTPUT IT
0437	45610	035430		ISZ LT1	BUMP POINTER
0438	45611	035762		ISZ NCH	FINISHED ALL CHARS?
0439	45612	027576		JMP SER10	NO
0440	45613		SER12	EQU *	
0441	45613	015536		JSB OUTCL	OUTPUT CR=LF
0442	45614		SER13	EQU *	
0443	45614	103100		CLF 0	
0444	45615	160257		LDA MAIN, I	DISALLOW
0445	45616	030372		IOR UNABT	
0446	45617	170257		STA MAIN, I	ABORTS
0447	45620	102100		STF 0	
0448	45621	061502		LDA FCNTR	
0449	45622	071552		STA FRMAT	
0450	45623	015560		JSB LCDLP	UPDATE LAST CHANGE DATE
0451	45624	124514		JMP SCHEM, I	
0452*					
0453	45625	061442	SERR5	LDA LT5	
0454	45626	042004		ADA FERRA	WARNING
0455	45627	042005		ADA WERRA	ERROR?
0456	45630	002021		SSA, RSS	
0457	45631	027645		JMP SER5A	YES
0458	45632	060257		LDA MAIN	NO, DOES USER
0459	45633	002004		INA	HAVE LP?
0460	45634	050255		CPA PRIST	

0461	45635	002001	RSS	
0462	45636	027645	JMP SER5A	NO
0463	45637	060375	LDA .+23B	YES,
0464	45640	015454	JSB OUTCR	RELEASE IT
0465	45641	060375	LDA .+23B	
0466	45642	015454	JSB OUTCR	
0467	45643	002400	CLA	
0468	45644	070255	STA PRIST	
0469	45645	060367	SER5A LDA .+15B	OUTPUT
0470	45646	015454	JSB OUTCR	CARRIAGE RETURN
0471	45647	060364	LDA .+12B	AND
0472	45650	015454	JSB OUTCR	LINE FEED
0473	45651	002400	CLA	BLOCK
0474	45652	170634	STA DCLC1,I	CLOCK
0475	45653	114534	JSB ABCK,I	CHECK FOR ABORTS
0476	45654	160640	LDA DCLC2,I	UNBLOCK
0477	45655	170634	STA DCLC1,I	CLOCK
0478	45656	061442	LDA LT5	WARNING
0479	45657	042004	ADA FERRA	
0480	45660	042005	ADA WERRA	
0481	45661	002021	SSA,RSS	ERROR?
0482	45662	027512	JMP SERR2	YES
0483	45663	060445	LDA CHNFG	NO
0484	45664	003000	CMA	
0485	45665	103100	CLF 0	
0486	45666	110001	AND 1,I	CLEAR
0487	45667	170001	STA 1,I	CHAIN FLAG
0488	45670	102100	STF 0	
0489	45671	006004	INB	
0490	45672	160001	LDA 1,I	TELL 2114
0491	45673	030230	IOR UNR	THAT USER IS
0492	45674	114500	JSB S14LP,I	NO LONGER RUNNING
0493	45675	060356	LDA .+4	CLEAR PBFLG AND CBFLG
0494	45676	044351	ADB .-7TNUM	
0495	45677	015564	JSB EDADR	BITS,
0496	45700	027512	JMP SERR2	
0497	45701	064056	SERR6 LDB PBPTR	
0498	45702	044354	ADB .+2	STORE
0499	45703	061432	LDA LT3	ERROR
0500	45704	170001	STA 1,I	NUMBER
0501	45705	006004	INB	SET POINTER TO
0502	45706	075574	STB SBPTR	LAST WORD +1 OF ERROR
0503	45707	002003	SZA,RSS	'OUT OF STORAGE' ERROR?
0504	45710	035575	ISZ SYMTB	YES
0505	45711	103100	CLF 0	NO
0506	45712	160257	LDA MAIN,I	FIRST
0507	45713	030353	IOR TERR	
0508	45714	150257	CPA MAIN,I	ERROR?
0509	45715	027721	JMP ++4	NO
0510	45716	170257	STA MAIN,I	YES-->SET FLAG
0511	45717	002400	CLA	CLEAR
0512	45720	071576	STA ERRCT	ERROR COUNTER
0513	45721	102100	STF 0	
0514	45722	035576	ISZ ERRCT	COUNT ERROR
0515	45723	015452	JSB BCKSP	SEEK

0516	45724	015450	SERR7	JSB	GETCR	CARRIAGE RETURN
0517	45725	124524		JMP	ACCSA,I	
0518	45726	027724		JMP	**2	
0519*						
0520	45727	045727	ASCER	DEF	ERR=1	
0521	45730	005105	ERR	OCT	5105	
0522	45731	051122		ASC	2,RROR	
	45732	047522				
0523	45733	045733	LINEA	DEF	*	
0524	45734	020111		ASC	4, IN LINE	
	45735	047040				
	45736	046111				
	45737	047105				
0525	45740	020000		OCT	20000	

0054	46052	040351	ADA	.-1	OF ARRAY
0055	46053	164000	LDB	0,I	
0056	46054	044350	ADB	.-2	SAVE POINTER TO
0057	46055	075574	STB	SBPTR	DYNAMIC DIMENSIONS
0058	46056	061613	LDA	TEMP1	LAST
0059	46057	002004	INA		WORD OF
0060	46060	051334	CPA	PRGCT	STATEMENT?
0061	46061	002400	CLA		YES
0062	46062	160000	LDA	0,I	NO, LOAD (A) WITH
0063	46063	010664	AND	OPMSK	FOLLOWING OPERATOR
0064	46064	065314	LDB	MT1	MAT
0065	46065	006003	SZB	RSS	PRINT?
0066	46066	026121	JMP	MI02	YES
0067	46067	050622	CPA	LBOP	NO, ' ' NEXT OPERATOR?
0068	46070	015470	JSB	REDIM	YES, REDIMENSION ARRAY
0069	46071	161574	LDA	SBPTR,I	SET POINTER
0070	46072	035574	ISZ	SBPTR	TO FIRST ELEMENT
0071	46073	100200	MPY	SBPTR,I	OF ARRAY
	46074	101574			
0072	46075	035574	ISZ	SBPTR	WHILE COMPUTING
0073	46076	003004	CMA,INA		NUMBER OF
0074	46077	071500	STA	MCNT	ELEMENTS
0075	46100	003400	CCA		MAT
0076	46101	051314	CPA	MT1	READ?
0077	46102	026110	JMP	MI09	YES
0078*					
0079**	INPUT VALUES FOR MATRIX **				
0080*					
0081	46103	035312	ISZ	MT0	FIRST MATRIX TO BE INPUT?
0082	46104	002001	RSS		NO
0083	46105	126002	JMP	MINP1,I	YES
0084	46106	041312	ADA	MT0	RETRIEVE
0085	46107	126001	JMP	MINP2,I	SAVED CHARACTER
0086*					
0087**	READ VALUES FOR MATRIX **				
0088*					
0089	46110	006404	MI09	CLB,INB	FETCH
0090	46111	015362	JSB	FDATA	CONSTANT
0091	46112	104400	DST	SBPTR,I	STORE
	46113	101574			
0092	46114	035574	ISZ	SBPTR	
0093	46115	035574	ISZ	SBPTR	IT
0094	46116	035500	ISZ	MCNT	DONE?
0095	46117	026110	JMP	MI09	NO
0096	46120	026174	JMP	MI07	YES
0097*					
0098	46121	050614	MI02	CPA	B3000
0099	46122	007400	CCB		';' FOLLOWING ARRAY?
0100	46123	075500	STB	MCNT	YES
0101	46124	065574	LDB	SBPTR	NO, TREAT AS COMMA
0102	46125	015472	JSB	VCHK	VALIDATE
0103	46126	161574	LDA	SBPTR,I	ARRAY ELEMENTS
0104	46127	035574	ISZ	SBPTR	SAVE
0105	46130	003004	CMA,INA		COUNT
0106	46131	071312	STA	MT0	OF
					ROWS

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0107	46132	161574		LDA SBPTR,I	
0108	46133	035574		ISZ SBPTR	
0109	46134	065234		LDB FILE#	WRITE ON
0110	46135	006020		SSB	A FILE?
0111	46136	026151		JMP M103	NO
0112*				*	
0113**			WRITE MATRIX ON FILE	**	
0114*				*	
0115	46137	100200		MPY MT0	SET
	46140	001312			
0116	46141	071500		STA MCNT	ELEMENT COUNTER
0117	46142	064350	M104	LDB #-2	WRITE ELEMENT
0118	46143	015512		JSB FILST	TO FILE
0119	46144	035574		ISZ SBPTR	MOVE TO
0120	46145	035574		ISZ SBPTR	NEXT ELEMENT
0121	46146	035500		ISZ MCNT	MATRIX DONE?
0122	46147	026142		JMP M104	NO
0123	46150	026174		JMP M107	YES

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0125*
0126** WRITE MATRIX ON TELETYPE **
0127*
0128 46151 003004 M103 CMA,INA SAVE
0129 46152 071625 STA MT3 COLUMN COUNT
0130 46153 071624 M108 STA MT2 SET COLUMN COUNT
0131 46154 026160 JMP M106
0132 46155 002400 M105 CLA
0133 46156 051500 CPA MCNT
0134 46157 015430 JSB EDELM
0135 46160 104200 M106 DLD SBPTR,I PRINT
    46161 101574
0136 46162 015420 JSB ENOUT ELEMENT
0137 46163 035574 ISZ SBPTR MOVE TO
0138 46164 035574 ISZ SBPTR NEXT ELEMENT
0139 46165 035624 ISZ MT2 ROW DONE?
0140 46166 026155 JMP M105 NO
0141 46167 015426 JSB OUTLN YES, DOUBLE
0142 46170 015426 JSB OUTLN SPACE
0143 46171 061625 LDA MT3
0144 46172 035312 ISZ MT0 MATRIX DONE?
0145 46173 026153 JMP M108 NO
0146*
0147** CHECK FOR MORE MATRICES **
0148*
0149 46174 035613 M107 ISZ TEMP1
0150 46175 065613 LDB TEMP1 STATEMENT
0151 46176 055334 CPB PRGCT FINISHED?
0152 46177 026202 JMP **3 YES
0153 46200 071312 STA MT0 NO, SAVE (A)
0154 46201 026044 JMP M101
0155 46202 064350 LDB *-2 MATRIX
0156 46203 055314 CPB MT1 INPUT?
0157 46204 126000 JMP ENDIN,I YES
0158 46205 124556 JMP XEC1A,I NO
0159*
0160** PREPARE MATRIX ASSIGNMENT **
0161*
0162 46206 064556 EMAT1 LDB XEC1A SET MAIN LOOP TO
0163 46207 075364 STB MEXIT STATEMENT EXIT MODE
0164 46210 001000 ALS
0165 46211 041575 ADA SYMTB COMPUTE
0166 46212 040351 ADA *-1 POINTER
0167 46213 164000 LDB 0,I TO
0168 46214 044350 ADB *-2 DESTINATION
0169 46215 075574 STB BS1 MATRIX
0170 46216 035613 ISZ TEMP1
0171 46217 161613 LDA TEMP1,I MATRIX
0172 46220 002020 SSA FUNCTION?
0173 46221 026455 JMP EMAT6 YES
0174 46222 066004 LDB MLP2A NO, SET OPERATION
0175 46223 075340 EMAT2 STB MOP JUMP TO 'REPLACE' MODE
0176 46224 035613 ISZ TEMP1
0177 46225 010700 AND OPDMK
0178 46226 002003 SZA,RSS SCALAR
    MULTIPLICATION?

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0179	46227	026445	JMP EMAT5	YES
0180	46230	001000	ALS	NO
0181	46231	041575	ADA SYMTB	COMPUTE
0182	46232	040351	ADA ,=1	POINTER
0183	46233	164000	LDB 0,I	TO FIRST
0184	46234	044350	ADB ,=2	SOURCE
0185	46235	075350	STB BS2	MATRIX
0186	46236	015472	JSB VCHK	VALIDATE ITS ELEMENTS
0187	46237	061613	LDA TEMP1	END OF
0188	46240	051334	CPA PRGCT	STATEMENT?
0189	46241	026277	JMP EMAT3	YES
0190	46242	161613	LDA TEMP1,I	NO
0191	46243	010700	AND OPDMK	COMPUTE
0192	46244	001000	ALS	
0193	46245	041575	ADA SYMTB	POINTER TO
0194	46246	040351	ADA ,=1	
0195	46247	164000	LDB 0,I	SECOND
0196	46250	044350	ADB ,=2	
0197	46251	075352	STB BS3	SOURCE MATRIX
0198	46252	015472	JSB VCHK	VALIDATE ITS ELEMENTS
0199	46253	161613	LDA TEMP1,I	
0200	46254	010664	AND OPMSK	MATRIX
0201	46255	050632	CPA MULOP	MULTIPLICATION?
0202	46256	026334	JMP EMAT4	YES
0203	46257	100106	RRL 6	NO
0204*				*
0205**	SET UP MATRIX ADD, SUBTRACT, OR REPLACE			**
0206*				*
0207	46260	066006	LDB MADD	RECORD
0208	46261	002020	SSA	'MATRIX ADD'
0209	46262	066007	LDB MSUBA	OR 'MATRIX SUBTRACT'
0210	46263	075340	STB MOP	OPERATION JUMP
0211	46264	065574	LDB BS1	
0212	46265	160001	LDA 1,I	ROW
0213	46266	151352	CPA BS3,I	COMPATIBILITY?
0214	46267	006005	INB,RSS	YES
0215	46270	115121	JSB RERRS+11,I	NO
0216	46271	035352	ISZ BS3	
0217	46272	164001	LDB 1,I	COLUMN
0218	46273	155352	CPB BS3,I	COMPATIBILITY?
0219	46274	002001	RSS	YES
0220	46275	115121	JSB RERRS+11,I	NO
0221	46276	035352	ISZ BS3	
0222	46277	161350	EMAT3 LDA BS2,I	ROW
0223	46300	151574	CPA BS1,I	COMPATIBILITY?
0224	46301	002001	RSS	YES
0225	46302	115121	JSB RERRS+11,I	NO
0226	46303	035350	ISZ BS2	
0227	46304	035574	ISZ BS1	COMPUTE NUMBER
0228	46305	100200	MPY BS2,I	OF MATRIX ELEMENTS
	46306	101350		
0229	46307	165350	LDB BS2,I	COLUMN
0230	46310	155574	CPB BS1,I	COMPATIBILITY?
0231	46311	003005	CMA,INA,RSS	YES
0232	46312	115121	JSB RERRS+11,I	NO

0233 46313 071500
0234 46314 035350
0235 46315 035574

STA MCNT
ISZ BS2
ISZ BS1

SAVE 2'S COMPLEMENT OF SIZE

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0237*
0238** ASSIGN MATRIX VALUE **
0239*
0240*
0241* MOP HOLDS A POINTER TO CODE WHICH COMPUTES ONE ELEMENT OF THE
0242* DESTINATION MATRIX AND RETURNS IT IN (A) AND (B). MEXIT
0243* HOLDS THE EXIT ADDRESS SET BY THE CALLER.
0244*
0245 46316 104200 MLOOP DLD BS2,I LOAD ELEMENT OF SOURCE MATRIX
      46317 101350
0246 46320 125340 JMP MOP,I JUMP TO OPERATION
0247 46321 035352 MLOP1 ISZ BS3 MOVE TO NEXT ELEMENT
0248 46322 035352 ISZ BS3 OF SECOND SOURCE MATRIX
0249 46323 035350 MLUP2 ISZ BS2 MOVE TO NEXT ELEMENT
0250 46324 035350 ISZ BS2 OF FIRST SOURCE MATRIX
0251 46325 104400 MLOP3 DST BS1,I RECORD ELEMENT
      46326 101574
0252 46327 035574 ISZ BS1 OF DESTINATION MATRIX
0253 46330 035574 ISZ BS1 AND MOVE TO NEXT ELEMENT
0254 46331 035500 ISZ MCNT DONE?
0255 46332 026316 JMP MLOOP NO
0256 46333 125364 JMP MEXIT,I YES
0257*
0258** COMPUTE MATRIX PRODUCT **
0259*
0260 46334 161574 EMAT4 LDA BS1,I DESTINATION MATRIX
0261 46335 151350 CPA BS2,I ROW COMPATIBILITY?
0262 46336 003005 CMA,INA,RSS YES
0263 46337 115121 JSB RERRS+11,I NO
0264 46340 071634 STA MMT0 SAVE ROW COUNTER
0265 46341 035574 ISZ BS1
0266 46342 035350 ISZ BS2
0267 46343 161350 LDA BS2,I INNER PRODUCT
0268 46344 151352 CPA BS3,I COMPATIBILITY?
0269 46345 003005 CMA,INA,RSS YES
0270 46346 115121 JSB RERRS+11,I NO
0271 46347 071635 STA MMT1 SAVE INNER PRODUCT
0272 46350 071636 STA MMT2 COUNTERS
0273 46351 001000 ALS SAVE ROW
0274 46352 071632 STA MMT6 BACK UP AMOUNT
0275 46353 100200 Mpy BS1,I SAVE COLUMN
      46354 101574
0276 46355 040354 ADA .+2 BACK UP
0277 46356 071633 STA MMT7 AMOUNT
0278 46357 035352 ISZ BS3
0279 46360 161574 LDA BS1,I DESTINATION MATRIX
0280 46361 151352 CPA BS3,I COLUMN COMPATIBILITY?
0281 46362 003005 CMA,INA,RSS YES
0282 46363 115121 JSB RERRS+11,I NO
0283 46364 071637 STA MMT3 SAVE COLUMN
0284 46365 071640 STA MMT4 COUNTERS
0285 46366 003004 CMA,INA SAVE COLUMN
0286 46367 001000 ALS ADVANCE
0287 46370 071641 STA MMT5 AMOUNT
0288 46371 035574 ISZ BS1 MOVE TO

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0289	46372	035350		ISZ BS2	FIRST ELEMENT
0290	46373	035352		ISZ BS3	OF MATRICES
0291	46374	065352		LDB BS3	SAVE FIRST-ELEMENT ADDRESS
0292	46375	075376		STB MMT8	OF SECOND SOURCE MATRIX
0293	46376	104200	MPR1	DLD F0,0	INITIALIZE DESTINATION
	46377	046016			
0294	46400	104400		DST BS1,I	ELEMENT TO ZERO
	46401	101574			
0295	46402	104200	MPR2	DLD BS2,I	COMPUTE
	46403	101350			
0296	46404	035350		ISZ BS2	TERM
0297	46405	035350		ISZ BS2	OF
0298	46406	015406		JSB .FMP	INNER
0299	46407	101352		DEF BS3,I	PRODUCT
0300	46410	015402		JSB .FAD	ADD IN PREVIOUS
0301	46411	101574		DEF BS1,I	RUNNING SUM
0302	46412	104400		DST BS1,I	SAVE RUNNING SUM
	46413	101574			
0303	46414	065352		LDB BS3	ADVANCE TO
0304	46415	045641		ADB MMT5	NEXT ROW OF
0305	46416	075352		STB BS3	SECOND SOURCE MATRIX
0306	46417	035636		ISZ MMT2	INNER PRODUCT COMPLETE?
0307	46420	026402		JMP MPR2	NO
0308	46421	035574		ISZ BS1	YES, MOVE TO NEXT
0309	46422	035574		ISZ BS1	DESTINATION ELEMENT
0310	46423	065635		LDB MMT1	RESET INNER PRODUCT
0311	46424	075636		STB MMT2	TERM COUNTER
0312	46425	035640		ISZ MMT4	ROW COMPLETE?
0313	46426	026434		JMP MPR3	NO
0314	46427	065637		LDB MMT3	YES, RESET
0315	46430	075640		STB MMT4	COLUMN COUNTER
0316	46431	035634		ISZ MMT0	DONE?
0317	46432	026442		JMP MPR4	NO
0318	46433	124556		JMP XEC1A,I	YES
0319	46434	065350	MPR3	LDB BS2	BACK UP
0320	46435	045632		ADB MMT6	TO BEGINNING OF ROW OF
0321	46436	075350		STB BS2	FIRST SOURCE MATRIX
0322	46437	065352		LDB BS3	BACK UP TO BEGINNING
0323	46440	045633		ADB MMT7	OF NEXT COLUMN
0324	46441	002001		RSS	OF SECOND SOURCE MATRIX
0325	46442	065376	MPR4	LDB MMT8	BACK UP TO FIRST ELEMENT
0326	46443	075352		STB BS3	
0327	46444	026376		JMP MPR1	
0328*					
0329**	SET UP SCALAR MULTIPLICATION				**
0330*					*
0331	46445	015356	EMAT5	JSB FE1CH	COMPUTE AND
0332	46446	104400		DST SCALR	SAVE SCALAR
	46447	001624			
0333	46450	035613		ISZ TEMP1	LOAD OPERATION JUMP
0334	46451	035613		ISZ TEMP1	PROCESS
0335	46452	161613		LDA TEMP1,I	FOLLOWING
0336	46453	066010		LDB SMULA	MATRIX
0337	46454	026223		JMP EMAT2	
0338*					

0339	46455	101104	EMAT6	RRR 4	COMPUTE
0340	46456	010411		AND .+37B	MATRIX
0341	46457	040323		ADA .-27B	FUNCTION
0342	46460	071516		STA ID0	TYPE
0343	46461	002021		SSA,RSS	MATRIX INITIALIZATION?
0344	46462	026521		JMP EMAT8	NO
0345*					*
0346**	SET UP MATRIX INITIALIZATION				**
0347*					*
0348	46463	065613		LDB TEMP1	
0349	46464	006004		INB	
0350	46465	055334		CPB PRGCT	REDIMENSIONING?
0351	46466	002001		RSS	NO
0352	46467	015470		JSB REDIM	YES
0353	46470	161574	INVL	LDA BS1,I	COMPUTE
0354	46471	071362		STA ID1	NUMBER
0355	46472	035574		ISZ BS1	OF ELEMENTS
0356	46473	100200		MPY BS1,I	IN 2'S
	46474	101574			
0357	46475	003004		CMA,INA	COMPLEMENT
0358	46476	071500		STA MCNT	SAVE IT
0359	46477	035516		ISZ ID0	'IDN' ?
0360	46500	026512		JMP EMAT7	NO
0361	46501	161574		LDA BS1,I	YES
0362	46502	051362		CPA ID1	SQUARE MATRIX?
0363	46503	003001		CMA,RSS	YES
0364	46504	115136		JSB RERRS+24,I	NO
0365	46505	071516		STA ID0	SET
0366	46506	003400		CCA	DIAGONAL
0367	46507	071362		STA ID1	COUNTER
0368	46510	062011		LDA IDNA	LOAD OPERATION JUMP
0369	46511	026515		JMP **4	
0370	46512	062005	EMAT7	LDA MLP3A	RECORD
0371	46513	066020		LDB F1,0A	CORRECT CONSTANT:
0372	46514	035516		ISZ ID0	0.0 FOR 'ZER'
0373	46515	066015		LDB F0,0A	1.0 FOR 'CON'
0374	46516	075350		STB BS2	0.0 FOR 'IDN'
0375	46517	071340		STA MOP	RECORD OPERATION JUMP
0376	46520	026315		JMP MLOOP=1	
0377*					
0378	46521	035613	EMAT8	ISZ TEMP1	COMPUTE
0379	46522	161613		LDA TEMP1,I	
0380	46523	010700		AND OPDMK	POINTER
0381	46524	001800		ALS	
0382	46525	041575		ADA SYMTB	TO
0383	46526	040351		ADA .-1	
0384	46527	164000		LDB 0,I	SOURCE
0385	46530	044350		ADB .-2	
0386	46531	075350		STB BS2	MATRIX
0387	46532	015472		JSB VCHK	VALIDATE IT
0388	46533	165574		LDB BS1,I	LOAD DESTINATION ROW DIMENSION
0389	46534	005000		BLS	SAVE COLUMN
0390	46535	075637		STB MMT3	ADVANCE AMOUNT
0391	46536	005100		BRS	
0392	46537	035574		ISZ BS1	

0393	46540	161574		LDA BS1,I	ARE COLUMNS OF DESTINATION
0394	46541	151350		CPA BS2,I	AND ROWS OF SOURCE EQUAL?
0395	46542	003005		CMA,INA,RSS	YES
0396	46543	115121		JSB RERRS+11,I	NO
0397	46544	071635		STA MMT1	SAVE DESTINATION MATRIX
0398	46545	071636		STA MMT2	COLUMN COUNTERS
0399	46546	035350		ISZ BS2	ARE ROWS OF DESTINATION AND
0400	46547	155350		CPB BS2,I	COLUMNS OF SOURCE EQUAL?
0401	46550	007005		CMB,INB,RSS	YES
0402	46551	115121		JSB RERRS+11,I	NO
0403	46552	075634		STB MMT0	SAVE ROW COUNTER
0404	46553	100200		MPY MMT3	SAVE COLUMN BACK UP
	46554	001637			
0405	46555	035350		ISZ BS2	
0406	46556	065516		LDB ID0	
0407	46557	006003		SZB,RSS	'TRN' ?
0408	46560	026610		JMP INV	NO
0409	46561	040354		ADA .+2	YES, SAVE COLUMN
0410	46562	071640		STA MMT4	BACK UP AMOUNT
0411	46563	035574		ISZ BS1	FOR SOURCE MATRIX
0412	46564	026572		JMP TRN	
0413	46565	065635	TRN1	LDB MMT1	RESET
0414	46566	075636		STB MMT2	COUNTER
0415	46567	065350		LDB BS2	BACK UP TO
0416	46570	045640		ADB MMT4	FIRST ELEMENT
0417	46571	075350		STB BS2	OF NEXT COLUMN
0001*					
0002**	TRANSPOSE A MATRIX		**		
0003*			*		
0004	46572	104200	TRN	DLB BS2,I	TRANSFER
	46573	101350			
0005	46574	104400		DST BS1,I	ELEMENT
	46575	101574			
0006	46576	035574		ISZ BS1	
0007	46577	035574		ISZ BS1	
0008	46600	065350		LDB BS2	ADVANCE TO
0009	46601	045637		ADB MMT3	NEXT ELEMENT
0010	46602	075350		STB BS2	OF COLUMN
0011	46603	035636		ISZ MMT2	COLUMN TRANSFERRED?
0012	46604	026572		JMP TRN	NO
0013	46605	035634		ISZ MMT0	YES, DONE?
0014	46606	026565		JMP TRN1	NO
0015	46607	124556		JMP XEC1A,I	YES
0016*					
0017**	INVERT A MATRIX		**		
0018*			*		
0019	46610	064000	INV	LDB 0	SAVE 2'S COMPLEMENT
0020	46611	001100		ARS	OF NUMBER OF
0021	46612	071500		STA MCNT	ELEMENTS IN MATRIX
0022	46613	061574		LDA BS1	SAVE ADDRESS OF
0023	46614	071352		STA BS3	DESTINATION MATRIX
0024	46615	061330		LDA TMPST	SET ADDRESS
0025	46616	040354		ADA .+2	OF FREE CORE
0026	46617	071574		STA BS1	AS BASE ADDRESS
0027	46620	003004		CMA,INA	SUFFICIENT

0028	46621	040462	ADA LWAUS	FREE CORE
0029	46622	040001	ADA 1	TO COPY
0030	46623	003021	CMA,SSA,RSS	SOURCE MATRIX?
0031	46624	115120	JSB RERRS+10,I	NO
0032	46625	040462	ADA LWAUS	YES, INCLUDE IT
0033	46626	070056	STA PBPTR	IN SWAP AREA
0034	46627	006400	CLB	SET 'MAXIMUM ELEMENT'
0035	46630	075626	STB MAXE	VALUE TO
0036	46631	075627	STB MAXE+1	ZERO
0037	46632	062012	LDA MCPYA	SET UP TO
0038	46633	071340	STA MOP	COPY MATRIX,
0039	46634	062637	LDA INV1	FIND MAXIMUM (ABSOLUTE
0040	46635	071364	STA MEXIT	VALUE) ELEMENT,
0041	46636	026316	JMP MLOOP	AND RETURN
0042	46637	046640	INV1 DEF ++1	
0043	46640	104200	DLD MAXE	COMPUTE
	46641	001626		
0044	46642	015406	JSB FMP	RELATIVE
0045	46643	046013	DEF TOLC	TOLERANCE
0046	46644	104400	DST TOL	
	46645	001630		
0047	46646	003400	CCA	
0048	46647	071516	STA ID0	RESTORE
0049	46650	041352	ADA BS3	DESTINATION
0050	46651	071574	STA BS1	BASE ADDRESS
0051	46652	003004	CMA,INA	COMPUTE DIFFERENCE
0052	46653	041330	ADA TMPST	BETWEEN BASE ADDRESSES
0053	46654	003004	CMA,INA	OF SOURCE (COPIED)
0054	46655	071352	STA BS3	AND DESTINATION
0055	46656	062661	LDA INV2	MATRICES
0056	46657	071364	STA MEXIT	SET DESTINATION MATRIX
0057	46660	026470	JMP INV1	TO IDENTITY AND RETURN
0058	46661	046662	INV2 DEF ++1	
0059	46662	065330	LDB TMPST	SAVE
0060	46663	044354	ADB ++2	BASE ADDRESS
0061	46664	060001	LDA 1	OF SOURCE
0062	46665	075350	STB BS2	MATRIX
0063	46666	045352	ADB BS3	SAVE BASE ADDRESS OF
0064	46667	075574	STB BS1	DESTINATION MATRIX
0065	46670	006400	CLB	SET PIVOT ELEMENT
0066	46671	075516	STB ID0	BIAS TO ZERO
0067	46672	026703	JMP INV4	
0068	46673	061516	INV3 LDA ID0	SET BIAS
0069	46674	040350	ADA --2	FOR NEXT
0070	46675	071516	STA ID0	PIVOT ELEMENT
0071	46676	061634	LDA MMT0	INITIALIZE COUNTER TO
0072	46677	071636	STA MMT2	2'S COMPLEMENT OF COLUMNS
0073	46700	061344	LDA PIVEL	UPDATE PIVOT
0074	46701	041637	ADA MMT3	ADDRESS
0075	46702	040354	ADA ++2	TO NEXT
0076	46703	071344	INV4 STA PIVEL	DIAGONAL ELEMENT
0077	46704	071640	STA MMT4	INITIALIZE
0078	46705	006400	CLB	PIVOT ELEMENT
0079	46706	075626	STB MAXE	AS MAXIMUM
0080	46707	075627	STB MAXE+1	IN COLUMN

0081	46710	065635		LDB MMT1	SET COUNTER TO SEARCH
0082	46711	075641		STB MMT5	REMAINDER OF COLUMN
0083	46712	071632	INV5	STA MMT6	LOAD
0084	46713	104200		OLD MMT6, I	ELEMENT
	46714	101632			
0085	46715	002020		SSA	GET
0086	46716	015370		JGB ARINV	ABSOLUTE
0087	46717	104400		DST SCALR	VALUE
	46720	001624			
0088	46721	015404		JGB .FGB	SUBTRACT
0089	46722	001626		DEF MAXE	PREVIOUS MAXIMUM
0090	46723	002002		SZA	RESULT
0091	46724	002020		SSA	POSITIVE?
0092	46725	026734		JMP INV6	NO
0093	46726	104200		OLD SCALR	YES, RECORD
	46727	001624			
0094	46730	104400		DST MAXE	NEW MAXIMUM
	46731	001626			
0095	46732	061632		LDA MMT6	AND ITS
0096	46733	071640		STA MMT4	LOCATION
0097	46734	061632	INV6	LDA MMT6	MOVE TO NEXT
0098	46735	041637		ADA MMT3	ELEMENT OF COLUMN
0099	46736	035641		ISZ MMT5	COLUMN DONE?
0100	46737	026712		JMP INV5	NO
0101	46740	065344		LDB PIVEL	YES
0102	46741	045516		ADB ID0	SET POINTERS
0103	46742	075633		STB MMT7	TO OLD
0104	46743	045352		ADB BS3	PIVOT ROWS OF
0105	46744	075641		STB MMT5	BOTH MATRICES
0106	46745	075362		STB ID1	
0107	46746	061640		LDA MMT4	NEED TO
0108	46747	051344		CPA PIVEL	SWAP ROWS?
0109	46750	027017		JMP INV8	NO
0110	46751	041516		ADA ID0	YES, SET POINTERS
0111	46752	071376		STA MMT8	TO NEW
0112	46753	041352		ADA BS3	PIVOT ROWS OF
0113	46754	071632		STA MMT6	BOTH MATRICES
0114	46755	104200	INV7	OLD MMT5, I	SWAP
	46756	101641			
0115	46757	104400		DST SCALR	
	46760	001624			
0116	46761	104200		OLD MMT6, I	ROW
	46762	101632			
0117	46763	104400		DST MMT5, I	
	46764	101641			
0118	46765	104200		OLD SCALR	ELEMENT
	46766	001624			
0119	46767	104400		DST MMT6, I	
	46770	101632			
0120	46771	104200		OLD MMT7, I	OF
	46772	101633			
0121	46773	104400		DST SCALR	
	46774	001624			
0122	46775	104200		OLD MMT8, I	EACH
	46776	101376			

0123	46777 104400		DST MMT7,I	
	47000 101633			
0124	47001 104200		DLD SCALR	MATRIX
	47002 001624			
0125	47003 104400		DST MMT8,I	
	47004 101376			
0126	47005 035641		ISZ MMT5	BUMP
0127	47006 035641		ISZ MMT5	
0128	47007 035632		ISZ MMT6	ALL
0129	47010 035632		ISZ MMT6	
0130	47011 035633		ISZ MMT7	FOUR
0131	47012 035633		ISZ MMT7	
0132	47013 035376		ISZ MMT8	POINTERS
0133	47014 035376		ISZ MMT8	
0134	47015 035636		ISZ MMT2	ROW SWAPPED?
0135	47016 026755		JMP INV7	NO
0136	47017 104200	INV8	DLD MAXE	YES
	47020 001626			
0137	47021 015404		JSB .FSB	PIVOT ELEMENT
0138	47022 001630		DEF TOL	SMALLER THAN
0139	47023 002020		SSA	TOLERANCE?
0140	47024 115140		JSB RERRS+26,I	YES
0141	47025 104200		DLD F1.0	NO
	47026 046021			
0142	47027 015410		JSB .FDV	COMPUTE
0143	47030 101344		DEF PIVEL,I	INVERSE OF
0144	47031 104400		DST MAXE	PIVOT ELEMENT
	47032 001626			
0145	47033 001635		LDA MMT1	LAST
0146	47034 002007		INA,SZA,RSS	PIVOT?
0147	47035 027053		JMP INV10	YES
0148	47036 071641		STA MMT5	NO, PREPARE
0149	47037 061344		LDA PIVEL	TO SCALE
0150	47040 071632		STA MMT6	PIVOT ROW
0151	47041 035632	INV9	ISZ MMT6	MOVE TO NEXT
0152	47042 035632		ISZ MMT6	ELEMENT OF ROW
0153	47043 104200		DLD MMT0,I	MULTIPLY
	47044 101632			
0154	47045 015406		JSB .FMP	BY 1/PIVOT
0155	47046 001626		DEF MAXE	AND STORE
0156	47047 104400		DST MMT6,I	NEW VALUE
	47050 101632			
0157	47051 035641		ISZ MMT5	ROW DONE?
0158	47052 027041		JMP INV9	NO
0159	47053 061352	INV10	LDA ID1	YES
0160	47054 071632		STA MMT6	
0161	47055 061634		LDA MMT0	SET
0162	47056 071636		STA MMT2	
0163	47057 071641		STA MMT5	COUNTERS
0164	47060 104200	INV11	DLD MMT6,I	SCALE ELEMENTS OF
	47061 101632			
0165	47062 002003		SZA,RSS	
0166	47063 027070		JMP INV12	PIVOT ROW
0167	47064 015406		JSB .FMP	
0168	47065 001626		DEF MAXE	OF DESTINATION

0169	47066	104400		DST MMT6, I	
	47067	101632			
0170	47070	035632	INV12	ISZ MMT6	MATRIX
0171	47071	035632		ISZ MMT6	
0172	47072	035641		ISZ MMT5	ROW DONE?
0173	47073	027060		JMP INV11	NO
0174	47074	065574		LDB BS1	YES, SET POINTER TO
0175	47075	075400		STB VT0	DESTINATION ARRAY
0176	47076	061350		LDA BS2	SET POINTER
0177	47077	003004		CMA, INA	TO PIVOT COLUMN
0178	47100	041516		ADA ID0	IN FIRST ROW
0179	47101	003004		CMA, INA	OF SOURCE
0180	47102	071376	INV13	STA MMT8	MATRIX
0181	47103	051344		CPA PIVEL	PIVOT ROW?
0182	47104	027206		JMP INV19	YES
0183	47105	071633		STA MMT7	NO
0184	47106	104200		DLD MMT7, I	LOAD MULTIPLIER FOR PIVOT ROW
	47107	101633			
0185	47110	002003		SZA, RSS	ZERO?
0186	47111	027206		JMP INV19	YES
0187	47112	104400		DST SCALR	NO, SAVE MULTIPLIER
	47113	001624			
0188	47114	061635		LDA MMT1	LAST
0189	47115	002007		INA, SZA, RSS	ROW?
0190	47116	027144		JMP INV15	YES
0191	47117	071641		STA MMT5	NO, SET POINTER TO
0192	47120	061344		LDA PIVEL	PIVOT ELEMENT IN
0193	47121	071632		STA MMT6	SOURCE MATRIX
0194	47122	035632	INV14	ISZ MMT6	MOVE
0195	47123	035632		ISZ MMT6	TO
0196	47124	035633		ISZ MMT7	NEXT
0197	47125	035633		ISZ MMT7	COLUMN
0198	47126	104200		DLD SCALR	COMPUTE
	47127	001624			
0199	47130	015406		JSB ,FMP	
0200	47131	101632		DEF MMT6, I	
0201	47132	104400		DST MAXE	TRANSFORMED
	47133	001626			
0202	47134	104200		DLD MMT7, I	
	47135	101633			
0203	47136	015404		JSB ,F8B	
0204	47137	001626		DEF MAXE	ELEMENT
0205	47140	104400		DST MMT7, I	
	47141	101633			
0206	47142	035641		ISZ MMT5	ROW DONE?
0207	47143	027122		JMP INV14	NO
0208	47144	061362	INV15	LDA ID1	YES, SET POINTER TO PIVOT
0209	47145	071632		STA MMT6	ROW OF DESTINATION MATRIX
0210	47146	061634		LDA MMT0	SET
0211	47147	071640		STA MMT4	COUNTER
0212	47150	104200	INV16	DLD MMT6, I	COMPUTE
	47151	101632			
0213	47152	002003		SZA, RSS	
0214	47153	027166		JMP INV17	
0215	47154	015406		JSB ,FMP	

0216	47155	001624		DEF SCALR	TRANSFORMED
0217	47156	104400		DST MAXE	
	47157	001626			
0218	47160	104200		DLD VT0,I	
	47161	101400			
0219	47162	015404		JSB .FSB	
0220	47163	001626		DEF MAXE	ELEMENT
0221	47164	104400		DST VT0,I	
	47165	101400			
0222	47166	035400	INV17	ISZ VT0	MOVE
0223	47167	035400		ISZ VT0	TO
0224	47170	035632		ISZ MMT6	NEXT
0225	47171	035632		ISZ MMT6	COLUMN
0226	47172	035640		ISZ MMT4	ROW DONE?
0227	47173	027150		JMP INV16	NO
0228	47174	061376	INV18	LDA MMT8	YES, MOVE TO NEXT
0229	47175	041637		ADA MMT3	ROW IN SOURCE MATRIX
0230	47176	035636		ISZ MMT2	ALL ROWS TRANSFORMED?
0231	47177	027102		JMP INV13	NO
0232	47200	035635		ISZ MMT1	YES, MATRIX INVERTED?
0233	47201	026673		JMP INV3	NO
0234	47202	061330		LDA TMPST	YES
0235	47203	040401		ADA .+23	RELEASE EXTRA
0236	47204	070056		STA PBPTR	CORE
0237	47205	124556		JMP XEC1A,I	
0238	47206	061400	INV19	LDA VT0	ADVANCE TO
0239	47207	041637		ADA MMT3	NEXT ROW OF
0240	47210	071400		STA VT0	DESTINATION
0241	47211	027174		JMP INV18	MATRIX
0242*					
0243**	CODE TO COMPUTE AN ELEMENT				**
0244*					*
0245	47212	015402	MADD	JSB .FAD	ADD
0246	47213	101352		DEF BS3,I	SOURCE
0247	47214	026321		JMP MLOP1	ELEMENTS
0248*					
0249	47215	015404	MSUB	JSB .FSB	SUBTRACT
0250	47216	101352		DEF BS3,I	SOURCE
0251	47217	026321		JMP MLOP1	ELEMENTS
0252*					
0253	47220	035362	IDN	ISZ ID1	DIAGONAL ELEMENT?
0254	47221	026325		JMP MLOP3	NO
0255	47222	061516		LDA ID0	YES, RESET
0256	47223	071362		STA ID1	DIAGONAL COUNTER
0257	47224	104200		DLD F1.0	LOAD
	47225	046021			
0258	47226	026325		JMP MLOP3	1.0
0259*					
0260	47227	015406	SMULT	JSB .FMP	MULTIPLY
0261	47230	001624		DEF SCALR	SOURCE ELEMENT
0262	47231	026323		JMP MLOP2	BY SCALAR
0263*					
0264	47232	002020	MCPY	SSA	GET
0265	47233	015370		JSB ARINV	ABSOLUTE
0266	47234	104400		DST SCALR	VALUE

0267	47235 001624			
0268	47236 015404	JSB ,FSB		SUBTRACT
0269	47237 001626	DEF MAXE		PREVIOUS
0270	47240 002002	SZA		MAXIMUM
0271	47241 002020	SSA		POSITIVE RESULT?
0272	47242 027247	JMP MCPY1		NO
	47243 104200	DLD SCALR		YES, RECORD
	47244 001624			
0273	47245 104400	DST MAXE		NEW MAXIMUM
	47246 001626			
0274	47247 104200	MCPY1 DLD BS2,I		RELOAD VALUE
	47250 101350			
0275	47251 126004	JMP MLP2A,I		
0276**				**
0277***	CHECK VALIDITY OF MATRIX			***
0278**				**
0279*				*
0280*	ENTER WITH (B) POINTING TO THE DYNAMIC ARRAY DIMENSIONS.			
0281*	COMPUTE THE NUMBER OF ELEMENTS AND CHECK EACH ONE, EXIT			
0282*	TO ERROR IF ANY ELEMENT HAS VALUE 'UNDEFINED'.			
0283*				
0284	47252 160001	#VCHK LDA 1,I		LOAD ROW DIMENSION
0285	47253 006004	INB		
0286	47254 075400	STB VT0		
0287	47255 100200	MPY VT0,I		MULTIPLY BY
	47256 101400			
0288	47257 065400	LDB VT0		COLUMN DIMENSION
0289	47260 003000	CMA		SAVE 1'S COMPLEMENT
0290	47261 071400	STA VT0		OF MATRIX SIZE
0291	47262 035400	VCHK1 ISZ VT0		DONE?
0292	47263 006005	INB,RSS		NO, MOVE TO NEXT ELEMENT
0293	47264 125472	JMP VCHK,I		YES
0294	47265 160001	LDA 1,I		
0295	47266 001222	RAL,RAL		IS
0296	47267 002004	INA		OPERAND
0297	47270 001310	RAR,SLA		NORMALIZED?
0298	47271 027301	JMP VCHK2		YES
0299	47272 051036	CPA BIT15		MAYBE, WAS FIRST WORD ZERO?
0300	47273 006005	INB,RSS		YES
0301	47274 115135	JSB RERRS+23,I		NO--ERROR
0302	47275 160001	LDA 1,I		SECOND
0303	47276 002002	SZA		WORD ZERO?
0304	47277 115135	JSB RERRS+23,I		NO--ERROR
0305	47300 027262	JMP VCHK1		
0306	47301 006004	VCHK2 INB		
0307	47302 027262	JMP VCHK1		

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0309**
0310*** REDIMENSION A MATRIX ***
0311**
0312*
0313* UPON ENTRY (TEMP1)+1 POINTS TO THE REDIMENSION SUBSCRIPT IN
0314* THE PROGRAM AND SBPTR POINTS TO THE CURRENT DYNAMIC DIMENSIONS
0315* OF THE ARRAY. THE SUBSCRIPT BOUNDS ARE EVALUATED, ROUNDED,
0316* AND RECORDED. IF THE NUMBER OF ELEMENTS IS WITHIN THE
0317* PHYSICAL ARRAY ALLOWANCE, EXIT WITH TEMP1 POINTING TO THE
0318* WORD FOLLOWING THE SUBSCRIPT AND SBPTR AS UPON ENTRY, ELSE
0319* EXIT TO ERROR.
0320*
0321 47303 035613 #RDIM ISZ TEMP1 COMPUTE NEW
0322 47304 015356 JSB FETCH ROW DIMENSION
0323 47305 015342 JSB SBFIX 15 BIT INTEGER > 0?
0324 47306 115127 JSB RERRS+17,I NO
0325 47307 006004 INB YES, SAVE
0326 47310 175574 STB SBPTR,I TRUE VALUE
0327 47311 075472 STB RD0 IN ARRAY
0328 47312 035574 ISZ SBPTR ENTRY
0329 47313 165613 LDB TEMP1,I EXPLICIT NEW
0330 47314 006003 SZB,RSS COLUMN DIMENSION?
0331 47315 027321 JMP RDIM1 NO
0332 47316 015356 JSB FETCH YES,
0333 47317 015342 JSB SBFIX COMPUTE
0334 47320 115127 JSB RERRS+17,I IT
0335 47321 006004 RDIM1 INB SAVE TRUE VALUE
0336 47322 175574 STB SBPTR,I IN ARRAY ENTRY
0337 47323 061472 LDA RD0 COMPUTE
0338 47324 100200 MPY SBPTR,I NUMBER OF
0339 47325 101574
0339 47326 006003 SZB,RSS ELEMENTS
0340 47327 003025 CMA,SSA,INA,RSS SPECIFIED
0341 47330 115137 JSB RERRS+25,I TOO MANY
0342 47331 071472 STA RD0
0343 47332 065574 LDB SBPTR RESET
0344 47333 044347 ADB .-3 ARRAY POINTER
0345 47334 160001 LDA 1,I AND COMPUTE
0346 47335 006004 INB NUMBER OF
0347 47336 075574 STB SBPTR ELEMENTS
0348 47337 100200 MPY SBPTR,I AVAILABLE
0349 47340 101574
0349 47341 035574 ISZ SBPTR FOR ARRAY
0350 47342 041472 ADA RD0 SUFFICIENT
0351 47343 002020 SSA PHYSICAL SPACE?
0352 47344 115137 JSB RERRS+25,I NO
0353 47345 035613 ISZ TEMP1 YES
0354 47346 125470 JMP REDIM,I

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0002 50000          ORG 50000B
0003 50000 174000  HMASK OCT 174000
0004 50001 052467  LCALL DEF LIS10=1
0005 50002 001616  NMBFA DEF NUMBF
0006 50003 000112  ,74  DEC 74
0007 50004 000113  ,75  DEC 75
0008 50005 177670  MM72  DEC =72
0009 50006 177666  MM74  DEC =74
0010 50007 176030  M1000 DEC =1000
0011**              **
0012*** PRINT A NUMBER ***
0013**              **
0014*
0015* ENTER WITH A FLOATING POINT NUMBER IN (A) AND (B), PRINT THE
0016* NUMBER AND APPEND BLANKS TO REACH THE PRINT POSITION SPECIFIED
0017* BY =EOPF ON RETURN FROM NUMOT,
0018*
0019 50010 002300  #ENOT CCE          ENABLE SIGN
0020 50011 015422          JSB NUMOT          OUTPUT NUMBER
0021 50012 026015          JMP ++3
0022 50013 060412          LDA ,+40B          OUTPUT
0023 50014 015454          JSB OUTCH          A BLANK
0024 50015 065460          LDB EOPF          FIELD
0025 50016 045572          ADB CHRCT
0026 50017 006002          SZB          FULL?
0027 50020 026013          JMP +=5          NO
0028 50021 125420          JMP ENOUT,I      YES
0029*
0030 50022 114631  MINFX DEC =0,099999959
0031 50023 116373
0031 50024 102756  MAXFX DEC =999999,5
0031 50025 002050
0032**              **
0033*** OUTPUT A NUMBER ***
0034**              **
0035*
0036* ENTER WITH A FLOATING POINT NUMBER IN (A) AND (B) AND (E) = 1
0037* IF A SIGN IS WANTED, DETERMINE THE FORM OF THE NUMBER AND
0038* SET EOPF ACCORDINGLY, NON-INTEGERS ARE ROUNDED AFTER CONVERSION
0039* TO DECIMAL, TRAILING ZEROS ARE SUPPRESSED ON NUMBERS WITHOUT
0040* EXPONENTS (AND ON NUMBERS WITH EXPONENTS IF CALLED FROM 'LIST').
0041*
0042 50026 071616  #NMOT STA NUMBF          SAVE HIGH MANTISSA
0043 50027 002041          SEZ,RSS          SIGN?
0044 50030 026042          JMP NUM01          NO
0045 50031 002021          SSA,RSS          YES, NEGATIVE NUMBER?
0046 50032 026037          JMP ++5          NO
0047 50033 015370          JSB ARINV          YES, NEGATE NUMBER
0048 50034 071616          STA NUMBF          SAVE HIGH MANTISSA
0049 50035 060427          LDA ,+55B          LOAD '!'
0050 50036 002001          RSS
0051 50037 060412          LDA ,+40B          LOAD '!'
0052 50040 071266          STA SIGN          SAVE SIGN
0053 50041 061616          LDA NUMBF          RETRIEVE HIGH MANTISSA
0054 50042 075617  NUM01 STB NUMBF+1  SAVE LOW MANTISSA

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0055	50043	015416	JSB	IFIX	INTEGER?
0056	50044	026070	JMP	NUM02	NO
0057	50045	102201	SOC		YES, 16-BIT INTEGER?
0058	50046	026070	JMP	NUM02	NO
0059*			*		
0060**	OUTPUT AN INTEGER			**	
0061*			*		
0062	50047	075616	STB	NUMBF	SAVE INTEGER
0063	50050	046007	ADB	M1000	
0064	50051	060360	LDA	,+6	
0065	50052	006021	SSB,	RSS	3 DIGIT INTEGER?
0066	50053	040355	ADA	,+3	NO
0067	50054	041572	ADA	CHRCT	COMPUTE END-OF-FIELD
0068	50055	003004	CMA,	INA	SAVE
0069	50056	071460	STA	EOPF	IT
0070	50057	042003	ADA	,74	ENOUGH
0071	50060	002020	SSA		ROOM?
0072	50061	015426	JSB	OUTLN	NO
0073	50062	061266	LDA	SIGN	YES
0074	50063	002002	SZA		SIGN?
0075	50064	015454	JSB	OUTCR	YES, OUTPUT IT
0076	50065	065616	LDB	NUMBF	NO
0077	50066	015456	JSB	OUTIN	OUTPUT THE INTEGER
0078	50067	125422	JMP	NUM02,I	
0079*			*		
0080**	OUTPUT A FLOATING POINT NUMBER			**	
0081*			*		
0082	50070	060350	NUM02	LDA ,+2	SET 'FIXED'
0083	50071	071336	STA	FFLAG	FLAG FALSE
0084	50072	104200	OLD	NUMBF	LOAD NUMBER
	50073	001616			
0085	50074	015402	JSB	,FAD	IS NUMBER
0086	50075	050024	DEF	MAXFX	LESS THAN
0087	50076	002021	SSA,	RSS	999999.5 ?
0088	50077	026106	JMP	NUM03	NO
0089	50100	104200	OLD	NUMBF	YES, IS
	50101	001616			
0090	50102	015402	JSB	,FAD	NUMBER
0091	50103	050022	DEF	MINFX	LESS THAN
0092	50104	002021	SSA,	RSS	0.99999995 ?
0093	50105	035336	ISZ	FFLAG	NO, SET 'FIXED' FLAG TRUE
0094	50106	104200	NUM03	OLD	LOAD NUMBER
	50107	001616			
0095	50110	071316	STA	MANT1	UNPACK
0096	50111	015414	JSB	,FLUN	
0097	50112	075320	STB	MANT2	NUMBER
0098	50113	071322	STA	EXP	
0099	50114	002400	CLA		INITIALIZE
0100	50115	071324	STA	EXPON	DECIMAL EXPONENT
0101	50116	051322	CPA	EXP	ZERO EXPONENT?
0102	50117	026141	JMP	NUM05	YES
0103	50120	015300	NUM00	JSB	NO
0104	50121	061322	LDA	EXP	MULTIPLY
0105	50122	003026	CMA,	SSA,INA,SZA	NUMBER BY 10
0106	50123	026126	JMP	*,+3	UNTIL IT IS

0107	50124	035324		ISZ EXPON		
0108	50125	026120		JMP NUM00		GREATER THAN 1
0109	50126	015302		JSB DBY10		DIVIDE BY 10
0110	50127	061324		LDA EXPON		
0111	50130	065322	NUM04	LDB EXP		DIVIDE NUMBER BY 10 UNTIL IT IS LESS THAN 1
0112	50131	007004		CMB, INB		
0113	50132	006021		SSB, RSS		
0114	50133	026141		JMP NUM05		
0115	50134	071324		STA EXPON		
0116	50135	015302		JSB DBY10		
0117	50136	003400		CCA		
0118	50137	041324		ADA EXPON		
0119	50140	026130		JMP NUM04		
0120	50141	003000	NUM05	CMA		SET EXPONENT TO TRUE VALUE-1
0121	50142	071324		STA EXPON		
0122	50143	064344		LDB .-6		SET DIGIT COUNTER
0123	50144	075356		STB DIGCT		SET BUFFER POINTER
0124	50145	066002		LDB NMBFA		
0125	50146	075362		STB NMPTR		
0126*						
0127**	CONVERT MANTISSA TO ASCII					
0128*						
0129	50147	015424	NUM06	JSB GETDG		STORE A DECIMAL DIGIT
0130	50150	040432		ADA .+60B		
0131	50151	171362		STA NMPTR, I		
0132	50152	035362		ISZ NMPTR		
0133	50153	035356		ISZ DIGCT		SIXTH DIGIT?
0134	50154	026147		JMP NUM06		NO
0135	50155	015424		JSB GETDG		YES,
0136	50156	040345		ADA .-5		NEXT DIGIT
0137	50157	002020		SSA		>= 5 ?
0138	50160	026201		JMP NUM09+1		NO
0139*						
0140**	ROUND ASCII MANTISSA					
0141*						
0142	50161	065362		LDB NMPTR		
0143	50162	044351	NUM07	ADB .-1		LOAD LAST DIGIT
0144	50163	160001		LDA 1, I		INCREMENT IT
0145	50164	002004		INA		WAS IT A 9?
0146	50165	050436		CPA .5B		YES
0147	50166	002001		RSS		NO
0148	50167	026200		JMP NUM09		LEADING DIGIT?
0149	50170	056002		CPB NMBFA		YES
0150	50171	026175		JMP NUM08		NO, OVERLAY
0151	50172	060432		LDA .+60B		A 0
0152	50173	170001		STA 1, I		
0153	50174	026162		JMP NUM07		
0154	50175	035324	NUM08	ISZ EXPON		BUMP DECIMAL EXPONENT AND OVERLAY A 1
0155	50176	000000		NOP		
0156	50177	060433		LDA .+61B		
0157	50200	170001	NUM09	STA 1, I		
0158	50201	061324		LDA EXPON		IS NUMBER LESS THAN 1 ?
0159	50202	002021		SSA, RSS		NO
0160	50203	026221		JMP NMO11		YES
0161	50204	071360		STA NMTMP		

0162	50205	060432		LDA	,+60B	
0163	50206	065362		LDB	NMPTR	
0164	50207	035360	NM010	ISZ	NMTMP	COUNT ZEROS
0165	50210	000000		NOP		PLUS 1
0166	50211	044351		ADB	,-1	LAST
0167	50212	150001		CPA	1,I	DIGIT 0?
0168	50213	026207		JMP	NM010	YES
0169	50214	061360		LDA	NMTMP	NO, ALL SIGNIFICANCE
0170	50215	002020		SSA		IN SIX DIGITS?
0171	50216	026221		JMP	NM011	NO
0172	50217	003400		CCA		YES, SET
0173	50220	071336		STA	FFLAG	'FIXED' FLAG TRUE
0174	50221	064366	NM011	LDB	,+12	COMPUTE
0175	50222	035336		ISZ	FFLAG	FIELD
0176	50223	044355		ADB	,+3	WIDTH
0177	50224	045572		ADB	CHRCT	SAVE
0178	50225	007004		CMB,	INB	END-OF-FIELD
0179	50226	075460		STB	EOPF	MARKER
0180	50227	046004		ADB	,75	ENOUGH
0181	50230	006020		SSB		ROOM?
0182	50231	015426		JSB	OUTLN	NO
0183	50232	061266		LDA	SIGN	YES
0184	50233	002002		SZA		SIGN?
0185	50234	015454		JSB	OUTCR	YES, OUTPUT IT
0186	50235	064343		LDB	,-7	SET OUTPUT
0187	50236	075356		STB	DIGCT	DIGIT COUNTER
0188	50237	065362		LDB	NMPTR	
0189	50240	003400		CCA		FIXED
0190	50241	051336		CPA	FFLAG	FORMAT?
0191	50242	026247		JMP	++5	NO
0192	50243	061324		LDA	EXPON	YES, SET
0193	50244	003000		CMA		INDICATOR TO
0194	50245	071360		STA	NMTMP	DECIMAL POINT
0195	50246	026261		JMP	NM016	
0196	50247	071360		STA	NMTMP	SET INDICATOR FOR DECIMAL POINT
0197	50250	062001		LDA	LCALL	CALLED
0198	50251	051422		CPA	NUMOT	FROM 'LIST' ?
0199	50252	026261		JMP	NM016	YES
0200	50253	026303		JMP	NM014	NO
0201*				*		
0202**	DELETE TRAILING ZEROS			**		
0203*				*		
0204	50254	061356	NM012	LDA	DIGCT	AT RIGHT OF
0205	50255	002004		INA		DECIMAL
0206	50256	051360		CPA	NMTMP	POINT?
0207	50257	026265		JMP	++6	NO
0208	50260	071356		STA	DIGCT	YES, DELETE ZERO
0209	50261	044351	NM016	ADB	,-1	LAST
0210	50262	160001		LDA	1,I	DIGIT
0211	50263	050432		CPA	,+60B	0?
0212	50264	026254		JMP	NM012	YES
0213	50265	003400		CCA		NO, FIXED
0214	50266	051336		CPA	FFLAG	FORMAT?
0215	50267	026303		JMP	NM014	NO
0216	50270	061324		LDA	EXPON	YES, LEADING

0217	50271	002021	SSA, RSS	DECIMAL POINT?
0218	50272	026303	JMP NM014	NO
0219	50273	071360	STA NMTMP	YES, SET LEADING ZEROS COUNTER
0220*			*	
0221**	OUTPUT MANTISSA		**	
0222*			*	
0223	50274	060430	LDA .+56B	OUTPUT A
0224	50275	002001	RSS	DECIMAL POINT
0225	50276	060432	NM013 LDA .+60B	OUTPUT
0226	50277	015454	JSB OUTCR	A ZERO
0227	50300	035360	ISZ NMTMP	MORE LEADING ZEROS?
0228	50301	026276	JMP NM013	YES
0229	50302	035356	ISZ DIGCT	NO, COUNT DECIMAL POINT
0230	50303	066002	NM014 LDB NMBFA	SET
0231	50304	075362	STB NMPTR	DIGIT POINTER
0232	50305	026312	JMP **5	
0233	50306	035360	NM015 ISZ NMTMP	DECIMAL POINT NEXT?
0234	50307	026312	JMP **3	NO
0235	50310	060430	LDA .+56B	YES, LOAD IT
0236	50311	026314	JMP **3	
0237	50312	161362	LDA NMPTR, I	LOAD NEXT
0238	50313	035362	ISZ NMPTR	DIGIT
0239	50314	015454	JSB OUTCR	OUTPUT CHARACTER
0240	50315	035356	ISZ DIGCT	MORE DIGITS?
0241	50316	026306	JMP NM015	YES
0242	50317	035336	ISZ FFLAG	NO, EXPONENT?
0243	50320	125422	JMP NUMOT, I	NO
0244*			*	
0245**	OUTPUT THE EXPONENT		**	
0246*			*	
0247	50321	060720	LDA E	
0248	50322	015454	JSB OUTCR	OUTPUT AN 'E'
0249	50323	060427	LDA .+55B	OUTPUT
0250	50324	065324	LDB EXPON	
0251	50325	006020	SSB	AN
0252	50326	007005	CMB, INB, RSS	
0253	50327	060425	LDA .+53B	EXPONENT
0254	50330	075324	STB EXPON	
0255	50331	015454	JSB OUTCR	SIGN
0256	50332	061324	LDA EXPON	
0257	50333	006400	CLB	COMPUTE
0258	50334	100400	DIV .+10	
	50335	000364		
0259	50336	040432	ADA .+60B	EXPONENT'S
0260	50337	044432	ADB .+60B	
0261	50340	075324	STB EXPON	10'S DIGIT
0262	50341	015454	JSB OUTCR	OUTPUT IT
0263	50342	061324	LDA EXPON	OUTPUT
0264	50343	015454	JSB OUTCR	1'S DIGIT
0265	50344	125422	JMP NUMOT, I	
0266**			**	
0267***	GET DIGIT TO OUTPUT		***	
0268**			**	
0269*			*	
0270*	COMPUTE NEXT DECIMAL DIGIT AND RETURN WITH IT IN (A).			

0271*	SUBTRACT IT OUT OF THE NUMBER.		
0272*			
0273	50345	015300	#GT0G JSB MBY10 MULTIPLY BY 10
0274	50346	065322	LDB EXP GET EXPONENT IN (B)
0275	50347	007004	CMB, INB AS NEGATIVE
0276	50350	012000	AND HMASK RETAIN HIGH 5 BITS
0277	50351	001200	RAL NORMALIZE TO BIT 15
0278	50352	006024	SSB, INB ROTATE INTEGER
0279	50353	026351	JMP *-2 INTO (A)
0280	50354	010443	AND B377 EXTRACT
0281	50355	071402	STA FD0 DIGIT
0282	50356	065322	LDB EXP ROTATE
0283	50357	007004	CMB, INB
0284	50360	001300	RAR BACK
0285	50361	006024	SSB, INB
0286	50362	026360	JMP *-2
0287	50363	021316	XOR MANT1 REMOVE
0288	50364	065320	LDB MANT2 DIGIT
0289	50365	015304	JSB NORML NORMALIZE REMAINDER
0290	50366	061402	LDA FD0 LOAD (A) WITH DIGIT
0291	50367	125424	JMP GET0G, I

```

0293**
0294*** OUTPUT AN INTEGER ***
0295**
0296*
0297* ENTER WITH A POSITIVE INTEGER IN (B). OUTPUT IT WITHOUT
0298* LEADING ZEROS.
0299*
0300 50370 060346 #OTIN LDA ,=4 SET DIGIT
0301 50371 071374 STA DGCNT COUNTER
0302 50372 061024 LDA LDVSR SET DIVISOR
0303 50373 071446 STA OT1 ADDRESS
0304 50374 002400 CLA SUPPRESS
0305 50375 071470 STA OT4 ZEROS
0306 50376 101040 OUTI1 LSR 16 DIVIDE INTEGER BY
0307 50377 100400 DIV OT1,I CURRENT DIVISOR
      50400 101446
0308 50401 075452 STB OT3 SAVE THE REMAINDER
0309 50402 051470 CPA OT4 LEADING ZERO?
0310 50403 026407 JMP OUTI2 YES
0311 50404 040432 ADA ,+600 NO, TURN OFF
0312 50405 071470 STA OT4 ZERO SUPPRESS
0313 50406 015454 JSB OUTCR OUTPUT DIGIT
0314 50407 065452 OUTI2 LDB OT3 RETRIEVE REMAINDER
0315 50410 035446 ISZ OT1 SET FOR NEXT DIVISOR
0316 50411 035374 ISZ DGCNT ALL DIVISORS USED?
0317 50412 026376 JMP OUTI1 NO
0318 50413 060001 LDA 1 YES
0319 50414 040432 ADA ,+600 OUTPUT
0320 50415 015454 JSB OUTCR LAST DIGIT
0321 50416 125456 JMP OUTIN,I
0322**
0323*** SPACE FOR A COMMA ***
0324**
0325*
0326* MOVE TO THE NEXT FIELD OF 15 ON THE PRINT LINE OR TO THE
0327* NEXT LINE IF THE CURRENT ONE IS EXHAUSTED.
0328*
0329 50417 065572 #EDLM LDB CHRCT LOAD CURRENT CHARACTER COUNT
0330 50420 006003 SZB,RSS ZERO?
0331 50421 125430 JMP EDELM,I YES, AT START OF ZONE
0332 50422 044333 ADB ,=15 NO, SUBTRACT ZONE WIDTH
0333 50423 006021 SSB,RSS NON-NEGATIVE RESULT?
0334 50424 026420 JMP #EDLM+1 YES
0335 50425 075472 STB EOL NO, SAVE COUNT
0336 50426 060412 LDA ,+400 OUTPUT
0337 50427 015454 JSB OUTCR A BLANK
0338 50430 035472 ISZ EOL ZONE FULL?
0339 50431 026426 JMP *-3 NO
0340 50432 065572 LDB CHRCT YES,
0341 50433 046006 ADB MM74 PAST THE
0342 50434 006021 SSB,RSS END OF LINE?
0343 50435 015426 JSB OUTLN YES
0344 50436 125430 JMP EDELM,I NO

```

```

0346**
0347*** OUTPUT AN END-OF-LINE ***
0348**
0349 50437 065460 #OTLN LDB EOPF      RESET
0350 50440 045572      ADB CHRCT      END-OF-FIELD
0351 50441 075460      STB EOPF      MARKER
0352 50442 060375      LDA .+23B      OUTPUT
0353 50443 015454      JSB OUTCR      AN X-OFF
0354 50444 060367      LDA .+15B      OUTPUT A
0355 50445 015454      JSB OUTCR      CARRIAGE RETURN
0356 50446 060364      LDA .+12B      AND A
0357 50447 015454      JSB OUTCR      LINE FEED
0358 50450 125426      JMP OUTLN,I
0359**
0360*** OUTPUT A CHARACTER ***
0361**
0362*
0363* OUTPUT THE CHARACTER IN (A). NON-PRINTING CHARACTERS DO NOT
0364* COUNT AGAINST THE 72 CHARACTERS PER LINE, A CARRIAGE RETURN
0365* (CONTROL O) IN A STRING OR AN END-OF-LINE, FOR EXAMPLE)
0366* RESETS THE PRINT POSITION TO 0.
0367*
0368 50451 071310 #OTCR STA OCTMP      SAVE CHARACTER
0369 50452 050441      CPA B177      CHECK FOR
0370 50453 026457      JMP OTCRA      RUBOUT
0371 50454 010730      AND .140      NON-PRINTING
0372 50455 002002      SZA      CHARACTER?
0373 50456 035572      ISZ CHRCT      NO, COUNT IT
0374 50457      OTCRA EQU *
0375 50457 006400      CLB
0376 50460 061310      LDA OCTMP      RETRIEVE CHARACTER
0377 50461 050367      CPA .+15B      CARRIAGE RETURN?
0378 50462 075572      STB CHRCT      YES, ZERO CHARACTER COUNT
0379 50463 064273      LDB MLINK+1
0380 50464 044335      ADB .-7LINK
0381 50465 114576      JSB OUTCH,I
0382 50466 125454      JMP OUTCR,I
0383**
0384*** BACKSPACE IN BUFFER ***
0385**
0386*
0387* BACKSPACE IN BUFFER
0388*
0389 50467 060257 #BKSP LDA MAIN      TELL 2114
0390 50470 002004      INA
0391 50471 160000      LDA 0,I      TO BACKSPACE
0392 50472 030251      IOR BKS
0393 50473 114500      JSB S14LP,I      IN BUFFER
0394 50474 125452      JMP BCKSP,I

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0396**
0397***  FETCH NEXT BUFFER CHARACTER  ***
0398**
0399*
0400*  THE NEXT CHARACTER FROM THE INPUT BUFFER IS FETCHED. NORMAL
0401*  EXIT IS TO (P+2) WITH THE CHARACTER IN (A). BLANKS ARE SKIPPED
0402*  IF !BLANK! = 40 OCTAL, A !CARRIAGE RETURN! EXITS TO (P+1)
0403  50475 060222 #GTCR LDA GTC      LOAD OPCODE
0404  50476 064267      LDB MAIN      FOR GET CHARACTER
0405  50477 006004      INB          => TTY #
0406  50500 130001      IOR 1,I      TTY # IN BITS 12=8
0407  50501 006400      CLB          BLOCK
0408  50502 174634      STB DCLC1,I  CLOCK
0409  50503 114500      JSB S14SC,I  CALL 2114 DRIVER
0410  50504 102311      SFS CH2      WAIT FOR
0411  50505 026504      JMP **1      RESPONSE
0412  50506 102511      LIA CH2      LOAD CHARACTER
0413  50507 164640      LDB DCLC2,I  UNBLOCK
0414  50510 174634      STB DCLC1,I  CLOCK
0415  50511 051573      CPA BLANK    BLANK?
0416  50512 026475      JMP #GTCR    YES==IGNORE IT
0417  50513 050367      CPA .+15B    NO, CARRIAGE RETURN?
0418  50514 125450      JMP GETCR,I  YES
0419  50515 064000      LDB 0        COPY CHAR TO B
0420  50516 040766      ADA M96
0421  50517 002021      SSA,RSS     LOWER CASE
0422  50520 040317      ADA M32     MAKE INTO UPPER CASE
0423  50521 040730      ADA .140
0424  50522 035450      ISZ GETCR   NO==EXIT
0425  50523 125450      JMP GETCR,I TO (P+2)

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0427* *
0428** EXECUTE TAB(X) *
0429* *
0430 50524 015442 ETAB JSB ,IENT INTEGERIZE ARGUMENT
0431 50525 060274 LDA INF ARG > 32767
0432 50526 006400 CLB SET FLAG TO
0433 50527 075472 STB EOL 'TAB OCCURRED'
0434 50530 065756 LOB FFLG GET FORMAT FLAG
0435 50531 006002 SZB IN FORMATTER ?
0436 50532 026537 JMP ETAB2 YES
0437 50533 066005 LDB MM72
0438 50534 044000 ADB A
0439 50535 006021 SSB,RSS
0440 50536 026551 JMP ETAB4-1 YES, GO TO NEXT LINE
0441 50537 003004 ETAB2 CMA,INA NO
0442 50540 041572 ADA CHRCT ANY BLANKS
0443 50541 002021 SSA,RSS REQUIRED?
0444 50542 026552 JMP ETAB4 NO
0445 50543 071436 STA LBTMP YES
0446 50544 060412 ETAB1 LDA ,+40B OUTPUT
0447 50545 015454 JSB OUTCR A BLANK
0448 50546 035436 ISZ LBTMP DONE?
0449 50547 026544 JMP ETAB1 NO
0450 50550 002001 RSS YES
0451 50551 015426 JSB OUTLN
0452 50552 061036 ETAB4 LDA BIT15 SO OPCHK DOESN'T BARF
0453 50553 124560 JMP FRET,I
0454* *
0455** EXECUTE SPA(X) *
0456 50554 015442 ESPA JSB ,IENT INTEGERIZE ARGUMENT
0457 50555 060274 LDA INF ARG > 32767
0458 50556 006400 CLB SET FUNCTION FLAG
0459 50557 075472 STB EOL TO EXECUTED
0460 50560 002003 SZA,RSS IS IT ZERO ?
0461 50561 026607 JMP ESPA4 YES
0462 50562 002020 SSA NO, NEGATIVE?
0463 50563 026607 JMP ESPA4 YES
0464 50564 003004 CMA,INA NO
0465 50565 071776 STA REPC T OUTPUT
0466 50566 065756 LDB FFLG
0467 50567 006002 SZB
0468 50570 026577 JMP ESPA1 NO
0469 50571 040440 ADA ,72
0470 50572 065572 LDB CHRCT SPACING PAST
0471 50573 007004 CMB,INB END OF LINE ?
0472 50574 040001 ADA 1
0473 50575 002020 SSA
0474 50576 026606 JMP ESPA4-1
0475 50577 061573 ESPA1 LDA BLANK
0476 50600 015454 JSB OUTCR
0477 50601 035776 ISZ REPC T
0478 50602 026577 JMP ESPA1
0479 50603 003400 CCA RESET
0480 50604 071776 STA REPC T REPCT
0481 50605 002001 RSS

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0482	50606	015426		JSB	OUTLN	
0483	50607	061036	ESPA4	LDA	BIT15	SO OPCHK DOESN'T BARF
0484	50610	124560		JMP	FRET,I	
0485*				*		
0486*				*		
0487**	EXECUTE	LIN(X)	*			
0488*				*		
0489	50611	015442	ELIN	JSB	.IENT	INTEGERIZE ARGUMENT
0490	50612	060444		LDA	B400	
0491	50613	006400		CLB		SET FUNCTION FLAG
0492	50614	075472		STB	EOL	TO EXECUTED
0493	50615	002021		SSA,	RSS	NO, NEGATIVE ?
0494	50616	026633		JMP	ELIN1	NO
0495	50617	040444		ADA	B400	
0496	50620	002020		SSA		
0497	50621	002400		CLA		
0498	50622	040762		ADA	M256	
0499	50623	071776		STA	REPCT	
0500	50624	060364		LDA	+.12B	
0501	50625	015454		JSB	OUTCR	REPCT LINEFEEDS
0502	50626	035776		ISZ	REPCT	
0503	50627	026624		JMP	**3	
0504	50630	003400		CCA		
0505	50631	071776		STA	REPCT	REINITIALIZE REPCT
0506	50632	026657		JMP	ELIN2	YES
0507	50633	040762	ELIN1	ADA	M256	
0508	50634	002021		SSA,	RSS	ARGUMENT > 2 56 ?
0509	50635	002400		CLA		
0510	50636	040444		ADA	B400	
0511	50637	002002		SZA		
0512	50640	026650		JMP	ELIN3	
0513	50641	060367		LDA	+.15B	
0514	50642	015454		JSB	OUTCR	
0515	50643	002400		CLA		
0516	50644	015454		JSB	OUTCR	
0517	50645	002400		CLA		
0518	50646	071572		STA	CHRCT	
0519	50647	026657		JMP	ELIN2	YES
0520	50650	003004	ELIN3	CMA,	INA	
0521	50651	071776		STA	REPCT	OUTPUT
0522	50652	015536		JSB	OUTGL	CR-LF'S
0523	50653	035776		ISZ	REPCT	
0524	50654	026652		JMP	**2	
0525	50655	003400		CCA		RESET
0526	50656	071776		STA	REPCT	REPCT
0527	50657	061036	ELIN2	LDA	BIT15	SO OPCHK DOESN'T BARF
0528	50660	124560		JMP	FRET,I	

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0002* *
0003** COMPUTE ABS(X) *
0004* *
0005 50661 002020 EABS SSA ARGUMENT NEGATIVE?
0006 50662 015370 JSB ARINV YES, NEGATE IT
0007 50663 124560 JMP FRET,I NO
0008* *
0009** COMPUTE INT(X) *
0010*
0011* ENTER WITH NUMBER IN (A) AND (B), EXIT WITH FLOATING
0012* POINT FORM OF ENTIER IN (A) AND (B).
0013*
0014 50664 075436 EINT STB LBTMP SAVE (B)
0015 50665 015416 JSB IFIX TAKE ENTIER
0016 50666 026675 JMP EINT,1 ALL SIGNIFICANCE IN MANTISSA
0017 50667 075436 STB LBTMP SAVE (B)
0018 50670 064411 LDB ,+31 CORRECT FOR
0019 50671 075322 STB EXP BINARY POINT BIAS
0020 50672 066436 LDB LBTMP RETRIEVE (B)
0021 50673 015306 JSB ,PACK NORMALIZE AND PACK
0022 50674 124560 JMP FRET,I
0023 50675 061260 EINT1 LDA TEMP6 RETRIEVE
0024 50676 066436 LDB LBTMP NUMBER
0025 50677 124560 JMP FRET,I
0026* *
0027** EXECUTE TIM(X) *
0028* *
0029 50700 015416 ETIM JSB IFIX INTEGERIZE ARGUMENT
0030 50701 115161 JSB RERRS+43,I ILLEGAL ARGUMENT
0031 50702 002002 SZA
0032 50703 115161 JSB RERRS+43,I ILLEGAL ARGUMENT
0033 50704 060001 LDA 1 IS ARGUMENT
0034 50705 010355 AND ,+3 <=3 AND
0035 50706 050001 CPA 1 >=0 ?
0036 50707 002001 RSS YES
0037 50710 115161 JSB RERRS+43,I NO-ILLEGAL ARGUMENT
0038 50711 042737 ADA DTMTB BRANCH TO
0039 50712 124000 JMP 0,I APPROPRIATE ROUTINE
0040 50713 060202 ETIM0 LDA DATIM+1 # OF 100 Ms
0041 50714 040704 ADA D36K UNITS
0042 50715 006400 CLB CONVERT
0043 50716 100400 DIV D600 TO MINUTES
0044 50720 026735 JMP ETIM3+1
0045 50721 060201 ETIM1 LDA DATIM HOURS OF YEAR
0046 50722 006400 CLB CONVERT
0047 50723 100400 DIV ,+24 TO DAYS
0048 50725 060001 LDA 1 REMAINDER IS HOUR OF DAY
0049 50726 026735 JMP ETIM3+1
0050 50727 060201 ETIM2 LDA DATIM HOURS OF YEAR
0051 50730 006400 CLB CONVERT
0052 50731 100400 DIV ,+24 TO DAYS
0053 50733 002001 RSS

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0054	50734	060200	ETIM3	LDA	YEAR	GET YEAR
0055	50735	015346		JSB	FLOAT	CONVERT TO FLOATING POINT
0056	50736	124560		JMP	FRET,I	EXIT WITH RESULT IN (A) AND (B)
0057	50737	150740	DTMTB	DEF	++1,I	
0058	50740	050713		DEF	ETIM0	
0059	50741	050721		DEF	ETIM1	
0060	50742	050727		DEF	ETIM2	
0061	50743	050734		DEF	ETIM3	
0062*	*					
0063**	COMPUTE	RND(X)	*			
0064*	*		*			
0065*						
0066*	THE	RANDOM	NUMBER	FUNCTION	COMPUTES	A
0067*	FORMULAS:					
0068*						
0069*	X(N)=A	X(N-1)+C	(MOD	2↑30)		(A=5↑11,C=2↑30*(1/2-1/SQR(12)))
0070*	RND	=X/2↑30	MIN	(1-2↑-23)		
0071*						
0072	50744		ERND	EQU	*	
0073	50744	002021		SSA,RSS		POSITIVE ARGUMENT?
0074	50745	026752		JMP	ERND1	YES, USE PREVIOUS VALUE
0075	50746	005265		RBL,CLE,ERB		NO, MAKE A
0076	50747	001600		ELA		
0077	50750	071566		STA	RNDX1	A NEW SEED
0078	50751	075567		STB	RNDX2	
0079	50752		ERND1	EQU	*	
0080	50752	061566		LDA	RNDX1	COMPUTE FIRST
0081	50753	100200		MPY	RNDA2	CROSS PRODUCT.
	50754	051014				
0082	50755	071566		STA	RNDX1	SAVE (ONLY NEED LOW ORDER PART)
0083	50756	061567		LDA	RNDX2	COMPUTE 2ND
0084	50757	100200		MPY	RNDA1	CROSS PRODUCT.
	50760	051013				
0085	50761	041566		ADA	RNDX1	ADD IN FIRST.
0086	50762	043015		ADA	RNDC1	ADD IN HIGH PART OF C.
0087	50763	071566		STA	RNDX1	SAVE TOTAL. (THIS IS HIGH PART).
0088	50764	002500		CLA,CLE		SET EXP=0.
0089	50765	071322		STA	EXP	
0090	50766	061567		LDA	RNDX2	COMPUTE LOW ORDER PRODUCT.
0091	50767	100200		MPY	RNDA2	
	50770	051014				
0092	50771	043016		ADA	RNDC2	ADD IN LOW PART OF C.
0093	50772	002040		SEZ		ADD ANY CARRY INTO
0094	50773	006004		INB		B.
0095	50774	001265		RAL,CLE,ERA		E+A(15),A(15)+0.
0096	50775	071567		STA	RNDX2	SAVE LOW ORDER RESULT.
0097	50776	005600		ELB		SHIFT HIGH ORDER PART & ADD IN
0098	50777	045566		ADB	RNDX1	PREVIOUS TOTAL.
0099	51000	005665		ELB,CLE,ERB		CLEAR BIT 15 AND STORE.
0100	51001	075566		STB	RNDX1	
0101	51002	001200		RAL		SHIFT A ADJACENT TO B.
0102	51003	101100		SWP		EXCHANGE REGISTERS AND
0103	51004	015306		JSB	.PACK	PACK.
0104	51005	054354		CPB	.+2	TEST FOR RESULT=1,0
0105	51006	002001		RSS		

0106	51007	124560		JMP FRET,I	EXIT IF NOT,
0107	51010	060274		LDA INF	SET RESULT TO 1-2↑-23
0108	51011	064762		LDB M256	
0109	51012	124560		JMP FRET,I	
0110*					
0111*					
0112	51013	002722	RNDA1	DEC 1490	A DIV 2↑15
0113	51014	007335	RNDA2	DEC 3805	A MOD 2↑15
0114	51015	016441	RNDC1	OCT 16441	C DIV 2↑15
0115	51016	007701	RNDC2	OCT 7701	C MOD 2↑15
0116*	*		*		
0117**	COMPUTE	SGN(X)	*		
0118*	*		*		
0119*					
0120*	ENTER WITH ARGUMENT IN (A) AND (B). IF ARGUMENT IS				
0121*	NEGATIVE RETURN -1,0, IF ZERO RETURN 0, IF POSITIVE				
0122*	RETURN 1,0				
0123*					
0124	51017	006400	ESGN	CLB	CLEAR LOW PART OF NUMBER
0125	51020	002003		SZA,RSS	ZERO?
0126	51021	124560		JMP FRET,I	YES, RETURN 0
0127	51022	002021		SSA,RSS	POSITIVE?
0128	51023	064354		LDB ,+2	YES, LOAD EXPONENT FOR +1
0129	51024	061036		LDA FLGBT	NO, LOAD HIGH PART OF -1
0130	51025	006002		SZB	WAS ARGUMENT POSITIVE?
0131	51026	001300		RAR	YES, SET RESULT TO +1
0132	51027	124560		JMP FRET,I	NO
0133*	*		*		
0134**	COMPUTE	TYP(X)	*		
0135*	*		*		
0136*					
0137*	UPON ENTRY (A) AND (B) HOLD A FILE NUMBER IN FLOATING POINT				
0138*	FORM. FILE 0 REFERS TO THE <DATA STATEMENT>S. IF THE FILE				
0139*	NUMBER IS NEGATIVE RETURN 1,0, 2,0, 3,0, OR 4,0 IF THE NEXT				
0140*	ITEM IN THE FILE IS A NUMBER, STRING, END-OF-FILE, OR END-				
0141*	OF-RECORD RESPECTIVELY. IF THE FILE NUMBER IS POSITIVE RETURN				
0142*	WITH THE VALUE CORRESPONDING TO THE FIRST ITEM FOUND OF ONE				
0143*	OF THE FIRST THREE TYPES.				
0144*					
0145	51030	075436	ETYP	STB LBTMP	SAVE (B)
0146	51031	065234		LDB FILE#	SAVE VALUE
0147	51032	075645		STB PINTG	OF FILE#
0148	51033	002003		SZA,RSS	'DATA' FILE?
0149	51034	027064		JMP ETYP3	YES
0150	51035	007400		CCB	NO, IGNORE
0151	51036	002020		SSA	END-OF-RECORDS
0152	51037	006400		CLB	UNLESS ARGUMENT
0153	51040	075653		STB EORFL	IS NEGATIVE
0154	51041	065436		LDB LBTMP	RETRIEVE (B)
0155	51042	002020		SSA	TAKE ABSOLUTE VALUE
0156	51043	015370		JSB ARINV	OF ARGUMENT
0157	51044	015342		JSB SBFIX	15-BIT INTEGER?
0158	51045	115151		JSB RERRS+35,I	NO
0159	51046	075234		STB FILE#	YES
0160	51047	061234		LDA FILE#	VALIDATE

0161	51050	064350		LDB .+2	
0162	51051	015510		JSB RQSTR	FILE
0163	51052	015514		JSB GTTYP	GET TYPE
0164	51053	065645	ETYP1	LDB PINTG	RESTORE
0165	51054	075234		STB FILE#	FILE#
0166	51055	015346		JSB FLOAT	RETURN TYPE IN
0167	51056	124560		JMP FRET,I	FLOATING POINT FORM
0168	51057	060355	ETYP2	LDA .+3	
0169	51060	065244		LDB NXTDT	OUT-OF-DATA
0170	51061	055575		CPB SYMTB	CONDITION?
0171	51062	027053		JMP ETYP1	YES, (A) = 3
0172	51063	015360		JSB SETOP	NO, SEEK NEXT <DATA STATEMENT>
0173	51064	003400	ETYP3	CCA	MORE DATA IN
0174	51065	051262		CPA DCCNT	CURRENT STATEMENT?
0175	51066	027057		JMP ETYP2	NO
0176	51067	165244		LDB NXTDT,I	YES, LOAD TYPE WORD
0177	51070	002404		CLA,INA	SET NUMBER
0178	51071	006021		SSB,RSS	NUMBER?
0179	51072	060354		LDA .+2	NO, SET FOR STRING
0180	51073	027053		JMP ETYP1	

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0182**          **
0183*** COMPUTE CHEBYSHEV(X) ***
0184**          **
0185 51074 015406 #CHEB JSB .FMP
0186 51075 051374      DEF K2
0187 51076 104400      DST X2TMP      X2TMP = X*2
      51077 001632
0188 51100 165440      LDB .CHEB,I
0189 51101 075376      STB CTMP      POINTER TO COEFFICIENT TABLE
0190 51102 104200      DLD 1,I
      51103 100001
0191 51104 104400      DST DTMP      DTMP = COEFF(N)
      51105 001640
0192 51106 002400      CLA
0193 51107 071636      STA BTMP
0194 51110 071637      STA BTMP+1      B = 0
0195 51111 035376 CHEB1 ISZ CTMP
0196 51112 035376      ISZ CTMP      N = N-1
0197 51113 161376      LDA CTMP,I
0198 51114 002003      SZA,RSS      C(N) = 0?
0199 51115 027137      JMP CHEB2      YES
0200 51116 104200      DLD BTMP      NO
      51117 001636
0201 51120 104400      DST ATMP      A = B
      51121 001634
0202 51122 104200      DLD DTMP
      51123 001640
0203 51124 104400      DST BTMP      B = 0
      51125 001636
0204 51126 015406      JSB .FMP
0205 51127 001632      DEF X2TMP
0206 51130 015404      JSB .FSB
0207 51131 001634      DEF ATMP
0208 51132 015402      JSB .FAD
0209 51133 101376      DEF CTMP,I
0210 51134 104400      DST DTMP      D = COEFF(N) = A+B*X2
      51135 001640
0211 51136 027111      JMP CHEB1
0212 51137 104200 CHEB2 DLD DTMP
      51140 001640
0213 51141 015404      JSB .FSB
0214 51142 001634      DEF ATMP
0215 51143 013406      JSB .FMP
0216 51144 001040      DEF HALF
0217 51145 035440      ISZ .CHEB      ANS = (D-A)/2
0218 51146 125440      JMP .CHEB,I

```

```

0221**          **
0222*** LIBRARY ENTIER ***
0223**          **
0224*
0225* ENTER WITH NUMBER IN (A) AND (B). IF EXPONENT > 14
0226* THEN EXIT TO (P+1), ELSE EXIT TO (P+2) WITH THE
0227* ENTIER OF THE ARGUMENT IN (A).

```

```

0228*
0229 51147 071436 #IENT STA LBTMP      SAVE (A)
0230 51150 060001      LDA 1          EXTRACT
0231 51151 010443      AND B377       EXPONENT
0232 51152 000033      SLA,RAR       NEGATIVE?
0233 51153 027157      JMP IENT1     YES
0234 51154 040333      ADA ,=15     NO, LESS THAN
0235 51155 002021      SSA,RSS     OR EQUAL TO 147
0236 51156 125442      JMP .IENT,I  NO
0237 51157 035442      IENT1 ISZ .IENT YES
0238 51160 061436      LDA LBTMP    RESTORE (A)
0239 51161 015416      JSB IFIX     TAKE ENTIER
0240 51162 000000      NOP
0241 51163 060001      LDA 1        LOAD INTEGER
0242 51164 125442      JMP .IENT,I  INTO (A)
0243**
0244*** FLOAT AN INTEGER ***
0245**
0246*
0247* ENTER WITH INTEGER IN (A). EXIT WITH FLOATING POINT
0248* EQUIVALENT IN (A) AND (B).
0249*
0250 51165 064371 #FLOT LDB ,+15  CORRECT BIAS
0251 51166 075322      STB EXP     OF BINARY POINT
0252 51167 006400      CLB        ZERO LOW MANTISSA
0253 51170 015306      JSB .PACK   NORMALIZE AND PACK
0254 51171 125346      JMP FLOAT,I

0256**
0257*** MULTIPLY BY A POWER OF 2 ***
0258**
0259*
0260* ENTER WITH NUMBER IN (A) AND (B). AUGMENT EXPONENT
0261* BY THE VALUE POINTED TO BY (P+1) AND EXIT TO (P+2).
0262* NO CHECK ON EXPONENT UNDERFLOW OR OVERFLOW.
0263*
0264 51172 002003 #PWR2 SZA,RSS  ARGUMENT ZERO?
0265 51173 027206      JMP PWR2A   YES, RETURN 0
0266 51174 071632      STA X2TMP  NO, SAVE HIGH PART OF MANTISSA
0267 51175 015414      JSB .FLUN  UNPACK LOW PART OF NUMBER
0268 51176 075633      STB X2TMP+1 SAVE LOW MANTISSA
0269 51177 165444      LDB .PWR2,I COMPUTE NEW
0270 51200 140001      ADA 1,I    EXPONENT
0271 51201 001200      RAL        POSITION
0272 51202 010443      AND B377   AND MASK IT
0273 51203 070001      STA 1      COMPUTE NEW LOW
0274 51204 045633      ADB X2TMP+1 PART OF NUMBER
0275 51205 061632      LDA X2TMP  RETRIEVE HIGH MANTISSA
0276 51206 035444      PWR2A ISZ .PWR2
0277 51207 125444      JMP .PWR2,I
0278* *
0279** COMPUTE COS(X) *
0280* *
0281 51210 015402 ECOS JSB .FAD  COMPUTE

```

```

0282 51211 051476      DEF PIBY2      SIN(X+PI/2)
0283* *
0284** COMPUTE SIN(X) *
0285* *
0286 51212 015406      ESIN  JSB  .FMP
0287 51213 051262      DEF  TOPI
0288 51214 104400      DST  XTEMP      X = 2*X/PI
      51215 001624
0289 51216 015402      JSB  .FAD
0290 51217 051372      DEF  K1
0291 51220 015444      JSB  .PWR2
0292 51221 000350      DEF  .=2
0293 51222 015442      JSB  .IENT
0294 51223 115145      JSB  RERR9+31,I  EXPONENT EXCEEDS 14
0295 51224 015346      JSB  FLOAT
0296 51225 015406      JSB  .FMP
0297 51226 051264      DEF  MM4
0298 51227 015402      JSB  .FAD
0299 51230 001624      DEF  XTEMP
0300 51231 104400      DST  XTEMP      X = X-4*ENTIER((X+1)/4)
      51232 001624
0301 51233 015404      JSB  .FSB
0302 51234 051372      DEF  K1
0303 51235 002020      SSA  X<1?
0304 51236 027245      JMP  ESIN1      YES
0305 51237 104200      DLD  K2          NO
      51240 051374
0306 51241 015404      JSB  .FSB
0307 51242 001624      DEF  XTEMP
0308 51243 104400      DST  XTEMP      X = 2=X
      51244 001624
0309 51245 104200      ESIN1 DLD  XTEMP
      51246 001624
0310 51247 015406      JSB  .FMP
0311 51250 001624      DEF  XTEMP
0312 51251 015444      JSB  .PWR2
0313 51252 000353      DEF  .+1
0314 51253 015404      JSB  .FSB
0315 51254 051372      DEF  K1
0316 51255 015440      JSB  .CHEB
0317 51256 051266      DEF  COEF2
0318 51257 015406      JSB  .FMP
0319 51260 001624      DEF  XTEMP
0320 51261 124560      JMP  FRET,I     ANS = X+CHEBY(2*X+2 -1)
0321*
0322 51262 050574      TOPI  DEC  .636619772      2/PI
      51263 141000
0323 51264 100000      MM4   DEC  =4.
      51265 000004
0324 51266 047605      COEF2 DEC  1.18496E=6
      51267 072733
0325 51270 134143      DEC  =1.365875E=4
      51271 104751
0326 51272 045261      DEC  9.118016E=3
      51273 157365

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0327 51274 133371      DEC =.2852615692
      51275 014777
0328 51276 050656      DEC 2.5525579248
      51277 107004
0329 51300 000000      OCT 0
0330* *
0331* * COMPUTE TAN(X) *
0332* *
0333 51301 015406      ETAN JSB .FMP
0334 51302 051370      DEF FOPI      4/PI
0335 51303 104400      DST XTEMP
      51304 001624
0336 51305 015402      JSB .FAD
0337 51306 051372      DEF K1
0338 51307 015444      JSB .PWR2
0339 51310 000350      DEF =2
0340 51311 015442      JSB .IENT
0341 51312 115145      JSB RERRS+31,I
0342 51313 015346      JSB FLOAT
0343 51314 015370      JSB ARINV
0344 51315 015444      JSB .PWR2
0345 51316 000354      DEF .+2
0346 51317 015402      JSB .FAD
0347 51320 001624      DEF XTEMP
0348 51321 104400      DST XTEMP      X = X-4*ENTIER((X+1)/4)
      51322 001624
0349 51323 015404      JSB .FSB
0350 51324 051372      DEF K1
0351 51325 071436      STA LBTMP
0352 51326 002020      SSA      X<1?
0353 51327 027362      JMP ETAN2      YES
0354 51330 104200      DLD K2      NO
      51331 051374
0355 51332 015404      JSB .FSB
0356 51333 001624      DEF XTEMP
0357 51334 104400      ETAN1 DST YTEMP      Y = 2-X
      51335 001626
0358 51336 015406      JSB .FMP
0359 51337 001626      DEF YTEMP
0360 51340 015406      JSB .FMP
0361 51341 051374      DEF K2
0362 51342 015404      JSB .FSB
0363 51343 051372      DEF K1
0364 51344 015440      JSB .CHEB
0365 51345 051376      DEF COEF0
0366 51346 015406      JSB .FMP
0367 51347 001626      DEF YTEMP
0368 51350 104400      DST YTEMP      Y = Y*CHEBY(2*Y+2 -1)
      51351 001626
0369 51352 061436      LDA LBTMP
0370 51353 002020      SSA      X<1?
0371 51354 027365      JMP ETAN3      YES
0372 51355 104200      DLD K1      NO
      51356 051372
0373 51357 015410      JSB .FDV

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0374	51360	001626		DEF YTEMP	
0375	51361	124560		JMP FRET,I	ANS = 1/Y
0376	51362	104200	ETAN2	DLD XTEMP	
	51363	001624			
0377	51364	027334		JMP ETAN1	Y = X
0378	51365	104200	ETAN3	DLD YTEMP	
	51366	001626			
0379	51367	124560		JMP FRET,I	ANS = Y
0380*					
0381	51370	050574	FOPI	DEC 1,273239545	
	51371	141002			
0382	51372	040000	K1	DEC 1.	
	51373	000002			
0383	51374	040000	K2	DEC 2.	
	51375	000004			
0384	51376	076061	COEF0	DEC 1,4458E-8	
	51377	075315			
0385	51400	066034		DEC 2,013766E-7	
	51401	176725			
0386	51402	057035		DEC 2,804816E-6	
	51403	030335			
0387	51404	050755		DEC 3,906637E-5	
	51405	114745			
0388	51406	043523		DEC 5,4417038E-4	
	51407	052355			
0389	51410	076112		DEC 7,586101578E-3	
	51411	065763			
0390	51412	066520		DEC .10675392857	
	51413	163773			
0391	51414	070512		DEC 1,7701474227	
	51415	014002			
0392	51416	000000		OCT 0	
0393*	*		*		
0394**	COMPUTE ATN(X)		*		
0395*	*		*		
0396	51417	104400	EATN	DST XTEMP	
	51420	001624			
0397	51421	060001		LDA 1	
0398	51422	010443		AND B377	
0399	51423	071436		STA LBTMP	
0400	51424	002002		SZA	
0401	51425	000010		SLA	ABS(X) > 1?
0402	51426	027463		JMP EATN2	NO
0403	51427	104200		DLD K1	YES
	51430	051372			
0404	51431	015410		JSB .FDV	
0405	51432	001624		DEF XTEMP	U = 1/X
0406	51433	104400	EATN1	DST UTEMP	
	51434	001630			
0407	51435	015406		JSB .FMP	
0408	51436	001630		DEF UTEMP	
0409	51437	015406		JSB .FMP	
0410	51440	051374		DEF K2	
0411	51441	015404		JSB .FSB	
0412	51442	051372		DEF K1	

0413	51443	015440	JSB	.CHEB	
0414	51444	051502	DEF	COEF1	
0415	51445	015406	JSB	.FMP	
0416	51446	001630	DEF	UTEMP	
0417	51447	104400	DST	YTEMP	Y = U * CHEBY(2 * U ² - 1)
	51450	001626			
0418	51451	061436	LDA	LBTMP	
0419	51452	002002	SZA		
0420	51453	000010	SLA		ABS(X) > 1?
0421	51454	027466	JMP	EATN3	NO
0422	51455	061624	LDA	XTEMP	YES
0423	51456	002020	SSA		X < 0?
0424	51457	027471	JMP	EATN4	YES
0425	51460	104200	DLD	PIBY2	NO
	51461	051476			
0426	51462	027473	JMP	EATN4+2	
0427	51463	104200	EATN2	DLD	XTEMP
	51464	001624			
0428	51465	027433	JMP	EATN1	U = X
0429	51466	104200	EATN3	DLD	YTEMP
	51467	001626			
0430	51470	124560	JMP	FRET, I	ANS = Y
0431	51471	104200	EATN4	DLD	MP2
	51472	051500			
0432	51473	015404	JSB	.FSB	
0433	51474	001626	DEF	YTEMP	
0434	51475	124560	JMP	FRET, I	ANS = -PI/2 - Y
0435*					
0436	51476	062207	PIBY2	DEC	1.5707963268 PI/2
	51477	166402			
0437	51500	115570	MP2	DEC	-1.5707963268 -PI/2
	51501	011402			
0438	51502	106671	COEF1	DEC	-1.33034E-8
	51503	102315			
0439	51504	056335		DEC	8.64888E-8
	51505	156323			
0440	51506	131601		DEC	-56.99186E-8
	51507	137731			
0441	51510	040033		DEC	3.821037E-6
	51511	035737			
0442	51512	111013		DEC	-2.6215196E-5
	51513	123343			
0443	51514	060542		DEC	1.8574297E-4
	51515	000351			
0444	51516	122573		DEC	-1.381195004E-3
	51517	062757			
0445	51520	055471		DEC	.01113584206
	51521	107365			
0446	51522	111620		DEC	-.1058929245
	51523	147373			
0447	51524	070320		DEC	1.762747174
	51525	155002			
0448	51526	000000	OCT	0	
0449*	*				
0450**	*	COMPUTE EXP(X)	*		

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0451*	*		*		
0452	51527	015434	EEXP	JSB .EXP	
0453	51530	124560		JMP FRET,I	
0454	51531	015406	#EXP	JSB .FMP	
0455	51532	051651		DEF L2E	
0456	51533	104400		DST XTEMP	X = ARG*LOG2(E)
	51534	001624			
0457	51535	015442		JSB .IENT	
0458	51536	027630		JMP .EXP2	
0459	51537	071436		STA LBTMP	
0460	51540	015346		JSB FLOAT	
0461	51541	104400		DST YTEMP	Y = ENTIER(X)
	51542	001626			
0462	51543	061436		LDA LBTMP	
0463	51544	043637		ADA M124	
0464	51545	002021		SSA,RSS	X >= 124?
0465	51546	027630		JMP .EXP2	YES
0466	51547	043640		ADA .244	NO
0467	51550	002020		SSA	X < =120?
0468	51551	027625		JMP .EXP1	YES
0469	51552	104200		DLD XTEMP	NO
	51553	001624			
0470	51554	015404		JSB .FSB	
0471	51555	001626		DEF YTEMP	
0472	51556	104400		DST XTEMP	X = X-ENTIER(X)
	51557	001624			
0473	51560	015406		JSB .FMP	
0474	51561	001624		DEF XTEMP	
0475	51562	104400		DST UTEMP	U = XT2
	51563	001630			
0476	51564	015402		JSB .FAD	
0477	51565	051641		DEF AAAA	
0478	51566	104400		DST YTEMP	Y = XT2+AAAA
	51567	001626			
0479	51570	104200		DLD BBBB	
	51571	051643			
0480	51572	015410		JSB .FDV	
0481	51573	001626		DEF YTEMP	
0482	51574	104400		DST YTEMP	Y = BBBB/Y
	51575	001626			
0483	51576	104200		DLD CCCC	
	51577	051645			
0484	51600	015406		JSB .FMP	
0485	51601	001630		DEF UTEMP	
0486	51602	015402		JSB .FAD	
0487	51603	051647		DEF DDDD	
0488	51604	015404		JSB .FSB	
0489	51605	001624		DEF XTEMP	
0490	51606	015404		JSB .FSB	
0491	51607	001626		DEF YTEMP	
0492	51610	104400		DST YTEMP	Y = -X+DDDD+CCCC*XT2-Y
	51611	001626			
0493	51612	104200		DLD XTEMP	
	51613	001624			
0494	51614	015410		JSB .FDV	

0495	51615	001626		DEF	YTEMP	
0496	51616	015402		JSB	.FAD	
0497	51617	001040		DEF	HALF	
0498	51620	035436		ISZ	LBTMP	
0499	51621	000000		NOP		
0500	51622	015444		JSB	.PWR2	
0501	51623	001436		DEF	LBTMP	
0502	51624	125434		JMP	.EXP,1	
0503	51625	002400	.EXP1	CLA		ANS = (0.5+X/Y)*2↑ENTIER(ARG*LE)
0504	51626	006400		CLB		
0505	51627	125434		JMP	.EXP,1	
0506	51630	061436	.EXP2	LDA	LBTMP	ANS = 0
0507	51631	002020		SSA		LARGE ARGUMENT
0508	51632	027625		JMP	.EXP1	NEGATIVE?
0509	51633	115213		JSB	WERRS+4,I	YES
0510	51634	060274		LDA	INF	NO
0511	51635	064350		LDB	.-2	
0512	51636	125434		JMP	.EXP,1	ANS = POSITIVE INFINITY
0513*						
0514	51637	177604	M124	DEC	=124	
0515	51640	000364	.244	DEC	244	
0516	51641	053552	AAAA	DEC	87,417497202	
		51642				
0517	51643	046477	BBBB	DEC	617,9722695	
		51644				
0518	51645	043372	CCCC	DEC	.03465735903	
		51646				
0519	51647	047643	DDDD	DEC	9,9545957821	
		51650				
0520	51651	056125	L2E	DEC	1,4426950409	
		51652				

```

0002* *
0003** COMPUTE LOG(X) *
0004* *
0005 51653 015436 ELOG JSB .LOG
0006 51654 124560 JMP FRET,I
0007 51655 002003 #LOG SZA,RSS NON=ZERO ARGUMENT?
0008 51656 027732 JMP .LOG1 NO
0009 51657 002020 SSA YES, POSITIVE ARGUMENT?
0010 51660 115141 JSB RERRS+27,I NO
0011 51661 071624 STA XTEMP YES,
0012 51662 015414 JSB .FLUN SAVE MANTISSA
0013 51663 075625 STB XTEMP+1 AND FLOATED
0014 51664 015346 JSB FLOAT EXPONENT
0015 51665 104400 DST YTEMP SEPARATELY
    51666 001626
0016 51667 104200 DLD XTEMP
    51670 001624
0017 51671 015402 JSB .FAD
0018 51672 051737 DEF R22
0019 51673 104400 DST UTEMP U = X+SQR(0.5)
    51674 001630
0020 51675 104200 DLD XTEMP
    51676 001624
0021 51677 015404 JSB .FSB
0022 51700 051737 DEF R22
0023 51701 015410 JSB .FDV
0024 51702 001630 DEF UTEMP
0025 51703 104400 DST UTEMP U = (X-SQR(0.5))/U
    51704 001630
0026 51705 015406 JSB .FMP
0027 51706 001630 DEF UTEMP
0028 51707 015404 JSB .FSB
0029 51710 051747 DEF CCC
0030 51711 104400 DST XTEMP
    51712 001624
0031 51713 104200 DLD MB
    51714 051745
0032 51715 015410 JSB .FDV
0033 51716 001624 DEF XTEMP
0034 51717 015402 JSB .FAD
0035 51720 051743 DEF AAA
0036 51721 015406 JSB .FMP
0037 51722 001630 DEF UTEMP
0038 51723 015404 JSB .FSB
0039 51724 001040 DEF HALF
0040 51725 015402 JSB .FAD
0041 51726 001626 DEF YTEMP
0042 51727 015406 JSB .FMP
0043 51730 051741 DEF LE2
0044 51731 125436 JMP .LOG,I ANS = LOG(2)*
0045 51732 115210 #LOG1 JSB WERRS+1,I (MANTISSA=0.5+U+(AAA+MB/X))
0046 51733 061036 LDA MNEG
0047 51734 067736 LDB B776 ANS = NEGATIVE INFINITY
0048 51735 125436 JMP .LOG,I
0049*

```

PAGE 0220 #21 LIBRARY FUNCTIONS

0050	51736	000776	B776	OCT 776	
0051	51737	055202	R22	DEC .707106781	SQR(0.5)
	51740	075000			
0052	51741	054271	LE2	DEC .6931471806	LOG BASE E (2)
	51742	006000			
0053	51743	051260	AAA	DEC 1.2920070987	
	51744	037402			
0054	51745	125606	MB	DEC -2.6398577035	
	51746	044404			
0055	51747	065010	CCC	DEC 1.6567626301	
	51750	063002			

0057*
 0058*
 0059*
 0060*
 0061*
 0062*
 0063*
 0064*
 0065*
 0066*
 0067*
 0068*
 0069*
 0070
 0071
 0072
 0073
 0074
 0075
 0076
 0077
 0078
 0079
 0080
 0081
 0082
 0083
 0084
 0085
 0086*
 0087*

ENTER WITH:

(A)=1 IF PBFLG HAS TO BE SET.

(A)=2 IF PBFLG HAS TO BE CLEARED.

(A)=4 IF PBFLG AND CBFLG HAVE TO BE CLEARED.

(B)= POINTER TO ?FLAG

EXIT WITH ORIGINAL CONTENTS IN B.

```

#EDAB EQU *
CLF 0
SLA,RSS      BIT#0 SET?
JMP **4
LDA PBFLG    YES, SET PBFLG.
IOR B,I
JMP #EDB1
RAR,SLA      NO, BIT#1 SET?
LDA PBFLG    YES, CLEAR PBFLG.
LDA B30M     NO, CLEAR PBFLG AND CBFLG.
CMA
AND B,I
#EDB1 EQU *
STA B,I      STORE ?FLAG WORD BACK.
STF 0
JMP EDABR,I  EXIT.
    
```

```

0089 52000          ORG 52000B
0090 52000 063146  TENTH OCT 63146
0091 52001 000063  B63   OCT 63
0092 52002 000120  B120  OCT 120      *P*
0093 52003 177716  D62   OCT -62
0094 52004 177707  M71B  OCT -71
0095 52005 000776  BB776 OCT 776
0096 52006 000106  F     OCT 106
0097 52007 000116  N     OCT 116
0098* *
0099** COMPUTE SQR(X) *
0100* *
0101 52010 002003  ESQR  SZA,RS8      X = 0?
0102 52011 124560          JMP FRET,I        YES, ANS = 0
0103 52012 002020          SSA                NO, X < 0?
0104 52013 115142          JSB RERRS+20,I   YES
0105 52014 071624          STA XTEMP        NO
0106 52015 015414          JSB .FLUN
0107 52016 000031          SLA,ARS          EXPONENT ODD?
0108 52017 026055          JMP ESQR2        YES
0109 52020 040351          ADA .-1         NO
0110 52021 071436          STA LBTMP        EXPONENT/2 -1
0111 52022 075625          STB XTEMP+1     MANTISSA SAVED
0112 52023 061624          LDA XTEMP
0113 52024 015406          JSB .FMP
0114 52025 052070          DEF SA2
0115 52026 015402          JSB .FAD
0116 52027 052074          DEF SB2         Y = SB2+SA2*X
0117 52030 104400  ESQR1  DST YTEMP
      52031 001626
0118 52032 104200          DLD XTEMP
      52033 001624
0119 52034 015410          JSB .FDV
0120 52035 001626          DEF YTEMP
0121 52036 015402          JSB .FAD
0122 52037 001626          DEF YTEMP
0123 52040 015444          JSB .PWR2
0124 52041 000351          DEF .-1
0125 52042 104400          DST YTEMP      Y = (Y+X/Y)/2
      52043 001626
0126 52044 104200          DLD XTEMP
      52045 001624
0127 52046 015410          JSB .FDV
0128 52047 001626          DEF YTEMP
0129 52050 015402          JSB .FAD
0130 52051 001626          DEF YTEMP
0131 52052 015444          JSB .PWR2
0132 52053 001436          DEF LBTMP
0133 52054 124560          JMP FRET,I      ANS = (P+F/P)*2↑ESQR
0134 52055 071436  ESQR2  STA LBTMP      EXPONENT/2
0135 52056 044443          ADB B377
0136 52057 075625          STB XTEMP+1    MANTISSA/2 SAVED
0137 52060 061624          LDA XTEMP
0138 52061 015406          JSB .FMP
0139 52062 052066          DEF SA1

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0140 52063 015402      JSB .FAD
0141 52064 052072      DEF SB1
0142 52065 026030      JMP ESQR1      Y = SB1+SA1*X
0143*
0144 52066 070000      SA1  DEC .875
      52067 000000
0145 52070 045000      SA2  DEC .578125
      52071 000000
0146 52072 043524      SB1  DEC .27863
      52073 046377
0147 52074 066000      SB2  DEC .421875
      52075 000377
0148* *
0149** COMPUTE BRK(X) *
0150* *
0151*
0152* ENTER WITH ARGUMENT IN A AND B.
0153* IF X=0, DISABLE ABORT CAPABILITY.
0154* IF X>0, ENABLE ABORT CAPABILITY.
0155* IF X<0, DO NOT DISABLE OR ENABLE BUT JUST
0156* RETURN A VALUE.
0157*
0158* RETURN WITH:
0159*
0160* 1. 0 IF ABORT CAPABILITY WAS DISABLED PREVIOUS
0161* TO EVALUATION.
0162*
0163* 2. +1 IF ABORT CAPABILITY WAS ENABLED PREVIOUS
0164* TO EVALUATION.
0165*
0166 52076 071624      EBRK  STA XTEMP      STORE HIGH PART OF ARGUMENT.
0167 52077 160257      LDA MAIN,I      A= ?FLAG
0168 52100 010616      AND PBFLG
0169 52101 006400      CLB
0170 52102 002003      SZA,RSS      PBFLG BIT SET?
0171 52103 064354      LDB ,+2      NO. SET (B) EXPONENT OF +1.
0172 52104 061036      LDA FLGBT      YES. SET (A)=1000000.
0173 52105 006003      SZB,RSS      WAS PBFLG SET?
0174 52106 002400      CLA      YES. SET RETURN VALUE TO 0.
0175 52107 001300      RAR      NO. SET RETURN VALUE TO +1.
0176 52110 104400      DST YTEMP      SAVE.
      52111 001626
0177*
0178 52112 064257      LDB MAIN      (B)= ? FLAG
0179 52113 061624      LDA XTEMP      RETRIEVE HIGH PART OF ARGUMENT.
0180 52114 002002      SZA      ARGUMENT=0?
0181 52115 026130      JMP EBRK1
0182 52116 002404      CLA,INA      YES. SET PBFLG TO 1(=DISABLE
0183 52117 015564      JSB EDABR      ABORT).
0184 52120 103100      CLF 0
0185 52121 044366      ADB ,+?STAT      B=> ?STAT
0186 52122 164001      LDB B,I      B= ?STAT
0187 52123 003400      CCA
0188 52124 050001      CPA B
0189 52125 126137      JMP SUSPN,I      QUIT IF ABORT REQUEST,

```


0190	52126	102100		STF 0	
0191	52127	026134		JMP EBRK2	
0192	52130		EBRK1	EQU *	
0193	52130	002020		SSA	NO. ARGUMENT >0 OR <0?
0194	52131	026134		JMP EBRK2	<0. DO NOTHING.
0195	52132	060354		LDA .+2	<0 SET PBFLG TO 0(=ENABLE
0196	52133	015564		JSB EDABR	ABORT).
0197	52134		EBRK2	EQU *	
0198	52134	104200		OLD YTEMP	RETURN WITH VALUE OF CONDITION
		52135			
0199	52136	124560		JMP FRET,I	PREVIOUS TO EVALUATION.
0200*					
0201*					
0202	52137	071651	SUSPN	DEF	SUSP
0203*					
0204*					
0205*					

```

0207* *****
0208***          ***
0209*** LIST THE PROGRAM ***
0210***          ***
0211* *****
0212*
0213*
0214*
0215* 'LIST' CONVERTS THE CURRENT USER PROGRAM TO A STANDARD ASCII
0216* FORMAT AND PRINTS IT ON THE TELETYPE ONE LINE PER PROGRAM
0217* STATEMENT. 'PUNCH' ADDS A LEADER AND TRAILER TO THE ASCII
0218* PROGRAM DUMP. LISTING BEGINS WITH THE FIRST PROGRAM STATEMENT
0219* UNLESS DIRECTED OTHERWISE BY THE 'LIST' OR 'PUNCH' COMMAND.
0220* LT1 IS THE PROGRAM POSITION POINTER. LT2 IS THE STATEMENT
0221* LENGTH COUNTER.
0222*
0223 52140 002404 XPNCH CLA,INA          SET TO 'XPUNCH' MODE
0224 52141 026144          JMP LIST+1
0225 52142 003401 PUNCH CCA,RSS          SET TO 'PUNCH' MODE
0226 52143 002400 LIST CLA          SET TO 'LIST' MODE
0227 52144 071400          STA LT0          SAVE MODE
0228 52145 002400          CLA          SET FOR
0229 52146 071552          STA LT8          NO PAGINATION
0230 52147 064702          LDB PBUFF          NULL
0231 52150 054056          CPB PBPTR          PROGRAM?
0232 52151 026574          JMP LIS16          YES
0233 52152 006404          CLB,INB          NO, SET FIRST STATEMENT NUMBER
0234 52153 075432          STB LT3
0235 52154 015464          JSB SINIT          PREPARE PROGRAM FOR LISTING
0236 52155 064056          LDB PBPTR
0237 52156 103100          CLF 0
0238 52157 060354          LDA CFLAG          SAVE
0239 52160 110257          AND MAIN,I          PROGRAM
0240 52161 071442          STA LT5          MODE
0241 52162 102100          STF 0
0242*
0243** DETERMINE FIRST STATEMENT TO BE LISTED **
0244*
0245 52163 002002          SZA          SAVE POINTER TO
0246 52164 065575          LDB SYMTB          LAST WORD +1
0247 52165 075444          STB LT6          OF PROGRAM
0248 52166 065036          LDB BIT15          GET LARGE SEQUENCE NUMBER
0249 52167 075434          STB LT7          SET ENDING SEQUENCE NUMBER
0250 52170 015450          JSB GETCR          STARTING LINE NUMBER?
0251 52171 026233          JMP LIS0Q          NO
0252 52172 006400          CLB
0253 52173 050426          CPA ,+54B          CHECK FOR COMMA
0254 52174 026206          JMP LISCM          FIRST STATEMENT NUMBER OMITTED.
0255 52175 052002          CPA B120          PAGINATION?
0256 52176 026226          JMP LISCP          YES
0257 52177 015452          JSB BCKSP          BACK UP FOR FIRST STATEMENT NUMB
0258 52200 015466          JSB BLDIN          FETCH INTEGER
0259 52201 050367          CPA ,+15B          CHECK FOR CARRIAGE RETURN
0260 52202 026234          JMP LISCR          YES, END OF COMMAND
0261 52203 050426          CPA ,+54B          COMMA FOLLOWS?

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0262	52204	002001	RSS	YES
0263	52205	115122	JSB RERRS+12,I	
0264	52206		LISCM EQU *	
0265	52206	075432	STB LT3	SAVE STARTING SEQUENCE NUMBER
0266	52207	015450	JSB GETCR	GET THE NEXT CHARACTER
0267	52210	115122	JSB RERRS+12,I	
0268	52211	052002	CPA B120	CHECK FOR P
0269	52212	026226	JMP LISCP	PAGINATION
0270	52213	015452	JSB BCKSP	BACK UP FOR SECOND STATEMENT *
0271	52214	015466	JSB BLDIN	GET INTEGER
0272	52215	007000	CMB	
0273	52216	075434	STB LT7	SAVE ENDING SEQUENCE NUMBER
0274	52217	050367	CPA .+15B	END OF RECORD?
0275	62220	026233	JMP LISCU	YES
0276	52221	015450	JSB GETCR	NO, GET NEXT CHARACTER
0277	52222	115122	JSB RERRS+12,I	
0278	52223	052002	CPA B120	PAGINATION?
0279	52224	002001	RSS	YES
0280	52225	115122	JSB RERRS+12,I	NO
0281	52226		LISCP EQU *	
0282	52226	062004	LDA M71B	SET LINE COUNTER
0283	52227	071552	STA LT8	
0284	52230	015450	JSB GETCR	TEST FOR END OF LINE
0285	52231	002001	RSS	
0286	52232	115122	JSB RERRS+12,I	
0287	52233		LISCU EQU *	
0288	62233	065432	LDB LT3	GET BACK STARTING SEQUENCE NUMBER
0289	52234		LISCR EQU *	
0290	52234	061444	LDA LT6	SEEK
0291	52235	015314	JSB FNDPS	STATEMENT
0292	52236	026574	JMP LIS16	ALL LINE NUMBERS < GIVEN INTEGER
0293	52237	000000	NOP	SAVE DESIRED
0294	52240	075432	STB LT3	STARTING POINT
0295	52241	060364	LDA .+12B	OUTPUT A
0296	52242	015454	JSB OUTCR	LINE FEED
0297*			*	
0298**	OUTPUT PROGRAM NAME		**	
0299*			*	
0300	52243	061571	LDA LNAME	
0301	52244	071430	STA LT1	
0302	52245	002004	INA	NULL
0303	52246	160000	LDA 0,I	
0304	52247	002003	SZA,RSS	NAME?
0305	52250	026257	JMP LISCU	YES
0306	52251	006400	CLB	NO
0307	52252	075274	STB LT2	OUTPUT
0308	52253	060347	LDA .-3	PROGRAM
0309	52254	015462	JSB OUTST	NAME
0310	52255	060367	LDA .+15B	OUTPUT
0311	52256	015454	JSB OUTCR	CARRIAGE RETURN
0312	52257		LISCU EQU *	
0313	52257	060364	LDA .+12B	AND
0314	52260	015454	JSB OUTCR	DOUBLE
0315	52261	060364	LDA .+12B	LINE
0316	52262	015454	JSB OUTCR	FEED

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0317*
0318** OUTPUT LEADER IF 'PUNCH' **
0319*
0320 52263 002400 CLA 'LIST'
0321 52264 051400 CPA LT0 MODE?
0322 52265 026274 JMP LIST2=2 YES
0323 52266 060316 LDA M72B NO,
0324 52267 071356 STA DIGCT OUTPUT
0325 52270 002400 CLA FEED
0326 52271 015454 JSB OUTCR FRAMES
0327 52272 035356 ISZ DIGCT FOR
0328 52273 026270 JMP *-3 LEADER
0329 52274 065432 LDB LT3 SET POINTER TO
0330 52275 075430 STB LT1 STARTING POINT
0331*
0332** MAIN LIST LOOP **
0333*
0334 52276 065430 LIST2 LDB LT1 PROGRAM
0335 52277 055444 CPB LT6 EXHAUSTED?
0336 52300 026562 JMP LIS15 YES
0337 52301 165430 LDB LT1,I GET LINE NUMBER
0338 52302 045434 ADB LT7 CHECK FOR END OF LISTING
0339 52303 006021 SSB,RSS SKIP IF NOT DONE YET
0340 52304 026562 JMP LIS15 STOP LISTING HERE
0341*
0342 52305 035552 ISZ LT8 CHECK FOR NEW PAGE
0343 52306 026317 JMP LISPM NOT YET
0344 52307 060342 LDA *-8
0345 52310 071552 STA LT8
0346 52311 LISPF EQU *
0347 52311 060364 LDA .+12B OUTPUT A
0348 52312 015454 JSB OUTCR BUNCH OF
0349 52313 035552 ISZ LT8 LINE FEEDS
0350 52314 026311 JMP LISPF
0351 52315 060316 LDA M72B
0352 52316 071552 STA LT8 RESET LINE COUNTER
0353 52317 LISPM EQU *
0354*
0355 52317 165430 LDB LT1,I NO, OUTPUT
0356 52320 015456 JSB OUTIN LINE NUMBER
0357 52321 060412 LDA .+40B OUTPUT
0358 52322 015454 JSB OUTCR BLANK
0359 52323 035430 ISZ LT1 CHECK
0360 52324 161430 LDA LT1,I STATEMENT
0361 52325 015556 JSB STLCK LENGTH
0362 52326 161430 LDA LT1,I LENGTH
0363 52327 003004 CMA,INA COUNTER
0364 52330 002004 INA FOR
0365 52331 071274 STA LT2 STATEMENT
0366 52332 026335 JMP LIST3
0367 52333 165430 LDB LT1,I OUTPUT
0368 52334 015456 JSB OUTIN BOUND
0369 52335 035430 LIST3 ISZ LT1 MORE OF
0370 52336 035274 ISZ LT2 STATEMENT?
0371 52337 026353 JMP LIST4 YES

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0372	52340	002404		CLA, INA	
0373	52341	051400		CPA LT0	XPUNCH?
0374	52342	002001		RSS	YES
0375	52343	026346		JMP **3	NO
0376	52344	060375		LDA .+23B	OUTPUT
0377	52345	015454		JSB OUTCR	X=OFF
0378	52346	060367		LDA .+15B	NO,
0379	52347	015454		JSB OUTCR	OUTPUT A
0380	52350	060364		LDA .+12B	CARRIAGE RETURN
0381	52351	015454		JSB OUTCR	AND LINE FEED
0382	52352	026276		JMP LIST2	
0383*				*	
0384**	IDENTIFY OPERATOR		**		
0385*				*	
0386	52353	161430	LIST4	LDA LT1,I	EXTRACT
0387	52354	010664		AND OPMSK	OPERATOR
0388	52355	002003		SZA, RSS	NULL OPERATOR?
0389	52356	026377		JMP LIST5	YES
0390	52357	050726		CPA LETOP	NO, 'IMPLIED' LET?
0391	52360	026375		JMP LIST5-2	YES, OUTPUT A BLANK
0392	52361	001727		ALF, ALF	NO,
0393	52362	042003		ADA D62	SINGLE-CHARACTER
0394	52363	002021		SSA, RSS	OPERATOR?
0395	52364	026531		JMP LI812	NO
0396	52365	042001		ADA B63	YES,
0397	52366	040564		ADA FOPBS	EXTRACT
0398	52367	160000		LDA 0,I	ASCII
0399	52370	001727		ALF, ALF	CODE
0400	52371	010441		AND B177	
0401	52372	050414		CPA .+42B	" ?
0402	52373	026577		JMP LI914	YES
0403	52374	002001		RSS	NO
0404	52375	060412		LDA .+40B	LOAD A BLANK
0405	52376	015454		JSB OUTCR	
0406*				*	
0407**	IDENTIFY OPERAND		**		
0408*				*	
0409	52377	161430	LIST5	LDA LT1,I	EXTRACT
0410	52400	010700		AND OPDMK	OPERAND
0411	52401	071432		STA LT3	
0412	52402	002020		SSA	FLAG BIT SET?
0413	52403	026451		JMP LIST9	YES
0414	52404	006400		CLB	NO, NULL
0415	52405	055432		CPB LT3	OPERAND?
0416	52406	026335		JMP LIST3	YES
0417	52407	055442		CPB LT5	NO, 'COMPILED' ?
0418	52410	026416		JMP LIST0	NO
0419	52411	040351		ADA .-1	YES
0420	52412	001000		ALS	LOAD
0421	52413	041575		ADA SYMTB	ACTUAL
0422	52414	160000		LDA 0,I	SYMBOL
0423	52415	071432		STA LT3	SAVE SYMBOL
0424*				*	
0425**	LIST SYMBOLIC OPERAND		**		
0426*				*	

0427	52416	010672	LIST0	AND PDFFL	ISOLATE TYPE PART
0428	52417	050371		CPA .+17B	FUNCTION?
0429	52420	026444		JMP LIST0	YES
0430	52421	061432	LIST6	LDA LT3	NO,
0431	52422	101104		RRR 4	COMPUTE
0432	52423	010411		AND .+37B	ASCII FOR
0433	52424	040772		ADA B100	LETTER
0434	52425	015454		JSB OUTCR	OUTPUT LETTER
0435	52426	061432		LDA LT3	
0436	52427	010371		AND .+17B	
0437	52430	050371		CPA .+17B	FUNCTION?
0438	52431	026335		JMP LIST3	YES
0439	52432	002003		SZA, RSS	NO, STRING VARIABLE?
0440	52433	026442		JMP LIST7	YES
0441	52434	040345		ADA .-5	NO
0442	52435	002020		SSA	DIGIT?
0443	52436	026335		JMP LIST3	NO
0444	52437	040432		ADA .+60B	YES,
0445	52440	015454		JSB OUTCR	OUTPUT IT
0446	52441	026335		JMP LIST3	
0447	52442	060416	LIST7	LDA .+44B	LOAD ASCII 'S'
0448	52443	026440		JMP *-3	
0449	52444	062006	LIST8	LDA F	OUTPUT
0450	52445	015454		JSB OUTCR	
0451	52446	062007		LDA N	IFN'
0452	52447	015454		JSB OUTCR	
0453	52450	026421		JMP LIST6	
0454*					*
0455**	LIST CONSTANT OPERAND OR PARAMETER			**	**
0456*					*
0457	52451	001665	LIST9	ELA, CLE, ERA	CLEAR FLAG BIT
0458	52452	002002		SZA	CONSTANT?
0459	52453	026470		JMP LIS10	NO
0460	52454	071572		STA CHRCT	YES, SET
0461	52455	071266		STA SIGN	FOR NO SIGN
0462	52456	035430		ISZ LT1	LOAD
0463	52457	035274		ISZ LT2	
0464	52460	104200		DLD LT1, I	CONSTANT
	52461	101430			
0465	52462	035430		ISZ LT1	
0466	52463	035274		ISZ LT2	
0467	52464	002120		CLE, SSA	NEGATIVE NUMBER?
0468	52465	002300		CCE	YES, ENABLE SIGN
0469	52466	015422		JSB NUMOT	OUTPUT THE CONSTANT
0470	52467	026335		JMP LIST3	
0471	52470	010371	LIS10	AND .+17B	ISOLATE TYPE PART
0472	52471	050355		CPA .+3	PROGRAM INTEGER?
0473	52472	026503		JMP LIS11	YES
0474	52473	050371		CPA .+17B	NO, PRE-DEFINED FUNCTION?
0475	52474	002001		RSS	YES
0476	52475	026421		JMP LIST6	NO, MUST BE A PARAMETER SYMBOL
0477	52476	061432		LDA LT3	OUTPUT
0478	52477	001722		ALF, RAL	
0479	52500	064510		LDB ATAB	FUNCTION
0480	52501	015460		JSB MCOUT	

0481	52502	026335		JMP LIST3	SYMBOL
0482	52503	035430	LIS11	ISZ LT1	
0483	52504	035274		ISZ LT2	
0484	52505	061440		LDA LT4	RESTORE OPERATOR
0485	52506	050636		CPA DIMOP	<DIM STATEMENT> ?
0486	52507	026333		JMP LIST3-2	YES
0487	52510	050742		CPA COMOP	NO, 'COMI' ?
0488	52511	026333		JMP LIST3-2	YES
0489	52512	061442		LDA LT5	NO
0490	52513	165430		LDB LT1,I	LOAD PROSPECTIVE INTEGER
0491	52514	002002		SZA	PROGRAM 'COMPILED' ?
0492	52515	164001		LDB 1,I	YES
0493	52516	015456		JSB OUTIN	OUTPUT INTEGER
0494	52517	035430		ISZ LT1	MORE
0495	52520	035274		ISZ LT2	STATEMENT?
0496	52521	002001		R99	YES
0497	52522	026340		JMP LIST3+3	NO
0498	52523	061440		LDA LT4	LISTING
0499	52524	050776		CPA USEOP	'USING' ?
0500	52525	026353		JMP LIST4	YES
0501	52526	060426		LDA ,+548	EMIT
0502	52527	015454		JSB OUTCR	A COMMA
0503	52530	026512		JMP LIS11+7	

0504*

0505** LIST MULTICHARACTER OPERATOR **

0506*

0507	52531	060412	LIS12	LDA ,+408	OUTPUT
0508	52532	015454		JSB OUTCR	A BLANK
0509	52533	161430		LDA LT1,I	OUTPUT
0510	52534	064470		LDB MCBOP	MULTICHARACTER
0511	52535	015460		JSB MCOU	OPERATOR
0512	52536	060412		LDA ,+408	
0513	52537	065440		LDB LT4	WAS IT
0514	52540	054642		CPB REMOP	A 'REM' ?
0515	52541	026556		JMP LIS13	YES
0516	52542	054660		CPB FILOP	NO, 'FILES' ?
0517	52543	026555		JMP LIS13-1	YES
0518	52544	054746		CPB IMGOP	NO, 'IMAGE' ?
0519	52545	026550		JMP LIS18	YES
0520	52546	015454		JSB OUTCR	NO, OUTPUT A BLANK
0521	52547	026377		JMP LIST5	
0522	52550	006400	LIS18	CLB	
0523	52551	061274		LDA LT2	
0524	52552	002006		INA,SZA	
0525	52553	015462		JSB OUTST	OUTPUT IMAGE STRING
0526	52554	026335		JMP LIST3	
0527	52555	015454		JSB OUTCR	OUTPUT A BLANK
0528	52556	007400	LIS13	CCB	OUTPUT
0529	52557	061274		LDA LT2	THE
0530	52560	015462		JSB OUTST	REMARK
0531	52561	026335		JMP LIST3	

0532*

0533** OUTPUT TRAILER IF 'PUNCH' **

0534*

0535 52562 LIS15 EQU *

0536	52562	002400		CLA	'LIST'
0537	52563	051400		CPA LT0	MODE?
0538	52564	124514		JMP SCHEN,I	YES
0539	52565	060316		LDA M720	NO,
0540	52566	071356		STA DIGCT	OUTPUT
0541	52567	002400		CLA	FEED
0542	52570	015454		JSB OUTCR	FRAMES
0543	52571	035356		ISZ DIGCT	FOR
0544	52572	026567		JMP **3	TRAILER
0545	52573	124514		JMP SCHEN,I	
0546*					
0547	52574	060364	LIS16	LDA .+120	ECHO
0548	52575	015454		JSB OUTCR	LINE
0549	52576	124514		JMP SCHEN,I	FEED
0550*					
0551**	LIST A STRING CONSTANT **				
0552*					
0553	52577	015454	LIS14	JSB OUTCR	OUTPUT "
0554	52600	161430		LDA LT1,I	COMPUTE
0555	52601	010443		AND B377	WORDS
0556	52602	002003		SZA,RSS	
0557	52603	026610		JMP LIS17	
0558	52604	003004		CMA,INA	OF
0559	52605	001100		ARS	STRING
0560	52606	006400		CLB	OUTPUT
0561	52607	015462		JSB OUTST	STRING
0562	52610	060414	LIS17	LDA .+420	
0563	52611	015454		JSB OUTCR	YES, OUTPUT IT
0564	52612	026335		JMP LIST3	
0565**					**
0566***	LIST A MULTICHAACTER SYMBOL ***				***
0567**					**
0568*					
0569*	UPON ENTRY (A) HOLDS A WORD CONTAINING A SYMBOL CODE AND (B)				
0570*	HOLDS A POINTER TO THE PRINT NAME TABLE. THE SYMBOL IS FOUND				
0571*	IN THE TABLE AND ITS ASCII FORM OUTPUT.				
0572*					
0573	52613	010664	#MCOT	AND OPMSK	SAVE
0574	52614	071440		STA LT4	SYMBOL
0575	52615	160001	MCOT1	LDA 1,I	DESIRED
0576	52616	010664		AND OPMSK	TABLE
0577	52617	051440		CPA LT4	ENTRY?
0578	52620	026627		JMP MCOT2	YES
0579	52621	160001		LDA 1,I	NO,
0580	52622	010361		AND .+7	COMPUTE
0581	52623	040355		ADA .+3	ADDRESS
0582	52624	001100		ARS	OF NEXT
0583	52625	044000		ADB 0	ENTRY
0584	52626	026615		JMP MCOT1	
0585	52627	160001	MCOT2	LDA 1,I	COMPUTE
0586	52630	010361		AND .+7	COUNT
0587	52631	003004		CMA,INA	OF
0588	52632	001100		ARS	ASCII
0589	52633	071432		STA LT3	WORDS
0590	52634	075462		STB OUTST	SAVE ASCII SYMBOL ADDRESS

0591	52635	035462	MCOT3	ISZ	OUTST	MOVE TO NEXT WORD OF SYMBOL
0592	52636	161462		LDA	OUTST,I	OUTPUT
0593	52637	001727		ALF,ALF		HIGH
0594	52640	015454		JSB	OUTCR	
0595	52641	161462		LDA	OUTST,I	OUTPUT
0596	52642	010443		AND	B377	LOW CHARACTER
0597	52643	002002		SZA		IF NOT
0598	52644	015454		JSB	OUTCR	NULL
0599	52645	035432		ISZ	LT3	MORE SYMBOL?
0600	52646	026635		JMP	MCOT3	YES
0601	52647	125460		JMP	MCOUT,I	NO

0602**

0603*** LIST A STRING ***

0604**

0605*

0606* UPON ENTRY (A) HOLDS A NEGATIVE WORD COUNT OF THE STRING. IF
 0607* (B) # 0 THE STRING BEGINS WITH THE LOW HALF OF (LT1),I ; IF
 0608* (B) = 0 IT BEGINS WITH THE HIGH HALF OF THE WORD FOLLOWING
 0609* (LT1),I . A TRAILING NULL CHARACTER WILL NOT BE PRINTED.

0610*

0611	52650	071440	#OTST	STA	LT4	SAVE STRING WORD COUNT
0612	52651	006002		SZB		'REM' ?
0613	52652	026660		JMP	OTST2	YES
0614	52653	035430	OTST1	ISZ	LT1	NO, MOVE TO
0615	52654	035274		ISZ	LT2	NEXT PROGRAM WORD
0616	52655	161430		LDA	LT1,I	OUTPUT
0617	52656	001727		ALF,ALF		HIGH
0618	52657	015454		JSB	OUTCR	
0619	52660	161430	OTST2	LDA	LT1,I	OUTPUT
0620	52661	010443		AND	B377	LOW CHARACTER
0621	52662	002002		SZA		IF NOT
0622	52663	015454		JSB	OUTCR	NULL
0623	52664	035440		ISZ	LT4	MORE STRING?
0624	52665	026653		JMP	OTST1	YES
0625	52666	125462		JMP	OUTST,I	NO

```

0002**                               **
0003*** HANDLE OVERFLOW            ***
0004**                               **
0005+
0006* (A) CONTAINS THE HIGH MANTISSA UPON ENTRY. (A) AND
0007* (B) CONTAIN THE LARGEST REPRESENTABLE NUMBER OF
0008* APPROPRIATE SIGN, PACKED, UPON EXIT.
0009+
0010 52667 064350 #OVFL LDB ,-2
0011 52670 002020 SSA
0012 52671 066005 LDB BB776
0013 52672 030274 IOR INF
0014 52673 002020 SSA
0015 52674 061036 LDA MNEG
0016 52675 125310 JMP OVFLW,I
0017**                               **
0018*** CHECK OVER/UNDERFLOWS      ***
0019**                               **
0020+
0021* EXIT TO (P+1) IF STATUS IS NOT SYNTAX. ELSE EXIT TO (P+2),
0022* SETTING SYMTB = 4 IF IN KEYBOARD MODE. THESE ERRORS ARE NOT
0023* REPORTED IF IN TAPE MODE.
0024+
0025 52676 061571 #CHOU LDA LNAME COMPUTE
0026 52677 040362 ADA ,+7STAT-?ID
0027 52700 164000 LDB 0,I STATUS
0028 52701 054356 CPB ,+4 SYNTAX?
0029 52702 002001 RSS YES
0030 52703 026712 JMP CHOU1 NO
0031 52704 060362 LDA TAPEF TAPE
0032 52705 110257 AND MAIN,I
0033 52706 002003 SZA,RSS MODE?
0034 52707 075575 STB SYMTB NO
0035 52710 035476 ISZ CHOUF
0036 52711 125476 JMP CHOUF,I
0037 52712 035611 CHOU1 ISZ ENOUF ARE WE EXECUTING ENTER STATE?
0038 52713 002001 RSS NO
0039 52714 035476 ISZ CHOUF YES-->SUPPRESS ERROR
0040 52715 125476 JMP CHOUF,I
0041**                               **
0042*** LOOK FOR A NUMBER            ***
0043**                               **
0044+
0045* NUMCK LOOKS FOR AN UNSIGNED NUMBER, SIGN MUST BE SET
0046* BY THE CALLER (SIGN = -1 FOR NEGATIVE, ELSE POSITIVE).
0047* (A) CONTAINS A CHARACTER UPON ENTRY; IF IT IS NEITHER
0048* A DIGIT NOR A DECIMAL POINT, EXIT IS TO (P+1) WITH
0049* (A) UNCHANGED AND (B) = 0. EXIT IS TO ERROR ON FINDING
0050* AN EXPONENT PART OF INCORRECT FORMAT. ZERO REPLACES AN
0051* UNDERFLOW; THE LARGEST REPRESENTABLE NUMBER OF THE
0052* APPROPRIATE SIGN REPLACES AN OVERFLOW. AFTER STORING A
0053* FLOATING POINT NUMBER IN M AND M+1 (WHERE SBPTR,I = M)
0054* EXIT IS TO (P+2) WITH THE NEXT INPUT STRING CHARACTER
0055* IN (A) AND TEMP+1.
0056+

```

0057	52716	006400	#NMCK	CLB	ZERO
0058	52717	075322		STB EXP	ALL
0059	52720	075316		STB MANT1	COMPONENTS
0060	52721	075320		STB MANT2	OF THE
0061	52722	075324		STB EXPON	NUMBER
0062	52723	075614		STB TEMP+1	SET 'NUMBER FLAG' FALSE
0063	52724	007400		CCB	SET 'DECIMAL POINT'
0064	52725	075752		STB DPFLG	FLAG FALSE
0065	52726	050430	NUMC1	CpA ,+56B	DECIMAL POINT?
0066	52727	035752		ISZ DPFLG	YES
0067	52730	026734		JMP NUMC2	NO
0068	52731	002400		CLA	ZERO POST-DECIMAL
0069	52732	071324		STA EXPON	DIGIT
0070	52733	026771		JMP NUMC4+1	COUNTER
0071	52734	015264	NUMC2	JSB DIGCK	DIGIT?
0072	52735	027005		JMP NUMC7	NO
0073	52736	035324		ISZ EXPON	YES, COUNT DIGIT
0074	52737	100033		ASL 11	LEFT-JUSTIFY DIGIT
0075	52740	071615		STA TEMP+2	AND SAVE IT
0076	52741	015300		JSB MBY10	MULTIPLY PREVIOUS NUMBER BY 10
0077	52742	065322		LDB EXP	ZERO
0078	52743	006003		SZB,RSS	EXPONENT?
0079	52744	027000		JMP NUMC6	YES
0080	52745	044346		ADB , -4	NO,
0081	52746	007000		CMB	SAVE
0082	52747	061615		LDA TEMP+2	SHIFT
0083	52750	075615		STB TEMP+2	COUNT
0084	52751	006400		CLB	CLEAR LOWER MANTISSA
0085	52752	035615	NUMC3	ISZ TEMP+2	ALL SHIFTS DONE?
0086	52753	026775		JMP NUMC5	NO
0087	52754	000040		CLE	YES, ADD IN
0088	52755	045320		ADB MANT2	LOW PART
0089	52756	103101		CLO	OF NUMBER
0090	52757	002040		SEZ	OVERFLOW FROM (B)?
0091	52760	002004		INA	YES
0092	52761	041316		ADA MANT1	ADD IN HIGH PART OF MANTISSA
0093	52762	102301		SOS	OVERFLOW?
0094	52763	026770		JMP NUMC4	NO
0095	52764	000065		CLE,ERA	YES, CORRECT
0096	52765	005500		ERB	MANTISSA
0097	52766	035322		ISZ EXP	AND BUMP
0098	52767	000000		NOP	EXPONENT
0099	52770	015304	NUMC4	JSB NORML	NORMALIZE THE NUMBER
0100	52771	035614		ISZ TEMP+1	SET 'NUMBER FLAG' TRUE
0101	52772	015450		JSB GETCR	FETCH CHARACTER
0102	52773	027054		JMP NUM12-1	NONE FOUND
0103	52774	026726		JMP NUMC1	
0104	52775	000065	NUMC5	CLE,ERA	SHIFT
0105	52776	005500		ERB	DIGIT
0106	52777	026752		JMP NUMC3	RIGHT
0107	53000	060356	NUMC6	LDA ,+4	SET
0108	53001	071322		STA EXP	EXPONENT
0109	53002	061615		LDA TEMP+2	LOAD
0110	53003	006400		CLB	NUMBER
0111	53004	026770		JMP NUMC4	

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0112	53005	006400	NUMC7	CLB	SET EXPONENT
0113	53006	075615		STB TEMP+2	SIGN TO '+'
0114	53007	055614		CPB TEMP+1	DIGIT OR DECIMAL POINT FOUND?
0115	53010	125276		JMP NUMCK,I	NO
0116	53011	050720		CPA E	'E' ?
0117	53012	002001		RSS	YES
0118	53013	027055		JMP NUM12	NO
0119	53014	015450		JSB GETCR	FETCH CHARACTER
0120	53015	027114		JMP NUM16	NONE FOUND
0121	53016	050425		CPA .+53B	'+' ?
0122	53017	027024		JMP NUMC8	YES
0123	53020	050427		CPA .+55B	NO, '!' ?
0124	53021	003401		CCA,RSS	YES
0125	53022	027026		JMP NUMC9	NO
0126	53023	071615		STA TEMP+2	SET EXPONENT SIGN TO '-'
0127	53024	015450	NUMC8	JSB GETCR	FETCH CHARACTER
0128	53025	027114		JMP NUM16	NONE FOUND
0129	53026	015264	NUMC9	JSB DIGCK	DIGIT?
0130	53027	027114		JMP NUM16	NO
0131	53030	071614		STA TEMP+1	YES, SAVE IT
0132	53031	015450		JSB GETCR	
0133	53032	027050		JMP NUM11	
0134	53033	015264		JSB DIGCK	DIGIT?
0135	53034	027050		JMP NUM11	NO
0136	53035	061614		LDA TEMP+1	YES, MULTIPLY
0137	53036	075614		STB TEMP+1	PREVIOUS DIGIT
0138	53037	100200		MPY .+10	BY 10
	53040	000364			
0139	53041	041614		ADA TEMP+1	ADD IN NEW DIGIT
0140	53042	071614		STA TEMP+1	SAVE EXPONENT
0141	53043	015450		JSB GETCR	
0142	53044	027050		JMP NUM11	
0143	53045	015264		JSB DIGCK	THIRD DIGIT?
0144	53046	002001		RSS	NO
0145	53047	027114		JMP NUM16	YES
0146	53050	065614	NUM11	LDB TEMP+1	LOAD EXPONENT
0147	53051	035615		ISZ TEMP+2	POSITIVE?
0148	53052	007004		CMB,INB	YES, COMPLEMENT IT
0149	53053	002001		RSS	NO
0150	53054	006400		CLB	
0151	53055	071614	NUM12	STA TEMP+1	SAVE CHARACTER
0152	53056	035752		ISZ DPFLG	DECIMAL POINT FOUND?
0153	53057	045324		ADB EXPON	YES, CORRECT EXPONENT
0154	53060	006003		SZB,RSS	NO, ZERO EXPONENT?
0155	53061	027076		JMP NUM14	YES
0156	53062	006020		SSB	NO, POSITIVE EXPONENT?
0157	53063	027072		JMP NUM13	YES
0158	53064	007004		CMB,INB	NO, SET
0159	53065	075324		STB EXPON	COUNTER
0160	53066	015302		JSB DBY10	DIVIDE NUMBER BY 10
0161	53067	035324		ISZ EXPON	DONE?
0162	53070	027066		JMP *-2	NO
0163	53071	027076		JMP NUM14	YES
0164	53072	075324	NUM13	STB EXPON	SET COUNTER
0165	53073	015300		JSB MBY10	MULTIPLY NUMBER BY 10

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0166	53074	035324		ISZ EXPON	DONE?
0167	53075	027073		JMP *+2	NO
0168	53076	061316	NUM14	LDA MANT1	LOAD
0169	53077	065320		LDB MANT2	MANTISSA
0170	53100	035266		ISZ SIGN	POSITIVE?
0171	53101	027105		JMP NUM15	YES
0172	53102	003000		CMA	NO, COMPLEMENT
0173	53103	007007		CMB, INB, SZB, RSS	THE
0174	53104	002004		INA	NUMBER
0175	53105	015306	NUM15	JSB .PACK	NORMALIZE AND PACK
0176	53106	171574		STA SBPTR, I	STORE
0177	53107	015270		JSB SBPUD	NUMBER IN
0178	53110	175574		STB SBPTR, I	DESTINATION
0179	53111	015270		JSB SBPUD	ADDRESS
0180	53112	061614		LDA TEMP+1	RETRIEVE CHARACTER
0181	53113	035276		ISZ NUMCK	
0182	53114	035276	NUM16	ISZ NUMCK	
0183	53115	125276		JMP NUMCK, I	
0184**					**
0185**	MULTIPLY UNPACKED NUMBER BY 10				***
0186**					**
0187*					**
0188*	THE FLOATING POINT NUMBER IN MANT1, MANT2, AND EXP				
0189*	IS MULTIPLIED BY 10.				
0190*					
0191	53116	061316	#MB10	LDA MANT1	LOAD HIGH MANTISSA
0192	53117	002003		SZA, RSS	ZERO NUMBER?
0193	53120	125300		JMP MBY10, I	YES
0194	53121	065322		LDB EXP	NO,
0195	53122	044355		ADB .+3	MULTIPLY
0196	53123	075322		STB EXP	BY 8
0197	53124	065320		LDB MANT2	LOAD LOW MANTISSA
0198	53125	000065		CLE, ERA	DIVIDE
0199	53126	005500		ERB	BY
0200	53127	000065		CLE, ERA	4
0201	53130	005540		ERB, CLE	
0202	53131	045320		ADB MANT2	ADD INTO
0203	53132	002040		SEZ	BOTH REGISTERS
0204	53133	002004		INA	PRODUCING
0205	53134	041316		ADA MANT1	1.25 * MANTISSA
0206	53135	002021		SSA, RSS	CORRECT
0207	53136	027143		JMP MBY01	
0208	53137	000065		CLE, ERA	ON
0209	53140	005500		ERB	
0210	53141	035322		ISZ EXP	OVERFLOW
0211	53142	000000		NOP	
0212	53143	071316	MBY01	STA MANT1	STORE
0213	53144	075320		STB MANT2	MANTISSA
0214	53145	125300		JMP MBY10, I	

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0216**
0217*** NORMALIZE UNPACKED NUMBER ***
0218**
0219*
0220* ENTER WITH NUMBER IN (A), (B), AND EXP, EXIT WITH
0221* NORMALIZED NUMBER IN MANT1, MANT2, AND EXP (MANTISSA
0222* IS LEFT IN (A) AND (B) AS WELL).
0223*
0224 53146 071300 #NRML STA NT0 SET
0225 53147 002400 CLA LEFT-SHIFT
0226 53150 071615 STA TEMP+2 COUNTER
0227 53151 061300 LDA NT0 TO ZERO
0228 53152 002003 SZA,RSS IF NUMBER
0229 53153 006002 SZB IS ZERO,
0230 53154 027162 JMP NORM2+1 CLEAR
0231 53155 071322 STA EXP EVERYTHING
0232 53156 071316 STA MANT1 STORE
0233 53157 075320 NORM1 STB MANT2 MANTISSA
0234 53160 125304 JMP NORML,I
0235 53161 035615 NORM2 ISZ TEMP+2 COUNT A LEFT SHIFT
0236 53162 004066 CLE,ELB ROTATE (A)
0237 53163 001600 ELA AND (B) LEFT
0238 53164 002061 SEZ,SSA,RSS TWO HIGHEST BITS 0?
0239 53165 027161 JMP NORM2 YES, POSITIVE UNNORMALIZED
0240 53166 002060 SEZ,SSA NO, TWO HIGHEST BITS 1?
0241 53167 027161 JMP NORM2 YES, NEGATIVE UNNORMALIZED
0242 53170 001500 ERA NO, NORMALIZE
0243 53171 005540 ERB,CLE MANTISSA
0244 53172 071316 STA MANT1 COMPUTE
0245 53173 061615 LDA TEMP+2
0246 53174 003004 CMA,INA CORRECTED
0247 53175 041322 ADA EXP
0248 53176 071322 STA EXP EXPONENT
0249 53177 061316 LDA MANT1
0250 53200 027157 JMP NORM1
0251**
0252*** NORMALIZE AND PACK NUMBER ***
0253**
0254*
0255* NUMBER IN (A), (B), AND EXP ON ENTRY. ON EXIT (A)
0256* AND (B) CONTAIN THE NORMALIZED, ROUNDED, AND PACKED
0257* NUMBER. UNDERFLOW BECOMES A ZERO, OVERFLOW BECOMES
0258* THE LARGEST REPRESENTABLE NUMBER OF APPROPRIATE SIGN.
0259*
0260 53201 015304 #PACK JSB NORML NORMALIZE NUMBER
0261 53202 002103 CLE,SZA,RSS ZERO?
0262 53203 125306 JMP PACK,I YES
0263 53204 044441 ADB B177 NO, ROUND
0264 53205 002021 SSA,RSS POSITIVE?
0265 53206 006004 INB YES, FINISH ROUND
0266 53207 103101 CLO
0267 53210 002040 SEZ ON OVERFLOW FROM (B)
0268 53211 002104 CLE,INA CORRECT (A)
0269 53212 102301 SOS OVERFLOW? ( (A)=100000, (B)=0 )
0270 53213 001200 RAL TWO HIGH BITS

```

0271	53214	002031		SSA,SLA,RSS	BOTH 1? (IF (A) WAS 140000)
0272	53215	027220		JMP PACK1	NO
0273	53216	002300		CCE	YES
0274	53217	001130		ARS,SLA,ALS	SET (A) = 100000 AND SKIP
0275	53220	001300	PACK1	RAR	UNDOES RAL ABOVE
0276	53221	071615		STA TEMP+2	SAVE (A)
0277	53222	101050		LSR 8	DELETE 8 LOW BITS
0278	53223	005727		BLF,BLF	OF MANTISSA
0279	53224	061322		LDA EXP	DECREMENT
0280	53225	002040		SEZ	EXPONENT
0281	53226	040351		ADA ,-1	ON (E) # 0
0282	53227	102201		SOC	INCREMENT
0283	53230	002004		INA	EXPONENT ON OVERFLOW
0284	53231	040442		ADA B200	EXPONENT
0285	53232	002020		SSA	UNDERFLOW?
0286	53233	027252		JMP PACK3	YES
0287	53234	040762		ADA M256	NO, EXPONENT
0288	53235	002021		SSA,RSS	OVERFLOW?
0289	53236	027257		JMP PACK4	YES
0290	53237	040442		ADA B200	NO, RESTORE EXPONENT
0291	53240	001200		RAL	POSITION
0292	53241	010443		AND B377	EXPONENT AND
0293	53242	044000		AUB 0	ADD LOW MANTISSA
0294	53243	061615		LDA TEMP+2	RETRIEVE HIGH MANTISSA
0295	53244	051036		CPA MNEG	
0296	53245	002001		RSS	NEGATIVE
0297	53246	125306		JMP ,PACK,I	
0298	53247	055037		CPB MNEG+1	OVERFLOW?
0299	53250	027257		JMP PACK4	YES
0300	53251	125306		JMP ,PACK,I	NO
0301	53252	015476	PACK3	JSB CHOUF	CHECK STATUS
0302	53253	115215		JSB WERRS+6,I	
0303	53254	002400		CLA	ZERO RESULT
0304	53255	006400		CLB	ON UNDERFLOW
0305	53256	125306		JMP ,PACK,I	
0306	53257	015476	PACK4	JSB CHOUF	CHECK STATUS
0307	53260	115214		JSB WERRS+6,I	
0308	53261	061615		LDA TEMP+2	RETRIEVE HIGH MANTISSA
0309	53262	015310		JSB OVFLW	
0310	53263	125306		JMP ,PACK,I	
0311**					**
0312***					***
0313**					**
0314*					
0315*					
0316*					
0317	53264	061316	#DB10	LDA MANT1	RETURN
0318	53265	002003		SZA,RSS	ON
0319	53266	125302		JMP DBY10,I	ZERO
0320	53267	064350		LDB ,-2	ADD EXPONENT
0321	53270	045322		ADB EXP	OF 1/10 TO
0322	53271	075322		STB EXP	THAT OF NUMBER
0323	53272	061320		LDA MANT2	JUSTIFY
0324	53273	000065		CLE,ERA	LOWER MANTISSA
0325	53274	100200		MPY TENTH	MULTIPLY BY 1/10

	53275	052000		
0326	53276	000066	CLE,ELA	SHIFT
0327	53277	005640	ELB,CLE	BACK
0328	53300	040001	ADA 1	ADD IN EQUIVALENT OF
0329	53301	002040	SEZ	LOWER MANTISSA*
0330	53302	006104	CLE,INB	TENTH*2 [↑] (-16)
0331	53303	075320	STB MANT2	AND ROUND TO 16 BITS
0332	53304	061316	LDA MANT1	DO
0333	53305	100200	MPY TENTH	SAME TO
	53306	052000		
0334	53307	040001	ADA 1	HIGH MANTISSA
0335	53310	041320	ADA MANT2	PERFORM EFFECTIVE
0336	53311	002040	SEZ	SUM OF DOUBLE-LENGTH
0337	53312	006004	INB	PRODUCTS
0338	53313	101100	SWP	SWAP (A) AND (B)
0339	53314	015304	JSB NORML	NORMALIZE
0340	53315	125302	JMP DBY10,I	RESULT

0342**

0343*** PRINT NAME TABLE FOR MULTICHARACTER SYMBOLS ***

0344**

0345*

0346* BITS 15-9 OF THE 'OCT' WORD ARE THE BASIC OPERATOR

0347* CODES OF THE SYMBOLS, BITS 2-0 ARE THE LENGTH IN

0348* CHARACTERS OF THE SYMBOLS. THE ASCII VERSION (PRINT

0349* NAME) FOLLOWS.

0350*

0351*

0352** MULTICHARACTER BINARY OPERATORS **

0353*

0354	53316	032003	MCBOS	OCT 32003	AND
0355	53317	040516		ASC 1,AN	
0356	53320	042000		OCT 42000	
0357	53321	033002		OCT 33002	OR
0358	53322	047522		ASC 1,OR	
0359	53323	034003		OCT 34003	MIN
0360	53324	046511		ASC 1,MI	
0361	53325	047000		OCT 47000	
0362	53326	035003		OCT 35003	MAX
0363	53327	046501		ASC 1,MA	
0364	53330	054000		OCT 54000	
0365	53331	036002	MRELS	OCT 36002	UNEQUAL
0366	53332	036076		ASC 1,←	
0367	53333	037002		OCT 37002	GREATER THAN OR EQUAL
0368	53334	037075		ASC 1,→	
0369	53335	040002		OCT 40002	LESS THAN OR EQUAL
0370	53336	036075		ASC 1,↔	

0371*

0372** MULTICHARACTER UNARY OPERATOR **

0373*

0374	53337	041003	NUT	OCT 41003	
0375	53340	047117		ASC 1,NO	
0376	53341	052000		OCT 52000	

0377*

0378** STATEMENT TYPES **

0379*

0380	53342	042006	STYPS	OCT 42006	ASSIGN
0381	53343	040523		ASC 3,ASSIGN	
	53344	051511			
	53345	043516			
0382	53346	043005	USTMT	OCT 43005	USING
0383	53347	052523		ASC 2,USIN	
	53350	044516			
0384	53351	043400		OCT 43400	
0385	53352	044005		OCT 44005	IMAGE
0386	53353	044515		ASC 2,IMAG	
	53354	040507			
0387	53355	042400		OCT 42400	
0388	53356	045003		OCT 45003	COM
0389	53357	041517		ASC 1,CO	
0390	53360	046400		OCT 46400	
0391	53361	046003		OCT 46003	LET
0392	53362	046105		ASC 1,LE	

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0393	53363	052000		OCT 52000	
0394	53364	047003		OCT 47003	DIM
0395	53365	042111		ASC 1,DI	
0396	53366	046400		OCT 46400	
0397	53367	050003		OCT 50003	DEF
0398	53370	042100		ASC 1,DE	
0399	53371	043000		OCT 43000	
0400	53372	051003		OCT 51003	REM
0401	53373	051105		ASC 1,RE	
0402	53374	046400		OCT 46400	
0403	53375	052004		OCT 52004	GOTO
0404	53376	043517		ASC 2,GOTO	
	53377	052117			
0405	53400	053002		OCT 53002	IF
0406	53401	044506		ASC 1,IF	
0407	53402	054003		OCT 54003	FOR
0408	53403	043117		ASC 1,FO	
0409	53404	051000		OCT 51000	
0410	53405	055004		OCT 55004	NEXT
0411	53406	047105		ASC 2,NEXT	
	53407	054124			
0412	53410	056005		OCT 56005	GOSUB
0413	53411	043517		ASC 2,GOSU	
	53412	051525			
0414	53413	041000		OCT 41000	
0415	53414	057006		OCT 57006	RETURN
0416	53415	051105		ASC 3,RETURN	
	53416	052125			
	53417	051116			
0417	53420	060003	EOFOP	OCT 60003	END
0418	53421	042516		ASC 1,EN	
0419	53422	042000		OCT 42000	
0420	53423	061004		OCT 61004	STOP
0421	53424	051524		ASC 2,STOP	
	53425	047520			
0422	53426	062004		OCT 62004	DATA
0423	53427	042101		ASC 2,DATA	
	53430	052101			
0424	53431	063005	IOSTS	OCT 63005	INPUT
0425	53432	044516		ASC 2,INPU	
	53433	050125			
0426	53434	052000		OCT 52000	
0427	53435	064004		OCT 64004	READ
0428	53436	051105		ASC 2,READ	
	53437	040504			
0429	53440	065005		OCT 65005	PRINT
0430	53441	050122		ASC 2,PRIN	
	53442	044516			
0431	53443	052000		OCT 52000	
0432	53444	066007		OCT 66007	RESTORE
0433	53445	051105		ASC 3,RESTOR	
	53446	051524			
	53447	047522			
0434	53450	042400		OCT 42400	
0435	53451	067003		OCT 67003	MAT

0436	53452	046501		ASC 1,MA	
0437	53453	052000		OCT 52000	
0438	53454	070005		OCT 70005	FILES
0439	53455	043111		ASC 2,FILE	
	53456	046105			
0440	53457	051400		OCT 51400	
0441	53460	071005		OCT 71005	CHAIN
0442	53461	041510		ASC 2,CHAI	
	53462	040511			
0443	53463	047000		OCT 47000	
0444	53464	072005		OCT 72005	ENTER
0445	53465	042516		ASC 2,ENTE	
	53466	052105			
0446	53467	051000		OCT 51000	
0447	53470	073001		OCT 73001	'IMPLIED' LET
0448	53471	000000		OCT 0	
0449*					
0450**	MISCELLANEOUS OPERATORS				**
0451*					*
0452	53472	074002		OCT 74002	OF
0453	53473	047506		ASC 1,OF	
0454	53474	075004	THEN	OCT 75004	
0455	53475	052110		ASC 2,THEN	
	53476	042516			
0456	53477	076002		OCT 76002	TO
0457	53500	052117		ASC 1,TO	
0458	53501	077004	STEP	OCT 77004	
0459	53502	051524		ASC 2,STEP	
	53503	042520			
0460*					*
0461**	PREDEFINED FUNCTIONS. BITS 13-9 ARE USED				**
0462**	FOR INTERNAL IDENTIFICATION				**
0463*					*
0464	53504	001003	TAB	OCT 1003	TAB
0465	53505	052101		ASC 1,TA	
0466	53506	041000		OCT 41000	
0467	53507	002003		OCT 2003	LIN
0468	53510	046111		ASC 1,LI	
0469	53511	047000		OCT 47000	
0470	53512	003003		OCT 3003	SPA
0471	53513	051520		ASC 1,SP	
0472	53514	040400		OCT 40400	
0473	53515	004003	PRDFS	OCT 4003	TAN
0474	53516	052101		ASC 1,TA	
0475	53517	047000		OCT 47000	
0476	53520	005003		OCT 5003	ATN
0477	53521	040524		ASC 1,AT	
0478	53522	047000		OCT 47000	
0479	53523	006003		OCT 6003	EXP
0480	53524	042530		ASC 1,EX	
0481	53525	050000		OCT 50000	
0482	53526	007003		OCT 7003	LUG
0483	53527	046117		ASC 1,LO	
0484	53530	043400		OCT 43400	
0485	53531	010003		OCT 10003	ABS

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0486	53532	040502		ASC 1,AB	
0487	53533	051400		OCT 51400	
0488	53534	011003		OCT 11003	SQR
0489	53535	051521		ASC 1,SG	
0490	53536	051000		OCT 51000	
0491	53537	012003		OCT 12003	INT
0492	53540	044516		ASC 1,IN	
0493	53541	052000		OCT 52000	
0494	53542	013003		OCT 13003	RND
0495	53543	051116		ASC 1,KN	
0496	53544	042000		OCT 42000	
0497	53545	014003		OCT 14003	SGN
0498	53546	051507		ASC 1,SG	
0499	53547	047000		OCT 47000	
0500	53550	015003		OCT 15003	LEN
0501	53551	046105		ASC 1,LE	
0502	53552	047000		OCT 47000	
0503	53553	016003		OCT 16003	TYP
0504	53554	052131		ASC 1,TY	
0505	53555	050000		OCT 50000	
0506	53556	017003		OCT 17003	TIM
0507	53557	052111		ASC 1,TI	
0508	53560	046400		OCT 46400	
0509	53561	020003		OCT 20003	SIN
0510	53562	051511		ASC 1,SI	
0511	53563	047000		OCT 47000	
0512	53564	021003		OCT 21003	COS
0513	53565	041517		ASC 1,CO	
0514	53566	051400		OCT 51400	
0515	53567	022003		OCT 22003	BRK
0516	53570	041122		ASC 1,BR	
0517	53571	045400		OCT 45400	
0518*				*	
0519**	MATRIX FUNCTIONS		**		
0520*				*	
0521	53572	024003	MATFS	OCT 24003	ZER
0522	53573	055105		ASC 1,ZE	
0523	53574	051000		OCT 51000	
0524	53575	025003		OCT 25003	CON
0525	53576	041517		ASC 1,CO	
0526	53577	047000		OCT 47000	
0527	53600	026003		OCT 26003	IDN
0528	53601	044504		ASC 1,ID	
0529	53602	047000		OCT 47000	
0530	53603	027003		OCT 27003	INV
0531	53604	044516		ASC 1,IN	
0532	53605	053000		OCT 53000	
0533	53606	030003		OCT 30003	TRN
0534	53607	052122		ASC 1,TR	
0535	53610	047000		OCT 47000	

PAGE 0244 #23 FORMATTED OUTPUT ROUTINE

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0002 54000          ORG 54000B
0003 54000 000130  .X   OCT 130
0004 54001 000123  S    OCT 123
0005 54002 000104  D    OCT 104
0006 54003 000101  .A   OCT 101
0007 54004 177722  M46  DEC -46
0008 54005 000111  ..73 DEC 73

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0009*

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0010* THE ADDRESS OF THE FIRST WORD OF THE FORMAT
0011* STRING IS IN (B) UPON ENTRY. THE FORMATTER
0012* EXTRACTS THE NUMBER OF CHARACTERS IN THE STRING
0013* AND THEN EXTRACTS THE FORMAT SPECIFICATIONS
0014* ONE BY ONE. AS EACH SPECIFICATION IS EXTRACTED,
0015* IT IS LOADED INTO A STACK, ONE CHARACTER PER
0016* WORD AND CHECKED FOR SYNTAX ERRORS. THE
0017* TYPE OF SPECIFICATION IS DETERMINED AT THIS
0018* TIME AND THE SPECIFICATION IS THEN EXECUTED
0019* FROM THE STACK.

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0020*

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0021 54006 075645  #FRMT STB EC      SAVE POINTER TO STRING
0022 54007 006004          INB      MAKE INTO
0023 54010 004066          CLE,ELB   CHARACTER POINTER
0024 54011 044000          ADB A     ADD IN STARTING CHARACTER
0025 54012 003004          CMA,INA  SAVE STARTING
0026 54013 071745          STA CC   CHARACTER
0027 54014 075761          STB IFSTR  SAVE IN FORMAT STRING ADDRESS
0028 54015 075751          STB DP   AND DELIMITER POINTER
0029 54016 065762          LDB NCH  MAYBE
0030 54017 006002          SZB
0031 54020 026027          JMP FM0  YES
0032 54021 161645          LDA EC,I NO, COMPUTE #
0033 54022 010443          AND B377 OF CHARACTERS
0034 54023 041745          ADA CC   IN FORMAT
0035 54024 071762          STA NCH  STRING
0036 54025 002003          SZA,RSS NULL STRING?
0037 54026 027674          JMP FMEND+1 YES, IGNORE IT
0038 54027 002400  FM0    CLA      INITIALIZE
0039 54030 071745          STA CC   CHARACTER COUNTER
0040 54031 071750          STA CONTR CONTROL CHARACTER
0041 54032 071645          STA EC   EXPRESSION COUNTER
0042 54033 071746          STA CC1  START OF PARENTHESIS LEVEL 1
0043 54034 071747          STA CC2  START OF PARENTHESIS LEVEL 2
0044 54035 071765          STA PC1  REPETITION COUNT FOR LEVEL 1
0045 54036 071766          STA PC2  REPETITION COUNT FOR LEVEL 2
0046 54037 071650          STA SFLG STRING FLAG
0047 54040 015540  FMT2   JSB DSRCH DELIMITER SEARCH
0048 54041 102101          STO      IGNORE BLANKS
0049 54042 061646          LDA FST  GET THE
0050 54043 015542          JSB MCHAR FIRST CHARACTER
0051 54044 051751          CPA DP   DELIMITER FOUND ?
0052 54045 027673          JMP FMEND YES
0053 54046 050425          CPA .+53B IS CHARACTER A PLUS ?
0054 54047 026055          JMP FMT1 YES
0055 54050 050427          CPA .+55B IS IT A MINUS ?
0056 54051 026055          JMP FMT1 YES

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PAGE 0245 #23 FORMATTED OUTPUT ROUTINE

0057	54052	050415		CPA ,+43B	NO, IS IT A NUMBER SIGN
0058	54053	002001		RSS	YES
0059	54054	026105		JMP FMT3	NO
0060	54055	065745	FMT1	LDB CC	END OF
0061	54056	055762		CPB NCH	STRING ?
0062	54057	115170		JSB FERRS,I	YES, ERROR
0063	54060	071750		STA CONTR	SAVE CARR, CONTROL CHARACTER
0064	54061	035646		ISZ FST	INCREMENT STRING POINTER
0065	54062	061646		LDA FST	
0066	54063	102101		STO	IGNORE BLANKS
0067	54064	015542		JSB MCHAR	GET NEXT CHARACTER
0068	54065	051751		CPA DP	DELIMITER FOUND ?
0069	54066	002001		RSS	YES
0070	54067	026073		JMP FMT01	NO, CHARACTER FOUND ?
0071	54070	103101		CLO	GET
0072	54071	061751		LDA DP	THE
0073	54072	015542		JSB MCHAR	DELIMITER
0074	54073	050426	FMT01	CPA ,+54B	IS IT A COMMA ?
0075	54074	002001		RSS	YES
0076	54075	115171		JSB FERRS+1,I	NO, ERROR
0077	54076	035751		ISZ DP	INCREMENT DELIMITER POINTER
0078	54077	035745		ISZ CC	AND CHARACTER COUNTER
0079	54100	065745		LDB CC	
0080	54101	055762		CPB NCH	ALL CHARACTERS USED ?
0081	54102	115170		JSB FERRS,I	YES, ERROR
0082	54103	061751		LDA DP	NO
0083	54104	015540		JSB DSRCH	FIND NEXT DELIMITING CHARACTER
0084	54105	003400	FMT3	CCA	INITIALIZE
0085	54106	071752		STA DPFLG	FIXED FLAG
0086	54107	071754		STA EFLAG	FLOATING FLAG
0087	54110	002004		INA	
0088	54111	071763		STA NUM1	PRE-DECIMAL POINT D COUNTER
0089	54112	071764		STA NUM2	POST-DECIMAL POINT D COUNTER
0090	54113	071770		STA SBD	S BEFORE D COUNTER
0091	54114	071767		STA SAD	S AFTER D COUNTER
0092	54115	071742		STA SNFLG	SIGN FLAG
0093	54116	071732		STA NAD	POST-DECIMAL ZERO COUNTER
0094	54117	071733		STA NBD	PRE-DECIMAL POINT DIGIT COUNT
0095	54120	002004		INA	
0096	54121	071776		STA REPCT	REPETITION COUNT
0097	54122	061760		LDA IFSS	FORMAT STACK
0098	54123	071757		STA FSP	POINTER
0099	54124	061646		LDA FST	GET NON-DELIMITING
0100	54125	102101		STO	CHARACTER
0101	54126	015542		JSB MCHAR	IGNORING BLANKS
0102	54127	051751		CPA DP	IS IT A DELIMITER ?
0103	54130	115170		JSB FERRS,I	YES
0104	54131	050414	FMT4	CPA ,+42B	IS IT A QUOTE ?
0105	54132	002001		RSS	YES
0106	54133	026177		JMP FMT0	NO
0107	54134	065751		LDB DP	
0108	54135	007004		CMB,INB	RESET
0109	54136	045646		ADB FST	CHARACTER
0110	54137	045745		ADB CC	COUNTER
0111	54140	075745		STB CC	

0112	54141	035646	FMT16	ISZ FST	INCREMENT STRING POINTER
0113	54142	061745		LDA CC	ALL
0114	54143	051762		CPA NCH	CHARACTERS USED ?
0115	54144	115172		JSB FERRS+2,I	YES, ERROR
0116	54145	035745		ISZ CC	INCREMENT CHARACTER COUNTER
0117	54146	061646		LDA FST	
0118	54147	103101		CLO	DON'T IGNORE BLANKS
0119	54150	015542		JSB MCHAR	GET NEXT CHARACTER
0120	54151	171757		STA FSP,I	LOAD CHARACTER ONTO STACK
0121	54152	035757		ISZ FSP	INCREMENT STACK POINTER
0122	54153	050414		CPA .+42B	IS IT A " ?
0123	54154	002001		RSS	YES
0124	54155	026141		JMP FMT16	NO
0125	54156	035646		ISZ FST	INCREMENT STRING POINTER
0126	54157	035745		ISZ CC	AND CHARACTER COUNTER
0127	54160	061745		LDA CC	ALL
0128	54161	051762		CPA NCH	CHARACTERS USED ?
0129	54162	026435		JMP FMT46	YES
0130	54163	061646		LDA FST	RESET
0131	54164	071751		STA DP	DELIMITER
0132	54165	015540		JSB USRCH	POINTER
0133	54166	061646		LDA FST	NEXT CHARACTER
0134	54167	051751		CPA DP	A DELIMITER ?
0135	54170	026435		JMP FMT46	YES
0136	54171	102101		STO	IGNORE BLANKS
0137	54172	015542		JSB MCHAR	FETCH A FORMAT STRING CHARACTER
0138	54173	061646		LDA FST	WOULD IT BE
0139	54174	055751		CPB DP	A DELIMITER ?
0140	54175	026435		JMP FMT46	YES
0141	54176	115171		JSB FERRS+1,I	NO, ERROR
0142	54177	052001	FMT0	CPA S	IS IT AN S ?
0143	54200	026330		JMP FMT14	YES
0144	54201	050430		CPA .+56B	IS IT A . ?
0145	54202	026316		JMP FMT9	YES
0146	54203	050720		CPA E	IS IT AN E ?
0147	54204	026325		JMP FMT13	YES
0148	54205	015264		JSB DIGCK	IS IT A DIGIT ?
0149	54206	026255		JMP FMT6	NO
0150	54207	071776		STA REPCT	YES, STORE IN REPCT
0151	54210	035646		ISZ FST	INCREMENT STRING POINTER
0152	54211	061646		LDA FST	NEXT CHARACTER
0153	54212	051751		CPA DP	A DELIMITER ?
0154	54213	115173		JSB FERRS+3,I	YES, ERROR
0155	54214	102101		STO	IGNORE BLANKS
0156	54215	015542		JSB MCHAR	GET NEXT CHARACTER
0157	54216	051751		CPA DP	IS IT A DELIMITER ?
0158	54217	115173		JSB FERRS+3,I	
0159	54220	015264		JSB DIGCK	IS IT A DIGIT ?
0160	54221	026243		JMP FMT5	NO
0161	54222	061776		LDA REPCT	YES,
0162	54223	075776		STB REPCT	MULTIPLY PREVIOUS
0163	54224	100200		MPY .+12B	DIGIT BY 10
		54225			
0164	54226	041776		ADA REPCT	ADD IN ONES DIGIT
0165	54227	071776		STA REPCT	

0166	54230	035646		ISZ FST	INCREMENT STRING POINTER
0167	54231	061646		LDA FST	NEXT CHARACTER
0168	54232	051751		CPA DP	A DELIMITER ?
0169	54233	115173		JSB FERRS+3,I	YES, ERROR
0170	54234	102101		STO	IGNORE BLANKS
0171	54235	015542		JSB MCHAR	GET NEXT CHARACTER
0172	54236	051751		CPA DP	IS IT A DELIMITER ?
0173	54237	115173		JSB FERRS+3,I	
0174	54240	015264		JSB DIGCK	THIRD DIGIT ?
0175	54241	002001		RSS	
0176	54242	115174		JSB FERRS+4,I	YES, ERROR
0177	54243	065776	FMT5	LDB REPCT	
0178	54244	006003		SZB,RSS	REPCT ZERO ?
0179	54245	115175		JSB FERRS+5,I	YES
0180	54246	044752		ADB M73	NO, GREATER
0181	54247	005021		SSB,RSS	THAN 72?
0182	54250	115174		JSB FERRS+4,I	YES
0183	54251	046005		ADB .,73	RESTORE REPCT
0184	54252	007004		CMB,INB	SET NUMBER FLAG
0185	54253	175757		STB FSP,I	LOAD ONTO FORMAT STACK
0186	54254	035757		ISZ FSP	INCREMENT STACK POINTER
0187	54255	052000	FMT6	CPA .X	IS NEXT CHARACTER AN X ?
0188	54256	026276		JMP FMT8	YES
0189	54257	052003		CPA .A	IS IT AN A ?
0190	54260	026321		JMP FMT10	YES
0191	54261	052002		CPA D	IS IT A D ?
0192	54262	002001		RSS	YES
0193	54263	026340		JMP FMT15	NO
0194	54264	065752		LDB DPFLG	DPFLG = -1?
0195	54265	005002		SZB	
0196	54266	026273		JMP FMT7	YES
0197	54267	065764		LDB NUM2	ADD REPCT TO
0198	54270	045776		ADB REPCT	POST-DECIMAL
0199	54271	075764		STB NUM2	DIGIT COUNTER
0200	54272	026276		JMP FMT8	
0201	54273	065763	FMT7	LDB NUM1	ADD REPCT TO
0202	54274	045776		ADB REPCT	PRE-DECIMAL
0203	54275	075763		STB NUM1	DIGIT COUNTER
0204	54276	006404	FMT8	CLB,INB	REINITIALIZE
0205	54277	075776		STB REPCT	REPCT
0206	54300	171757		STA FSP,I	LOAD CHARACTER ONTO STACK
0207	54301	035646		ISZ FST	INCREMENT STRING POINTER
0208	54302	035757		ISZ FSP	AND STACK POINTER
0209	54303	061646		LDA FST	NEXT CHARACTER
0210	54304	051751		CPA DP	A DELIMITER ?
0211	54305	026313		JMP FMT08	YES
0212	54306	102101		STO	IGNORE BLANKS
0213	54307	015542		JSB MCHAR	GET NEXT CHARACTER
0214	54310	051751		CPA DP	IS IT A DELIMITER ?
0215	54311	002001		RSS	YES
0216	54312	026177		JMP FMT0	
0217	54313	065757	FMT08	LDB FSP	
0218	54314	075755		STB EST	SET END OF STACK MARK
0219	54315	026343		JMP FMT18	
0220	54316	035752	FMT9	ISZ DPFLG	DPFLG = -1 ?

0221	54317	115176		JSB FERRS+6, I	NO
0222	54320	026300		JMP FMT8+2	YES
0223	54321	065650	FMT10	LDB SFLG	IS SFLG
0224	54322	006003		SZB, RSS	
0225	54323	035650	FMT11	ISZ SFLG	YES, INCREMENT IT
0226	54324	026276		JMP FMT8	NO
0227	54325	035754	FMT13	ISZ EFLAG	EFLAG = -1?
0228	54326	115177		JSB FERRS+7, I	NO
0229	54327	026300		JMP FMT8+2	YES
0230	54330	065763	FMT14	LDB NUM1	
0231	54331	045764		ADB NUM2	ANY D'S FOUND ?
0232	54332	006003		SZB, RSS	
0233	54333	035770		ISZ SBD	NO, INCREMENT BEFORE COUNTER
0234	54334	065770		LDB SBD	ANY S'S BEFORE A D ?
0235	54335	006003		SZB, RSS	
0236	54336	035767		ISZ SAD	NO, INCREMENT AFTER COUNTER
0237	54337	026300		JMP FMT8+2	
0238	54340	050422	FMT15	CPA, +50B	IS CHARACTER A (?
0239	54341	027433		JMP FMT95	YES
0240	54342	115200		JSB FERRS+8, I	NO, ILLEGAL CHARACTER
0241	54343	061760	FMT18	LDA IFSS	REINITIALIZE
0242	54344	071757		STA FSP	STACK POINTER
0243	54345	003400		CCA	AND
0244	54346	071776		STA REPCT	REPCT
0245	54347	041650		ADA SFLG	SFLG = 1 ?
0246	54350	002003		SZA, RSS	
0247	54351	026500		JMP FMT24	YES
0248	54352	040350		ADA, -2	SFLG = 3 ?
0249	54353	002021		SSA, RSS	
0250	54354	026502		JMP FMT25	YES
0251	54355	061763		LDA NUM1	NO, ANY
0252	54356	041764		ADA NUM2	D'S
0253	54357	002003		SZA, RSS	FOUND ?
0254	54360	026457		JMP FMT20	NO
0255	54361	015544		JSB EVEXP	EVALUATE EXPRESSION
0256	54362	027673		JMP FMEND	NONE FOUND
0257	54363	115201		JSB FERRS+9, I	STRING--ERROR
0258	54364	071316		STA MANT1	IF NUMBER
0259	54365	071740		STA NUMW1	SAVE HIGH MANTISSA
0260	54366	015414		JSB, FLUN	UNPACK NUMBER
0261	54367	071322		STA EXP	AND SAVE THE EXPONENT
0262	54370	061316		LDA MANT1	IS THE NUMBER NEGATIVE ?
0263	54371	002021		SSA, RSS	
0264	54372	026414		JMP FMT31	NO
0265	54373	060427		LDA, +55B	YES, SET SIGN TO MINUS
0266	54374	071266		STA SIGN	AND
0267	54375	007104		CMB, CLE, INB	COMPLEMENT
0268	54376	061316		LDA MANT1	
0269	54377	003000		CMA	OVERFLOW FROM
0270	54400	002041		SEZ, RSS	LOW MANTISSA ?
0271	54401	026411		JMP FMT31-3	NO
0272	54402	002004		INA	YES, OVERFLOW FROM
0273	54403	102301		SOS	HIGH MANTISSA ?
0274	54404	026411		JMP FMT31-3	NO
0275	54405	000065		CLE, ERA	YES, SHIFT RIGHT

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0276	54406	005500		ERB	AND
0277	54407	035322		ISZ EXP	BUMP EXPONENT
0278	54410	000000		NOP	
0279	54411	071316		STA MANT1	
0280	54412	071740		STA NUMW1	SAVE HIGH MANTISSA
0281	54413	026416		JMP ++3	
0282	54414	060425	FMT31	LDA .+53B	SET SIGN
0283	54415	071266		STA SIGN	TO PLUS
0284	54416	075320		STB MANT2	
0285	54417	075741		STB NUMW2	SAVE LOW MANTISSA
0286	54420	061322		LDA EXP	
0287	54421	071651		STA EXPW	AND EXPONENT
0288	54422	006404		CLB, INB	SET EXPRESSION
0289	54423	075645		STB EC	FOUND FLAG
0290	54424	060760		LDA IHB	HOLDING BUFFER
0291	54425	071730		STA HBP	POINTER
0292	54426	061754		LDA EFLAG	EFLAG
0293	54427	002003		SZA, RSS	SET ?
0294	54430	027210		JMP FMT62	YES
0295	54431	061752		LDA DPFLG	DPFLG
0296	54432	002003		SZA, RSS	SET
0297	54433	027047		JMP FMT45	YES
0298	54434	026551		JMP FMT30	NO
0299**					**
0300***				OUTPUT A LITERAL STRING	***
0301**					**
0302	54435	061760	FMT46	LDA IFSS	RESET
0303	54436	071757		STA FSP	STACK POINTER
0304	54437	161757		LDA FSP, I	TOP OF STACK
0305	54440	050414		CPA .+42B	A " ?
0306	54441	027332		JMP FMT90	YES, DONE WITH THIS SPEC
0307	54442	050370		CPA .+16B	IS IT A PSEUDO-LINEFEED ?
0308	54443	060364		LDA .+12B	YES, MAKE IT A LINEFEED
0309	54444	050371		CPA .+17B	IS IT A PSEUDO CARRIAGE RETURN ?
0310	54445	002001		RSS	YES
0311	54446	026454		JMP FMT47	NO
0312	54447	060375		LDA .+23B	OUTPUT AN X-OFF
0313	54450	015454		JSB OUTCR	
0314	54451	060367		LDA .+15B	OUTPUT A
0315	54452	015454		JSB OUTCR	CARRIAGE RETURN
0316	54453	002400		CLA	AND A NULL.
0317	54454		FMT47	EQU *	
0318	54454	015454		JSB OUTCR	NO, OUTPUT THE CHARACTER
0319	54455	035757		ISZ FSP	INCREMENT STACK POINTER
0320	54456	026437		JMP FMT46+2	NO
0321**					**
0322***				OUTPUT A BLANK SPECIFICATION	***
0323**					**
0324	54457	161757	FMT20	LDA FSP, I	LOAD TOP OF STACK
0325	54460	002021		SSA, RSS	IS IT A NUMBER ?
0326	54461	026465		JMP FMT21	NO
0327	54462	071776		STA REPC	YES, STORE NUMBER IN REPC
0328	54463	035757		ISZ FSP	INCREMENT STACK POINTER
0329	54464	161757		LDA FSP, I	LOAD NEW TOP OF STACK
0330	54465	052000	FMT21	CPA .X	IS IT AN X ?

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0331	54466	002001	RSS	YES
0332	54467	115200	JSB FERRS+8,I	NO, ERROR
0333	54470	015534	JSB OUTBL	
0334	54471	003400	CCA	REINITIALIZE
0335	54472	071776	STA REPCT	REPCT
0336	54473	061757	LDA FSP	END
0337	54474	051755	CPA EST	OF STACK
0338	54475	027332	JMP FMT00	YES
0339	54476	161757	LDA FSP,I	LOAD NEW TOP OF STACK
0340	54477	026457	JMP FMT20	
0341**			**	
0342***	OUTPUT A STRING		***	
0343**			**	
0344	54500		FMT24 EQU *	
0345	54500	015544	JSB EVEXP	EVALUATE NEXT EXPRESSION
0346	54501	027673	JMP FMEND	NONE FOUND
0347	54502		FMT25 EQU *	
0348	54502	006405	CLB,INB,RSS	SET THE EXPRESSION
0349	54503	115206	JSB FERRS+14,I	
0350	54504	075645	STB EC	FOUND FLAG
0351	54505	161757	LDA FSP,I	LOAD TOP OF STACK
0352	54506	002021	SSA,RSS	IS IT A NUMBER ?
0353	54507	026513	JMP FMT26	NO
0354	54510	071776	STA REPCT	YES
0355	54511	035757	ISZ FSP	INCREMENT STACK POINTER
0356	54512	161757	LDA FSP,I	LOAD NEW TOP OF STACK
0357	54513	052000	FMT26 CPA .X	IS IT AN X ?
0358	54514	002001	RSS	YES
0359	54515	026520	JMP FMT27	NO
0360	54516	015534	JSB OUTBL	
0361	54517	026543	JMP FMT28	
0362	54520	052003	FMT27 CPA .A	IS IT AN A ?
0363	54521	002001	RSS	YES
0364	54522	115201	JSB FERRS+9,I	NO, ERROR
0365	54523	035757	ISZ FSP	INCREMENT STACK POINTER
0366	54524		FMT05 EQU *	
0367	54524	015364	JSB FSCH	FETCH STRING CHARACTER
0368	54525	061573	LDA BLANK	NO, FETCH A BLANK
0369	54526	050370	CPA .+16B	IS IT A PSEUDO-LINEFEED ?
0370	54527	060364	LDA .+12B	YES, MAKE IT A LINEFEED
0371	54530	050371	CPA .+17B	IS IT A PSEUDO CARRIAGE RETURN ?
0372	54531	002001	RSS	YES
0373	54532	026540	JMP FMT29	NO
0374	54533	060375	LDA .+23B	OUTPUT AN X-OFF
0375	54534	015454	JSB OUTCR	
0376	54535	060367	LDA .+15B	OUTPUT A
0377	54536	015454	JSB OUTCR	CARRIAGE RETURN
0378	54537	002400	CLA	AND A NULL.
0379	54540		FMT29 EQU *	
0380	54540	015454	JSB OUTCR	OUTPUT CHARACTER
0381	54541	035776	ISZ REPCT	REPCT USED UP ?
0382	54542	026524	JMP FMT05	NO
0383	54543	003400	FMT28 CCA	REINITIALIZE
0384	54544	071776	STA REPCT	REPCT
0385	54545	061757	LDA FSP	END OF

0386	54546	051755	CPA	EST	STACK ?
0387	54547	027332	JMP	FMT90	
0388	54550	026502	JMP	FMT25	NO
0389	**				**
0390	***	PREPARE AN INTEGER FOR OUTPUT			***
0391	**				**
0392	54551	002400	FMT30	CLA	INITIALIZE PRE-DECIMAL POINT
0393	54552	071324		STA EXPON	DIGIT COUNTER
0394	54553	003400		CCA	
0395	54554	041322		ADA EXP	EXPONENT ZERO OR NEGATIVE ?
0396	54555	002021		SSA, RSS	
0397	54556	026565		JMP FMT32	NO
0398	54557	060432		LDA ,+60B	YES, LOAD A
0399	54560	171730		STA HBP, I	ZERO
0400	54561	035730		ISZ HBP	INCREMENT BUFFER POINTER
0401	54562	003400		CCA	NUMBER OF BUFFER WORDS
0402	54563	071735		STA NHBW	IS ONE
0403	54564	026576		JMP FMT33	
0404	54565	015530	FMT32	JSB DTL1	SAVE NUMBER
0405	54566	071324		STA EXPON	OF DIGITS
0406	54567	071735		STA NHBW	GET DIGIT
0407	54570	015424		JSB GETDG	CONVERT TO ASCII
0408	54571	040432		ADA ,+60B	STORE IN HOLD BUFFER
0409	54572	171730		STA HBP, I	ALL DIGITS
0410	54573	035730		ISZ HBP	FOUND ?
0411	54574	035324		ISZ EXPON	NO
0412	54575	026570		JMP FMT32+3	COMPUTE NUMBER OF
0413	54576	061763	FMT33	LDA NUM1	LEADING BLANKS
0414	54577	041735		ADA NHBW	ANY S'S
0415	54600	065770		LDB SBD	FOUND ?
0416	54601	045767		ADB SAD	
0417	54602	006002		SZB	YES
0418	54603	026612		JMP FMT43	NO, NUMBER POSITIVE ?
0419	54604	065266		LDB SIGN	
0420	54605	054425		CPB ,+53B	YES
0421	54606	026612		JMP FMT43	NO, SAVE ROOM
0422	54607	040351		ADA ,=1	FOR
0423	54610	006404		CLB, INB	PRINTING SIGN
0424	54611	075742		STB SNFLG	NUMBER OF BLANKS NEGATIVE ?
0425	54612	002020	FMT43	SSA	YES
0426	54613	027570		JMP FMT80	NO
0427	54614	071734		STA NBLK	ROUND NUMBER IN BUFFER
0428	54615	015532		JSB ROUND	
0429	54616	002001		RSS	NO ROOM FOR CARRY FROM ROUND
0430	54617	027570		JMP FMT80	REINITIALIZE
0431	54620	064760		LDB IH8	HOLD BUFFER POINTER
0432	54621	075730		STB HBP	
0433	**				**
0434	***	OUTPUT NUMBER FROM HOLDING BUFFER			***
0435	**				**
0436	54622	161757	FMT34	LDA FSP, I	LOAD TOP OF FORMAT STACK
0437	54623	052001		CPA S	IS IT AN S ?
0438	54624	002001		RSS	YES
0439	54625	026645		JMP FMT36	NO
0440	54626	035757		ISZ FSP	INCREMENT STACK POINTER

0441	54627	061742	LDA	SNFLG	
0442	54630	002002	SZA		SNFLG = 0 ?
0443	54631	026777	JMP	FMT59	NO, IGNORE THE S
0444	54632	065770	LDB	SBD	YES, ANY S'S BEFORE A D ?
0445	54633	006002	SZB		
0446	54634	026642	JMP	FMT35	YES
0447	54635	061266	LDA	SIGN	NO, OUTPUT SIGN
0448	54636	015454	JSB	OUTCR	IMMEDIATELY
0449	54637	060354	LDA	.+2	SET SNFLG TO 2
0450	54640	071742	STA	SNFLG	
0451	54641	026777	JMP	FMT59	
0001	54642	007400	FMT35	CCB	
0002	54643	075742	STB	SNFLG	SET SNFLG TO -1
0003	54644	026622	JMP	FMT34	
0004	54645	002021	FMT36	S9A, RSS	TOP OF STACK A NUMBER ?
0005	54646	026652	JMP	FMT06	NO
0006	54647	071776	STA	REPCT	YES, STORE IN REPCT
0007	54650	035757	ISZ	FSP	INCREMENT STACK POINTER
0008	54651	161757	LDA	FSP, I	LOAD NEW TOP OF STACK
0009	54652	052000	FMT06	CPA .X	IS TOP AN X ?
0010	54653	002001	RSS		YES
0011	54654	026661	JMP	FMT37	NO
0012	54655	015534	JSB	OUTBL	
0013	54656	003400	CCA		REINITIALIZE
0014	54657	071776	STA	REPCT	REPCT
0015	54660	026777	JMP	FMT59	
0016	54661	052002	FMT37	CPA D	TOP OF STACK A D ?
0017	54662	002001	RSS		YES
0018	54663	026753	JMP	FMT57	NO
0019	54664	035757	ISZ	FSP	INCREMENT STACK POINTER
0020	54665	003400	CCA		
0021	54666	041734	ADA	NBLK	NUMBER OF BLANKS > 0 ?
0022	54667	002020	SSA		
0023	54670	026677	JMP	FMT07	NO
0024	54671	061573	LDA	BLANK	YES, OUTPUT A
0025	54672	015454	JSB	OUTCR	BLANK
0026	54673	007400	CCB		DECREMENT
0027	54674	045734	ADB	NBLK	BLANK
0028	54675	075734	STB	NBLK	COUNT
0029	54676	026746	JMP	FMT40	
0030	54677	061734	FMT07	LDA NBLK	NUMBER OF BLANKS
0031	54700	002020	SSA		LESS THAN ZERO ?
0032	54701	026713	JMP	FMT56	YES
0033	54702	003400	CCA		NO, DECREMENT
0034	54703	071734	STA	NBLK	BLANK COUNT
0035	54704	007400	CCB		
0036	54705	055742	CPB	SNFLG	SNFLG = - 1 ?
0037	54706	026717	JMP	FMT02	YES
0038	54707	045742	ADB	SNFLG	SNFLG = 1 ?
0039	54710	006003	SZB, RSS		
0040	54711	026746	JMP	FMT40	YES
0041	54712	026723	JMP	FMT58	NO
0042	54713	007400	FMT56	CCB	
0043	54714	045742	ADB	SNFLG	SNFLG = 1 ?
0044	54715	006002	SZB		

0045	54716	026723		JMP FMT58	NO
0046	54717	061266	FMT02	LDA SIGN	YES, OUTPUT
0047	54720	015454		JSB OUTCR	SIGN AND
0048	54721	060354		LDA .+2	SET SNFLG
0049	54722	071742		STA SNFLG	TO 2
0050	54723	060760	FMT58	LDA IHB	END
0051	54724	040430		ADA .+46	OF
0052	54725	051730		CPA HBP	BUFFER ?
0053	54726	026777		JMP FMT59	
0054	54727	161730		LDA HBP,I	OUTPUT A
0055	54730	015454		JSB OUTCR	DIGIT
0056	54731	035730		ISZ HBP	INCREMENT HOLD BUFFER POINTER
0057	54732	061754		LDA EFLAG	IS THIS A
0058	54733	002002		SZA	FLOATING POINT SPECIFICATION ?
0059	54734	026746		JMP FMT40	NO
0060	54735	002404		CLA,INA	YES, HAS THE DECIMAL POINT
0061	54736	051752		CPA DPFLG	BEEN FOUND YET ?
0062	54737	026746		JMP FMT40	YES
0063	54740	003400		CCA	NO, DECREMENT
0064	54741	041324		ADA EXPON	DECIMAL
0065	54742	164760		LDB IHB,I	IS THE
0066	54743	054432		CPB .+60B	NUMBER ZERO?
0067	54744	002400		CLA	YES, ZERO EXPONENT
0068	54745	071324		STA EXPON	EXPONENT
0069	54746	035776	FMT40	ISZ REpCT	REpCT = 0 ?
0070	54747	026665		JMP FMT37+4	NO
0071	54750	003400		CCA	YES, REINITIALIZE
0072	54751	071776		STA REpCT	REpCT
0073	54752	026777		JMP FMT59	
0074	54753	065752	FMT57	LDB DPFLG	FIXED POINT
0075	54754	006002		SZB	SPECIFICATION ?
0076	54755	027003		JMP FMT42	NO
0077	54756	050430		CPA .+56B	TOP OF STACK A DECIMAL POINT ?
0078	54757	002001		RSS	YES
0079	54760	027003		JMP FMT42	NO
0080	54761	035757		ISZ FSP	INCREMENT STACK POINTER
0081	54762	065742		LDB SNFLG	
0082	54763	006020		SSB	SNFLG = -1 ?
0083	54764	026770		JMP FM00	YES
0084	54765	044351		ADB .-1	NO, = 1 ?
0085	54766	006002		SZB	
0086	54767	026774		JMP FM01	NO
0087	54770	061266	FM00	LDA SIGN	YES, OUTPUT
0088	54771	015454		JSB OUTCR	SIGN
0089	54772	060354		LDA .+2	SET SNFLG
0090	54773	071742		STA SNFLG	TO 2
0091	54774	060430	FM01	LDA .+56B	OUTPUT
0092	54775	015454		JSB OUTCR	DECIMAL POINT
0093	54776	035752		ISZ DPFLG	INCREMENT FLAG TO SHOW D.P. FOUN
0094	54777	061757	FMT59	LDA FSP	END OF
0095	55000	051755		CPA EST	STACK
0096	55001	027332		JMP FMT90	YES
0097	55002	026622		JMP FMT34	NO
0098	55003	035757	FMT42	ISZ FSP	INCREMENT STACK POINTER
0099	55004	015454		JSB OUTCR	OUTPUT AN E

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0100	55005	061757	FMT76	LDA FSP	END OF
0101	55006	051755		CPA EST	STACK ?
0102	55007	027025		JMP FMT78	YES
0103	55010	161757		LDA FSP,I	NO, TOP OF
0104	55011	002021		SSA,RSS	STACK A NUMBER ?
0105	55012	027016		JMP FM02	NO
0106	55013	035757		ISZ FSP	YES, INCREMENT STACK POINTER
0107	55014	071776		STA REPCT	STORE NUMBER
0108	55015	161757		LDA FSP,I	GET NEW TOP OF STACK
0109	55016	052000	FM02	CPA ,X	IS IT AN X ?
0110	55017	002001		RSS	YES
0111	55020	115177		JSB FERRS+7,I	NO, ERROR
0112	55021	015534		JSB OUTBL	
0113	55022	003400		CCA	RESET
0114	55023	071776		STA REPCT	REPCT
0115	55024	027005		JMP FMT76	
0116	55025	060427	FMT78	LDA .+55B	OUTPUT
0117	55026	065324		LDB EXPON	
0118	55027	006020		SSB	AN
0119	55030	007005		CMB,INB,RSS	
0120	55031	060425		LDA .+53B	EXPONENT
0121	55032	075324		STB EXPON	
0122	55033	015454		JSB OUTCR	SIGN
0123	55034	061324		LDA EXPON	
0124	55035	006400		CLB	COMPUTE
0125	55036	100400		DIV .+12B	
	55037	000364			
0126	55040	040432		ADA .+60B	EXPONENT'S
0127	55041	044432		ADB .+60B	
0128	55042	075324		STB EXPON	10'S DIGIT
0129	55043	015454		JSB OUTCR	OUTPUT IT
0130	55044	061324		LDA EXPON	
0131	55045	015454		JSB OUTCR	OUTPUT 1'S DIGIT
0132	55046	027332		JMP FMT90	
0133**					**
0134***	PREPARE	FIXED POINT NUMBER			***
0135**					**
0136	55047	002400	FMT45	CLA	SET PRE-DECIMAL POINT
0137	55050	071324		STA EXPON	DIGIT COUNTER
0138	55051	071732		STA NAD	ZERO COUNTER
0139	55052	051322		CPA EXP	ZERO EXPONENT ?
0140	55053	027161		JMP FMT61+3	YES
0141	55054	065322		LDB EXP	NO
0142	55055	006020		SSB	EXPONENT NEGATIVE
0143	55056	027156		JMP FMT61	YES
0144	55057	015530		JSB DTL1	
0145	55060	071324		STA EXPON	LOAD
0146	55061	071733		STA NBD	PRE-DECIMAL POINT
0147	55062	015424	FM03	JSB GETDG	DIGITS
0148	55063	040432		ADA .+60B	
0149	55064	171730		STA HBP,I	INTO
0150	55065	035730		ISZ HBP	HOLD
0151	55066	035324		ISZ EXPON	BUFFER
0152	55067	027062		JMP FM03	
0153	55070	065764	FMT50	LDB NUM2	ANY D'S AFTER

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0154	55071	006003	SZB, RSS	DECIMAL POINT ?
0155	55072	027126	JMP FMT51	NO
0156	55073	060760	LDA IHB	END
0157	55074	040430	ADA ,+46	OF
0158	55075	051730	CPA HBP	BUFFER ?
0159	55076	027116	JMP FM04	YES
0160	55077	065732	LDB NAD	LEADING
0161	55100	002400	CLA	ZERGES
0162	55101	006003	SZB, RSS	AFTER
0163	55102	027106	JMP ++4	DECIMAL
0164	55103	044351	ADB , -1	POINT
0165	55104	075732	STB NAD	
0166	55105	002001	RSS	YES
0167	55106	015424	JSB GETDG	
0168	55107	040432	ADA ,+60B	LOAD
0169	55110	171730	STA HBP, I	POST-DECIMAL POINT
0170	55111	007400	CCB	DIGITS
0171	55112	045764	ADB NUM2	INTO
0172	55113	075764	STB NUM2	HOLD
0173	55114	035730	ISZ HBP	BUFFER
0174	55115	027071	JMP FMT50+1	
0175	55116	061764	FM04 LDA NUM2	OUTPUT BLANKS
0176	55117	003004	CMA, INA	TO
0177	55120	071776	STA REPCT	FILL FIELD
0178	55121	015534	JSB OUTBL	
0179	55122	003400	CCA	REINITIALIZE
0180	55123	071776	STA REPCT	REPCT
0181	55124	041757	ADA FSP	CORRECT
0182	55125	071757	STA FSP	STACK POINTER
0183	55126	061733	FMT51 LDA NBD	COMPUT NUMBER
0184	55127	041763	ADA NUM1	OF LEADING BLANKS
0185	55130	065770	LDB SBD	ANY S'S
0186	55131	045767	ADB SAD	FOUND ?
0187	55132	006002	SZB	
0188	55133	027142	JMP FMT54	YES
0189	55134	065266	LDB SIGN	NO, NUMBER
0190	55135	054425	CPB ,+53B	POSITIVE ?
0191	55136	027142	JMP FMT54	YES
0192	55137	040351	ADA , -1	NO, LEAVE ROOM FOR
0193	55140	006404	CLB, INB	SIGN TO BE PRINTED AND
0194	55141	075742	STB SNFLG	SET SNFLG TO 1
0195	55142	002020	FMT54 SSA	NUMBER OF BLANKS NEGATIVE ?
0196	55143	027570	JMP FMT80	YES
0197	55144	071734	STA NBLK	NO,
0198	55145	007400	CCB	NEXT DIGIT A
0199	55146	045732	ADB NAD	LEADING ZERO ?
0200	55147	006020	SSB	
0201	55150	015532	JSB ROUND	NO, ROUND NUMBER
0202	55151	002001	RSS	
0203	55152	027570	JMP FMT80	NO ROOM FOR CARRY FROM ROUND
0204	55153	060760	LDA IHB	RESET HOLD
0205	55154	071730	STA HBP	BUFFER POINTER
0206	55155	026622	JMP FMT34	GO OUTPUT THE NUMBER
0207	55156	015526	FMT61 JSB MTG1	
0208	55157	061324	LDA EXPON	

0209	55160	071732		STA NAD	
0210	55161	065763		LDB NUM1	ANY D'S FOUND
0211	55162	006003		SZB, RSS	BEFORE THE DECIMAL POINT ?
0212	55163	027070		JMP FMT50	NO
0213	55164	061764		LDA NUM2	YES, ANY D'S FOUND
0214	55165	002003		SZA, RSS	AFTER THE DECIMAL POINT ?
0215	55166	027201		JMP FMT55	NO
0216	55167	054353		CPB .+1	YES, ONLY ONE OF THEM ?
0217	55170	002001		RSS	
0218	55171	027201		JMP FMT55	NO
0219	55172	061767		LDA SAD	YES, ANY S'S FOUND ?
0220	55173	041770		ADA SBD	
0221	55174	002002		SZA	
0222	55175	027201		JMP FMT55	YES
0223	55176	061266		LDA SIGN	NO, NUMBER
0224	55177	050427		CPA .+55B	NEGATIVE ?
0225	55200	027070		JMP FMT50	YES
0226	55201	060432	FMT55	LDA .+60B	NO, LOAD PRE-DECIMAL POINT
0227	55202	171730		STA HBP, I	ZERO INTO BUFFER
0228	55203	035730		ISZ HBP	
0229	55204	003400		CCA	DECREASE NUMBER OF
0230	55205	041763		ADA NUM1	D'S AVAILABLE FOR SIGN
0231	55206	071763		STA NUM1	AND BLANKS BEFORE DECIMAL PT
0232	55207	027070		JMP FMT50	
0233**					**
0234***					***
0235**					**
0236	55210	002400	FMT62	CLA	INITIALIZE DECIMAL
0237	55211	071324		STA EXPON	EXPONENT
0238	55212	051322		CPA EXP	ZERO EXPONENT ?
0239	55213	027216		JMP **3	YES
0240	55214	015526		JSB MT61	
0241	55215	015530		JSB DTL1	
0242	55216	003004		CMA, INA	SAVE DECIMAL EXPONENT
0243	55217	071324		STA EXPON	
0244	55220	061763		LDA NUM1	GET
0245	55221	041764		ADA NUM2	TOTAL NUMBER
0246	55222	071743		STA TOTDG	OF DIGITS
0247	55223	061770		LDA SBD	
0248	55224	041767		ADA SAD	ANY S'S FOUND ?
0249	55225	002002		SZA	
0250	55226	027246		JMP FMT67	YES
0251	55227	061266		LDA SIGN	NO, NUMBER
0252	55230	050425		CPA .+53B	POSITIVE ?
0253	55231	027246		JMP FMT67	YES
0254	55232	007400		CCB	NO, LEAVE ROOM
0255	55233	045763		ADB NUM1	FOR SIGN
0256	55234	006020		SSB	NONE ?
0257	55235	027570		JMP FMT80	YES
0258	55236	075763		STB NUM1	NO, DECREMENT
0259	55237	003400		CCA	TOTAL NUMBER OF D'S
0260	55240	041743		ADA TOTDG	AVAILABLE FOR SIGN
0261	55241	071743		STA TOTDG	AND BLANKS BEFORE DEC. PT.
0262	55242	002003		SZA, RSS	
0263	55243	027570		JMP FMT80	

0264	55244	006404		CLB, INB	SET SNFLG
0265	55245	075742		STB SNFLG	TO 1
0266	55246	061764	FMT67	LDA NUM2	NUM2
0267	55247	003004		CMA, INA	> 7 ?
0268	55250	064360		LDB .+6	
0269	55251	044000		ADB 0	
0270	55252	006020		SSB	
0271	55253	027273		JMP FMT70	YES
0272	55254	061743		LDA TOTDG	YES, TOTAL NUMBER OF D'S
0273	55255	040342		ADA .-100	> 7 ?
0274	55256	002020		SSA	
0275	55257	027265		JMP FMT68	NO
0276	55260	064343		LDB .-7	PREPARE TO GET
0277	55261	075744		STB DCTR	SEVEN DIGITS
0278	55262	002004		INA	NUMBER OF BLANKS
0279	55263	071734		STA NBLK	BECOMES TOTDG = 7
0280	55264	027314		JMP FMT72	
0281	55265	061743	FMT68	LDA TOTDG	PREPARE TO GET
0282	55266	003004		CMA, INA	
0283	55267	071744		STA DCTR	TOTDG DIGITS
0284	55270	006400		CLB	SET NUMBER OF BLANKS
0285	55271	075734		STB NBLK	TO ZERO
0286	55272	027314		JMP FMT72	
0287	55273	065763	FMT70	LDB NUM1	ANY D'S BEFORE
0288	55274	006002		SZB	DECIMAL POINT ?
0289	55275	040351		ADA .-1	YES, INCREMENT NUMBER OF DIGITS
0290	55276	071744		STA DCTR	PREPARE TO GET NUM2 DIGITS
0291	55277	006002		SZB	SET
0292	55300	044351		ADB .-1	BLANK
0293	55301	075734		STB NBLK	COUNT
0294	55302	061744		LDA DCTR	MORE THAN
0295	55303	040430		ADA .+46	FOURTY-SIX
0296	55304	002021		SSA, RSS	DIGITS NEEDED ?
0297	55305	027314		JMP FMT72	NO
0298	55306	071776		STA REPCT	YES, OUTPUT NECESSARY BLANKS
0299	55307	015534		JSB OUTBL	
0300	55310	041757		ADA FSP	CORRECT
0301	55311	071757		STA FSP	STACK POINTER
0302	55312	062004		LDA M46	SET DCTR
0303	55313	071744		STA DCTR	TO 46
0304	55314		FMT72	EQU *	
0305	55314	003400		CCA	REINITIALIZE
0306	55315	071776		STA REPCT	REPCT
0307	55316	015424		JSB GETDG	
0308	55317	040432		ADA .+60B	CONVERT TO ASCII
0309	55320	171730		STA HBP, I	STORE IN HOLD BUFFER
0310	55321	035730		ISZ HBP	INCREMENT BUFFER POINTER
0311	55322	035744		ISZ DCTR	ALL DIGITS GOT ?
0312	55323	027314		JMP FMT72	NO
0313	55324	015532		JSB ROUND	YES, ROUND THE NUMBER IN BUFFER
0314	55325	002001		RSS	
0315	55326	027570		JMP FMT80	NO ROOM FOR CARRY FROM ROUND
0316	55327	060760		LDA IHB	RESET
0317	55330	071730		STA HBP	BUFFER POINTER
0318	55331	026622		JMP FMT34	

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0319**
0320*** HANDLE END OF SPECIFICATION ***
0321**
0322 55332 002400 FMT90 CLA
0323 55333 071650 STA SFLG STRING FLAG
0324 55334 061745 LDA CC ENF OF
0325 55335 051762 CPA NCH FORMAT STRING ?
0326 55336 002001 RSS YES
0327 55337 027357 JMP FMT92 NO
0328 55340 061746 FMT09 LDA CC1 YES, PARENTHESIS
0329 55341 002002 SZA BALANCED ?
0330 55342 115202 JSB FERRS+10,I NO, ERROR
0331 55343 065645 FMT91 LDB EC ANY EXPRESSIONS
0332 55344 006003 SZB,RSS USED ?
0333 55345 027673 JMP FMEND NO
0334 55346 065753 LDB EDSTA END OF
0335 55347 006003 SZB,RSS STATEMENT ?
0336 55350 027673 JMP FMEND YES
0337 55351 002400 CLA
0338 55352 071645 STA EC YES, CLEAR EC
0339 55353 071745 STA CC
0340 55354 061761 LDA IFSIR RESET
0341 55355 071751 STA DP DELIMITER POINTER
0342 55356 026040 JMP FMT12
0001 55357 061751 FMT92 LDA DP GET THE
0002 55360 103101 CLO DELIMITING CHARACTER
0003 55361 015542 JSB MCHAR NOT IGNORING BLANKS
0004 55362 050423 CPA ,+51B IS IT A RIGHT PARENTHESIS
0005 55363 027470 JMP FMT97 YES
0006 55364 071731 STA LCH NO, SAVE THE CHARACTER
0007 55365 050420 CPA ,+64B IS IT A COMMA ?
0008 55366 027373 JMP FMT93+1 YES
0009 55367 050431 CPA ,+57B IS IT A SLASH ?
0010 55370 002001 RSS YES
0011 55371 115171 JSB FERRS+1,I NO, ERROR EXIT
0012 55372 015536 FMT93 JSB OUTCL
0013 55373 035745 ISZ CC INCREMENT CHARACTER COUNTER
0014 55374 061745 LDA CC ALL CHARACTERS
0015 55375 051762 CPA NCH USED ?
0016 55376 027424 JMP FMT94 YES
0017 55377 035751 ISZ DP INCREMENT DELIMITER POINTER
0018 55400 015540 JSB DSRCH FIND NEXT DELIMITER
0019 55401 102101 STO IGNORE BLANKS
0020 55402 061646 LDA FST
0021 55403 015542 JSB MCHAR NEXT CHARACTER
0022 55404 051751 CPA DP IS IT A DELIMITER
0023 55405 002001 RSS YES
0024 55406 027415 JMP FM11 NO
0025 55407 061745 LDA CC ALL CHARACTERS
0026 55410 051762 CPA NCH USED ?
0027 55411 027424 JMP FMT94 YES
0028 55412 061751 LDA DP NO, GET DELIMITING
0029 55413 103101 CLO CHARACTER
0030 55414 015542 JSB MCHAR IGNORING BLANKS
0031 55415 050440 FM11 CPA ,+54 IS IT A COMMA

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0032	55416	115170		JSB FERRS,I	YES, ERROR
0033	55417	050431		CPA ,+57B	NO, A SLASH
0034	55420	027424		JMP FMT94	YES
0035	55421	050423		CPA ,+51B	NO, A RIGHT PARENTHESIS ?
0036	55422	027470		JMP FMT97	YES
0037	55423	026105		JMP FMT3	
0038	55424	061731	FMT94	LDA LCH	LAST CHARACTER
0039	55425	050426		CPA ,+54B	A COMMA ?
0040	55426	115170		JSB FERRS,I	
0041	55427	061745		LDA CC	NO, ALL CHARACTERS
0042	55430	051762		CPA NCH	USED ?
0043	55431	027340		JMP FMT09	YES
0044	55432	027372		JMP FMT93	NO
0045**					**
0046***				HANDLE GROUPS OF SPECIFICATIONS	***
0047**					**
0048	55433	003400	FMT95	CCA	SECOND
0049	55434	041757		ADA FSP	CHARACTER
0050	55435	051760		CPA IFSS	IN STACK ?
0051	55436	002001		RSS	
0052	55437	115203		JSB FERRS+11,I	NO, ERROR
0053	55440	061746		LDA CC1	YES, FIRST LEVEL
0054	55441	002002		SZA	OF PARENTHESIS ?
0055	55442	027454		JMP FMT96	NO
0056	55443	035646		ISZ FST	INCREMENT STRING POINTER
0057	55444	003400		CCA	FIND CHARACTER COUNT
0058	55445	041761		ADA IFSTR	UP TO AND INCLUDING
0059	55446	003000		CMA	LEFT
0060	55447	041646		ADA FST	PARENTHESIS
0061	55450	071746		STA CC1	
0062	55451	065776		LDB REPCT	STORE REPETITION
0063	55452	075765		STB PC1	COUNT
0064	55453	026105		JMP FMT3	PROCESS STRING
0065	55454	061747	FMT96	LDA CC2	SECOND LEVEL
0066	55455	002002		SZA	OF PARENTHESIS
0067	55456	115204		JSB FERRS+12,I	NO, ERROR
0068	55457	035646		ISZ FST	
0069	55460	003400		CCA	FIND CHARACTER COUNT
0070	55461	041761		ADA IFSTR	UP TO AND
0071	55462	003000		CMA	INCLUDING
0072	55463	041646		ADA FST	LEFT
0073	55464	071747		STA CC2	PARENTHESIS
0074	55465	065776		LDB REPCT	STORE REPETITION
0075	55466	075766		STB PC2	COUNT
0076	55467	026105		JMP FMT3	
0077	55470	061766	FMT97	LDA PC2	SECOND LEVEL OF
0078	55471	002003		SZA,RSS	PARENTHESIS ?
0079	55472	027530		JMP FMT98	NO
0080	55473	040351		ADA ,=1	YES, REPEAT IT
0081	55474	071766		STA PC2	
0082	55475	002003		SZA,RSS	
0083	55476	027505		JMP FMT99	
0084	55477	065747		LDB CC2	RESET
0085	55500	075745		STB CC	CHARACTER COUNTER
0086	55501	045761		ADB IFSTR	

0087	55502	075751	STB DP	AND STRING POINTER
0088	55503	015540	JSB DSRCH	
0089	55504	026105	JMP FMT3	REPROCESS PARENTHESESIZED STRING
0090	55505	002400	FMT99 CLA	CLEAR SECOND
0091	55506	071747	STA CC2	LEVEL POINTER
0092	55507	071650	STA SFLG	AND STRING FLAG
0093	55510	035745	ISZ CC	INCREMENT CHARACTER COUNTER
0094	55511	061745	LDA CC	ALL CHARACTERS
0095	55512	051762	CPA NCH	USED ?
0096	55513	115171	JSB FERRS+1,I	YES, ERROR
0097	55514	035751	ISZ DP	NO, POINT TO DELIMITER
0098	55515	015540	JSB DSRCH	FIND NEXT DELIMITER
0099	55516	102101	STO	GET NEXT
0100	55517	061646	LDA FST	NON-BLANK
0101	55520	015542	JSB MCHAR	CHARACTER
0102	55521	051751	CPA DP	IS IT A DELIMITER ?
0103	55522	002001	RSS	YES
0104	55523	027362	JMP FMT92+3	MAYBE
0105	55524	065745	LDB CC	ALL
0106	55525	055762	CPB NCH	CHARACTERS USED ?
0107	55526	115202	JSB FERRS+10,I	YES, ERROR
0108	55527	027357	JMP FMT92	NO, INVESTIGATE THE CHARACTER
0109	55530	061765	FMT98 LDA PC1	FIRST LEVEL
0110	55531	002003	SZA,RSS	OF PARENTHESIS ?
0111	55532	115205	JSB FERRS+13,I	NO, ERROR
0112	55533	040351	ADA ,=1	YES, REPEAT IT
0113	55534	071765	STA PC1	
0114	55535	002003	SZA,RSS	
0115	55536	027545	JMP FMT00	
0116	55537	065746	LDB CC1	RESET
0117	55540	075745	STB CC	CHARACTER COUNTER
0118	55541	045761	ADB IFSTR	
0119	55542	075751	STB DP	
0120	55543	015540	JSB DSRCH	
0121	55544	026105	JMP FMT3	REPROCESS PARENTHESESIZED STRING
0122	55545	002400	FMT00 CLA	CLEAR FIRST
0123	55546	071746	STA CC1	LEVEL POINTER
0124	55547	071650	STA SFLG	AND STRING FLAG
0125	55550	035745	ISZ CC	INCREMENT CHARACTER COUNTER
0126	55551	035751	ISZ DP	POINT TO DELIMITER
0127	55552	061745	LDA CC	ALL
0128	55553	051762	CPA NCH	CHARACTERS USED ?
0129	55554	027343	JMP FMT91	YES
0130	55555	015540	JSB DSRCH	NO, FIND NEXT DELIMITER
0131	55556	102101	STO	GET NEXT
0132	55557	061646	LDA FST	NON-BLANK
0133	55560	015542	JSB MCHAR	CHARACTER
0134	55561	051751	CPA DP	IS IT A DELIMITER ?
0135	55562	002001	RSS	YES
0136	55563	027362	JMP FMT92+3	NO
0137	55564	065745	LDB CC	ALL
0138	55565	055762	CPB NCH	CHARACTERS USED ?
0139	55566	027343	JMP FMT91	YES
0140	55567	027357	JMP FMT92	NO, INVESTIGATE THE FOUND CHARAC
0141**				**

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0142*** OUTPUT NUMBER IN DEFAULT FORMAT ***

0143**

0144	55570	061740	FMT00	LDA NUMW1	
0145	55571	071316		STA MANT1	LOAD
0146	55572	065741		LDB NUMW2	
0147	55573	075320		STB MANT2	SAVED
0148	55574	061651		LDA EXPW	
0149	55575	071322		STA EXP	NUMBER
0150	55576	002400		CLA	CLEAR
0151	55577	071324		STA EXPON	DECIMAL EXPONENT
0152	55600	071754		STA EFLAG	SET FLOATING POINT FLAG
0153	55601	051322		CPA EXP	ZERO EXPONENT ?
0154	55602	027605		JMP **3	YES
0155	55603	015526		JSB MTG1	
0156	55604	015530		JSB DTL1	
0157	55605	003000		CMA	
0158	55606	071324		STA EXPON	
0159	55607	015536		JSB OUTCL	
0160	55610	060760		LDA IHB	RESET HOLD
0161	55611	071730		STA HBP	BUFFER POINTER
0162	55612	060344		LDA .=6	PREPARE TO GET
0163	55613	071743		STA TOTDG	SIX DIGITS
0164	55614	015424		JSB GETDG	GET
0165	55615	040432		ADA .+60B	
0166	55616	171730		STA HBP,I	SIX
0167	55617	035730		ISZ HBP	
0168	55620	035743		ISZ TOTDG	DIGITS
0169	55621	027614		JMP **5	
0170	55622	060354		LDA .+2	SET NBLK TO
0171	55623	071734		STA NBLK	WHERE IT WONT CAUSE TROUBLE
0172	55624	015532		JSB ROUND	ROUND NUMBER IN HOLD BUFFER
0173	55625	000000		NOP	
0174	55626	061266		LDA SIGN	OUTPUT
0175	55627	015454		JSB OUTCR	SIGN
0176	55630	060760		LDA IHB	INITIALIZE
0177	55631	071730		STA HBP	HOLD BUFFER POINTER
0178	55632	161730		LDA HBP,I	OUTPUT
0179	55633	015454		JSB OUTCR	DIGIT
0180	55634	035730		ISZ HBP	INCREMENT HOLD BUFFER POINTER
0181	55635	060430		LDA .+56B	OUTPUT
0182	55636	015454		JSB OUTCR	DECIMAL POINT
0183	55637	060345		LDA .=5	PREPARE TO OUTPUT
0184	55640	071743		STA TOTDG	FIVE DIGITS
0185	55641	161730		LDA HBP,I	OUTPUT
0186	55642	015454		JSB OUTCR	FIVE
0187	55643	035730		ISZ HBP	DIGITS
0188	55644	035743		ISZ TOTDG	
0189	55645	027641		JMP **4	
0190	55646	060720		LDA E	OUTPUT
0191	55647	015454		JSB OUTCR	AN E
0192	55650	060427		LDA .+55B	
0193	55651	065324		LDB EXPON	OUTPUT
0194	55652	006020		SSB	
0195	55653	007005		CMB,INB,RSS	EXPONENT
0196	55654	060425		LDA .+53B	

0197	55655	075324	STB	EXPON	SIGN
0198	55656	015454	JSB	OUTCR	
0199	55657	061324	LDA	EXPON	
0200	55660	006400	CLB		GET BOTH EXPONENT DIGITS
0201	55661	100400	DIV	+.12B	
	55662	000364			
0202	55663	040432	ADA	+.60B	CONVERT BOTH
0203	55664	044432	ADB	+.60B	TO ASCII
0204	55665	075324	STB	EXPON	
0205	55666	015454	JSB	OUTCR	OUTPUT 10'S DIGIT
0206	55667	061324	LDA	EXPON	
0207	55670	015454	JSB	OUTCR	OUTPUT 1'S DIGIT
0208	55671	015536	JSB	OUTCL	
0209	55672	027332	JMP	FMT90	
0210	55673	061750	FMEND	LDA	CONTR
0211	55674	002002	SZA		YES, CONTROL
0212	55675	027700	JMP	++3	CHARACTER FOUND ?
0213	55676	015536	JSB	OUTCL	YES
0214	55677	124556	JMP	XEC1A,I	NO
0215	55700	050425	CPA	+.53B	IS CARRIAGE
0216	55701	002001	RSS		CONTROL A +
0217	55702	027714	JMP	FM10	NO
0218	55703	060375	LDA	+.23B	YES
0219	55704	015454	JSB	OUTCR	OUTPUT AN X-OFF
0220	55705	060367	LDA	+.15B	AND A
0221	55706	015454	JSB	OUTCR	CARRIAGE RETURN
0222	55707	002400	CLA		AND A
0223	55710	015454	JSB	OUTCR	NULL.
0224	55711	002400	CLA		
0225	55712	071572	STA	CHRCT	
0226	55713	124556	JMP	XEC1A,I	
0227	55714	050427	FM10	CPA	+.55B
0228	55715	002001	RSS		IS IT A MINUS ?
0229	55716	124556	JMP	XEC1A,I	YES
0230	55717	060364	LDA	+.12B	OUTPUT A
0231	55720	015454	JSB	OUTCR	LINEFEED
0232	55721	124556	JMP	XEC1A,I	

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0234 56000          ORG 560000
0235**
0236***  MAKE A NUMBER LESS THAN 1  ***
0237**
0238*
0239*  MULTIPLY AN UNPACKED FLOATING POINT
0240*  NUMBER IN MANT1, MANT2 AND EXP BY 10 UNTIL
0241*  IT IS GREATER THAN 1, THEN DIVIDE BY 10
0242*
0243 56000 015300 #MTG1 JSB M8Y10
0244 56001 061322      LDA EXP          MULTIPLY
0245 56002 003026      CMA,SSA,INA,SZA  NUMBER BY 10
0246 56003 026006      JMP ++3          UNTIL IT IS
0247 56004 035324      ISZ EXPON          GREATER
0248 56005 025527      JMP MTG1+1          THAN 1
0249 56006 015302      JSB DBY10        DIVIDE BY 10
0250 56007 125526      JMP MTG1,I
0251*
0252*  DIVIDE AN UNPACKED FLOATING POINT NUMBER
0253*  IN MANT1, MANT2 AND EXP BY 10 UNTIL IT IS
0254*  LESS THAN 1
0255*
0256 56010 061324 #DTL1 LDA EXPON
0257 56011 065322 DTL10 LDB EXP          DIVIDE
0258 56012 007004      CMB,INB          NUMBER
0259 56013 006021      SSB,RSS          BY 10
0260 56014 125530      JMP DTL1,I          UNTIL
0261 56015 071324      STA EXPON          IT IS
0262 56016 015302      JSB DBY10        LESS
0263 56017 003400      CCA          THAN
0264 56020 041324      ADA EXPON          1
0265 56021 026011      JMP DTL10

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0267**
0268*** ROUND ASCII NUMBER ***
0269**
0270*
0271* NUMBER STORED ONE ASCII DIGIT PER WORD IN
0272* HOLDING BUFFER, ROUTINE GETS NEXT DIGIT
0273* AND ROUNDS IF IT IS >= 5.
0274* IF THERE IS A CARRY TO AN EXTRA DIGIT AND NO
0275* ROOM EXISTS, EXIT IS TO (P+1), OTHERWISE RETURN
0276* TO (P+2).
0277*
0278 56022 015424 #RUND JSB GETDG GET NEXT DIGIT
0279 56023 040345 ADA .-5 IS IT >= 5 ?
0280 56024 002020 SSA
0281 56025 125532 JMP ROUND,I
0282 56026 003400 CCA DECREMENT HOLD
0283 56027 041730 ADA HBP BUFFER POINTER
0284 56030 164000 ROND1 LDB 0,I LOAD NEXT DIGIT
0285 56031 006004 INB INCREMENT IT
0286 56032 054436 CPB .58 WAS IT A 9 ?
0287 56033 026036 JMP ++3 YES
0288 56034 174000 STB 0,I NO, SAVE IT
0289 56035 125532 JMP ROUND,I AND RETURN
0290 56036 064432 LDB .+60B OVERLAY
0291 56037 174000 STB 0,I A 0
0292 56040 050760 CPA IHB LEADING DIGIT ?
0293 56041 026044 JMP ++3 YES
0294 56042 040351 ADA .-1 NO, DECREMENT POINTER
0295 56043 026030 JMP ROND1
0296 56044 064433 LDB .+61B OVERLAY A
0297 56045 174000 STB 0,I ONE
0298 56046 064432 LDB .+60B LOAD
0299 56047 175730 STB HBP,I EXTRA ZERO
0300 56050 065754 LDB EFLAG FLOATING POINT
0301 56051 006002 SZB SPECIFICATION ?
0302 56052 026056 JMP ROND2 NO
0303 56053 035324 ISZ EXPON INCREMENT EXPONENT
0304 56054 000000 NOP
0305 56055 125532 JMP ROUND,I
0306 56056 007400 ROND2 CCB IS NBLK
0307 56057 045734 ADB NBLK LESS
0308 56060 006020 SSB THAN 1 ?
0309 56061 035532 ISZ ROUND NO, RETURN TO (P+2)
0310 56062 075734 STB NBLK YES, KEEP DECREMENTED VALUE
0311 56063 125532 JMP ROUND,I

```

```

0313**
0314*** OUTPUT BLANKS ***
0315**
0316*
0317* OUTPUTS THE NUMBER OF BLANKS SPECIFIED
0318* BY THE NEGATIVE OF REPCT. THE STACK POINTER
0319* IS INCREMENTED AND REPCT HAS THE VALUE ZERO
0320* UPON EXIT.
0321*
0322 56064 035757 #OTBL ISZ FSP INCREMENT STACK POINTER
0323 56065 061573 LDA BLANK OUTPUT A
0324 56066 015454 JSB OUTCR BLANK
0325 56067 035776 ISZ REPCT REPCT USED UP ?
0326 56070 026065 JMP *-3
0327 56071 125534 JMP OUTBL,I
0328*
0329* OUTPUT X-OFF, CARRIAGE RETURN, LINE FEED
0330*
0331 56072 #OTCL EQU *
0332 56072 060375 LDA .+23B
0333 56073 015454 JSB OUTCR
0334 56074 060367 LDA .+15B
0335 56075 015454 JSB OUTCR
0336 56076 060364 LDA .+12B
0337 56077 015454 JSB OUTCR
0338 56100 002400 CLA
0339 56101 071572 STA CHRCT
0340 56102 125536 JMP OUTCL,I

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0342**

0343*** SEARCH FOR A DELIMITING CHARACTER ***

0344**

0345*

0346* BEGINS SEARCH AT CHARACTER DP, WHEN A COMMA
 0347* OR SLASH IS FOUND, DP IS SET TO POINT TO THAT
 0348* CHARACTER. CHARACTERS ARE COUNTED AND IF THE
 0349* END OF THE STRING IS ENCOUNTERED BEFORE A
 0350* DELIMITER IS FOUND, A FLAG IS SET

0351*

0352	56103	061751	#DSCH	LDA DP	SET STRING POINTER TO
0353	56104	071646		STA FST	FIRST CHARACTER
0354	56105	103101		CLO	DON'T IGNORE BLANKS
0355	56106	015542	SER1	JSB MCHAR	GET STRING CHARACTER
0356	56107	050426		CPA .+54B	IS IT A COMMA ?
0357	56110	125540		JMP DSRCH,I	YES
0358	56111	050431		CPA .+57B	NO, IS IT A SLASH ?
0359	56112	125540		JMP DSRCH,I	YES
0360	56113	050423		CPA .+51B	NO, IS IT A RIGHT PARENTHESIS ?
0361	56114	125540		JMP DSRCH,I	YES
0362	56115	035751		ISZ DP	NO, INCREMENT DELIMITER POINTER
0363	56116	035745		ISZ CC	AND CHARACTER COUNTER
0364	56117	061751		LDA DP	
0365	56120	065745		LDB CC	
0366	56121	055762		CPB NCH	ALL CHARACTERS USED ?
0367	56122	125540		JMP DSRCH,I	YES
0368	56123	026106		JMP SER1	NO

0369**

0370*** MASK OUT A CHARACTER ***

0371**

0372*

0373* GET NEXT CHARACTER FROM FORMAT STRING
 0374* ADDRESS OF CHARACTER IS IN (A). CHARACTER IS
 0375* RETURNED IN (A)

0376*

0377	56124	000065	#MCHR	CLE,ERA	SHIFT ADDRESS RIGHT
0378	56125	164000		LDB 0,I	LOAD WORD FROM STRING
0379	56126	002041		SEZ,RSS	HIGH CHARACTER ?
0380	56127	005727		BLF,BLF	YES, SWITCH POSITIONS
0381	56130	060001		LDA 1	NO
0382	56131	010443		AND 0377	MASK OUT LOW CHARACTER
0383	56132	102301		SOS	SHOULD BLANKS BE IGNORED ?
0384	56133	125542		JMP MCHAR,I	
0385	56134	051573		CPA BLANK	YES, IS CHARACTER A BLANK ?
0386	56135	026143		JMP MCHR1	YES
0387	56136	040766		ADA M96	NO
0388	56137	002021		SSA,RSS	LOWER CASE?
0389	56140	040317		ADA M32	YES
0390	56141	040730		ADA .140	NO
0391	56142	125542		JMP MCHAR,I	
0392	56143		MCHR1	EQU *	
0393	56143	035646		ISZ FST	INCREMENT STRING POINTER
0394	56144	061646		LDA FST	NEXT CHARACTER
0395	56145	051751		CPA DP	A DELIMITER ?
0396	56146	125542		JMP MCHAR,I	YES, RETURN

```

0397 56147 025543      JMP MCHAR+1  IGNORE THE BLANK
0398**                **
0399*** EVALUATE EXPRESSION ***
0400**                **
0401*
0402* EXTRACT THE NEXT VARIABLE TO BE OUTPUT BY THE FORMATTER, IF
0403* NONE FOUND, EXIT TO (P+1). IF A STRING IS FOUND, EXIT TO
0404* (P+2) AFTER PREPARING THE STRING FOR OUTPUT. IF A NUMERIC
0405* QUANTITY IS FOUND, EXIT TO (P+3) WITH THE NUMBER IF (A) AND (B).
0406* EDSTA IS SET TO 0 IF THIS IS THE LAST VARIABLE IN THE STATEMENT.
0407*
0408 56150      #EVEP EQU *
0409 56150 061756 LDA FFLG      MAT
0410 56151 002020 SSA          PRINT?
0411 56152 026212 JMP EVEX5      YES
0412 56153 065613 EVEX0 LDB TEMP1
0413 56154 055334 CPB PRGCT      END OF STATEMENT?
0414 56155 125544 JMP EVEXP,I    YES
0415 56156 003400 CCA          TURN OFF
0416 56157 071472 STA EOL      FUNCTION FLAG
0417 56160 015336 JSB FORMX    EVALUATE FORMULA
0418 56161 165332 LDB OPDST,I  IS IT A
0419 56162 006020 SSB          STRING VARIABLE ?
0420 56163 026177 JMP EVEX3      YES
0421 56164 015376 JSB OPCHK     NO, UNSTACK VALUE ADDRESS
0422 56165 035472 ISZ EOL      A FUNCTION ?
0423 56166 026153 JMP EVEX0
0424 56167 061613 LDA TEMP1     LAST VARIABLE?
0425 56170 051334 CPA PRGCT
0426 56171 002400 CLA          YES
0427 56172 071753 STA EDSTA     NO
0428 56173 104200 DLD 1,I      NO, LOAD NUMBER
          56174 100001
0429 56175 035544 ISZ EVEXP     RETURN TO (P+3)
0430 56176 026210 JMP EVEX4
0431 56177 060350 EVEX3 LDA #2    PREPARE
0432 56200 015344 JSB PSTR     PRINT
0433 56201 071256 STA TEMP4    STRING
0434 56202 075410 STB TPRME
0435 56203 065613 LDB TEMP1    END OF
0436 56204 055334 CPB PRGCT    STATEMENT?
0437 56205 006400 CLB          YES
0438 56206 075753 STB EDSTA     NO
0439 56207 065410 LDB TPRME
0440 56210      EVEX4 EQU *
0441 56210 035544 ISZ EVEXP     RETURN TO
0442 56211 125544 JMP EVEXP,I   (P+2)
0443 56212 035472 EVEX5 ISZ ELCNT FINISHED CURRENT MATRIX?
0444 56213 026244 JMP EVEX7     NO
0445 56214 065613 EVEX6 LDB TEMP1 YES
0446 56215 055334 CPB PRGCT    END OF STATEMENT?
0447 56216 125544 JMP EVEXP,I  YES
0448 56217 161613 LDA TEMP1,I  GET NEXT OPERAND
0449 56220 010700 AND OPDMK
0450 56221 002003 SZA,RSS     NULL

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0451	56222	125544		JMP	EVEXP,I	YES
0452	56223	002020		SSA		NO, FUNCTION?
0453	56224	026262		JMP	EVEX8	YES
0454	56225	001000		AL9		NO, LOAD
0455	56226	041575		ADA	SYMTB	BASE ADDRESS
0456	56227	040351		ADA	.-1	OF ARRAY
0457	56230	164000		LDB	A,I	
0458	56231	044350		ADB	.-2	SAVE POINTER TO
0459	56232	075574		STB	SBPTR	DYNAMIC DIMENSIONS
0460	56233	015472		JSB	VCHK	VALIDATE ARRAY ELEMENTS
0461	56234	161574		LDA	SBPTR,I	SET POINTER
0462	56235	035574		ISZ	SBPTR	TO FIRST ELEMENT
0463	56236	100200		MPY	SBPTR,I	OF ARRAY
	56237	101574				
0464	56240	035574		ISZ	SBPTR	WHILE COMPUTING
0465	56241	003004		CMA,INA		NUMBER OF
0466	56242	071472		STA	ELCNT	ELEMENTS
0467	56243	035613		ISZ	TEMP1	BUMP TO NEXT OPERAND
0468	56244	003400	EVEX7	CCA		LAST
0469	56245	051472		CPA	ELCNT	ELEMENT?
0470	56246	002001		RSS		YES
0471	56247	026253		JMP	EVEX9	NO
0472	56250	061613		LDA	TEMP1	END OF
0473	56251	051334		CPA	PRGCT	STATEMENT?
0474	56252	002400		CLA		YES
0475	56253		EVEX9	EQU	*	
0476	56253	071753		STA	EDSTA	NO
0477	56254	104200		DLI	SBPTR,I	GET NUMBER
	56255	101574				
0478	56256	035574		ISZ	SBPTR	BUMP TO
0479	56257	035574		ISZ	SBPTR	NEXT ELEMENT
0480	56260	035544		ISZ	EVEXP	
0481	56261	026210		JMP	EVEX4	EXIT
0482	56262	003400	EVEX8	CCA		TURN OFF
0483	56263	071472		STA	EOL	FUNCTION FLAG
0484	56264	015336		JSB	FORMX	EVALUATE FUNCTION
0485	56265	015376		JSB	OPCHK	REMOVE ARGUMENT FROM TEMP STACK
0486	56266	026214		JMP	EVEX6	GET NEXT OPERAND
0487*						
0488*						
0489*						
0490	56267	000000	MSQHD	BSS	MESBN	
0491	56641			BSS	0	

```

0002 60000          ORG 600000
0003 60000 020134  RVRSL ASC 1, \
0004 60001 160000  TBITS OCT 160000
0005 60002 120000  B120K OCT 120000
0006 60003 130000  B130K OCT 130000
0007 00226          B160K EQU INI
0008 60004 000137  BKSPC OCT 137
0009 60005 000000  TTA   BSS 1
0010 60006 000000  TTB   BSS 1
0011 60007 000000  TTE   BSS 1
0012 60010 000000  TUG   BSS 1
0013 60011 000000  TADR  BSS 1

```

0014*

0015*

0016* THE TSB DRUM DRIVER IS RESPONSIBLE FOR ALL TRANSFERS TO AND FROM
0017* THE SYSTEM DRUM(S). THE CALLING SEQUENCE TO THE DRIVER IS AS
0018* FOLLOWS:

0019* JSB DRUM,I

0020* A-REG=DRUM ADDRESS, IN THE STANDARD SYSTEM FORMAT, NAMELY:

0021* A(15:14)=DRUM NO.

0022* A(13:8) =TRACK NO.

0023* A(7) =0

0024* A(6:0) =SECTOR NO.

0025*

0026* B-REG=CORE ADDRESS (BITS 14:0) AND DIRECTION (BIT 15).

0027* B(15)=1 FOR A DRUM READ, 0 FOR A DRUM WRITE.

0028*

0029* WORD=# OF WORDS TO BE TRANSFERRED. IF WORD=0, NO TRANSFER IS
0030* DONE. IF THE TRANSFER IS A WRITE, THE ACTUAL # OF WORDS
0031* TRANSFERRED IS =64*INT(WORD/64).

0032*

0033* THE DRIVER MAINTAINS A FLAG CALLED ENDRM. IT IS SET TO -1 WHEN A
0034* TRANSFER IS INITIATED, AND CLEARED UPON SUCCESSFUL COMPLETION OF
0035* THE TRANSFER.

0036*

0037* WHEN AN ATTEMPTED TRANSFER FAILS, IT IS REPEATED 95 ADDITIONAL
0038* TIMES. IF IT CONTINUES TO FAIL, ENDRM IS SET TO 1 BEFORE THE
0039* DRIVER RETURNS TO ITS CALLER.

0040*

```

0042 60012 000000  LDRUM NOP          ENTRY POINT
0043 60013 103100  CLF 0             INTERRUPT OFF.
0044 60014 072140  STA DADDR        SAVE DRUM AND
0045 60015 076141  STB CORE         CORE ADDRESSES.
0046 60016 066012  LDB LDRUM        SET UP RETURN
0047 60017 076052  STB DINT         ADDRESS.
0048 60020 006400  CLB             TEST FOR ZERO LENGTH TRANSFER.
0049 60021 054072  CPB WORD
0050 60022 026072  JMP DEND        NO TRANSFER.
0051 60023 007400  CCB             SET DRIVER
0052 60024 074261  STB ENDRM       BUSY FLAG
0053*
0054 60025 006400  DSCST CLB
0055 60026 100042  LSL 2           GET SELECT CODE FROM DRUM TABLE

```

0056	60027	044676		ADB ?ATBL	
0057	60030	160001		LDA 1,I	
0058	60031	072146		STA DTEMP	
0059	60032	010734		AND B77	
0060	60033	040552		ADA LIA1	CONSTRUCT "LIA COMMAND CHANNEL"
0061	60034	072077		STA DRIVE	
0062	60035	072062		STA DINT1	
0063	60036	072132		STA DRMER	
0064	60037	040772		ADA B100	CONSTRUCT "OTA COMMAND CHANNEL"
0065	60040	072126		STA DINT2	
0066	60041	040734		ADA B77	CONSTRUCT "STC DATA CHANNEL"
0067	60042	072130		STA DINT3	
0068	60043	022142		XOR DCHAN	CONSTRUCT "20000B+SC" AS DMA
0069	60044	102607		OTA DMA	CONTROL WORD.
0070*					
0071	60045	060766		LDA M96	INITIALIZE FAIL COUNT
0072	60046	072143		STA DFAIL	
0073	60047	002400		CLA	
0074	60050	072147		STA DRATS	CLEAR ERROR STATUS SAVE WORD
0075	60051	026077		JMP DRIVE	GO INITIATE TRANSFER.
0076*					
0077*	INTERRUPT SECTION *				
0078*					
0079	60052	000000	DINT	NOP	
0080	60053	103100		CLF 0	INHIBIT INTERRUPT.
0081	60054	104400		DST DSAVE	SAVE A AND B REGISTERS.
	60055	060144			
0082	60056	064362		LDB .+10B	COMPUTE MASK FOR ERROR TEST.
0083	60057	062141		LDA CORE	TEST BIT 3 ONLY IF OUTPUT.
0084	60060	002020		SSA	
0085	60061	064364		LDB .+12B	TEST BITS 1 AND 3 IF INPUT
0086	60062	102500	DINT1	LIA 0	READ DRUM STATUS.
0087	60063	010001		AND 1	MASK RELEVANT BITS.
0088	60064	002002		SZA	IF ERROR BITS SET, GO TO
0089	60065	026132		JMP DRMER	DRUM RETRY
0090	60066	070261	DEND2	STA ENDRM	FLAG OPERATION COMPLETE
0091	60067	062147		LDA DRATS	GET ERROR STATUS
0092	60070	002002		SZA	RETRIES OR FAILS?
0093	60071	016150		JSB DRAIL	YES, GO INFORM OPERATOR
0094	60072	107707	DEND	CLC DMA,C	CLEAR DMA.
0095	60073	104200	DEND1	DLD DSAVE	RESTORE REGISTERS.
	60074	060144			
0096	60075	102100		STF 0	FORCE INTERRUPT ON.
0097	60076	126052		JMP DINT,I	EXIT.
0098*					
0099	60077	102500	DRIVE	LIA 0	START TRANSFER.
0100	60100	000010		SLA	TEST IF CONTROLLER BUSY.
0101	60101	026077		JMP DRIVE	
0102	60102	001727		ALF,ALF	
0103	60103	002021		SSA,RSS	
0104	60104	026077		JMP DRIVE	
0105	60105	066141		LDB CORE	OUTPUT CORE ADDRESS
0106	60106	106703		CLC DMA=4	TO DMA.
0107	60107	106603		OTB DMA=4	
0108	60110	060072		LDA WORD	IF OUTPUT, SET WORD COUNT TO AN

0109	60111	007020		CMB,SSB	EVEN # OF SECTORS,
0110	60112	010610		AND M64	
0111	60113	102703		STC DMA=4	OUTPUT WORD
0112	60114	102603		OTA DMA=4	COUNT,
0113*					
0114	60115	062146		LDA DTEMP	GET DRUM INFO,
0115	60116	001727		ALF,ALF	A(15:14)+TRACK PREFIX.
0116	60117	005200		RBL	B(0)+DIRECTION,
0117	60120	100042		LSL 2	B(2:0)+DADDR PREFIX,
0118	60121	062140		LDA DADDR	GET DRUM ADDRESS,
0119	60122	001222		RAL,RAL	REMOVE DRUM NUMBER,
0120	60123	100046		LSL 6	EXTRACT TRACK,
0121	60124	001200		RAL	REMOVE BIT 7,
0122	60125	101051		LSR 9	GET FINAL DRUM ADDRESS,
0123	60126	102600	DINT2	OTA 0	SEND DRUM ADDRESS TO DRUM
0124	60127	103707		STC DMA,C	INITIATE DMA,
0125	60130	102700	DINT3	STC 0	INITIATE DRUM,
0126	60131	026073		JMP DEND1	
0127*					
0128	60132	102500	DRMER	LIA 0	GET STATUS
0129	60133	072147		STA DRATS	AND SAVE IT
0130	60134	036143		ISZ DFAIL	TEST FOR DEATH
0131	60135	026077		JMP DRIVE	TRY AGAIN,
0132	60136	002404		CLA,INA	
0133	60137	026066		JMP DEND2	
0134	60140		DSCE0	EQU *	
0135*					
0136*					
0137	60140	000000	DADDR	BSS 1	DRUM ADDRESS
0138	60141	000000	CORE	BSS 1	CORE ADDRESS,
0139	60142	122700	DCHAN	OCT 122700	
0140	60143	000000	DFAIL	BSS 1	FAIL COUNT,
0141	60144	000000	DSAVE	BSS 2	A&B REGISTERS,
0142	60146	000000	DTEMP	BSS 1	TBL ENTRY,
0143	60147	000000	DRATS	BSS 1	ERROR STATUS SAVE WORD

0145* THIS ROUTINE INFORMS THE SYSTEM OPERATOR EACH TIME THE
 0146* DRUM DRIVER FAILS TO SUCCESSFULLY COMPLETE A REQUESTED
 0147* TRANSFER AND EACH TIME RETRIES ARE NEEDED TO COMPLETE
 0148* A REQUESTED TRANSFER. THE PRINTOUT INCLUDES THE
 0149* OPERATION, NUMBER OF SECTORS BEING TRANSFERRED, DRUM
 0150* ADDRESS, AND STATUS.

0152	60150	000000	DRAIL	NOP	ENTRY POINT
0153	60151	114211		JSB GMQBP, I	GET POINTER TO MESSAGE QUEUE
0154	60152	126150		JMP DRAIL, I	NO ROOM; RETURN (DO NOTHING)
0155*					
0156	60153	064261		LDB ENDRM	
0157	60154	006003		SZB, RSS	RETRY OR FAILURE MESSAGE?
0158	60155	026173		JMP DRA1	RETRY
0159	60156	066414		LDB DR, 66	FAILURE; SET LENGTH
0160	60157	174000		STB A, I	
0161	60160	002004		INA	
0162	60161	066413		LDB DCRLF	CARRIAGE RETURN/
0163	60162	174000		STB A, I	LINEFEED
0164	60163	002004		INA	
0165	60164	066406		LDB DRBLS	
0166	60165	174000		STB A, I	TWO BELLS
0167	60166	002004		INA	
0168	60167	072416		STA CARRD	
0169	60170	062343		LDA DRDFP	OUTPUT
0170	60171	064344		LDB =6	"DRUM FAILURE"
0171	60172	026201		JMP DRA2	
0172*					
0173*					
0174	60173	064436	DRA1	LDB =58	COME HERE FOR RETRY MESSAGE
0175	60174	174000		STB A, I	
0176	60175	002004		INA	
0177	60176	072416		STA CARRD	
0178	60177	062352		LDA DRDRP	OUTPUT
0179	60200	064345		LDB =6	"DRUM RETRY"
0180	60201	072415	DRA2	STA CARRS	
0181	60202	016307		JSB CARRY	
0182*					
0183*					
0184*					
0185	60203	066141		LDB CORE	
0186	60204	006021		SSB, RSS	
0187	60205	026210		JMP DRA3	
0188	60206	062360		LDA DRREP	OUTPUT "READING"
0189	60207	002001		RSS	
0190	60210	062365	DRA3	LDA DRWRP	OUTPUT "WRITING"
0191	60211	072415		STA CARRS	
0192	60212	064346		LDB =4	
0193	60213	016307		JSB CARRY	
0194*					
0195*					
0196*					
0197	60214	060072		LDA WORD	CONVERT
0198	60215	007400		CCB	=WORDS

0199	60216	101026	ASR 6	TO	
0200	60217	003004	CMA, INA	+SECTORS	
0201	60220	006400	CLB		
0202	60221	100400	DIV .100		
	60222	000437			
0203	60223	042410	ADA DRAB0		
0204	60224	172416	STA CARRD, I	DIGIT 1	
0205	60225	036416	ISZ CARRD		
0206	60226	060001	LDA B		
0207	60227	016317	JSB DRANM	DIGITS 2 AND 3	
0208*					
0209*					
0210	60230	062372	LDA DRAP		
0211	60231	072415	STA CARRS		
0212	60232	064344	LDB .-6		
0213	60233	016307	JSB CARRY	OUTPUT "SECTORS AT"	
0214*					
0215*	GET AND OUTPUT DRUM ADDRESS				
0216*					
0217	60234	062140	LDA DADDR		
0218	60235	001222	RAL, RAL	DRUM # IN LOW 2 BITS	
0219	60236	010355	AND .+3		
0220	60237	001727	ALF, ALF		
0221	60240	042411	ADA DRAS0		
0222	60241	172416	STA CARRD, I	OUTPUT DRUM # - SLASH	
0223	60242	036416	ISZ CARRD		
0224	60243	062140	LDA DADDR		
0225	60244	001727	ALF, ALF	ISOLATE TRACK	
0226	60245	010734	AND B77		
0227	60246	016317	JSB DRANM	OUTPUT TRACK #	
0228	60247	062140	LDA DADDR		
0229	60250	010441	AND B177	ISOLATE SECTOR	
0230	60251	006400	CLB		
0231	60252	100400	DIV .100		
	60253	000437			
0232	60254	042412	ADA DRAS0		
0233	60255	172416	STA CARRD, I	OUTPUT SLASH - DIGIT 1	
0234	60256	036416	ISZ CARRD		
0235	60257	060001	LDA B		
0236	60260	016317	JSB DRANM	OUTPUT DIGITS 2 AND 3	
0237	60261	062407	LDA DRDOT		
0238	60262	172416	STA CARRD, I	PERIOD - BLANK	
0239	60263	036416	ISZ CARRD		
0240*					
0241*	GET STATUS AND OUTPUT IT				
0242*					
0243	60264	062401	LDA DRSTP		
0244	60265	072415	STA CARRS	OUTPUT	
0245	60266	064346	LDB .-4		
0246	60267	016307	JSB CARRY	"STATUS"	
0247	60270	066147	LDB DRATS		
0248	60271	002400	CLA		
0249	60272	100104	RRL 4		
0250	60273	076415	STB CARRS		
0251	60274	016331	JSB DR8NM	DIGITS 1 AND 2	

0252	60275	066415	LDB	CARRS	
0253	60276	002400	CLA		
0254	60277	100106	RRL	6	
0255	60300	016331	JSB	DR8NM	DIGITS 3 AND 4
0256	60301	062147	LDA	DRATS	
0257	60302	010734	AND	B77	
0258	60303	016331	JSB	DR8NM	DIGITS 5 AND 6
0259*					
0260	60304	062413	LDA	DCRLF	
0261	60305	172416	STA	CARRD,I	CARRIAGE RETURN / LINEFEED
0262	60306	126150	JMP	DRAIL,I	
0263*					
0264*					
0265	60307	000000	CARRY	NOP	MOVES -B WORDS FROM CARRS,I TO
0266	60310	006025	SSB,INB,RSS		CARRD,I
0267	60311	126307	JMP	CARRY,I	
0268	60312	162415	LDA	CARRS,I	
0269	60313	172416	STA	CARRD,I	
0270	60314	036415	ISZ	CARRS	
0271	60315	036415	ISZ	CARRD	
0272	60316	026310	JMP	CARRY+1	
0273*					
0274*					
0275	60317	000000	DRANM	NOP	CONVERT A # < 100 TO ASCII
0276	60320	006400	CLB		
0277	60321	100400	DIV	+.10	
	60322	000364			
0278	60323	001727	ALF,ALF		
0279	60324	040001	ADA	B	
0280	60325	040574	ADA	ASC00	
0281	60326	172416	STA	CARRD,I	OUTPUT 2 ASCII DIGITS
0282	60327	036416	ISZ	CARRD	
0283	60330	126317	JMP	DRANM,I	
0284*					
0285*					
0286	60331	000000	DR8NM	NOP	CONVERTS A # < 1000 TO ASCII
0287	60332	006400	CLB		(TWO OCTAL DIGITS)
0288	60333	100400	DIV	+.8	
	60334	000362			
0289	60335	001727	ALF,ALF		
0290	60336	040001	ADA	B	
0291	60337	040574	ADA	ASC00	
0292	60340	172416	STA	CARRD,I	OUTPUT 2 ASCII DIGITS
0293	60341	036416	ISZ	CARRD	
0294	60342	126331	JMP	DR8NM,I	
0295*					
0296*					
0297	60343	060344	DRDFP	DEF DRDF	
0298	60344	042122	DRDF	ASC 6,DRUM FAILURE	
	60345	052515			
	60346	020106			
	60347	040511			
	60350	046125			
	60351	051105			
0299	60352	060353	DRDRP	DEF DRDR	

0300	60353	042122	DRDR	ASC 5, DRUM RETRY
	60354	052515		
	60355	020122		
	60356	042524		
	60357	051131		
0301	60360	060361	DRREP	DEF DRRE
0302	60361	020122	DRRE	ASC 4, READING
	60362	042501		
	60363	042111		
	60364	047107		
0303	60365	060366	DRWRP	DEF DRWR
0304	60366	020127	DRWR	ASC 4, WRITING
	60367	051111		
	60370	052111		
	60371	047107		
0305	60372	060373	DRSAP	DEF DRSA
0306	60373	020123	DRSA	ASC 6, SECTORS AT
	60374	042503		
	60375	052117		
	60376	051123		
	60377	020101		
	60400	052040		
0307	60401	060402	DRSTP	DEF DRST
0308	60402	020123	DRST	ASC 4, STATUS
	60403	052101		
	60404	052125		
	60405	051440		
0309	60406	003407	DRBLS	OCT 3407
0310	60407	027040	DRDOT	ASC 1, 0
0311	60410	020060	DRAB0	ASC 1, 0
0312	60411	030057	DKA0S	ASC 1, 0/
0313	60412	027460	DKAS0	ASC 1, 0
0314	60413	006412	DCRLF	OCT 6412
0315*				
0316	60414	000102	DR, 66	DEC 66
0317*				
0318	60415	000000	CARRS	BSS 1
0319	60416	000000	CARRD	BSS 1
0320*				

PAGE 0276 #26 POWER FAIL/RESTART ROUTINE

0322* THE POWER FAIL/RESTART ROUTINE INSURES A LOGICAL SHUTDOWN AND
 0323* RESTART OF THE SYSTEM IN CASE OF POWER FAIL.

0325	60417	000000	POW	NOP	INTERRUPT ENTRY POINT.
0326	60420	102204		SFC 4	TEST FOR FAIL OR RESTART.
0327	60421	026474		JMP POW1	TRANSFER TO RESTART SECTION.
0328*					
0329*	POWER FAIL SECTION.				
0330*					
0331	60422	104400		DST POWI	SAVE REGISTERS TEMPORARILY.
	60423	060651			
0332	60424	005520		ERB,BLS	
0333	60425	102201		SOC	
0334	60426	006004		INB	
0335	60427	002400		CLA	IF POWFF WAS NONZERO,
0336	60430	052650		CPA POWFF	INTERRUPT WAS FROM POWER FAIL.
0337	60431	026434		JMP ++3	
0338	60432	072650		STA POWFF	
0339	60433	026472		JMP POW2	
0340*					
0341	60434	062417		LDA POW	TEST FOR INTERRUPT OUT OF
0342	60435	042670		ADA POWD1	RESTART SECTION.
0343	60436	002020		SSA	
0344	60437	026443		JMP ++4	NORMAL FAIL.
0345	60440	042671		ADA POWD2	
0346	60441	002020		SSA	
0347	60442	026472		JMP POW2	FAILED FROM RESTART SECTION.
0348*					
0349	60443	076655		STB POWEO	NORMAL FAILURE--SAVE REGISTERS.
0350	60444	104200		DLD POWI	
	60445	060651			
0351	60446	104400		DST POWAB	
	60447	060653			
0352	60450	062417		LDA POW	
0353	60451	072656		STA POWP	
0354	60452	102501		LIA 01	LOAD AND SAVE
0355	60453	072661		STA POWSW	THE SWITCH REGISTER
0356*					
0357	60454	002400		CLA	GET FLAGS FOR ALL DEVICES THAT
0358*					CAN INTERRUPT.
0359	60455	102207		SFC DMA	CHECK DMA FLAG
0360	60456	030353		IOR .+1	BIT ZERO FOR CH 7
0361*		SFC CH1			NOT INTERESTED IN STATE
0362*		IOR .+2			OF THIS CHANNEL
0363	60457	102211		SFC CH2	CHECK INTERCONNECT TWO
0364	60460	030356		IOR .+4	BIT 2 FOR CH 12
0365	60461	102212		SFC 7SC	CHECK FLAG ON CONSOLE TTY.
0366	60462	030362		IOR .+10B	BIT 3 FOR TTY
0367	60463	102216		SFC CLOCK	CHECK TIME BASE GENERATOR
0368	60464	030442		IOR 0200	BIT 7 FOR CH 16
0369	60465	072657		STA POWFL	
0370	60466	006400		CLB	
0371	60467	102200		SFC 0	IF INTERRUPT IS SET, STORE
0372	60470	066556		LDB STF0	STF 0 INTO POWND; ELSE NOP.
0373	60471	076641		STB POWND	

0374*

0375 60472 106704 POW2 CLC 4 SET FOR RESTART.
 0376 60473 102000 HLT

0378* RESTART SECTION

0380 60474 102704 POW1 STC 4 RESET FOR POWER FAIL.
 0381 60475 062661 LDA POWSW FETCH AND RESTORE
 0382 60476 102601 OTA 01 THE SWITCH REGISTER
 0383 60477 060360 LDA .+6 INITIALIZE J AS POWER FAIL POIN-
 0384 60500 072652 STA POWJ TER AND I AS DMA POINTER,
 0385 60501 002004 INA
 0386 60502 072651 STA POWI
 0387 60503 060355 LDA .+3 RESET CLOCK FREQUENCY.
 0388 60504 102616 OTA CLOCK
 0389 60505 062657 LDA POWFL COPY FLAGS.
 0390 60506 072660 STA POWF
 0391 60507 066001 LDB TBITS IF ASR35 FLAG WAS CLEAR, SET UP
 0392 60510 010362 AND .+10B THE CORRECT STATE OF THE ASR35
 0393 60511 002003 SZA,RSS OTHERWISE LEAVE IT SET IN THE
 0394 60512 106612 OTB ?SC INPUT STATE.

0395*

0396* NOW TEST THE INDIVIDUAL IO FLAGS, IF A FLAG WAS CLEAR, WE PERFORM
 0397* A CLF OPERATION, IF IT WAS SET, WE TAKE STRONGER ACTION.

0398*

0399 60513 062660 POW4 LDA POWF GET WORD CONTAINING FLAGS, THE
 0400 60514 001300 RAR ONE TO BE TESTED IS IN BIT 0 AND
 0401 60515 072660 STA POWF I* ITS SELECT CODE.
 0402 60516 002020 SSA
 0403 60517 026531 JMP POW5 FLAG SET.

0404*

0405 60520 062651 LDA POWI PRODUCE CLF INSTRUCTION,
 0406 60521 042560 ADA CLF0
 0407 60522 072523 STA **1
 0408 60523 000000 NOP EXECUTE CLF,
 0409 60524 062651 POW6 LDA POWI TEST FOR DONE.
 0410 60525 050370 CPA .+16B CHECK FOR CLOCK LOCATION
 0411 60526 026567 JMP POWI4 DONE.
 0412 60527 036651 ISZ POWI OTHERWISE, BUMP I AND LOOP.
 0413 60530 026513 JMP POW4

0414*

0415* FLAG WAS SET, TEST IF ROUTINE HAD ACTUALLY BEEN
 0416* ENTERED, IF SO, PERFORM A DUMMY INTERRUPT TO PRE-
 0417* VENT IT FROM BEING REENTERED.

0418*

0419 60531 066662 POW5 LDB POWTB COMPUTE LOCATION OF RETURN AD-
 0420 60532 046652 ADB POWJ DRESS OF HIGHEST PRIORITY ROU-
 0421 60533 164001 LDB 1,I TINE NOT YET TESTED.
 0422 60534 160001 LDA 1,I GET ITS RETURN ADDRESS
 0423 60535 066662 LDB POWTB
 0424 60536 046651 ADB POWI POINT TO RET.ADR. OF TEST ROUTIN
 0425 60537 003000 CMA TEST FOR INTERRUPT OUT OF THAT
 0426 60540 140001 ADA 1,I ROUTINE.
 0427 60541 002021 SSA,RSS

```

0428 60542 026524          JMP POW6          NO-INTERRUPT WAS PENDING.
0429 60543 044362      ADB10 ADB .+10B      POINT TO END OF TEST ROUTINE.
0430 60544 140001          ADA 1,I
0431 60545 002020          SSA
0432 60546 026524          JMP POW6          NOT INTERRUPTED.
0433*
0434* PERFORM DUMMY INTERRUPT TO PREVENT AN UNWANTED ONE LATER.
0435*
0436 60547 062543          LDA ADB10        PLACE ADB10 IN INTERRUPT CELL.
0437 60550 172651          STA POWI,I
0438 60551 062651          LDA POWI
0439 60552 042700          ADA STC0        SET UP STC AND CLC.
0440 60553 072555          STA POWST
0441 60554 020736          XOR B4000       CREATE CLC.
0442 60555 102700      POWST STC 0        SET DEVICE CONTROL
0443 60556 102100      STF0  STF 0       ENABLE INTERRUPT (CAUSING ADB10&
0444 60557 072561          STA POWCL       COMPUTE ADR. OF CORRECT INT. VAL
0445 60560 103100      CLF0  CLF 0       DISABLE INTERRUPT.
0446 60561 106700      POWCL CLC 0      DISABLE DEVICE.
0447 60562 160001          LDA 1,I         GET CORRECT INTERRUPT CONTENTS.
0448 60563 172651          STA POWI,I      STORE IN INTERRUPT CELL.
0449 60564 062651          LDA POWI        UPDATE INTERRUPT CHAIN
0450 60565 072652          STA POWJ        POINTER.
0451 60566 026524          JMP POW6        GO TEST NEXT DEVICE.
0452*
0453*** HAVE DONE ALL DUMMY INTERRUPTS.
0454*** SET CONTROL ON CLOCK AND ITY.
0455*** AND RESTART INTERCONNECT.
0456*
0457 60567          POW14 EQU *
0458 60567 103710          STC CH1,C       RESTART FIRST CHANNEL
0459 60570 060073          LDA SVCH2       PUT WORD BACK OUT ON CH2
0460 60571 102611          OTA CH2
0461 60572 102111          STF CH2
0462 60573 062657          LDA POWFL       LOAD FLAG WORD
0463 60574 010356          AND .+4         LEAVE BIT 2
0464 60575 002003          SZA,RSS        SKIP IF FLAG SET
0465 60576 103711          STC CH2,C       OTHERWISE, TELL OTHER MACHINE
0466 60577 106711          CLC CH2        WANT NO INTERRUPT
0467 60600 102710          STC CLOCK
0468 60601 102712          STC ?SC
0469 60602 062001          LDA TBITS       RE-ESTABLISH PREVIOUS
0470 60603 102612          OTA ?SC        STATE OF ASK35
0471 60604 036650          ISZ POWFF       SET IN CASE OF ANOTHER PF
0472*** IF DRUM TRANSFER WAS IN PROGRESS REPEAT TRANSFER
0473*** ELSE DO NORMAL RETURN.
0474 60605 060261          LDA ENDRM
0475 60606 002021          SSA,RSS
0476 60607 026630          JMP POW52       DRUM FREE; GO PROCESS DISCS
0477*** DRUM DRIVER WAS BUSY. TEST IF POWER FAIL
0478*** TOOK PLACE WITHIN DRUM DRIVER
0479 60610 066656          LDB POWP        GET RETURN ADDRESS.
0480 60611 046702          ADB POW28       COMPARE TO START OF DRUM DRIVER
0481 60612 006020          SSB            RETURN ADDRESS < DRIVER ?
0482 60613 026624          JMP POW29       YES,

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0483	60614	046701	ADB POW31	COMPARE TO END OF DRIVER,
0484	60615	006021	SSB,RSS	RETURN ADDRESS > DRIVER ?
0485	60616	026624	JMP POW29	YES.
0486	60617	016643	JSB POW50	WAS IN DRUM DRIVER; DO DISCS 1ST
0487	60620	062140	LDA DADDR	GET DRUM ADDRESS
0488	60621	006400	CLB	SAY NOT IN RESTART
0489	60622	076650	STB POWFF	ROUTINE
0490	60623	026025	JMP DSCST	JUMP DIRECTLY TO THE DRIVER
0491	60624		POW29 EQU *	
0492	60624	066141	LDB CORE	GET CORE AND
0493	60625	062140	LDA DADDR	DRUM ADDRESS
0494	60626	114770	JSB DRUM,I	RECALL DRUM DRIVER
0495	60627	103100	CLF 0	
0496*				
0497	60630		POW52 EQU *	
0498	60630	016643	JSB POW50	GO WAIT FOR DISCS
0499*				
0500	60631		POW27 EQU *	
0501	60631	002400	CLA	
0502	60632	072650	STA POWFF	SAY NOT RESTARTING
0503***	RESTORE REGISTERS,			
0504	60633	062655	LDA POWEO	IEI AND OVERFLOW
0505	60634	103101	CLO	
0506	60635	000036	SLA,ELA	
0507	60636	102101	STU	
0508	60637	104200	DL0 POWAB	
	60640	060653		
0509***	RESET INTERRUPT SYSTEM TO SAME AS BEFORE FAIL.			
0510	60641	000000	POWND NOP	OR STF 0,
0511	60642	126656	JMP POWP,I	RETURN.
0512	60643	000000	POW50 NOP	
0513	60644	062714	LDA PPOFFP	GET POINTER TO POWFF
0514	60645	066656	LDB POWP	GET POWER FAIL LOCATION
0515	60646	114216	JSB DREDP,I	GO DO DISC STUFF
0516	60647	126643	JMP POW50,I	RETURN
0517	60650		POW40 EQU *	
0518*				
0519	60650	000000	POWFF NOP	SET TO 1 DURING DISC RECALL,
0520	60651	000000	POWI BSS 1	POINTER TO DEVICE BEING TESTED,
0521	60652	000000	POWJ BSS 1	POINTER TO INTERRUPT CHAIN,
0522	60653	000000	POWAB BSS 2	TEMPS TO HOLD VALUES OF A&B,
0523	60655	000000	POWEO BSS 1	TEMP TO HOLD VALUE OF E&O,
0524	60656	000000	POWP BSS 1	TEMP TO HOLD VALUE OF P
0525	60657	000000	POWFL BSS 1	TEMP TO HOLD STATE OF I/O FLAGS,
0526	60660	000000	POWF BSS 1	COPY OF POWFL,
0527	60661	000000	POWSW BSS 1	TEMP TO HOLD SWITCH REGISTER
0528*				
0529	60662	060655	PUNTB DEF *5	POINTER TO FOLLOWING TABLE.
0530*				
0531*	THIS TABLE POINTS TO THE ENTRY POINTS FOR			
0532*	THE INTERRUPT ROUTINES.			
0533*				
0534	60663	060656	DEF POWP	POWER FAIL RTN,ADR.
0535	60664	060052	DEF DINT	DISC RTN,ADR.
0536	60665	063334	DEF R14CM	INTERCONNECT RTN ADR


```

0537 60666 063334      DEF R14CM
0538 60667 060735      DEF ?TT2      TTY RTN,ADR.
0539 60670              POX1 EQU *
0540 60670 000000      BSS 3          NO INTERRUPTS OCCUR ON THESE CHA
0541 60673 070026      DEF CLKIN      CLK RTN,ADR.

```

0542*

0543*

0544*

0545*

0546*

0547*

0548*

THIS SECTION GIVES THE LENGTH OF EACH ROUTINE
 SO THAT POWER FAIL CAN DETERMINE WHETHER
 THAT ROUTINES INTERRUPT HAD ACTUALLY OCCURRED
 OR WAS STILL PENDING AT THE TIME OF THE POWER FAILURE.

```

0549 60674 000067      ABS DSCED=DINT+1  CODES FOR TESTING IF
0550 60675 000220      ABS R14ED=R14CM
0551 60676 000000      ABS 0           NO SUCH ROUTINE
0552 60677 000166      ABS TTYED=?TT2+1  WITHIN INTERRUPT
0553 60700              POX2 EQU *
0554 60700 000000      BSS 3          NO INTERRUPTS OCCUR ON THESE CHA
0555 60703 000030      ABS CLKED=CLKIN+1  ROUTINES.

```

0556*

```

0557 60704 114476      JSB ?ADIN,I      CORRECT CONTENTS
0558 60705 114464      JSB R14DR,I      OF INTERRUPT CELLS
0559 60706 106711      CLC CH2
0560 60707 114466      JSB T35DR,I
0561 60710 103013      HLT 13B,C
0562 60711 103014      HLT 14B,C
0563 60712 103015      HLT 15B,C
0564 60713 114472      JSB CLKDR,I

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0565*

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0566 60714              POX3 EQU *
0567 60670              ORG POX1      FILL UP THE HOLE
0568 60670 117304      POWD1 ABS =POW1
0569 60671 177624      POWD2 ABS POW1=POW40
0570 60672 102207      SFC7  SFC 7
0571 60700              ORG POX2      FILL UP THE HOLE
0572 60700 102700      STC0  STC 0
0573 60701 177665      POW31 ABS DSCST=DSCED
0574 60702 117763      POW28 ABS =DSCST
0575 60714              ORG POX3      BACK WHERE WE BELONG
0576 60714 060650      POFFP DEF POWFF

```

0002* THE SYSTEM CONSOLE DRIVER CONTROLS ALL TRANSMISSION OF DATA BETWEEN THE SYSTEM CONSOLE (ASR-35) AND THE SYSTEM. IT HANDLES ALL IO FOR THE DEVICE AND PROVIDES FOR COMMUNICATION OF MESSAGES TO THE SYSTEM, THE FOLLOWING VARIABLES ARE SIGNIFICANT:

0006*
 0007* T35F1: =0 DURING INPUT, =1 DURING OUTPUT.
 0008* T35F2: NORMALLY 0, IT IS SET TO =1 WHEN A COMPLETE MESSAGE HAS BEEN RECEIVED, UNTIL IT IS CLEARED BY THE SYSTEM, ALL FURTHER INPUT IS INHIBITED.
 0009*
 0010*
 0011* T35F3: NORMALLY 0, IT IS SET TO =1 WHEN A COMPLETE MESSAGE HAS BEEN RECEIVED, UNTIL IT IS CLEARED BY THE OUTPUT INITIALIZATION SECTION OF THIS DRIVER, LOG AND MESSAGE ENTRIES ARE HELD OFF.
 0012*
 0013*
 0014*
 0015* TOG: NOT USED DURING INPUT, DURING OUTPUT, BIT 0 = 0 IF NEXT CHARACTER IS ON LEFT, 1 IF ON RIGHT.
 0016*
 0017* TADR: NOT USED DURING INPUT. DURING OUTPUT, TADR(14:0) POINTS TO THE WORD FROM WHICH THE NEXT CHARACTER WILL BE TAKEN.
 0018*
 0019* BIT 15=1 FOR PUNCH & PRINT, 0 FOR PRINT ONLY.
 0020* TCNT: DURING INPUT, TCNT=# OF CHARS IN SO FAR, DURING OUTPUT, TCNT(14:0)=# OF CHARS REMAINING TO BE OUTPUT, BIT 15=0 IF A CRLF IS TO BE APPENDED, 1 IF NOT.
 0021*
 0022*
 0023* TBITS: CONTAINS CURRENT CONTROL BITS.
 0024* 120000 => PRINT
 0025* 130000 => PUNCH AND PRINT
 0026* 100000 => INPUT
 0027* TTA,TTB,TTT: USED TO SAVE THE VALUES OF A,B,E REGISTERS DURING INTERRUPTS.
 0028*
 0029*

0030* CALLING SEQUENCE:

0031* JSR TTY35,1 A=# OF CHARS (BIT 15=0 FOR CRLF, 1 FOR NONE)
 0032* B=BUFFER ADDRESS (BIT 15=1 FOR PUNCHING)
 0033*

0034* INPUT MESSAGES ARE STORED IN THE 72 CHARACTER BUFFER T35BF.
 0035*

0037	60715	000000	?TT35	NOP	ENTRY POINT FOR OUTPUT.
0038	60716	103100		CLF 0	INHIBIT INTERRUPT.
0039	60717	070074		STA TCNT	SET UP INITIAL PARAMETERS.
0040	60720	076011		STB TADR	
0041	60721	003400		CCA	SET FLAG TO SAY
0042	60722	070313		STA T35F1	OUTPUT.
0043	60723	062715		LDA ?TT35	COPY RETURN ADDRESS INTO THAT OF
0044	60724	072735		STA ?TT2	INTERRUPT SECTION.
0045	60725	002400		CLA	SET TOG TO SAY LEFT HAND CHAR.
0046	60726	072010		STA TOG	
0047	60727	070315		STA T35F3	
0048*					
0049*	TEST FOR PENDING INPUT, IF THERE IS ANY, EXIT IMMEDIATELY AND LET				
0050*	THE INTERRUPT TRIGGER THE FIRST OUTPUT CHARACTER.				
0051*					
0052	60730	102512		LIA ?SC	
0053	60731	002021		SSA,RSS	
0054	60732	026761		JMP TT18	NONE PENDING--GO OUTPUT 1ST CHAR
0055	60733	102100		STF 0	

```

0056 60734 126715      JMP ?TT35,I
0057*
0058* INTERRUPT SECTION
0059*
0060 60735 000000      ?TT2  NOP
0061 60736 072005      STA TTA          SAVE REGISTERS.
0062 60737 076006      STB TTB
0063 60740 001500      ERA
0064 60741 072007      STA TTE
0065 60742 060313      LDA T35F1       TEST FLAG TO DETERMINE IF
0066 60743 002003      SZA,R9S         INPUT OR OUTPUT.
0067 60744 027037      JMP TT17        INPUT
0068 60745 102512      LIA ?9C         LOAD BACK LINE STATUS DURING OUT
0069 60746 064277      LDB T35ST       GET CONSOLE STATUS
0070 60747 054355      CPB XOUTW       IF OUTPUT WAIT
0071 60750 064301      LDB T35PR       USE PRIORITY
0072 60751 007004      CMB,INB
0073 60752 044435      ADB ,+X8YNT-.,+1+R08-COM2
0074 60753 006021      SSB,R9S         SKIP IF ABORT NOT ALLOWED
0075 60754 050443      CPA B377        CHECK FOR A KEY STRUCK
0076 60755 026761      JMP TT10        NO INPUT, CONTINUE ON
0077 60756 002400      CLA
0078 60757 070314      STA T35F2       CLEAR CONTINUEING OUTPUT FLAG
0079 60760 070277      STA T35ST       SET CONSOLE STATUS TO IDLE
0080*
0081 60761 060074      TT10 LDA TCNT        GET # OF CHARS LEFT.
0082 60762 001265      RAL,CLE,ERA     COPY CRLF BIT INTO E.
0083 60763 002002      SZA             ANY CHARS LEFT?
0084 60764 027014      JMP TT5         YES==GO OUTPUT NEXT ONE.
0085 60765 002040      SEZ            NO==WANT CRLF?
0086 60766 027000      JMP TT6         NO==GO RESET FOR INPUT.
0087 60767 072010      STA TOG        SET UP OUTPUT OF CRLF.
0088 60770 060355      LDA ,+3        3 CHARS WITH
0089 60771 031036      IOR BIT15      NO CRLF FOLLOWING.
0090 60772 070074      STA TCNT
0091 60773 062011      LDA TADR       KEEP PRINT/PUNCH BIT.
0092 60774 011036      AND BIT15
0093 60775 033123      IOR TTXCP
0094 60776 072011      STA TADR
0095 60777 026761      JMP TT10
0096*
0097* END OF OUTPUT==RESET FOR INPUT.
0098*
0099 61000 070074      TT6  STA TCNT        SET COUNTER TO SAY NO CHARS IN.
0100 61001 070313      STA T35F1       SET FLAG TO SAY INPUT.
0101 61002 060226      LDA B160K       GET CONTROL BITS FOR INPUT.
0102 61003 072001      STA T8BITS      SAVE.
0103 61004 102512      TT8  OTA ?9C     OUTPUT TO CONSOLE.
0104 61005 062007      TT10 LDA TTE        RESTORE REGISTERS.
0105 61006 001600      ELA
0106 61007 062005      LDA TTA
0107 61010 066006      LDB TTB
0108 61011 103712      STC ?9C,C      ENABLE DEVICE.
0109 61012 102100      STF 0           ENABLE INTERRUPT.
0110 61013 126735      JMP ?TT2,I     EXIT.

```

```

0111*
0112* OUTPUT NEXT CHARACTER
0113*
0114 61014 003400 TT5 CCA DECREMENT
0115 61015 040074 ADA TCNT COUNTER.
0116 61016 070074 STA TCNT
0117 61017 066011 LDB TADR GET POINTER TO OUTPUT BUFFER.
0118 61020 062002 LDA B120K GET BITS FOR PRINT ONLY.
0119 61021 005275 RBL,CLE,SLB,ERB TEST & CLEAR BIT 15 OF B.
0120 61022 062003 LDA B130K GET PRINT/PUNCH BITS.
0121 61023 072001 STA TBITS SAVE CONTROL BITS.
0122 61024 102612 OTA ?SC OUTPUT TO DEVICE.
0123 61025 160001 LDA 1,I GET WORD CONTAINING CHARACTER.
0124 61026 066010 LDB TOG GET LEFT/RIGHT TOGGLE.
0125 61027 004010 SLB IF RIGHT CHARACTER,
0126 61030 036011 ISZ TADR BUMP POINTER.
0127 61031 006011 SLB,RSS IF LEFT CHARACTER,
0128 61032 001727 ALF,ALF POSITION ON RIGHT.
0129 61033 036010 ISZ TUG REVERSE TOGGLE SENSE.
0130 61034 010441 TT15 AND B177 KEEP BITS 6=0 AND
0131 61035 030442 IOR B200 SET BIT 7.
0132 61036 027004 JMP TT8 GO OUTPUT CHARACTER.
0133*
0134* CHARACTER HAS BEEN INPUT.
0135*
0136 61037 060314 TT17 LDA T35F2 IGNORE CHARACTER IF T35F2 IS SET
0137 61040 102401 MIA 1 OR SWITCH 0 IS SET.
0138 61041 000010 SLA
0139 61042 027005 JMP TT10
0140 61043 102512 LIA ?SC GET CHARACTER IN A.
0141 61044 010441 AND B177
0142 61045 007400 CCB PREPARE -1 IN B.
0143 61046 050364 CPA .+12B IGNORE LF, RUBOUT, NULL, XOFF.
0144 61047 027005 JMP TT10
0145 61050 050441 CPA B177
0146 61051 027005 JMP TT10
0147 61052 002002 SZA
0148 61053 050375 CPA .+23B
0149 61054 027005 JMP TT10
0150*
0151** TEST FOR 'CONTROL X'
0152*
0153 61055 050402 CPA .+30B
0154 61056 027112 JMP TT11
0155*
0156 61057 052004 CPA BKSPC TEST FOR "*"
0157 61060 027100 JMP TT12
0158 61061 050367 CPA .+15B TEST FOR CR.
0159 61062 074314 STB T35F2 SET COMMUNICATION FLAG.
0160 61063 050367 CPA .+15B
0161 61064 074315 STB T35F3
0162*
0163* NOW INSERT CHARACTER IN BUFFER.
0164*
0165 61065 064074 LDB TCNT GET COUNT IN B.

```

0166	61066	054440		CPB ,72	DON'T IF BUFFER IS FULL.
0167	61067	027005		JMP TT10	
0168	61070	004065		CLE,ERB	MOVE LEFT/RIGHT BIT TO E, AND
0169	61071	044305		ADB T35B1	COMPUTE ADDRESS OF DESTINATION.
0170	61072	002041		SEZ,RSS	LEFT/RIGHT TEST.
0171	61073	001737		ALF,SLA,ALF	LEFT.
0172	61074	130001		IOR 1,I	RIGHT.
0173	61075	034074		ISZ TCNT	BUMP COUNTER.
0174	61076	170001	TT16	STA 1,I	STORE IN BUFFER.
0175	61077	027005		JMP TT10	GO EXIT.
0176*					
0177*	HANDLE BACKSPACE,				
0178*					
0179	61100	064074	TT12	LDB TCNT	GET CHARACTER COUNT
0180	61101	006003		SZB,RSS	IGNORE IF NO CHARS YET,
0181	61102	027005		JMP TT10	
0182	61103	044351		ADB ,=1	GET NEW TCNT.
0183	61104	074074		STB TCNT	
0184	61105	004065		CLE,ERB	CLEAR RIGHT HALF OF NEW DESTIN-
0185	61106	044305		ADB T35B1	ATION.
0186	61107	160001		LDA 1,I	
0187	61110	010762		AND HIMSK	
0188	61111	027076		JMP TT16	
0189*					
0190**	HANDLE 'CONTROL X'				
0191*					
0192	61112	074313	TT11	STB T35F1	SET OUTPUT FLAG.
0193	61113	002400		CLA	SET TCNT FOR CRLF AFTER "\".
0194	61114	070074		STA TCNT	
0195	61115	072011		STA TADR	SET FOR NO PUNCHING,
0196	61116	062002		LDA B120K	SET FOR PRINT ONLY.
0197	61117	072001		STA TBIT8	
0198	61120	102612		OTA 79C	
0199	61121	062000		LDA RVRSL	GO OUTPUT "\"
0200	61122	027034	TTYED	JMP TT15	
0201	61123	061124	TTXCP	DEF ++1	
0202	61124	011415		OCT 011415	X-OFF CR
0203	61125	005000		OCT 005000	LF

0205

SUP

0206* THE TELETYPE TABLES CONTAIN IN CORE INFORMATION FOR SYSTEM USERS.
 0207* EACH OF THE 32 USERS HAS 1 TABLE, CONTAINING THE FOLLOWING
 0208* ENTRIES:
 0209* (?FLAG MUST BE FIRST, AND ?CLOC THROUGH ?PLEV MUST
 0210* BE CONTIGUOUS.)

0212 00000 ?FLAG EQU 0

0214* CONTAINS ALL BIT FLAGS FOR USER

0215*		
0216*	TERR = 0001	TAPE ERROR
0217*	CFLAG = 0002	COMPILE MODE
0218*	HFLAG = 0004	HELLO IS RUNNING
0219*	TAPEF = 0010	USER IN TAPE MODE
0220*	UNABT = 0020	UNABLE TO ABORT
0221*	OUTWT = 0040	OUTPUT BUFFER FULL
0222*	COM14 = 0100	2114 COMMUNICATION
0223*	ABTRY = 0200	ABORT ATTEMPT
0224*	DFCHK = 0400	DIRTY FILES CHECK
0225*	CHNFG = 1000	CHAIN RUNNING
0226*	ENDST = 2000	ENDRM POSITIVE
0227*	MBUST = 4000	MBUSY POSITIVE
0228*		

0230 00001 ?TNUM EQU ?FLAG+1

0232* TELETYPE # IN BITS 12-8.

0234 00002 ?DISC EQU ?TNUM+1

0236* DRUM ADDRESS OF THIS USERS SWAP AREA

0238 00003 ?PROG EQU ?DISC+1

0240* POINTS TO LAST USED WORD OF CORE PROGRAM.

0242 00004 ?ID EQU ?PROG+1

0244* USER ID.

0246 00005 ?NAME EQU ?ID+1

0248* 8 CHAR PROGRAM NAME

0250 00010 ?TIME EQU ?NAME+3

0252* STARTING TIME

0254 00012 ?CLOC EQU ?TIME+2

0256* USER'S TIMEOUT CLOCK.

0258 00013 ?RSTR EQU ?CLOC+1

0260* RESTART ADDRESS FOR SUSPENDED PROGRAMS.

0262 00014 ?STAT EQU ?RSTR+1

0264* USER STATUS--WHEN ON Q INDICATED PROGRAM TYPE;
0265* WHEN NOT ON Q INDICATED REASON WHY.

0267 00015 ?LINK EQU ?STAT+1

0269* POINTS TO LINK POSITION OF NEXT ENTRY ON QUEUE.

0271 00016 ?PLEV EQU ?LINK+1

0273* FOR PROGRAMS ON Q, CONTAINS PRIORITY LEVEL. FOR
0274* SUSPENDED PROGRAMS CONTAINS PROGRAM TYPE.

0276 00017 ?RTIM EQU ?PLEV+1

0278* RESPONSE TIME FOR ENTER STATEMENT

0279*

0280 00020 ?TEMP EQU ?RTIM+1

0281*

0282* TEMPORARIES FOR LIBRARY ROUTINES

0284	61126	000000	TTY00	OCT 0
0285	61127	000000		OCT 0
0286	61130	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0287	61146	000000		OCT 0,0,0
0288*				
0289	61151	000000	TTY01	OCT 0
0290	61152	000400		OCT 400
0291	61153	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0292	61171	000000		OCT 0,0,0
0293*				
0294	61174	000000	TTY02	OCT 0
0295	61175	001000		OCT 1000
0296	61176	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0297	61214	000000		OCT 0,0,0
0298*				
0299	61217	000000	TTY03	OCT 0
0300	61220	001400		OCT 1400
0301	61221	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0302	61237	000000		OCT 0,0,0
0303*				
0304	61242	000000	TTY04	OCT 0
0305	61243	002000		OCT 2000
0306	61244	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0307	61262	000000		OCT 0,0,0
0308*				
0309	61265	000000	TTY05	OCT 0
0310	61266	002400		OCT 2400
0311	61267	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0312	61305	000000		OCT 0,0,0
0313*				
0314	61310	000000	TTY06	OCT 0
0315	61311	003000		OCT 3000
0316	61312	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0317	61330	000000		OCT 0,0,0
0318*				
0319	61333	000000	TTY07	OCT 0
0320	61334	003400		OCT 3400
0321	61335	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0322	61353	000000		OCT 0,0,0
0323*				
0324	61356	000000	TTY08	OCT 0
0325	61357	004000		OCT 4000
0326	61360	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0327	61376	000000		OCT 0,0,0
0328*				
0329	61401	000000	TTY09	OCT 0
0330	61402	004400		OCT 4400
0331	61403	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0332	61421	000000		OCT 0,0,0
0333*				
0334	61424	000000	TTY10	OCT 0
0335	61425	005000		OCT 5000
0336	61426	000000		OCT 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0337	61444	000000		OCT 0,0,0
0338*				

0339	61447	000000	TTY11	OCT	0
0340	61450	005400		OCT	5400
0341	61451	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0342	61467	000000		OCT	0,0,0
0343*					
0344	61472	000000	TTY12	OCT	0
0345	61473	006000		OCT	6000
0346	61474	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0347	61512	000000		OCT	0,0,0
0348*					
0349	61515	000000	TTY13	OCT	0
0350	61516	006400		OCT	6400
0351	61517	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0352	61535	000000		OCT	0,0,0
0353*					
0354	61540	000000	TTY14	OCT	0
0355	61541	007000		OCT	7000
0356	61542	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0357	61560	000000		OCT	0,0,0
0358*					
0359	61563	000000	TTY15	OCT	0
0360	61564	007400		OCT	7400
0361	61565	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0362	61603	000000		OCT	0,0,0
0363*					
0364	61606	000000	TTY16	OCT	0
0365	61607	010000		OCT	10000
0366	61610	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0367	61626	000000		OCT	0,0,0
0368*					
0369	61631	000000	TTY17	OCT	0
0370	61632	010400		OCT	10400
0371	61633	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0372	61651	000000		OCT	0,0,0
0373*					
0374	61654	000000	TTY18	OCT	0
0375	61655	011000		OCT	11000
0376	61656	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0377	61674	000000		OCT	0,0,0
0378*					
0379	61677	000000	TTY19	OCT	0
0380	61700	011400		OCT	11400
0381	61701	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0382	61717	000000		OCT	0,0,0
0383*					
0384	61722	000000	TTY20	OCT	0
0385	61723	012000		OCT	12000
0386	61724	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0387	61742	000000		OCT	0,0,0
0388*					
0389	61745	000000	TTY21	OCT	0
0390	61746	012400		OCT	12400
0391	61747	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0
0392	61765	000000		OCT	0,0,0
0393*					

0394	61770	000000	TTY22	OCT	0
0395	61771	013000		OCT	13000
0396	61772	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0397	62010	000000		OCT	0,0,0
0398*					
0399	62013	000000	TTY23	OCT	0
0400	62014	013400		OCT	13400
0401	62015	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0402	62033	000000		OCT	0,0,0
0403*					
0404	62036	000000	TTY24	OCT	0
0405	62037	014000		OCT	14000
0406	62040	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0407	62056	000000		OCT	0,0,0
0408*					
0409	62061	000000	TTY25	OCT	0
0410	62062	014400		OCT	14400
0411	62063	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0412	62101	000000		OCT	0,0,0
0413*					
0414	62104	000000	TTY26	OCT	0
0415	62105	015000		OCT	15000
0416	62106	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0417	62124	000000		OCT	0,0,0
0418*					
0419	62127	000000	TTY27	OCT	0
0420	62130	015400		OCT	15400
0421	62131	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0422	62147	000000		OCT	0,0,0
0423*					
0424	62152	000000	TTY28	OCT	0
0425	62153	016000		OCT	16000
0426	62154	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0427	62172	000000		OCT	0,0,0
0428*					
0429	62175	000000	TTY29	OCT	0
0430	62176	016400		OCT	16400
0431	62177	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0432	62215	000000		OCT	0,0,0
0433*					
0434	62220	000000	TTY30	OCT	0
0435	62221	017000		OCT	17000
0436	62222	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0437	62240	000000		OCT	0,0,0
0438*					
0439	62243	000000	TTY31	OCT	0
0440	62244	017400		OCT	17400
0441	62245	000000		OCT	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
0442	62263	000000		OCT	0,0,0
0443	62266		TTY32	EQU	*

0445* THE QUEUE ALWAYS CONJNS AT LEAST ONE ENTRY, A DUMMY ENTRY, IT
 0446* IS POINTED TO BY THE LAST ACTUAL ELEMENT, AND POINTS TOTHE FIRST.
 0447* WHEN THE QUEUE IS OTHERWISE EMPTY, THE DUMMY LINK POINTS TO
 0448* ITSELF.

0450* THIS ROUTINE IS CALLED WHEN A DRUM TRANSFER TO OR FROM A
 0451* USER'S SWAP TRACK HAS FAILED. THE ROUTINE SETS THE USER'S
 0452* PORT TO AN UNAVAILABLE STATUS AND CLEARS HIS FUSS TABLE.
 0453* ENTER WITH TTY TABLE ADDRESS IN B.

```

0455 62266 000000 JETPT NOP
0456 62267 076366 STB JETT1 SAVE TABLE POINTER
0457 62270 044367 ADB +?LINK
0458 62271 116365 JSB JDEQU,I TAKE HIM OFF THE QUEUE
0459 62272 066366 LDB JETT1
0460 62273 044366 ADB +?STAT => STATUS WORD
0461 62274 060346 LDA %PUN SET PORT TO
0462 62275 170001 STA B,I UNAVAILABLE
0463 62276 044342 ADB +?ID=?STAT
0464 62277 002400 CLA
0465 62300 070257 STA MAIN SAY NOBODY IN CORE
0466 62301 170001 STA B,I CLEAR ID
0467 62302 044346 ADB +?FLAG=?ID
0468 62303 170001 STA B,I CLEAR FLAGS WORD
0469 62304 060732 LDA M2000 READ IN
0470 62305 070072 STA WORD THE FUSS TABLE
0471 62306 160540 LDA FUSS,I
0472 62307 064566 LDB LIBDI
0473 62310 116524 JSB DRUMS,I
0474 62311 016613 JSB SICK IT'S STUCK ON THE DRUM; GIVE UP
0475 62312 066366 LDB JETT1 GET TABLE POINTER AGAIN
0476 62313 044353 ADB +?TNUM
0477 62314 160001 LDA B,I GET THE PORT NUMBER
0478 62315 001727 ALF,ALF
0479 62316 072366 STA JETT1 SAVE IT
0480 62317 001720 ALF,ALS TIMES 32
0481 62320 040562 ADA LIBD
0482 62321 072367 STA JETT2
0483 62322 002400 CLA ZERO OUT
0484 62323 064317 LDB M32 THIS CLOD'S PART
0485 62324 172367 STA JETT2,I OF THE FUSS
0486 62325 036367 ISZ JETT2 TABLE
0487 62326 006006 INB,SZB
0488 62327 026324 JMP +=3
0489 62330 160540 LDA FUSS,I WRITE THE FUSS
0490 62331 064562 LDB LIBD TABLE BACK TO
0491 62332 116524 JSB DRUMS,I THE DRUM
0492 62333 016613 JSB SICK DARN, IT'S STUCK IN CORE, CROAK
0493 62334 062366 LDA JETT1 GET PORT NUMBER
0494 62335 017056 JSB TCRIR AND GO INFORM VICTIM
0495*
0496* ALSO INFORM THE SYSTEM OPERATOR WHAT WE'VE DONE.
0497*
0498 62336 103100 CLF 0
0499 62337 114211 JSB GMQBP,I GO GET POINTER TO MESSAGE 0
0500 62340 026363 JMP JET2 NO ROOM, SORRY
0501 62341 072367 STA JETT2 SAVE POINTER TO AVAILABLE BUFFER
0502 62342 062366 LDA JETT1 GET PORT NUMBER
0503 62343 006400 CLB

```

0504	62344	100400		DIV ,+10	CONVERT
0505	62346	001727		ALF,ALF	IT
0506	62347	040001		ADA B	TO
0507	62350	040574		ADA ASC00	ASCII
0508	62351	072376		STA JETNO	INSERT IT INTO THE MESSAGE
0509	62352	062370		LDA JETMS	GET ADDRESS OF
0510	62353	072366		STA JETT1	STUFF TO BE MOVED
0511	62354	064332		LDB ,=16	MOVE
0512	62355	162366	JET1	LDA JETT1,I	IT
0513	62356	172367		STA JETT2,I	INTO
0514	62357	036366		ISZ JETT1	THE
0515	62360	036367		ISZ JETT2	MESSAGE
0516	62361	006006		INB,SZB	QUEUE
0517	62362	026355		JMP JET1	BUFFER
0518	62363		JET2	EQU *	
0519	62363	102100		STF 0	
0520	62364	126266		JMP JETPT,I	
0521*					
0522	62365	071577	JDEQU	DEF DEQUE	
0523	62366	000000	JETT1	BSS 1	
0524	62367	000000	JETT2	BSS 1	
0525	62370	062371	JETMS	DEF **1	
0526	62371	000036		DEC 30	
0527	62372	006412		OCT 6412	CR LF
0528	62373	050117		ASC 3,PORT #	
0529	62376	000000	JETNO	BSS 1	
0530	62377	020115		ASC 9, MADE UNAVAILABLE.	
0531	62410	006412		OCT 6412	CR LF

0002* THIS ROUTINE IS CALLED WHEN A SYSTEM TRACK WITH VITAL
 0003* INFORMATION (SUCH AS A DIRECTORY OR IDT TRACK) CANNOT BE
 0004* WRITTEN BACK TO ITS ASSIGNED DRUM ADDRESS, BUT WHEN RECOVERY
 0005* MIGHT BE POSSIBLE IF THE INFORMATION CAN BE SAVED. THE TABLE
 0006* MUST BE IN CORE STARTING AT LIBUS. (A) IS THE ADDRESS OF THE
 0007* WORD IN CORE WHICH CONTAINS THE DRUM ADDRESS OF THE TRACK IN
 0008* QUESTION. (B) IS THE NEGATIVE LENGTH OF THE TABLE IN CORE.
 0009* SALVG READS THE DRUM ADT IN PIECES INTO THE UPPER 2K OF USER
 0010* AREA AND SEARCHES FOR AN ENTRY LARGE ENOUGH TO HOLD THE TABLE.
 0011* IF AN ENTRY IS FOUND, SALVG ATTEMPTS TO WRITE THE TABLE OUT TO
 0012* THE DRUM. IF IT SUCCEEDS, IT STORES THE NEW DRUM ADDRESS INTO
 0013* THE WORD POINTED TO BY (A). THE ADT IS NOT UPDATED AND THE
 0014* FORMER SYSTEM TRACK IS NOT LOCKED. IF THE ADT CANNOT BE READ,
 0015* NO DRUM SPACE IS AVAILABLE, OR THE TABLE CANNOT BE WRITTEN
 0016* OUT, THE WORD POINTED TO BY (A) IS NOT CHANGED. SALVG CALLS
 0017* CLNOT TO PRINT ANY REMAINING SYSTEM MESSAGES AND AN INDICATION
 0018* OF SALVG'S SUCCESS OR FAILURE, AND THEN HALTS. A HALT 32B SEZ
 0019* SUCCESS; ATTEMPT RECOVERY. A HALT 33B MEANS FORGET IT.

0021	62411	000000	SALVG	NQP	
0022	62412	072515		STA SALCP	SAVE CORE POINTER
0023	62413	002400		CLA	BLOCK
0024	62414	170634		STA DCLC1,I	CLOCK
0025	62415	076516		STB SALTL	SAVE TABLE LENGTH
0026	62416	060354		LDA ,+2	GET ADT LENGTH
0027	62417	040113		ADA ADLEN	LESS PSEUDO ENTRY
0028	62420	072517		STA SALWL	SAVE AS WORDS LEFT ON DRUM
0029	62421	060112		LDA ADLOC	GET ADT DRUM ADDRESS
0030	62422	040317		ADA M32	FAKE PREVIOUS 2K ADDRESS
0031	62423	072520		STA SALDA	AND SAVE
0032	62424	062516		LDA SALTL	GET TABLE
0033	62425	007400		CCB	LENGTH AND
0034	62426	101026		ASR 6	CONVERT TO
0035	62427	072521		STA SALTS	SECTOR COUNT
0036	62430	062517	SAL1	LDA SALWL	GET WORDS YET TO BE READ
0037	62431	002021		SSA,RSS	ARE THERE ANY?
0038	62432	026507		JMP SAL2	NO, GO TO FAILURE
0039	62433	040736		ADA B4000	YES, ADD 2K TO THE COUNT
0040	62434	002021		SSA,RSS	2K OR MORE WORDS
0041	62435	002003		SZA,RSS	LEFT TO BE READ?
0042	62436	026441		JMP SAL3	YES
0043	62437	066517		LDB SALWL	NO, GET WORD COUNT INTO B
0044	62440	002401		CLA,RSS	AND WORDS LEFT INTO A
0045	62441	066523	SAL3	LDB SAM2K	=2048 WORDS TO BE READ
0046	62442	072517		STA SALWL	STORE NEW WORDS LEFT COUNT
0047	62443	074072		STB WORD	STORE DRUM READ LENGTH
0048	62444	005100		BRS	
0049	62445	076522		STB SALEC	AND ADT-IN-CORE ENTRY COUNT
0050	62446	062520		LDA SALDA	GET PREVIOUS DRUM ADDRESS
0051	62447	040412		ADA ,+32	BUMP TO NEXT 2K CHUNK
0052	62450	072520		STA SALDA	AND SAVE IT
0053	62451	066002		LDB L8192	GET ADDRESS OF USER'S UPPER 2K
0054	62452	045036		ADB BIT15	AND READ BIT
0055	62453	116524		JSB DRUMS,I	GO READ ADT PORTION

0056	62454	026507		JMP SAL2	ERROR, GO TO FAILURE
0057	62455	065002		LDB L8,12	GET ADDRESS OF FIRST ENTRY
0058*					
0059	62456	006004	SAL4	INB	BUMP POINTER TO ENTRY LENGTH
0060	62457	160001		LDA B,I	AND GET LENGTH
0061	62460	042521		ADA SALTS	IS ENTRY LARGE ENOUGH
0062	62461	002021		SSA,RSS	TO HOLD TABLE IN CORE?
0063	62462	026467		JMP SAL5	YES GO WRITE IT OUT
0064	62463	006004		INB	NO, ARE THERE
0065	62464	036522		ISZ SALEC	MORE ENTRIES IN CORE?
0066	62465	026456		JMP SAL4	YES, CHECK NEXT
0067	62466	026430		JMP SAL1	NO, GET ANOTHER BUNCH
0068*					
0069*					
0070	62467	044351	SAL5	ADB ,-1	B POINTS TO DRUM ADDRESS
0071	62470	160001		LDA B,I	GET IT INTO A
0072	62471	072520		STA SALDA	AND SAVE IT
0073	62472	066516		LDB SALTL	GET LENGTH OF TABLE
0074	62473	074072		STB WORD	FOR DRUM DRIVER
0075	62474	064562		LDB LIBD	GET CORE ADDRESS INTO B
0076	62475	116524		JSB DRUMS,I	WRITE OUT THE SYSTEM TABLE
0077	62476	026507		JMP SAL2	ARRGH! GO TO FAILURE
0078*					
0079*					
0080*					
					WE HAVE SUCCESSFULLY FOUND A NEW HOME FOR THE TABLE
0081	62477	103100		CLF 0	DISABLE INTERRUPTS
0082	62500	062520		LDA SALDA	GET NEW DRUM ADDRESS OF TABLE
0083	62501	172515		STA SALCP,I	AND UPDATE IN-CORE POINTER
0084	62502	066525		LDB SALSU	GET ADDRESS OF SUCCESS MESSAGE
0085	62503	016771		JSB CLNOT	GO PRINT MESSAGES
0086	62504	062411		LDA SALVG	A GETS CALLING ADDRESS
0087	62505	102032		HLT 32B	EXPIRE
0088	62506	026505		JMP *-1	
0089*					
0090	62507	103100	SAL2	CLF 0	DISABLE INTERRUPTS
0091	62510	066554		LDB SALFA	GET ADDRESS OF FAILURE MESSAGE
0092	62511	016771		JSB CLNOT	GO PRINT MESSAGES
0093	62512	062411		LDA SALVG	A GETS CALLING ADDRESS
0094	62513	102033		HLT 33B	DIE
0095	62514	026513		JMP *-1	
0096*					
0097	62515	000000	SALCP	BSS 1	SYSTEM TABLE DRUM POINTER POINTR
0098	62516	000000	SALTL	BSS 1	NEGATIVE TABLE LENGTH
0099	62517	000000	SALWL	BSS 1	REMAINING ADT WORDS ON DRUM
0100	62520	000000	SALDA	BSS 1	ADT 2K CHUNK DRUM POINTER
0101	62521	000000	SALTS	BSS 1	NEGATIVE SECTOR COUNT OF TABLE
0102	62522	000000	SALEC	BSS 1	ADT CHUNK ENTRY COUNT (NEGATIVE)
0103*					
0104	62523	174000	SAM2K	DEC -2048	2K CHUNK
0105	62524	074231	DRUMS	DEF DRUML	POINTER TO DRUM DRIVER DRIVER
0106	62525	062526	SALSU	DEF **1	
0107	62526	000051		DEC 41	
0108	62527	006412		OCT 6412	
0109	62530	046517		ASC 20,MOVED	SYSTEM TRACK. RECOVERY POSSIBLE.
0110	62554	062555	SALFA	DEF **1	

0111 62555 000072
0112 62556 006412
0113 62557 041501
0114 62601 047525

DEC 58
OCT 6412
ASC 18, CAN'T WRITE SYSTEM TRACK, RECOVERY
ASC 10, OUT OF THE QUESTION.

0116* THIS ROUTINE IS CALLED WHEN THE SYSTEM CANNOT CONTINUE
 0117* OPERATING BUT MAY BE ABLE TO BE RESUSCITATED.

0119	62613	000000	SICK	NOP	
0120	62614	103100		CLF 0	DISABLE INTERRUPTS
0121	62615	066622		LDB SICKM	GET ADDRESS OF OPTIMISTIC MESSAG
0122	62616	016771		JSB CLNOT	GO PRINT MESSAGES
0123	62617	062613		LDA SICK	A GETS CALLING ADDRESS
0124	62620	102032		HLT 32B	CROAK
0125	62621	026620		JMP *-1	
0126*					
0127	62622	062623	SICKM	DEF **1	
0128	62623	000073		DEC 59	
0129	62624	006412		OCT 6412	
0130	62625	041501		ASC 19,CAN'T ACCESS SYSTEM SEGMENT OR TABLE.	
0131	62650	020122		ASC 10, RECOVERY POSSIBLE.	

0133* THIS ROUTINE IS CALLED WHEN THE SYSTEM CANNOT CONTINUE
 0134* OPERATING AND HAS ALTERED ITS TABLES IN SUCH A WAY THAT
 0135* THEY CONTAIN CONFLICTING INFORMATION AND RESUSCITATION IS
 0136* IMPOSSIBLE.

0138	62662	000000	DEAD	NOP	
0139	62663	103100		CLF 0	DISABLE INTERRUPTS
0140	62664	066671		LDB DEADM	GET ADDRESS OF PESSIMISTIC MESAG
0141	62665	016771		JSB CLNOT	GO PRINT MESSAGES
0142	62666	062662		LDA DEAD	A GETS CALLING ADDRESS
0143	62667	102033		HLT 33B	PASS AWAY
0144	62670	026667		JMP *-1	
0145*					
0146	62671	062672	DEADM	DEF **1	
0147	62672	000063		DEC 51	
0148	62673	006412		OCT 6412	
0149	62674	051531		ASC 19,SYSTEM TABLES INCOMPATIBLE. RECOVERY	
0150	62717	044515		ASC 6,IMPOSSIBLE.	

0152* THIS ROUTINE IS CALLED WHEN THE SYSTEM HAS BLOWN IT WRITING
 0153* ON THE LOCKED BLOCKS TABLE OF ONE OF THE DISCS. THE SITUATION
 0154* IS SIMILAR TO THOSE WHICH CALL "DEAD", BUT SINCE LOCKED BLOCKS
 0155* TABLES ARE IMMORTAL, THE OPERATOR MUST BE INFORMED THAT ONE
 0156* HAS BEEN DAMAGED.

0158	62725	000000	MDEAD	NOP	
0159	62726	103100		CLF 0	DISABLE INTERRUPTS
0160	62727	066734		LDB MDEDM	GET ADDRESS OF WARNING MESSAGE
0161	62730	016771		JSB CLNOT	GO PRINT MESSAGES
0162	62731	062725		LDA MDEAD	A GETS CALLING ADDRESS
0163	62732	102033		HLT 33B	GIVE OUT
0164	62733	026732		JMP *-1	
0165*					
0166	62734	062735	MDEDM	DEF **1	
0167	62735	000066		DEC 54	
0168	62736	006412		OCT 6412	

0169 62737 046117
0170 62757 051105

ASC 16, LOCKED BLOCKS TABLE DESTROYED.
ASC 10, RECOVERY IMPOSSIBLE.

0172* THIS ROUTINE SENDS A SYSTEM DEATH MESSAGE TO THE USERS.
 0173* NEXT, IT COMPLETES ANY OUTPUT WHICH HAS BEEN STARTED
 0174* BY THE SYSTEM CONSOLE DRIVER. IT THEN PRINTS ANY MESSAGES
 0175* REMAINING IN THE MESSAGE BUFFER. IF IT IS ENTERED WITH (B)
 0176* NONZERO, IT WILL LAST PRINT THE ASCII STRING WHOSE LENGTH
 0177* IS POINTED TO BY (B) AND WHICH STARTS IN THE WORD FOLLOWING
 0178* THIS LENGTH.

0180	62771	000000	CLNOT	NOP	
0181	62772	002400		CLA	BLOCK
0182	62773	170634		STA DCLC1,I	CLOCK
0183	62774	077052		STB CLNB	SAVE SPECIAL MESSAGE POINTER
0184	62775	003400		CCA	INFORM USERS OF
0185	62776	017056		JSB TCRIR	SYSTEM DEATH
0186	62777	103100		CLF 0	
0187	63000	060313		LDA T35F1	WAS SYSTEM CONSOLE DRIVER
0188	63001	002021		SSA,RSS	DOING INPUT OR OUTPUT?
0189	63002	027021		JMP CLN1	INPUT, GO CHECK FOR MESSAGES
0190	63003	102312		SFS ?SC	OUTPUT, WAIT FOR CURRENT
0191	63004	027003		JMP *-1	CHARACTER TO BE OUTPUT
0192	63005	163053		LDA CLADR,I	GET CHARACTER POINTER
0193	63006	000066		CLE,ELA	DOUBLE FOR SYCON AND LOSE BIT 15
0194	63007	167054		LDB CLTOG,I	GET LEFT=RIGHT WORD
0195	63010	004010		SLB	WHERE IS NEXT CHARACTER?
0196	63011	002004		INA	ON THE RIGHT: BUMP POINTER
0197	63012	073302		STA SYCBA	SAVE POINTER FOR SYCON
0198	63013	064074		LDB TCNT	GET REMAINING CHARACTER COUNT
0199	63014	077301		STB SYCCC	AND STORE FOR SYCON
0200	63015	067055		LDB CLN1P	GET RETURN ADDRESS
0201	63016	077235		STB SYCON	AND STORE IN SYCON
0202	63017	163303		LDA SYBIT,I	GET CURRENT OUTPUT CONTROL BITS
0203	63020	027243		JMP SYC3	JUMP INTO MIDDLE OF ROUTINE
0204*					
0205*					COME HERE TO CHECK FOR MORE MESSAGES IN QUEUE
0206*					
0207	63021	003400	CLN1	CCA	ARE THERE MESSAGES
0208	63022	040306		ADA MSGCT	IN THE
0209	63023	050351		CPA *-1	QUEUE?
0210	63024	027037		JMP CLN2	NO
0211	63025	070306		STA MSGCT	YES, DECREMENT THE COUNT
0212	63026	064307		LDB MSGP1	BUMP POINTER
0213	63027	044421		ADB .+MESLN	TO NEXT MESSAGE BUFFER
0214	63030	054311		CPB MSGND	WRAP AROUND?
0215	63031	064312		LDB MSGBG	YES
0216	63032	074307		STB MSGP1	SAVE NEW CURRENT MESSAGE POINTER
0217	63033	160001		LDA B,I	GET CHARACTER COUNT INTO A
0218	63034	006004		INB	POINTER TO FIRST WORD INTO B
0219	63035	017235		JSB SYCON	GO OUTPUT IT
0220	63036	027021		JMP CLN1	CHECK FOR MORE
0221*					
0222*					COME HERE TO PRINT FINAL SPECIAL MESSAGE
0223*					
0224	63037	067052	CLN2	LDB CLNB	GET SPECIAL BUFFER POINTER
0225	63040	006003		SZB,RSS	IS THERE A MESSAGE?

0226	63041	027045		JMP CLN3	NO
0227	63042	160001		LDA B,I	YES, GET CHARACTER COUNT
0228	63043	006004		INB	BUMP POINTER TO FIRST MES. WORD
0229	63044	017235		JSB SYCON	GO OUTPUT IT
0230	63045	002400	CLN3	CLA	FINALLY,
0231	63046	017235		JSB SYCON	OUTPUT 3
0232	63047	017235		JSB SYCON	"AGONIZING DEATH"
0233	63050	017235		JSB SYCON	CRLF'S AND
0234	63051	126771		JMP CLNOT,I	RETURN
0235*					
0236*					
0237	63052	000000	CLNB	BSS 1	B REG, SAVE WORD
0238	63053	060011	CLADR	DEF TADR	POINTER TO 7TT35'S CHAR POINTER
0239	63054	060010	CLTOG	DEF TOG	POINTER TO 7TT35'S LEFT-RIGHT WD
0240	63055	063021	CLN1P	DEF CLN1	RETURN ADDRESS FOR FAKE SYCON CL

0242* THIS ROUTINE IS CALLED TO INFORM ALL USERS THAT THE SYSTEM
 0243* IS GOING DOWN BECAUSE OF A HARDWARE FAILURE OR TO INFORM A
 0244* SINGLE USER THAT HIS PORT IS BEING MADE UNAVAILABLE (BECAUSE
 0245* OF A SWAP TRACK ERROR). IT MUST BE ENTERED WITH THE AFFECTED
 0246* PORT NUMBER IN A IN THE LATTER CASE OR WITH A=-1 TO INFORM
 0247* ALL USERS OF SYSTEM DEATH.

0249	63056	000000	TCRIR	NOP	
0250	63057	073226		STA TCRPT	SAVE PORT NUMBER
0251	63060	003002		CMA,SZA	IS THIS A SYSTEM DEATH?
0252	63061	027070		JMP TCR1	NO, GO SET UP FOR 1 PORT NEWS
0253	63062	073226		STA TCRPT	YES, SET FIRST PORT TO ZERO
0254	63063	064177		LDB NPORT	GET COUNT OF PORTS TO GET NEWS
0255	63064	077227		STB TCRPC	AND SET IT INTO TCRPC
0256	63065	050412		LDA ,+32	GET LENGTH OF MESSAGE (CHARS)
0257	63066	067205		LDB TCRSD	AND POINTER TO MESSAGE
0258	63067	027074		JMP TCR2	
0259*					
0260	63070	003400	TCR1	CCA	SINGLE PORT BEING ZAPPED
0261	63071	073227		STA TCRPC	SET PORT COUNT TO -1
0262	63072	060417		LDA ,+37	GET LENGTH OF MESSAGE
0263	63073	067161		LDB TCRPU	AND POINTER TO IT
0264*					
0265	63074	003000	TCR2	CMA	SAVE -MESSAGE
0266	63075	073230		STA TCRCC	LENGTH-1
0267	63076	004066		CLE,ELB	SAVE MESSAGE
0268	63077	077231		STB TCRBA	BUFFER CHARACTER POINTER
0269*					
0270	63100	060367		LDA ,+150	PRECEDE
0271	63101	017131		JSB TCROT	MESSAGE
0272	63102	060364		LDA ,+12B	WITH
0273	63103	017131		JSB TCROT	CR
0274	63104	060364		LDA ,+12B	LF
0275	63105	017131		JSB TCROT	LF
0276*					
0277	63106	037230	TCR3	ISZ TCRCC	ARE THERE MORE CHARACTERS?
0278	63107	002001		RSS	YES
0279	63110	027122		JMP TCR4	NO, GO FINISH UP
0280	63111	067231		LDB TCRBA	GET BUFFER POINTER
0281	63112	037231		ISZ TCRBA	BUMP IT
0282	63113	004065		CLE,ERB	CALCULATE WORD ADDRESS
0283	63114	160001		LDA B,I	GET 2 CHARACTERS
0284	63115	002041		SEZ,RSS	WHICH ONE?
0285	63116	001727		ALF,ALF	LEFT ONE; MOVE IT
0286	63117	010441		AND B177	ISOLATE CHARACTER
0287	63120	017131		JSB TCROT	GO SEND IT
0288	63121	027106		JMP TCR3	CHECK FOR MORE
0289*					
0290	63122	060367	TCR4	LDA ,+15B	SEND
0291	63123	017131		JSB TCROT	USER(S)
0292	63124	060364		LDA ,+12B	FINAL
0293	63125	017131		JSB TCROT	GASP
0294	63126	060364		LDA ,+12B	FORM
0295	63127	017131		JSB TCROT	FEEDS

0296	63130	127056		JMP TCRIR,I	
0297*					
0298	63131	000000	TCROT	NOP	COME HERE TO OUTPUT CHAR IN A
0299	63132	073232		STA TCR02	SAVE CHARACTER
0300	63133	063227		LDA TCRPC	SAVE NUMBER
0301	63134	073233		STA TCR03	OF PORTS
0302	63135	063226		LDA TCRPT	AND FIRST
0303	63136	073234		STA TCR04	PORT
0304	63137	063234	TCR5	LDA TCR04	ASK 2114 IF
0305	63140	001727		ALF,ALF	THIS USER'S BUFFER
0306	63141	030244		IOR IBF	IS FULL
0307	63142	114500		J9B S14SC,I	
0308	63143	102311		SFS CH2	
0309	63144	027143		JMP *-1	
0310	63145	102511		LIA CH2	GET RESPONSE
0311	63146	002002		SZA	
0312	63147	027137		JMP TCR5	YES, GO ASK AGAIN
0313	63150	063234		LDA TCR04	NO, GET PORT #
0314	63151	001727		ALF,ALF	
0315	63152	030220		IOR OCR	OUTPUT CODE
0316	63153	033232		IOR TCR02	AND CHARACTER
0317	63154	114500		J9B S14SC,I	GO SEND IT
0318	63155	037234		ISZ TCR04	BUMP PORT NUMBER
0319	63156	037233		ISZ TCR03	OUTPUT TO ANOTHER?
0320	63157	027137		JMP TCR5	YES
0321	63160	127131		JMP TCROT,I	NO, RETURN
0322*					
0323*					
0324	63161	063162	TCRPU	DEF **1	
0325	63162	044101		ASC 19,HARDWARE FAILURE -- PORT UNAVAILABLE.	
0326	63205	063206	TCRSD	DEF **1	
0327	63206	044101		ASC 16,HARDWARE FAILURE -- SYSTEM DOWN.	
0328*					
0329	63226	000000	TCRPT	BSS 1	NUMBER OF FIRST PORT TO GET NEWS
0330	63227	000000	TCRPC	BSS 1	TOTAL # OF PORTS TO RECEIVE NEWS
0331	63230	000000	TCRCC	BSS 1	LENGTH OF MESSAGE
0332	63231	000000	TCRBA	BSS 1	MESSAGE CHARACTER POINTER
0333	63232	000000	TCR02	BSS 1	OUTPUT CHARACTER
0334	63233	000000	TCR03	BSS 1	ROUTINE
0335	63234	000000	TCR04	BSS 1	TEMPS

0337* UPON ENTRY (A) HOLDS THE NUMBER OF CHARACTERS TO BE OUTPUT.
 0338* BIT 15 OF A = 0 FOR X-OFF CR LF AFTER OUTPUT.
 0339* (B) POINTS TO THE FIRST WORD OF THE BUFFER TO BE OUTPUT.

0341	63235	000000	SYCON	NOP	
0342	63236	073301		STA SYCCC	SET CHARACTER COUNT
0343	63237	004066		CLE,ELB	INITIALIZE
0344	63240	077302		STB SYCBA	CHARACTER POINTER
0345	63241	060224		LDA SBP	BITS FOR "PRINT ONLY"
0346	63242	173303		STA SYBIT,I	SAVE THEM
0347	63243	102612	SYC3	OTA ?SC	SEND THEM
0348	63244	063301	SYC1	LDA SYCCC	HAVE ALL CHARACTERS
0349	63245	001265		RAL,CLE,ERA	(COPY CRLF BIT INTO E)
0350	63246	002003		SZA,RSS	BEEN OUTPUT?
0351	63247	027270		JMP SYC2	YES, GO SEE ABOUT CRLF
0352	63250	003400		CCA	NO, DECREMENT
0353	63251	043301		ADA SYCCC	
0354	63252	073301		SIA SYCCC	CHARACTER COUNT
0355	63253	067302		LDB SYCBA	COMPUTE
0356	63254	037302		ISZ SYCBA	WORD_CHARACTER
0357	63255	004065		CLE,ERB	ADDRESS
0358	63256	160001		LDA B,I	LOAD WORD
0359	63257	002041		SEZ,RSS	POSITION
0360	63260	001727		ALF,ALF	CHARACTER
0361	63261	010441		AND B177	EXTRACT CHARACTER
0362	63262	030442		IOR B200	ADD IN BIT 7
0363	63263	102612		OTA ?SC	OUTPUT IT
0364	63264	103712		STC ?SC,C	REQUEST CHARACTER TRANSFER
0365	63265	102312		SFS ?SC	WAIT FOR
0366	63266	027265		JMP *-1	COMPLETION FLAG
0367	63267	027244		JMP SYC1	GO DO NEXT CHARACTER
0368*					
0369*					
0370	63270	002040	SYC2	SEZ	WANT CRLF?
0371	63271	127235		JMP SYCON,I	NO, RETURN
0372	63272	060355		LDA .+3	YES, 3 CHARACTERS
0373	63273	031036		IOR BIT15	WITH NO CRLF
0374	63274	073301		STA SYCCC	FOLLOWING
0375	63275	067304		LDB SYCCL	ADDRESS OF
0376	63276	004066		CLE,ELB	X-OFF CR LF
0377	63277	077302		STB SYCBA	
0378	63300	027244		JMP SYC1	GO OUTPUT THESE
0379*					
0380*					
0381	63301	000000	SYCCC	BSS 1	COUNT OF CHARACTERS TO BE OUTPUT
0382	63302	000000	SYCBA	BSS 1	CURRENT CHARACTER POINTER
0383	63303	060001	SYBIT	DEF TBITS	POINTER TO CURRENT CONTROL BITS
0384	63304	063305	SYCCL	DEF *-1	
0385	63305	011415		OCT 011415	X-OFF CR
0386	63306	005000		OCT 005000	LF
0387				UNS	

0389*

0390* THESE ROUTINES ARE USED FOR COMMUNICATION BETWEEN THE 2114
0391* AND 2116

0392*

0393* 2116 TO 2114 SEND DRIVER

0394*

0395	63307	000000	S14SH	NOP	
0396	63310	103100		CLF 0	
0397	63311	070073		STA SVCH2	SAVE COMMUNICATION
0398	63312	077554		STB SVBC2	
0399	63313	164634		LDB DCLC1,I	GET CLOCK WORD
0400	63314	005726		BLF,ELB	IF IT IS A JMP, BIT 12
0401	63315	006400		CLB	WILL BE SET
0402	63316	174634		STB DCLC1,I	BLOCK CLOCK
0403	63317	102100		STF 0	
0404	63320	102311		SFS CH2	WAIT FOR ACKNOWLEDGMENT
0405	63321	027320		JMP *-1	OF PREVIOUS TRANSMISSION
0406	63322	102611		OTA CH2	OUTPUT WORD
0407	63323	103711		STC CH2,C	INTERRUPT OTHER MACHINE
0408	63324	106711		CLC CH2	
0409	63325	164640		LDB DCLC2,I	
0410	63326	103100		CLF 0	
0411	63327	002040		SEZ	UNBLOCK CLOCK UNLESS IT WAS
0412	63330	174634		STB DCLC1,I	BLOCKED WHEN WE ENTERED
0413	63331	067554		LDB SVBC2	
0414	63332	102100		STF 0	
0415	63333	127307		JMP S14SH,I	EXIT

0416*

0417* 2114 TO 2116 RECEIVE DRIVER

0418*

0419	63334	000000	R14CM	NOP	
0420	63335	070067		STA CMA	SAVE
0421	63336	074070		STB CMB	
0422	63337	001520		ERA,ALS	A,B,E
0423	63340	102201		SOC	
0424	63341	002004		INA	AND OVERFLOW
0425	63342	070071		STA CME	
0426	63343	102510		LIA CH1	LOAD REQUEST WORD
0427	63344	001723		ALF,RAR	OPCODE IN BITS 2-0.
0428	63345	010361		AND,+7	MASK TO THREE BITS
0429	63346	043350		ADA CMTBL	ADD ON DECODE TABLE POINTER
0430	63347	124000		JMP 0,I	BRANCH TO APPROPRIATE ROUTINE

0431*

0432	63350	163351	CMTBL	DEF **+1,I	
0433	63351	063371		DEF HVL	HAVE LINE
0434	63352	063406		DEF ABR	USER'S ABORT REQUEST
0435	63353	063454		DEF BFL	BUFFER FULL
0436	63354	063463		DEF BFE	BUFFER EMPTY
0437	63355	063475		DEF ETO	ENTER STATEMENT TIMED OUT
0438	63356	063513		DEF UHU	USER HUNG UP
0439	63357	063361		DEF R14RT	
0440	63360	063361		DEF R14KT	

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0442*
0443* ALWAYS RETURNS HERE
0444*
0445 63361 060071 R14RT LDA CME RESTORE
0446 63362 103101 CLO
0447 63363 000036 SLA,ELA A,B,E
0448 63364 102101 STO
0449 63365 060067 LDA CMA AND OVERFLOW
0450 63366 064070 LDB CMB
0451 63367 103710 STC CH1,C ACKNOWLEDGE RECEIPT
0452 63370 127334 JMP R14CM,I EXIT
0453*
0454* 2114 HAS A LINE
0455*
0456 63371 017536 HVL JSB FDTTY B=> FIRST WORD OF TTY TABLE
0457 63372 002002 SZA SKIP IF STATUS IS IDLE.
0458 63373 050354 CPA %INPT NO SKIP IF INPUT WAIT
0459 63374 002001 RSS IDLE OR WAITING FOR INPUT
0460 63375 027361 JMP R14RT IGNORE
0461 63376 160001 LDA 1,I SET 2114
0462 63377 030772 IOR COM14 COMMUNICATION
0463 63400 170001 STA 1,I BIT
0464 63401 102510 LIA CH1 STORE RESPONSE
0465 63402 010443 AND B377 TIME IN TTY
0466 63403 044371 ADB .+?RTIM TABLE (#0 IF NO
0467 63404 170001 STA 1,I ENTER TIMING)
0468 63405 027361 JMP R14RT RETURN TO 2114 DRIVER
0469*
0470* USER'S ABORT REQUEST
0471*
0472 63406 017536 ABR JSB FDTTY B=> FIRST WORD OF TTY TABLE
0473 63407 160001 LDA 1,I
0474 63410 010447 AND B30M
0475 63411 050616 CPA PBFLG CBFLG=0 AND PBFLG=1?
0476 63412 027361 JMP R14RT YES, ABORT NOT ALLOWED!
0477 63413 160001 LDA B,I NO, ABORT POSSIBLE!
0478 63414 010372 AND UNABT UNABLE TO
0479 63415 002003 SZA,RSS ABORT?
0480 63416 027423 JMP ABR1 NO
0481 63417 160001 LDA 1,I
0482 63420 030442 IOR ABTRY DELAY ABORT
0483 63421 170001 STA 1,I ATTEMPT
0484 63422 027361 JMP R14RT RETURN TO 2114 DRIVER
0485 63423 ABR1 EQU *
0486 63423 044366 ADB .+?STAT B => STATUS
0487 63424 160001 LDA 1,I A = STATUS
0488 63425 050356 CPA %SYNT CHECK FOR SYNTAX.
0489 63426 027361 JMP R14RT CAN'T ABORT OUT OF SYNTAX.
0490 63427 040337 ADA .+,%SYNT-1-COM3-COM2
0491 63430 002020 SSA SKIP IF LIBRARY PROGRAM.
0492 63431 027444 JMP ABR2 OTHERWISE ABORT ALWAYS ALLOWED.
0493 63432 060405 LDA .+%SYNT-.+1-CAT-COM2
0494 63433 003004 CMA,INA ABORTABLE
0495 63434 140001 ADA B,I LIBRARY
0496 63435 002020 SSA PROGRAM?

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0497 63436 027361      JMP R14RT      NO
0498 63437 160001      LDA B,I        MAYBE
0499 63440 003004      CMA,INA
0500 63441 040414      ADA ,+XSYNT=,+1+STA=COM2
0501 63442 002020      SSA
0502 63443 027361      JMP R14RT      NO
0503 63444                ABR2 EQU *
0504 63444 044336      ADB ,=7STAT   B => FLAGS
0505 63445 160001      LDA 1,I        SET 2114
0506 63446 030772      IOR COM14      COMMUNICATIONS
0507 63447 170001      STA 1,I        BIT
0508 63450 044366      ADB ,+7STAT   SET
0509 63451 003400      CCA            STATUS TO
0510 63452 170001      STA 1,I        ABORTING
0511 63453 027361      JMP R14RT      RETRUN TO 2114 DRIVER
0512*
0513* BUFFER IS FULL
0514*
0515 63454 017536      BFL JSB FDTTY  B =>FIRST WORD OF TTY TABLE
0516 63455 050355      CPA XOUTW      IGNORE IF
0517 63456 027361      JMP R14RT      ALREADY OUTPUT WAIT
0518 63457 160001      LDA 1,I        SET
0519 63460 030412      IOR OUTWT      OUTPUT
0520 63461 170001      STA 1,I        WAIT BIT
0521 63462 027361      JMP R14RT      RETURN TO 2114 DRIVER
0522*
0523*
0524* BUFFER IS EMPTY AGAIN
0525*
0526 63463 017536      BFE JSB FDTTY  B=> FIRST WORD OF TTY TABLE
0527 63464 050355      CPA XOUTW      CHECK FOR STATUS OUTPUT WAIT
0528 63465 003701      CCA,CCE,RSS   A ← -1, E ← 1
0529 63466 003500      CCA,CLE       A ← -1, E ← 0
0530 63467 020412      XOR OUTWT      CLEAR OUTPUT
0531 63470 110001      AND 1,I        WAIT BIT
0532 63471 002040      SEZ            IF STATUS ≠ XOUTW, THEN DON'T
0533 63472 030772      IOR COM14      SET 2114
0534 63473 170001      STA 1,I        COMMUNICATIONS BIT
0535 63474 027361      JMP R14RT      RETURN TO 2114 DRIVER
0536* ENTER STATEMENT TIMED OUT
0537*
0538 63475 017536      ETO JSB FDTTY  B=> FIRST WORD OF TTY TABLE
0539 63476 044366      ADB ,+7RSTR   B => RESTART ADDRESS
0540 63477 160001      LDA 1,I        A = RESTART ADDRESS
0541 63500 053555      CPA DENRT      WAITING FOR ENTER?
0542 63501 002001      Rss           YES, SET COM BIT.
0543 63502 027361      JMP R14RT      NO, MUST BE MISTAKE.
0544 63503 044337      ADB ,=7RSTR
0545 63504 160001      LDA 1,I        SET 2114
0546 63505 030772      IOR COM14      COMMUNICATIONS
0547 63506 170001      STA 1,I        BIT
0548 63507 044366      ADB ,+7STAT   SET
0549 63510 060347      LDA XENTO      STATUS TO
0550 63511 170001      STA 1,I        ENTER TIMEOUT
0551 63512 027361      JMP R14RT      RETURN TO 2114 DRIVER

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0552*
0553* USER HUNG UP
0554*
0555 63513 017536 UHU JSB FDTTY B=> FIRST WORD OF TTY TABLE
0556 63514 044366 ADB .+?STAT
0557 63515 040337 ADA .+.-%SYNT=1<COM3+COM2
0558 63516 002020 SSA LIBRARY PROGRAM RUNNING?
0559 63517 027527 JMP UHU1 NO
0560 63520 006004 INB YES, IS THIS GUY THE
0561 63521 054273 CPB MLINK+1 HEAD OF THE QUEUE?
0562 63522 002001 RSS YES
0563 63523 027526 JMP UHU1=1 NO
0564 63524 074262 STB HQDIS SET DISCONNECT FLAG
0565 63525 027361 JMP R14RT
0566 63526 044351 ADB .+?STAT=?LINK
0567 63527 060350 UHU1 LDA %DISC SET STATUS
0568 63530 170001 STA 1,I TO DISCONNECT
0569 63531 044336 ADB .=?STAT
0570 63532 160001 LDA 1,I SET 2114
0571 63533 030772 IOR COM14 COMMUNICATIONS
0572 63534 170001 STA 1,I BIT
0573 63535 027361 JMP R14RT RETURN TO 2114 DRIVER
0574** **
0575* FIND FIRST WORD OF TTY TABLE *
0576** **
0577* EXIT WITH (B) => FIRST WORD OF TELETYPE TABLE
0578* (A) = USERS STATUS
0579*
0580 63536 000000 FDTTY NOP
0581 63537 102510 LIA CH1 LOAD REQUEST WORD
0582 63540 001727 ALF,ALF TTY# IN 4=0
0583 63541 010411 AND .+37B MASK TO 5 BITS
0584 63542 100200 MPY .+TTY01-TTY00
0585 63543 000375
0585 63544 064000 LDB 0 COMPUT LOCATION
0586 63545 044546 ADB DTTY0 OF FLAG WORD
0587 63546 060001 LDA 1 A => FLAGS
0588 63547 040366 ADA .+?STAT A => STATUS
0589 63550 160000 LDA 0,I A = STATUS
0590 63551 050346 CPA %PUN CHECK FOR PORT UNAVAILABLE
0591 63552 027361 JMP R14RT IGNORE IF SO
0592 63553 127536 JMP FDTTY,I
0593 63554 R14ED EQU *
0594 63554 000000 SVBC2 BSS 1
0595 63555 041235 DENRT DEF ENRT WHERE ENTER WAITS.
0596*
0597* ROUTINE TO CLEAR PBFLG & CBFLG BITS AND TO TELL
0598* THE OTHER MACHINE ABOUT THE ABORT.
0599*
0600 63556 000000 TRNOF NOP
0601 63557 044336 ADB .=?STAT B=> ?FLAG
0602 63560 103100 CLF 0
0603 63561 060447 LDA B30M CLEAR PBFLG & CBFLG
0604 63562 003000 CMA BITS.
0605 63563 110001 AND B,I

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0606 63564 170001
0607 63565 006004
0608 63566 160001
0609 63567 030254
0610 63570 114500
0611 63571 127556
0612*
0613*

STA B,I
INB
LDA B,I
IOR ABT
JSB S149C,I
JMP TRNOF,I

B=> ?TNUM
A= ?TNUM
TELL OTHER MACHINE.

0615	70000		ORG	700000
0616	70000	000140	B140	OCT 140
0617	70001	177720	M60B	OCT =60
0618	70002	177737	M41B	OCT =41
0619	70003	177645	M133B	OCT =133
0620	70004	106062	MCOM2	ABS =COM2
0621	70005	071540	M36K	ABS =30000-6000
0622	70006	047040	ASCIN	ASC 1,N
0623	70007	043106	ASCFF	ASC 1,FF
0624	70010	020100	ASCBA	ASC 1, *
0625	70011	030040	ASC0B	ASC 1,0
0626	70012	072034	DCOM6	DEF COM6
0627	70013	061126	TTYCK	ABS TTY00
0628	70014	000000	OUTM1	BSS 1
0629	70015	177776	X	OCT =2
0630	70016	000000	CTEMP	BSS 1
0631	70017	000000	SMAIN	OCT 0
0632	70020	000000	FMAIN	OCT 0
0633	70021	062266	JETPA	DEF JETPT
0634	70022	062613	SICKZ	DEF SICK
0635	70023	072021	XCOM5	DEF COM5=2
0636	70024	074563	INSQA	DEF INSEQ
0637	70025	063556	TRNFP	DEF TRNOF

TEMPS USED BY OUTCH ROUTINE.

CURRENT SWAPR DRUM TRANSFER FLAG
 OLD TOP OF Q FLAGS POINTER

0639* THE CLOCK DRIVER IS THE CENTRAL POINT THROUGH WHICH CONTROL IS
 0640* PASSED TO THE SCHEDULER. ENTRY COMES TO THE DRIVER WHENEVER THE
 0641* CLOCK (REAL TIME SCALAR) INTERRUPTS. THIS EVENT OCCURS EVERY
 0642* 100 MS. BESIDES GIVING CONTROL TO THE SCHEDULER, THE CLOCK
 0643* DRIVER ALSO HAS THE TASK OF UPDATING THE TIME OF DAY CLOCK,
 0644* THIS CLOCK IS A TWO WORD ENTRY WHOSE VALUE IS AS FOLLOWS:
 0645* DATIM=24*DAY+HOUR
 0646* DATIM+1=600*MIN+10*SEC=36000

0648	70026	000000	CLKIN	NOP	ENTRY POINT.
0649	70027	072016		STA CTEMP	SAVE A.
0650	70030	034202		ISZ DATIM+1	BUMP 100MS COUNTER
0651	70031	026036		JMP CLC0	NO PROBLEM IF NO SKIP
0652	70032	062005		LDA M36K	RESET 100MS COUNTER.
0653	70033	070202		STA DATIM+1	
0654	70034	034201		ISZ DATIM	BUMP HR COUNTER.
0655	70035	000000		NOP	JUST IN CASE.
0656	70036	036015	CLC0	ISZ X	ENTER SCHEDULER THIS TIME?
0657	70037	026044		JMP CLC1+1	NO
0658	70040	060350		LDA .-2	YES, RESET
0659	70041	072015		STA X	RESET SKIP WORD
0660	70042	062016		LDA CTEMP	RESET A

0662* THE NEXT INSTRUCTION IS NORMALLY A JMP. WHEN THE
 0663* SCHEDULER IS RUNNING, HOWEVER, IT PREVENTS ITSELF
 0664* FROM BEING REENTERED BY INSERTING A NOP.

0666	70043	000000	CLC1	NOP	
0668	70044	062016		LDA CTEMP	RESET A
0669	70045	103116		CLF CLOCK	ALLOW ANOTHER CLOCK INTERRUPT.
0670	70046	126026		JMP CLKIN,I	RETURN.
0671	70047	026050	CLC2	JMP SCHED	USED TO INSERT IN CLC1.

0673* THE SCHEDULER SECTION OF TSB DETERMINES WHICH
 0674* PROGRAM IS TO RUN NEXT. FIRST IT CLEARS CLC1,
 0675* ALLOWING THE CLOCK TO CONTINUE INTERRUPTING.

0677	70050	071224	SCHED	STA AREG	SAVE A-REGISTER.
0678	70051	002400		CLA	INSERT NOP IN CLC1 TO PREVENT
0679	70052	072043		STA CLC1	REENTERING SCHED.
0680	70053	062026		LDA CLKIN	SAVE THE PROGRAM COUNTER
0681	70054	071227		STA PREG	ALSO.
0682	70055	103116	CLKED	CLF CLOCK	NOW LET THE CLOCK IN AGAIN.
0683	70056	075225		STB BREG	SAVE B REGISTER,
0684	70057	001520		ERA,ALS	E-REGISTER,
0685	70060	102201		SOC	AND OVERFLOW REGISTER.
0686	70061	002004		INA	
0687	70062	071226		STA EREG	
0688	70063	064273		LDB MLINK+1	GET POINTER
0689	70064	044335		ADB .-7LINK	

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0690 70065 076020      STB FMAIN          TO FLAG WORD
0692 70066 060264      LDA TIMEF          GET TIMER FLAG.
0693 70067 002002      SZA                IF 0, THIS IS NOT A TIMED PROG.
0694 70070 134057      ISZ TIMER,I        IF NOT 0, BUMP TIMER.
0695 70071 026362      JMP SCH1           IF NOT OUT OF TIME, SKIP ROTAT-
0696*                                     ING RUN QUEUE.
0001*
0002*   AT THIS POINT WE HAVE DISCOVERED THAT THE PROGRAM THAT HAS
0003*   BEEN RUNNING HAS EXHAUSTED ITS TIME LIMIT. THE NEXT STEP IS
0004*   TO ADJUST THE QUEUE SO THAT THIS PROGRAM IS MOVED TO THE
0005*   BOTTOM. THIS IS ACCOMPLISHED BY DELETING THE PROGRAM
0006*   FROM THE QUEUE AND THEN REINSERTING IT WITH ITS NEW PRIORITY.
0007*
0008 70072 064273      LDB MLINK+1       GET THE ADDRESS OF PRIORITY
0009 70073 006004      INB                FOR THE CURRENT PROGRAM.
0010 70074 060356      LDA ,+4            SET IT TO LOW PRIORITY.
0011 70075 170001      STA 1,I
0012 70076 044351      ADB ,+?LINK-?PLEV
0013 70077 160001      LDA 1,I            GET THE LINK FROM THE CURRENT
0014 70100 070273      STA MLINK+1       PROGRAM AND STORE IT IN MLINK+1
0015 70101 116024      SCH3 JSB INQA,I    INSERT USER IN QUEUE
0016 70102 017202      JSB SWAPR         START EARLY SWAPPING
0017 70103 026362      JMP SCH1           CHECK FOR COMMUNICATION FROM 14
0018*
0019*
0020*   TEST FOR ANY TTY35 BUSINESS
0021*
0022 70104                SCHS1 EQU *      JUST FINISHED CHECKING TTYS
0023 70104 064546                LDB DTTY0        REINITIALIZE
0024 70105 076013                STB TTYCK        POINTER
0025 70106 003400      SCH5 CCA          TEST FOR DRIVER BUSY
0026 70107 050313                CPA T35F1
0027 70110 026273                JMP SCH15        DRIVER IS BUSY.
0028 70111 050315                CPA T35F3
0029 70112 026224                JMP SCH16        COMMAND ENTERED BUT NOT STARTED
0030*
0031*   WHEN T35F1=0, THE CONSOLE IS QUIET SO WE CAN DO LOGGING.
0032*
0033 70113 040306                ADA MSGCT        TEST FOR ANY ENTRIES ON MESSAGE
0034 70114 050351                CPA ,=1
0035 70115 026130                JMP SCH52        MESSAGE QUEUE EMPTY
0036*
0037*   OUTPUT AN ELEMENT OF THE MESSAGE QUEUE
0038*
0039 70116 070306                STA MSGCT        DECREMENT MESSAGE COUNTER
0040 70117 064307                LDB MSQP1        ADVANCE MESSAGE POINTER
0041 70120 044421                ADB ,+MESLN
0042 70121 054311                CPB MSQND        IF AT END OF BUFFER
0043 70122 064312                LDB MSQBG        THEN WRAP AROUND
0044 70123 074307                STB MSQP1        SET UP NEW ADDRESS
0045 70124 160001                LDA B,I          GET ADDRESS AND
0046 70125 006004                INB                LENGTH OF MESSAGE
0047 70126 114522                JSB TTY35,I      AND OUTPUT IT
0048 70127 026273                JMP SCH15

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0049*

0050	70130		SCH52	EQU *	
0051	70130	040604		ADA LOGCT	TEST FOR ANY ENTRIES IN LOGTABLE
0052	70131	050351		CPA .-1	
0053	70132	026224		JMP SCH16	LOG TABLE IS EMPTY.

0054* SET UP LOG BUFFER

0055*

0056	70133	070604		STA LOGCT	DECREMENT LOG COUNTER,
0057	70134	060606		LDA LOGP1	BUMP LOG POINTER
0058	70135	002004		INA	
0059	70136	050630		CPA LOGND	IF AT END,
0060	70137	060626		LDA LOGBG	WRAP AROUND.
0061	70140	070606		STA LOGP1	
0062	70141	160606		LDA LOGP1,I	TEST FOR LOGON
0063	70142	066006		LDB ASCIN	OR LOGOUT.
0064	70143	002020		SSA	
0065	70144	066007		LDB ASCFF	
0066	70145	076214		STB LOGBF+3	
0067	70146	101052		Lsr 10	SHIFT LOG CHAR TO LEAST 5 BITS.
0068	70147	010411		AND .+37B	MASK OFF OTHER STUFF.
0069	70150	042010		ADA ASCBA	CONVERT TO ASCII.
0070	70151	072215		STA LOGBF+4	
0071	70152	160606		LDA LOGP1,I	GET ACCOUNT NUMBER AGAIN.
0072	70153	010602		AND B1777	KEEP ONLY # PART.
0073	70154	006400		CLB	
0074	70155	100400		DIV .+10	GET 1ST 2 DIGITS IN A, LAST IN B
	70156	000364			
0075	70157	005727		BLF, BLF	SET UP LAST DIGIT AS
0076	70160	046011		ADB ASC0B	ASCII LEFT HALF.
0077	70161	076217		STB LOGBF+6	
0078	70162	017047		JSB #LTEN	CONVERT FIRST 2 TO ASCII ALSO
0079	70163	072216		STA LOGBF+5	
0080	70164	034606		ISZ LOGP1	
0081	70166	160606		LDA LOGP1,I	NOW GET THE TIME.
0082	70166	010411		AND .+37B	GET TERMINAL NUMBER
0083	70167	017047		JSB #LTEN	CONVERT AND STORE IN BUFFER.
0084	70170	072223		STA LOGBF+10	
0085	70171	160606		LDA LOGP1,I	
0086	70172	006400		CLB	
0087	70173	101025		ASR 5	
0088	70174	100400		DIV 060	
	70175	000724			
0089	70176	174606		STB LOGP1,I	SAVE SECOND HALF
0090	70177	017047		JSB #LTEN	CONVERT FIRST HALF TO ASCII.
0091	70200	072220		STA LOGBF+7	
0092	70201	160606		LDA LOGP1,I	
0093	70202	017047		JSB #LTEN	CONVERT 2ND HALF TO ASCII.
0094	70203	072221		STA LOGBF+8	
0095	70204	060400		LDA .+22	
0096	70205	066210		LDB LOGR2	TO PRINT THE
0097	70206	114522	SCH21	JSB TTY35,I	STUFF.
0098	70207	026273		JMP SCH15	
0099	70210	170211	LOGR2	DEF **1,I	BUFFER ADDRESS (I=>PUNCH)
0100	70211	025052	LOGBF	ASC 11,**LOGOFF A123 0930 #01	
	70212	046117			

70213	043517				
70214	043106				
70215	020101				
70216	030462				
70217	031440				
70220	030071				
70221	031460				
70222	020043				
70223	030061				
0101*					
0102*	TTY35 IO COMPLETE				
0103*					
0104	70224 050314	SCH16	CPA	T35F2	TEST DRIVER COMMUNICATE FLAG,
0105	70225 002001		RSS		
0106	70226 026273		JMP	SCH15	
0107	70227 060277		LDA	T35ST	GET CONSOLE STATUS.
0108	70230 064301		LDB	T35PR	
0109	70231 050355		CPA	XOUTW	IF OUTPUT WAIT,
0110	70232 026256		JMP	SCH23	GO SET HIM UP.
0111	70233 002002		SZA		IF NOT IDLE WEVE ALREADY
0112	70234 026273		JMP	SCH15	QUEUED HIM.
0113*	TTY35 INPUT COMMAND				
0114*					
0115	70235 060303		LDA	T35B2	POINTER TO FIRST CHARACTER
0116	70236 070060		STA	SBHED	OF CONSOLE BUFFER.
0117	70237 060304		LDA	T35ND	POINTER TO END OF
0118	70240 070061		STA	SCHL	CONSOLE BUFFER.
0119	70241 060412		LDA	.,+40B	INITIALIZE COMMAND
0120	70242 070064		STA	SCHP	HOLDER.
0121	70243 017113		JSB	SCOM	GET COMMAND.
0122	70244 026264		JMP	SCH17	BLANK LINE
0123	70245 026266		JMP	SCH18	ERROR
0124	70246 026266		JMP	SCH18	ERROR
0125*					
0126*	SET UP QUEUE ENTRY FOR CONSOLE.				
0127*					
0128	70247 060060		LDA	SBHED	SET POINTER FOR
0129	70250 070054		STA	T35CP	T35CR.
0130	70251 060412		LDA	.,+40B	SET UP LA2T CHAR
0131	70252 070055		STA	T35LC	AS BLANK
0132*					
0133	70253 060506		LDA	#LIB#	SET RESTART ADDRESS.
0134	70254 070276		STA	T35RS	
0135	70255 046263		ADB	SCH19	SET PROGRAM STATUS
0136	70256 074277	SCH23	STB	T35ST	TYPE.
0137	70257 060354		LDA	.,+2	SET PRIORITY.
0138	70260 070301		STA	T35PR	
0139	70261 064302		LDB	T35LN	GO INSERT IN QUEUE
0140	70262 026101		JMP	SCH3	
0141	70263 106067	SCH19	ABS	=COM2+%SYNT=.,+1	
0142	70264 060662	SCH17	LDA	ONEI	OUTPUT LINE FEED
0143	70265 002001		RSS		
0144	70266 060356	SCH18	LDA	.,+4	OUTPUT ERROR MESSAGR
0145	70267 006400		CLB		
0146	70270 074314		STB	T35F2	

0147 70271 064666 LDB DEH
 0148 70272 026206 JMP SCH21

0150*

0151*

0152 70273 017202 SCH15 JSB SWAPR

0153*

0154*

0155*

CHECK FOR ANYTHING TO DO. IF NOT
 SWAPR WILL GO TO SCH1 AGAIN,
 IT WILL RETURN HERE IF THERE IS
 AN EXECUTABLE PROGRAM IN CORE.

0157*

0158*

0159*

0160*

THE PROGRAM TO RUN IS AT THE HEAD OF THE QUEUE, AND SWAPR HAS
 GUARANTEED THAT IT IS IN CORE. THE FOLLOWING SECTION OF CODE
 SETS IT UP TO RUN, AND ALSO SETS UP THE CLOCK DRIVER SO THAT
 FUTURE INTERRUPTS WILL GO BACK INTO THE SCHEDULER.

0162 70274 103100

0163 70275 062047

0164 70276 072043

0165 70277 060273

0166 70300 002004

0167 70301 164000

0168 70302 054354

0169 70303 006400

0170 70304 174000

0171 70305 040347

0172 70306 164000

0173 70307 006002

0174 70310 075227

0175 70311 006400

0176 70312 174000

0177 70313 074264

0178 70314 002004

0179 70315 164000

0180 70316 040350

0181 70317 070057

0182 70320 054357

0183 70321 034264

0184 70322 040340

0185 70323 064000

0186 70324 160001

0187 70325 010612

0188 70326 070261

0189 70327 160001

0190 70330 010736

0191 70331 070214

0192 70332 061226

0193 70333 103101

0194 70334 000036

0195 70335 102101

0196 70336 061224

0197 70337 065225

0198 70340 102100

CLF 0

LDA CLC2

STA CLC1

LDA MLINK+1

INA

LDB 0,I

CPB .+2

CLB

STB 0,I

ADA .+7RSTR-?PLEV

LDB 0,I

SZB

STB PREG

CLB

STB 0,I

STB TIMEF

INA

LDB 0,I

ADA .+7CLOC-?STAT

STA TIMER

CPB XSYNT+1

ISZ TIMEF

ADA .-7CLOC

LDB A

LDA B,I

AND ENDST

STA ENDRM

LDA B,I

AND MBUST

STA MBUSY

LDA EREG

CLO

SLA,ELA

STO

LUA AREG

LDB BREG

STF 0

INHIBIT INTERRUPT.

RESTORE A <JMP SCHED> IN THE

CLOCK INTERRUPT ROUTINE.

GET PRIORITY OF PROGRAM.

IF PRIORITY IS 2, CHANGE IT TO

ZERO SO IT DOESNT GET INTERRUPTED

GET RESTART ADDRESS

IF NOT 0, PUT IT IN PREG

TO START UP PROPERLY.

PUT 0 INTO TABLE IN ANY CASE

SET TO SAY NO TIMING.

GET PROGRAM STATUS.

SET TIMER POINTER.

IF STATUS IS RUN, SET

TIMEFLAG FOR CLOCKING.

SAVE FLAGS

POINTER

RESTORE

DRUM

AND

DISC

BUSY

FLAGS

RESTURE E

AND OVERFLOW

REGISTERS.

RESTORE A AND

B REG.

ENABLE INTERRUPT AND

```

0199 70341 125227      JMP PREG,I          TRANSFER TO PROGRAM,
0200*  START OF SYSTEM *
0201 70342 060355  TSB  LDA .+3          START CLOCK COUNTING IN
0202 70343 102616      OTA CLOCK          100 MS UNITS.
0203 70344 103716      STC CLOCK,C       START CLOCK
0204 70345 106711      CLC CH2
0205 70346 106712      CLC ?9C
0206 70347 060177      LDA NPORT
0207 70350 003000      CMA              A ← NUMBER OF LEGAL PORTS - 1
0208 70351 001727      ALF,ALF
0209 70352 030226      IOR INI          PLUG IN INITIALIZATION CODE.
0210 70353 114500      JSB S145C,I     WE'RE STARTING
0211 70354 102311      SFS CH2         WAIT FOR 2114
0212 70355 026354      JMP *-1         TO FINISH
0213 70356 103710      STC CH1,C
0214 70357 060360      LDA .+6         START SYSTEM
0215 70360 064266      LDB READY       TELETYPE BY OUTPUTTING
0216 70361 114522      JSB TTY35,I     READY MESSAGE.

```

```

0217*
0218* THIS SECTION IS THE BEGINNING OF THE MAIN PART OF THE SCHEDU-
0219* LER. CONTROL ALWAYS COMES HERE TO EXAMINE THE TTQ UNTIL IT'S
0220* EXHAUSTED, OR WHEN THERE IS NOTHING TO DO. SWAPR ALWAYS COMES
0221* TO THIS POINT WHEN THE QUEUE IS EMPTY OR THE FIRST PROGRAM ON
0222* THE QUEUE IS ABSENT.

```

```

0223* THIS SECTION ACTUALLY PROCESSES A TTQ ENTRY. THERE ARE SEVERAL
0224* KINDS OF ENTRIES WHICH MAY BE CLASSIFIED AS FOLLOWS:

```

- ```

0225*
0226* 1) ABORT - THIS IS INDICATED BY THE TELETYPE STATUS BEING
0227* -1. THE ACTION TAKEN IS TO STOP THE PROGRAM (IF IT IS
0228* IN THE QUEUE), AND TO INITIATE THE ABORT MESSAGE.
0229*
0230* 2) OUTPUT TERMINATE - THIS IS INDICATED BY THE STATUS BEING
0231* XOUTW. THE TTQ ENTRY REALLY MEANS THAT THE OUTPUT BUFFER
0232* IS ALMOST EMPTY. THE PROGRAM IS PLACED BACK ON THE QUEUE
0233* ACCORDING TO ITS PRIORITY.
0234*
0235* 3) INPUT - THIS IS INDICATED BY STATUS BEING XINPT. IT INDI-
0236* CATES THAT A USER PROGRAM OR SYSTEM PROGRAM THAT HAS
0237* REQUESTED INPUT HAS GOTTEN IT. THE PROGRAM IS PLACED IN
0238* THE QUEUE.
0239*
0240* 4) COMMAND - WHEN STATUS IS XIDLE, EITHER A COMMAND OR
0241* A SYNTAX STATEMENT HAS BEEN ENTERED. THESE CAN BE DISTIN-
0242* GUISHED BY THE FIRST NON BLANK INPUT CHARACTER, WHICH IS
0243* A DIGIT ONLY IF SYNTAX HAS BEEN ENTERED.
0244*
0245* 5) DISCONNECT - THIS IS INDICATED BY STATUS BEING XDISC.
0246* THE ACTION TAKEN IS TO CALL THE BYE ROUTINE
0247*
0248* 6) ENTER TIMEOUT - THIS IS INDICATED BY THE STATUS BEING
0249* XENTO. THE RESTART ADDRESS IS BUMPED AND THE PROGRAM IS
0250* PLACED ON THE QUEUE.

```

```

0251*
0252 70362 102100 SCH1 STF 0
0253 70363 066013 LDB TTYCK

```

```

0254 70364 054550 CPB DTT32 HAVE ALL TELETYPES BEEN CHECKED?
0255 70365 026104 JMP SCHS1 YES
0256 70366 160001 LDA 1,I LOAD STATUS FOR THIS USER
0257 70367 044375 ADB ,+TTY01-TTY00 GENERATE ADDRESS FOR NEXT
0258 70370 076013 STB TTYCK USER
0259 70371 010772 AND COM14 COMMUNICATION FROM 2114?
0260 70372 002003 SZA,RSS SKIP IF 0
0261 70373 026362 JMP SCH1 NO== CHECK NEXT ONE
0262 70374 044327 ADB ,+TTY00-TTY01 MOVE ADDRESS BACK TO THIS U
0263 70375 103100 CLF 0
0264 70376 120001 XOR 1,I CLEAR
0265 70377 170001 STA 1,I COM14 BIT
0266 70400 074062 STB TTQ SAVE TABLE ADDRESS
0267 70401 044356 ADB ,+?ID STORE ID
0268 70402 074063 STB SCHID ADDRESS
0269 70403 044362 ADB ,+?STAT-?ID
0270 70404 160001 LDA 1,I A=STATUS
0271 70405 040346 ADA ,=4 MAKE SURE
0272 70406 002021 SSA,RSS STATUS<4
0273 70407 026362 JMP SCH1 IGNORE OTHERWISE
0274 70410 042412 ADA **2 BRANCH TO SECIION
0275 70411 124000 JMP 0,I TO HANDLE REQUEST
0276 70412 070422 DEF **8
0277 70413 026531 JMP SCH4 ENTER TIMEOUT
0278 70414 026514 JMP SCH8 DISCONNECT
0279 70415 026433 JMP SCH7 ABORT
0280 70416 026535 JMP SCH6 COMMAND
0281 70417 026106 JMP SCH5 ABORTING
0282 70420 000000 NOP INPUT

```

0283\*  
0284\* CODE TO HANDLE INPUT OR OUTPUT,

```

0285*
0286 70421 044354 ADB ,+?PLEV-?STAT
0287 70422 160001 SCH51 LDA 1,I GET ACTUAL STATUS
0288 70423 044350 ADB ,+?STAT-?PLEV
0289 70424 170001 STA 1,I SET ACTUAL STATUS
0290 70425 102100 STF 0
0291 70426 044354 ADB ,+?PLEV-?STAT
0292 70427 002400 CLA SET PRIORITY TO 0
0293 70430 170001 STA 1,I
0294 70431 044351 ADB ,+?LINK-?PLEV
0295 70432 026101 JMP SCH3 GO INSERT USER IN QUEUE

```

0296\*  
0297\* CODE TO HANDLE ABORT

```

0298*
0299 70433 102100 SCH7 STF 0
0300 70434 006004 INB B=>LINK
0301 70435 017577 JSB DEQUE REMOVE USER FROM QUEUE.
0302 70436 064062 LDB TTQ
0303 70437 060412 LDA OUTWT CLEAR
0304 70440 003000 CMA OUTPUT
0305 70441 103100 CLF 0
0306 70442 110001 AND 1,I WAIT
0307 70443 170001 STA 1,I BIT
0308 70444 006004 INB

```

|       |                                   |        |                            |                                |
|-------|-----------------------------------|--------|----------------------------|--------------------------------|
| 0309  | 70445                             | 160001 | LDA B,I                    | GET TTY NUMBER                 |
| 0310  | 70446                             | 030241 | IOR KAO                    |                                |
| 0311  | 70447                             | 114500 | JSB S149C,I                | KILL OUTPUT                    |
| 0312  | 70450                             | 044351 | ADB .-1                    |                                |
| 0313  | 70451                             | 060444 | LDA DFCHK                  |                                |
| 0314  | 70452                             | 110001 | AND 1,I                    |                                |
| 0315  | 70453                             | 002003 | SZA,RSS                    | NEED TO UPDATE CHANGE DATE?    |
| 0316  | 70454                             | 026475 | JMP SCH75                  | NO                             |
| 0317  | 70455                             | 060372 | LDA UNABT                  | YES                            |
| 0318  | 70456                             | 130001 | IOR B,I                    | DISALLOW                       |
| 0319  | 70457                             | 170001 | STA B,I                    | ABORTS                         |
| 0320  | 70460                             | 102100 | STF 0                      |                                |
| 0321  | 70461                             | 044370 | ADB .+?PLEV                |                                |
| 0322  | 70462                             | 002400 | CLA                        |                                |
| 0323  | 70463                             | 170001 | STA B,I                    | SET PRIORITY TO 0              |
| 0324  | 70464                             | 044350 | ADB .+?STAT=?PLEV          |                                |
| 0325  | 70465                             | 060363 | LDA .+XSYNT=,+1+UCDAB-COM2 |                                |
| 0326  | 70466                             | 170001 | STA B,I                    | SET STATUS TO LAST CHANGE DATE |
| 0327  | 70467                             | 044351 | ADB .+?RSTR=?STAT          |                                |
| 0328  | 70470                             | 042023 | ADA XCOM5                  | FIND POSITION IN TABLE         |
| 0329  | 70471                             | 160000 | LDA A,I                    | GET RESTART ADDRESS            |
| 0330  | 70472                             | 170001 | STA B,I                    | SAVE IT                        |
| 0331  | 70473                             | 044354 | ADB .+?LINK=?RSTR          |                                |
| 0332  | 70474                             | 026101 | JMP SCH3                   | GO INSERT IN QUEUE             |
| 0333  | 70475                             |        | SCH75 EQU *                |                                |
| 0334  | 70475                             | 044366 | ADB .+?STAT                | SET STATUS                     |
| 0335  | 70476                             | 170001 | STA 1,I                    |                                |
| 0336  | 70477                             | 116025 | JSB TRNFP,I                | CLEAR PBFLG & CBFLG BITS       |
| 0337* |                                   |        |                            | AND TELL OTHER MACHINE.        |
| 0338  | 70500                             | 054255 | CPB PRIST                  | USER HAVE LP?                  |
| 0339  | 70501                             | 017057 | JSB SCLPR                  | YES.                           |
| 0340  | 70502                             | 064062 | LDB TTQ                    | NO. PRINT ABORT                |
| 0341  | 70503                             | 060342 | LDA .-8                    | MESSAGE                        |
| 0342  | 70504                             | 017075 | JSB TYPE                   |                                |
| 0343  | 70505                             | 006412 | OCT 6412                   | CRLF                           |
| 0344  | 70506                             | 051524 | ASC 2,STOP                 |                                |
|       | 70507                             | 047520 |                            |                                |
| 0345  | 70510                             | 006412 | OCT 6412                   | CRLF                           |
| 0346  | 70511                             | 064062 | SCH78 LDB TTQ              | SCRATCH IF SHELL0 IS RUNNING   |
| 0347  | 70512                             | 017700 | JSB HTEST                  |                                |
| 0348  | 70513                             | 026362 | JMP SCH1                   |                                |
| 0349* |                                   |        |                            |                                |
| 0350* | CODE TO SET UP FORCED DISCONNECT. |        |                            |                                |
| 0351* |                                   |        |                            |                                |
| 0352  | 70514                             | 006004 | SCH8 INB                   | B => LINK WORD                 |
| 0353  | 70515                             | 017577 | JSB DEQUE                  | REMOVE FROM QUEUE              |
| 0354  | 70516                             | 064062 | LDB TTQ                    | CLEAR                          |
| 0355  | 70517                             | 060372 | LDA UNABT                  |                                |
| 0356  | 70520                             | 030442 | IOR ABTRY                  | ABORT                          |
| 0357  | 70521                             | 030444 | IOR DFCHK                  |                                |
| 0358  | 70522                             | 003000 | CMA                        |                                |
| 0359  | 70523                             | 110001 | AND 1,I                    | FLAGS                          |
| 0360  | 70524                             | 170001 | STA 1,I                    |                                |
| 0361  | 70525                             | 102100 | STF 0                      |                                |
| 0362  | 70526                             | 060001 | LDA 1                      |                                |

```

0363 70527 040365 ADA ,+?RSTR
0364 70530 026755 JMP SCH61 GO SET UP STARTING INFO.
0365*
0366* CODE TO HANDLE ENTER TIMEOUT
0367*
0368 70531 044351 SCH4 ADB ,+?RSTR=?STAT
0369 70532 134001 ISZ 1,I BUMP RESTART ADDRESS
0370 70533 044355 ADB ,+?PLEV=?RSTR
0371 70534 026422 JMP SCH51 GO RESTORE STATUS
0372*
0373*
0374* CODE TO HANDLE COMMANDS.
0375*
0376 70535 102100 SCH6 STF 0
0377 70536 002400 CLA FLAG BUFFER HEAD TO
0378 70537 070060 STA SBMED SAY BUFFER IN 2114
0379 70540 070064 STA SCHP INITIALIZE TO HOLD CHARACTERS
0380 70541 017113 JSB SCOM INTERPRET COMMAND
0381 70542 026564 JMP SCH30 EMPTY LINE.
0382 70543 026546 JMP SCH9 FIRST CHARACTER A DIGIT
0383 70544 026605 JMP EHERR INVALID COMMAND.
0384 70545 026617 JMP SCH11 COMMAND IS OK.
0385*
0386* THE FIRST CHARACTER IS A DIGIT. THIS MEANS THE LINE IS SYNTAX AND
0387* WE HAVE TO QUEUE IT AS SUCH.
0388*
0389 70546 064062 SCH9 LDB TTQ
0390 70547 044370 ADB ,+?PLEV B=> PRIORITY
0391 70550 002400 CLA SET PRIORITY TO 0
0392 70551 150063 CPA SCHID,I IF NO ID, GO LOG IN.
0393 70552 026623 JMP SCH25
0394 70553 170001 STA 1,I
0395 70554 044347 ADB ,+?RSTR=?PLEV SET UP STARTING ADDRESS
0396 70555 060454 LDA SYNTA FOR SYNTAX
0397 70556 170001 STA 1,I
0398 70557 044353 ADB ,+?STAT=?RSTR
0399 70560 060356 LDA %SYNT SET STATUS TO
0400 70561 170001 STA 1,I SYNTAX.
0401 70562 006004 INB GO INSERT IN QUEUE.
0402 70563 026101 JMP SCH3
0403*
0404 70564 064062 SCH30 LDB TTQ TEST FOR TAPE MODE IF NULL LINE.
0405 70565 060362 LDA TAPEF
0406 70566 110001 AND 1,I
0407 70567 002003 SZA,RSS
0408 70570 026601 JMP SCH20 NO TAPE--GO EMI, LINE FEED.
0409 70571 006004 INB B=> ITY # IN BITS 12-8
0410 70572 160001 LDA 1,I SPACE
0411 70573 030222 IOR GTC PAST
0412 70574 114509 JSB S14SC,I CARRIAGE RETURN
0413 70575 160001 LDA 1,I INFORM 2114
0414 70576 030242 IOR ALI THAT MORE INPUT
0415 70577 114500 JSB S14SC,I IS ALLOWABLE
0416 70600 026362 JMP SCH1
0417*

```

```

0418 70601 060364 SCH20 LDA ,+12B OUTPUT A LINE FEED.
0419 70602 064062 LDB TTQ
0420 70603 114576 JSB OUTCH,I
0421 70604 026362 JMP SCH1
0422*
0423* COME HERE WHEN ANY ILLEGAL INPUT IS FOUND.
0424*
0425 70605 064062 EHERR LDB TTQ
0426 70606 006004 INB
0427 70607 054255 CPB PRIST IF USER HAS LP,
0428 70610 017057 JSB SCLPR RELEASE IT
0429 70611 060344 LDA ,=6
0430 70612 017075 JSB TYPE
0431 70613 005077 EH OCT 5077,37477,6412 (???)
70614 037477
70615 006412
0432 70616 026362 JMP SCH1
0433*
0434* COME HERE WHEN A LEGITIMATE COMMAND IS FOUND
0435*
0436 70617 160063 SCH11 LDA SCHID,I PROCESS COMMAND ONLY IF
0437 70620 002003 SZA,RSS ID#0 OR
0438 70621 056636 CPB HI HELLO COMMAND.
0439 70622 026640 JMP SCH22
0440 70623 060332 SCH25 LDA ,=16 PRINT LOG IN MESSAGE
0441 70624 017075 JSB TYPE
0442 70625 005120 OCT 5120 LF=P
0443 70626 046105 ASC 6,LEASE LOG IN
70627 040523
70630 042440
70631 046117
70632 043440
70633 044516
0444 70634 006412 OCT 6412
0445 70635 026362 JMP SCH1
0446 70636 071737 HI DEF HELLO
0447 70637 071723 DTAPR DEF CTAPR
0448 70640 064062 SCH22 LDB TTQ
0449 70641 160001 LDA 1,I TAPE
0450 70642 010362 AND TAPEF
0451 70643 002003 SZA,RSS MODE?
0452 70644 026665 JMP SCH24 NO
0453 70645 006004 INB
0454 70646 160001 LDA 1,I YES==CHECK
0455 70647 030237 IOR ILI FOR ADDITIONAL
0456 70650 114500 JSB S14SC,I INPUT
0457 70651 102311 SFS CH2 WAIT FOR
0458 70652 026651 JMP *-1 ACKNOWLEDGMENT
0459 70653 102511 LIA CH2
0460 70654 002002 SZA ILLEGAL INPUT?
0461 70655 026605 JMP EHERR YES
0462 70656 103100 CLF 0 NO
0463 70657 044351 ADB ,=1
0464 70660 060362 LDA TAPEF CLEAR
0465 70661 003000 CMA TAPE

```

|       |       |        |       |                      |                                  |
|-------|-------|--------|-------|----------------------|----------------------------------|
| 0466  | 70662 | 110001 | AND   | 1,I                  | FLAG                             |
| 0467  | 70663 | 170001 | STA   | 1,I                  |                                  |
| 0468  | 70664 | 102100 | STF   | 0                    |                                  |
| 0469  | 70665 | 160064 | SCH24 | LDA SCHP,I           | TEST FOR HELLO,BYE, OR SCRATCH   |
| 0470  | 70666 | 053737 |       | CPA HELLO            | OK TO PROCEDE IF ANY             |
| 0471  | 70667 | 026703 |       | JMP SCH27            | OF THESE.                        |
| 0472  | 70670 | 053713 |       | CPA SCR              |                                  |
| 0473  | 70671 | 026703 |       | JMP SCH27            |                                  |
| 0474  | 70672 | 053740 |       | CPA BYE              |                                  |
| 0475  | 70673 | 026703 |       | JMP SCH27            |                                  |
| 0476  | 70674 | 160001 |       | LDA 1,I              | TEST FOR ANY TAPE ERRORS.        |
| 0477  | 70675 | 010353 |       | AND TERR             |                                  |
| 0478  | 70676 | 002003 |       | SZA,RSS              |                                  |
| 0479  | 70677 | 026707 |       | JMP SCH26            | NO TAPE ERRORS--CONTINUE.        |
| 0480* |       |        |       |                      |                                  |
| 0481  | 70700 | 062637 |       | LDA DTAPR            | OTHERWISE, SET UP FOR EXECU-     |
| 0482  | 70701 | 070064 |       | STA SCHP             | TION OF TAPE ERROR               |
| 0483  | 70702 | 026707 |       | JMP SCH26            | PRINTOUT ROUTINE.                |
| 0484* |       |        |       |                      |                                  |
| 0485  | 70703 | 060353 | SCH27 | LDA TERR             | IF HELLO, BYE OR SCRATCH,        |
| 0486  | 70704 | 003000 |       | CMA                  | CLEAR TAPE                       |
| 0487  | 70705 | 110001 |       | AND 1,I              | ERROR BIT                        |
| 0488  | 70706 | 170001 |       | STA 1,I              | AND PROCEED                      |
| 0489  | 70707 | 044357 | SCH26 | ADB .+?NAME          |                                  |
| 0490  | 70710 | 160001 |       | LDA 1,I              | TEST FOR                         |
| 0491  | 70711 | 002021 |       | SSA,RSS              | RUN-ONLY PROGRAM.                |
| 0492  | 70712 | 026726 |       | JMP SCH28            | NOT RUN-ONLY.                    |
| 0493  | 70713 | 160064 |       | LDA SCHP,I           | IF RUN-ONLY, DON'T               |
| 0494  | 70714 | 053732 |       | CPA SAVE             | ALLOW THESE                      |
| 0495  | 70715 | 026735 |       | JMP SCH29            | COMMANDS.                        |
| 0496  | 70716 | 053733 |       | CPA CSAV             |                                  |
| 0497  | 70717 | 026735 |       | JMP SCH29            |                                  |
| 0498  | 70720 | 053717 |       | CPA LIS              |                                  |
| 0499  | 70721 | 026735 |       | JMP SCH29            |                                  |
| 0500  | 70722 | 053720 |       | CPA PUN              |                                  |
| 0501  | 70723 | 026735 |       | JMP SCH29            |                                  |
| 0502  | 70724 | 053721 |       | CPA XPUN             |                                  |
| 0503  | 70725 | 026735 |       | JMP SCH29            |                                  |
| 0504* |       |        |       |                      |                                  |
| 0505  | 70726 | 064064 | SCH28 | LDB SCHP             | TEST FOR TYPE I COMMAND.         |
| 0506  | 70727 | 046004 |       | ADB MCOM2            |                                  |
| 0507  | 70730 | 006021 |       | SSB,RSS              |                                  |
| 0508  | 70731 | 026745 |       | JMP SCH12            | NOT TYPE I.                      |
| 0509  | 70732 | 046734 |       | ADB ++2              | GET STARTING ADDRESS FOR COMMAND |
| 0510  | 70733 | 124001 |       | JMP 1,I              | PROCESSOR AND GO THERE.          |
| 0511  | 70734 | 172026 |       | DEF COM5=COM1+COM2,I |                                  |
| 0512  | 70735 | 060340 | SCH29 | LDA .-10             |                                  |
| 0513  | 70736 | 017075 |       | JSB TYPE             |                                  |
| 0514  | 70737 | 005122 |       | OCT 5122             | LF=R                             |
| 0515  | 70740 | 052516 |       | ASC 3,UN ONL         |                                  |
|       | 70741 | 020117 |       |                      |                                  |
|       | 70742 | 047114 |       |                      |                                  |
| 0516  | 70743 | 054415 |       | OCT 54415            | Y=CR                             |
| 0517  | 70744 | 026601 |       | JMP SCH20            |                                  |
| 0518* |       |        |       |                      |                                  |

## 0519\* TYPE II AND III COMMANDS

0520\*

```

0521 70745 044357 SCH12 ADB %SYNT+1 DETERMINE PROGRAM STATUS,
0522 70746 060062 LDA TTQ
0523 70747 040366 ADA ,+?STAT
0524 70750 174000 STB 0,I
0525 70751 040351 ADA ,+?RSTR=?STAT A=>RESTART ADDRESS
0526 70752 044337 ADB ,+,%SYNT+COM2-COM3-1 TYPE II OR III ??
0527 70753 006020 SSB
0528 70754 026766 JMP SCH13 TYPE II COMMAND
0529 70755 064506 SCH61 LDB #LIB# TYPE III COMMANDS HAVE A STAN-
0530 70756 174000 STB 0,I DARD STARTING ADDRESS AND
0531 70757 064354 LDB ,+2 PRIORITY 2.
0532 70760 040355 SCH14 ADA ,+?PLEV=?RSTR
0533 70761 174000 STB 0,I
0534 70762 007400 CCB GET LINK POINTER IN B AND GO
0535 70763 044000 ADB 0 TO INSERT INTO QUEUE.
0536 70764 026101 JMP SCH3
0537 70765 072034 DEF COM3+COM5=COM1
0538 70766 046765 SCH13 ADB *-1 GET STARTING ADDRESS FOR TYPE
0539 70767 164001 LDB 1,I II COMMANDS.
0540 70770 174000 STB 0,I
0541 70771 006404 CLB,INB GO SET PRIORITY TO 1
0542 70772 026760 JMP SCH14

```

0543\*

0544\* "SCRATCH" COMMAND

0545\*

```

0546 70773 064062 #SCR LDB TTQ B=>TTY TABLE.
0547 70774 016776 JSB SCRAT PERFORM SCRATCH FUNCTION.
0548 70775 026601 JMP SCH20 TERMINATE.
0549*
0550 70776 000000 SCRAT NOP SCRATCH A PROGRAM (B=>USERS TTY)
0551 70777 060702 LDA PBUFF IF MAIN=B, SET PBPTR.
0552 71000 054257 CPB MAIN
0553 71001 070056 STA PBPTR
0554 71002 044355 ADB ,+?PROG B=>PROGEND
0555 71003 170001 STA 1,I RESET TABLE(PROG)
0556 71004 044354 ADB ,+?NAME=?PROG CLEAR
0557 71005 160001 LDA 1,I READ-ONLY BIT.
0558 71006 001665 ELA,CLE,ERA BIT.
0559 71007 170001 STA 1,I
0560 71010 126776 JMP SCRAT,I

```

0001\*

0002\* "TAPE" COMMAND

0003\*

```

0004 71011 103100 #TAP CLF 0
0005 71012 064062 LDB TTQ B => ?FLAG
0006 71013 006004 INB B=> ?TNUM
0007 71014 160001 LDA B,I A= ?TNUM
0008 71015 030253 IOR WTP ASK WHAT TYPE.
0009 71016 114500 JSB S14SC,I
0010 71017 103100 CLF 0
0011 71020 102311 SFS CH2
0012 71021 027020 JMP *-1
0013 71022 102511 LIA CH2

```



|        |                                                                    |        |       |              |                                 |
|--------|--------------------------------------------------------------------|--------|-------|--------------|---------------------------------|
| 0014   | 71023                                                              | 002003 |       | SZA,RSS      |                                 |
| 0015   | 71024                                                              | 027035 |       | JMP #TAP1    | TYPE #1, OK                     |
| 0016   | 71025                                                              | 060340 |       | LDA ,=10     |                                 |
| 0017   | 71026                                                              | 017075 |       | JSB TYPE     |                                 |
| 0018   | 71027                                                              | 005111 |       | OCT 5111     | LF, I                           |
| 0019   | 71030                                                              | 046114 |       | ASC 3,LLEGAL |                                 |
|        | 71031                                                              | 042507 |       |              |                                 |
|        | 71032                                                              | 040514 |       |              |                                 |
| 0020   | 71033                                                              | 006412 |       | OCT 6412     | CR, LF                          |
| 0021   | 71034                                                              | 026362 |       | JMP SCH1     | PRINT MESSAGE & TERMINATE.      |
| 0022   | 71035                                                              | 064062 | #TAP1 | LDB TTQ      | B => FLAG WORD                  |
| 0023   | 71036                                                              | 160001 |       | LDA 1,I      |                                 |
| 0024   | 71037                                                              | 030362 |       | IOR TAPEF    | SET TAPE BIT                    |
| 0025   | 71040                                                              | 170001 |       | STA 1,I      |                                 |
| 0026   | 71041                                                              | 102100 |       | STF 0        |                                 |
| 0027   | 71042                                                              | 006004 |       | INB          |                                 |
| 0028   | 71043                                                              | 160001 |       | LDA 1,I      | TELL                            |
| 0029   | 71044                                                              | 030236 |       | IOR TPO      |                                 |
| 0030   | 71045                                                              | 114500 |       | JSB S14SC,I  | 2114                            |
| 0031   | 71046                                                              | 026601 |       | JMP SCH20    | TERMINATE.                      |
| 0032*  |                                                                    |        |       |              |                                 |
| 0033*  |                                                                    |        |       |              |                                 |
| 0034   | 71047                                                              | 000000 | #LTEN | NOP          | CONVERT A # FROM 0-99 TO ASCII. |
| 0035   | 71050                                                              | 006400 |       | CLB          | GET FIRST DIGIT IN A,           |
| 0036   | 71051                                                              | 100400 |       | DIV ,+10     | SECOND IN B.                    |
|        | 71052                                                              | 000364 |       |              |                                 |
| 0037   | 71053                                                              | 001727 |       | ALF,ALF      | POSITION FIRST ON LEFT,         |
| 0038   | 71054                                                              | 040001 |       | ADA 1        | ADD IN SECOND,                  |
| 0039   | 71055                                                              | 040574 |       | ADA ASC00    | ADD IN ASCII BITS.              |
| 0040   | 71056                                                              | 127047 |       | JMP #LTEN,I  | RETURN.                         |
| 0041*  |                                                                    |        |       |              |                                 |
| 0042** | RELEASE LINE PRINTER                                               |        |       |              |                                 |
| 0043*  |                                                                    |        |       |              |                                 |
| 0044   | 71057                                                              | 000000 | SCLPR | NOP          |                                 |
| 0045   | 71060                                                              | 002400 |       | CLA          |                                 |
| 0046   | 71061                                                              | 070255 |       | STA PRIST    | REMOVE USER FROM LP             |
| 0047   | 71062                                                              | 060336 |       | LDA ,=12     | OUTPUT MESSAGE                  |
| 0048   | 71063                                                              | 017075 |       | JSB TYPE     |                                 |
| 0049   | 71064                                                              | 011423 |       | OCT 11423    | X=OFF, X=OFF                    |
| 0050   | 71065                                                              | 005114 |       | OCT 5114     | LF, L                           |
| 0051   | 71066                                                              | 050040 |       | ASC 3,P FREE |                                 |
|        | 71067                                                              | 043122 |       |              |                                 |
|        | 71070                                                              | 042505 |       |              |                                 |
| 0052   | 71071                                                              | 006412 |       | OCT 6412     | CR, LF                          |
| 0053   | 71072                                                              | 060247 |       | LDA LPD      | TELL I/O PROCESSOR TO           |
| 0054   | 71073                                                              | 114500 |       | JSB S14SC,I  | REMOVE USER FROM LP             |
| 0055   | 71074                                                              | 127057 |       | JMP SCLPR,I  |                                 |
| 0056*  |                                                                    |        |       |              |                                 |
| 0057*  | TYPE SENDS AN ENTIRE STRING TO A TELETYPE. IT IS CALLED AS FOLLOWS |        |       |              |                                 |
| 0058*  | A=#OF CHARS--MUST END ON RIGHT HALF OF WORD                        |        |       |              |                                 |
| 0059*  | JSB TYPE                                                           |        |       |              |                                 |
| 0060*  | <CHAR STRING>                                                      |        |       |              |                                 |
| 0061*  | RETURN                                                             |        |       |              |                                 |

|       |                                                     |        |       |             |                                  |
|-------|-----------------------------------------------------|--------|-------|-------------|----------------------------------|
| 0063  | 71075                                               | 000000 | TYPE  | NOP         |                                  |
| 0064  | 71076                                               | 073112 |       | STA TYPET   | SAVE COUNTER                     |
| 0065  | 71077                                               | 163075 | TYPEL | LDA TYPE,I  | GET WORD CONTAINING CHAR.        |
| 0066  | 71100                                               | 067112 |       | LDB TYPET   | GET COUNT IN B.                  |
| 0067  | 71101                                               | 006011 |       | SLB,RSS     | IF COUNT IS EVEN, TAKE HIGH      |
| 0068  | 71102                                               | 001727 |       | ALF,ALF     | CHAR;                            |
| 0069  | 71103                                               | 004010 |       | SLB         | IF COUNT IS ODD,                 |
| 0070  | 71104                                               | 037075 |       | ISZ TYPE    | BUMP TYPE.                       |
| 0071  | 71105                                               | 064062 |       | LDB TTQ     | OUTPUT CHAR TO TELETYPE.         |
| 0072  | 71106                                               | 114576 |       | JSB OUTCH,I |                                  |
| 0073  | 71107                                               | 037112 |       | ISZ TYPET   | ANY MORE?                        |
| 0074  | 71110                                               | 027077 |       | JMP TYPEL   | YES.                             |
| 0075  | 71111                                               | 127075 |       | JMP TYPE,I  | NO.                              |
| 0076  | 71112                                               | 000000 | TYPET | NOP         |                                  |
| 0077* | SCOM SCANS A COMMAND INPUT BUFFER TO DETERMINE WHAT |        |       |             |                                  |
| 0078* | THE COMMAND IS. THE CALLING SEQUENCE TO SCOM IS:    |        |       |             |                                  |
| 0079* |                                                     |        |       |             |                                  |
| 0080* | JSB SCOM                                            |        |       |             |                                  |
| 0081* | <RETURN IF BLANK LINE>                              |        |       |             |                                  |
| 0082* | <RETURN IF FIRST CHARACTER A DIGIT>                 |        |       |             |                                  |
| 0083* | <RETURN IF NO LEGAL COMMAND>                        |        |       |             |                                  |
| 0084* | <RETURN IF COMMAND FOUND--B=COMMAND ADDRESS>        |        |       |             |                                  |
| 0085* |                                                     |        |       |             |                                  |
| 0086* | SCOM ASSUMES THAT BEFORE IT IS CALLED, SBMED AND    |        |       |             |                                  |
| 0087* | SCHL ARE INITIALIZED AS REQUIRED BY SCHAR,, AND     |        |       |             |                                  |
| 0088* | SCHP=0 FOR NORMAL USERS AND OCT40 FOR CONSOLE.      |        |       |             |                                  |
| 0090  | 71113                                               | 000000 | SCOM  | NOP         | ENTRY POINT.                     |
| 0091  | 71114                                               | 064347 |       | LDB ,=3     | INITIALIZE CHAR. COUNT TO =3     |
| 0092  | 71115                                               | 074065 |       | STB SCNT    |                                  |
| 0093  | 71116                                               | 017527 |       | JSB SCHAR   | GET A CHARACTER.                 |
| 0094  | 71117                                               | 127113 |       | JMP SCOM,I  | NOT THERE--BLANK LINE.           |
| 0095  | 71120                                               | 037113 |       | ISZ SCOM    | BUMP SCOM TO POINT AT DIGIT RET. |
| 0096  | 71121                                               | 042001 |       | ADA M60B    | TEST FOR FIRST CHAR A DIGIT.     |
| 0097  | 71122                                               | 002020 |       | SSA         | AUTOMATIC FAILURE IF             |
| 0098  | 71123                                               | 037113 |       | ISZ SCOM    | < ASC0                           |
| 0099  | 71124                                               | 040340 |       | ADA ,=10    |                                  |
| 0100  | 71125                                               | 002021 |       | SSA,RSS     | IF <=ASC9, RETURN TO P+2 IF A    |
| 0101  | 71126                                               | 027140 |       | JMP SCOME   | DIGIT, P+3 IF NOT                |
| 0102  | 71127                                               | 064064 |       | LDB SCHP    |                                  |
| 0103  | 71130                                               | 006002 |       | SZB         | CONSOLE?                         |
| 0104  | 71131                                               | 127113 |       | JMP SCOM,I  | YES                              |
| 0105  | 71132                                               | 064062 |       | LDB TTQ     | NO                               |
| 0106  | 71133                                               | 006004 |       | INB         |                                  |
| 0107  | 71134                                               | 160001 |       | LDA 1,1     | TELL 2114                        |
| 0108  | 71135                                               | 030251 |       | IOR BKS     |                                  |
| 0109  | 71136                                               | 114500 |       | JSB S14SC,I | TO BACKSPACE                     |
| 0110  | 71137                                               | 127113 |       | JMP SCOM,I  |                                  |
| 0111  | 71140                                               | 037113 | SCOME | ISZ SCOM    |                                  |
| 0112  | 71141                                               | 042002 |       | ADA M41B    | TEST FOR LETTER.                 |
| 0113  | 71142                                               | 002021 | SCOMB | SSA,RSS     |                                  |
| 0114  | 71143                                               | 127113 |       | JMP SCOM,I  | NOT A LETTER.                    |
| 0115  | 71144                                               | 040404 |       | ADA ,+32B   |                                  |
| 0116  | 71145                                               | 002020 |       | SSA         |                                  |
| 0117  | 71146                                               | 127113 |       | JMP SCOM,I  | NOT A LETTER.                    |

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0118 71147 030064 IOR SCHP
0119 71150 034065 ISZ SCNT TEST FOR 3 LETTERS IN.
0120 71151 001732 ALF,SLA,RAL NO--ROTATE FOR NEXT ONE.
0121 71152 027160 JMP SCOMA YES--GO TO SEARCH TABLE.
0122 71153 070064 STA SCHP
0123 71154 017527 JSB SCHAR GET NEXT CHARACTER
0124 71155 127113 JMP SCOM,I FAIL.
0125 71156 042003 ADA M133B
0126 71157 027142 JMP SCOMB
0127* SEARCH COMMAND TABLE *
0128 71160 064710 SCOMA LDB SCOM1 B->TABLE
0129 71161 002020 SSA
0130 71162 044425 ADB ,+COM4-COM1
0131 71163 150001 SCOMD CPA 1,I
0132 71164 027171 JMP SCOMC COMMAND FOUND
0133 71165 054712 CPB SCOM5
0134 71166 127113 JMP SCOM,I ILLEGAL COMMAND
0135 71167 006004 INB
0136 71170 027163 JMP SCOMD
0137 71171 037113 SCOMC ISZ SCOM RETURN O.K.
0138 71172 074064 STB SCHP SAVE ADDRESS OF COMMAND.
0139 71173 017527 JSB SCHAR SCAN
0140 71174 027200 JMP **4 FOR CR
0141 71175 050427 CPA ,+55B OR DASH.
0142 71176 002001 RSS
0143 71177 027173 JMP **4
0144 71200 064064 LDB SCHP
0145 71201 127113 JMP SCOM,I
0146*
0147* THE SWAPR ROUTINE IS CALLED FROM VARIOUS POINTS IN THE SCHEDULER
0148* IN ORDER TO DETERMINE IF A PROGRAM IS READY TO RUN. IT IS ALSO
0149* CALLED WHENEVER THE QUEUE IS UPDATED. THE FUNCTION OF SWAPR IS TO
0150* DETERMINE IF THERE IS A PROGRAM ON THE QUEUE, AND IF SO, IS THE
0151* PROGRAM AT THE HEAD OF THE QUEUE READY TO RUN. IF SAID PROGRAM IS
0152* NOT READY, SWAPR INITIATES THE NECESSARY DRUM TRANSFERS. SWAPR IN-
0153* DICATES WHETHER A PROGRAM CAN BE RUN OR NOT AS FOLLOWS:
0154*
0155* READY : NORMAL RETURN
0156* NOT READY: TRANSFER TO SCH1

0158 71202 000000 SWAPR NOP
0159 71203 060261 LDA ENDRM TEST FOR DRUM
0160 71204 030214 IOR MBUSY OR DISC BUSY
0161 71205 002020 SSA
0162 71206 026362 JMP SCH1 WAIT FOR TRANSFER COMPLETION
0163 71207 066017 LDB SMAIN
0164 71210 006002 SZB
0165 71211 027262 JMP SWAP5 WAS SWAPR DOING A TRANSFER?
0166 71212 066020 LDB FMAIN YES, GO CHECK SUCCESS
0167 71213 006003 SZB,RSS NO, HAVE WE SAVED
0168 71214 027237 JMP SWAP7 DRIVER FLAGS FOR THIS USER?
0169 71215 002400 CLA YES, DONIT SAVE CURRENT ONES
0170 71216 064261 LDB ENDRM NO,
0171 71217 006002 SZB SAVE
 DRUM

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|       |       |        |       |                      |                                |
|-------|-------|--------|-------|----------------------|--------------------------------|
| 0172  | 71220 | 060612 | LDA   | ENDST                |                                |
| 0173  | 71221 | 064214 | LDB   | MBUSY                | AND                            |
| 0174  | 71222 | 006002 | SZB   |                      | DISC                           |
| 0175  | 71223 | 030736 | IOR   | MBUST                | "NOT                           |
| 0176  | 71224 | 064000 | LDB   | A                    | BUSY"                          |
| 0177  | 71225 | 060612 | LDA   | ENDST                | FLAGS                          |
| 0178  | 71226 | 030736 | IOR   | MBUST                | IN                             |
| 0179  | 71227 | 003000 | CMA   |                      | THIS                           |
| 0180  | 71230 | 103100 | CLF   | 0                    | USER'S                         |
| 0181  | 71231 | 112020 | AND   | FMAIN,I              | FLAGS                          |
| 0182  | 71232 | 030001 | IOR   | 0                    | WORD                           |
| 0183  | 71233 | 172020 | STA   | FMAIN,I              |                                |
| 0184  | 71234 | 102100 | STF   | 0                    |                                |
| 0185  | 71235 | 006400 | CLB   |                      | SAY DRIVER                     |
| 0186  | 71236 | 076020 | STB   | FMAIN                | FLAGS SAVED                    |
| 0187  | 71237 | 064273 | SWAP7 | LDB MLINK+1          | GET FIRST QUEUE ENTRY          |
| 0188  | 71240 | 054272 | CPB   | MLINK                | TEST FOR QUEUE EMPTY.          |
| 0189  | 71241 | 026362 | JMP   | SCH1                 | EMPTY--NOTHING TO DO.          |
| 0190  | 71242 | 060604 | LDA   | LOGCT                | IF CONSOLE AND THERE           |
| 0191  | 71243 | 030313 | IOR   | T35F1                | IS CURRENT OR                  |
| 0192  | 71244 | 054302 | CPB   | T35LN                | IMMINENT OUTPUT TO             |
| 0193  | 71245 | 002003 | SZA   | RSS                  | ASR,                           |
| 0194  | 71246 | 027273 | JMP   | SWAP4                |                                |
| 0195  | 71247 | 060277 | LDA   | T35ST                | GET THE STATUS                 |
| 0196  | 71250 | 003004 | CMA   | INA                  |                                |
| 0197  | 71251 | 040435 | ADA   | .*XSUNT-.+1+ROS-COM2 |                                |
| 0198  | 71252 | 002020 | SSA   |                      | CHECK TO SEE IF THIS IS        |
| 0199  | 71253 | 027273 | JMP   | SWAP4                | A ROUTINE THAT CAN'T BE DEQUED |
| 0200  | 71254 | 017577 | JSB   | DEQUE                | SUSPEND UNTIL ITS DONE.        |
| 0201  | 71255 | 060277 | LDA   | T35ST                |                                |
| 0202  | 71256 | 070301 | STA   | T35PR                |                                |
| 0203  | 71257 | 060355 | LDA   | XOUTW                |                                |
| 0204  | 71260 | 070277 | STA   | T35ST                |                                |
| 0205  | 71261 | 027203 | JMP   | SWAPR+1              |                                |
| 0206* |       |        |       |                      |                                |
| 0207  | 71262 | 002400 | SWAP5 | CLA                  | CLEAR "SWAPR INVOKED           |
| 0208  | 71263 | 072017 | STA   | SMAIN                | TRANSFER" FLAG                 |
| 0209  | 71264 | 050261 | CPA   | ENDRM                | WAS DRUM TRANSFER SUCCESSFUL?  |
| 0210  | 71265 | 027237 | JMP   | SWAP7                | YES, CONTINUE                  |
| 0211  | 71266 | 070261 | STA   | ENDRM                | NO, CLEAR ENDRM FOR KICKS      |
| 0212  | 71267 | 006020 | SSB   |                      | WERE WE SWAPPING A USER?       |
| 0213  | 71270 | 116022 | JSB   | SICKZ,I              | NO, GO FOLD CON GRACIA         |
| 0214  | 71271 | 116021 | JSB   | JETPA,I              | YES GO GET RID OF HIM OR HER   |
| 0215  | 71272 | 026362 | JMP   | SCH1                 |                                |
| 0216  | 71273 |        | SWAP4 | EQU *                |                                |
| 0217  | 71273 | 044351 | ADB   | .-1                  | B=>STATUS OF FIRST ENTRY.      |
| 0218  | 71274 | 160001 | LUA   | 1,I                  | A=STATUS                       |
| 0219  | 71275 | 050350 | CPA   | .-2                  | TEST FOR SPECIAL DISCONNECT.   |
| 0220  | 71276 | 060401 | LDA   | XSUNT+1+BYE-COM2     |                                |
| 0221  | 71277 | 040337 | ADA   | .-5+COM2-COM3        | TEST FOR TYPE II OR III.       |
| 0222  | 71300 | 002021 | SSA   | RSS                  |                                |
| 0223  | 71301 | 027374 | JMP   | SWAP3                | PROGRAM IS OF TYPE III.        |
| 0224  | 71302 | 044336 | ADB   | .-7STAT              | TEST FOR PROGRAM IN CORE.      |
| 0225  | 71303 | 054257 | CPB   | MAIN                 |                                |
| 0226  | 71304 | 127202 | JMP   | SWAPR,I              | PROGRAM PRESENT.               |

|       |                                |        |                   |                                 |
|-------|--------------------------------|--------|-------------------|---------------------------------|
| 0227  | 71305                          | 060257 | LDA MAIN          | FIND OUT WHAT PROGRAM IS.       |
| 0228  | 71306                          | 002002 | SZA               | IS ANY PROGRAM PRESENT?         |
| 0229  | 71307                          | 027325 | JMP SWAP1         | YES.                            |
| 0230  | 71310                          | 074257 | STB MAIN          | SET MAIN TO NEW PROGRAM.        |
| 0231* |                                |        |                   |                                 |
| 0232* | INITIATE DRUM TO CORE TRANSFER |        |                   |                                 |
| 0233* |                                |        |                   |                                 |
| 0234  | 71311                          | 076017 | STB SMAIN         | SAVE TABLE OF USER IN QUESTION  |
| 0235  | 71312                          | 044355 | ADB .+?PROG       | B=>PROGRAM END LOCATION.        |
| 0236  | 71313                          | 160001 | LDA 1,I           | COMPUTE NUMBER OF               |
| 0237  | 71314                          | 070056 | STA PBPTR         |                                 |
| 0238  | 71315                          | 003000 | CMA               | WORDS IN PROGRAM.               |
| 0239  | 71316                          | 041221 | ADA USE           |                                 |
| 0240  | 71317                          | 070072 | STA WORD          | STORE -LENGTH INTO WORD.        |
| 0241  | 71320                          | 044351 | ADB .+?DISC=?PROG |                                 |
| 0242  | 71321                          | 160001 | LDA 1,I           | A=DISC ADDRESS                  |
| 0243  | 71322                          | 065222 | LDB USEI          | B=CORE ADDRESS                  |
| 0244  | 71323                          | 114770 | JSB DRUM,I        | INITIATE DRUM TRANSFER          |
| 0245  | 71324                          | 026362 | JMP SCH1          | RETURN BUSY.                    |
| 0247* |                                |        |                   |                                 |
| 0248* | INITIATE CORE TO DRUM TRANSFER |        |                   |                                 |
| 0249* |                                |        |                   |                                 |
| 0251  | 71325                          | 070001 | SWAP1 STA 1       | B=>TABLE OF USER TO BE WRITTEN. |
| 0252  | 71326                          | 002400 | SWAP2 CLA         | SET MAIN TO SAY NO USER IN      |
| 0253  | 71327                          | 076017 | STB SMAIN         | SAVE TABLE OF USER IN QUESTION  |
| 0254  | 71330                          | 070257 | STA MAIN          | CORE.                           |
| 0255  | 71331                          | 044355 | ADB .+?PROG       | B=>PROG,END LOCATION.           |
| 0256  | 71332                          | 060056 | LDA PBPTR         |                                 |
| 0257  | 71333                          | 170001 | STA 1,I           |                                 |
| 0258  | 71334                          | 003000 | CMA               |                                 |
| 0259  | 71335                          | 041221 | ADA USE           |                                 |
| 0260  | 71336                          | 070072 | STA WORD          | STORE -LENGTH INTO WORD.        |
| 0261  | 71337                          | 044351 | ADB .+?DISC=?PROG | B => DRUM ADDRESS               |
| 0262  | 71340                          | 160001 | LDA B,I           | GET USER DRUM ADDRESS           |
| 0263  | 71341                          | 010317 | AND M32           | DELETE SECTOR PART              |
| 0264  | 71342                          | 170001 | STA 1,I           |                                 |
| 0265  | 71343                          | 001222 | RAL,RAL           | GET DRUM TABLE ADDRESS          |
| 0266  | 71344                          | 010355 | AND .+3           | ADDRESS                         |
| 0267  | 71345                          | 040676 | ADA ?ATBL         |                                 |
| 0268  | 71346                          | 077112 | STB TYPET         | SAVE DRUM ADDRESS LOCATION      |
| 0269  | 71347                          | 160000 | LDA A,I           | A=SELECT CODE FOR DRUM          |
| 0270  | 71350                          | 010734 | AND B77           | LEAVE THE SELECT CODE           |
| 0271  | 71351                          | 040552 | ADA LIA1          | SET UP LIA.                     |
| 0272  | 71352                          | 073353 | STA **1           | READ THE DRUM STATUS            |
| 0273  | 71353                          | 102500 | LIA 0             |                                 |
| 0274  | 71354                          | 001727 | ALF,ALF           | GET CURRENT SECTOR.             |
| 0275  | 71355                          | 040354 | ADA .+2           | GET POTENTIAL DEST. SECTOR.     |
| 0276  | 71356                          | 010411 | AND .+37B         |                                 |
| 0277  | 71357                          | 064000 | LDB A             |                                 |
| 0278  | 71360                          | 005700 | BLF               | GET NUMBER OF WORDS THAT WOULD  |
| 0279  | 71361                          | 005222 | RBL,RBL           | BE SKIPPED AT TRACK BEGINNING   |
| 0280  | 71362                          | 045000 | ADB MULEN         | B ← - NUMBER OF WORDS LEFT      |
| 0281  | 71363                          | 007004 | CMB,INB           | NOW POSITIVE COUNT              |

|      |       |        |             |                                  |
|------|-------|--------|-------------|----------------------------------|
| 0282 | 71364 | 044072 | ADB WORD    | TEST TO SEE IF THERE IS ENOUGH,  |
| 0283 | 71365 | 143112 | ADA TYPET,I | COMPUTE NEW DRUM ADDRESS         |
| 0284 | 71366 | 006020 | SSB         | IF END OF TRACK NOT LONG ENOUGH, |
| 0285 | 71367 | 163112 | LDA TYPET,I | WRITE TO BEGINNING.              |
| 0286 | 71370 | 173112 | STA TYPET,I | STORE NEW DRUM ADDR IN TABLE     |
| 0287 | 71371 | 065221 | LDB USE     | B*CORE ADDRESS.                  |
| 0288 | 71372 | 114770 | JSB DRUM,I  | INITIATE DRUM TRANSFER           |
| 0289 | 71373 | 026362 | JMP SCH1    | AND RETURN BUSY.                 |

0291\*

0292\* TYPE III PROGRAMS

0293\*

|      |       |        |                          |                                  |
|------|-------|--------|--------------------------|----------------------------------|
| 0295 | 71374 |        | SWAP3 EQU *              |                                  |
| 0296 | 71374 | 160001 | LDA B,I                  | GET STATUS                       |
| 0297 | 71375 | 050421 | CPA ,+XSYNT-,+1+OPE=COM2 |                                  |
| 0298 | 71376 | 002401 | CLA,RSS                  | SET PRIORITY TO 0 IF OPEN        |
| 0299 | 71377 | 027403 | JMP SWAP6                |                                  |
| 0300 | 71400 | 044354 | ADB ,+?PLEV=?STAT        |                                  |
| 0301 | 71401 | 170001 | STA B,I                  |                                  |
| 0302 | 71402 | 044350 | ADB ,+?STAT=?PLEV        |                                  |
| 0303 | 71403 |        | SWAP6 EQU *              |                                  |
| 0304 | 71403 | 044351 | ADB ,+?RSTR=?STAT        | B => RESTART ADDRESS             |
| 0305 | 71404 | 160001 | LDA B,I                  |                                  |
| 0306 | 71405 | 050506 | CPA #LIB#                | IF THIS A FRESH CALL,            |
| 0307 | 71406 | 070265 | STA LCHCR                | ZAP THE LCHCR FLAG               |
| 0308 | 71407 | 044353 | ADB ,+?STAT=?RSTR        |                                  |
| 0309 | 71410 | 160001 | LDA B,I                  |                                  |
| 0310 | 71411 | 050350 | CPA ,=2                  |                                  |
| 0311 | 71412 | 060401 | LDA XSYNT+1+BYE=COM2     |                                  |
| 0312 | 71413 | 040337 | ADA ,=5+COM2=COM3        |                                  |
| 0313 | 71414 | 064257 | LDB MAIN                 | TEST FOR MAIN PROGRAM IN CORE    |
| 0314 | 71415 | 006002 | SZB                      |                                  |
| 0315 | 71416 | 027326 | JMP SWAP2                | GO TO WRITE OUT MAIN PROGRAM.    |
| 0316 | 71417 | 042012 | ADA DCOM6                | A=> DRUM ADDRESS FOR LIB. PROGR. |
| 0317 | 71420 | 050260 | CPA LIB                  | IS IT IN CORE?                   |
| 0318 | 71421 | 127202 | JMP SWAPR,I              | YES==RETURN PRESENT.             |
| 0319 | 71422 | 070260 | STA LIB                  | IF NOT, INITIATE READ IN.        |
| 0320 | 71423 | 064750 | LDB M512                 | LENGTH OF PROGRAM = 512          |
| 0321 | 71424 | 074072 | STB WORD                 |                                  |
| 0322 | 71425 | 007400 | CCB                      | SMAIN = -1 SEZ                   |
| 0323 | 71426 | 076017 | STB SMAIN                | READING LIBRARY PROGRAM          |
| 0324 | 71427 | 064504 | LDB #LIBI                |                                  |
| 0325 | 71430 | 160000 | LDA 0,I                  |                                  |
| 0326 | 71431 | 114770 | JSB DRUM,I               | INITIATE DRUM TRANSFER           |
| 0327 | 71432 | 026362 | JMP SCH1                 |                                  |

0328\*

0329\* ENTRY POINT FOR INPUT REQUEST

0330\*

|      |       |        |                   |                    |
|------|-------|--------|-------------------|--------------------|
| 0331 | 71433 | 000000 | SCHIG NOP         |                    |
| 0332 | 71434 | 103100 | CLF 0             | INTERRUPT INHIBIT. |
| 0333 | 71435 | 064273 | LDB MLINK+1       |                    |
| 0334 | 71436 | 044336 | ADB ,+?TNUM=?LINK |                    |
| 0335 | 71437 | 130001 | IUR 1,I           | TELL 2114          |
| 0336 | 71440 | 114500 | JSB S148C,I       | ABOUT INPUT WAIT   |

|       |                              |        |       |                |                        |
|-------|------------------------------|--------|-------|----------------|------------------------|
| 0337  | 71441                        | 103100 | CLF   | 0              |                        |
| 0338  | 71442                        | 044364 | ADB   | .,+?RSTR=?TNUM |                        |
| 0339  | 71443                        | 063433 | LDA   | SCHIQ          |                        |
| 0340  | 71444                        | 170001 | STA   | 1,I            |                        |
| 0341  | 71445                        | 006004 | INB   |                | GET PROGRAM TYPE       |
| 0342  | 71446                        | 160001 | LDA   | 1,I            |                        |
| 0343  | 71447                        | 002020 | SSA   |                | QUIT IF ABORT REQUEST. |
| 0344  | 71450                        | 027651 | JMP   | SUSP           |                        |
| 0345  | 71451                        | 044354 | ADB   | .,+?PLEV=?STAT |                        |
| 0346  | 71452                        | 170001 | STA   | 1,I            | SET INTO PLEV.         |
| 0347  | 71453                        | 044350 | ADB   | .,+?STAT=?PLEV |                        |
| 0348  | 71454                        | 060354 | LDA   | XINPT          | CHANGE STATUS TO       |
| 0349  | 71455                        | 170001 | STA   | 1,I            | INPUT WAIT.            |
| 0350  | 71456                        | 027651 | JMP   | SUSP           | GO REMOVE FROM QUEUE.  |
| 0351* |                              |        |       |                |                        |
| 0352* | ENT RY POINT FOR TERMINATION |        |       |                |                        |
| 0353* |                              |        |       |                |                        |
| 0354  | 71457                        | 103100 | SCHQ0 | CLF            | 0                      |
| 0355  | 71460                        | 060262 | LDA   | HQDIS          | DID THIS GUY TRY TO    |
| 0356  | 71461                        | 002003 | SZA   | ,RSS           | DISCONNECT?            |
| 0357  | 71462                        | 027476 | JMP   | SCHQ1          | NO                     |
| 0358  | 71463                        | 002400 | CLA   |                | YES                    |
| 0359  | 71464                        | 070262 | STA   | HQDIS          | RESET DISCONNECT FLAG  |
| 0360  | 71465                        | 064273 | LDB   | MLINK+1        |                        |
| 0361  | 71466                        | 044335 | ADB   | .,-?LINK       |                        |
| 0362  | 71467                        | 160001 | LDA   | 1,I            | SET                    |
| 0363  | 71470                        | 030772 | IOR   | COM14          | COMMUNICATIONS         |
| 0364  | 71471                        | 170001 | STA   | 1,I            | BIT                    |
| 0365  | 71472                        | 044366 | ADB   | .,+?STAT       |                        |
| 0366  | 71473                        | 060350 | LDA   | XDISC          | SET STATUS             |
| 0367  | 71474                        | 170001 | STA   | 1,I            | TO DISCONNECT          |
| 0368  | 71475                        | 027651 | JMP   | SUSP           |                        |
| 0369  | 71476                        | 060273 | SCHQ1 | LDA            | MLINK+1                |
| 0370  | 71477                        | 040336 | ADA   | .,+?TNUM=?LINK | DOES THIS              |
| 0371  | 71500                        | 050255 | CPA   | PRIST          | USER HAVE              |
| 0372  | 71501                        | 002001 | RSS   |                | THE LINE               |
| 0373  | 71502                        | 027512 | JMP   | SCHQ3          | PRINTER?               |
| 0374  | 71503                        | 060256 | LDA   | LFLAG          | NO                     |
| 0375  | 71504                        | 002002 | SZA   |                | YES - IS THE LPR       |
| 0376  | 71505                        | 027510 | JMP   | SCHQ2          | COMMAND FLAG SET?      |
| 0377  | 71506                        | 072043 | STA   | CLC1           | YES                    |
| 0378  | 71507                        | 017057 | JSB   | SCLPR          | NO, BLOCK CLOCK        |
| 0379  | 71510                        | 002400 | SCHQ2 | CLA            | REMOVE USER FROM LP    |
| 0380  | 71511                        | 070256 | STA   | LFLAG          | CLEAR                  |
| 0381  | 71512                        | 064273 | SCHQ3 | LDB            | FLAG                   |
| 0382  | 71513                        | 054302 | CPB   | T35LN          | SCRATCH IF             |
| 0383  | 71514                        | 027520 | JMP   | ++4            |                        |
| 0384  | 71515                        | 044335 | ADB   | .,-?LINK       | THIS IS                |
| 0385  | 71516                        | 017700 | JSB   | HTEST          | SHELLO.                |
| 0386  | 71517                        | 064273 | LDB   | MLINK+1        | CHANGE                 |
| 0387  | 71520                        | 044351 | ADB   | .,+?STAT=?LINK | STATUS                 |
| 0388  | 71521                        | 160001 | LDA   | 1,I            |                        |
| 0389  | 71522                        | 050351 | CPA   | .-1            | QUIT IF ABORT REQUEST. |
| 0390  | 71523                        | 027651 | JMP   | SUSP           |                        |
| 0391  | 71524                        | 002400 | CLA   |                | TO IDLE                |

```

0392 71525 170001 STA 1,I
0393 71526 027651 JMP SUSP
0394* SCHAR FETCHES THE NEXT CHARACTER FROM A BUFFER. BUFFER
0395* POINTERS FOR SCHAR ARE INITIALIZED AS FOLLOWS;
0396* SBHED=> FIRST CHARACTER IF TTY35; #0 OTHERWISE
0397* SCHL,I=> END OF TTY35 BUFFER
0398*
0399* SCHAR CALLING SEQUENCE:
0400*
0401* JSB SCHAR
0402* RETURN HERE IF CR
0403* RETURN HERE IF ANY OTHER CHARACTER

0405 71527 000000 SCHAR NOP
0406 71530 064060 LDB SBHED GET POINTER,
0407 71531 006003 SZB,RSS TTY35?
0408 71532 027551 JMP SCHR1 NO
0409 71533 004065 CLE,ERB YES=>POSITION AS WORD POINTER
0410 71534 160001 LDA 1,I GET WORD CONTAINING CHARACTER,
0411 71535 005610 ELB,SLB REPOSITION POINTER AND TEST
0412 71536 002001 RSS FOR UPPER OR LOWER,
0413 71537 001727 ALF,ALF
0414 71540 010443 AND B377 MASK OUT CHARACTER,
0415 71541 050367 CPA .+15B RETURN IMMEDIATELY IF CR
0416 71542 127527 JMP SCHAR,I BUMP CHARACTER POINTER,
0417 71543 006004 INB SKIP BLANKS
0418 71544 074060 STB SBHED
0419 71545 050412 CPA .+40B
0420 71546 027531 JMP SCHAR+2
0421 71547 037527 ISZ SCHAR
0422 71550 127527 JMP SCHAR,I
0423 71551 064062 SCHR1 LDB TTQ FETCH
0424 71552 006004 INB
0425 71553 160001 LDA 1,I CHARACTER
0426 71554 030222 IOR GTC
0427 71555 114520 JSB S14SC,I FROM 2114
0428 71556 102311 SFS CH2 WAIT FOR RESPONSE
0429 71557 027556 JMP +=1
0430 71560 102511 LIA CH2
0431 71561 050412 CPA .+40B BLANK?
0432 71562 027553 JMP SCHR1+2 YES=>IGNORE IT
0433 71563 050367 CPA .+15B NO, CARRIAGE RETURN?
0434 71564 027573 JMP SCHR2 YES
0435 71565 040766 ADA M96 CHECK FOR CODES
0436 71566 002021 SSA,RSS GREATER THAN 140.
0437 71567 040317 ADA M32 CODE IS LOWER CASE, MAKE UPPER,
0438 71570 042000 ADA B140 RESTORE ASCII CODES,
0439 71571 037527 ISZ SCHAR NO=>EXIT
0440 71572 127527 JMP SCHAR,I TO (P+2)
0441 71573 SCHR2 EQU +
0442 71573 160001 LDA 1,I B=>TTY #
0443 71574 030251 IOR BKS TELL 2114
0444 71575 114500 JSB S14SC,I TO BACKSPACE
0445 71576 127527 JMP SCHAR,I
0446*

```



0447\* DEQUE REMOVES A USER FROM THE QUEUE. IT IS CALLED WITH THE USER'S  
 0448\* LINK ADDRESS IN B.

0449\*

|      |       |        |       |     |         |
|------|-------|--------|-------|-----|---------|
| 0450 | 71577 | 000000 | DEQUE | NOP |         |
| 0451 | 71600 | 060272 |       | LDA | MLINK   |
| 0452 | 71601 | 154000 | DEQ1  | CPB | 0,I     |
| 0453 | 71602 | 027607 |       | JMP | DEQ2    |
| 0454 | 71603 | 160000 |       | LDA | 0,I     |
| 0455 | 71604 | 050272 |       | CPA | MLINK   |
| 0456 | 71605 | 127577 |       | JMP | DEQUE,I |
| 0457 | 71606 | 027601 |       | JMP | DEQ1    |
| 0458 | 71607 | 164001 | DEQ2  | LDB | 1,I     |
| 0459 | 71610 | 174000 |       | STB | 0,I     |
| 0460 | 71611 | 127577 |       | JMP | DEQUE,I |

GET POINTER TO FIRST ENTRY.  
 TEST FOR ENTRY FOUND.

LINK TO NEXT ENTRY.  
 TEST FOR END OF QUEUE.  
 NOT ON QUEUE--RETURN.  
 LOOP.  
 LINK AROUND THIS USER.

0462\* THE OUTCH ROUTINE OUTPUTS A CHARACTER TO A USER'S  
 0463\* BUFFER IN THE 2114, THE CALLING SEQUENCE IS:  
 0464\*  
 0465\* JSB OUTCH,I A=CHARACTER TO BE OUTPUT  
 0466\* B=TTY TABLE ADDRESS,  
 0467\*  
 0468\* OUTCH FIRST CHECKS TO MAKE SURE THAT THE 2114 CAN ACCEPT  
 0469\* CHARACTERS, IF NOT, THE USER IS PLACED IN OUTPUT WAIT STATUS  
 0470\* AND A TRANSFER IS MADE INTO THE SYSTEM TO DELETE THE USER  
 0471\* FROM THE QUEUE  
 0472\*

```

0474 71612 000000 #OUTC NOP
0475 71613 103100 CLF 0
0476 71614 010443 AND B377 MASK AND
0477 71615 072014 STA OUTM1 SAVE CHARACTER
0478 71616 160001 LDA 1,I CAN 2114
0479 71617 010412 AND OUTWT TAKE THIS
0480 71620 002002 SZA CHARACTER?
0481 71621 027630 JMP OUTC1 NO
0482 71622 006004 INB YES
0483 71623 160001 LDA 1,I BUILD OUTPUT WORD
0484 71624 032014 IOR OUTM1 WITH USER'S TTY #,
0485 71625 030220 IUR OCR CHARACTER AND OPCODE.
0486 71626 114500 JSB S14LP,I CALL 2114 DRIVER
0487 71627 127612 JMP #OUTC,I
0488*
0489* TAKE CARE OF FULL BUFFER IN 2114
0490*
0491 71630 044366 OUTC1 ADB .+7STAT
0492 71631 160001 LDA 1,I
0493 71632 002020 SSA IF ABORTED GO DIRECTLY
0494 71633 027651 JMP SUSP TO SUSPEND.
0495 71634 044354 ADB .+7PLEV-7STAT MOVE STATUS TO
0496 71635 170001 STA 1,I PLEV AND SET
0497 71636 044350 ADB .+7STAT-7PLEV STATUS TO
0498 71637 060355 LDA %OUTW OUTWAIT.
0499 71640 170001 STA 1,I
0500 71641 003400 CCA SET RETURN ADDRESS TO
0501 71642 043612 ADA #OUTC RECALL OUTC
0502 71643 044351 ADB .+7RSTR-7STAT
0503 71644 170001 STA 1,I
0504 71645 062014 LDA OUTM1
0505 71646 071224 STA AREG
0506 71647 044337 ADB .-7RSTR
0507 71650 075225 STB BREG
0508 71651 160273 SUSP LDA MLINK+1,I
0509 71652 070273 STA MLINK+1
0510 71653 002400 CLA LOCK
0511 71654 072043 STA CLC1 CLOCK
0512 71655 026362 JMP SCH1 JUMP TO SCHEDULER
0513*
0514 71656 000000 SCH00 NOP OUTPUT SUSPEND REQUEST ENTRY.

```

PAGE 0330 #30 OUTPUT CHARACTER ROUTINE

```

0515 71657 103100 CLF 0 TURN OFF INTERRUPT.
0516 71660 063656 LDA SCHSQ SET UP RETURN ADDRESS.
0517 71661 002004 INA
0518 71662 SCHSQ EQU *
0519 71662 073612 STA #OUTC
0520 71663 064273 LDB MLINK+1
0521 71664 044335 ADB ,-?LINK
0522 71665 160001 LDA 1,I
0523 71666 030412 IOR OUTWT SET OUTPUT WAIT BIT
0524 71667 170001 STA 1,I
0525 71670 006004 INB
0526 71671 160001 LDA 1,I PUT USER
0527 71672 030243 IOR OWT
0528 71673 114500 JSB S14LP,I IN OUTPUT WAIT
0529 71674 103100 CLF 0 NO INTERRUPTS DURING SUSPEND
0530 71675 064273 LDB MLINK+1 FOOL OUTCR INTO DOING THE WORK.
0531 71676 044351 ADB ,+?STAT-?LINK
0532 71677 027631 JMP OUTC1+1
0533* HTEST SCRATCHES A PROGRAM IF THE ASSOCIATED HFLAG BIT IS SET.
0534* B POINTS TO THE USER'S TTY ADDRESS.
0535*
0536 71700 000000 HTEST NOP
0537 71701 160001 LDA 1,I
0538 71702 010356 AND HFLAG GET HFLAG BIT.
0539 71703 002003 SZA,RSS
0540 71704 127700 JMP HTEST,I RETURN IF HFLAG BIT =0.
0541 71705 103100 CLF 0
0542 71706 120001 XOR 1,I
0543 71707 170001 STA 1,I CLEAR HFLAG BIT
0544 71710 102100 STF 0
0545 71711 016776 JSB SCRAT
0546 71712 127700 JMP HTEST,I RETURN.

```

0001\* COMMAND TABLE -- THIS TABLE CONSISTS OF 2 PARTS, PART 1 CONTAINS  
 0002\* THE ENCODED SYMBOLIC COMMANDS, THESE ARE CODED AS 3 BYTES, EACH  
 0003\* BYTE BEING OF LENGTH 5 BITS AND OF VALUE 101(OCTAL) LESS THAN THE  
 0004\* OCTAL VALUE OF THE CHARACTER. THE THREE BYTES ARE IN BIT POSI-  
 0005\* TIONS 14-10, 9-5, AND 4-0, RESPECTIVELY, BIT 15 IS SET TO 1 FOR  
 0006\* COMMANDS THAT ARE LEGAL FOR THE SYSTEM CONSOLE.

0007\*  
 0008\* PART 1 IS ITSELF DIVIDED INTO 3 SECTIONS, COMMANDS IN SECTION 1  
 0009\* ARE THOSE COMMANDS WHICH ARE HANDLED IMMEDIATELY BY THE EXECUTIVE  
 0010\* WITHOUT ANY DRUM ACCESS, THOSE IN SECTION 2 ARE COMPILER COMMANDS  
 0011\* WHICH ARE RESIDENT BUT WHICH REQUIRE THE PROGRAM TO BE LOADED  
 0012\* FROM DRUM, COMMANDS IN SECTION 3 ARE SYSTEM COMMANDS WHICH ARE  
 0013\* DRUM RESIDENT, ALL SYSTEM COMMANDS ARE OF THIS TYPE AND  
 0014\* MUST BE LOCATED AFTER COM4.

0015\*  
 0016\* PART 2 OF THE COMMAND TABLE CONTAINS THE CORE STARTING ADDRESSES  
 0017\* FOR THOSE COMMANDS IN SECTIONS 1 AND 2, AND THE DRUM ADDRESSES OF  
 0018\* THOSE IN SECTION 3.

0019\*  
 0020\* PART I

0021\*  
 0022\* SECTION I

|       |       |        |      |           |         |
|-------|-------|--------|------|-----------|---------|
| 0024* | 71713 | 044121 | COM1 | OCT 44121 | SCRATCH |
| 0025* | 71713 |        | SCR  | EQU COM1  |         |
| 0026* | 71714 | 046017 |      | OCT 46017 | TAPE    |
| 0027* | 71715 | 024230 |      | OCT 24230 | KEY     |

0028\*  
 0029\* SECTION II

|       |       |        |       |            |                               |
|-------|-------|--------|-------|------------|-------------------------------|
| 0031* | 71716 | 043215 | COM2  | OCT 43215  | RUN                           |
| 0032* | 71717 | 026422 | LIS   | OCT 26422  | LIST                          |
| 0033* | 71720 | 037215 | PUN   | OCT 37215  | PUNCH                         |
| 0034* | 71721 | 056764 | XPUN  | OCT 056764 | XPUNCH                        |
| 0035* | 71722 | 177777 | UCDAB | OCT -1     | FOR ABORT UPDATE CHANGE DATE  |
| 0036* | 71723 | 177777 | CTAPR | OCT -1     | USED FOR TAPE ERROR PRINTOUT, |

0037\*  
 0038\* SECTION III

|       |       |        |       |           |                    |
|-------|-------|--------|-------|-----------|--------------------|
| 0039* |       |        |       |           |                    |
| 0040* | 71724 | 177777 | COM3  | OCT -1    | FOR LENGTH SECTION |
| 0041* | 71725 | 177777 |       | OCT -1    | FOR TWO HALVES     |
| 0042* | 71726 | 177777 |       | OCT -1    | OF FUSS TABLE      |
| 0043* | 71727 | 177777 | COMFL | OCT -1    | FOR FILES          |
| 0044* | 71730 | 177777 | ASGNA | OCT -1    | ASSIGN             |
| 0045* | 71731 | 177777 | COMCH | OCT -1    | FOR CHAIN          |
| 0046* | 71732 | 044025 | SAVE  | OCT 44025 | SAVE               |
| 0047* | 71733 | 005100 | CSAV  | OCT 5100  | CSAVE              |
| 0048* | 71734 | 177777 | SAVO  | OCT -1    | FOR SAVE OVERLAY   |
| 0049* | 71735 | 014223 |       | OCT 14223 | GET                |
| 0050* | 71736 | 000757 |       | OCT 757   | APPEND             |
| 0051* | 71737 | 016213 | HELLO | OCT 16213 | HELLO              |
| 0052* | 71740 | 003404 | BYE   | OCT 3404  | BYE                |
| 0053* | 71741 | 024413 |       | OCT 24413 | KILL               |
| 0054* | 71742 | 042215 |       | OCT 42215 | RENUMBER           |
| 0055* | 71743 | 032014 |       | OCT 32014 | NAME               |

|       |                               |        |      |     |           |                                  |
|-------|-------------------------------|--------|------|-----|-----------|----------------------------------|
| 0056  | 71744                         | 004023 | CAT  | OCT | 004023    | CATALOG                          |
| 0057  | 71745                         | 026401 |      | OCT | 26401     | LIBRARY                          |
| 0058  | 71746                         | 015056 |      | OCT | 15056     | GROUP                            |
| 0059  | 71747                         | 006421 |      | OCT | 6421      | DIRECTORY - USER CONSOLE         |
| 0060  | 71750                         | 044150 |      | OCT | 44150     | SDIRECTORY - USER CONSOLE        |
| 0061  | 71751                         | 042217 |      | OCT | 42217     | REPORT - USER CONSOLE            |
| 0062  | 71752                         | 045140 |      | OCT | 45140     | STATUS - USER CONSOLE            |
| 0063  | 71753                         | 177777 | STA  | OCT | =1        | FOR STATUS OVERLAY - USER CONSOL |
| 0064  | 71754                         | 006213 |      | OCT | 6213      | DELETE                           |
| 0065  | 71755                         | 046414 |      | OCT | 46414     | TIME                             |
| 0066  | 71756                         | 037056 |      | OCT | 37056     | PROTECT                          |
| 0067  | 71757                         | 050657 |      | OCT | 50657     | UNPROTECT                        |
| 0068  | 71760                         | 034744 | OPE  | OCT | 34744     | OPEN                             |
| 0069  | 71761                         | 026215 |      | OCT | 26215     | LENGTH                           |
| 0070  | 71762                         | 010107 |      | OCT | 10107     | ECHO                             |
| 0071  | 71763                         | 030222 |      | OCT | 030222    | MESSAGE                          |
| 0072  | 71764                         | 026761 |      | OCT | 26761     | LPRINTER                         |
| 0073  | 71765                         | 036721 |      | OCT | 36721     | PORT=USER CONSOLE                |
| 0074  | 71766                         |        | COM4 | EQU | *         |                                  |
| 0075  | 71766                         | 142217 |      | OCT | 142217    | REPORT - SYSTEM CONSOLE          |
| 0076  | 71767                         | 106421 |      | OCT | 106421    | DIRECTORY - SYSTEM CONSOLE       |
| 0077  | 71770                         | 144150 |      | OCT | 144150    | SDIRECTORY - SYSTEM CONSOLE      |
| 0078  | 71771                         | 145140 |      | OCT | 145140,-1 | STATUS - SYSTEM CONSOLE          |
|       |                               | 71772  |      |     |           |                                  |
| 0079  | 71773                         | 136721 |      | OCT | 136721    | PORT=SYSTEM CONSOLE              |
| 0080  | 71774                         | 142722 | ROS  | OCT | 142722    | ROSTER                           |
| 0081  | 71775                         | 100655 |      | OCT | 100655    | ANNOUNCE                         |
| 0082  | 71776                         | 142222 |      | OCT | 142222    | RESET                            |
| 0083  | 71777                         | 104340 |      | OCT | 104340    | CHANGE                           |
| 0084  | 72000                         | 144544 |      | OCT | 144544    | SLEEP                            |
| 0085  | 72001                         | 116401 |      | OCT | 116401    | HIBERNATE                        |
| 0086  | 72002                         | 132226 |      | OCT | 132226    | NEWID                            |
| 0087  | 72003                         | 124413 |      | OCT | 124413    | KILLID                           |
| 0088  | 72004                         | 150653 |      | OCT | 150653    | UNLOCK                           |
| 0089  | 72005                         | 126702 |      | OCT | 126702    | LOCK                             |
| 0090  | 72006                         | 131215 |      | OCT | 131215    | MUNLOCK                          |
| 0091  | 72007                         | 130556 |      | OCT | 130556,-1 | MLOCK                            |
|       |                               | 72010  |      |     |           |                                  |
| 0092  | 72011                         | 104717 |      | OCT | 104717    | COPY                             |
| 0093  | 72012                         | 102222 |      | OCT | 102222    | BESTOW                           |
| 0094  | 72013                         | 144015 |      | OCT | 144015    | SANCTIFY                         |
| 0095  | 72014                         | 106222 |      | OCT | 106222    | DESECRATE                        |
| 0096  | 72015                         | 137221 |      | OCT | 137221    | PURGE                            |
| 0097  | 72016                         | 130006 |      | OCT | 130006    | MAGTAPE                          |
| 0098  | 72017                         | 136356 |      | OCT | 136356    | PHO                              |
| 0099  | 72020                         | 137050 |      | OCT | 137050    | PRINTER                          |
| 0100  | 72021                         | 144744 |      | OCT | 144744    | SPEED                            |
| 0101  | 72022                         | 103044 |      | OCT | 103044    | BREAK                            |
| 0102* |                               |        |      |     |           |                                  |
| 0103* | PART II == STARTING ADDRESSES |        |      |     |           |                                  |
| 0104* |                               |        |      |     |           |                                  |
| 0105  | 72023                         | 070773 | COM5 | DEF | #SCR      |                                  |
| 0106  | 72024                         | 071011 |      | DEF | #TAP      |                                  |
| 0107  | 72025                         | 070601 |      | DEF | SCH20     | KEY                              |
| 0108* |                               |        |      |     |           |                                  |

|       |                                               |        |       |     |                 |                                |
|-------|-----------------------------------------------|--------|-------|-----|-----------------|--------------------------------|
| 0109  | 72026                                         | 036007 |       | DEF | CMPL            |                                |
| 0110  | 72027                                         | 052143 |       | DEF | LIST            |                                |
| 0111  | 72030                                         | 052142 |       | DEF | PUNCH           |                                |
| 0112  | 72031                                         | 052140 |       | DEF | XPUNCH          |                                |
| 0113  | 72032                                         | 073473 |       | DEF | ABUCD           |                                |
| 0114  | 72033                                         | 045233 |       | DEF | TAPER           |                                |
| 0115* |                                               |        |       |     |                 |                                |
| 0116* | DRUM ADDRESSES -- TO BE FILLED BY THE LOADER, |        |       |     |                 |                                |
| 0117* |                                               |        |       |     |                 |                                |
| 0118  | 72034                                         | 000000 | COM6  | BSS | COM5=COM3       |                                |
| 0119  | 72037                                         |        | FILIB | EQU | COM6=COM3+COMFL | FILES DRUM ADDRESS             |
| 0120  | 72041                                         |        | CHLIB | EQU | COM6=COM3+COMCH | CHAIN DRUM ADDRESS             |
| 0121  | 72040                                         |        | ASNIB | EQU | COM6+ASGNA=COM3 |                                |
| 0122  | 72133                                         | 000000 | DSERA | BSS | 4               | DRUM ADDRESSES FOR ERROR MESS. |
| 0123  | 72137                                         |        | COMTE | EQU | *               |                                |
| 0124  | 72137                                         | 000000 | LOGGR | BSS | 64              | HOLDS INFO FOR LOGGING         |

0126\*

0127\*

0128\*

0129\*

0130\*

ROUTINE TO FIND THE ADT THAT THE DISK ADDRESS  
CONTAINED IN KILD I SHOULD GO INTO,  
LTEMPS CALLED KILD AND KILDF ARE USED

```

0131 72237 000000 FADT NOP
0132 72240 060341 LDA ,=9 SET COUNT FOR NUMBER OF ADTS
0133 72241 070044 STA KILD
0134 72242 060210 LDA MHAD A => DISK TABLES
0135 72243 040432 ADA ,+48 POINT TO LAST ENTRY
0136 72244 FADBC EQU *
0137 72244 070045 STA KILDF A => DISK TABLE ENTRY
0138 72245 104200 OLD KILDF,I AB = FIRST ADDRESS ON THIS DISK
 72246 100045
0139 72247 000065 CLE,ERA CONVERT TO BLOCKS
0140 72250 005500 ERB
0141 72251 016600 JSB FADDB
0142 72252 002021 SSA,RSS SKIP IF LOWER DISK
0143 72253 026262 JMP FADBF RESULT POSITIVE, FOUND THE DISK
0144 72254 060045 LDA KILDF
0145 72255 040344 ADA ,=6 MOVE TO PRECEEDING ENTRY
0146 72256 034044 ISZ KILD
0147 72257 026244 JMP FADBC GO TRY NEXT DISK
0148 72260 102031 FADBN HLT 31B BETTER FIND DISK
0149 72261 026260 JMP *-1
0150 72262 FADBF EQU *
0151 72262 060044 LDA KILD GENERATE THE NUMBER OF
0152 72263 003000 CMA THE DISK ADT TO GET
0153 72264 050362 CPA ,+8 IF EIGHT, THEN ADDRESS WAS BAD
0154 72265 026260 JMP FADBN
0155 72266 042273 ADA KILPC
0156 72267 070044 STA KILD => DRUM ADDRESS WORD
0157 72270 040362 ADA ,+DADLN-DADLC
0158 72271 070045 STA KILDF => DRUM LENGTH WORD
0159 72272 126237 JMP FADT,I RETURN
0160 72273 000115 KILPC DEF DADLC

```

0161\*

0162\*

0163\*

0164\*

0165\*

0166\*

0167\*

0168\*

0169\*

ROUTINE RESTORES DRUM SPACE TO THE DRUM ADT.

ROUTINE ASSUMES:

KILD = DRUM ADDRESS

KILDF = DRUM AREA LENGTH

ROUTINE USES:

KILP

```

0170 72274 000000 RSFS NOP
0171 72275 064562 LDB LIBD
0172 72276 060044 KIL13 LDA KILD FIND THE FIRST ADT ENTRY >
0173 72277 003104 CMA,CLE,INA RELEASED SPACE,
0174 72300 140001 ADA 1,I
0175 72301 002040 SEZ
0176 72302 026305 JMP KIL12 FOUND ONE.
0177 72303 044354 ADB ,+2
0178 72304 026276 JMP KIL13
0179*

```

|       |                                                                    |        |       |             |                                  |
|-------|--------------------------------------------------------------------|--------|-------|-------------|----------------------------------|
| 0180  | 72305                                                              | 074034 | KIL12 | STB KILP    | SAVE POINTER TO IT.              |
| 0181  | 72306                                                              | 054562 |       | CPB LIBD    | FIRST ENTRY ON TRACK?            |
| 0182  | 72307                                                              | 026316 |       | JMP RSFAE   | YES, NO PREVIOUS ENTRY,          |
| 0183  | 72310                                                              | 044350 |       | ADB ,=2     | TEST FOR PREVIOUS ENTRY ADJACENT |
| 0184  | 72311                                                              | 160001 |       | LDA 1,I     | TO NEW ONE.                      |
| 0185  | 72312                                                              | 006004 |       | INB         |                                  |
| 0186  | 72313                                                              | 140001 |       | ADA 1,I     |                                  |
| 0187  | 72314                                                              | 050044 |       | CPA KILD    |                                  |
| 0188  | 72315                                                              | 026355 |       | JMP KIL14   | IT IS--GO COMBINE AREAS.         |
| 0189* |                                                                    |        |       |             |                                  |
| 0190  | 72316                                                              |        | RSFAE | EQU *       |                                  |
| 0191  | 72316                                                              | 060044 |       | LDA KILD    | TEST FOR NEXT ENTRY ADJACENT TO  |
| 0192  | 72317                                                              | 040045 |       | ADA KILDF   | NEW ONE                          |
| 0193  | 72320                                                              | 150034 |       | CPA KILP,I  |                                  |
| 0194  | 72321                                                              | 026346 |       | JMP KIL15   | IT IS--GO COMBINE AREAS.         |
| 0195* |                                                                    |        |       |             |                                  |
| 0196* | THE NEW ENTRY IS ADJACENT TO NEITHER THE PRECEDING NOR THE FOLLOW- |        |       |             |                                  |
| 0197* | ING ENTRIES, WE HAVE TO CREATE ROOM FOR IT BY SLIDING DOWN THE     |        |       |             |                                  |
| 0198* | ADT.                                                               |        |       |             |                                  |
| 0199* |                                                                    |        |       |             |                                  |
| 0200* |                                                                    |        |       |             |                                  |
| 0201  | 72322                                                              | 064072 |       | LDB WORD    | IF NO ROOM TO EXPAND ADT, WE     |
| 0202  | 72323                                                              | 057554 |       | CPB M8192   | HAVE TO LOSE THE SPACE           |
| 0203  | 72324                                                              | 126274 |       | JMP RSFS,I  |                                  |
| 0204  | 72325                                                              | 007000 |       | CMB         | SET UP SOURCE FOR THE MOVE.      |
| 0205  | 72326                                                              | 044562 |       | ADB LIBD    |                                  |
| 0206  | 72327                                                              | 074050 |       | STB MOVES   |                                  |
| 0207  | 72330                                                              | 044354 |       | ADB ,+2     | SET UP DESTINATION.              |
| 0208  | 72331                                                              | 074051 |       | STB MOVED   |                                  |
| 0209  | 72332                                                              | 007004 |       | CMB,INB     | COMPUTE LENGTH.                  |
| 0210  | 72333                                                              | 006004 |       | INB         |                                  |
| 0211  | 72334                                                              | 044034 |       | ADB KILP    |                                  |
| 0212  | 72335                                                              | 117536 |       | JSB MOVFB,I | MOVE IT                          |
| 0213  | 72336                                                              | 060044 |       | LDA KILD    | INSERT NEW                       |
| 0214  | 72337                                                              | 064045 |       | LDB KILDF   | ENTRY                            |
| 0215  | 72340                                                              | 104400 |       | DST KILP,I  |                                  |
|       | 72341                                                              | 100034 |       |             |                                  |
| 0216* |                                                                    |        |       |             |                                  |
| 0217  | 72342                                                              | 060113 |       | LDA ADLEN   | ADJUST ADLEN.                    |
| 0218  | 72343                                                              | 040350 |       | ADA ,=2     |                                  |
| 0219  | 72344                                                              | 070113 |       | STA ADLEN   |                                  |
| 0220  | 72345                                                              | 126274 |       | JMP RSFS,I  | DONE                             |
| 0221* |                                                                    |        |       |             |                                  |
| 0222* | COME HERE WHEN THE NEW AREA IS ADJACENT TO THE FOLLOWING ONE, BUT  |        |       |             |                                  |
| 0223* | NOT TO THE PRECEDING ONE.                                          |        |       |             |                                  |
| 0224* |                                                                    |        |       |             |                                  |
| 0225  | 72346                                                              | 104200 | KIL15 | DLD KILP,I  | GET FOLLOWING ENTRY.             |
|       | 72347                                                              | 100034 |       |             |                                  |
| 0226  | 72350                                                              | 044045 |       | ADB KILDF   | COMBINE LENGTHS                  |
| 0227  | 72351                                                              | 060044 |       | LDA KILD    | USE NEW DISC ADDRESS.            |
| 0228  | 72352                                                              | 104400 |       | DST KILP,I  | REPLACE.                         |
|       | 72353                                                              | 100034 |       |             |                                  |
| 0229  | 72354                                                              | 126274 |       | JMP RSFS,I  | DONE                             |



```

0231*
0232* COME HERE WHEN THE NEW AREA IS ADJACENT TO THE PRECEDING AREA.
0233*
0234 72355 160001 KIL14 LDA 1,I ADD LENGTH OF OLD AREA TO
0235 72356 040045 ADA KILDF LENGTH OF NEW ONE
0236 72357 170001 STA 1,I
0237 72360 060044 LDA KILD NOW TEST TO SEE IF THE COMBINED
0238 72361 040045 ADA KILDF AREA IS ADJACENT TO THE NEXT
0239 72362 150034 CPA KILP,I
0240 72363 026365 JMP KIL17 IT IS--GO COMBINE THEM.
0241*
0242 72364 126274 JMP RSFS,I
0243*
0244* NEW AREA WAS ADJACENT TO 2 OTHERS, COMBINE THEM ALL.
0245*
0246 72365 034034 KIL17 ISZ KILP COMBINE
0247 72366 160001 LDA 1,I THE
0248 72367 140034 ADA KILP,I LENGTHS.
0249 72370 170001 STA 1,I
0250 72371 006004 INB COLLAPSE ADT.
0251 72372 074051 STB MOVED SET UP MOVE DESTINATION.
0252 72373 044354 ADB .+2
0253 72374 074050 STB MOVES SET UP SOURCE
0254 72375 044674 ADB MLIBD COMPUTE # OF WORDS
0255 72376 044072 ADB WORD TO MOVE.
0256 72377 117537 JSB MOVFW,I
0257*
0258 72400 034113 ISZ ADLEN REDUCE SIZE OF ADT BY
0259 72401 034113 ISZ ADLEN TWO.
0260 72402 126274 JMP RSFS,I RETURN

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0262*
0263* ROUTINE TO ADD A BLOCK OF SPACE BACK INTO THE DISK ADT
0264* WHICH IS IN CORE,
0265* ROUTINE ASSUMES:
0266* KILDI * TWO WORD DISK ADDRESS
0267* KILN * DISK LENGTH
0268* KILD *-> DRUM ADDRESS OF ADT
0269* KILDF *-> DRUM LENGTH OF ADT
0270* ROUTINE USES:
0271* KILC
0272* KILP
0273* KILPD
0274* ROUTINE RETURNS WITH LENGTH AND WORD BOTH UPDATED,
0275* BUT THE TRACK IS NOT WRITTEN OUT,
0276* SKIP RETURN IS NORMAL. NO SKIP IF THE TRACK WAS
0277* NOT MODIFIED (TRACK TOO LONG TO ADD)
0278*
0279 72403 000000 RADT NOP
0280 72404 060043 LDA KILN GET LENGTH
0281 72405 002003 SZA,RSS CHECK LENGTH
0282 72406 126403 JMP RADT,I DON'T WASTE TIME ON ZERO LENGTH
0283 72407 060072 LDA WORD GET THE ADT LENGTH
0284 72410 003004 CMA,INA MAKE POSITIVE
0285 72411 040562 ADA LIBD
0286 72412 070042 STA KILC *-> END OF ADT
0287 72413 064562 LDB LIBD *-> BEGINNING OF ADT
0288 72414 KILCD EQU *
0289 72414 074034 STB KILP B *-> CURRENT ENTRY
0290 72415 054042 CPB KILC CHECK FOR END OF TABLE
0291 72416 026520 JMP KILCG INSERT ENTRY AT END
0292 72417 104200 DLD KILP,I GET DISK ADDRESS FOR THIS ENTRY
 72420 100034
0293 72421 016600 JSB FADDB SUBTRACT FROM ADDRESS BEING RETU
0294 72422 002020 SSA SKIP IF NOT FAR ENOUGH
0295 72423 026427 JMP KILCF FOUND NEXT ENTRY GREATER
0296 72424 064034 LDB KILP GET ADT POINTER AND
0297 72425 044355 ADB ,+3 ADVANCE TO THE NEXT ENTRY
0298 72426 026414 JMP KILCD
0299*
0300 72427 KILCF EQU *
0301*
0302* CHECK TO SEE IF THE NEW ENTRY
0303* IS ADJACENT TO THE FOLLOWING ENTRY
0304*
0305 72427 104200 DLD KILDI GET CURRENT DISK ADDRESS
 72430 000046
0306 72431 000040 CLE
0307 72432 044043 ADB KILN ADD TO B THE LENGTH
0308 72433 002040 SEZ CHECK FOR OVERFLOW
0309 72434 002004 INA
0310 72435 150034 CPA KILP,I CHECK FOR MATCH
0311 72436 002005 CLA,INA,RSS FIRST WORDS ARE EQUAL
0312 72437 026520 JMP KILCG NO MATCH
0313 72440 040034 ADA KILP A *-> SECOND WORD OF ENTRY
0314 72441 154000 CPB A,I CHECK FOR MATCH

```

|       |                                            |        |             |                                  |
|-------|--------------------------------------------|--------|-------------|----------------------------------|
| 0315  | 72442                                      | 002001 | RSS         | YES, WE CAN COMBINE THE TWO ENTH |
| 0316  | 72443                                      | 026520 | JMP KILCG   | CAN'T BE COMBINED WITH NEXT ENTR |
| 0317* |                                            |        |             |                                  |
| 0318* | COMBINE THIS ENTRY WITH THE NEXT ENTRY     |        |             |                                  |
| 0319* |                                            |        |             |                                  |
| 0320  | 72444                                      | 104200 | DLR KILDI   | GET THIS DISK ADDRESS            |
|       | 72445                                      | 000046 |             |                                  |
| 0321  | 72446                                      | 104400 | DST KILP,I  | REPLACE THE NEXT ENTRY           |
|       | 72447                                      | 100034 |             |                                  |
| 0322  | 72450                                      | 064034 | LDB KILP    |                                  |
| 0323  | 72451                                      | 044354 | ADB .+2     | B => LENGTH OF ENTRY             |
| 0324  | 72452                                      | 060043 | LDA KILN    | A * LENGTH                       |
| 0325  | 72453                                      | 140001 | ADA B,I     | INCREASE THE LENGTH TO INCLUDE   |
| 0326  | 72454                                      | 170001 | STA B,I     | BOTH OLD AND NEW DISK AREAS      |
| 0327* |                                            |        |             |                                  |
| 0328* | CHECK TO SEE IF PREVIOUS ENTRY IS ADJACENT |        |             |                                  |
| 0329* | I.E. DID THE NEW ENTRY BRIDGE THE GAP      |        |             |                                  |
| 0330* | BETWEEN TWO OTHERS?                        |        |             |                                  |
| 0331* |                                            |        |             |                                  |
| 0332  | 72455                                      | 060034 | LDA KILP    | A => THIS ENTRY                  |
| 0333  | 72456                                      | 050562 | CPA LIBD    | CHECK FOR NO PREVIOUS ENTRY      |
| 0334  | 72457                                      | 026576 | JMP KILCP   | NO PREVIOUS ENTRY, WE'RE DONE    |
| 0335  | 72460                                      | 040351 | ADA .-1     | A => LENGTH OF PREVIOUS ENTRY    |
| 0336  | 72461                                      | 070035 | STA KILPD   |                                  |
| 0337  | 72462                                      | 040350 | ADA .-2     | A => PREVIOUS ENTRY DISK ADDRESS |
| 0338  | 72463                                      | 104200 | DLR A,I     |                                  |
|       | 72464                                      | 100000 |             |                                  |
| 0339  | 72465                                      | 000040 | CLE         |                                  |
| 0340  | 72466                                      | 144035 | ADB KILPD,I | ADD PREVIOUS LENGTH TO           |
| 0341  | 72467                                      | 002040 | SEZ         | PREVIOUS ADDRESS                 |
| 0342  | 72470                                      | 002004 | INA         |                                  |
| 0343  | 72471                                      | 150034 | CPA KILP,I  | FIRST WORD MATCH                 |
| 0344  | 72472                                      | 002405 | CLA,INA,RSS |                                  |
| 0345  | 72473                                      | 026576 | JMP KILCP   | ENTRIES ARE NOT ADJACENT, ADD DO |
| 0346  | 72474                                      | 040034 | ADA KILP    | A => SECOND DISK ADDRESS WORD    |
| 0347  | 72475                                      | 154000 | CPB A,I     | CHECK SECOND WORD FOR MATCH      |
| 0348  | 72476                                      | 002005 | INA,RSS     | => LENGTH OF FOLLOWING ENTRY     |
| 0349  | 72477                                      | 026576 | JMP KILCP   | ADD IS DONE CUZ NO MATCH         |
| 0350* |                                            |        |             |                                  |
| 0351* | NOW COMBINE ENTRIES                        |        |             |                                  |
| 0352* |                                            |        |             |                                  |
| 0353  | 72500                                      | 164000 | LDB A,I     | B * LENGTH OF SECOND ENTRY       |
| 0354  | 72501                                      | 040347 | ADA .-3     | => LENGTH OF PREVIOUS            |
| 0355  | 72502                                      | 144000 | ADB A,I     | SUM OF LENGTHS                   |
| 0356  | 72503                                      | 174000 | STB A,I     | UPDATE LENGTHS                   |
| 0357  | 72504                                      | 064034 | LDB KILP    | NOW SET UP FOR MOVE              |
| 0358  | 72505                                      | 074051 | STB MOVED   | CURRENT ENTRY IS TO BE REMOVED   |
| 0359  | 72506                                      | 044355 | ADB .+3     |                                  |
| 0360  | 72507                                      | 074050 | STB MOVES   |                                  |
| 0361  | 72510                                      | 044674 | ADB MLIBD   | FIND LENGTH OF MOVE              |
| 0362  | 72511                                      | 044072 | ADB WORD    |                                  |
| 0363  | 72512                                      | 117537 | JSB MOVFW,I | MOVE TABLE DOWN                  |
| 0364  | 72513                                      | 160045 | LDA KILDF,I | A * TABLE LENGTH                 |
| 0365  | 72514                                      | 040355 | ADA .+3     | SHORTEN ADT                      |
| 0366  | 72515                                      | 170045 | STA KILDF,I |                                  |

```

0367 72516 070072 STA WORD
0368 72517 026576 JMP KILCP DONE WITH UPDATE, WRITE OUT
0369*
0370* SEE IF THE ENTRY WILL COMBINE WITH THE PREVIOUS ENTRY
0371*
0372 72520 KILCG EQU *
0373 72520 060034 LDA KILP A => CURRENT ENTRY
0374 72521 050562 CPA LIBD CHECK FOR BEGINNING OF TABLE
0375 72522 026546 JMP KILCN NO PRECEEDING ENTRY TO COMBINE W
0376 72523 040351 ADA ,=1 A => LENGTH OF PRECEEDING ENTRY
0377 72524 070042 STA KILC SAVE POINTER
0378 72525 040350 ADA ,=2 A => PREVIOUS DISK ADDRESS
0379 72526 104200 DLD A,I
 72527 100000
0380 72530 000040 CLE
0381 72531 144042 ADB KILC,I ADD PREVIOUS LENGTH TO
0382 72532 002040 SEZ PREVIOUS DISK ADDRESS
0383 72533 002004 INA
0384 72534 050046 CPA KILDI DOES FIRST WORD MATCH
0385 72535 002001 RSS
0386 72536 026546 JMP KILCN DOESN'T COMBINE
0387 72537 054047 CPB KILDI+1 DO SECOND WORDS MATCH
0388 72540 002001 RSS YES, ENTRIES CAN COMBINE
0389 72541 026546 JMP KILCN DOESN'T COMBINE ANYWHERE
0390 72542 060043 LDA KILN GET LENGTH
0391 72543 140042 ADA KILC,I UPDATE ENTRY
0392 72544 170042 STA KILC,I
0393 72545 026576 JMP KILCP ADD IS ALL DONE
0394*
0395* ENTRY IS NOT ADJACENT TO , OR BRIDGING BETWEEN
0396* TWO ENTRIES THAT ARE IN THE TABLE. . . MOVE
0397* TABLE IF POSSIBLE AND INSERT
0398*
0399 72546 KILCN EQU *
0400 72546 064072 LDB WORD IF THERE IS NO ROOM TO
0401 72547 057552 CPB M8190 EXPAND THE ADT,
0402 72550 126403 JMP RADT,I WE HAVE TO LOOSE THE SPACE
0403 72551 007000 CMB
0404 72552 044562 ADB LIBD
0405 72553 074050 STB MOVES SET UP FOR THE MOVE
0406 72554 044355 ADB ,+3
0407 72555 074051 STB MOVED
0408 72556 007004 CMB,INB
0409 72557 044354 ADB ,+2
0410 72560 044034 ADB KILP
0411 72561 117536 JSB MOVFB,I MOVE TABLE UP TO MAKE ROOM
0412 72562 104200 DLD KILDI GET DISK ADDRESS
 72563 000046
0413 72564 104400 DST KILP,I SET INTO TABLE
 72565 100034
0414 72566 064034 LDB KILP
0415 72567 044354 ADB ,+2 B => NEW ENTRIES LENGTH
0416 72570 060043 LDA KILN A = LENGTH
0417 72571 170001 STA B,I SET NEW ENTRIES LENGTH
0418 72572 160045 LDA KILOF,I GET TABLE LENGTH

```

|       |       |        |       |             |                         |
|-------|-------|--------|-------|-------------|-------------------------|
| 0419  | 72573 | 040347 | ADA   | .*3         | INCREASE BY THREE WORDS |
| 0420  | 72574 | 170045 | STA   | KILDF,I     |                         |
| 0421  | 72575 | 070072 | STA   | WORD        |                         |
| 0422  | 72576 |        | KILCP | EQU *       |                         |
| 0423  | 72576 | 036403 | ISZ   | RADT        | SKIP RETURN IS NORMAL   |
| 0424  | 72577 | 126403 | JMP   | RADT,I      | RETURN                  |
| 0425* |       |        |       |             |                         |
| 0426  | 72600 | 000000 | FADDB | NOP         |                         |
| 0427  | 72601 | 007104 |       | CMB,CLE,INB |                         |
| 0428  | 72602 | 003040 |       | CMA,SEZ     |                         |
| 0429  | 72603 | 002004 |       | INA         |                         |
| 0430  | 72604 | 000040 |       | CLE         |                         |
| 0431  | 72605 | 044047 | ADB   | KILDI+1     | ADD LOWER WORDS         |
| 0432  | 72606 | 002040 |       | SEZ         |                         |
| 0433  | 72607 | 002004 |       | INA         |                         |
| 0434  | 72610 | 040046 | ADA   | KILDI       | ADD UPPER WORDS         |
| 0435  | 72611 | 126600 | JMP   | FADDB,I     |                         |

```

0437*
0438* THIS ROUTINE SCANS A TABLE AND PUTS DISK SPACE BACK
0439* INTO THE DISK ADTS.
0440* THE FORMAT OF THE TABLE IS:
0441* LIBUS+8192/ (ID)
0442* / LENGTH
0443* / TWO WORD DISK ADDRESS
0444* .
0445* .
0446* .
0447* LOCTC CONTAINS THE NEGATIVE NUMBER OF ENTRIES
0448*
0449* THE ROUTINE RETURNS ALL SPACE ON ONE ADT BEFORE WRITING
0450* IT BACK. THE DISK ADDRESS OF EACH ENTRY IS ZEROED AS THE
0451* SPACE IS RETURNED.
0452*
0453*
0454 72612 000000 TBDAD NOP
0455 72613 TBDBB EQU *
0456 72613 060030 LDA LOCTC GET THE ENTRY COUNT
0457 72614 073562 STA TBDT1 AND SAVE IN A TEMP
0458 72615 002003 SZA,RSS CHECK FOR NULL TABLE
0459 72616 126612 JMP TBDAD,I RETURN IF SO
0460 72617 065002 LDB L8192 LOAD TABLE BASE
0461 72620 006004 INB => DISK LENGTH OF FIRST ENTRY
0462 72621 TBDBA EQU *
0463 72621 160001 LDA B,I GET THE LENGTH
0464 72622 070043 STA KILN AND SAVE FOR THE RADT ROUTINE
0465 72623 006004 INB => DISK ADDRESS
0466 72624 077563 STB TBDT2 SAVE THE POINTER
0467 72625 104200 DLD TBDT2,I GET THE DISK ADDRESS
72626 173563
0468 72627 002003 SZA,RSS SKIP IF FIRST HALF NON-ZERO
0469 72630 006002 SZB SKIP IF ENTRY ALL ZERO
0470 72631 002001 RSS NON-ZERO ENTRY, IT MUST BE RETURNED
0471 72632 026721 JMP TBDBU THIS ONE IS NULL
0472 72633 104400 DST KILDI SAVE THE DISK ADDRESS FOR RADT
72634 000046
0473 72635 002400 CLA
0474 72636 006400 CLB
0475 72637 104400 DST TBDT2,I PREVENT SECOND RETURN OF SPACE
72640 173563
0476 72641 016237 JSB FADT FIND THE CORRECT ADT TRACK
0477 72642 160045 LDA KILDF,I GET THE ADTS LENGTH
0478 72643 070072 STA WORD
0479 72644 060044 LDA KILO GET THE POINTER TO THE DRUM ADDR
0480 72645 073564 STA TBDT3 AND SAVE
0481 72646 160044 LDA KILD,I GET THE DRUM ADDRESS
0482 72647 002003 SZA,RSS SKIP IF TRACK EXISTS
0483 72650 026721 JMP TBDBU NO ADT, FORGET ENTRY
0484 72651 064566 LDB LIBDI
0485 72652 117534 JSB DRUMP,I READ IN THE TRACK
0486 72653 026716 JMP TBDBY
0487 72654 016403 JSB RADT PUT THE SPACE BACK
0488 72655 000000 NOP

```

|       |              |             |                                   |
|-------|--------------|-------------|-----------------------------------|
| 0489  | 72656        | TBDBC EQU * |                                   |
| 0490  | 72656 037562 | ISZ TBDT1   | CHECK COUNTER                     |
| 0491  | 72657 026665 | JMP TBDBE   | MORE ENTRIES                      |
| 0492  | 72660 163564 | LDA TBDT3,I | GET THE DRUM ADDRESS              |
| 0493  | 72661 064562 | LDB LIBD    |                                   |
| 0494  | 72662 117534 | JSB DRUMP,I | WRITE THE DISK ADT BACK           |
| 0495  | 72663 026716 | JMP TBDBY   |                                   |
| 0496  | 72664 026613 | JMP TBDBB   | SCAN TABLE UNTIL EMPTY            |
| 0497  | 72665        | TBDBE EQU * |                                   |
| 0498  | 72665 067563 | LDB TBDT2   |                                   |
| 0499  | 72666 044355 | ADB ,+3     | => NEXT DISK LENGTH               |
| 0500  | 72667 160001 | LDA B,I     | GET LENGTH                        |
| 0501  | 72670 070043 | STA KILN    | AND SAVE FOR RADT                 |
| 0502  | 72671 006004 | INB         | => DISK ADDRESS                   |
| 0503  | 72672 077563 | STB TBDT2   | SAVE UPDATED POINTER              |
| 0504  | 72673 104200 | DLB TBDT2,I | GET THE DISK ADDRESS              |
|       | 72674 173563 |             |                                   |
| 0505  | 72675 002003 | SZA,RSS     | CHECK IT FOR ZERO                 |
| 0506  | 72676 006002 | SZB         |                                   |
| 0507  | 72677 002001 | RSS         | REAL ADDRESS, RETURN SPACE        |
| 0508  | 72700 026656 | JMP TBDBC   | GO TRY NEXT ENTRY                 |
| 0509  | 72701 104400 | DST KILDI   | SAVE DISK ADDRESS FOR RADT        |
|       | 72702 000046 |             |                                   |
| 0510  | 72703 016237 | JSB FADT    | FIND WHICH TRACK THIS SPACE BELOW |
| 0511  | 72704 060044 | LDA KILD    | GET POINTER TO DRUM ADDRESS       |
| 0512  | 72705 053564 | CPA TBDT3   | COMPARE WITH SAVED VERSION        |
| 0513  | 72706 002401 | CLA,RSS     | OKAY, SAME TRACK                  |
| 0514  | 72707 026656 | JMP TBDBC   | NOT ON THIS ADT - DEFER           |
| 0515  | 72710 006400 | CLB         |                                   |
| 0516  | 72711 104400 | DST TBDT2,I | PREVENT DOUBLE RETURNS            |
|       | 72712 173563 |             |                                   |
| 0517  | 72713 016403 | JSB RADT    | PUT THE SPACE BACK                |
| 0518  | 72714 000000 | NOP         |                                   |
| 0519  | 72715 026656 | JMP TBDBC   | TRY FOR ANOTHER ENTRY             |
| 0520* |              |             |                                   |
| 0521  | 72716        | TBDBY EQU * |                                   |
| 0522  | 72716 002400 | CLA         |                                   |
| 0523  | 72717 170044 | STA KILD,I  | SET ADDRESS AND LENGTH            |
| 0524  | 72720 170045 | STA KILDF,I | TO NULL                           |
| 0525* |              |             |                                   |
| 0526  | 72721        | TBDBU EQU * |                                   |
| 0527  | 72721 037562 | ISZ TBDT1   | CHECK THE COUNTER                 |
| 0528  | 72722 002001 | RSS         | ENTRIES STILL EXIST               |
| 0529  | 72723 126612 | JMP TBDBA,I | ALL ENTRIES ARE ZERO              |
| 0530  | 72724 067563 | LDB TBDT2   | GET THE TABLE POINTER             |
| 0531  | 72725 044355 | ADB ,+3     | => NEXT DISK LENGTH               |
| 0532  | 72726 026621 | JMP TBDBA   | BACK TO TRY THIS ONE              |
| 0001* |              |             |                                   |

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0003* THE TBIDT ROUTINE IS USED TO UPDATE THE CORE TABLE
0004* BUILT BY ROUTINES SUCH AS KILLID, PURGE, MLOCK, ETC.
0005* IT UPDATES EACH IDT TRACK AND REWRITES IT TO THE DRUM,
0006*
0007*
0008 72727 000000 TBIDT NOP
0009 72730 060030 LDA LOCTC GET COUNT OF ENTRIES
0010 72731 002003 SZR,RSS SKIP IF WORK TO DO
0011 72732 126727 JMP TBIDT,I NO TABLE, EXIT
0012 72733 001020 ALS,ALS MAKE INTO NEGATIVE WORD COUNT
0013 72734 003004 CMA,INA
0014 72735 041002 ADA L8192 ADD TABLE BASE
0015 72736 040346 ADA .-4 *-> LAST ENTRY
0016 72737 073562 STA TBIDT1 SAVE POINTER
0017 72740 LOCFB EQU *
0018 72740 163562 LDA TBIDT1,I GET THE NEXT ID FROM THE TABLE
0019 72741 070052 STA ID
0020 72742 117535 JSB GTILP,I FIND WHAT TRACK IT'S ON
0021 72743 160076 LDA IDLNP,I READ IN IDT
0022 72744 070072 STA WORD
0023 72745 160075 LDA IDLCP,I
0024 72746 064566 LOB LIBVI
0025 72747 117534 JSB DRUMP,I
0026 72750 117546 JSB DEADA,I
0027 72751 164076 LOB IDLNP,I SET B TO POINT TO END OF IDT TRA
0028 72752 007004 CMB,INB
0029 72753 044562 ADB LIBD
0030 72754 LOCF1 EQU *
0031 72754 163562 LDA TBIDT1,I GET ID OF FIRST ENTRY
0032 72755 LOCFG EQU *
0033 72755 054562 CPB LIBD
0034 72756 027006 JMP LOCFR
0035 72757 044342 ADB .-8 SEARCH FOR IT IN IDT.
0036 72760 150001 CPA 1,I
0037 72761 002001 RSS FOUND.
0038 72762 026755 JMP LOCFG
0039 72763 037562 ISZ TBIDT1 *-> LENGTH OF THIS PATCH
0040 72764 044361 ADB .+7 POINT TO SECTORS USED.
0041 72765 163562 LDA TBIDT1,I SUBTRACT
0042 72766 003004 CMA,INA THE
0043 72767 140001 ADA B,I LENGTH
0044 72770 170001 STA B,I OFF
0045 72771 006004 INB SET B TO NEXT HIGHER ENTRY
0046 72772 063562 LDA TBIDT1
0047 72773 040345 ADA .-5 *-> PREVIOUS ENTRY
0048 72774 073562 STA TBIDT1 SET POINTER TO PATCH TABLE
0049 72775 040356 ADA .+4
0050 72776 051002 CPA L8192 BACK TO BEGINNING?
0051 72777 002001 RSS
0052 73000 026754 JMP LOCF1 LOOP.
0053*
0054 73001 160076 LDA IDLCP,I
0055 73002 064562 LOB LIBD WRITE BACK IDT.
0056 73003 117534 JSB DRUMP,I
0057 73004 117546 JSB DEADA,I

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0058 73005 126727 JMP T01DT,I RETURN
0059*
0060 73006 LOCFR EQU *
0061 73006 160075 LDA IDLCP,I REWRITE THE CURRENT TRACK
0062 73007 064562 LDB LIBD
0063 73010 117534 JSB DRUMP,I
0064 73011 117546 JSB DEADA,I
0065 73012 026740 JMP LOCFB AND READ THE NEXT
0066 73013 MLKFL EQU *
0067 73013 060403 LDA .+25
0068 73014 067016 LDB **2
0069 73015 127555 JMP LEN2A,I
0070 73016 073017 DEF **1
0071 73017 005114 OCT 5114
0072 73020 047503 ASC 12,OCKED BLOCKS TABLE FULL
 73021 045505
 73022 042040
 73023 041114
 73024 047503
 73025 045523
 73026 020124
 73027 040502
 73030 046105
 73031 020106
 73032 052514
 73033 046040
0073 73034 005104 ODERL OCT 5104 LF D
0074 73035 044523 ASC 14,ISC/DRUM ERROR; CAN'T DO IT
 73036 041457
 73037 042122
 73040 052515
 73041 020105
 73042 051122
 73043 047522
 73044 035440
 73045 041501
 73046 047047
 73047 052040
 73050 042117
 73051 020111
 73052 052040

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0076*
0077* HDBUF SETS UP THE HEADING FOR DIRECTORY, SDIRECTORY, STATUS AND
0078* REPORT ON THE SYSTEM CONSOLE. THE HEADING CONSISTS OF THE SYSTEM
0079* ID, DATE AND TIME.
0080*
0081 73053 000000 HDBUF NOP
0082 73054 060305 LDA T35B1 INITIALIZE ITY
0083 73055 070041 STA LTEMP+9 BUFFER POINTER
0084 73056 063557 LDA LFSPA LF=SPACE
0085 73057 170041 STA LTEMP+9,I
0086 73060 063560 LDA SPSP TWO SPACES
0087 73061 034041 ISZ LTEMP+9
0088 73062 170041 STA LTEMP+9,I
0089 73063 060305 LDA T35B1 MOVE
0090 73064 040354 ADA .+2
0091 73065 070051 STA MOVED SYSTEM
0092 73066 063551 LDA DSYID
0093 73067 070050 STA MOVES ID TO
0094 73070 064345 LDB .+5
0095 73071 117537 JSB MOVFW,I BUFFER
0096 73072 063560 LDA SPSP TWO SPACES
0097 73073 064041 LDB LTEMP+9
0098 73074 044360 ADB .+6
0099 73075 170001 STA B,I
0100 73076 044354 ADB .+2
0101 73077 074041 STB LTEMP+9
0102 73100 060201 LDA DATIM GET HOUR OF YEAR
0103 73101 006400 CLB CONVERT
0104 73102 100400 DIV .+24 TO DAY
0105 73103 000402
0105 73104 074042 STB LTEMP+10 SAVE HOUR REMAINDER
0106 73105 006400 CLB GET LAST
0107 73106 100400 DIV .+10 DIGIT
0108 73107 000364
0108 73110 005727 BLF,BLF
0109 73111 047561 ADB ZERSL MERGE IN SLASH
0110 73112 174041 STB LTEMP+9,I
0111 73113 017146 JSB TDNUM FIRST TWO DIGITS OF DAY
0112 73114 007400 CCB
0113 73115 044041 ADB LTEMP+9
0114 73116 170001 STA B,I
0115 73117 044354 ADB .+2
0116 73120 074041 STB LTEMP+9
0117 73121 060200 LDA YEAR YEAR OF CENTURY
0118 73122 017146 JSB TDNUM
0119 73123 170041 STA LTEMP+9,I
0120 73124 063560 LDA SPSP TWO SPACES
0121 73125 034041 ISZ LTEMP+9
0122 73126 170041 STA LTEMP+9,I
0123 73127 060042 LDA LTEMP+10 HOUR OF DAY
0124 73130 017146 JSB TDNUM
0125 73131 034041 ISZ LTEMP+9
0126 73132 170041 STA LTEMP+9,I
0127 73133 060202 LDA DATIM+1 CONVERT
0128 73134 040704 ADA D36K 100 MS

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0129 73135 006400 CLB
0130 73136 100400 DIV D600 UNITS TO
 MINUTES
0131 73140 017146 JSB TDNUM OF HOUR
0132 73141 034041 ISZ LTEMP+9
0133 73142 170041 STA LTEMP+9,I
0134 73143 060406 LDA ,+28 28 CHARS IN HEADING
0135 73144 064305 LDB T35B1
0136 73145 127053 JMP HDBUF,I
0137*
0138* CONVERT A NUMBER <100 TO ASCII
0139*
0140 73146 000000 TDNUM NOP
0141 73147 006400 CLB
0142 73150 100400 DIV ,+10
0143 73152 001727 ALF,ALF FIRST DIGIT
0144 73153 040001 ADA B SECOND DIGIT
0145 73154 040574 ADA ASC00 ASCII OFFSET
0146 73155 127146 JMP TDNUM,I
0147*
0148* UHDBF PRINTS THE HEADING FOR DIRECTORY, SDIRECTORY, STATUS AND
0149* REPORT ON THE USER TERMINAL. THE HEADING CONSISTS OF THE SYSTEM
0150* ID, DATE AND TIME.
0151*
0152 73156 000000 UHDBF NOP
0153 73157 060364 LDA ,+12B LF
0154 73160 117556 JSB LOUTA,I
0155 73161 060412 LDA ,+40B BLANK
0156 73162 117556 JSB LOUTA,I
0157 73163 060412 LDA ,+40B BLANK
0158 73164 117556 JSB LOUTA,I
0159 73165 060412 LDA ,+40B BLANK
0160 73166 117556 JSB LOUTA,I
0161 73167 063551 LDA DSYID
0162 73170 070040 STA LTEMP+8 => SYSTEM ID
0163 73171 060345 LDA ,=5
0164 73172 070041 STA LTEMP+9 5 WORDS
0165 73173 UHDB1 EQU *
0166 73173 160040 LDA LTEMP+8,I OUTPUT
0167 73174 001727 ALF,ALF
0168 73175 010443 AND B377
0169 73176 117556 JSB LOUTA,I SYSTEM
0170 73177 160040 LDA LTEMP+8,I
0171 73200 010443 AND B377
0172 73201 117556 JSB LOUTA,I ID
0173 73202 034040 ISZ LTEMP+8
0174 73203 034041 ISZ LTEMP+9
0175 73204 027173 JMP UHDB1
0176 73205 060412 LDA ,+40B BLANK
0177 73206 117556 JSB LOUTA,I
0178 73207 060412 LDA ,+40B BLANK
0179 73210 117556 JSB LOUTA,I
0180 73211 060201 LDA DATIM GET HOUR OF YEAR
0181 73212 006400 CLB

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|       |                                        |        |       |          |                              |
|-------|----------------------------------------|--------|-------|----------|------------------------------|
| 0182  | 73213                                  | 100400 | DIV   | +.24     | CONVERT TO DAY               |
|       | 73214                                  | 000402 |       |          |                              |
| 0183  | 73215                                  | 074041 | STB   | LTEMP+9  | SAVE HOUR REMAINDER          |
| 0184  | 73216                                  | 006400 | CLB   |          |                              |
| 0185  | 73217                                  | 100400 | DIV   | +.10     | 1ST 2 DIGITS IN A, LAST IN B |
|       | 73220                                  | 000364 |       |          |                              |
| 0186  | 73221                                  | 074040 | STB   | LTEMP+8  |                              |
| 0187  | 73222                                  | 017255 | JSB   | UTDNM    | OUTPUT 1ST 2                 |
| 0188  | 73223                                  | 060040 | LDA   | LTEMP+8  |                              |
| 0189  | 73224                                  | 040432 | ADA   | +.60B    |                              |
| 0190  | 73225                                  | 117556 | JSB   | LOUTA,I  | OUTPUT LAST ONE              |
| 0191  | 73226                                  | 060431 | LDA   | +.57B    | '/'                          |
| 0192  | 73227                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0193  | 73230                                  | 060200 | LDA   | YEAR     | GET YEAR                     |
| 0194  | 73231                                  | 017255 | JSB   | UTDNM    | AND OUTPUT                   |
| 0195  | 73232                                  | 060412 | LDA   | +.40B    | BLANK                        |
| 0196  | 73233                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0197  | 73234                                  | 060412 | LDA   | +.40B    | BLANK                        |
| 0198  | 73235                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0199  | 73236                                  | 060041 | LDA   | LTEMP+9  | HOUR OF DAY                  |
| 0200  | 73237                                  | 017255 | JSB   | UTDNM    |                              |
| 0201  | 73240                                  | 060202 | LDA   | DATIM+1  | CONVERT                      |
| 0202  | 73241                                  | 040704 | ADA   | D36K     | 100MS                        |
| 0203  | 73242                                  | 006400 | CLB   |          | UNITS TO                     |
| 0204  | 73243                                  | 100400 | DIV   | D600     | MINUTES                      |
|       | 73244                                  | 000456 |       |          |                              |
| 0205  | 73245                                  | 017255 | JSB   | UTDNM    | OF HOUR                      |
| 0206  | 73246                                  | 060375 | LDA   | +.23B    | X-OFF                        |
| 0207  | 73247                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0208  | 73250                                  | 060367 | LDA   | +.15B    | CR                           |
| 0209  | 73251                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0210  | 73252                                  | 060364 | LDA   | +.12B    | LF                           |
| 0211  | 73253                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0212  | 73254                                  | 127156 | JMP   | UHDBF,I  |                              |
| 0213* |                                        |        |       |          |                              |
| 0214* | CONVERT A #<100 TO ASCII AND OUTPUT IT |        |       |          |                              |
| 0215* |                                        |        |       |          |                              |
| 0216  | 73255                                  | 000000 | UTDNM | NOP      |                              |
| 0217  | 73256                                  | 006400 | CLB   |          |                              |
| 0218  | 73257                                  | 100400 | DIV   | +.10     |                              |
|       | 73260                                  | 000364 |       |          |                              |
| 0219  | 73261                                  | 074043 | STB   | LTEMP+11 |                              |
| 0220  | 73262                                  | 040432 | ADA   | +.60B    |                              |
| 0221  | 73263                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0222  | 73264                                  | 060043 | LDA   | LTEMP+11 |                              |
| 0223  | 73265                                  | 040432 | ADA   | +.60B    |                              |
| 0224  | 73266                                  | 117556 | JSB   | LOUTA,I  |                              |
| 0225  | 73267                                  | 127255 | JMP   | UTDNM,I  |                              |

0227\*

0228\* UPDATE LAST CHANGED DATES IF NECESSARY

0229\*

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0230 73270 #LCDL EQU *
0231 73270 064273 LDB MLINK+1 IS THERE
0232 73271 044335 ADB .-?LINK A NEED TO
0233 73272 160001 LDA B,I CHECK FILES
0234 73273 010444 AND DFCHK FOR POSSIBLE
0235 73274 002003 SZA,RSS LCD UPDATE
0236 73275 027345 JMP EXIT7
0237 73276 044370 ADB .+?PLEV
0238 73277 002400 CLA
0239 73300 103100 CLF 0
0240 73301 170001 STA B,I SET PRIORITY TO 0
0241 73302 070264 STA TIMEF NO TIMING
0242 73303 044350 ADB .+?STAT-?PLEV
0243 73304 060356 LDA XSYNT SET STATUS TO SYNTAX SO
0244 73305 170001 STA B,I WE WON'T GET SWAPPED
0245 73306 044341 ADB .+?PROG-?STAT
0246 73307 060056 LDA PBPTR BOUND INTO
0247 73310 170001 STA B,I ITY TABLE
0248 73311 003000 CMA CALCULATE LENGTH
0249 73312 041221 ADA USE FOR WRITE
0250 73313 070072 STA WORD TO DRUM+M
0251 73314 044351 ADB .+?DISC-?PROG FORCE BACK
0252 73315 160001 LDA B,I TO SWAP
0253 73316 010317 AND M32 AREA
0254 73317 170001 STA B,I ORIGIN
0255 73320 065221 LDB USE OUTPUT USER
0256 73321 117534 JSB DRUMP,I TO DRUM
0257 73322 127540 JMP RDPJP,I BLEW IT, GO ZAP USER
0258 73323 061552 LDA FRMAT GET FILE COUNT (-)
0259 73324 064273 LDB MLINK+1 GET POINTER
0260 73325 044341 ADB .+?ID-?LINK TO ID WORD
0261 73326 017353 JSB LCD GO UPDATE LAST CHANGED DATES
0262 73327 027345 JMP EXIT7 CORE INTACT, EXIT
0263 73330 002400 CLA BLOCK
0264 73331 170634 STA DCLC1,I CLOCK
0265 73332 064273 LDB MLINK+1 RESTORE
0266 73333 044340 ADB .+?PROG-?LINK
0267 73334 160001 LDA B,I
0268 73335 003000 CMA
0269 73336 041221 ADA USE
0270 73337 070072 STA WORD USER
0271 73340 044351 ADB .+?DISC-?PROG
0272 73341 160001 LDA B,I
0273 73342 065222 LDB USEI
0274 73343 117534 JSB DRUMP,I AREA
0275 73344 127540 JMP RDPJP,I BLEW IT, GO ZAP USER
0276 73345 EXIT7 EQU *
0277 73345 002400 CLA BLOCK
0278 73346 170634 STA DCLC1,I CLOCK
0279 73347 114534 JSB ABCK,I CHECK FOR ABORT'S
0280 73350 160640 LDA DCLC2,I UNBLOCK
0281 73351 170634 STA DCLC1,I CLOCK

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0282 73352 125560 JMP LCDLP,I
0283*
0284* THIS ROUTINE ASSUMES THAT THE USER'S SNAP AREA IS IN CORE,
0285* THAT THE B REGISTER POINTS TO HIS ID WORD IN THE TELETYPE
0286* TABLE, AND THAT A CONTAINS THE NEGATIVE OF THE NUMBER OF FILES
0287*
0288*
0289 73353 000000 LCD NOP ENTRY POINT
0290 73354 073565 STA LCDFC SAVE FILE COUNT
0291 73355 077566 STB LCDID AND ID POINTER
0292 73356 002021 SSA,RSS MAKE SURE THERE REALLY ARE
0293 73357 027436 JMP LCD9 SOME FILES
0294 73360 002400 CLA INITIALIZE DIRTY
0295 73361 073567 STA DFCNT FILE COUNT TO ZERO
0296 73362 063542 LDA DFNAM GET ADDRESS FOR FIRST
0297 73363 070051 STA MOVED DIRTY FILE'S NAME
0298 73364 065504 LDB FILTB GET START OF FILE TABLE
0299 73365 006004 INB BUMP POINTER TO WORD 1
0300 73366 077570 STB LCDB8 OF ENTRY AND SAVE
0301*
0302 73367 160001 LCD1 LDA B,I GET DIRTY FILE BIT
0303 73370 010222 AND BIT14 HAS THIS FILE
0304 73371 002002 SZA BEEN CHANGED?
0305 73372 027446 JMP LCD2 YES
0306 73373 044371 LCD3 ADB ,+FTEL NO, POINT TO NEXT ENTRY
0307 73374 037565 ISZ LCDFC ARE THERE MORE FILES?
0308 73375 027367 JMP LCD1 YES, CHECK NEXT ONE
0309 73376 063567 LDA DFCNT NO, WERE
0310 73377 002003 SZA,RSS ANY DIRTY?
0311 73400 027436 JMP LCD9 NO, RETURN
0312*
0313 73401 037353 ISZ LCD YES, BUMP RETURN (CORE IS DIFF)
0314 73402 003004 CMA,INA SAVE NEGATIVE OF
0315 73403 073567 STA DFCNT DIRTY FILE COUNT
0316 73404 067542 LDB DFNAM GET ADDRESS OF FIRST
0317 73405 077570 STB LCDB8 DIRTY FILE'S NAME
0318 73406 163566 LDA LCDID,I STICK ID IN LTEMP
0319 73407 070030 STA LTEMP FOR DLOOK
0320 73410 160001 LCD6 LDA B,I MOVE DIRTY
0321 73411 070031 STA LTEMP+1 FILE'S
0322 73412 006004 INB NAME
0323 73413 104200 DLD B,I INTO
0324 73414 100001
0324 73415 104400 DBT LTEMP+2 LTEMP5
0324 73416 000032
0325 73417 117543 JSB DLOKA,I GO HUNT FOR DIRECTORY ENTRY
0326 73420 027456 JMP LCD5 FOUND IT
0327 73421 067570 LCD7 LDB LCDB8 BUMP
0328 73422 044355 ADB ,+3 POINTER TO
0329 73423 077570 STB LCDB8 NEXT NAME
0330 73424 037567 ISZ DFCNT MORE DIRTY FILES?
0331 73425 027410 JMP LCD6 YES, PROCESS NEXT ONE
0332*
0333 73426 163545 LDA DIRWA,I NO, WRITE DIRECTORY TO DRUM
0334 73427 002003 SZA,RSS IF ANY IS IN CORE

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0335 73430 027436 JMP LCD9 ELSE, RETURN
0336 73431 006400 CLB TELL DLOOK
0337 73432 177545 STB DIRWA,I THERE ISNIT
0338 73433 064562 LDB LIBD
0339 73434 117534 JSB DRUMP,I
0340 73435 127544 JMP DLK9A,I GOOF, ATTEMPT SALVAGE
0341 73436 067566 LCD9 LDB LCDID CLEAR
0342 73437 044346 ADB .-?ID CHECK
0343 73440 060444 LDA DFCHK FOR
0344 73441 103100 CLF 0 DIRTY
0345 73442 120001 XOR B,I FILES
0346 73443 170001 STA B,I BIT
0347 73444 102100 STF 0
0348 73445 127383 JMP LCD,I RETURN
0349*
0350* MOVE NAME OF DIRTY FILE TO SAFE PLACE
0351*
0352 73446 037567 LCD2 ISZ DFCNT BUMP DIRTY FILE COUNT
0353 73447 077570 STB LCDBS SAVE POINTER TO FILE TABLE ENTRY
0354 73450 044364 ADB .+10 GET POINTER TO FILE NAME
0355 73451 074050 STB MOVE8 AND SET IN MOVEW'S SOURCE ADR
0356 73452 064347 LDB .-3 MOVE THE 3
0357 73453 117537 JSB MOVFW,I NAME WORDS
0358 73454 067570 LDB LCDBS GET ENTRY POINTER BACK
0359 73455 027373 JMP LCD3 RETURN TO SCAN OF FILE TABLE
0360*
0361* PROCESS A FOUND DIRECTORY ENTRY
0362*
0363 73456 060034 LCD5 LDA LTEMP+4 TELL DLOOK
0364 73457 040360 ADA .+6 WHICH DIRECTORY
0365 73460 160000 LDA A,I TRACK IS
0366 73461 173545 STA DIRWA,I IN CORE
0367 73462 064055 LDB LTEMP+5 GET
0368 73463 044354 ADB .+2 WORD
0369 73464 160001 LDA B,I 2
0370 73465 002021 SSA,RSS IS THE ENTRY A FILE?
0371 73466 027421 JMP LCD7 NO, GO PROCESS NEXT NAME
0372 73467 044356 ADB .+4 YES, UPDATE LAST
0373 73470 060201 LDA DATIM CHANGED DATE IN
0374 73471 170001 STA B,I DIRECTORY ENTRY
0375 73472 027421 JMP LCD7 GO PROCESS NEXT NAME
0376*
0377* THIS ROUTINE SETS UP THINGS TO UPDATE THE LAST CHANGE DATE
0378* WHEN A USER HAS ABORTED
0379*
0380 73473 ABUCD EQU *
0381 73473 064257 LDB MAIN
0382 73474 044355 ADB .+?PROG
0383 73475 060056 LDA PBPTR SET BOUND
0384 73476 170001 STA B,I IN TTY TABLE
0385 73477 003000 CMA
0386 73500 041221 ADA USE
0387 73501 070072 STA WORD NUMBER OF WORDS TO TRANSFER
0388 73502 044351 ADB .+?DISC=?PROG
0389 73503 160001 LDA B,I GET SWAP TRACK ADDRESS

```

|       |       |        |        |                 |                               |
|-------|-------|--------|--------|-----------------|-------------------------------|
| 0390  | 73504 | 010317 | AND    | M32             |                               |
| 0391  | 73505 | 170001 | STA    | B,I             |                               |
| 0392  | 73506 | 065221 | LDB    | USE             |                               |
| 0393  | 73507 | 117534 | JSB    | DRUMP,I         | WRITE USER TO SWAP TRACK      |
| 0394  | 73510 | 127540 | JMP    | RDpJp,I         |                               |
| 0395  | 73511 | 061502 | LDA    | FCNTR           |                               |
| 0396  | 73512 | 003004 | CMA,   | INA             | *# OF FILES                   |
| 0397  | 73513 | 064257 | LDB    | MAIN            |                               |
| 0398  | 73514 | 044356 | ADB    | ,+?ID           | *> ID WORD IN TTY TABLE       |
| 0399  | 73515 | 017353 | JSB    | LCD             | UPDATE LAST CHANGE DATE       |
| 0400  | 73516 | 000000 | NOP    |                 |                               |
| 0401  | 73517 | 103100 | CLF    | 0               |                               |
| 0402  | 73520 | 064257 | LDB    | MAIN            |                               |
| 0403  | 73521 | 074062 | STB    | TTQ             | FOR SCHEDULER                 |
| 0404  | 73522 | 060372 | LDA    | UNABT           |                               |
| 0405  | 73523 | 030442 | IOR    | ABTRY           |                               |
| 0406  | 73524 | 003000 | CMA    |                 |                               |
| 0407  | 73525 | 110001 | AND    | B,I             |                               |
| 0408  | 73526 | 170001 | STA    | B,I             | CLEAR ABORT FLAGS             |
| 0409  | 73527 | 002400 | CLA    |                 |                               |
| 0410  | 73530 | 070257 | STA    | MAIN            | USER NO LONGER IN CPRE        |
| 0411  | 73531 | 170634 | STA    | DCLC1,I         | BLOCK CLOCK                   |
| 0412  | 73532 | 044366 | ADB    | ,+?STAT         | => STATUS WORD                |
| 0413  | 73533 | 127541 | JMP    | DSCH7,I         | ENTER ABORT CODE IN SCHEDULER |
| 0414* |       |        |        |                 |                               |
| 0415* |       |        |        |                 |                               |
| 0416  | 73534 | 074231 | DRUMP  | DEF DRUML       |                               |
| 0417  | 73535 | 074370 | GTILP  | DEF GTIL        |                               |
| 0418  | 73536 | 074243 | MOVFB  | DEF MOVEB       |                               |
| 0419  | 73537 | 074257 | MUVFW  | DEF MOVEW       |                               |
| 0420  | 73540 | 074071 | RDpJp  | DEF RDPRJ       |                               |
| 0421  | 73541 | 070433 | DSCH7  | DEF SCH7        |                               |
| 0422  | 73542 | 025130 | DFNAM  | DEF LIBUS+10176 | DIRTY FILE NAMES BUFFER       |
| 0423  | 73543 | 031060 | DLOKA  | DEF DLOOK       |                               |
| 0424  | 73544 | 031173 | DLK9A  | DEF DLOK9       |                               |
| 0425  | 73545 | 031223 | DIRWA  | DEF DIRWD       |                               |
| 0426  | 73546 | 062662 | DEADA  | DEF DEAD        |                               |
| 0427  | 73547 | 062613 | SICKA  | DEF SICK        |                               |
| 0428  | 73550 | 062411 | SALVA  | DEF SALVG       |                               |
| 0429  | 73551 | 000171 | DSYID  | DEF SYSID       |                               |
| 0430  | 73552 | 160002 | M8190  | DEC -8190       |                               |
| 0431  | 73553 | 177744 | HM28   | DEC -28         |                               |
| 0432  | 73554 | 160000 | M8192  | DEC -8192       |                               |
| 0433* |       |        |        |                 |                               |
| 0434  | 73555 | 074271 | LEN2A  | DEF LEND+2      |                               |
| 0435  | 73556 | 074132 | LOUTA  | DEF LOUT        |                               |
| 0436  | 73557 | 005040 | LFSPA  | OCT 5040        |                               |
| 0437  | 73560 | 020040 | SPSP   | ASC 1,          |                               |
| 0438  | 73561 | 030057 | ZERSL  | ASC 1,0/        |                               |
| 0439* |       |        |        |                 |                               |
| 0440  | 73562 | 000000 | TBDT1  | BSS 1           |                               |
| 0441  | 73563 | 000000 | TBDT2  | BSS 1           |                               |
| 0442  | 73564 | 000000 | TBDT3  | BSS 1           |                               |
| 0443  | 73565 | 000000 | LCDFC  | BSS 1           | COUNT OF FILES TO BE CHECKED  |
| 0444  | 73566 | 000000 | LCIDID | BSS 1           | POINTER TO USER ID            |



|      |       |        |        |     |     |
|------|-------|--------|--------|-----|-----|
| 0445 | 73567 | 000000 | DFCNT  | BSS | 1   |
| 0446 | 73570 | 000000 | LCDBS  | BSS | 1   |
| 0447 | 73571 | 000000 | FILEBF | BSS | 131 |
| 0448 | 73774 |        |        | BSS | 0   |

COUNT OF CHANGED (DIRTY) FILES  
POINTER FOR LCD'S SEARCHES

0450\*  
 0451\* THE FOLLOWING ROUTINE WILL PROVIDE A CORE  
 0452\* DUMP ON THE CONSOLE TELETYPE.

0453\*  
 0454\* ENTER HERE FOR A TSB DUMP  
 0455\*

|      |       |        |            |                                  |
|------|-------|--------|------------|----------------------------------|
| 0456 | 77000 |        | ORG 77000B |                                  |
| 0457 | 77000 | 103100 | CLF 0      |                                  |
| 0458 | 77001 | 103110 | CLF CH1    | CLEAR RETURN CHAN. FROM OTHER MA |
| 0459 | 77002 | 063231 | LDA LPSTK  | GET LP STATUS COMMAND            |
| 0460 | 77003 | 102611 | OTA CH2    | OUTPUT IT TO OTHER MACHINE.      |
| 0461 | 77004 | 103711 | STC CH2,C  | INTERRUPT OTHER MACHINE          |
| 0462 | 77005 | 102311 | SFS CH2    | WAIT FOR ACCEPT AND RETURN       |
| 0463 | 77006 | 027005 | JMP *-1    | OF STATUS FROM OTHER MACHINE     |
| 0464 | 77007 | 102511 | LIA CH2    | GET STATUS WORD                  |
| 0465 | 77010 | 013233 | AND B37TK  | MASK SELECT CODE OF LP           |
| 0466 | 77011 | 073234 | STA TKLP   | SAVE SEL. CODE (OR 0)            |
| 0467 | 77012 | 002002 | SZA        | LP UP & READY?                   |
| 0468 | 77013 | 027016 | JMP **3    | YES.                             |
| 0469 | 77014 | 063227 | LDA TB130  | PRINT AND PUNCH                  |
| 0470 | 77015 | 102612 | OTA 79C    | OUTPUT TO TELEPRINTER KLUDGE BOA |
| 0471 | 77016 | 017116 | JSB TKCRL  | PUT OUT LEADING CR LF            |
| 0472 | 77017 | 002400 | CLA        |                                  |
| 0473 | 77020 | 067224 | LDB TP21H  | END BLOCK                        |
| 0474 | 77021 | 000000 | NOP        |                                  |
| 0475 | 77022 | 017067 | JSB TK     |                                  |

0476\*  
 0477\* THIS CODE DUMPS IMPORTANT SYSTEM LOCATIONS

|       |       |        |                   |                                |
|-------|-------|--------|-------------------|--------------------------------|
| 0478* |       |        |                   |                                |
| 0479  | 77023 | 063236 | LDA TKTBL         | INITIALIZE                     |
| 0480  | 77024 | 073235 | STA TKTBP         | PNTR.                          |
| 0481  | 77025 | 163235 | TKDLP LDA TKTBP,I | GET TBL ENTRY                  |
| 0482  | 77026 | 002021 | SSA,RSS           | SINGLE WORD?                   |
| 0483  | 77027 | 027035 | JMP TK1WD         | YES.                           |
| 0484  | 77030 | 037235 | ISZ TKTBP         | BUMP PNTR.                     |
| 0485  | 77031 | 167235 | LDB TKTBP,I       | GET ENDING PNTR.               |
| 0486  | 77032 | 003004 | CMA,INA           | MAKE STARTING ADDRESS POSITIVE |
| 0487  | 77033 | 017067 | JSB TK            | OUTPUT STRING                  |
| 0488  | 77034 | 027047 | JMP TKDLN         |                                |
| 0489  | 77035 | 002003 | TK1WD SZA,RSS     | END OF TABLE?                  |
| 0490  | 77036 | 027051 | JMP TKDON         | YES.                           |
| 0491  | 77037 | 064000 | LDB A             | COPY TO B                      |
| 0492  | 77040 | 017155 | JSB TKWO          | PRINT ADDRESS                  |
| 0493  | 77041 | 063221 | LDA TP40          | A ← BLANK                      |
| 0494  | 77042 | 017124 | JSB TKCO          | AND PRINT IT                   |
| 0495  | 77043 | 167235 | LDB TKTBP,I       | GET ADDR. AGAIN                |
| 0496  | 77044 | 164001 | LDB B,I           | B = MEM CONTENT                |
| 0497  | 77045 | 017155 | JSB TKWO          | PRINT CONTENT                  |
| 0498  | 77046 | 017116 | JSB TKCRL         | AGAIN FEED CARRIAGE            |
| 0499  | 77047 | 037235 | TKDLN ISZ TKTBP   |                                |
| 0500  | 77050 | 027025 | JMP TKDLP         |                                |
| 0501  | 77051 | 102000 | TKDON HLT         |                                |
| 0502  | 77052 | 027051 | JMP *-1           |                                |

0503\*  
 0504\* STARTING POINT FOR DUMPING OF

```

0505* SELECTED LOCATIONS.
0506* ENTER WITH A= STARTING ADDRESS AND
0507* B= ENDING ADDRESS.
0508*
0509 77053 073206 STA TK1 SAVE STARTING ADDRESS.
0510 77054 077207 STB TK2 SAVE ENDING ADDRESS.
0511 77055 063234 LDA TKLP CHECK FOR LP SEL. CODE
0512 77056 002002 SZA READY?
0513 77057 027062 JMP ++3 YES.
0514 77060 063227 LDA TB130 PRINT AND PUNCH
0515 77061 102612 OTA ?SC OUTPUT TO TTY KLUDGE BOARD.
0516 77062 017116 JSB TKCRL PUT OUT LEADING CR LF
0517 77063 063206 LDA TK1 GET STARTING AND
0518 77064 067207 LDB TK2 ENDING ADDRESS.
0519 77065 017067 JSB TK DUMP.
0520 77066 027051 JMP TKDON STOP.
0521*
0522*
0523 77067 000000 TK NOP
0524 77070 013214 AND TMB BE STUFFY ABOUT STARTING POINT.
0525 77071 073206 STA TK1 SAVE STARTING ADDRESS
0526 77072 007000 CMB B * = B = 1
0527 77073 077207 STB TK2 STORE ENDING ADDRESS.
0528 77074 TKA EQU *
0529 77074 063214 LDA TMB EIGHT WORDS PER LINE.
0530 77075 073210 STA TK3
0531 77076 067206 LDB TK1 LOAD ADDRESS
0532 77077 017155 JSB TKWO PUT IT OUT
0533 77100 TKB EQU *
0534 77100 063221 LDA TP40 A * BLANK
0535 77101 017124 JSB TKCO PUT IT OUT.
0536 77102 167206 LDB TK1,I LOAD DATA WORD
0537 77103 017155 JSB TKWO OUT IT GOES.
0538 77104 037206 ISZ TK1 COUNT UP ADDRESS.
0539 77105 037210 ISZ TK3 COUNT DOWN COUNT WITHIN LINE
0540 77106 027100 JMP TKB CONTINUE WITH THIS LINE
0541 77107 017116 JSB TKCRL OUTPUT CR AND LF
0542 77110 063206 LDA TK1 LOAD CURRENT ADDRESS
0543 77111 043207 ADA TK2 CHECK FOR DONE
0544 77112 002020 SSA SKIP IF DONE WITH DUMP
0545 77113 027074 JMP TKA OTHERWISE, START LINE
0546 77114 017116 JSB TKCRL
0547 77115 127067 JMP TK,I
0548*
0549 77116 000000 TKCRL NOP
0550 77117 063220 LDA TP15 CR
0551 77120 017124 JSB TKCO
0552 77121 063217 LDA TP12 LF
0553 77122 017124 JSB TKCO
0554 77123 127116 JMP TKCRL,I RETURN
0555*
0556 77124 000000 TKCO NOP
0557 77125 073213 STA TK6 ROUTINE TO PUT OUT CHARACTERS
0558 77126 077212 STB TK5 SAVE OUTPUT CHR.
0559 77127 106501 LIB 01 SAVE THE B REGISTER

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|       |       |        |             |                                               |
|-------|-------|--------|-------------|-----------------------------------------------|
| 0560  | 77130 | 005665 | ELB,CLE,ERB |                                               |
| 0561  | 77131 | 164001 | LDB 1,I     | DISPLAY MEMORY LOCATION                       |
| 0562  | 77132 | 013223 | AND TP377   | MASK DOWN TO SIZE                             |
| 0563  | 77133 | 063234 | LDA TKLP    | CHECK FOR LP SEL. CODE                        |
| 0564  | 77134 | 002002 | SZA         | READY?                                        |
| 0565  | 77135 | 027144 | JMP TKCOL   | YES,                                          |
| 0566  | 77136 | 063213 | LDA TK6     | NO, GET CHR.                                  |
| 0567  | 77137 | 102312 | SFS ?SC     | WAIT FOR TELEKLUDGE.                          |
| 0568  | 77140 | 027137 | JMP *-1     | AND WAIT SOME MORE.                           |
| 0569  | 77141 | 102612 | OTA ?SC     | OUTPUT THE CHARACTER.                         |
| 0570  | 77142 | 103712 | STC ?SC,C   | START THE MONSTER.                            |
| 0571  | 77143 | 027153 | JMP TKCRN   |                                               |
| 0572  | 77144 |        | TKCOL EQU * |                                               |
| 0573  | 77144 | 063213 | LDA TK6     | GET OUTPUT CHR.                               |
| 0574  | 77145 | 001722 | ALF,RAL     | POSITION CHARACTER                            |
| 0575  | 77146 | 033232 | IOR TKOTK   | COMPOSE TKC COMMAND                           |
| 0576  | 77147 | 102311 | SFS CH2     | LAST COMM. ACCEPTED?                          |
| 0577  | 77150 | 027147 | JMP *-1     | NOT YET, WAIT.                                |
| 0578  | 77151 | 102611 | OTA CH2     | GIVE TKO TO OTHER MACHINE.                    |
| 0579  | 77152 | 103711 | STC CH2,C   | INTERRUPT OTHER MACHINE.                      |
| 0580  | 77153 |        | TKCRN EQU * |                                               |
| 0581  | 77153 | 067212 | LDB TK5     |                                               |
| 0582  | 77154 | 127124 | JMP TKCO,I  |                                               |
| 0583* |       |        |             |                                               |
| 0584  | 77155 | 000000 | TKWO NOP    | ROUTINE TO OUTPUT AN ENTIRE WORD              |
| 0585  | 77156 | 063222 | LDA TP60    | LOAD CODE FOR ZERO                            |
| 0586  | 77157 | 005210 | RBL,SLB     | TEST SIGN BIT                                 |
| 0587  | 77160 | 002004 | INA         | ONE IF SET.                                   |
| 0588  | 77161 | 017124 | JSB TKCO    |                                               |
| 0589  | 77162 | 063215 | LDA TM5     | FIVE MORE DIGITS.                             |
| 0590  | 77163 | 073211 | STA TK4     |                                               |
| 0591  | 77164 |        | TKWB EQU *  |                                               |
| 0592  | 77164 | 063216 | LDA TP6     | BITS FOR ASCII                                |
| 0593  | 77165 | 100103 | RRL 3       | NEXT OCTAL DIGIT TO A                         |
| 0594  | 77166 | 017124 | JSB TKCO    | OUT GOES THE MEAN OL' CHARACTER               |
| 0595  | 77167 | 037211 | ISZ TK4     | CHECK FOR COMPLETION OF WORD.                 |
| 0596  | 77170 | 027164 | JMP TKWB    | ANOTHER 100,000,000 NS SHOT                   |
| 0597  | 77171 | 127155 | JMP TKWO,I  | RETURN                                        |
| 0598* |       |        |             |                                               |
| 0599* |       |        |             |                                               |
| 0600* |       |        |             | TO SET UP DMA FOR TRANSFER UP OF 2114 PROGRAM |
| 0601* |       |        |             | THE 2116 PROGRAM MUST BE RUN FIRST            |
| 0602* |       |        |             |                                               |
| 0603  | 77172 | 106703 | CLC DMA=4   | SET UP FOR ADDRESS                            |
| 0604  | 77173 | 063225 | LDA TBT15   | INPUT STARTING AT ZERO                        |
| 0605  | 77174 | 102603 | OTA DMA=4   | ADDRESS OUT                                   |
| 0606  | 77175 | 063230 | LDA TB160   | LOAD WORD COUNT ALLOWED                       |
| 0607  | 77176 | 102703 | STC DMA=4   | SET UP TO LOAD WORD COUNT                     |
| 0608  | 77177 | 102603 | OTA DMA=4   | OUTPUT WORD COUNT                             |
| 0609  | 77200 | 063226 | LDA TB12C   | LOAD DMA CONTROL WORD                         |
| 0610  | 77201 | 102607 | OTA DMA     | OUT TO DMA                                    |
| 0611  | 77202 | 103711 | STC CH2,C   | START CHANNEL                                 |
| 0612  | 77203 | 103707 | STC DMA,C   | START DMA                                     |
| 0613  | 77204 | 102000 | HLT         |                                               |
| 0614  | 77205 | 027204 | JMP *-1     |                                               |

0615\*

0616\*

|      |       |        |       |     |             |
|------|-------|--------|-------|-----|-------------|
| 0617 | 77206 | 000000 | TK1   | BSS | 1           |
| 0618 | 77207 | 000000 | TK2   | BSS | 1           |
| 0619 | 77210 | 000000 | TK3   | BSS | 1           |
| 0620 | 77211 | 000000 | TK4   | BSS | 1           |
| 0621 | 77212 | 000000 | TK5   | BSS | 1           |
| 0622 | 77213 | 000000 | TK6   | BSS | 1           |
| 0623 | 77214 | 177770 | TM8   | DEC | -8          |
| 0624 | 77215 | 177773 | TM5   | DEC | -5          |
| 0625 | 77216 | 000006 | TP6   | DEC | 6           |
| 0626 | 77217 | 000012 | TP12  | OCT | 12          |
| 0627 | 77220 | 000015 | TP15  | OCT | 15          |
| 0628 | 77221 | 000040 | TP40  | OCT | 40          |
| 0629 | 77222 | 000060 | TP60  | OCT | 60          |
| 0630 | 77223 | 000377 | TP377 | OCT | 377         |
| 0631 | 77224 | 002100 | TP21H | OCT | 2100        |
| 0632 | 77225 | 100000 | TBT15 | OCT | 100000      |
| 0633 | 77226 | 120011 | TB12C | ABS | 120000B+CH2 |
| 0634 | 77227 | 130000 | TB130 | OCT | 130000      |
| 0635 | 77230 | 160000 | TB160 | OCT | 160000      |
| 0636 | 77231 | 160022 | LPSTK | OCT | 160022      |
| 0637 | 77232 | 160031 | TKOTK | OCT | 160031      |
| 0638 | 77233 | 000037 | B37TK | OCT | 37          |

0639\*

|      |       |        |       |     |     |
|------|-------|--------|-------|-----|-----|
| 0640 | 77234 | 000000 | TKLP  | OCT | 0   |
| 0641 | 77235 | 000000 | TKTBP | BSS | 1   |
| 0642 | 77236 | 077237 | TKTBL | DEF | ++1 |

0643\*

|      |       |        |     |              |
|------|-------|--------|-----|--------------|
| 0644 | 77237 | 152650 | ABS | -LIBUS-10176 |
| 0645 | 77240 | 025274 | DEF | LIBUS+10276  |

0646\*

0647\*      LOADER ENTRY POINTS

0648\*

|      |       |        |     |        |                 |
|------|-------|--------|-----|--------|-----------------|
| 0649 | 77241 | 026000 | OCT | 26000  | MDISC           |
| 0650 | 77242 | 026156 | OCT | 26156  | TBSCH           |
| 0651 | 77243 | 026175 | OCT | 26175  |                 |
| 0652 | 77244 | 026217 | OCT | 26217  | MDINT           |
| 0653 | 77245 | 026236 | OCT | 26236  |                 |
| 0654 | 77246 | 026260 | OCT | 26260  | RECON           |
| 0655 | 77247 | 026321 | OCT | 26321  |                 |
| 0656 | 77250 | 026512 | OCT | 26512  | SEEK            |
| 0657 | 77251 | 026557 | OCT | 26557  |                 |
| 0658 | 77252 | 026526 | OCT | 26526  | DCOUT           |
| 0659 | 77253 | 026572 | OCT | 26572  |                 |
| 0660 | 77254 | 026532 | OCT | 26532  | CCOUT           |
| 0661 | 77255 | 026576 | OCT | 26576  |                 |
| 0662 | 77256 | 026540 | OCT | 26540  | WAITD           |
| 0663 | 77257 | 026604 | OCT | 26604  |                 |
| 0664 | 77260 | 026551 | OCT | 26551  | MSTAT           |
| 0665 | 77261 | 026615 | OCT | 26615  |                 |
| 0666 | 77262 | 026561 | OCT | 26561  | DMAGO           |
| 0667 | 77263 | 026625 | OCT | 26625  |                 |
| 0668 | 77264 | 151143 | OCT | 151143 | -ABSSEC (26635) |
| 0669 | 77265 | 026662 | OCT | 26662  | TATUS           |

|       |       |        |     |        |               |
|-------|-------|--------|-----|--------|---------------|
| 0670  | 77266 | 151076 | OCT | 151076 |               |
| 0671  | 77267 | 026731 | OCT | 26731  |               |
| 0672  | 77270 | 027250 | OCT | 27250  | DREDY         |
| 0673  | 77271 | 027317 | OCT | 27317  |               |
| 0674  | 77272 | 150416 | OCT | 150416 | =DREA (27362) |
| 0675  | 77273 | 027374 | OCT | 27374  | DREBS         |
| 0676  | 77274 | 150347 | OCT | 150347 |               |
| 0677  | 77275 | 027443 | OCT | 27443  |               |
| 0678* |       |        |     |        |               |
| 0679  | 77276 | 150000 | ABS | =DIREC |               |
| 0680  | 77277 | 031060 | DEF | DLOOK  |               |
| 0681* |       |        |     |        |               |
| 0682  | 77300 | 031251 | DEF | ZDISC  |               |
| 0683  | 77301 | 060012 | DEF | LDRUM  |               |
| 0684  | 77302 | 060052 | DEF | DINT   |               |
| 0685* |       |        |     |        |               |
| 0686  | 77303 | 117640 | ABS | =DADDR |               |
| 0687  | 77304 | 060150 | DEF | DRAIL  |               |
| 0688* |       |        |     |        |               |
| 0689  | 77305 | 060417 | DEF | POW    |               |
| 0690* |       |        |     |        |               |
| 0691  | 77306 | 117130 | ABS | =POWFF |               |
| 0692  | 77307 | 060661 | DEF | POWSW  |               |
| 0693* |       |        |     |        |               |
| 0694  | 77310 | 060715 | DEF | ?TT35  |               |
| 0695  | 77311 | 060735 | DEF | ?TT2   |               |
| 0696* |       |        |     |        |               |
| 0697  | 77312 | 116652 | ABS | =TTY00 |               |
| 0698  | 77313 | 062266 | DEF | TTY32  |               |
| 0699* |       |        |     |        |               |
| 0700  | 77314 | 062266 | DEF | JETPT  |               |
| 0701  | 77315 | 062411 | DEF | SALVG  |               |
| 0702* |       |        |     |        |               |
| 0703  | 77316 | 115263 | ABS | =SALCP |               |
| 0704  | 77317 | 062522 | DEF | SALEC  |               |
| 0705* |       |        |     |        |               |
| 0706  | 77320 | 062613 | DEF | SICK   |               |
| 0707  | 77321 | 062662 | DEF | DEAD   |               |
| 0708  | 77322 | 062725 | DEF | MDEAD  |               |
| 0709  | 77323 | 063307 | DEF | S14SH  |               |
| 0710  | 77324 | 063334 | DEF | R14CM  |               |
| 0711  | 77325 | 070014 | DEF | OUTM1  |               |
| 0712  | 77326 | 070016 | DEF | CTEMP  |               |
| 0713  | 77327 | 070017 | DEF | SMAIN  |               |
| 0714  | 77330 | 070020 | DEF | FMAIN  |               |
| 0715  | 77331 | 070026 | DEF | CLKIN  |               |
| 0716  | 77332 | 070043 | DEF | CLC1   |               |
| 0717  | 77333 | 071075 | DEF | TYPE   |               |
| 0718  | 77334 | 071113 | DEF | SCOM   |               |
| 0719  | 77335 | 071202 | DEF | SWAPR  |               |
| 0720  | 77336 | 071527 | DEF | SCHAR  |               |
| 0721  | 77337 | 071577 | DEF | DEQUE  |               |
| 0722  | 77340 | 071612 | DEF | #OUTC  |               |
| 0723  | 77341 | 071656 | DEF | SCHOQ  |               |
| 0724  | 77342 | 071700 | DEF | HTEST  |               |

|       |       |        |                 |
|-------|-------|--------|-----------------|
| 0725* |       |        |                 |
| 0726  | 77343 | 105744 | ABS -COM6       |
| 0727  | 77344 | 072237 | DEF FADT        |
| 0728* |       |        |                 |
| 0729  | 77345 | 072274 | DEF RSFS        |
| 0730  | 77346 | 072403 | DEF RADT        |
| 0731  | 77347 | 072612 | DEF TBDAD       |
| 0732  | 77350 | 072727 | DEF TBIUT       |
| 0733  | 77351 | 073053 | DEF HDBUF       |
| 0734  | 77352 | 073353 | DEF LCD         |
| 0735* |       |        |                 |
| 0736  | 77353 | 104216 | ABS -TBDT1      |
| 0737  | 77354 | 073775 | DEF FILBF+132   |
| 0738* |       |        |                 |
| 0739  | 77355 | 074001 | DEF STAV1       |
| 0740  | 77356 | 074002 | DEF STAV2       |
| 0741  | 77357 | 074003 | DEF STAV3       |
| 0742  | 77360 | 074025 | DEF T35CQ       |
| 0743  | 77361 | 074047 | DEF RDPRG       |
| 0744  | 77362 | 074107 | DEF RDIDT       |
| 0745  | 77363 | 074132 | DEF LOUT        |
| 0746  | 77364 | 074137 | DEF LTYPR       |
| 0747  | 77365 | 074156 | DEF LTYPE       |
| 0748  | 77366 | 074164 | DEF LCHAR       |
| 0749  | 77367 | 074231 | DEF DRUML       |
| 0750  | 77370 | 074243 | DEF MOVEB       |
| 0751  | 77371 | 074257 | DEF MOVEW       |
| 0752  | 77372 | 074315 | DEF GETID       |
| 0753  | 77373 | 074370 | DEF GTIL        |
| 0754  | 77374 | 074435 | DEF SCHLQ       |
| 0755  | 77375 | 074563 | DEF INSEQ       |
| 0756* |       |        |                 |
| 0757  | 77376 | 103167 | ABS -T35BF      |
| 0758  | 77377 | 074655 | DEF CRLF        |
| 0759* |       |        |                 |
| 0760  | 77400 | 074656 | DEF ABCHK       |
| 0761  | 77401 | 074710 | DEF SEMIC       |
| 0762* |       |        |                 |
| 0763  | 77402 | 103000 | ABS -LIBRA      |
| 0764  | 77403 | 076000 | DEF LIBRA+10000 |
| 0765* |       |        |                 |
| 0766  | 77404 | 000000 | OCT 0           |
| 0767* |       |        |                 |
| 0768* |       |        |                 |
| 0769* |       |        |                 |

|       |                                                                    |        |                 |                                  |
|-------|--------------------------------------------------------------------|--------|-----------------|----------------------------------|
| 0002  | 74000                                                              |        | ORG 74000B      |                                  |
| 0003  | 74000                                                              | 177645 | M133, OCT =133  |                                  |
| 0004  | 74001                                                              | 000000 | STAV1 BSS 1     | USED BY                          |
| 0005  | 74002                                                              | 000000 | STAV2 BSS 1     | STATUS WHILE                     |
| 0006  | 74003                                                              | 000000 | STAV3 BSS 1     | SUSPENDED                        |
| 0007  | 74004                                                              | 074655 | ?ABP2 DEF CRLF  |                                  |
| 0008  | 74005                                                              | 031060 | DLOKP DEF DLOOK | LINK TO DIRECTORY SEARCH ROUTINE |
| 0009  | 74006                                                              | 031223 | DIRWP DEF DIRWD |                                  |
| 0010  | 74007                                                              | 072237 | FADTP DEF FADT  |                                  |
| 0011  | 74010                                                              | 000115 | RKCYP DEF DADLC | CYCLIC POINTER TO CURRENT        |
| 0012* |                                                                    |        |                 | DISK ADT TRACK ADDRESS           |
| 0013  | 74011                                                              | 072403 | RADTP DEF RADT  |                                  |
| 0014  | 74012                                                              | 072274 | RSFSP DEF RSFS  |                                  |
| 0015  | 74013                                                              | 072612 | TBDAP DEF TBDAD |                                  |
| 0016  | 74014                                                              | 062266 | JETPP DEF JETPT |                                  |
| 0017  | 74015                                                              | 062613 | SICKP DEF SICK  |                                  |
| 0018  | 74016                                                              | 062411 | SALVP DEF SALVG |                                  |
| 0019  | 74017                                                              | 062662 | DEADP DEF DEAD  |                                  |
| 0020  | 74020                                                              | 062725 | MDEDP DEF MDEAD |                                  |
| 0021  | 74021                                                              | 073053 | HDBFA DEF HDBUF |                                  |
| 0022  | 74022                                                              | 073156 | UHDBA DEF UHDBF |                                  |
| 0023  | 74023                                                              | 071656 | SCHOU DEF SCHOU |                                  |
| 0024  | 74024                                                              | 073013 | MLFLA DEF MLKFL |                                  |
| 0025* |                                                                    |        |                 |                                  |
| 0026* | T35CQ IS USED BY LIBRARY PROGRAMS TO SCAN THE TTY35 INPUT BUFFER.  |        |                 |                                  |
| 0027* | EACH TIME IT IS CALLED, IT FETCHES THE NEXT CHARACTER, BUT SKIPS   |        |                 |                                  |
| 0028* | BLANKS. THE CHARACTER IS LEFT IN T35LC, AND IN A, WHEN A RETURN IS |        |                 |                                  |
| 0029* | ENCOUNTERED, T35CQ RETURNS TO P+1; OTHERWISE TO P+2. IT IS INITI-  |        |                 |                                  |
| 0030* | ALIZED BY THE MONITOR BEFORE THE LIBRARY ROUTINE IS CALLED.        |        |                 |                                  |
| 0031* |                                                                    |        |                 |                                  |
| 0032  | 74025                                                              | 000000 | T35CQ NOP       | ENTRY POINT.                     |
| 0033  | 74026                                                              | 060055 | LDA T35LC       | GET LAST CHARACTER.              |
| 0034  | 74027                                                              | 050367 | CPA .+15B       | IF CR,                           |
| 0035  | 74030                                                              | 126025 | JMP T35CQ, I    | RETURN IMMEDIATELY.              |
| 0036  | 74031                                                              |        | T35C0 EQU *     |                                  |
| 0037  | 74031                                                              | 064054 | LDB T35CP       | GET CHARACTER POINTER IN B+      |
| 0038  | 74032                                                              | 004065 | CLE, ERB        | ADJUST.                          |
| 0039  | 74033                                                              | 160001 | LDA 1, I        | FETCH                            |
| 0040  | 74034                                                              | 002041 | SEZ, RSS        | CHAR.                            |
| 0041  | 74035                                                              | 001727 | ALF, ALF        |                                  |
| 0042  | 74036                                                              | 010441 | AND B177        |                                  |
| 0043  | 74037                                                              | 070055 | STA T35LC       | SAVE IT.                         |
| 0044  | 74040                                                              | 034054 | ISZ T35CP       | BUMP POINTER.                    |
| 0045  | 74041                                                              | 050367 | CPA .+15B       | IF CR,                           |
| 0046  | 74042                                                              | 126025 | JMP T35CQ, I    | RETURN IMMEDIATELY.              |
| 0047  | 74043                                                              | 050412 | CPA .+40B       | IF BLANK,                        |
| 0048  | 74044                                                              |        | T35C1 EQU *     |                                  |
| 0049  | 74044                                                              | 026031 | JMP T35C0       |                                  |
| 0050  | 74045                                                              | 036025 | ISZ T35CQ       | OTHERWISE                        |
| 0051  | 74046                                                              | 126025 | JMP T35CQ, I    | RETURN NORMAL.                   |
| 0052* |                                                                    |        |                 |                                  |
| 0053* | RDPRG READS THE CURRENT USER INTO CORE.                            |        |                 |                                  |
| 0054* |                                                                    |        |                 |                                  |
| 0055  | 74047                                                              | 000000 | RDPRG NOP       |                                  |
| 0056  | 74050                                                              | 064273 | LDB MLINK+1     | GET PROGRAM BOUND POINTER.       |



|       |                                                                   |        |       |                |                            |
|-------|-------------------------------------------------------------------|--------|-------|----------------|----------------------------|
| 0057  | 74051                                                             | 044340 | ADB   | .,+?PROG=?LINK |                            |
| 0058  | 74052                                                             | 160001 | LDA   | 1,I            | GET PROGRAM BOUND          |
| 0059  | 74053                                                             | 070056 | STA   | PBPTR          |                            |
| 0060  | 74054                                                             | 003000 | CMA   |                | COMPUTE LENGTH.            |
| 0061  | 74055                                                             | 041221 | ADA   | USE            |                            |
| 0062  | 74056                                                             | 070072 | STA   | WORD           |                            |
| 0063  | 74057                                                             | 044351 | ADB   | .,+?DISC=?PROG |                            |
| 0064  | 74060                                                             | 160001 | LDA   | B,I            | GET DRUM ADDRESS           |
| 0065  | 74061                                                             | 006400 | CLB   |                | BLOCK                      |
| 0066  | 74062                                                             | 174634 | STB   | DCLC1,I        | SCHEDULER.                 |
| 0067  | 74063                                                             | 065222 | LDB   | USE1           | PERFORM                    |
| 0068  | 74064                                                             | 016231 | JSB   | DRUML          | TRANSFER                   |
| 0069  | 74065                                                             | 026071 | JMP   | RDPRJ          |                            |
| 0070  | 74066                                                             | 160640 | LDA   | DCLC2,I        | UNBLOCK SCHEDULER.         |
| 0071  | 74067                                                             | 170634 | STA   | DCLC1,I        |                            |
| 0072  | 74070                                                             | 126047 | JMP   | RDPRG,I        | RETURN                     |
| 0073* |                                                                   |        |       |                |                            |
| 0074  | 74071                                                             |        | RDPRJ | EQU *          |                            |
| 0075  | 74071                                                             | 064273 | LDB   | MLINK+1        |                            |
| 0076  | 74072                                                             | 044335 | ADB   | .,=?LINK       |                            |
| 0077  | 74073                                                             | 116014 | JSB   | JETPP,I        | GO JETTISON PORT           |
| 0078  | 74074                                                             | 126075 | JMP   | ++1,I          |                            |
| 0079  | 74075                                                             | 070362 | DEF   | SCH1           |                            |
| 0080* |                                                                   |        |       |                |                            |
| 0081* | DATE COMPUTES A WORD CONTAINING THE YEAR IN ITS 7 HIGH ORDER BITS |        |       |                |                            |
| 0082* | AND THE DAY IN ITS 9 LOW ORDER BITS.                              |        |       |                |                            |
| 0083* |                                                                   |        |       |                |                            |
| 0084  | 74076                                                             | 000000 | DATE  | NOP            |                            |
| 0085  | 74077                                                             | 060201 | LDA   | DATIM          | GET HOUR OF YEAR.          |
| 0086  | 74100                                                             | 006400 | CLB   |                | DIVIDE BY 24 TO            |
| 0087  | 74101                                                             | 100400 | DIV   | .,+24          | GET THE DAY.               |
|       | 74102                                                             | 000402 |       |                |                            |
| 0088  | 74103                                                             | 100047 | LSL   | 7              | POSITION ON LEFT.          |
| 0089  | 74104                                                             | 064200 | LDB   | YEAR           | POSITION THE YEAR          |
| 0090  | 74105                                                             | 101047 | LSR   | 7              |                            |
| 0091  | 74106                                                             | 126076 | JMP   | DATE,I         |                            |
| 0092* |                                                                   |        |       |                |                            |
| 0093* | RDIDT READS A BLOCK OF THE IDT INTO CORE.                         |        |       |                |                            |
| 0094* | IT THEN SEARCHES THE IDT FOR THE ID OF THE CURRENT USER AND       |        |       |                |                            |
| 0095* | RETURNS WITH B POINTING TO IT.                                    |        |       |                |                            |
| 0096* |                                                                   |        |       |                |                            |
| 0097  | 74107                                                             | 000000 | RDIDT | NOP            |                            |
| 0098  | 74110                                                             | 060273 | LDA   | MLINK+1        | GET USER ID                |
| 0099  | 74111                                                             | 040341 | ADA   | .,+?ID=?LINK   |                            |
| 0100  | 74112                                                             | 160000 | LDA   | 0,I            |                            |
| 0101  | 74113                                                             | 070052 | STA   | ID             | SAVE IN ID                 |
| 0102  | 74114                                                             | 016370 | JSB   | GTIL           | FIND WHICH ID TRACK        |
| 0103  | 74115                                                             | 160076 | LDA   | IDLNP,I        | GET LENGTH OF CHOSEN TRACK |
| 0104  | 74116                                                             | 070072 | STA   | WORD           | SET DRUM DRIVER WORD COUNT |
| 0105  | 74117                                                             | 160075 | LDA   | IDLCP,I        | GET DRUM ADDRESS           |
| 0106  | 74120                                                             | 064566 | LDB   | LIBDI          |                            |
| 0107  | 74121                                                             | 016231 | JSB   | DRUML          |                            |
| 0108  | 74122                                                             | 116017 | JSB   | DEADP,I        | BAD NEWS                   |
| 0109* |                                                                   |        |       |                |                            |
| 0110  | 74123                                                             | 064562 | LDB   | LIBD           | SEARCH IDT.                |

|       |       |        |                     |                                      |
|-------|-------|--------|---------------------|--------------------------------------|
| 0111  | 74124 | 060052 | LDA ID              | GET THIS USERS ID BACK               |
| 0112  | 74125 | 002002 | SZA                 | RETURN IF NOT LOGGED ON              |
| 0113  | 74126 | 150001 | CPA 1,1             | SEARCH FOR ENTRY.                    |
| 0114  | 74127 | 126107 | JMP RDIDT,I         | RETURN                               |
| 0115  | 74130 | 044362 | ADB .+8             |                                      |
| 0116  | 74131 | 026126 | JMP *-3             |                                      |
| 0117* |       |        |                     |                                      |
| 0118  | 74132 | 000000 | LOUT NOP            | OUTPUT CHAR. IN A TO USERS TELETYPE. |
| 0119  | 74133 | 064273 | LDB MLINK+1         |                                      |
| 0120  | 74134 | 044335 | ADB .-?LINK         |                                      |
| 0121  | 74135 | 114576 | JSB OUTCH,I         |                                      |
| 0122  | 74136 | 126132 | JMP LOUT,I          |                                      |
| 0123* |       |        |                     |                                      |
| 0124  | 74137 | 000000 | LTYPR NOP           | OUTPUT -A CHARS TO USER'S TTY;       |
| 0125  | 74140 | 072076 | STA LTYPR1          | B POINTS TO BUFFER.                  |
| 0126  | 74141 | 076107 | STB LTYPR2          |                                      |
| 0127  | 74142 | 162107 | LTYPR3 LDA LTYPR2,I | GET FIRST                            |
| 0128  | 74143 | 001727 | ALF,ALF             | CHARACTER OF WORD                    |
| 0129  | 74144 | 016132 | JSB LOUT            | OUT.                                 |
| 0130  | 74145 | 036076 | ISZ LTYPR1          | ANY MORE?                            |
| 0131  | 74146 | 002001 | RSS                 | YES                                  |
| 0132  | 74147 | 126137 | JMP LTYPR,I         | NO.                                  |
| 0133  | 74150 | 162107 | LDA LTYPR2,I        | SEND 2ND                             |
| 0134  | 74151 | 016132 | JSB LOUT            | CHAR.                                |
| 0135  | 74152 | 036107 | ISZ LTYPR2          | BUMP POINTER.                        |
| 0136  | 74153 | 036076 | ISZ LTYPR1          | ANY MORE?                            |
| 0137  | 74154 | 026142 | JMP LTYPR3          | YES                                  |
| 0138  | 74155 | 126137 | JMP LTYPR,I         |                                      |
| 0139  | 74156 | 000000 | LTYPE NOP           | SAME AS LTYPR BUT WITH CRLF.         |
| 0140  | 74157 | 016137 | JSB LTYPR           |                                      |
| 0141  | 74160 | 060350 | LDA .-2             |                                      |
| 0142  | 74161 | 066004 | LDB ?ABP2           |                                      |
| 0143  | 74162 | 016137 | JSB LTYPR           |                                      |
| 0144  | 74163 | 126156 | JMP LTYPE,I         |                                      |
| 0145  | 74076 |        | LTYPR1 EQU DATE     |                                      |
| 0146  | 74107 |        | LTYPR2 EQU RDIDT    |                                      |
| 0147* |       |        |                     |                                      |
| 0148  | 74164 | 000000 | LCHAR NOP           | GET NEXT INPUT CHAR.--SKIP RETURN    |
| 0149  | 74165 | 060265 | LDA LCHCR           | GET CARRIAGE RETURN FLAG             |
| 0150  | 74166 | 050367 | CPA .+15B           | PREVIOUS RETURN?                     |
| 0151  | 74167 | 126164 | JMP LCHAR,I         | YES                                  |
| 0152  | 74170 | 064273 | LCHR1 LDB MLINK+1   |                                      |
| 0153  | 74171 | 044336 | ADB .+?INUM-?LINK   |                                      |
| 0154  | 74172 | 160001 | LDA 1,I             | FETCH                                |
| 0155  | 74173 | 030222 | IOR GTC             | CHARACTER                            |
| 0156  | 74174 | 114500 | JSB S14SC,I         | FROM 2114                            |
| 0157  | 74175 | 102311 | SFS CH2             | WAIT FOR                             |
| 0158  | 74176 | 026175 | JMP *-1             | RESPONSE                             |
| 0159  | 74177 | 102511 | LIA CH2             |                                      |
| 0160  | 74200 | 070265 | STA LCHCR           | SET CARRIAGE RETURN FLAG             |
| 0161  | 74201 | 050412 | CPA .+40B           | BLANK?                               |
| 0162  | 74202 | 026170 | LCHR2 JMP LCHR1     | YES, IGNORE IT                       |
| 0163  | 74203 | 050367 | CPA .+15B           | NO, CARRIAGE RETURN                  |
| 0164  | 74204 | 126164 | JMP LCHAR,I         | YES--EXIT                            |
| 0165  | 74205 | 040766 | ADA M96             |                                      |

|       |                                                 |        |       |               |                                 |
|-------|-------------------------------------------------|--------|-------|---------------|---------------------------------|
| 0166  | 74206                                           | 002021 |       | SSA, RSS      | LOWER CASE?                     |
| 0167  | 74207                                           | 040317 |       | ADA M32       | YES, CONVERT                    |
| 0168  | 74210                                           | 040730 |       | ADA .140      | NO                              |
| 0169  | 74211                                           | 036164 |       | ISZ LCHAR     | NO==EXIT                        |
| 0170  | 74212                                           | 126164 |       | JMP LCHAR, I  | TO (P+2)                        |
| 0171  | 74213                                           | 000000 | T35SP | NOP           | OUTPUT TO TT35 AND WAIT.        |
| 0172  | 74214                                           | 114522 |       | JSB TTY35, I  | FIRST OUTPUT.                   |
| 0173  | 74215                                           | 103100 |       | CLF 0         |                                 |
| 0174  | 74216                                           | 062213 |       | LDA T35SP     | MOVE RETURN ADDRESS             |
| 0175  | 74217                                           | 070276 |       | STA T35RS     | INTO TABLE.                     |
| 0176  | 74220                                           | 060277 |       | LDA T35ST     | MOVE STATUS INTO PRIORITY       |
| 0177  | 74221                                           | 070301 |       | STA T35PR     |                                 |
| 0178  | 74222                                           | 060355 |       | LDA XOUTW     | SET STATUS TO OUTWAIT.          |
| 0179  | 74223                                           | 070277 |       | STA T35ST     |                                 |
| 0180  | 74224                                           | 126225 |       | JMP SUSPP, I  | GO HANG                         |
| 0181  | 74225                                           | 071651 | SUSPP | DEF SUSP      |                                 |
| 0182  | 74226                                           | 060364 | LLEND | LDA .+12B     |                                 |
| 0183  | 74227                                           | 016132 |       | JSB LOUT      |                                 |
| 0184  | 74230                                           | 124514 |       | JMP SCHEM, I  |                                 |
| 0185* |                                                 |        |       |               |                                 |
| 0186  | 74231                                           | 000000 | DRUML | NOP           |                                 |
| 0187  | 74232                                           | 114770 |       | JSB DRUM, I   |                                 |
| 0188  | 74233                                           | 006400 |       | CLB           |                                 |
| 0189  | 74234                                           | 060261 |       | LDA ENDRM     | GET BUSY FLAG                   |
| 0190  | 74235                                           | 002020 |       | SSA           | DONE?                           |
| 0191  | 74236                                           | 026234 |       | JMP *-2       |                                 |
| 0192  | 74237                                           | 002003 |       | SZA, RSS      | YES, TRANSFER SUCCESSFUL?       |
| 0193  | 74240                                           | 036231 |       | ISZ DRUML     | YES, SKIP RETURN                |
| 0194  | 74241                                           | 074261 |       | STB ENDRM     | CLEAR BUSY FLAG REGARDLESS      |
| 0195  | 74242                                           | 126231 |       | JMP DRUML, I  |                                 |
| 0196* |                                                 |        |       |               |                                 |
| 0197  | 74243                                           | 000000 | MOVEB | NOP           | MOVE BACKWARD =B WORDS FROM     |
| 0198  | 74244                                           | 006025 |       | SSB, INB, RSS | MOVES TO MOVED.                 |
| 0199  | 74245                                           | 126243 |       | JMP MOVEB, I  |                                 |
| 0200  | 74246                                           | 160050 |       | LDA MOVES, I  |                                 |
| 0201  | 74247                                           | 170051 |       | STA MOVED, I  |                                 |
| 0202  | 74250                                           | 003400 |       | CCA           | UPDATE POINTERS.                |
| 0203  | 74251                                           | 040051 |       | ADA MOVED     |                                 |
| 0204  | 74252                                           | 070051 |       | STA MOVED     |                                 |
| 0205  | 74253                                           | 003400 |       | CCA           |                                 |
| 0206  | 74254                                           | 040050 |       | ADA MOVES     |                                 |
| 0207  | 74255                                           | 070050 |       | STA MOVES     |                                 |
| 0208  | 74256                                           | 026244 |       | JMP MOVEB+1   |                                 |
| 0209* |                                                 |        |       |               |                                 |
| 0210  | 74257                                           | 000000 | MOVEW | NOP           | MOVES =B WORDS FROM MOVES, I TO |
| 0211  | 74260                                           | 006025 |       | SSB, INB, RSS | MOVED, I                        |
| 0212  | 74261                                           | 126257 |       | JMP MOVEW, I  |                                 |
| 0213  | 74262                                           | 160050 |       | LDA MOVES, I  | GET A WORD                      |
| 0214  | 74263                                           | 170051 |       | STA MOVED, I  | STORE IT.                       |
| 0215  | 74264                                           | 034050 |       | ISZ MOVES     | BUMP                            |
| 0216  | 74265                                           | 034051 |       | ISZ MOVED     | POINTERS.                       |
| 0217  | 74266                                           | 026260 |       | JMP MOVEW+1   | NO.                             |
| 0218* |                                                 |        |       |               |                                 |
| 0219* | LEND OUTPUTS A LINE FEED ON THE SYSTEM TELETYPE |        |       |               |                                 |
| 0220* | AND THEN TERMINATES THE PROGRAM.                |        |       |               |                                 |

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0221 74267 060662 LEND LDA ONEI OUTPUT THE
0222 74270 064666 LDB DEH LINE FEED.
0223 74271 114522 JSB TTY35,I
0224 74272 002400 LENDR CLA
0225 74273 070314 STA T35F2
0226 74274 124514 JMP SCHEM,I
0227*
0228* LFRER PRINTS AN ILLEGAL FORMAT MESSAGE ON THE SYSTEM
0229* TELETYPE AND THEN TERMINATES THE PROGRAM.
0230 74275 060371 LFRER LDA ,+15
0231 74276 066300 LDB LFRDF
0232 74277 026271 JMP LEND+2
0233 74300 074301 LFRDF DEF ++1
0234 74301 005111 OCT 5111
0235 74302 046114 ASC 7,LLEGAL FORMAT
74303 042507
74304 040514
74305 020106
74306 047522
74307 046501
74310 052040
0236 74311 DDERK EQU *
0237 74311 060407 LDA ,+29
0238 74312 066314 LDB ++2
0239 74313 026271 JMP LEND+2
0240 74314 073034 DEF DDERL
0241*
0242* GETID SCANS THE INPUT BUFFER FOR AN ID NUMBER. IF NOT FOUND, IT
0243* OUTPUTS A MESSAGE AND TERMINATES.
0244* IF FOUND, THE RESULT IS PLACED IN ID, *RESULT
0245* IN MID. IF THE FOLLOWING CHARACTER IS A CR, GETID SKIPS ON THE
0246* WAY BACK. IN ANY CASE, THE NEXT CHARACTER IS IN A.
0247* GETID USES LTEMP+12,13,14,15.
0248*
0249 00044 GETCH EQU LTEMP+12
0250 00045 GETI1 EQU LTEMP+13
0251 00046 GETI2 EQU LTEMP+14
0252 00047 GETI3 EQU LTEMP+15
0253 74315 000000 GETID NOP
0254 74316 060273 LDA MLINK+1 DETERMINE WHICH SCANNER TO USE
0255 74317 066434 LDB DLCHR USE LCHAR IF USER TELETYPE,
0256 74320 050302 CPA T35LN T35CH IF SYSTEM.
0257 74321 064572 LDB T35CH
0258 74322 074044 STB GETCH
0259 74323 114044 JSB GETCH,I SCAN INPUT BUFFER FOR FIRST
0260 74324 026425 JMP GTFER CHARACTER.
0261 74325 042000 ADA M133. TEST FOR LETTER
0262 74326 002021 SSA,RSS
0263 74327 026425 JMP GTFER
0264 74330 040404 ADA ,+32B
0265 74331 002024 SSA,INA
0266 74332 026425 JMP GTFER
0267 74333 100032 ASL 10
0268 74334 070045 STA GETI1 SAVE FOR LATER.
0269 74335 060347 LDA ,=3 SET DIGIT

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|       |       |        |       |             |                                           |
|-------|-------|--------|-------|-------------|-------------------------------------------|
| 0270  | 74336 | 070046 |       | STA GETI2   | COUNTER.                                  |
| 0271  | 74337 | 006400 |       | CLB         | SET NUMBER                                |
| 0272  | 74340 | 074047 | GETI4 | STB GETI3   | TO 0.                                     |
| 0273  | 74341 | 114044 |       | JSB GETCH,I | GET NEXT CHAR.                            |
| 0274  | 74342 | 026425 |       | JMP GTFER   | FAIL.                                     |
| 0275  | 74343 | 040316 |       | ADA M72B    | TEST FOR DIGIT                            |
| 0276  | 74344 | 002021 |       | SSA,RSS     |                                           |
| 0277  | 74345 | 026425 |       | JMP GTFER   | FAIL.                                     |
| 0278  | 74346 | 040364 |       | ADA .+10    |                                           |
| 0279  | 74347 | 002020 |       | SSA         |                                           |
| 0280  | 74350 | 026425 |       | JMP GTFER   | FAIL.                                     |
| 0281  | 74351 | 064047 |       | LDB GETI3   | GET PARTIAL VALUE.                        |
| 0282  | 74352 | 005222 |       | RBL,RBL     | MULTIPLY BY 10.                           |
| 0283  | 74353 | 044047 |       | ADB GETI3   |                                           |
| 0284  | 74354 | 005200 |       | RBL         |                                           |
| 0285  | 74355 | 044000 |       | ADB 0       | ADD IN NEW DIGIT.                         |
| 0286  | 74356 | 034046 |       | ISZ GETI2   | TEST FOR DCNE.                            |
| 0287  | 74357 | 026340 |       | JMP GETI4   |                                           |
| 0288  | 74360 | 044045 |       | ADB GETI1   | MERGE IN LETTER.                          |
| 0289  | 74361 | 074052 |       | STB ID      |                                           |
| 0290  | 74362 | 007004 |       | CMB,INB     |                                           |
| 0291  | 74363 | 074053 |       | STB MID     |                                           |
| 0292  | 74364 | 016370 |       | JSB GTIL    | FIND ID TRACK                             |
| 0293  | 74365 | 114044 |       | JSB GETCH,I | GET NEXT CHARACTER.                       |
| 0294  | 74366 | 036315 |       | ISZ GETID   | SKIP RETURN IF CR.                        |
| 0295  | 74367 | 126316 |       | JMP GETID,I |                                           |
| 0296* |       |        |       |             |                                           |
| 0297* |       |        |       |             |                                           |
| 0298* |       |        |       |             |                                           |
| 0299* |       |        |       |             |                                           |
| 0300* |       |        |       |             |                                           |
|       |       |        |       |             | THE GTIL ROUTINE FINDS WHICH ID TRACK THE |
|       |       |        |       |             | SPECIFIED ID CODE IS ON.                  |
|       |       |        |       |             | ENTER WITH THE ID CODE IN ID              |
| 0301  | 74370 | 000000 | GTIL  | NOP         |                                           |
| 0302  | 74371 | 066424 |       | LDB IDECL   | => LAST ENTRY                             |
| 0303  | 74372 |        | G TSA | EQU *       |                                           |
| 0304  | 74372 | 074075 |       | STB IDLCP   | SAVE IN TEMP                              |
| 0305  | 74373 | 006004 |       | INB         | => DRUM ADDRESS                           |
| 0306  | 74374 | 160001 |       | LDA B,I     |                                           |
| 0307  | 74375 | 002003 |       | SZA,RSS     |                                           |
| 0308  | 74376 | 026411 |       | JMP GTSB    | NO ENTRIES ON TRACK                       |
| 0309  | 74377 | 006004 |       | INB         | => TRACK LENGTH                           |
| 0310  | 74400 | 160001 |       | LDA B,I     | GET THE LENGTH                            |
| 0311  | 74401 | 002003 |       | SZA,RSS     | SKIP THIS ONE IF                          |
| 0312  | 74402 | 026411 |       | JMP GTSB    | THE TRACK IS ZERO LENGTH                  |
| 0313  | 74403 | 044350 |       | ADB .-2     |                                           |
| 0314  | 74404 | 160001 |       | LDA B,I     | A = FIRST ID ON THIS TRACK                |
| 0315  | 74405 | 003004 |       | CMA,INA     |                                           |
| 0316  | 74406 | 040052 |       | ADA ID      | > OR < ?                                  |
| 0317  | 74407 | 002021 |       | SSA,RSS     |                                           |
| 0318  | 74410 | 026416 |       | JMP GTSC    | FOUND THE TRACK                           |
| 0319  | 74411 |        | G TSB | EQU *       |                                           |
| 0320  | 74411 | 064075 |       | LDB IDLCP   |                                           |
| 0321  | 74412 | 056423 |       | CPB IDECM   | CHECK FOR DONE                            |
| 0322  | 74413 | 026416 |       | JMP GTSC    | DONE, MUST BE ON FIRST TRACK              |
| 0323  | 74414 | 044347 |       | ADB .-3     | MOVE TO PREVIOUS ENTRY                    |
| 0324  | 74415 | 026372 |       | JMP GTSA    |                                           |

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0325 74416 GTSC EQU *
0326 74416 006004 INB B => DRUM ADDRESS
0327 74417 074075 STB IDLCP SET POINTER TO DRUM ADDRESS
0328 74420 006004 INB => TRACK LENGTH
0329 74421 074076 STB IDLNP SET POINTER TO LENGTH
0330 74422 126370 JMP GTIL,I RETURN
0331 74423 000100 IDECM DEF IDEC
0332 74424 000106 IDECL DEF IDEC+6
0333*
0334 74425 060044 GTFER LDA GETCH IF SYSTEM TELETYPE, PRINT
0335 74426 050572 CPA T35CH ERROR MESSAGE THERE.
0336 74427 026275 JMP LFRER
0337 74430 060333 ILFER LDA .-15 OTHERWISE PRINT IT ON
0338 74431 066300 LDB LFRDF USER TELETYPE.
0339 74432 016156 LIBER JSB LTYPE
0340 74433 124514 JMP SCHEN,I TERMINATE.
0341 74434 074164 DLCHR DEF LCHAR
0342* THIS ROUTINE IS CALLED BY THE COMPILER WHEN IT WANTS TO EXECUTE
0343* A DRUM ROUTINE. THE DRUM ROUTINE IS ALWAYS EXECUTED WITH A PRIORI-
0344* TY OF 0, AS ALL DRUM ROUTINES ARE. THE CALLING SEQUENCE IS
0345* JSB SCHLB,I
0346* DEF <DRUM ADDRESS OF ROUTINE>
0347* <PARAMETERS IF DESIRED>
0348* <RETURN>
0349*
0350 74435 000000 SCHLQ NOP
0351 74436 103100 CLF 0
0352 74437 064273 LDB MLINK+1
0353 74440 044335 ADB .-?LINK
0354 74441 160001 LDA 1,I SUSPEND
0355 74442 010772 AND COM14 IF HE
0356 74443 002002 SZA TRIED TO
0357 74444 126225 JMP LLEND-1,I ABORT
0358 74445 160001 LDA 1,I SET UNABLE
0359 74446 030372 IOR UNABT TO ABORT
0360 74447 170001 STA 1,I BIT
0361 74450 044370 ADB .+?PLEV
0362 74451 002400 CLA
0363 74452 070264 STA TIMEF NO TIMING.
0364 74453 170001 STA 1,I SET PRIORITY TO 0
0365 74454 044350 ADB .+?STAT-?PLEV SET STATUS TO SYNTAX
0366 74455 060356 LDA XSYNT SO SCHEDULER DOESN'T KNOW
0367 74456 170001 STA 1,I WHAT WE'RE DOING.
0368 74457 044341 ADB .+?PROG-?STAT
0369 74460 060056 LDA PBPTR SET PBPTR IN TABLE.
0370 74461 170001 STA 1,I
0371 74462 003000 CMA SET UP DRUM
0372 74463 041221 ADA USE PARAMETERS.
0373 74464 070072 STA WORD
0374 74465 044351 ADB .+?DISC-?PROG
0375 74466 160001 LDA 1,I
0376 74467 010317 AND M32 FORCE BACK TO SWAP AREA ORIGIN
0377 74470 170001 STA 1,I
0378 74471 065221 LDB USE OUTPUT USER TO
0379 74472 016231 JSB DRUML DRUM

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0380 74473 026071 JMP RDPRJ BLEW IT, GO DUMP USER
0381 74474 162435 LDA SCHLQ,I GET DRUM ADDRESS,
0382 74475 036435 ISZ SCHLQ
0383 74476 050260 CPA LIB IF IN CORE, TRANSFER DIRECT.
0384 74477 027000 JMP LIBRA
0385 74500 070260 STA LIB SET LIB.
0386 74501 160000 LDA 0,I
0387 74502 064750 LDB M512 SET UP DRUM TRANSFER
0388 74503 074072 STB WORD
0389 74504 064504 LDB #LIBI
0390 74505 016231 JSB DRUML
0391 74506 116015 JSB SICKP,I READ NO GOOD, GO EXPIRE
0392 74507 027000 JMP LIBRA
0393*
0394* PROGRAM ALWAYS RETURNS HERE.
0395*
0396 74510 103100 SCHBL CLF 0
0397 74511 064273 LDB MLINK+1
0398 74512 044351 ADB .+?STAT=?LINK
0399 74513 134001 ISZ 1,I TRUE STATUS IS RUN
0400 74514 034264 ISZ TIMEF SET FLAG FOR TIMING
0401 74515 044350 ADB .+?CLOC=?STAT
0402 74516 134001 ISZ 1,I TIMED OUT?
0403 74517 026537 JMP SCHB1 NO
0404 74520 044356 ADB .+?PLEV=?CLOC
0405 74521 060356 LDA .+4 SET PRIORITY TO 4
0406 74522 170001 STA B,I
0407 74523 044347 ADB .+?RSTR=?PLEV
0408 74524 062435 LDA SCHLQ
0409 74525 170001 STA B,I SET RESTART ADDRESS
0410 74526 002400 CLA
0411 74527 170634 STA DCLC1,I BLOCK CLOCK
0412 74530 102100 STF 0
0413 74531 064273 LDB MLINK+1 REMOVE
0414 74532 160001 LDA B,I USER FROM
0415 74533 070273 STA MLINK+1 QUEUE
0416 74534 016563 JSB INSEQ INSERT AGAIN AT END
0417 74535 126536 JMP **+1,I RETURN TO SCHEDULER
0418 74536 070362 DEF SCH1
0419 74537 SCHB1 EQU *
0420 74537 102100 STF 0
0421 74540 126435 JMP SCHLQ,I RETURN TO LANGUAGE PROCESSOR
0422 74541 074542 HELK DEF **+1
0423 74542 005111 OCT 5111
0424 74543 046114 ASC 7,LLEGAL ACCESS
 74544 042507
 74545 040514
 74546 020101
 74547 041503
 74550 042523
 74551 051440
0425 74552 074553 HELH DEF **+1
0426 74553 005116 OCT 5116
0427 74554 047440 ASC 6,0 TIME LEFT
 74555 052111

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74556 046505  
 74557 020114  
 74560 042506  
 74561 052040

0428 74562 000000 STABF BSS 1 USED BY STATUS

0429\*

0430\* THIS SUBROUTINE INSERTS A USER INTO THE QUEUE IN ORDER OF HIS  
 0431\* PRIORITY. WHEN WE ARRIVE HERE, THE B REGISTER POINTS TO THE LINK  
 0432\* WORD FOR THE USER.

0433\*

|      |       |        |       |                   |                                  |
|------|-------|--------|-------|-------------------|----------------------------------|
| 0434 | 74563 | 000000 | INSEQ | NOP               |                                  |
| 0435 | 74564 | 074061 |       | STB SCHL          | SAVE LINK ADDRESS IN SCHL        |
| 0436 | 74565 | 006004 |       | INB               | B=>USERS PRIORITY                |
| 0437 | 74566 | 160001 |       | LDA 1,I           | A=PRIORITY                       |
| 0438 | 74567 | 003000 |       | CMA               | STORE -1-PRIORITY                |
| 0439 | 74570 | 070066 |       | STA SCHPR         | IN SCHPR.                        |
| 0440 | 74571 | 064272 |       | LDB MLINK         | B=>PHONY USER.                   |
| 0441 | 74572 | 074064 | SCH2  | STB SCHP          | SAVE IN SCHP.                    |
| 0442 | 74573 | 164001 |       | LDB 1,I           | B POINTS TO NEXT USER.           |
| 0443 | 74574 | 060001 |       | LDA 1             | GET PRIORITY OF                  |
| 0444 | 74575 | 002004 |       | INA               | THAT USER IN                     |
| 0445 | 74576 | 160000 |       | LDA 0,I           | A.                               |
| 0446 | 74577 | 040066 |       | ADA SCHPR         | COMPARE WITH PRIORITY            |
| 0447 | 74600 | 002020 |       | SSA               | OF USER BEING INSERTED.          |
| 0448 | 74601 | 026572 |       | JMP SCH2          | IF >= GO TO LINK TO NEXT ENTRY.  |
| 0449 | 74602 | 174061 |       | STB SCHL,I        | SET NEW ENTRY TO POINT TO HIM.   |
| 0450 | 74603 | 060061 |       | LDA SCHL          |                                  |
| 0451 | 74604 | 170064 |       | STA SCHP,I        | SET PREVIOUS ENTRY => NEW ENTRY. |
| 0452 | 74605 | 040347 |       | ADA .+?CLOC=?LINK | SET NEW USERS CLOCK TO -10.      |
| 0453 | 74606 | 064340 |       | LDB .-10          |                                  |
| 0454 | 74607 | 174000 |       | STB 0,I           |                                  |
| 0455 | 74610 | 126563 |       | JMP INSEQ,I       |                                  |
| 0456 | 74611 | 000000 | T35BF | BSS 36            | BUFFER FOR INPUT AND REPLIES.    |
| 0457 | 74655 | 006412 | CRLF  | OCT 6412          | MUST FOLLOW T35BF                |

0458\*

0459\* TEST FOR ABORT ATTEMPT WHEN THEY WEREN'T ALLOWED. IF SO, LET  
 0460\* THE SCHEDULER KNOW TO ABORT HIM

|      |       |        |       |             |                     |
|------|-------|--------|-------|-------------|---------------------|
| 0461 | 74656 | 000000 | ABCHK | NOP         |                     |
| 0462 | 74657 | 064273 |       | LDB MLINK+1 | CLEAR               |
| 0463 | 74660 | 044335 |       | ADB .-?LINK |                     |
| 0464 | 74661 | 060372 |       | LDA UNABT   | UNABLE TO           |
| 0465 | 74662 | 003000 |       | CMA         |                     |
| 0466 | 74663 | 103100 |       | CLF 0       | ABORT               |
| 0467 | 74664 | 110001 |       | AND 1,I     |                     |
| 0468 | 74665 | 170001 |       | STA 1,I     | FLAG                |
| 0469 | 74666 | 102100 |       | STF 0       |                     |
| 0470 | 74667 | 010442 |       | AND ABTRY   |                     |
| 0471 | 74670 | 002003 |       | SZA,RSS     | ABORT ATTEMPTED?    |
| 0472 | 74671 | 126656 |       | JMP ABCHK,I | NO                  |
| 0473 | 74672 | 103100 |       | CLF 0       | YES                 |
| 0474 | 74673 | 030445 |       | IOR CHNFG   |                     |
| 0475 | 74674 | 003000 |       | CMA         | CLEAR ABORT         |
| 0476 | 74675 | 110001 |       | AND 1,I     | TRY FLAG            |
| 0477 | 74676 | 030772 |       | IOR COM14   | SET COM14 BIT       |
| 0478 | 74677 | 170001 |       | STA 1,I     | TO SIGNAL SCHEDULER |



|       |                                                                |        |                 |                      |
|-------|----------------------------------------------------------------|--------|-----------------|----------------------|
| 0479  | 74700                                                          | 002400 | CLA             | BLOCK                |
| 0480  | 74701                                                          | 170634 | STA DCLC1,I     | CLOCK                |
| 0481  | 74702                                                          | 044366 | ADB .+7STAT     |                      |
| 0482  | 74703                                                          | 003400 | CCA             | SET STATUS           |
| 0483  | 74704                                                          | 170001 | STA 1,I         | TO ABORTING          |
| 0484  | 74705                                                          | 102100 | STF 0           |                      |
| 0485  | 74706                                                          | 126707 | JMP ++1,I       | RETURN THRU          |
| 0486  | 74707                                                          | 070362 | DEF SCH1        | SCHEDULER            |
| 0487* |                                                                |        |                 |                      |
| 0488* | CHECK IF THE PROGRAM WHICH HAS JUST BEEN LOADED FROM THE USER  |        |                 |                      |
| 0489* | LIBRARY IS SEMI-COMPILED, AND SET THE NECESSARY COMPILER       |        |                 |                      |
| 0490* | VARIABLES. LIBSC, LIBSP, AND LIBPB ARE PASSED TO THIS ROUTINE  |        |                 |                      |
| 0491* | FROM THE LIBRARY ROUTINE WHICH CALLS IT (CHAIN, GET, OR HELLO) |        |                 |                      |
| 0492* |                                                                |        |                 |                      |
| 0493  | 74710                                                          | 000000 | SEMIC NOP       |                      |
| 0494  | 74711                                                          | 103100 | CLF 0           |                      |
| 0495  | 74712                                                          | 060040 | LDA LIBSC       |                      |
| 0496  | 74713                                                          | 002020 | SSA             | SEMI-COMPILED?       |
| 0497  | 74714                                                          | 026727 | JMP SEMI1       | YES                  |
| 0498  | 74715                                                          | 002400 | CLA             | NO-CLEAR OUT-OF-     |
| 0499  | 74716                                                          | 071575 | STA SYMTB       | STORAGE FLAG         |
| 0500  | 74717                                                          | 060045 | LDA LIBPB       | SET LENGTH           |
| 0501  | 74720                                                          | 070056 | STA PBPTR       | POINTER              |
| 0502  | 74721                                                          | 064273 | LDB MLINK+1     | SET                  |
| 0503  | 74722                                                          | 044335 | ADB .-?LINK     | UNCOMPILED           |
| 0504  | 74723                                                          | 060354 | LDA CFLAG       | BIT                  |
| 0505  | 74724                                                          | 003000 | CMA             |                      |
| 0506  | 74725                                                          | 110001 | AND 1,I         |                      |
| 0507  | 74726                                                          | 026761 | JMP SEMI3       |                      |
| 0508  | 74727                                                          | 060045 | SEMI1 LDA LIBPB | SET                  |
| 0509  | 74730                                                          | 040343 | ADA .-7         | LENGTH               |
| 0510  | 74731                                                          | 070056 | STA PBPTR       | POINTER              |
| 0511  | 74732                                                          | 071504 | STA FILTB       |                      |
| 0512  | 74733                                                          | 164000 | LDB 0,I         | SET END-OF-          |
| 0513  | 74734                                                          | 075575 | STB SYMTB       | PROGRAM POINTER      |
| 0514  | 74735                                                          | 002004 | INA             | SET <FILES           |
| 0515  | 74736                                                          | 164000 | LDB 0,I         | STATEMENT>           |
| 0516  | 74737                                                          | 075606 | STB FILCT       | COUNTER              |
| 0517  | 74740                                                          | 064452 | LDB DFILT       | POINTER TO           |
| 0518  | 74741                                                          | 075605 | STB FILPT       | <FILES STATEMENTS>   |
| 0519  | 74742                                                          | 064346 | LDB .-4         | 4 <FILES             |
| 0520  | 74743                                                          | 075230 | STB SPTR        | STATEMENTS> POSSIBLE |
| 0521  | 74744                                                          | 002004 | SEMI2 INA       | STORE                |
| 0522  | 74745                                                          | 164000 | LDB 0,I         | POINTER              |
| 0523  | 74746                                                          | 175605 | STB FILPT,I     | TO <FILES            |
| 0524  | 74747                                                          | 035605 | ISZ FILPT       | STATEMENT>           |
| 0525  | 74750                                                          | 035230 | ISZ SPTR        | ALL 4 DONE?          |
| 0526  | 74751                                                          | 026744 | JMP SEMI2       | NO                   |
| 0527  | 74752                                                          | 002004 | INA             | SAVE                 |
| 0528  | 74753                                                          | 164000 | LDB 0,I         | 'USING               |
| 0529  | 74754                                                          | 075607 | STB USESN       | 'SEEN' FLAG          |
| 0530  | 74755                                                          | 064273 | LDB MLINK+1     | SET                  |
| 0531  | 74756                                                          | 044335 | ADB .-?LINK     | COMPILED             |
| 0532  | 74757                                                          | 160001 | LDA 1,I         | BIT                  |
| 0533  | 74760                                                          | 030354 | IOR CFLAG       |                      |

|      |       |        |       |     |          |                                  |
|------|-------|--------|-------|-----|----------|----------------------------------|
| 0534 | 74761 | 170001 | SEMI3 | STA | 1,I      | SET                              |
| 0535 | 74762 | 074257 |       | STB | MAIN     | MAIN                             |
| 0536 | 74763 | 064041 |       | LDB | LIBSP    | SET START-OF-                    |
| 0537 | 74764 | 075577 |       | STB | SPROG    | PROGRAM POINTER                  |
| 0538 | 74765 | 102100 |       | STF | 0        |                                  |
| 0539 | 74766 | 126710 |       | JMP | SEMIC,I  |                                  |
| 0540 | 74767 | 000000 | PORS1 | BSS | 1        | USED BY "PORT"                   |
| 0541 | 74770 | 000000 | PORS2 | BSS | 1        | COMMAND WHILE                    |
| 0542 | 74771 | 000000 | PORTL | BSS | 1        | SUSPENDED,                       |
| 0543 | 74772 | 100000 | SPE   | OCT | 100000   | BAUD RATE INFO                   |
| 0544 | 74773 | 160024 | CHS   | OCT | 160024   | CHAR, SIZE INFO                  |
| 0545 | 74774 | 160025 | STP   | OCT | 160025   | SUBTYPE INFO                     |
| 0546 | 74775 | 160026 | WSP   | OCT | 160026   | WHAT BAUD RATE?                  |
| 0547 | 00045 |        | LIBPB | EQU | LTEMP+13 | END OF PROGRAM POINTER (PBPIR) . |
| 0548 | 00040 |        | LIBSC | EQU | LTEMP+8  | SEMI-COMPILED FLAG               |
| 0549 | 00041 |        | LIBSP | EQU | LTEMP+9  | START OF PROGRAM POINTER         |

0002\* THIS TABLE IS USED BY THE TSB PAPER TAPE LOADER, THE SLEEP  
 0003\* ROUTINE, AND THE MAG TAPE LOADER. IT CONTAINS THE LENGTHS OF  
 0004\* ALL THE REMAINING LIBRARY ROUTINES, AND ENABLES THE LOADER TO  
 0005\* ALLOCATE THE MINIMUM NUMBER OF DISC SECTORS FOR EACH OF THEM.  
 0006\* THE TABLE IS WRITTEN ON THE DISC AS THE FIRST LIBRARY ROUTINE.

|      |              |                 |               |
|------|--------------|-----------------|---------------|
| 0008 | 75000        | ORG LIBRA       |               |
| 0009 | 75000 177675 | ABS LIBRA-SSLPL |               |
| 0010 | 75001 177000 | DEC -512        | TWO HALVES OF |
| 0011 | 75002 177000 | DEC -512        | FUSS TABLE    |
| 0012 | 75003 177174 | ABS LIBRA-SFLB  |               |
| 0013 | 75004 177257 | ABS LIBRA-SASN  |               |
| 0014 | 75005 177346 | ABS LIBRA-SCHN  |               |
| 0015 | 75006 177000 | ABS LIBRA-SSAV  |               |
| 0016 | 75007 177000 | ABS LIBRA-SSAV  |               |
| 0017 | 75010 177005 | ABS LIBRA-SSSAV | SAVE OVERLAY, |
| 0018 | 75011 177372 | ABS LIBRA-SGET  |               |
| 0019 | 75012 177244 | ABS LIBRA-SAPP  |               |
| 0020 | 75013 177237 | ABS LIBRA-SHEL  |               |
| 0021 | 75014 177516 | ABS LIBRA-SBYE  |               |
| 0022 | 75015 177440 | ABS LIBRA-SKIL  |               |
| 0023 | 75016 177172 | ABS LIBRA-SREN  |               |
| 0024 | 75017 177645 | ABS LIBRA-SNAM  |               |
| 0025 | 75020 177420 | ABS LIBRA-SCAT  |               |
| 0026 | 75021 177420 | ABS LIBRA-SCAT  |               |
| 0027 | 75022 177420 | ABS LIBRA-SCAT  | GROUP         |
| 0028 | 75023 177262 | ABS LIBRA-SDIRS |               |
| 0029 | 75024 177262 | ABS LIBRA-SDIRS |               |
| 0030 | 75025 177423 | ABS LIBRA-SREPS |               |
| 0031 | 75026 177000 | ABS LIBRA-SSTAS |               |
| 0032 | 75027 177000 | ABS LIBRA-SSTAS |               |
| 0033 | 75030 177650 | ABS LIBRA-SDEL  |               |
| 0034 | 75031 177644 | ABS LIBRA-STIM  |               |
| 0035 | 75032 177650 | ABS LIBRA-SPRO  |               |
| 0036 | 75033 177650 | ABS LIBRA-SPRO  |               |
| 0037 | 75034 177000 | ABS LIBRA-SOPE  |               |
| 0038 | 75035 177717 | ABS LIBRA-SLEN  |               |
| 0039 | 75036 177737 | ABS LIBRA-SECH  |               |
| 0040 | 75037 177655 | ABS LIBRA-SMES  | MESSAGE       |
| 0041 | 75040 177720 | ABS LIBRA-SLPR  |               |
| 0042 | 75041 177354 | ABS LIBRA-SPOKS |               |
| 0043 | 75042 177441 | ABS LIBRA-SREP  |               |
| 0044 | 75043 177345 | ABS LIBRA-SDIR  |               |
| 0045 | 75044 177345 | ABS LIBRA-SDIR  |               |
| 0046 | 75045 177000 | ABS LIBRA-SSTA  |               |
| 0047 | 75046 177000 | ABS LIBRA-SSTA  |               |
| 0048 | 75047 177404 | ABS LIBRA-SPOR  |               |
| 0049 | 75050 177663 | ABS LIBRA-SROS  |               |
| 0050 | 75051 177606 | ABS LIBRA-SANN  |               |
| 0051 | 75052 177606 | ABS LIBRA-SRES  |               |
| 0052 | 75053 177603 | ABS LIBRA-SCHA  |               |
| 0053 | 75054 177344 | ABS LIBRA-SSLE  |               |
| 0054 | 75055 177344 | ABS LIBRA-SSLE  | HIBERNATE     |
| 0055 | 75056 177147 | ABS LIBRA-SNEW  |               |
| 0056 | 75057 177225 | ABS LIBRA-SKID  |               |

0057 75060 177464  
0058 75061 177035  
0059 75062 177203  
0060 75063 177000  
0061 75064 177036  
0062 75065 177000  
0063 75066 177000  
0064 75067 177375  
0065 75070 177455  
0066 75071 177314  
0067 75072 177730  
0068 75073 177747  
0069 75074 177716  
0070 75075 177425  
0071 75076 177677  
0072  
0073 75077 177000  
0073 75100 177000  
0073 75101 177000  
0073 75102 177000  
0074 75103

ABS LIBRA-SUNL  
ABS LIBRA-SLOC  
ABS LIBRA-SMUN  
ABS LIBRA-SMLO  
ABS LIBRA-SSMLO  
ABS LIBRA-SCOP  
ABS LIBRA-SBES  
ABS LIBRA-SSAN  
ABS LIBRA-SDES  
ABS LIBRA-SPUR  
ABS LIBRA-SMAG  
ABS LIBRA-SPHO  
ABS LIBRA-SPRI  
ABS LIBRA-SSPE  
ABS LIBRA-SBRE

SANCTIFY

REP 4  
DEC =512  
DEC =512  
DEC =512  
DEC =512

SSLPL EQU \*



|      |       |        |     |                                   |
|------|-------|--------|-----|-----------------------------------|
| 0090 | 75240 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75260 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75300 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75320 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75340 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75360 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75400 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75420 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75440 | 000000 | UCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75460 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75500 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75520 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75540 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75560 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75600 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75620 | 000000 | UCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75640 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75660 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75700 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75720 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75740 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0090 | 75760 | 000000 | OCT | 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 |
| 0091 |       |        | UNS |                                   |

0093\* THE FILES ROUTINE IS USED BY THE BASIC COMPILER TO PROCESS FILES  
 0094\* STATEMENTS DURING PHASE II. THE PURPOSE OF THE ROUTINE IS TO PRO-  
 0095\* VIDE THE COMPILER WITH INFORMATION ABOUT THE REQUESTED FILES. THIS  
 0096\* INFORMATION CONSISTS OF THE FILE'S DISC ADDRESS AND DRUM  
 0097\* ADDRESS (IF ANY), ITS LENGTH, AND ITS RECORD SIZE.  
 0098\* THE COMPILER PASSES PARAMETERS TO THE FILES ROUTINE AS FOLLOWS:

0099\*  
 0100\* FILCT=#5+# OF FILES STATEMENTS  
 0101\* FILTB=>BEGINNING OF TABLE AREA FOR FILE INFO.  
 0102\* SCHLB,I=>FIRST POSSIBLE RETURN ADDRESS.  
 0103\*

0104\* THE CALLING SEQUENCE TO THE FILES ROUTINE IS AS FOLLOWS:

0105\*  
 0106\* JSB SCHLB,I  
 0107\* DEF FILTB  
 0108\* <ERROR EXIT FOR BAD FORMAT IN FILES STATEMENT>  
 0109\* <ERROR EXIT IF A FILE IS UNACCESSIBLE>  
 0110\* <ERROR EXIT IF PROGRAM OVERFLOW>  
 0111\* <NORMAL EXIT>

|       |       |        |              |                                  |
|-------|-------|--------|--------------|----------------------------------|
| 0113  | 75000 |        | ORG LIBRA    |                                  |
| 0114* |       |        |              |                                  |
| 0115  | 75000 | 063602 | LDA FILBP    | GET POINTER TO FILE BUFFER       |
| 0116  | 75001 | 070036 | STA FLBUF    | SAVE BUFFER POINTER.             |
| 0117  | 75002 | 070037 | STA FLBFP    |                                  |
| 0118  | 75003 | 060331 | LDA .-17     | SET COUNTER FOR MAXIMUM NUMBER   |
| 0119  | 75004 | 070040 | STA FLBC1    | OF FILES ALLOWED.                |
| 0120  | 75005 | 061606 | LDA FILCT    | GET COUNT = 5 OF FILES STATEMENT |
| 0121  | 75006 | 040357 | ADA .+5      | GET COUNT                        |
| 0122  | 75007 | 003004 | CMA,INA      | GET NEGATIVE                     |
| 0123  | 75010 | 070046 | STA FLBFC    | SAVE COUNT                       |
| 0124  | 75011 | 060452 | LDA DFILT    | GET POINTER TO FILES             |
| 0125  | 75012 | 070047 | STA FLBFF    | STATEMENT TABLE                  |
| 0126  | 75013 |        | FLBA EQU *   |                                  |
| 0127  | 75013 | 164047 | LDB FLBFF,1  | GET POINTER TO FILES STATEMENTS  |
| 0128  | 75014 | 003400 | CCA          | SET POINTER TO                   |
| 0129  | 75015 | 140001 | ADA 1,1      | LAST CHAR + 1 OF                 |
| 0130  | 75016 | 040001 | ADA 1        | FILES STATEMENT.                 |
| 0131  | 75017 | 001200 | RAL          |                                  |
| 0132  | 75020 | 070042 | STA FLBP     |                                  |
| 0133  | 75021 | 006004 | INB          | INITIALIZE POINTER TO            |
| 0134  | 75022 | 005000 | BLS          |                                  |
| 0135  | 75023 | 074043 | STB FLBCP    | FILES STATEMENT.                 |
| 0136* |       |        |              |                                  |
| 0137  | 75024 | 060347 | FLB1 LDA .+3 | SET FILC2 TO SAY 3 WORDS         |
| 0138  | 75025 | 070041 | STA FLBC2    | ALLOWED.                         |
| 0139  | 75026 | 002400 | CLA          |                                  |
| 0140  | 75027 | 070031 | STA FLBCM    | CLEAR COMMA FLAG.                |
| 0141  | 75030 | 070030 | STA FLBS     |                                  |
| 0142  | 75031 | 017550 | JSB FLBCH    | GET FIRST CHAR.                  |
| 0143  | 75032 | 050416 | CPA .+44B    | TEST FOR DOLLAR SIGN.            |
| 0144  | 75033 | 027055 | JMP FLB2     |                                  |
| 0145  | 75034 | 050424 | CPA .+52B    | TEST FOR SNOWFLAKE               |
| 0146  | 75035 | 027061 | JMP FLB22    |                                  |

|       |       |        |       |             |                                  |
|-------|-------|--------|-------|-------------|----------------------------------|
| 0147  | 75036 | 050412 | FLB5  | CPA ,+40B   | BETTER NOT BE A BLANK,           |
| 0148  | 75037 | 027177 |       | JMP FLB8+1  | FAIL IF IT IS,                   |
| 0149  | 75040 |        | FLB25 | EQU *       |                                  |
| 0150  | 75040 | 040030 |       | ADA FLB\$   | * OR \$ FLAG FIRST CHARACTER     |
| 0151  | 75041 | 001727 | FLB3  | ALF,ALF     | POSITION ON LEFT                 |
| 0152  | 75042 | 170036 |       | STA FLBUF,I | AND STORE IN BUFFER,             |
| 0153  | 75043 | 017550 |       | JSB FLBCH   | GET RIGHT CHARACTER              |
| 0154  | 75044 | 130036 |       | IOR FLBUF,I | AND PACK IN.                     |
| 0155  | 75045 | 170036 |       | STA FLBUF,I |                                  |
| 0156  | 75046 | 034036 |       | ISZ FLBUF   | BUMP BUFFER POINTER,             |
| 0157  | 75047 | 017550 |       | JSB FLBCH   | GET NEXT CHARACTER,              |
| 0158  | 75050 | 034041 |       | ISZ FLBC2   | TEST FOR END OF FILE NAME,       |
| 0159  | 75051 | 027041 |       | JMP FLB3    |                                  |
| 0160* |       |        |       |             |                                  |
| 0161  | 75052 | 050412 |       | CPA ,+40B   | IF END OF FILE NAME, CHAR MUST   |
| 0162  | 75053 | 027100 |       | JMP FLB4    | BE A BLANK.                      |
| 0163  | 75054 | 027177 |       | JMP FLB8+1  | FAIL IF NOT,                     |
| 0164* |       |        |       |             |                                  |
| 0165  | 75055 | 060442 | FLB2  | LDA B200    | IF 1ST CHAR IS \$, SET FILS TO   |
| 0166  | 75056 | 070030 |       | STA FLB\$   | INDICATE LIBRARY FILE.           |
| 0167  | 75057 | 017550 |       | JSB FLBCH   | GET NEXT CHAR,                   |
| 0168  | 75060 | 027036 |       | JMP FLB5    |                                  |
| 0169  | 75061 | 061036 | FLB22 | LDA BIT15   | IF FIRST CHAR IS *, SET FILS TO  |
| 0170  | 75062 | 070030 |       | STA FLB\$   | INDICATE GROUP LIBRARY FILE      |
| 0171  | 75063 | 017550 |       | JSB FLBCH   | GET NEXT CHARACTER               |
| 0172  | 75064 | 050412 |       | CPA ,+40B   | IS IT BLANK?                     |
| 0173  | 75065 | 002401 |       | CLA,RSS     | YES, * IS PLACE HOLDER           |
| 0174  | 75066 | 027040 |       | JMP FLB25   | NO, CONTINUE PROCESSING NAME     |
| 0175  | 75067 | 064343 |       | LDB ,=7     | CLEAR BUFFER                     |
| 0176  | 75070 | 170036 |       | STA FLBUF,I | SINCE NO                         |
| 0177  | 75071 | 034036 |       | ISZ FLBUF   | FILE NOW                         |
| 0178  | 75072 | 006006 |       | INB,SZB     |                                  |
| 0179  | 75073 | 027070 |       | JMP *-3     |                                  |
| 0180  | 75074 | 064444 |       | LDB B400    | RESERVE 256 WORDS                |
| 0181  | 75075 | 174036 |       | STB FLBUF,I | IN CORE FOR FUTURE FILE          |
| 0182  | 75076 | 002004 |       | INA         |                                  |
| 0183  | 75077 | 027101 |       | JMP FLB26   |                                  |
| 0184* |       |        |       |             |                                  |
| 0185  | 75100 | 060357 | FLB4  | LDA ,+5     | LEAVE ROOM FOR STORAGE           |
| 0186  | 75101 |        | FLB26 | EQU *       |                                  |
| 0187  | 75101 | 040036 |       | ADA FLBUF   | OF FILE INFORMATION              |
| 0188  | 75102 | 070036 |       | STA FLBUF   | FROM THE DIRECTORY               |
| 0189  | 75103 | 034040 |       | ISZ FLBC1   | TEST FOR TOO MANY FILES,         |
| 0190  | 75104 | 002001 |       | RSS         |                                  |
| 0191  | 75105 | 027177 |       | JMP FLB8+1  |                                  |
| 0192  | 75106 | 060031 |       | LDA FLBCM   | TEST FOR ANY MORE REQUESTED.     |
| 0193  | 75107 | 002002 |       | SZA         |                                  |
| 0194  | 75110 | 027024 |       | JMP FLB1    | YES IF CUMMA WAS SEEN,           |
| 0195  | 75111 | 034047 |       | ISZ FLBFF   | COUNT UP POINTER INTO TABLE      |
| 0196  | 75112 | 034046 |       | ISZ FLBFC   | CHECK COUNTER                    |
| 0197  | 75113 | 027013 |       | JMP FLBA    | PROCESS ANOTHER FILES STATEMENT. |
| 0198* |       |        |       |             |                                  |
| 0199  | 75114 | 060040 |       | LDA FLBC1   | SET FILC1 TO EQUAL               |
| 0200  | 75115 | 040373 |       | ADA ,+17    | =# OF FILES REQUESTED            |
| 0201  | 75116 | 003004 |       | CMA,INA     |                                  |



|       |       |        |       |                 |                                 |
|-------|-------|--------|-------|-----------------|---------------------------------|
| 0202  | 75117 | 070040 |       | STA FLBC1       |                                 |
| 0203  | 75120 | 070041 |       | STA FLBC2       |                                 |
| 0204* |       |        |       |                 |                                 |
| 0205  | 75121 | 036435 |       | ISZ SCHLQ       | BUMP RETURN ADDRESS SINCE WE'VE |
| 0206  | 75122 | 060037 |       | LDA FLBFP       | NOW CHECKED FOR TYPE I ERRORS,  |
| 0207  | 75123 | 070036 |       | STA FLBUF       | SET POINTER TO BUFFER AGAIN.    |
| 0208* |       |        |       |                 |                                 |
| 0209  | 75124 | 060273 |       | LDA MLINK+1     | GET USER ID AND SAVE IT.        |
| 0210  | 75125 | 040341 |       | ADA ,+?ID=?LINK |                                 |
| 0211  | 75126 | 160000 |       | LDA 0,I         |                                 |
| 0212  | 75127 | 070044 |       | STA FLBID       |                                 |
| 0213* |       |        |       |                 |                                 |
| 0214  | 75130 | 164036 | FLB6  | LDB FLBUF,I     | GET FIRST WORD OF FILE NAME.    |
| 0215  | 75131 | 006003 |       | SZB,RSS         | IS THIS A PLACE HOLDER          |
| 0216  | 75132 | 027143 |       | JMP FLB27       | YES, SKIP DIRECTORY LOOKUP      |
| 0217  | 75133 | 060044 |       | LDA FLBID       |                                 |
| 0218  | 75134 | 006020 |       | SSB             | IF BIT 15 OF FIRST WORD IS SET, |
| 0219  | 75135 | 060612 |       | LDA A000        | PERFORM SEARCH USING A000.      |
| 0220  | 75136 | 005727 |       | BLF,BLF         | IF BIT 7 OF                     |
| 0221  | 75137 | 006020 |       | SSB             | FIRST WORD IS SET               |
| 0222  | 75140 | 027147 |       | JMP FLB24       | SET UP FOR GROUP LIB SEARCH     |
| 0223  | 75141 | 005727 |       | BLF,BLF         | ELSE RESTORE FIRST WORD         |
| 0224  | 75142 | 027165 |       | JMP FLB23       |                                 |
| 0225* |       |        |       |                 |                                 |
| 0226  | 75143 |        | FLB27 | EQU *           |                                 |
| 0227  | 75143 | 064036 |       | LDB FLBUF       | BUMP POINTER                    |
| 0228  | 75144 | 044362 |       | ADB ,+8         | TO NEXT TEMP                    |
| 0229  | 75145 | 074036 |       | STB FLBUF       | BUFFER ENTRY                    |
| 0230  | 75146 | 027262 |       | JMP FLB28       |                                 |
| 0231* |       |        |       |                 |                                 |
| 0232  | 75147 | 005665 | FLB24 | ELB,CLE,ERB     | CLEAR BIT 7                     |
| 0233  | 75150 | 005727 |       | BLF,BLF         | AND                             |
| 0234  | 75151 | 174036 |       | STB FLBUF,I     | RESTORE TO TABLE                |
| 0235  | 75152 | 010602 |       | AND B1777       | ISOLATE NUMERICAL PART OF ID    |
| 0236  | 75153 | 006400 |       | CLB             |                                 |
| 0237  | 75154 | 100400 |       | DIV .100        | GET                             |
|       | 75155 | 000437 |       |                 |                                 |
| 0238  | 75156 | 100200 |       | MPY .100        |                                 |
|       | 75157 | 000437 |       |                 |                                 |
| 0239  | 75160 | 064000 |       | LDB A           | LIBRARIAN                       |
| 0240  | 75161 | 060732 |       | LDA M2000       |                                 |
| 0241  | 75162 | 010044 |       | AND FLBID       | USER                            |
| 0242  | 75163 | 030001 |       | IOR B           | NUMBER                          |
| 0243  | 75164 | 164036 |       | LDB FLBUF,I     | RESTORE FIRST WORD OF FILE NAME |
| 0244  | 75165 | 104400 | FLB23 | DST LTEMP       |                                 |
|       | 75166 | 000030 |       |                 |                                 |
| 0245  | 75167 | 034036 |       | ISZ FLBUF       | GET NEXT 2 WORDS ALSO.          |
| 0246  | 75170 | 104200 |       | OLD FLBUF,1     |                                 |
|       | 75171 | 100036 |       |                 |                                 |
| 0247  | 75172 | 104400 |       | DST LTEMP+2     |                                 |
|       | 75173 | 000032 |       |                 |                                 |
| 0248* |       |        |       |                 |                                 |
| 0249  | 75174 | 116005 |       | JSB DLOKP,I     | SEARCH FOR FILE                 |
| 0250  | 75175 | 027203 |       | JMP FLB7        | FOUND IT.                       |
| 0251* |       |        |       |                 |                                 |

|       |       |        |      |                                     |                                  |
|-------|-------|--------|------|-------------------------------------|----------------------------------|
| 0252  | 75176 | 016047 | FLB8 | JSB ROPRG                           | IF NOT FOUND, RETURN TO          |
| 0253  | 75177 | 002400 |      | CLA                                 |                                  |
| 0254  | 75200 | 172006 |      | STA DIRWP,I                         | NO DIRECTORY BLOCK IN CORE NOW   |
| 0255  | 75201 | 015322 |      | JSB DCMPL                           |                                  |
| 0256  | 75202 | 026510 |      | JMP SCHBL                           |                                  |
| 0257* |       |        |      |                                     |                                  |
| 0258  | 75203 |        | FLB7 | EQU *                               |                                  |
| 0259  | 75203 | 060034 |      | LDA LTEMP+4                         | LOAD POINTER TO DIREC ENTRY,     |
| 0260  | 75204 | 040360 |      | ADA ,+6                             | POINTER TO DRUM ADDRESS          |
| 0261  | 75205 | 160000 |      | LDA A,I                             | LOAD CURRENT DRUM ADDRESS        |
| 0262  | 75206 | 172006 |      | STA DIRWP,I                         | SET DIRWD FOR DLOOK              |
| 0263  | 75207 | 064035 |      | LDB LTEMP+5                         | TEST TO SEE                      |
| 0264  | 75210 | 044364 |      | ADB ,+2                             | IF THIS IS                       |
| 0265  | 75211 | 160001 |      | LDA 1,I                             | REALLY A                         |
| 0266  | 75212 | 002021 |      | SSA,RSS                             | FILE,                            |
| 0267  | 75213 | 027176 |      | JMP FLB8                            | FAIL IF NOT,                     |
| 0268  | 75214 | 044361 |      | ADB , -1                            | TEST FOR PROTECTED,              |
| 0269  | 75215 | 160001 |      | LDA 1,I                             |                                  |
| 0270  | 75216 | 002021 |      | SSA,RSS                             |                                  |
| 0271  | 75217 | 027224 |      | JMP FLB9                            | NOT PROTECTED,                   |
| 0272  | 75220 | 060030 |      | LDA LTEMP                           | IF PRO., TEST FOR FILE OWNER     |
| 0273  | 75221 | 050044 |      | CPA FLBID                           |                                  |
| 0274  | 75222 | 003777 |      | CCA,SEZ,CCE,SSA,SLA,INA,SZA,RSS JRW |                                  |
| 0275  | 75223 | 027176 |      | JMP FLB8                            | PROTECTED FILE ACCESS--FAIL,     |
| 0276* |       |        |      |                                     |                                  |
| 0277  | 75224 | 034036 | FLB9 | ISZ FLBUF                           |                                  |
| 0278  | 75225 | 034036 |      | ISZ FLBUF                           |                                  |
| 0279  | 75226 | 044360 |      | ADB ,+6                             | GET DRUM                         |
| 0280  | 75227 | 160001 |      | LDA B,I                             | ADDRESS AND INSERT               |
| 0281  | 75230 | 170036 |      | STA FLBUF,I                         | IN BUFFER ENTRY WORD 4           |
| 0282  | 75231 | 006004 |      | INB                                 | BUMP DIRECT, POINTER TO DISC ADD |
| 0283  | 75232 | 034036 |      | ISZ FLBUF                           | BUMP BUFF POINTER TO WORD 5      |
| 0284  | 75233 | 104200 |      | DLD B,I                             | GET DISC ADDRESS AND             |
|       | 75234 | 100001 |      |                                     |                                  |
| 0285  | 75235 | 104400 |      | DST FLBUF,I                         | PUT IT IN THE BUFFER             |
|       | 75236 | 100036 |      |                                     |                                  |
| 0286  | 75237 | 064035 |      | LDB LTEMP+5                         | GET DIRECTORY ENTRY POINTER      |
| 0287  | 75240 | 044365 |      | ADB ,+11                            | ADJUST TO FILE LENGTH WORD       |
| 0288  | 75241 | 034036 |      | ISZ FLBUF                           | BUMP BUFFER POINTER              |
| 0289  | 75242 | 034036 |      | ISZ FLBUF                           | TO LENGTH SLOT                   |
| 0290  | 75243 | 060044 |      | LDA FLBID                           | TEST FOR USER REFERENCE          |
| 0291  | 75244 | 050030 |      | CPA LTEMP                           | TO PUBLIC OR GROUP FILE          |
| 0292  | 75245 | 002401 |      | CLA,RSS                             | NO,CLEAR BIT 15                  |
| 0293  | 75246 | 061036 |      | LDA BIT15                           | YES, SET BIT 15                  |
| 0294  | 75247 | 130001 |      | IOR B,I                             | OR IN FILE LENGTH                |
| 0295  | 75250 | 170036 |      | STA FLBUF,I                         | STORE IT IN BUFFER               |
| 0296  | 75251 | 034036 |      | ISZ FLBUF                           | BUMP POINTER TO RECORD SIZE SLOT |
| 0297  | 75252 | 044343 |      | ADB , -7                            | SAME FOR DIRECTORY POINTER       |
| 0298  | 75253 | 160001 |      | LDA B,I                             | TRANSFER RECORD SIZE             |
| 0299  | 75254 | 170036 |      | STA FLBUF,I                         | TO BUFFER                        |
| 0300  | 75255 | 034036 |      | ISZ FLBUF                           | BUMP POINTER TO NEXT ENTRY       |
| 0301  | 75256 | 016076 |      | JSB DATE                            | GET DATE AND SET                 |
| 0302  | 75257 | 064035 |      | LDB LTEMP+5                         | INTO PURGE (LAST                 |
| 0303  | 75260 | 044367 |      | ADB ,+5                             | REFERENCED)                      |
| 0304  | 75261 | 170001 |      | SIA B,I                             | DATE,                            |

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0305*
0306 75262 FLB28 EQU *
0307 75262 034040 ISZ FLBC1 TEST FOR ANY MORE FILES.
0308 75263 027130 JMP FLB6
0309*
0310* WE HAVE FOUND ALL THE FILES. WE NOW HAVE TO UPDATE THE FUSS TABLE.
0311* FIRST CHECK TO SEE IF THE PROGRAM HAS ROOM ENOUGH FOR THE TABLE.
0312*
0313 75264 162006 LDA DIRWP,I WRITE DIRECTORY TO DRUM
0314 75265 002003 SZA,RSS IF ANY IS IN CORE
0315 75266 027272 JMP FLB29
0316 75267 064562 LDB LIBD OUTGOING CORE ADDRESS.
0317 75270 016231 JSB DRUML
0318 75271 127603 JMP DLK9P,I CAN'T, GO ATTEMPT SALVAGE
0319 75272 FLB29 EQU *
0320 75272 036435 ISZ SCHLQ BUMP TO NEXT ERROR EXIT,
0321 75273 060041 LDA FLBC2 GET # OF FILES.
0322 75274 070040 STA FLBC1
0323 75275 003004 CMA,INA
0324 75276 100200 MPY ,+FTEL COMPUTE NEW VALUE OF PBPTR
 75277 000371
0325 75300 040056 ADA PBPTR
0326 75301 003000 CMA
0327 75302 040462 ADA LWAUS TEST FOR OVERFLOW.
0328 75303 002020 SSA
0329 75304 027176 JMP FLB8 FAIL--PROGRAM TOO LARGE.
0330*
0331 75305 036435 ISZ SCHLQ BUMP TO NORMAL RETURN ADDRESS.
0332 75306 060732 LDA M2000 INPUT FUSS TABLE
0333 75307 070072 STA WORD
0334 75310 160540 LDA FUSS,I
0335 75311 064566 LDB LIBDI
0336 75312 016231 JSB DRUML
0337 75313 116015 JSB SICKP,I IT'S STUCK ON THE DRUM
0338*
0339 75314 060273 LDA MLINK+1 DETERMINE USER #.
0340 75315 040336 ADA ,+?TNUM=?LINK
0341 75316 160000 LDA 0,I USER # IN BITS 12-8
0342 75317 001727 ALF,ALF RIGHT JUSTIFY USER #
0343 75320 001722 ALF,RAL MULTIPLY USER # BY 32 AND
0344 75321 040562 ADA LIBD ADD LIBD TO POINT AT USER'S
0345 75322 070045 STA FLBFS SECTION OF FUSS.
0346 75323 070030 STA LTEMP
0347 75324 064317 LDB M32 ZERO OUT USER'S SECTION
0348 75325 002400 CLA
0349 75326 170030 STA LTEMP,I
0350 75327 034030 ISZ LTEMP
0351 75330 006006 INB,SZB
0352 75331 027326 JMP *-3
0353*
0354* NOW CHECK TO SEE IF ANY OF THE REQUESTED FILES ARE BEING USED BY
0355* ANOTHER USER. IF THEY ARE, WE ALLOW ONLY FILE READS BUT NO WRITES.
0356* IF THE USER IS AN 'A', WE SKIP THE TEST.
0357*
0358 75332 060044 LDA FLBID

```

|       |                                                              |        |       |             |                                |
|-------|--------------------------------------------------------------|--------|-------|-------------|--------------------------------|
| 0359  | 75333                                                        | 010732 |       | AND M2000   |                                |
| 0360  | 75334                                                        | 050612 |       | CPA A000    |                                |
| 0361  | 75335                                                        | 027403 |       | JMP FLB10   |                                |
| 0362* |                                                              |        |       |             |                                |
| 0363  | 75336                                                        | 060037 |       | LDA FLBFP   | SET BUFFER POINTER.            |
| 0364  | 75337                                                        |        | FLB11 | EQU *       |                                |
| 0365  | 75337                                                        | 070036 |       | STA FLBUF   | ADDRESS.                       |
| 0366* |                                                              |        |       |             |                                |
| 0367  | 75340                                                        | 164036 |       | LDB FLBUF,I | GET FIRST WORD OF NAME         |
| 0368  | 75341                                                        | 006003 |       | SZB,RSS     | PLACE HOLDER?                  |
| 0369  | 75342                                                        | 027366 |       | JMP FLB30   | YES                            |
| 0370  | 75343                                                        | 040356 |       | ADA ,+4     | NO, BUMP POINTER TO            |
| 0371  | 75344                                                        | 070036 |       | STA FLBUF   | DISC ADDRESS                   |
| 0372* |                                                              |        |       |             |                                |
| 0373  | 75345                                                        | 064562 |       | LDB LIBD    | PUT ADDRESS OF FUSS            |
| 0374  | 75346                                                        | 077604 |       | STB FUSCH   | INTO FUSS SEARCH POINTER       |
| 0375  | 75347                                                        | 104200 |       | OLD FLBUF,I | GET DISC ADDRESS               |
|       |                                                              | 75350  |       |             |                                |
| 0376  | 75351                                                        | 153604 | FLB14 | CPA FUSCH,I | UPPER WORDS EQUAL?             |
| 0377  | 75352                                                        | 027362 |       | JMP FLB18   | YES, GO COMPARE LOWER          |
| 0378  | 75353                                                        | 037604 |       | ISZ FUSCH   | NO, BUMP                       |
| 0379  | 75354                                                        | 037604 | FLB19 | ISZ FUSCH   | FUSS POINTER                   |
| 0380  | 75355                                                        | 060536 |       | LDA L1024   | GET FUSS END ADDRESS           |
| 0381  | 75356                                                        | 053604 |       | CPA FUSCH   | HAVE WE EXHAUSTED FUSS?        |
| 0382  | 75357                                                        | 027376 |       | JMP FLB13   | YES, GO CHECK NEXT FILE        |
| 0383  | 75360                                                        | 160036 |       | LDA FLBUF,I | NO, RESTORE UPPER ADDRESS WORD |
| 0384  | 75361                                                        | 027351 |       | JMP FLB14   | AND GO COMPARE AGAIN           |
| 0385  | 75362                                                        | 037604 | FLB18 | ISZ FUSCH   | BUMP TO LOW ADDRESS WORD       |
| 0386  | 75363                                                        | 157604 |       | CPB FUSCH,I | IS LOW ADDRESS ALSO EQUAL?     |
| 0387  | 75364                                                        | 027370 |       | JMP FLB12   | YES, GO FLAG READ ONLY         |
| 0388  | 75365                                                        | 027354 |       | JMP FLB19   | NO, GO CHECK NEXT FILE+E       |
| 0389* |                                                              |        |       |             |                                |
| 0390  | 75366                                                        |        | FLB30 | EQU *       |                                |
| 0391  | 75366                                                        | 060360 |       | LDA ,+6     |                                |
| 0392  | 75367                                                        | 027377 |       | JMP FLB13+1 |                                |
| 0393* |                                                              |        |       |             |                                |
| 0394  | 75370                                                        | 034036 | FLB12 | ISZ FLBUF   | BUMP BUFFER POINTER            |
| 0395  | 75371                                                        | 034036 |       | ISZ FLBUF   | TO LENGTH WORD                 |
| 0396  | 75372                                                        | 160036 |       | LDA FLBUF,I | SET DISC LENGTH TO SAY         |
| 0397  | 75373                                                        | 031036 |       | IOR BIT15   | READ ONLY.                     |
| 0398  | 75374                                                        | 170036 |       | STA FLBUF,I |                                |
| 0399* |                                                              |        |       |             |                                |
| 0400  | 75375                                                        | 002401 |       | CLA,RSS     |                                |
| 0401  | 75376                                                        | 060354 | FLB13 | LDA ,+2     |                                |
| 0402  | 75377                                                        | 040354 |       | ADA ,+2     | ADJUST BUFFER POINTER          |
| 0403  | 75400                                                        | 040036 |       | ADA FLBUF   | TO NEXT FILE NAME              |
| 0404  | 75401                                                        | 034040 |       | ISZ FLBC1   | TEST FOR ANY MORE              |
| 0405  | 75402                                                        | 027337 |       | JMP FLB11   |                                |
| 0406* |                                                              |        |       |             |                                |
| 0407* | NOW UPDATE FUSS BY PLACING THE DISC ADDRESSES JUST REQUESTED |        |       |             |                                |
| 0408* | INTO THE USER'S FUSS AREA,                                   |        |       |             |                                |
| 0409* |                                                              |        |       |             |                                |
| 0410  | 75403                                                        | 060041 | FLB10 | LDA FLBC2   | SET COUNTER.                   |
| 0411  | 75404                                                        | 070040 |       | STA FLBC1   |                                |
| 0412  | 75405                                                        | 060037 |       | LDA FLBFP   | GET POINTER TO FIRST ONE.      |

|       |              |             |                                 |
|-------|--------------|-------------|---------------------------------|
| 0413  | 75406        | FLB15 EQU * |                                 |
| 0414  | 75406 040360 | ADA .+6     | GET FILE LENGTH                 |
| 0415  | 75407 164000 | LDB 0,I     |                                 |
| 0416  | 75410 040350 | ADA .-2     | A POINTS TO HIGH DISC ADDRESS   |
| 0417  | 75411 006021 | SSB,RSS     | IF NOT READ ONLY,               |
| 0418  | 75412 006401 | CLB,RSS     | LEAVE BIT 15 0,                 |
| 0419  | 75413 065036 | LDB BIT15   | ELSE SET IT.                    |
| 0420  | 75414 144000 | ADB 0,I     |                                 |
| 0421  | 75415 174045 | STB FLBFS,I | AND PUT INTO TABLE.             |
| 0422  | 75416 034045 | ISZ FLBFS   | BUMP                            |
| 0423  | 75417 002004 | INA         | POINTERS AND                    |
| 0424  | 75420 164000 | LDB A,I     | STORE LOW                       |
| 0425  | 75421 174045 | STB FLBFS,I | DISC ADDRESS                    |
| 0426  | 75422 034045 | ISZ FLBFS   | REBUMP                          |
| 0427  | 75423 040355 | ADA .+3     | POINTERS                        |
| 0428  | 75424 034040 | ISZ FLBC1   | TEST FOR DONE.                  |
| 0429  | 75425 027406 | JMP FLB15   |                                 |
| 0430* |              |             |                                 |
| 0431  | 75426 160540 | LDA FUSS,I  | WRITE FUSS TABLE BACK TO        |
| 0432  | 75427 064562 | LDB LIHD    | DRUM                            |
| 0433  | 75430 016231 | JSB DRUML   |                                 |
| 0434  | 75431 116015 | JSB SICKP,I | IT'S STUCK IN CORE              |
| 0435* |              |             |                                 |
| 0436  | 75432 016047 | JSB RDPRG   | READ IN USER'S PROGRAM AGAIN.   |
| 0437  | 75433 061504 | LDA FILTB   |                                 |
| 0438  | 75434 071576 | STA VALTB   |                                 |
| 0439  | 75435 064037 | LDB FLBFP   | GET BUFFER POINTER              |
| 0440  | 75436        | FLB16 EQU * |                                 |
| 0441  | 75436 044360 | ADB .+6     | BUMP TO LENGTH WORD             |
| 0442  | 75437 104200 | OLD B,I     | GET LENGTH WORD AND RECORD SIZE |
|       | 75440 100001 |             |                                 |
| 0443  | 75441 104400 | DST VALTB,I | STORE THEM IN FILE TABLE        |
|       | 75442 101576 |             |                                 |
| 0444  | 75443 035576 | ISZ VALTB   | BUMP FILE                       |
| 0445  | 75444 035576 | ISZ VALTB   | TABLE POINTER                   |
| 0446  | 75445 001665 | ELA,CLE,ERA | REMOVE BIT 15 FROM LENGTH       |
| 0447  | 75446 040350 | ADA .-2     | COMPUTE RELATIVE                |
| 0448  | 75447 002016 | SLA,INA,SZA | ADDRESS OF LAST                 |
| 0449  | 75450 040351 | ADA .-1     | LOGICAL RECORD                  |
| 0450  | 75451 007400 | CCB         | SET FIRST DISC ADDRESS WORD     |
| 0451  | 75452 175576 | STB VALTB,I | TO ALL ONES                     |
| 0452  | 75453 064355 | LDB .+3     | GET                             |
| 0453  | 75454 044037 | ADB FLBFP   | DRUM                            |
| 0454  | 75455 164001 | LDB B,I     | ADDRESS                         |
| 0455  | 75456 006003 | SZB,RSS     | IS FILE SANCTIFIED?             |
| 0456  | 75457 027474 | JMP FLB20   | NO, FILL DOUBLE WORDS           |
| 0457  | 75460 035576 | ISZ VALTB   | YES, BUMP FILE TABLE POINTER    |
| 0458  | 75461 001020 | ALS,ALS     | 1 RECORD = 4 SECTORS            |
| 0459  | 75462 040001 | ADA B       | COMPUTE DRUM ADDRESS            |
| 0460* |              |             | OF LAST LOGICAL RECORD          |
| 0461  | 75463 171576 | STA VALTB,I | INSERT INTO FILE TABLE          |
| 0462  | 75464 060355 | LDA .+3     |                                 |
| 0463  | 75465 041576 | ADA VALTB   |                                 |
| 0464  | 75466 071576 | STA VALTB   | INSERT "SANCTIFIED" FLAG        |
| 0465  | 75467 003400 | CCA         | INTO HIGH WORD OF               |

|       |                                                    |        |                 |                                  |
|-------|----------------------------------------------------|--------|-----------------|----------------------------------|
| 0466  | 75470                                              | 171576 | STA VALTB,I     | BASE ADDRESS                     |
| 0467  | 75471                                              | 035576 | ISZ VALTB       | INSERT BASE DRUM ADDRESS         |
| 0468  | 75472                                              | 175576 | STB VALTB,I     | INTO LOW WORD                    |
| 0469  | 75473                                              | 027521 | JMP FLB21       | GO PREPARE FOR NEXT FILE         |
| 0470  | 75474                                              | 064037 | FLB20 LDB FLBFP | NOT SANCTIFIED; GET ADDRESS      |
| 0471  | 75475                                              | 044356 | ADB .+4         | OF HIGH DISC ADDRESS             |
| 0472  | 75476                                              | 077604 | STB FUSCH       | AND SAVE IT                      |
| 0473  | 75477                                              | 006004 | INB             | GET POINTER TO LOW DISC ADD WD.  |
| 0474  | 75500                                              | 000040 | CLE             |                                  |
| 0475  | 75501                                              | 140001 | ADA B,I         | ADD RELATIVE LAST RECORD ADDRESS |
| 0476  | 75502                                              | 067604 | LDB FUSCH       | B GETS HIGH DISC                 |
| 0477  | 75503                                              | 164001 | LDB B,I         | ADDRESS WORD                     |
| 0478  | 75504                                              | 002040 | SEZ             | IF LOW ADD OVERFLEW,             |
| 0479  | 75505                                              | 006004 | INB             | ADD 1 TO HIGH PART               |
| 0480  | 75506                                              | 101100 | SWP             | STORE BOTH WORDS                 |
| 0481  | 75507                                              | 104400 | DST VALTB,I     | OF DISC ADDRESS                  |
|       | 75510                                              | 101576 |                 |                                  |
| 0482  | 75511                                              | 060356 | LDA .+4         |                                  |
| 0483  | 75512                                              | 041576 | ADA VALTB       |                                  |
| 0484  | 75513                                              | 071576 | STA VALTB       |                                  |
| 0485  | 75514                                              | 104200 | DL0 FUSCH,I     | BASE DISC ADDRESS                |
|       | 75515                                              | 175604 |                 |                                  |
| 0486  | 75516                                              | 104400 | DST VALTB,I     | INTO FILE TABLE                  |
|       | 75517                                              | 101576 |                 |                                  |
| 0487  | 75520                                              | 035576 | ISZ VALTB       | ADJUST POINTER                   |
| 0488  | 75521                                              | 061576 | FLB21 LDA VALTB | BUMP POINTERS.                   |
| 0489  | 75522                                              | 040356 | ADA .+4         |                                  |
| 0490  | 75523                                              | 071576 | STA VALTB       |                                  |
| 0491  | 75524                                              | 164037 | LDB FLBFP,I     | MOVE                             |
| 0492  | 75525                                              | 175576 | STB VALTB,I     |                                  |
| 0493  | 75526                                              | 034037 | ISZ FLBFP       | FILE                             |
| 0494  | 75527                                              | 035576 | ISZ VALTB       |                                  |
| 0495  | 75530                                              | 104200 | DL0 FLBFP,I     | NAME                             |
|       | 75531                                              | 100037 |                 |                                  |
| 0496  | 75532                                              | 104400 | DST VALTB,I     |                                  |
|       | 75533                                              | 101576 |                 |                                  |
| 0497  | 75534                                              | 061576 | LDA VALTB       | INTO                             |
| 0498  | 75535                                              | 040355 | ADA .+FTEL-12   |                                  |
| 0499  | 75536                                              | 071576 | STA VALTB       | TABLE                            |
| 0500  | 75537                                              | 064037 | LDB FLBFP       |                                  |
| 0501  | 75540                                              | 044361 | ADB .+7         |                                  |
| 0502  | 75541                                              | 074037 | STB FLBFP       |                                  |
| 0503  | 75542                                              | 034041 | ISZ FLBC2       | TEST FOR ANY MORE.               |
| 0504  | 75543                                              | 027436 | JMP FLB16       |                                  |
| 0505  | 75544                                              | 070056 | STA PBPTR       | ADVANCE PBPTR TO                 |
| 0506* |                                                    |        |                 | FIRST UNUSED WORD                |
| 0507* |                                                    |        |                 |                                  |
| 0508  | 75545                                              | 002400 | CLA             |                                  |
| 0509  | 75546                                              | 172006 | STA DIRWP,I     | NO DIRECTORY BLOCK IN CORE NOW   |
| 0510  | 75547                                              | 026510 | JMP SCHBL       |                                  |
| 0511* |                                                    |        |                 |                                  |
| 0512* | FLBCH GETS THE NEXT CHARACTER OUT OF THE FILES     |        |                 |                                  |
| 0513* | STATEMENT. IF FLBCM=1, IT ASSUMES A COMMA HAS BEEN |        |                 |                                  |
| 0514* | SEEN AND RETURNS A BLANK. OTHERWISE IF THE CHARAC- |        |                 |                                  |
| 0515* | TER IS A COMMA, IT SETS FLBCM AND RETURNS A BLANK. |        |                 |                                  |

0516\* IT ALSO RETURNS BLANKS AT THE END OF THE CODE.

0517\*

|       |       |        |       |              |                           |
|-------|-------|--------|-------|--------------|---------------------------|
| 0518  | 75550 | 000000 | FLBCH | NOP          |                           |
| 0519  | 75551 | 060412 |       | LDA .+40B    | RETURN BLANK IF           |
| 0520  | 75552 | 064031 |       | LDB FLBCM    | FLBCM IS SET.             |
| 0521  | 75553 | 006002 |       | SZB          |                           |
| 0522  | 75554 | 127550 |       | JMP FLBCH,I  |                           |
| 0523  | 75555 | 064043 |       | LDB FLBCP    | GET CHAR. POINTER.        |
| 0524  | 75556 | 006004 |       | INB          | OTHERWISE BUMP            |
| 0525  | 75557 | 054042 |       | CPB FLBP     | IF END OF STATEMENT,      |
| 0526  | 75560 | 127550 |       | JMP FLBCH,I  | RETURN A BLANK.           |
| 0527  | 75561 | 074043 |       | STB FLBCP    | POINTER.                  |
| 0528  | 75562 | 004065 |       | CLE,ERB      | GET NEXT CHAR.            |
| 0529  | 75563 | 160001 |       | LDA 1,I      |                           |
| 0530  | 75564 | 002041 |       | SEZ,RSS      |                           |
| 0531  | 75565 | 001727 |       | ALF,ALF      | ROTATE IF NECESSARY.      |
| 0532  | 75566 | 010441 |       | AND B177     | MASK.                     |
| 0533  | 75567 | 002003 |       | SZA,RSS      | SKIP 0'S.                 |
| 0534  | 75570 | 027551 |       | JMP FLBCH+1  |                           |
| 0535  | 75571 | 040766 |       | ADA M96      |                           |
| 0536  | 75572 | 002021 |       | SSA,RSS      | LOWER CASE?               |
| 0537  | 75573 | 040317 |       | ADA M32      | YES, MAKE INTO UPPER CASE |
| 0538  | 75574 | 040730 |       | ADA .140     | NO                        |
| 0539  | 75575 | 050426 |       | CPA .+54B    | TEST FOR COMMA.           |
| 0540  | 75576 | 002001 |       | RSS          |                           |
| 0541  | 75577 | 127550 |       | JMP FLBCH,I  | NOT A COMMA.              |
| 0542  | 75600 | 034031 |       | ISZ FLBCM    | IF COMMA, SET FLAG AND GO |
| 0543  | 75601 | 027551 |       | JMP FLBCH+1  | RETURN A BLANK.           |
| 0544* |       |        |       |              |                           |
| 0545  | 00030 |        | FLBS  | EQU LTEMP    |                           |
| 0546  | 00031 |        | FLBCM | EQU LTEMP+1  |                           |
| 0547  | 00036 |        | FLBUF | EQU LTEMP+6  |                           |
| 0548  | 00037 |        | FLBFP | EQU LTEMP+7  |                           |
| 0549  | 00040 |        | FLBC1 | EQU LTEMP+8  |                           |
| 0550  | 00041 |        | FLBC2 | EQU LTEMP+9  |                           |
| 0551  | 00042 |        | FLBP  | EQU LTEMP+10 |                           |
| 0552  | 00043 |        | FLBCP | EQU LTEMP+11 |                           |
| 0553  | 00044 |        | FLBID | EQU LTEMP+12 |                           |
| 0554  | 00045 |        | FLBFS | EQU LTEMP+13 |                           |
| 0555  | 00046 |        | FLBFC | EQU LTEMP+14 |                           |
| 0556  | 00047 |        | FLBFF | EQU LTEMP+15 |                           |
| 0557  | 75602 | 073571 | FILBP | DEF FILBF    |                           |
| 0558  | 75603 | 031173 | DLK9P | DEF DLOK9    |                           |
| 0559  | 75604 |        | SFLB  | EQU *        |                           |
| 0560  | 75604 | 000000 | FUSCH | BSS 1        | FUSS TABLE SEARCH POINTER |

0003\* THE ASSIGN ROUTINE IS USED BY THE BASIC STATEMENT EXECUTION PROCES  
 0004\* (PHASE III) TO PROCESS AN ASSIGN STATEMENT. THE PURPOSE OF THE ROU  
 0005\* TINE IS TO REPLACE THE INFORMATION CURRENTLY IN THE FILE CONTROL  
 0006\* BLOCK REFERENCED BY A SPECIFIED ORDINAL NUMBER WITH INFORMATION AB  
 0007\* THE NEW FILE BEING ASSIGNED TO THAT ORDINAL NUMBER, INPUT PARAMETE  
 0008\* TO THE ASSIGN ROUTINE ARE AS FOLLOWS:

0009\*  
 0010\* ASBFP: > TO BUFFER CONTAINING FILE NAME  
 0011\* ASNID: 0= USER LIBRARY, 1= SYSTEM LIBRARY, 2= GROUP LIBRARY  
 0012\* ORDNO: SPECIFIED ORDINAL NUMBER  
 0013\* FILTB: => FILE TABLE

0014\*  
 0015\* THE CALLING SEQUENCE TO THE ASSIGN ROUTINE IS AS FOLLOWS:

0016\*  
 0017\* JSB SCHLB,I  
 0018\* DEF ASNIB  
 0019\* <EXIT FOR NON-EXISTENT FILE>  
 0020\* <EXIT FOR 'READ-ONLY' (GROUP OR SYSTEM LIB.) FILE>  
 0021\* <EXIT FOR 'READ-ONLY' (IN USE) FILE>  
 0022\* <NORMAL EXIT>

|       |       |        |                 |                            |
|-------|-------|--------|-----------------|----------------------------|
| 0023  | 75000 |        | ORG LIBRA       |                            |
| 0024  | 75000 | 060273 | LDA MLINK+1     | GET USER ID AND STORE      |
| 0025  | 75001 | 040341 | ADA .+?ID=?LINK |                            |
| 0026  | 75002 | 160000 | LDA 0,I         |                            |
| 0027  | 75003 | 070041 | STA ASNID       |                            |
| 0028* |       |        |                 |                            |
| 0029  | 75004 | 013500 | AND HI6         | LOSE NUMERICS              |
| 0030  | 75005 | 070030 | STA LTEMP       | SAVE                       |
| 0031  | 75006 | 060041 | LDA ASNID       | GET THE ID BACK            |
| 0032  | 75007 | 020030 | XOR LTEMP       | LOSE THE TOP               |
| 0033  | 75010 | 006400 | CLB             | SET UP FOR DIVISION        |
| 0034  | 75011 | 100400 | DIV .100        | PRODUCE GROUP              |
|       | 75012 | 000437 |                 |                            |
| 0035  | 75013 | 100200 | MPY .100        | LIBRARY ID                 |
|       | 75014 | 000437 |                 |                            |
| 0036  | 75015 | 030030 | IOR LTEMP       | AND SAVE                   |
| 0037  | 75016 | 070030 | STA LTEMP       | IN LTEMP                   |
| 0038  | 75017 | 063512 | LDA ASBFB       | INITIALIZE INFORMATION     |
| 0039  | 75020 | 073510 | STA ASBUF       | BUFFER POINTER             |
| 0040* |       |        |                 |                            |
| 0041  | 75021 | 064041 | ASN1 LDB ASNID  | GET USER ID                |
| 0042  | 75022 | 061470 | LDA ASTYP       | GET LIBRARY INDICATOR      |
| 0043  | 75023 | 050353 | CPA .+1         | SYSTEM LIBRARY?            |
| 0044  | 75024 | 064612 | LDB A000        | YES                        |
| 0045  | 75025 | 050354 | CPA .+2         | GROUP LIBRARY?             |
| 0046  | 75026 | 064030 | LDB LTEMP       | YES                        |
| 0047  | 75027 | 177510 | STB ASBUF,I     | STORE CORRECT ID IN BUFFER |
| 0048* |       |        |                 |                            |
| 0049  | 75030 | 061552 | ASN2 LDA ORDNO  | SAVE SPECIFIED             |
| 0050  | 75031 | 070037 | STA ASORD       | ORDINAL NUMBER             |
| 0051  | 75032 | 100200 | MPY .+FTEL      | SAVE POINTER               |
|       | 75033 | 000371 |                 |                            |
| 0052  | 75034 | 041504 | ADA FILTB       | TO FILE TABLE              |
| 0053  | 75035 | 070036 | STA ASFCB       | ENTRY                      |
| 0054  | 75036 | 002004 | INA             |                            |



|       |       |        |                    |                                  |
|-------|-------|--------|--------------------|----------------------------------|
| 0055  | 75037 | 164000 | LDB 0,I            |                                  |
| 0056  | 75040 | 004066 | CLE,ELB            |                                  |
| 0057  | 75041 | 004066 | CLE,ELB            |                                  |
| 0058  | 75042 | 005323 | RBR,RBR            |                                  |
| 0059  | 75043 | 077507 | STB ASSAV          | SAVE OLD RECORD SIZE             |
| 0060  | 75044 | 002041 | SEZ,RSS            | DID WRITE OCCUR ON OLD FILE?     |
| 0061  | 75045 | 027112 | JMP ASN21          | NO                               |
| 0062  | 75046 | 064041 | LDB ASNID          | YES, SET UP                      |
| 0063  | 75047 | 074030 | STB LTEMP          | LTEMP(0:3)                       |
| 0064  | 75050 | 040364 | ADA .+10           | WITH OLD                         |
| 0065  | 75051 | 164000 | LDB 0,I            | FILE NAME                        |
| 0066  | 75052 | 074031 | STB LTEMP+1        |                                  |
| 0067  | 75053 | 002004 | INA                |                                  |
| 0068  | 75054 | 104200 | DLD 0,I            |                                  |
|       | 75055 | 100000 |                    |                                  |
| 0069  | 75056 | 104400 | DST LTEMP+2        |                                  |
|       | 75057 | 000032 |                    |                                  |
| 0070  | 75060 | 061556 | LDA ASBFP          | SAVE                             |
| 0071  | 75061 | 164000 | LDB 0,I            | NEW FILENAME                     |
| 0072  | 75062 | 074042 | STB LTEMP+10       | BEFORE SWAP                      |
| 0073  | 75063 | 002004 | INA                | OCCURS                           |
| 0074  | 75064 | 104200 | DLD 0,I            |                                  |
|       | 75065 | 100000 |                    |                                  |
| 0075  | 75066 | 104400 | DST LTEMP+11       |                                  |
|       | 75067 | 000043 |                    |                                  |
| 0076  | 75070 | 116005 | JSB DLOKP,I        | FIND DIRECTORY ENTRY FOR OLD FIL |
| 0077  | 75071 | 002001 | RSS                |                                  |
| 0078  | 75072 | 027103 | JMP ASN20          | NOT FOUND                        |
| 0079  | 75073 | 060034 | LDA LTEMP+4        | SAVE CURRENT                     |
| 0080  | 75074 | 040360 | ADA .+6            | DIRECTORY                        |
| 0081  | 75075 | 160000 | LDA A,I            | TRACK                            |
| 0082  | 75076 | 172006 | STA DIRWP,I        | FOR DLOOK                        |
| 0083  | 75077 | 060201 | LDA DATIM          | GET HOUR OF YEAR                 |
| 0084  | 75100 | 064035 | LDB LTEMP+5        | AND UPDATE                       |
| 0085  | 75101 | 044360 | ADB .+6            | 'LAST CHANGE'                    |
| 0086  | 75102 | 170001 | STA 1,I            | LOCATION                         |
| 0087  | 75103 | 060042 | ASN20 LDA LTEMP+10 | GET                              |
| 0088  | 75104 | 070031 | STA LTEMP+1        |                                  |
| 0089  | 75105 | 104200 | DLD LTEMP+11       | NEW                              |
|       | 75106 | 000043 |                    |                                  |
| 0090  | 75107 | 104400 | DST LTEMP+2        |                                  |
|       | 75110 | 000032 |                    |                                  |
| 0091  | 75111 | 027122 | JMP ASN22          |                                  |
| 0092  | 75112 | 065556 | ASN21 LDB ASBFP    |                                  |
| 0093  | 75113 | 160001 | LDA 1,I            | FILE NAME                        |
| 0094  | 75114 | 070031 | STA LTEMP+1        |                                  |
| 0095  | 75115 | 006004 | INB                | IN                               |
| 0096  | 75116 | 104200 | DLD 1,I            |                                  |
|       | 75117 | 100001 |                    |                                  |
| 0097  | 75120 | 104400 | DST LTEMP+2        | LTEMP(1:3)                       |
|       | 75121 | 000032 |                    |                                  |
| 0098  | 75122 | 163510 | ASN22 LDA ASBUF,I  | SET APPROPRIATE                  |
| 0099  | 75123 | 070030 | STA LTEMP          | ID IN LTEMP                      |
| 0100* |       |        |                    |                                  |
| 0101  | 75124 | 116005 | JSB DLOKP,I        | SEARCH FOR FILE                  |

|      |       |        |                  |                                |
|------|-------|--------|------------------|--------------------------------|
| 0102 | 75125 | 006401 | CLB,RSS          | IF FOUND, CLEAR B              |
| 0103 | 75126 | 007400 | CCB              | IF NOT, B GETS =1              |
| 0104 | 75127 | 060034 | LDA LTEMP+4      | GET CURRENT                    |
| 0105 | 75130 | 040360 | ADA ,+6          |                                |
| 0106 | 75131 | 160000 | LDA A,I          | DIRECTORY TRACK                |
| 0107 | 75132 | 152006 | CPA DIRWP,I      | SAME AS OTHER ONE?             |
| 0108 | 75133 | 027136 | JMP ASN23        | YES (SO NONE HAS BEEN WRITTEN) |
| 0109 | 75134 | 002400 | CLA              | NO, SO UPDATED ONE HAS         |
| 0110 | 75135 | 172006 | STA DIRWP,I      | BEEN WRITTEN OUT               |
| 0111 | 75136 | 006003 | ASN23 SZB,RSS    | IF ENTRY WAS FOUND             |
| 0112 | 75137 | 027153 | JMP ASN4         | GO CHECK IT OUT                |
| 0113 | 75140 | 036435 | ASN24 ISZ SCHLQ  |                                |
| 0114 | 75141 | 162006 | ASN3 LDA DIRWP,I | IS THERE A CHANGED             |
| 0115 | 75142 | 002003 | SZA,RSS          | DIRECTORY TRACK IN CORE?       |
| 0116 | 75143 | 027151 | JMP ASN26        | NO                             |
| 0117 | 75144 | 006400 | CLB              | YES, TELL DLOOK                |
| 0118 | 75145 | 176006 | STB DIRWP,I      | THERE ISN'T                    |
| 0119 | 75146 | 064562 | LDB LIBD         | AND WRITE                      |
| 0120 | 75147 | 016231 | JSB DRUML        | IT OUT                         |
| 0121 | 75150 | 127504 | JMP DLK90,I      | BLEW IT, GO TRY TO SALVAGE     |
| 0122 | 75151 | 016247 | ASN26 JSB RDPRG  |                                |
| 0123 | 75152 | 027476 | JMP ASN14        |                                |
| 0124 | 75153 | 064035 | ASN4 LDB LTEMP+5 | IS THE                         |
| 0125 | 75154 | 044354 | ADB ,+2          | ENTRY WE                       |
| 0126 | 75155 | 160001 | LDA B,I          | FOUND                          |
| 0127 | 75156 | 002021 | SSA,RSS          | A FILE?                        |
| 0128 | 75157 | 027140 | JMP ASN24        | NO, FAIL                       |
| 0129 | 75160 | 044351 | ADB ,=1          | YES, IS                        |
| 0130 | 75161 | 160001 | LDA B,I          | IT PERCHANCE                   |
| 0131 | 75162 | 002021 | SSA,RSS          | PROTECTED?                     |
| 0132 | 75163 | 027171 | JMP ASN25        | NO, CONTINUE                   |
| 0133 | 75164 | 044351 | ADB ,=1          | YES, IS ITS                    |
| 0134 | 75165 | 160001 | LDA B,I          | OWNER TRYING TO                |
| 0135 | 75166 | 050041 | CPA ASNID        | ACCESS IT?                     |
| 0136 | 75167 | 006005 | INB,RSS          | YES                            |
| 0137 | 75170 | 027140 | JMP ASN24        | NO, FAIL                       |
| 0138 | 75171 | 044355 | ASN25 ADB ,+3    | GET LOGICAL                    |
| 0139 | 75172 | 160001 | LDA B,I          | RECORD SIZE                    |
| 0140 | 75173 | 173510 | STA ASBUF,I      | AND SAVE IT                    |
| 0141 | 75174 | 003004 | CMA,INA          | IS IT LARGER                   |
| 0142 | 75175 | 043507 | ADA ASSAV        | THAN THE ALLOCATED             |
| 0143 | 75176 | 002020 | SSA              | BUFFER?                        |
| 0144 | 75177 | 027141 | JMP ASN3         | YES, FAIL                      |
| 0145 | 75200 | 036435 | ISZ SCHLQ        | NO                             |
| 0146 | 75201 | 037510 | ISZ ASBUF        |                                |
| 0147 | 75202 | 044355 | ASN5 ADB ,+3     | PUT FILE'S DRUM ADDRESS        |
| 0148 | 75203 | 160001 | LDA 1,I          | IN BUFFER                      |
| 0149 | 75204 | 173510 | STA ASBUF,I      |                                |
| 0150 | 75205 | 006004 | INB              |                                |
| 0151 | 75206 | 037510 | ISZ ASBUF        |                                |
| 0152 | 75207 | 160001 | LDA 1,I          | PUT                            |
| 0153 | 75210 | 173510 | STA ASBUF,I      | DISC                           |
| 0154 | 75211 | 006004 | INB              | ADDRESS                        |
| 0155 | 75212 | 037510 | ISZ ASBUF        | IN                             |
| 0156 | 75213 | 160001 | LDA 1,I          | BUFFER                         |

|       |       |        |       |                   |                                  |
|-------|-------|--------|-------|-------------------|----------------------------------|
| 0157  | 75214 | 173510 |       | STA ASBUF,I       |                                  |
| 0158  | 75215 | 044354 |       | ADB .+2           |                                  |
| 0159  | 75216 | 037510 |       | ISZ ASBUF         |                                  |
| 0160  | 75217 | 164001 |       | LDB 1,I           |                                  |
| 0161  | 75220 | 060041 |       | LDA ASNID         | TEST FOR USER REFERENCE          |
| 0162  | 75221 | 050030 |       | CPA LTEMP         | TO PUBLIC FILE                   |
| 0163  | 75222 | 002001 |       | RSS               |                                  |
| 0164  | 75223 | 045036 |       | ADB BIT15         | SET BIT 15 OF LENGTH IF IT IS    |
| 0165  | 75224 | 177510 |       | STB ASBUF,I       | STORE LENGTH IN BUFFER           |
| 0166  | 75225 | 016076 |       | JSB DATE          | GET DATE AND SET IN              |
| 0167  | 75226 | 064035 |       | LDB LTEMP+5       | PURGE LOCATION                   |
| 0168  | 75227 | 044357 |       | ADB .+5           |                                  |
| 0169  | 75230 | 170001 |       | STA 1,I           |                                  |
| 0170  | 75231 | 002400 |       | CLA               | TELL DLOOK THAT NO DIRECTORY     |
| 0171  | 75232 | 172006 |       | STA DIRWP,I       | TRACK IS IN CORE AND             |
| 0172  | 75233 | 060034 |       | LDA LTEMP+4       | WRITE IT BACK                    |
| 0173  | 75234 | 040360 |       | ADA .+6           |                                  |
| 0174  | 75235 | 160000 |       | LDA 0,I           |                                  |
| 0175  | 75236 | 064562 |       | LDB LIBD          |                                  |
| 0176  | 75237 | 016231 |       | JSB DRUML         |                                  |
| 0177  | 75240 | 127504 |       | JMP DLK9Q,I       | BLEW IT, TRY TO SALVAGE          |
| 0178* |       |        |       |                   |                                  |
| 0179  | 75241 | 036435 | ASN50 | ISZ SCHLQ         | FILE EXISTS--BUMP RETURN ADDRESS |
| 0180  | 75242 | 060732 |       | LDA M2000         | INPUT FUSS TABLE                 |
| 0181  | 75243 | 070072 |       | STA WORD          |                                  |
| 0182  | 75244 | 160540 |       | LDA FUSS,1        |                                  |
| 0183  | 75245 | 064566 |       | LDB LIBDI         |                                  |
| 0184  | 75246 | 016231 |       | JSB DRUML         |                                  |
| 0185  | 75247 | 116015 |       | JSB SICKP,I       | IT'S STUCK ON THE DRUM           |
| 0186* |       |        |       |                   |                                  |
| 0187  | 75250 | 060273 |       | LDA MLINK+1       | DETERMINE USER #                 |
| 0188  | 75251 | 043503 |       | ADA ASN5P         |                                  |
| 0189  | 75252 | 006400 |       | CLB               |                                  |
| 0190  | 75253 | 100400 |       | DIV .+TTY01-TTY00 |                                  |
|       |       | 75254  |       |                   |                                  |
| 0191  | 75255 | 001722 |       | ALF,RAL           | MULTIPLY USER# BY 32 AND         |
| 0192  | 75256 | 040562 |       | ADA LIBD          | ADD LIBD TO POINT TO USER'S      |
| 0193  | 75257 | 073505 |       | STA ASUFS         |                                  |
| 0194  | 75260 | 064037 |       | LDB ASORD         | SECTION OF FUSS                  |
| 0195  | 75261 | 005000 |       | BLS               |                                  |
| 0196  | 75262 | 040001 |       | ADA 1             | SET POINTER TO FUSS              |
| 0197  | 75263 | 070040 |       | STA ASNFS         | ENTRY FOR THE                    |
| 0198  | 75264 | 002400 |       | CLA               | SPECIFIED ORDINAL NO.            |
| 0199  | 75265 | 006400 |       | CLB               |                                  |
| 0200  | 75266 | 104400 |       | DST ASNFS,I       | ZERO OUT OLD FILE INFORMATION    |
|       |       | 75267  |       |                   |                                  |
| 0201* |       |        |       |                   |                                  |
| 0202  | 75270 | 002400 |       | CLA               | SAY ENTRY NOT YET                |
| 0203  | 75271 | 073511 |       | STA ASNIF         | FOUND IN FUSS TABLE              |
| 0204* |       |        |       |                   |                                  |
| 0205  | 75272 | 064562 | ASN6  | LDB LIBD          |                                  |
| 0206  | 75273 | 063510 |       | LDA ASBUF         |                                  |
| 0207  | 75274 | 040350 |       | ADA .-2           |                                  |
| 0208  | 75275 | 160000 |       | LDA 0,I           | GET FIRST WORD OF DISC ADDRESS   |
| 0209  | 75276 | 057505 | ASN7  | CPB ASUFS         | SKIP OVER                        |

|       |       |        |       |             |                                 |
|-------|-------|--------|-------|-------------|---------------------------------|
| 0210  | 75277 | 044412 |       | ADB .+32    | USERS OWN FUSS                  |
| 0211  | 75300 | 054536 |       | CPB L1024   | ALL FUSS CHECKED?               |
| 0212  | 75301 | 027326 |       | JMP ASN11   | YES, NOT THERE                  |
| 0213  | 75302 | 150001 |       | CPA 1,I     | TEST FOR THERE                  |
| 0214  | 75303 | 027306 |       | JMP ASN9    | IT IS                           |
| 0215  | 75304 | 044354 |       | ADB .+2     | BUMP FUSS POINTER               |
| 0216  | 75305 | 027276 |       | JMP ASN7    | LOOK AT NEXT ENTRY              |
| 0217* |       |        |       |             |                                 |
| 0218  | 75306 | 063510 | ASN9  | LDA ASBUF   |                                 |
| 0219  | 75307 | 040351 |       | ADA .-1     | GET 2ND WORD OF ADDRESS         |
| 0220  | 75310 | 160000 |       | LDA 0,I     |                                 |
| 0221  | 75311 | 006004 |       | INB         | BUMP FUSS TO 2ND WORD           |
| 0222  | 75312 | 150001 |       | CPA 1,I     | ARE THEY EQUAL?                 |
| 0223  | 75313 | 027316 |       | JMP ASN10   | YES                             |
| 0224  | 75314 | 006004 |       | INB         | MOVE TO NEXT FUSS ENTRY         |
| 0225  | 75315 | 027273 |       | JMP ASN6+1  | RETURN TO CHECKING FUSS         |
| 0226* |       |        |       |             |                                 |
| 0227  | 75316 |        | ASN10 | EQU *       |                                 |
| 0228  | 75316 | 077511 |       | STB ASNIF   | SET TO SAY "IN FUSS"            |
| 0229  | 75317 | 060041 |       | LDA ASNID   | IS THIS                         |
| 0230  | 75320 | 010732 |       | AND M2000   | AN "A"                          |
| 0231  | 75321 | 050612 |       | CPA A000    | USER?                           |
| 0232  | 75322 | 027326 |       | JMP ASN11   | YES                             |
| 0233  | 75323 | 163510 |       | LDA ASBUF,I | SET DISC LENGTH TO SAY          |
| 0234  | 75324 | 031036 |       | IOR BIT15   | READ ONLY                       |
| 0235  | 75325 | 173510 |       | STA ASBUF,I |                                 |
| 0236* |       |        |       |             |                                 |
| 0237  | 75326 | 063510 | ASN11 | LDA ASBUF   |                                 |
| 0238  | 75327 | 040350 |       | ADA .-2     |                                 |
| 0239  | 75330 | 160000 |       | LDA 0,I     | GET HIGH DISC ADDRESS           |
| 0240  | 75331 | 167510 |       | LDB ASBUF,I | GET LENGTH                      |
| 0241  | 75332 | 006021 |       | SSB,RSS     | IF READ ONLY,                   |
| 0242  | 75333 | 027341 |       | JMP ASN30   |                                 |
| 0243  | 75334 | 031036 |       | IOR BIT15   | SET BIT 15 OF HIGH ADDRESS, AND |
| 0244  | 75335 | 064041 |       | LDB ASNID   | SKIP 1 OR BOTH RETURN INCREM    |
| 0245  | 75336 | 054030 |       | CPB LTEMP   | DEPENDING ON REASON FOR         |
| 0246  | 75337 | 027344 |       | JMP ASN31   |                                 |
| 0247  | 75340 | 027345 |       | JMP ASN32   |                                 |
| 0248  | 75341 |        | ASN30 | EQU *       |                                 |
| 0249  | 75341 | 067511 |       | LDB ASNIF   | READ=WRITE; WAS IT              |
| 0250  | 75342 | 006003 |       | SZB,RSS     | IN FUSS?                        |
| 0251  | 75343 | 036435 |       | ISZ SCHLQ   | NO, BUMP TWICE                  |
| 0252  | 75344 |        | ASN31 | EQU *       |                                 |
| 0253  | 75344 | 036435 |       | ISZ SCHLQ   |                                 |
| 0254  | 75345 |        | ASN32 | EQU *       |                                 |
| 0255  | 75345 | 067510 |       | LDB ASBUF   |                                 |
| 0256  | 75346 | 044351 |       | ADB .-1     |                                 |
| 0257  | 75347 | 164001 |       | LDB 1,I     | GET LOW ADDRESS IN B            |
| 0258  | 75350 | 104400 |       | DST ASNFS,I | STORE NEW FUSS INFORMATION      |
|       |       | 75351  |       |             |                                 |
| 0259* |       |        |       |             |                                 |
| 0260  | 75352 | 160540 |       | LDA FUSS,I  | WRITE FUSS BACK TO DISC         |
| 0261  | 75353 | 064562 |       | LDB LIBD    |                                 |
| 0262  | 75354 | 016231 |       | JSB DRUML   |                                 |
| 0263  | 75355 | 116015 |       | JSB SICKP,I | IT'S STUCK IN CORE              |

|       |       |        |                 |                                  |
|-------|-------|--------|-----------------|----------------------------------|
| 0264* |       |        |                 |                                  |
| 0265  | 75356 | 016047 | JSB RDPRG       | READ USER'S PROGRAM BACK IN      |
| 0266  | 75357 | 067510 | LDB ASBUF       |                                  |
| 0267  | 75360 | 160001 | LDA 1,I         | GET LENGTH WORD                  |
| 0268  | 75361 | 170036 | STA ASFCB,I     | AND STORE IT                     |
| 0269  | 75362 | 034036 | ISZ ASFCB       |                                  |
| 0270  | 75363 | 044346 | ADB .-4         |                                  |
| 0271  | 75364 | 164001 | LDB 1,I         | GET NEW RECORD SIZE              |
| 0272  | 75365 | 174036 | STB ASFCB,I     | AND STORE IT                     |
| 0273  | 75366 | 034036 | ISZ ASFCB       |                                  |
| 0274  | 75367 | 001665 | ELA,CLE,ERA     | REMOVE BIT 15 FROM LENGTH        |
| 0275  | 75370 | 040350 | ADA .-2         | COMPUTE RELATIVE                 |
| 0276  | 75371 | 002016 | SLA,INA,SZA     | ADDRESS OF LAST                  |
| 0277  | 75372 | 040351 | ADA .-1         | LOGICAL RECORD                   |
| 0278  | 75373 | 007400 | CCB             | SET FIRST DISC ADDRESS WORD      |
| 0279  | 75374 | 174036 | STB ASFCB,I     | TO ALL ONES                      |
| 0280  | 75375 | 067510 | LDB ASBUF       | GET                              |
| 0281  | 75376 | 044347 | ADB .-3         | DRUM                             |
| 0282  | 75377 | 164001 | LDB 1,I         | ADDRESS                          |
| 0283  | 75400 | 006003 | SZB,RSS         | IS FILE SANCTIFIED?              |
| 0284  | 75401 | 027416 | JMP ASN12       | NO, FILL DOUBLE WORDS            |
| 0285  | 75402 | 034036 | ISZ ASFCB       | YES, BUMP FILE TABLE POINTER     |
| 0286  | 75403 | 001020 | ALS,ALS         | 1 RECORD = 4 SECTORS             |
| 0287  | 75404 | 040001 | ADA 1           | COMPUTE DRUM ADDRESS OF LAST LOG |
| 0288  | 75405 | 170036 | STA ASFCB,I     | RECORD AND STORE IN FILE TABLE   |
| 0289  | 75406 | 060036 | LDA ASFCB       |                                  |
| 0290  | 75407 | 040355 | ADA .+3         |                                  |
| 0291  | 75410 | 070036 | STA ASFCB       | INSERT 'SANCTIFIED' FLAG         |
| 0292  | 75411 | 003400 | CCA             | INTO HIGH WORD OF                |
| 0293  | 75412 | 170036 | STA ASFCB,I     | BASE ADDRESS                     |
| 0294  | 75413 | 034036 | ISZ ASFCB       | INSERT BASE DRUM ADDRESS         |
| 0295  | 75414 | 174036 | STB ASFCB,I     | INTO LOW WORD                    |
| 0296  | 75415 | 027442 | JMP ASN13       |                                  |
| 0297  | 75416 | 067510 | ASN12 LDB ASBUF | NOT SANCTIFIED; GET ADDRESS      |
| 0298  | 75417 | 044350 | ADB .-2         | OF HIGH DISC ADDRESS             |
| 0299  | 75420 | 077506 | STB ASSCH       | AND SAVE IT                      |
| 0300  | 75421 | 006004 | INB             | GET POINTER TO LOW DISC ADDRESS  |
| 0301  | 75422 | 000040 | CLE             |                                  |
| 0302  | 75423 | 140001 | ADA 1,I         | ADD RELATIVE LAST RECORD ADDRESS |
| 0303  | 75424 | 167506 | LDB ASSCH,I     | B GETS HIGH DISC ADDRESS WORD    |
| 0304  | 75425 | 002040 | SEZ             | IF LOW ADDRESS OVERFLOWS,        |
| 0305  | 75426 | 006004 | INB             | ADD 1 TO HIGH PART               |
| 0306  | 75427 | 101100 | SWP             | STORE BOTH WORDS OF              |
| 0307  | 75430 | 104400 | DST ASFCB,I     | DISC ADDRESS                     |
|       | 75431 | 100036 |                 |                                  |
| 0308  | 75432 | 060036 | LDA ASFCB       |                                  |
| 0309  | 75433 | 040356 | ADA .+4         |                                  |
| 0310  | 75434 | 070036 | STA ASFCB       |                                  |
| 0311  | 75435 | 104200 | OLD ASSCH,I     | STORE BASE DISC ADDRESS          |
|       | 75436 | 175506 |                 |                                  |
| 0312  | 75437 | 104400 | DST ASFCB,I     | INTO FILE TABLE                  |
|       | 75440 | 100036 |                 |                                  |
| 0313  | 75441 | 034036 | ISZ ASFCB       | ADJUST POINTER                   |
| 0314  | 75442 | 060036 | ASN13 LDA ASFCB | SET                              |
| 0315  | 75443 | 040347 | ADA .-3         | 'NULL RECORD'                    |

|       |       |        |       |                  |                             |
|-------|-------|--------|-------|------------------|-----------------------------|
| 0316  | 75444 | 065036 | LDB   | BIT15            | CONDITION                   |
| 0317  | 75445 | 174000 | STB   | 0,I              |                             |
| 0318  | 75446 | 063510 | LDA   | ASBUF            |                             |
| 0319  | 75447 | 040346 | ADA   | ,-4              |                             |
| 0320  | 75450 | 067507 | LDB   | ASSAV            |                             |
| 0321  | 75451 | 007004 | CMB   | ,INB             | COMPUTE DIFFERENCE BETWEEN  |
| 0322  | 75452 | 144000 | ADB   | 0,I              | OLD AND NEW BUFFER SIZES    |
| 0323  | 75453 | 034036 | ISZ   | ASFCB            |                             |
| 0324  | 75454 | 160036 | LDA   | ASFCB,I          |                             |
| 0325  | 75455 | 040001 | ADA   | 1                | ADJUST BUFFER               |
| 0326  | 75456 | 170036 | STA   | ASFCB,I          | ADDRESS                     |
| 0327  | 75457 | 034036 | ISZ   | ASFCB            |                             |
| 0328  | 75460 | 170036 | STA   | ASFCB,I          | SET 'RECORD FULL' CONDITION |
| 0329  | 75461 | 034036 | ISZ   | ASFCB            |                             |
| 0330  | 75462 | 002400 | CLA   |                  | SET 'NO EOF EXIT'           |
| 0331  | 75463 | 170036 | STA   | ASFCB,I          | CONDITION                   |
| 0332  | 75464 | 034036 | ISZ   | ASFCB            |                             |
| 0333  | 75465 | 061550 | LDA   | ASBFP            | MOVE                        |
| 0334  | 75466 | 164000 | LDB   | 0,I              | FILE NAME                   |
| 0335  | 75467 | 174036 | STB   | ASFCB,I          | TO                          |
| 0336  | 75470 | 002004 | INA   |                  | FILE TABLE                  |
| 0337  | 75471 | 034036 | ISZ   | ASFCB            |                             |
| 0338  | 75472 | 104200 | DL0   | 0,I              |                             |
|       | 75473 | 100000 |       |                  |                             |
| 0339  | 75474 | 104400 | DST   | ASFCB,I          |                             |
|       | 75475 | 100036 |       |                  |                             |
| 0340* |       |        |       |                  |                             |
| 0341  | 75476 |        | ASN14 | EQU *            |                             |
| 0342  | 75476 | 016656 | JSB   | ABCHK            |                             |
| 0343  | 75477 | 026510 | JMP   | SCHBL            | ALL DONE                    |
| 0344  | 75500 | 176000 | HI6   | OCT 176000       |                             |
| 0345  | 75501 | 177400 | HI8   | OCT 177400       |                             |
| 0346  | 75502 | 177000 | ASN28 | DEC =512         |                             |
| 0347  | 75503 | 116635 | ASN5P | ABS =TTY00=7LINK |                             |
| 0348  | 00036 |        | ASFCB | EQU LTEMP+6      |                             |
| 0349  | 00037 |        | ASORD | EQU LTEMP+7      |                             |
| 0350  | 00040 |        | ASNFS | EQU LTEMP+8      |                             |
| 0351  | 00041 |        | ASNID | EQU LTEMP+9      |                             |
| 0352  | 75504 | 031173 | DLK90 | DEF DLOK9        |                             |
| 0353  | 75505 | 000000 | ASUFS | BSS 1            |                             |
| 0354  | 75506 | 000000 | ASSCH | BSS 1            |                             |
| 0355  | 75507 | 000000 | ASSAV | BSS 1            |                             |
| 0356  | 75510 | 000000 | ASBUF | BSS 1            |                             |
| 0357  | 75511 | 000000 | ASNIF | BSS 1            | CLEAR UNLESS FILE IN FUSS   |
| 0358  | 75512 | 075513 | ASBFP | DEF **+1         |                             |
| 0359  | 75513 | 000000 |       | BSS 6            |                             |
| 0360  | 75521 |        | \$ASN | EQU *            |                             |



|      |       |        |             |                             |
|------|-------|--------|-------------|-----------------------------|
| 0417 | 75057 | 071472 | STA EOL     | CONSTANT                    |
| 0418 | 75060 | 015336 | JSB FORMX   | EVALUATE STRING             |
| 0419 | 75061 | 060350 | LDA ,+2     | PREPARE                     |
| 0420 | 75062 | 015344 | JSB PSTR    | STRING                      |
| 0421 | 75063 | 071256 | STA TEMP4   | SAVE SOURCE POINTER         |
| 0422 | 75064 | 054351 | CPB ,+1     | NULL STRING?                |
| 0423 | 75065 | 027137 | JMP CHAN4   | YES                         |
| 0424 | 75066 | 075410 | STB TPRME   | SAVE LENGTH                 |
| 0425 | 75067 | 065256 | LDB TEMP4   | EXTRACT                     |
| 0426 | 75070 | 004065 | CLE,ERB     |                             |
| 0427 | 75071 | 160001 | LDA B,I     | FIRST                       |
| 0428 | 75072 | 002041 | SEZ,RSS     |                             |
| 0429 | 75073 | 001727 | ALF,ALF     | CHARACTER                   |
| 0430 | 75074 | 010443 | AND B377    |                             |
| 0431 | 75075 | 050416 | CPA ,+44B   | 'S'?                        |
| 0432 | 75076 | 027116 | JMP CHAN2   | YES                         |
| 0433 | 75077 | 050424 | CPA ,+52B   | NO, I+I?                    |
| 0434 | 75100 | 002001 | RSS         | YES                         |
| 0435 | 75101 | 027122 | JMP CHAN3   | NO                          |
| 0436 | 75102 | 060030 | LDA LTEMP   | GET USER'S ID               |
| 0437 | 75103 | 010602 | AND B1777   | CONVERT                     |
| 0438 | 75104 | 006400 | CLB         | IT                          |
| 0439 | 75105 | 100400 | DIV .100    | TO                          |
|      | 75106 | 000437 |             |                             |
| 0440 | 75107 | 100200 | MPY .100    | ID                          |
|      | 75110 | 000437 |             |                             |
| 0441 | 75111 | 064000 | LDB A       | OF                          |
| 0442 | 75112 | 060732 | LDA M2000   | GROUP                       |
| 0443 | 75113 | 010030 | AND LTEMP   | LIBRARIAN                   |
| 0444 | 75114 | 030001 | IOR B       | AND                         |
| 0445 | 75115 | 002001 | RSS         |                             |
| 0446 | 75116 |        | CHAN2 EQU * |                             |
| 0447 | 75116 | 060612 | LDA A000    | SET UP FOR PUBLIC LIBRARY   |
| 0448 | 75117 | 070030 | STA LTEMP   | SAVE ID                     |
| 0449 | 75120 | 035256 | ISZ TEMP4   | BUMP SOURCE POINTER         |
| 0450 | 75121 | 035410 | ISZ TPRME   | BUMP LENGTH                 |
| 0451 | 75122 |        | CHAN3 EQU * |                             |
| 0452 | 75122 | 061410 | LDA TPRME   |                             |
| 0453 | 75123 | 040361 | ADA ,+7     |                             |
| 0454 | 75124 | 002020 | SSA         | LENGTH > 6?                 |
| 0455 | 75125 | 002400 | CLA         | YES, SET TO 6               |
| 0456 | 75126 | 040343 | ADA ,+7     | NO                          |
| 0457 | 75127 | 071410 | STA TPRME   |                             |
| 0458 | 75130 | 071406 | STA TNULL   |                             |
| 0459 | 75131 | 060520 | LDA DLTEM   |                             |
| 0460 | 75132 | 002004 | INA         |                             |
| 0461 | 75133 | 001000 | ALS         |                             |
| 0462 | 75134 | 071272 | STA TEMP5   | DESTINATION POINTER         |
| 0463 | 75135 | 061004 | LDA FCUCA   | UPPER CASE ONLY             |
| 0464 | 75136 | 015350 | JSB TRSTR   | TRANSFER STRING             |
| 0465 | 75137 |        | CHAN4 EQU * |                             |
| 0466 | 75137 | 007400 | CCB         | SET FLAG FOR NO LINE NUMBER |
| 0467 | 75140 | 061613 | LDA TEMP1   |                             |
| 0468 | 75141 | 051334 | CPA PRGCT   | END OF STATEMENT?           |
| 0469 | 75142 | 027147 | JMP CHAN5   | YES                         |



|       |                                                    |        |       |               |                                 |
|-------|----------------------------------------------------|--------|-------|---------------|---------------------------------|
| 0470  | 75143                                              | 015356 |       | JSB FETCH     | NO, GET LINE NUMBER             |
| 0471  | 75144                                              | 015342 |       | JSB SBFIX     | ROUND TO INTEGER                |
| 0472  | 75145                                              | 065032 |       | LDB DVSR5     | ILLEGAL LINE NUMBER             |
| 0473  | 75146                                              | 006004 |       | INB           | READJUST                        |
| 0474  | 75147                                              |        | CHAN5 | EQU *         |                                 |
| 0475  | 75147                                              | 077426 |       | STB PKCNT     | SAVE THE LINE NUMBER            |
| 0476  | 75150                                              | 061577 |       | LDA SPROG     |                                 |
| 0477  | 75151                                              | 073427 |       | STA INWRD     |                                 |
| 0478  | 75152                                              | 116005 |       | JSB DLOKP, I  | SEARCH DIRECTORY FOR PROGRAM    |
| 0479  | 75153                                              | 002001 |       | RSS           |                                 |
| 0480  | 75154                                              | 027421 |       | JMP CHAN7     | PROGRAM NOT FOUND               |
| 0481  | 75155                                              | 064035 |       | LDB CHNPD     | CHECK ILL-STORED                |
| 0482  | 75156                                              | 044356 |       | ADB .+4       | PROGRAM FLAG                    |
| 0483  | 75157                                              | 160001 |       | LDA B, I      |                                 |
| 0484  | 75160                                              | 002021 |       | SSA, RSS      | UNSUCCESSFULLY STORED?          |
| 0485  | 75161                                              | 027166 |       | JMP CHN14     | NO, CONTINUE                    |
| 0486  | 75162                                              | 160036 |       | LDA CHNI, I   | GET USER'S ID                   |
| 0487  | 75163                                              | 050030 |       | CPA LTEMP     | DOES HE OWN THE PROGRAM?        |
| 0488  | 75164                                              | 036435 |       | ISZ SCHLQ     | YES, BUMP TO ILL-STORED MESSAGE |
| 0489  | 75165                                              | 027421 |       | JMP CHAN7     | NO, PRINT NONEXISTENT PROGRAM   |
| 0490  | 75166                                              | 036435 | CHN14 | ISZ SCHLQ     | PAST SECOND ERROR               |
| 0491  | 75167                                              | 036435 |       | ISZ SCHLQ     | AND ERROR 2.5                   |
| 0492  | 75170                                              | 044350 |       | ADB .-2       |                                 |
| 0493  | 75171                                              | 160001 |       | LDA 1, I      |                                 |
| 0494  | 75172                                              | 002020 |       | SSA           |                                 |
| 0495  | 75173                                              | 027421 |       | JMP CHAN7     | ENTRY IS A FILE                 |
| 0496  | 75174                                              | 036435 |       | ISZ SCHLQ     | PAST THIRD ERROR                |
| 0497* |                                                    |        |       |               |                                 |
| 0498* | IF ENTRY IS ON DISC, START SEEK                    |        |       |               |                                 |
| 0499* |                                                    |        |       |               |                                 |
| 0500  | 75175                                              | 044357 |       | ADB .+5       | GET DRUM                        |
| 0501  | 75176                                              | 160001 |       | LDA B, I      | ADDRESS                         |
| 0502  | 75177                                              | 002002 |       | SZA           | PROGRAM ON DRUM?                |
| 0503  | 75200                                              | 027207 |       | JMP CHN10     | YES, DON'T BOTHER SEEKING       |
| 0504  | 75201                                              | 070215 |       | STA MWORD     | STORE 0 WORD COUNT              |
| 0505  | 75202                                              | 060001 |       | LDA B         | DISC ADDRESS ADDRESS            |
| 0506  | 75203                                              | 002004 |       | INA           | TO A REG                        |
| 0507  | 75204                                              | 114212 |       | JSB DISCA, I  | INITIATE SEEK                   |
| 0508  | 75205                                              | 102030 |       | HLT 30B       | DRIVER BUSY                     |
| 0509  | 75206                                              | 102031 |       | HLT 31B       | BLOCK OUT OF RANGE              |
| 0510* |                                                    |        |       |               |                                 |
| 0511* | FOUND CORRECT ENTRY. FIRST CHECK TO SEE IF IT FITS |        |       |               |                                 |
| 0512* |                                                    |        |       |               |                                 |
| 0513  | 75207                                              | 044344 | CHN10 | ADB .-6       | *-> FIRST WORD OF NAME          |
| 0514  | 75210                                              | 160001 |       | LDA B, I      | MOVE PROTECTED BIT              |
| 0515  | 75211                                              | 070031 |       | STA LTEMP+1   | TO SAFE PLACE                   |
| 0516  | 75212                                              | 044354 |       | ADB .+2       | *-> THIRD WORD OF NAME          |
| 0517  | 75213                                              | 160001 |       | LDA 1, I      | SAVE SEMI-                      |
| 0518  | 75214                                              | 070040 |       | STA LIBSC     | COMPILED FLAG                   |
| 0519  | 75215                                              | 006004 |       | INB           |                                 |
| 0520  | 75216                                              | 160001 |       | LDA 1, I      | SAVE START-OF-                  |
| 0521  | 75217                                              | 001665 |       | ELA, CLE, ERA |                                 |
| 0522  | 75220                                              | 070041 |       | STA LIBSP     | PROGRAM POINTER                 |
| 0523  | 75221                                              | 044361 |       | ADB .+7       | GET PROGRAM LENGTH              |
| 0524  | 75222                                              | 160001 |       | LDA 1, I      |                                 |

|      |       |        |                   |                              |
|------|-------|--------|-------------------|------------------------------|
| 0525 | 75223 | 070042 | STA CHNLN         |                              |
| 0526 | 75224 | 003004 | CMA, INA          | COMPUTE FIRST                |
| 0527 | 75225 | 040041 | ADA LIBSP         | UNUSED WORD                  |
| 0528 | 75226 | 070045 | STA LIBPB         |                              |
| 0529 | 75227 | 003004 | CMA, INA          | COMPUTE NEGATIVE             |
| 0530 | 75230 | 064040 | LDB LIBSC         |                              |
| 0531 | 75231 | 006021 | SSB, RSS          | SEMI-COMPILED?               |
| 0532 | 75232 | 027237 | JMP CHN18         | NO                           |
| 0533 | 75233 | 040462 | ADA LWAUS         |                              |
| 0534 | 75234 | 002021 | SSA, RSS          |                              |
| 0535 | 75235 | 027246 | JMP CHN11         | OK                           |
| 0536 | 75236 | 027242 | JMP CHN19         | TOO BIG                      |
| 0537 | 75237 |        | CHN18 EQU *       |                              |
| 0538 | 75237 | 040654 | ADA LW97          | TOTAL LENGTH                 |
| 0539 | 75240 | 002021 | SSA, RSS          | COMPARE WITH MAX ALLOWED     |
| 0540 | 75241 | 027246 | JMP CHN11         |                              |
| 0541 | 75242 |        | CHN19 EQU *       |                              |
| 0542 | 75242 | 060214 | LDA MBUSY         | MAKE SURE                    |
| 0543 | 75243 | 002020 | SSA               | DISC DRIVER                  |
| 0544 | 75244 | 027242 | JMP +=2           | IS THROUGH                   |
| 0545 | 75245 | 027421 | JMP CHAN7         | PROGRAM TOO LARGE            |
| 0546 | 75246 |        | CHN11 EQU *       |                              |
| 0547 | 75246 | 036435 | ISZ SCHLQ         | PAST FOURTH ERROR            |
| 0548 | 75247 | 016076 | JSB DATE          | SET NEW DATE                 |
| 0549 | 75250 | 064035 | LDB CHNPD         | INTO                         |
| 0550 | 75251 | 044357 | ADB .+5           | DIRECTORY                    |
| 0551 | 75252 | 170001 | STA 1, I          |                              |
| 0552 | 75253 | 044354 | ADB .+2           | SET PROGRAM                  |
| 0553 | 75254 | 160001 | LDA B, I          | DRUM ADDRESS                 |
| 0554 | 75255 | 070044 | STA CHND          |                              |
| 0555 | 75256 | 006004 | INB               | ALSO                         |
| 0556 | 75257 | 104200 | DLD B, I          | DISC                         |
|      | 75260 | 100001 |                   |                              |
| 0557 | 75261 | 104400 | DST CHNDI         | ADDRESS                      |
|      | 75262 | 000046 |                   |                              |
| 0558 | 75263 | 160034 | LDA CHNP, I       | WRITE DIRECTORY              |
| 0559 | 75264 | 070072 | STA WORD          | BACK TO                      |
| 0560 | 75265 | 060034 | LDA CHNP          | DISC                         |
| 0561 | 75266 | 040360 | ADA .+6           |                              |
| 0562 | 75267 | 160000 | LDA 0, I          |                              |
| 0563 | 75270 | 064562 | LDB LIBD          |                              |
| 0564 | 75271 | 016231 | JSB DRUML         |                              |
| 0565 | 75272 | 027415 | JMP CHN16         | CAN'T, GO SET UP FOR SALVAGE |
| 0566 | 75273 | 064273 | LDB MLINK+1       | SET TO NULL PROGRAM          |
| 0567 | 75274 | 044340 | ADB .+?PROG=?LINK |                              |
| 0568 | 75275 | 160001 | LDA B, I          | SAVE CURRENT                 |
| 0569 | 75276 | 070037 | STA CHNC          | PROGRAM BOUND                |
| 0570 | 75277 | 063427 | LDA INWRD         |                              |
| 0571 | 75300 | 170001 | STA 1, I          |                              |
| 0572 | 75301 | 016047 | JSB RDPRG         | READ IN FIXED AREA           |
| 0573 | 75302 | 064042 | LDB CHNLN         |                              |
| 0574 | 75303 | 060044 | LDA CHND          | GET DRUM ADDRESS             |
| 0575 | 75304 | 002002 | SZA               | PROGRAM ON DRUM?             |
| 0576 | 75305 | 027327 | JMP CHN12         | YES, GO GET IT               |
| 0577 | 75306 | 074215 | STB MWORD         | NO!                          |

|       |            |        |                   |                           |
|-------|------------|--------|-------------------|---------------------------|
| 0578  | 75307      | 064041 | LDB LIBSP         |                           |
| 0579  | 75310      | 045036 | ADB BIT15         | READ                      |
| 0580  | 75311      | 063424 | LDA CHNDP         | PROGRAM                   |
| 0581  | 75312      | 114212 | JSB DISCA, I      |                           |
| 0582  | 75313      | 027312 | JMP *-1           |                           |
| 0583  | 75314      | 102031 | HLT 31B           | FROM                      |
| 0584  | 75315      | 060214 | LDA MBUSY         |                           |
| 0585  | 75316      | 002020 | SSA               |                           |
| 0586  | 75317      | 027315 | JMP *-2           |                           |
| 0587  | 75320      | 002003 | SZA, RSS          | DISC                      |
| 0588  | 75321      | 027334 | JMP CHN13         |                           |
| 0589  | 75322      | 064273 | CHN15 LDB MLINK+1 |                           |
| 0590  | 75323      | 044340 | ADB ,+7PROG-7LINK |                           |
| 0591  | 75324      | 060037 | LDA CHNC          |                           |
| 0592  | 75325      | 170001 | STA B, I          |                           |
| 0593  | 75326      | 027421 | JMP CHAN7         |                           |
| 0594  | 75327      | 074072 | CHN12 STB WORD    |                           |
| 0595  | 75330      | 064041 | LDB LIBSP         | => START OF PROGRAM       |
| 0596  | 75331      | 045036 | ADB BIT15         |                           |
| 0597  | 75332      | 016231 | JSB DRUML         | READ PROGRAM FROM DRUM    |
| 0598  | 75333      | 027322 | JMP CHN15         |                           |
| 0599  | 75334      | 160036 | CHN13 LDA CHNI, I | GET USER'S ID             |
| 0600  | 75335      | 034036 | ISZ CHNI          | TO FIRST WORD OF NAME     |
| 0601  | 75336      | 064031 | LDB LTEMP+1       | GET FIRST WORD            |
| 0602  | 75337      | 050030 | CPA LTEMP         | IF PROGRAM OWNER CLEAR    |
| 0603  | 75340      | 005665 | ELB, CLE, ERB     | RUN-ONLY BIT              |
| 0604  | 75341      | 174036 | STB CHNI, I       | STORE FIRST WORD OF NAME  |
| 0605  | 75342      | 034036 | ISZ CHNI          | BUMP POINTER TO NEXT WORD |
| 0606  | 75343      | 104200 | DLD LTEMP+2       | GET LAST 2 WORDS OF NAME  |
|       | 75344      | 000032 |                   |                           |
| 0607  | 75345      | 104400 | DST CHNI, I       | STORE IN TABLE            |
|       | 75346      | 100036 |                   |                           |
| 0608  | 75347      | 036435 | ISZ SCHLO         |                           |
| 0609  | 75350      | 016710 | JSB SEMIC         |                           |
| 0610  | 75351      | 016655 | JSB ABCHK         | ABORT ATTEMPT?            |
| 0611* |            |        |                   |                           |
| 0612* | SET TO RUN |        |                   |                           |
| 0613* |            |        |                   |                           |
| 0614  | 75352      | 103100 | CLF 0             |                           |
| 0615  | 75353      | 064257 | LDB MAIN          |                           |
| 0616  | 75354      | 160001 | LDA 1, I          | DON'T ALLOW               |
| 0617  | 75355      | 030372 | IOR UNABT         | ABORTS                    |
| 0618  | 75356      | 030445 | IOR CHNFG         |                           |
| 0619  | 75357      | 170001 | STA 1, I          | DURING COMPILE            |
| 0620  | 75360      | 102100 | STF 0             |                           |
| 0621  | 75361      | 065577 | LDB SPROG         | NULL                      |
| 0622  | 75362      | 054055 | CPB PBPTR         | PROGRAM?                  |
| 0623  | 75363      | 027404 | JMP CHAN9         | YES                       |
| 0624  | 75364      | 061575 | LDA SYMTB         |                           |
| 0625  | 75365      | 002003 | SZA, RSS          | UNCOMPILED?               |
| 0626  | 75366      | 060056 | LDA PBPTR         | YES, USE PBPTR            |
| 0627  | 75367      | 067426 | LDB PKCNT         | LINE NUMBER               |
| 0628  | 75370      | 006020 | SSB               | SPECIFIED?                |
| 0629  | 75371      | 027376 | JMP CHAN6         | NO                        |
| 0630  | 75372      | 015314 | JSB FNDPS         | FIND REFERENCED STATEMENT |

|       |       |          |             |              |                        |
|-------|-------|----------|-------------|--------------|------------------------|
| 0631  | 75373 | 027404   | JMP         | CHAN9        | BAD LINE NUMBER        |
| 0632  | 75374 | 000000   | NOP         |              |                        |
| 0633  | 75375 | 002001   | RSS         |              |                        |
| 0634  | 75376 |          | CHAN6 EQU * |              |                        |
| 0635  | 75376 | 065577   | LDB         | SPROG        | DEFAULT LINE NUMBER    |
| 0636  | 75377 | 075334   | STB         | PRGCT        | SAVE FIRST STATEMENT   |
| 0637  | 75400 | 036435   | ISZ         | SCHLQ        |                        |
| 0638  | 75401 |          | CHAN8 EQU * |              |                        |
| 0639  | 75401 | 060412   | LDA         | +.40B        |                        |
| 0640  | 75402 | 071573   | STA         | BLANK        |                        |
| 0641  | 75403 | 026510   | JMP         | SCHBL        |                        |
| 0642  | 75404 | 016656   | CHAN9 JSB   | ABCHK        |                        |
| 0643  | 75405 | 060445   | LDA         | CHNFG        |                        |
| 0644  | 75406 | 003000   | CMA         |              |                        |
| 0645  | 75407 | 064257   | LDB         | MAIN         |                        |
| 0646  | 75410 | 103100   | CLF         | 0            |                        |
| 0647  | 75411 | 110001   | AND         | B,I          | CLEAR CHAIN FLAG       |
| 0648  | 75412 | 170001   | STA         | B,I          |                        |
| 0649  | 75413 | 102100   | STF         | 0            |                        |
| 0650  | 75414 | 027401   | JMP         | CHAN8        |                        |
| 0651  | 75415 | 164034   | CHN16 LDB   | CHNP,I       |                        |
| 0652  | 75416 | 060034   | LDA         | CHNP         |                        |
| 0653  | 75417 | 040360   | ADA         | +.6          |                        |
| 0654  | 75420 | 116016   | JSB         | SALVP,I      |                        |
| 0655  | 75421 | 016047   | CHAN7 JSB   | RDPRG        | READ BACK USER PROGRAM |
| 0656  | 75422 | 016656   | JSB         | ABCHK        | ABORT ATTEMPT?         |
| 0657  | 75423 | 026510   | JMP         | SCHBL        | NO                     |
| 0658  | 75424 | 000046   | CHNDP DEF   | CHNDI        |                        |
| 0659  | 75425 | 020040   | TWOSP       | ASC 1,       |                        |
| 0660  | 75426 | 000000   | PKCNT       | BSS 1        |                        |
| 0661  | 75427 | 000000   | INWRD       | BSS 1        |                        |
| 0662  | 75430 | 000000   | INCHR       | BSS 1        |                        |
| 0663  | 75431 | 073353   | LCDP        | DEF LCD      |                        |
| 0664  | 00034 |          | CHNP        | EQU LTEMP+4  |                        |
| 0665  | 00035 |          | CHNPD       | EQU LTEMP+5  |                        |
| 0666  | 00036 |          | CHNI        | EQU LTEMP+6  |                        |
| 0667  | 00037 |          | CHNC        | EQU LTEMP+7  |                        |
| 0668  | 00042 |          | CHNLN       | EQU LTEMP+10 |                        |
| 0669  | 00044 |          | CHND        | EQU LTEMP+12 |                        |
| 0670  | 00046 |          | CHNDI       | EQU LTEMP+14 |                        |
| 0671* |       | LTEMP+15 | IS USED     | HERE ALSO    |                        |
| 0672  | 75432 |          | SCHN        | EQU *        |                        |

0002\* THE SAVE COMMAND IS USED TO SAVE PROGRAMS IN THE USER LIBRARY,  
 0003\* THE PROCEDURE IS AS FOLLOWS:  
 0004\* 1) CHECK THAT PROGRAM IS LISTABLE (OR ID=AB00), HAS A NAME,  
 0005\* AND ISN'T NULL,  
 0006\* 2) DECOMPILE,  
 0007\* 3) CHECK FOR IDT OR ADT OVERFLOW,  
 0008\* 4) CHECK FOR DUPLICATEDLY NAMED PROGRAM,  
 0009\* 5) UPDATE DIRECTORY,  
 0010\* 6) UPDATE IDT AND ADT,  
 0011\* 7) MOVE PROGRAM TO LIBRARY AREA,  
 0012\*

0013\* STEP 5 IS WRITTEN AS AN OVERLAY, WHICH IS CALLED WHENEVER THE PAR-  
 0014\* TICULAR DIRECTORY TRACK NEEDED IS ALREADY FULL, ITS JOB IS TO GAR-  
 0015\* BAGE COLLECT THE DIRECTORY TRACKS.

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0017 75000 ORG LIBRA

0019 75000 064273 LDB MLINK+1 B=>LINK WORD.
0020 75001 044341 ADB .+?ID=?LINK ID LOCN.
0021 75002 074050 STB MOVES
0022 75003 044351 ADB .+?PROG=?ID
0023 75004 074042 STB SAVP
0024 75005 044351 ADB .+?DISC=?PROG
0025 75006 074043 STB SAVD
0026 75007 104200 DLD MOVES,I A=ID,B=1ST WORD OF NAME.
 75010 100050
0027 75011 006002 SZB TEST FOR NO PROGRAM NAME
0028 75012 054570 CPB A9CBB
0029 75013 027557 JMP SAV3
0030 75014 164042 LDB SAVP,I TEST FOR NULL PROGRAM.
0031 75015 060337 LDA .-11
0032 75016 054702 CPB PBUFF
0033 75017 027560 JMP SAV4
0034*
0035 75020 016047 JSB RDPRG READ PROGRAM TO CORE.
0036 75021 064042 LDB SAVP TEST FOR COMPILED.
0037 75022 044347 ADB .+?FLAG=?PROG
0038 75023 160001 LDA I,I
0039 75024 010354 AND CFLAG
0040 75025 002003 SAV0 SZA,RSS
0041 75026 027044 JMP SAV5 NOT COMPILED.
0042 75027 027043 JMP SAV5=1 ROOM FOR CSAVE CODE
0043 75030 000000 BSS 11
0044*
0045 75043 015322 SAV5 JSB DCMPLE DECOMPILE IT.
0046 75044 065577 LDB SPROG COMMON
0047 75045 054702 CPB PBUFF ALLOCATED?
0048 75046 015520 JSB ALCOM NO--DO IT
0049 75047 064056 LDB PBPTR RESET PROGRAM BOUND
0050 75050 174042 STB SAVP,I INTO TABLE
0051 75051 007004 CMB,INB COMPUTE #
0052 75052 045221 ADB USE OF WORDS
0053 75053 074072 STB WORD
0054 75054 160043 LDA SAVD,I GET DRUM ADDRESS

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|       |                                          |        |       |                   |                                 |
|-------|------------------------------------------|--------|-------|-------------------|---------------------------------|
| 0055  | 75055                                    | 010317 |       | AND M32           | SET BACK TO SWAP                |
| 0056  | 75056                                    | 170043 |       | STA SAVD,I        | TRACK ORIGIN                    |
| 0057  | 75057                                    | 065221 |       | LDB USE           | WRITE OUT                       |
| 0058  | 75060                                    | 016231 |       | JSB DRUML         | TO DRUM                         |
| 0059  | 75061                                    | 026071 |       | JMP RDPRJ         | GO DUMP THIS ILL-FATED USER     |
| 0060  | 75062                                    | 027106 | SAV50 | JMP SAV51         |                                 |
| 0061  | 75063                                    | 000000 |       | BSS 19            | ROOM FOR CSAVE CODE             |
| 0062  | 75106                                    | 164042 | SAV51 | LDB SAVP,I        | COMPUTE                         |
| 0063  | 75107                                    | 007004 |       | CMB,INB           | PROGRAM                         |
| 0064  | 75110                                    | 045577 |       | ADB SPROG         | LENGTH                          |
| 0065  | 75111                                    | 074040 |       | STB SAVWD         | SAVE IN                         |
| 0066  | 75112                                    | 101030 |       | ASR 8             | NEGATIVE WORDS AND              |
| 0067  | 75113                                    | 007004 |       | CMB,INB           | POSITIVE                        |
| 0068  | 75114                                    | 076025 |       | STB SAVLN         | BLOCKS                          |
| 0069  | 75115                                    | 065577 |       | LDB SPROG         | SAVE START-OF-                  |
| 0070  | 75116                                    | 074042 |       | STB SAVP          | PROGRAM POINTER                 |
| 0071* |                                          |        |       |                   |                                 |
| 0072  | 75117                                    | 016107 |       | JSB RDIDT         | READ IN AN ID TRACK             |
| 0073  | 75120                                    | 044361 |       | ADB .+7           | GET DISC USED TO DATE.          |
| 0074  | 75121                                    | 160001 |       | LDA 1,I           |                                 |
| 0075  | 75122                                    | 042025 |       | ADA SAVLN         | GET TOTAL AMOUNT TO             |
| 0076  | 75123                                    | 003004 |       | CMA,INA           | USED AS A NEGATIVE QUANTITY     |
| 0077  | 75124                                    | 044351 |       | ADB .-1           |                                 |
| 0078  | 75125                                    | 000040 |       | CLE               |                                 |
| 0079  | 75126                                    | 140001 |       | ADA 1,I           | COMPARE WITH ALLOTMENT.         |
| 0080  | 75127                                    | 002040 |       | SEZ               |                                 |
| 0081  | 75130                                    | 027147 |       | JMP SAV6          | OK.                             |
| 0082  | 75131                                    | 067134 |       | LDB ++3           |                                 |
| 0083  | 75132                                    | 060327 | SAV9  | LDA .-19          |                                 |
| 0084  | 75133                                    | 026432 |       | JMP LIBER         |                                 |
| 0085  | 75134                                    | 075135 |       | DEF ++1           |                                 |
| 0086  | 75135                                    | 005114 |       | OCT 5114          | LF=L                            |
| 0087  | 75136                                    | 044502 |       | ASC 9,IBRARY      | SPACE FULL                      |
|       | 75137                                    | 051101 |       |                   |                                 |
|       | 75140                                    | 051131 |       |                   |                                 |
|       | 75141                                    | 020123 |       |                   |                                 |
|       | 75142                                    | 050101 |       |                   |                                 |
|       | 75143                                    | 041505 |       |                   |                                 |
|       | 75144                                    | 020106 |       |                   |                                 |
|       | 75145                                    | 052514 |       |                   |                                 |
|       | 75146                                    | 046040 |       |                   |                                 |
| 0088* |                                          |        |       |                   |                                 |
| 0089* | SEARCH ADT FOR SPACE TO PUT THE PROGRAM. |        |       |                   |                                 |
| 0090* |                                          |        |       |                   |                                 |
| 0091  | 75147                                    |        | SAV6  | EQU *             |                                 |
| 0092  | 75147                                    | 060342 |       | LDA .-8           | SET COUNT OF POSSIBLE DISK ADTS |
| 0093  | 75150                                    | 070044 |       | STA SAVDF         |                                 |
| 0094  | 75151                                    |        | SAVBA | EQU *             |                                 |
| 0095  | 75151                                    | 062010 |       | LDA RKCYP         | GET CYCLIC POINTER              |
| 0096  | 75152                                    | 002004 |       | INA               | AND ADVANCE                     |
| 0097  | 75153                                    | 053601 |       | CPA EALNA         | IT TO THE                       |
| 0098  | 75154                                    | 063600 |       | LDA EALCA         | NEXT ENTRY                      |
| 0099  | 75155                                    | 072010 |       | STA RKCYP         | IN THE TABLE                    |
| 0100  | 75156                                    | 040362 |       | ADA .+DADLN-DADLC | > LENGTH WORD                   |
| 0101  | 75157                                    | 070043 |       | STA SAVD          |                                 |

|       |       |        |                       |                                  |
|-------|-------|--------|-----------------------|----------------------------------|
| 0102  | 75160 | 160043 | LDA SAVD,I            | IS THIS DISK AVAILABLE           |
| 0103  | 75161 | 002003 | SZA,RSS               | ZERO SEZ NO ADT TABLE            |
| 0104  | 75162 | 027207 | JMP SAVBF             | SO WE ADVANCE TO NEXT DISK       |
| 0105  | 75163 | 070072 | STA WORD              | OTHERWISE, SAVE LENGTH           |
| 0106  | 75164 | 162010 | LDA RKCYP,I           | GET DRUM ADDRESS OF ADT          |
| 0107  | 75165 | 064566 | LDB LIBDI             |                                  |
| 0108  | 75166 | 016231 | JSB DRUML             | READ IT IN                       |
| 0109  | 75167 | 027207 | JMP SAVBF             | DRUM ERROR; IGNORE TRACK FOR NOW |
| 0110  | 75170 | 007400 | CCB                   | COMPUTE THE                      |
| 0111  | 75171 | 160043 | LDA SAVD,I            | ENTRY                            |
| 0112  | 75172 | 100400 | DIV ,+3               | COUNT                            |
|       | 75173 | 000355 |                       |                                  |
| 0113  | 75174 | 070041 | STA SAVC              | AND SAVE                         |
| 0114  | 75175 | 064562 | LDB LIBD              | => FIRST ENTRY                   |
| 0115  | 75176 | 044354 | ADB ,+2               | => LENGTH WORD                   |
| 0116  | 75177 |        | SAVBD EQU *           |                                  |
| 0117  | 75177 | 160001 | LDA B,I               | TEST THIS ENTRY FOR BIG ENOUGH   |
| 0118  | 75200 | 003100 | CMA,CLE               |                                  |
| 0119  | 75201 | 042025 | ADA SAVLN             |                                  |
| 0120  | 75202 | 002041 | SEZ,RSS               | SKIP IF TOO SHORT                |
| 0121  | 75203 | 027244 | JMP SAV7              | GUTCHA                           |
| 0122  | 75204 | 044355 | ADB ,+3               | ADVANCE TO NEXT ENTRY            |
| 0123  | 75205 | 034041 | ISZ SAVC              | DECREMENT ENTRY COUNT            |
| 0124  | 75206 | 027177 | JMP SAVBD             | PROCESS NEXT ENTRY               |
| 0125  | 75207 |        | SAVBF EQU *           | PROCESS NEXT TRACK               |
| 0126  | 75207 | 034044 | ISZ SAVDF             | TRIED ALL DISKS FOR ROOM?        |
| 0127  | 75210 | 027151 | JMP SAVBA             | NO, TRY THE NEXT ONE             |
| 0128* |       |        |                       |                                  |
| 0129  | 75211 |        | SAV23 EQU *           |                                  |
| 0130  | 75211 | 060332 | LDA ,=16              |                                  |
| 0131  | 75212 | 067214 | LDB **2               | PRINT "SYSTEM OVERLOAD"          |
| 0132  | 75213 | 026432 | JMP LIBER             |                                  |
| 0133  | 75214 | 075215 | DEF **1               |                                  |
| 0134  | 75215 | 005123 | OCT 5123              | LF=S                             |
| 0135  | 75216 | 054523 | ASC 7,YSTEM OVERLOAD  |                                  |
|       | 75217 | 052105 |                       |                                  |
|       | 75220 | 046440 |                       |                                  |
|       | 75221 | 047526 |                       |                                  |
|       | 75222 | 042522 |                       |                                  |
|       | 75223 | 046117 |                       |                                  |
|       | 75224 | 040504 |                       |                                  |
| 0136* |       |        |                       |                                  |
| 0137  | 75225 | 060214 | SAV12 LDA MBUSY       | MAKE SURE                        |
| 0138  | 75226 | 002020 | SSA                   | DISC IS                          |
| 0139  | 75227 | 027225 | JMP **2               | IDLE                             |
| 0140  | 75230 | 060332 | LDA ,=16              |                                  |
| 0141  | 75231 | 067233 | LDB **2               | PRINT "DUPLICATE ENTRY"          |
| 0142  | 75232 | 026432 | JMP LIBER             |                                  |
| 0143  | 75233 | 075234 | DEF **1               |                                  |
| 0144  | 75234 | 005104 | OCT 5104              | LF=D                             |
| 0145  | 75235 | 052520 | ASC 7,UPPLICATE ENTRY |                                  |
|       | 75236 | 046111 |                       |                                  |
|       | 75237 | 041501 |                       |                                  |
|       | 75240 | 052105 |                       |                                  |
|       | 75241 | 020105 |                       |                                  |

|       |       |        |       |              |                         |
|-------|-------|--------|-------|--------------|-------------------------|
|       | 75242 | 047124 |       |              |                         |
|       | 75243 | 051131 |       |              |                         |
| 0146* |       |        |       |              |                         |
| 0147  | 75244 |        | SAV7  | EQU *        |                         |
| 0148  | 75244 | 062025 |       | LDA SAVLN    | SAVE                    |
| 0149  | 75245 | 003004 |       | CMA, INA     | NEGATIVE NUMBER OF      |
| 0150  | 75246 | 140001 |       | ADA B, I     | SECTORS LEFT            |
| 0151  | 75247 | 070044 |       | STA SAVDF    |                         |
| 0152  | 75250 | 044350 |       | ADB .-2      | SAVE LOCATION OF        |
| 0153  | 75251 | 074041 |       | STB SAVC     | DISK ADT ENTRY          |
| 0154  | 75252 | 104200 |       | DLB B, I     | GET DISK ADDRESS        |
|       | 75253 | 100001 |       |              |                         |
| 0155  | 75254 | 104400 |       | DST SAVDS    | AND SAVE                |
|       | 75255 | 000036 |       |              |                         |
| 0156  | 75256 | 006400 |       | CLB          | START SEEK              |
| 0157  | 75257 | 074215 |       | STB MWORD    | TO CORRECT              |
| 0158  | 75260 | 063603 |       | LDA SAVDP    | DISC (WITH A "C")       |
| 0159  | 75261 | 114212 |       | JSB DISCA, I | ADDRESS                 |
| 0160  | 75262 | 102030 |       | HLT 30B      | DRIVER BUSY: HALT       |
| 0161  | 75263 | 102031 |       | HLT 31B      | DISC NOT PRESENT: HALT  |
| 0162* |       |        |       |              |                         |
| 0163  | 75264 | 002400 |       | CLA          | SET DRUM                |
| 0164  | 75265 | 070045 |       | STA SAVDU    | DRUM ADDRESS            |
| 0165  | 75266 | 060520 |       | LDA DLTEM    | MOVE ID/NAME ENTRY TO   |
| 0166  | 75267 | 070051 |       | STA MOVED    | LTEMP(0:3).             |
| 0167  | 75270 | 064346 |       | LDB .-4      |                         |
| 0168  | 75271 | 016257 |       | JSB MOVEW    |                         |
| 0169  | 75272 | 027275 | SAV10 | JMP SAV11    | ROOM FOR CSAVE CODE     |
| 0170  | 75273 | 000000 |       | BSS 2        |                         |
| 0171* |       |        |       |              |                         |
| 0172  | 75275 |        | SAV11 | EQU *        |                         |
| 0173  | 75275 | 116005 |       | JSB DLOKP, I | SEARCH FOR ENTRY        |
| 0174  | 75276 | 027225 |       | JMP SAV12    | ENTRY FOUND--ILLEGAL.   |
| 0175* |       |        |       |              |                         |
| 0176  | 75277 | 164034 |       | LDB SAV1, I  | IF TRACK IS FULL, GO DO |
| 0177  | 75300 | 054714 |       | CPB M8184    | OVERLAY SECTION.        |
| 0178  | 75301 | 027573 |       | JMP SAV98    |                         |
| 0179* |       |        |       |              |                         |
| 0180  | 75302 | 007000 |       | CMB          | SET UP SOURCE FOR       |
| 0181  | 75303 | 044562 |       | ADB LIBD     | MOVE.                   |
| 0182  | 75304 | 074050 |       | STB MOVES    |                         |
| 0183  | 75305 | 044366 |       | ADB .+12     | SET UP DESTINATION      |
| 0184  | 75306 | 074051 |       | STB MOVED    |                         |
| 0185  | 75307 | 007000 |       | CMB          | COMPUTE LENGTH.         |
| 0186  | 75310 | 044402 |       | ADB .+24     |                         |
| 0187  | 75311 | 044035 |       | ADB SAVS     |                         |
| 0188  | 75312 | 016243 |       | JSB MOVEB    |                         |
| 0189* |       |        |       |              |                         |
| 0190  | 75313 | 060520 |       | LDA DLTEM    | MOVE 5 WORDS IN FOR     |
| 0191  | 75314 | 070050 |       | STA MOVES    | NEW ENTRY.              |
| 0192  | 75315 | 060035 |       | LDA SAVS     |                         |
| 0193  | 75316 | 040366 |       | ADA .+12     |                         |
| 0194  | 75317 | 070051 |       | STA MOVED    |                         |
| 0195  | 75320 | 064346 |       | LDB .-4      |                         |
| 0196  | 75321 | 016257 |       | JSB MOVEW    |                         |



|       |       |        |              |                             |
|-------|-------|--------|--------------|-----------------------------|
| 0197  | 75322 | 060042 | LDA SAVP     | STORE START-OF-             |
| 0198  | 75323 | 170051 | STA MOVED, I | PROGRAM POINTER             |
| 0199  | 75324 | 016076 | JSB DATE     | STORE DATE IN ALSO,         |
| 0200  | 75325 | 034051 | ISZ MOVED    |                             |
| 0201  | 75326 | 170051 | STA MOVED, I | LAST REFERENCE DATE         |
| 0202  | 75327 | 034051 | ISZ MOVED    |                             |
| 0203  | 75330 | 060201 | LDA DATIM    | GET HOUR OF YEAR            |
| 0204  | 75331 | 170051 | STA MOVED, I | LAST CHANGE DATE            |
| 0205  | 75332 | 034051 | ISZ MOVED    |                             |
| 0206  | 75333 | 002400 | CLA          |                             |
| 0207  | 75334 | 170051 | STA MOVED, I | CLEAR DRUM ADDRESS (WORD 7) |
| 0208  | 75335 | 034051 | ISZ MOVED    |                             |
| 0209  | 75336 | 104200 | DLD SAVDS    | GET DISK ADDRESS FOR        |
|       | 75337 | 000036 |              |                             |
| 0210  | 75340 | 104400 | DST MOVED, I | WORDS 8 AND 9               |
|       | 75341 | 100051 |              |                             |
| 0211  | 75342 | 064051 | LDB MOVED    |                             |
| 0212  | 75343 | 044355 | ADB .+3      | => WORD 11                  |
| 0213  | 75344 | 060040 | LDA SAVWD    | GET THE LENGTH WORD FOR     |
| 0214  | 75345 | 170001 | STA B, I     | WORD 11                     |
| 0215* |       |        |              |                             |
| 0216  | 75346 | 160034 | LDA SAVI, I  | ADJUST                      |
| 0217  | 75347 | 040336 | ADA .-12     | DIRECTORY                   |
| 0218  | 75350 | 170034 | STA SAVI, I  | LENGTH.                     |
| 0219  | 75351 | 070072 | STA WORD     |                             |
| 0220  | 75352 | 060034 | LDA SAVI     | WRITE DIRECTORY BACK OUT.   |
| 0221  | 75353 | 002004 | INA          |                             |
| 0222  | 75354 | 070051 | STA MOVED    |                             |
| 0223  | 75355 | 040357 | ADA .+5      |                             |
| 0224  | 75356 | 160000 | LDA 0, I     |                             |
| 0225  | 75357 | 064562 | LDB LIBD     |                             |
| 0226  | 75360 | 074050 | STB MOVES    |                             |
| 0227  | 75361 | 016231 | JSB DRUML    | WRITE OUT                   |
| 0228  | 75362 | 116017 | JSB DEADP, I | ERROR, FORGET IT            |
| 0229* |       |        |              |                             |
| 0230  | 75363 | 064346 | LDB .-4      | RESET DIREC.                |
| 0231  | 75364 | 016257 | JSB MOVEW    |                             |
| 0232* |       |        |              |                             |
| 0233  | 75365 |        | SAV21 EQU *  |                             |
| 0234  | 75365 | 016107 | JSB RDIDT    | READ IN THE IDT             |
| 0235  | 75366 | 044361 | ADB .+7      |                             |
| 0236  | 75367 | 062025 | LDA SAVLN    | ADJUST AMOUNT               |
| 0237  | 75370 | 140001 | ADA B, I     | OF DISK SPACE USED          |
| 0238  | 75371 | 170001 | STA 1, I     |                             |
| 0239* |       |        |              |                             |
| 0240  | 75372 | 160076 | LDA IDLCP, I | GET DRUM ADDRESS            |
| 0241  | 75373 | 064562 | LDB LIBD     | TO WRITE IDT BACK           |
| 0242  | 75374 | 016231 | JSB DRUML    | TO THE DRUM                 |
| 0243  | 75375 | 116017 | JSB DEADP, I | ERROR, FORGET IT            |
| 0244* |       |        |              |                             |
| 0245* |       |        |              |                             |
| 0246  | 75376 | 160043 | LDA SAVD, I  | FETCH THE LENGTH OF THE     |
| 0247  | 75377 | 070072 | STA WORD     | ADT TRACK                   |
| 0248  | 75400 | 162010 | LDA RKCYP, I | GET THE DRUM ADDRESS        |
| 0249  | 75401 | 064566 | LDB LIBDI    | AND READ IN THE             |

|       |       |        |       |             |                                |
|-------|-------|--------|-------|-------------|--------------------------------|
| 0250  | 75402 | 016231 |       | JSB DRUML   | ADT TRACK AGAIN                |
| 0251  | 75403 | 027425 |       | JMP SAV30   | CAN'T, MAKE IT DISAPPEAR       |
| 0252* |       |        |       |             |                                |
| 0253  | 75404 | 064044 |       | LDB SAVDF   |                                |
| 0254  | 75405 | 006002 |       | SZB         | ADT ENTRY COMPLETELY USED?     |
| 0255  | 75406 | 027431 |       | JMP SAVCF   | NO, SHORTEN IT                 |
| 0256* |       |        |       |             |                                |
| 0257  | 75407 | 064041 |       | LDB SAVC    | YES, REMOVE IT                 |
| 0258  | 75410 | 074051 |       | STB MOVED   |                                |
| 0259  | 75411 | 044355 |       | ADB ,+3     | SET UP POINTERS FOR MOVE       |
| 0260  | 75412 | 074050 |       | STB MOVES   |                                |
| 0261  | 75413 | 044674 |       | ADB MLIBD   | CALCULATE THE NEEDED           |
| 0262  | 75414 | 044072 |       | ADB WORD    | WORD COUNT                     |
| 0263  | 75415 | 016257 |       | JSB MOVEW   |                                |
| 0264* |       |        |       |             |                                |
| 0265  | 75416 | 060355 |       | LDA ,+3     | SHORTEN THE APPROPRIATE COUNTS |
| 0266  | 75417 | 164043 |       | LDB SAVD,I  |                                |
| 0267  | 75420 | 044000 |       | ADB A       | SHORTEN THE TABLE ENTRY        |
| 0268  | 75421 | 174043 |       | STB SAVD,I  |                                |
| 0269  | 75422 | 040072 |       | ADA WORD    | AND THE DRUM DRIVER COUNT      |
| 0270  | 75423 | 070072 |       | STA WORD    |                                |
| 0271  | 75424 | 027445 |       | JMP SAVCG   |                                |
| 0272  | 75425 | 002400 | SAV30 | CLA         |                                |
| 0273  | 75426 | 170043 |       | STA SAVD,I  | ZERO LENGTH                    |
| 0274  | 75427 | 172010 |       | STA RKCYP,I | ZERO ADDRESS                   |
| 0275  | 75430 | 027461 |       | JMP SAV31   |                                |
| 0276* |       |        |       |             |                                |
| 0277  | 75431 |        | SAVCF | EQU *       |                                |
| 0278  | 75431 | 104200 |       | DLD SAVC,I  | MOVE UP THE DISK ADDRESS       |
|       | 75432 | 100041 |       |             |                                |
| 0279  | 75433 | 000040 |       | CLE         |                                |
| 0280  | 75434 | 046025 |       | ADB SAVLN   | BY SAVLN BLOCKS                |
| 0281  | 75435 | 002040 |       | SEZ         | CHECK FOR OVERFLOW             |
| 0282  | 75436 | 002004 |       | INA         |                                |
| 0283  | 75437 | 104400 |       | DST SAVC,I  |                                |
|       | 75440 | 100041 |       |             |                                |
| 0284  | 75441 | 064041 |       | LDB SAVC    | AND UPDATE THE COUNT           |
| 0285  | 75442 | 044354 |       | ADB ,+2     | > LENGTH WORD                  |
| 0286  | 75443 | 060044 |       | LDA SAVDF   | GET SAVED LENGTH               |
| 0287  | 75444 | 170001 |       | STA B,I     | AND PLUG IN                    |
| 0288* |       |        |       |             |                                |
| 0289  | 75445 |        | SAVCG | EQU *       |                                |
| 0290  | 75445 | 162010 |       | LDA RKCYP,I | GET DRUM ADDRESS               |
| 0291  | 75446 | 064562 |       | LDB LIBD    | AND WRITE THE DISK ADT         |
| 0292  | 75447 | 016231 |       | JSB DRUML   | BACK TO THE DRUM               |
| 0293  | 75450 | 027425 |       | JMP SAV30   | CAN'T, MAKE IT DISAPPEAR       |
| 0294* |       |        |       |             |                                |
| 0295  | 75451 | 016047 | SAV31 | JSB ROPRG   | READ USER PROGRAM AGAIN        |
| 0296  | 75452 | 060040 |       | LDA SAVWD   | WRITE IT OUT.                  |
| 0297  | 75453 | 070215 |       | STA MWORD   | TO LIBRARY                     |
| 0298  | 75454 | 027477 | SAV24 | JMP SAV25   | ROOM FOR CSAVE CODE            |
| 0299  | 75455 | 000000 |       | BSS 10      |                                |
| 0300* |       |        |       |             |                                |
| 0301  | 75477 |        | SAV25 | EQU *       |                                |
| 0302  | 75477 | 063603 |       | LDA SAVDP   |                                |

0303 75500 064042  
 0304 75501 114212  
 0305 75502 027501  
 0306 75503 102031  
 0307 75504 060214  
 0308 75505 002020  
 0309 75506 027504  
 0310 75507 002003  
 0311 75510 026226  
 0312\*  
 0313 75511 116005  
 0314 75512 002001  
 0315 75513 102032  
 0316 75514 064035  
 0317 75515 044356  
 0318 75516 160001  
 0319 75517 031036  
 0320 75520 170001  
 0321 75521 060034  
 0322 75522 040360  
 0323 75523 160000  
 0324 75524 064562  
 0325 75525 016231  
 0326 75526 027553  
 0327 75527 063605  
 0328 75530 067532  
 0329 75531 026432  
 0330 75532 075533  
 0331 75533 005125  
 0332 75534 047123  
 75535 052503  
 75536 041505  
 75537 051523  
 75540 043125  
 75541 046073  
 75542 020113  
 75543 044514  
 75544 046040  
 75545 040516  
 75546 042040  
 75547 051105  
 75550 050105  
 75551 040524  
 75552 027040  
 0333 75553 060034  
 0334 75554 040360  
 0335 75555 064072  
 0336 75556 116016  
 0337 75557 060332  
 0338 75560 067562  
 0339 75561 026432  
 0340 75562 075563  
 0341 75563 005116  
 0342 75564 047440  
 75565 050122

LDB SAVP  
 JSB DISCA,I WRITE TO DISK  
 JMP \*-1 TRY AGAIN IF BUSY  
 HLT 318 DISC NOT PRESENT; HALT  
 LDA MBUSY WAIT FOR  
 SSA TRANSFER TO  
 JMP \*-2 COMPLETE  
 SZA,RSS TRANSFER SUCCESSFUL?  
 JMP LLEND  
  
 JSB DLOKP,I NO, GO GET DIRECTORY ENTRY AGAIN  
 RSS FOUND IT  
 HLT DEATH+32B NOT FOUND: TROUBLE  
 LDB LTEMP+5 GET POINTER TO ENTRY  
 ADB .+4 => END OF COMMON POINTER  
 LDA B,I SET BIT 15 TO  
 IOR BIT15 INDICATE BADLY SAVED  
 STA B,I PROGRAM  
 LDA LTEMP+4 WRITE OUT  
 ADA .+6 DIRECTORY  
 LDA A,I TRACK  
 LDB LIBD  
 JSB DRUML  
 JMP SAV32 BLEW IT, TRY TO SALVAGE  
 LDA SM31  
 LDB \*\*2  
 JMP LIBER PRINT FAILURE  
 DEF \*\*1  
 OCT 5125 LF=U  
 ASC 15,NSUCCESSFUL; KILL AND REPEAT.  
  
 SAV32 LDA LTEMP+4 GET POINTER TO  
 ADA .+6 DRUM ADDRESS  
 LDB WORD GET TRACK LENGTH  
 JSB SALVP,I GO GRAB A NEW TRACK  
 SAV3 LDA \*-16  
 SAV4 LDB \*\*2  
 JMP LIBER  
 DEF \*\*1  
 OCT 5116 LF=N  
 ASC 7,0 PROGRAM NAME

```

75566 047507
75567 051101
75570 046440
75571 047101
75572 046505
0343 75573 SAV98 EQU *
0344 75573 063604 LDA SM507 SET UP
0345 75574 070072 STA WORD OVERLAY.
0346 75575 163602 LDA SAVOV,I
0347 75576 064504 LDB #LIBI
0348 75577 027773 JMP SAV99
0349 75600 000115 EALCA DEF DADLC
0350 75601 000125 EALNA DEF DADLN
0351 75602 072044 SAVOV DEF SAVO+COM6=COM3
0352 75603 000036 SAVDP DEF SAVDS *-> DISK ADDRESS
0353 75604 177005 SM507 DEC =507
0354 75605 177741 SM31 DEC =31
0355*
0356 00034 SAVI EQU LTEMP+4
0357 00035 SAVS EQU LTEMP+5
0358 00036 SAVDS EQU LTEMP+6 6 & 7 ARE THE DISK ADDRESS
0359 00040 SAVWD EQU LTEMP+8 LENGTH IN WORDS OF PROGRAM
0360 00041 SAVC EQU LTEMP+9
0361 00042 SAVP EQU LTEMP+10
0362 00043 SAVD EQU LTEMP+11
0363 00044 SAVDF EQU LTEMP+12
0364 00045 SAVDU EQU LTEMP+13
0365 74025 SAVLN EQU T35CQ
0366*
0367*
0368 75773 ORG LIBRA+507
0369 75773 SAV99 EQU *
0370 75773 016231 JSB DRUML CALL IN OVERLAY
0371 75774 116015 JSB SICKP,I BLEW IT, GO HOME QUIETLY
0372 75775 027000 JMP LIBRA
0373 75776 027366 JMP SAV21 NORMAL RETURN
0374 75777 027211 JMP SAV23 ERROR RETURN
0375 76000 $$AV EQU *

```

0377\* THE CSAVE COMMAND IS USED TO SAVE PROGRAMS IN THE USER LIBRARY  
 0378\* IN SEMI-COMPILED FORM. CSAVE BORROWS CODE FROM SAVE AND MUST  
 0379\* FOLLOW IT.

0380\*

0381 75000                   ORG LIBRA  
 0382 75000 064273         LDB MLINK+1

0383\*

0384 75025                   ORG SAV0  
 0385 75025 002002         SZA                    COMPILED?  
 0386 75026 027042         JMP CSAV1                YES  
 0387 75027 065577         LDB SPROG                NO, COMMON  
 0388 75030 054702         CPB PBUFF                ALLOCATED?  
 0389 75031 015520         JSB ALCOM                NO==DO IT  
 0390 75032 065577         LDB SPROG                SET PROGRAM  
 0391 75033 075334         STB PRGCT                COUNTER  
 0392 75034 060412         LDA ,+40B                TURN ON  
 0393 75035 071573         STA BLANK                BLANK SUPPRESSION  
 0394 75036 002400         CLA                     CLEAR OUT-OF  
 0395 75037 071575         STA SYMTB                STORAGE FLAG  
 0396 75040 127041         JMP \*\*+1,I             GO COMPILE IT  
 0397 75041 036071         DEF CMP00  
 0398 75042 061230         CSAV1 LDA SPTR  
 0399 75043 002002         SZA                     SEMI-COMPILED?  
 0400 75044 015522         JSB RSTPT                RESTORE SYMBOL TABLE POINTERS  
 0401 75045 002400         CSAV2 CLA                    FLAG AS  
 0402 75046 071230         STA SPTR                SEMI-COMPILED  
 0403 75047 065504         LDB FILTB

0404\*

0405 75062                   ORG SAV50  
 0406 75062 065504         LDB FILTB  
 0407 75063 044361         ADB ,+7  
 0408 75064 007004         CMB,INB  
 0409 75065 044462         ADB LWAUS  
 0410 75066 006021         SSB,RSS                TOO BIG?  
 0411 75067 027105         JMP CSAV4                NO  
 0412 75070 060330         LDA ,=18                YES  
 0413 75071 067073         LDB \*\*+2  
 0414 75072 026432         JMP LIBER  
 0415 75073 075074         DEF \*\*+1  
 0416 75074 005120         OCT 5120                LF=P  
 0417 75075 051117         ASC 8,ROGRAM         TOO LARGE

75076 043522  
 75077 040515  
 75100 020124  
 75101 047517  
 75102 020114  
 75103 040522  
 75104 043505

0418 75105                   CSAV4 EQU +  
 0419 75105 065504         LDB FILTB  
 0420 75106 044361         ADB ,+7

0421\*

0422 75272                   ORG SAV10  
 0423 75272 060033         LDA LTEMP+3            FLAG NAME  
 0424 75273 031036         IOR BIT15             TO INDICATE

0425 75274 070033  
 0426\* 75454  
 0427 75454  
 0428 75454 061504  
 0429 75455 065575  
 0430 75456 174000  
 0431 75457 002004  
 0432 75460 065606  
 0433 75461 174000  
 0434 75462 064452  
 0435 75463 075605  
 0436 75464 064346  
 0437 75465 075230  
 0438 75466 002004  
 0439 75467 165605  
 0440 75470 174000  
 0441 75471 035605  
 0442 75472 035230  
 0443 75473 027466  
 0444 75474 002004  
 0445 75475 065607  
 0446 75476 174000

STA LTEMP+3  
 ORG SAV24  
 LDA FILTB  
 LDB SYMTB  
 STB 0,I  
 INA  
 LDB FILCT  
 STB 0,I  
 LDB DFILT  
 STB FILPT  
 LDB 4  
 STB SPTR  
 CSAV3 INA  
 LDB FILPT,I  
 STB 0,I  
 ISZ FILPT  
 ISZ SPTR  
 JMP CSAV3  
 INA  
 LDB USESN  
 STB 0,I

SEMI-COMPILED  
 => FIRST WORD AFTER SYMBOL TABLE  
 SAVE END-OF  
 PROGRAM POINTER  
 SAVE # OF  
 <FILES STATEMENTS>  
 SAVE  
 POINTERS  
 TO <FILES  
 STATEMENTS>  
 SAVE  
 USING  
 SEEN FLAG

```

0002* THE SAVE OVERLAY ROUTINE IS CALLED BY THE SAVE AND OPEN ROUTINES
0003* * WHENEVER THEY WANT TO MAKE A DIRECTORY ENTRY ON A TRACK THAT IS
0004* ALREADY FULL, THE FOLLOWING LOCATIONS MUST BE APPROPRIATELY SET:
0005* LTEMP(0:3)=1ST 4 WORDS OF ENTRY.
0006* LTEMP(4:5)=SAME AS LEFT BY DLODIC
0007* LTEMP(6:7)=DISC ADDRESS
0008* LTEMP(13)=DRUM ADDRESS
0009* LTEMP(8)=WORD COUNT
0010* LTEMP(10)=START OF PROGRAM POINTER OR RECORD SIZE
0011 75000 ORG LIBRA
0012*
0013 75000 063651 LDA SDIR0 GET FIRST DIRECTORY TRACK PTR
0014*
0015* COMPUTE TOTAL # OF WORDS IN DIRECTORIES.
0016*
0017 75001 040360 ADA .+6 => DIRECTORY DRUM ADDRESS
0018 75002 164000 SUP1 LDB 0,I GET IT IN B,
0019 75003 040344 ADA .-6
0020 75004 006003 SZB,RSS TEST FOR NONEXIST ENT DIRECTORY.
0021 75005 027020 JMP SUP2
0022 75006 164000 LDB 0,I GET DIRECTORY LENGTH.
0023 75007 006103 CLE,SZB,RSS LENGTH ZERO?
0024 75010 027017 JMP SUP2-1 YES
0025 75011 047657 ADB SUPS ADD TO
0026 75012 077657 STB SUPS TOTAL.
0027 75013 067656 LDB SUPS-1
0028 75014 002041 SEZ,RSS INCREMENTING DOUBLE WORD QUANTIT
0029 75015 044351 ADB .-1
0030 75016 077656 STB SUPS-1
0031 75017 037661 ISZ SUPB BUMP DIRECTORY TRACK COUNTER.
0032 75020 SUP2 EQU *
0033 75020 053652 CPA SDIRL LAST DIRECTORY TRACK?
0034 75021 027024 JMP ++3 YES
0035 75022 040367 ADA .+13
0036 75023 027002 JMP SUP1 NO==GO TO NEXT ONE.
0037*
0038 75024 063657 LDA SUPS GET TOTAL # OF DIRECTORY WORDS.
0039 75025 067655 LOB SUPS-1
0040 75026 100400 DIV .+12 GET ENTRY COUNT IN A
0041 75027 000366
0042 75030 007400 CCB
0043 75031 100400 DIV SUPB COUNT < 65535
0044 75032 075661 COMPUTE # IN EACH DIRECTORY.
0045 75033 053644 CPA M682
0046 75034 006003 SZB,RSS TEST FOR FULL UP.
0047 75035 053645 CPA M683
0048 75036 027634 JMP SUP3
0049 75037 040351 ADA .-1
0050 75040 073657 STA SUPS INCREASE # OF ENTRIES/TRACK BY 1
0051 75041 044351 ADB .-1 AND SAVE IN S.
0052 75042 077661 STB SUPB LET B COUNT HOW MANY WILL HAVE
0053 75043 067651 THIS LARGER SIZE.
0054 75044 044360 LDB SDIR0 GET POINTER TO FIRST TRACK AGAIN
0055 75045 160001 SUP4 LDA 1,I POINT TO ITS DISC ADDRESS.

```

|       |                                                            |        |       |             |                                 |
|-------|------------------------------------------------------------|--------|-------|-------------|---------------------------------|
| 0055  | 75046                                                      | 002003 |       | SZA, RSS    | IF 0 DON'T GIVE IT ANYTHING,    |
| 0056  | 75047                                                      | 027060 |       | JMP SUP5    |                                 |
| 0057  | 75050                                                      | 037661 |       | ISZ SUPB    | TEST FOR ANY MORE BIG TRACKS,   |
| 0058  | 75051                                                      | 002001 |       | RSS         | YES--DON'T SWITCH,              |
| 0059  | 75052                                                      | 037657 |       | ISZ SUPS    | SWITCH TO SMALLER SIZE          |
| 0060  | 75053                                                      | 063657 |       | LDA SUPS    | GET # OF ENTRIES ON TRACK.      |
| 0061  | 75054                                                      | 001020 |       | ALS, ALS    | CONVERT                         |
| 0062  | 75055                                                      | 073656 |       | STA SUPS-1  | * 4                             |
| 0063  | 75056                                                      | 001000 |       | ALS         | TO WORDS,                       |
| 0064  | 75057                                                      | 043656 |       | ADA SUPS-1  | * 12                            |
| 0065  | 75060                                                      | 173662 | SUP5  | STA SUPP, I | STORE IN TABLE,                 |
| 0066  | 75061                                                      | 044344 |       | ADB .-6     | TEST FOR DONE,                  |
| 0067  | 75062                                                      | 057652 |       | CPB SDIRL   |                                 |
| 0068  | 75063                                                      | 027067 |       | JMP SUP6    |                                 |
| 0069  | 75064                                                      | 044367 |       | ADB .+13    | BUMP TO NEXT TRACK.             |
| 0070  | 75065                                                      | 037562 |       | ISZ SUPP    | BUMP TABLE POINTER ALSO.        |
| 0071  | 75066                                                      | 027045 |       | JMP SUP4    |                                 |
| 0072* | TABLE NN NOW CONTAINS THE NEW LENGTHS OF THE 4 DI-         |        |       |             |                                 |
| 0073* | RECTORY TRACKS,                                            |        |       |             |                                 |
| 0074* |                                                            |        |       |             |                                 |
| 0075  | 75067                                                      | 063641 | SUP6  | LDA DEFNN   | SET UP POINTER                  |
| 0076  | 75070                                                      | 073662 |       | STA SUPP    | TO NN AGAIN,                    |
| 0077* |                                                            |        |       |             |                                 |
| 0078* | SQUEEZE ALL THE DIRECTORY ENTRIES ONTO THE LASTMOST OF THE |        |       |             |                                 |
| 0079* | AVAILABLE TRACKS,                                          |        |       |             |                                 |
| 0080* |                                                            |        |       |             |                                 |
| 0081  | 75071                                                      | 063652 |       | LDA SDIRL   | => 1ST TRACK                    |
| 0082  | 75072                                                      | 073664 |       | STA SUPK1   | FOR READ                        |
| 0083  | 75073                                                      | 040360 |       | ADA .+6     |                                 |
| 0084  | 75074                                                      |        | SUP20 | EQU *       |                                 |
| 0085  | 75074                                                      | 164000 |       | LDB A, I    | GET ADDRESS                     |
| 0086  | 75075                                                      | 006002 |       | SZB         | ZERO?                           |
| 0087  | 75076                                                      | 027101 |       | JMP SUP21   | NO                              |
| 0088  | 75077                                                      | 040343 |       | ADA .-7     | YES                             |
| 0089  | 75100                                                      | 027074 |       | JMP SUP20   |                                 |
| 0090  | 75101                                                      |        | SUP21 | EQU *       |                                 |
| 0091  | 75101                                                      | 040344 |       | ADA .-6     | => 1ST TRACK                    |
| 0092  | 75102                                                      | 073666 |       | STA SUPL1   | FOR WRITE                       |
| 0093  | 75103                                                      | 002400 |       | CLA         | # OF WORDS                      |
| 0094  | 75104                                                      | 073665 |       | STA SUPK2   | IN BUFFER                       |
| 0095* |                                                            |        |       |             |                                 |
| 0096  | 75105                                                      | 063564 |       | LDA SUPK1   |                                 |
| 0097  | 75106                                                      |        | SUP22 | EQU *       |                                 |
| 0098  | 75106                                                      | 164000 |       | LDB A, I    | GET LENGTH FOR READ             |
| 0099  | 75107                                                      | 006003 |       | SZB, RSS    | ZERO?                           |
| 0100  | 75110                                                      | 027237 |       | JMP SUP27   | YES                             |
| 0101  | 75111                                                      | 047665 |       | ADB SUPK2   | NO, ADD IN # OF WORDS IN BUFFER |
| 0102  | 75112                                                      | 047647 |       | ADB S8184   |                                 |
| 0103  | 75113                                                      | 006020 |       | SSB         | >8184?                          |
| 0104  | 75114                                                      | 027146 |       | JMP SUP23   | YES                             |
| 0105  | 75115                                                      | 164000 |       | LDB A, I    | NO, SET                         |
| 0106  | 75116                                                      | 074072 |       | STB WORD    | LENGTH                          |
| 0107  | 75117                                                      | 047665 |       | ADB SUPK2   | UPDATE # OF                     |
| 0108  | 75120                                                      | 077665 |       | STB SUPK2   | WORDS IN CORE                   |
| 0109  | 75121                                                      | 044530 |       | ADB LULEN   |                                 |



|       |       |        |             |                     |
|-------|-------|--------|-------------|---------------------|
| 0110  | 75122 | 045036 | ADB BIT15   | CORE ADDRESS        |
| 0111  | 75123 | 040360 | ADA ,+6     |                     |
| 0112  | 75124 | 160000 | LDA A,I     | DRUM ADDRESS        |
| 0113  | 75125 | 016231 | JSB DRUML   |                     |
| 0114  | 75126 | 116017 | JSB DEADP,I |                     |
| 0115* |       |        |             |                     |
| 0116  | 75127 | 063665 | LDA SUPK2   |                     |
| 0117  | 75130 | 050714 | CPA M8184   | EXACTLY 8104 WORDS? |
| 0118  | 75131 | 002001 | RSS         | YES                 |
| 0119  | 75132 | 027237 | JMP SUP27   | NO                  |
| 0120  | 75133 | 070072 | STA WORD    |                     |
| 0121  | 75134 | 067666 | LDB SUPL1   | SET LENGTH          |
| 0122  | 75135 | 170001 | STA B,I     | IN DIREC            |
| 0123  | 75136 | 044360 | ADB ,+6     |                     |
| 0124  | 75137 | 160001 | LDA B,I     | DRUM ADDRESS        |
| 0125  | 75140 | 067650 | LDB X2056   | CORE ADDRESS        |
| 0126  | 75141 | 016231 | JSB DRUML   |                     |
| 0127  | 75142 | 116017 | JSB DEADP,I |                     |
| 0128  | 75143 | 006400 | CLB         | BUFFER NOW EMPTY    |
| 0129  | 75144 | 077665 | STB SUPK2   |                     |
| 0130  | 75145 | 027226 | JMP SUP24   |                     |
| 0131* |       |        |             |                     |
| 0132  | 75146 |        | SUP23 EQU * |                     |
| 0133  | 75146 | 007004 | CMB,INB     |                     |
| 0134  | 75147 | 005121 | BRS,BRS     | COMPUTE             |
| 0135  | 75150 | 005121 | BRS,BRS     | # OF                |
| 0136  | 75151 | 005121 | BRS,BRS     | EXTRA               |
| 0137  | 75152 | 077671 | STB SUPES   | SECTORS             |
| 0138  | 75153 | 005700 | BLF         | # OF                |
| 0139  | 75154 | 005222 | RBL,RBL     | EXTRA               |
| 0140  | 75155 | 077670 | STB SUPEX   | WORDS               |
| 0141  | 75156 | 144000 | ADB A,I     | # OF WORDS          |
| 0142  | 75157 | 074072 | STB WORD    | TO READ             |
| 0143  | 75160 | 047665 | ADB SUPK2   |                     |
| 0144  | 75161 | 044530 | ADB LULEN   |                     |
| 0145  | 75162 | 074050 | STB MOVES   |                     |
| 0146  | 75163 | 045036 | ADB BIT15   | CORE ADDRESS        |
| 0147  | 75164 | 040360 | ADA ,+6     |                     |
| 0148  | 75165 | 160000 | LDA A,I     | DRUM ADDRESS        |
| 0149  | 75166 | 043671 | ADA SUPES   |                     |
| 0150  | 75167 | 016231 | JSB DRUML   |                     |
| 0151  | 75170 | 116017 | JSB DEADP,I |                     |
| 0152* |       |        |             |                     |
| 0153  | 75171 | 060714 | LDA M8184   | # OF WORDS          |
| 0154  | 75172 | 070072 | STA WORD    | TO WRITE            |
| 0155  | 75173 | 067666 | LDB SUPL1   |                     |
| 0156  | 75174 | 170001 | STA B,I     | SAVE IN DIREC       |
| 0157  | 75175 | 044360 | ADB ,+6     |                     |
| 0158  | 75176 | 160001 | LDA B,I     | DRUM ADDRESS        |
| 0159  | 75177 | 067650 | LDB X2056   | CORE ADDRESS        |
| 0160  | 75200 | 016231 | JSB DRUML   |                     |
| 0161  | 75201 | 116017 | JSB DEADP,I |                     |
| 0162* |       |        |             |                     |
| 0163  | 75202 | 067650 | LDB X2056   | # OF                |
| 0164  | 75203 | 007004 | CMB,INB     | EXTRA               |

|       |       |        |              |                           |
|-------|-------|--------|--------------|---------------------------|
| 0165  | 75204 | 044050 | ADB MOVES    | WORDS                     |
| 0166  | 75205 | 077665 | STB SUPK2    | TO MOVE                   |
| 0167  | 75206 | 060530 | LDA LULEN    |                           |
| 0168  | 75207 | 040001 | ADA B        |                           |
| 0169  | 75210 | 070051 | STA MOVED    | DESTINATION POINTER       |
| 0170  | 75211 | 016257 | JSB MOVEW    | MUVE THEM                 |
| 0171* |       |        |              |                           |
| 0172  | 75212 | 067670 | LDB SUPEX    | # OF WORDS                |
| 0173  | 75213 | 007004 | CMB, INB     | TO READ FROM              |
| 0174  | 75214 | 074072 | STB WORD     | PARTIAL TRACK             |
| 0175  | 75215 | 047665 | ADB SUPK2    |                           |
| 0176  | 75216 | 077665 | STB SUPK2    | # OF WORDS IN BUFFER      |
| 0177  | 75217 | 044530 | ADB LULEN    |                           |
| 0178  | 75220 | 045036 | ADB BIT15    | CORE ADDRESS              |
| 0179  | 75221 | 063664 | LDA SUPK1    |                           |
| 0180  | 75222 | 040360 | ADA .+6      |                           |
| 0181  | 75223 | 160000 | LDA A, I     | DRUM ADDRESS              |
| 0182  | 75224 | 016231 | JSB DRUML    |                           |
| 0183  | 75225 | 116017 | JSB DEADP, I |                           |
| 0184* |       |        |              |                           |
| 0185  | 75226 |        | SUP24 EQU *  |                           |
| 0186  | 75226 | 003400 | CCA          | BUMP TO NEXT              |
| 0187  | 75227 | 043666 | ADA SUPL1    | TRACK TO WRITE            |
| 0188  | 75230 |        | SUP25 EQU *  |                           |
| 0189  | 75230 | 164000 | LDB A, I     | GET ADDRESS               |
| 0190  | 75231 | 006002 | SZB          | ZERO?                     |
| 0191  | 75232 | 027235 | JMP SUP26    | NO                        |
| 0192  | 75233 | 040343 | ADA .-7      | YES, MOVE TO NEXT ONE     |
| 0193  | 75234 | 027230 | JMP SUP25    |                           |
| 0194  | 75235 |        | SUP26 EQU *  |                           |
| 0195  | 75235 | 040344 | ADA .-6      | BUMP TO LENGTH WORD       |
| 0196  | 75236 | 073666 | STA SUPL1    | SAVE POINTER              |
| 0197* |       |        |              |                           |
| 0198  | 75237 |        | SUP27 EQU *  |                           |
| 0199  | 75237 | 063664 | LDA SUPK1    | => CURRENT READ TRACK     |
| 0200  | 75240 | 053651 | CPA SDIR0    | LAST ONE                  |
| 0201  | 75241 | 027245 | JMP SUP28    | YES                       |
| 0202  | 75242 | 040343 | ADA .-7      | NO, BUMP TO NEXT ONE      |
| 0203  | 75243 | 073664 | STA SUPK1    |                           |
| 0204  | 75244 | 027106 | JMP SUP22    |                           |
| 0205  | 75245 |        | SUP28 EQU *  |                           |
| 0206* |       |        |              |                           |
| 0207  | 75245 | 063665 | LDA SUPK2    | # OF WORDS IN BUFFER      |
| 0208  | 75246 | 002003 | SZA, RSS     | ZERO?                     |
| 0209  | 75247 | 027266 | JMP SUP30    | YES                       |
| 0210  | 75250 | 070072 | STA WORD     | NO, MUST WRITE OUT BUFFER |
| 0211  | 75251 | 067666 | LDB SUPL1    | SET LENGTH                |
| 0212  | 75252 | 170001 | STA B, I     | IN DIREC                  |
| 0213  | 75253 | 044360 | ADB .+6      |                           |
| 0214  | 75254 | 160001 | LDA B, I     | DRUM ADDRESS              |
| 0215  | 75255 | 064072 | LDB WORD     |                           |
| 0216  | 75256 | 044530 | ADB LULEN    | CORE ADDRESS              |
| 0217  | 75257 | 016231 | JSB DRUML    |                           |
| 0218  | 75260 | 116017 | JSB DEADP, I |                           |
| 0219* |       |        |              |                           |

|       |                                                                   |        |       |             |                                 |
|-------|-------------------------------------------------------------------|--------|-------|-------------|---------------------------------|
| 0220  | 75261                                                             | 063666 |       | LDA SUPL1   |                                 |
| 0221  | 75262                                                             |        | SUP29 | EQU *       |                                 |
| 0222  | 75262                                                             | 053661 |       | CPA SDIR0   | LAST WRITE TRACK?               |
| 0223  | 75263                                                             | 027277 |       | JMP SUP31   | YES, DONE                       |
| 0224  | 75264                                                             | 040343 |       | ADA .-7     | NO, BUMP TO NEXT ONE            |
| 0225  | 75265                                                             | 002001 |       | RSS         |                                 |
| 0226  | 75266                                                             |        | SUP30 | EQU *       |                                 |
| 0227  | 75266                                                             | 063666 |       | LDA SUPL1   |                                 |
| 0228  | 75267                                                             | 040360 |       | ADA .+6     |                                 |
| 0229  | 75270                                                             | 164000 |       | LDB A,I     | GET ADDRESS                     |
| 0230  | 75271                                                             | 040344 |       | ADA .-6     |                                 |
| 0231  | 75272                                                             | 006003 |       | SZB,RSS     | ZERO?                           |
| 0232  | 75273                                                             | 027202 |       | JMP SUP29   | YES                             |
| 0233  | 75274                                                             | 006400 |       | CLB         | NO, SET                         |
| 0234  | 75275                                                             | 174000 |       | STB A,I     | LENGTH =0                       |
| 0235  | 75276                                                             | 027262 |       | JMP SUP29   |                                 |
| 0236* |                                                                   |        |       |             |                                 |
| 0237* | THE MAIN PART OF THE ALGORITHM CONSISTS OF TWO SECTIONS. IN THE   |        |       |             |                                 |
| 0238* | FIRST SECTION WE READ AS POSSIBLE INTO THE SWAP AREA. IN THE 2ND  |        |       |             |                                 |
| 0239* | SECTION WE WRITE OUT AS MUCH AS POSSIBLE. THE ENTIRE PROCEDURE IS |        |       |             |                                 |
| 0240* | THEN REPEATED UNTIL WE ARE FINISHED. THE FOLLOWING MEANINGS ARE   |        |       |             |                                 |
| 0241* | ASSOCIATED WITH THESE VARIABLES:                                  |        |       |             |                                 |
| 0242* |                                                                   |        |       |             |                                 |
| 0243* | SUPK1=>DIREC ENTRY FOR TRACK BEING READ.                          |        |       |             |                                 |
| 0244* | SUPL1=>DIREC ENTRY FOR TRACK BEING WRITTEN.                       |        |       |             |                                 |
| 0245* | SUPK2=# OF WORDS READ SO FAR FROM K1.                             |        |       |             |                                 |
| 0246* | SUPL2=# OF WORDS WRITTEN SO FAR ON L1.                            |        |       |             |                                 |
| 0247* | SUP # OF WORDS IN CORE.                                           |        |       |             |                                 |
| 0248* | SUPP => # OF WORDS TO BE WRITTEN ON L1.                           |        |       |             |                                 |
| 0249* |                                                                   |        |       |             |                                 |
| 0250  | 75277                                                             |        | SUP31 | EQU *       |                                 |
| 0251  | 75277                                                             | 002400 |       | CLA         | INITIALIZE                      |
| 0252  | 75300                                                             | 073665 |       | STA SUPK2   | LENGTH                          |
| 0253  | 75301                                                             | 073667 |       | STA SUPL2   | WORDS                           |
| 0254  | 75302                                                             | 063651 |       | LDA SDIR0   | INITIALIZE                      |
| 0255  | 75303                                                             | 073664 |       | STA SUPK1   | DIREC                           |
| 0256  | 75304                                                             | 073666 |       | STA SUPL1   | POINTERS                        |
| 0257* |                                                                   |        |       |             |                                 |
| 0258  | 75305                                                             | 063667 | SUP7  | LDA SUPL2   | IS # OF WORDS WRITTEN SO FAR ON |
| 0259  | 75306                                                             | 003004 |       | CMA,INA     | L1=# OF WORDS TO BE WRITTEN?    |
| 0260  | 75307                                                             | 153662 |       | CPA SUPP,I  |                                 |
| 0261  | 75310                                                             | 027502 |       | JMP SUP10   | YES--GO ADVANCE L19             |
| 0262* |                                                                   |        |       |             |                                 |
| 0263  | 75311                                                             | 063660 | SUP8  | LDA SUP     | IS THE SWAP AREA FULL           |
| 0264  | 75312                                                             | 043655 |       | ADA STLE    |                                 |
| 0265  | 75313                                                             | 002021 |       | SSA,RSS     |                                 |
| 0266  | 75314                                                             | 027513 |       | JMP SUP11   | YES==GO TO WRITE SECTION.       |
| 0267  | 75315                                                             | 070072 |       | STA WORD    | NO==SAVE -# OF COREWORDS AVAIL. |
| 0268  | 75316                                                             | 067664 |       | LDB SUPK1   | HAVE WE READ ALL OF THE TRACKS? |
| 0269  | 75317                                                             | 057653 |       | CPB SDIRU   |                                 |
| 0270  | 75320                                                             | 027513 |       | JMP SUP11   | YES==GO TO WRITE SECTION.       |
| 0271  | 75321                                                             | 163664 |       | LDA SUPK1,I | A=# OF WORDS ON THIS TRACK.     |
| 0272  | 75322                                                             | 043665 |       | ADA SUPK2   | A=# NOT READ YET.               |
| 0273  | 75323                                                             | 002002 |       | SZA         | ENTIRE TRACK READ?              |
| 0274  | 75324                                                             | 027331 |       | JMP SUP9    | NO.                             |

|       |       |        |             |                                 |
|-------|-------|--------|-------------|---------------------------------|
| 0275  | 75325 | 044361 | ADB ,+7     | YES==BUMP K1 TO NEXT TRACK.     |
| 0276  | 75326 | 077664 | STB SUPK1   |                                 |
| 0277  | 75327 | 073665 | STA SUPK2   | SET # OF WORDS READ TO 0.       |
| 0278  | 75330 | 027311 | JMP SUP8    | TEST THIS TRACK.                |
| 0279* |       |        |             |                                 |
| 0280  | 75331 | 070001 | SUP9 STA 1  | B=# OF WORDS NOT YET READ ON K1 |
| 0281  | 75332 | 007004 | CMB,INB     | MAKE POSITIVE.                  |
| 0282  | 75333 | 044072 | ADB WORD    | IS # OF WORDS ON TRACK > # OF   |
| 0283  | 75334 | 006020 | SSB         | WORDS WE HAVE ROOM FOR?         |
| 0284  | 75335 | 027341 | JMP ++4     | NO==READ IN ENTIRE TRACK.       |
| 0285  | 75336 | 060072 | LDA WORD    | GET=# WE HAVE ROOM FOR.         |
| 0286  | 75337 | 040734 | ADA B77     | REDUCE TO NEXT SMALLER          |
| 0287  | 75340 | 010610 | AND M64     | SECTOR SIZE.                    |
| 0288  | 75341 | 002003 | SZA,RSS     | IF WE CAN'T READ IN ANY, GO TO  |
| 0289  | 75342 | 027513 | JMP SUP11   | WRITE SECTION.                  |
| 0290* |       |        |             |                                 |
| 0291  | 75343 | 070072 | STA WORD    | SET WORD = # OF WORDS TO READ.  |
| 0292  | 75344 | 063665 | LDA SUPK2   | GET # OF WORDS READ SO FAR,     |
| 0293  | 75345 | 006400 | CLB         | DIVIDE BY 64 TO GET             |
| 0294  | 75346 | 101026 | ASR 6       | SECTOR ADDRESS.                 |
| 0295  | 75347 | 067664 | LDB SUPK1   | GET DIRECTORY                   |
| 0296  | 75350 | 044360 | ADB ,+6     | TRACK ADDRESS.                  |
| 0297  | 75351 | 140001 | ADA 1,I     |                                 |
| 0298  | 75352 | 064566 | LDB LIBDI   | COMPUTE CORE LOCATION           |
| 0299  | 75353 | 047660 | ADB SUP     | TO READ INTO.                   |
| 0300  | 75354 | 016231 | JSB DRUML   | READ IT IN                      |
| 0301  | 75355 | 116017 | JSB DEADP,I | DRUM ERROR, FORGET IT           |
| 0302* |       |        |             |                                 |
| 0303  | 75356 | 064072 | LDB WORD    | UPDATE # OF WORDS               |
| 0304  | 75357 | 007004 | CMB,INB     | IN CORE.                        |
| 0305  | 75360 | 047660 | ADB SUP     |                                 |
| 0306  | 75361 | 077660 | STB SUP     |                                 |
| 0307  | 75362 | 064072 | LDB WORD    | UPDATE # OF WORDS               |
| 0308  | 75363 | 007004 | CMB,INB     | READ FROM K1.                   |
| 0309  | 75364 | 047665 | ADB SUPK2   |                                 |
| 0310  | 75365 | 077665 | STB SUPK2   |                                 |
| 0311* |       |        |             |                                 |
| 0312  | 75366 | 063663 | LDA SUPTG   | HAVE WE INSERTED THE NEW ENTRY  |
| 0313  | 75367 | 002002 | SZA         | YET?                            |
| 0314  | 75370 | 027311 | JMP SUP8    | YES==GO TRY TO READ MORE.       |
| 0315  | 75371 | 063667 | LDA SUPL2   | GET THE AMOUNT ALREADY WRITTEN  |
| 0316  | 75372 | 006400 | CLB         | ON THIS TRACK                   |
| 0317  | 75373 | 100400 | DIV ,+12    | FIND EXCESS OVER EVEN ENTRY     |
|       | 75374 | 000366 |             |                                 |
| 0318  | 75375 | 060001 | LDA B       |                                 |
| 0319  | 75376 | 007004 | CMB,INB     |                                 |
| 0320  | 75377 | 077670 | STB SUPEX   |                                 |
| 0321  | 75400 | 043660 | ADA SUP     | GET THE COUNT                   |
| 0322  | 75401 | 006400 | CLB         | OF WORDS IN CORE                |
| 0323  | 75402 | 100400 | DIV ,+12    | CONVERT TO ENTRY COUNT          |
|       | 75403 | 000366 |             |                                 |
| 0324  | 75404 | 100200 | MPY ,+12    | AND BACK TO WORD COUNT          |
|       | 75405 | 000366 |             |                                 |
| 0325  | 75406 | 040562 | ADA LIBD    | SO THAT WE LOOK AT              |
| 0326  | 75407 | 043670 | ADA SUPEX   | AN EVEN BOUNDARY                |

|       |       |        |              |                                  |
|-------|-------|--------|--------------|----------------------------------|
| 0327  | 75410 | 006003 | 8ZB, RSS     |                                  |
| 0328  | 75411 | 040336 | ADA .-12     |                                  |
| 0329  | 75412 | 073670 | STA SUPEX    |                                  |
| 0330  | 75413 | 064520 | LDB DLTEM    | ⇒ ID/NAME OF NEW ENTRY           |
| 0331  | 75414 | 117654 | JSB DIRCS, I | GO COMPARE                       |
| 0332  | 75415 | 027311 | JMP SUP8     | DOESN'T GO ON THIS TRACK         |
| 0333  | 75416 |        | SUP32 EQU *  |                                  |
| 0334  | 75416 | 067670 | LDB SUPEX    | GOES ON THIS                     |
| 0335  | 75417 | 077671 | STB SUPES    | TRACK, SO                        |
| 0336  | 75420 | 044336 | ADB .-12     | SEARCH BACKWARDS                 |
| 0337  | 75421 | 077670 | STB SUPEX    | TO FIND                          |
| 0338  | 75422 | 044674 | ADB MLIBD    |                                  |
| 0339  | 75423 | 006020 | SSB          | NO SKIP IF SEARCH DONE           |
| 0340  | 75424 | 027431 | JMP SUP33    |                                  |
| 0341  | 75425 | 067670 | LDB SUPEX    |                                  |
| 0342  | 75426 | 060520 | LDA DLTEM    | OUT WHERE                        |
| 0343  | 75427 | 117654 | JSB DIRCS, I | COMPARE THIS ENTRY               |
| 0344  | 75430 | 027416 | JMP SUP32    | NOT THIS ONE                     |
| 0345* |       |        |              |                                  |
| 0346  | 75431 |        | SUP33 EQU *  |                                  |
| 0347  | 75431 | 037663 | ISZ SUPTG    | SET TOGGLE TO SAY WE'VE INSERTED |
| 0348  | 75432 | 060562 | LDA LIBD     | COMPUTE DESTINATION              |
| 0349  | 75433 | 043660 | ADA SUP      | OF WORDS TO BE                   |
| 0350  | 75434 | 064000 | LDB A        | MOVED                            |
| 0351  | 75435 | 040365 | ADA .+11     |                                  |
| 0352  | 75436 | 070051 | STA MOVED    | COMPUTE SOURCE                   |
| 0353  | 75437 | 040336 | ADA .-12     |                                  |
| 0354  | 75440 | 070050 | STA MOVES    |                                  |
| 0355  | 75441 | 007004 | CMB, INB     |                                  |
| 0356  | 75442 | 047671 | ADB SUPES    | CALL REVERSE MOVER.              |
| 0357  | 75443 | 016245 | JSB MOVEB    |                                  |
| 0358* |       |        |              |                                  |
| 0359  | 75444 | 063671 | LDA SUPES    | ⇒ HOLE                           |
| 0360  | 75445 | 070051 | STA MOVED    |                                  |
| 0361  | 75446 | 060520 | LDA DLTEM    | SET SOURCE AT LTEMP.             |
| 0362  | 75447 | 070050 | STA MOVES    |                                  |
| 0363  | 75450 | 064346 | LDB .-4      | MOVE IN FIRST 4                  |
| 0364  | 75451 | 016257 | JSB MOVEW    | WORDS.                           |
| 0365  | 75452 | 060042 | LDA SAVP     | STORE START-OF-                  |
| 0366  | 75453 | 170051 | STA MOVED, I | PROGRAM POINTER                  |
| 0367  | 75454 | 034051 | ISZ MOVED    |                                  |
| 0368  | 75455 | 016076 | JSB DATE     | INSERT DATE IN WORD 5            |
| 0369  | 75456 | 170051 | STA MOVED, I |                                  |
| 0370  | 75457 | 034051 | ISZ MOVED    | AND                              |
| 0371  | 75460 | 060201 | LDA DATIM    | GET HOUR OF YEAR FOR             |
| 0372  | 75461 | 170051 | STA MOVED, I | WORD 6                           |
| 0373  | 75462 | 034051 | ISZ MOVED    |                                  |
| 0374  | 75463 | 060045 | LDA SAVDU    | SET DRUM                         |
| 0375  | 75464 | 170051 | STA MOVED, I | ADDRESS                          |
| 0376  | 75465 | 034051 | ISZ MOVED    |                                  |
| 0377  | 75466 | 104200 | DLD SAVDS    | GET THE DISK ADDRESS AND SET IT  |
|       | 75467 | 000036 |              |                                  |
| 0378  | 75470 | 104400 | DST MOVED, I | INTO WORDS 8 AND 9               |
|       | 75471 | 100051 |              |                                  |
| 0379  | 75472 | 064051 | LDB MOVED    |                                  |

```

0380 75473 044355 ADB ,+3 => WORD 11
0381 75474 060040 LDA SAVWD GET LENGTH
0382 75475 170001 STA B,I AND STORE AWAY
0383 75476 063660 LDA SUP UPDATE THE COUNT OF WORDS
0384 75477 040366 ADA ,+12 IN CORE BY TWELVE
0385 75500 073660 STA SUP
0386 75501 027311 JMP SUP8

```

0387\*  
0388\* COME HERE WHEN CURRENT OUTPUT TRACK HAS BEEN FILLED.  
0389\*

```

0390 75502 063666 SUP10 LDA SUPL1 TEST FOR LAST TRACK,
0391 75503 053652 CPA SDIRL
0392 75504 027621 JMP SUP16 ALL DONE--GO CLEAN UP DIREC.
0393 75505 040361 ADA ,+7 BUMP TO NEXT TRACK,
0394 75506 073666 STA SUPL1
0395 75507 002400 CLA SET # OF WORDS WRITTEN SO FAR
0396 75510 073667 STA SUPL2 TO 0.
0397 75511 037662 ISZ SUPP BUMP POINTER TO WORDS TO BE
0398 75512 027305 JMP SUP7 WRITTEN,

```

0400\* THE NEXT SECTION IS THE OUTPUT SECTION. WE ONLY COME TO THIS SEC-  
0401\* TION WHEN WE HAVE DETERMINED THAT NO MORE CAN BE READ. IN THIS  
0402\* PART WE WRITE OUT AS MUCH AS POSSIBLE UNTIL WE HAVE EXHAUSTED ALL  
0403\* WE HAVE IN CORE OR WE REACH THE POINT WHEN FURTHER OUTPUT WOULD  
0404\* DESTROY INFORMATION NOT YET READ. IN THIS SECTION, THE VARIABLE  
0405\* SUPS = # OF WORDS THAT HAVE BEEN OUTPUT FROM THE CURRENT CORE  
0406\* LOAD.

```

0408 75513 002400 SUP11 CLA SET # OF WORDS OUTPUT SO FAR TO
0409 75514 073657 SUP15 STA SUPS ZERO.
0410 75515 063667 LDA SUPL2 SET WORD = # OF WORDS LEFT
0411 75516 143662 ADA SUPP,I TO BE WRITTEN ON L1.
0412 75517 067666 LDB SUPL1 TEST FOR WRITING ON A TRACK NOT
0413 75520 057664 CPB SUPK1 COMPLETELY READ.
0414 75521 027535 JMP SUP12 WE ARE.
0415 75522 067657 SUP13 LDB SUPS SET B=# OF WORDS LEFT IN CORE.
0416 75523 007004 CMB,INB
0417 75524 047660 ADB SUP
0418 75525 077661 STB SUPB SAVE IN B.
0419 75526 044000 ADB 0 COMPARE WITH # WE WANT TO WRITE.
0420 75527 006021 SSB,RSS
0421 75530 027544 JMP SUP14 HAVE ENOUGH, -# IS IN A.
0422 75531 063661 LDA SUPB ONLY WRITE WHAT WE HAVE.
0423 75532 010610 AND M64 USE ONLY FULL SECTOR'S WORTH
0424 75533 003004 CMA,INA MAKE NEGATIVE.
0425 75534 027544 JMP SUP14
0426 75535 067667 SUP12 LDB SUPL2 IF WRITING ON UNREAD TRACK, MAKE
0427 75536 007004 CMB,INB SURE WE DON'T GO INTO UNREAD
0428 75537 047665 ADB SUPK2 AREA.
0429 75540 044000 ADB 0
0430 75541 007025 CMB,SSB,INB,RSS
0431 75542 040001 ADA 1 CHANGE A TO AVOID OVERLAY.

```

```

0432 75543 027522 JMP SUP13
0433*
0434* A NOW CONTAINS # OF WORDS WE'RE GOING TO WRITE.
0435*
0436 75544 070072 SUP14 STA WORD IF NO WORDS TO BE
0437 75545 002003 SZA,RSS WRITTEN GO TO SLIDE CORE FOR
0438 75546 027604 JMP SUP17 NEW INPUT.
0439 75547 003004 CMA,INA
0440 75550 073661 STA SUPB
0441 75551 063667 LDA SUPL2 TEST FOR FIRST WRITE ON THIS
0442 75552 002002 SZA TRACK.
0443 75553 027565 JMP SUP18
0444*
0445 75554 063666 LDA SUPL1 IF FIRST WRITE,
0446 75555 002004 INA
0447 75556 070051 STA MOVED ADJUST DIREC TO TELL
0448 75557 060562 LDA LIBD NEW FIRST ENTRY ON THAT
0449 75560 043657 ADA SUPS TRACK.
0450 75561 070050 STA MOVES
0451 75562 064346 LDB .-4
0452 75563 016257 JSB MOVEW
0453 75564 002400 CLA
0454*
0455 75565 006400 SUP18 CLB CONVERT WORDS TO SECTOR
0456 75566 101026 ASR 6 ADDRESS.
0457 75567 067666 LDB SUPL1 ADD IN TRACK ADDRESS.
0458 75570 044360 ADB .+6
0459 75571 140001 ADA 1,I
0460 75572 064562 LDB LIBD COMPUTE CORE
0461 75573 047657 ADB SUPS ADDRESS.
0462 75574 016231 JSB DRUML OUTPUT TO DRUM
0463 75575 116017 JSB DEADP,I DRUM ERROR, NO CHANCE FOR RECOVER
0464 75576 063661 LDA SUPB ADJUST # OF WORDS OUTPUT TO
0465 75577 043667 ADA SUPL2 TRACK.
0466 75600 073667 STA SUPL2
0467 75601 063661 LDA SUPB ADJUST # OF CORE WORDS WRITTEN
0468 75602 043657 ADA SUPS OUT SO FAR.
0469 75603 027514 JMP SUP15 LOOP FOR ANY MORE WRITING.
0470*
0471* COME HERE WHEN WE CAN'T WRITE ANYMORE.
0472*
0473 75604 053657 SUP17 CPA SUPS IF NOTHING WRITTEN AT ALL, GO TO
0474 75605 027305 JMP SUP7 TRY AND READ AGAIN.
0475 75606 067657 LDB SUPS ADJUST # OF WORDS IN CORE.
0476 75607 007004 CMB,INB
0477 75610 047660 ADB SUP
0478 75611 077660 STB SUP
0479 75612 007004 CMB,INB
0480 75613 060562 LDA LIBD MAKE NEGATIVE FOR CORE MOVE.
0481 75614 070051 STA MOVED SET DESTINATION AND SOURCE.
0482 75615 043657 ADA SUPS
0483 75616 070050 STA MOVES
0484 75617 016257 JSB MOVEW
0485 75620 027305 JMP SUP7
0486*

```

```

0487* ALL TRACKS WRITTEN BACK, NOW UPDATE WORD COUNTS IN
0488* DIREC.
0489*
0490 75621 SUP16 EQU *
0491 75621 063642 LDA M80 SET COUNT
0492 75622 073660 STA SUP OF DIRECTORY TRAX
0493 75623 067651 LDB SDIR0 => FIRST DIREC ENTRY
0494 75624 SUPLL EQU *
0495 75624 163641 LDA DEFNN,I COPY NEW LENGTH WORDS INTO
0496 75625 170001 STA B,I THE DIREC TABLE ENTRIES
0497 75626 037641 ISZ DEFNN WIPE OUT "CONSTANT"
0498 75627 044361 ADB ,+7 ADVANCE DIREC POINTER
0499 75630 037660 ISZ SUP
0500 75631 027624 JMP SUPLL
0501 75632 063646 LDA SUPR1 SET UP RETURN ADDRESS.
0502 75633 073772 STA SUPR
0503 75634 SUP3 EQU *
0504 75634 063643 LDA SM504 SET WORD COUNT
0505 75635 070072 STA WORD
0506 75636 160260 LDA LIB,I GET DISC ADDRESS.
0507 75637 064504 LDB #LIBI
0508 75640 027770 JMP SUPRR
0509 75641 073571 DEFNN DEF FILBF
0510 75642 177660 M80 DEC -80
0511 75643 177010 SM504 DEC -504
0512 75644 176526 M682 DEC -682
0513 75645 176525 M683 DEC -683
0514 75646 027776 SUPR1 JMP LIBR+510 JUMP FOR NORMAL RETURN
0515 75647 017770 S8184 DEC 8184
0516 75650 005240 X2056 DEF LIBUS+ULEN-8184
0517 75651 030000 SDIR0 DEF DIREC
0518 75652 031051 SDIRL DEF DIREL
0519 75653 031060 SDIRU DEF DIREU
0520 75654 031176 DIRCS DEF DIRCM
0521 75655 154024 STLE ABS -ULEN+20
0522 75656 177777 OCT -1
0523 75657 177764 SUPS DEC -12
0524 75660 000000 SUP OCT 0
0525 75661 000000 SUPB OCT 0
0526 75662 073571 SUPP DEF FILBF
0527 75663 000000 SUPTG OCT 0
0528 75664 000000 SUPK1 BSS 1
0529 75665 000000 SUPK2 BSS 1
0530 75666 000000 SUPL1 BSS 1
0531 75667 000000 SUPL2 BSS 1
0532 75670 000000 SUPEX BSS 1
0533 75671 000000 SUPES BSS 1
0534 75770 ORG LIBR+504
0535 75770 SUPRR EQU *
0536 75770 016231 JSB DRUML OVERLAY WITH ORIGINAL ROUTINE
0537 75771 116017 JSB DEADP,I CAN'T GET IT BACK, ARRGH!
0538 75772 027777 SUPR JMP LIBR+511 SET FOR ERROR ROUTINE
0539 75773 $$$AV EQU *

```



0002\* THE GET ROUTINE IS RESPONSIBLE FOR LOADING A PROGRAM FROM THE  
 0003\* USER LIBRARY, IT CAN BE USED TO LOAD FROM EITHER THE USER'S  
 0004\* PRIVATE LIBRARY, THE GROUP LIBRARY, OR THE PUBLIC LIBRARY.  
 0005\* IF THE PROGRAM IS TO BE FROM THE USER'S GROUP LIBRARY, THE  
 0006\* PROGRAM NAME SHOULD BE PRECEDED BY A SNOWFLAKE (\*). IF IT IS TO  
 0007\* BE FROM THE PUBLIC LIBRARY, THE PROGRAM NAME SHOULD BE PRECEDED  
 0008\* BY A DOLLAR SIGN (\$).

```

0010 75000 ORG LIBRA

0012 75000 060273 LDA MLINK+1 GET USER'S ID.
0013 75001 040341 ADA ,+?ID=?LINK
0014 75002 070036 STA GETI
0015 75003 160000 LDA 0,I
0016 75004 070030 STA LTEMP STORE IN LTEMP.
0017 75005 060520 LDA DLTEM SET UP POINTER FOR NAME.
0018 75006 002004 INA
0019 75007 070034 STA GETP
0020 75010 060347 LDA ,=3 SET UP COUNTER.
0021 75011 070037 STA GETC
0022 75012 016164 JSB LCHAR GET FIRST INPUT CHAR.
0023 75013 027035 JMP GET1 ERROR IF NONE.
0024 75014 050416 CPA ,+44B IF $ GO TO SET UP FOR
0025 75015 027050 JMP GET2 SEARCHING PUBLIC LIBRARY.
0026 75016 050424 CPA ,+52B IF * GO TO SET UP FOR
0027 75017 027055 JMP GET14 SEARCHING GROUP LIBRARY
0028 75020 001727 GET3 ALF,ALF SAVE CHARACTER IN TABLE.
0029 75021 170034 STA GETP,I
0030 75022 016164 JSB LCHAR GET RIGHT CHARACTER.
0031 75023 060412 LDA ,+40B IF END CHANGE TO BLANK.
0032 75024 130034 IOR GETP,I
0033 75025 170034 STA GETP,I
0034 75026 034034 ISZ GETP BUMP POINTER.
0035 75027 016164 JSB LCHAR GET NEXT CHARACTER.
0036 75030 060412 LDA ,+40B
0037 75031 034037 ISZ GETC DO WE WANT IT?
0038 75032 027020 JMP GET3 YES.
0039 75033 050412 CPA ,+40B NO--A SHOULD NOW BE BLANK.
0040 75034 027074 JMP GET4

0041*
0042 75035 060335 GET1 LDA ,=13
0043 75036 067040 LDB ++2
0044 75037 026432 JMP LIBER
0045 75040 075041 DEF ++1
0046 75041 005111 OCT 5111
0047 75042 047126 ASC 6,NVALID NAME
75043 040514
75044 044504
75045 020116
75046 040515
75047 042440

0048*
0049 75050 060612 GET2 LDA A000 SET UP FOR PUBLIC LIBRARY SEARCH
0050 75051 070030 STA LTEMP
0051 75052 016164 JSB LCHAR GET FIRST CHAR OF NAME.

```

|       |       |        |       |                         |                                |
|-------|-------|--------|-------|-------------------------|--------------------------------|
| 0052  | 75053 | 027035 |       | JMP GET1                | FAIL IF NONE.                  |
| 0053  | 75054 | 027020 |       | JMP GET3                |                                |
| 0054  | 75055 | 060030 | GET14 | LDA LTEMP               | GET USER'S ID                  |
| 0055  | 75056 | 010602 |       | AND B1777               | ISOLATE NUMERICAL PART         |
| 0056  | 75057 | 006400 |       | CLB                     |                                |
| 0057  | 75060 | 100400 |       | DIV .100                | DIVIDE BY 100 AND              |
|       | 75061 | 000437 |       |                         |                                |
| 0058  | 75062 | 100200 |       | MPY .100                | MULTIPLY BACK, DROPPING REMAIN |
|       | 75063 | 000437 |       |                         |                                |
| 0059  | 75064 | 064000 |       | LDB A                   | SAVE RESULTING MULTIPLE OF 100 |
| 0060  | 75065 | 060732 |       | LDA M2000               | GET UPPER 6 BITS MASK          |
| 0061  | 75066 | 010030 |       | AND LTEMP               | GET ALPHABETIC PART OF ID      |
| 0062  | 75067 | 030001 |       | IOR B                   | MERGE NEW NUMERICAL PART       |
| 0063  | 75070 | 070030 |       | STA LTEMP               | STORE LIBRARIAN ID             |
| 0064  | 75071 | 016164 |       | JSB LCHAR               | GET FIRST CHAR OF NAME         |
| 0065  | 75072 | 027035 |       | JMP GET1                | FAIL IF NONE                   |
| 0066  | 75073 | 027020 |       | JMP GET3                | ELSE, CONTINUE                 |
| 0067* |       |        |       |                         |                                |
| 0068  | 75074 | 016047 | GET4  | JSB RDPRG               |                                |
| 0069  | 75075 | 061577 |       | LDA SPROG               | SAVE END-OF-                   |
| 0070  | 75076 | 070043 |       | STA GETS                | COMMON POINTER                 |
| 0071  | 75077 | 116005 |       | JSB DLOKP,I             | SEARCH DIRECTORY FOR PROGRAM   |
| 0072  | 75100 | 027133 |       | JMP GET18               |                                |
| 0073* |       |        |       |                         |                                |
| 0074  | 75101 | 060332 | GET19 | LDA .-16                |                                |
| 0075  | 75102 | 067104 |       | LDB **2                 |                                |
| 0076  | 75103 | 026432 |       | JMP LIBER               |                                |
| 0077  | 75104 | 075105 |       | DEF **1                 |                                |
| 0078  | 75105 | 005116 |       | OCT 5116                |                                |
| 0079  | 75106 | 047440 |       | ASC 7,0 SUCH PROGRAM    |                                |
|       | 75107 | 051525 |       |                         |                                |
|       | 75110 | 041510 |       |                         |                                |
|       | 75111 | 020120 |       |                         |                                |
|       | 75112 | 051117 |       |                         |                                |
|       | 75113 | 043522 |       |                         |                                |
|       | 75114 | 040515 |       |                         |                                |
| 0080  | 75115 | 060327 | GET22 | LDA .-19                |                                |
| 0081  | 75116 | 067120 |       | LDB **2                 |                                |
| 0082  | 75117 | 026432 |       | JMP LIBER               |                                |
| 0083  | 75120 | 075121 |       | DEF **1                 |                                |
| 0084  | 75121 | 005111 |       | OCT 5111                |                                |
| 0085  | 75122 | 046114 |       | ASC 9,LL=STORED PROGRAM |                                |
|       | 75123 | 026523 |       |                         |                                |
|       | 75124 | 052117 |       |                         |                                |
|       | 75125 | 051105 |       |                         |                                |
|       | 75126 | 042040 |       |                         |                                |
|       | 75127 | 050122 |       |                         |                                |
|       | 75130 | 047507 |       |                         |                                |
|       | 75131 | 051101 |       |                         |                                |
|       | 75132 | 046440 |       |                         |                                |
| 0086  | 75133 | 064035 | GET18 | LDB GETPD               | CHECK ILL-STORED               |
| 0087  | 75134 | 044356 |       | ADB .+4                 | PROGRAM FLAG                   |
| 0088  | 75135 | 160001 |       | LDA B,I                 |                                |
| 0089  | 75136 | 002021 |       | SSA,RSS                 | UNSUCCESSFULLY STORED?         |
| 0090  | 75137 | 027144 |       | JMP GET9                | NO, CONTINUE                   |

|       |                                                    |        |               |                                |
|-------|----------------------------------------------------|--------|---------------|--------------------------------|
| 0091  | 75140                                              | 160036 | LDA GET1,I    | YES, GET USER'S ID             |
| 0092  | 75141                                              | 050030 | CPA LTEMP     | DOES HE (OR SHE) OWN THE PROG? |
| 0093  | 75142                                              | 027115 | JMP GET22     | YES, PRINT ILL-STORED PROGRAM  |
| 0094  | 75143                                              | 027101 | JMP GET19     | NO, PRINT NO SUCH PROGRAM      |
| 0095  | 75144                                              | 044350 | GET9 ADB ,=2  | TEST FOR FILE                  |
| 0096  | 75145                                              | 160001 | LDA 1,I       |                                |
| 0097  | 75146                                              | 002021 | SSA,RSS       |                                |
| 0098  | 75147                                              | 027164 | JMP GET10     |                                |
| 0099* |                                                    |        |               |                                |
| 0100  | 75150                                              | 060332 | LDA ,=16      |                                |
| 0101  | 75151                                              | 067153 | LDB ,+2       |                                |
| 0102  | 75152                                              | 026432 | JMP LIBER     |                                |
| 0103  | 75153                                              | 075154 | DEF ,+1       |                                |
| 0104  | 75154                                              | 005105 | OCT 5105      | LF=E                           |
| 0105  | 75155                                              | 047124 | ASC 7,NTRY IS | A FILE                         |
|       | 75156                                              | 051131 |               |                                |
|       | 75157                                              | 020111 |               |                                |
|       | 75160                                              | 051440 |               |                                |
|       | 75161                                              | 040440 |               |                                |
|       | 75162                                              | 043111 |               |                                |
|       | 75163                                              | 046105 |               |                                |
| 0106* |                                                    |        |               |                                |
| 0107* | IF PROGRAM IS ON DISC, START SEEK.                 |        |               |                                |
| 0108* |                                                    |        |               |                                |
| 0109  | 75164                                              | 044357 | GET10 ADB ,+5 | DRUM ADDRESS WORD              |
| 0110  | 75165                                              | 160001 | LDA B,I       | GET DRUM ADDRESS               |
| 0111  | 75166                                              | 002002 | SZA           | IS PROGRAM ON DRUM?            |
| 0112  | 75167                                              | 027176 | JMP GET16     | YES, DON'T BOTHER SEEKING      |
| 0113  | 75170                                              | 070215 | STA MWORD     | ZERO WORD COUNT                |
| 0114  | 75171                                              | 060001 | LDA B         | A REG GETS POINTER             |
| 0115  | 75172                                              | 002004 | INA           | TO DISC ADDRESS                |
| 0116  | 75173                                              | 114212 | J9B DISCA,I   | GO INITIATE SEEK ON DISC       |
| 0117  | 75174                                              | 102030 | HLT 30B       | DRIVER BUSY: HALT              |
| 0118  | 75175                                              | 102031 | HLT 31B       | RECORD OUT OF RANGE: HALT      |
| 0119* |                                                    |        |               |                                |
| 0120* | FOUND CORRECT ENTRY, FIRST CHECK TO SEE IF IT FITS |        |               |                                |
| 0121* |                                                    |        |               |                                |
| 0122  | 75176                                              | 044344 | GET15 ADB ,=6 | => FIRST WORD OF NAME          |
| 0123  | 75177                                              | 160001 | LDA B,I       | MOVE WITH PROTECTED FLAG       |
| 0124  | 75200                                              | 070031 | STA LTEMP+1   | TO SAFE PLACE                  |
| 0125  | 75201                                              | 044354 | ADB ,+2       | => THIRD WORD OF NAME          |
| 0126  | 75202                                              | 160001 | LDA 1,I       | SAVE SEMI-                     |
| 0127  | 75203                                              | 070040 | STA LIBSC     | COMPILED FLAG                  |
| 0128  | 75204                                              | 006004 | INB           | RETRIEVE START-                |
| 0129  | 75205                                              | 160001 | LDA 1,I       | OF-PROGRAM                     |
| 0130  | 75206                                              | 001665 | ELA,CLE,ERA   |                                |
| 0131  | 75207                                              | 070041 | STA LIBSP     | POINTER                        |
| 0132  | 75210                                              | 044361 | ADB ,+7       | GET PROGRAM                    |
| 0133  | 75211                                              | 160001 | LDA 1,I       | LENGTH.                        |
| 0134  | 75212                                              | 070042 | STA GETLN     |                                |
| 0135  | 75213                                              | 003004 | CMA,INA       | COMPUTE FIRST                  |
| 0136  | 75214                                              | 040041 | ADA LIBSP     | UNUSED WORD                    |
| 0137  | 75215                                              | 070045 | STA LIBPB     |                                |
| 0138  | 75216                                              | 003004 | CMA,INA       | COMPUTE NEGATIVE               |
| 0139  | 75217                                              | 064040 | LDB LIBSC     |                                |

|       |       |        |                   |                           |
|-------|-------|--------|-------------------|---------------------------|
| 0140  | 75220 | 006021 | SSB, RSS          | SEMI-COMPILED?            |
| 0141  | 75221 | 027226 | JMP GET25         | NO                        |
| 0142  | 75222 | 040462 | ADA LWAUS         |                           |
| 0143  | 75223 | 002021 | SSA, RSS          | TOO BIG?                  |
| 0144  | 75224 | 027251 | JMP GET13         | NO                        |
| 0145  | 75225 | 027231 | JMP GET26         | YES                       |
| 0146  | 75226 |        | GET25 EQU *       |                           |
| 0147  | 75226 | 040654 | ADA LW97          | TOTAL LENGTH              |
| 0148  | 75227 | 002021 | SSA, RSS          | COMPARE WITH MAX ALLOWED. |
| 0149  | 75230 | 027251 | JMP GET13         | OK                        |
| 0150  | 75231 |        | GET26 EQU *       |                           |
| 0151  | 75231 | 060214 | LDA MBUSY         | MAKE SURE                 |
| 0152  | 75232 | 002020 | SSA               | DISC DRIVER               |
| 0153  | 75233 | 027231 | JMP *-2           | IS FINISHED               |
| 0154  | 75234 | 060330 | LDA *-18          |                           |
| 0155  | 75235 | 067237 | LDB ++2           |                           |
| 0156  | 75236 | 026432 | JMP LIBER         |                           |
| 0157  | 75237 | 075240 | DEF ++1           |                           |
| 0158  | 75240 | 005120 | UCT 5120          | LF-P                      |
| 0159  | 75241 | 051117 | ASC 8,ROGRAM      | TOO LARGE                 |
|       | 75242 | 043522 |                   |                           |
|       | 75243 | 040515 |                   |                           |
|       | 75244 | 020124 |                   |                           |
|       | 75245 | 047517 |                   |                           |
|       | 75246 | 020114 |                   |                           |
|       | 75247 | 040522 |                   |                           |
|       | 75250 | 043505 |                   |                           |
| 0160* |       |        |                   |                           |
| 0161  | 75251 | 016076 | GET13 JSB DATE    | SET NEW DATE              |
| 0162  | 75252 | 064035 | LDB GETPD         | INTO                      |
| 0163  | 75253 | 044357 | ADB .+5           | DIRECTORY.                |
| 0164  | 75254 | 170001 | STA 1,I           |                           |
| 0165  | 75255 | 044354 | ADB .+2           | GET PROGRAM               |
| 0166  | 75256 | 160001 | LDA B,I           | DRUM ADDRESS              |
| 0167  | 75257 | 070044 | STA GETD          |                           |
| 0168  | 75260 | 006004 | INB               | ALSO SAVE                 |
| 0169  | 75261 | 104200 | DLD B,I           | DISC                      |
|       | 75262 | 100001 |                   |                           |
| 0170  | 75263 | 104400 | DST GETDI         | ADDRESS                   |
|       | 75264 | 000046 |                   |                           |
| 0171* |       |        |                   |                           |
| 0172  | 75265 | 160034 | LDA GETP,I        | WRITE DIRECTORY           |
| 0173  | 75266 | 070072 | STA WORD          | BACK TO                   |
| 0174  | 75267 | 060034 | LDA GETP          | DRUM                      |
| 0175  | 75270 | 040360 | ADA .+6           |                           |
| 0176  | 75271 | 160000 | LDA 0,I           |                           |
| 0177  | 75272 | 064562 | LDB LIBD          |                           |
| 0178  | 75273 | 016231 | JSB DRUML         |                           |
| 0179  | 75274 | 027357 | JMP GET21         | BLEW IT, TRY TO SALVAGE   |
| 0180* |       |        |                   |                           |
| 0181* |       |        |                   |                           |
| 0182  | 75275 | 064273 | LDB MLINK+1       | SET TO NULL PROGRAM       |
| 0183  | 75276 | 044340 | ADB .+7PROG-?LINK |                           |
| 0184  | 75277 | 160001 | LDA B,I           | SAVE PROGRAM              |
| 0185  | 75300 | 070037 | STA GETC          | LENGTH                    |

0186 75301 060043  
 0187 75302 170001  
 0188 75303 016047  
 0189 75304 064042  
 0190 75305 060044  
 0191 75306 002002  
 0192 75307 027363  
 0193 75310 074215  
 0194 75311 064041  
 0195 75312 045036  
 0196 75313 063405  
 0197 75314 114212  
 0198 75315 027314  
 0199 75316 102031  
 0200 75317 060214  
 0201 75320 002020  
 0202 75321 027317  
 0203 75322 002003  
 0204 75323 027370  
 0205 75324 064273  
 0206 75325 044335  
 0207 75326 074257  
 0208 75327 044355  
 0209 75330 060037  
 0210 75331 170001  
 0211 75332 016047  
 0212 75333 060317  
 0213 75334 067336  
 0214 75335 026432  
 0215 75336 075337  
 0216 75337 005125  
 0217 75340 047101  
 75341 041114  
 75342 042440  
 75343 052117  
 75344 020122  
 75345 042524  
 75346 051111  
 75347 042526  
 75350 042440  
 75351 043122  
 75352 047515  
 75353 020114  
 75354 044502  
 75355 051101  
 75356 051131  
 0218 75357 060034  
 0219 75360 040360  
 0220 75361 164034  
 0221 75362 116016  
 0222 75363 074072  
 0223 75364 064041  
 0224 75365 045036  
 0225 75366 016231  
 0226 75367 027324

LDA GETS  
 STA 1,I  
 JSB RDPRG  
 LDB GETLN  
 LDA GETD  
 SZA  
 JMP GET16  
 STB MWORD  
 LDB LIBSP  
 ADB BIT15  
 LDA GETDP  
 JSB DISCA,I  
 JMP \*-1  
 HLT 31B  
 LDA MBUSY  
 SSA  
 JMP \*-2  
 SZA,RSS  
 JMP GET17  
 LDB MLINK+1  
 ADB .-?LINK  
 STB MAIN  
 ADB .+?PROG  
 LDA GETC  
 STA B,I  
 JSB RDPRG  
 LDA M32  
 LDB \*\*2  
 JMP LIBER  
 DEF \*\*1  
 OCT 5125  
 ASC 15,NABLE TO RETRIEVE FROM LIBRARY

GET20  
 GET21 LDA GETP  
 ADA ,+6  
 LDB GETP,I  
 JSB SALVP,I  
 GET16 STB WORD  
 LDB LIBSP  
 ADB BIT15  
 JSB DRUML  
 JMP GET20

READ IN CURRENT USER PROGRAM.  
 GET WORD COUNT  
 GET DRUM ADDRESS  
 FILE ON DISC OR DRUM?  
 DRUM, GO GET FROM DRUM  
 DISC, STORE WORD COUNT  
 GET START OF PROGRAM POINTER  
 AND READ BIT  
 GET PTR TO DISK ADDRESS  
 GO DO READ FROM DISC  
 DISC DRIVER IS CALLED  
 DIRECTLY HERE BECAUSE IT  
 IS PROBABLY STILL BUSY  
 DOING THE ADVANCE SEEK  
 AND SO A  
 JMP \*-1 IS PUT IN THE  
 "DRIVER BUSY" RETURN LOC

LF=U  
 STORE WORD COUNT FOR DRUM  
 GET START OF PROGRAM POINTER

|       |          |        |       |                |                            |
|-------|----------|--------|-------|----------------|----------------------------|
| 0227  | 75370    | 160036 | GET17 | LDA GETI,I     | GET USER'S ID              |
| 0228  | 75371    | 034036 |       | ISZ GETI       | FIRST WORD OF NAME.        |
| 0229  | 75372    | 064031 |       | LDB LTEMP+1    | GET IT                     |
| 0230  | 75373    | 050030 |       | CPA LTEMP      | IF PROGRAM OWNER CLEAR     |
| 0231  | 75374    | 005665 |       | ELB,CLE,ERB    | RUN-ONLY BIT.              |
| 0232  | 75375    | 174036 |       | STB GETI,I     | STORE FIRST WORD OF NAME.  |
| 0233  | 75376    | 034036 |       | ISZ GETI       | BUMP POINTER TO NEXT WORD. |
| 0234  | 75377    | 104200 |       | DLD LTEMP+2    | GET LAST 2 WORDS OF NAME.  |
|       | 75400    | 000032 |       |                |                            |
| 0235  | 75401    | 104400 |       | DST GETI,I     | STORE IN TABLE.            |
|       | 75402    | 100036 |       |                |                            |
| 0236  | 75403    | 016710 |       | JSB SEMIC      |                            |
| 0237  | 75404    | 026226 |       | JMP LLEND      | TERMINATE.                 |
| 0238  | 75405    | 000046 | GETDP | DEF GETDI      | => DISK ADDRESS            |
| 0239* |          |        |       |                |                            |
| 0240  | 00034    |        | GETP  | EQU LTEMP+4    |                            |
| 0241  | 00035    |        | GETPD | EQU LTEMP+5    |                            |
| 0242  | 00036    |        | GETI  | EQU LTEMP+6    |                            |
| 0243  | 00037    |        | GETC  | EQU LTEMP+7    |                            |
| 0244  | 00042    |        | GETLN | EQU LTEMP+10   |                            |
| 0245  | 00043    |        | GETS  | EQU LTEMP+11   |                            |
| 0246  | 00044    |        | GETD  | EQU LTEMP+12   |                            |
| 0247  | 00046    |        | GETDI | EQU LTEMP+14   |                            |
| 0248* | LTEMP+15 |        | IS    | USED HERE ALSO |                            |
| 0249  | 75406    |        | SGET  | EQU *          |                            |

0251\* THE APPEND COMMAND ALLOWS A USER TO APPEND A LIBRARY PROGRAM ON TO  
 0252\* THE END OF HIS CURRENT PROGRAM, THE FIRST STATEMENT OF THE NEW  
 0253\* PROGRAM MUST HAVE A SEQUENCE NUMBER GREATER THAN THAT OF THE LAST  
 0254\* STATEMENT OF THE ORIGINAL PROGRAM. IF THE NEW SECTION IS PROTECTED  
 0255\* THE ENTIRE PROGRAM WILL BE PROTECTED. SEMI-COMPILED PROGRAMS AND  
 0256\* PROGRAMS WITH COMMON MAY NOT BE APPENDED  
 0257\*  
 0258\* THE CODE FOR APPEND MUST FOLLOW THE CODE FOR "GET".

```

0260 75000 ORG LIBRA THE CODE IS IDENTICAL TO "GET"
0261 75000 060273 LDA MLINK+1 UP TO LOCATION GET15
0262 75176 ORG GET15
0263*
0264 75176 044346 ADB ,=4 => THIRD WORD OF NAME
0265 75177 160001 LDA 1,I
0266 75200 002021 SSA,RSS SEMI-COMPILED?
0267 75201 027224 JMP APP01 NO
0268 75202 060214 LDA MBUSY YES, MAKE SURE
0269 75203 002020 SSA DISC DRIVER
0270 75204 027202 JMP *-2 IS FINISHED
0271 75205 060324 LDA ,=22
0272 75206 067210 LOB **2
0273 75207 026432 JMP LIBER
0274 75210 075211 DEF **1
0275 75211 005123 OCT 5123 LF=S
0276 75212 042515 ASC 10,EMI-COMPILED PROGRAM
 75213 044455
 75214 041517
 75215 046520
 75216 044514
 75217 042504
 75220 020120
 75221 051117
 75222 043522
 75223 040515

```

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0277*
0278 75224 006004 APP01 INB
0279 75225 160001 LDA 1,I
0280 75226 050702 CPA PBUFF COMMON AREA?
0281 75227 027253 JMP APP02 NO
0282 75230 060214 LDA MBUSY MAKE SURE
0283 75231 002020 SSA DISC DRIVER
0284 75232 027230 JMP *-2 IS FINISHED
0285 75233 060323 LDA ,=23
0286 75234 067236 LOB **2
0287 75235 026432 JMP LIBER
0288 75236 075237 DEF **1
0289 75237 005116 OCT 5116 LF=N
0290 75240 047440 ASC 11,0 COMMON AREA ALLOWED
 75241 041517
 75242 046515
 75243 047516
 75244 020101
 75245 051105
 75246 040440

```

|       |        |        |                |                                |
|-------|--------|--------|----------------|--------------------------------|
| 75247 | 040514 |        |                |                                |
| 75250 | 046117 |        |                |                                |
| 75251 | 053505 |        |                |                                |
| 75252 | 042040 |        |                |                                |
| 0291  | 75253  | 016076 | APP02 JSB DATE | SET DATE OF LAST REFERENCE     |
| 0292  | 75254  | 064035 | LDB GETPD      | INTO DIRECTORY ENTRY.          |
| 0293  | 75255  | 044357 | ADB .+5        |                                |
| 0294  | 75256  | 170001 | STA 1,I        | SAVE LIST BIT.                 |
| 0295  | 75257  | 044346 | ADB .-4        |                                |
| 0296  | 75260  | 160001 | LDA 1,I        | GET PROGRAM DRUM ADDRESS       |
| 0297  | 75261  | 070036 | STA APPLS      |                                |
| 0298  | 75262  | 044360 | ADB .+6        | SAVE IT                        |
| 0299  | 75263  | 160001 | LDA B,I        | SAVE ALSO                      |
| 0300  | 75264  | 070044 | STA GETD       | DISC                           |
| 0301  | 75265  | 006004 | INB            |                                |
| 0302  | 75266  | 104200 | DLB B,I        | ADDRESS                        |
|       | 75267  | 100001 |                |                                |
| 0303  | 75270  | 104400 | DST GETDI      | AND                            |
|       | 75271  | 000046 |                |                                |
| 0304  | 75272  | 064035 | LDB GETPD      | PROGRAM                        |
| 0305  | 75273  | 044365 | ADB .+11       | LENGTH                         |
| 0306  | 75274  | 160001 | LDA B,I        |                                |
| 0307  | 75275  | 070042 | STA GETLN      | WRITE DIRECTORY                |
| 0308* |        |        |                | BACK TO DRUM                   |
| 0309  | 75276  | 160034 | LDA GETP,I     |                                |
| 0310  | 75277  | 070072 | STA WORD       |                                |
| 0311  | 75300  | 060034 | LDA GETP       |                                |
| 0312  | 75301  | 040360 | ADA .+6        |                                |
| 0313  | 75302  | 160000 | LDA 0,I        |                                |
| 0314  | 75303  | 064562 | LDB LIBD       |                                |
| 0315  | 75304  | 016231 | JSB DRUML      | DRUM ERROR, GO TRY TO SALVAGE  |
| 0316  | 75305  | 027343 | JMP APP10      |                                |
| 0317* |        |        |                |                                |
| 0318  | 75306  | 016047 | JSB RDPRG      | READ IN USER'S PROGRAM AND     |
| 0319  | 75307  | 015322 | JSB DCMPL      | DECOMPILE IT.                  |
| 0320* |        |        |                |                                |
| 0321  | 75310  | 060042 | LDA GETLN      | TEST FOR PROGRAM TOO           |
| 0322  | 75311  | 003004 | CMA,INA        | LARGE.                         |
| 0323  | 75312  | 040056 | ADA PBPTR      | LAST WORD+1 OF COMBINED PROGS. |
| 0324  | 75313  | 070045 | STA LIBPB      |                                |
| 0325  | 75314  | 003004 | CMA,INA        | COMPUTE NEGATIVE               |
| 0326  | 75315  | 040654 | ADA LW97       | TOTAL LENGTH                   |
| 0327  | 75316  | 002021 | SSA,RSS        | COMPARE WITH MAX ALLOWED.      |
| 0328  | 75317  | 027347 | JMP APP1       | O.K.                           |
| 0329  | 75320  | 060214 | LDA M8USY      | MAKE SURE                      |
| 0330  | 75321  | 002020 | SSA            | DISC DRIVER                    |
| 0331  | 75322  | 027320 | JMP *-2        | IS IDLE                        |
| 0332  | 75323  | 060273 | LDA MLINK+1    | SET MAIN TO SAY PROGRAM IN     |
| 0333  | 75324  | 040335 | ADA .-7LINK    | CORE.                          |
| 0334  | 75325  | 070257 | STA MAIN       |                                |
| 0335  | 75326  | 060330 | LDA .-18       |                                |
| 0336  | 75327  | 067331 | LDB **2        |                                |
| 0337  | 75330  | 026432 | JMP LIBER      |                                |
| 0338  | 75331  | 075332 | DEF **1        |                                |
| 0339  | 75332  | 005120 | OCT 5120       | LF=P                           |



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0340 75333 051117 ASC 8,ROGRAM TOO LARGE
 75334 043522
 75335 040515
 75336 020124
 75337 047517
 75340 020114
 75341 040522
 75342 043505
0341 75343 060034 APP10 LDA GETP
0342 75344 040360 ADA ,+6
0343 75345 164034 LDB GETP,I
0344 75346 116016 JSB SALVP,I
0345*
0346 75347 064042 APP1 LDB GETLN GET LENGTH OF PROGRAM TO BE APPD
0347 75350 060044 LDA GETD GET DRUM ADDRESS
0348 75351 002002 SZA DISC OR DRUM ADDRESS?
0349 75352 027364 JMP APP7 DRUM, GO DO DRUM READ
0350 75353 074215 STB MWORD DISC, STORE WORD COUNT
0351 75354 070261 STA ENDRM FAKE "DRUM SUCCESSFUL"
0352 75355 064056 LDB PBPTR INITIATE
0353 75356 045036 ADB BIT15
0354 75357 063533 LDA APPDP DISK
0355 75360 114212 JSB DISCA,I READ
0356 75361 027360 JMP *+1 WAIT UNTIL DRIVER FREE
0357 75362 102031 HLT 31B
0358 75363 027372 JMP APP8
0359 75364 074072 APP7 STB WORD STORE WORD COUNT FOR DRUM
0360 75365 006400 CLB FAKE
0361 75366 074214 STB MBUSY "DISC SUCCESSFUL"
0362 75367 064056 LDB PBPTR
0363 75370 045036 ADB BIT15
0364 75371 114770 JSB DRUM,I INITIATE DRUM READ
0365*
0366* SCAN ORIGINAL PROGRAM TO DETERMINE LAST SEQUENCE NUMBER.
0367*
0368 75372 061577 APP8 LDA SPROG SET A TO POINT AT LENGTH OF
0369 75373 002004 INA FIRST STATEMENT.
0370 75374 064056 LDB PBPTR SET B TO POINT AT LENGTH OF
0371 75375 006004 INB FIRST NEW PROGRAM.
0372 75376 050001 CPA 1 IF EQUAL, PROGRAM IS NULL, SO
0373 75377 027422 JMP APP2 IT'S OK.
0374 75400 003004 CMA,INA
0375 75401 040001 ADA B
0376 75402 002021 SSA,RSS IS SPROG>PBPTR?
0377 75403 027407 JMP APP5-2 NO
0378 75404 060056 LDA PBPTR YES, RESET SPROG
0379 75405 071577 STA SPROG
0380 75406 027422 JMP APP2
0381*
0382 75407 061577 LDA SPROG RESTORE
0383 75410 002004 INA (A)
0384 75411 070037 APP5 STA APPS SAVE LOCN OF THIS STATE, LENGTH,
0385 75412 140000 ADA 0,I LINK TO NEXT ONE.
0386 75413 050001 CPA 1 IF SAVE AS B, APPS=>LAST STATE.
0387 75414 002001 RSS

```

|       |       |        |      |                |                                 |
|-------|-------|--------|------|----------------|---------------------------------|
| 0388  | 75415 | 027411 |      | JMP APP5       | OTHERWISE, LOOP.                |
| 0389* |       |        |      |                |                                 |
| 0390  | 75416 | 003400 |      | CCA            | GET SEQUENCE # OF LAST STATE-   |
| 0391  | 75417 | 040037 |      | ADA APPS       | MENT.                           |
| 0392  | 75420 | 160000 |      | LDA 0,I        | MAKE NEGATIVE AND SUBTRACT      |
| 0393  | 75421 | 003001 |      | CMA,RSS        | ONE.                            |
| 0394  | 75422 | 003400 | APP2 | CCA            | SET TO -1 (SEQNO=0) IF NO PROG. |
| 0395* |       |        |      |                |                                 |
| 0396  | 75423 | 064261 |      | LDB ENDRM      | WAIT FOR DRUM TO TERMINATE OK   |
| 0397  | 75424 | 006020 |      | SSB            |                                 |
| 0398  | 75425 | 027423 |      | JMP *-2        |                                 |
| 0399  | 75426 | 006002 |      | SZB            |                                 |
| 0400  | 75427 | 027463 |      | JMP APP9       |                                 |
| 0401  | 75430 | 064214 |      | LDB MBUSY      | WAIT FOR DISC                   |
| 0402  | 75431 | 006020 |      | SSB            | TO                              |
| 0403  | 75432 | 027430 |      | JMP *-2        | TERMINATE                       |
| 0404  | 75433 | 006002 |      | SZB            | WITHOUT                         |
| 0405  | 75434 | 027463 |      | JMP APP9       |                                 |
| 0406* |       |        |      |                |                                 |
| 0407  | 75435 | 140056 |      | ADA PBPTR,I    | CHECK THAT FIRST SEQUENCE # IS  |
| 0408  | 75436 | 002021 |      | SSA,RSS        | GREATER THAN LAST ONE OF OLD    |
| 0409  | 75437 | 027514 |      | JMP APP3       | PROGRAM.                        |
| 0410* |       |        |      |                |                                 |
| 0411  | 75440 | 060273 |      | LDA MLINK+1    | SET MAIN TO SAY PROGRAM IN      |
| 0412  | 75441 | 040335 |      | ADA ,-7LINK    | CORE.                           |
| 0413  | 75442 | 070257 |      | STA MAIN       |                                 |
| 0414  | 75443 | 060322 |      | LDA ,-24       | ERROR.                          |
| 0415  | 75444 | 067446 |      | LDB ++2        |                                 |
| 0416  | 75445 | 026432 |      | JMP LIBER      |                                 |
| 0417  | 75446 | 075447 |      | DEF ++1        |                                 |
| 0418  | 75447 | 005123 |      | OCT 5123       | LF=S                            |
| 0419  | 75450 | 042521 |      | ASC 11,EQUENCE | NUMBER OVERLAP                  |
|       | 75451 | 052506 |      |                |                                 |
|       | 75452 | 047103 |      |                |                                 |
|       | 75453 | 042440 |      |                |                                 |
|       | 75454 | 047125 |      |                |                                 |
|       | 75455 | 046502 |      |                |                                 |
|       | 75456 | 042522 |      |                |                                 |
|       | 75457 | 020117 |      |                |                                 |
|       | 75460 | 053105 |      |                |                                 |
|       | 75461 | 051114 |      |                |                                 |
|       | 75462 | 040520 |      |                |                                 |
| 0420* |       |        |      |                |                                 |
| 0421  | 75463 | 006400 | APP9 | CLB            | CLEAR DRUM DRIVER               |
| 0422  | 75464 | 074261 |      | STB ENDRM      | BUSY FLAG                       |
| 0423  | 75465 | 060273 |      | LDA MLINK+1    |                                 |
| 0424  | 75466 | 040335 |      | ADA ,-7LINK    |                                 |
| 0425  | 75467 | 070257 |      | STA MAIN       |                                 |
| 0426  | 75470 | 060317 |      | LDA M32        |                                 |
| 0427  | 75471 | 067473 |      | LDB ++2        |                                 |
| 0428  | 75472 | 026432 |      | JMP LIBER      |                                 |
| 0429  | 75473 | 075474 |      | DEF ++1        |                                 |
| 0430  | 75474 | 005125 |      | OCT 5125       | LF=U                            |
| 0431  | 75475 | 047101 |      | ASC 15,NABLE   | TO RETRIEVE FROM LIBRARY        |
|       | 75476 | 041114 |      |                |                                 |

75477 042440  
 75500 052117  
 75501 020122  
 75502 042524  
 75503 051111  
 75504 042526  
 75505 042440  
 75506 043122  
 75507 047515  
 75510 020114  
 75511 044502  
 75512 051101  
 75513 051131

0432\*

|       |       |        |       |     |             |                      |
|-------|-------|--------|-------|-----|-------------|----------------------|
| 0433  | 75514 | 060045 | APP3  | LDA | LIBPB       | SET NEW VALUE OF     |
| 0434  | 75515 | 070056 |       | STA | PBPTR       | PBPTR.               |
| 0435  | 75516 | 064273 |       | LDB | MLINK+1     | GET USER ID.         |
| 0436  | 75517 | 044341 |       | ADB | ,+?ID=?LINK |                      |
| 0437  | 75520 | 160001 |       | LDA | 1,I         |                      |
| 0438  | 75521 | 006004 |       | INB |             | SET POINTER TO NAME. |
| 0439  | 75522 | 050030 |       | CPA | LTEMP       | TEST FOR SPECIAL     |
| 0440  | 75523 | 027530 |       | JMP | APP6        | USER.                |
| 0441  | 75524 | 060036 |       | LDA | APPLS       | IF NOT, GET LIST BIT |
| 0442  | 75525 | 011036 |       | AND | BIT15       | AND MERGE INTO NAME. |
| 0443  | 75526 | 130001 |       | IOR | 1,I         |                      |
| 0444  | 75527 | 170001 |       | STA | 1,I         |                      |
| 0445  | 75530 | 044345 | APP6  | ADB | ,?NAME      | SET MAIN.            |
| 0446  | 75531 | 074257 |       | STB | MAIN        |                      |
| 0447  | 75532 | 020226 |       | JMP | LLEND       | TERMINATE.           |
| 0448  | 75533 | 000046 | APPDP | DEF | GETDI       |                      |
| 0449* |       |        |       |     |             |                      |
| 0450  | 00036 |        | APPLS | EQU | LTEMP+6     |                      |
| 0451  | 00037 |        | APPS  | EQU | LTEMP+7     |                      |
| 0452  | 75534 |        | SAPP  | EQU | *           |                      |

0002\* THE HELLO COMMAND IS USED TO LOG A USER ON TO THE SYSTEM. IT  
 0003\* PERFORMS THE FOLLOWING FUNCTIONS:  
 0004\* 1) IF A USER IS ALREADY ON, HE IS LOGGED OFF.  
 0005\* 2) READ USER ID AND PASSWORD, AND ENTER INTO TTY TABLE,

|       |              |                   |                               |
|-------|--------------|-------------------|-------------------------------|
| 0007  | 75000        | ORG LIBRA         |                               |
| 0008  | 75000 060273 | LDA MLINK+1       | GET HELID TM# ADA ,)*ID-=LI   |
| 0009  | 75001 070037 | STA HELTP         | STARTING TIME,                |
| 0010  | 75002 043527 | ADA HELST         | COMPUTE PORT NUMBER,          |
| 0011  | 75003 006400 | CLB               |                               |
| 0012  | 75004 100400 | DIV .+TTY01=TTY00 |                               |
|       | 75005 000375 |                   |                               |
| 0013  | 75006 070031 | STA HELPT         | SAVE IT.                      |
| 0014  | 75007 154036 | CPB HELID,I       | TEST FOR USER IN CORE,        |
| 0015  | 75010 027042 | JMP HEL7          | GO INPUT IDT.                 |
| 0016* |              |                   |                               |
| 0017  | 75011 060732 | LDA M2000         | INPUT FUSS TABLE              |
| 0018  | 75012 070072 | STA WORD          |                               |
| 0019  | 75013 160540 | LDA FUSS,I        |                               |
| 0020  | 75014 064566 | LDB LIBDI         |                               |
| 0021  | 75015 016231 | JSB DRUML         |                               |
| 0022  | 75016 116015 | JSB SICKP,I       | IT'S STUCK ON THE DRUM        |
| 0023* |              |                   |                               |
| 0024  | 75017 060031 | LDA HELPT         | COMPUTE LOCATION OF USER'S    |
| 0025  | 75020 001720 | ALF,ALS           |                               |
| 0026  | 75021 040562 | ADA LIBD          |                               |
| 0027  | 75022 070030 | STA LTEMP         |                               |
| 0028* |              |                   |                               |
| 0029  | 75023 002400 | CLA               | ZERO OUT HIS SECTION,         |
| 0030  | 75024 064317 | LDB M32           |                               |
| 0031  | 75025 170030 | STA LTEMP,I       |                               |
| 0032  | 75026 034030 | ISZ LTEMP         |                               |
| 0033  | 75027 006006 | INB, SZB          |                               |
| 0034  | 75030 027025 | JMP +=3           |                               |
| 0035* |              |                   |                               |
| 0036  | 75031 160540 | LDA FUSS,I        | WRITE BACK TO                 |
| 0037  | 75032 064562 | LDB LIBD          | DISC,                         |
| 0038  | 75033 016231 | JSB DRUML         |                               |
| 0039  | 75034 116015 | JSB SICKP,I       | IT'S STUCK IN CORE            |
| 0040* |              |                   |                               |
| 0041  | 75035 064273 | LDB MLINK+1       |                               |
| 0042  | 75036 044336 | ADB .+?TNUM=?LINK |                               |
| 0043  | 75037 160001 | LDA 1,I           | TELL 2114 THAT                |
| 0044  | 75040 030240 | IUR NUC           | NEW USER CALLED               |
| 0045  | 75041 114500 | JSB S14SC,I       |                               |
| 0046* |              |                   |                               |
| 0047  | 75042        | HEL7 EQU *        |                               |
| 0048  | 75042 160036 | LDA HELID,I       | GET CURRENT ID.               |
| 0049  | 75043 002003 | SZA, RSS          | IF 0, NO LOGOFF IS NECESSARY. |
| 0050  | 75044 027124 | JMP HEL1          |                               |
| 0051* |              |                   |                               |
| 0052* |              |                   |                               |
| 0053  | 75045 060273 | LDA MLINK+1       | DOES THIS                     |
| 0054  | 75046 040336 | ADA .+?TNUM=?LINK | USER HAVE                     |

|       |            |        |                   |                                  |
|-------|------------|--------|-------------------|----------------------------------|
| 0055  | 75047      | 050255 | CPA PRIST         | THE LINE                         |
| 0056  | 75050      | 002001 | RSS               | PRINTER?                         |
| 0057  | 75051      | 027056 | JMP HEL7A         | NO                               |
| 0058  | 75052      | 060247 | LDA LPD           | YES = GET OPCODE                 |
| 0059  | 75053      | 114500 | JSB S14SC,I       | TELL I/O PROCESSOR               |
| 0060  | 75054      | 002400 | CLA               | REMOVE                           |
| 0061  | 75055      | 070255 | STA PRIST         | USER                             |
| 0062  | 75056      | 104200 | HEL7A DLD HELTP,I | GET STARTING TIME.               |
|       | 75057      | 100037 |                   |                                  |
| 0063  | 75060      | 003004 | CMA,INA           | MAKE BOTH PARTS NEGATIVE.        |
| 0064  | 75061      | 007004 | CMB,INB           |                                  |
| 0065  | 75062      | 104400 | DST HELTM         | SAVE.                            |
|       | 75063      | 000040 |                   |                                  |
| 0066  | 75064      | 104200 | DLD DATIM         | GET CURRENT TIME.                |
|       | 75065      | 000201 |                   |                                  |
| 0067  | 75066      | 040040 | ADA HELTM         | COMPUTE DIFFERENCES: A=# OF HRS, |
| 0068  | 75067      | 000040 | CLE               | B=# OF 100 MS UNITS,             |
| 0069  | 75070      | 044041 | ADB HELTM+1       | E INDICATES SIGN OF B.           |
| 0070  | 75071      | 074041 | STB HELTM+1       | SAVE UNITS.                      |
| 0071  | 75072      | 100200 | MPY D60           | CHANGE HRS TO MINS.              |
|       | 75073      | 000724 |                   |                                  |
| 0072  | 75074      | 070040 | STA HELTM         |                                  |
| 0073  | 75075      | 060041 | LDA HELTM+1       | GET UNIT COUNT. IF E=0           |
| 0074  | 75076      | 002041 | SEZ,RSS           | THEN COUNT AS NEGATIVE.          |
| 0075  | 75077      | 007400 | CCB               |                                  |
| 0076  | 75100      | 100400 | DIV D600          | CHANGE TO MINUTES.               |
|       | 75101      | 000456 |                   |                                  |
| 0077  | 75102      | 040040 | ADA HELTM         | ADD PREVIOUS COMPUTATION +1      |
| 0078  | 75103      | 070040 | STA HELTM         |                                  |
| 0079* |            |        |                   |                                  |
| 0080  | 75104      | 160036 | LDA HELID,I       | SET UP LOGOFF                    |
| 0081  | 75105      | 031036 | IOR BIT15         | ENTRY.                           |
| 0082  | 75106      | 017470 | JSB HELOG         |                                  |
| 0083* |            |        |                   |                                  |
| 0084  | 75107      | 016107 | JSB RDIDT         | READ IN PROPER TRACK OF IDT      |
| 0085* |            |        |                   |                                  |
| 0086  | 75110      | 044357 | ADB .+5           | COMPUTE NEW TOTAL TIME.          |
| 0087  | 75111      | 000040 | CLE               |                                  |
| 0088  | 75112      | 160001 | LDA 1,I           |                                  |
| 0089  | 75113      | 040040 | ADA HELTM         |                                  |
| 0090  | 75114      | 002040 | SEZ               | IF OVERFLOW, USE MAXIMUM.        |
| 0091  | 75115      | 003400 | CCA               |                                  |
| 0092  | 75116      | 170001 | STA 1,I           |                                  |
| 0093* |            |        |                   |                                  |
| 0094  | 75117      | 160075 | LDA IDLCP,I       | GET DRUM ADDRESS                 |
| 0095  | 75120      | 064562 | LDB LIBD          | AND CORE OUTPUT ADDRESS          |
| 0096  | 75121      | 016231 | JSB DRUML         | REWRITE TO DRUM                  |
| 0097  | 75122      | 027261 | JMP HEL10         | DRUM ERROR, TRY TO SALVAGE       |
| 0098* |            |        |                   |                                  |
| 0099  | 75123      | 170036 | STA HELID,I       | REMOVE USER'S ID FROM TABLE.     |
| 0100* |            |        |                   |                                  |
| 0101* | CONVERT ID |        |                   |                                  |
| 0102* |            |        |                   |                                  |
| 0103  | 75124      | 016315 | HEL1 JSB GETID    | TRANSLATE ID.                    |
| 0104  | 75125      | 002001 | RSS               |                                  |

|       |       |        |       |              |                               |
|-------|-------|--------|-------|--------------|-------------------------------|
| 0105  | 75126 | 026425 |       | JMP GTFER    | ERROR--NO COMMA               |
| 0106  | 75127 | 050426 |       | CPA ,+54B    |                               |
| 0107  | 75130 | 002001 |       | RSS          |                               |
| 0108  | 75131 | 026425 |       | JMP GTFER    | ERROR--NO COMMA.              |
| 0109* |       |        |       |              |                               |
| 0110  | 75132 | 160076 |       | LDA IDLNP, I | GET ID TABLE LENGTH           |
| 0111  | 75133 | 070072 |       | STA WORD     | SAVE FOR DRUM DRIVER          |
| 0112  | 75134 | 160075 |       | LDA IDLCP, I | GET DRUM ADDRESS              |
| 0113  | 75135 | 064566 |       | LDB LIBDI    | AND CORE INPUT ADDRESS        |
| 0114  | 75136 | 016231 |       | JSB DRUML    | AND READ IN THE PROPER TRACK  |
| 0115  | 75137 | 116015 |       | JSB SICKP, I | DRUM ERROR, DIE GRACEFULLY    |
| 0116  | 75140 | 064072 |       | LDB WORD     | SEARCH IDT FOR                |
| 0117  | 75141 | 007004 |       | CMB, INB     | NEW USER'S ID.                |
| 0118  | 75142 | 044562 |       | ADB LIBD     |                               |
| 0119  | 75143 | 060052 |       | LDA ID       |                               |
| 0120  | 75144 | 054562 | HEL2  | CPB LIBD     |                               |
| 0121  | 75145 | 027256 |       | JMP HELF     | NOT THERE.                    |
| 0122  | 75146 | 044342 |       | ADB , -8     |                               |
| 0123  | 75147 | 150001 |       | CPA 1, I     |                               |
| 0124  | 75150 | 002001 |       | RSS          | FOUND                         |
| 0125  | 75151 | 027144 |       | JMP HEL2     |                               |
| 0126* |       |        |       |              |                               |
| 0127  | 75152 | 060347 |       | LDA , -3     | CHECK PASSWORD.               |
| 0128  | 75153 | 070042 |       | STA HELC     |                               |
| 0129  | 75154 | 074043 |       | STB HELP     |                               |
| 0130  | 75155 | 034043 | HEL3  | ISZ HELP     | BUMP TO NEXT PASSWORD ENTRY.  |
| 0131  | 75156 | 067536 |       | LDB HFLG     |                               |
| 0132  | 75157 | 006002 |       | SZB          | COMMA ENCOUNTERED PREVIOUSLY? |
| 0133  | 75160 | 027170 |       | JMP HEL3C    | YES.                          |
| 0134  | 75161 | 016164 |       | JSB LCHAR    | NO, GET 1ST CHAR.             |
| 0135  | 75162 | 027170 |       | JMP HEL3C    | CR.                           |
| 0136  | 75163 | 006404 |       | CLB, INB     | NO CR.                        |
| 0137  | 75164 | 050426 |       | CPA ,+54B    | COMMA?                        |
| 0138  | 75165 | 002001 |       | RSS          |                               |
| 0139  | 75166 | 027171 |       | JMP HEL3G    | NO.                           |
| 0140  | 75167 | 077536 |       | STB HFLG     | YES. SET FLAG.                |
| 0141  | 75170 |        | HEL3C | EQU *        |                               |
| 0142  | 75170 | 002400 |       | CLA          |                               |
| 0143  | 75171 |        | HEL3G | EQU *        |                               |
| 0144  | 75171 | 001727 |       | ALF, ALF     | FIRST CHAR, ON LEFT.          |
| 0145  | 75172 | 070044 |       | STA HELGT    |                               |
| 0146  | 75173 | 067536 |       | LDB HFLG     |                               |
| 0147  | 75174 | 006002 |       | SZB          | COMMA ENCOUNTERED PREVIOUSLY? |
| 0148  | 75175 | 027205 |       | JMP HEL3D    | YES.                          |
| 0149  | 75176 | 016164 |       | JSB LCHAR    | NO, GET 2ND CHAR.             |
| 0150  | 75177 | 027205 |       | JMP HEL3D    | CR.                           |
| 0151  | 75200 | 006404 |       | CLB, INB     | NO CR.                        |
| 0152  | 75201 | 050426 |       | CPA ,+54B    | COMMA?                        |
| 0153  | 75202 | 002001 |       | RSS          |                               |
| 0154  | 75203 | 027206 |       | JMP HEL3H    | NO.                           |
| 0155  | 75204 | 077536 |       | STB HFLG     | YES. SET FLAG.                |
| 0156  | 75205 |        | HEL3D | EQU *        |                               |
| 0157  | 75205 | 002400 |       | CLA          |                               |
| 0158  | 75206 |        | HEL3H | EQU *        |                               |
| 0159  | 75206 | 040044 |       | ADA HELGT    |                               |

|       |              |        |          |           |                                |
|-------|--------------|--------|----------|-----------|--------------------------------|
| 0160  | 75207        | 150043 | CPA      | HELP, I   | COMPARE,                       |
| 0161  | 75210        | 002001 | RSS      |           |                                |
| 0162  | 75211        | 027256 | JMP      | HELJ      | DOES NOT COMPARE,              |
| 0163  | 75212        | 034042 | ISZ      | HEL3      | COMPARES, BUMP CHAR. COUNTER,  |
| 0164  | 75213        | 027155 | JMP      | HEL3      | GET NEXT CHAR.                 |
| 0165* |              |        |          |           |                                |
| 0166  | 75214        | 067536 | LDB      | HFLG      |                                |
| 0167  | 75215        | 006002 | SZB      |           | COMMA ENCOUNTERED PREVIOUSLY?  |
| 0168  | 75216        | 027224 | JMP      | HEL3F     | YES.                           |
| 0169  | 75217        | 016164 | JSB      | LCHAR     | NO, GET NEXT CHAR.             |
| 0170  | 75220        | 027264 | JMP      | HEL3A     | CR, SUBTYPE #11                |
| 0171  | 75221        | 050426 | CPA      | ,+54B     | NO CR, COMMA?                  |
| 0172  | 75222        | 002001 | RSS      |           |                                |
| 0173  | 75223        | 026425 | JMP      | GTFER     | NO, ERROR!                     |
| 0174  | 75224        |        | HEL3F    | EQU *     |                                |
| 0175  | 75224        | 016164 | JSB      | LCHAR     | GET NEXT CHAR.                 |
| 0176  | 75225        | 026425 | JMP      | GTFER     | CR, ERROR!                     |
| 0177  | 75226        |        | HEL3I    | EQU *     |                                |
| 0178  | 75226        | 040316 | ADA      | M72B      | NO CR, DIGIT?                  |
| 0179  | 75227        | 002021 | SSA, RSS |           |                                |
| 0180  | 75230        | 026425 | JMP      | GTFER     | NO, ERROR!                     |
| 0181  | 75231        | 040364 | ADA      | ,+10      | MAY BE.                        |
| 0182  | 75232        | 002020 | SSA      |           |                                |
| 0183  | 75233        | 026425 | JMP      | GTFER     | NON-DIGIT!                     |
| 0184  | 75234        | 073540 | STA      | HTEMP     | DIGIT! SAVE.                   |
| 0185  | 75235        | 063537 | LDA      | HTYPE     | UPDATE TYPE VARIABLE.          |
| 0186  | 75236        | 100200 | MPY      | ,+10      |                                |
|       | 75237        | 000364 |          |           |                                |
| 0187  | 75240        | 043540 | ADA      | HTEMP     |                                |
| 0188  | 75241        | 073537 | STA      | HTYPE     |                                |
| 0189  | 75242        | 016164 | JSB      | LCHAR     | GET NEXT CHAR,                 |
| 0190  | 75243        | 002001 | RSS      |           |                                |
| 0191  | 75244        | 027226 | JMP      | HEL3I     | NO CR.                         |
| 0192  | 75245        | 063537 | LDA      | HTYPE     | CR, TYPE>6?                    |
| 0193  | 75246        | 040343 | ADA      | ,=7       |                                |
| 0194  | 75247        | 002021 | SSA, RSS |           |                                |
| 0195  | 75250        | 026425 | JMP      | GTFER     | YES, ERROR!                    |
| 0196  | 75251        | 040360 | ADA      | ,+6       | NO, RESTORE TO(ORIG, INPUT-1). |
| 0197  | 75252        | 002020 | SSA      |           | WAS 0 INPUT?                   |
| 0198  | 75253        | 026425 | JMP      | GTFER     | YES, ERROR!                    |
| 0199  | 75254        | 001722 | ALF, RAL |           | NO, ROTATE INTO POSITION.      |
| 0200  | 75255        | 027265 | JMP      | HEL3B     |                                |
| 0201  | 75256        | 060332 | HEL3F    | LDA ,=16  | PRINT ILLEGAL ACCESS MESSAGE.  |
| 0202  | 75257        | 066541 | LDB      | HELK      |                                |
| 0203  | 75260        | 026432 | JMP      | LIBER     |                                |
| 0204  | 75261        | 060075 | HEL10    | LDA IDLCP |                                |
| 0205  | 75262        | 064072 | LDB      | WORD      |                                |
| 0206  | 75263        | 116016 | JSB      | SALVP, I  |                                |
| 0207* |              |        |          |           |                                |
| 0208* | PASSWORD OK. |        |          |           |                                |
| 0209* |              |        |          |           |                                |
| 0210  | 75264        |        | HEL3A    | EQU *     |                                |
| 0211  | 75264        | 002400 | CLA      |           | SUBTYPE#11                     |
| 0212  | 75265        |        | HEL3B    | EQU *     |                                |
| 0213  | 75265        | 032774 | IOR      | STP       | MERPE OPCODE.                  |

|       |       |        |      |                   |                               |
|-------|-------|--------|------|-------------------|-------------------------------|
| 0214  | 75266 | 064273 |      | LDB MLINK+1       |                               |
| 0215  | 75267 | 044336 |      | ADB ,+?TNUM=?LINK |                               |
| 0216  | 75270 | 130001 |      | IOR B,I           | MERGE PORT NR.                |
| 0217  | 75271 | 114500 |      | JSB S14SC,I       | TELL 2114 TO SET UP DELAYS.   |
| 0218* |       |        |      |                   |                               |
| 0219  | 75272 | 034043 |      | ISZ HELP          | COMPUTE                       |
| 0220  | 75273 | 104200 |      | DLI HELP,I        | ALLOWED TIME=TIME TO DATE.    |
|       | 75274 | 100043 |      |                   |                               |
| 0221  | 75275 | 003104 |      | CMA,CLE,INA       |                               |
| 0222  | 75276 | 040001 |      | ADA 1             |                               |
| 0223  | 75277 | 002040 |      | SEZ               |                               |
| 0224  | 75300 | 027346 |      | JMP HELG          | NO TIME LEFT.                 |
| 0225* |       |        |      |                   |                               |
| 0226  | 75301 | 064273 |      | LDB MLINK+1       |                               |
| 0227  | 75302 | 044335 |      | ADB ,=?LINK       | B=> ?FLAG                     |
| 0228  | 75303 | 060446 |      | LDA CBFLG         | CLEAR                         |
| 0229  | 75304 | 003000 |      | CMA               | CBFLG                         |
| 0230  | 75305 | 110001 |      | AND B,I           |                               |
| 0231  | 75306 | 170001 |      | STA B,I           | BIT.                          |
| 0232  | 75307 | 006004 |      | INB               | B=> ?TNUM                     |
| 0233  | 75310 | 160001 |      | LDA 1,I           | TELL 2114                     |
| 0234  | 75311 | 030233 |      | IOR ULO           | THAT USER                     |
| 0235  | 75312 | 114500 |      | JSB S14SC,I       | LOGGED ON                     |
| 0236  | 75313 | 060052 |      | LDA ID            | MAKE LOG ENTRY.               |
| 0237  | 75314 | 017470 |      | JSB HELOG         |                               |
| 0238  | 75315 | 104200 |      | DLI DATIM         | SET STARTING TIME AND ID      |
|       | 75316 | 000201 |      |                   |                               |
| 0239  | 75317 | 104400 |      | DST HELTP,I       | INTO TABLE.                   |
|       | 75320 | 100037 |      |                   |                               |
| 0240  | 75321 | 060052 |      | LDA ID            | INSERT NEW ID AND CLEAR       |
| 0241  | 75322 | 006400 |      | CLB               | NAME.                         |
| 0242  | 75323 | 104400 |      | DST HELID,I       |                               |
|       | 75324 | 100036 |      |                   |                               |
| 0243  | 75325 | 060702 |      | LDA PBUFF         | ALSO SCRATCH                  |
| 0244  | 75326 | 064273 |      | LDB MLINK+1       |                               |
| 0245  | 75327 | 044340 |      | ADB ,+?PRG=?LINK  |                               |
| 0246  | 75330 | 170001 |      | STA 1,I           |                               |
| 0247  | 75331 | 104200 |      | DLI Z999          | MOVE SETUP FOR HELLO          |
|       | 75332 | 075532 |      |                   |                               |
| 0248  | 75333 | 104400 |      | DST LTEMP         | PROGRAM INTO LTEMP(0:3)       |
|       | 75334 | 000030 |      |                   |                               |
| 0249  | 75335 | 104200 |      | DLI HELM+1        |                               |
|       | 75336 | 075534 |      |                   |                               |
| 0250  | 75337 | 104400 |      | DST LTEMP+2       |                               |
|       | 75340 | 000032 |      |                   |                               |
| 0251* |       |        |      |                   |                               |
| 0252  | 75341 | 116005 |      | JSB DLOKP,I       | SEARCH FOR PROGRAM IN LIBRARY |
| 0253  | 75342 | 027351 |      | JMP HEL6          | FOUND IT.                     |
| 0254* |       |        |      |                   |                               |
| 0255* |       |        |      |                   |                               |
| 0256  | 75343 | 060344 | HEL4 | LDA ,=6           | OUTPUT READY MESSAGE          |
| 0257  | 75344 | 064266 |      | LDB READY         |                               |
| 0258  | 75345 | 026432 |      | JMP LIBER         |                               |
| 0259  | 75346 | 060334 | HEL6 | LDA ,=14          |                               |
| 0260  | 75347 | 066552 |      | LDB HELH          |                               |



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0261 75350 026432 JMP LIBER
0262*
0263*
0264*
0265* SET UP USER TO RUN HELLO PROGRAM.
0266*
0267 75351 064035 HEL6 LDB LTEMP+5
0268 75352 044356 ADB .+4 IS HELLO PROGRAM
0269 75353 160001 LDA B,I ILL-STORED?
0270 75354 002020 SSA
0271 75355 027343 JMP HEL4 YES
0272 75356 044356 ADB .-2 NO, TEST FOR FILE
0273 75357 160001 LDA 1,I
0274 75360 002020 SSA
0275 75361 027343 JMP HEL4
0276*
0277 75362 006004 INB => THIRD WORD OF NAME
0278 75363 160001 LDA 1,I SAVE SEMI-
0279 75364 070040 STA LIBSC COMPILED FLAG
0280 75365 006004 INB
0281 75366 160001 LDA 1,I SAVE START-OF-
0282 75367 001665 ELA,CLE,ERA
0283 75370 070041 STA LIBSP PROGRAM POINTER
0284 75371 044355 ADB .+3 GET PROGRAM DRUM ADDRESS
0285 75372 160001 LDA B,I
0286 75373 070043 STA HELP SAVE DRUM ADDRESS
0287 75374 006004 INB SAVE ALSO
0288 75375 104200 DLD B,I PROGRAM
 75376 100001
0289 75377 104400 DST HELDI DISC ADDRESS
 75400 000046
0290 75401 064035 LDB LTEMP+5 GET
0291 75402 044365 ADB .+11 PROGRAM
0292 75403 164001 LDB B,I LENGTH
0293 75404 074042 STB HELC STORE LENGTH.
0294 75405 007004 CMB,INB COMPUTE FIRST
0295 75406 044041 ADB LIBSP UNUSED WORD
0296 75407 074045 STB LIBPB
0297 75410 007004 CMB,INB TEST FOR OVERFLOW.
0298 75411 060040 LDA LIBSC
0299 75412 002021 SSA,RSS SEMI-COMPILED?
0300 75413 027420 JMP HEL12 NO
0301 75414 044462 ADB LW99
0302 75415 006021 SSB,RSS
0303 75416 027423 JMP HEL13 OK
0304 75417 027343 JMP HEL4 TOO BIG
0305 75420 HEL12 EQU *
0306 75420 044654 ADB LW97
0307 75421 006020 SSB
0308 75422 027343 JMP HEL4
0309*
0310*
0311 75423 HEL13 EQU *
0312 75423 016047 JSB RDPRG READ IN FIXED AREA.
0313 75424 064042 LDB HELC GET HELLO PROGRAM LENGTH

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|       |       |        |       |          |                               |
|-------|-------|--------|-------|----------|-------------------------------|
| 0314  | 75425 | 060043 | LDA   | HELP     | AND DRUM ADDRESS              |
| 0315  | 75426 | 002002 | SZA   |          | PROGRAM ON DRUM?              |
| 0316  | 75427 | 027437 | JMP   | HEL8     | YES, GO GET IT                |
| 0317  | 75430 | 074215 | STB   | MWORD    | NO, STORE WORD COUNT FOR DISC |
| 0318  | 75431 | 064041 | LDB   | LIBSP    | GET START OF PROGRAM POINTER  |
| 0319  | 75432 | 045036 | ADB   | BIT15    | AND READ BIT                  |
| 0320  | 75433 | 063531 | LDA   | HELDP    | GET POINTER TO DISK ADDRESS   |
| 0321  | 75434 | 114217 | JSB   | DISCZ, I |                               |
| 0322  | 75435 | 027343 | JMP   | HEL4     | DISK ERROR                    |
| 0323  | 75436 | 027444 | JMP   | HEL9     |                               |
| 0324  | 75437 | 074072 | HEL8  | STB      | WORD                          |
| 0325  | 75440 | 064041 | LDB   | LIBSP    | STORE WORD COUNT FOR DRUM     |
| 0326  | 75441 | 045036 | ADB   | BIT15    | GET START OF PROGRAM POINTER  |
| 0327  | 75442 | 016231 | JSB   | DRUML    |                               |
| 0328  | 75443 | 027343 | JMP   | HEL4     | DRUM ERROR, GO OUTPUT "READY" |
| 0329  | 75444 | 016710 | HEL9  | JSB      | SEMIC                         |
| 0330  | 75445 | 103100 | CLF   | 0        | PLAY SAFE.                    |
| 0331  | 75446 | 064273 | LDB   | MLINK+1  |                               |
| 0332  | 75447 | 044335 | ADB   | .-?LINK  |                               |
| 0333  | 75450 | 160001 | LDA   | 1, I     | SET                           |
| 0334  | 75451 | 030356 | IOR   | HFLAG    | HELLO                         |
| 0335  | 75452 | 170001 | STA   | 1, I     | FLAG                          |
| 0336  | 75453 | 044366 | ADB   | .+?STAT  |                               |
| 0337  | 75454 | 060357 | LDA   | XSYNT+1  | SET STATUS TO RUN.            |
| 0338  | 75455 | 170001 | STA   | 1, I     |                               |
| 0339  | 75456 | 034264 | ISZ   | TIMEF    | SET FLAG FOR TIMING.          |
| 0340  | 75457 | 065577 | LDB   | SPROG    |                               |
| 0341  | 75460 | 054056 | CPB   | PBPTR    | NULL PROGRAM                  |
| 0342  | 75461 | 127530 | JMP   | HELRT, I | YES                           |
| 0343  | 75462 | 075334 | STB   | PRGCT    |                               |
| 0344  | 75463 | 060412 | LDA   | .+40B    |                               |
| 0345  | 75464 | 071573 | STA   | BLANK    |                               |
| 0346  | 75465 | 102100 | STF   | 0        | INTERRUPT BACK ON.            |
| 0347  | 75466 | 127467 | JMP   | *+1, I   |                               |
| 0348  | 75467 | 036045 | DEF   | CMP14    |                               |
| 0349* |       |        |       |          |                               |
| 0350  | 75470 | 000000 | HELOG | NOP      | MAKE ENTRY IN LOG TABLE.      |
| 0351  | 75471 | 064604 | LDB   | LOGCT    | WAIT UNTIL                    |
| 0352  | 75472 | 054412 | CPB   | .+32     | THERE'S ROOM                  |
| 0353  | 75473 | 027471 | JMP   | *-2      |                               |
| 0354  | 75474 | 064620 | LDB   | LOGP2    | SET POINTER TO NEXT LOC.      |
| 0355  | 75475 | 006004 | INB   |          | IN LOG QUEUE.                 |
| 0356  | 75476 | 054630 | CPB   | LOGND    |                               |
| 0357  | 75477 | 064626 | LDB   | LOGBG    |                               |
| 0358  | 75500 | 103100 | CLF   | 0        | INHIBIT INTERRUPT.            |
| 0359  | 75501 | 074620 | STB   | LOGP2    |                               |
| 0360  | 75502 | 170620 | STA   | LOGP2, I | ENTER ID.                     |
| 0361  | 75503 | 060201 | LDA   | DATIM    | GET DAY COUNT.                |
| 0362  | 75504 | 006400 | CLB   |          | GET HOURS OF TODAY.           |
| 0363  | 75505 | 100400 | DIV   | .+24     |                               |
|       | 75506 | 002402 |       |          |                               |
| 0364  | 75507 | 060001 | LDA   | 1        |                               |
| 0365  | 75510 | 100200 | MPY   | D60      | CONVERT TO MINS.              |
|       | 75511 | 000724 |       |          |                               |
| 0366  | 75512 | 070044 | STA   | HELGT    | SAVE.                         |

|       |       |          |       |         |                      |
|-------|-------|----------|-------|---------|----------------------|
| 0367  | 75513 | 060202   | LDA   | DATIM+1 | GET UNIT COUNTER,    |
| 0368  | 75514 | 040704   | ADA   | D36K    | ADJUST,              |
| 0369  | 75515 | 100400   | DIV   | D600    | GET IN MINUTES,      |
|       | 75516 | 000456   |       |         |                      |
| 0370  | 75517 | 040044   | ADA   | HELGT   |                      |
| 0371  | 75520 | 034620   | ISZ   | LOGP2   | PUT IN QUEUE,        |
| 0372  | 75521 | 001722   | ALF,  | RAL     |                      |
| 0373  | 75522 | 030031   | IOR   | HELPT   | MERGE IN PORT NUMBER |
| 0374  | 75523 | 170620   | STA   | LOGP2,I |                      |
| 0375  | 75524 | 034604   | ISZ   | LOGCT   | BUMP COUNT           |
| 0376  | 75525 | 102100   | STF   | 0       | INTERRUPT BACK ON,   |
| 0377  | 75526 | 127470   | JMP   | HELOG,I | RETURN,              |
| 0378  | 75527 | 116642   | HELST | AB8     | =TTY00=?TIME         |
| 0379  | 75530 | 041675   | HELRT | DEF     | EXIT3                |
| 0380  | 75531 | 000046   | HELDP | DEF     | HELDI                |
| 0381  | 75532 | 065747   | Z999  | OCT     | 65747                |
| 0382  | 75533 | 044105   | HELM  | ASC     | 3,HELLO              |
|       | 75534 | 046114   |       |         |                      |
|       | 75535 | 047440   |       |         |                      |
| 0383  | 75536 | 000000   | HFLG  | OCT     | 0                    |
| 0384  | 75537 | 000000   | HTYPE | OCT     | 0                    |
| 0385  | 75540 | 000000   | HTEMP | BSS     | 1                    |
| 0386  | 00031 |          | HELPT | EQU     | LTEMP+1              |
| 0387  | 00036 |          | HELID | EQU     | LTEMP+6              |
| 0388  | 00037 |          | HELTP | EQU     | LTEMP+7              |
| 0389  | 00040 |          | HELTM | EQU     | LTEMP+8              |
| 0390  | 00042 |          | HELC  | EQU     | LTEMP+10             |
| 0391  | 00043 |          | HELP  | EQU     | LTEMP+11             |
| 0392  | 00044 |          | HELGT | EQU     | LTEMP+12             |
| 0393  | 00046 |          | HELDI | EQU     | LTEMP+14             |
| 0394* |       | LTEMP+15 | IS    | USED    | HERE ALSO            |
| 0395  | 75541 |          | SHEL  | EQU     | *                    |

=> DISK ADDRESS  
USER NUMBER 1999

0397\* THE BYE COMMAND IS USED TO LOG A USER OFF, BYE MUST PERFORM THE  
 0398\* FOLLOWING FUNCTIONS:  
 0399\* 1) DETERMINE AMOUNT OF CONSOLE TIME USED  
 0400\* 2) UPDATE USER'S CLOCK IN ID=TABLE  
 0401\* 3) SET FLAG FOR SYSTEM TO UNHOOK.  
 0402\* 4) OUTPUT TERMINATION MESSAGE

|       |       |                   |                                 |
|-------|-------|-------------------|---------------------------------|
| 0404  | 75000 | ORG LIBRA         |                                 |
| 0405  | 75000 | LDA MLINK+1       | DOES THIS                       |
| 0406  | 75001 | ADA ,+?TNUM=?LINK | USER HAVE                       |
| 0407  | 75002 | CPA PRIST         | THE LINE                        |
| 0408  | 75003 | RSS               | PRINTER?                        |
| 0409  | 75004 | JMP BYE2          | NO                              |
| 0410  | 75005 | LDA LPD           | YES=GET OPCCODE                 |
| 0411  | 75006 | JSB S149C,I       | TELL I/O PROCESSOR              |
| 0412  | 75007 | CLA               | REMOVE                          |
| 0413  | 75010 | STA PRIST         | USER                            |
| 0414  | 75011 | BYE2 LDB MLINK+1  |                                 |
| 0415  | 75012 | ADB ,+?FLAG=?LINK | B => FLAG WORD                  |
| 0416  | 75013 | LDA OUTWT         | REMOVE                          |
| 0417  | 75014 | CMA               | OUTWT BIT                       |
| 0418  | 75015 | AND 1,I           | FROM                            |
| 0419  | 75016 | STA 1,I           | STATUS.                         |
| 0420  | 75017 | ADB ,+?ID=?FLAG   |                                 |
| 0421  | 75020 | LDA 1,I           | GET ID                          |
| 0422  | 75021 | SZA,RSS           | IF ID=0, USER NEVER             |
| 0423  | 75022 | JMP BYBY          | LOGGED ON, SO EXIT              |
| 0424  | 75023 | STB BYEID         | SAVE POINTER TO ID              |
| 0425  | 75024 | LDA M2000         | INPUT FUSS TABLE                |
| 0426  | 75025 | STA WORD          |                                 |
| 0427  | 75026 | LDA FUSS,I        |                                 |
| 0428  | 75027 | LDB LIBDI         |                                 |
| 0429  | 75030 | JSB DRUML         |                                 |
| 0430  | 75031 | JSB SICKP,I       | IT'S STUCK ON THE DRUM          |
| 0431* |       |                   |                                 |
| 0432  | 75032 | LDA MLINK+1       | COMPUTE USER'S PORT NO.         |
| 0433  | 75033 | ADA BYESP         |                                 |
| 0434  | 75034 | CLB               |                                 |
| 0435  | 75035 | DIV ,+TTY01=TTY00 |                                 |
|       | 75036 |                   |                                 |
| 0436  | 75037 | STA BYEPT         |                                 |
| 0437* |       |                   |                                 |
| 0438  | 75040 | ALF,ALS           | COMPUTE LOCATION OF USER'S FUSS |
| 0439  | 75041 | ADA LIBD          |                                 |
| 0440  | 75042 | STA LTEMP+1       |                                 |
| 0441  | 75043 | LDA M32           | CLEAR USER'S FUSS               |
| 0442  | 75044 | STB LTEMP+1,I     |                                 |
| 0443  | 75045 | ISZ LTEMP+1       |                                 |
| 0444  | 75046 | INA,SZA           |                                 |
| 0445  | 75047 | JMP *=3           |                                 |
| 0446* |       |                   |                                 |
| 0447  | 75050 | LDA FUSS,I        | WRITE FUSS                      |
| 0448  | 75051 | LDB LIBD          | BACK TO DRUM                    |
| 0449  | 75052 | JSB DRUML         |                                 |

|       |       |        |                   |                                  |
|-------|-------|--------|-------------------|----------------------------------|
| 0450  | 75053 | 116015 | JSB SICKP,I       | IT'S STUCK IN CORE               |
| 0451* |       |        |                   |                                  |
| 0452* |       |        |                   |                                  |
| 0453  | 75054 | 060273 | LDA MLINK+1       |                                  |
| 0454  | 75055 | 040345 | ADA .+7TIME=?LINK | SET POINTER TO START TIME.       |
| 0455  | 75056 | 104200 | DL0 0,I           | GET STARTING TIME.               |
|       | 75057 | 100000 |                   |                                  |
| 0456  | 75060 | 003004 | CMA,INA           | SET BOTH PARTS NEGATIVE.         |
| 0457  | 75061 | 007004 | CMB,INB           |                                  |
| 0458  | 75062 | 104400 | DST BYETM         | SAVE                             |
|       | 75063 | 000031 |                   |                                  |
| 0459  | 75064 | 104200 | DL0 DATIM         | NOW GET CURRENT TIME             |
|       | 75065 | 000201 |                   |                                  |
| 0460  | 75066 | 040031 | ADA BYETM         | COMPUTE DIFFERENCES: A## OF HRS, |
| 0461  | 75067 | 000040 | CLE               | B## OF 100 MS UNITS,             |
| 0462  | 75070 | 044032 | A0B BYETM+1       | E INDICATES SIGN OF B.           |
| 0463  | 75071 | 074032 | STB BYETM+1       | SAVE UNITS.                      |
| 0464  | 75072 | 100200 | MPY D60           | CHANGE HRS TO MINS.              |
|       | 75073 | 000724 |                   |                                  |
| 0465  | 75074 | 070031 | STA BYETM         |                                  |
| 0466  | 75075 | 060032 | LDA BYETM+1       | GET UNIT COUNT. IF E=0           |
| 0467  | 75076 | 002041 | SEZ,RSS           | THEN COUNT AS NEGATIVE.          |
| 0468  | 75077 | 007400 | CCB               |                                  |
| 0469  | 75100 | 100400 | DIV D600          | CHANGE TO MINUTES.               |
|       | 75101 | 000456 |                   |                                  |
| 0470  | 75102 | 040031 | ADA BYETM         | ADD PREVIOUS COMPUTATION PLUS    |
| 0471  | 75103 | 070031 | STA BYETM         |                                  |
| 0472* |       |        |                   |                                  |
| 0473  | 75104 | 060604 | LDA LOGCT         | CHECK FOR ROOM IN LOG TABLE      |
| 0474  | 75105 | 050412 | CPA .+32          |                                  |
| 0475  | 75106 | 027104 | JMP +=2           |                                  |
| 0476  | 75107 | 060620 | LDA LOGP2         | SET LOGP2 TO NEXT LOCATION IN    |
| 0477  | 75110 | 002004 | INA               | LOG TABLE.                       |
| 0478  | 75111 | 050630 | CPA LOGND         |                                  |
| 0479  | 75112 | 060626 | LDA LOG8G         |                                  |
| 0480  | 75113 | 070620 | STA LOGP2         |                                  |
| 0481  | 75114 | 160030 | LDA BYEID,I       | PLACE ID IN LOG TABLE AND        |
| 0482  | 75115 | 031036 | I0R BIT15         | SAY LOGOFF.                      |
| 0483  | 75116 | 170620 | STA LOGP2,I       |                                  |
| 0484  | 75117 | 034620 | ISZ LOGP2         |                                  |
| 0485  | 75120 | 104200 | DL0 DATIM         | COMPUTE TIME OF DAY.             |
|       | 75121 | 000201 |                   |                                  |
| 0486  | 75122 | 074032 | STB BYETM+1       | SAVE UNIT COUNTER.               |
| 0487  | 75123 | 006400 | CLB               | GET # OF HRS IN B BY MODING      |
| 0488  | 75124 | 100400 | DIV .+24          | OFF THE DAY COUNT.               |
|       | 75125 | 000402 |                   |                                  |
| 0489  | 75126 | 060001 | LDA 1             |                                  |
| 0490  | 75127 | 100200 | MPY D60           | CONVERT TO MINS.                 |
|       | 75130 | 000724 |                   |                                  |
| 0491  | 75131 | 070033 | STA BYET          | SAVE THAT.                       |
| 0492  | 75132 | 060032 | LDA BYETM+1       | GET UNIT COUNTER.                |
| 0493  | 75133 | 040704 | ADA D36K          | ADJUST                           |
| 0494  | 75134 | 100400 | DIV D600          | GET MINUTES.                     |
|       | 75135 | 000456 |                   |                                  |
| 0495  | 75136 | 040033 | ADA BYET          | PACK TOGETHER AND PUT IN LOG     |

|       |       |        |                   |                                  |
|-------|-------|--------|-------------------|----------------------------------|
| 0496  | 75137 | 001722 | ALF, RAL          |                                  |
| 0497  | 75140 | 030034 | IOR BYEPT         |                                  |
| 0498  | 75141 | 170620 | STA LOGP2, I      | TABLE,                           |
| 0499  | 75142 | 034604 | ISZ LOGCT         | BUMP COUNTER,                    |
| 0500* |       |        |                   |                                  |
| 0501  | 75143 | 016107 | JSB RDIDT         | READ IDT TRACK FOR THIS USER'S I |
| 0502* |       |        |                   |                                  |
| 0503  | 75144 | 044357 | ADB .+5           | COMPUTE NEW TOTAL TIME,          |
| 0504  | 75145 | 000040 | CLE               |                                  |
| 0505  | 75146 | 160001 | LDA 1, I          |                                  |
| 0506  | 75147 | 040031 | ADA BYETM         |                                  |
| 0507  | 75150 | 002040 | SEZ               | IF OVERFLOW, USE MAXIMUM,        |
| 0508  | 75151 | 003400 | CCA               |                                  |
| 0509  | 75152 | 170001 | STA 1, I          |                                  |
| 0510* |       |        |                   |                                  |
| 0511  | 75153 | 160075 | LDA IDLCP, I      | GET DRUM ADDRESS                 |
| 0512  | 75154 | 064562 | LDB LIBD          |                                  |
| 0513  | 75155 | 016231 | JSB DRUML         | AND WRITE OUT MODIFIED TRACK     |
| 0514  | 75156 | 027240 | JMP BYE1          | BLEW IT, TRY TO SALVAGE          |
| 0515* |       |        |                   |                                  |
| 0516  | 75157 | 002400 | CLA               | REMOVE USER'S ID                 |
| 0517  | 75160 | 170030 | STA BYEID, I      | FROM TABLE                       |
| 0518* |       |        |                   |                                  |
| 0519  | 75161 | 060364 | LDA .+12B         |                                  |
| 0520  | 75162 | 016132 | JSB LOUT          |                                  |
| 0521* |       |        |                   |                                  |
| 0522  | 75163 | 060031 | LDA BYETM         |                                  |
| 0523  | 75164 | 006400 | CLB               | OUTPUT # OF MINUTES,             |
| 0524  | 75165 | 100400 | DIV .100          |                                  |
|       | 75166 | 000437 |                   |                                  |
| 0525  | 75167 | 074033 | STB BYET          |                                  |
| 0526  | 75170 | 040432 | ADA .+60B         |                                  |
| 0527  | 75171 | 016132 | JSB LOUT          | HUNDREDS                         |
| 0528  | 75172 | 060033 | LDA BYET          |                                  |
| 0529  | 75173 | 006400 | CLB               |                                  |
| 0530  | 75174 | 100400 | DIV .+10          |                                  |
|       | 75175 | 000364 |                   |                                  |
| 0531  | 75176 | 074033 | STB BYET          |                                  |
| 0532  | 75177 | 040432 | ADA .+60B         |                                  |
| 0533  | 75200 | 016132 | JSB LOUT          | TENS                             |
| 0534  | 75201 | 060033 | LDA BYET          |                                  |
| 0535  | 75202 | 040432 | ADA .+60B         |                                  |
| 0536  | 75203 | 016132 | JSB LOUT          | UNITS,                           |
| 0537* |       |        |                   |                                  |
| 0538  | 75204 | 060321 | LDA .-25          | OUTPUT THE REST OF               |
| 0539  | 75205 | 067243 | LDB BYEM          | THE MESSAGE,                     |
| 0540  | 75206 | 016156 | JSB LTYPE         |                                  |
| 0541  | 75207 |        | EQU *             |                                  |
| 0542  | 75207 | 064273 | LDB MLINK+1       |                                  |
| 0543  | 75210 | 044336 | ADB .+?TNUM-?LINK |                                  |
| 0544  | 75211 | 160001 | LDA 1, I          |                                  |
| 0545  | 75212 | 030253 | IOR WTP           | ASK FOR TERMINAL TYPE.           |
| 0546  | 75213 | 114500 | JSB 814SC, I      |                                  |
| 0547  | 75214 | 102311 | SFS CH2           |                                  |
| 0548  | 75215 | 027214 | JMP *-1           |                                  |

BYBY

|      |       |        |                                   |                         |
|------|-------|--------|-----------------------------------|-------------------------|
| 0549 | 75216 | 102511 | LIA CH2                           | GET TYPE,               |
| 0550 | 75217 | 002002 | SZA                               | WHICH?                  |
| 0551 | 75220 | 027224 | JMP BYE3                          |                         |
| 0552 | 75221 | 160001 | LDA 1,I                           | TYPE#1. TURN ECHO ON.   |
| 0553 | 75222 | 030234 | IOR ECO                           |                         |
| 0554 | 75223 | 027226 | JMP BYE4                          |                         |
| 0555 | 75224 |        | BYE3 EQU *                        |                         |
| 0556 | 75224 | 160001 | LDA 1,I                           | TYPE #2. TURN ECHO OFF. |
| 0557 | 75225 | 030235 | IOR ECF                           |                         |
| 0558 | 75226 |        | BYE4 EQU *                        |                         |
| 0559 | 75226 | 114500 | JSB S14SC,I                       |                         |
| 0560 | 75227 | 160001 | LDA 1,I                           | DISCONNECT              |
| 0561 | 75230 | 030232 | IOR HUU                           |                         |
| 0562 | 75231 | 114500 | JSB S14SC,I                       | USER                    |
| 0563 | 75232 | 044351 | ADB .-?TNUM                       | B=> ?FLAG               |
| 0564 | 75233 | 060447 | LDA B30M                          | CLEAR CBFLG AND         |
| 0565 | 75234 | 003000 | CMA                               |                         |
| 0566 | 75235 | 110001 | AND B,I                           |                         |
| 0567 | 75236 | 170001 | STA B,I                           | PBFLG BITS.             |
| 0568 | 75237 | 026226 | JMP LLEND                         |                         |
| 0569 | 75240 | 060075 | BYE1 LDA IDLCP                    |                         |
| 0570 | 75241 | 064072 | LDB WORD                          |                         |
| 0571 | 75242 | 116016 | JSB SALVP,I                       |                         |
| 0572 | 00030 |        | BYE10 EQU LTEMP                   |                         |
| 0573 | 00031 |        | BYETM EQU LTEMP+1                 |                         |
| 0574 | 00033 |        | BYET EQU LTEMP+3                  |                         |
| 0575 | 00034 |        | BYEPT EQU LTEMP+4                 |                         |
| 0576 | 75243 | 075244 | BYEM DEF ++1                      |                         |
| 0577 | 75244 | 020115 | ASC 13, MINUTES OF TERMINAL TIME. |                         |
|      | 75245 | 044516 |                                   |                         |
|      | 75246 | 052524 |                                   |                         |
|      | 75247 | 042523 |                                   |                         |
|      | 75250 | 020117 |                                   |                         |
|      | 75251 | 043040 |                                   |                         |
|      | 75252 | 052105 |                                   |                         |
|      | 75253 | 051115 |                                   |                         |
|      | 75254 | 044516 |                                   |                         |
|      | 75255 | 040514 |                                   |                         |
|      | 75256 | 020124 |                                   |                         |
|      | 75257 | 044515 |                                   |                         |
|      | 75260 | 042456 |                                   |                         |
| 0578 | 75261 | 116635 | BYESP ABS -TTY00-?LINK            |                         |
| 0579 | 75262 |        | SBYE EQU *                        |                         |

0581\* THE KILL ROUTINE IS USED TO DELETE A PROGRAM FROM THE USER  
 0582\* LIBRARY, THE PROCESS IS AS FOLLOWS:  
 0583\* 1) CHECK FORMAT AND DETERMINE PROGRAM NAME,  
 0584\* 2) SEARCH DIRECTORY FOR ENTRY,  
 0585\* 3) OBTAIN LOCATION AND LENGTH,  
 0586\* 4) COLLAPSE DIRECTORY,  
 0587\* 5) UPDATE ADT AND IDT.

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0589 75000 ORG LIBRA

0591 75000 003400 CCA SET FLAG TO SAY WE HAVE TO CHECK
0592 75001 070036 STA KILTS FOR BUSY FILE.
0593 75002 060273 LDA MLINK+1 GET USER'S ID.
0594 75003 040341 ADA ,+?ID=?LINK
0595 75004 160000 LDA 0,I
0596 75005 070030 STA LTEMP STORE IN LTEMP.
0597 75006 060520 LDA DLTEM SET UP POINTER FOR
0598 75007 002004 INA NAME.
0599 75010 070034 STA KILP
0600 75011 060347 LDA ,=3 SET UP COUNTER.
0601 75012 070042 STA KILC
0602 75013 016164 KIL1 JSB LCHAR GET LEFT CHAR.
0603 75014 060412 LDA ,+40B BLANK IF NONE.
0604 75015 001727 ALF,ALF
0605 75016 170034 STA KILP,I
0606 75017 016164 JSB LCHAR GET RIGHT CHAR.
0607 75020 060412 LDA ,+40B
0608 75021 130034 IOR KILP,I
0609 75022 170034 STA KILP,I
0610 75023 034034 ISZ KILP BUMP POINTER.
0611 75024 034042 ISZ KILC ANY MORE?
0612 75025 027013 JMP KIL1 YES.
0613 75026 060031 LDA LTEMP+1
0614 75027 050570 CPA ASCBB
0615 75030 027033 JMP KIL2 NO CHARS--ERROR.
0616 75031 016164 JSB LCHAR TEST FOR TOO MANY.
0617 75032 027046 JMP KIL3 O.K.
0618*
0619 75033 067036 KIL2 LDB ,+3
0620 75034 060335 LDA ,=13
0621 75035 026432 JMP LIBER
0622 75036 075037 DEF ,+1
0623 75037 005111 OCT 5111
0624 75040 046114 ASC 6,LLEGAL NAME
 75041 042507
 75042 040514
 75043 020116
 75044 040515
 75045 042440

0625*
0626 75046 KIL3 EQU *
0627 75046 116005 JSB DLKP,I SEARCH DIRECTORY FOR PROGRAM
0628 75047 027063 JMP KIL10 FOUND.
0629*
0630 75050 060334 LDA ,=14

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|       |                             |        |                    |                                  |
|-------|-----------------------------|--------|--------------------|----------------------------------|
| 0631  | 75051                       | 067053 | LDB **2            |                                  |
| 0632  | 75052                       | 026432 | JMP LIBER          |                                  |
| 0633  | 75053                       | 075054 | DEF **1            |                                  |
| 0634  | 75054                       | 005116 | UCT 5116           |                                  |
| 0635  | 75055                       | 047440 | ASC 6,0 SUCH ENTRY |                                  |
|       | 75056                       | 051525 |                    |                                  |
|       | 75057                       | 041510 |                    |                                  |
|       | 75060                       | 020105 |                    |                                  |
|       | 75061                       | 047124 |                    |                                  |
|       | 75062                       | 051131 |                    |                                  |
| 0636* |                             |        |                    |                                  |
| 0637* | FOUND ENTRY, NOW REMOVE IT. |        |                    |                                  |
| 0638* |                             |        |                    |                                  |
| 0639  | 75063                       | 064035 | KIL10 LDB KILPD    | GET LOCATION OF DISC ADDRESS.    |
| 0640  | 75064                       | 074051 | STB MOVED          |                                  |
| 0641  | 75065                       | 044361 | ADB .+7            | B => DRUM ADDRESS                |
| 0642  | 75066                       | 160001 | LDA B,I            | A = DRUM ADDRESS                 |
| 0643  | 75067                       | 070044 | STA KILD           | SAVE THEM.                       |
| 0644  | 75070                       | 006004 | INB                | B => DISK ADDRESS                |
| 0645  | 75071                       | 104200 | DLD B,I            | AB = DISK ADDRESS                |
|       | 75072                       | 100001 |                    |                                  |
| 0646  | 75073                       | 104400 | DST KILDI          | SAVE DISK ADDRESS                |
|       | 75074                       | 000046 |                    |                                  |
| 0647  | 75075                       | 064035 | LDB KILPD          | B => DIR ENTRY                   |
| 0648  | 75076                       | 044365 | ADB .+11           | B => LENGTH                      |
| 0649  | 75077                       | 160001 | LDA B,I            | A = LENGTH OF FILE               |
| 0650  | 75100                       | 064000 | LDB A              |                                  |
| 0651  | 75101                       | 005222 | RBL,RBL            |                                  |
| 0652  | 75102                       | 074045 | STB KILDF          | SET DRUM SECTOR COUNT            |
| 0653  | 75103                       | 002021 | SSA,RSS            | SKIP IF LENGTH IN WORDS (NEGATIV |
| 0654  | 75104                       | 027113 | JMP KIL11          | LENGTH IS POSITIVE BLOCK COUNT   |
| 0655  | 75105                       | 007400 | CCB                |                                  |
| 0656  | 75106                       | 101026 | ASR 6              | / 64 TO GET DRUM SECTOR COUNT    |
| 0657  | 75107                       | 003004 | CMA,INA            | MAKE INTO POSITIVE COUNT         |
| 0658  | 75110                       | 070045 | STA KILDF          |                                  |
| 0659  | 75111                       | 040355 | ADA .+3            |                                  |
| 0660  | 75112                       | 001121 | ARS,ARS            |                                  |
| 0661  | 75113                       |        | KIL11 EQU *        |                                  |
| 0662  | 75113                       | 070043 | STA KILN           | SAVE LENGTH                      |
| 0663* |                             |        |                    |                                  |
| 0664  | 75114                       | 034036 | ISZ KILTS          | TEST FOR OK TO KILL.             |
| 0665  | 75115                       | 027211 | JMP KIL18          | O.K.                             |
| 0666  | 75116                       | 064035 | LDB KILPD          | TEST FOR FILE.                   |
| 0667  | 75117                       | 044354 | ADB .+2            |                                  |
| 0668  | 75120                       | 160001 | LDA 1,I            |                                  |
| 0669  | 75121                       | 002021 | SSA,RSS            |                                  |
| 0670  | 75122                       | 027211 | JMP KIL18          | NOT A FILE.                      |
| 0671* |                             |        |                    |                                  |
| 0672  | 75123                       | 060732 | LDA M2000          | INPUT FUSS TABLE                 |
| 0673  | 75124                       | 070072 | STA WORD           |                                  |
| 0674  | 75125                       | 070042 | STA KILC           | SAVE IN KILC ALSO.               |
| 0675  | 75126                       | 160540 | LDA FUSS,I         |                                  |
| 0676  | 75127                       | 064566 | LDB LIBDI          |                                  |
| 0677  | 75130                       | 016231 | JSB DRUML          |                                  |
| 0678  | 75131                       | 116015 | JSB SICKP,I        | IT'S STUCK ON THE DRUM           |

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0679*
0680 75132 060273 LDA MLINK+1 COMPUTE USER'S
0681 75133 040336 ADA ,+?TNUM=?LINK
0682 75134 160000 LDA A,I USER # IN BITS 12 = 8
0683 75135 001727 ALF,ALF RIGHT JUSTIFY USER NUMBER
0684 75136 001722 ALF,RAL COMPUTE LOCATION OF
0685 75137 040562 ADA LIBD USER'S FUSS,
0686 75140 070045 STA KILDF ZERO OUT USER'S FUSS,
0687 75141 060317 LDA M32
0688 75142 174045 STB KILDF,I
0689 75143 034045 ISZ KILDF
0690 75144 002006 INA,SZA
0691 75145 027142 JMP **3
0692*
0693* SEARCH FUSS TABLE TO SEE IF FILE IS BEING USED
0694*
0695 75146 064562 LDB LIBD B => BEGINNING OF TABLE
0696 75147 074042 STB KILC
0697 75150 104200 DLD KILDI GET DISK ADDRESS TO AB
75151 000046
0698 75152 KILAD EQU *
0699 75152 150042 CPA KILC,I ARE THE UPPER WORDS EQUAL?
0700 75153 027166 JMP KILAF YES, CHECK LOWER WORDS
0701 75154 031036 IOR BIT15 PLUG IN WRITE PROTECT BIT AND
0702 75155 150042 CPA KILC,I CHECK FOR THAT EQUAL
0703 75156 027166 JMP KILAF EQUAL, CHECK LOWER WORD
0704 75157 034042 ISZ KILC
0705 75160 KILAE EQU *
0706 75160 034042 ISZ KILC ADVANCE POINTER TO NEXT ENTRY
0707 75161 060536 LDA L1024 GET ENDING ADDRESS AND
0708 75162 050042 CPA KILC SEE IF WE ARE THERE YET
0709 75163 027172 JMP KILAJ NOT IN FUSS TABLE
0710 75164 060046 LDA KILDI MUST SEARCH ON, RESTORE UPPER WO
0711 75165 027152 JMP KILAD
0712*
0713 75166 KILAF EQU *
0714 75166 034042 ISZ KILC ADVANCE TO SECOND WORD
0715 75167 154042 CPB KILC,I CHECK LOWER WORD
0716 75170 027177 JMP KIL19 CAN'T KILL - - FILE IS IN USE
0717 75171 027160 JMP KILAE GO TRY NEXT ENTRY
0718 75172 KILAJ EQU *
0719*
0720 75172 160540 LDA FUSS,I WRITE BACK FUSS TABLE.
0721 75173 064562 LDB LIBD
0722 75174 016231 JSB DRUML
0723 75175 116015 JSB SICKP,I NOW IT'S STUCK IN CORE
0724 75176 027046 JMP KIL3 GO GET DIRECTORY AGAIN.
0725*
0726 75177 060336 KIL19 LDA *-12
0727 75200 067202 LDB **2
0728 75201 026432 JMP LIBER
0729 75202 075203 DEF **1
0730 75203 005106 OCT 5106 LF=F
0731 75204 044514 ASC 5,ILE IN USE
75205 042440

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75206 044516  
 75207 020125  
 75210 051505

0732\*

|      |       |        |       |     |        |                             |
|------|-------|--------|-------|-----|--------|-----------------------------|
| 0733 | 75211 | 064035 | KIL18 | LDB | KILPD  | SET UP PARAMETERS FOR MOVE. |
| 0734 | 75212 | 044366 |       | ADB | +.12   |                             |
| 0735 | 75213 | 074050 |       | STB | MOVES  |                             |
| 0736 | 75214 | 144034 |       | ADB | KILP,I |                             |
| 0737 | 75215 | 044674 |       | ADB | MLIBD  |                             |
| 0738 | 75216 | 016257 |       | JSB | MOVEW  |                             |

0739\*

|      |       |        |  |     |        |                               |
|------|-------|--------|--|-----|--------|-------------------------------|
| 0740 | 75217 | 160034 |  | LDA | KILP,I | REDUCE DIRECTORY LENGTH BY 8. |
| 0741 | 75220 | 040366 |  | ADA | +.12   |                               |
| 0742 | 75221 | 170034 |  | STA | KILP,I |                               |
| 0743 | 75222 | 070072 |  | STA | WORD   | WRITE DIRECTORY BACK OUT.     |

|      |       |        |  |     |       |
|------|-------|--------|--|-----|-------|
| 0744 | 75223 | 060034 |  | LDA | KILP  |
| 0745 | 75224 | 002004 |  | INA |       |
| 0746 | 75225 | 070051 |  | STA | MOVED |
| 0747 | 75226 | 040357 |  | ADA | +.5   |
| 0748 | 75227 | 073337 |  | STA | KILRD |
| 0749 | 75230 | 160000 |  | LDA | 0,I   |
| 0750 | 75231 | 064562 |  | LDB | LIBD  |
| 0751 | 75232 | 074050 |  | STB | MOVES |
| 0752 | 75233 | 016231 |  | JSB | DRUML |
| 0753 | 75234 | 027326 |  | JMP | KILRC |

0754\*

|      |       |        |  |     |       |                            |
|------|-------|--------|--|-----|-------|----------------------------|
| 0755 | 75235 | 060034 |  | LDA | KILP  | ADJUST WORDS 1-4 OF DIREC. |
| 0756 | 75236 | 002004 |  | INA |       |                            |
| 0757 | 75237 | 070051 |  | STA | MOVED |                            |
| 0758 | 75240 | 064346 |  | LDB | .-4   |                            |
| 0759 | 75241 | 016257 |  | JSB | MOVEW |                            |

0760\*

|      |       |        |  |     |       |                     |
|------|-------|--------|--|-----|-------|---------------------|
| 0761 | 75242 | 016107 |  | JSB | RDIDT | READ IN IDT         |
| 0762 | 75243 | 060043 |  | LDA | KILN  | GET PROGRAM LENGTH. |

|      |       |        |  |     |     |            |
|------|-------|--------|--|-----|-----|------------|
| 0763 | 75244 | 003004 |  | CMA | INA |            |
| 0764 | 75245 | 044361 |  | ADB | +.7 | ADJUST IDT |

|      |       |        |  |     |         |                 |
|------|-------|--------|--|-----|---------|-----------------|
| 0765 | 75246 | 140001 |  | ADA | B,I     |                 |
| 0766 | 75247 | 170001 |  | STA | 1,I     |                 |
| 0767 | 75250 | 060075 |  | LDA | IDLCP   |                 |
| 0768 | 75251 | 073337 |  | STA | KILRD   |                 |
| 0769 | 75252 | 160075 |  | LDA | IDLCP,I | RESTORE UPDATED |
| 0770 | 75253 | 064562 |  | LDB | LIBD    | IDT TO          |
| 0771 | 75254 | 016231 |  | JSB | DRUML   | THE DRUM        |
| 0772 | 75255 | 027326 |  | JMP | KILRC   |                 |

0773\*

|      |       |        |  |     |      |                              |
|------|-------|--------|--|-----|------|------------------------------|
| 0774 | 75256 | 060044 |  | LDA | KILD | CHECK DRUM ADDRESS           |
| 0775 | 75257 | 002003 |  | SZA | RSS  | TO SEE IF FILE IS SANCTIFIED |
| 0776 | 75260 | 027276 |  | JMP | KILB | NO, DONE                     |

0777\*

0778\* RESTORE SPACE USED BY SANCTIFIED  
 0779\* FILE TO THE DRUM ADT

0780\*

|      |       |        |  |     |       |                            |
|------|-------|--------|--|-----|-------|----------------------------|
| 0781 | 75261 | 060113 |  | LDA | ADLEN | GET AD TRACK LENGTH WORD   |
| 0782 | 75262 | 070072 |  | STA | WORD  | SET DRUM DRIVER WORD COUNT |
| 0783 | 75263 | 060112 |  | LDA | ADLOC | GET AD TRACK DRUM ADDRESS  |

|       |       |        |                   |                                               |
|-------|-------|--------|-------------------|-----------------------------------------------|
| 0784  | 75264 | 064566 | LDB LIBDI         |                                               |
| 0785  | 75265 | 016231 | JSB DRUML         | READ TRACK IN                                 |
| 0786  | 75266 | 027276 | JMP KILB          |                                               |
| 0787  | 75267 | 116012 | JSB RSFSP,I       | PUT DRUM SPACE BACK                           |
| 0788  | 75270 | 060113 | LDA ADLEN         | WRITE THE ADT                                 |
| 0789  | 75271 | 070072 | STA WORD          |                                               |
| 0790  | 75272 | 060112 | LDA ADLOC         | TO THE DRUM                                   |
| 0791  | 75273 | 064562 | LDB LIBD          |                                               |
| 0792  | 75274 | 016231 | JSB DRUML         |                                               |
| 0793  | 75275 | 116015 | JSB SICKP,I       |                                               |
| 0794* |       |        |                   |                                               |
| 0795* |       |        |                   | NOW RESTORE THE DISK SPACE TO THE APPROPRIATE |
| 0796* |       |        |                   | DISK ADT                                      |
| 0797* |       |        |                   |                                               |
| 0798  | 75276 |        | KILB EQU *        |                                               |
| 0799  | 75276 | 116007 | JSB FADTP,I       | FIND THE CORRECT DISK                         |
| 0800* |       |        |                   |                                               |
| 0801  | 75277 | 160045 | LDA KILDF,I       | GET LENGTH OF DISK ADT                        |
| 0802  | 75300 | 070072 | STA WORD          | SET FOR DRUM DRIVER                           |
| 0803  | 75301 | 160044 | LDA KILD,I        | A = DRUM ADDRESS OF DISK ADT                  |
| 0804  | 75302 | 002003 | SZA,RSS           | CHECK EXISTANCE                               |
| 0805  | 75303 | 026226 | JMP LLEND         | NO SUCH ADT - - QUIT                          |
| 0806  | 75304 | 064566 | LDB LIBDI         | GET CORE ADDRESS AND INPUT BIT                |
| 0807  | 75305 | 016231 | JSB DRUML         | READ THE DISK ADT IN                          |
| 0808  | 75306 | 027315 | JMP KILCS         | CAN'T, FORGET ABOUT RETURNING IT              |
| 0809  | 75307 | 116011 | JSB RADTP,I       | PUT SPACE FOR THIS ENTRY BACK                 |
| 0810  | 75310 | 027315 | JMP KILCS         | SKIP REWRITE                                  |
| 0811  | 75311 | 160044 | LDA KILD,I        | A* DRUM ADDRESS                               |
| 0812  | 75312 | 064562 | LDB LIBD          |                                               |
| 0813  | 75313 | 016231 | JSB DRUML         | WRITE OUT UPDATED ADT                         |
| 0814  | 75314 | 027333 | JMP KILD M        | CAN'T, MAKE IT DISAPPEAR                      |
| 0815  | 75315 |        | KILCS EQU *       |                                               |
| 0816* |       |        |                   |                                               |
| 0817  | 75315 | 060036 | LDA KILTS         | DID WE JUST KILL A                            |
| 0818  | 75316 | 002003 | SZA,RSS           | FILE?                                         |
| 0819  | 75317 | 026226 | JMP LLEND         | NO.                                           |
| 0820  | 75320 | 016047 | JSB RDPRG         | IF WE DID, WE HAVE TO DECOMPILE               |
| 0821  | 75321 | 015322 | JSB DCMPL         | THE GUY TO MAKE SURE HE DOESN'T               |
| 0822  | 75322 | 060273 | LDA MLINK+1       | USE IT.                                       |
| 0823  | 75323 | 040335 | ADA ,=?LINK       | LEAVE USER IN CORE.                           |
| 0824  | 75324 | 070257 | STA MAIN          |                                               |
| 0825  | 75325 | 026226 | JMP LLEND         | TERMINATE.                                    |
| 0826  | 75326 | 064346 | KILRC LDB ,=4     |                                               |
| 0827  | 75327 | 016257 | JSB MOVEW         | RESET DIREC                                   |
| 0828  | 75330 | 064072 | LDB WORD          |                                               |
| 0829  | 75331 | 063337 | LDA KILRD         |                                               |
| 0830  | 75332 | 116016 | JSB SALVP,I       |                                               |
| 0831  | 75333 | 002400 | KILD M CLA        |                                               |
| 0832  | 75334 | 170044 | STA KILD,I        | ZERO DRUM ADDRESS                             |
| 0833  | 75335 | 170045 | STA KILDF,I       | ZERO LENGTH                                   |
| 0834  | 75336 | 027315 | JMP KILCS         |                                               |
| 0835  | 75337 | 000000 | KILRD BSS 1       |                                               |
| 0836  | 00034 |        | KILP EQU LTEMP+4  |                                               |
| 0837  | 00035 |        | KILPD EQU LTEMP+5 |                                               |
| 0838  | 00036 |        | KILTS EQU LTEMP+6 |                                               |

```
0839 00042 KILC EQU LTEMP+10
0840 00043 KILN EQU LTEMP+11
0841 00044 KILD EQU LTEMP+12
0842 00045 KILDF EQU LTEMP+13
0843 00046 KILDI EQU LTEMP+14
0844* LTEMP+15 IS USED HERE ALSO
0845 75340 SKIL EQU *
```

0002\* THE RENUMBER ROUTINE IS CALLED BY A USER TO ASSIGN NEW  
 0003\* SEQUENCE NUMBERS TO ALL OR A PART OF A PROGRAM. THE FORMAT OF  
 0004\* THE COMMAND IS:  
 0005\* REN=M,N,P,Q  
 0006\* M IS THE NEW INITIAL SEQUENCE NUMBER  
 0007\* N IS THE NEW INCREMENT  
 0008\* P IS THE FIRST STATEMENT TO BE RENUMBERED  
 0009\* Q IS THE LAST STATEMENT TO BE RENUMBERED.  
 0010\* DEFAULT VALUES ARE ASSIGNED AS FOLLOWS:  
 0011\* M=10, N=10, P=FIRST STATEMENT, Q=LAST STATEMENT  
 0012\*

```

0014 75000 ORG LIBRA
0015 75000 060273 LDA MLINK+1
0016 75001 040340 ADA ,+?PROG-?LINK
0017 75002 164000 LDB 0,I
0018 75003 054702 CPB PBUFF NULL PROGRAM?
0019 75004 026226 JMP LLEND YES
0020 75005 016047 JSB RDPRG READ IN USER PROGRAM.
0021 75006 064273 LDB MLINK+1 COMPUTE
0022 75007 044335 ADB ,_?LINK
0023 75010 060354 LDA CFLAG PROGRAM
0024 75011 110001 AND 1,I
0025 75012 064056 LDB PBPTR STATE AND
0026 75013 070033 STA RENC
0027 75014 002002 SZA END OF PROGRAM
0028 75015 065575 LDB SYMTB
0029 75016 074040 STB RENEN POINTER

```

0030\*  
 0031\* SET UP INITIAL SEQUENCE NUMBER AND INCREMENT  
 0032\*

```

0033 75017 061577 LDA SPROG
0034 75020 070037 STA RENBA INITIALIZE
0035 75021 074045 STB RENLA
0036 75022 060364 LDA ,+10 DEFAULT
0037 75023 070031 STA RENM
0038 75024 070032 STA RENN VALUES
0039 75025 017417 JSB RENUM PARAMETER?
0040 75026 027134 JMP REN1 NO
0041 75027 074031 STB RENM YES, RECORD IT
0042 75030 050367 CPA ,+15B END OF RECORD?
0043 75031 027134 JMP REN1 YES
0044 75032 050426 CPA ,+54B NO, COMMA?
0045 75033 017417 JSB RENUM DEMAND SECOND
0046 75034 027454 JMP RENF1 NONE FOUND
0047 75035 074032 STB RENN RECORD IT
0048 75036 050367 CPA ,+15B END OF RECORD?
0049 75037 027134 JMP REN1 YES
0050 75040 050426 CPA ,+54B NO, COMMA?
0051 75041 017417 JSB RENUM YES, DEMAND THIRD
0052 75042 027454 JMP RENF1 NOT FOUND
0053 75043 074037 STB RENBA RECORD IT
0054 75044 050367 CPA ,+15B END OF RECORD?
0055 75045 027075 JMP REN22 YES

```

|       |                                                 |        |       |       |                                  |
|-------|-------------------------------------------------|--------|-------|-------|----------------------------------|
| 0056  | 75046                                           | 050426 | CPA   | +.54B | NO, COMMA?                       |
| 0057  | 75047                                           | 017417 | JSB   | RENUM | DEMAND FOURTH                    |
| 0058  | 75050                                           | 027454 | JMP   | RENF1 | NONE FOUND                       |
| 0059  | 75051                                           | 074045 | STB   | RENLA | RECORD IT                        |
| 0060  | 75052                                           | 050367 | CPA   | +.15B | END OF RECORD?                   |
| 0061  | 75053                                           | 002001 | RSS   |       |                                  |
| 0062  | 75054                                           | 027454 | JMP   | RENF1 | NO, ERROR                        |
| 0063* |                                                 |        |       |       |                                  |
| 0064* | FIND THE LAST SEQUENCE NUMBER LESS THAN         |        |       |       |                                  |
| 0065* | OR EQUAL TO RENLA, AND SET RENLA TO POINT TO IT |        |       |       |                                  |
| 0066* |                                                 |        |       |       |                                  |
| 0067  | 75055                                           | 065577 | LDB   | SPROG | START WITH FIRST PROGRAM WORD    |
| 0068  | 75056                                           | 074030 | STB   | RENLA |                                  |
| 0069  | 75057                                           |        | REN20 | EQU * |                                  |
| 0070  | 75057                                           | 054040 | CPB   | RENEB | PROGRAM EXHAUSTED?               |
| 0071  | 75060                                           | 027073 | JMP   | REN21 | YES                              |
| 0072  | 75061                                           | 160001 | LDA   | B,I   | CURRENT SEQUENCE                 |
| 0073  | 75062                                           | 003004 | CMA,  | INA   | NUMBER GREATER                   |
| 0074  | 75063                                           | 040045 | ADA   | RENLA | THAN RENLA?                      |
| 0075  | 75064                                           | 002020 | SSA   |       |                                  |
| 0076  | 75065                                           | 027073 | JMP   | REN21 | YES                              |
| 0077  | 75066                                           | 074030 | STB   | RENLA | NO, SAVE POINTER TO STATEMENT    |
| 0078  | 75067                                           | 060001 | LDA   | B     |                                  |
| 0079  | 75070                                           | 002004 | INA   |       | SET (B) TO                       |
| 0080  | 75071                                           | 144000 | ADB   | A,I   | NEXT PROGRAM                     |
| 0081  | 75072                                           | 027057 | JMP   | REN20 | STATEMENT                        |
| 0082  | 75073                                           |        | REN21 | EQU * |                                  |
| 0083  | 75073                                           | 064030 | LDB   | RENLA |                                  |
| 0084  | 75074                                           | 074045 | STB   | RENLA |                                  |
| 0085* |                                                 |        |       |       |                                  |
| 0086* | FIND THE FIRST SEQUENCE NUMBER GREATER THAN     |        |       |       |                                  |
| 0087* | OR EQUAL TO RENBA, AND SET RENBA TO POINT TO IT |        |       |       |                                  |
| 0088* |                                                 |        |       |       |                                  |
| 0089  | 75075                                           |        | REN22 | EQU * |                                  |
| 0090  | 75075                                           | 060037 | LDA   | RENBA |                                  |
| 0091  | 75076                                           | 003004 | CMA,  | INA   |                                  |
| 0092  | 75077                                           | 070037 | STA   | RENBA |                                  |
| 0093  | 75100                                           | 065577 | LDB   | SPROG | START WITH FIRST WORD OF PROGRAM |
| 0094  | 75101                                           | 074030 | STB   | RENLA |                                  |
| 0095  | 75102                                           |        | REN23 | EQU * |                                  |
| 0096  | 75102                                           | 054040 | CPB   | RENEB | PROGRAM EXHAUSTED?               |
| 0097  | 75103                                           | 027115 | JMP   | REN24 | YES                              |
| 0098  | 75104                                           | 160001 | LDA   | B,I   | CURRENT SEQUENCE                 |
| 0099  | 75105                                           | 040037 | ADA   | RENBA | NUMBER GREATER THAN              |
| 0100  | 75106                                           | 002021 | SSA,  | RSS   | OR EQUAL TO RENBA?               |
| 0101  | 75107                                           | 027115 | JMP   | REN24 | YES                              |
| 0102  | 75110                                           | 060001 | LDA   | B     | NO,                              |
| 0103  | 75111                                           | 002004 | INA   |       | SET (B)                          |
| 0104  | 75112                                           | 074030 | STB   | RENLA | TO NEXT                          |
| 0105  | 75113                                           | 144000 | ADB   | A,I   | PROGRAM                          |
| 0106  | 75114                                           | 027102 | JMP   | REN23 | STATEMENT                        |
| 0107  | 75115                                           |        | REN24 | EQU * |                                  |
| 0108  | 75115                                           | 054040 | CPB   | RENEB | SEQ NBR BEYOND PROGRAM?          |
| 0109  | 75116                                           | 027366 | JMP   | REN13 | YES, SO FINISHED                 |
| 0110  | 75117                                           | 074037 | STB   | RENBA |                                  |

|       |                                                  |        |       |          |                     |
|-------|--------------------------------------------------|--------|-------|----------|---------------------|
| 0111  | 75120                                            | 055577 | CPB   | SPROG    | 1ST STATEMENT       |
| 0112  | 75121                                            | 027127 | JMP   | REN29    | YES                 |
| 0113* |                                                  |        |       |          |                     |
| 0114* | TEST FOR SEQUENCE NUMBER OVERLAP AT RENBA        |        |       |          |                     |
| 0115* |                                                  |        |       |          |                     |
| 0116  | 75122                                            | 060031 | LDA   | RENM     | LOAD NEW BA SEQ NBR |
| 0117  | 75123                                            | 003004 | CMA,  | INA      | GET OLD             |
| 0118  | 75124                                            | 140030 | ADA   | RENLI, I | SEQUENCE NUMBER     |
| 0119  | 75125                                            | 002021 | SSA,  | RSS      | OVERLAP?            |
| 0120  | 75126                                            | 027372 | JMP   | RENF2    | YES                 |
| 0121  | 75127                                            |        | REN29 | EQU *    |                     |
| 0122  | 75127                                            | 060037 | LDA   | RENBA    | RENLA               |
| 0123  | 75130                                            | 003004 | CMA,  | INA      | GREATER             |
| 0124  | 75131                                            | 040045 | ADA   | RENLA    | THAN OR             |
| 0125  | 75132                                            | 002020 | SSA   |          | EQUAL TO RENBA?     |
| 0126  | 75133                                            | 027454 | JMP   | RENF1    | NO, FAIL            |
| 0127* |                                                  |        |       |          |                     |
| 0128* | GET NUMBER OF STATEMENTS IN PROGRAM              |        |       |          |                     |
| 0129* |                                                  |        |       |          |                     |
| 0130  | 75134                                            |        | REN1  | EQU *    |                     |
| 0131  | 75134                                            | 002400 | CLA   |          | INITIALIZE          |
| 0132  | 75135                                            | 070041 | STA   | RENNS    | COUNTER             |
| 0133  | 75136                                            | 065577 | LDB   | SPROG    |                     |
| 0134  | 75137                                            |        | REN27 | EQU *    |                     |
| 0135  | 75137                                            | 054040 | CPB   | RENEN    | DONE?               |
| 0136  | 75140                                            | 027146 | JMP   | REN2     | YES                 |
| 0137  | 75141                                            | 060001 | LDA   | B        | ADVANCE             |
| 0138  | 75142                                            | 002004 | INA   |          | TO                  |
| 0139  | 75143                                            | 144000 | ADB   | A, I     | NEXT                |
| 0140  | 75144                                            | 034041 | ISZ   | RENNS    | STATEMENT           |
| 0141  | 75145                                            | 027137 | JMP   | REN27    |                     |
| 0142* |                                                  |        |       |          |                     |
| 0143* | GET THE NUMBER OF STATEMENTS FROM RENBA TO RENLA |        |       |          |                     |
| 0144* |                                                  |        |       |          |                     |
| 0145  | 75146                                            |        | REN2  | EQU *    |                     |
| 0146  | 75146                                            | 002400 | CLA   |          | INITIALIZE          |
| 0147  | 75147                                            | 070030 | STA   | RENLI    | STATEMENT COUNTER   |
| 0148  | 75150                                            | 064037 | LDB   | RENBA    | STARTING STATEMENT  |
| 0149  | 75151                                            |        | REN25 | EQU *    |                     |
| 0150  | 75151                                            | 054045 | CPB   | RENLA    | PROGRAM EXHAUSTED?  |
| 0151  | 75152                                            | 027160 | JMP   | REN26    | YES                 |
| 0152  | 75153                                            | 060001 | LDA   | B        | NO                  |
| 0153  | 75154                                            | 002004 | INA   |          | SET (B)             |
| 0154  | 75155                                            | 144000 | ADB   | A, I     | TO NEXT             |
| 0155  | 75156                                            | 034030 | ISZ   | RENLI    | PROGRAM             |
| 0156  | 75157                                            | 027151 | JMP   | REN25    | STATEMENT           |
| 0157* |                                                  |        |       |          |                     |
| 0158* | TEST FOR SEQUENCE NUMBER OVERLAP AT RENLA        |        |       |          |                     |
| 0159* |                                                  |        |       |          |                     |
| 0160  | 75160                                            |        | REN26 | EQU *    |                     |
| 0161  | 75160                                            | 060030 | LDA   | RENLI    | COMPUTE             |
| 0162  | 75161                                            | 064045 | LDB   | RENLA    | NEW                 |
| 0163  | 75162                                            | 054040 | CPB   | RENEN    | HIGHEST             |
| 0164  | 75163                                            | 040351 | ADA   | ,-1      | SEQUENCE            |
| 0165  | 75164                                            | 100200 | MPY   | RENN     | NUMBER              |



|       |                                                                    |        |                |                                  |
|-------|--------------------------------------------------------------------|--------|----------------|----------------------------------|
| 0166  | 75166                                                              | 002021 | SSA, RSS       |                                  |
| 0167  | 75167                                                              | 006002 | SZB            |                                  |
| 0168  | 75170                                                              | 027372 | JMP RENF2      | OVERFLOW                         |
| 0169  | 75171                                                              | 040031 | ADA RENM       |                                  |
| 0170  | 75172                                                              | 070030 | STA RENL       | SAVE IT                          |
| 0171  | 75173                                                              | 040716 | ADA MAXSN      | IN                               |
| 0172  | 75174                                                              | 002021 | SSA, RSS       | LEGAL RANGE?                     |
| 0173  | 75175                                                              | 027372 | JMP RENF2      | NO                               |
| 0174  | 75176                                                              | 060045 | LDA RENLA      | YES                              |
| 0175  | 75177                                                              | 050040 | CPA RENEN      |                                  |
| 0176  | 75200                                                              | 027213 | JMP REN3       |                                  |
| 0177  | 75201                                                              | 064000 | LDB A          | MOVE                             |
| 0178  | 75202                                                              | 006004 | INB            | POINTER TO                       |
| 0179  | 75203                                                              | 140001 | ADA B, I       | NEXT STATEMENT                   |
| 0180  | 75204                                                              | 050040 | CPA RENEN      | BEYOND PROGRAM?                  |
| 0181  | 75205                                                              | 027213 | JMP REN3       | YES, DON'T BOTHER ABOUT OVERLAP  |
| 0182  | 75206                                                              | 164000 | LDB A, I       | GET FOLLOWING                    |
| 0183  | 75207                                                              | 007004 | CMB, INB       | OLD SEQ NBR                      |
| 0184  | 75210                                                              | 044030 | ADB RENL       | TEST FOR OVERLAP                 |
| 0185  | 75211                                                              | 006021 | SSB, RSS       |                                  |
| 0186  | 75212                                                              | 027372 | JMP RENF2      | FAIL                             |
| 0187  | 75213                                                              | 064033 | REN3 LDB RENC  | PROGRAM                          |
| 0188  | 75214                                                              | 006002 | SZB            | COMPILED?                        |
| 0189  | 75215                                                              | 027332 | JMP REN9       | YES                              |
| 0190* |                                                                    |        |                |                                  |
| 0191  | 75216                                                              | 060041 | LDA RENNS      | GET # OF STATEMENTS IN PROGRAM,  |
| 0192  | 75217                                                              | 100400 | DIV ,+32       | DIVIDE INTO 32 PARTS,            |
|       | 75220                                                              | 000412 |                |                                  |
| 0193  | 75221                                                              | 007000 | CMB            | SET B=-1-#OF OVERSIZE GROUPS,    |
| 0194  | 75222                                                              | 002003 | SZA, RSS       | BUT IF <32 STATEMENTS USE =#.    |
| 0195  | 75223                                                              | 006004 | INB            |                                  |
| 0196  | 75224                                                              | 002004 | INA            | SET A TO SIZE OF LARGER GROUP,   |
| 0197  | 75225                                                              | 070042 | STA RENC1      | SET COUNTER,                     |
| 0198  | 75226                                                              | 074043 | STB RENC2      |                                  |
| 0199  | 75227                                                              | 064544 | LDB ERSCA      | SET INITIAL POINTER TO ERSEC,    |
| 0200  | 75230                                                              | 074046 | STB REN5N      |                                  |
| 0201* |                                                                    |        |                |                                  |
| 0202* | NOW BUILD A TABLE IN ERSEC HAVING THE FOLLOWING STRUCTURE;         |        |                |                                  |
| 0203* | ERSEC(0:31) ARE SEQUENCE NOS. OF STATEMENTS WHICH DIVIDE           |        |                |                                  |
| 0204* | THE PROGRAM INTO 32 ALMOST EQUAL PARTS. ERSEC(32:63) ARE THE ABSO- |        |                |                                  |
| 0205* | LUTE ADDRESSES OF THESE STATEMENTS, ERSEC(0) IS THE SEQ.NO. OF THE |        |                |                                  |
| 0206* | FIRST STATEMENTS,                                                  |        |                |                                  |
| 0207* |                                                                    |        |                |                                  |
| 0208  | 75231                                                              | 061577 | LDA SPROG      |                                  |
| 0209  | 75232                                                              | 044412 | REN15 ADB ,+32 |                                  |
| 0210  | 75233                                                              | 170001 | STA 1, I       | SET ABSOLUTE ADDRESS INTO TABLE, |
| 0211  | 75234                                                              | 164000 | LDB 0, I       | SET SEQUENCE # INTO TABLE,       |
| 0212  | 75235                                                              | 174046 | STB REN5N, I   |                                  |
| 0213  | 75236                                                              | 034046 | ISZ REN5N      | BUMP POINTERS,                   |
| 0214* |                                                                    |        |                |                                  |
| 0215  | 75237                                                              | 034043 | ISZ RENC2      | TEST FOR ANY MORE OVERSIZE       |
| 0216  | 75240                                                              | 006401 | CLB, RSS       | GROUPS,                          |
| 0217  | 75241                                                              | 007400 | CCB            | COMPUTE SIZE OF NEXT GROUP,      |
| 0218  | 75242                                                              | 044042 | ADB RENC1      |                                  |

|       |                                                            |        |       |      |        |                                   |
|-------|------------------------------------------------------------|--------|-------|------|--------|-----------------------------------|
| 0219  | 75243                                                      | 074042 |       | STB  | RENC1  |                                   |
| 0220  | 75244                                                      | 007000 |       | CMB  |        |                                   |
| 0221  | 75245                                                      | 074044 |       | STB  | RENC3  |                                   |
| 0222* |                                                            |        |       |      |        |                                   |
| 0223  | 75246                                                      | 064046 |       | LDB  | RENSN  | TEST FOR DONE.                    |
| 0224  | 75247                                                      | 054644 |       | CPB  | ERS32  |                                   |
| 0225  | 75250                                                      | 027257 |       | JMP  | REN14  |                                   |
| 0226* |                                                            |        |       |      |        |                                   |
| 0227  | 75251                                                      | 034044 |       | ISZ  | RENC3  | COMPUTE 1ST STATEMENT IN          |
| 0228  | 75252                                                      | 002005 |       | INA, | RSS    | NEXT GROUP.                       |
| 0229  | 75253                                                      | 027232 |       | JMP  | REN15  |                                   |
| 0230  | 75254                                                      | 140000 |       | ADA  | 0,I    |                                   |
| 0231  | 75255                                                      | 040351 |       | ADA  | .-1    |                                   |
| 0232  | 75256                                                      | 027251 |       | JMP  | *=5    |                                   |
| 0233* |                                                            |        |       |      |        |                                   |
| 0234* | SCAN THROUGH PROGRAM FOR SEQUENCE NUMBER REFERENCES.       |        |       |      |        |                                   |
| 0235* | FOR EACH ONE, DETERMINE ABSOLUTE ADDRESS OF THE LABEL      |        |       |      |        |                                   |
| 0236* | AND REPLACE IT WITH THAT ADDRESS, IF LABEL IS NONEXISTENT, |        |       |      |        |                                   |
| 0237* | PLACE THE NEGATIVE LABEL IN TO INDICATE THIS FACT.         |        |       |      |        |                                   |
| 0238* |                                                            |        |       |      |        |                                   |
| 0239  | 75257                                                      | 061577 | REN14 | LDA  | SPROG  | INITIALIZE POINTERS               |
| 0240  | 75260                                                      | 070035 |       | STA  | RENQ   | FOR RENSK.                        |
| 0241  | 75261                                                      | 040351 |       | ADA  | .-1    |                                   |
| 0242  | 75262                                                      | 070034 |       | STA  | RENP   |                                   |
| 0243* |                                                            |        |       |      |        |                                   |
| 0244  | 75263                                                      | 017467 | REN4  | JSB  | RENSK  | GET NEXT STATEMENT REFERENCE.     |
| 0245  | 75264                                                      | 027332 |       | JMP  | REN9   | NONE LEFT.                        |
| 0246* |                                                            |        |       |      |        |                                   |
| 0247  | 75265                                                      | 064544 |       | LDB  | ERSCA  |                                   |
| 0248  | 75266                                                      | 160001 | REN7  | LDA  | 1,I    | FIRST STATEMENT >= SOUGHT STATE.? |
| 0249  | 75267                                                      | 003000 |       | CMA  |        |                                   |
| 0250  | 75270                                                      | 140034 |       | ADA  | RENP,I |                                   |
| 0251  | 75271                                                      | 002024 |       | SSA, | INA    |                                   |
| 0252  | 75272                                                      | 027302 |       | JMP  | REN5   | FOUND ONE.                        |
| 0253  | 75273                                                      | 006004 |       | INB  |        |                                   |
| 0254  | 75274                                                      | 054644 |       | CPB  | ERS32  | TEST FOR DONE.                    |
| 0255  | 75275                                                      | 002001 |       | RSS  |        |                                   |
| 0256  | 75276                                                      | 027266 |       | JMP  | REN7   |                                   |
| 0257* |                                                            |        |       |      |        |                                   |
| 0258  | 75277                                                      | 044411 |       | ADB  | .+31   |                                   |
| 0259  | 75300                                                      | 060056 |       | LDA  | PBPTR  | STATEMENT IS IN LAST GROUP.       |
| 0260  | 75301                                                      | 027311 |       | JMP  | REN6   |                                   |
| 0261  | 75302                                                      | 044412 | REN5  | ADB  | .+32   | B=>FIRST STATEMENT IN GROUP.      |
| 0262  | 75303                                                      | 002003 |       | SZA, | RSS    | TEST FOR FOUND.                   |
| 0263  | 75304                                                      | 027324 |       | JMP  | REN18  |                                   |
| 0264  | 75305                                                      | 054644 |       | CPB  | ERS32  | TEST FOR NOT THERE.               |
| 0265  | 75306                                                      | 027326 |       | JMP  | REN17  |                                   |
| 0266  | 75307                                                      | 160001 |       | LDA  | 1,I    | SET A=>FIRST WORD BEYOND GROUP.   |
| 0267  | 75310                                                      | 044351 |       | ADB  | .-1    | AT FIRST WORD BEYOND GROUP.       |
| 0268  | 75311                                                      | 164001 | REN6  | LDB  | 1,I    |                                   |
| 0269  | 75312                                                      | 070042 |       | STA  | RENC1  | SAVE END TEST.                    |
| 0270  | 75313                                                      | 160034 |       | LDA  | RENP,I | GET SEQUENCE NUMBER.              |
| 0271  | 75314                                                      | 006004 | REN16 | INB  |        | BUMP STATEMENT POINTER.           |
| 0272  | 75315                                                      | 144001 |       | ADB  | 1,I    |                                   |
| 0273  | 75316                                                      | 044351 |       | ADB  | .-1    |                                   |

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0274 75317 054042 CPB RENC1 TEST FOR DONE.
0275 75320 027326 JMP REN17
0276 75321 150001 CPA 1,I TEST FOR FOUND.
0277 75322 027330 JMP REN8
0278 75323 027314 JMP REN16
0279*
0280 75324 164001 REN18 LDB 1,I
0281 75325 027330 JMP *+3
0282 75326 164034 REN17 LDB RENP,I SET BIT15 FOR
0283 75327 045036 ADB BIT15 UNDEFINED LABELS.
0284 75330 174034 REN8 STB RENP,I
0285 75331 027263 JMP REN4
0286*
0287* NOW CHANGE ALL LABELS TO THEIR NEW VALUES.
0288*
0289 75332 REN9 EQU *
0290 75332 060037 LDA RENBA
0291 75333 064031 LDB RENM
0292 75334 REN10 EQU *
0293 75334 050045 CPA RENLA DONE?
0294 75335 027344 JMP REN28 YES
0295 75336 174000 STB A,I NO, RECORD NEW SEQUENCE NUMBER
0296 75337 044032 ADB RENN INCREMENT TO NEXT LINE NUMBER
0297 75340 002004 INA MOVE
0298 75341 140000 ADA A,I TO
0299 75342 040351 ADA .-1 NEXT
0300 75343 027334 JMP REN10 STATEMENT
0301 75344 REN28 EQU *
0302 75344 050040 CPA RENEN
0303 75345 002001 RSS
0304 75346 174000 STB A,I RECORD LAST SEQ NBR
0305*
0306* SCAN REFERENCES AGAIN, IF ABSOLUTE ADDRESS IS THERE,
0307* REPLACE BY NEW LABEL, OTHERWISE REPLACE BY OLD LABEL.
0308*
0309 75347 060033 REN11 LDA RENC IS PROGRAM
0310 75350 002002 SZA COMPILED?
0311 75351 027366 JMP REN13 YES
0312 75352 061577 LDA SPROG
0313 75353 070035 STA RENQ
0314 75354 040351 ADA .-1
0315 75355 070034 STA RENP SEEK EMBEDDED
0316 75356 017467 REN12 JSB RENSK STATEMENT REFERENCES
0317 75357 027366 JMP REN13 NONE LEFT
0318 75360 160034 LDA RENP,I IF REFERENCE IS
0319 75361 001275 RAL,CLE,SLA,ERA NEGATIVE, CLEAR BIT 15,
0320 75362 002001 RSS OTHERWISE, REPLACE IT,
0321 75363 160000 LDA 0,I WITH THE NEW
0322 75364 170034 STA RENP,I LINE NUMBER
0323 75365 027356 JMP REN12
0324 75366 060273 REN13 LDA MLINK+1 SET FLAG TO SAY
0325 75367 040335 ADA .=?LINK 'USER PROGRAM TO CORE'
0326 75370 070257 STA MAIN
0327 75371 026226 JMP LLEND
0328 75372 RENF2 EQU *

```

|      |       |        |      |           |                                 |
|------|-------|--------|------|-----------|---------------------------------|
| 0329 | 75372 | 063604 |      | LDA LENT  |                                 |
| 0330 | 75373 | 067375 |      | LDB RENO  |                                 |
| 0331 | 75374 | 026432 |      | JMP LIBER |                                 |
| 0332 | 75375 | 075376 | RENO | DEF **1   |                                 |
| 0333 | 75376 | 005123 |      | OCT 5123  | LF=9                            |
| 0334 | 75377 | 042521 |      | ASC 16,   | EQUENCE NUMBER OVERFLOW/OVERLAP |

75400 052505  
 75401 047103  
 75402 042440  
 75403 047125  
 75404 046502  
 75405 042522  
 75406 020117  
 75407 053105  
 75410 051106  
 75411 046117  
 75412 053457  
 75413 047526  
 75414 042522  
 75415 046101  
 75416 050040

0335\*

0336\* RENUM SCANS INPUT BUFFER FOR A NUMBER. IF IT FINDS NOTHING  
 0337\* IT RETURNS WITHOUT SKIPPING. IF IT FINDS A LEGAL LABEL  
 0338\* (1=9999) IT RETURNS WITH IT IN B AND THE NEXT CHARACTER IN A,  
 0339\* AND SKIPS ON THE WAY BACK. IF IT FINDS AN ERROR IT GOES TO RENF.

0340\*

|      |       |        |       |              |                             |
|------|-------|--------|-------|--------------|-----------------------------|
| 0341 | 75417 | 000000 | RENUM | NOP          |                             |
| 0342 | 75420 | 002400 |       | CLA          | INITIALIZE INTEGER          |
| 0343 | 75421 | 070030 |       | STA RENL     | TO ZERO                     |
| 0344 | 75422 | 016164 |       | JSB LCHAR    | ANY CHARACTERS?             |
| 0345 | 75423 | 127417 |       | JMP RENUM, I | NO                          |
| 0346 | 75424 | 040316 | RENU1 | ADA M72B     | YES, IS IT                  |
| 0347 | 75425 | 002021 |       | SSA, RSS     | < ASCII 72 ?                |
| 0348 | 75426 | 027447 |       | JMP RENU2    | NO                          |
| 0349 | 75427 | 040364 |       | ADA .+10     | YES,                        |
| 0350 | 75430 | 002020 |       | SSA          | > ASCII 57 ?                |
| 0351 | 75431 | 027447 |       | JMP RENU2    | NO                          |
| 0352 | 75432 | 064030 |       | LDB RENL     | YES, PREVIOUS               |
| 0353 | 75433 | 047605 |       | ADB .1000    | INTEGER                     |
| 0354 | 75434 | 006021 |       | SSB, RSS     | < 1000 ?                    |
| 0355 | 75435 | 027454 |       | JMP RENF1    | NO                          |
| 0356 | 75436 | 064030 |       | LDB RENL     | YES                         |
| 0357 | 75437 | 005222 |       | RBL, RBL     | MULTIPLY                    |
| 0358 | 75440 | 044030 |       | ADB RENL     | BY                          |
| 0359 | 75441 | 005200 |       | RBL          | 10                          |
| 0360 | 75442 | 040001 |       | ADA 1        | ADD IN                      |
| 0361 | 75443 | 070030 |       | STA RENL     | NEW DIGIT                   |
| 0362 | 75444 | 016164 |       | JSB LCHAR    | FETCH NEXT                  |
| 0363 | 75445 | 027450 |       | JMP **3      | CHARACTER                   |
| 0364 | 75446 | 027424 |       | JMP RENU1    |                             |
| 0365 | 75447 | 040432 | RENU2 | ADA .+600B   | RESTORE ANY LEGAL CHARACTER |
| 0366 | 75450 | 064030 |       | LDB RENL     |                             |
| 0367 | 75451 | 037417 |       | ISZ RENUM    |                             |
| 0368 | 75452 | 006002 |       | SZB          | NON-ZERO INTEGER?           |

|      |       |        |       |     |         |                          |
|------|-------|--------|-------|-----|---------|--------------------------|
| 0369 | 75453 | 127417 |       | JMP | RENUM,I | YES                      |
| 0370 | 75454 | 060334 | RENF1 | LDA | ,-14    |                          |
| 0371 | 75455 | 067457 |       | LDB | ++2     |                          |
| 0372 | 75456 | 026432 |       | JMP | LIBER   |                          |
| 0373 | 75457 | 075460 |       | DEF | ++1     |                          |
| 0374 | 75460 | 005102 |       | OCT | 5102    | LF=B                     |
| 0375 | 75461 | 040504 |       | ASC | 6,AD    | PARAMETER                |
|      | 75462 | 020120 |       |     |         |                          |
|      | 75463 | 040522 |       |     |         |                          |
|      | 75464 | 040515 |       |     |         |                          |
|      | 75465 | 042524 |       |     |         |                          |
|      | 75466 | 042522 |       |     |         |                          |
| 0376 | 75467 | 000000 | RENSK | NOP |         |                          |
| 0377 | 75470 | 034034 |       | ISZ | RENQ    | INCREMENT POINTER        |
| 0378 | 75471 | 064035 |       | LDB | RENQ    |                          |
| 0379 | 75472 | 034036 |       | ISZ | RENK    | <USING STATEMENT>?       |
| 0380 | 75473 | 002001 |       | RSS |         | NO                       |
| 0381 | 75474 | 027502 |       | JMP | RENS2   | YES                      |
| 0382 | 75475 | 054034 |       | CPB | RENQ    | STATEMENT FINISHED?      |
| 0383 | 75476 | 027502 |       | JMP | RENS2   | YES                      |
| 0384 | 75477 | 037467 | RENS1 | ISZ | RENSK   | NO, RETURN WITH RENP     |
| 0385 | 75500 | 127467 |       | JMP | RENSK,I | SET TO NEXT REFERENCE    |
| 0386 | 75501 | 074035 |       | STB | RENQ    | UPDATE TO NEXT STATEMENT |
| 0387 | 75502 | 054056 | RENS2 | CPB | PBPTR   | PROGRAM EXHAUSTED?       |
| 0388 | 75503 | 127467 |       | JMP | RENSK,I | YES                      |
| 0389 | 75504 | 002400 |       | CLA |         | CLEAR USING              |
| 0390 | 75505 | 070036 |       | STA | RENK    | FLAG                     |
| 0391 | 75506 | 034035 |       | ISZ | RENQ    |                          |
| 0392 | 75507 | 064035 |       | LDB | RENQ    |                          |
| 0393 | 75510 | 034035 |       | ISZ | RENQ    | EXTRACT                  |
| 0394 | 75511 | 160035 |       | LDA | RENQ,I  | STATEMENT                |
| 0395 | 75512 | 010664 |       | AND | OPMSK   | TYPE                     |
| 0396 | 75513 | 144001 |       | ADB | 1,I     | SET (B) TO               |
| 0397 | 75514 | 044351 |       | ADB | ,-1     | NEXT STATEMENT           |
| 0398 | 75515 | 053576 |       | CPA | RESOP   | <RESTORE STATEMENT> ?    |
| 0399 | 75516 | 027573 |       | JMP | RENS5   | YES                      |
| 0400 | 75517 | 053577 |       | CPA | GOTOP   | NO, <GOTO STATEMENT> ?   |
| 0401 | 75520 | 027560 |       | JMP | RENS3   | YES                      |
| 0402 | 75521 | 053600 |       | CPA | GOSOP   | NO, <GOSUB STATEMENT> ?  |
| 0403 | 75522 | 027560 |       | JMP | RENS3   | YES                      |
| 0404 | 75523 | 053601 |       | CPA | IFOP    | NO, <IF STATEMENT>?      |
| 0405 | 75524 | 027557 |       | JMP | RENS3-1 | YES                      |
| 0406 | 75525 | 053602 |       | CPA | MTOPR   | NO, <MAT STATEMENT>?     |
| 0407 | 75526 | 002001 |       | RSS |         | YES                      |
| 0408 | 75527 | 027533 |       | JMP | RENS6   | NO                       |
| 0409 | 75530 | 034035 |       | ISZ | RENQ    |                          |
| 0410 | 75531 | 160035 |       | LDA | RENQ,I  | GET NEXT                 |
| 0411 | 75532 | 010664 |       | AND | OPMSK   | OPERATOR                 |
| 0412 | 75533 |        | RENS6 | EQU | *       |                          |
| 0413 | 75533 | 050656 |       | CPA | PRTOP   | <PRINT STATEMENT>?       |
| 0414 | 75534 | 002001 |       | RSS |         | YES                      |
| 0415 | 75535 | 027501 |       | JMP | RENS2-1 | NO                       |
| 0416 | 75536 | 034035 |       | ISZ | RENQ    |                          |
| 0417 | 75537 | 160035 |       | LDA | RENQ,I  | GET NEXT                 |
| 0418 | 75540 | 010664 |       | AND | OPMSK   | OPERATOR                 |

|      |       |        |        |              |                               |
|------|-------|--------|--------|--------------|-------------------------------|
| 0419 | 75541 | 050776 | CPA    | USEOP        | <USING STATEMENT?             |
| 0420 | 75542 | 002001 | RSS    |              | YES                           |
| 0421 | 75543 | 027501 | JMP    | RENS2-1      | NO                            |
| 0422 | 75544 | 120035 | XOR    | RENO,I       | GET OPERAND                   |
| 0423 | 75545 | 050670 | CPA    | INTFL        | INTEGER FOLLOWS?              |
| 0424 | 75546 | 002001 | RSS    |              | YES                           |
| 0425 | 75547 | 027501 | JMP    | RENS2-1      | NO                            |
| 0426 | 75550 | 003400 | CCA    |              | SET USING                     |
| 0427 | 75551 | 070036 | STA    | REN R        | FLAG                          |
| 0428 | 75552 | 060035 | LDA    | RENO         | SET                           |
| 0429 | 75553 | 002004 | INA    |              | REFERENCE                     |
| 0430 | 75554 | 070034 | STA    | REN P        | POINTER                       |
| 0431 | 75555 | 074035 | STB    | RENO         | SET POINTER TO NEXT STATEMENT |
| 0432 | 75556 | 027477 | JMP    | RENS1        |                               |
| 0433 | 75557 | 063603 | LDA    | THNOP        | LOAD 'THEN'                   |
| 0434 | 75560 | 030670 | RENS3  | IOR INTFL    | CREATE REFERENCE HEADER       |
| 0435 | 75561 | 074035 | STB    | RENO         | SET POINTER TO NEXT STATEMENT |
| 0436 | 75562 | 044351 | ADB    | .-1          | SET POINTER TO                |
| 0437 | 75563 | 074034 | RENS4  | STB RENP     | PROSPECTIVE REFERENCE         |
| 0438 | 75564 | 044351 | ADB    | .-1          | PRECEDED BY                   |
| 0439 | 75565 | 150001 | CPA    | 1,I          | REFERENCE HEADER?             |
| 0440 | 75566 | 027477 | JMP    | RENS1        | YES                           |
| 0441 | 75567 | 060706 | LDA    | OFOP         | NO, LOAD HEADER FOR           |
| 0442 | 75570 | 150001 | CPA    | 1,I          |                               |
| 0443 | 75571 | 027477 | JMP    | RENS1        |                               |
| 0444 | 75572 | 027563 | JMP    | RENS4        | REFERENCE LIST                |
| 0445 | 75573 | 150035 | RENS5  | CPA RENQ,I   | ANY REFERENCE?                |
| 0446 | 75574 | 027501 | JMP    | RENS2-1      | NO                            |
| 0447 | 75575 | 027560 | JMP    | RENS3        | YES                           |
| 0448 | 00030 |        | REN L  | EQU LTEMP    |                               |
| 0449 | 00031 |        | REN M  | EQU LTEMP+1  |                               |
| 0450 | 00032 |        | REN N  | EQU LTEMP+2  |                               |
| 0451 | 00033 |        | REN C  | EQU LTEMP+3  |                               |
| 0452 | 00034 |        | REN P  | EQU LTEMP+4  |                               |
| 0453 | 00035 |        | REN Q  | EQU LTEMP+5  |                               |
| 0454 | 00036 |        | REN R  | EQU LTEMP+6  |                               |
| 0455 | 00037 |        | REN BA | EQU LTEMP+7  |                               |
| 0456 | 00040 |        | REN EN | EQU LTEMP+8  |                               |
| 0457 | 00041 |        | REN NS | EQU LTEMP+9  |                               |
| 0458 | 00042 |        | REN C1 | EQU LTEMP+10 |                               |
| 0459 | 00043 |        | REN C2 | EQU LTEMP+11 |                               |
| 0460 | 00044 |        | REN C3 | EQU LTEMP+12 |                               |
| 0461 | 00045 |        | REN LA | EQU LTEMP+13 |                               |
| 0462 | 00046 |        | REN SN | EQU LTEMP+14 |                               |
| 0463 | 75576 | 066000 | RESOP  | OCT 66000    |                               |
| 0464 | 75577 | 052000 | GOTOP  | OCT 52000    |                               |
| 0465 | 75600 | 056000 | GOSOP  | OCT 56000    |                               |
| 0466 | 75601 | 053000 | IFOP   | OCT 53000    |                               |
| 0467 | 75602 | 067000 | MTOPR  | OCT 67000    |                               |
| 0468 | 75603 | 075000 | THNOP  | OCT 75000    |                               |
| 0469 | 75604 | 177737 | LENT   | DEC =33      |                               |
| 0470 | 75605 | 176030 | .1000  | DEC =1000    |                               |
| 0471 | 75606 |        | SREN   | EQU *        |                               |

0473\* THE NAME ROUTINE ALLOWS A USER TO ASSIGN HIS PROGRAM A NAME.

```

0475 75000 ORG LIBRA

0477 75000 060273 LDA MLINK+1 SET POINTER TO NAME,
0478 75001 040342 ADA .+?NAME=?LINK
0479 75002 070030 STA LTEMP
0480 75003 070033 STA LTEMP+3 SAVE NAME POINTER IN LTEMP+3.
0481 75004 160000 LDA 0,I SAVE RUN=ONLY BIT IN LTEMP+4.
0482 75005 011036 AND BIT15
0483 75006 070034 STA LTEMP+4
0484 75007 060347 LDA .-3 SET COUNTER,
0485 75010 070031 STA LTEMP+1
0486 75011 002400 CLA SET FLAG TO SAY
0487 75012 070032 STA LTEMP+2 FIRST CHARACTER
0488 75013 017055 NAME1 JSB NAMER GET A CHAR,
0489 75014 001727 ALF,ALF
0490 75015 170030 STA LTEMP,I
0491 75016 017055 JSB NAMER GET 2ND CHAR.
0492 75017 130030 IOR LTEMP,I
0493 75020 170030 STA LTEMP,I
0494 75021 034030 ISZ LTEMP BUMP NAME POINTER,
0495 75022 034031 ISZ LTEMP+1 TEST FOR DONE.
0496 75023 027013 JMP NAME1
0497 75024 160033 LDA LTEMP+3,I GET FIRST WORD OF NAME
0498 75025 030034 IOR LTEMP+4 MERGE IN RUN=ONLY BIT,
0499 75026 170033 STA LTEMP+3,I
0500 75027 017055 JSB NAMER TEST FOR ONLY 5 CHARS.
0501 75030 050412 CPA .+40B
0502 75031 026226 JMP LLEND

0503*
0504 75032 063054 LDA NAM27
0505 75033 067035 LDB ++2
0506 75034 026432 JMP LIBER
0507 75035 075036 DEF ++1
0508 75036 005117 OCT 5117 LF=0
0509 75037 047114 ASC 13,NLY 6 CHARACTERS ACCEPTED
75040 054440
75041 033040
75042 041510
75043 040522
75044 040503
75045 052105
75046 051123
75047 020101
75050 041503
75051 042520
75052 052105
75053 042040
0510 75054 177745 NAM27 DEC =27
0511*
0512 75055 000000 NAMER NOP GETS NEXT NAME CHARACTER.
0513 75056 016164 JSB LCHAR
0514 75057 060412 LDA .+40B USE BLANK IF END OF LINE.
0515 75060 070001 STA 1 HOLD IN B.

```

|       |       |        |           |               |                        |
|-------|-------|--------|-----------|---------------|------------------------|
| 0516  | 75061 | 010730 | AND       | .140          | TEST FOR CONTROL CHAR. |
| 0517  | 75062 | 002002 | SZA       |               |                        |
| 0518  | 75063 | 050730 | CPA       | .140          |                        |
| 0519  | 75064 | 027056 | JMP       | NAMER+1       | SKIP CONTROL CHARS.    |
| 0520  | 75065 | 060001 | LDA       | 1             | GET IN A AGAIN.        |
| 0521  | 75066 | 064032 | LDB       | LTEMP+2       | GET 1ST CHAR FLAG.     |
| 0522  | 75067 | 034032 | ISZ       | LTEMP+2       |                        |
| 0523  | 75070 | 050416 | CPA       | +.44B         | IF \$                  |
| 0524  | 75071 | 002001 | RSS       |               |                        |
| 0525  | 75072 | 050424 | CPA       | +.52B         | OR IF *                |
| 0526  | 75073 | 006002 | SZB       |               | AND FIRST CHARACTER    |
| 0527  | 75074 | 027115 | JMP       | NAME2         |                        |
| 0528* |       |        |           |               |                        |
| 0529  | 75075 | 060322 | LDA       | .=24          | PRINT ERROR            |
| 0530  | 75076 | 067100 | LDB       | ++2           |                        |
| 0531  | 75077 | 026432 | JMP       | LIBER         |                        |
| 0532  | 75100 | 075101 | DEF       | ++1           |                        |
| 0533  | 75101 | 005111 | OCT       | 6111          | LF=1                   |
| 0534  | 75102 | 046114 | ASC       | 11,LLEGAL     | FIRST CHARACTER        |
|       | 75103 | 042507 |           |               |                        |
|       | 75104 | 040514 |           |               |                        |
|       | 75105 | 020106 |           |               |                        |
|       | 75106 | 044522 |           |               |                        |
|       | 75107 | 051524 |           |               |                        |
|       | 75110 | 020103 |           |               |                        |
|       | 75111 | 044101 |           |               |                        |
|       | 75112 | 051101 |           |               |                        |
|       | 75113 | 041524 |           |               |                        |
|       | 75114 | 042522 |           |               |                        |
| 0535  | 75115 | 050426 | NAME2 CPA | +.54B         | IS CHARACTER A COMMA?  |
| 0536  | 75116 | 002001 | RSS       |               |                        |
| 0537  | 75117 | 127055 | JMP       | NAMER,I       | NO. RETURN CHARACTER,  |
| 0538  | 75120 | 060347 | LDA       | .=3           | YES. BLANK             |
| 0539  | 75121 | 070030 | STA       | LTEMP         |                        |
| 0540  | 75122 | 064273 | LDB       | MLINK+1       | OUT                    |
| 0541  | 75123 | 044342 | ADB       | +.?NAME=?LINK |                        |
| 0542  | 75124 | 063132 | LDA       | NAMBL         | ILLEGAL                |
| 0543  | 75125 | 170001 | NAMFL STA | B,I           |                        |
| 0544  | 75126 | 006004 | INB       |               |                        |
| 0545  | 75127 | 034030 | ISZ       | LTEMP         |                        |
| 0546  | 75130 | 027125 | JMP       | NAMFL         | NAME.                  |
| 0547  | 75131 | 026430 | JMP       | ILFER         | OUTPUT ERROR MESSAGE.  |
| 0548* |       |        |           |               |                        |
| 0549  | 75132 | 020040 | NAMBL ASC | 1,            |                        |
| 0550  | 75133 |        | \$NAM EQU | *             |                        |



0002\* CATALOG PRINTS A LIST OF USER PROGRAMS AND FILES ON THE USER  
 0003\* TELETYPE. IT PRINTS THESE, 4 PER LINE, ALONG WITH THEIR LENGTHS  
 0004\* AND AN INDICATION OF FILES, CSAVED PROGRAMS, PROTECTED ENTRIES,  
 0005\* AND SANCTIFIED ENTRIES. LIBRARY MUST FOLLOW CATALOG IN SEQUENCE.

0006\*

0007 75000

ORG LIBRA

0008\*

0009 75000 002400

CLA

FIRST TIME IN, SET LTEMP(1:3)=0.

0010 75001 070031

STA LTEMP+1

WE WILL HAVE TO LOCATE THE FIRST

0011 75002 070032

STA LTEMP+2

DIRECTORY ENTRY FOLLOWING

0012 75003 070033

STA LTEMP+3

LTEMP(0:3).

0013 75004 060364

LDA ,+12B

LF

0014 75005 016132

JSB LOUT

0015 75006 060346

LDA ,=4

0016 75007 070036

STA CATJ

0017 75010

CAT00 EQU \*

0018 75010 060341

LDA ,=9

0019 75011 070037

STA CATN

0020 75012 063346

LDA CATTP

0021 75013 070044

STA CATS

0022 75014

CAT01 EQU \*

0023 75014 160044

LDA CATS,I

0024 75015 001727

ALF,ALF

0025 75016 010443

AND B377

0026 75017 016132

JSB LOUT

OUTPUT LEFT CHARACTER

0027 75020 160044

LDA CATS,I

0028 75021 010443

AND B377

0029 75022 016132

JSB LOUT

OUTPUT RIGHT CHARACTER

0030 75023 034044

ISZ CATS

BUMP TO NEXT HEADING WORD

0031 75024 034037

ISZ CATN

0032 75025 027014

JMP CAT01

0033 75026 034036

ISZ CATJ

0034 75027 027010

JMP CAT00

0035 75030 060367

LDA ,+16B

CR

0036 75031 016132

JSB LOUT

0037\*

0038 75032 060273

CAT1 LDA MLINK+1 SET USER ID INTO LTEMP.

0039 75033 040341

ADA ,+7ID-7LINK

0040 75034 160000

LDA 0,I

0041 75035 027047

JMP CAT2

0042 75036 000000

BSS 9

SPACE FOR ID CALCS IN GROUP

0043 75047 070030

CAT2 STA LTEMP

RENDEZVOUS WITH "LIBRARY".

0044\*

0045 75050 060346

LDA ,=4

SET N TO COUNT # OF NAMES ON

0046 75051 070037

STA CATN

THIS LINE.

0047 75052 002400

CLA

SET J=0 TO INDICATE THAT NO

0048 75053 070036

STA CATJ

DIRECTORY TRACK HAS BEEN EXAMED

0049 75054 060364

LDA ,+12B

EMIT A LINE FEED.

0050 75055 016132

JSB LOUT

0051\*

0052 75056 116005

JSB DLOKP,I

FIND LAST ENTRY &lt;= LAST ONE

0053 75057 000000

NOP

OUTPUT.

0054 75060 160034

LDA CATI,I

COMPUTE LAST ADDRESS

0055 75061 003004

CMA,INA

IN TRACK.

0056 75062 040562

ADA LIBD

|       |       |        |       |            |                                  |
|-------|-------|--------|-------|------------|----------------------------------|
| 0057  | 75063 | 070041 |       | STA CATQ   |                                  |
| 0058* |       |        |       |            |                                  |
| 0059  | 75064 | 060035 | CAT22 | LDA CATP   | SET P TO NEXT                    |
| 0060  | 75065 | 040366 |       | ADA ,+12   | ENTRY                            |
| 0061  | 75066 | 070035 | CAT10 | STA CATP   |                                  |
| 0062  | 75067 | 050041 |       | CPA CATQ   | IF P=Q, WERE DONE WITH THIS      |
| 0063  | 75070 | 027275 |       | JMP CAT11  | TRACK--GO LOOK AT NEXT ONE       |
| 0064  | 75071 | 160035 |       | LDA CATP,I | TEST FOR ENTRY BELONGING TO THIS |
| 0065  | 75072 | 050030 |       | CPA LTEMP  | USER--IF NOT, WE'RE DONE.        |
| 0066  | 75073 | 027077 |       | JMP CAT12  |                                  |
| 0067* |       |        |       |            |                                  |
| 0068  | 75074 | 060367 | CAT13 | LDA ,+15B  | EMIT CRLF                        |
| 0069  | 75075 | 016132 |       | JSB LOUT   |                                  |
| 0070  | 75076 | 026226 |       | JMP LLEND  |                                  |
| 0071* |       |        |       |            |                                  |
| 0072  | 75077 | 027104 | CAT12 | JMP CAT23  |                                  |
| 0073  | 75100 | 000000 |       | NOP        | THIS SPACE IS RESERVED           |
| 0074  | 75101 | 000000 |       | NOP        | FOR THE ILL-STORED               |
| 0075  | 75102 | 000000 |       | NOP        | PROGRAM CHECK IN                 |
| 0076  | 75103 | 000000 |       | NOP        | LIBRARY AND GROUP.               |
| 0077  | 75104 | 060347 | CAT23 | LDA ,=3    | SET UP COUNTER FOR               |
| 0078  | 75105 | 070042 |       | STA CATC   | PRINTING NAME.                   |
| 0079  | 75106 | 034035 | CAT15 | ISZ CATP   | BUMP P TO NEXT WORD.             |
| 0080  | 75107 | 160035 |       | LDA CATP,I |                                  |
| 0081  | 75110 | 001727 |       | ALF,ALF    | GET LEFT CHAR.                   |
| 0082  | 75111 | 016132 |       | JSB LOUT   | PRINT IT.                        |
| 0083  | 75112 | 160035 |       | LDA CATP,I | OUTPUT IT                        |
| 0084  | 75113 | 016132 |       | JSB LOUT   |                                  |
| 0085  | 75114 | 034042 |       | ISZ CATC   | TEST FOR 6 CHARS OUT.            |
| 0086  | 75115 | 027106 |       | JMP CAT15  |                                  |
| 0087  | 75116 | 060412 |       | LDA ,+40B  | OUTPUT A BLANK.                  |
| 0088  | 75117 | 016132 |       | JSB LOUT   |                                  |
| 0089  | 75120 | 160035 |       | LDA CATP,I | GET THIRD WORD OF NAME           |
| 0090  | 75121 | 002021 |       | SSA,RSS    | SEMI-COMPILED?                   |
| 0091  | 75122 | 027125 |       | JMP CAT20  | NO                               |
| 0092  | 75123 | 063342 |       | LDA ASCC   | YES, OUTPUT A "C"                |
| 0093  | 75124 | 027135 |       | JMP CAT21  |                                  |
| 0094  | 75125 | 007400 | CAT20 | CCB        |                                  |
| 0095  | 75126 | 044035 |       | ADB CATP   | GET SECOND WORD OF NAME          |
| 0096  | 75127 | 160001 |       | LDA B,I    | FILE?                            |
| 0097  | 75130 | 002021 |       | SSA,RSS    | NO                               |
| 0098  | 75131 | 027134 |       | JMP ++3    | YES, OUTPUT "F"                  |
| 0099  | 75132 | 063343 |       | LDA ASCF   |                                  |
| 0100  | 75133 | 002001 |       | RSS        | NEITHER, OUTPUT " "              |
| 0101  | 75134 | 060412 |       | LDA ,+40B  |                                  |
| 0102  | 75135 | 016132 | CAT21 | JSB LOUT   | POINTER TO                       |
| 0103  | 75136 | 064035 |       | LDB CATP   | FIRST WORD OF NAME               |
| 0104  | 75137 | 044350 |       | ADB ,=2    | GET IT                           |
| 0105  | 75140 | 160001 |       | LDA B,I    | PROTECTED?                       |
| 0106  | 75141 | 002021 |       | SSA,RSS    | NO                               |
| 0107  | 75142 | 027145 |       | JMP ++3    | YES, OUTPUT "P"                  |
| 0108  | 75143 | 063344 |       | LDA ASCP   |                                  |
| 0109  | 75144 | 002001 |       | RSS        |                                  |
| 0110  | 75145 | 060412 |       | LDA ,+40B  |                                  |
| 0111  | 75146 | 016132 |       | JSB LOUT   |                                  |

|       |       |        |                   |                             |
|-------|-------|--------|-------------------|-----------------------------|
| 0112  | 75147 | 064035 | LDB CATP          | POINTER TO                  |
| 0113  | 75150 | 044356 | ADB .+4           | DRUM ADDRESS                |
| 0114  | 75151 | 160001 | LDA B,I           | GET IT                      |
| 0115  | 75152 | 002003 | SZA,RSS           | SANCTIFIED?                 |
| 0116  | 75153 | 027156 | JMP **3           | NO                          |
| 0117  | 75154 | 063345 | LDA ASCS          | YES, OUTPUT "S"             |
| 0118  | 75155 | 002001 | RSS               |                             |
| 0119  | 75156 | 060412 | LDA .+40B         | OUTPUT " "                  |
| 0120  | 75157 | 016132 | JSB LOUT          |                             |
| 0121  | 75160 | 060035 | LDA CATP          | BUMP TO PROGRAM LENGTH      |
| 0122  | 75161 | 040362 | ADA .+8           |                             |
| 0123  | 75162 | 070035 | STA CATP          |                             |
| 0124  | 75163 | 002400 | CLA               | INITIALIZE                  |
| 0125  | 75164 | 070045 | STA CATZS         | ZERO SUPPRESS FLAG          |
| 0126* |       |        |                   |                             |
| 0127  | 75165 | 160035 | LDA CATP,I        | GET LENGTH                  |
| 0128  | 75166 | 002020 | SSA               | MAKE POSITIVE IF NECESSARY  |
| 0129  | 75167 | 003004 | CMA,INA           |                             |
| 0130  | 75170 | 006400 | CLB               |                             |
| 0131  | 75171 | 100400 | DIV DVSRs         | DIVIDE IT BY 10000          |
|       |       | 75172  | 001032            |                             |
| 0132  | 75173 | 017256 | JSB CAT24         | OUTPUT THE FIRST CHARACTER  |
| 0133  | 75174 | 100400 | DIV DVSRs+1       | DIV BY 1000.                |
|       |       | 75175  | 001033            |                             |
| 0134  | 75176 | 017256 | JSB CAT24         | OUTPUT THE SECOND DIGIT     |
| 0135  | 75177 | 100400 | DIV DVSRs+2       | DIV BY 100                  |
|       |       | 75200  | 001034            |                             |
| 0136  | 75201 | 017256 | JSB CAT24         | OUTPUT THE THIRD DIGIT      |
| 0137  | 75202 | 100400 | DIV .+10          |                             |
|       |       | 75203  | 000364            |                             |
| 0138  | 75204 | 017256 | JSB CAT24         | OUTPUT THE FOURTH DIGIT     |
| 0139  | 75205 | 040574 | ADA ASC00         |                             |
| 0140  | 75206 | 016132 | JSB LOUT          |                             |
| 0141  | 75207 | 060412 | LDA .+40B         | OUTPUT A BLANK              |
| 0142  | 75210 | 016132 | JSB LOUT          |                             |
| 0143  | 75211 | 060412 | LDA .+40B         | AND ANOTHER                 |
| 0144  | 75212 | 016132 | JSB LOUT          |                             |
| 0145  | 75213 | 060412 | LDA .+40B         | AND ANOTHER                 |
| 0146  | 75214 | 016132 | JSB LOUT          |                             |
| 0147* |       |        |                   |                             |
| 0148  | 75215 | 034035 | ISZ CATP          | BUMP POINTER TO NEXT ENTRY. |
| 0149  | 75216 | 060035 | LDA CATP          |                             |
| 0150  | 75217 | 034037 | ISZ CATN          | END OF LINE?                |
| 0151  | 75220 | 027066 | JMP CAT10         | NO.                         |
| 0152  | 75221 | 040337 | ADA .-11          | ** FIRST WORD OF LAST NAME  |
| 0153  | 75222 | 064273 | LDB MLINK+1       |                             |
| 0154  | 75223 | 044355 | ADB .+7TEMP=?LINK |                             |
| 0155  | 75224 | 074036 | STB CATJ          | POINTER FOR STORING NAME    |
| 0156  | 75225 | 064347 | LDB .-3           |                             |
| 0157  | 75226 | 074037 | STB CATN          |                             |
| 0158  | 75227 |        | CAT30 EQU *       |                             |
| 0159  | 75227 | 164000 | LDB A,I           | SAVE A WORD                 |
| 0160  | 75230 | 174036 | STB CATJ,I        | OF THE NAME                 |
| 0161  | 75231 | 034036 | ISZ CATJ          |                             |
| 0162  | 75232 | 002004 | INA               |                             |

|       |                                    |        |                   |                                 |
|-------|------------------------------------|--------|-------------------|---------------------------------|
| 0163  | 75233                              | 034037 | ISZ CATN          |                                 |
| 0164  | 75234                              | 027227 | JMP CAT30         |                                 |
| 0165* |                                    |        |                   |                                 |
| 0166  | 75235                              | 060367 | LDA .+15B         | OUTPUT CR.                      |
| 0167  | 75236                              | 016132 | JSB LOUT          |                                 |
| 0168  | 75237                              | 116023 | JSB SCHOU,I       | OUTPUT WAIT.                    |
| 0169* |                                    |        |                   |                                 |
| 0170* | READ THE LAST ENTRY OUT OF THE TTY |        |                   |                                 |
| 0171* | TABLE AND PUT IT INTO LTEMP(1:3)   |        |                   |                                 |
| 0172* |                                    |        |                   |                                 |
| 0173  | 75240                              | 060520 | LDA DLTEM         | PUT                             |
| 0174  | 75241                              | 002004 | INA               |                                 |
| 0175  | 75242                              | 064347 | LDB .-3           |                                 |
| 0176  | 75243                              | 074037 | STB CATN          |                                 |
| 0177  | 75244                              | 064273 | LDB MLINK+1       |                                 |
| 0178  | 75245                              | 044355 | ADB .+7TEMP=?LINK |                                 |
| 0179  | 75246                              | 074036 | STB CATJ          |                                 |
| 0180  | 75247                              |        | CAT29 EQU *       |                                 |
| 0181  | 75247                              | 164036 | LDB CATJ,I        | RESTORE A WORD                  |
| 0182  | 75250                              | 174000 | STB A,I           | OF THE NAME                     |
| 0183  | 75251                              | 002004 | INA               |                                 |
| 0184  | 75252                              | 034036 | ISZ CATJ          |                                 |
| 0185  | 75253                              | 034037 | ISZ CATN          |                                 |
| 0186  | 75254                              | 027247 | JMP CAT29         |                                 |
| 0187  | 75255                              | 027032 | JMP CAT1          | GO TO START.                    |
| 0188  | 75256                              | 000000 | CAT24 NOP         |                                 |
| 0189  | 75257                              | 074043 | STB CATLN         | SAVE REMAINDER                  |
| 0190  | 75260                              | 002002 | SZA               | IS DIGIT ZERO?                  |
| 0191  | 75261                              | 027267 | JMP CAT27         | NO, GO PRINT IT                 |
| 0192  | 75262                              | 064045 | LDB CATZ8         | YES                             |
| 0193  | 75263                              | 006002 | SZB               | IS IT A LEADING ZERO?           |
| 0194  | 75264                              | 027270 | JMP CAT25         | NO, GO PRINT IT                 |
| 0195  | 75265                              | 060412 | LDA .+40B         | YES, SUPPRESS IT AND            |
| 0196  | 75266                              | 027271 | JMP CAT26         | PRINT " "                       |
| 0197  | 75267                              | 070045 | CAT27 STA CATZ8   | NONZERO THE SUPPRESS FLAG       |
| 0198  | 75270                              | 040574 | CAT25 ADA ASC00   | CONSTRUCT THE CHARACTER         |
| 0199  | 75271                              | 016132 | CAT26 JSB LOUT    | PUT OUT CHARACTER               |
| 0200  | 75272                              | 060043 | LDA CATLN         | GET REMAINDER                   |
| 0201  | 75273                              | 006400 | CLB               | PREPARE FOR DIVIDE              |
| 0202  | 75274                              | 127256 | JMP CAT24,I       | RETURN                          |
| 0203* |                                    |        |                   |                                 |
| 0204  | 75275                              | 060034 | CAT11 LDA CATI    | TEST FOR USER DIRECTORY CONTIN- |
| 0205  | 75276                              | 040361 | ADA .+7           | UED ON NEXT DIRECTORY TRACK.    |
| 0206  | 75277                              | 070034 | STA CATI          |                                 |
| 0207  | 75300                              | 164000 | LDB 0,I           |                                 |
| 0208  | 75301                              | 006003 | SZB,RSS           |                                 |
| 0209  | 75302                              | 027276 | JMP CAT11+1       | NEXT TRACK EMPTY. THERE, RUN.   |
| 0210  | 75303                              | 074072 | STB WORD          |                                 |
| 0211  | 75304                              | 007004 | CMB,INB           |                                 |
| 0212  | 75305                              | 044562 | ADB LIBD          |                                 |
| 0213  | 75306                              | 074041 | STB CATQ          |                                 |
| 0214  | 75307                              | 002004 | INA               | DOES NEXT TRACK BEGIN WITH      |
| 0215  | 75310                              | 164000 | LDB 0,I           | THIS USER?                      |
| 0216  | 75311                              | 054030 | CPB LTEMP         |                                 |
| 0217  | 75312                              | 002001 | RSS               | YES                             |

|       |       |        |           |          |                               |
|-------|-------|--------|-----------|----------|-------------------------------|
| 0218  | 75313 | 027074 | JMP       | CAT13    | NO--QUIT.                     |
| 0219* |       |        |           |          |                               |
| 0220  | 75314 | 040357 | ADA       | .,+5     | GET DIRECTORY DRUM ADDRESS    |
| 0221  | 75315 | 160000 | LDA       | 0,I      |                               |
| 0222  | 75316 | 064566 | LDB       | LIBDI    |                               |
| 0223  | 75317 | 016231 | JSB       | DRUML    | READ DIRECTORY                |
| 0224  | 75320 | 027323 | JMP       | CAT28    | ARRGH, GO INFORM GUY (OR GAL) |
| 0225  | 75321 | 060562 | LDA       | LIBD     |                               |
| 0226  | 75322 | 027066 | JMP       | CAT10    |                               |
| 0227  | 75323 | 060324 | CAT28 LDA | .,=22    |                               |
| 0228  | 75324 | 067326 | LDB       | ++2      |                               |
| 0229  | 75325 | 026432 | JMP       | LIBER    |                               |
| 0230  | 75326 | 075327 | DEF       | ++1      |                               |
| 0231  | 75327 | 006412 | OCT       | 6412     |                               |
| 0232  | 75330 | 041501 | ASC       | 10,CANIT | READ DIRECTORY                |
|       | 75331 | 047047 |           |          |                               |
|       | 75332 | 052040 |           |          |                               |
|       | 75333 | 051105 |           |          |                               |
|       | 75334 | 040504 |           |          |                               |
|       | 75335 | 020104 |           |          |                               |
|       | 75336 | 044522 |           |          |                               |
|       | 75337 | 042503 |           |          |                               |
|       | 75340 | 052117 |           |          |                               |
|       | 75341 | 051131 |           |          |                               |
| 0233  | 00034 |        | CATI      | EQU      | LTEMP+4                       |
| 0234  | 00035 |        | CATP      | EQU      | LTEMP+5                       |
| 0235  | 00036 |        | CATJ      | EQU      | LTEMP+6                       |
| 0236  | 00037 |        | CATN      | EQU      | LTEMP+7                       |
| 0237  | 00041 |        | CATQ      | EQU      | LTEMP+9                       |
| 0238  | 00042 |        | CATC      | EQU      | LTEMP+10                      |
| 0239  | 00043 |        | CATLN     | EQU      | LTEMP+11                      |
| 0240  | 00044 |        | CATS      | EQU      | LTEMP+12                      |
| 0241  | 00045 |        | CATZS     | EQU      | LTEMP+13                      |
| 0242  | 75342 | 000103 | ASCC      | OCT      | 103                           |
| 0243  | 75343 | 000106 | ASCF      | OCT      | 106                           |
| 0244  | 75344 | 000120 | ASCP      | OCT      | 120                           |
| 0245  | 75345 | 000123 | ASCS      | OCT      | 123                           |
| 0246  | 75346 | 075347 | CATTP     | DEF      | CATIT                         |
| 0247  | 75347 | 020116 | CATIT     | ASC      | 9, NAME                       |
|       | 75350 | 040515 |           |          | LENGTH                        |
|       | 75351 | 042440 |           |          |                               |
|       | 75352 | 020040 |           |          |                               |
|       | 75353 | 020114 |           |          |                               |
|       | 75354 | 042516 |           |          |                               |
|       | 75355 | 043524 |           |          |                               |
|       | 75356 | 044040 |           |          |                               |
|       | 75357 | 020040 |           |          |                               |
| 0248  | 75360 |        | SCAT      | EQU      | *                             |

0250\* LIBRARY IS IDENTICAL TO CATALOG EXCEPT THAT IT USES A000  
0251\* AS ID RATHER THAN THE USER ID, AND PROGRAMS WITH EMBEDDED  
0252\* ERROR MESSAGES ARE NOT LISTED, IT MUST BE LOADED IMMEDIATELY  
0253\* AFTER CATALOG, GROUP MUST FOLLOW LIBRARY IN SEQUENCE,

|      |              |           |                 |
|------|--------------|-----------|-----------------|
| 0255 | 75000        | ORG LIBRA |                 |
| 0256 | 75000 002400 | CLA       |                 |
| 0257 | 75032        | ORG CAT1  |                 |
| 0258 | 75032 060612 | LDA A000  |                 |
| 0259 | 75033 027047 | JMP CAT2  |                 |
| 0260 | 75077        | ORG CAT12 |                 |
| 0261 | 75077 060035 | LDA CATP  | CHECK FOR       |
| 0262 | 75100 040356 | ADA .+4   | ILL*STORED      |
| 0263 | 75101 160000 | LDA A,I   | PROGRAMS        |
| 0264 | 75102 002020 | SSA       |                 |
| 0265 | 75103 027064 | JMP CAT22 | DON'T LIST THEM |

0267\* GROUP IS IDENTICAL TO LIBRARY EXCEPT THAT IT USES THE  
 0268\* GROUP LIBRARIAN'S ID INSTEAD OF A000. IT MUST BE LOADED  
 0269\* IMMEDIATELY AFTER LIBRARY.

|      |       |        |                 |                        |
|------|-------|--------|-----------------|------------------------|
| 0271 | 75000 |        | ORG LIBRA       |                        |
| 0272 | 75000 | 002400 | CLA             |                        |
| 0273 | 75032 |        | ORG CAT1        |                        |
| 0274 | 75032 | 064273 | LDB MLINK+1     | GET USER ID            |
| 0275 | 75033 | 044341 | ADB .+?ID=?LINK |                        |
| 0276 | 75034 | 160001 | LDA B,I         |                        |
| 0277 | 75035 | 010732 | AND M2000       | ISOLATE AND            |
| 0278 | 75036 | 070030 | STA LTEMP       | SAVE ALPHABETIC PART   |
| 0279 | 75037 | 160001 | LDA B,I         |                        |
| 0280 | 75040 | 010602 | AND B1777       | ISOLATE NUMERICAL PART |
| 0281 | 75041 | 006400 | CLB             |                        |
| 0282 | 75042 | 100400 | DIV .100        | GET RID OF             |
|      | 75043 | 000437 |                 |                        |
| 0283 | 75044 | 100200 | MPY .100        | TENS AND ONES          |
|      | 75045 | 000437 |                 |                        |
| 0284 | 75046 | 030030 | IOR LTEMP       | MERGE IN LETTER        |

0286\* THE DIRECTORY COMMAND IS AVAILABLE TO USER 0000. IT CAUSES THE  
 0287\* CONTENTS OF THE DISC DIRECTORY TO BE PRINTED ON THE USER'S CONSOLE  
 0288\* IN THE FOLLOWING FORMAT:

0289\*  
 0290\* <ID> <NAME> <PURGE DATE> <FLAGS> <LENGTH> <DISC ADR> <DRUM ADR>  
 0291\*

0292\* THE PURGE DATE IS PRINTED AS A 3-DIGIT INTEGER INDICATING THE DAY  
 0293\* OF THE YEAR AND A 2-DIGIT INTEGER INDICATING THE YEAR. THE DRUM  
 0294\* ADDRESS CONSISTS OF 3 INTEGERS INDICATING DRUM, TRACK, AND SECTOR,  
 0295\* THE DISC ADDRESS IS A LOGICAL BLOCK NUMBER. THE LENGTH IS IN WORDS  
 0296\* FOR PROGRAMS, RECORDS FOR FILES. THESE ARE ALL PRINTED IN DECIMAL.  
 0297\* TYPING DIR=ID WILL START THE LISTING WITH THAT ID.

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0298*
0299 75000 ORG LIBRA
0300 75000 064273 LDB MLINK+1
0301 75001 044341 ADB .+?ID=?LINK
0302 75002 160001 LDA B,I GET USER'S ID
0303 75003 050612 CPA A000 A000?
0304 75004 027023 JMP UDIR1 YES
0305 75005 060327 LDA .-19 NO, NOT ALLOWED
0306 75006 067010 LDB ++2
0307 75007 026432 JMP LIBER
0308 75010 075011 DEF ++1
0309 75011 005120 OCT 5120
0310 75012 051111 ASC 9,RIVILEGED COMMAND
 75013 053111
 75014 046105
 75015 043505
 75016 042040
 75017 041517
 75020 046515
 75021 040516
 75022 042040
0311 75023 UDIR1 EQU *
0312 75023 002404 CLA,INA INITIALIZE IS IN CASE
0313 75024 070052 STA ID NONE IS SPECIFIED
0314 75025 016164 JSB LCHAR GET A CHAR
0315 75026 027036 JMP UDIR2 CR = START A BEGINNING OF DIR
0316 75027 064273 LDB MLINK+1
0317 75030 044336 ADB .+?TNUM=?LINK
0318 75031 160001 LDA 1,I BACKSPACE
0319 75032 030251 IOR BKS BUFFER
0320 75033 114500 JSB S14SC,I POINTER
0321 75034 016315 JSB GETID GET THE ID
0322 75035 026430 JMP ILFER CR MUST FOLLOW
0323 75036 UDIR2 EQU *
0324 75036 003400 CCA
0325 75037 040052 ADA ID
0326 75040 064273 LDB MLINK+1
0327 75041 044354 ADB .+?RTIM=?LINK
0328 75042 170001 STA B,I SAVE PREVIOUS ID
0329 75043 116022 JSB UHDBA,I OUTPUT THE HEADING
0330 75044 116023 JSB SCHOU,I AND SUSPEND
0331*
0332 75045 060321 LDA .-25 25 WORDS IN

```



|       |       |        |             |               |                       |
|-------|-------|--------|-------------|---------------|-----------------------|
| 0333  | 75046 | 070030 | STA         | LTEMP         | HEADING               |
| 0334  | 75047 | 063511 | LDA         | UDHDA         |                       |
| 0335  | 75050 | 070031 | STA         | LTEMP+1       |                       |
| 0336  | 75051 |        | UDIR3 EQU * |               |                       |
| 0337  | 75051 | 160031 | LDA         | LTEMP+1,I     | OUTPUT                |
| 0338  | 75052 | 001727 | ALF,        | ALF           |                       |
| 0339  | 75053 | 010443 | AND         | B377          | THE                   |
| 0340  | 75054 | 016132 | JSB         | LOUT          |                       |
| 0341  | 75055 | 160031 | LDA         | LTEMP+1,I     | DIRECTORY             |
| 0342  | 75056 | 010443 | AND         | B377          |                       |
| 0343  | 75057 | 016132 | JSB         | LOUT          | HEADING               |
| 0344  | 75060 | 034031 | ISZ         | LTEMP+1       |                       |
| 0345  | 75061 | 034030 | ISZ         | LTEMP         |                       |
| 0346  | 75062 | 027051 | JMP         | UDIR3         |                       |
| 0347  | 75063 | 116023 | JSB         | SCHOU,I       | SUSPEND               |
| 0348* |       |        |             |               |                       |
| 0349  | 75064 | 060274 | LDA         | INF           | SET UP LTEMP[0:3] FOR |
| 0350  | 75065 | 070031 | STA         | LTEMP+1       | INITIAL SEARCH        |
| 0351  | 75066 | 070032 | STA         | LTEMP+2       |                       |
| 0352  | 75067 | 070033 | STA         | LTEMP+3       |                       |
| 0353  | 75070 | 064273 | LDB         | MLINK+1       |                       |
| 0354  | 75071 | 044354 | ADB         | .*?RTIM=?LINK |                       |
| 0355  | 75072 | 160001 | LDA         | B,I           | RETRIEVE              |
| 0356  | 75073 | 070030 | STA         | LTEMP         | STARTING ID           |
| 0357* |       |        |             |               |                       |
| 0358  | 75074 |        | UDIR4 EQU * |               |                       |
| 0359  | 75074 | 116005 | JSB         | DLOKP,I       | SEARCH DIRECTORY FOR  |
| 0360  | 75075 | 000000 | NOP         |               | PREVIOUS ENTRY        |
| 0361  | 75076 |        | UDIR5 EQU * |               |                       |
| 0362  | 75076 | 060035 | LDA         | LTEMP+5       | MOVE                  |
| 0363  | 75077 | 040366 | ADA         | .*+12         | TO NEXT               |
| 0364  | 75100 | 070035 | STA         | LTEMP+5       | ENTRY                 |
| 0365  | 75101 | 140034 | ADA         | LTEMP+4,I     |                       |
| 0366  | 75102 | 040674 | ADA         | MLIBD         |                       |
| 0367  | 75103 | 002002 | SZA         |               | END OF TRACK          |
| 0368  | 75104 | 027123 | JMP         | UDIR6         | NO                    |
| 0369* |       |        |             |               |                       |
| 0370  | 75105 | 064034 | LDB         | LTEMP+4       | YES, BUMP TO          |
| 0371  | 75106 | 044361 | ADB         | .*+7          | NEXT ONE              |
| 0372  | 75107 | 150001 | CPA         | B,I           | LOOP IF EMPTY         |
| 0373  | 75110 | 027106 | JMP         | .*+2          |                       |
| 0374* |       |        |             |               |                       |
| 0375  | 75111 | 074034 | STB         | LTEMP+4       |                       |
| 0376  | 75112 | 160001 | LDA         | B,I           |                       |
| 0377  | 75113 | 070072 | STA         | WORD          | LENGTH OF TRACK       |
| 0378  | 75114 | 044360 | ADB         | .*+6          |                       |
| 0379  | 75115 | 160001 | LDA         | B,I           | DRUM ADDRESS          |
| 0380  | 75116 | 064566 | LDB         | LIBDI         | CORE ADDRESS          |
| 0381  | 75117 | 016231 | JSB         | DRUML         | READ IT               |
| 0382  | 75120 | 027415 | JMP         | UDI13         | READ FAILURE          |
| 0383* |       |        |             |               |                       |
| 0384  | 75121 | 060562 | LDA         | LIBD          | SET POINTER           |
| 0385  | 75122 | 070035 | STA         | LTEMP+5       | TO FIRST ENTRY        |
| 0386* |       |        |             |               |                       |
| 0387  | 75123 |        | UDIR6 EQU * |               |                       |

```

0388 75123 027130 JMP UDIR7 SPACE
0389 75124 000000 NOP
0390 75125 000000 NOP FOR
0391 75126 000000 NOP
0392 75127 000000 NOP SDIRECTORY
0393 75130 UDIR7 EQU *
0394 75130 160035 LDA LTEMP+5,I GET USER ID
0395 75131 064273 LDB MLINK+1
0396 75132 044354 ADB .+?RTIM-?LINK
0397 75133 170001 STA B,I SAVE IT
0398 75134 050351 CPA .-1 END OF DIRECTORY?
0399 75135 026226 JMP LLEND YES
0400 75136 050030 CPA LTEMP NO, SAME AS PREVIOUS ONE?
0401 75137 027160 JMP UDIR8 YES
0402*
0403 75140 001323 RAR,RAR NO, POSITION
0404 75141 001727 ALF,ALF LETTER
0405 75142 010411 AND .+37B KEEP ONLY 5 BITS
0406 75143 040772 ADA B100 CONVERT TO ASCII
0407 75144 016132 JSB LOUT OUTPUT IT
0408 75145 160035 LDA LTEMP+5,I GET ID AGAIN
0409 75146 010602 AND B1777 NUMERICAL PART
0410 75147 006400 CLB
0411 75150 100400 DIV .100 FIRST DIGIT IN A, LAST 2 IN B
 75151 000437
0412 75152 074040 STB LTEMP+8
0413 75153 040432 ADA .+60B CONVERT TO ASCII
0414 75154 016132 JSB LOUT AND OUTPUT
0415 75155 060040 LDA LTEMP+8 OUTPUT LAST
0416 75156 017434 JSB UDIOW TWO DIGITS
0417 75157 027164 JMP UDIR9
0418*
0419 75160 UDIR8 EQU *
0420 75160 063512 LDA UDISS REPLACE
0421 75161 017447 JSB UDIOW ID WITH
0422 75162 063512 LDA UDISS FOUR
0423 75163 017447 JSB UDIOW BLANKS
0424*
0425 75164 UDIR9 EQU *
0426 75164 064273 LDB MLINK+1
0427 75165 044355 ADB .+?TEMP-?LINK
0428 75166 074040 STB LTEMP+8 => INTO TTY TABLE
0429 75167 063512 LDA UDISS 2 BLANKS
0430 75170 017447 JSB UDIOW
0431 75171 034035 ISZ LTEMP+5
0432 75172 160035 LDA LTEMP+5,I OUTPUT 3 WORDS
0433 75173 170040 STA LTEMP+8,I
0434 75174 017447 JSB UDIOW
0435 75175 034040 ISZ LTEMP+8
0436 75176 034035 ISZ LTEMP+5 OF NAME WHILE
0437 75177 160035 LDA LTEMP+5,I
0438 75200 170040 STA LTEMP+8,I
0439 75201 017447 JSB UDIOW
0440 75202 034040 ISZ LTEMP+8 SAVING THEM IN
0441 75203 034035 ISZ LTEMP+5

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|       |       |        |         |           |                                  |
|-------|-------|--------|---------|-----------|----------------------------------|
| 0442  | 75204 | 160035 | LDA     | LTEMP+5,I |                                  |
| 0443  | 75205 | 170040 | STA     | LTEMP+8,I |                                  |
| 0444  | 75206 | 017447 | JSB     | UDIOW     | USER'S ITY TABLE                 |
| 0445  | 75207 | 063512 | LDA     | UDISS     | 2 BLANKS                         |
| 0446  | 75210 | 017447 | JSB     | UDIOW     |                                  |
| 0447* |       |        |         |           |                                  |
| 0448  | 75211 | 064035 | LDB     | LTEMP+5   |                                  |
| 0449  | 75212 | 044354 | AOB     | +.2       |                                  |
| 0450  | 75213 | 074035 | STB     | LTEMP+6   | => DATE                          |
| 0451  | 75214 | 160035 | LDA     | LTEMP+5,I |                                  |
| 0452  | 75215 | 010502 | AND     | B777      | GET DAY OF YEAR                  |
| 0453  | 75216 | 006400 | CLB     |           |                                  |
| 0454  | 75217 | 100400 | DIV     | +.10      | 1ST 2 DIGITS IN A, LAST ONE IN B |
|       | 75220 | 000364 |         |           |                                  |
| 0455  | 75221 | 074040 | STB     | LTEMP+8   |                                  |
| 0456  | 75222 | 017434 | JSB     | UDINM     | OUTPUT FIRST 2                   |
| 0457  | 75223 | 060040 | LDA     | LTEMP+8   | GET LAST ONE                     |
| 0458  | 75224 | 040432 | AOA     | +.60B     | CONVERT TO ASCII                 |
| 0459  | 75225 | 016132 | JSB     | LOUT      | AND OUTPUT                       |
| 0460  | 75226 | 060431 | LDA     | +.57B     | '/'                              |
| 0461  | 75227 | 016132 | JSB     | LOUT      |                                  |
| 0462  | 75230 | 160035 | LDA     | LTEMP+5,I |                                  |
| 0463  | 75231 | 001727 | ALF,ALF |           | POSITION                         |
| 0464  | 75232 | 001300 | RAR     |           | YEAR AND                         |
| 0465  | 75233 | 010441 | AND     | B177      | MASK                             |
| 0466  | 75234 | 017434 | JSB     | UDINM     | OUTPUT IT                        |
| 0467* |       |        |         |           |                                  |
| 0468  | 75235 | 063512 | LDA     | UDISS     | 2 BLANKS                         |
| 0469  | 75236 | 017447 | JSB     | UDIOW     |                                  |
| 0470  | 75237 | 064035 | LDB     | LTEMP+5   |                                  |
| 0471  | 75240 | 044347 | AOB     | .-3       | => SECOND WORD OF NAME           |
| 0472  | 75241 | 160001 | LDA     | B,I       |                                  |
| 0473  | 75242 | 006034 | INB     |           |                                  |
| 0474  | 75243 | 002021 | SSA,RSS |           | FILE?                            |
| 0475  | 75244 | 027247 | JMP     | UDI10     | NO                               |
| 0476  | 75245 | 063513 | LDA     | UDIRF     | YES, GET AN 'F'                  |
| 0477  | 75246 | 027255 | JMP     | UDI11     |                                  |
| 0478  | 75247 |        | UDI10   | EQU *     |                                  |
| 0479  | 75247 | 160001 | LDA     | B,I       |                                  |
| 0480  | 75250 | 002021 | SSA,RSS |           | SEMI-COMPILED?                   |
| 0481  | 75251 | 027254 | JMP     | UDI11-1   | NO                               |
| 0482  | 75252 | 063514 | LDA     | UDIRC     | YES, GET A 'C'                   |
| 0483  | 75253 | 002001 | RSS     |           |                                  |
| 0484  | 75254 | 060412 | LDA     | +.40B     | A BLANK                          |
| 0485  | 75255 |        | UDI11   | EQU *     |                                  |
| 0486  | 75255 | 044350 | AOB     | .-2       |                                  |
| 0487  | 75256 | 074035 | STB     | LTEMP+6   | => 1ST WORD OF NAME              |
| 0488  | 75257 | 016132 | JSB     | LOUT      | OUTPUT A CHAR                    |
| 0489  | 75260 | 164035 | LDB     | LTEMP+5,I |                                  |
| 0490  | 75261 | 006021 | SSB,RSS |           | PROTECTED?                       |
| 0491  | 75262 | 027265 | JMP     | ++3       | NO                               |
| 0492  | 75263 | 063515 | LDA     | UDIRP     | YES, GET A 'P'                   |
| 0493  | 75264 | 002001 | RSS     |           |                                  |
| 0494  | 75265 | 060412 | LDA     | +.40B     | A BLANK                          |
| 0495  | 75266 | 016132 | JSB     | LOUT      | OUTPUT CHAR                      |

|       |       |        |               |                                |
|-------|-------|--------|---------------|--------------------------------|
| 0496  | 75267 | 060412 | LDA .+40B     | A BLANK                        |
| 0497  | 75270 | 016132 | JSB LOUT      |                                |
| 0498* |       |        |               |                                |
| 0499  | 75271 | 064035 | LDB LTEMP+5   |                                |
| 0500  | 75272 | 044364 | ADB .+10      | => LENGTH                      |
| 0501  | 75273 | 160001 | LDA B,I       |                                |
| 0502  | 75274 | 044347 | ADB .-3       |                                |
| 0503  | 75275 | 074035 | STB LTEMP+5   |                                |
| 0504  | 75276 | 002020 | SSA           | COMPLEMENT                     |
| 0505  | 75277 | 003004 | CMA,INA       | IF NEGATIVE                    |
| 0506  | 75300 | 006400 | CLB           |                                |
| 0507  | 75301 | 100400 | DIV DVRS      | FIRST DIGIT IN A, LAST 4 IN B  |
|       | 75302 | 001032 |               |                                |
| 0508  | 75303 | 074040 | STB LTEMP+8   |                                |
| 0509  | 75304 | 040432 | ADA .+60B     | CONVERT TO ASCII               |
| 0510  | 75305 | 016132 | JSB LOUT      | AND OUTPUT                     |
| 0511  | 75306 | 060040 | LDA LTEMP+8   |                                |
| 0512  | 75307 | 006400 | CLB           |                                |
| 0513  | 75310 | 100400 | DIV .100      | DIGITS 2-3 IN A, 4-5 IN B      |
|       | 75311 | 000437 |               |                                |
| 0514  | 75312 | 074040 | STB LTEMP+8   |                                |
| 0515  | 75313 | 017434 | JSB UDINM     | OUTPUT 2-3                     |
| 0516  | 75314 | 060040 | LDA LTEMP+8   |                                |
| 0517  | 75315 | 017434 | JSB UDINM     | OUTPUT 4-5                     |
| 0518* |       |        |               |                                |
| 0519  | 75316 | 063512 | LDA UDISS     | 2 BLANKS                       |
| 0520  | 75317 | 017447 | JSB UDIOW     |                                |
| 0521  | 75320 | 164035 | LDB LTEMP+5,I | GET                            |
| 0522  | 75321 | 034035 | ISZ LTEMP+5   | DISC                           |
| 0523  | 75322 | 160035 | LDA LTEMP+5,I | ADDRESS                        |
| 0524  | 75323 | 100400 | DIV DVRS      | 1ST 2 DIGITS IN A, LAST 4 IN B |
|       | 75324 | 001032 |               |                                |
| 0525  | 75325 | 074040 | STB LTEMP+8   |                                |
| 0526  | 75326 | 017434 | JSB UDINM     | OUTPUT FIRST 2                 |
| 0527  | 75327 | 060040 | LDA LTEMP+8   |                                |
| 0528  | 75330 | 006400 | CLB           |                                |
| 0529  | 75331 | 100400 | DIV .100      | DIGITS 3-4 IN A, 5-6 IN B      |
|       | 75332 | 000437 |               |                                |
| 0530  | 75333 | 074040 | STB LTEMP+8   |                                |
| 0531  | 75334 | 017434 | JSB UDINM     | OUTPUT 3-4                     |
| 0532  | 75335 | 060040 | LDA LTEMP+8   |                                |
| 0533  | 75336 | 017434 | JSB UDINM     | OUTPUT 5-6                     |
| 0534* |       |        |               |                                |
| 0535  | 75337 | 064035 | LDB LTEMP+5   |                                |
| 0536  | 75340 | 044350 | ADB .-2       |                                |
| 0537  | 75341 | 074035 | STB LTEMP+5   | => DRUM ADDRESS                |
| 0538  | 75342 | 160035 | LDA LTEMP+5,I |                                |
| 0539  | 75343 | 002003 | SZA,RSS       |                                |
| 0540  | 75344 | 027376 | JMP UDI12     | SKIP PRINTING IF ZERO          |
| 0541  | 75345 | 063512 | LDA UDISS     | 2 BLANKS                       |
| 0542  | 75346 | 017447 | JSB UDIOW     |                                |
| 0543  | 75347 | 160035 | LDA LTEMP+5,I |                                |
| 0544  | 75350 | 001222 | RAL,RAL       | DRUM NUMBER                    |
| 0545  | 75351 | 010355 | AND .+3       | IN LOWEST 2 BITS               |
| 0546  | 75352 | 040432 | ADA .+60B     | CONVERT TO ASCII               |

|       |       |                  |          |                         |                             |
|-------|-------|------------------|----------|-------------------------|-----------------------------|
| 0547  | 75353 | 016132           | JSB      | LOUT                    | AND OUTPUT                  |
| 0548  | 75354 | 060431           | LDA      | .,+57B                  | '/'                         |
| 0549  | 75355 | 016132           | JSB      | LOUT                    |                             |
| 0550  | 75356 | 160036           | LDA      | LTEMP+5,I               |                             |
| 0551  | 75357 | 001727           | ALF      | ,ALF                    | TRACK NUMBER IN             |
| 0552  | 75360 | 010734           | AND      | B77                     | LOWEST 6 BITS               |
| 0553  | 75361 | 017434           | JSB      | UDINM                   | OUTPUT IT                   |
| 0554  | 75362 | 060431           | LDA      | .,+57B                  | '/'                         |
| 0555  | 75363 | 016132           | JSB      | LOUT                    |                             |
| 0556  | 75364 | 160036           | LDA      | LTEMP+5,I               | SECTOR NUMBER IN            |
| 0557  | 75365 | 010441           | AND      | B177                    | LOWEST 8 BITS               |
| 0558  | 75366 | 006400           | CLB      |                         |                             |
| 0559  | 75367 | 100400           | DIV      | .100                    | 1ST DIGIT IN A, LAST 2 IN B |
|       | 75370 | 000437           |          |                         |                             |
| 0560  | 75371 | 074040           | STB      | LTEMP+8                 |                             |
| 0561  | 75372 | 040432           | ADA      | .,+60B                  | CONVERT 1ST DIGIT           |
| 0562  | 75373 | 016132           | JSB      | LOUT                    | TO ASCII AND OUTPUT         |
| 0563  | 75374 | 060040           | LDA      | LTEMP+8                 | DVT PUT LAST 2              |
| 0564  | 75375 | 017434           | JSB      | UDINM                   |                             |
| 0565  | 75376 |                  | UDI12    | EQU *                   |                             |
| 0566  | 75376 | 060375           | LDA      | .,+23B                  | X=OFF                       |
| 0567  | 75377 | 016132           | JSB      | LOUT                    |                             |
| 0568  | 75400 | 060367           | LDA      | .,+15B                  | CR                          |
| 0569  | 75401 | 016132           | JSB      | LOUT                    |                             |
| 0570  | 75402 | 060364           | LDA      | .,+12B                  | LF                          |
| 0571  | 75403 | 016132           | JSB      | LOUT                    |                             |
| 0572  | 75404 | 116023           | JSB      | SCHOU,I                 | SUSPEND                     |
| 0573  | 75405 | 064520           | LDB      | DLTEM                   | MOVE NAME                   |
| 0574  | 75406 | 074051           | STB      | MOVED                   |                             |
| 0575  | 75407 | 064273           | LDB      | MLINK+1                 | FROM TTY                    |
| 0576  | 75410 | 044354           | ADB      | .,+?RTIM=?LINK          |                             |
| 0577  | 75411 | 074050           | STB      | MOVES                   | TABLE TO                    |
| 0578  | 75412 | 064346           | LDB      | .,=4                    |                             |
| 0579  | 75413 | 016257           | JSB      | MOVEW                   | LTEMP{0:3}                  |
| 0580  | 75414 | 027074           | JMP      | UDIR4                   |                             |
| 0581  | 75415 |                  | UDI13    | EQU *                   |                             |
| 0582  | 75415 | 060324           | LDA      | .,=22                   |                             |
| 0583  | 75416 | 067420           | LDB      | .,+2                    |                             |
| 0584  | 75417 | 026432           | JMP      | LIBER                   |                             |
| 0585  | 75420 | 075421           | DEF      | .,+1                    |                             |
| 0586  | 75421 | 006412           | OCT      | 6412                    |                             |
| 0587  | 75422 | 041501           | ASC      | 10,CAN'T READ DIRECTORY |                             |
|       | 75423 | 047047           |          |                         |                             |
|       | 75424 | 052040           |          |                         |                             |
|       | 75425 | 051105           |          |                         |                             |
|       | 75426 | 040504           |          |                         |                             |
|       | 75427 | 020104           |          |                         |                             |
|       | 75430 | 044522           |          |                         |                             |
|       | 75431 | 042503           |          |                         |                             |
|       | 75432 | 052117           |          |                         |                             |
|       | 75433 | 051131           |          |                         |                             |
| 0588* |       |                  |          |                         |                             |
| 0589* | UDINM | CONVERTS A #<100 | TO ASCII | AND OUTPUTS IT          |                             |
| 0590* |       |                  |          |                         |                             |
| 0591  | 75434 | 000000           | UDINM    | NOP                     |                             |

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0592 75435 006400 CLB
0593 75436 100400 DIV ,+10
 75437 000364
0594 75440 074043 STB LTEMP+11
0595 75441 040432 ADA ,+60B
0596 75442 016132 JSB LOUT
0597 75443 060043 LDA LTEMP+11
0598 75444 040432 ADA ,+60B
0599 75445 016132 JSB LOUT
0600 75446 127434 JMP UDINM,I
0601*
0602* UDLOW OUTPUTS THE TWO CHARACTERS OF A WORD
0603*
0604 75447 000000 UDLOW NOP
0605 75450 070043 STA LTEMP+11
0606 75451 001727 ALF,ALF
0607 75452 010443 AND B377
0608 75453 016132 JSB LOUT
0609 75454 060043 LDA LTEMP+11
0610 75455 010443 AND B377
0611 75456 016132 JSB LOUT
0612 75457 127447 JMP UDLOW,I
0613 75460 005040 UDIHD OCT 5040 LF=BLANK
0614 75461 044504 ASC 9,ID NAME DATE
 75462 020040
 75463 020040
 75464 047101
 75465 046505
 75466 020040
 75467 020040
 75470 042101
 75471 052105
0615 75472 020040 ASC 13, LENGTH DISC DRU
 75473 020040
 75474 020114
 75475 042516
 75476 043524
 75477 044040
 75500 020040
 75501 042111
 75502 051503
 75503 020040
 75504 020040
 75505 020104
 75506 051125
0616 75507 046423 OCT 46423 M=XOFF
0617 75510 006412 OCT 6412 CR=LF
0618 75511 075460 UDHDA DEF UDIHD
0619 75512 020040 UDISS ASC 1,
0620 75513 000106 UDIRF OCT 106
0621 75514 000103 UDIRC OCT 103
0622 75515 000120 UDIRP OCT 120
0623 75516 SDIRS EQU *
```

0625\* SDIRECTORY IS AVAILABLE TO USER A000 AND CAUSES THE SAME PRINTOUT  
0626\* AS DIRECTORY, EXCEPT THAT ONLY SANCTIFIED PROGRAMS AND FILES  
0627\* (THOSE CURRENTLY RESIDING ON THE DRUM) ARE LISTED. SDIRECTORY  
0628\* MUST FOLLOW DIRECTORY.

|      |       |        |             |                      |
|------|-------|--------|-------------|----------------------|
| 0629 | 75000 |        | ORG LIBRA   |                      |
| 0630 | 75000 | 064273 | LOB MLINK+1 |                      |
| 0631 | 75123 |        | ORG UDIR6   |                      |
| 0632 | 75123 | 060035 | LDA LTEMP+5 | IS                   |
| 0633 | 75124 | 040361 | ADA .+7     | THIS                 |
| 0634 | 75125 | 160000 | LDA A,I     | ENTRY                |
| 0635 | 75126 | 002003 | SZA,RSS     | SANCTIFIED?          |
| 0636 | 75127 | 027076 | JMP UDIR5   | NO, LOOK AT NEXT ONE |

0002\* THE REPORT COMMAND IS AVAILABLE TO USER A000 AND CAUSES IDT INFO  
 0003\* TO BE LISTED ON THE USER CONSOLE. EACH USER ID IS LISTED, ALONG  
 0004\* WITH THE DISC AND TIME USED TO DATE. DISC STORAGE IS LISTED IN  
 0005\* WORDS, AND TIME IS LISTED IN MINUTES.

0006\*

```

0007 75000 ORG LIBRA
0008 75000 064273 LDB MLINK+1
0009 75001 044341 ADB ,+?ID=?LINK
0010 75002 160001 LDA B,I GET ID
0011 75003 050612 CPA A000 A000?
0012 75004 027023 JMP UREP1 YES
0013 75005 060327 LDA ,=19 NO, NOT ALLOWED
0014 75006 067010 LDB ++2
0015 75007 026432 JMP LIBER
0016 75010 075011 DEF ++1
0017 75011 005120 OCT 5120
0018 75012 051111 ASC 9,RIVILEGED COMMAND

```

```

75013 053111
75014 046105
75015 043505
75016 042040
75017 041517
75020 046515
75021 040516
75022 042040

```

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0019 75023 UREP1 EQU *
0020 75023 002404 CLA,INA DEFAULT ID
0021 75024 070052 STA ID OF 1=1
0022 75025 016164 JSB LCHAR GET FIRST CR
0023 75026 027036 JMP UREP2 CR
0024 75027 064273 LDB MLINK+1
0025 75030 044336 ADB ,+?TNUM=?LINK
0026 75031 160001 LDA B,I BACKSPACE
0027 75032 030251 IOR BKS IN BUFFER
0028 75033 114500 JSB S14SC,I
0029 75034 016315 JSB GETID GET THE STARTING ID
0030 75035 026430 JMP ILFER
0031 75036 UREP2 EQU *
0032 75036 060052 LDA ID SAVE STARTING
0033 75037 064273 LDB MLINK+1 ID
0034 75040 044354 ADB ,+?RTIM=?LINK
0035 75041 170001 STA B,I
0036 75042 116022 JSB UHDBA,I OUTPUT HEADING
0037 75043 116023 JSB SCHOU,I AND SUSPEND
0038*
0039 75044 063353 LDA UREJ0 30 WORDS
0040 75045 070040 STA LTEMP+8 IN HEADING
0041 75046 063314 LDA URHDA => FIRST ONE
0042 75047 070041 STA LTEMP+9
0043 75050 UREP3 EQU *
0044 75050 160041 LDA LTEMP+9,I OUTPUT
0045 75051 001727 ALF,ALF
0046 75052 010443 AND B377
0047 75053 015132 JSB LOUT REPORT
0048 75054 160041 LDA LTEMP+9,I

```



|       |       |        |       |         |                                   |
|-------|-------|--------|-------|---------|-----------------------------------|
| 0049  | 75055 | 010443 | AND   | B377    |                                   |
| 0050  | 75056 | 016132 | JSB   | LOUT    | HEADING                           |
| 0051  | 75057 | 034041 | ISZ   | LTEMP+9 |                                   |
| 0052  | 75060 | 034040 | ISZ   | LTEMP+8 |                                   |
| 0053  | 75061 | 027050 | JMP   | UREP3   | AND SUSPEND                       |
| 0054  | 75062 | 116023 | JSB   | SCHOU,I |                                   |
| 0055* |       |        |       |         |                                   |
| 0056  | 75063 |        | URE22 | EQU *   |                                   |
| 0057  | 75063 | 064273 |       | LDB     | MLINK+1                           |
| 0058  | 75064 | 044354 |       | ADB     | .+?RTIM-?LINK                     |
| 0059  | 75065 | 160001 |       | LDA     | B,I RETRIEVE                      |
| 0060  | 75066 | 070052 |       | STA     | ID STARTING ID                    |
| 0061  | 75067 | 016370 |       | JSB     | GTIL FIND WHAT TRACK IT'S ON      |
| 0062  | 75070 | 060347 |       | LDA     | .-3 3 ID'S                        |
| 0063  | 75071 | 070035 |       | STA     | LTEMP+5 PER LINE                  |
| 0064  | 75072 | 060076 |       | LDA     | IDLNP GET POINTER TO LENGTH WORD  |
| 0065  | 75073 |        | UREP4 | EQU *   |                                   |
| 0066  | 75073 | 070030 |       | STA     | LTEMP SAVE LIVE TABLE ENTRY       |
| 0067  | 75074 | 164000 |       | LDB     | A,I GET TRACK LENGTH              |
| 0068  | 75075 | 006002 |       | SZB     | SKIP IF ZERO                      |
| 0069  | 75076 | 027103 |       | JMP     | UREP5                             |
| 0070  | 75077 |        | URE21 | EQU *   |                                   |
| 0071  | 75077 | 053354 |       | CPA     | URDCL LAST ID TRACK?              |
| 0072  | 75100 | 027256 |       | JMP     | URE15                             |
| 0073  | 75101 | 040355 |       | ADA     | .+3 NO, ADVANCE TO NEXT ONE       |
| 0074  | 75102 | 027073 |       | JMP     | UREP4                             |
| 0075  | 75103 |        | UREP5 | EQU *   |                                   |
| 0076  | 75103 | 074072 |       | STB     | WORD SAVE ACTUAL LENGTH           |
| 0077  | 75104 | 007004 |       | CMB     | ,INB                              |
| 0078  | 75105 | 044562 |       | ADB     | LIBD MAKE POINTER TO LAST ENTRY+1 |
| 0079  | 75106 | 074032 |       | STB     | LTEMP+2                           |
| 0080  | 75107 | 003400 |       | CCA     |                                   |
| 0081  | 75110 | 040030 |       | ADA     | LTEMP                             |
| 0082  | 75111 | 160000 |       | LDA     | A,I GET DRUM ADDRESS              |
| 0083  | 75112 | 064566 |       | LDB     | LIBDI                             |
| 0084  | 75113 | 016231 |       | JSB     | DRUML READ IT IN                  |
| 0085  | 75114 | 116015 |       | JSB     | SICKP,I                           |
| 0086  | 75115 | 060562 |       | LDA     | LIBD                              |
| 0087  | 75116 |        | UREP6 | EQU *   |                                   |
| 0088  | 75116 | 050032 |       | CPA     | LTEMP+2 CHECK FOR END             |
| 0089  | 75117 | 027127 |       | JMP     | URE25 NOT ON THIS TRACK           |
| 0090  | 75120 | 164000 |       | LDB     | A,I GET ID                        |
| 0091  | 75121 | 007000 |       | CMB     |                                   |
| 0092  | 75122 | 044052 |       | ADB     | ID                                |
| 0093  | 75123 | 006020 |       | SSB     | ARE WE PAST YET?                  |
| 0094  | 75124 | 027144 |       | JMP     | UREP9                             |
| 0095  | 75125 | 040362 |       | ADA     | .+8                               |
| 0096  | 75126 | 027116 |       | JMP     | UREP6                             |
| 0097  | 75127 |        | URE25 | EQU *   |                                   |
| 0098  | 75127 | 060030 |       | LDA     | LTEMP                             |
| 0099  | 75130 | 027077 |       | JMP     | URE21                             |
| 0100  | 75131 |        | URE11 | EQU *   |                                   |
| 0101  | 75131 | 074072 |       | STB     | WORD SAVE LENGTH                  |
| 0102  | 75132 | 007004 |       | CMB     | ,INB                              |
| 0103  | 75133 | 044562 |       | ADB     | LIBD MAKE POINTER TO LAST WORD +1 |

|       |       |        |       |               |                             |
|-------|-------|--------|-------|---------------|-----------------------------|
| 0104  | 75134 | 074032 | STB   | LTEMP+2       |                             |
| 0105  | 75135 | 003400 | CCA   |               |                             |
| 0106  | 75136 | 040030 | ADA   | LTEMP         |                             |
| 0107  | 75137 | 160000 | LDA   | A,I           | DRUM ADDRESS                |
| 0108  | 75140 | 064566 | LDB   | LIBDI         | CORE ADDRESS                |
| 0109  | 75141 | 016231 | JSB   | DRUML         |                             |
| 0110  | 75142 | 116015 | JSB   | SICKP,I       |                             |
| 0111  | 75143 | 060562 | LDA   | LIBD          |                             |
| 0112* |       |        |       |               |                             |
| 0113  | 75144 |        | UREP0 | EQU *         |                             |
| 0114  | 75144 | 070034 | STA   | LTEMP+4       |                             |
| 0115  | 75145 | 160034 | LDA   | LTEMP+4,I     | GET ID                      |
| 0116  | 75146 | 064273 | LDB   | MLINK+1       |                             |
| 0117  | 75147 | 044354 | ADB   | .+?RTIM-?LINK |                             |
| 0118  | 75150 | 170001 | STA   | B,I           | SAVE ID                     |
| 0119  | 75151 | 001121 | ARS   | ARS           | SHIFT                       |
| 0120  | 75152 | 001727 | ALF   | ALF           | LETTER                      |
| 0121  | 75153 | 010411 | AND   | .+37B         | TO 4.0                      |
| 0122  | 75154 | 040772 | ADA   | B100          | ASCII OFFSET                |
| 0123  | 75155 | 016132 | JSB   | LOUT          | OUTPUT IT                   |
| 0124  | 75156 | 160034 | LDA   | LTEMP+4,I     | GET ID AGAIN                |
| 0125  | 75157 | 010602 | AND   | B1777         | MASK NUMBER PART            |
| 0126  | 75160 | 006400 | CLB   |               |                             |
| 0127  | 75161 | 100400 | DIV   | .100          | 1ST DIGIT IN A, LAST 2 IN B |
|       | 75162 | 000437 |       |               |                             |
| 0128  | 75163 | 074040 | STB   | LTEMP+8       |                             |
| 0129  | 75164 | 040432 | ADA   | .+60B         |                             |
| 0130  | 75165 | 016132 | JSB   | LOUT          | OUTPUT 1ST                  |
| 0131  | 75166 | 060040 | LDA   | LTEMP+8       |                             |
| 0132  | 75167 | 017261 | JSB   | URENM         | OUTPUT LAST 2               |
| 0133  | 75170 | 060034 | LDA   | LTEMP+4       | => TIME                     |
| 0134  | 75171 | 040357 | ADA   | .+5           | USED                        |
| 0135  | 75172 | 070034 | STA   | LTEMP+4       | AREA                        |
| 0136  | 75173 | 060412 | LDA   | .+40B         | BLANK                       |
| 0137  | 75174 | 016132 | JSB   | LOUT          |                             |
| 0138  | 75175 | 160034 | LDA   | LTEMP+4,I     | GET TIME                    |
| 0139  | 75176 | 017274 | JSB   | URETR         | OUTPUT IT                   |
| 0140  | 75177 | 034034 | ISZ   | LTEMP+4       | => DISC                     |
| 0141  | 75200 | 034034 | ISZ   | LTEMP+4       | USED                        |
| 0142  | 75201 | 060412 | LDA   | .+40B         | BLANK                       |
| 0143  | 75202 | 016132 | JSB   | LOUT          |                             |
| 0144  | 75203 | 160034 | LDA   | LTEMP+4,I     | GET DISC                    |
| 0145  | 75204 | 017274 | JSB   | URETR         | OUTPUT IT                   |
| 0146  | 75205 | 060412 | LDA   | .+40B         | FOUR                        |
| 0147  | 75206 | 016132 | JSB   | LOUT          |                             |
| 0148  | 75207 | 060412 | LDA   | .+40B         |                             |
| 0149  | 75210 | 016132 | JSB   | LOUT          | BLANKS                      |
| 0150  | 75211 | 060412 | LDA   | .+40B         |                             |
| 0151  | 75212 | 016132 | JSB   | LOUT          |                             |
| 0152  | 75213 | 060412 | LDA   | .+40B         |                             |
| 0153  | 75214 | 016132 | JSB   | LOUT          |                             |
| 0154  | 75215 | 060034 | LDA   | LTEMP+4       |                             |
| 0155  | 75216 | 002004 | INA   |               | BUMP TO NEXT ID             |
| 0156  | 75217 | 050032 | CPA   | LTEMP+2       | DONE?                       |
| 0157  | 75220 | 002001 | RSS   |               | YES                         |

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0158 75221 027247 JMP URE12 NO, GO CHECK FOR ROOM
0159 75222 URE10 EQU *
0160 75222 060030 LDA LTEMP NO, LAST
0161 75223 053354 CPA URDCL ID TRACK?
0162 75224 027252 JMP URE14 YES, DONE
0163 75225 040355 ADA .+3 NO, ADVANCE TO
0164 75226 070030 STA LTEMP NEXT IDEC ENTRY
0165 75227 164000 LDB A,I GET COUNT ON THIS TRACK
0166 75230 006003 SZB,RSS IF ZERO, CHECK
0167 75231 027222 JMP URE10 NEXT ONE
0168 75232 034035 ISZ LTEMP+5 ANY ROOM LEFT ON LINE
0169 75233 027131 JMP URE11 YES
0170 75234 URE13 EQU *
0171 75234 060375 LDA .+23B XOFF
0172 75235 016132 JSB LOUT
0173 75236 060367 LDA .+15B CR
0174 75237 016132 JSB LOUT
0175 75240 060364 LDA .+12B LF
0176 75241 016132 JSB LOUT
0177 75242 064273 LDB MLINK+1
0178 75243 044354 ADB .+?RTIM=?LINK
0179 75244 134001 ISZ B,I BUMP ID
0180 75245 116023 JSB SCHOU,I SUSPEND
0181 75246 027063 JMP URE22
0182 75247 URE12 EQU *
0183 75247 034035 ISZ LTEMP+5 END OF LINE
0184 75250 027144 JMP UREP9 NO, DO ANOTHER ENTRY
0185 75251 027234 JMP URE13 YES, GO SUSPEND
0186 75252 URE14 EQU *
0187 75252 060375 LDA .+23B X=OFF
0188 75253 016132 JSB LOUT
0189 75254 060367 LDA .+15B CR
0190 75255 016132 JSB LOUT
0191 75256 URE15 EQU *
0192 75256 060364 LDA .+12B LF
0193 75257 016132 JSB LOUT
0194 75260 026226 JMP LLEND LF AND END
0195*
0196* URENM CONVERTS * #<100 TO ASCII AND OUTPUTS IT
0197*
0198 75261 000000 URENM NOP
0199 75262 006400 CLB
0200 75263 100400 DIV .+10
 75264 000364
0201 75265 074043 STB LTEMP+11
0202 75266 040432 ADA .+60B
0203 75267 016132 JSB LOUT
0204 75270 060043 LDA LTEMP+11
0205 75271 040432 ADA .+60B
0206 75272 016132 JSB LOUT
0207 75273 127261 JMP URENM,I
0208*
0209* URETR OUTPUTS A 5-DIGIT NUMBER
0210*
0211 75274 000000 URETR NOP

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|      |       |        |       |     |          |        |       |               |
|------|-------|--------|-------|-----|----------|--------|-------|---------------|
| 0212 | 75275 | 006400 |       | CLB |          |        |       |               |
| 0213 | 75276 | 100400 |       | DIV | DVSRS    |        |       |               |
|      | 75277 | 001032 |       |     |          |        |       |               |
| 0214 | 75300 | 074044 |       | STB | LTEMP+12 |        |       |               |
| 0215 | 75301 | 040432 |       | ADA | .+60B    |        |       |               |
| 0216 | 75302 | 016132 |       | JSB | LUUT     | 1ST    | DIGIT |               |
| 0217 | 75303 | 060044 |       | LDA | LTEMP+12 |        |       |               |
| 0218 | 75304 | 006400 |       | CLB |          |        |       |               |
| 0219 | 75305 | 100400 |       | DIV | .100     |        |       |               |
|      | 75306 | 000437 |       |     |          |        |       |               |
| 0220 | 75307 | 074044 |       | STB | LTEMP+12 |        |       |               |
| 0221 | 75310 | 017261 |       | JSB | URENM    | DIGITS | 2=3   |               |
| 0222 | 75311 | 060044 |       | LDA | LTEMP+12 |        |       |               |
| 0223 | 75312 | 017261 |       | JSB | URENM    | DIGITS | 4=5   |               |
| 0224 | 75313 | 127274 |       | JMP | URETR,1  |        |       |               |
| 0225 | 75314 | 075315 | URHDA | DEF | URPHD    |        |       |               |
| 0226 | 75315 | 005040 | URPHD | OCT | 5040     |        |       |               |
| 0227 | 75316 | 044504 |       | ASC | 20,ID    | TIME   | SPACE | ID TIME SPACE |
|      | 75317 | 020040 |       |     |          |        |       |               |
|      | 75320 | 052111 |       |     |          |        |       |               |
|      | 75321 | 046505 |       |     |          |        |       |               |
|      | 75322 | 020040 |       |     |          |        |       |               |
|      | 75323 | 051520 |       |     |          |        |       |               |
|      | 75324 | 040503 |       |     |          |        |       |               |
|      | 75325 | 042440 |       |     |          |        |       |               |
|      | 75326 | 020040 |       |     |          |        |       |               |
|      | 75327 | 020040 |       |     |          |        |       |               |
|      | 75330 | 044504 |       |     |          |        |       |               |
|      | 75331 | 020040 |       |     |          |        |       |               |
|      | 75332 | 052111 |       |     |          |        |       |               |
|      | 75333 | 046505 |       |     |          |        |       |               |
|      | 75334 | 020040 |       |     |          |        |       |               |
|      | 75335 | 051520 |       |     |          |        |       |               |
|      | 75336 | 046503 |       |     |          |        |       |               |
|      | 75337 | 042440 |       |     |          |        |       |               |
|      | 75340 | 020040 |       |     |          |        |       |               |
|      | 75341 | 020040 |       |     |          |        |       |               |
| 0228 | 75342 | 044504 |       | ASC | 7,ID     | TIME   | SPAC  |               |
|      | 75343 | 020040 |       |     |          |        |       |               |
|      | 75344 | 052111 |       |     |          |        |       |               |
|      | 75345 | 046505 |       |     |          |        |       |               |
|      | 75346 | 020040 |       |     |          |        |       |               |
|      | 75347 | 051520 |       |     |          |        |       |               |
|      | 75350 | 040503 |       |     |          |        |       |               |
| 0229 | 75351 | 042423 |       | OCT | 042423   | E=XUFF |       |               |
| 0230 | 75352 | 006412 |       | OCT | 6412     | LR=LF  |       |               |
| 0231 | 75353 | 177742 | URE30 | DEC | =30      |        |       |               |
| 0232 | 75354 | 000110 | URDCL | DEF | IDEC+8   |        |       |               |
| 0233 | 75355 |        | SREPS | EQU | *        |        |       |               |

0235\* THE STATUS COMMAND, AVAILABLE TO USER A000, PRINTS A SUMMARY OF  
 0236\* SYSTEM RESOURCES, AND THE EXTENT OF THEIR UTILIZATION, ON THE  
 0237\* USER CONSOLE.

0238\*

|       |       |        |                         |                    |
|-------|-------|--------|-------------------------|--------------------|
| 0239  | 75000 |        | ORG LIBRA               |                    |
| 0240  | 75000 | 064273 | LDB MLINK+1             |                    |
| 0241  | 75001 | 044341 | ADB .+?ID=?LINK         |                    |
| 0242  | 75002 | 160001 | LDA B,I                 | GET ID             |
| 0243  | 75003 | 050612 | CPA A000                | A000?              |
| 0244  | 75004 | 027023 | JMP USTA0               | YES                |
| 0245  | 75005 | 060327 | LDA .-19                | NO, NOT ALLOWED    |
| 0246  | 75006 | 067010 | LDB ++2                 |                    |
| 0247  | 75007 | 026432 | JMP LIBER               |                    |
| 0248  | 75010 | 075011 | DEF ++1                 |                    |
| 0249  | 75011 | 005120 | OCT 5120                |                    |
| 0250  | 75012 | 051111 | ASC 9,RIVILEGED COMMAND |                    |
|       | 75013 | 053111 |                         |                    |
|       | 75014 | 046105 |                         |                    |
|       | 75015 | 043505 |                         |                    |
|       | 75016 | 042040 |                         |                    |
|       | 75017 | 041517 |                         |                    |
|       | 75020 | 046515 |                         |                    |
|       | 75021 | 040516 |                         |                    |
|       | 75022 | 042040 |                         |                    |
| 0251  | 75023 |        | USTA0 EQU *             |                    |
| 0252  | 75023 | 116022 | JSB UHDBA,I             | PRINT HEADING      |
| 0253  | 75024 | 116023 | JSB SCHOU,I             | AND SUSPEND        |
| 0254* |       |        |                         |                    |
| 0255  | 75025 | 017656 | JSB USTST               | LF,MAG#            |
| 0256  | 75026 | 005115 | OCT 5115                |                    |
| 0257  | 75027 | 040507 | ASC 2,AG#               |                    |
|       | 75030 | 036440 |                         |                    |
| 0258  | 75031 | 000000 | OCT 0                   |                    |
| 0259  | 75032 | 060176 | LDA MAGSC               | MAGTAPE            |
| 0260  | 75033 | 017701 | JSB USTOC               | SELECT CODE        |
| 0261  | 75034 | 064176 | LDB MAGSC               |                    |
| 0262  | 75035 | 060424 | LDA .+52B               | !+!                |
| 0263  | 75036 | 006020 | SSB                     | SKIP IF 3030       |
| 0264  | 75037 | 016132 | JSB LOUT                | SNOWFLAKE FOR 7970 |
| 0265  | 75040 | 017656 | JSB USTST               |                    |
| 0266  | 75041 | 020040 | ASC 4, DRUM#            |                    |
|       | 75042 | 042122 |                         |                    |
|       | 75043 | 052515 |                         |                    |
|       | 75044 | 036440 |                         |                    |
| 0267  | 75045 | 000000 | OCT 0                   |                    |
| 0268  | 75046 | 060346 | LDA .-4                 | DRUM               |
| 0269  | 75047 | 070036 | STA LTEMP+6             | COUNTER            |
| 0270  | 75050 |        | USTA1 EQU *             |                    |
| 0271  | 75050 | 060036 | LDA LTEMP+6             |                    |
| 0272  | 75051 | 040356 | ADA .+4                 |                    |
| 0273  | 75052 | 040676 | ADA ?ATBL               |                    |
| 0274  | 75053 | 160000 | LDA 0,I                 | GET SELECT CODE    |
| 0275  | 75054 | 010734 | AND B77                 | MASK AND           |
| 0276  | 75055 | 017701 | JSB USTOC               | OUTPUT             |
| 0277  | 75056 | 060412 | LDA .+40B               | BLANK              |

|      |       |        |     |             |            |        |       |       |
|------|-------|--------|-----|-------------|------------|--------|-------|-------|
| 0278 | 75057 | 016132 | JSB | LOUT        |            |        |       |       |
| 0279 | 75060 | 034036 | ISZ | LTEMP+6     | DONE?      |        |       |       |
| 0280 | 75061 | 027050 | JMP | USTA1       | NO         |        |       |       |
| 0281 | 75062 | 017745 | JSB | XCRFLF      |            |        |       |       |
| 0282 | 75063 | 116023 | JSB | SCHOU,I     | SUSPEND    |        |       |       |
| 0283 | 75064 | 017656 | JSB | USTST       |            |        |       |       |
| 0284 | 75065 | 005104 | OCT | 5104        | LF=D       |        |       |       |
| 0285 | 75066 | 044523 | ASC | 2,ISCS      |            |        |       |       |
|      | 75067 | 041523 |     |             |            |        |       |       |
| 0286 | 75070 | 011415 | OCT | 11415       | XOFF=CR    |        |       |       |
| 0287 | 75071 | 005040 | OCT | 5040        | LF=BLANK   |        |       |       |
| 0288 | 75072 | 020114 | ASC | 19, LOGICAL | SELECT     | UNIT   | FIRST | LAST  |
|      | 75073 | 047507 |     |             |            |        |       |       |
|      | 75074 | 044503 |     |             |            |        |       |       |
|      | 75075 | 040514 |     |             |            |        |       |       |
|      | 75076 | 020040 |     |             |            |        |       |       |
|      | 75077 | 051505 |     |             |            |        |       |       |
|      | 75100 | 045105 |     |             |            |        |       |       |
|      | 75101 | 041524 |     |             |            |        |       |       |
|      | 75102 | 020040 |     |             |            |        |       |       |
|      | 75103 | 020125 |     |             |            |        |       |       |
|      | 75104 | 047111 |     |             |            |        |       |       |
|      | 75105 | 052040 |     |             |            |        |       |       |
|      | 75106 | 020040 |     |             |            |        |       |       |
|      | 75107 | 043111 |     |             |            |        |       |       |
|      | 75110 | 051123 |     |             |            |        |       |       |
|      | 75111 | 052040 |     |             |            |        |       |       |
|      | 75112 | 020040 |     |             |            |        |       |       |
|      | 75113 | 046101 |     |             |            |        |       |       |
|      | 75114 | 051524 |     |             |            |        |       |       |
| 0289 | 75115 | 011415 | OCT | 11415       | X=OFF=CR   |        |       |       |
| 0290 | 75116 | 005040 | OCT | 5040        | LF=BLANK   |        |       |       |
| 0291 | 75117 | 020040 | ASC | 20, UNIT    | CODE       | NUMBER | BLOCK | BLOCK |
|      | 75120 | 052516 |     |             |            |        |       |       |
|      | 75121 | 044524 |     |             |            |        |       |       |
|      | 75122 | 020040 |     |             |            |        |       |       |
|      | 75123 | 020040 |     |             |            |        |       |       |
|      | 75124 | 020103 |     |             |            |        |       |       |
|      | 75125 | 047504 |     |             |            |        |       |       |
|      | 75126 | 042440 |     |             |            |        |       |       |
|      | 75127 | 020040 |     |             |            |        |       |       |
|      | 75130 | 047125 |     |             |            |        |       |       |
|      | 75131 | 046502 |     |             |            |        |       |       |
|      | 75132 | 042522 |     |             |            |        |       |       |
|      | 75133 | 020040 |     |             |            |        |       |       |
|      | 75134 | 041114 |     |             |            |        |       |       |
|      | 75135 | 047503 |     |             |            |        |       |       |
|      | 75136 | 045440 |     |             |            |        |       |       |
|      | 75137 | 020040 |     |             |            |        |       |       |
|      | 75140 | 041114 |     |             |            |        |       |       |
|      | 75141 | 047503 |     |             |            |        |       |       |
|      | 75142 | 045440 |     |             |            |        |       |       |
| 0292 | 75143 | 000000 | OCT | 0           |            |        |       |       |
| 0293 | 75144 | 017745 | JSB | XCRFLF      | XOFF=CR=LF |        |       |       |
| 0294 | 75145 | 116023 | JSB | SCHOU,I     | SUSPEND    |        |       |       |

|      |       |        |               |                     |
|------|-------|--------|---------------|---------------------|
| 0295 | 75146 | 002400 | CLA           | FOR LOGICAL         |
| 0296 | 75147 | 070030 | STA LTEMP     | DISC 0              |
| 0297 | 75150 |        | USTA4 EQU *   |                     |
| 0298 | 75150 | 060030 | LDA LTEMP     | FINISHED            |
| 0299 | 75151 | 050362 | CPA .+8       | ALL DISCS?          |
| 0300 | 75152 | 027266 | JMP USTA5     | YES                 |
| 0301 | 75153 | 100200 | MPY .+6       | NO                  |
|      | 75154 | 000360 |               |                     |
| 0302 | 75155 | 040210 | ADA MHAD      |                     |
| 0303 | 75156 | 040364 | ADA .+2       |                     |
| 0304 | 75157 | 164000 | LDB A,I       |                     |
| 0305 | 75160 | 164001 | LDB B,I       | GET SELECT CODE     |
| 0306 | 75161 | 006003 | SZB,RSS       |                     |
| 0307 | 75162 | 027264 | JMP USTA5-2   | SKIP IF ZERO        |
| 0308 | 75163 | 070031 | STA LTEMP+1   |                     |
| 0309 | 75164 | 017666 | JSB USTST     | 4 BLANKS            |
| 0310 | 75165 | 020040 | ASC 2,        |                     |
|      | 75166 | 020040 |               |                     |
| 0311 | 75167 | 000000 | OCT 0         |                     |
| 0312 | 75170 | 060412 | LDA .+40B     | BLANK               |
| 0313 | 75171 | 016132 | JSB LOUT      |                     |
| 0314 | 75172 | 060030 | LDA LTEMP     | LOGICAL DISC NUMBER |
| 0315 | 75173 | 017710 | JSB USTDG     |                     |
| 0316 | 75174 | 017666 | JSB USTST     | 6 BLANKS            |
| 0317 | 75175 | 020040 | ASC 3,        |                     |
|      | 75176 | 020040 |               |                     |
|      | 75177 | 020040 |               |                     |
| 0318 | 75200 | 000000 | OCT 0         |                     |
| 0319 | 75201 | 060412 | LDA .+40B     | BLANK               |
| 0320 | 75202 | 016132 | JSB LOUT      |                     |
| 0321 | 75203 | 160031 | LDA LTEMP+1,I |                     |
| 0322 | 75204 | 160000 | LDA A,I       |                     |
| 0323 | 75205 | 001727 | ALF,ALF       |                     |
| 0324 | 75206 | 010734 | AND B77       |                     |
| 0325 | 75207 | 017701 | JSB USTOC     | SELECT CODE         |
| 0326 | 75210 | 017666 | JSB USTST     | 6 BLANKS            |
| 0327 | 75211 | 020040 | ASC 3,        |                     |
|      | 75212 | 020040 |               |                     |
|      | 75213 | 020040 |               |                     |
| 0328 | 75214 | 000000 | OCT 0         |                     |
| 0329 | 75215 | 160031 | LDA LTEMP+1,I |                     |
| 0330 | 75216 | 160000 | LDA A,I       |                     |
| 0331 | 75217 | 010355 | AND .+3       |                     |
| 0332 | 75220 | 017710 | JSB USTDG     | UNIT NUMBER         |
| 0333 | 75221 | 017666 | JSB USTST     | 4 BLANKS            |
| 0334 | 75222 | 020040 | ASC 2,        |                     |
|      | 75223 | 020040 |               |                     |
| 0335 | 75224 | 000000 | OCT 0         |                     |
| 0336 | 75225 | 060412 | LDA .+40B     | BLANK               |
| 0337 | 75226 | 016132 | JSB LOUT      |                     |
| 0338 | 75227 | 060031 | LDA LTEMP+1   | GET SECTOR          |
| 0339 | 75230 | 040350 | ADA .-2       |                     |
| 0340 | 75231 | 164000 | LDB A,I       | ADDRESS OF          |
| 0341 | 75232 | 002004 | INA           |                     |
| 0342 | 75233 | 160000 | LOA A,I       | THIS DISC           |

|      |       |        |             |                    |
|------|-------|--------|-------------|--------------------|
| 0343 | 75234 | 004065 | CLE,ERB     | CONVERT            |
| 0344 | 75235 | 001540 | ERA,CLE     | TO BLOCKS          |
| 0345 | 75236 | 040356 | ADA ,+4     | FIRST AVAILABLE    |
| 0346 | 75237 | 002040 | SEZ         | BLOCK IS #4        |
| 0347 | 75240 | 006004 | INB         |                    |
| 0348 | 75241 | 017716 | JSB UST6D   | FIRST BLOCK        |
| 0349 | 75242 | 017656 | JSB USTST   | 2 BLANKS           |
| 0350 | 75243 | 020040 | ASC 1,      |                    |
| 0351 | 75244 | 000000 | OCT 0       |                    |
| 0352 | 75245 | 060031 | LDA LTEMP+1 | GET SECTOR         |
| 0353 | 75246 | 040356 | ADA ,+4     |                    |
| 0354 | 75247 | 164000 | LDB A,I     | ADDRESS OF         |
| 0355 | 75250 | 002004 | INA         |                    |
| 0356 | 75251 | 160000 | LDA A,I     | NEXT DISC          |
| 0357 | 75252 | 004065 | CLE,ERB     | CONVERT            |
| 0358 | 75253 | 001540 | ERA,CLE     | TO BLOCKS          |
| 0359 | 75254 | 040351 | ADA ,=1     | LAST BLOCK         |
| 0360 | 75255 | 002041 | SEZ,RSS     | IS 1 LESS          |
| 0361 | 75256 | 044351 | ADB ,=1     |                    |
| 0362 | 75257 | 017716 | JSB UST6D   | LAST BLOCK         |
| 0363 | 75260 | 017745 | JSB XCRLF   | XOFF=CR=LF         |
| 0364 | 75261 | 017755 | JSB USTSV   | SAVE VARIABLES     |
| 0365 | 75262 | 116023 | JSB SCHOU,I | SUSPEND            |
| 0366 | 75263 | 017766 | JSB USTRV   | RETRIEVE VARIABLES |
| 0367 | 75264 | 034030 | ISZ LTEMP   |                    |
| 0368 | 75265 | 027150 | JMP USTA4   |                    |
| 0369 | 75266 |        | EQU *       |                    |
| 0370 | 75266 | 017656 | JSB USTST   |                    |
| 0371 | 75267 | 005114 | OCT 5114    |                    |
| 0372 | 75270 | 047503 | ASC 9,OCKED | DRUM TRACKS        |
|      | 75271 | 045505 |             |                    |
|      | 75272 | 042040 |             |                    |
|      | 75273 | 042122 |             |                    |
|      | 75274 | 052515 |             |                    |
|      | 75275 | 020124 |             |                    |
|      | 75276 | 051101 |             |                    |
|      | 75277 | 041513 |             |                    |
|      | 75300 | 051440 |             |                    |
| 0373 | 75301 | 000000 | OCT 0       |                    |
| 0374 | 75302 | 017745 | JSB XCRLF   |                    |
| 0375 | 75303 | 002400 | CLA         |                    |
| 0376 | 75304 | 070030 | STA LTEMP   | TRACK # (0=63)     |
| 0377 | 75305 | 070032 | STA LTEMP+2 | DRUM # (0=3)       |
| 0378 | 75306 | 002404 | CLA,INA     |                    |
| 0379 | 75307 | 070031 | STA LTEMP+1 | MASK               |
| 0380 | 75310 |        | EQU *       |                    |
| 0381 | 75310 | 060676 | LDA ?ATBL   |                    |
| 0382 | 75311 | 040032 | ADA LTEMP+2 |                    |
| 0383 | 75312 | 164000 | LDB A,I     | IS DRUM            |
| 0384 | 75313 | 006003 | 8ZB,RSS     | PRESENT?           |
| 0385 | 75314 | 027410 | JMP UST15   | NO                 |
| 0386 | 75315 |        | EQU *       |                    |
| 0387 | 75315 | 002400 | CLA         | YES, INITIALIZE    |
| 0388 | 75316 | 070034 | STA LTEMP+4 | COUNT OF ENTRIES   |
| 0389 | 75317 |        | EQU *       |                    |



|      |       |        |       |         |                        |
|------|-------|--------|-------|---------|------------------------|
| 0390 | 75317 | 017604 | JSB   | USTTZ   | TEST THIS TRACK        |
| 0391 | 75320 | 002001 | RSS   |         | UNLOCKED               |
| 0392 | 75321 | 027325 | JMP   | USTA9   | LOCKED                 |
| 0393 | 75322 | 017621 | JSB   | USTBP   | BUMP POINTERS          |
| 0394 | 75323 | 027401 | JMP   | UST14   | END OF DRUM            |
| 0395 | 75324 | 027317 | JMP   | USTA8   |                        |
| 0396 | 75325 |        | USTA9 | EQU *   |                        |
| 0397 | 75325 | 002400 | CLA   |         |                        |
| 0398 | 75326 | 050034 | CPA   | LTEMP+4 | FIRST ENTRY ON LINE?   |
| 0399 | 75327 | 002001 | RSS   |         | YES                    |
| 0400 | 75330 | 027335 | JMP   | UST10   | NO                     |
| 0401 | 75331 | 060032 | LDA   | LTEMP+2 | OUTPUT                 |
| 0402 | 75332 | 017710 | JSB   | USTDG   | DRUM #                 |
| 0403 | 75333 | 060436 | LDA   | B72     | '!'                    |
| 0404 | 75334 | 016132 | JSB   | LOUT    |                        |
| 0405 | 75335 |        | UST10 | EQU *   |                        |
| 0406 | 75335 | 017656 | JSB   | USTST   | 2 BLANKS               |
| 0407 | 75336 | 020040 | ASC   | 1,      |                        |
| 0408 | 75337 | 000000 | OCT   | 0       |                        |
| 0409 | 75340 | 060030 | LDA   | LTEMP   | OUTPUT TRACK #         |
| 0410 | 75341 | 017672 | JSB   | UST2D   |                        |
| 0411 | 75342 | 034034 | ISZ   | LTEMP+4 |                        |
| 0412 | 75343 | 017621 | JSB   | USTBP   | BUMP POINTERS          |
| 0413 | 75344 | 027401 | JMP   | UST14   | END OF DRUM            |
| 0414 | 75345 | 017604 | JSB   | USTTZ   | TEST NEXT TRACK        |
| 0415 | 75346 | 027362 | JMP   | UST12   | UNLOCKED (ONLY ONE)    |
| 0416 | 75347 |        | UST11 | EQU *   |                        |
| 0417 | 75347 | 017621 | JSB   | USTBP   | LOCKED, BUMP POINTERS  |
| 0418 | 75350 | 027375 | JMP   | UST13   | END OF DRUM            |
| 0419 | 75351 | 017604 | JSB   | USTTZ   | TEST NEXT TRACK        |
| 0420 | 75352 | 002001 | RSS   |         | UNLOCKED               |
| 0421 | 75353 | 027347 | JMP   | UST11   | LOCKED, GO TO NEXT ONE |
| 0422 | 75354 | 060427 | LDA   | .+55B   | '!'                    |
| 0423 | 75355 | 016132 | JSB   | LOUT    |                        |
| 0424 | 75356 | 003400 | CCA   |         |                        |
| 0425 | 75357 | 040030 | ADA   | LTEMP   | OUTPUT TRACK #         |
| 0426 | 75360 | 017672 | JSB   | UST2D   |                        |
| 0427 | 75361 | 034034 | ISZ   | LTEMP+4 |                        |
| 0428 | 75362 |        | UST12 | EQU *   |                        |
| 0429 | 75362 | 017621 | JSB   | USTBP   | BUMP POINTERS          |
| 0430 | 75363 | 027401 | JMP   | UST14   | END OF DRUM            |
| 0431 | 75364 | 060034 | LDA   | LTEMP+4 | MORE ROOM              |
| 0432 | 75365 | 040332 | ADA   | .-16    | ON THIS                |
| 0433 | 75366 | 002020 | SSA   |         | LINE?                  |
| 0434 | 75367 | 027317 | JMP   | USTA8   | YES                    |
| 0435 | 75370 | 017745 | JSB   | XCRLF   | NO                     |
| 0436 | 75371 | 017755 | JSB   | USTSV   | SAVE VARIABLES         |
| 0437 | 75372 | 116023 | JSB   | SCHOU,I | SUSPEND                |
| 0438 | 75373 | 017766 | JSB   | USTRV   | RETRIEVE VARIABLES     |
| 0439 | 75374 | 027315 | JMP   | USTA7   |                        |
| 0440 | 75375 |        | UST13 | EQU *   |                        |
| 0441 | 75375 | 060427 | LDA   | .+55B   | '!'                    |
| 0442 | 75376 | 016132 | JSB   | LOUT    |                        |
| 0443 | 75377 | 063634 | LDA   | US.63   | LAST TRACK IS 63       |
| 0444 | 75400 | 017672 | JSB   | UST2D   |                        |

|      |              |       |                          |                          |
|------|--------------|-------|--------------------------|--------------------------|
| 0445 | 75401        | UST14 | EQU *                    |                          |
| 0446 | 75401 060034 |       | LDA LTEMP+4              |                          |
| 0447 | 75402 002003 |       | SZA, RSS                 |                          |
| 0448 | 75403 027410 |       | JMP UST15                | SKIP PRINTING BLANK LINE |
| 0449 | 75404 017745 |       | JSB XCRLF                |                          |
| 0450 | 75405 017755 |       | JSB USTSV                | SAVE VARIABLES           |
| 0451 | 75406 116023 |       | JSB SCHOU, I             | SUSPEND                  |
| 0452 | 75407 017766 |       | JSB USTRV                | RETRIEVE VARIABLES       |
| 0453 | 75410        | UST15 | EQU *                    |                          |
| 0454 | 75410 060032 |       | LDA LTEMP+2              |                          |
| 0455 | 75411 002004 |       | INA                      | BUMP DRUM #              |
| 0456 | 75412 050356 |       | CPA ,+4                  |                          |
| 0457 | 75413 027416 |       | JMP UST16                | DONE                     |
| 0458 | 75414 070032 |       | STA LTEMP+2              |                          |
| 0459 | 75415 027310 |       | JMP USTA6                |                          |
| 0460 | 75416        | UST16 | EQU *                    |                          |
| 0461 | 75416 017656 |       | JSB USTST                |                          |
| 0462 | 75417 005114 |       | OCT 5114                 |                          |
| 0463 | 75420 047503 |       | ASC 9, OCKED DISC BLOCKS |                          |
|      | 75421 045505 |       |                          |                          |
|      | 75422 042040 |       |                          |                          |
|      | 75423 042111 |       |                          |                          |
|      | 75424 051503 |       |                          |                          |
|      | 75425 020102 |       |                          |                          |
|      | 75426 046117 |       |                          |                          |
|      | 75427 041513 |       |                          |                          |
|      | 75430 051440 |       |                          |                          |
| 0464 | 75431 000000 |       | OCT 0                    |                          |
| 0465 | 75432 017745 |       | JSB XCRLF                | XOFF=CR-LF               |
| 0466 | 75433 116023 |       | JSB SCHOU, I             | SUSPEND                  |
| 0467 | 75434 002400 |       | CLA                      |                          |
| 0468 | 75435 070034 |       | STA LTEMP+4              |                          |
| 0469 | 75436 060210 |       | LDA MHAD                 | => FIRST DISC            |
| 0470 | 75437        | UST17 | EQU *                    |                          |
| 0471 | 75437 070030 |       | STA LTEMP                |                          |
| 0472 | 75440 060562 |       | LDA LIBD                 | INITIALIZE               |
| 0473 | 75441 070031 |       | STA LTEMP+1              | BUFFER POINTER           |
| 0474 | 75442 060030 |       | LDA LTEMP                |                          |
| 0475 | 75443 040354 |       | ADA ,+2                  |                          |
| 0476 | 75444 164000 |       | LDB A, I                 |                          |
| 0477 | 75445 164001 |       | LDB B, I                 | GET SELECT CODE          |
| 0478 | 75446 006003 |       | SZB, RSS                 |                          |
| 0479 | 75447 027551 |       | JMP UST22                | DISC NOT PRESENT         |
| 0480 | 75450        | UST18 | EQU *                    |                          |
| 0481 | 75450 104200 |       | DLU LTEMP, I             | COMPUTE                  |
|      | 75451 100030 |       |                          |                          |
| 0482 | 75452 000065 |       | CLE, ERA                 |                          |
| 0483 | 75453 00E540 |       | ERB, CLE                 | ADDRESS                  |
| 0484 | 75454 044355 |       | ADB ,+3                  |                          |
| 0485 | 75455 002040 |       | SEZ                      | OF BAD                   |
| 0486 | 75456 002004 |       | INA                      |                          |
| 0487 | 75457 104400 |       | DST LTEMP+14             | BLOCKS                   |
|      | 75460 000046 |       |                          |                          |
| 0488 | 75461 060762 |       | LUA M256                 |                          |
| 0489 | 75462 070215 |       | STA MWORD                |                          |

|      |       |        |       |           |                          |
|------|-------|--------|-------|-----------|--------------------------|
| 0490 | 75463 | 063777 | LDA   | UDL14     |                          |
| 0491 | 75464 | 064566 | LDB   | LIBDI     |                          |
| 0492 | 75465 | 114217 | JSB   | DISCZ,I   | READ BAD BLOCKS          |
| 0493 | 75466 | 027641 | JMP   | USTER     |                          |
| 0494 | 75467 | 002400 | CLA   |           | PUT ZERO AT              |
| 0495 | 75470 | 173636 | STA   | USTQV,I   | BUFFER END               |
| 0496 | 75471 |        | UST19 | EQU *     |                          |
| 0497 | 75471 | 160031 | LDA   | LTEMP+1,I | GET LOCKED BLOCK ADDRESS |
| 0498 | 75472 | 002003 | SZA   | ,RSS      |                          |
| 0499 | 75473 | 027551 | JMP   | UST22     | IF ZERO, FINISHED TABLE  |
| 0500 | 75474 | 104200 | DL0   | LTEMP,I   | COMPUTE                  |
|      | 75475 | 100030 |       |           |                          |
| 0501 | 75476 | 000065 | CLE   | ,ERA      |                          |
| 0502 | 75477 | 005540 | ERB   | ,CLE      | LOGICAL                  |
| 0503 | 75500 | 144031 | ADB   | LTEMP+1,I |                          |
| 0504 | 75501 | 002040 | SEZ   |           | BLOCK                    |
| 0505 | 75502 | 002004 | INA   |           |                          |
| 0506 | 75503 | 101100 | SWP   |           | ADDRESS                  |
| 0507 | 75504 | 104400 | DST   | LTEMP+14  |                          |
|      | 75505 | 000046 |       |           |                          |
| 0508 | 75506 | 017716 | JSB   | UST6D     | FIRST BLOCK              |
| 0509 | 75507 | 034031 | ISZ   | LTEMP+1   |                          |
| 0510 | 75510 | 003400 | CCA   |           |                          |
| 0511 | 75511 | 140031 | ADA   | LTEMP+1,I |                          |
| 0512 | 75512 | 002003 | SZA   | ,RSS      | IF ONLY ONE BLOCK, DON'T |
| 0513 | 75513 | 027527 | JMP   | UST20     | PRINT SECOND ADDRESS     |
| 0514 | 75514 | 070035 | STA   | LTEMP+5   |                          |
| 0515 | 75515 | 060427 | LDA   | ,+55B     | '=1                      |
| 0516 | 75516 | 016132 | JSB   | LOUT      |                          |
| 0517 | 75517 | 104200 | DL0   | LTEMP+14  | COMPUTE                  |
|      | 75520 | 000046 |       |           |                          |
| 0518 | 75521 | 000040 | CLE   |           | LAST                     |
| 0519 | 75522 | 040035 | ADA   | LTEMP+5   | BLOCK                    |
| 0520 | 75523 | 002040 | SEZ   |           | ADDRESS                  |
| 0521 | 75524 | 006004 | INB   |           |                          |
| 0522 | 75525 | 017716 | JSB   | UST6D     | OUTPUT IT                |
| 0523 | 75526 | 002404 | CLA   | ,INA      | UPDATE                   |
| 0524 | 75527 |        | UST20 | EQU *     |                          |
| 0525 | 75527 | 002004 | INA   |           | COUNT OF                 |
| 0526 | 75530 | 040034 | ADA   | LTEMP+4   |                          |
| 0527 | 75531 | 070034 | STA   | LTEMP+4   | ENTRIES ON LINE          |
| 0528 | 75532 | 034031 | ISZ   | LTEMP+1   |                          |
| 0529 | 75533 | 040342 | ADA   | ,=8       |                          |
| 0530 | 75534 | 002021 | SSA   | ,RSS      |                          |
| 0531 | 75535 | 027542 | JMP   | UST21     | PRINT FULL LINE          |
| 0532 | 75536 | 017656 | JSB   | USTST     | 2 BLANKS                 |
| 0533 | 75537 | 020040 | ASC   | 1,        |                          |
| 0534 | 75540 | 000000 | OCT   | 0         |                          |
| 0535 | 75541 | 027471 | JMP   | UST19     |                          |
| 0536 | 75542 |        | UST21 | EQU *     |                          |
| 0537 | 75542 | 017745 | JSB   | XCRLF     | XOFF=CR=LF               |
| 0538 | 75543 | 017755 | JSB   | USTSV     | SAVE VARIABLES           |
| 0539 | 75544 | 116023 | JSB   | SCHOU,I   | SUSPEND                  |
| 0540 | 75545 | 017766 | JSB   | USTRV     | RESTORE VARIABLES        |
| 0541 | 75546 | 002400 | CLA   |           | RDSET ENTRY              |

```

0542 75547 070034 STA LTEMP+4 COUNTER
0543 75550 027450 JMP UST18
0544 75551 UST22 EQU *
0545 75551 060030 LDA LTEMP
0546 75552 040360 ADA ,+6 NEXT DISC
0547 75553 064210 LDB MHAD
0548 75554 044432 ADB ,+48
0549 75555 050001 CPA B FINISHED ALL 8
0550 75556 002001 RSS YES
0551 75557 027437 JMP UST17 NO
0552 75560 060034 LDA LTEMP+4
0553 75561 002002 SZA
0554 75562 017745 JSB XCRLF NON-BLANK LINE
0555 75563 017656 JSB USTST
0556 75564 005114 OCT 5114
0557 75565 044516 ASC 7,LINE PRINTER *
 75566 042440
 75567 050122
 75570 044516
 75571 052105
 75572 051040
 75573 036440
0558 75574 000000 OCT 0
0559 75575 103100 CLF 0
0560 75576 064273 LDB MLINK+1
0561 75577 044351 ADB ,+?STAT=?LINK
0562 75600 134001 ISZ B,I SET STATUS TO OVERLAY
0563 75601 060506 LDA #LIB# RESTART ADDRESS
0564 75602 002004 INA SO #OUTC WILL WORK
0565 75603 127635 JMP UST50,I
0566*
0567* USTTZ TESTS THE CURRENT TRAX POSITION. EXIT TO (P+1) IF 0, (P+2)
0568* IF 1.
0569*
0570 75604 000000 USTTZ NOP
0571 75605 064032 LDB LTEMP+2 DRUM #
0572 75606 005222 RBL,RBL MULTIPLY BY 4
0573 75607 044512 ADB DTRAX => 1ST TRAX ELEMENT
0574 75610 060030 LDA LTEMP
0575 75611 001121 ARS,ARS
0576 75612 001121 ARS,ARS
0577 75613 044000 ADB A POSITION IN TRAX
0578 75614 160001 LDA B,I
0579 75615 010031 AND LTEMP+1 MASK
0580 75616 002002 SZA 0 EXISTS TO P+1
0581 75617 037604 ISZ USTTZ 1 EXISTS TO P+2
0582 75620 127604 JMP USTTZ,I
0583*
0584* USTBP BUMPS THE POINTERS TO THE TRAX TABLE. IT EXISTS TO (P+1) IF
0585* A DRUM IS FINISHED, OTHERWISE TO (P+2).
0586*
0587 75621 000000 USTBP NOP
0588 75622 060031 LDA LTEMP+1 MASK
0589 75623 001200 RAL ROTATE IT
0590 75624 070031 STA LTEMP+1

```

|      |       |        |       |         |                          |
|------|-------|--------|-------|---------|--------------------------|
| 0591 | 75625 | 060030 | LDA   | LTEMP   |                          |
| 0592 | 75626 | 002004 | INA   |         | BUMP TRACK #             |
| 0593 | 75627 | 050772 | CPA   | B,00    | FINISHED A DRUM?         |
| 0594 | 75630 | 002401 | CLA   | RSS     | YES, SET TRACK # TO ZERO |
| 0595 | 75631 | 037621 | ISZ   | USTBP   | NO, EXIT TO (P+2)        |
| 0596 | 75632 | 070030 | STA   | LTEMP   |                          |
| 0597 | 75633 | 127621 | JMP   | USTBP,I |                          |
| 0598 | 75634 | 000077 | US,63 | DEC     | 63                       |
| 0599 | 75635 | 071662 | USTSQ | DEF     | SCHSQ                    |
| 0600 | 75636 | 001630 | USTQV | DEF     | LIBUS+256                |

```

0602 75641 ORG LIBRA+512-95
0603 75641 060330 USTER LDA .-18
0604 75642 067644 LDB **2
0605 75643 026432 JMP LIBER
0606 75644 075645 DEF **1
0607 75645 006412 OCT 6412
0608 75646 041501 ASC 8,CAN'T READ TABLE
 75647 047047
 75650 052040
 75651 051105
 75652 040504
 75653 020124
 75654 040502
 75655 046105

```

0609\*

0610\* USTST OUTPUTS A STRING

0611\*

```

0612 75656 000000 USTST NOP
0613 75657 163656 LDA USTST,I
0614 75660 002003 SZA, RSS ZERO IS
0615 75661 127656 JMP USTST,I END
0616 75662 001727 ALF, ALF
0617 75663 010443 AND B377
0618 75664 016132 JSB LOUT RIGHT CHAR
0619 75665 163656 LDA USTST,I
0620 75666 010443 AND B377
0621 75667 016132 JSB LOUT
0622 75670 037656 ISZ USTST
0623 75671 027657 JMP USTST+1

```

0624\*

0625\* UST2D OUTPUTS A 2-DIGIT NUMBER

0626\*

```

0627 75672 000000 UST2D NOP
0628 75673 006400 CLB
0629 75674 100400 DIV .+10
 75675 000364
0630 75676 017710 JSB USTDG
0631 75677 017710 JSB USTDG
0632 75700 127672 JMP UST2D,I

```

0633\*

0634\* USTOC OUTPUTS A 2-DIGIT OCTAL INTEGER

0635\*

```

0636 75701 000000 USTOC NOP
0637 75702 006400 CLB
0638 75703 100400 DIV .+8
 75704 000362
0639 75705 017710 JSB USTDG
0640 75706 017710 JSB USTDG
0641 75707 127701 JMP USTOC,I

```

0642\*

0643\* UST DG OUTPUTS A DIGIT

0644\*

```

0645 75710 000000 USTDG NOP
0646 75711 074040 STB LTEMP+8
0647 75712 040432 ADA .+608

```

```

0648 75713 016132 JSB LOUT
0649 75714 060040 LDA LTEMP+8
0650 75715 127710 JMP USTDG,I
0651*
0652* UST6D OUTPUTS A 6-DIGIT NUMBER
0653*
0654 75716 000000 UST6D NOP
0655 75717 100400 DIV DVSR8
 75720 001032
0656 75721 074037 STB LTEMP+7
0657 75722 017672 JSB UST2D DIGITS 1-2
0658 75723 060037 LDA LTEMP+7
0659 75724 006400 CLB
0660 75725 100400 DIV .100
 75726 000437
0661 75727 074037 STB LTEMP+7
0662 75730 017672 JSB UST2D
0663 75731 060037 LDA LTEMP+7
0664 75732 017672 JSB UST2D DIGITS 5-6
0665 75733 127716 JMP UST6D,I
0666*
0667* UST3D OUTPUTS A 3-DIGIT NUMBER
0668*
0669 75734 000000 UST3D NOP
0670 75735 006400 CLB
0671 75736 100400 DIV .100
 75737 000437
0672 75740 017710 JSB USTDG DIGIT 1
0673 75741 017672 JSB UST2D DIGITS 2-3
0674 75742 060412 LDA .+40B BLANK
0675 75743 016132 JSB LOUT
0676 75744 127734 JMP UST3D,I
0677*
0678* XCRLF OUTPUTS X-OFF, CARRIAGE RETURN AND LINEFEED
0679*
0680 75745 000000 XCRLF NOP
0681 75746 060375 LDA .+23B XOFF
0682 75747 016132 JSB LOUT
0683 75750 060367 LDA .+15B CR
0684 75751 016132 JSB LOUT
0685 75752 060364 LDA .+12B CF
0686 75753 016132 JSB LOUT
0687 75754 127745 JMP XCRLF,I
0688*
0689* USTSV SAVES STATUS VARIABLES
0690*
0691 75755 000000 USTSV NOP
0692 75756 064273 LDB MLINK+1
0693 75757 044355 ADB .+?TEMP=?LINK
0694 75760 074051 STB MOVED
0695 75761 064520 LDB DLTEM
0696 75762 074050 STB MOVES
0697 75763 064347 LDB .-3
0698 75764 016257 JSB MOVEW
0699 75765 127755 JMP USTSV,I

```

0700\*

0701\* USTRV RESTORES STATUS VARIABLES

0702\*

|      |       |        |        |               |
|------|-------|--------|--------|---------------|
| 0703 | 75766 | 000000 | USTRV  | NOP           |
| 0704 | 75767 | 064273 | LDB    | MLINK+1       |
| 0705 | 75770 | 044355 | ADB    | .+?TEMP-?LINK |
| 0706 | 75771 | 074050 | STB    | MOVES         |
| 0707 | 75772 | 064520 | LDB    | DLTEM         |
| 0708 | 75773 | 074051 | STB    | MOVED         |
| 0709 | 75774 | 064347 | LDB    | .-3           |
| 0710 | 75775 | 016257 | JSB    | MOVEW         |
| 0711 | 75776 | 127766 | JMP    | USTRV,I       |
| 0712 | 75777 | 000046 | UDL,14 | DEF LTEMP+14  |
| 0713 | 76000 |        | SSTAS  | EQU *         |



|      |       |                 |                        |
|------|-------|-----------------|------------------------|
| 0002 | 75000 | ORG LIBRA       |                        |
| 0003 | 75000 | LDA LPS         | GET THE LINE           |
| 0004 | 75001 | JSB S14SC,I     | PRINTER STATUS         |
| 0005 | 75002 | SFS CH2         | FROM THE I/O           |
| 0006 | 75003 | JMP *-1         | PROCESSOR              |
| 0007 | 75004 | LIA CH2         | A = STATUS             |
| 0008 | 75005 | STA LTEMP       |                        |
| 0009 | 75006 | AND B77         | A = SELECT CODE        |
| 0010 | 75007 | JSB USTOC       | OUTPUT THE SC          |
| 0011 | 75010 | LDA .+52B       | A = '*'                |
| 0012 | 75011 | LDB LTEMP       | B = LP STATUS          |
| 0013 | 75012 | SSB             | CHECK FOR 2610A LP     |
| 0014 | 75013 | JSB LOUT        | YES = OUTPUT '*'       |
| 0015 | 75014 | LDA .+52B       | A = '*'                |
| 0016 | 75015 | LDB LTEMP       |                        |
| 0017 | 75016 | RBL             |                        |
| 0018 | 75017 | SSB             | CHECK FOR 2767A LP     |
| 0019 | 75020 | JSB LOUT        | YES = OUTPUT '*'       |
| 0020 | 75021 | JSB USTST       |                        |
| 0021 | 75022 | ASC 5,          | USER *                 |
|      | 75023 |                 |                        |
|      | 75024 |                 |                        |
|      | 75025 |                 |                        |
|      | 75026 |                 |                        |
| 0022 | 75027 | OCT 0           |                        |
| 0023 | 75030 | LDB PRIST       | GET USER INDICATOR AND |
| 0024 | 75031 | SZB,RSS         | CHECK FOR USE          |
| 0025 | 75032 | JMP USTA2       | NO                     |
| 0026 | 75033 | LDA B,I         | YES,                   |
| 0027 | 75034 | ALF,ALF         | OUTPUT                 |
| 0028 | 75035 | JSB UST2D       | USER TTY#              |
| 0029 | 75036 | USTA2 JSB XCRLF |                        |
| 0030 | 75037 | JSB USTST       |                        |
| 0031 | 75040 | OCT 5111        |                        |
| 0032 | 75041 | ASC 2,DT        |                        |
|      | 75042 |                 |                        |
| 0033 | 75043 | OCT 0           |                        |
| 0034 | 75044 | LDA .+3         | 3 IDT                  |
| 0035 | 75045 | STA LTEMP+3     | TRACKS                 |
| 0036 | 75046 | LDB USTID       |                        |
| 0037 | 75047 | STB LTEMP+4     |                        |
| 0038 | 75050 | UST30 EQU *     |                        |
| 0039 | 75050 | LDA LTEMP+4,I   | GET ADDRESS            |
| 0040 | 75051 | ISZ LTEMP+4     |                        |
| 0041 | 75052 | SZA,RSS         |                        |
| 0042 | 75053 | JMP UST31       | SKIP IF ZERO           |
| 0043 | 75054 | LDB LTEMP+4,I   | GET LENGTH             |
| 0044 | 75055 | JSB USTLL       | OUTPUT THEM            |
| 0045 | 75056 | UST31 EQU *     |                        |
| 0046 | 75056 | ISZ LTEMP+4     |                        |
| 0047 | 75057 | ISZ LTEMP+4     |                        |
| 0048 | 75060 | ISZ LTEMP+3     |                        |
| 0049 | 75061 | JMP UST30       |                        |
| 0050 | 75062 | JSB XCRLF       | XOFF=CR=LF             |
| 0051 | 75063 | JSB USTST       |                        |

|       |       |        |                   |                         |
|-------|-------|--------|-------------------|-------------------------|
| 0052  | 75064 | 006412 | OCT 6412          | CR-LF                   |
| 0053  | 75065 | 040504 | ASC 2,ADT         |                         |
|       | 75066 | 052040 |                   |                         |
| 0054  | 75067 | 000000 | OCT 0             |                         |
| 0055  | 75070 | 060112 | LDA ADLOC         | OUTPUT ADT              |
| 0056  | 75071 | 064113 | LDB ADLEN         | ADDRESS AND             |
| 0057  | 75072 | 017447 | JSB USTLL         | LENGTH                  |
| 0058* |       |        |                   |                         |
| 0059  | 75073 | 017745 | JSB XCRLF         |                         |
| 0060  | 75074 | 017656 | JSB USTST         |                         |
| 0061  | 75075 | 005104 | OCT 5104          |                         |
| 0062  | 75076 | 044523 | ASC 4,ISC ADTS    |                         |
|       | 75077 | 041440 |                   |                         |
|       | 75100 | 040504 |                   |                         |
|       | 75101 | 052123 |                   |                         |
| 0063  | 75102 | 000000 | OCT 0             |                         |
| 0064  | 75103 | 017745 | JSB XCRLF         |                         |
| 0065  | 75104 | 116023 | JSB SCHOU,I       |                         |
| 0066  | 75105 | 060346 | LDA ,=4           | 4 PER                   |
| 0067  | 75106 | 070033 | STA LTEMP+3       | LINE                    |
| 0068  | 75107 | 067626 | LDB USTDC         | => 1ST DISC ADT         |
| 0069  | 75110 |        | UST32 EQU *       |                         |
| 0070  | 75110 | 074030 | STB LTEMP         |                         |
| 0071  | 75111 | 160030 | LDA LTEMP,I       | GET ADDRESS             |
| 0072  | 75112 | 002003 | SZA,RSS           |                         |
| 0073  | 75113 | 027125 | JMP UST33         | SKIP IF ZERU            |
| 0074  | 75114 | 064030 | LDB LTEMP         |                         |
| 0075  | 75115 | 044362 | ADB ,+DADLN-DADLC |                         |
| 0076  | 75116 | 164001 | LDB B,I           | GET LENGTH              |
| 0077  | 75117 | 017447 | JSB USTLL         | OUTPUT THEM             |
| 0078  | 75120 | 034033 | ISZ LTEMP+3       | LINE FULL               |
| 0079  | 75121 | 027125 | JMP UST33         | NO                      |
| 0080  | 75122 | 017745 | JSB XCRLF         | YES                     |
| 0081  | 75123 | 060346 | LDA ,=4           |                         |
| 0082  | 75124 | 070033 | STA LTEMP+3       |                         |
| 0083  | 75125 |        | UST33 EQU *       |                         |
| 0084  | 75125 | 064030 | LDB LTEMP         |                         |
| 0085  | 75126 | 006004 | INB               |                         |
| 0086  | 75127 | 057632 | CPB USTDL         | FINISHED ALL DISC ADTS? |
| 0087  | 75130 | 002001 | RSS               | YES                     |
| 0088  | 75131 | 027110 | JMP UST32         | NO                      |
| 0089  | 75132 | 060033 | LDA LTEMP+3       |                         |
| 0090  | 75133 | 050346 | CPA ,=4           |                         |
| 0091  | 75134 | 002001 | RSS               | SKIP BLANK LINE         |
| 0092  | 75135 | 017745 | JSB XCRLF         |                         |
| 0093  | 75136 | 115023 | JSB SCHOU,I       |                         |
| 0094* |       |        |                   |                         |
| 0095  | 75137 | 017656 | JSB USTST         |                         |
| 0096  | 75140 | 005104 | OCT 5104          |                         |
| 0097  | 75141 | 044522 | ASC 2,IRES        |                         |
|       | 75142 | 042503 |                   |                         |
| 0098  | 75143 | 000000 | OCT 0             |                         |
| 0099  | 75144 | 017745 | JSB XCRLF         |                         |
| 0100  | 75145 | 060346 | LDA ,=4           | 4 PER                   |
| 0101  | 75146 | 070033 | STA LTEMP+3       | LINE                    |

|      |       |        |              |                                |
|------|-------|--------|--------------|--------------------------------|
| 0102 | 75147 | 067624 | LDB USTD6    | => 1ST DIREC ENTRY             |
| 0103 | 75150 |        | UST34 EQU *  |                                |
| 0104 | 75150 | 074030 | STB LTEMP    |                                |
| 0105 | 75151 | 160030 | LDA LTEMP,I  | GET ADDRESS                    |
| 0106 | 75152 | 002003 | SZA,RSS      |                                |
| 0107 | 75153 | 027170 | JMP UST35    | SKIP IF ZERO                   |
| 0108 | 75154 | 064030 | LDB LTEMP    |                                |
| 0109 | 75155 | 044344 | ADB ,=6      |                                |
| 0110 | 75156 | 164001 | LDB B,I      | GET LENGTH                     |
| 0111 | 75157 | 017447 | JSB USTLL    | OUTPUT THEM                    |
| 0112 | 75160 | 034033 | ISZ LTEMP+3  | LINE FULL                      |
| 0113 | 75161 | 027170 | JMP UST35    | NO                             |
| 0114 | 75162 | 017745 | JSB XCRLF    | YES,XOFF=CR=CF                 |
| 0115 | 75163 | 017755 | JSB USTSV    |                                |
| 0116 | 75164 | 116023 | JSB SCHOU,I  | SUSPEND                        |
| 0117 | 75165 | 017766 | JSB USTRV    | RESTORE VARIABLES              |
| 0118 | 75166 | 060346 | LDA ,=4      |                                |
| 0119 | 75167 | 070033 | STA LTEMP+3  |                                |
| 0120 | 75170 |        | UST35 EQU *  |                                |
| 0121 | 75170 | 064030 | LDB LTEMP    |                                |
| 0122 | 75171 | 044361 | ADB ,+7      |                                |
| 0123 | 75172 | 057625 | CPB USTDU    | FINISHED ALL DIREC ENTRIES?    |
| 0124 | 75173 | 002001 | RSS          | YES                            |
| 0125 | 75174 | 027150 | JMP UST34    | NO                             |
| 0126 | 75175 | 060033 | LDA LTEMP+3  |                                |
| 0127 | 75176 | 050346 | CPA ,=4      |                                |
| 0128 | 75177 | 002001 | RSS          | SKIP PRINTING OF BLANK LINE    |
| 0129 | 75200 | 017745 | JSB XCRLF    |                                |
| 0130 | 75201 | 017656 | JSB USTST    |                                |
| 0131 | 75202 | 005123 | OCT 5123     |                                |
| 0132 | 75203 | 054523 | ASC 3,SYSTEM |                                |
|      | 75204 | 052105 |              |                                |
|      | 75205 | 046440 |              |                                |
| 0133 | 75206 | 000000 | OCT 0        |                                |
| 0134 | 75207 | 002400 | CLA          |                                |
| 0135 | 75210 | 070033 | STA LTEMP+3  | SET COMPARE DRUM ADDRESS       |
| 0136 | 75211 | 067627 | LOB USTTB    | B => BEGINNING OF COM TABLE    |
| 0137 | 75212 |        | UST50 EQU *  |                                |
| 0138 | 75212 | 074034 | STB LTEMP+4  |                                |
| 0139 | 75213 | 160001 | LDA B,I      | GET THE NEXT USED DRUM ADDRESS |
| 0140 | 75214 | 010764 | AND M128     | MASK OFF THE SECTOR PART       |
| 0141 | 75215 | 050033 | CPA LTEMP+3  | IS IT ALREADY PRINTED?         |
| 0142 | 75216 | 027221 | JMP UST36    | YES                            |
| 0143 | 75217 | 070033 | STA LTEMP+3  | NO                             |
| 0144 | 75220 | 017464 | JSB USTD5    |                                |
| 0145 | 75221 |        | UST36 EQU *  |                                |
| 0146 | 75221 | 064034 | LOB LTEMP+4  | GET COM TABLE POINTER          |
| 0147 | 75222 | 006004 | INB          | ADVANCE TO NEXT ENTRY          |
| 0148 | 75223 | 057630 | CPB USTTE    | CHECK FOR END OF TABLE         |
| 0149 | 75224 | 002001 | RSS          |                                |
| 0150 | 75225 | 027212 | JMP UST50    | SCAN ON                        |
| 0151 | 75226 | 017745 | JSB XCRLF    |                                |
| 0152 | 75227 | 017656 | JSB USTST    |                                |
| 0153 | 75230 | 005125 | OCT 5125     |                                |
| 0154 | 75231 | 051505 | ASC 2,SERS   |                                |

|       |       |        |       |                   |                           |
|-------|-------|--------|-------|-------------------|---------------------------|
|       | 75232 | 051123 |       |                   |                           |
| 0155  | 75233 | 000000 |       | OCT 0             |                           |
| 0156  | 75234 | 017745 |       | JSB XCRLF         |                           |
| 0157  | 75235 | 116023 |       | JSB SCHOU,I       |                           |
| 0158  | 75236 | 060342 |       | LDA ,=8           | 8 PER                     |
| 0159  | 75237 | 070033 |       | STA LTEMP+3       | LINE                      |
| 0160  | 75240 | 067633 |       | LDB USTSW         | => DISC ADDRESS FOR TTY00 |
| 0161  | 75241 |        | UST37 | EQU *             |                           |
| 0162  | 75241 | 074030 |       | STB LTEMP         |                           |
| 0163  | 75242 | 160030 |       | LDA LTEMP,I       | GET ADDRESS               |
| 0164  | 75243 | 002003 |       | SZA,RSS           |                           |
| 0165  | 75244 | 027263 |       | JMP UST39         | DONE IF ZERO              |
| 0166  | 75245 | 017464 |       | JSB USTDS         | OUTPUT IT                 |
| 0167  | 75246 | 034033 |       | ISZ LTEMP+3       | LINE FULL?                |
| 0168  | 75247 | 027256 |       | JMP UST38         | NO                        |
| 0169  | 75250 | 017745 |       | JSB XCRLF         |                           |
| 0170  | 75251 | 017755 |       | JSB USTSV         | YES                       |
| 0171  | 75252 | 116023 |       | JSB SCHOU,I       |                           |
| 0172  | 75253 | 017766 |       | JSB USTRV         |                           |
| 0173  | 75254 | 060342 |       | LDA ,=8           |                           |
| 0174  | 75255 | 070033 |       | STA LTEMP+3       |                           |
| 0175  | 75256 |        | UST38 | EQU *             |                           |
| 0176  | 75256 | 064030 |       | LDB LTEMP         |                           |
| 0177  | 75257 | 044375 |       | ADB ,+TTY01=TTY00 |                           |
| 0178  | 75260 | 057634 |       | CPB USTUS         | FINISHED ALL USERS        |
| 0179  | 75261 | 002001 |       | RSS               | YES                       |
| 0180  | 75262 | 027241 |       | JMP UST37         | NO                        |
| 0181  | 75263 |        | UST39 | EQU *             |                           |
| 0182  | 75263 | 060033 |       | LDA LTEMP+3       |                           |
| 0183  | 75264 | 050342 |       | CPA ,=8           |                           |
| 0184  | 75265 | 002001 |       | RSS               | SKIP BLANK LINE           |
| 0185  | 75266 | 017745 |       | JSB XCRLF         |                           |
| 0186* |       |        |       |                   |                           |
| 0187  | 75267 | 017656 |       | JSB USTST         |                           |
| 0188  | 75270 | 005104 |       | OCT 5104          |                           |
| 0189  | 75271 | 044523 |       | ASC 7,ISC         | ALLOCATION                |
|       | 75272 | 041440 |       |                   |                           |
|       | 75273 | 040514 |       |                   |                           |
|       | 75274 | 046117 |       |                   |                           |
|       | 75275 | 041501 |       |                   |                           |
|       | 75276 | 052111 |       |                   |                           |
|       | 75277 | 047516 |       |                   |                           |
| 0190  | 75300 | 011415 |       | OCT 11415         | XOFF=CR                   |
| 0191  | 75301 | 005012 |       | OCT 5012          | LF=LF                     |
| 0192  | 75302 | 020040 |       | ASC 3, IDT        |                           |
|       | 75303 | 044504 |       |                   |                           |
|       | 75304 | 052040 |       |                   |                           |
| 0193  | 75305 | 000000 |       | OCT 0             |                           |
| 0194  | 75306 | 017745 |       | JSB XCRLF         |                           |
| 0195  | 75307 | 017554 |       | JSB USTDR         | READ DAT                  |
| 0196  | 75310 | 060347 |       | LDA ,=3           | 3 ENTRIES                 |
| 0197  | 75311 | 064356 |       | LDB ,+4           | => 1ST IDT ENTRY          |
| 0198  | 75312 | 017505 |       | JSB USTDA         | PRINT IDT                 |
| 0199  | 75313 | 116023 |       | JSB SCHOU,I       | SUSPEND                   |
| 0200  | 75314 | 017656 |       | JSB USTST         |                           |

|      |       |        |                 |                           |
|------|-------|--------|-----------------|---------------------------|
| 0201 | 75315 | 005040 | OCT 5040        |                           |
| 0202 | 75316 | 020104 | ASC 5, DISC ADT |                           |
|      | 75317 | 044523 |                 |                           |
|      | 75320 | 041440 |                 |                           |
|      | 75321 | 040504 |                 |                           |
|      | 75322 | 052040 |                 |                           |
| 0203 | 75323 | 000000 | OCT 0           |                           |
| 0204 | 75324 | 017745 | JSB XCRLF       |                           |
| 0205 | 75325 | 017554 | JSB USTDR       | READ DAT                  |
| 0206 | 75326 | 060342 | LDA ,=8         | 8 ENTRIES                 |
| 0207 | 75327 | 064367 | LDB ,+13        | => 1ST DISC ADT ENTRY     |
| 0208 | 75330 | 017505 | JSB USTDA       | SET UP BUFFER FOR ADT     |
| 0209 | 75331 | 017656 | JSB USTST       |                           |
| 0210 | 75332 | 005040 | OCT 5040        | LF=BLANK                  |
| 0211 | 75333 | 020104 | ASC 3, DIREC    |                           |
|      | 75334 | 044522 |                 |                           |
|      | 75335 | 042503 |                 |                           |
| 0212 | 75336 | 000000 | OCT 0           |                           |
| 0213 | 75337 | 017745 | JSB XCRLF       | XOFF=CR-LF                |
| 0214 | 75340 | 116023 | JSB SCHOU,I     | SUSPEND                   |
| 0215 | 75341 | 017554 | JSB USTDR       | READ DAT                  |
| 0216 | 75342 | 060342 | LDA ,=8         | 8 PER                     |
| 0217 | 75343 | 070033 | STA LTEMP+3     | LINE                      |
| 0218 | 75344 | 064562 | LDB LIBD        |                           |
| 0219 | 75345 | 044417 | ADB ,+37        | => 1ST DIREC ENTRY        |
| 0220 | 75346 |        | UST40 EQU *     |                           |
| 0221 | 75346 | 017520 | JSB USTSR       | CALL SAVE ROOM SUBROUTINE |
| 0222 | 75347 | 027361 | JMP UST41       | ZERO DISC ADDRESS         |
| 0223 | 75350 | 034033 | ISZ LTEMP+3     | LINE FULL?                |
| 0224 | 75351 | 027361 | JMP UST41       | NO                        |
| 0225 | 75352 | 017745 | JSB XCRLF       | YES                       |
| 0226 | 75353 | 017755 | JSB USTSV       |                           |
| 0227 | 75354 | 116023 | JSB SCHOU,I     | SUSPEND                   |
| 0228 | 75355 | 017766 | JSB USTRV       |                           |
| 0229 | 75356 | 060342 | LDA ,=8         |                           |
| 0230 | 75357 | 070033 | STA LTEMP+3     |                           |
| 0231 | 75360 | 017554 | UST41 JSB USTDR | READ DAT AGAIN            |
| 0232 | 75361 |        | UST41 EQU *     |                           |
| 0233 | 75361 | 064030 | LDB LTEMP       |                           |
| 0234 | 75362 | 044355 | ADB ,+3         |                           |
| 0235 | 75363 | 060207 | LDA DATLN       |                           |
| 0236 | 75364 | 003004 | CMA,INA         |                           |
| 0237 | 75365 | 002004 | INA             |                           |
| 0238 | 75366 | 040562 | ADA LIBD        |                           |
| 0239 | 75367 | 054000 | CPB A           | FINISHED ALL ENTRIES?     |
| 0240 | 75370 | 002001 | RSS             | YES                       |
| 0241 | 75371 | 027346 | JMP UST40       | NO                        |
| 0242 | 75372 | 060033 | LDA LTEMP+3     |                           |
| 0243 | 75373 | 050342 | CPA ,=8         |                           |
| 0244 | 75374 | 002001 | RSS             | SKIP BLANK LINE           |
| 0245 | 75375 | 017745 | JSB XCRLF       |                           |
| 0246 | 75376 | 017655 | JSB USTST       |                           |
| 0247 | 75377 | 005040 | OCT 5040        |                           |
| 0248 | 75400 | 020123 | ASC 4, SYSTEM   |                           |
|      | 75401 | 054523 |                 |                           |

|      |       |        |             |                |
|------|-------|--------|-------------|----------------|
|      | 75402 | 052105 |             |                |
|      | 75403 | 046440 |             |                |
| 0249 | 75404 | 000000 | OCT 0       |                |
| 0250 | 75405 | 017745 | JSB XCRLF   |                |
| 0251 | 75406 | 116023 | JSB SCHOU,I |                |
| 0252 | 75407 | 017554 | JSB USTDR   | GET DAT BACK   |
| 0253 | 75410 | 064562 | LDB LIBD    |                |
| 0254 | 75411 | 160001 | LDA B,I     |                |
| 0255 | 75412 | 070033 | STA LTEMP+3 | SAVE LENGTH    |
| 0256 | 75413 | 006004 | INB         |                |
| 0257 | 75414 | 104200 | OLD B,I     | GET ADDRESS OF |
|      | 75415 | 100001 |             |                |
| 0258 | 75416 | 101100 | SWP         | SYSTEM LIBRARY |
| 0259 | 75417 | 017716 | JSB UST6D   | OUTPUT IT      |
| 0260 | 75420 | 060412 | LDA .+40B   | BLANK          |
| 0261 | 75421 | 016132 | JSB LOUT    |                |
| 0262 | 75422 | 060033 | LDA LTEMP+3 | OUTPUT         |
| 0263 | 75423 | 017734 | JSB UST3D   | LENGTH         |
| 0264 | 75424 | 017656 | JSB USTST   | 2 BLANKS       |
| 0265 | 75425 | 020040 | ASC 1,      |                |
| 0266 | 75426 | 000000 | OCT 0       |                |
| 0267 | 75427 | 064205 | LDB LDBSA   | GET POINTER    |
| 0268 | 75430 | 044355 | ADB .+3     | TO 1ST DISC    |
| 0269 | 75431 | 074030 | STB LTEMP   | ADDRESS IN SST |
| 0270 | 75432 | 060346 | LDA .-4     |                |
| 0271 | 75433 | 017573 | JSB USTSS   | SEGMENTS 1-4   |
| 0272 | 75434 | 017755 | JSB USTSV   |                |
| 0273 | 75435 | 116023 | JSB SCHOU,I |                |
| 0274 | 75436 | 017766 | JSB USTRV   |                |
| 0275 | 75437 | 060345 | LDA .-5     |                |
| 0276 | 75440 | 017573 | JSB USTSS   | SEGMENTS 5-9   |
| 0277 | 75441 | 017755 | JSB USTSV   |                |
| 0278 | 75442 | 116023 | JSB SCHOU,I |                |
| 0279 | 75443 | 017766 | JSB USTRV   |                |
| 0280 | 75444 | 060346 | LDA .-4     |                |
| 0281 | 75445 | 017573 | JSB USTSS   | SEGMENTS 10-13 |
| 0282 | 75446 | 026226 | JMP LLEND   |                |

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0284*
0285* USTLL OUTPUTS A DRUM LOCATION AND LENGTH
0286*
0287 75447 000000 USTLL NOP
0288 75450 074035 STB LTEMP+5 SAVE LENGTH
0289 75451 017464 JSB USTDS OUTPUT DRUM ADDRESS
0290 75452 060035 LDA LTEMP+5 GET LENGTH
0291 75453 003004 CMA,INA MAKE POSITIVE
0292 75454 006400 CLB
0293 75455 100400 DIV DV9RS+1
 75456 001033
0294 75457 017710 JSB USTDG 1ST DIGIT
0295 75460 017734 JSB UST3D LAST 3 DIGITS
0296 75461 060412 LDA .+40B BLANK
0297 75462 016132 JSB LOUT
0298 75463 127447 JMP USTLL,I
0299*
0300* USTOS OUTPUTS A DRUM ADDRESS AS 8 CHARS FOLLOWED BY A BLANK
0301*
0302 75464 000000 USTOS NOP
0303 75465 070036 STA LTEMP+6
0304 75466 001222 RAL,RAL GET DRUM#
0305 75467 010355 AND .+3
0306 75470 017710 JSB USTDG
0307 75471 060431 LDA .+57B '/'
0308 75472 016132 JSB LOUT
0309 75473 060036 LDA LTEMP+6
0310 75474 001727 ALF,ALF
0311 75475 010734 AND B77 GET TRACK#
0312 75476 017672 JSB UST2D
0313 75477 060431 LDA .+57B '/'
0314 75500 016132 JSB LOUT
0315 75501 060036 LDA LTEMP+6
0316 75502 010441 AND B177 GET SECTOR #
0317 75503 017734 JSB UST3D
0318 75504 127464 JMP USTOS,I
0319*
0320* USTDA PRINTS DISC ALLOCATION FOR THE IOT AND DISC ADT
0321*
0322 75505 000000 USTDA NOP
0323 75506 070033 STA LTEMP+3 # OF ENTRIES
0324 75507 044562 ADB LIBD => 1ST ONE WE WANT
0325 75510 USTD1 EQU *
0326 75510 017520 JSB UST9R CALL SUBROUTINE THAT SAVES ROOM
0327 75511 000000 NOP
0328 75512 USTD2 EQU *
0329 75512 064030 LDB LTEMP
0330 75513 044355 ADB .+3 => NEXT ONE
0331 75514 034033 ISZ LTEMP+3 FINISHED?
0332 75515 027510 JMP USTD1 NO
0333 75516 017745 JSB XCRLF
0334 75517 127505 JMP USTDA,I YES
0335*
0336* SUBROUTINE TO SAVE ENOUGH ROOM YHAT THIS ROUTINE WILL FIT
0337*

```

```

0338 75520 000000 UTSR NOP
0339 75521 074030 STB LTEMP
0340 75522 104200 DLD LTEMP,I GET DISC ADDRESS
 75523 100030
0341 75524 002003 SZA,RSS
0342 75525 006002 SZB
0343 75526 002001 RSS
0344 75527 127520 JMP UTSR,I
0345 75530 101100 SWP
0346 75531 017716 JSB UST6D OUTPUT IT
0347 75532 017656 JSB USTST 2 BLANKS
0348 75533 029040 ASC 1,
0349 75534 000000 OCT 0
0350 75535 037520 ISZ UTSR
0351 75536 127520 JMP UTSR,I
0352*
0353* USTBR READS THE BOOTSTRAP
0354*
0355 75537 000000 USTBR NOP
0356 75540 060750 LDA M512
0357 75541 070215 STA MWORD LENGTH
0358 75542 002400 CLA
0359 75543 006404 CLB,INB
0360 75544 104400 DST LTEMP+14 DISC ADDRESS
 75545 000046
0361 75546 064205 LDB LDBSA CORE ADDRESS
0362 75547 045036 ADB BIT15
0363 75550 063777 LDA UDL14
0364 75551 114217 JSB DISCZ,I READ IT
0365 75552 027641 JMP USTER
0366 75553 127537 JMP USTBR,I
0367*
0368* USTDR READS THE DISC ALLOCATION TABLE
0369*
0370 75554 000000 USTDR NOP
0371 75555 017537 JSB USTBR READ BOOTSTRAP
0372 75556 064206 LDB LSTDA
0373 75557 044354 ADB ,+2
0374 75560 104200 DLD B,I
 75561 100001
0375 75562 104400 DST LTEMP+14 ADDRESS OF DAT
 75563 000046
0376 75564 063777 LDA UDL14 => DISC ADDRESS
0377 75565 064207 LDB DATLN
0378 75566 074215 STB MWORD LENGTH
0379 75567 064566 LDB LIBDI CORE ADDRESS
0380 75570 114217 JSB DISCZ,I READ IT
0381 75571 027641 JMP USTER
0382 75572 127554 JMP USTDR,I
0383*
0384* USTSS FILLS THE BUFFER WITH SYSTEM SEGMENT
0385* ADDRESSES AND LENGTHS
0386*
0387 75573 000000 USTSS NOP
0388 75574 070033 STA LTEMP+3 SAVE # OF SEGMENTS

```



|      |       |        |       |                 |                  |
|------|-------|--------|-------|-----------------|------------------|
| 0389 | 75575 | 017537 |       | JSB USTBR       | READ BOOTSTRAP   |
| 0390 | 75576 |        | USTS1 | LDI *           |                  |
| 0391 | 75576 | 104200 |       | DLI LTEMP,I     | GET DISC ADDRESS |
|      | 75577 | 100030 |       |                 |                  |
| 0392 | 75600 | 101100 |       | SWP             |                  |
| 0393 | 75601 | 017716 |       | JSB UST6D       | OUTPUT IT        |
| 0394 | 75602 | 060412 |       | LDA .+40B       | BLANK            |
| 0395 | 75603 | 016132 |       | JSB LOUT        |                  |
| 0396 | 75604 | 064030 |       | LDB LTEMP       |                  |
| 0397 | 75605 | 044350 |       | ADB .-2         |                  |
| 0398 | 75606 | 160001 |       | LDA B,I         | GET LENGTH       |
| 0399 | 75607 | 044360 |       | ADB .+6         |                  |
| 0400 | 75610 | 074030 |       | STB LTEMP       |                  |
| 0401 | 75611 | 001727 |       | ALF,ALF         | CONVERT          |
| 0402 | 75612 | 030762 |       | IOR HIMSK       |                  |
| 0403 | 75613 | 003004 |       | CMA,INA         | TO BLOCKS        |
| 0404 | 75614 | 017734 |       | JSB UST3D       | OUTPUT IT        |
| 0405 | 75615 | 017656 |       | JSB USTST       | 2 BLANKS         |
| 0406 | 75616 | 020040 |       | ASC 1,          |                  |
| 0407 | 75617 | 000000 |       | OCT 0           |                  |
| 0408 | 75620 | 034033 |       | ISZ LTEMP+3     |                  |
| 0409 | 75621 | 027576 |       | JMP USTS1       |                  |
| 0410 | 75622 | 017745 |       | JSB XCRLF       |                  |
| 0411 | 75623 | 127573 |       | JMP USTSS,I     |                  |
| 0412 | 75624 | 030000 | USTD6 | DEF DIREC+6     |                  |
| 0413 | 75625 | 031060 | USTDU | DEF DIREU+6     |                  |
| 0414 | 75626 | 000115 | USTDC | DEF DADLC       |                  |
| 0415 | 75627 | 072034 | USTTB | DEF COM6        |                  |
| 0416 | 75630 | 072137 | USTTE | DEF COMTE       |                  |
| 0417 | 75631 | 000101 | USTID | DEF IDEC+1      |                  |
| 0418 | 75632 | 000125 | USTDL | DEF DADLN       |                  |
| 0419 | 75633 | 061130 | USTSW | DEF TTY00+7DISC |                  |
| 0420 | 75634 | 062270 | USTUS | DEF TTY32+7DISC |                  |

0422\* THE DELETE COMMAND ALLOWS A USER TO DELETE A SECTION OF HIS  
 0423\* PROGRAM IN A SINGLE LINE. THE FORMAT IS:  
 0424\* DELETE=M,N  
 0425\* OR  
 0426\* DELETE=M  
 0427\* WITH THE FIRST FORMAT, ALL LINES FROM M THROUGH N ARE  
 0428\* DELETED. WITH THE SECOND, ALL LINES FROM M TO THE END OF  
 0429\* THE PROGRAM ARE DELETED.

|       |       |        |                |                                  |
|-------|-------|--------|----------------|----------------------------------|
| 0431  | 75000 |        | ORG LIBRA      |                                  |
| 0432  | 75000 | 017074 | JSB DELNM      | GET M.                           |
| 0433  | 75001 | 070030 | STA DELM       |                                  |
| 0434  | 75002 | 063126 | LDA DEL99      |                                  |
| 0435  | 75003 | 054426 | CPB .+54B      | IF COMMA FOLLOWS, GO             |
| 0436  | 75004 | 017074 | JSB DELNM      | GET N.                           |
| 0437  | 75005 | 070031 | STA DELN       |                                  |
| 0438  | 75006 | 054367 | CPB .+15B      | NEXT CHAR MUST BE A CR.          |
| 0439  | 75007 | 027011 | JMP DEL2       |                                  |
| 0440  | 75010 | 026430 | JMP ILFER      |                                  |
| 0441* |       |        |                |                                  |
| 0442  | 75011 | 003000 | DEL2 CMA       | CHECK FOR M<=N                   |
| 0443  | 75012 | 040030 | ADA DELM       |                                  |
| 0444  | 75013 | 002021 | SSA,RSS        |                                  |
| 0445  | 75014 | 026430 | JMP ILFER      |                                  |
| 0446* |       |        |                |                                  |
| 0447  | 75015 | 016047 | JSB RDPRG      | READ IN PROGRAM AND              |
| 0448  | 75016 | 015322 | JSB DCMPL      | DECOMPILE IT.                    |
| 0449* |       |        |                |                                  |
| 0450  | 75017 | 060056 | LDA PBPTR      | LOCATE FIRST                     |
| 0451  | 75020 | 064030 | LDB DELM       | STATEMENT TO BE DELETED.         |
| 0452  | 75021 | 015314 | JSB FNDPS      |                                  |
| 0453  | 75022 | 002001 | RSS            |                                  |
| 0454  | 75023 | 000000 | NOP            |                                  |
| 0455  | 75024 | 074051 | STB MOVED      |                                  |
| 0456* |       |        |                |                                  |
| 0457  | 75025 | 060056 | LDA PBPTR      | LOCATE FIRST STATEMENT           |
| 0458  | 75026 | 064031 | LDB DELN       | NOT TO BE DELETED.               |
| 0459  | 75027 | 070050 | STA MOVES      |                                  |
| 0460  | 75030 | 057126 | CPB DEL99      |                                  |
| 0461  | 75031 | 027037 | JMP DEL3       |                                  |
| 0462  | 75032 | 006004 | INB            |                                  |
| 0463  | 75033 | 015314 | JSB FNDPS      |                                  |
| 0464  | 75034 | 002001 | RSS            |                                  |
| 0465  | 75035 | 000000 | NOP            |                                  |
| 0466  | 75036 | 074050 | STB MOVES      |                                  |
| 0467* |       |        |                |                                  |
| 0468  | 75037 | 064050 | DEL3 LDB MOVES | IF DEST=SOURCE, NOTHING DELETED. |
| 0469  | 75040 | 054051 | CPB MOVED      |                                  |
| 0470  | 75041 | 027054 | JMP DEL4       |                                  |
| 0471  | 75042 | 007004 | CMB,INB        | OTHERWISE, MOVE UP.              |
| 0472  | 75043 | 044056 | ADB PBPTR      |                                  |
| 0473  | 75044 | 007004 | CMB,INB        |                                  |
| 0474  | 75045 | 016257 | JSB MOVEW      |                                  |
| 0475  | 75046 | 060051 | LDA MOVED      | SET NEW VALUE OF                 |
| 0476  | 75047 | 070056 | STA PBPTR      | PBPTR.                           |

|       |                                                                  |        |       |              |                      |
|-------|------------------------------------------------------------------|--------|-------|--------------|----------------------|
| 0477  | 75050                                                            | 060273 |       | LDA MLINK+1  | TELL SCHEDULER THAT  |
| 0478  | 75051                                                            | 040335 |       | ADA ,=7LINK  | PROGRAM IS IN CORE.  |
| 0479  | 75052                                                            | 070257 |       | STA MAIN     |                      |
| 0480  | 75053                                                            | 026226 |       | JMP LLEND    |                      |
| 0481* |                                                                  |        |       |              |                      |
| 0482  | 75054                                                            | 060273 | DEL4  | LDA MLINK+1  |                      |
| 0483  | 75055                                                            | 040335 |       | ADA ,=7LINK  |                      |
| 0484  | 75056                                                            | 070257 |       | STA MAIN     |                      |
| 0485  | 75057                                                            | 060331 |       | LDA ,=17     |                      |
| 0486  | 75060                                                            | 067062 |       | LDB ++2      |                      |
| 0487  | 75061                                                            | 026432 |       | JMP LIBER    |                      |
| 0488  | 75062                                                            | 075063 |       | DEF ++1      |                      |
| 0489  | 75063                                                            | 005116 |       | OCT 5116     | LF=N                 |
| 0490  | 75064                                                            | 047524 |       | ASC 7,OTHING | DELETED              |
|       | 75065                                                            | 044111 |       |              |                      |
|       | 75066                                                            | 047107 |       |              |                      |
|       | 75067                                                            | 020104 |       |              |                      |
|       | 75070                                                            | 042514 |       |              |                      |
|       | 75071                                                            | 042524 |       |              |                      |
|       | 75072                                                            | 042504 |       |              |                      |
| 0491  | 75073                                                            | 006400 |       | OCT 6400     | CR                   |
| 0492* |                                                                  |        |       |              |                      |
| 0493* | DELNM READS A NUMBER FROM THE USER'S BUFFER. IN CASE OF ERROR IT |        |       |              |                      |
| 0494* | GOES TO DEL1. OTHERWISE IT RETURNS WITH A=# AND B=NEXT CHAR.     |        |       |              |                      |
| 0495* |                                                                  |        |       |              |                      |
| 0496  | 75074                                                            | 000000 | DELNM | NOP          |                      |
| 0497  | 75075                                                            | 002400 |       | CLA          | INITIALIZE TO 0.     |
| 0498  | 75076                                                            |        | DEL7  | EQU *        |                      |
| 0499  | 75076                                                            | 070032 |       | STA DELT     |                      |
| 0500  | 75077                                                            | 016164 |       | JSB LCHAR    | GET A CHARACTER      |
| 0501  | 75100                                                            | 000000 |       | NOP          |                      |
| 0502  | 75101                                                            | 070001 |       | STA 1        | SAVE IN B.           |
| 0503  | 75102                                                            | 040316 |       | ADA M72B     | TEST FOR DIGIT.      |
| 0504  | 75103                                                            | 002021 |       | SSA,R3S      |                      |
| 0505  | 75104                                                            | 027122 |       | JMP DEL6     |                      |
| 0506  | 75105                                                            | 040364 |       | ADA ,+10     |                      |
| 0507  | 75106                                                            | 002020 |       | SSA          |                      |
| 0508  | 75107                                                            | 027122 |       | JMP DEL6     |                      |
| 0509  | 75110                                                            | 064032 |       | LDB DELT     |                      |
| 0510  | 75111                                                            | 047127 |       | ADB DELMX    |                      |
| 0511  | 75112                                                            | 006021 |       | SSB,R3S      |                      |
| 0512  | 75113                                                            | 026430 |       | JMP ILFER    |                      |
| 0513  | 75114                                                            | 064032 |       | LDB DELT     | MPY OLD VALUE BY 10. |
| 0514  | 75115                                                            | 005222 |       | RBL,RBL      |                      |
| 0515  | 75116                                                            | 044032 |       | ADB DELT     |                      |
| 0516  | 75117                                                            | 005200 |       | RBL          |                      |
| 0517  | 75120                                                            | 040001 |       | ADA 1        | ADD IN NEW.          |
| 0518  | 75121                                                            | 027076 |       | JMP DEL7     | LOOP.                |
| 0519* |                                                                  |        |       |              |                      |
| 0520  | 75122                                                            | 060032 | DEL6  | LDA DELT     | GET VALUE            |
| 0521  | 75123                                                            | 002002 |       | SZA          | FAIL IF ZERO.        |
| 0522  | 75124                                                            | 127074 |       | JMP DELNM,I  |                      |
| 0523  | 75125                                                            | 026430 |       | JMP ILFER    |                      |
| 0524* |                                                                  |        |       |              |                      |
| 0525  | 00030                                                            |        | DELM  | EQU LTEMP    |                      |

|      |              |       |     |         |
|------|--------------|-------|-----|---------|
| 0526 | 00031        | DELN  | EQU | LTEMP+1 |
| 0527 | 00032        | DELT  | EQU | LTEMP+2 |
| 0528 | 75126 023417 | DEL99 | DEC | 9999    |
| 0529 | 75127 176030 | DELMX | DEC | -1000   |
| 0530 | 75130        | SDEL  | EQU | *       |

0532\* THE TIME COMMAND PRINTS THE USER'S CONSOLE TIME DURING THIS  
 0533\* SESSION AND HIS TOTAL CONSOLE TIME TO DATE.

|       |       |        |                      |                                  |
|-------|-------|--------|----------------------|----------------------------------|
| 0535  | 75000 |        | ORG LIBRA            |                                  |
| 0537  | 75000 | 060332 | LDA , -16            | OUTPUT START OF                  |
| 0538  | 75001 | 067047 | LDB TIM1             | MESSAGE.                         |
| 0539  | 75002 | 016137 | JSB LTYPR            |                                  |
| 0540* |       |        |                      |                                  |
| 0541  | 75003 | 060273 | LDA MLINK+1          | COMPUTE LOC OF USER'S            |
| 0542  | 75004 | 040345 | ADA , +?TIME=?LINK   | STARTING TIME.                   |
| 0543  | 75005 | 104200 | DL0 0, I             | GET STARTING TIME.               |
|       | 75006 | 100000 |                      |                                  |
| 0544  | 75007 | 003004 | CMA, INA             | MAKE NEGATIVE AND                |
| 0545  | 75010 | 007004 | CMB, INB             | SAVE IN TIMT.                    |
| 0546  | 75011 | 104400 | DST TIMT             |                                  |
|       | 75012 | 000031 |                      |                                  |
| 0547  | 75013 | 104200 | DL0 DATIM            | GET CURRENT TIME.                |
|       | 75014 | 000201 |                      |                                  |
| 0548  | 75015 | 040031 | ADA TIMT             | COMPUTE DIRRERENCES: A## OF HRS; |
| 0549  | 75016 | 000040 | CLE                  | B## OF 100 MS UNITS.             |
| 0550  | 75017 | 044032 | ADB TIMT+1           | E## SIGN OF B.                   |
| 0551  | 75020 | 074032 | STB TIMT+1           | SAVE UNITS.                      |
| 0552  | 75021 | 100200 | MPY D60              | CHANGE HRS TO MINS.              |
|       | 75022 | 000724 |                      |                                  |
| 0553  | 75023 | 070031 | STA TIMT             |                                  |
| 0554  | 75024 | 060032 | LDA TIMT+1           | GET UNIT COUNT. IF E##           |
| 0555  | 75025 | 002041 | SEZ, RSS             | THEN COUNT IS NEGATIVE.          |
| 0556  | 75026 | 007400 | CCB                  |                                  |
| 0557  | 75027 | 100400 | DIV D600             | CHANGE TO MINS.                  |
|       | 75030 | 000456 |                      |                                  |
| 0558  | 75031 | 040031 | ADA TIMT             | ADD IN PREVIOUS AMT.             |
| 0559  | 75032 | 070031 | STA TIMT             |                                  |
| 0560  | 75033 | 017076 | JSB TIMPR            | PRINT IT.                        |
| 0561* |       |        |                      |                                  |
| 0562  | 75034 | 060334 | LDA , -14            | OUTPUT SOME MORE                 |
| 0563  | 75035 | 067060 | LDB TIM2             | CHARACTERS.                      |
| 0564  | 75036 | 016137 | JSB LTYPR            |                                  |
| 0565* |       |        |                      |                                  |
| 0566  | 75037 | 016107 | JSB RDIDT            | READ IN THE IDT                  |
| 0567* |       |        |                      |                                  |
| 0568  | 75040 | 044357 | ADB , +5             | GET TIME TO DATE.                |
| 0569  | 75041 | 160001 | LDA 1, I             |                                  |
| 0570  | 75042 | 040031 | ADA TIMT             | ADD IN CURRENT TIME.             |
| 0571  | 75043 | 017076 | JSB TIMPR            | PRINT IT.                        |
| 0572* |       |        |                      |                                  |
| 0573  | 75044 | 060367 | LDA , +15B           | OUTPUT CR.                       |
| 0574  | 75045 | 016132 | JSB LOUT             |                                  |
| 0575  | 75046 | 026226 | JMP LLEND            | TERMINATE.                       |
| 0576* |       |        |                      |                                  |
| 0577  | 75047 | 075050 | DEF **1              |                                  |
| 0578  | 75050 | 005103 | OCT 5103             | LF=C                             |
| 0579  | 75051 | 047516 | ASC 7, ONSOLE TIME * |                                  |
|       | 75052 | 051517 |                      |                                  |
|       | 75053 | 046105 |                      |                                  |

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75054 020124
75055 044515
75056 042440
75057 036440
0580 75060 075061 TIM2 DEF *+1
0581 75061 020124 ASC 7, TOTAL TIME *
75062 047524
75063 040514
75064 020124
75065 044515
75066 042440
75067 036440
0582 75070 075071 TIM3 DEF *+1
0583 75071 020115 ASC 5, MINUTES.
75072 044516
75073 052524
75074 042523
75075 027040

0584*
0585* TIMPR OUTPUTS THE INTEGER IN A TO THE CONSOLE.
0586*
0587 75076 000000 TIMPR NOP
0588 75077 002003 SZA, RSS SPECIAL CASE OF ZERO.
0589 75100 027125 JMP TIMP1
0590 75101 070033 STA TIMNM SAVE ORIGINAL NUMBER.
0591 75102 067133 LDB TIMXK GET INITIAL DIVISOR OF 10000.
0592 75103 074034 STB TIMDV
0593 75104 006400 TIMP4 CLB COMPUTE A DIGIT.
0594 75105 100400 DIV TIMDV
75106 000034
0595 75107 074030 STB TIMN SAVE REMAINDER.
0596 75110 054033 CPB TIMNM IF REMAINDER=ORIGINAL NUMBER
0597 75111 027114 JMP TIMP2 THIS IS A LEADING ZERO.
0598 75112 040432 ADA .+60B OUTPUT
0599 75113 016132 JSB LOUT DIGIT.
0600 75114 060034 TIMP2 LDA TIMDV PRODUCE NEW DIVISOR.
0601 75115 006400 CLB
0602 75116 100400 DIV .+10
75117 000364
0603 75120 070034 STA TIMDV
0604 75121 002003 SZA, RSS DONE IF DIVISOR IS ZERO.
0605 75122 027127 JMP TIMP3
0606 75123 060030 LDA TIMN GET # AGAIN AND LOOP.
0607 75124 027104 JMP TIMP4
0608 75125 060432 TIMP1 LDA .+60B OUTPUT SINGLE 0.
0609 75126 016132 JSB LOUT
0610 75127 060341 TIMP3 LDA .-9 PRINT
0611 75130 067070 LDB TIM3 "MINUTES,"
0612 75131 016137 JSB LTYPR
0613*
0614 75132 127076 JMP TIMPR, I
0615*
0616 75133 023420 TIMXK DEC 10000
0617 00030 TIMN EQU LTEMP
0618 00031 TIMT EQU LTEMP+1

```

0619 00033  
0620 00034  
0621 75134

TIMNM EQU LTEMP+3  
TIMDV EQU LTEMP+4  
STIM EQU \*

0002\* THE PROTECT COMMAND CAN BE USED BY A000 AND BY GROUP LIBRARIANS  
 0003\* TO RESTRICT THE USE OF PROGRAMS AND FILES BY OTHER USERS.  
 0004\* A PROTECTED PUBLIC OR GROUP LIBRARY PROGRAM MAY NOT BE LISTED,  
 0005\* SAVED, CSAVED, OR PUNCHED IN ANY WAY BY ANOTHER USER. A  
 0006\* PROTECTED FILE MAY NOT BE ACCESSED AT ALL. THE PROTECT  
 0007\* COMMAND SIMPLY SETS BIT 15 OF WORD 1 OF THE DIRECTORY ENTRY  
 0008\* FOR THE PROGRAM OR FILE.

```

0010 75000 ORG LIBRA

0012 75000 064273 LDB MLINK+1 GET USER'S ID
0013 75001 044341 ADB ,+?ID=?LINK
0014 75002 160001 LDA B,I
0015 75003 070030 STA LTEMP PLACE ID INTO LTEMP
0016 75004 010602 AND B1777 CHECK
0017 75005 006400 CLB FOR
0018 75006 100400 DIV .100 PRIVILEGED
 75007 000437
0019 75010 006003 SZB,RSS USER
0020 75011 027030 JMP PRO1

0021*
0022 75012 060327 LDA ,=19
0023 75013 067015 LOB ++2
0024 75014 026432 JMP LIBER
0025 75015 075016 DEF ++1
0026 75016 005120 OCT 5120 LF=P
0027 75017 051111 ASC 9,RIVILEGED COMMAND
 75020 053111
 75021 046105
 75022 043505
 75023 042040
 75024 041517
 75025 046515
 75026 040516
 75027 042040

0028*
0029 75030 060520 PRO1 LDA DLTEM SET POINTER TO PROGRAM NAME
0030 75031 070037 STA PROC
0031 75032 060347 LDA ,=3 SET UP COUNTER.
0032 75033 070036 STA PROD
0033 75034 016164 JSB LCHAR GET FIRST CHAR.
0034 75035 027053 JMP PRO2 ERROR IF NONE.
0035 75036 001727 PRO3 ALF,ALF SAVE CHARACTER IN
0036 75037 034037 ISZ PROC TABLE.
0037 75040 170037 STA PROC,I
0038 75041 016164 JSB LCHAR GET RIGHT CHAR.
0039 75042 060412 LDA ,+40B IF END CHANGE TO BLANK
0040 75043 130037 IOR PROC,I
0041 75044 170037 STA PROC,I
0042 75045 016164 JSB LCHAR GET NEXT CHAR.
0043 75046 060412 LDA ,+40B
0044 75047 034036 ISZ PROD
0045 75050 027036 JMP PRO3 DO WE WANT IT?
0046 75051 050412 CPA ,+40B YES.
0047 75052 027066 JMP PRO4 MUST BE A BLANK.

```



```

0048*
0049 75053 060335 PRO2 LDA ,=13
0050 75054 067056 LDB ++2
0051 75055 026432 JMP LIBER
0052 75056 075057 DEF ++1
0053 75057 005111 OCT 5111 LF=I
0054 75060 047126 ASC 6,NVALID NAME
 75061 040514
 75062 044504
 75063 020116
 75064 040515
 75065 042440

0055*
0056 75066 116005 PRO4 JSB DLOKP,I SEARCH FOR PROG IN DIRECTORY
0057 75067 027103 JMP PRO6 FOUND.
0058*
0059 75070 060334 LDA ,=14
0060 75071 067073 LDB ++2
0061 75072 026432 JMP LIBER
0062 75073 075074 DEF ++1
0063 75074 005110 OCT 5110 LF=N
0064 75075 047440 ASC 6,0 SUCH ENTRY
 75076 051525
 75077 041510
 75100 020105
 75101 047124
 75102 051131

0065*
0066 75103 064035 PRO6 LDB LTEMP+5 SET PROTECT BIT.
0067 75104 006004 INB
0068 75105 160001 LDA 1,I
0069 75106 031036 PRO7 IOR BIT15
0070 75107 170001 STA 1,I
0071 75110 060201 LDA DATIM SET THE LAST
0072 75111 044357 AD0 ,+5 CHANGED DATE
0073 75112 170001 STA 0,I
0074*
0075 75113 064034 LDB LTEMP+4 WRITE OUT DIRECTORY.
0076 75114 160001 LDA 1,I
0077 75115 070072 STA WORD
0078 75116 044360 AD0 ,+6
0079 75117 160001 LDA 1,I
0080 75120 064562 LDB LI00
0081 75121 016231 JSB DRUML
0082 75122 002001 RSS
0083 75123 026226 JMP LLEND
0084 75124 060034 LDA LTEMP+4
0085 75125 164000 LDB A,I
0086 75126 040360 AD0 ,+6
0087 75127 116016 JSB SALVP,I
0088 00036 PROD EQU LTEMP+6
0089 00037 PROC EQU LTEMP+7
0090 75130 SPRO EQU *

```

0092\* UNPROTECT IS IDENTICAL TO PROTECT EXCEPT THAT IT CLEARS THE  
0093\* PROTECT BIT INSTEAD OF SETTING IT.  
0094 75000                   ORG LIBRA  
0095 75000 064273           LDB MLINK+1  
0096 75106                   ORG PRU7  
0097 75106 001665           ELA,CLE,ERA

0099\* THE OPEN COMMAND IS A USER FUNCTION WHICH CAUSES THE SYSTEM TO  
 0100\* CREATE ROOM FOR A DATA FILE. THE FORMAT FOR THE COMMAND IS:

0101\*

0102\* OPEN - FILENAME, FILE LENGTH, RECORD SIZE

0103\*

0104\* THE FILENAME IS SUBJECT TO ALL THE RULES OF PROGRAM NAMES, THE  
 0105\* LENGTH IS A DECIMAL INTEGER FROM 1 TO 32767 INDICATING THE FILE  
 0106\* LENGTH IN RECORDS, RECORD SIZE IS A DECIMAL INTEGER FROM 64 TO  
 0107\* 256 INDICATING THE RECORD SIZE IN WORDS.

|       |       |        |                 |                          |
|-------|-------|--------|-----------------|--------------------------|
| 0109  | 75000 |        | ORG LIBRA       |                          |
| 0110  | 75000 | 060273 | LDA MLINK+1     | GET ID AND STORE         |
| 0111  | 75001 | 040341 | ADA ,+?ID-?LINK | IN LTEMP,                |
| 0112  | 75002 | 160000 | LDA 0,I         |                          |
| 0113  | 75003 | 070030 | STA LTEMP       |                          |
| 0114  | 75004 | 060520 | LDA DLTEM       | SET UP POINTER FOR       |
| 0115  | 75005 | 070042 | STA OPEP        | NAME,                    |
| 0116  | 75006 | 060347 | LDA ,-3         | SET UP COUNTER,          |
| 0117  | 75007 | 070043 | STA OPEC        |                          |
| 0118  | 75010 | 002400 | CLA             | SET FLAG SAYING FIRST    |
| 0119  | 75011 | 070040 | STA OPEF        | CHAR,                    |
| 0120  | 75012 | 017041 | OPE1 JSB OPER   | GET A CHARACTER,         |
| 0121  | 75013 | 001727 | ALF,ALF         | STORE IN                 |
| 0122  | 75014 | 034042 | ISZ OPEP        | NAME AREA,               |
| 0123  | 75015 | 170042 | STA OPEP,I      |                          |
| 0124  | 75016 | 017041 | JSB OPER        | GET RIGHT CHAR,          |
| 0125  | 75017 | 130042 | IOR OPEP,I      | MERGE IN,                |
| 0126  | 75020 | 170042 | STA OPEP,I      |                          |
| 0127  | 75021 | 034043 | ISZ OPEC        | TEST FOR ANY MORE,       |
| 0128  | 75022 | 027012 | JMP OPE1        |                          |
| 0129* |       |        |                 |                          |
| 0130  | 75023 | 017041 | JSB OPER        | NEXT CHARACTER MUST BE   |
| 0131  | 75024 | 050412 | CPA ,+400       | BLANK,                   |
| 0132  | 75025 | 027116 | JMP OPE2        |                          |
| 0133  | 75026 | 060334 | LDA ,+14        |                          |
| 0134  | 75027 | 067031 | LDB ++2         |                          |
| 0135  | 75030 | 026432 | JMP LIBER       |                          |
| 0136  | 75031 | 075032 | DEF ++1         |                          |
| 0137  | 75032 | 005116 | OCT 5116        | LF=N                     |
| 0138  | 75033 | 040515 | ASC 6,AME       | TOO LONG                 |
|       | 75034 | 042440 |                 |                          |
|       | 75035 | 052117 |                 |                          |
|       | 75036 | 047440 |                 |                          |
|       | 75037 | 046117 |                 |                          |
|       | 75040 | 047107 |                 |                          |
| 0139* |       |        |                 |                          |
| 0140  | 75041 | 000000 | OPER NOP        | GET NEXT CHAR FOR NAME,  |
| 0141  | 75042 | 060040 | LDA OPEF        | TEST TO SEND BACK BLANK, |
| 0142  | 75043 | 050412 | CPA ,+400       |                          |
| 0143  | 75044 | 127041 | JMP OPER,I      |                          |
| 0144  | 75045 | 016164 | OPER1 JSB LCHAR | GET NEXT CHAR,           |
| 0145  | 75046 | 026430 | JMP ILFER       | FAIL IF NONE,            |
| 0146  | 75047 | 064000 | LDB 0           | SAVE IN B,               |
| 0147  | 75050 | 010730 | AND ,140        | SKIP CONTRCL CHARS,      |

|       |                  |        |       |               |                         |
|-------|------------------|--------|-------|---------------|-------------------------|
| 0148  | 75051            | 002002 |       | SZA           |                         |
| 0149  | 75052            | 050730 |       | CPA .140      |                         |
| 0150  | 75053            | 027045 |       | JMP OPER1     |                         |
| 0151  | 75054            | 060040 |       | LDA OPEF      | GET 1ST CHAR, FLAG.     |
| 0152  | 75055            | 002002 |       | SZA           | TEST FOR 1ST CHAR.      |
| 0153  | 75056            | 027070 |       | JMP OPER2     | NOT,                    |
| 0154  | 75057            | 054426 |       | CPB .+54B     | TEST FOR COMMA OR \$    |
| 0155  | 75060            | 026430 |       | JMP ILFER     |                         |
| 0156  | 75061            | 054416 |       | CPB .+44B     |                         |
| 0157  | 75062            | 027076 |       | JMP OPE16     |                         |
| 0158  | 75063            | 054424 |       | CPB .+52B     | TEST FOR *              |
| 0159  | 75064            | 027076 |       | JMP OPE16     |                         |
| 0160  | 75065            | 060001 | OPER3 | LDA 1         | RETURN CHAR IN B        |
| 0161  | 75066            | 034040 |       | ISZ OPEF      |                         |
| 0162  | 75067            | 127041 |       | JMP OPER,I    |                         |
| 0163  | 75070            | 054426 | OPER2 | CPB .+54B     | COMMA TEST              |
| 0164  | 75071            | 002001 |       | RSS           |                         |
| 0165  | 75072            | 027065 |       | JMP OPER3     |                         |
| 0166  | 75073            | 060412 |       | LDA .+40B     |                         |
| 0167  | 75074            | 070040 |       | STA OPEF      |                         |
| 0168  | 75075            | 127041 |       | JMP OPER,I    |                         |
| 0169* |                  |        |       |               |                         |
| 0170  | 75076            | 060322 | OPE16 | LDA .+24      |                         |
| 0171  | 75077            | 067101 |       | LDB **2       |                         |
| 0172  | 75100            | 026432 |       | JMP LIBER     |                         |
| 0173  | 75101            | 075102 |       | DEF **1       |                         |
| 0174  | 75102            | 005111 |       | OCT 5111      | LF=I                    |
| 0175  | 75103            | 046114 |       | ASC 11,LLEGAL | FIRST CHARACTER         |
|       | 75104            | 042507 |       |               |                         |
|       | 75105            | 040514 |       |               |                         |
|       | 75106            | 020106 |       |               |                         |
|       | 75107            | 044522 |       |               |                         |
|       | 75110            | 051524 |       |               |                         |
|       | 75111            | 020103 |       |               |                         |
|       | 75112            | 044101 |       |               |                         |
|       | 75113            | 051101 |       |               |                         |
|       | 75114            | 041524 |       |               |                         |
|       | 75115            | 042522 |       |               |                         |
| 0176* |                  |        |       |               |                         |
| 0177* | GET FILE LENGTH, |        |       |               |                         |
| 0178* |                  |        |       |               |                         |
| 0179  | 75116            | 002400 | OPE2  | CLA           | INITIALIZE # TO 0       |
| 0180  | 75117            | 070040 |       | STA OPEF      |                         |
| 0181  | 75120            | 016164 |       | JSB LCHAR     | GET A CHAR,             |
| 0182  | 75121            | 027154 |       | JMP OPE51     | DONE                    |
| 0183  | 75122            | 050426 |       | CPA .+54B     | IS IT A COMMA?          |
| 0184  | 75123            | 027136 |       | JMP OPE50     | YES, GO GET RECORD SIZE |
| 0185  | 75124            | 040316 |       | ADA M72B      | DIGIT TEST,             |
| 0186  | 75125            | 002021 |       | SSA,RSS       |                         |
| 0187  | 75126            | 026430 |       | JMP ILFER     |                         |
| 0188  | 75127            | 040364 |       | ADA .+10      |                         |
| 0189  | 75130            | 002020 |       | SSA           |                         |
| 0190  | 75131            | 026430 |       | JMP ILFER     |                         |
| 0191  | 75132            | 070043 |       | STA OPEC      | SAVE DIGIT,             |
| 0192  | 75133            | 060040 |       | LDA OPEF      |                         |

|       |                 |        |       |              |                                 |
|-------|-----------------|--------|-------|--------------|---------------------------------|
| 0193  | 75134           | 017700 |       | JSB OPE3B    |                                 |
| 0194  | 75135           | 027117 |       | JMP OPE2+1   |                                 |
| 0195* |                 |        |       |              |                                 |
| 0196* | GET RECORD SIZE |        |       |              |                                 |
| 0197* |                 |        |       |              |                                 |
| 0198  | 75136           | 002400 | OPE50 | CLA          | INITIALIZE SIZE TO 0            |
| 0199  | 75137           | 070042 |       | STA OPEP     |                                 |
| 0200  | 75140           | 016164 |       | JSB LCHAR    | GET A CHARACTER                 |
| 0201  | 75141           | 027156 |       | JMP OPE3     | DONE                            |
| 0202  | 75142           | 040316 |       | ADA M72B     | DIGIT TEST                      |
| 0203  | 75143           | 002021 |       | SSA,RSS      |                                 |
| 0204  | 75144           | 026430 |       | JMP ILFER    |                                 |
| 0205  | 75145           | 040364 |       | ADA ,+10     |                                 |
| 0206  | 75146           | 002020 |       | SSA          |                                 |
| 0207  | 75147           | 026430 |       | JMP ILFER    |                                 |
| 0208  | 75150           | 070043 |       | STA OPEC     | SAVE DIGIT                      |
| 0209  | 75151           | 060042 |       | LDA OPEP     | BUILD                           |
| 0210  | 75152           | 017700 |       | JSB OPE3B    |                                 |
| 0211  | 75153           | 027137 |       | JMP OPE50+1  | GET NEXT DIGIT                  |
| 0212* |                 |        |       |              |                                 |
| 0213  | 75154           | 060444 | OPE51 | LDA B400     | DEFAULT RECORD SIZE             |
| 0214  | 75155           | 070042 |       | STA OPEP     | IS 256 WORDS                    |
| 0215  | 75156           | 060040 | OPE3  | LDA OPEF     | TEST FOR LEGAL VALUE.           |
| 0216  | 75157           | 002021 |       | SSA,RSS      |                                 |
| 0217  | 75160           | 002003 |       | SZA,RSS      |                                 |
| 0218  | 75161           | 026430 |       | JMP ILFER    | ERROR IF ZERO OR NEGATIVE       |
| 0219  | 75162           | 060042 |       | LDA OPEP     | GET RECORD SIZE                 |
| 0220  | 75163           | 040610 |       | ADA M64      |                                 |
| 0221  | 75164           | 002020 |       | SSA          | LESS THAN 64?                   |
| 0222  | 75165           | 026430 |       | JMP ILFER    | YES, AND THAT'S NOT PLAYING     |
| 0223* |                 |        |       |              | BY THE RULES.                   |
| 0224  | 75166           | 043757 |       | ADA OM103    |                                 |
| 0225  | 75167           | 002021 |       | SSA,RSS      | GREATER THAN 256?               |
| 0226  | 75170           | 026430 |       | JMP ILFER    | THAT'S EQUALLY A NO=NO          |
| 0227* |                 |        |       |              |                                 |
| 0228  | 75171           | 016107 |       | JSB RDIDT    | GET APPROPRIATE IDT TRACK       |
| 0229  | 75172           | 044360 |       | ADB ,+6      | TEST FOR USER OUT OF DISK SPACE |
| 0230  | 75173           | 160001 |       | LDA 1,I      |                                 |
| 0231  | 75174           | 003100 |       | CMA,CLE      |                                 |
| 0232  | 75175           | 006004 |       | INB          |                                 |
| 0233  | 75176           | 140001 |       | ADA 1,I      |                                 |
| 0234  | 75177           | 040040 |       | ADA OPEF     |                                 |
| 0235  | 75200           | 002041 |       | SEZ,RSS      |                                 |
| 0236  | 75201           | 027220 |       | JMP OPE4     |                                 |
| 0237* |                 |        |       |              |                                 |
| 0238  | 75202           | 067205 |       | LDB ,+3      |                                 |
| 0239  | 75203           | 060327 | OPE7  | LDA ,+19     |                                 |
| 0240  | 75204           | 026432 |       | JMP LIBER    |                                 |
| 0241  | 75205           | 075206 |       | DEF ,+1      |                                 |
| 0242  | 75206           | 005114 |       | OCT 5114     | LF=L                            |
| 0243  | 75207           | 044602 |       | ASC 9,IBRARY | SPACE FULL                      |
|       | 75210           | 051101 |       |              |                                 |
|       | 75211           | 051131 |       |              |                                 |
|       | 75212           | 020123 |       |              |                                 |
|       | 75213           | 050101 |       |              |                                 |

75214 041505  
 75215 020106  
 75216 052514  
 75217 046040

0244\*

0245\* SEARCH ADT FOR SPACE TO PUT THE FILE.

0246\*

```

0247 75220 OPE4 EQU *
0248 75220 060342 LDA ,=8 SET COUNT OF ADT'S TO SEARCH
0249 75221 070041 STA OPEDF
0250 75222 OPE4A EQU *
0251 75222 062010 LDA RKCYP ADVANCE THE CURRENT
0252 75223 002004 INA ADT TRACK POINTER
0253 75224 053766 CPA DALNA CHECK FOR END OF TABLE
0254 75225 063765 LDA DALCA CYCLE TO BEGINNING IF SO
0255 75226 072010 STA RKCYP
0256 75227 040362 ADA ,+DADLN-DADLC POINTER TO LENGTH TABLE
0257 75230 070044 STA OPELN
0258 75231 160044 LDA OPELN,I IS THIS DISK
0259 75232 002003 SZA,RSS AVAILABLE?
0260 75233 027260 JMP OPE6A NO, TRY NEXT ADT
0261 75234 070072 STA WORD YES
0262 75235 162010 LDA RKCYP,I READ IN
0263 75236 064566 LDB LIBDI THE DISK ADT
0264 75237 016231 JSB DRUML TRACK
0265 75240 027260 JMP OPE6A DRUM ERROR: SKIP TRACK FOR NOW
0266 75241 007400 CCB COMPUTE
0267 75242 160044 LDA OPELN,I ENTRY
0268 75243 100400 DIV ,+3 COUNT
0269 75244 000355
0269 75245 070043 STA OPEC AND SAVE
0270 75246 064562 LOB LIBD => FIRST ENTRY
0271 75247 044354 ADB ,+2 LENGTH WORD
0272 75250 160001 OPE6 LDA I,I TEST FOR BIG ENOUGH.
0273 75251 003100 CMA,CLE
0274 75252 040040 ADA OPEF
0275 75253 002041 SEZ,RSS
0276 75254 027276 JMP OPE5 IT IS.
0277 75255 044355 ADB ,+3
0278 75256 034043 ISZ OPEC
0279 75257 027250 JMP OPE6
0280 75260 OPE6A EQU *
0281 75260 034041 ISZ OPEDF HAVE WE TRIED ALL ADT'S?
0282 75261 027222 JMP OPE4A NO, TRY NEXT ONE
0283 75262 OPE12 EQU *
0284 75262 060332 LDA ,=16
0285 75263 067265 LDB ,+2
0286 75264 026432 JMP LIBER
0287 75265 075266 DEF ,+1
0288 75266 005123 OCT 5123 LF=8
0289 75267 054523 ASC 7,SYSTEM OVERLOAD
0289 75270 052105
0289 75271 046440
0289 75272 047526
0289 75273 042522

```

|       |       |        |      |                |                                  |
|-------|-------|--------|------|----------------|----------------------------------|
|       | 75274 | 046117 |      |                |                                  |
|       | 75275 | 040504 |      |                |                                  |
| 0290* |       |        |      |                |                                  |
| 0291  | 75276 | 060040 | OPE5 | LDA OPEF       | SAVE                             |
| 0292  | 75277 | 003004 |      | CMA, INA       | =NUMBER                          |
| 0293  | 75300 | 140001 |      | ADA B, I       | OF SECTORS                       |
| 0294  | 75301 | 070041 |      | STA OPEDF      | LEFT                             |
| 0295  | 75302 | 044350 |      | ADB -2         | SAVE LOCATION OF                 |
| 0296  | 75303 | 074043 |      | STB OPEC       | DISC ADT ENTRY                   |
| 0297  | 75304 | 104200 |      | DLD 1, I       | SAVE DISC                        |
|       | 75305 | 100001 |      |                |                                  |
| 0298  | 75306 | 104400 |      | DST OPEDA      | ADDRESS                          |
|       | 75307 | 000036 |      |                |                                  |
| 0299  | 75310 | 002400 |      | CLA            | CLEAR DRUM                       |
| 0300  | 75311 | 070045 |      | STA OPEDU      | ADDRESS                          |
| 0301* |       |        |      |                |                                  |
| 0302  | 75312 | 060032 |      | LDA LTEMP+2    | SET                              |
| 0303  | 75313 | 031036 |      | IOR BIT15      | FILES                            |
| 0304  | 75314 | 070032 |      | STA LTEMP+2    | BIT                              |
| 0305  | 75315 | 116005 |      | JSB DLOKP, 1   | SEARCH FOR ENTRY                 |
| 0306  | 75316 | 027734 |      | JMP OPE8       | ENTRY FOUND=ILLEGAL.             |
| 0307* |       |        |      |                |                                  |
| 0308  | 75317 | 164034 |      | LDB LTEMP+4, I | IF DIRECTORY TRACK IS            |
| 0309  | 75320 | 054714 |      | CPB M8184      | FULL, DO                         |
| 0310  | 75321 | 027750 |      | JMP OPE98      | SUPERSAVE (THE SAVE OF STEEL)    |
| 0311* |       |        |      |                |                                  |
| 0312  | 75322 | 007000 |      | CMB            | SET UP SOURCE                    |
| 0313  | 75323 | 044562 |      | ADB LIBD       | FOR MOVE.                        |
| 0314  | 75324 | 074050 |      | STB MOVES      |                                  |
| 0315  | 75325 | 044366 |      | ADB +12        | SET UP DESTINATION               |
| 0316  | 75326 | 074051 |      | STB MOVED      |                                  |
| 0317  | 75327 | 007000 |      | CMB            | COMPUTE LENGTH.                  |
| 0318  | 75330 | 044402 |      | ADB +24        |                                  |
| 0319  | 75331 | 044035 |      | ADB LTEMP+5    |                                  |
| 0320  | 75332 | 016243 |      | JSB MOVEB      |                                  |
| 0321* |       |        |      |                |                                  |
| 0322  | 75333 | 060520 |      | LDA DLTEM      | MOVE 4 WORDS IN FOR              |
| 0323  | 75334 | 070050 |      | STA MOVES      | NEW ENTRY.                       |
| 0324  | 75335 | 060035 |      | LDA LTEMP+5    |                                  |
| 0325  | 75336 | 040366 |      | ADA +12        |                                  |
| 0326  | 75337 | 070051 |      | STA MOVED      |                                  |
| 0327  | 75340 | 064346 |      | LDB -4         |                                  |
| 0328  | 75341 | 016257 |      | JSB MOVEW      |                                  |
| 0329  | 75342 | 060042 |      | LDA OPEP       | GET LOGICAL RECORD SIZE          |
| 0330  | 75343 | 170051 |      | STA MOVED, I   | AND PUT IT IN DIRECTORY          |
| 0331  | 75344 | 034051 |      | ISZ MOVED      | BUMP POINTER                     |
| 0332  | 75345 | 016076 |      | JSB DATE       | GET DATE                         |
| 0333  | 75346 | 170051 |      | STA MOVED, I   | SET IT IN LAST REFERENCE DATE    |
| 0334  | 75347 | 034051 |      | ISZ MOVED      |                                  |
| 0335  | 75350 | 060201 |      | LDA DATIM      | GET HOUR OF YEAR                 |
| 0336  | 75351 | 170051 |      | STA MOVED, I   | SET IT IN LAST CHANGE DATE       |
| 0337  | 75352 | 034051 |      | ISZ MOVED      |                                  |
| 0338  | 75353 | 002400 |      | CLA            |                                  |
| 0339  | 75354 | 170051 |      | STA MOVED, I   | ZERO DRUM ADDRESS - UNSANCTIFIED |
| 0340  | 75355 | 034051 |      | ISZ MOVED      |                                  |

|       |       |        |               |                               |
|-------|-------|--------|---------------|-------------------------------|
| 0341  | 75356 | 104200 | OLD OPEDA     | GET DISC ADDRESS              |
|       | 75357 | 000036 |               |                               |
| 0342  | 75360 | 104400 | DST MOVED,I   | INTO DIRECTORY                |
|       | 75361 | 100051 |               |                               |
| 0343  | 75362 | 060355 | LDA .+3       | INSERT FILE                   |
| 0344  | 75363 | 040051 | ADA MOVED     | LENGTH INTO                   |
| 0345  | 75364 | 064040 | LDB OPEF      | LAST WORD OF                  |
| 0346  | 75365 | 174000 | STB A,I       | DIRECTORY ENTRY               |
| 0347* |       |        |               |                               |
| 0348  | 75366 | 160034 | LDA LTEMP+4,I | ADJUST DIRECTORY              |
| 0349  | 75367 | 040336 | ADA .-12      | LENGTH                        |
| 0350  | 75370 | 170034 | STA LTEMP+4,I |                               |
| 0351  | 75371 | 070072 | STA WORD      |                               |
| 0352  | 75372 | 060034 | LDA LTEMP+4   | WRITE DIRECTORY               |
| 0353  | 75373 | 002004 | INA           | BACK OUT.                     |
| 0354  | 75374 | 070051 | STA MOVED     |                               |
| 0355  | 75375 | 040357 | ADA .+5       |                               |
| 0356  | 75376 | 160000 | LDA 0,I       |                               |
| 0357  | 75377 | 064562 | LDB LIBD      |                               |
| 0358  | 75400 | 074050 | STB MOVES     |                               |
| 0359  | 75401 | 016231 | JSB DRUML     |                               |
| 0360  | 75402 | 116017 | JSB DEADP,I   | DRUM ERROR, IT'S CURTAINS     |
| 0361* |       |        |               |                               |
| 0362  | 75403 | 064346 | LDB .-4       | RESET                         |
| 0363  | 75404 | 016257 | JSB MOVEW     | DIREC.                        |
| 0364* |       |        |               |                               |
| 0365  | 75405 |        | OPE11 EQU *   |                               |
| 0366  | 75405 | 016107 | JSB RDIDT     | GET IDT TRACK AGAIN           |
| 0367  | 75406 | 044361 | ADB .+7       |                               |
| 0368  | 75407 | 060040 | LDA OPEF      | ADJUST AMOUNT OF DISC USED.   |
| 0369  | 75410 | 140001 | ADA 1,I       |                               |
| 0370  | 75411 | 170001 | STA 1,I       |                               |
| 0371  | 75412 | 160075 | LDA IDLCP,I   | WRITE                         |
| 0372  | 75413 | 064562 | LDB LIBD      | OUT                           |
| 0373  | 75414 | 016231 | JSB DRUML     | IDT                           |
| 0374  | 75415 | 116017 | JSB DEADP,I   | DRUM ERROR, BYE-BYE           |
| 0375  | 75416 | 160044 | LDA OPELN,I   | READ                          |
| 0376  | 75417 | 070072 | STA WORD      | IN                            |
| 0377  | 75420 | 162010 | LDA RKCYP,I   | DISK                          |
| 0378  | 75421 | 064566 | LDB LIBDI     | ADT                           |
| 0379  | 75422 | 016231 | JSB DRUML     | TRACK                         |
| 0380  | 75423 | 027674 | JMP OPE14     | CAN'T, SO MAKE IT DISAPPEAR   |
| 0381* |       |        |               |                               |
| 0382  | 75424 | 064041 | LDB OPEDF     | GET # OF SECTORS LEFT IN ADT. |
| 0383  | 75425 | 006002 | SZB           | REST FOR ANY PART LEFT        |
| 0384  | 75426 | 027445 | JMP OPE9      | NON EMPTY ADT ENTRY.          |
| 0385* |       |        |               |                               |
| 0386  | 75427 | 064043 | LDB OPEC      | SQUEEZE OUT ADT ENTRY.        |
| 0387  | 75430 | 074051 | STB MOVED     |                               |
| 0388  | 75431 | 044355 | ADB .+3       |                               |
| 0389  | 75432 | 074050 | STB MOVES     |                               |
| 0390  | 75433 | 044674 | ADB MLIBD     |                               |
| 0391  | 75434 | 044072 | ADB WORD      |                               |
| 0392  | 75435 | 016257 | JSB MOVEW     |                               |
| 0393* |       |        |               |                               |



|       |       |        |       |            |                                 |
|-------|-------|--------|-------|------------|---------------------------------|
| 0394  | 75436 | 060355 | LDA   | .,+3       | REDUCE                          |
| 0395  | 75437 | 164044 | LDB   | OPELN,I    | DISC ADT                        |
| 0396  | 75440 | 044000 | ADB   | A          | LENGTH                          |
| 0397  | 75441 | 174044 | STB   | OPELN,I    | BY 3                            |
| 0398  | 75442 | 040072 | ADA   | WORD       | ALSO REDUCE                     |
| 0399  | 75443 | 070072 | STA   | WORD       | TRANSFER LENGTH                 |
| 0400  | 75444 | 027461 | JMP   | OPE10      |                                 |
| 0401* |       |        |       |            |                                 |
| 0402  | 75445 | 104200 | OPE9  | DLD OPEC,I | UPDATE                          |
|       | 75446 | 100043 |       |            |                                 |
| 0403  | 75447 | 000040 | CLE   |            |                                 |
| 0404  | 75450 | 044040 | ADB   | OPEF       | DISC                            |
| 0405  | 75451 | 002040 | SEZ   |            |                                 |
| 0406  | 75452 | 002004 | INA   |            | ADDRESS                         |
| 0407  | 75453 | 104400 | DST   | OPEC,I     |                                 |
|       | 75454 | 100043 |       |            |                                 |
| 0408  | 75455 | 064043 | LDB   | OPEC       | SAVE                            |
| 0409  | 75456 | 044354 | ADB   | .,+2       | REMAINING                       |
| 0410  | 75457 | 060041 | LDA   | OPEDF      | BLOCKS                          |
| 0411  | 75460 | 170001 | STA   | B,I        | LENGTH                          |
| 0412* |       |        |       |            |                                 |
| 0413  | 75461 |        | OPE10 | EGU *      |                                 |
| 0414  | 75461 | 162010 | LDA   | RKCYP,I    | WRITE                           |
| 0415  | 75462 | 064562 | LDB   | LIBD       | DISC ADT                        |
| 0416  | 75463 | 016231 | JSB   | DRUML      | BACK                            |
| 0417  | 75464 | 027674 | JMP   | OPE14      | CAN'T, SO MAKE IT DISAPPEAR     |
| 0418* |       |        |       |            |                                 |
| 0419  | 75465 | 067760 | OPE15 | LDB M40    | FILL                            |
| 0420  | 75466 | 074043 | STB   | OPEC       | USER                            |
| 0421  | 75467 | 064562 | LDB   | LIBD       | AREA                            |
| 0422  | 75470 | 003400 | CCA   |            | WITH                            |
| 0423  | 75471 | 170001 | STA   | B,I        | END=                            |
| 0424  | 75472 | 044444 | ADB   | B400       | OF=                             |
| 0425  | 75473 | 034043 | ISZ   | OPEC       | FILE                            |
| 0426  | 75474 | 027471 | JMP   | .,+3       | MARKS                           |
| 0427* |       |        |       |            |                                 |
| 0428  | 75475 | 060340 | LDA   | .,-10      | INITIALIZE WRITES-BEFORE-       |
| 0429  | 75476 | 070043 | STA   | OPEC       | SUSPEND COUNT                   |
| 0430  | 75477 | 063755 | LDA   | M10K       | INITIALIZE                      |
| 0431  | 75500 | 070215 | STA   | MWORD      | WORD COUNT                      |
| 0432* |       |        |       |            |                                 |
| 0433  | 75501 | 064040 | OPE52 | LDB OPEF   | GET REMAINING RECORD COUNT      |
| 0434  | 75502 | 047760 | ADB   | M40        | MORE THAN                       |
| 0435  | 75503 | 006020 | SSB   |            | 40?                             |
| 0436  | 75504 | 027661 | JMP   | OPE13      | NO, GO DO PARTIAL WRITE         |
| 0437  | 75505 | 074040 | STB   | OPEF       | YES, UPDATE COUNT               |
| 0438  | 75506 | 063764 | LDA   | OPEDI      | POINTER TO DISC TO DISC ADDRESS |
| 0439  | 75507 | 064562 | LDB   | LIBD       | CORE ADDRESS                    |
| 0440  | 75510 | 114217 | JSB   | DISCZ,I    | WRITE 40 FILE MARKS             |
| 0441  | 75511 | 027710 | JMP   | OPEDE      | FAILURE: GO PRINT ERROR         |
| 0442  | 75512 | 104200 | DLD   | OPEDA      | UPDATE                          |
|       | 75513 | 000036 |       |            |                                 |
| 0443  | 75514 | 000040 | CLE   |            |                                 |
| 0444  | 75515 | 044422 | ADB   | .,+40      | DISC                            |
| 0445  | 75516 | 002040 | SEZ   |            |                                 |

|       |                                                 |        |                   |                           |
|-------|-------------------------------------------------|--------|-------------------|---------------------------|
| 0446  | 75517                                           | 002004 | INA               | ADDRESS                   |
| 0447  | 75520                                           | 104400 | DST OPEDA         |                           |
|       | 75521                                           | 000036 |                   |                           |
| 0448* |                                                 |        |                   |                           |
| 0449  | 75522                                           | 034043 | ISZ OPEC          | TIME TO SESPEND?          |
| 0450  | 75523                                           | 027501 | JMP OPE52         | NO, CONTINUE              |
| 0451* |                                                 |        |                   |                           |
| 0452* | AFTER 10 WRITES OF 40 FILE MARKS EACH, SUSPEND. |        |                   |                           |
| 0453* |                                                 |        |                   |                           |
| 0454  | 75524                                           | 064273 | LDB MLINK+1       | GET POINTER TO DISC       |
| 0455  | 75525                                           | 044354 | ADB .+?RTIM=?LINK | ADDRESS STORAGE           |
| 0456  | 75526                                           | 060037 | LDA OPEDA+1       | GET LOW PART AND          |
| 0457  | 75527                                           | 170001 | STA B,I           | STASH IN TTY TABLE        |
| 0458  | 75530                                           | 006004 | INB               |                           |
| 0459  | 75531                                           | 060031 | LDA LTEMP+1       | STORE                     |
| 0460  | 75532                                           | 170001 | STA B,I           | ALSO                      |
| 0461  | 75533                                           | 006004 | INB               | FILE                      |
| 0462  | 75534                                           | 074043 | STB OPEC          | NAME                      |
| 0463  | 75535                                           | 104200 | DLD LTEMP+2       | IN TTY                    |
|       | 75536                                           | 000032 |                   |                           |
| 0464  | 75537                                           | 104400 | DST OPEC,I        | TABLE                     |
|       | 75540                                           | 100043 |                   |                           |
| 0465  | 75541                                           | 103100 | CLF 0             | DISABLE INTERRUPTS        |
| 0466  | 75542                                           | 064273 | LDB MLINK+1       | SET                       |
| 0467  | 75543                                           | 044353 | ADB .+?PLEV=?LINK | PRIORITY                  |
| 0468  | 75544                                           | 060356 | LDA .+4           | TO                        |
| 0469  | 75545                                           | 170001 | STA B,I           | 4                         |
| 0470  | 75546                                           | 044347 | ADB .+?RSTR=?PLEV | SET                       |
| 0471  | 75547                                           | 063762 | LDA OP17P         | RESTART                   |
| 0472  | 75550                                           | 170001 | STA B,I           | ADDRESS                   |
| 0473  | 75551                                           | 002400 | CLA               | BLOCK                     |
| 0474  | 75552                                           | 170634 | STA DCLC1,I       | CLOCK                     |
| 0475  | 75553                                           | 102100 | STF 0             | ENABLE INTERRUPTS         |
| 0476  | 75554                                           | 064273 | LDB MLINK+1       | REMOVE                    |
| 0477  | 75555                                           | 160001 | LDA B,I           | USER                      |
| 0478  | 75556                                           | 070273 | STA MLINK+1       | FROM 0                    |
| 0479  | 75557                                           | 016563 | JSB INSEQ         | AND REINSERT HIM (OR HER) |
| 0480  | 75560                                           | 127501 | JMP **+1,I        | GO TO                     |
| 0481  | 75561                                           | 070362 | DEF SCH1          | SCHEDULER                 |
| 0482* |                                                 |        |                   |                           |
| 0483* |                                                 |        |                   |                           |
| 0484* | OPEN WILL BE RESTARTED HERE.                    |        |                   |                           |
| 0485* |                                                 |        |                   |                           |
| 0486  | 75562                                           | 064273 | OPE17 LDB MLINK+1 | GET                       |
| 0487  | 75563                                           | 044341 | ADB .+?ID=?LINK   | USER                      |
| 0488  | 75564                                           | 160001 | LDA B,I           | ID                        |
| 0489  | 75565                                           | 070030 | STA LTEMP         |                           |
| 0490  | 75566                                           | 044365 | ADB .+?RTIM=?ID   | GET LOW                   |
| 0491  | 75567                                           | 160001 | LDA B,I           | WORD OF CURRENT           |
| 0492  | 75570                                           | 070037 | STA OPEDA+1       | DISC ADDRESS              |
| 0493  | 75571                                           | 006004 | INB               |                           |
| 0494  | 75572                                           | 160001 | LDA B,I           | GET                       |
| 0495  | 75573                                           | 070031 | STA LTEMP+1       | FILE                      |
| 0496  | 75574                                           | 006004 | INB               | NAME                      |
| 0497  | 75575                                           | 104200 | DLD B,I           | BEING                     |

|       |              |         |             |                                   |
|-------|--------------|---------|-------------|-----------------------------------|
| 0498  | 75576 100001 |         |             |                                   |
|       | 75577 104400 | DST     | LTEMP+2     | INITIALIZED                       |
|       | 75600 000032 |         |             |                                   |
| 0499* |              |         |             |                                   |
| 0500  | 75601 116005 | JSB     | DLOKP,I     | CHECK FOR FILE'S EXISTENCE        |
| 0501  | 75602 002001 | RSS     |             | IT'S THERE                        |
| 0502  | 75603 026226 | JMP     | LLEND       | IT'S GONE! TERMINATE              |
| 0503  | 75604 064035 | LDB     | LTEMP+5     | GET                               |
| 0504  | 75605 044354 | ADB     | ,+2         | WORD                              |
| 0505  | 75606 160001 | LDA     | B,I         | 2                                 |
| 0506  | 75607 002021 | SSA,RSS |             | IS IT A FILE?                     |
| 0507  | 75610 026226 | JMP     | LLEND       | NO, TERMINATE                     |
| 0508  | 75611 044360 | ADB     | ,+6         | ⇒ DISC ADDRESS                    |
| 0509  | 75612 160001 | LDA     | B,I         | SET TENTATIVE UPPER               |
| 0510  | 75613 070036 | STA     | OPEDA       | WORD OF CURRENT DISC ADDRESS      |
| 0511  | 75614 074043 | STB     | OPEC        | SAVE DISC                         |
| 0512  | 75615 044355 | ADB     | ,+3         | ADDRESS AND                       |
| 0513  | 75616 074042 | STB     | OPEP        | LENGTH POINTERS                   |
| 0514  | 75617 017630 | JSB     | OPERC       | CHECK CURRENT FOR IN RANGE        |
| 0515  | 75620 027625 | JMP     | OPE18       | IT IS; PROCEED                    |
| 0516  | 75621 034036 | ISZ     | OPEDA       | TRY ONE HIGHER UPPER WORD         |
| 0517  | 75622 017630 | JSB     | OPERC       | AGAIN CHECK FOR IN RANGE          |
| 0518  | 75623 002001 | RSS     |             | GOOD                              |
| 0519  | 75624 026226 | JMP     | LLEND       | BAD, GIVE UP                      |
| 0520  | 75625 007004 | OPE18   | CMB,INB     | GET REMAINING RECORD              |
| 0521  | 75626 074040 | STB     | OPEF        | COUNT AND STORE                   |
| 0522  | 75627 027465 | JMP     | OPE15       | GO WRITE SOME FILE MARKS          |
| 0523* |              |         |             |                                   |
| 0524  | 75630 000000 | OPERC   | NOP         |                                   |
| 0525  | 75631 104200 |         | DLD OPEC,I  | GET FILE START                    |
|       | 75632 100043 |         |             |                                   |
| 0526  | 75633 017647 | JSB     | OPEDS       | SUBSTRACT IT FROM CURRENT ADDRESS |
| 0527  | 75634 002120 | CLE,SSA |             | IN RANGE?                         |
| 0528  | 75635 027645 | JMP     | OPE19       | NO, GO FAIL                       |
| 0529  | 75636 104200 |         | DLD OPEC,I  | GET FILE START                    |
|       | 75637 100043 |         |             |                                   |
| 0530  | 75640 144042 | ADB     | OPEP,I      | CALCULATE DISC                    |
| 0531  | 75641 002040 | SEZ     |             | ADDRESS OF ONE                    |
| 0532  | 75642 002004 | INA     |             | BEYOND FILE END                   |
| 0533  | 75643 017647 | JSB     | OPEDS       | SUBTRACT IT FROM CURRENT ADDRESS  |
| 0534  | 75644 002021 | SSA,RSS |             | IN RANGE?                         |
| 0535  | 75645 037630 | OPE19   | ISZ OPERC   | NO, BUMP RETURN                   |
| 0536  | 75646 127630 |         | JMP OPERC,I |                                   |
| 0537* |              |         |             |                                   |
| 0538* |              |         |             |                                   |
| 0539  | 75647 000000 | OPEDS   | NOP         |                                   |
| 0540  | 75650 007104 |         | CMB,CLE,INB | NEGATE                            |
| 0541  | 75651 003040 |         | CMA,SEZ     | A,B                               |
| 0542  | 75652 002004 |         | INA         | CONTENTS                          |
| 0543  | 75653 000040 |         | CLE         |                                   |
| 0544  | 75654 044037 |         | ADB OPEDA+1 | ADD                               |
| 0545  | 75655 002040 |         | SEZ         | TO                                |
| 0546  | 75656 002004 |         | INA         | OPEDA, OPEDA+1                    |
| 0547  | 75657 040036 |         | ADA OPEDA   | CONTENTS                          |
| 0548  | 75660 127647 |         | JMP OPEDS,I |                                   |

|       |       |        |                                       |                            |
|-------|-------|--------|---------------------------------------|----------------------------|
| 0549* |       |        |                                       |                            |
| 0550* |       |        |                                       |                            |
| 0551  | 75661 |        | OPE13 EQU *                           |                            |
| 0552  | 75661 | 064040 | LDB OPEF                              | GET RECORDS LEFT           |
| 0553  | 75662 | 006003 | SZB,RSS                               | IF NONE,                   |
| 0554  | 75663 | 026226 | JMP LLEND                             | DON'T BOTHER               |
| 0555  | 75664 | 005727 | BLF, BLF                              | NUMBER OF                  |
| 0556  | 75665 | 007004 | CMB, INB                              | WORDS TO                   |
| 0557  | 75666 | 074215 | STB MWORD                             | TRANSFER                   |
| 0558  | 75667 | 063764 | LDA OPEDI                             | WRITE                      |
| 0559  | 75670 | 064562 | LDB LIBD                              | OUT TO                     |
| 0560  | 75671 | 114217 | JSB DISCZ, I                          | DISC                       |
| 0561  | 75672 | 027710 | JMP OPEDE                             | UNSUCCESSFUL DISK TRANSFER |
| 0562  | 75673 | 026226 | JMP LLEND                             | TERMINATE                  |
| 0563* |       |        |                                       |                            |
| 0564  | 75674 | 002400 | OPE14 CLA                             |                            |
| 0565  | 75675 | 170044 | STA OPELN, I                          | ZERO LENGTH                |
| 0566  | 75676 | 172010 | STA RKCYP, I                          | ZERO DRUM ADDRESS          |
| 0567  | 75677 | 027465 | JMP OPE15                             |                            |
| 0568* |       |        |                                       |                            |
| 0569  | 75700 | 000000 | OPE5B NOP                             |                            |
| 0570  | 75701 | 100200 | MPY ,+10                              | BUILD NEW                  |
|       | 75702 | 000364 |                                       |                            |
| 0571  | 75703 | 000040 | CLE                                   | NUMBER.                    |
| 0572  | 75704 | 040043 | ADA OPEC                              |                            |
| 0573  | 75705 | 006043 | SEZ, SZB, RSS                         | OVERFLOW CHECK.            |
| 0574  | 75706 | 127700 | JMP OPE5B, I                          | EXIT                       |
| 0575  | 75707 | 026430 | JMP ILFER                             |                            |
| 0576  | 75710 |        | OPEDE EQU *                           |                            |
| 0577  | 75710 | 063761 | LDA OM31                              | GET CHARACTER COUNT        |
| 0578  | 75711 | 067713 | LDB ++2                               | AND POINTER                |
| 0579  | 75712 | 026432 | JMP LIBER                             |                            |
| 0580  | 75713 | 075714 | DEF ++1                               |                            |
| 0581  | 75714 | 005125 | OCT 5125                              |                            |
| 0582  | 75715 | 047123 | ASC 15, NSUCCESSFUL; KILL AND REPEAT. |                            |
|       | 75716 | 052503 |                                       |                            |
|       | 75717 | 041505 |                                       |                            |
|       | 75720 | 051523 |                                       |                            |
|       | 75721 | 043126 |                                       |                            |
|       | 75722 | 046073 |                                       |                            |
|       | 75723 | 020113 |                                       |                            |
|       | 75724 | 044514 |                                       |                            |
|       | 75725 | 046040 |                                       |                            |
|       | 75726 | 040516 |                                       |                            |
|       | 75727 | 042040 |                                       |                            |
|       | 75730 | 051105 |                                       |                            |
|       | 75731 | 050105 |                                       |                            |
|       | 75732 | 040524 |                                       |                            |
|       | 75733 | 027040 |                                       |                            |
| 0583* |       |        |                                       |                            |
| 0584  | 75734 |        | OPE8 EQU *                            |                            |
| 0585  | 75734 | 060332 | LDA ,+16                              |                            |
| 0586  | 75735 | 067737 | LDB ++2                               |                            |
| 0587  | 75736 | 026432 | JMP LIBER                             |                            |
| 0588  | 75737 | 075740 | DEF ++1                               |                            |

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0589 75740 005104 OCT 5104
0590 75741 052520 ASC 7, UPLICATE ENTRY
 75742 046111
 75743 041501
 75744 052105
 75745 020105
 75746 047124
 75747 051131

0591*
0592 75750 OPE98 EQU *
0593 75750 063756 LDA OM507 SET UP OVERLAY
0594 75751 070072 STA WORD
0595 75752 163763 LDA OPEOV, I
0596 75753 064504 LDB #LIBI
0597 75754 027773 JMP OPEOR
0598 75755 154000 M10K DEC =10240
0599 75756 177005 OM507 DEC =507
0600 75757 177477 OM193 DEC =193
0601 75760 177730 M40 DEC =40
0602 75761 177741 OM31 DEC =31
0603*
0604 00040 OPEF EQU LTEMP+8
0605 00041 OPEOF EQU LTEMP+9
0606 00042 OPEP EQU LTEMP+10
0607* OPEP IS REFERRED TO AS SAVP BY SUPERSAVE (AND SAVE)
0608 00043 OPEC EQU LTEMP+11
0609 00044 OPELN EQU LTEMP+12
0610 00045 OPEDU EQU LTEMP+13
0611 00036 OPEDA EQU LTEMP+6
0612*
0613 75762 075562 OP17P DEF OPE17
0614 75763 072044 OPEOV DEF SAVO+COM6-COM3
0615 75764 000036 OPEDI DEF OPEDA
0616 75765 000115 DALCA DEF DADLC
0617 75766 000125 DALNA DEF DADLN
0618*
0619 75773 ORG LIBRA+507
0620 75773 016231 OPEOR JSB DRUML
0621 75774 116015 JSB SICKP, I OUCH, DIE GRACEFULLY
0622 75775 027000 JMP LIBRA
0623 75776 027405 JMP OPE11 NORMAL RETURN.
0624 75777 027262 JMP OPE12 ERROR RETURN
0625 76000 SOPE EQU *

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0002\* THE LENGTH COMMAND CAUSES THE LENGTH OF THE USER'S PROGRAM TO  
 0003\* BE PRINTED ON THE USER'S CONSOLE.

|       |       |        |                   |                                |
|-------|-------|--------|-------------------|--------------------------------|
| 0005  | 75000 |        | ORG LIBRA         |                                |
| 0006  | 75000 | 016047 | JSB RDPRG         | READ IN USER PROGRAM.          |
| 0007  | 75001 | 064273 | LDB MLINK+1       |                                |
| 0008  | 75002 | 044340 | ADB ,+?PROG=?LINK |                                |
| 0009  | 75003 | 160001 | LDA 1,I           | GET POINTER TO END OF          |
| 0010  | 75004 | 070030 | STA LTEMP         | PROGRAM.                       |
| 0011  | 75005 | 050702 | CPA PBUFF         | IF NULL PROGRAM GO TO PRINTOUT |
| 0012  | 75006 | 027016 | JMP LEN1          | SECTION.                       |
| 0013  | 75007 | 044347 | ADB ,+?FLAG=?PROG |                                |
| 0014  | 75010 | 160001 | LDA 1,I           | TEST FOR COMPILED.             |
| 0015  | 75011 | 010354 | AND CFLAG         |                                |
| 0016  | 75012 | 002003 | SZA,RSS           |                                |
| 0017  | 75013 | 027016 | JMP LEN1          | USER NOT COMPILED.             |
| 0018  | 75014 | 061575 | LDA SYMTB         | USE SOURCE PROGRAM POINTER     |
| 0019  | 75015 | 002001 | RSS               |                                |
| 0020  | 75016 | 060030 | LEN1 LDA LTEMP    |                                |
| 0021  | 75017 | 003000 | CMA               | COMPUTE LENGTH IN WORDS.       |
| 0022  | 75020 | 041577 | ADA SPROG         |                                |
| 0023  | 75021 | 003000 | CMA               |                                |
| 0024  | 75022 | 002020 | SSA               | IF NEGATIVE,                   |
| 0025  | 75023 | 002400 | CLA               | SET TO ZERO                    |
| 0026  | 75024 | 070030 | STA LTEMP         |                                |
| 0027* |       |        |                   |                                |
| 0028  | 75025 | 060364 | LDA ,+12B         | OUTPUT LINE FEED.              |
| 0029  | 75026 | 016132 | JSB LOUT          |                                |
| 0030  | 75027 | 060350 | LDA ,=2           | SET COUNTER.                   |
| 0031  | 75030 | 070031 | STA LTEMP+1       |                                |
| 0032  | 75031 | 060030 | LDA LTEMP         | GET FIRST 2 DIGITS IN A.       |
| 0033  | 75032 | 006400 | CLB               | LAST 2 IN B.                   |
| 0034  | 75033 | 100400 | DIV .100          |                                |
|       | 75034 | 000437 |                   |                                |
| 0035  | 75035 | 074030 | STB LTEMP         |                                |
| 0036  | 75036 | 006400 | LEN2 CLB          |                                |
| 0037  | 75037 | 100400 | DIV ,+10          | GET 2 DIGITS.                  |
|       | 75040 | 000364 |                   |                                |
| 0038  | 75041 | 074032 | STB LTEMP+2       | SAVE 2ND.                      |
| 0039  | 75042 | 040432 | ADA ,+60B         |                                |
| 0040  | 75043 | 016132 | JSB LOUT          | PRINT 1ST                      |
| 0041  | 75044 | 060032 | LDA LTEMP+2       |                                |
| 0042  | 75045 | 040432 | ADA ,+60B         | PRINT                          |
| 0043  | 75046 | 016132 | JSB LOUT          | 2ND.                           |
| 0044  | 75047 | 060030 | LDA LTEMP         | GET 2ND PAIR.                  |
| 0045  | 75050 | 034031 | ISZ LTEMP+1       | TEST FOR DONE.                 |
| 0046  | 75051 | 027036 | JMP LEN2          |                                |
| 0047  | 75052 | 060344 | LDA ,=6           | PRINT " WORDS".                |
| 0048  | 75053 | 067055 | LDB ++2           |                                |
| 0049  | 75054 | 026432 | JMP LIBER         |                                |
| 0050  | 75055 | 075056 | DEF ++1           |                                |
| 0051  | 75056 | 020127 | ASC 3, WORDS      |                                |
|       | 75057 | 047522 |                   |                                |
|       | 75060 | 042123 |                   |                                |
| 0052  | 75061 |        | SLEN EQU *        |                                |

0054\* THE ECHO COMMAND IS USED TO TELL THE SYSTEM WHETHER A TELETYPE  
 0055\* IS FULL DUPLEX OR HALF DUPLEX. TYPING  
 0056\* ECHO-OFF SAYS HALF DUPLEX.  
 0057\* AND  
 0058\* ECHO-ON SAYS FULL DUPLEX.

|       |       |        |                   |                             |
|-------|-------|--------|-------------------|-----------------------------|
| 0060  | 75000 |        | ORG LIBRA         |                             |
| 0061  | 75000 | 016164 | JSB LCHAR         | TEST FOR FIRST CHARACTER O. |
| 0062  | 75001 | 026430 | JMP ILFER         |                             |
| 0063  | 75002 | 053040 | CPA ECHO          |                             |
| 0064  | 75003 | 002001 | RSS               |                             |
| 0065  | 75004 | 026430 | JMP ILFER         | FAIL.                       |
| 0066  | 75005 | 016164 | JSB LCHAR         | GET NEXT CHARACTER.         |
| 0067  | 75006 | 026430 | JMP ILFER         | FAIL IF NONE.               |
| 0068  | 75007 | 053036 | CPA ECHN          | TEST FOR N.                 |
| 0069  | 75010 | 027023 | JMP ECH1          |                             |
| 0070  | 75011 | 053037 | CPA ECHF          | TEST FOR F.                 |
| 0071  | 75012 | 002001 | RSS               |                             |
| 0072  | 75013 | 026430 | JMP ILFER         | FAIL IF NOT.                |
| 0073  | 75014 | 016164 | JSB LCHAR         | TEST FOR F.                 |
| 0074  | 75015 | 026430 | JMP ILFER         |                             |
| 0075  | 75016 | 053037 | CPA ECHF          |                             |
| 0076  | 75017 | 002001 | RSS               |                             |
| 0077  | 75020 | 026430 | JMP ILFER         |                             |
| 0078  | 75021 | 060235 | LDA ECF           | SET ECHO OFF                |
| 0079  | 75022 | 002001 | RSS               |                             |
| 0080  | 75023 | 060234 | ECH1 LDA ECO      | SET ECHO ON                 |
| 0081  | 75024 | 070030 | STA LTEMP         |                             |
| 0082  | 75025 | 016164 | JSB LCHAR         | TEST FOR CR.                |
| 0083  | 75026 | 002001 | RSS               |                             |
| 0084  | 75027 | 026430 | JMP ILFER         |                             |
| 0085* |       |        |                   |                             |
| 0086  | 75030 | 064273 | LDB MLINK+1       |                             |
| 0087  | 75031 | 044336 | ADB .+?TNUM=?LINK |                             |
| 0088  | 75032 | 160001 | LDA 1,I           | SEND                        |
| 0089  | 75033 | 030030 | IOR LTEMP         | ECHO                        |
| 0090  | 75034 | 114500 | JSB S148C,I       | TO 2114                     |
| 0091  | 75035 | 026226 | JMP LLEND         |                             |
| 0092* |       |        |                   |                             |
| 0093  | 75036 | 000116 | ECHN OCT 116      |                             |
| 0094  | 75037 | 000106 | ECHF OCT 106      |                             |
| 0095  | 75040 | 000117 | ECHO OCT 117      |                             |
| 0096  | 75041 |        | SECH EQU *        |                             |

0098\*

0099\*

0100\*

0101\*

0102\*

0103\*

0104\*

0105\*

0106\*

0107\*

0108\*

0109\*

THE MESSAGE COMMAND IS USED TO SEND A MESSAGE TO THE SYSTEM CONSOLE. THE PORT NUMBER OF THE REQUESTING USER IS ALSO OUTPUT. IF THE MESSAGE QUEUE IS FULL AT THE TIME OF THE REQUEST, THEN THE USER IS INFORMED AND HIS MESSAGE IS IGNORED. IF NOT, IT IS PLACED ON THE QUEUE. A MESSAGE MORE THAN 68 CHARACTERS LONG WILL BE TRUNCATED. EACH MESSAGE FITS IN A 39 WORD BUFFER WHOSE FORMAT IS:

<LENGTH><CRLF><PORT>< ><MESSAGE><CRLF>

|      |       |                   |                                  |
|------|-------|-------------------|----------------------------------|
| 0110 | 75000 | ORG LIBRA         |                                  |
| 0111 | 75000 | LDA MSGCT         | IS THE MESSAGE QUEUE             |
| 0112 | 75001 | ADA ,+2           | ALREADY FULL?                    |
| 0113 | 75002 | SSA,RSS           |                                  |
| 0114 | 75003 | JMP MESS1         | YES, TELL USER                   |
| 0115 | 75004 | LDA MSQP3         | > NEXT AVAILABLE BUFFER          |
| 0116 | 75005 | INA               | PUT CR LF INTO                   |
| 0117 | 75006 | LDB CRLF          | THE MESSAGE BUFFER               |
| 0118 | 75007 | STB A,I           |                                  |
| 0119 | 75010 | INA               |                                  |
| 0120 | 75011 | STA MSQP2         | SET POINTER                      |
| 0121 | 75012 | LDA MLINK+1       | GET THE USER NUMBER              |
| 0122 | 75013 | ADA ,+?TNUM-?LINK |                                  |
| 0123 | 75014 | LDA A,I           | INTO THE A REGISTER              |
| 0124 | 75015 | ALF,ALF           |                                  |
| 0125 | 75016 | CLB               | SET UP FOR AND                   |
| 0126 | 75017 | DIV ,+10          | DIVIDE BY TEN                    |
|      | 75020 |                   |                                  |
| 0127 | 75021 | ALF,ALF           | CONVERT TO ASCII                 |
| 0128 | 75022 | IOR B             |                                  |
| 0129 | 75023 | IOR ASC00         |                                  |
| 0130 | 75024 | STA MSQP2,I       | STORE INTO BUFFER                |
| 0131 | 75025 | ISZ MSQP2         | ADVANCE POINTER                  |
| 0132 | 75026 | LDA ASC00         | GET TWO BLANKS                   |
| 0133 | 75027 | STA MSQP2,I       | AND PLACE IN THE BUFFER          |
| 0134 | 75030 | LDB MSQP2         | TURN BUFFER POINTER              |
| 0135 | 75031 | INB               |                                  |
| 0136 | 75032 | RBL               | INTO                             |
| 0137 | 75033 | STB MSQP2         | A CHARACTER POINTER              |
| 0138 | 75034 | LDA ,+6           |                                  |
| 0139 | 75035 | STA MSSCT         | SET CHARACTER COUNT              |
| 0140 | 75036 | CLA               |                                  |
| 0141 | 75037 | STA LCHR2         | PREVENT BLANK SUPPRESSION        |
| 0142 | 75040 | JSB LCHAR         | GET A CHARACTER                  |
| 0143 | 75041 | JMP MESSR         | EMPTY MESSAGE IS AN ERROR        |
| 0144 | 75042 | MESS2 EQU *       |                                  |
| 0145 | 75042 | LDB ,+74          | IS THE MESSAGE TOO LONG?         |
| 0146 | 75043 | CPB MSSCT         |                                  |
| 0147 | 75044 | JMP MESS4         | YES, TRUNCATE HERE               |
| 0148 | 75045 | JSB MESSH         | STORE CHARACTER INTO BUFFER      |
| 0149 | 75046 | JSB LCHAR         | GET ANOTHER CHARACTER            |
| 0150 | 75047 | JMP MESS4         | CR SEZ END OF MESSAGE            |
| 0151 | 75050 | JMP MESS2         | NO, PUT THIS CHARACTER INTO BUFF |



```

0152*
0153 75051 MES84 EQU *
0154 75051 060364 LDA ,+120 LF
0155 75052 017104 JSB MESCH
0156 75053 063120 LDA MSOCT SET CHARACTER COUNT
0157 75054 170310 STA MSQP3,I INTO BUFFER
0158 75055 067117 LDB MESWK RESTORE LCHAR
0159 75056 076202 STB LCHR2
0160 75057 034306 ISZ MSOCT INCREMENT THE MESSAGE COUNTER
0161 75060 064310 LDB MSQP3 ADVANCE POINTER
0162 75061 044421 ADB ,+MESLN FOR
0163 75062 054311 CPB MSQND THE
0164 75063 064312 LDB MSQNG NEXT
0165 75064 074310 STB MSQP3 MESSAGE
0166 75065 026226 JMP LLEND EXIT

```

```

0167*
0168 75066 MESER EQU *
0169 75066 067117 LDB MESWK FIX LCHAR AND
0170 75067 076202 STB LCHR2
0171 75070 026430 JMP ILFER GIVE ERROR EXIT

```

```

0172*
0173 75071 MESS1 EQU *
0174 75071 060334 LDA , -14
0175 75072 067074 LDB ++2
0176 75073 026432 JMP LIBER
0177*
0178 75074 075075 DEF ++1
0179 75075 005103 OCT 5103
0180 75076 047516 ASC 6,ONSULE BUSY
 75077 051517
 75100 046105
 75101 020102
 75102 052523
 75103 054440

```

0181\*  
0182\* THIS ROUTINE PUTS INDIVIDUAL CHARACTERS INTO THE BUFFER  
0183\*

```

0184 75104 000000 MESCH NOP
0185 75105 067121 LDB MSQP2 LOAD THE BUFFER POINTER
0186 75106 004065 CLE,ERB TURN INTO WORD POINTER
0187 75107 002041 SEZ,RSB SKIP IF LOWER CHARACTER
0188 75110 001727 ALF,ALF CHARACTER TO LEFT
0189 75111 002040 SEZ SKIP IF UPPER CHARACTER
0190 75112 130001 IOR B,I OR IN UPPER CHARACTER
0191 75113 170001 STA B,I STORE CHARACTER (S)
0192 75114 037121 ISZ MSQP2 ADVANCE CHARACTER POINTER
0193 75115 037120 ISZ MSSCT INCREMENT COUNT
0194 75116 127104 JMP MESCH,I RETURN
0195*
0196 75117 026170 MESWK JMP LCHR1
0197 75120 000000 MSSCT BSS 1
0198 75121 000000 MSQP2 BSS 1
0199 75122 000112 ,.74 DEC 74
0200 75123 SMES EQU *

```

0202\* THE LPRINTER COMMAND IS USED TO REQUEST THE USE OF THE LINE  
 0203\* PRINTER. THE FORMAT IS:  
 0204\* LPRINTER=(CHARACTER STRING)  
 0205\*

|       |       |        |                       |                            |
|-------|-------|--------|-----------------------|----------------------------|
| 0207  | 75000 |        | ORG LIBRA             |                            |
| 0208  | 75000 | 060273 | LDA MLINK+1           | GET TTY# ADDRESS           |
| 0209  | 75001 | 040336 | ADA ,+?TNUM=?LINK     |                            |
| 0210  | 75002 | 070030 | STA PRITY             | SAVE IT                    |
| 0211  | 75003 | 060255 | LDA PRIST             | GET LP INDICATOR           |
| 0212  | 75004 | 002003 | SZA,RSS               | LP BUSY?                   |
| 0213  | 75005 | 027013 | JMP LPR1              | NO                         |
| 0214  | 75006 | 050030 | CPA PRITY             | YES = DOES USER            |
| 0215  | 75007 | 002001 | RSS                   | HAVE LP?                   |
| 0216  | 75010 | 027031 | JMP LPR2              | NO                         |
| 0217  | 75011 | 070256 | STA LFLAG             | YES = SET LPR COMMAND FLAG |
| 0218  | 75012 | 026226 | JMP LLEND             | TERMINATE                  |
| 0219* |       |        |                       |                            |
| 0220  | 75013 | 160030 | LPR1 LDA PRITY,I      | GET TTY#                   |
| 0221  | 75014 | 030246 | IOR LPR               | ADD OPCODE                 |
| 0222  | 75015 | 114500 | JSB S14SC,I           | TELL I/O PROCESSOR         |
| 0223  | 75016 | 102311 | SFS CH2               | AND WAIT FOR               |
| 0224  | 75017 | 027016 | JMP *-1               | RESPONSE                   |
| 0225  | 75020 | 102511 | LIA CH2               | GET RESPONSE               |
| 0226  | 75021 | 002003 | SZA,RSS               | DID USER GET LP?           |
| 0227  | 75022 | 027034 | JMP LPR3              | NO = NOT AVAILABLE         |
| 0228  | 75023 | 002020 | SSA                   |                            |
| 0229  | 75024 | 026430 | JMP ILFER             | NO = HEADING TOO LONG      |
| 0230  | 75025 | 060030 | LDA PRITY             | YES = GET TTY# ADDRESS     |
| 0231  | 75026 | 070255 | STA PRIST             | AND SET LP INDICATOR       |
| 0232  | 75027 | 070256 | STA LFLAG             | SET LPR COMMAND FLAG       |
| 0233  | 75030 | 026226 | JMP LLEND             | TERMINATE                  |
| 0234  | 75031 | 060341 | LPR2 LDA ,=9          | LP BUSY                    |
| 0235  | 75032 | 067037 | LDB LPM1              |                            |
| 0236  | 75033 | 026432 | JMP LIBER             |                            |
| 0237  | 75034 | 060327 | LPR3 LDA ,=19         | LP NOT AVAILABLE           |
| 0238  | 75035 | 067045 | LDB LPM2              |                            |
| 0239  | 75036 | 026432 | JMP LIBER             |                            |
| 0240* |       |        |                       |                            |
| 0241  |       |        | SUP                   |                            |
| 0242  | 75037 | 075040 | LPM1 DEF **1          |                            |
| 0243  | 75040 | 005114 | OCT 5114              |                            |
| 0244  | 75041 | 050040 | ASC 3,P BUSY          |                            |
| 0245  | 75044 | 006400 | OCT 6400              |                            |
| 0246  | 75045 | 075046 | LPM2 DEF **1          |                            |
| 0247  | 75046 | 005114 | OCT 5114              |                            |
| 0248  | 75047 | 050040 | ASC 8,P NOT AVAILABLE |                            |
| 0249  | 75057 | 006400 | OCT 6400              |                            |
| 0250  |       |        | UNS                   |                            |
| 0251  | 00030 |        | PRITY EQU LTEMP       |                            |
| 0252  | 75060 |        | SLPR EQU *            |                            |

0254\* THIS COMMAND GIVES A PRINT OUT OF THE BAUD RATE &  
 0255\* CHAR.SIZE FOR WHICH THE PORT IS CONFIGURED.

0256\*  
 0257\* THE DATA PRINTED IS:

0258\* PORT NR.  
 0259\* BAUD RATE  
 0260\* CHAR. SIZE

0261\*  
 0262\* FORMAT:

0263\*  
 0264\* PORT\_PORT#(,PORT),.....,] CR

0265\* OR  
 0266\* PORT=ALL

|      |       |        |                         |                  |
|------|-------|--------|-------------------------|------------------|
| 0268 | 75000 |        | ORG LIBRA               |                  |
| 0269 | 75000 | 064273 | LDB MLINK+1             |                  |
| 0270 | 75001 | 044341 | ADB .+7ID=?LINK         |                  |
| 0271 | 75002 | 160001 | LDA B,I                 | GET ID.          |
| 0272 | 75003 | 050612 | CPA A000                | A000?            |
| 0273 | 75004 | 027023 | JMP UPO0                | YES.             |
| 0274 | 75005 | 060327 | LDA .-19                | NO. NOT ALLOWED! |
| 0275 | 75006 | 067010 | LDB ++2                 |                  |
| 0276 | 75007 | 026432 | JMP LIBER               |                  |
| 0277 | 75010 | 075011 | DEF ++1                 |                  |
| 0278 | 75011 | 005120 | OCT 5120                |                  |
| 0279 | 75012 | 051111 | ASC 9,RIVILEGED COMMAND |                  |

75013 053111  
 75014 046105  
 75015 043505  
 75016 042040  
 75017 041517  
 75020 046515  
 75021 040516  
 75022 042040

|      |       |        |             |                       |
|------|-------|--------|-------------|-----------------------|
| 0280 | 75023 |        | UPO0 EQU *  |                       |
| 0281 | 75023 | 002400 | CLA         |                       |
| 0282 | 75024 | 070030 | STA LTEMP   |                       |
| 0283 | 75025 | 070031 | STA LTEMP+1 |                       |
| 0284 | 75026 | 070032 | STA LTEMP+2 |                       |
| 0285 | 75027 | 070034 | STA UPOC1   |                       |
| 0286 | 75030 | 060177 | LDA NPORT   | SET UP LIMIT.         |
| 0287 | 75031 | 070033 | STA UPOCN   |                       |
| 0288 | 75032 | 016164 | JSB LCHAR   | GET CHARACTER.        |
| 0289 | 75033 | 026430 | JMP ILFER   | CR. ERROR.            |
| 0290 | 75034 | 053422 | CPA UPO.A   | NO CR. "A"?           |
| 0291 | 75035 | 027062 | JMP UPO4    | YES.                  |
| 0292 | 75036 |        | UPO15 EQU * |                       |
| 0293 | 75036 | 017320 | JSB UPOD6   | NO. DIGIT?            |
| 0294 | 75037 |        | UPO1 EQU *  |                       |
| 0295 | 75037 | 017330 | JSB UPOSP   | YES. COMPUTE PORT NR. |
| 0296 | 75040 | 016164 | JSB LCHAR   | GET CHARACTER.        |
| 0297 | 75041 | 027045 | JMP UPO3    | CR.                   |
| 0298 | 75042 | 050425 | CPA .+54B   | NO CR. COMMA?         |
| 0299 | 75043 | 002001 | RSE         | YES.                  |
| 0300 | 75044 | 027036 | JMP UPO15   | NO.                   |

|       |       |        |       |                 |                              |
|-------|-------|--------|-------|-----------------|------------------------------|
| 0301  | 75045 |        | UPO3  | EQU *           |                              |
| 0302  | 75045 | 060034 |       | LDA UPOC1       | CHECK LEGALITY.              |
| 0303  | 75046 | 040033 |       | ADA UPOCN       |                              |
| 0304  | 75047 | 002021 |       | SSA,RSS         | > LIMIT?                     |
| 0305  | 75050 | 026430 |       | JMP ILFER       | YES, ERROR.                  |
| 0306  | 75051 | 017256 |       | JSB UPOIN       | NO. SET INDICATOR.           |
| 0307* |       |        |       |                 |                              |
| 0308* |       |        |       |                 |                              |
| 0309  | 75052 | 060265 |       | LDA LCHCR       | PICK UP LAST CHAR.           |
| 0310  | 75053 | 050367 |       | CPA .+15B       | WAS IT A CR?                 |
| 0311  | 75054 | 027110 |       | JMP UPO5        | YES, GIVE THE INFORMATION.   |
| 0312  | 75055 | 002400 |       | CLA             |                              |
| 0313  | 75056 | 070034 |       | STA UPOC1       |                              |
| 0314  | 75057 | 016164 |       | JSB LCHAR       | NO. GET NEXT CHARACTER.      |
| 0315  | 75060 | 027110 |       | JMP UPO5        | CR. GIVE THE INFORMATION.    |
| 0316  | 75061 | 027036 |       | JMP UPO15       | NO CR.                       |
| 0317* |       |        |       |                 |                              |
| 0318* |       |        |       |                 |                              |
| 0319  | 75062 |        | UPO4  | EQU *           | COMMAND FOR ALL PORTS GIVEN. |
| 0320  | 75062 | 016164 |       | JSB LCHAR       | GET NEXT CHAR                |
| 0321  | 75063 | 026430 |       | JMP ILFER       | CR. ERROR.                   |
| 0322  | 75064 | 053423 |       | CPA UPO.L       | NO CR, ="L"?                 |
| 0323  | 75065 | 002001 |       | RSS             |                              |
| 0324  | 75066 | 026430 |       | JMP ILFER       | NO. ERROR.                   |
| 0325  | 75067 | 016164 |       | JSB LCHAR       | YES, GET NEXT CHAR.          |
| 0326  | 75070 | 026430 |       | JMP ILFER       | CR. ERROR!                   |
| 0327  | 75071 | 053423 |       | CPA UPO.L       | "L"?                         |
| 0328  | 75072 | 002001 |       | RSS             |                              |
| 0329  | 75073 | 026430 |       | JMP ILFER       | NO. ERROR.                   |
| 0330  | 75074 | 016164 |       | JSB LCHAR       | YES, GET NEXT CHAR.          |
| 0331  | 75075 | 002001 |       | RSS             |                              |
| 0332  | 75076 | 026430 |       | JMP ILFER       | NO CR, ERROR.                |
| 0333  | 75077 | 002400 |       | CLA             | CR.                          |
| 0334  | 75100 |        | UPO18 | EQU *           |                              |
| 0335  | 75100 | 070034 |       | STA UPOC1       |                              |
| 0336  | 75101 | 040033 |       | ADA UPOCN       |                              |
| 0337  | 75102 | 002021 |       | SSA,RSS         | >LIMIT?                      |
| 0338  | 75103 | 027110 |       | JMP UPO5        | YES.                         |
| 0339  | 75104 | 017256 |       | JSB UPOIN       | NO. SET INDICATOR.           |
| 0340  | 75105 | 060034 |       | LDA UPOC1       | BUMP PORT NR.                |
| 0341  | 75106 | 002004 |       | INA             |                              |
| 0342  | 75107 | 027100 |       | JMP UPO18       |                              |
| 0343* |       |        |       |                 | GIVE THE INFORMATION.        |
| 0344  | 75110 |        | UPO5  | EQU *           | PRINT HEADING.               |
| 0345  | 75110 | 017340 |       | JSB UPOPR       |                              |
| 0346  | 75111 | 005040 |       | OCT 5040        | LF=SPACE                     |
| 0347  | 75112 | 050117 |       | ASC 4,PORT      |                              |
|       | 75113 | 051124 |       |                 |                              |
|       | 75114 | 020040 |       |                 |                              |
|       | 75115 | 020040 |       |                 |                              |
| 0348  | 75116 | 041101 |       | ASC 6,BAUD RATE |                              |
|       | 75117 | 052504 |       |                 |                              |
|       | 75120 | 020122 |       |                 |                              |
|       | 75121 | 040524 |       |                 |                              |
|       | 75122 | 042440 |       |                 |                              |

|       |              |       |                  |                         |
|-------|--------------|-------|------------------|-------------------------|
| 0349  | 75123 020040 |       |                  |                         |
|       | 75124 041510 |       | ASC 5,CHAR, SIZE |                         |
|       | 75125 040522 |       |                  |                         |
|       | 75126 027040 |       |                  |                         |
|       | 75127 051511 |       |                  |                         |
|       | 75130 055105 |       |                  |                         |
| 0350  | 75131 006412 |       | OCT 6412         | CR=LF                   |
| 0351  | 75132 000000 |       | OCT 0            |                         |
| 0352  | 75133 017400 |       | JOB UPTSV        | SAVE VARIABLES,         |
| 0353  | 75134 116023 |       | JOB SCHOU, I     | SUSPEND.                |
| 0354  | 75135 017411 |       | JOB UPTRV        | RETRIEVE VARIABLES.     |
| 0355  | 75136        | UP06  | EQU *            |                         |
| 0356  | 75136 060032 |       | LDA LTEMP+2      |                         |
| 0357  | 75137 050372 |       | CPA .+16         | DONE?                   |
| 0358  | 75140 027157 |       | JMP UP014        | YES,                    |
| 0359  | 75141 006400 |       | CLB              | CLEAR (B) AND GET       |
| 0360  | 75142 060030 |       | LDA LTEMP        | LOWER INDICATOR,        |
| 0361  | 75143 000010 |       | SLA              | BIT SET?                |
| 0362  | 75144 006004 |       | INB              | YES, BUMP (B).          |
| 0363  | 75145 001300 |       | RAR              | ROTATE RIGHT,           |
| 0364  | 75146 070030 |       | STA LTEMP        | RESTORE INDICATOR,      |
| 0365  | 75147 006003 |       | SZB, RSS         | IF BIT=0, JUMP,         |
| 0366  | 75150 027155 |       | JMP UP016        | OTHERWISE SET UP BUFFER |
| 0367  | 75151 017200 |       | JOB UP07         | AND PRINT.              |
| 0368  | 75152 017400 |       | JOB UPTSV        | SAVE VARIABLES,         |
| 0369  | 75153 116023 |       | JOB SCHOU, I     | SUSPEND.                |
| 0370  | 75154 017411 |       | JOB UPTRV        | RETRIEVE VARIABLES.     |
| 0371  | 75155        | UP016 | EQU *            |                         |
| 0372  | 75155 034032 |       | ISZ LTEMP+2      | BUMP COUNTER.           |
| 0373  | 75156 027136 |       | JMP UP06         | GO BACK.                |
| 0374* |              |       |                  |                         |
| 0375  | 75157        | UP014 | EQU *            |                         |
| 0376  | 75157 060032 |       | LDA LTEMP+2      |                         |
| 0377  | 75160 050412 |       | CPA .+32         | DONE?                   |
| 0378  | 75161 026226 |       | JMP LLEND        | YES, GET OUT.           |
| 0379  | 75162 006400 |       | CLB              | CLEAR (B) AND GET       |
| 0380  | 75163 060031 |       | LDA LTEMP+1      | UPPER INDICATOR,        |
| 0381  | 75164 000010 |       | SLA              | BIT SET?                |
| 0382  | 75165 006004 |       | INB              | YES, BUMP (B).          |
| 0383  | 75166 001300 |       | RAR              | ROTATE RIGHT.           |
| 0384  | 75167 070031 |       | STA LTEMP+1      | RESTORE INDICATOR.      |
| 0385  | 75170 006003 |       | SZB, RSS         | IF BIT=0, JUMP,         |
| 0386  | 75171 027176 |       | JMP UP017        | OTHERWISE SET UP BUFFER |
| 0387  | 75172 017200 |       | JOB UP07         | AND PRINT.              |
| 0388  | 75173 017400 |       | JOB UPTSV        | SAVE VARIABLES,         |
| 0389  | 75174 116023 |       | JOB SCHOU, I     | SUSPEND.                |
| 0390  | 75175 017411 |       | JOB UPTRV        | RETRIEVE VARIABLES.     |
| 0391  | 75176        | UP017 | EQU *            |                         |
| 0392  | 75176 034032 |       | ISZ LTEMP+2      | BUMP COUNTER.           |
| 0393  | 75177 027157 |       | JMP UP014        | GO BACK.                |
| 0394* |              |       |                  |                         |
| 0395* |              |       |                  |                         |
| 0396  | 75200 000000 | UP07  | NOP              |                         |
| 0397  | 75201 017340 |       | JOB UP0PR        | BLANK-BLANK             |
| 0398  | 75202 020040 |       | OCT 20040        |                         |

|       |       |        |             |                             |
|-------|-------|--------|-------------|-----------------------------|
| 0399  | 75203 | 000000 | OCT 0       |                             |
| 0400  | 75204 | 060412 | LDA ,+40B   | BLANK                       |
| 0401  | 75205 | 016132 | JSB LOUT    |                             |
| 0402  | 75206 | 060032 | LDA LTEMP+2 | GET PORT NR.                |
| 0403  | 75207 | 017354 | JSB UPD2D   | OUTPUT PORT NR.             |
| 0404  | 75210 |        | UPO9 EQU *  |                             |
| 0405  | 75210 | 017340 | JSB UPOPR   | PRINT 6 BLANKS.             |
| 0406  | 75211 | 020040 | ASC 3,      |                             |
|       | 75212 | 020040 |             |                             |
|       | 75213 | 020040 |             |                             |
| 0407  | 75214 | 000000 | OCT 0       |                             |
| 0408  | 75215 | 060032 | LDA LTEMP+2 | GET PORT NR.                |
| 0409  | 75216 | 001727 | ALF,ALF     | ROTATE.                     |
| 0410  | 75217 | 032775 | IOR WSP     | MERGE WITH OPCODE.          |
| 0411  | 75220 | 114500 | JSB S14SC,I | ASK FOR BAUD RATE.          |
| 0412  | 75221 | 102311 | SFS CH2     |                             |
| 0413  | 75222 | 027221 | JMP *-1     |                             |
| 0414  | 75223 | 102511 | LIA CH2     | GET BAUD RATE.              |
| 0415  | 75224 | 017371 | JSB UPD3D   | OUTPUT BAUD RATE.           |
| 0416  | 75225 | 017340 | JSB UPOPR   | OUTPUT 10 BLANKS.           |
| 0417  | 75226 | 020040 | ASC 5,      |                             |
|       | 75227 | 020040 |             |                             |
|       | 75230 | 020040 |             |                             |
|       | 75231 | 020040 |             |                             |
|       | 75232 | 020040 |             |                             |
| 0418  | 75233 | 000000 | OCT 0       |                             |
| 0419  | 75234 | 060032 | LDA LTEMP+2 | GET PORT NR.                |
| 0420  | 75235 | 001727 | ALF,ALF     | ROTATE.                     |
| 0421  | 75236 | 030252 | IOR WCS     |                             |
| 0422  | 75237 | 114500 | JSB S14SC,I | ASK FOR CHAR SIZE.          |
| 0423  | 75240 | 102311 | SFS CH2     |                             |
| 0424  | 75241 | 027240 | JMP *-1     |                             |
| 0425  | 75242 | 102511 | LIA CH2     | GET CHAR.SIZE.              |
| 0426  | 75243 | 002003 | SZA,RSS     | =0?                         |
| 0427  | 75244 | 027247 | JMP UPO12   | YES.                        |
| 0428  | 75245 | 017363 | JSB UPD0G   | NO. PRINT IT.               |
| 0429  | 75246 | 027251 | JMP UPO13   |                             |
| 0430  | 75247 |        | UPO12 EQU * |                             |
| 0431  | 75247 | 060424 | LDA ,+42    | PRINT "+".                  |
| 0432  | 75250 | 016132 | JSB LOUT    |                             |
| 0433  | 75251 |        | UPO13 EQU * |                             |
| 0434  | 75251 | 060367 | LDA ,+15B   | CR.                         |
| 0435  | 75252 | 016132 | JSB LOUT    |                             |
| 0436  | 75253 | 060364 | LDA ,+12B   | LF.                         |
| 0437  | 75254 | 016132 | JSB LOUT    |                             |
| 0438  | 75255 | 127200 | JMP UPO7,I  | RETURN.                     |
| 0439* |       |        |             |                             |
| 0440* |       |        |             |                             |
| 0441  | 75256 | 000000 | UPOIN NOP   | SETS PORT BIT IN INDICATOR. |
| 0442  | 75257 | 060034 | LDA UPOC1   | A=PORT#                     |
| 0443  | 75260 | 064000 | LDB A       | B=PORT#                     |
| 0444  | 75261 | 005323 | RBR,RBR     | ROTATE BIT#4 INTO BIT#0.    |
| 0445  | 75262 | 005323 | RBR,RBR     |                             |
| 0446  | 75263 | 004010 | SLB         | PORT#> 15?                  |
| 0447  | 75264 | 040332 | ADA ,=16    | YES, MAKE PORT# FROM 0-15.  |

|       |                         |        |       |              |                              |
|-------|-------------------------|--------|-------|--------------|------------------------------|
| 0448  | 75265                   | 003004 |       | CMA, INA     | NO, NEGATE.                  |
| 0449  | 75266                   | 070036 |       | STA UPCCN    | SET UP COUNTER.              |
| 0450  | 75267                   | 060030 |       | LDA LTEMP    | A=LOWER INDIVATOR.           |
| 0451  | 75270                   | 004010 |       | SLB          | UPPER OR LOWER PORT?         |
| 0452  | 75271                   | 060031 |       | LDA LTEMP+1  | UPPER.                       |
| 0453  | 75272                   | 064036 |       | LDB UPCCN    | B=COUNTER.                   |
| 0454  | 75273                   |        | UPON1 | EQU *        |                              |
| 0455  | 75273                   | 006003 |       | SZB, RSS     | DONE?                        |
| 0456  | 75274                   | 027300 |       | JMP UPON2    | YES.                         |
| 0457  | 75275                   | 001300 |       | RAR          | NO, ROTATE RIGHT.            |
| 0458  | 75276                   | 006004 |       | INB          | BUMP COUNTER.                |
| 0459  | 75277                   | 027273 |       | JMP UPON1    | GO BACK.                     |
| 0460  | 75300                   |        | UPON2 | EQU *        |                              |
| 0461  | 75300                   | 030353 |       | IOR .+1      | SET BIT.                     |
| 0462* |                         |        |       |              |                              |
| 0463  | 75301                   | 064036 |       | LDB UPCCN    | B=COUNTER.                   |
| 0464  | 75302                   |        | UPON3 | EQU *        |                              |
| 0465  | 75302                   | 006003 |       | SZB, RSS     | DONE?                        |
| 0466  | 75303                   | 027307 |       | JMP UPON4    | YES.                         |
| 0467  | 75304                   | 001200 |       | RAL          | NO, ROTATE LEFT.             |
| 0468  | 75305                   | 006004 |       | INB          | BUMP COUNTER.                |
| 0469  | 75306                   | 027302 |       | JMP UPON3    | GO BACK.                     |
| 0470  | 75307                   |        | UPON4 | EQU *        |                              |
| 0471  | 75307                   | 064034 |       | LDB UPUC1    |                              |
| 0472  | 75310                   | 005323 |       | RBR, RBR     |                              |
| 0473  | 75311                   | 005323 |       | RBR, RBR     |                              |
| 0474  | 75312                   | 004010 |       | SLB          | UPPER OR LOWER PORT?         |
| 0475  | 75313                   | 027316 |       | JMP UPON5    |                              |
| 0476  | 75314                   | 070030 |       | STA LTEMP    | LOWER, STORE IN LOWER INDIC. |
| 0477  | 75315                   | 002001 |       | RSS          |                              |
| 0478  | 75316                   |        | UPON5 | EQU *        |                              |
| 0479  | 75316                   | 070031 |       | STA LTEMP+1  | UPPER, STORE IN UPPER INDIC. |
| 0480  | 75317                   | 127256 |       | JMP UPON, I  | EXIT.                        |
| 0481* |                         |        |       |              |                              |
| 0482* |                         |        |       |              |                              |
| 0483  | 75320                   | 000000 | UPODG | NOP          |                              |
| 0484  | 75321                   | 040316 |       | ADA M720     | DIGIT?                       |
| 0485  | 75322                   | 002021 |       | SSA, RSS     |                              |
| 0486  | 75323                   | 026430 |       | JMP ILFER    | NO, ERROR.                   |
| 0487  | 75324                   | 040364 |       | ADA .+10     | MAY BE.                      |
| 0488  | 75325                   | 002020 |       | SSA          |                              |
| 0489  | 75326                   | 026430 |       | JMP ILFER    | ERROR.                       |
| 0490  | 75327                   | 127320 |       | JMP UPODG, I | RETURN.                      |
| 0491* |                         |        |       |              |                              |
| 0492* |                         |        |       |              |                              |
| 0493  | 75330                   | 000000 | UPOSP | NOP          |                              |
| 0494  | 75331                   | 070035 |       | STA UPOC2    | SAVE (A).                    |
| 0495  | 75332                   | 060034 |       | LDA UPOC1    | UPDATE                       |
| 0496  | 75333                   | 100200 |       | MPY .+10     |                              |
|       | 75334                   | 000364 |       |              |                              |
| 0497  | 75335                   | 040035 |       | ADA UPOC2    | PORT                         |
| 0498  | 75336                   | 070034 |       | STA UPOC1    | NUMBER.                      |
| 0499  | 75337                   | 127330 |       | JMP UPOSP, I |                              |
| 0500* |                         |        |       |              |                              |
| 0501* | UPOPR OUTPUTS A STRING. |        |       |              |                              |

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0502*
0503 75340 000000 UPOPR NOP
0504 75341 163340 LDA UPOPR,I
0505 75342 002003 SZA,RSS END OF STRING?
0506 75343 127340 JMP UPOPR,I YES, RETURN,
0507 75344 001727 ALF,ALF NO, OUTPUT
0508 75345 010443 AND B377 LEFT
0509 75346 016132 JSB LOUT CHARACTER,
0510 75347 163340 LDA UPOPR,I OUTPUT
0511 75350 010443 AND B377 RIGHT
0512 75351 016132 JSB LOUT CHARACTER,
0513 75352 037340 ISZ UPOPR GET NEXT WORD.
0514 75353 027341 JMP UPOPR+1
0515*
0516* UPD2D PRINTS A 2-DIGIT NR.
0517*
0518 75354 000000 UPD2D NOP
0519 75355 006400 CLB
0520 75356 100400 DIV .+10
 75357 000364
0521 75360 017363 JSB UPDDG
0522 75361 017363 JSB UPDDG
0523 75362 127354 JMP UPD2D,I
0524*
0525* UPDDG PRINTS A DIGIT.
0526*
0527 75363 000000 UPDDG NOP
0528 75364 074040 STB LTEMP+8
0529 75365 040432 ADA .+60B
0530 75366 016132 JSB LOUT
0531 75367 060040 LDA LTEMP+8
0532 75370 127363 JMP UPDDG,I
0533*
0534*
0535* UPD3D OUTPUTS A 3-DIGIT NUMBER.
0536*
0537 75371 000000 UPD3D NOP
0538 75372 006400 CLB
0539 75373 100400 DIV .100
 75374 000437
0540 75375 017363 JSB UPDDG OUTPUT FIRST DIGIT.
0541 75376 017354 JSB UPD2D OUTPUT LAST TWO.
0542 75377 127371 JMP UPD3D,I
0543*
0544*
0545* UPTSV SAVES VARIABLES.
0546*
0547 75400 000000 UPTSV NOP
0548 75401 064273 LDB MLINK+1
0549 75402 044355 ADB .+?TEMP-?LINK
0550 75403 074051 STB MOVED
0551 75404 064520 LDB DLTEM
0552 75405 074050 STB MOVES
0553 75406 064347 LDB .-3
0554 75407 016257 JSB MOVEW

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0555 75410 127400 JMP UPTSV,I
0556*
0557* UPTRV RESTORES VARIABLES.
0558*
0559 75411 000000 UPTRV NOP
0560 75412 064273 LDB MLINK+1
0561 75413 044355 ADB .+?TEMP-?LINK
0562 75414 074050 STB MOVES
0563 75415 064520 LDB DLTEM
0564 75416 074051 STB MOVED
0565 75417 064347 LDB .-3
0566 75420 016257 JSB MOVEW
0567 75421 127411 JMP UPTRV,I
0568*
0569*
0570*
0571 75422 000101 UPO.A OCT 101 =A.
0572 75423 000114 UPO.L OCT 114 =L.
0573 00033 UPOCN EQU LTEMP+3
0574 00034 UPOC1 EQU LTEMP+4
0575 00035 UPOC2 EQU LTEMP+5
0576 00036 UPCCN EQU LTEMP+6
0577 75424 SPORS EQU *

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0579\* THE REPORT COMMAND CAUSES IDT INFO TO BE LISTED ON THE SYSTEM  
 0580\* TELETYPE, EACH USER ID IS LISTED, ALONG WITH THE DISC AND TIME  
 0581\* USED TO DATE. DISC STORAGE IS LISTED IN WORDS, AND TIME IS LISTED  
 0582\* IN MINUTES.

|       |       |        |             |                              |
|-------|-------|--------|-------------|------------------------------|
| 0584  | 75000 |        | ORG LIBRA   |                              |
| 0585  | 75000 | 002404 | CLA,INA     | START WITH ID OF 1 = 1       |
| 0586  | 75001 | 070052 | STA ID      | IN CASE WE DON'T GO TO GETID |
| 0587  | 75002 | 114572 | JSB T35CH,I | SEE WHAT FIRST CHARACTER IS  |
| 0588  | 75003 | 027011 | JMP REPNI   | CR = - START AT BEGINNING    |
| 0589  | 75004 | 003400 | CCA         | A + =1                       |
| 0590  | 75005 | 040054 | ADA T35CP   | MOVE BACK BUFFER POINTER     |
| 0591  | 75006 | 070054 | STA T35CP   |                              |
| 0592  | 75007 | 016315 | JSB GETID   | GET STARTING ID CODE         |
| 0593  | 75010 | 026275 | JMP LFRER   | SHOULD END WITH CR           |
| 0594  | 75011 |        | REPNI EQU * |                              |
| 0595  | 75011 | 060052 | LDA ID      | SAVE ID                      |
| 0596  | 75012 | 072654 | STA REPLN   | IN BUFFER                    |
| 0597  | 75013 | 116021 | JSB HDBFA,I | PRINY HEADING                |
| 0598  | 75014 | 016213 | JSB T35SP   | AND SUSPEND                  |
| 0599* |       |        |             |                              |
| 0600  | 75015 | 062654 | LDA REPLN   | RESTORE                      |
| 0601  | 75016 | 070052 | STA ID      | ID                           |
| 0602  | 75017 | 060305 | LDA T35B1   | TO PRINT                     |
| 0603  | 75020 | 070051 | STA MOVED   | BUFFER.                      |
| 0604  | 75021 | 063267 | LDA REPHD   |                              |
| 0605  | 75022 | 070050 | STA MOVES   |                              |
| 0606  | 75023 | 067333 | LDB REP29   |                              |
| 0607  | 75024 | 016257 | JSB MOVEW   |                              |
| 0608  | 75025 | 016370 | JSB GTIL    | FIND WHAT TRACK IT'S ON      |
| 0609  | 75026 | 060076 | LDA IDLNP   | GET POINTER TO LENGTH WORD   |
| 0610  | 75027 |        | REPAB EQU * |                              |
| 0611  | 75027 | 072653 | STA REPPT   | SAVE LIVE TABLE ENTRY        |
| 0612  | 75030 | 164000 | LDB A,I     | GET THIS TRACKS LENGTH       |
| 0613  | 75031 | 006002 | SZB         | SKIP IF TRACK EMPTY          |
| 0614  | 75032 | 027037 | JMP REPAF   | GOOD TRACK, GO               |
| 0615  | 75033 |        | REPSG EQU * |                              |
| 0616  | 75033 | 053325 | CPA RIDCL   | LAST ID TRACK?               |
| 0617  | 75034 | 027072 | JMP REPS    | YES, EMPTY ID TABLE          |
| 0618  | 75035 | 040355 | ADA ,+3     | ADVANCE TO NEXT ENTRY        |
| 0619  | 75036 | 027027 | JMP REPAB   |                              |
| 0620  | 75037 |        | REPAF EQU * |                              |
| 0621  | 75037 | 074072 | STB WORD    | SAVE ACTUAL LENGTH           |
| 0622  | 75040 | 062653 | LDA REPPT   |                              |
| 0623  | 75041 | 040351 | ADA ,=1     |                              |
| 0624  | 75042 | 160000 | LDA A,I     | GET DRUM ADDRESS             |
| 0625  | 75043 | 064566 | LDB LIBDI   |                              |
| 0626  | 75044 | 016231 | JSB DRUML   | READ IT IN                   |
| 0627  | 75045 | 116015 | JSB SICKP,I | CAN'T, DIE GRACEFULLY        |
| 0628  | 75046 | 064072 | LDB WORD    |                              |
| 0629  | 75047 | 007004 | CMB,INB     |                              |
| 0630  | 75050 | 044562 | ADB LIBD    | MAKE POINTER TO LAST ENTRY+1 |
| 0631  | 75051 | 074030 | STB REPBF   |                              |
| 0632  | 75052 | 064562 | LDB LIBD    |                              |

|       |       |        |                |                               |
|-------|-------|--------|----------------|-------------------------------|
| 0633  | 75053 |        | REPSC EQU *    |                               |
| 0634  | 75053 | 062663 | LDA REPPT      |                               |
| 0635  | 75054 | 054030 | CPB REPBF      | CHECK FOR END                 |
| 0636  | 75055 | 027033 | JMP REPSG      | NOT ON THIS TRACK             |
| 0637  | 75056 | 160001 | LDA B,I        | GET THIS ID                   |
| 0638  | 75057 | 003000 | CMA            |                               |
| 0639  | 75060 | 040052 | ADA ID         | ARE WE PAST YET               |
| 0640  | 75061 | 002020 | SSA            |                               |
| 0641  | 75062 | 027065 | JMP REPSE      | YES, THIS IS WHERE WE START   |
| 0642  | 75063 | 044362 | ADB .+8        | MOVE UP TO NEXT ENTRY         |
| 0643  | 75064 | 027053 | JMP REPSC      |                               |
| 0644  | 75065 |        | REPSE EQU *    |                               |
| 0645  | 75065 | 044674 | ADB MLIBD      | MAKE POINTER FOR LATER        |
| 0646  | 75066 | 044072 | ADB WORD       |                               |
| 0647  | 75067 | 076654 | STB REPLN      | SET COUNT ON THIS TRACK       |
| 0648  | 75070 | 063334 | LDA REP57      | GET CHARACTER COUNT           |
| 0649  | 75071 | 027075 | JMP REP1       |                               |
| 0650  | 75072 |        | REPS EQU *     |                               |
| 0651  | 75072 | 063334 | LDA REP57      | WE WILL PRINT 57 CHARACTERS.  |
| 0652  | 75073 | 064305 | REP2 LDB T35B1 | OTHERWISE, JUST PRINT THE     |
| 0653  | 75074 | 026271 | JMP LEND+2     | HEADING AND TERMINATE.        |
| 0654* |       |        |                |                               |
| 0655  | 75075 | 064305 | REP1 LDB T35B1 | PRINT AND                     |
| 0656  | 75076 | 016213 | JSB T35SP      | SUSPEND.                      |
| 0657* |       |        |                |                               |
| 0658  | 75077 | 060305 | LDA T35B1      | SET BUFFER                    |
| 0659  | 75100 | 070030 | STA REPBF      | POINTER.                      |
| 0660  | 75101 |        | REPNT EQU *    |                               |
| 0661  | 75101 | 066653 | LDB REPPT      | GET CURRENT TRACK POINTER     |
| 0662  | 75102 | 044351 | ADB .-1        |                               |
| 0663  | 75103 | 160001 | LDA B,I        | GET LOCATION                  |
| 0664  | 75104 | 070033 | STA REPK       | SAVE DRUM ADDRESS             |
| 0665  | 75105 | 162653 | LDA REPPT,1    | COMPUTE PARAMETERS FOR DRUM   |
| 0666  | 75106 | 003004 | CMA,INA        | TRANSFER.                     |
| 0667  | 75107 | 042654 | ADA REPLN      |                               |
| 0668  | 75110 | 070031 | STA REPID      | REPLN=IDLEN.                  |
| 0669  | 75111 | 006400 | CLB            |                               |
| 0670  | 75112 | 101046 | LSR 6          | DIV BY 64 TO GET # OF SECTORS |
| 0671  | 75113 | 070001 | STA 1          | TO SKIP.                      |
| 0672  | 75114 | 040033 | ADA REPK       | COMPUTE DRUM ADDRESS          |
| 0673  | 75115 | 005700 | BLF            | COMPUTE # OF WORDS            |
| 0674  | 75116 | 005222 | RBL,RBL        | TO TRANSFER.                  |
| 0675  | 75117 | 007004 | CMB,INB        |                               |
| 0676  | 75120 | 044031 | ADB REPID      |                               |
| 0677  | 75121 | 074031 | STB REPID      | LN=IDLEN=(LN-IDLEN)/64*64     |
| 0678  | 75122 | 044402 | ADB .+24       | SET TRANSFER LENGTH TO READ   |
| 0679  | 75123 | 007004 | CMB,INB        | 3 NEW ID RECORDS.             |
| 0680  | 75124 | 074072 | STB WORD       |                               |
| 0681  | 75125 | 064566 | LDB LIBDI      |                               |
| 0682  | 75126 | 016231 | JSB DRUML      |                               |
| 0683  | 75127 | 116015 | JSB SICKP,1    | DRUM ERROR, GO DIE GRACEFULLY |
| 0684  | 75130 | 060031 | LDA REPID      | SET REPID TO POINT TO THE     |
| 0685  | 75131 | 040562 | ADA LIBD       | FIRST ENTRY TO BE CONVERTED.  |
| 0686  | 75132 | 070031 | STA REPID      |                               |
| 0687* |       |        |                |                               |

0688\*

0689\* NOW CONVERT ENTRIES INTO THE BUFFER, REPID POINTS AT THE ENTRY,  
 0690\* REPBF POINTS TO THE OUTPUT BUFFER,

0691\*

|      |       |        |      |             |                                  |
|------|-------|--------|------|-------------|----------------------------------|
| 0692 | 75133 | 160031 | REP4 | LDA REPID,I | GET ID.                          |
| 0693 | 75134 | 010602 |      | AND B1777   | MASK NUMBER PART.                |
| 0694 | 75135 | 006400 |      | CLB         | GET #/100 IN A, # MOD 100 IN B.  |
| 0695 | 75136 | 100400 |      | DIV ,100    |                                  |
|      | 75137 | 000437 |      |             |                                  |
| 0696 | 75140 | 074032 |      | STB REPT    | SAVE LAST 2 DIGITS.              |
| 0697 | 75141 | 070001 |      | STA 1       | COMBINE FIRST DIGIT WITH         |
| 0698 | 75142 | 160031 |      | LDA REPID,I | LETTER.                          |
| 0699 | 75143 | 001121 |      | ARS,ARS     |                                  |
| 0700 | 75144 | 013330 |      | AND REPMS   |                                  |
| 0701 | 75145 | 040001 |      | ADA 1       |                                  |
| 0702 | 75146 | 043331 |      | ADA REPFX   |                                  |
| 0703 | 75147 | 170030 |      | STA REPBF,I | STORE ASCII LETTER&DIGIT IN BUF. |
| 0704 | 75150 | 034030 |      | ISZ REPBF   |                                  |
| 0705 | 75151 | 060032 |      | LDA REPT    | CONVERT LAST 2 DIGITS            |
| 0706 | 75152 | 017233 |      | JSB REPNM   | AND STORE IN BUFFER.             |
| 0707 | 75153 | 170030 |      | STA REPBF,I |                                  |
| 0708 | 75154 | 034030 |      | ISZ REPBF   | MOVE REPBF TO POINT AT TIME AREA |
| 0709 | 75155 | 060031 |      | LDA REPID   | SET REPID TO POINT               |
| 0710 | 75156 | 040357 |      | ADA ,+5     | TO USERS TIME.                   |
| 0711 | 75157 | 070031 |      | STA REPID   |                                  |
| 0712 | 75160 | 160031 |      | LDA REPID,I | GET USERS TIME.                  |
| 0713 | 75161 | 017243 |      | JSB REPTR   | CONVERT INTO BUFFER.             |
| 0714 | 75162 | 034031 |      | ISZ REPID   | POINT TO DISC USED               |
| 0715 | 75163 | 034031 |      | ISZ REPID   | AND                              |
| 0716 | 75164 | 160031 |      | LDA REPID,I |                                  |
| 0717 | 75165 | 017243 |      | JSB REPTR   | CONVERT IT.                      |
| 0718 | 75166 | 060570 |      | LDA ASCBB   | GET A PAIR OF BLANKS             |
| 0719 | 75167 | 170030 |      | STA REPBF,I | BLANK OUT THIS SPOT              |
| 0720 | 75170 | 034030 |      | ISZ REPBF   | MOVE BUFFER POINTER UP FOR       |
| 0721 | 75171 | 034030 |      | ISZ REPBF   | NEXT ENTRY.                      |
| 0722 | 75172 | 034031 |      | ISZ REPID   | MOVE ID POINTER ALSO.            |
| 0723 | 75173 | 066654 |      | LDB REPLN   | BUMP ID ENTRY COUNTER.           |
| 0724 | 75174 | 044362 |      | ADB ,+8     |                                  |
| 0725 | 75175 | 076654 |      | STB REPLN   |                                  |
| 0726 | 75176 | 006002 |      | SZB         | IF ANY LEFT, TEST FOR BUFFER     |
| 0727 | 75177 | 027226 |      | JMP REP3    | FULL.                            |

0728\*

0729\* ARRIVE HERE WHEN WE HAVE COMPLETED AN ID TRACK

0730\*

|      |       |        |             |           |                                  |
|------|-------|--------|-------------|-----------|----------------------------------|
| 0731 | 75200 |        | REPET EQU * |           |                                  |
| 0732 | 75200 | 062653 |             | LDA REPPT | GET CURRENT IDEC TABLE POINTER   |
| 0733 | 75201 | 053325 |             | CPA RIDCL | WAS THIS THE LAST IDT TRACK?     |
| 0734 | 75202 | 027216 |             | JMP REPEV | YES, DONE WITH REPORT            |
| 0735 | 75203 | 040355 |             | ADA ,+3   | NO, ADVANCE TO THE NEXT IDEC ENT |
| 0736 | 75204 | 072653 |             | STA REPPT |                                  |
| 0737 | 75205 | 164000 |             | LDB A,I   | GET COUNT ON THIS TRACK          |
| 0738 | 75206 | 076654 |             | STB REPLN | AND SET THE COUNTER              |
| 0739 | 75207 | 006003 |             | SZB,RSS   |                                  |
| 0740 | 75210 | 027200 |             | JMP REPET | EMPTY TRACK, TRY NEXT            |
| 0741 | 75211 | 063335 |             | LDA REP56 | IF END OF BUFFER,                |

|       |       |        |         |           |                               |
|-------|-------|--------|---------|-----------|-------------------------------|
| 0742  | 75212 | 064030 | LDB     | REPBF     | GO TO PRINT                   |
| 0743  | 75213 | 057327 | CPB     | REPND     | AND SUSPEND                   |
| 0744  | 75214 | 027075 | JMP     | REP1      |                               |
| 0745  | 75215 | 027101 | JMP     | REPNT     | OTHERWISE READ NEXT TRACK AND |
| 0746* |       |        |         |           | DO ANOTHER ENTRY              |
| 0747  | 75216 |        | REPEV   | EQU *     |                               |
| 0748  | 75216 | 060350 | LDA     | .-2       |                               |
| 0749  | 75217 | 040030 | ADA     | REPBF     |                               |
| 0750  | 75220 | 067336 | LDB     | REPSL     |                               |
| 0751  | 75221 | 174000 | STB     | A,I       | SPACE-LF                      |
| 0752  | 75222 | 040355 | ADA     | .+3       | COMPUTE #                     |
| 0753  | 75223 | 043326 | ADA     | REPTT     | OF CHARACTERS.                |
| 0754  | 75224 | 001000 | ALS     |           |                               |
| 0755  | 75225 | 027073 | JMP     | REP2      |                               |
| 0756* |       |        |         |           |                               |
| 0757  | 75226 | 063335 | REP3    | LDA REP56 | IF END OF                     |
| 0758  | 75227 | 064030 | LDB     | REPBF     | BUFFER, GO TO                 |
| 0759  | 75230 | 057327 | CPB     | REPND     | PRINT AND SUSPEND.            |
| 0760  | 75231 | 027075 | JMP     | REP1      |                               |
| 0761  | 75232 | 027133 | JMP     | REP4      | ELSE GO DO NEXT ENTRY.        |
| 0762* |       |        |         |           |                               |
| 0763  | 75233 | 000000 | REPNM   | NOP       | CONVERT A #<100 TO ASCII.     |
| 0764  | 75234 | 006400 | CLB     |           | GET 1ST DIGIT IN A,           |
| 0765  | 75235 | 100400 | DIV     | .+10      | 2ND IN B.                     |
|       | 75236 | 000364 |         |           |                               |
| 0766  | 75237 | 001727 | ALF,ALF |           | PACK AND                      |
| 0767  | 75240 | 040001 | ADA     | 1         | ADD ON ASCII                  |
| 0768  | 75241 | 040574 | ADA     | ASC00     | BITS.                         |
| 0769  | 75242 | 127233 | JMP     | REPNM,I   |                               |
| 0770* |       |        |         |           |                               |
| 0771  | 75243 | 000000 | REPTR   | NOP       | TRANSLATE A 5-DIGIT NUMBER    |
| 0772  | 75244 | 006400 | CLB     |           | INTO THE BUFFER.              |
| 0773  | 75245 | 100400 | DIV     | DVSR5     | CONVERT FIRST                 |
|       | 75246 | 001032 |         |           |                               |
| 0774  | 75247 | 043332 | ADA     | REP00     | DIGIT.                        |
| 0775  | 75250 | 170030 | STA     | REPBF,I   | PUT IN                        |
| 0776  | 75251 | 034030 | ISZ     | REPBF     | BUFFER.                       |
| 0777  | 75252 | 060001 | LDA     | 1         | NOW GET THE REST.             |
| 0778  | 75253 | 006400 | CLB     |           |                               |
| 0779  | 75254 | 100400 | DIV     | .100      | COMPUTE AS 2 2-DIGIT #8.      |
|       | 75255 | 000437 |         |           |                               |
| 0780  | 75256 | 074033 | STB     | REPK      | SAVE 2ND HALF.                |
| 0781  | 75257 | 017233 | JSB     | REPNM     | CONVERT AND STORE             |
| 0782  | 75260 | 170030 | STA     | REPBF,I   | FIRST PART.                   |
| 0783  | 75261 | 034030 | ISZ     | REPBF     |                               |
| 0784  | 75262 | 060033 | LDA     | REPK      | SAME WITH                     |
| 0785  | 75263 | 017233 | JSB     | REPNM     | 2ND PART.                     |
| 0786  | 75264 | 170030 | STA     | REPBF,I   |                               |
| 0787  | 75265 | 034030 | ISZ     | REPBF     |                               |
| 0788  | 75266 | 127243 | JMP     | REPTR,I   |                               |
| 0789* |       |        |         |           |                               |
| 0790  | 75267 | 075270 | REPND   | DEF **1   |                               |
| 0791  | 75270 | 005040 | OCT     | 5040      |                               |
| 0792  | 75271 | 044504 | ASC     | 20,ID     | TIME SPACE ID TIME SPACE      |
|       | 75272 | 020040 |         |           |                               |

|      |       |        |                      |
|------|-------|--------|----------------------|
|      | 75273 | 052111 |                      |
|      | 75274 | 046505 |                      |
|      | 75275 | 020040 |                      |
|      | 75276 | 051520 |                      |
|      | 75277 | 040503 |                      |
|      | 75300 | 042440 |                      |
|      | 75301 | 020040 |                      |
|      | 75302 | 020040 |                      |
|      | 75303 | 044504 |                      |
|      | 75304 | 020040 |                      |
|      | 75305 | 052111 |                      |
|      | 75306 | 046505 |                      |
|      | 75307 | 020040 |                      |
|      | 75310 | 051520 |                      |
|      | 75311 | 040503 |                      |
|      | 75312 | 042440 |                      |
|      | 75313 | 020040 |                      |
|      | 75314 | 020040 |                      |
| 0793 | 75315 | 044504 | ASC 8, ID TIME SPACE |
|      | 75316 | 020040 |                      |
|      | 75317 | 052111 |                      |
|      | 75320 | 046505 |                      |
|      | 75321 | 020040 |                      |
|      | 75322 | 051520 |                      |
|      | 75323 | 040503 |                      |
|      | 75324 | 042440 |                      |
| 0794 | 75325 | 000110 | RIDCL DEF IDEC+8     |
| 0795 | 74653 |        | REPPT EQU T35BF+34   |
| 0796 | 74654 |        | REPLN EQU T35BF+35   |
| 0797 | 00030 |        | REPBF EQU LTEMP      |
| 0798 | 00031 |        | REPID EQU LTEMP+1    |
| 0799 | 00032 |        | REPT EQU LTEMP+2     |
| 0800 | 00033 |        | REPK EQU LTEMP+3     |
| 0801 | 75326 | 103165 | REPTT ABS -T35BF=2   |
| 0802 | 75327 | 074647 | REPND DEF T35BF+30   |
| 0803 | 75330 | 017400 | REPMS OCT 17400      |
| 0804 | 75331 | 040060 | REPFX ASC 1, 00      |
| 0805 | 75332 | 020060 | REP00 ASC 1, 0       |
| 0806 | 75333 | 177743 | REP29 DEC =29        |
| 0807 | 75334 | 000071 | REP57 DEC 57         |
| 0808 | 75335 | 000070 | REP56 DEC 56         |
| 0809 | 75336 | 020012 | REPSL OCT 20012      |
| 0810 | 75337 |        | SREP EQU *           |

0002\* THE DIRECTORY COMMAND IS A SYSTEM COMMAND WHICH CAUSES THE  
 0003\* CONTENTS OF THE DISC DIRECTORY TO BE PRINTED ON THE SYSTEM  
 0004\* CONSOLE, THE FORMAT OF THE PRINTOUT IS AS FOLLOWS:

0005\*  
 0006\* <ID> <NAME> <PURGE DATE> <FLAGS> <LENGTH> <DISC ADR> <DRUM ADR>

0007\*  
 0008\* THE PURGE DATE IS PRINTED AS A 3-DIGIT INTEGER INDICATING THE DAY  
 0009\* OF THE YEAR AND A 2-DIGIT INTEGER INDICATING THE YEAR. THE DRUM  
 0010\* ADDRESS CONSISTS OF 3 INTEGERS INDICATING DRUM, TRACK, AND SECTOR.  
 0011\* THE DISC ADDRESS IS A LOGICAL BLOCK NUMBER.  
 0012\* THE LENGTH IS IN WORDS FOR PROGRAMS, RECORDS FOR FILES.  
 0013\* THESE ARE ALL PRINTED IN DECIMAL.  
 0014\* TYPING DIR, ID WILL START THE LISTING WITH THAT ID,  
 0015\* SDIRECTORY MUST FOLLOW DIRECTORY IN SEQUENCE.

0017 75000

ORG LIBRA

|       |       |        |                   |                                  |
|-------|-------|--------|-------------------|----------------------------------|
| 0019  | 75000 | 002404 | CLA, INA          | START WITH ID OF 1 - 1           |
| 0020  | 75001 | 070052 | STA ID            | IN CASE WE DON'T GO TO GETID,    |
| 0021  | 75002 | 114572 | JSB T35CH, I      | SEE WHAT FIRST CHARACTER IS      |
| 0022  | 75003 | 027011 | JMP DIRNI         | CR = - START AT BEGINNING OF DIR |
| 0023  | 75004 | 003400 | CCA               | A ← - 1                          |
| 0024  | 75005 | 040054 | ADA T35CP         | MOVE BACK BUFFER POINTER,        |
| 0025  | 75006 | 070054 | STA T35CP         |                                  |
| 0026  | 75007 | 016315 | JSB GETID         | GET STARTING ID CODE             |
| 0027  | 75010 | 026275 | JMP LFRER         | SHOULD END WITH CR               |
| 0028  | 75011 |        | DIRNI EQU *       |                                  |
| 0029  | 75011 | 003400 | CCA               | A ← - 1                          |
| 0030  | 75012 | 040052 | ADA ID            | LOOK FOR PREVIOUS ID WITH        |
| 0031  | 75013 | 072654 | STA T35BF+35      | NAME OF INFINITY,                |
| 0032  | 75014 | 116021 | JSB HDBFA, I      | PRINT HEADING                    |
| 0033  | 75015 | 016213 | JSB T359P         | AND SUSPEND                      |
| 0034  | 75016 | 063367 | LDA DIR1          | MOVE HEADING TO                  |
| 0035  | 75017 | 070050 | STA MOVES         | PRINT BUFFER,                    |
| 0036  | 75020 | 060305 | LDA T35B1         |                                  |
| 0037  | 75021 | 070051 | STA MOVED         |                                  |
| 0038  | 75022 | 064322 | LDB , -24         |                                  |
| 0039  | 75023 | 016257 | JSB MOVEW         |                                  |
| 0040  | 75024 | 060432 | LDA , +48         | PRINT                            |
| 0041  | 75025 | 064305 | LDB T35B1         | HEADING AND                      |
| 0042  | 75026 | 016213 | JSB T359P         | SUSPEND,                         |
| 0043* |       |        |                   |                                  |
| 0044  | 75027 | 060274 | LDA INF           | SET UP LTEMP(0;3) FOR            |
| 0045  | 75030 | 070031 | STA LTEMP+1       | INITIAL DIRECTORY SEARCH .       |
| 0046  | 75031 | 070032 | STA LTEMP+2       |                                  |
| 0047  | 75032 | 070033 | STA LTEMP+3       |                                  |
| 0048  | 75033 | 062654 | LDA T35BF+35      | GET SAVED STARTING ID,           |
| 0049  | 75034 | 070030 | STA LTEMP         |                                  |
| 0050* |       |        |                   |                                  |
| 0051  | 75035 | 116005 | DIR2 JSB DLOKP, I | PERFORM DIRECTORY SEARCH FOR     |
| 0052  | 75036 | 000000 | NOP               | LAST ENTRY.                      |
| 0053  | 75037 | 060035 | DIR8 LDA LTEMP+5  | MOVE POINTER UP TO               |
| 0054  | 75040 | 040366 | ADA , +12         | NEXT ENTRY                       |
| 0055  | 75041 | 070035 | STA LTEMP+5       |                                  |

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0056 75042 140034 ADA LTEMP+4,I TEST FOR END OF TRACK.
0057 75043 040674 ADA MLIBD
0058 75044 002002 SZA
0059 75045 027064 JMP DIR3 NOT END OF TRACK.
0060*
0061 75046 064034 LDB LTEMP+4 BUMP TRACK POINTER TO NEXT
0062 75047 044361 ADB .+7 TRACK.
0063 75050 150001 CPA 1,I LOOP IF EMPTY.
0064 75051 027047 JMP +=2
0065*
0066* FOUND NEXT NON-EMPTY TRACK--WANT TO READ IT IN.
0067*
0068 75052 074034 STB LTEMP+4
0069 75053 160001 LDA 1,I SET WORD LENGTH.
0070 75054 070072 STA WORD
0071 75055 044360 ADB .+6
0072 75056 160001 LDA 1,I GET DRUM ADDRESS.
0073 75057 064566 LDB LIBDI
0074 75060 016231 JSB DRUML READ TRACK
0075 75061 027335 JMP DIRFM DRUM ERROR, GO TELL OP
0076*
0077 75062 060562 LDA LIBD SET POINTER TO ENTRY.
0078 75063 070035 STA LTEMP+5
0079*
0080 75064 027071 DIR3 JMP DIR9
0081 75065 000000 NOP SPACE FOR
0082 75066 000000 NOP SANCTIFIED
0083 75067 000000 NOP TEST IN
0084 75070 000000 NOP SDIRECTORY
0085 75071 160035 DIR9 LDA LTEMP+5,I GET USER ID
0086 75072 072654 STA T35BF+35 LEAVE IN BUFFER;
0087 75073 050351 CPA .-1 IF NEGATIVE, WE'RE AT END OF
0088 75074 026267 JMP LEND DIRECTORY, SO TERMINATE.
0089 75075 050030 CPA LTEMP IF ID SAME AS LAST TIME, GO PUT
0090 75076 027115 JMP DIR4 BLANKS IN.
0091*
0092 75077 010602 AND B1777 GET NUMERICAL PART OF ID.
0093 75100 006400 CLB
0094 75101 100400 DIV .100 GET FIRST DIGIT IN A, LAST 2 IN B
75102 000437
0095 75103 072611 STA T35BF SAVE FIRST DIGIT.
0096 75104 160035 LDA LTEMP+5,I GET ID AGAIN.
0097 75105 001323 RAR,RAR POSITION LETTER.
0098 75106 013420 AND DIRMS KEEP ONLY THOSE 5 BITS.
0099 75107 042611 ADA T35BF ADD IN DIGIT.
0100 75110 043421 ADA DIRFX CONVERT TO ASCII.
0101 75111 072611 STA T35BF
0102 75112 060001 LDA 1
0103 75113 017325 JSB DIRNM CONVERT LAST 2 DIGITS TO
0104 75114 027117 JMP +=3 ASCII AND STORE IN BUFFER.
0105*
0106 75115 062613 DIR4 LDA T35BF+2 PLACE BLANKS IN ID POSITION IN
0107 75116 072611 STA T35BF BUFFER.
0108 75117 072612 STA T35BF+1
0109*

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|       |       |        |               |                                  |
|-------|-------|--------|---------------|----------------------------------|
| 0110  | 75120 | 034035 | ISZ LTEMP+5   | MOVE PROGRAM NAME INTO BUFFER.   |
| 0111  | 75121 | 160035 | LDA LTEMP+5,1 |                                  |
| 0112  | 75122 | 072614 | STA T35BF+3   |                                  |
| 0113  | 75123 | 034035 | ISZ LTEMP+5   |                                  |
| 0114  | 75124 | 104200 | OLD LTEMP+5,1 |                                  |
|       | 75125 | 100035 |               |                                  |
| 0115  | 75126 | 104400 | DST T35BF+4   |                                  |
|       | 75127 | 074615 |               |                                  |
| 0116* |       |        |               |                                  |
| 0117  | 75130 | 064035 | LDB LTEMP+5   | SET POINTER TO DATE LOCATION.    |
| 0118  | 75131 | 044355 | ADB .+3       |                                  |
| 0119  | 75132 | 074035 | STB LTEMP+5   |                                  |
| 0120  | 75133 | 160035 | LDA LTEMP+5,1 | GET DATE.                        |
| 0121  | 75134 | 010502 | AND B777      | GET DAY OF YEAR.                 |
| 0122  | 75135 | 006400 | CLB           |                                  |
| 0123  | 75136 | 100400 | DIV .+10      | SET A=1ST 2 DIGITS, B=LAST ONE.  |
|       | 75137 | 000364 |               |                                  |
| 0124  | 75140 | 005727 | BLF,BLF       | POSITION LAST DIGIT IN LEFT      |
| 0125  | 75141 | 047422 | ADB DIR08     | HALF AND MERGE IN ASCII.         |
| 0126  | 75142 | 076621 | STB T35BF+8   | STORE IN BUFFER.                 |
| 0127  | 75143 | 017325 | JSB DIRNM     | CONVERT 1ST 2 DIGITS AND STORE   |
| 0128  | 75144 | 072620 | STA T35BF+7   | IN BUFFER.                       |
| 0129  | 75145 | 160035 | LDA LTEMP+5,1 | GET YEAR.                        |
| 0130  | 75146 | 001727 | ALF,ALF       | POSITION.                        |
| 0131  | 75147 | 001300 | RAR           |                                  |
| 0132  | 75150 | 010441 | AND B177      | MASK,                            |
| 0133  | 75151 | 017325 | JSB DIRNM     | CONVERT,                         |
| 0134  | 75152 | 072622 | STA T35BF+9   | STORE.                           |
| 0135* |       |        |               |                                  |
| 0136  | 75153 | 034035 | ISZ LTEMP+5   | BUMP POINTER TO                  |
| 0137  | 75154 | 034035 | ISZ LTEMP+5   | DRUM ADDRESS                     |
| 0138  | 75155 | 160035 | LDA LTEMP+5,1 | GET DRUM ADDRESS                 |
| 0139  | 75156 | 002003 | SZA,RSS       | IS IT ZERO?                      |
| 0140  | 75157 | 027204 | JMP DIR7      | YES, SKIP DRUM ADDRESS FORMATTIN |
| 0141  | 75160 | 001222 | RAL,RAL       | POSITION DRUM NO. IN LOW 2 BITS  |
| 0142  | 75161 | 010355 | AND .+3       | KEEP IT.                         |
| 0143  | 75162 | 001727 | ALF,ALF       | POSITION AS LEFT CHAR.           |
| 0144  | 75163 | 043422 | ADA DIR08     | ADD IN ASCII JUNK.               |
| 0145  | 75164 | 072635 | STA T35BF+20  | STORE IN BUFFER                  |
| 0146* |       |        |               |                                  |
| 0147  | 75165 | 160035 | LDA LTEMP+5,1 | GET DRUM ADDRESS AGAIN           |
| 0148  | 75166 | 001727 | ALF,ALF       | POSITION TRACK IN LOW 6 BITS.    |
| 0149  | 75167 | 010734 | AND B77       | KEEP ONLY THOSE BITS.            |
| 0150  | 75170 | 017325 | JSB DIRNM     | CONVERT.                         |
| 0151  | 75171 | 072636 | STA T35BF+21  | STORE IN BUFFER                  |
| 0152* |       |        |               |                                  |
| 0153  | 75172 | 160035 | LDA LTEMP+5,1 | GET DRUM ADDRESS AGAIN           |
| 0154  | 75173 | 010441 | AND B177      | KEEP ONLY SECTOR ADDRESS.        |
| 0155  | 75174 | 006400 | CLB           | GET FIRST DIGIT IN A,            |
| 0156  | 75175 | 100400 | DIV .100      | LAST 2 IN B.                     |
|       | 75176 | 000437 |               |                                  |
| 0157  | 75177 | 043423 | ADA DIR08     | CONVERT FIRST ONE.               |
| 0158  | 75200 | 072637 | STA T35BF+22  |                                  |
| 0159  | 75201 | 060001 | LDA 1         | CONVERT LAST                     |
| 0160  | 75202 | 017325 | JSB DIRNM     | TWO.                             |

|       |       |        |      |               |                              |
|-------|-------|--------|------|---------------|------------------------------|
| 0161  | 75203 | 072640 |      | STA T35BF+23  |                              |
| 0162* |       |        |      |               |                              |
| 0163  | 75204 | 034035 | DIR7 | ISZ LTEMP+5   | BUMP POINTER TO DISC ADDRESS |
| 0164  | 75205 | 164035 |      | LDB LTEMP+5,I | GET HIGH PART IN B           |
| 0165  | 75206 | 034035 |      | ISZ LTEMP+5   |                              |
| 0166  | 75207 | 160035 |      | LDA LTEMP+5,I | GET LOW PART IN A            |
| 0167  | 75210 | 100400 |      | DIV DVSR5     | GET FIRST 2 DIGITS IN A      |
|       | 75211 | 001032 |      |               |                              |
| 0168  | 75212 | 076632 |      | STB T35BF+17  | SAVE THE REST                |
| 0169  | 75213 | 017325 |      | JSB DIRNM     | CONVERT TO ASCII             |
| 0170  | 75214 | 072631 |      | STA T35BF+16  | STORE IN BUFFER              |
| 0171  | 75215 | 062632 |      | LDA T35BF+17  | RETRIEVE REST OF DIGITS      |
| 0172  | 75216 | 006400 |      | CLB           | GET DIGITS 3 AND 4           |
| 0173  | 75217 | 100400 |      | DIV .100      | INTO A                       |
|       | 75220 | 000437 |      |               |                              |
| 0174  | 75221 | 076633 |      | STB T35BF+18  | SAVE 5 AND 6                 |
| 0175  | 75222 | 017325 |      | JSB DIRNM     | CONVERT TO ASCII             |
| 0176  | 75223 | 072632 |      | STA T35BF+17  | STORE IN BUFFER              |
| 0177  | 75224 | 062633 |      | LDA T35BF+18  | GET DIGITS 5 AND 6           |
| 0178  | 75225 | 017325 |      | JSB DIRNM     | CONVERT TO ASCII             |
| 0179  | 75226 | 072633 |      | STA T35BF+18  | STORE IN BUFFER              |
| 0180* |       |        |      |               |                              |
| 0181  | 75227 | 034035 |      | ISZ LTEMP+5   | BUMP POINTER TO LENGTH,      |
| 0182  | 75230 | 034035 |      | ISZ LTEMP+5   |                              |
| 0183  | 75231 | 160035 |      | LDA LTEMP+5,I | GET LENGTH,                  |
| 0184  | 75232 | 002020 |      | SSA           |                              |
| 0185  | 75233 | 003004 |      | CMA,INA       | MAKE POSITIVE IF NECESSARY   |
| 0186  | 75234 | 006400 |      | CLB           | GET FIRST DIGIT IN A, LAST 4 |
| 0187  | 75235 | 100400 |      | DIV DVSR5     | IN B                         |
|       | 75236 | 001032 |      |               |                              |
| 0188  | 75237 | 043430 |      | ADA ASCB0     | CONVERT FIRST TO ASCII       |
| 0189  | 75240 | 072625 |      | STA T35BF+12  | STORE IN BUFFER              |
| 0190  | 75241 | 060001 |      | LDA B         | GET DIGITS 2 - 5             |
| 0191  | 75242 | 006400 |      | CLB           | GET DIGITS 2 - 3 IN A, 4 - 5 |
| 0192  | 75243 | 100400 |      | DIV .100      | IN B,                        |
|       | 75244 | 000437 |      |               |                              |
| 0193  | 75245 | 076627 |      | STB T35BF+14  | SAVE LAST TWO                |
| 0194  | 75246 | 017325 |      | JSB DIRNM     | CONVERT 2 AND 3 TO ASCII     |
| 0195  | 75247 | 072626 |      | STA T35BF+13  | STORE IN BUFFER              |
| 0196  | 75250 | 062627 |      | LDA T35BF+14  | GET LAST TWO                 |
| 0197  | 75251 | 017325 |      | JSB DIRNM     | CONVERT TO ASCII             |
| 0198  | 75252 | 072627 |      | STA T35BF+14  | STORE IN BUFFER              |
| 0199  | 75253 | 062613 |      | LDA T35BF+2   | BLANK OUT                    |
| 0200  | 75254 | 072630 |      | STA T35BF+15  | NEXT TWO COLUMNS             |
| 0201* |       |        |      |               |                              |
| 0202  | 75255 | 064035 |      | LDB LTEMP+5   |                              |
| 0203  | 75256 | 044341 |      | ADB .-9       | ⇒ SECOND WORD OF NAME        |
| 0204  | 75257 | 160001 |      | LDA 1,I       |                              |
| 0205  | 75260 | 006004 |      | INB           | BUMP POINTER TO THIRD WORD   |
| 0206  | 75261 | 002021 |      | SSA,RSS       | FILE?                        |
| 0207  | 75262 | 027265 |      | JMP DIR5      | NO                           |
| 0208  | 75263 | 063425 |      | LDA DASC5     | YES, GET AN F                |
| 0209  | 75264 | 027273 |      | JMP DIR6      |                              |
| 0210  | 75265 | 160001 | DIR5 | LDA B,I       |                              |
| 0211  | 75266 | 002021 |      | SSA,RSS       | SEMI-COMPILED?               |

|       |       |        |               |                               |
|-------|-------|--------|---------------|-------------------------------|
| 0212  | 75267 | 027272 | JMP ++3       | NO                            |
| 0213  | 75270 | 063424 | LDA DASCC     | YES, GET A C                  |
| 0214  | 75271 | 002001 | RSS           |                               |
| 0215  | 75272 | 060412 | LDA .+40B     | GET A SPACE                   |
| 0216  | 75273 | 044350 | DIR6 ADB .-2  | => FIRST WORD OF NAME         |
| 0217  | 75274 | 001727 | ALF,ALF       | MOVE CHARACTER TO HIGH 8 BITS |
| 0218  | 75275 | 164001 | LDB B,I       |                               |
| 0219  | 75276 | 006021 | SSB,RSS       | PROTECTED?                    |
| 0220  | 75277 | 027302 | JMP ++3       | NO                            |
| 0221  | 75300 | 033426 | IOR DASCP     | MERGE IN A P                  |
| 0222  | 75301 | 002001 | RSS           |                               |
| 0223  | 75302 | 030412 | IOR .+40B     | MERGE IN A SPACE              |
| 0224  | 75303 | 072624 | STA T35BF+11  | STORE IN BUFFER               |
| 0225  | 75304 | 064035 | LDB LTEMP+5   |                               |
| 0226  | 75305 | 044346 | ADB .-4       |                               |
| 0227  | 75306 | 160001 | LDA B,I       | GET DRUM ADDRESS              |
| 0228  | 75307 | 002002 | SZA           | IS THERE ONE TO PRINT?        |
| 0229  | 75310 | 060364 | LDA .+10      | YES                           |
| 0230  | 75311 | 040420 | ADA .+38      | PRINT THE LINE                |
| 0231  | 75312 | 064305 | LDB T35B1     |                               |
| 0232  | 75313 | 016213 | JSB T359P     | SUSPEND,                      |
| 0233* |       |        |               |                               |
| 0234  | 75314 | 062654 | LDA T35BF+35  | SET UP LTEMP(0:3) IN ORDER TO |
| 0235  | 75315 | 066614 | LDB T35BF+3   |                               |
| 0236  | 75316 | 104400 | DST LTEMP     | FIND NEXT PROGRAM             |
|       | 75317 | 000030 |               |                               |
| 0237  | 75320 | 104200 | DL0 T35BF+4   |                               |
|       | 75321 | 074615 |               |                               |
| 0238  | 75322 | 104400 | DST LTEMP+2   |                               |
|       | 75323 | 000032 |               |                               |
| 0239  | 75324 | 027035 | JMP DIR2      | LOOP FOR NEXT OUTPUT.         |
| 0240* |       |        |               |                               |
| 0241* |       |        |               |                               |
| 0242* |       |        |               |                               |
| 0243  | 75325 | 000000 | DIRNM NOP     | CONVERT A # <100 TO ASCII.    |
| 0244  | 75326 | 006400 | CLB           |                               |
| 0245  | 75327 | 100400 | DIV .+10      |                               |
|       | 75330 | 000364 |               |                               |
| 0246  | 75331 | 001727 | ALF,ALF       |                               |
| 0247  | 75332 | 040001 | ADA 1         |                               |
| 0248  | 75333 | 040574 | ADA ASC00     |                               |
| 0249  | 75334 | 127325 | JMP DIRNM,I   |                               |
| 0250  | 75335 |        | DIRFM EQU *   |                               |
| 0251  | 75335 | 063350 | LDA DIRSO     |                               |
| 0252  | 75336 | 070050 | STA MOVES     |                               |
| 0253  | 75337 | 060305 | LDA T35B1     |                               |
| 0254  | 75340 | 070051 | STA MOVED     |                               |
| 0255  | 75341 | 064316 | LDB DIRSP     |                               |
| 0256  | 75342 | 005100 | BRS           |                               |
| 0257  | 75343 | 016257 | JSB MOVEW     |                               |
| 0258  | 75344 | 060316 | LDA DIRSP     |                               |
| 0259  | 75345 | 003004 | CMA,INA       |                               |
| 0260  | 75346 | 067350 | LDB DIRSO     |                               |
| 0261  | 75347 | 026271 | JMP LEND+2    |                               |
| 0262  | 75350 | 075351 | DIRSO DEF ++1 |                               |

|      |       |        |       |       |                       |      |                 |
|------|-------|--------|-------|-------|-----------------------|------|-----------------|
| 0263 | 75351 | 005103 | OCT   | 5103  |                       |      |                 |
| 0264 | 75352 | 040516 | ASC   | 13,   | ANIT                  | READ | DIRECTORY TRACK |
|      | 75353 | 023524 |       |       |                       |      |                 |
|      | 75354 | 020122 |       |       |                       |      |                 |
|      | 75355 | 042501 |       |       |                       |      |                 |
|      | 75356 | 042040 |       |       |                       |      |                 |
|      | 75357 | 042111 |       |       |                       |      |                 |
|      | 75360 | 051105 |       |       |                       |      |                 |
|      | 75361 | 041524 |       |       |                       |      |                 |
|      | 75362 | 047522 |       |       |                       |      |                 |
|      | 75363 | 054440 |       |       |                       |      |                 |
|      | 75364 | 052122 |       |       |                       |      |                 |
|      | 75365 | 040503 |       |       |                       |      |                 |
|      | 75366 | 045440 |       |       |                       |      |                 |
| 0265 | 00316 |        | DIRSP | EQU   | ,+DIRSO=**+DIRSO=**+2 |      |                 |
| 0266 | 75367 | 075370 | DIR1  | DEF   | **+1                  |      |                 |
| 0267 | 75370 | 005040 | OCT   | 5040  | LF=BLANK              |      |                 |
| 0268 | 75371 | 044504 | ASC   | 9, ID | NAME                  | DATE |                 |
|      | 75372 | 020040 |       |       |                       |      |                 |
|      | 75373 | 020040 |       |       |                       |      |                 |
|      | 75374 | 047101 |       |       |                       |      |                 |
|      | 75375 | 046505 |       |       |                       |      |                 |
|      | 75376 | 020040 |       |       |                       |      |                 |
|      | 75377 | 020040 |       |       |                       |      |                 |
|      | 75400 | 042101 |       |       |                       |      |                 |
| 0269 | 75401 | 052105 |       |       |                       |      |                 |
|      | 75402 | 020040 | ASC   | 14,   | LENGTH                | DISC | DRUM            |
|      | 75403 | 020040 |       |       |                       |      |                 |
|      | 75404 | 020114 |       |       |                       |      |                 |
|      | 75405 | 042515 |       |       |                       |      |                 |
|      | 75406 | 043524 |       |       |                       |      |                 |
|      | 75407 | 044040 |       |       |                       |      |                 |
|      | 75410 | 020040 |       |       |                       |      |                 |
|      | 75411 | 042111 |       |       |                       |      |                 |
|      | 75412 | 051503 |       |       |                       |      |                 |
|      | 75413 | 020040 |       |       |                       |      |                 |
|      | 75414 | 020040 |       |       |                       |      |                 |
|      | 75415 | 020104 |       |       |                       |      |                 |
|      | 75416 | 051125 |       |       |                       |      |                 |
|      | 75417 | 046440 |       |       |                       |      |                 |
| 0270 | 75420 | 017400 | DIRMS | OCT   | 17400                 |      |                 |
| 0271 | 75421 | 040060 | DIRFX | ASC   | 1,00                  |      |                 |
| 0272 | 75422 | 030057 | DIR0S | ASC   | 1,0/                  |      |                 |
| 0273 | 75423 | 027460 | DIRS0 | ASC   | 1,/0                  |      |                 |
| 0274 | 75424 | 000103 | DASCC | OCT   | 103                   |      |                 |
| 0275 | 75425 | 000106 | DASCF | OCT   | 106                   |      |                 |
| 0276 | 75426 | 000120 | DASCP | OCT   | 120                   |      |                 |
| 0277 | 75427 | 000040 | DASCS | OCT   | 40                    |      |                 |
| 0278 | 75430 | 020060 | ASCB0 | ASC   | 1, 0                  |      |                 |
| 0279 | 75431 | 020040 | ASCSS | ASC   | 2,                    |      |                 |
|      | 75432 | 020040 |       |       |                       |      |                 |
| 0280 | 75433 |        | SDIR  | EQU   | *                     |      |                 |

0282\* SDIRECTORY IS A SYSTEM COMMAND WHICH CAUSES THE SAME PRINTOUT  
0283\* AS DIRECTORY, EXCEPT THAT ONLY SANCTIFIED PROGRAMS AND FILES  
0284\* (THOSE CURRENTLY RESIDING ON DRUM) ARE LISTED. SDIRECTORY MUST  
0285\* BE LOADED IMMEDIATELY AFTER DIRECTORY.

|      |       |        |             |                      |
|------|-------|--------|-------------|----------------------|
| 0287 | 75000 |        | ORG LIBRA   |                      |
| 0288 | 75000 | 002404 | CLA,INA     |                      |
| 0289 | 75064 |        | ORG DIR3    |                      |
| 0290 | 75064 | 060035 | LDA LTEMP+5 | IS                   |
| 0291 | 75065 | 040361 | ADA .+7     | THIS                 |
| 0292 | 75066 | 160000 | LDA A,I     | ENTRY                |
| 0293 | 75067 | 002003 | SZA,RSS     | SANCTIFIED?          |
| 0294 | 75070 | 027037 | JMP DIR8    | NO, LOOK AT NEXT ONE |

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0296* THE STATUS COMMAND PRINTS A SUMMARY OF THE SYSTEM RESOURCES,
0297* AND THE EXTENT OF THEIR UTILIZATION, ON THE SYSTEM TELETYPE.
0298 75000 ORG LIBRA
0299 75000 116021 JSB HDBFA,I PRINT HEADING
0300 75001 016213 JSB T35SP AND SUSPEND
0301 75002 060303 LDA T35B2 INITIALIZE
0302 75003 072562 STA STABF BUFFER POINTER
0303*
0304* PRINT SELECT CODES,
0305*
0306 75004 017666 JSB STAST PRINT LF,MAG#
0307 75005 005115 OCT 5115
0308 75006 040507 ASC 2,AG#
 75007 036440
0309 75010 000000 NOP
0310 75011 060176 LDA MAGSC PRINT MAGSC.
0311 75012 017707 JSB STAOC
0312 75013 064176 LDB MAGSC GET SELECT CODE,
0313 75014 060424 LDA ,+52B GET '*'
0314 75015 006020 SSB SKIP IF 3030
0315 75016 017740 JSB STACH PUT '*' INTO LINE FOR 7970
0316 75017 017666 JSB STAST
0317 75020 020040 ASC 4, DRUM# PRINT "DRUM#"
 75021 042122
 75022 052515
 75023 036440
0318 75024 000000 NOP
0319 75025 060346 LDA ,=4 SET UP DRUM COUNTER
0320 75026 070036 STA LTEMP+6
0321 75027 060036 STAD1 LDA LTEMP+6 GET SELECT
0322 75030 040356 ADA ,+4 CODE
0323 75031 040676 ADA ?ATBL OF DRUM
0324 75032 160000 LDA 0,I
0325 75033 010734 AND B77 MASK SC.
0326 75034 017707 JSB STAOC OUTPUT SC.
0327 75035 060412 LDA ,+40B
0328 75036 017740 JSB STACH OUTPUT BLANK
0329 75037 034036 ISZ LTEMP+6 DONE?
0330 75040 027027 JMP STAD1 NO.
0331 75041 017654 JSB STAPR
0332*
0333 75042 017666 JSB STAST
0334 75043 005104 OCT 5104 LF=D
0335 75044 044523 ASC 2,ISCS
 75045 041523
0336 75046 011415 OCT 11415 XOFF=CR
0337 75047 005040 OCT 5040 LF=BLANK
0338 75050 020114 ASC 19, LOGICAL SELECT UNIT FIRST LAST
 75051 047507
 75052 044503
 75053 040514
 75054 020040
 75055 051505
 75056 046105
 75057 041524

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75060 020040  
 75061 020125  
 75062 047111  
 75063 052040  
 75064 020040  
 75065 043111  
 75066 051123  
 75067 052040  
 75070 020040  
 75071 046101  
 75072 051524  
 0339 75073 000000  
 0340 75074 017654  
 0341 75075 017666  
 0342 75076 020040  
 75077 020125  
 75100 047111  
 75101 052040  
 75102 020040  
 75103 020040  
 75104 041517  
 75105 042105  
 75106 020040  
 75107 020116  
 75110 052515  
 75111 041105  
 75112 051040  
 75113 020102  
 75114 046117  
 75115 041513  
 75116 020040  
 75117 020102  
 75120 046117  
 0343 75121 041513  
 0344 75122 000000  
 0345 75123 017654  
 0346 75124 002400  
 0347 75125 072001  
 0348 75126  
 0349 75126 062001  
 0350 75127 050362  
 0351 75130 027241  
 0352 75131 100200  
 75132 000360  
 0353 75133 040210  
 0354 75134 040354  
 0355 75135 164000  
 0356 75136 164001  
 0357 75137 006003  
 0358 75140 027237  
 0359 75141 070031  
 0360 75142 017666  
 0361 75143 020040  
 75144 020040  
 0362 75145 000000

OCT 0  
 JSB STAPR FIRST LINE OF DISC HEADING  
 JSB STAST  
 ASC 19, UNIT CODE NUMBER BLOCK BLO

ASC 1,CK  
 OCT 0  
 JSB STAPR SECOND LINE OF DISC HEADING  
 CLA FOR LOGICAL  
 STA STAV1 DISC 0  
 STADI EQU \*  
 LDA STAV1 FINISHED  
 CPA .+8 ALL DISCS?  
 JMP STALT YES  
 MPY .+6 NO  
 ADA MHAD  
 ADA .+2  
 LDB A,I GET SELECT CODE  
 LDB B,I  
 SZB,RSS  
 JMP STALT=2 SKIP IF ZERO  
 STA LTEMP+1 SAVE SELECT CODE,UNIT  
 JSB STAST 4 BLANKS  
 ASC 2,  
 OCT 0

|      |       |        |               |                     |
|------|-------|--------|---------------|---------------------|
| 0363 | 75146 | 060412 | LDA ,+40B     | BLANK               |
| 0364 | 75147 | 017740 | JSB STACH     |                     |
| 0365 | 75150 | 062001 | LDA STAV1     | LOGICAL DISC NUMBER |
| 0366 | 75151 | 017716 | JSB STADG     |                     |
| 0367 | 75152 | 017666 | JSB STAST     | 6 BLANKS            |
| 0368 | 75153 | 020040 | ASC 3,        |                     |
|      | 75154 | 020040 |               |                     |
|      | 75155 | 020040 |               |                     |
| 0369 | 75156 | 000000 | OCT 0         |                     |
| 0370 | 75157 | 060412 | LDA ,+40B     | BLANK               |
| 0371 | 75160 | 017740 | JSB STACH     |                     |
| 0372 | 75161 | 160031 | LDA LTEMP+1,I |                     |
| 0373 | 75162 | 160000 | LDA A,I       |                     |
| 0374 | 75163 | 001727 | ALF,ALF       |                     |
| 0375 | 75164 | 010734 | AND B77       |                     |
| 0376 | 75165 | 017707 | JSB STAOC     | DISC SELECT CODE    |
| 0377 | 75166 | 017666 | JSB STAST     | 6 BLANKS            |
| 0378 | 75167 | 020040 | ASC 3,        |                     |
|      | 75170 | 020040 |               |                     |
|      | 75171 | 020040 |               |                     |
| 0379 | 75172 | 000000 | OCT 0         |                     |
| 0380 | 75173 | 160031 | LDA LTEMP+1,I |                     |
| 0381 | 75174 | 160000 | LDA A,I       |                     |
| 0382 | 75175 | 010355 | AND ,+3       |                     |
| 0383 | 75176 | 017716 | JSB STADG     | UNIT NUMBER         |
| 0384 | 75177 | 017666 | JSB STAST     | 4 BLANKS            |
| 0385 | 75200 | 020040 | ASC 2,        |                     |
|      | 75201 | 020040 |               |                     |
| 0386 | 75202 | 000000 | OCT 0         |                     |
| 0387 | 75203 | 060412 | LDA ,+40B     | BLANK               |
| 0388 | 75204 | 017740 | JSB STACH     |                     |
| 0389 | 75205 | 060031 | LDA LTEMP+1   | GET SECTOR          |
| 0390 | 75206 | 040350 | ADA ,=2       |                     |
| 0391 | 75207 | 164000 | LDB A,I       | ADDRESS OF          |
| 0392 | 75210 | 002004 | INA           |                     |
| 0393 | 75211 | 160000 | LDA A,I       | THIS DISC           |
| 0394 | 75212 | 004065 | CLE,ERB       | CONVERT             |
| 0395 | 75213 | 001540 | ERA,CLE       | TO BLOCKS           |
| 0396 | 75214 | 040356 | ADA ,+4       | FIRST AVAILABLE     |
| 0397 | 75215 | 002040 | SEZ           | BLOCK IS #4         |
| 0398 | 75216 | 006004 | INB           |                     |
| 0399 | 75217 | 017722 | JSB STA6D     | FIRST BLOCK         |
| 0400 | 75220 | 017666 | JSB STAST     | 2 BLANKS            |
| 0401 | 75221 | 020040 | ASC 1,        |                     |
| 0402 | 75222 | 000000 | OCT 0         |                     |
| 0403 | 75223 | 060031 | LDA LTEMP+1   | GET SECTOR          |
| 0404 | 75224 | 040356 | ADA ,+4       |                     |
| 0405 | 75225 | 164000 | LDB A,I       | ADDRESS OF          |
| 0406 | 75226 | 002004 | INA           |                     |
| 0407 | 75227 | 160000 | LDA A,I       | NEXT DISC           |
| 0408 | 75230 | 004065 | CLE,ERB       | CONVERT             |
| 0409 | 75231 | 001540 | ERA,CLE       | TO BLOCKS           |
| 0410 | 75232 | 040351 | ADA ,=1       | LAST BLOCK          |
| 0411 | 75233 | 002041 | SEZ,RSS       | IS 1 LESS           |
| 0412 | 75234 | 044351 | AUB ,=1       |                     |



|      |       |        |                          |                      |
|------|-------|--------|--------------------------|----------------------|
| 0413 | 75235 | 017722 | JSB STA6D                | LAST BLOCK           |
| 0414 | 75236 | 017654 | JSB STAPR                | PRINT IT             |
| 0415 | 75237 | 036001 | ISZ STAV1                |                      |
| 0416 | 75240 | 027126 | JMP STADI                |                      |
| 0417 | 75241 |        | STALT EQU *              |                      |
| 0418 | 75241 | 017666 | JSB STAST                |                      |
| 0419 | 75242 | 005114 | OCT 5114                 |                      |
| 0420 | 75243 | 047503 | ASC 9, OCKED DRUM TRACKS |                      |
|      | 75244 | 045505 |                          |                      |
|      | 75245 | 042040 |                          |                      |
|      | 75246 | 042122 |                          |                      |
|      | 75247 | 052515 |                          |                      |
|      | 75250 | 020124 |                          |                      |
|      | 75251 | 051101 |                          |                      |
|      | 75252 | 041613 |                          |                      |
|      | 75253 | 051440 |                          |                      |
| 0421 | 75254 | 000000 | OCT 0                    |                      |
| 0422 | 75255 | 017654 | JSB STAPR                |                      |
| 0423 | 75256 | 002400 | CLA                      |                      |
| 0424 | 75257 | 072001 | STA STAV1                | TRACK # (0-63)       |
| 0425 | 75260 | 072003 | STA STAV3                | DRUM # (0-3)         |
| 0426 | 75261 | 002404 | CLA, INA                 |                      |
| 0427 | 75262 | 072002 | STA STAV2                | MASK                 |
| 0428 | 75263 |        | STLT0 EQU *              |                      |
| 0429 | 75263 | 060676 | LDA ?ATBL                |                      |
| 0430 | 75264 | 042003 | ADA STAV3                |                      |
| 0431 | 75265 | 164000 | LDB A, I                 | IS DRUM              |
| 0432 | 75266 | 006003 | SZB, RSS                 | PRESENT?             |
| 0433 | 75267 | 027354 | JMP STLT7                | NO                   |
| 0434 | 75270 |        | STLT1 EQU *              |                      |
| 0435 | 75270 | 002400 | CLA                      | YES, INITIALIZE      |
| 0436 | 75271 | 070030 | STA LTEMP                | COUNT OF ENTRIES     |
| 0437 | 75272 |        | STLT5 EQU *              |                      |
| 0438 | 75272 | 017600 | JSB STATZ                | TEST THIS TRACK      |
| 0439 | 75273 | 002001 | RSS                      | UNLOCKED             |
| 0440 | 75274 | 027300 | JMP STLT2                | LOCKED               |
| 0441 | 75275 | 017615 | JSB STLBP                |                      |
| 0442 | 75276 | 027351 | JMP STLT6                | END OF DRUM          |
| 0443 | 75277 | 027272 | JMP STLT5                |                      |
| 0444 | 75300 |        | STLT2 EQU *              |                      |
| 0445 | 75300 | 002400 | CLA                      |                      |
| 0446 | 75301 | 050030 | CPA LTEMP                | FIRST ENTRY ON LINE? |
| 0447 | 75302 | 002001 | RSS                      | YES                  |
| 0448 | 75303 | 027310 | JMP STLT3                | NO                   |
| 0449 | 75304 | 062003 | LDA STAV3                | OUTPUT               |
| 0450 | 75305 | 017716 | JSB STADG                | DRUM #               |
| 0451 | 75306 | 060436 | LDA B72                  | '3'                  |
| 0452 | 75307 | 017740 | JSB STACH                |                      |
| 0453 | 75310 |        | STLT3 EQU *              |                      |
| 0454 | 75310 | 017666 | JSB STAST                | 2 BLANKS             |
| 0455 | 75311 | 020040 | ASC 1,                   |                      |
| 0456 | 75312 | 000000 | OCT 0                    |                      |
| 0457 | 75313 | 062001 | LDA STAV1                | OUTPUT TRACK #       |
| 0458 | 75314 | 017700 | JSB STA2D                |                      |
| 0459 | 75315 | 034030 | ISZ LTEMP                |                      |

|      |       |        |       |                     |                        |
|------|-------|--------|-------|---------------------|------------------------|
| 0460 | 75316 | 017615 | JSB   | STLBP               | BUMP POINTERS          |
| 0461 | 75317 | 027351 | JMP   | STLT6               | END OF DRUM            |
| 0462 | 75320 | 017600 | JSB   | STATZ               | TEST NEXT TRACK        |
| 0463 | 75321 | 027335 | JMP   | STLT8               | UNLOCKED (ONLY ONE)    |
| 0464 | 75322 |        | STLT4 | EQU *               |                        |
| 0465 | 75322 | 017615 | JSB   | STLBP               | LOCKED, BUMP POINTERS  |
| 0466 | 75323 | 027345 | JMP   | STLT9               | END OF DRUM            |
| 0467 | 75324 | 017600 | JSB   | STATZ               | TEST NEXT TRACK        |
| 0468 | 75325 | 002001 | RSS   |                     | UNLOCKED               |
| 0469 | 75326 | 027322 | JMP   | STLT4               | LOCKED, GO TO NEXT ONE |
| 0470 | 75327 | 060427 | LDA   | .,+55B              | '-'                    |
| 0471 | 75330 | 017740 | JSB   | STACH               |                        |
| 0472 | 75331 | 003400 | CCA   |                     |                        |
| 0473 | 75332 | 042001 | ADA   | STAV1               | OUTPUT TRACK #         |
| 0474 | 75333 | 017700 | JSB   | STA2D               |                        |
| 0475 | 75334 | 034030 | ISZ   | LTEMP               |                        |
| 0476 | 75335 |        | STLT8 | EQU *               |                        |
| 0477 | 75335 | 017615 | JSB   | STLBP               | BUMP POINTERS          |
| 0478 | 75336 | 027351 | JMP   | STLT6               | END OF DRUM            |
| 0479 | 75337 | 060030 | LDA   | LTEMP               | MORE ROOM              |
| 0480 | 75340 | 040332 | ADA   | .,-16               | ON THIS                |
| 0481 | 75341 | 002020 | SSA   |                     | LINE?                  |
| 0482 | 75342 | 027272 | JMP   | STLT5               | YES                    |
| 0483 | 75343 | 017654 | JSB   | STAPR               | NO, PRINT AND SUSPEND  |
| 0484 | 75344 | 027270 | JMP   | STLT1               |                        |
| 0485 | 75345 |        | STLT9 | EQU *               |                        |
| 0486 | 75345 | 060427 | LDA   | .,+55B              | '-'                    |
| 0487 | 75346 | 017740 | JSB   | STACH               |                        |
| 0488 | 75347 | 063630 | LDA   | 91.63               | LAST TRACK IS 63       |
| 0489 | 75350 | 017700 | JSB   | STA2D               |                        |
| 0490 | 75351 |        | STLT6 | EQU *               |                        |
| 0491 | 75351 | 060030 | LDA   | LTEMP               |                        |
| 0492 | 75352 | 002002 | SZA   |                     | SKIP PRINTING          |
| 0493 | 75353 | 017654 | JSB   | STAPR               | BLANK LINE             |
| 0494 | 75354 |        | STLT7 | EQU *               |                        |
| 0495 | 75354 | 062003 | LDA   | STAV3               |                        |
| 0496 | 75355 | 002004 | INA   |                     | BUMP DRUM #            |
| 0497 | 75356 | 050356 | CPA   | .,+4                |                        |
| 0498 | 75357 | 027362 | JMP   | STL10               | DONE                   |
| 0499 | 75360 | 072003 | STA   | STAV3               |                        |
| 0500 | 75361 | 027263 | JMP   | STLT0               |                        |
| 0001 | 75362 |        | STL10 | EQU *               |                        |
| 0002 | 75362 | 017666 | JSB   | STAST               |                        |
| 0003 | 75363 | 005114 | OCT   | 5114                |                        |
| 0004 | 75364 | 047503 | ASC   | 9,0CKED DISC BLOCKS |                        |
|      | 75365 | 045505 |       |                     |                        |
|      | 75366 | 042040 |       |                     |                        |
|      | 75367 | 042111 |       |                     |                        |
|      | 75370 | 051503 |       |                     |                        |
|      | 75371 | 020102 |       |                     |                        |
|      | 75372 | 046117 |       |                     |                        |
|      | 75373 | 041513 |       |                     |                        |
|      | 75374 | 051440 |       |                     |                        |
| 0005 | 75375 | 000000 | OCT   | 0                   |                        |
| 0006 | 75376 | 017654 | JSB   | STAPR               |                        |

|      |       |        |             |                          |  |
|------|-------|--------|-------------|--------------------------|--|
| 0007 | 75377 | 002400 | CLA         |                          |  |
| 0008 | 75400 | 070033 | STA LTEMP+3 |                          |  |
| 0009 | 75401 | 060210 | LDA MHAD    | ⇒ FIRST DISC             |  |
| 0010 | 75402 |        | STALY EQU * |                          |  |
| 0011 | 75402 | 072001 | STA STAV1   |                          |  |
| 0012 | 75403 | 060562 | LDA LIBD    | INITIALIZE               |  |
| 0013 | 75404 | 072002 | STA STAV2   | BUFFER POINTER           |  |
| 0014 | 75405 | 062001 | LDA STAV1   |                          |  |
| 0015 | 75406 | 040354 | ADA ,+2     |                          |  |
| 0016 | 75407 | 164000 | LDB A,I     | GET SELECT CODE          |  |
| 0017 | 75410 | 164001 | LDB B,I     |                          |  |
| 0018 | 75411 | 006003 | SZB,RSS     |                          |  |
| 0019 | 75412 | 027511 | JMP STALX   | DISC NOT PRESENT         |  |
| 0020 | 75413 |        | STALY EQU * |                          |  |
| 0021 | 75413 | 104200 | DLA STAV1,I | COMPUTE                  |  |
|      |       | 75414  |             |                          |  |
|      |       | 75415  |             |                          |  |
| 0022 | 75415 | 000065 | CLE,ERA     |                          |  |
| 0023 | 75416 | 005540 | ERB,CLE     | ADDRESS                  |  |
| 0024 | 75417 | 044355 | ADB ,+3     |                          |  |
| 0025 | 75420 | 002040 | SEZ         | OF BAD                   |  |
| 0026 | 75421 | 002004 | INA         |                          |  |
| 0027 | 75422 | 104400 | DST LTEMP   | BLOCKS                   |  |
|      |       | 75423  |             |                          |  |
| 0028 | 75424 | 060762 | LDA M256    |                          |  |
| 0029 | 75425 | 070215 | STA MWORD   |                          |  |
| 0030 | 75426 | 060520 | LDA DLTEM   |                          |  |
| 0031 | 75427 | 064566 | LDB LIBDI   |                          |  |
| 0032 | 75430 | 114217 | JSB DISCZ,I | READ BAD BLOCKS          |  |
| 0033 | 75431 | 026311 | JMP DDERR   |                          |  |
| 0034 | 75432 | 002400 | CLA         | PUT ZERO AT              |  |
| 0035 | 75433 | 173772 | STA STAQV,I | BUFFER END               |  |
| 0036 | 75434 |        | STALZ EQU * |                          |  |
| 0037 | 75434 | 162002 | LDA STAV2,I | GET LOCKED BLOCK ADDRESS |  |
| 0038 | 75435 | 002003 | SZA,RSS     |                          |  |
| 0039 | 75436 | 027511 | JMP STALX   | IF ZERO, FINISHED TABLE  |  |
| 0040 | 75437 | 104200 | DLA STAV1,I | COMPUTE                  |  |
|      |       | 75440  |             |                          |  |
| 0041 | 75441 | 000065 | CLE,ERA     |                          |  |
| 0042 | 75442 | 005540 | ERB,CLE     | LOGICAL                  |  |
| 0043 | 75443 | 146002 | ADB STAV2,I |                          |  |
| 0044 | 75444 | 002040 | SEZ         | BLOCK                    |  |
| 0045 | 75445 | 002004 | INA         |                          |  |
| 0046 | 75446 | 101100 | SWP         | ADDRESS                  |  |
| 0047 | 75447 | 104400 | DST LTEMP   |                          |  |
|      |       | 75450  |             |                          |  |
| 0048 | 75451 | 017722 | JSB STA6D   | FIRST BLOCK              |  |
| 0049 | 75452 | 036002 | ISZ STAV2   |                          |  |
| 0050 | 75453 | 003400 | CCA         |                          |  |
| 0051 | 75454 | 142002 | ADA STAV2,I |                          |  |
| 0052 | 75455 | 002003 | SZA,RSS     | IF ONLY ONE BLOCK, DON'T |  |
| 0053 | 75456 | 027472 | JMP STAPZ   | PRINT SECOND ADDRESS     |  |
| 0054 | 75457 | 070032 | STA LTEMP+2 |                          |  |
| 0055 | 75460 | 060427 | LDA ,+55B   | '                        |  |
| 0056 | 75461 | 017740 | JSB STACH   |                          |  |
| 0057 | 75462 | 104200 | DLA LTEMP   | COMPUTE                  |  |

|      |       |        |                      |                          |
|------|-------|--------|----------------------|--------------------------|
| 0058 | 75463 | 000030 | CLE                  | - LAST                   |
| 0059 | 75464 | 000040 | ADA LTEMP+2          | BLOCK                    |
| 0060 | 75465 | 040032 | SEZ                  | ADDRESS                  |
| 0061 | 75466 | 002040 | INB                  |                          |
| 0062 | 75467 | 006004 | JSB STA6D            | OUTPUT IT                |
| 0063 | 75470 | 017722 | CLA, INA             | UPDATE                   |
| 0064 | 75471 | 002404 | STAPZ EQU *          |                          |
| 0065 | 75472 | 002004 | INA                  | COUNT OF                 |
| 0066 | 75473 | 040033 | ADA LTEMP+3          |                          |
| 0067 | 75474 | 070033 | STA LTEMP+3          | ENTRIES ON LINE          |
| 0068 | 75475 | 036002 | ISZ STAV2            |                          |
| 0069 | 75476 | 040342 | ADA .-8              |                          |
| 0070 | 75477 | 002021 | SSA, RSS             |                          |
| 0071 | 75500 | 027505 | JMP STAPL            | PRINT FULL LINE          |
| 0072 | 75501 | 017666 | JSB STAST            | 2 BLANKS                 |
| 0073 | 75502 | 020040 | ASC 1,               |                          |
| 0074 | 75503 | 000000 | OCT 0                |                          |
| 0075 | 75504 | 027434 | JMP STALZ            |                          |
| 0076 | 75505 |        | STAPL EQU *          |                          |
| 0077 | 75505 | 017654 | JSB STAPR            |                          |
| 0078 | 75506 | 002400 | CLA                  | RESET ENTRY              |
| 0079 | 75507 | 070033 | STA LTEMP+3          | COUNTER                  |
| 0080 | 75510 | 027413 | JMP STALY            |                          |
| 0081 | 75511 |        | STALX EQU *          |                          |
| 0082 | 75511 | 062001 | LDA STAV1            |                          |
| 0083 | 75512 | 040360 | ADA .+6              | NEXT DISC                |
| 0084 | 75513 | 064210 | LDB MHAD             |                          |
| 0085 | 75514 | 044432 | ADB .+48             |                          |
| 0086 | 75515 | 050001 | CPA B                | FINISHED ALL 8?          |
| 0087 | 75516 | 002001 | RSS                  | YES                      |
| 0088 | 75517 | 027402 | JMP STALV            | NO                       |
| 0089 | 75520 | 060033 | LDA LTEMP+3          |                          |
| 0090 | 75521 | 002002 | SZA                  |                          |
| 0091 | 75522 | 017654 | JSB STAPR            | DUMP REST OF BUFFER      |
| 0092 | 75523 | 017666 | JSB STAST            |                          |
| 0093 | 75524 | 005114 | OCT 5114             |                          |
| 0094 | 75525 | 044516 | ASC 7, INE PRINTER * |                          |
|      | 75526 | 042440 |                      |                          |
|      | 75527 | 050122 |                      |                          |
|      | 75530 | 044516 |                      |                          |
|      | 75531 | 052105 |                      |                          |
|      | 75532 | 051040 |                      |                          |
|      | 75533 | 036440 |                      |                          |
| 0095 | 75534 | 000000 | OCT 0                |                          |
| 0096 | 75535 | 060250 | LDA LPS              | GET THE LINE             |
| 0097 | 75536 | 114500 | JSB S14SC, I         | PRINTER STATUS           |
| 0098 | 75537 | 102311 | SFS CH2              | FROM THE I/O             |
| 0099 | 75540 | 027537 | JMP *-1              | PROCESSOR                |
| 0100 | 75541 | 102511 | LIA CH2              | A * STATUS               |
| 0101 | 75542 | 070030 | STA LTEMP            |                          |
| 0102 | 75543 | 010734 | AND B77              | A * SELECT CODE          |
| 0103 | 75544 | 017707 | JSB STAOC            | PUT THE SC IN THE BUFFER |
| 0104 | 75545 | 060424 | LDA .+52B            | A * 'A'                  |
| 0105 | 75546 | 064030 | LDB LTEMP            | B * LP STATUS            |

|       |                                         |                                                             |                |                             |
|-------|-----------------------------------------|-------------------------------------------------------------|----------------|-----------------------------|
| 0106  | 75547                                   | 006020                                                      | SSB            | CHECK FOR 2610A LP          |
| 0107  | 75550                                   | 017740                                                      | JSB STACH      | YES - PUT '*' IN THE BUFFER |
| 0108  | 75551                                   | 060424                                                      | LDA .+52B      | A = '*'                     |
| 0109  | 75552                                   | 064030                                                      | LDB LTEMP      |                             |
| 0110  | 75553                                   | 005200                                                      | RBL            |                             |
| 0111  | 75554                                   | 006020                                                      | SSB            | CHECK FOR 2767A LP          |
| 0112  | 75555                                   | 017740                                                      | JSB STACH      | YES - PUT '*' IN THE BUFFER |
| 0113  | 75556                                   | 017666                                                      | JSB STAST      |                             |
| 0114  | 75557                                   | 020040                                                      | ASC 5,         | USER *                      |
|       | 75560                                   | 020040                                                      |                |                             |
|       | 75561                                   | 052523                                                      |                |                             |
|       | 75562                                   | 042522                                                      |                |                             |
|       | 75563                                   | 020075                                                      |                |                             |
| 0115  | 75564                                   | 000000                                                      | OCT 0          |                             |
| 0116  | 75565                                   | 064255                                                      | LDB PRIST      | GET USER INDICATOR AND      |
| 0117  | 75566                                   | 006003                                                      | SZB,RSS        | CHECK FOR USE               |
| 0118  | 75567                                   | 027573                                                      | JMP STLP       | NO                          |
| 0119  | 75570                                   | 160001                                                      | LDA B,I        | YES,                        |
| 0120  | 75571                                   | 001727                                                      | ALF,ALF        | OUTPUT                      |
| 0121  | 75572                                   | 017700                                                      | JSB STA20      | USER TTY#                   |
| 0122  | 75573                                   | 017654                                                      | STLP JSB STAPR | PRINT THE BUFFER            |
| 0123  | 75574                                   | 103100                                                      | CLF 0          |                             |
| 0124  | 75575                                   | 034277                                                      | ISZ T35ST      | CHANGE STATUS TO OVERLAY    |
| 0125  | 75576                                   | 060506                                                      | LDA #LIB#      | RESTART AT LIBRA            |
| 0126  | 75577                                   | 027656                                                      | JMP STAPR+2    | PRINT THE LINE AND SUSPEND  |
| 0127* |                                         |                                                             |                |                             |
| 0128* | STATZ                                   | TESTS THE CURRENT TRAX POSITION, EXIT TO (P+1) IF 0, (P+2)  |                |                             |
| 0129* | IF 1.                                   |                                                             |                |                             |
| 0130* |                                         |                                                             |                |                             |
| 0131  | 75600                                   | 000000                                                      | STATZ NOP      |                             |
| 0132  | 75601                                   | 066003                                                      | LDB STAV3      | DRUM NO.                    |
| 0133  | 75602                                   | 005222                                                      | RBL,RBL        | MULTIPLY BY 4               |
| 0134  | 75603                                   | 044512                                                      | ADB DTRAX      | => FIRT TRAX ELEMENT        |
| 0135  | 75604                                   | 062001                                                      | LDA STAV1      |                             |
| 0136  | 75605                                   | 001121                                                      | ARS,ARS        |                             |
| 0137  | 75606                                   | 001121                                                      | ARS,ARS        |                             |
| 0138  | 75607                                   | 044000                                                      | ADB A          | POSITION IN TRAX            |
| 0139  | 75610                                   | 160001                                                      | LDA B,I        |                             |
| 0140  | 75611                                   | 012002                                                      | AND STAV2      | MASK                        |
| 0141  | 75612                                   | 002002                                                      | SZA            | 0 EXISTS TO P+1             |
| 0142  | 75613                                   | 037600                                                      | ISZ STATZ      | 1 EXISTS TO P+2             |
| 0143  | 75614                                   | 127600                                                      | JMP STATZ,I    |                             |
| 0144* |                                         |                                                             |                |                             |
| 0145* | STLBP                                   | BUMPS THE POINTERS TO THE TRAX TABLE. IT EXISTS TO (P+1) IF |                |                             |
| 0146* | A DRUM IS FINISHED, OTHERWISE TO (P+2). |                                                             |                |                             |
| 0147* |                                         |                                                             |                |                             |
| 0148  | 75615                                   | 000000                                                      | STLBP NOP      |                             |
| 0149  | 75616                                   | 062002                                                      | LDA STAV2      | MASK                        |
| 0150  | 75617                                   | 001200                                                      | RAL            | ROTATE IT                   |
| 0151  | 75620                                   | 072002                                                      | STA STAV2      |                             |
| 0152  | 75621                                   | 062001                                                      | LDA STAV1      |                             |
| 0153  | 75622                                   | 002004                                                      | INA            | BUMP TRACK #                |
| 0154  | 75623                                   | 050772                                                      | CPA B100       | FINISHED THIS DRUM?         |
| 0155  | 75624                                   | 002401                                                      | CLA,RSS        | YES, SET TRACK # TO ZERO    |
| 0156  | 75625                                   | 037615                                                      | ISZ STLBP      | NO, EXIT TO (P+2)           |

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0157 75626 072001 STA STAV1
0158 75627 127615 JMP STLBP,I
0159*
0160 75630 000077 ST,63 DEC 63
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0162 75654 ORG LIBRA+512=84
0163*
0164* STAPR PRINTS THE BUFFER.
0165*
0166 75654 000000 STAPR NOP
0167 75655 063654 LDA STAPR SAVE RETURN ADDRESS.
0168 75656 072213 STA T35SP
0169 75657 060303 LDA T35B2 COMPUTE # OF CHARS.
0170 75660 003004 CMA, INA
0171 75661 042562 ADA STABF
0172 75662 064303 LDB T35B2 RESET BUFFER
0173 75663 076562 STB STABF POINTER.
0174 75664 064305 LDB T35B1
0175 75665 026214 JMP T35B+1 OUTPUT.
0176*
0177* STAST OUTPUTS A STRING
0178*
0179 75666 000000 STAST NOP
0180 75667 163666 LDA STAST,I GET CHAR, PAIR
0181 75670 002003 SZR,RSS
0182 75671 127666 JMP STAST,I
0183 75672 001727 ALF,ALF OUTPUT LEFT CHAR.
0184 75673 017740 JSB STACH
0185 75674 163666 LDA STAST,I OUTPUT RIGHT CHAR.
0186 75675 017740 JSB STACH
0187 75676 037666 ISZ STAST BUMP POINTER.
0188 75677 027667 JMP STAST+1 LOOP.
0189*
0190* STA2D OUTPUTS A 2 DIGIT NUMBER.
0191*
0192 75700 000000 STA2D NOP
0193 75701 006400 CLB
0194 75702 100400 DIV ,+10
 75703 000364
0195 75704 017716 JSB STADG
0196 75705 017716 JSB STADG
0197 75706 127700 JMP STA2D,I
0198*
0199* STAOC OUTPUTS A 2-DIGIT OCTAL INTEGER.
0200*
0201 75707 000000 STAOC NOP
0202 75710 006400 CLB
0203 75711 100400 DIV ,+8
 75712 000362
0204 75713 017716 JSB STADG
0205 75714 017716 JSB STADG
0206 75715 127707 JMP STAOC,I
0207*
0208* STADG OUTPUTS A DIGIT.
0209*
0210 75716 000000 STADG NOP
0211 75717 040432 ADA ,+60B
0212 75720 017740 JSB STACH
0213 75721 127716 JMP STADG,I
0214*

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0215* STA6D OUTPUTS A 6-DIGIT NUMBER
0216*
0217 75722 000000 STA6D NOP
0218 75723 100400 DIV DVSR5
 75724 001032
0219 75725 074037 STB LTEMP+7
0220 75726 017700 JSB STA2D FIRST TWO DIGITS
0221 75727 060037 LDA LTEMP+7
0222 75730 006400 CLB
0223 75731 100400 DIV .100
 75732 000437
0224 75733 074037 STB LTEMP+7
0225 75734 017700 JSB STA2D SECOND TWO DIGITS
0226 75735 060037 LDA LTEMP+7
0227 75736 017700 JSB STA2D THIRD TWO DIGITS
0228 75737 127722 JMP STA6D,I
0229*
0230* STACH INSERTS A CHARACTER INTO THE BUFFER.
0231*
0232 75740 000000 STACH NOP
0233 75741 074040 STB LTEMP+8 SAVE B-REG.
0234 75742 010441 AND B177 CLEAR TOP BITS.
0235 75743 066562 LDB STABF GET BUFFER POINTER.
0236 75744 004065 CLE,ERB
0237 75745 002041 SEZ,RSS
0238 75746 001737 ALF,SLA,ALF CHARACTER ON LEFT.
0239 75747 130001 IOR 1,I CHARACTER ON RIGHT.
0240 75750 170001 STA 1,I
0241 75751 036562 ISZ STABF BUMP POINTER.
0242 75752 060040 LDA LTEMP+8 RESTORE OLD B-REG. INTO A.
0243 75753 127740 JMP STACH,I
0244*
0245* STA3D OUTPUTS A 3-DIGIT NUMBER.
0246*
0247 75754 000000 STA3D NOP
0248 75755 006400 CLB
0249 75756 100400 DIV .100 GET 1ST DIGIT IN A, LAST 2 IN B.
 75757 000437
0250 75760 017716 JSB STADG OUTPUT FIRST DIGIT.
0251 75761 017700 JSB STA2D OUTPUT LAST TWO.
0252 75762 060412 LDA .+40B
0253 75763 017740 JSB STACH
0254 75764 127754 JMP STA3D,I OUTPUT BLANK.
0255 75765 030006 STAD6 DEF DIREC+6
0256 75766 031066 STADU DEF DIREU+6
0257 75767 000115 STADC DEF DADLC
0258 75770 072034 STATB DEF COM6
0259 75771 072137 STATE DEF COMTE
0260 75772 001630 STAGV DEF LIBUS+256
0261 75773 000101 STAID DEF IDEC+1
0262 75774 000125 STADL DEF DADLN
0263 75775 061130 STASH DEF TTY00+7DISC
0264 75776 062270 STAUS DEF TTY32+7DISC
0265 75777 074002 DSTV2 DEF STAV2
0266 76000 SSTA EQU *

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|       |       |        |                   |                        |
|-------|-------|--------|-------------------|------------------------|
| 0268  | 75000 |        | ORG LIBRA         |                        |
| 0269  | 75000 | 017666 | JSB STAST         | PRINT                  |
| 0270  | 75001 | 044504 | ASC 2, IDT        | IDT                    |
|       | 75002 | 052040 |                   |                        |
| 0271  | 75003 | 000000 | OCT 0             |                        |
| 0272  | 75004 | 060347 | LDA .-3           | 3 IDT                  |
| 0273  | 75005 | 070033 | STA LTEMP+3       | TRACKS                 |
| 0274  | 75006 | 067773 | LDB STAID         |                        |
| 0275  | 75007 | 074034 | STB LTEMP+4       |                        |
| 0276  | 75010 |        | STAIR EQU *       |                        |
| 0277  | 75010 | 160034 | LDA LTEMP+4, I    | GET ADDRESS            |
| 0278  | 75011 | 034034 | ISZ LTEMP+4       |                        |
| 0279  | 75012 | 002003 | SZA, RSS          |                        |
| 0280  | 75013 | 027016 | JMP STAIQ         | SKIP IF ZERO           |
| 0281  | 75014 | 164034 | LDB LTEMP+4, I    | GET LENGTH             |
| 0282  | 75015 | 017411 | JSB STALL         | OUTPUT THEM            |
| 0283  | 75016 |        | STAIQ EQU *       |                        |
| 0284  | 75016 | 034034 | ISZ LTEMP+4       |                        |
| 0285  | 75017 | 034034 | ISZ LTEMP+4       |                        |
| 0286  | 75020 | 034033 | ISZ LTEMP+3       |                        |
| 0287  | 75021 | 027010 | JMP STAIR         |                        |
| 0288  | 75022 | 017654 | JSB STAPR         |                        |
| 0289  | 75023 | 017666 | JSB STAST         |                        |
| 0290  | 75024 | 006412 | OCT 6412          |                        |
| 0291  | 75025 | 040504 | ASC 2, ADT        |                        |
|       | 75026 | 052040 |                   |                        |
| 0292  | 75027 | 000000 | OCT 0             |                        |
| 0293  | 75030 | 060112 | LDA ADLOC         |                        |
| 0294  | 75031 | 064113 | LDB ADLEN         |                        |
| 0295  | 75032 | 017411 | JSB STALL         |                        |
| 0296* |       |        |                   |                        |
| 0297* |       |        |                   | PRINT OUT THE DISK ADT |
| 0298* |       |        |                   |                        |
| 0299  | 75033 | 017666 | JSB STAST         |                        |
| 0300  | 75034 | 006412 | OCT 6412, 5104    |                        |
|       | 75035 | 005104 |                   |                        |
| 0301  | 75036 | 044523 | ASC 4, ISC ADTS   |                        |
|       | 75037 | 041440 |                   |                        |
|       | 75040 | 040504 |                   |                        |
|       | 75041 | 052123 |                   |                        |
| 0302  | 75042 | 000000 | OCT 0             |                        |
| 0303  | 75043 | 017654 | JSB STAPR         | PRINT THE BUFFER       |
| 0304  | 75044 | 060346 | LDA .-4           | 4 PER                  |
| 0305  | 75045 | 070033 | STA LTEMP+3       | LINE                   |
| 0306  | 75046 | 067767 | LDB STADC         | => 1ST DISC ADT        |
| 0307  | 75047 |        | STADJ EQU *       |                        |
| 0308  | 75047 | 076001 | STB STAV1         |                        |
| 0309  | 75050 | 162001 | LDA STAV1, I      | GET ADDRESS            |
| 0310  | 75051 | 002003 | SZA, RSS          |                        |
| 0311  | 75052 | 027064 | JMP STADK         | SKIP IF ZERO           |
| 0312  | 75053 | 066001 | LDB STAV1         |                        |
| 0313  | 75054 | 044362 | AOB .+DADLN-DADLC |                        |
| 0314  | 75055 | 164001 | LDB B, I          | GET LENGTH             |
| 0315  | 75056 | 017411 | JSB STALL         | OUTPUT THEM            |
| 0316  | 75057 | 034033 | ISZ LTEMP+3       | LINE FULL?             |

|       |                                       |        |       |         |                             |
|-------|---------------------------------------|--------|-------|---------|-----------------------------|
| 0317  | 75060                                 | 027064 | JMP   | STADK   | NO                          |
| 0318  | 75061                                 | 017654 | JSB   | STAPR   | YES, PRINT IT               |
| 0319  | 75062                                 | 060346 | LDA   | ,=4     |                             |
| 0320  | 75063                                 | 070033 | STA   | LTEMP+3 |                             |
| 0321  | 75064                                 |        | STADK | EQU *   |                             |
| 0322  | 75064                                 | 066001 | LDB   | STAV1   |                             |
| 0323  | 75065                                 | 006004 | INB   |         |                             |
| 0324  | 75066                                 | 057774 | CPB   | STADL   | FINISHED ALL DISC ADIS?     |
| 0325  | 75067                                 | 002001 | RSS   |         | YES                         |
| 0326  | 75070                                 | 027047 | JMP   | STADJ   | NO                          |
| 0327  | 75071                                 | 060033 | LDA   | LTEMP+3 |                             |
| 0328  | 75072                                 | 050346 | CPA   | ,=4     |                             |
| 0329  | 75073                                 | 002001 | RSS   |         | SKIP PRINTING OF BLANK LINE |
| 0330  | 75074                                 | 017654 | JSB   | STAPR   |                             |
| 0331* |                                       |        |       |         |                             |
| 0332* |                                       |        |       |         |                             |
| 0333* | THIS SECTION PRINTS OUT THE DIRECTORY |        |       |         |                             |
| 0334* | TRACKS THAT ARE ON THE DRUM           |        |       |         |                             |
| 0335* |                                       |        |       |         |                             |
| 0336  | 75075                                 | 017666 | JSB   | STAST   |                             |
| 0337  | 75076                                 | 006412 | OCT   | 6412    |                             |
| 0338  | 75077                                 | 042111 | ASC   | 3,DIREC |                             |
|       | 75100                                 | 051105 |       |         |                             |
|       | 75101                                 | 041440 |       |         |                             |
| 0339  | 75102                                 | 000000 | OCT   | 0       |                             |
| 0340  | 75103                                 | 017654 | JSB   | STAPR   |                             |
| 0341  | 75104                                 | 060346 | LDA   | ,=4     | 4 PER                       |
| 0342  | 75105                                 | 070033 | STA   | LTEMP+3 | LINE                        |
| 0343  | 75106                                 | 067765 | LDB   | STAD6   | => FIRST DIREC ENTRY        |
| 0344  | 75107                                 |        | STADX | EQU *   |                             |
| 0345  | 75107                                 | 076001 | STB   | STAV1   |                             |
| 0346  | 75110                                 | 162001 | LDA   | STAV1,I | GET ADDRESS                 |
| 0347  | 75111                                 | 002003 | SZA   | RSS     |                             |
| 0348  | 75112                                 | 027124 | JMP   | STADY   | SKIP IF ZERO                |
| 0349  | 75113                                 | 066001 | LDB   | STAV1   |                             |
| 0350  | 75114                                 | 044344 | ADB   | ,=6     |                             |
| 0351  | 75115                                 | 164001 | LDB   | B,I     | GET LENGTH                  |
| 0352  | 75116                                 | 017411 | JSB   | STALL   | OUTPUT THEM                 |
| 0353  | 75117                                 | 034033 | ISZ   | LTEMP+3 | LINE FULL?                  |
| 0354  | 75120                                 | 027124 | JMP   | STADY   | NO                          |
| 0355  | 75121                                 | 017654 | JSB   | STAPR   | YES, PRINT IT               |
| 0356  | 75122                                 | 060346 | LDA   | ,=4     |                             |
| 0357  | 75123                                 | 070033 | STA   | LTEMP+3 |                             |
| 0358  | 75124                                 |        | STADY | EQU *   |                             |
| 0359  | 75124                                 | 066001 | LDB   | STAV1   |                             |
| 0360  | 75125                                 | 044361 | ADB   | ,+7     |                             |
| 0361  | 75126                                 | 057766 | CPB   | STADU   | FINISHED ALL DIREC ENTRIES? |
| 0362  | 75127                                 | 002001 | RSS   |         | YES                         |
| 0363  | 75130                                 | 027107 | JMP   | STADX   | NO                          |
| 0364  | 75131                                 | 060033 | LDA   | LTEMP+3 |                             |
| 0365  | 75132                                 | 050346 | CPA   | ,=4     |                             |
| 0366  | 75133                                 | 002001 | RSS   |         | SKIP PRINTING OF BLANK LINE |
| 0367  | 75134                                 | 017654 | JSB   | STAPR   |                             |
| 0368* |                                       |        |       |         |                             |
| 0369  | 75135                                 | 017666 | JSB   | STAST   | PRINT                       |

|       |       |        |       |                |                                |
|-------|-------|--------|-------|----------------|--------------------------------|
| 0370  | 75136 | 005123 | OCT   | 5123           |                                |
| 0371  | 75137 | 054523 | ASC   | 3,SYSTEM       |                                |
|       | 75140 | 052105 |       |                |                                |
|       | 75141 | 046440 |       |                |                                |
| 0372  | 75142 | 000000 | OCT   | 0              |                                |
| 0373  | 75143 | 002400 | CLA   |                |                                |
| 0374  | 75144 | 070033 | STA   | LTEMP+3        | SET COMPARE DRUM ADDRESS       |
| 0375  | 75145 | 067770 | LDB   | STATB          | B => BEGINNING OF COM TABLE    |
| 0376  | 75146 |        | STANE | EQU *          |                                |
| 0377  | 75146 | 074034 | STB   | LTEMP+4        |                                |
| 0378  | 75147 | 160001 | LDA   | B,I            | GET THE NEXT USED DRUM ADDRESS |
| 0379  | 75150 | 010764 | AND   | M128           | MASK OFF THE SECTOR PART       |
| 0380  | 75151 | 050033 | CPA   | LTEMP+3        | IS IT ALREADY PRINTED          |
| 0381  | 75152 | 027155 | JMP   | STANG          | YES                            |
| 0382  | 75153 | 070033 | STA   | LTEMP+3        | NO, PRINT OUT TRACK PART       |
| 0383  | 75154 | 017426 | JSB   | STADS          |                                |
| 0384  | 75155 |        | STANG | EQU *          |                                |
| 0385  | 75155 | 064034 | LDB   | LTEMP+4        | GET COM TABLE POINTER          |
| 0386  | 75156 | 006004 | INB   |                | ADVANCE TO NEXT ENTRY          |
| 0387  | 75157 | 057771 | CPB   | STATE          | CHECK FOR END OF TABLE         |
| 0388  | 75160 | 002001 | RSS   |                |                                |
| 0389  | 75161 | 027146 | JMP   | STANE          | SCAN ON                        |
| 0390  | 75162 | 017666 | JSB   | STAST          |                                |
| 0391  | 75163 | 006412 | OCT   | 6412,5125      |                                |
|       | 75164 | 005125 |       |                |                                |
| 0392  | 75165 | 051505 | ASC   | 2,SERS         |                                |
|       | 75166 | 051123 |       |                |                                |
| 0393  | 75167 | 000000 | OCT   | 0              |                                |
| 0394  | 75170 | 017654 | JSB   | STAPR          |                                |
| 0395* |       |        |       |                |                                |
| 0396  | 75171 | 060342 | LDA   | .-8            | 8 PER                          |
| 0397  | 75172 | 070033 | STA   | LTEMP+3        | LINE                           |
| 0398  | 75173 | 067775 | LDB   | STASW          | => DISC ADDRESS FOR TTY00      |
| 0399  | 75174 |        | STASX | EQU *          |                                |
| 0400  | 75174 | 076001 | STB   | STAV1          |                                |
| 0401  | 75175 | 162001 | LDA   | STAV1,I        | GET ADDRESS                    |
| 0402  | 75176 | 002003 | SZA   | RSS            |                                |
| 0403  | 75177 | 027213 | JMP   | STASZ          | DONE IF ZERO                   |
| 0404  | 75200 | 017426 | JSB   | STADS          | OUTPUT IT                      |
| 0405  | 75201 | 034033 | ISZ   | LTEMP+3        | LINE FULL                      |
| 0406  | 75202 | 027206 | JMP   | STASY          | NO                             |
| 0407  | 75203 | 017654 | JSB   | STAPR          | YES, OUTPUT IT                 |
| 0408  | 75204 | 060342 | LDA   | .-8            |                                |
| 0409  | 75205 | 070033 | STA   | LTEMP+3        |                                |
| 0410  | 75206 |        | STASY | EQU *          |                                |
| 0411  | 75206 | 066001 | LDB   | STAV1          |                                |
| 0412  | 75207 | 044375 | ADB   | .-+TTY01=TTY00 |                                |
| 0413  | 75210 | 057776 | CPB   | STASZ          | FINISHED ALL USERS             |
| 0414  | 75211 | 002001 | RSS   |                | YES                            |
| 0415  | 75212 | 027174 | JMP   | STASX          | NO                             |
| 0416  | 75213 |        | STASZ | EQU *          |                                |
| 0417  | 75213 | 060033 | LDA   | LTEMP+3        |                                |
| 0418  | 75214 | 050342 | CPA   | .-8            |                                |
| 0419  | 75215 | 002001 | RSS   |                | SKIP PRINTING BLANK LINE       |
| 0420  | 75216 | 017654 | JSB   | STAPR          |                                |

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0421*
0422* PRINT OUT DISC ALLOCATION TABLE
0423*
0424 75217 017666 JSB STAST
0425 75220 005104 OCT 5104
0426 75221 044523 ASC 7, ISC ALLOCATION
 75222 041440
 75223 040514
 75224 046117
 75225 041501
 75226 052111
 75227 047516
0427 75230 011415 OCT 11415 XOFF=CR
0428 75231 005012 OCT 5012
0429 75232 020040 ASC 3, IDT
 75233 044504
 75234 052040
0430 75235 000000 OCT 0
0431 75236 017654 JSB STAPR
0432 75237 017473 JSB STABR READ BOOTSTRAP
0433 75240 064206 LDB LSTDA
0434 75241 044354 ADB ,+2
0435 75242 104200 DLD B,I
 75243 100001
0436 75244 104400 DST STAV2 SAVE ADDRESS OF DAT
 75245 074002
0437 75246 017510 JSB STADR READ DAT
0438 75247 060347 LDA ,=3 3 ENTRIES
0439 75250 064356 LDB ,+4 => 1ST IDT ENTRY
0440 75251 017447 JSB STADA SET UP BUFFER FOR IDT
0441 75252 017654 JSB STAPR PRINT IT
0442 75253 017666 JSB STAST
0443 75254 005040 OCT 5040
0444 75255 020104 ASC 5, DISC ADT
 75256 044523
 75257 041440
 75260 040504
 75261 052040
0445 75262 000000 OCT 0
0446 75263 017654 JSB STAPR
0447 75264 017510 JSB STADR READ DAT BACK
0448 75265 060342 LDA ,=8 8 ENTRIES
0449 75266 064367 LDB ,+13 => FIRST DISC ADT ENTRY
0450 75267 017447 JSB STADA SET UP BUFFER FOR ADT
0451 75270 017654 JSB STAPR PRINT IT
0452 75271 017666 JSB STAST
0453 75272 005040 OCT 5040
0454 75273 020104 ASC 3, DIREC
 75274 044522
 75275 042503
0455 75276 000000 OCT 0
0456 75277 017664 JSB STAPR
0457 75300 017510 JSB STADR READ DAT
0458 75301 060342 LDA ,=8 8 PER
0459 75302 070033 STA LTEMP+3 LINE

```

|      |       |        |               |                          |
|------|-------|--------|---------------|--------------------------|
| 0460 | 75303 | 064562 | LDB LIBD      |                          |
| 0461 | 75304 | 044417 | ADB .+37      | ⇒ FIRST DIREC ENTRY      |
| 0462 | 75305 |        | STATX EQU *   |                          |
| 0463 | 75305 | 076001 | STB STAV1     |                          |
| 0464 | 75306 | 104200 | DLD STAV1,I   | GET DISC ADDRESS         |
|      | 75307 | 174001 |               |                          |
| 0465 | 75310 | 002003 | SZA,RSS       |                          |
| 0466 | 75311 | 006002 | SZB           |                          |
| 0467 | 75312 | 002001 | RSS           |                          |
| 0468 | 75313 | 027327 | JMP STATY     | SKIP IF ZERO             |
| 0469 | 75314 | 101100 | SWP           |                          |
| 0470 | 75315 | 017722 | JSB STA6D     | OUTPUT IT                |
| 0471 | 75316 | 017666 | JSB STAST     | 2 BLANKS                 |
| 0472 | 75317 | 020040 | ASC 1,        |                          |
| 0473 | 75320 | 000000 | OCT 0         |                          |
| 0474 | 75321 | 034033 | ISZ LTEMP+3   | LINE FULL?               |
| 0475 | 75322 | 027327 | JMP STATY     | NO                       |
| 0476 | 75323 | 017654 | JSB STAPR     | YES, PRINT IT            |
| 0477 | 75324 | 060342 | LDA .-8       |                          |
| 0478 | 75325 | 070033 | STA LTEMP+3   |                          |
| 0479 | 75326 | 017510 | JSB STADR     | READ DAT AGAIN           |
| 0480 | 75327 |        | STATY EQU *   |                          |
| 0481 | 75327 | 066001 | LDB STAV1     |                          |
| 0482 | 75330 | 044355 | ADB .+3       |                          |
| 0483 | 75331 | 060207 | LDA DATLN     |                          |
| 0484 | 75332 | 003004 | CMA,INA       |                          |
| 0485 | 75333 | 002004 | INA           |                          |
| 0486 | 75334 | 040562 | ADA LIBD      |                          |
| 0487 | 75335 | 054000 | CPB A         | FINISHED ALL ENTRIES?    |
| 0488 | 75336 | 002001 | RSS           | YES                      |
| 0489 | 75337 | 027305 | JMP STATX     | NO                       |
| 0490 | 75340 | 060033 | LDA LTEMP+3   |                          |
| 0491 | 75341 | 050342 | CPA .-8       |                          |
| 0492 | 75342 | 002001 | RSS           | SKIP PRINTING BLANK LINE |
| 0493 | 75343 | 017654 | JSB STAPR     |                          |
| 0494 | 75344 | 017666 | JSB STAST     |                          |
| 0495 | 75345 | 005040 | OCT 5040      |                          |
| 0496 | 75346 | 020123 | ASC 4, SYSTEM |                          |
|      | 75347 | 054523 |               |                          |
|      | 75350 | 052105 |               |                          |
|      | 75351 | 046440 |               |                          |
| 0497 | 75352 | 000000 | OCT 0         |                          |
| 0498 | 75353 | 017654 | JSB STAPR     |                          |
| 0499 | 75354 | 017510 | JSB STADR     | GET DAT BACK             |
| 0500 | 75355 | 064562 | LDB LIBD      |                          |
| 0501 | 75356 | 160001 | LDA B,I       |                          |
| 0502 | 75357 | 070033 | STA LTEMP+3   | SAVE LENGTH              |
| 0503 | 75360 | 006004 | INB           |                          |
| 0504 | 75361 | 104200 | DLD B,I       | GET ADDRESS OF           |
|      | 75362 | 100001 |               |                          |
| 0505 | 75363 | 101100 | SWP           | SYSTEM LIBRARY           |
| 0506 | 75364 | 017722 | JSB STA6D     | OUTPUT IT                |
| 0507 | 75365 | 060412 | LDA .+40B     | BLANK                    |
| 0508 | 75366 | 017740 | JSB STACH     |                          |
| 0509 | 75367 | 060033 | LDA LTEMP+3   | OUTPUT LENGTH            |

|      |       |        |     |       |                |
|------|-------|--------|-----|-------|----------------|
| 0510 | 75370 | 017754 | JSB | STA3D |                |
| 0511 | 75371 | 017666 | JSB | STAST | 2 BLANKS       |
| 0512 | 75372 | 020040 | ASC | 1,    |                |
| 0513 | 75373 | 000000 | OCT | 0     |                |
| 0514 | 75374 | 064205 | LDB | LDBSA |                |
| 0515 | 75375 | 044355 | AOB | .,+3  | FIRST DISC     |
| 0516 | 75376 | 076001 | STB | STAV1 | ADDRESS IN SST |
| 0517 | 75377 | 060346 | LDA | .,=4  |                |
| 0518 | 75400 | 017520 | JSB | STASS | SEGMENTS 1-4   |
| 0519 | 75401 | 017654 | JSB | STAPR |                |
| 0520 | 75402 | 060345 | LDA | .,=5  |                |
| 0521 | 75403 | 017520 | JSB | STASS | SEGMENTS 5-9   |
| 0522 | 75404 | 017654 | JSB | STAPR |                |
| 0523 | 75405 | 060346 | LDA | .,=4  |                |
| 0524 | 75406 | 017520 | JSB | STASS | SEGMENTS 10-13 |
| 0525 | 75407 | 017654 | JSB | STAPR |                |
| 0526 | 75410 | 026267 | JMP | LEND  | DONE           |

0002\*

0003\* STALL OUTPUTS A DRUM LOCATION AND LENGTH

0004\*

|      |       |        |       |              |                     |
|------|-------|--------|-------|--------------|---------------------|
| 0005 | 75411 | 000000 | STALL | NOP          |                     |
| 0006 | 75412 | 074032 |       | STB LTEMP+2  | SAVE LENGTH.        |
| 0007 | 75413 | 017420 |       | JSB STADS    | OUTPUT DRUM ADDRESS |
| 0008 | 75414 | 060032 |       | LDA LTEMP+2  | GET LENGTH.         |
| 0009 | 75415 | 003004 |       | CMA, INA     | MAKE POSITIVE.      |
| 0010 | 75416 | 006400 |       | CLB          |                     |
| 0011 | 75417 | 100400 |       | DIV DVSR9+1  | GET FIRST DIGIT.    |
|      | 75420 | 001033 |       |              |                     |
| 0012 | 75421 | 017716 |       | JSB STADG    | PRINT IT.           |
| 0013 | 75422 | 017754 |       | JSB STA3D    | PRINT REMAINING 3.  |
| 0014 | 75423 | 060412 |       | LDA ,+40B    |                     |
| 0015 | 75424 | 017740 |       | JSB STACH    | OUTPUT BLANK.       |
| 0016 | 75425 | 127411 |       | JMP STALL, I |                     |

0017\*

0018\* STADS OUTPUTS A DRUM ADDRESS AS 8 CHARS FOLLOWED BY A BLANK

0019\*

|      |       |        |       |              |                 |
|------|-------|--------|-------|--------------|-----------------|
| 0020 | 75426 | 000000 | STADS | NOP          |                 |
| 0021 | 75427 | 070031 |       | STA LTEMP+1  |                 |
| 0022 | 75430 | 001222 |       | RAL, RAL     | GET DRUM NUMBER |
| 0023 | 75431 | 010355 |       | AND ,+3      |                 |
| 0024 | 75432 | 017716 |       | JSB STADG    |                 |
| 0025 | 75433 | 060431 |       | LDA ,+57B    | SLASH.          |
| 0026 | 75434 | 017740 |       | JSB STACH    |                 |
| 0027 | 75435 | 060031 |       | LDA LTEMP+1  | GET TRACK NO.   |
| 0028 | 75436 | 001727 |       | ALF, ALF     |                 |
| 0029 | 75437 | 010734 |       | AND B77      |                 |
| 0030 | 75440 | 017700 |       | JSB STA2D    |                 |
| 0031 | 75441 | 060431 |       | LDA ,+57B    | SLASH.          |
| 0032 | 75442 | 017740 |       | JSB STACH    |                 |
| 0033 | 75443 | 060031 |       | LDA LTEMP+1  | SECTOR NO.      |
| 0034 | 75444 | 010441 |       | AND B177     |                 |
| 0035 | 75445 | 017754 |       | JSB STA3D    |                 |
| 0036 | 75446 | 127426 |       | JMP STADS, I |                 |

0037\*

0038\* STADA PRINTS DISC ALLOCATION FOR THE IDT AND DISC ADT

0039\*

|      |       |        |       |                |                       |
|------|-------|--------|-------|----------------|-----------------------|
| 0040 | 75447 | 000000 | STADA | NOP            |                       |
| 0041 | 75450 | 070033 |       | STA LTEMP+3    | NUMBER OF ENTRIES     |
| 0042 | 75451 | 044562 |       | ADB LIBD       | * > 1ST ENTRY WE WANT |
| 0043 | 75452 |        | STAA1 | EQU *          |                       |
| 0044 | 75452 | 074034 |       | STB LTEMP+4    |                       |
| 0045 | 75453 | 104200 |       | DLD LTEMP+4, I | GET DISC ADDRESS      |
|      | 75454 | 100034 |       |                |                       |
| 0046 | 75455 | 002003 |       | SZA, RSS       |                       |
| 0047 | 75456 | 006002 |       | SZB            |                       |
| 0048 | 75457 | 002001 |       | RSS            |                       |
| 0049 | 75460 | 027466 |       | JMP STAA2      | SKIP IF ZERO          |
| 0050 | 75461 | 101100 |       | SWP            |                       |
| 0051 | 75462 | 017722 |       | JSB STA6D      | OUTPUT IT             |
| 0052 | 75463 | 017666 |       | JSB STAST      | 2 BLANKS              |
| 0053 | 75464 | 020040 |       | ASC 1,         |                       |
| 0054 | 75465 | 000000 |       | OCT 0          |                       |

```

0055 75466 STAA2 EQU *
0056 75466 064034 LDB LTEMP+4
0057 75467 044355 ADB .+3 => NEXT ONE
0058 75470 034033 ISZ LTEMP+3 FINISHED?
0059 75471 027452 JMP STAA1 NO
0060 75472 127447 JMP STADA,I YES
0061*
0062* STABR READS THE BOOTSTRAP
0063*
0064 75473 000000 STABR NOP
0065 75474 060750 LDA M512
0066 75475 070215 STA MWORD LENGTH
0067 75476 002400 CLA
0068 75477 006404 CLB,INB
0069 75500 104400 DST LTEMP DISC ADDRESS
 75501 000030
0070 75502 064205 LDB LDBSA CORE ADDRESS
0071 75503 045036 ADB BIT15
0072 75504 060520 LDA DLTEM
0073 75505 114217 JSB DISCZ,I READ IT
0074 75506 026311 JMP DDERR
0075 75507 127473 JMP STABR,I
0076*
0077* STADR READS THE DISC ALLOCATION TABLE
0078*
0079 75510 000000 STADR NOP
0080 75511 063777 LDA DSTV2 => DISC ADDRESS IN STAV2 + STAV3
0081 75512 064207 LDB DATLN
0082 75513 074215 STB MWORD LENGTH
0083 75514 064566 LDB LIBDI CORE ADDRESS
0084 75515 114217 JSB DISCZ,I READ IT
0085 75516 026311 JMP DDERR
0086 75517 127510 JMP STADR,I
0087*
0088* STASS FILLS THE BUFFER WITH SYSTEM SEGMENT
0089* ADDRESS AND LENGTHS
0090*
0091 75520 000000 STASS NOP
0092 75521 070033 STA LTEMP+3 SAVE # OF SEGMENTS
0093 75522 017473 JSB STABR READ BOOTSTRAP
0094 75523 STAS1 EQU *
0095 75523 104200 DLD STAV1,I GET DISC ADDRESS
 75524 174001
0096 75525 101100 SWP
0097 75526 017722 JSB STA6D OUTPUT IT
0098 75527 060412 LDA .+40B BLANK
0099 75530 017740 JSB STACH
0100 75531 066001 LDB STAV1
0101 75532 044350 ADB .-2
0102 75533 160001 LDA B,I GET LENGTH
0103 75534 044360 ADB .+6
0104 75535 076001 STB STAV1
0105 75536 001727 ALF,ALF CONVERT
0106 75537 030762 IOR HIMSK
0107 75540 003004 CMA,INA TO BLOCKS

```



|      |       |        |             |           |
|------|-------|--------|-------------|-----------|
| 0108 | 75541 | 017754 | JSB STA3D   | OUTPUT IT |
| 0109 | 75542 | 017666 | JSB STAST   | 2 BLANKS  |
| 0110 | 75543 | 020040 | ASC 1,      |           |
| 0111 | 75544 | 000000 | OCT 0       |           |
| 0112 | 75545 | 034033 | ISZ LTEMP+3 |           |
| 0113 | 75546 | 027523 | JMP STAS1   |           |
| 0114 | 75547 | 127520 | JMP STASS,I |           |

```

0116* THIS COMMAND GIVES A PRINT OUT OF THE BAUD RATE &
0117* CHAR,SIZE FOR WHICH THE PORT IS CONFIGURED.
0118*
0119* THE DATA PRINTED IS:
0120* PORT NR.
0121* BAUD RATE
0122* CHAR, SIZE
0123*
0124* FORMAT:
0125*
0126* PORT=PORT#[,PORT#,.....] CR
0127* OR
0128* PORT=ALL
0129*
0130 75000 ORG LIBRA
0131 75000 002400 CLA CLEAR INDICATORS.
0132 75001 072767 STA POR31
0133 75002 072770 STA POR32
0134 75003 072771 STA PORTL
0135 75004 070031 STA PORC1
0136 75005 060177 LDA NPORT SET UP LIMIT.
0137 75006 070030 STA PORCN
0138 75007 114572 JSB T35CH,I GET CHAR,
0139 75010 026275 JMP LFRER CR, ERROR!
0140 75011 053372 CPA POR,A NO CR, #"A"?
0141 75012 027037 JMP POR3 YES.
0142 75013 POR13 EQU *
0143 75013 017270 JSB POR0G NO. DIGIT?
0144 75014 POR0 EQU *
0145 75014 017362 JSB PORSP YES. COMPUTE PORT NR.
0146 75015 114572 JSB T35CH,I GET NEXT CHAR.
0147 75016 027022 JMP POR2 CR,
0148 75017 050426 CPA .+54B NO CR, COMMA?
0149 75020 002001 RSS YES.
0150 75021 027013 JMP POR13 NO.
0151*
0152 75022 POR2 EQU *
0153 75022 060031 LDA PORC1 CHECK LEGALITY.
0154 75023 040030 ADA PORCN
0155 75024 002021 SSA,RSS >LIMIT?
0156 75025 026275 JMP LFRER YES. ERROR!
0157 75026 017226 JSB PORIN NO. SET INDICATOR.
0158 75027 060055 LDA T35LC PICK UP LAST CHAR.
0159 75030 050367 CPA .+15B WAS IT A CRT
0160 75031 027066 JMP POR4 YES. GIVE THE INFORMATION.
0161 75032 002400 CLA
0162 75033 070031 STA PORC1
0163 75034 114572 JSB T35CH,I NO. GET NEXT CHAR.
0164 75035 027065 JMP POR4 CR, GIVE THE INFORMATION.
0165 75036 027013 JMP POR13 NO CR.
0166*
0167*
0168 75037 POR3 EQU *
0169 75037 114572 JSB T35CH,I COMMAND FOR ALL PORTS GIVEN.
0170 75040 026275 JMP LFRER GET NEXT CHAR.
 CR, ERROR!

```

|       |       |        |                       |                       |
|-------|-------|--------|-----------------------|-----------------------|
| 0171  | 75041 | 053373 | CPA POR,L             | NO CR, "L"?           |
| 0172  | 75042 | 002001 | RSS                   |                       |
| 0173  | 75043 | 026275 | JMP LFRER             | NO, ERROR!            |
| 0174  | 75044 | 114572 | JSB T35CH,I           | YES, GET NEXT CHAR.   |
| 0175  | 75045 | 026275 | JMP LFRER             | CR, ERROR!            |
| 0176  | 75046 | 053373 | CPA POR,L             | "L"?                  |
| 0177  | 75047 | 002001 | RSS                   |                       |
| 0178  | 75050 | 026275 | JMP LFRER             | NO, ERROR!            |
| 0179  | 75051 | 114572 | JSB T35CH,I           | YES, GET NEXT CHAR.   |
| 0180  | 75052 | 002001 | RSS                   |                       |
| 0181  | 75053 | 026275 | JMP LFRER             | NO CR, ERROR!         |
| 0182  | 75054 | 002400 | CLA                   | CR!                   |
| 0183  | 75055 |        | POR9 EQU *            |                       |
| 0184  | 75055 | 070031 | STA PORC1             |                       |
| 0185  | 75056 | 040030 | ADA PORCN             |                       |
| 0186  | 75057 | 002021 | SSA,RSS               | >LIMIT?               |
| 0187  | 75060 | 027065 | JMP POR4              | YES.                  |
| 0188  | 75061 | 017226 | JSB PORIN             | NO, SET INDICATOR,    |
| 0189  | 75062 | 060031 | LDA PORC1             | BUMP PORT NR.         |
| 0190  | 75063 | 002004 | INA                   |                       |
| 0191  | 75064 | 027055 | JMP POR9              |                       |
| 0192* |       |        | GIVE THE INFORMATION. |                       |
| 0193  | 75065 |        | POR4 EQU *            |                       |
| 0194  | 75065 | 060303 | LDA T35B2             | INITIALIZE            |
| 0195  | 75066 | 072562 | STA STABF             | BUFFER POINTER,       |
| 0196  | 75067 | 017312 | JSB PROST             | OUTPUT HEADING,       |
| 0197  | 75070 | 005040 | OCT 5040              | LF_SPACE              |
| 0198  | 75071 | 050117 | ASC 4,PORT            |                       |
|       | 75072 | 051124 |                       |                       |
|       | 75073 | 020040 |                       |                       |
|       | 75074 | 020040 |                       |                       |
| 0199  | 75075 | 041101 | ASC 6,BAUD RATE       |                       |
|       | 75076 | 052504 |                       |                       |
|       | 75077 | 020122 |                       |                       |
|       | 75100 | 040524 |                       |                       |
|       | 75101 | 042440 |                       |                       |
|       | 75102 | 020040 |                       |                       |
| 0200  | 75103 | 041510 | ASC 5,CHAR, SIZE      |                       |
|       | 75104 | 040522 |                       |                       |
|       | 75105 | 027040 |                       |                       |
|       | 75106 | 051511 |                       |                       |
|       | 75107 | 055105 |                       |                       |
| 0201  | 75110 | 000000 | OCT 0                 |                       |
| 0202  | 75111 | 060412 | LDA ,+32              | A= NR. OF CHARS.      |
| 0203  | 75112 | 064305 | LDB T35B1             | B= BUFFER POINTER,    |
| 0204  | 75113 | 016213 | JSB T35SP             | PRINT & SUSPEND,      |
| 0205  | 75114 | 060303 | LDA T35B2             | RESET BUFFER POINTER. |
| 0206  | 75115 | 072562 | STA STABF             |                       |
| 0207* |       |        |                       |                       |
| 0208  | 75116 |        | POR5 EQU *            |                       |
| 0209  | 75116 | 062771 | LDA PORTL             |                       |
| 0210  | 75117 | 050372 | CPA ,+16              | DONE?                 |
| 0211  | 75120 | 027135 | JMP POR22             | YES.                  |
| 0212  | 75121 | 006400 | CLB                   | CLEAR (B) AND GET     |
| 0213  | 75122 | 062767 | LDA POR51             | LOWER INDICATOR,      |

|       |       |        |       |              |                           |
|-------|-------|--------|-------|--------------|---------------------------|
| 0214  | 75123 | 000010 |       | SLA          | BIT SET?                  |
| 0215  | 75124 | 006004 |       | INB          | YES, BUMP (B).            |
| 0216  | 75125 | 001300 |       | RAR          | ROTATE RIGHT.             |
| 0217  | 75126 | 072767 |       | STA POR51    | RESTORE INDICATOR.        |
| 0218  | 75127 | 006003 |       | SZB, RSS     | IF BIT=0, JUMP.           |
| 0219  | 75130 | 027133 |       | JMP POR7     | OTHERWISE SET UP BUFFER.  |
| 0220  | 75131 | 017154 |       | JSB POR6     |                           |
| 0221  | 75132 | 017300 |       | JSB PROPR    | PRINT BUFFER AND SUSPEND. |
| 0222  | 75133 |        | POR7  | EQU *        |                           |
| 0223  | 75133 | 036771 |       | ISZ PORTL    | BUMP COUNTER.             |
| 0224  | 75134 | 027116 |       | JMP POR5     | GO BACK.                  |
| 0225* |       |        |       |              |                           |
| 0226  | 75135 |        | POR22 | EQU *        |                           |
| 0227  | 75135 | 062771 |       | LDA PORTL    |                           |
| 0228  | 75136 | 050412 |       | CPA ,+32     | DONE?                     |
| 0229  | 75137 | 026267 |       | JMP LEND     | YES, GET OUT.             |
| 0230  | 75140 | 006400 |       | CLB          | CLEAR (B) AND GET         |
| 0231  | 75141 | 062770 |       | LDA POR52    | UPPER INDICATOR.          |
| 0232  | 75142 | 000010 |       | SLA          | BIT SET?                  |
| 0233  | 75143 | 006004 |       | INB          | YES, BUMP (B).            |
| 0234  | 75144 | 001300 |       | RAR          | ROTATE RIGHT.             |
| 0235  | 75145 | 072770 |       | STA POR52    | RESTORE INDICATOR.        |
| 0236  | 75146 | 006003 |       | SZB, RSS     | IF BIT=0, JUMP.           |
| 0237  | 75147 | 027152 |       | JMP POR8     | OTHERWISE SET UP BUFFER.  |
| 0238  | 75150 | 017154 |       | JSB POR6     |                           |
| 0239  | 75151 | 017300 |       | JSB PROPR    | PRINT BUFFER AND SUSPEND. |
| 0240  | 75152 |        | POR8  | EQU *        |                           |
| 0241  | 75152 | 036771 |       | ISZ PORTL    | BUMP COUNTER.             |
| 0242  | 75153 | 027135 |       | JMP POR22    | GO BACK.                  |
| 0243* |       |        |       |              |                           |
| 0244* |       |        |       |              |                           |
| 0245* |       |        |       |              |                           |
| 0246  | 75154 | 000000 | POR6  | NOP          |                           |
| 0247  | 75155 | 060412 |       | LDA ,+40B    | OUTPUT A BLANK.           |
| 0248  | 75156 | 017324 |       | JSB PROCH    |                           |
| 0249  | 75157 | 017312 |       | JSB PROST    | OUTPUT 2 BLANKS.          |
| 0250  | 75160 | 020040 |       | ASC 1,       |                           |
| 0251  | 75161 | 000000 |       | OCT 0        |                           |
| 0252  | 75162 | 062771 |       | LDA PORTL    | GET PORT NR.              |
| 0253  | 75163 | 017344 |       | JSB PRO2D    | OUTPUT PORT NR.           |
| 0254  | 75164 | 017312 |       | JSB PROST    | OUTPUT 6 BLANKS.          |
| 0255  | 75165 | 020040 |       | ASC 3,       |                           |
|       | 75166 | 020040 |       |              |                           |
|       | 75167 | 020040 |       |              |                           |
| 0256  | 75170 | 000000 |       | OCT 0        |                           |
| 0257  | 75171 | 062771 |       | LDA PORTL    | GET PORT NR.              |
| 0258  | 75172 | 001727 |       | ALF, ALF     | ROTATE INTO POSITION.     |
| 0259  | 75173 | 032775 |       | IOR WSP      | MERGE INTO OPCODE.        |
| 0260  | 75174 | 114500 |       | JSB S14SC, I | ASK FOR BAUD RATE.        |
| 0261  | 75175 | 102311 |       | SFS CH2      |                           |
| 0262  | 75176 | 027175 |       | JMP *-1      |                           |
| 0263  | 75177 | 102511 |       | LIA CH2      | GET BAUD RATE.            |
| 0264  | 75200 | 017353 |       | JSB PRO3D    | OUTPUT BAUD RATE.         |
| 0265  | 75201 | 017312 |       | JSB PROST    | OUTPUT 10 BLANKS.         |
| 0266  | 75202 | 020040 |       | ASC 5,       |                           |

75203 020040  
 75204 020040  
 75205 020040  
 75206 020040  
 0267 75207 000000  
 0268 75210 062771  
 0269 75211 001727  
 0270 75212 030252  
 0271 75213 114500  
 0272 75214 102311  
 0273 75215 027214  
 0274 75216 102511  
 0275 75217 002003  
 0276 75220 027223  
 0277 75221 017340  
 0278 75222 127154  
 0279 75223  
 0280 75223 060424  
 0281 75224 017324  
 0282 75225 127154  
 0283\*  
 0284\*  
 0285\*  
 0286 75226 000000  
 0287 75227 060031  
 0288 75230 064000  
 0289 75231 005323  
 0290 75232 005323  
 0291 75233 004010  
 0292 75234 040332  
 0293 75235 003004  
 0294 75236 070033  
 0295\*  
 0296 75237 062767  
 0297 75240 004010  
 0298 75241 062770  
 0299 75242 064033  
 0300 75243  
 0301 75243 006003  
 0302 75244 027250  
 0303 75245 001300  
 0304 75246 006004  
 0305 75247 027243  
 0306 75250  
 0307 75250 030353  
 0308\*  
 0309 75251 064033  
 0310 75252  
 0311 75252 006003  
 0312 75253 027257  
 0313 75254 001200  
 0314 75255 006004  
 0315 75256 027252  
 0316 75257  
 0317 75257 064031

OCT 0  
 LDA PORTL  
 ALF,ALF  
 IOR WCS  
 JSB S14SC,I  
 SFS CH2  
 JMP \*-1  
 LIA CH2  
 SZA,RSS  
 JMP POR11  
 JSB PRODG  
 JMP POR6,I  
 POR11 EQU \*  
 LDA .+42  
 JSB PROCH  
 JMP POR6,I

GET PORT NR,  
 ROTATE INTO POSITION.

ASK FOR CHAR. SIZE.

GET CHAR. SIZE,  
 #0?  
 YES.  
 NO. OUTPUT IT,  
 RETURN.

OUTPUT "\*" "  
 RETURN.

PURIN NOP  
 LDA PORC1  
 LDB A  
 RBR,RBR  
 RBR,RBR  
 SLB  
 ADA .-16  
 CMA,INA  
 STA PRCCN

SETS PORT BIT IN INDICATOR,  
 A=PORT#  
 B=PORT#  
 ROTATE BIT#4 INTO BIT#0.

PORT#>15?  
 YES. MAKE PORT# FROM 0-15.  
 NO. NEGATE.  
 SET UP COUNTER.

LDA POR91  
 SLB  
 LDA POR92  
 LDB PRCCN  
 PORI1 EQU \*  
 SZB,RSS  
 JMP PORI2  
 RAR  
 INB  
 JMP PORI1  
 PORI2 EQU \*  
 IOR .+1

A=LOWER INDICATOR,  
 UPPER OR LOWER PORT?  
 UPPER. A=UPPER INDICATOR.  
 B=COUNTER.

DONE?  
 YES.  
 NO. ROTATE RIGHT ONE BIT.  
 BUMP COUNTER.  
 GO BACK.

SET BIT.

B=COUNTER.

LDB PRCCN  
 PORI3 EQU \*  
 SZB,RSS  
 JMP PORI4  
 RAL  
 INB  
 JMP PORI3  
 PORI4 EQU \*  
 LDB PORC1

DONE?  
 YES.  
 NO. ROTATE LEFT ONE BIT.  
 BUMP COUNTER.  
 GO BACK.

|       |                                    |        |             |                                  |
|-------|------------------------------------|--------|-------------|----------------------------------|
| 0318  | 75260                              | 005323 | RBR,RBR     |                                  |
| 0319  | 75261                              | 005323 | RBR,RBR     |                                  |
| 0320  | 75262                              | 004010 | SLB         | UPPER OR LOWER PORT?             |
| 0321  | 75263                              | 027266 | JMP PORI5   |                                  |
| 0322  | 75264                              | 072767 | STA POR51   | LOWER. STORE IN LOWER INDICATOR. |
| 0323  | 75265                              | 002001 | RSS         |                                  |
| 0324  | 75266                              |        | PORI5 EQU * |                                  |
| 0325  | 75266                              | 072770 | STA POR52   | UPPER. STORE IN UPPER INDICATOR. |
| 0326  | 75267                              | 127226 | JMP PORIN,I | EXIT.                            |
| 0327* |                                    |        |             |                                  |
| 0328  | 75270                              | 000000 | PORDG NOP   | CHECK IF DIGIT IS INPUT.         |
| 0329  | 75271                              | 040316 | ADA M72B    | DIGIT?                           |
| 0330  | 75272                              | 002021 | SSA,RSS     |                                  |
| 0331  | 75273                              | 026275 | JMP LFRER   | NO. ERROR!                       |
| 0332  | 75274                              | 040364 | ADA .+10    | MAY BE.                          |
| 0333  | 75275                              | 002020 | SSA         |                                  |
| 0334  | 75276                              | 026275 | JMP LFRER   | NO. ERROR!                       |
| 0335  | 75277                              | 127270 | JMP PORDG,I | DIGIT! RETURN.                   |
| 0336* |                                    |        |             |                                  |
| 0337* |                                    |        |             |                                  |
| 0338* |                                    |        |             |                                  |
| 0339* |                                    |        |             |                                  |
| 0340* | PROPR PRINTS THE BUFFER.           |        |             |                                  |
| 0341* |                                    |        |             |                                  |
| 0342  | 75300                              | 000000 | PROPR NOP   |                                  |
| 0343  | 75301                              | 063300 | LDA PROPR   | SAVE RETURN ADDRESS.             |
| 0344  | 75302                              | 072213 | STA T358P   |                                  |
| 0345  | 75303                              | 060303 | LDA T3582   | COMPUTE NR. OF CHARS.            |
| 0346  | 75304                              | 003004 | CMA,INA     |                                  |
| 0347  | 75305                              | 042562 | ADA STABF   |                                  |
| 0348  | 75306                              | 064303 | LDB T3582   | RESET BUFFER                     |
| 0349  | 75307                              | 076562 | STB STABF   | POINTER.                         |
| 0350  | 75310                              | 064305 | LDB T3581   |                                  |
| 0351  | 75311                              | 026214 | JMP T358P+1 | OUTPUT.                          |
| 0352* |                                    |        |             |                                  |
| 0353* | PROST OUTPUTS A STRING.            |        |             |                                  |
| 0354* |                                    |        |             |                                  |
| 0355  | 75312                              | 000000 | PROST NOP   |                                  |
| 0356  | 75313                              | 163312 | LDA PROST,I | GET CHAR. PAIR.                  |
| 0357  | 75314                              | 002003 | SZA,RSS     |                                  |
| 0358  | 75315                              | 127312 | JMP PROST,I |                                  |
| 0359  | 75316                              | 001727 | ALF,ALF     | OUTPUT LEFT CHAR.                |
| 0360  | 75317                              | 017324 | JSB PROCH   |                                  |
| 0361  | 75320                              | 163312 | LDA PROST,I | OUTPUT RIGHT CHAR.               |
| 0362  | 75321                              | 017324 | JSB PROCH   |                                  |
| 0363  | 75322                              | 037312 | ISZ PROST   | BUMP POINTER.                    |
| 0364  | 75323                              | 027313 | JMP PROST+1 | LOOP.                            |
| 0365* |                                    |        |             |                                  |
| 0366* | PROCH INSERTS A CHAR. INTO BUFFER. |        |             |                                  |
| 0367* |                                    |        |             |                                  |
| 0368  | 75324                              | 000000 | PROCH NOP   |                                  |
| 0369  | 75325                              | 074034 | STB SPS2    | SAVE B.                          |
| 0370  | 75326                              | 010441 | AND B177    | CLEAR LEFT PART.                 |
| 0371  | 75327                              | 066562 | LDB STABF   | GET BUFFER POINTER.              |
| 0372  | 75330                              | 004065 | CLE,ERB     |                                  |

|       |       |        |                                 |                     |
|-------|-------|--------|---------------------------------|---------------------|
| 0373  | 75331 | 002041 | SEZ, RSS                        |                     |
| 0374  | 75332 | 001737 | ALF, SLA, ALF                   | CHAR. ON LEFT.      |
| 0375  | 75333 | 130001 | IOR 1, I                        | CHAR. ON RIGHT.     |
| 0376  | 75334 | 170001 | STA 1, I                        |                     |
| 0377  | 75335 | 036562 | ISZ STABF                       | BUMP POINTER,       |
| 0378  | 75336 | 060034 | LDA SPS2                        | A = B.              |
| 0379  | 75337 | 127324 | JMP PROCH, I                    |                     |
| 0380* |       |        |                                 |                     |
| 0381* |       |        | PRODG OUTPUTS A DIGIT.          |                     |
| 0382* |       |        |                                 |                     |
| 0383  | 75340 | 000000 | PRODG NOP                       |                     |
| 0384  | 75341 | 040432 | ADA ,+60B                       |                     |
| 0385  | 75342 | 017324 | JSB PROCH                       |                     |
| 0386  | 75343 | 127340 | JMP PRODG, I                    |                     |
| 0387* |       |        |                                 |                     |
| 0388* |       |        | PRO2D OUTPUTS A 2-DIGIT NUMBER. |                     |
| 0389* |       |        |                                 |                     |
| 0390  | 75344 | 000000 | PRO2D NOP                       |                     |
| 0391  | 75345 | 006400 | CLB                             |                     |
| 0392  | 75346 | 100400 | DIV ,+10                        |                     |
|       | 75347 | 000364 |                                 |                     |
| 0393  | 75350 | 017340 | JSB PRODG                       |                     |
| 0394  | 75351 | 017340 | JSB PRODG                       |                     |
| 0395  | 75352 | 127344 | JMP PRO2D, I                    |                     |
| 0396* |       |        |                                 |                     |
| 0397* |       |        | PRO3D OUTPUTS A 3-DIGIT NUMBER. |                     |
| 0398* |       |        |                                 |                     |
| 0399  | 75353 | 000000 | PRO3D NOP                       |                     |
| 0400  | 75354 | 006400 | CLB                             |                     |
| 0401  | 75355 | 100400 | DIV ,100                        |                     |
|       | 75356 | 000437 |                                 |                     |
| 0402  | 75357 | 017340 | JSB PRODG                       | OUTPUT FIRST DIGIT. |
| 0403  | 75360 | 017344 | JSB PRO2D                       | OUTPUT LAST TWO.    |
| 0404  | 75361 | 127353 | JMP PRO3D, I                    |                     |
| 0405* |       |        |                                 |                     |
| 0406  | 75362 |        | PORSP EQU *                     |                     |
| 0407  | 75362 | 000000 | NOP                             |                     |
| 0408  | 75363 | 070032 | STA PORC2                       | SAVE (A).           |
| 0409  | 75364 | 060031 | LDA PORC1                       | UPDATE              |
| 0410  | 75365 | 100200 | MPY ,+10                        |                     |
|       | 75366 | 000364 |                                 |                     |
| 0411  | 75367 | 040032 | ADA PORC2                       | PORT                |
| 0412  | 75370 | 070031 | STA PORC1                       | NUMBER.             |
| 0413  | 75371 | 127362 | JMP PORSP, I                    |                     |
| 0414* |       |        |                                 |                     |
| 0415* |       |        |                                 |                     |
| 0416* |       |        |                                 |                     |
| 0417* |       |        |                                 |                     |
| 0418  | 00030 |        | PORCN EQU LTEMP                 |                     |
| 0419  | 75372 | 000101 | POR, A OCT 101                  | =A                  |
| 0420  | 75373 | 000114 | POR, L OCT 114                  | =L                  |
| 0421  | 00031 |        | PURC1 EQU LTEMP+1               |                     |
| 0422  | 00032 |        | PORC2 EQU LTEMP+2               |                     |
| 0423  | 00033 |        | PRCCN EQU LTEMP+3               |                     |
| 0424  | 00034 |        | SPS2 EQU LTEMP+4                |                     |

PAGE 0567 #48 PORT \* SYSTEM CONSOLE.

0425 75374

SPOR EQU \*



0427\* ROSTER PRINTS A LISTING, ON THE SYSTEM CONSOLE, OF ALL  
 0428\* IDS OF CURRENTLY ACTIVE USERS. THEY ARE PRINTED 8 PER LINE.

```

0430 75000 ORG LIBRA
0431 75000 063111 LDA ROSLB SET LF-BLANK IN BUFFER
0432 75001 072611 STA T358F
0433 75002 017031 JSB ROST8 PROCESS FIRST 8
0434 75003 061132 DEF TTY00+?ID
0435 75004 060432 LDA ,+48 OUTPUT THEM,
0436 75005 064305 LDB T35B1
0437 75006 016213 JSB T35SP
0438 75007 062611 LDA T358F
0439 75010 030762 IOR HIMSK
0440 75011 072611 STA T358F
0441 75012 017031 JSB ROST8 PROCESS 2ND 8
0442 75013 061362 DEF TTY08+?ID
0443 75014 060432 LDA ,+48
0444 75015 064305 LDB T35B1
0445 75016 016213 JSB T35SP OUTPUT THEM
0446 75017 017031 JSB ROST8 PROCESS 3RD 8
0447 75020 061612 DEF TTY16+?ID
0448 75021 060432 LDA ,+48
0449 75022 064305 LDB T35B1
0450 75023 016213 JSB T35SP OUTPUT THEM
0451 75024 017031 JSB ROST8 PROCESS LAST 8
0452 75025 062042 DEF TTY24+?ID
0453 75026 060432 LDA ,+48 OUTPUT THEM,
0454 75027 064305 LDB T35B1
0455 75030 026271 JMP LEND+2

```

0457\* ROST8 FILLS THE TELETYPE BUFFER WITH 8 IDS. THE FORMAT IS:  
 0458\* LF,BLANK,7(ID,BLANK,BLANK),ID

```

0460 75031 000000 ROST8 NOP
0461 75032 060305 LDA T35B1 SET UP POINTER FOR FIRST ID.
0462 75033 002004 INA
0463 75034 070030 STA ROSP
0464 75035 060342 LDA ,=8 SET UP COUNTER.
0465 75036 070031 STA ROSC
0466 75037 163031 LDA ROST8,I SET UP POINTER TO ID.
0467 75040 070032 STA ROSID
0468 75041 027045 JMP ROS2 GO DO FIRST ID.
0469 75042 060570 ROS1 LDA ASCBB PUT BLANKS IN AS SEPARATORS.
0470 75043 170030 STA ROSP,I
0471 75044 034030 ISZ ROSP
0472 75045 160032 ROS2 LDA ROSID,I GET ID
0473 75046 002003 SZA,ROSS TEST FOR NO ID.
0474 75047 027075 JMP ROS3
0475 75050 010602 AND B1777 MASK NUMBER PART
0476 75051 006400 CLB GET #/100 IN A,# MOD 100 IN B.
0477 75052 100400 DIV ,100
 75053 000437
0478 75054 074033 STB ROST
0479 75055 070001 STA 1 SAVE LAST 2 DIGITS.
 COMBINE FIRST DIGIT WITH LETTER.

```

|       |       |        |       |                   |                               |
|-------|-------|--------|-------|-------------------|-------------------------------|
| 0480  | 75056 | 160032 |       | LDA ROSID,I       |                               |
| 0481  | 75057 | 001121 |       | ARS,ARS           |                               |
| 0482  | 75060 | 013112 |       | AND ROSMS         |                               |
| 0483  | 75061 | 040001 |       | ADA 1             |                               |
| 0484  | 75062 | 043113 |       | ADA ROSFX         |                               |
| 0485  | 75063 | 170030 |       | STA ROSP,I        | STORE IN BUFFER,              |
| 0486  | 75064 | 034030 |       | ISZ ROSP          |                               |
| 0487  | 75065 | 060033 |       | LDA ROST          | GET LAST 2 DIGITS.            |
| 0488  | 75066 | 000400 |       | CLB               |                               |
| 0489  | 75067 | 100400 |       | DIV ,+10          | SEPARATE THEM.                |
|       | 75070 | 000364 |       |                   |                               |
| 0490  | 75071 | 001727 |       | ALF,ALF           | PACK AND CONVERT              |
| 0491  | 75072 | 040001 |       | ADA 1             | TO ASCII.                     |
| 0492  | 75073 | 040574 |       | ADA ASC00         |                               |
| 0493  | 75074 | 027100 |       | JMP ROS4          | GO STORE IN BUFFER.           |
| 0494  | 75075 | 063114 | ROS3  | LDA ROSDD         | IF NO ID, PUT DOTS IN BUFFER. |
| 0495  | 75076 | 170030 |       | STA ROSP,I        |                               |
| 0496  | 75077 | 034030 |       | ISZ ROSP          |                               |
| 0497  | 75100 | 170030 | ROS4  | STA ROSP,I        |                               |
| 0498  | 75101 | 034030 |       | ISZ ROSP          |                               |
| 0499  | 75102 | 060032 |       | LDA ROSID         | ADVANCE ID POINTER.           |
| 0500  | 75103 | 040375 |       | ADA ,+TTY01-TTY00 |                               |
| 0501  | 75104 | 070032 |       | STA ROSID         |                               |
| 0502  | 75105 | 034031 |       | ISZ ROSC          | ANY MORE?                     |
| 0503  | 75106 | 027042 |       | JMP ROS1          | YES.                          |
| 0504  | 75107 | 037031 |       | ISZ ROST0         |                               |
| 0505  | 75110 | 127031 |       | JMP ROST0,I       | NO                            |
| 0506* |       |        |       |                   |                               |
| 0507  | 00030 |        | ROSP  | EQU LTEMP         |                               |
| 0508  | 00031 |        | ROSC  | EQU LTEMP+1       |                               |
| 0509  | 75111 | 005040 | ROSLB | OCT 5040          |                               |
| 0510  | 00032 |        | ROSID | EQU LTEMP+2       |                               |
| 0511  | 00033 |        | ROST  | EQU LTEMP+3       |                               |
| 0512  | 75112 | 017400 | RUSMS | OCT 17400         |                               |
| 0513  | 75113 | 040060 | ROSFX | ASC 1,00          |                               |
| 0514  | 75114 | 027056 | ROSDD | ASC 1,..          |                               |
| 0515  | 75115 |        | \$ROS | EQU *             |                               |

0517\* THE ANNOUNCE (ANNOY) COMMAND IS USED TO SEND A MESSAGE FROM THE  
 0518\* SYSTEM CONSOLE TO THE USER CONSOLES, THE FORMAT IS

0519\*

0520\* ANN=<PORT #>,<MESSAGE>

0521\*

0522\* WHERE PORT # IS AN INTEGER BETWEEN 0 AND 31 OR 'ALL' AND MESSAGE  
 0523\* IS A STRING OF CHARACTERS ENDING WITH A CARRIAGE RETURN,  
 0524\*

|      |       |        |             |                |
|------|-------|--------|-------------|----------------|
| 0525 | 75000 |        | ORG LIBRA   |                |
| 0526 | 75000 | 114572 | JSB T35CH,I | GET 1ST CHAR   |
| 0527 | 75001 | 026275 | JMP LFRER   |                |
| 0528 | 75002 | 053167 | CPA ANN,A   | 'A'?           |
| 0529 | 75003 | 027046 | JMP ANN2    | YES            |
| 0530 | 75004 | 040316 | ADA M72B    | NO,            |
| 0531 | 75005 | 002021 | SSA,RSS     | DIGIT?         |
| 0532 | 75006 | 026275 | JMP LFRER   | NO             |
| 0533 | 75007 | 040364 | ADA .+10    | MAYBE          |
| 0534 | 75010 | 002020 | SSA         |                |
| 0535 | 75011 | 026275 | JMP LFRER   | NO             |
| 0536 | 75012 | 070030 | STA LTEMP   | YES, SAVE IT   |
| 0537 | 75013 | 114572 | JSB T35CH,I | NEXT CHAR      |
| 0538 | 75014 | 026275 | JMP LFRER   |                |
| 0539 | 75015 | 050426 | CPA .+54B   | COMMA?         |
| 0540 | 75016 | 027043 | JMP ANN1    | YES            |
| 0541 | 75017 | 040316 | ADA M72B    | NO,            |
| 0542 | 75020 | 002021 | SSA,RSS     | DIGIT?         |
| 0543 | 75021 | 026275 | JMP LFRER   | NO             |
| 0544 | 75022 | 040364 | ADA .+10    | MAYBE          |
| 0545 | 75023 | 002020 | SSA         |                |
| 0546 | 75024 | 026275 | JMP LFRER   | NO             |
| 0547 | 75025 | 070031 | STA LTEMP+1 | YES            |
| 0548 | 75026 | 060030 | LDA LTEMP   | COMPUTE        |
| 0549 | 75027 | 100200 | MPY .+10    |                |
|      | 75030 | 000364 |             |                |
| 0550 | 75031 | 040031 | ADA LTEMP+1 | NUMBER         |
| 0551 | 75032 | 070030 | STA LTEMP   |                |
| 0552 | 75033 | 040177 | ADA NPORT   |                |
| 0553 | 75034 | 002021 | SSA,RSS     | TOO BIG?       |
| 0554 | 75035 | 026275 | JMP LFRER   | YES, ERROR     |
| 0555 | 75036 | 114572 | JSB T35CH,I | NEXT CHAR      |
| 0556 | 75037 | 026275 | JMP LFRER   |                |
| 0557 | 75040 | 050426 | CPA .+54B   | COMMA?         |
| 0558 | 75041 | 002001 | RSS         | YES            |
| 0559 | 75042 | 026275 | JMP LFRER   | NO             |
| 0560 | 75043 |        | ANN1 EQU *  |                |
| 0561 | 75043 | 003400 | CCA         | SET FOR        |
| 0562 | 75044 | 070031 | STA LTEMP+1 | ONE PORT       |
| 0563 | 75045 | 027065 | JMP ANN3    |                |
| 0564 | 75046 |        | ANN2 EQU *  |                |
| 0565 | 75046 | 114572 | JSB T35CH,I | NEXT CHAR      |
| 0566 | 75047 | 026275 | JMP LFRER   |                |
| 0567 | 75050 | 053170 | CPA ANN,L   | 'L'?           |
| 0568 | 75051 | 114572 | JSB T35CH,I | YES, NEXT CHAR |
| 0569 | 75052 | 026275 | JMP LFRER   | NO             |
| 0570 | 75053 | 053170 | CPA ANN,L   | 'L'?           |

|       |       |        |                   |                               |
|-------|-------|--------|-------------------|-------------------------------|
| 0571  | 75054 | 114572 | JSB T35CH,I       | YES, NEXT CHAR                |
| 0572  | 75055 | 026275 | JMP LFRER         | NO                            |
| 0573  | 75056 | 050426 | CPA ,+54B         | COMMA?                        |
| 0574  | 75057 | 002001 | RSS               | YES                           |
| 0575  | 75060 | 026275 | JMP LFRER         | NO                            |
| 0576  | 75061 | 060177 | LDA NPORT         | # OF PORTS TO SEND MESSAGE TO |
| 0577  | 75062 | 070031 | STA LTEMP+1       |                               |
| 0578  | 75063 | 002400 | CLA               | 1ST PORT IS 0                 |
| 0579  | 75064 | 070030 | STA LTEMP         |                               |
| 0580  | 75065 |        | ANN3 EQU *        |                               |
| 0581  | 75065 | 060367 | LDA ,+15B         | CR                            |
| 0582  | 75066 | 017132 | JSB ANNCH         |                               |
| 0583  | 75067 | 060364 | LDA ,+12B         | LF                            |
| 0584  | 75070 | 017132 | JSB ANNCH         |                               |
| 0585  | 75071 | 060364 | LDA ,+12B         | LF                            |
| 0586  | 75072 | 017132 | JSB ANNCH         |                               |
| 0587  | 75073 |        | ANN4 EQU *        |                               |
| 0588  | 75073 | 002400 | CLA               | ALLOW                         |
| 0589  | 75074 | 072044 | STA T35C1         | BLANKS                        |
| 0590  | 75075 | 114572 | JSB T35CH,I       | NEXT CHAR                     |
| 0591  | 75076 | 027101 | JMP ANN5          | CR                            |
| 0592  | 75077 | 017132 | JSB ANNCH         | OUTPUT IT                     |
| 0593  | 75100 | 027073 | JMP ANN4          | LOOP                          |
| 0594  | 75101 |        | ANN5 EQU *        |                               |
| 0595  | 75101 | 017132 | JSB ANNCH         | CR                            |
| 0596  | 75102 | 060364 | LDA ,+12B         | LF                            |
| 0597  | 75103 | 017132 | JSB ANNCH         |                               |
| 0598  | 75104 | 060364 | LDA ,+12B         | LF                            |
| 0599  | 75105 | 017132 | JSB ANNCH         |                               |
| 0600  | 75106 | 063171 | LDA ANNJM         | RESTORE BLANK                 |
| 0601  | 75107 | 072044 | STA T35C1         | BLANK SUPPRESSION             |
| 0602  | 75110 |        | ANN6 EQU *        |                               |
| 0603  | 75110 | 060375 | LDA ,+TTY01-TTY00 |                               |
| 0604  | 75111 | 100200 | MPY LTEMP         |                               |
|       |       | 75112  |                   |                               |
| 0605  | 75113 | 064000 | LDB A             |                               |
| 0606  | 75114 | 044546 | ADB DTTY0         | B=> USER'S TTY TABLE          |
| 0607  | 75115 | 044366 | ADB ,+?STAT       |                               |
| 0608  | 75116 | 160001 | LDA B,I           | A= STATUS                     |
| 0609  | 75117 | 050354 | CPA ,+2           | IS STATUS INPUT WAIT?         |
| 0610  | 75120 | 002001 | RSS               |                               |
| 0611  | 75121 | 027126 | JMP ANN7          | NO.                           |
| 0612  | 75122 | 060030 | LDA LTEMP         | YES.                          |
| 0613  | 75123 | 001727 | ALF,ALF           | RE-ISSUE INPUT                |
| 0614  | 75124 | 030231 | IOR IWT           | WAIT REQUEST.                 |
| 0615  | 75125 | 114500 | JSB S14SC,I       |                               |
| 0616  | 75126 |        | ANN7 EQU *        |                               |
| 0617  | 75126 | 034030 | ISZ LTEMP         | BUMP PORT#                    |
| 0618  | 75127 | 034031 | ISZ LTEMP+1       | ALL PORTS DONE?               |
| 0619  | 75130 | 027110 | JMP ANN6          | NO.                           |
| 0620  | 75131 | 026267 | JMP LEND          |                               |
| 0621* |       |        |                   |                               |
| 0622  | 75132 | 000000 | ANNCH NOP         |                               |
| 0623  | 75133 | 070032 | STA LTEMP+2       | SAVE CHAR                     |
| 0624  | 75134 | 060031 | LDA LTEMP+1       | # OF PORTS                    |

|      |       |        |       |      |         |                         |
|------|-------|--------|-------|------|---------|-------------------------|
| 0625 | 75135 | 070033 |       | STA  | LTEMP+3 |                         |
| 0626 | 75136 | 060030 |       | LDA  | LTEMP   | 1ST PORT                |
| 0627 | 75137 | 070034 |       | STA  | LTEMP+4 |                         |
| 0628 | 75140 |        | ANNC1 | EQU  | *       |                         |
| 0629 | 75140 | 060034 |       | LDA  | LTEMP+4 | ASK 2114                |
| 0630 | 75141 | 001727 |       | ALF, | ALF     | IF BUFFER               |
| 0631 | 75142 | 030244 |       | IQR  | IBF     | IS FULL                 |
| 0632 | 75143 | 114500 |       | JSB  | S14SC,I |                         |
| 0633 | 75144 | 102311 |       | SFS  | CH2     |                         |
| 0634 | 75145 | 027144 |       | JMP  | *-1     |                         |
| 0635 | 75146 | 102511 |       | LIA  | CH2     |                         |
| 0636 | 75147 | 002002 |       | SZA  |         |                         |
| 0637 | 75150 | 027140 |       | JMP  | ANNC1   | YES                     |
| 0638 | 75151 | 060034 |       | LDA  | LTEMP+4 | NO                      |
| 0639 | 75152 | 001727 |       | ALF, | ALF     |                         |
| 0640 | 75153 | 064255 |       | LDB  | PRIST   | IS THE LP               |
| 0641 | 75154 | 006003 |       | SZB, | RSS     | IN USE?                 |
| 0642 | 75155 | 027160 |       | JMP  | ANNC2   | NO                      |
| 0643 | 75156 | 150001 |       | CPA  | B,I     | YES - IF THIS USER HAS  |
| 0644 | 75157 | 027163 |       | JMP  | ANNC3   | LP, DO NOT SEND MESSAGE |
| 0645 | 75160 | 030220 | ANNC2 | IQR  | OCR     |                         |
| 0646 | 75161 | 030032 |       | IQR  | LTEMP+2 |                         |
| 0647 | 75162 | 114500 |       | JSB  | S14SC,I | OUTPUT CHAR             |
| 0648 | 75163 | 034034 | ANNC3 | ISZ  | LTEMP+4 | BUMP PORT *             |
| 0649 | 75164 | 034033 |       | ISZ  | LTEMP+3 | ALL PORTS DONE?         |
| 0650 | 75165 | 027140 |       | JMP  | ANNC1   | NO                      |
| 0651 | 75166 | 127132 |       | JMP  | ANNCH,I | YES                     |
| 0652 | 75167 | 000101 | ANN,A | OCT  | 101     |                         |
| 0653 | 75170 | 000114 | ANN,L | OCT  | 114     |                         |
| 0654 | 75171 | 026031 | ANNJM | JMP  | T35C0   |                         |
| 0655 | 75172 |        | SANN  | EQU  | *       |                         |

0657\* RESET ALLOWS A USER'S TIME-TO-DATE ENTRY TO BE MODIFIED.  
 0658\* THE FORMAT IS AS FOLLOWS:  
 0659\*  
 0660\* RESET=ALL ALL TIMES ARE SET TO ZERO  
 0661\*  
 0662\* RESET-ID SPECIFIED USER'S TIME SET TO ZERO  
 0663\*  
 0664\* RESET-ID,TIME SPECIFIED ID SET TO SPECIFIED TIME.  
 0665\*

|       |       |        |               |                                  |
|-------|-------|--------|---------------|----------------------------------|
| 0667  | 75000 |        | ORG LIBRA     |                                  |
| 0668* |       |        |               |                                  |
| 0669  | 75000 | 002400 | CLA           | INITIALIZE ID TO 0.              |
| 0670  | 75001 | 070052 | STA ID        |                                  |
| 0671  | 75002 | 070031 | STA REST      | INITIALIZE TIME ALSO.            |
| 0672  | 75003 | 114572 | JSB T35CH,I   | GET 1ST CHAR.                    |
| 0673  | 75004 | 026275 | JMP LFRER     | CR = = NO PARAMETERS             |
| 0674* |       |        |               |                                  |
| 0675  | 75005 | 053160 | CPA RESCA     | "A" ?                            |
| 0676  | 75006 | 027115 | JMP RESX1     | YES                              |
| 0677  | 75007 | 003400 | CGA           | BACKSPACE                        |
| 0678  | 75010 |        | RESXE EQU *   |                                  |
| 0679  | 75010 | 040054 | ADA T35CP     | BUFFER POINTER.                  |
| 0680  | 75011 | 070054 | STA T35CP     |                                  |
| 0681* |       |        |               |                                  |
| 0682  | 75012 | 016315 | JSB GETID     | GET THE ID.                      |
| 0683  | 75013 | 027133 | JMP RES2      | GO GET TIME--NO CARRIAGE RETURN. |
| 0684* |       |        |               |                                  |
| 0685  | 75014 |        | RES1 EQU *    |                                  |
| 0686  | 75014 | 164076 | LDB IDLNP,I   | SET DRUM TRANSFER LENGTH         |
| 0687  | 75015 | 074072 | STB WORD      |                                  |
| 0688  | 75016 | 101023 | ASR 3         | SET RESC=# OF ENTRIES -1.        |
| 0689  | 75017 | 044351 | ADB ,-1       |                                  |
| 0690  | 75020 | 074030 | STB RESC      |                                  |
| 0691  | 75021 | 160075 | LDA IDLCP,I   | INITIATE DRUM                    |
| 0692  | 75022 | 064566 | LDB LIBDI     | TRANSFER.                        |
| 0693  | 75023 | 016231 | JSB DRUML     |                                  |
| 0694  | 75024 | 116015 | JSB SICKP,I   | DRUM ERROR, GO DIE GRACEFULLY    |
| 0695* |       |        |               |                                  |
| 0696  | 75025 | 064562 | LDB LIBD      |                                  |
| 0697  | 75026 | 060052 | LDA ID        |                                  |
| 0698  | 75027 | 002003 | SZA,RSS       | IF ID=0 WE WANT TO CLEAR         |
| 0699  | 75030 | 027105 | JMP RES4      | ALL TIMERS.                      |
| 0700* |       |        |               |                                  |
| 0701  | 75031 | 034030 | RES5 ISZ RESC | SEARCH IDT FOR CORRECT ENTRY.    |
| 0702  | 75032 | 027046 | JMP RES51     | TEST ENTRY                       |
| 0703* |       |        |               |                                  |
| 0704  | 75033 | 063163 | LDA RESER     | GET ERROR MESSAGE POINTER        |
| 0705  | 75034 | 070050 | STA MOVES     | SET UP FOR MOVE ROUTINE          |
| 0706  | 75035 | 060305 | LDA T35B1     |                                  |
| 0707  | 75036 | 070051 | STA MOVED     |                                  |
| 0708  | 75037 | 064336 | LDB RESES     | GET CHARACTER COUNT              |
| 0709  | 75040 | 005100 | BRS           |                                  |
| 0710  | 75041 | 016257 | JSB MOVEW     |                                  |

|       |       |        |              |                             |
|-------|-------|--------|--------------|-----------------------------|
| 0711  | 75042 | 060336 | LDA RESES    | GET CHAR COUNT              |
| 0712  | 75043 | 003004 | CMA, INA     | MAKE NEGATIVE CHAR COUNT    |
| 0713  | 75044 | 067163 | LDB RESER    |                             |
| 0714  | 75045 | 026271 | JMP LEND+2   |                             |
| 0715* |       |        |              |                             |
| 0716  | 75046 |        | RES51 EQU *  |                             |
| 0717  | 75046 | 150001 | CPA 1, I     | IS THIS THE ENTRY?          |
| 0718  | 75047 | 027052 | JMP **3      | YES.                        |
| 0719  | 75050 | 044362 | ADB .+8      |                             |
| 0720  | 75051 | 027031 | JMP RES5     |                             |
| 0721* |       |        |              |                             |
| 0722  | 75052 | 044357 | ADB .+5      | SET IN                      |
| 0723  | 75053 | 060031 | LDA REST     | NEW TIME.                   |
| 0724  | 75054 | 170001 | STA 1, I     |                             |
| 0725* |       |        |              |                             |
| 0726  | 75055 |        | RES6 EQU *   |                             |
| 0727  | 75055 | 160076 | LDA IDLNP, I | WRITE ID                    |
| 0728  | 75056 | 070072 | STA WORD     | TABLE BACK.                 |
| 0729  | 75057 | 160075 | LDA IDLCP, I |                             |
| 0730  | 75060 | 064562 | LDB LIBD     |                             |
| 0731  | 75061 | 016231 | JSB DRUML    |                             |
| 0732  | 75062 | 027102 | JMP RES62    | DRUM ERROR                  |
| 0733  | 75063 | 060052 | LDA ID       | CHECK FOR ALL               |
| 0734  | 75064 | 002002 | SZA          |                             |
| 0735  | 75065 | 026267 | JMP LEND     |                             |
| 0736  | 75066 |        | RES61 EQU *  |                             |
| 0737  | 75066 | 060076 | LDA IDLNP    | ADVANCE ID TABLE POINTERS   |
| 0738  | 75067 | 040355 | ADA .+3      |                             |
| 0739  | 75070 | 070076 | STA IDLNP    |                             |
| 0740  | 75071 | 060075 | LDA IDLCP    |                             |
| 0741  | 75072 | 040355 | ADA .+3      |                             |
| 0742  | 75073 | 070075 | STA IDLCP    |                             |
| 0743  | 75074 | 053162 | CPA RESLE    | CHECK FOR ALL ID TRACKS     |
| 0744  | 75075 | 026267 | JMP LEND     | DONE                        |
| 0745  | 75076 | 160075 | LDA IDLCP, I | CHECK TO SEE IF THE TRACK   |
| 0746  | 75077 | 002003 | SZA, RSS     | HAS BEEN ASSIGNED           |
| 0747  | 75100 | 027066 | JMP RES61    | NO, SKIP IT                 |
| 0748  | 75101 | 027014 | JMP RES1     | NO                          |
| 0749  | 75102 |        | RES62 EQU *  |                             |
| 0750  | 75102 | 060075 | LDA IDLCP    |                             |
| 0751  | 75103 | 164076 | LDB IDLNP, I |                             |
| 0752  | 75104 | 116016 | JSB SALVP, I |                             |
| 0753* |       |        |              |                             |
| 0754  | 75105 | 044357 | RES4 ADB .+5 | CLEAR ALL TIMERS.           |
| 0755  | 75106 | 060031 | LDA REST     | GET TIME                    |
| 0756  | 75107 |        | RES42 EQU *  |                             |
| 0757  | 75107 | 034030 | ISZ RESC     | TEST FOR ANY MORE.          |
| 0758  | 75110 | 002001 | RSS          |                             |
| 0759  | 75111 | 027055 | JMP RES6     | GO WRITE IDI BACK OUT.      |
| 0760  | 75112 | 170001 | STA 1, I     | STORE TIME                  |
| 0761  | 75113 | 044362 | ADB .+8      | BUMP ADDRESS TO NEXT ENTRY. |
| 0762  | 75114 | 027107 | JMP RES42    | LOOP                        |
| 0763* |       |        |              |                             |
| 0764  | 75115 |        | RESX1 EQU *  |                             |
| 0765  | 75115 | 114572 | JSB T35CH, I | GET NEXT CHARACTER          |

|       |                  |        |       |                           |                              |
|-------|------------------|--------|-------|---------------------------|------------------------------|
| 0766  | 75116            | 026275 |       | JMP LFRER                 | ERROR, NOT ENOUGH CHARACTERS |
| 0767  | 75117            | 053161 |       | CPA RESCL                 | "L" ?                        |
| 0768  | 75120            | 027123 |       | JMP RESX2                 | YES                          |
| 0769  | 75121            | 060350 |       | LDA .-2                   |                              |
| 0770  | 75122            | 027010 |       | JMP RESXE                 | GO TRY TO PACK ID            |
| 0771  | 75123            |        | RESX2 | EQU *                     |                              |
| 0772  | 75123            | 016370 |       | JSB GTIL                  | SET UP IDLNP & IDLCP         |
| 0773  | 75124            | 114572 |       | JSB T35CH,I               | GET ANOTHER                  |
| 0774  | 75125            | 026275 |       | JMP LFRER                 | ERROR, NOT ENOUGH CHARACTERS |
| 0775  | 75126            | 053161 |       | CPA RESCL                 | "L" ?                        |
| 0776  | 75127            | 027131 |       | JMP RESX3                 | YES, RESET ALL USERS         |
| 0777  | 75130            | 026275 |       | JMP LFRER                 | NOT "ALL" OR LEGAL ID        |
| 0778  | 75131            |        | RESX3 | EQU *                     |                              |
| 0779  | 75131            | 114572 |       | JSB T35CH,I               | GET ANOTHER CHARACTER        |
| 0780  | 75132            | 027014 |       | JMP RES1                  | CR, RESET TO ZERO            |
| 0781* |                  |        |       |                           |                              |
| 0782* | COMPUTE THE TIME |        |       |                           |                              |
| 0783* |                  |        |       |                           |                              |
| 0784  | 75133            | 050426 | RES2  | CPA .+540                 | TEST FOR COMMA               |
| 0785  | 75134            | 114572 |       | JSB T35CH,I               | COMMA OK--GET NEXT CHAR.     |
| 0786  | 75135            | 026275 |       | JMP LFRER                 | ERROR IF NONE.               |
| 0787  | 75136            | 027141 |       | JMP **3                   |                              |
| 0788  | 75137            | 114572 | RES3  | JSB T35CH,I               | GET NEXT CHAR.               |
| 0789  | 75140            | 027014 |       | JMP RES1                  |                              |
| 0790  | 75141            | 040316 |       | ADA M72B                  | TEST FOR DIGIT.              |
| 0791  | 75142            | 002021 |       | SSA,RSS                   |                              |
| 0792  | 75143            | 026275 |       | JMP LFRER                 | ERROR.                       |
| 0793  | 75144            | 040364 |       | ADA .+10                  |                              |
| 0794  | 75145            | 002120 |       | CLE,SSA                   |                              |
| 0795  | 75146            | 026275 |       | JMP LFRER                 | ERROR.                       |
| 0796  | 75147            | 070032 |       | STA RESD                  | SAVE DIGIT.                  |
| 0797  | 75150            | 060031 |       | LDA REST                  | GET PARTIAL RESULT.          |
| 0798  | 75151            | 100200 |       | MPY .+10                  | COMPUTE NEW VALUE.           |
|       |                  | 75152  |       |                           |                              |
| 0799  | 75153            | 040032 |       | ADA RESD                  | ADD IN NEW DIGIT.            |
| 0800  | 75154            | 070031 |       | STA REST                  | SAVE NEW RESULT.             |
| 0801  | 75155            | 006043 |       | SEZ,SZB,RSS               | TEST FOR OVERFLOW.           |
| 0802  | 75156            | 027137 |       | JMP RES3                  |                              |
| 0803  | 75157            | 026275 |       | JMP LFRER                 | ERROR.                       |
| 0804* |                  |        |       |                           |                              |
| 0805  | 75160            | 000101 | RESCA | OCT 101                   | ASCII "A"                    |
| 0806  | 75161            | 000114 | RESCL | OCT 114                   | ASCII "L"                    |
| 0807  | 75162            | 000112 | RESLE | DEF IDEC+10               |                              |
| 0808  | 75163            | 075164 | RESER | DEF **1                   |                              |
| 0809  | 75164            | 005116 |       | OCT 5116                  |                              |
| 0810  | 75165            | 047440 |       | ASC 5,0 SUCH ID           |                              |
|       |                  | 75166  |       |                           |                              |
|       |                  | 75167  |       |                           |                              |
|       |                  | 75170  |       |                           |                              |
|       |                  | 75171  |       |                           |                              |
| 0811  | 00336            |        | RESES | EQU .+RESER-**+RESEH-**+2 |                              |
| 0812* |                  |        |       |                           |                              |
| 0813  | 00030            |        | RESC  | EQU LTEMP                 |                              |
| 0814  | 00031            |        | REST  | EQU LTEMP+1               |                              |
| 0815  | 00032            |        | RESD  | EQU LTEMP+2               |                              |



0816 75172

\$RES EQU \*

0002\* THE CHANGEID COMMAND CAN BE USED TO MODIFY THE PARAMETERS IN AN  
 0003\* ID ENTRY. THE MODIFIABLE ENTRIES ARE THE PASSWORD, TIME ALLOWED,  
 0004\* AND DISC ALLOWED. THE POSSIBLE FORMATS ARE:

- 0005\*
- 0006\* CHANGEID=ID,PASSWORD,TIME,DISC
- 0007\* CHANGEID=ID,PASSWORD,TIME
- 0008\* CHANGEID=ID,PASSWORD,,DISC
- 0009\* CHANGEID=ID,,TIME,DISC
- 0010\* CHANGEID=ID,PASSWORD
- 0011\* CHANGEID=ID,,TIME
- 0012\* CHANGEID=ID,,,DISC

```

0014 75000 ORG LIBRA

0016 75000 016315 JSB GETID GET ID ENTRY.
0017 75001 002001 RSS SKIP TO COMMA TEST.
0018 75002 026275 JMP LFRER FAIL IF NOTHING FOLLOWS.
0019 75003 050426 CPA ,+54B TEST FOR COMMA FOLLOWING.
0020 75004 002001 RSS OK.
0021 75005 026275 JMP LFRER FAIL IF NO COMMA FOLLOWS.
0022*
0023 75006 160076 LDA IDLNP,I READ IN THE IDT
0024 75007 070072 STA WORD
0025 75010 160075 LDA IDLCP,I
0026 75011 064566 LDB LIBDI
0027 75012 016231 JSB DRUML
0028 75013 116015 JSB SICKP,I DRUM ERROR, DIE WITH CLASS
0029*
0030 75014 164076 LDB IDLNP,I SEARCH ID TABLE
0031 75015 007004 CMB,INB FOR CORRECT ID.
0032 75016 044562 ADB LIBD
0033 75017 060052 LDA ID
0034 75020 054562 CHA1 CPB LIBD TEST FOR IDT EXHAUSTED.
0035 75021 027026 JMP CHA2
0036 75022 044342 ADB ,=8 MOVE BACK TO NEXT ENTRY.
0037 75023 150001 CPA 1,I TEST FOR CORRECT ENTRY.
0038 75024 027047 JMP CHA3 FOUND IT.
0039 75025 027020 JMP CHA1
0040*
0041 75026 063040 CHA2 LDA CHA2E OUPUT NO ID MESSAGE.
0042 75027 070050 STA MOVES
0043 75030 060305 LDA T35B1
0044 75031 070051 STA MOVED
0045 75032 064344 LDB ,=6
0046 75033 016257 JSB MOVEW
0047 75034 060365 LDA ,+11
0048 75035 064306 LDB T35B1
0049 75036 114522 JSB TTY35,I
0050 75037 026272 JMP LENDR TERMINATE.
0051 75040 075041 CHA2E DEF ++1
0052 75041 005116 OCT 5116 LF=N
0053 75042 047440 ASC 5,0 SUCH ID
 75043 051525
 75044 041510

```

75045 020111  
75046 042040

0054\*

0055\* B NOW POINTS TO THE CORRECT ID.

0056\*

```

0057 75047 006004 CHA3 INB
0058 75050 074030 STB CHAID
0059 75051 074031 STB CHAI1
0060 75052 114572 JSB T35CH,I
0061 75053 026275 JMP LFRER
0062 75054 050426 CPA .+54B
0063 75055 027115 JMP CHA5
0064 75056 006400 CLB
0065 75057 034030 ISZ CHAID
0066 75060 174030 STB CHAID,I
0067 75061 034030 ISZ CHAID
0068 75062 174030 STB CHAID,I
0069 75063 064031 LDB CHAI1
0070 75064 074030 STB CHAID
0071 75065 064347 LDB .-3
0072 75066 074032 STB CHAC
0073 75067 001727 CHA4 ALF,ALF
0074 75070 170030 STA CHAID,I
0075 75071 114572 JSB T35CH,I
0076 75072 027133 JMP CHAI0
0077 75073 050426 CPA .+54B
0078 75074 027115 JMP CHA5
0079 75075 130030 IOR CHAID,I
0080 75076 170030 STA CHAID,I
0081 75077 034032 ISZ CHAC
0082 75100 002001 RSS
0083 75101 027110 JMP CHA6
0084 75102 034030 ISZ CHAID
0085 75103 114572 JSB T35CH,I
0086 75104 027133 JMP CHAI0
0087 75105 050426 CPA .+54B
0088 75106 027115 JMP CHA5
0089 75107 027067 JMP CHA4

```

SET CHAID TO POINT TO THE  
PASSWORD.  
STORE COPY IN CHAI1.  
GET FIRST CHARACTER OF POSSIBLE  
PASSWORD--ERROR IF NONE.  
IF COMMA, WE DON'T WANT TO  
CHANGE PASSWORD.  
INITIALIZE FASSWORD  
TO NULLS.

SET CHAID TO POINT AT  
PASSWORD AGAIN.  
SET COUNTER FOR 3 WORD  
PASSWORD.  
SET LEFT CHARACTER OF WORD.

GET RIGHT CHARACTER.  
TERMINATE IF CR.  
IF COMMA, WE'RE DONE WITH  
PASSWORD.  
MERGE IN WITH LEFT CHAR.

TEST FOR ALL OF PASSWORD IN.  
NOT ALL IN YET.

BUMP POINTER.  
GET ANOTHER PASSWORD CHARACTER.  
DONE IF CR.  
TEST FOR COMMA.

LOOP.

0090\*

```

0091 75110 114572 CHA6 JSB T35CH,I
0092 75111 027133 JMP CHAI0
0093 75112 050426 CPA .+54B
0094 75113 002001 RSS
0095 75114 026275 JMP LFRER

```

TEST FOR TOO MANY PASSWORD CHARS  
END OF REQUEST.  
TEST COMMA.

FAIL.

0096\*

```

0097 75115 060031 CHA5 LDA CHAI1
0098 75116 040355 ADA .+3
0099 75117 070030 STA CHAID

```

SET CHAID TO POINT TO  
TIME ALLOWED.

0100\*

```

0101 75120 114572 JSB T35CH,I
0102 75121 026275 JMP LFRER
0103 75122 050426 CPA .+54B
0104 75123 002001 RSS
0105 75124 017145 JSB CHA#
0106 75125 034030 ISZ CHAIU

```

GET 1ST CHAR OF POSSIBLE TIME.  
ERROR IF NONE.  
IF COMMA, GO TO DO DISC PART.

OTHERWISE GET NEW ALLOTTED TIME.  
SET POINTER TO ALLOTTED DISC

```

0107 75126 034030 ISZ CHAID SPACE.
0108 75127 114572 JSB T35CH,I GET FIRST DIGIT OF DISC.
0109 75130 026275 JMP LFRER FAIL IF NONE.
0110 75131 017145 JSB CHA# COMPUTE IT.
0111 75132 026275 JMP LFRER RETURN HERE IS ILLEGAL.
0112*
0113 75133 CHA10 EQU *
0114 75133 160076 LDA IDLNP,I WRITE OUT THE NEW ID TABLE
0115 75134 070072 STA WORD
0116 75135 160075 LDA IDLCP,I
0117 75136 064562 LDB LIBD
0118 75137 016231 JSB DRUML
0119 75140 002001 RSS
0120 75141 026267 JMP LEND TERMINATE.
0121*
0122 75142 060075 LDA IDLCP
0123 75143 164076 LDB IDLNP,I
0124 75144 118016 JSB SALVP,I
0125*
0126* CHA# SCANS THE INPUT BUFFER FOR A # FROM 0 TO 65535. IF IT FINDS
0127* ONE, IT STORES IT IN CHAID,I. IF NO CHARACTER FOLLOWS THE #,
0128* CHA# TRANSFERS TO CHA10. IF A COMMA FOLLOWS IT RETURNS. IF AN
0129* ERROR IS FOUND, IT TRANSFERS TO LFRER. THE 1ST CHARACTER OF
0130* THE NUMBER IS IN A UPON ENTRY.

0132 75145 000000 CHA# NOP
0133 75146 006400 CLB INITIALIZE # TO ZERO.
0134 75147 174030 STB CHAID,I
0135 75150 040316 CHA7 ADA M72B TEST FOR DIGIT.
0136 75151 002021 SSA,RSS
0137 75152 026275 JMP LFRER FAIL.
0138 75153 040364 ADA ,+10
0139 75154 002020 SSA
0140 75155 026275 JMP LFRER FAIL.
0141 75156 070033 STA CHAD SAVE DIGIT.
0142 75157 160030 LDA CHAID,I GET OLD VALUE.
0143 75160 100200 MPY ,+10 * 10
 75161 000364
0144 75162 000040 CLE
0145 75163 040033 ADA CHAD + NEW DIGIT.
0146 75164 006043 SEZ,SZB,RSS TEST FOR OVERFLOW.
0147 75165 002001 RSS OK
0148 75166 026275 JMP LFRER FAIL
0149 75167 170030 STA CHAID,I STORE AGAIN.
0150 75170 114572 JSB T35CH,I GET NEXT CHAR.
0151 75171 027133 JMP CHA10 DONE IF CR.
0152 75172 050426 CPA ,+54B RETURN IF COMMA.
0153 75173 127145 JMP CHA#,I
0154 75174 027150 JMP CHA7 ELSE LOOP.

0156 00030 CHAID EQU LTEMP
0157 00031 CHA11 EQU LTEMP+1
0158 00032 CHAC EQU LTEMP+2
0159 00033 CHAD EQU LTEMP+3
0160 75175 SCHA EQU *

```

0162\* THE SLEEP COMMAND IS A SYSTEM COMMAND WHICH IS USED FOR SYSTEM  
 0163\* SHUTDOWN. THE SLEEP ROUTINE PERFORMS THE FOLLOWING FUNCTIONS:

0164\*

- 0165\* 1) PLACE ALL USERS IN DISCONNECT MODE.  
 0166\* 2) OUTPUT SPECIFIED MESSAGE TO ALL TERMINALS.  
 0167\* 3) DISCONNECT ALL USERS.  
 0168\* 4) LOG OFF ALL ACTIVE USERS.  
 0169\* 5) FIXUP ALL USER TRACKS AND FUSS.  
 0170\* 6) GARBAGE COLLECT LIBRARY.  
 0171\* 7) DUMP SYSTEM TO MAG TAPE.

```

0173 75000 ORG LIBRA
0174 75000 103100 CLF 0
0175 75001 027030 JMP SLERE
0176 75002 000000 BSS 22 ROOM FOR HIBERNATE CODE
0177 75030 SLERE EQU *
0178 75030 063425 LDA SLEST
0179 75031 070010 STA CH1 WIPE OUT RECEIVE CHANNEL
0180 75032 002400 CLA
0181 75033 072044 STA T35C1 NO DEBLANKING
0182 75034 170634 STA DCLC1,I
0183 75035 060272 LDA MLINK
0184 75036 070300 STA T35LK
0185 75037 064546 LDB DTTY0
0186 75040 060444 SLE1 LDA DFCHK CLEAR
0187 75041 110001 AND 1,I BIT FLAG
0188 75042 170001 STA 1,I WORD
0189 75043 044366 ADB ,+?STAT
0190 75044 060350 LDA XDISC SET STATUS
0191 75045 170001 STA 1,I TO ABORT
0192 75046 044337 ADB ,+?TNUM-?STAT
0193 75047 160001 LDA B,I GET TTY NUMBER
0194 75050 030241 IOR KAO
0195 75051 114500 JSB S14SC,I KILL OUTPUT
0196 75052 044374 ADB ,+?TNUM+TTY01-TTY00
0197 75053 054550 CPB DTT32 FINISHED ALL USERS?
0198 75054 002001 RSS YES
0199 75055 027040 JMP SLE1 NO
0200 75056 160640 LDA DCLC2,I
0201 75057 170634 STA DCLC1,I
0202 75060 060662 LDA ONE1 OUTPUT
0203 75061 064666 LDB DEH LINE FEED
0204 75062 114522 JSB TTY35,I

```

0205\*

0206\* REMOVE USER, IF ANY, FROM THE LINE PRINTER

0207\*

```

0208 75063 060247 LDA LPD GET OPCODE
0209 75064 114500 JSB S14SC,I TELL I/O PROCESSOR

```

0210\*

0211\* OUTPUT SLEEP MESSAGE TO ALL ACTIVE TERMINALS.

0212\*

```

0213 75065 060367 LDA ,+15B FIRST OUTPUT CR-LF-LF
0214 75066 017402 JSB SLECH
0215 75067 060364 LDA ,+12B

```

|       |                         |        |      |                   |                              |
|-------|-------------------------|--------|------|-------------------|------------------------------|
| 0216  | 75070                   | 017402 |      | JSB SLECH         |                              |
| 0217  | 75071                   | 060364 |      | LDA .+12B         |                              |
| 0218  | 75072                   | 017402 |      | JSB SLECH         |                              |
| 0219* |                         |        |      |                   |                              |
| 0220  | 75073                   | 016025 |      | JSB T35C0         | GET INPUT CHARACTER.         |
| 0221  | 75074                   | 027077 |      | JMP ++3           | END OF INPUT                 |
| 0222  | 75075                   | 017402 |      | JSB SLECH         |                              |
| 0223  | 75076                   | 027073 |      | JMP +-3           |                              |
| 0224* |                         |        |      |                   |                              |
| 0225  | 75077                   | 017402 |      | JSB SLECH         | FOLLOW BY ANOTHER CRLF.      |
| 0226  | 75100                   | 060364 |      | LDA .+12B         |                              |
| 0227  | 75101                   | 017402 |      | JSB SLECH         |                              |
| 0228  | 75102                   | 060364 |      | LDA .+12B         |                              |
| 0229  | 75103                   | 017402 |      | JSB SLECH         |                              |
| 0230* |                         |        |      |                   |                              |
| 0231  | 75104                   | 064546 |      | LDB DTTY0         |                              |
| 0232  | 75105                   | 006004 |      | INB               |                              |
| 0233  | 75106                   | 060317 |      | LDA M32           |                              |
| 0234  | 75107                   | 070031 |      | STA LTEMP+1       |                              |
| 0235  | 75110                   | 060232 | SLE0 | LDA HUU           | HANG UP                      |
| 0236  | 75111                   | 130001 |      | IOR 1,I           | ALL                          |
| 0237  | 75112                   | 114500 |      | JSB S14SC,I       | USERS                        |
| 0238  | 75113                   | 044375 |      | ADB .+TTY01-TTY00 |                              |
| 0239  | 75114                   | 034031 |      | ISZ LTEMP+1       | FINISHED ALL USERS?          |
| 0240  | 75115                   | 027110 |      | JMP SLE0          | NO                           |
| 0241* |                         |        |      |                   |                              |
| 0242* | UPDATE LAST CHANGE DATE |        |      |                   |                              |
| 0243* |                         |        |      |                   |                              |
| 0244  | 75116                   | 002400 |      | CLA               | BLOCK CLOCK.                 |
| 0245  | 75117                   | 170634 |      | STA DCLC1,I       |                              |
| 0246  | 75120                   | 064546 |      | LDB DTTY0         |                              |
| 0247  | 75121                   |        | SLE7 | EQU *             |                              |
| 0248  | 75121                   | 074030 |      | STB LTEMP         |                              |
| 0249  | 75122                   | 160030 |      | LDA LTEMP,I       |                              |
| 0250  | 75123                   | 010444 |      | AND DFCHK         |                              |
| 0251  | 75124                   | 002003 |      | SZA,RSS           | DATE NEED UPDATING?          |
| 0252  | 75125                   | 027145 |      | JMP SLE8          | NO                           |
| 0253  | 75126                   | 044355 |      | ADB .+?PROG       | YES                          |
| 0254  | 75127                   | 160001 |      | LDA B,I           |                              |
| 0255  | 75130                   | 003000 |      | CMA               |                              |
| 0256  | 75131                   | 041221 |      | ADA USE           |                              |
| 0257  | 75132                   | 070072 |      | STA WORD          |                              |
| 0258  | 75133                   | 044351 |      | ADB .+?DISC=?PROG |                              |
| 0259  | 75134                   | 160001 |      | LDA B,I           |                              |
| 0260  | 75135                   | 065222 |      | LDB USEI          |                              |
| 0261  | 75136                   | 016231 |      | JSB DRUML         | READ PROGRAM FROM SWAP TRACK |
| 0262  | 75137                   | 027145 |      | JMP SLE8          | ERROR                        |
| 0263  | 75140                   | 061502 |      | LDA FCNTR         |                              |
| 0264  | 75141                   | 003004 |      | CMA,INA           |                              |
| 0265  | 75142                   | 064030 |      | LDB LTEMP         |                              |
| 0266  | 75143                   | 044356 |      | ADB .+?ID         |                              |
| 0267  | 75144                   | 117424 |      | JSB LSD,I         | UPDATE LAST CHANGE DATE      |
| 0268  | 75145                   |        | SLE8 | EQU *             |                              |
| 0269  | 75145                   | 064030 |      | LDB LTEMP         |                              |
| 0270  | 75146                   | 002400 |      | CLA               |                              |

|       |                                         |        |                   |                                  |
|-------|-----------------------------------------|--------|-------------------|----------------------------------|
| 0271  | 75147                                   | 170001 | STA B,I           | ZERO BIT FLAG WORD               |
| 0272  | 75150                                   | 044375 | ADB ,+TTY01-TTY00 |                                  |
| 0273  | 75151                                   | 054550 | CPB DTT32         | FINISHED ALL TTYS?               |
| 0274  | 75152                                   | 002001 | RSS               | YES                              |
| 0275  | 75153                                   | 027121 | JMP SLE7          | NO                               |
| 0276* |                                         |        |                   |                                  |
| 0277* | NOW WE HAVE TO LOG OFF ALL ACTIVE USER. |        |                   |                                  |
| 0278* |                                         |        |                   |                                  |
| 0279  | 75154                                   | 160640 | LDA DCLC2,I       | UNBLOCK CLOCK.                   |
| 0280  | 75155                                   | 170634 | STA DCLC1,I       |                                  |
| 0281  | 75156                                   | 064546 | LDB DTTY0         | SEARCH USER TABLES.              |
| 0282  | 75157                                   | 044356 | ADB ,+?ID         | FOR ACTIVE IDS.                  |
| 0283  | 75160                                   | 060317 | LDA M32           |                                  |
| 0284  | 75161                                   | 070030 | STA LTEMP         |                                  |
| 0285  | 75162                                   | 160001 | LDA 1,I           | GET ID.                          |
| 0286  | 75163                                   | 002003 | SZA,RSS           | TEST FOR ACTIVE.                 |
| 0287  | 75164                                   | 027306 | JMP SLE3          | NOT ACTIVE.                      |
| 0288  | 75165                                   | 074031 | STB LTEMP+1       | SAVE POINTER.                    |
| 0289* |                                         |        |                   |                                  |
| 0290* | COMPUTE TIME USED.                      |        |                   |                                  |
| 0291* |                                         |        |                   |                                  |
| 0292  | 75166                                   | 044356 | ADB ,+?TIME-?ID   |                                  |
| 0293  | 75167                                   | 104200 | OLD 1,I           | GET STARTING TIME                |
|       | 75170                                   | 100001 |                   |                                  |
| 0294  | 75171                                   | 003004 | CMA,INA           | SET BOTH PARTS NEGATIVE.         |
| 0295  | 75172                                   | 007004 | CMB,INB           |                                  |
| 0296  | 75173                                   | 103100 | CLF 0             |                                  |
| 0297  | 75174                                   | 040201 | ADA DATIM         | A## OF MRS. USED.                |
| 0298  | 75175                                   | 000040 | CLE               |                                  |
| 0299  | 75176                                   | 044202 | ADB DATIM+1       | B## OF UNITS, WITH OVERFLOW IN E |
| 0300  | 75177                                   | 102100 | STF 0             |                                  |
| 0301  | 75200                                   | 074032 | STB LTEMP+2       | SAVE # OF UNITS.                 |
| 0302  | 75201                                   | 100200 | MPY D00           | HRS##> MINS.                     |
|       | 75202                                   | 000724 |                   |                                  |
| 0303  | 75203                                   | 070033 | STA LTEMP+3       |                                  |
| 0304  | 75204                                   | 060032 | LDA LTEMP+2       | GET UNIT COUNT; IF E=0 THEN      |
| 0305  | 75205                                   | 002041 | SEZ,RSS           | COUNT AS NEGATIVE                |
| 0306  | 75206                                   | 007400 | CCB               |                                  |
| 0307  | 75207                                   | 100400 | DIV D600          | CHANGE TO MINUTES.               |
|       | 75210                                   | 000456 |                   |                                  |
| 0308  | 75211                                   | 040033 | ADA LTEMP+3       | ADD IN OTHER MINUTES.            |
| 0309  | 75212                                   | 070032 | STA LTEMP+2       | TOTAL IN LTEMP(2).               |
| 0310* |                                         |        |                   |                                  |
| 0311* | SEARCH IDT FOR USER.                    |        |                   |                                  |
| 0312* |                                         |        |                   |                                  |
| 0313  | 75213                                   | 160031 | LDA LTEMP+1,I     | GET THIS CLODS ID CODE           |
| 0314  | 75214                                   | 070052 | STA ID            |                                  |
| 0315  | 75215                                   | 016370 | JSB GTIL          | FIND WHICH IDT TRACK IT'S ON     |
| 0316  | 75216                                   | 160076 | LDA IDLNP,I       | GET LENGTH                       |
| 0317  | 75217                                   | 070072 | STA WORD          | FOR DRUM DRIVER                  |
| 0318  | 75220                                   | 160075 | LDA IDLCP,I       |                                  |
| 0319  | 75221                                   | 064566 | LDB LIBDI         |                                  |
| 0320  | 75222                                   | 016231 | JSB DRUML         | READ IN APPROPRIATE IDT TRACK    |
| 0321  | 75223                                   | 116015 | JSB SICKP,I       | CAN'T, DIE, KEEPING CHARISMA     |
| 0322  | 75224                                   | 160031 | LDA LTEMP+1,I     | GET ID AGAIN.                    |

|       |                   |        |                   |                               |
|-------|-------------------|--------|-------------------|-------------------------------|
| 0323  | 75225             | 064562 | LDB LIBD          | GET IDT POINTER,              |
| 0324  | 75226             | 150001 | CPA 1,1           |                               |
| 0325  | 75227             | 027232 | JMP **3           |                               |
| 0326  | 75230             | 044362 | ADB .+8           |                               |
| 0327  | 75231             | 027226 | JMP **3           |                               |
| 0328* |                   |        |                   |                               |
| 0329* | UPDATE IDT ENTRY, |        |                   |                               |
| 0330* |                   |        |                   |                               |
| 0331  | 75232             | 044357 | ADB .+5           | COMPUTER NEW TOTAL TIME,      |
| 0332  | 75233             | 000040 | CLE               |                               |
| 0333  | 75234             | 160001 | LDA 1,I           |                               |
| 0334  | 75235             | 040032 | ADA LTEMP+2       |                               |
| 0335  | 75236             | 002040 | SEZ               | IF OVERFLOW,                  |
| 0336  | 75237             | 003400 | CCA               | USE MAXIMUM.                  |
| 0337  | 75240             | 170001 | STA 1,I           |                               |
| 0338* |                   |        |                   |                               |
| 0339  | 75241             | 060604 | LDA LOGCT         | CHECK FOR ROOM IN LOG TABLE,  |
| 0340  | 75242             | 050412 | CPA .+32          |                               |
| 0341  | 75243             | 027241 | JMP **2           |                               |
| 0342  | 75244             | 060620 | LDA LOGP2         | SET LOGP2 TO NEXT LOCATION IN |
| 0343  | 75245             | 002004 | INA               | LOG TABLE.                    |
| 0344  | 75246             | 050630 | CPA LOGND         |                               |
| 0345  | 75247             | 060626 | LDA LOGBG         |                               |
| 0346  | 75250             | 070620 | STA LOGP2         |                               |
| 0347  | 75251             | 160031 | LDA LTEMP+1,I     | PLACE ID IN LOG TABLE,        |
| 0348  | 75252             | 031036 | IOR BIT15         |                               |
| 0349  | 75253             | 170620 | STA LOGP2,I       |                               |
| 0350  | 75254             | 034620 | ISZ LOGP2         |                               |
| 0351  | 75255             | 104200 | DLD DATIM         | COMPUTE TIME OF DAY,          |
|       | 75256             | 000201 |                   |                               |
| 0352  | 75257             | 074032 | STB LTEMP+2       | SAVE UNIT COUNTER             |
| 0353  | 75260             | 006400 | CLB               | GET NO OF HRS.                |
| 0354  | 75261             | 100400 | DIV .+24          |                               |
|       | 75262             | 000402 |                   |                               |
| 0355  | 75263             | 060001 | LDA 1             |                               |
| 0356  | 75264             | 100200 | MPY D60           | CHANGE TO MINS.               |
|       | 75265             | 000724 |                   |                               |
| 0357  | 75266             | 070033 | STA LTEMP+3       | SAVE,                         |
| 0358  | 75267             | 060032 | LDA LTEMP+2       | CHANGE UNITS TO MINS.         |
| 0359  | 75270             | 040704 | ADA D36K          |                               |
| 0360  | 75271             | 100400 | DIV D600          |                               |
|       | 75272             | 000456 |                   |                               |
| 0361  | 75273             | 040033 | ADA LTEMP+3       | COMPUTE TOTAL TIME,           |
| 0362  | 75274             | 001722 | ALF,RAL           | ROTATE                        |
| 0363  | 75275             | 040030 | ADA LTEMP         | ADD IN PORT NO.               |
| 0364  | 75276             | 040412 | ADA .+32          |                               |
| 0365  | 75277             | 170620 | STA LOGP2,I       | STORE IN TABLE.               |
| 0366  | 75300             | 034604 | ISZ LOGCT         | BUMP COUNTER.                 |
| 0367* |                   |        |                   |                               |
| 0368  | 75301             | 160075 | LDA IDLCP,I       |                               |
| 0369  | 75302             | 064562 | LDB LIBD          |                               |
| 0370  | 75303             | 016231 | JSB DRJML         | WRITE OUT MODIFIED IDT TRACK  |
| 0371  | 75304             | 027377 | JMP SLE6          | BLEW IT, TRY TO SALVAGE       |
| 0372  | 75305             | 064031 | LDB LTEMP+1       | GET POINTER AGAIN.            |
| 0373  | 75306             | 044376 | ADB .+TTY01-TTY00 |                               |

SLE3



|       |       |        |      |             |                              |
|-------|-------|--------|------|-------------|------------------------------|
| 0374  | 75307 | 034030 |      | ISZ LTEMP   | TEST FOR DONE.               |
| 0375  | 75310 | 027162 |      | JMP SLE2    |                              |
| 0376* |       |        |      |             |                              |
| 0377* |       |        |      |             |                              |
| 0378  | 75311 | 060604 |      | LDA LOGCT   | WAIT FOR LOG TABLE TO EMPTY. |
| 0379  | 75312 | 002002 |      | SZA         |                              |
| 0380  | 75313 | 027311 |      | JMP **2     |                              |
| 0381  | 75314 | 050313 |      | CPA T35F1   | WAIT FOR TTY TO STOP.        |
| 0382  | 75315 | 002001 |      | RSS         |                              |
| 0383  | 75316 | 027314 |      | JMP **2     |                              |
| 0384* |       |        |      |             |                              |
| 0385* |       |        |      |             |                              |
| 0386* |       |        |      |             |                              |
| 0387  | 75317 | 064210 |      | LDB MHAD    | FIND                         |
| 0388  | 75320 | 044354 |      | ADB .+2     |                              |
| 0389  | 75321 | 160001 | SLE5 | LDA B,I     | AN                           |
| 0390  | 75322 | 160000 |      | LDA A,I     |                              |
| 0391  | 75323 | 002002 |      | SZA         |                              |
| 0392  | 75324 | 027327 |      | JMP **3     | ACTIVE                       |
| 0393  | 75325 | 044360 |      | ADB .+6     |                              |
| 0394  | 75326 | 027321 |      | JMP SLE5    | DISC                         |
| 0395  | 75327 | 044350 |      | ADB .-2     |                              |
| 0396  | 75330 | 104200 |      | OLD B,I     | CONVERT                      |
|       | 75331 | 100001 |      |             |                              |
| 0397  | 75332 | 000065 |      | CLE,ERA     | SECTORS                      |
| 0398  | 75333 | 005540 |      | ERB,CLE     | TO BLOCKS                    |
| 0399  | 75334 | 006004 |      | INB         | GET                          |
| 0400  | 75335 | 002040 |      | SEZ         | BOOTSTRAP                    |
| 0401  | 75336 | 002004 |      | INA         | ADDRESS                      |
| 0402  | 75337 | 104400 |      | DST SLEBA   |                              |
|       | 75340 | 075432 |      |             |                              |
| 0403  | 75341 | 060750 |      | LDA M512    | 512 WORDS IN                 |
| 0404  | 75342 | 070215 |      | STA MWORD   | BOOTSTRAP                    |
| 0405  | 75343 | 063426 |      | LDA SLEBD   | READ                         |
| 0406  | 75344 | 064205 |      | LDB LDBSA   |                              |
| 0407  | 75345 | 045036 |      | ADB BIT15   | BOOTSTRAP                    |
| 0408  | 75346 | 114217 |      | JSB DISCZ,I |                              |
| 0409  | 75347 | 116015 |      | JSB SICKP,I |                              |
| 0410  | 75350 | 060360 |      | LDA .-2     | 2 PARTS                      |
| 0411  | 75351 | 073430 |      | STA SLECT   | TO LOADER                    |
| 0412  | 75352 | 060206 |      | LDA LSTDA   | COMPUTE ADDRESS              |
| 0413  | 75353 | 073431 |      | STA SLETP   | OF SEGMENT TABLE             |
| 0414  | 75354 | 104200 | SLE4 | OLD SLETP,I | GET LENGTH AND CORE ADDRESS  |
|       | 75355 | 175431 |      |             |                              |
| 0415  | 75356 | 070215 |      | STA MWORD   |                              |
| 0416  | 75357 | 037431 |      | ISZ SLETP   |                              |
| 0417  | 75360 | 037431 |      | ISZ SLETP   |                              |
| 0418  | 75361 | 045036 |      | ADB BIT15   |                              |
| 0419  | 75362 | 063431 |      | LDA SLETP   |                              |
| 0420  | 75363 | 114217 |      | JSB DISCZ,I | READ A PORTION OF THE LOADER |
| 0421  | 75364 | 116015 |      | JSB SICKP,I |                              |
| 0422  | 75365 | 037431 |      | ISZ SLETP   |                              |
| 0423  | 75366 | 037431 |      | ISZ SLETP   |                              |
| 0424  | 75367 | 037430 |      | ISZ SLECT   | FINISHED BOTH PARTS?         |
| 0425  | 75370 | 027354 |      | JMP SLE4    | NO                           |

```

0426*
0427 75371 063427 LDA HLT4C YES, SET POWER
0428 75372 070004 STA 4 FAIL TO HALT
0429 75373 107700 CLC 0,C
0430 75374 002400 SLEHI CLA A = 0 SEZ SLEEP
0431 75375 127376 JMP SLECA,I TRANSFER TO LOADER DISC DUMP
0432 75376 020000 SLECA OCT 20000
0433*
0434 75377 060075 SLE6 LDA IDLCP
0435 75400 064072 LDB WORD
0436 75401 116016 JSB SALVP,I
0437*
0438*
0439* SLECH OUTPUTS THE CHARACTER IN A TO ALL ACTIVE
0440* USER TERMINALS.
0441*
0442 75402 000000 SLECH NOP
0443 75403 070030 STA LTEMP SAVE CHARACTER.
0444 75404 060317 LDA M32 SET
0445 75405 070031 STA LTEMP+1 COUNTER.
0446 75406 064546 LDB DTTY0 GET INITIAL POINTER.
0447 75407 044356 ADB .+?ID
0448 75410 160001 SLEC1 LDA 1,I TEST FOR ACTIVE.
0449 75411 002003 SZA,RSS
0450 75412 027420 JMP SLEC2 INACTIVE.
0451 75413 074032 STB LTEMP+2 SAVE POINTER.
0452 75414 060030 LDA LTEMP
0453 75415 044346 ADB .-?ID
0454 75416 114576 JSB OUTCH,I OUTPUT IT.
0455 75417 064032 LDB LTEMP+2 GET ID POINTER AGAIN.
0456 75420 044375 SLEC2 ADB .+TTY01-TTY00
0457 75421 034031 ISZ LTEMP+1 TEST FOR DONE.
0458 75422 027410 JMP SLEC1
0459 75423 127402 JMP SLECH,I
0460*
0461 75424 073353 L8D DEF LCD
0462 75425 103710 SLEST STC CH1,C RESPOND TO 2114 SO NO HANG-UP
0463 75426 075432 SLEBD DEF SLEBA
0464 75427 103004 HLT4C HLT 4,C
0465*
0466 75430 000000 SLECT BSS 1
0467 75431 000000 SLETP BSS 1
0468 75432 000000 SLEBA BSS 2
0469*
0470 75434 SSLE EQU +

```

0472\* THE HIBERNATE COMMAND IS IDENTICAL TO THE SLEEP COMMAND  
 0473\* EXCEPT THAT IT UPDATES THE HDATE WORD IN THE EQUIPMENT TABLE AND  
 0474\* TELLS THE MAG TAPE SLEEP TO DUMP THE ENTIRE SYSTEM TO TAPE.

0475\*

```

0476 75000 ORG LIBRA
0477 75000 103100 CLF 0
0478 75001 060176 LDA MAGSC CHECK FOR MAG TAPE
0479 75002 002002 SZA
0480 75003 027026 JMP HIBA TAPE PRESENT, OKAY
0481*
0482 75004 063017 LDA HIBR1 SET UP
0483 75005 070050 STA MOVES SOURCE
0484 75006 060305 LDA T35B1 AND
0485 75007 070051 STA MOVED DESTINATION
0486 75010 064336 LDB HIBS1 FOR MOVE ROUTINE
0487 75011 005100 BRS MAKE WORD COUNT
0488 75012 016257 JSB MOVEW MOVE MESSAGE INTO BUFFER
0489 75013 060336 LDA HIBS1 LOAD CHARACTER COUNT
0490 75014 003004 CMA,INA
0491 75015 064305 LDB T35B1
0492 75016 026271 JMP LEND+2 PRINT ERROR MESSAGE
0493 75017 075020 HIBR1 DEF *+1
0494 75020 005116 OCT 5116
0495 75021 047440 ASC 5,0 MAG TAPE
 75022 046501
 75023 043440
 75024 052101
 75025 050105
0496 00336 HIBS1 EQU ,+HIBR1-,*+HIBR1-,*+2
0497 75026 HIBA EQU *
0498 75026 060201 LDA DATIM LOAD THE CURRENT TIME AND
0499 75027 070203 STA HDATE SET INTO THE EQUIPMENT TABLE
0500 75374 ORG SLEHI
0501 75374 003400 CCA A * -1 SEZ HIBERNATE

```

0002\* NEWID CREATES NEW ENTRIES IN THE SYSTEM ID TABLE, THE INPUT  
 0003\* FORMAT IS AS FOLLOWS:

0004\*

0005\* NEWID IDCODE, PASSWORD, TIME, DISC

0006\*

0007\* THESE PROVIDE, RESPECTIVELY, WORDS 0, 1-3, 4, AND 6 OF THE ID ENTRY.

0008\* WORDS 5 AND 7 ARE INITIALIZED TO ZERO.

0010 75000 ORG LIBRA

0011\*

0012\* NOW INTERPRET PARAMETERS

0013\*

|      |       |        |           |                 |
|------|-------|--------|-----------|-----------------|
| 0014 | 75000 | 016315 | JSB GETID | GET             |
| 0015 | 75001 | 002001 | RSS       |                 |
| 0016 | 75002 | 026275 | JMP LFRER | ID ENTRY.       |
| 0017 | 75003 | 050426 | CPA ,+54B | TEST FOR COMMA. |
| 0018 | 75004 | 002401 | CLA, RSS  | OK              |
| 0019 | 75005 | 026275 | JMP LFRER | NOT OK          |

0020\*

0021\* INPUT ID=TABLE \*

|      |       |        |              |                        |
|------|-------|--------|--------------|------------------------|
| 0022 | 75006 | 160076 | LDA IDLNP, I | A = LENGTH OF ID TABLE |
| 0023 | 75007 | 070072 | STA WORD     |                        |
| 0024 | 75010 | 160075 | LDA IDLCP, I | CALL DRUM DRIVER TO    |
| 0025 | 75011 | 064566 | LDB LIBDI    | INPUT IDTABLE.         |
| 0026 | 75012 | 044362 | ADB ,+8      |                        |
| 0027 | 75013 | 114770 | JSB DRUM, I  |                        |
| 0028 | 75014 | 064052 | LDB ID       |                        |
| 0029 | 75015 | 074030 | STB LTEMP    |                        |

0030\*

0031\* NOW SCAN PASSWORD

0032\*

|      |       |        |             |  |
|------|-------|--------|-------------|--|
| 0033 | 75016 | 002400 | CLA         |  |
| 0034 | 75017 | 070055 | STA T35LC   |  |
| 0035 | 75020 | 017231 | JSB NEWIP   |  |
| 0036 | 75021 | 070031 | STA LTEMP+1 |  |
| 0037 | 75022 | 017231 | JSB NEWIP   |  |
| 0038 | 75023 | 070032 | STA LTEMP+2 |  |
| 0039 | 75024 | 017231 | JSB NEWIP   |  |
| 0040 | 75025 | 070033 | STA LTEMP+3 |  |

0041\*

0042\* GET THE ALLOWED TIME

0043\*

|      |       |        |              |                  |
|------|-------|--------|--------------|------------------|
| 0044 | 75026 | 060055 | LDA T35LC    | CHECK FOR        |
| 0045 | 75027 | 050426 | CPA ,+54B    | COMMA            |
| 0046 | 75030 | 027030 | JMP NEWI4    |                  |
| 0047 | 75031 | 114572 | JSB T35CH, I | GET NEXT CHAR.   |
| 0048 | 75032 | 026275 | JMP LFRER    |                  |
| 0049 | 75033 | 050426 | CPA ,+54B    | MUST BE A COMMA. |
| 0050 | 75034 | 002001 | RSS          |                  |
| 0051 | 75035 | 026275 | JMP LFRER    |                  |

0052\*

|      |       |        |                 |                       |
|------|-------|--------|-----------------|-----------------------|
| 0053 | 75036 | 017176 | NEWI4 JSB NEWI# | GET THE ALLOTTED TIME |
| 0054 | 75037 | 070034 | STA LTEMP+4     | IN MINUTES.           |
| 0055 | 75040 | 060055 | LDA T35LC       |                       |

|       |       |             |       |         |                                 |
|-------|-------|-------------|-------|---------|---------------------------------|
| 0056  | 75041 | 050426      | CPA   | +,54B   |                                 |
| 0057  | 75042 | 002001      | RSS   |         |                                 |
| 0058  | 75043 | 026275      | JMP   | LFRRR   |                                 |
| 0059* |       |             |       |         |                                 |
| 0060  | 75044 | 017176      | JSB   | NEWI#   | GET THE DISC ALLOWED,           |
| 0061  | 75045 | 070036      | STA   | LTEMP+6 |                                 |
| 0062  | 75046 | 006400      | CLB   |         |                                 |
| 0063  | 75047 | 074035      | STB   | LTEMP+5 |                                 |
| 0064  | 75050 | 074037      | STB   | LTEMP+7 |                                 |
| 0065  | 75051 | 060055      | LDA   | T35LC   | MUST BE END OF                  |
| 0066  | 75052 | 050367      | CPA   | +,15B   | LINE,                           |
| 0067  | 75053 | 002001      | RSS   |         |                                 |
| 0068  | 75054 | 026275      | JMP   | LFRRR   |                                 |
| 0069* |       |             |       |         |                                 |
| 0070  | 75055 | 060261      | LDA   | ENDRM   | TEST FOR DRUM INPUT DONE        |
| 0071  | 75056 | 002020      | SSA   |         |                                 |
| 0072  | 75057 | 027055      | JMP   | +,-2    |                                 |
| 0073  | 75060 | 002002      | SZA   |         |                                 |
| 0074  | 75061 | 116015      | JSB   | SICKP,I | CROAK CREATIVELY                |
| 0075* |       |             |       |         |                                 |
| 0076  | 75062 | 164076      | LDB   | IDLNP,I | SET B TO POINT TO LAST ID ENTRY |
| 0077  | 75063 | 007004      | CMB,  | INB     |                                 |
| 0078  | 75064 | 044562      | ADB   | LIBD    |                                 |
| 0079  | 75065 | 002001      | RSS   |         |                                 |
| 0080  | 75066 |             | NEWI7 | EQU *   |                                 |
| 0081  | 75066 | 044342      | ADB   | .,-8    | POINT TO NEXT ENTRY             |
| 0082  | 75067 | 054562      | CPB   | LIBD    | DONE WITH ID TABLE?             |
| 0083  | 75070 | 027077      | JMP   | NEWI5   | YES,                            |
| 0084  | 75071 | 160001      | LDA   | 1,I     | GET TABLE ID.                   |
| 0085  | 75072 | 040053      | ADA   | MID     | SUBTRACT TEST ID.               |
| 0086  | 75073 | 002003      | SZA,  | RSS     | TEST FOR EQUAL                  |
| 0087  | 75074 | 027140      | JMP   | NEWI6   | GO PRINT MESSAGE.               |
| 0088  | 75075 | 002021      | SSA,  | RSS     | IF LESS WE FOUND A HOLE.        |
| 0089  | 75076 | 027066      | JMP   | NEWI7   | ELSE LOOP.                      |
| 0090  | 75077 |             | NEWI5 | EQU *   |                                 |
| 0091  | 75077 | 160076      | LDA   | IDLNP,I | GET LENGTH                      |
| 0092  | 75100 | 053611      | CPA   | N8192   | CHECK FOR TRACK FULL            |
| 0093  | 75101 | 027252      | JMP   | NWSU    | AND SUPERNEW IF SO              |
| 0094* |       |             |       |         |                                 |
| 0095* | SLIDE | ID TABLE UP |       |         |                                 |
| 0096* |       |             |       |         |                                 |
| 0097  | 75102 | 060562      | LDA   | LIBD    | MOVE THE                        |
| 0098  | 75103 | 070051      | STA   | MOVED   | FIRST PART                      |
| 0099  | 75104 | 040362      | ADA   | .,+8    | OF THE ID                       |
| 0100  | 75105 | 070050      | STA   | MOVES   | TABLE                           |
| 0101  | 75106 | 007004      | CMB,  | INB     | COMPUTE LENGTH OF MOVE.         |
| 0102  | 75107 | 044562      | ADB   | LIBD    |                                 |
| 0103  | 75110 | 016257      | JSB   | MOVEW   |                                 |
| 0104  | 75111 | 060520      | LDA   | DLTEM   | MOVE THE                        |
| 0105  | 75112 | 070050      | STA   | MOVES   | NEW PART                        |
| 0106  | 75113 | 064342      | LDB   | .,-8    | IN.                             |
| 0107  | 75114 | 016257      | JSB   | MOVEW   |                                 |
| 0108  | 75115 | 061230      | LDA   | LIBUS   | SET UP                          |
| 0109  | 75116 | 007400      | CCB   |         | NEW                             |
| 0110  | 75117 | 044075      | ADB   | IDLCP   | FIRST ID                        |

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0111 75120 170001 STA B,I ON TRACK
0112*
0113 75121 160076 LDA IDLNP,I MODIFY IDLENGTH
0114 75122 040342 ADA ,=8
0115 75123 170076 STA IDLNP,I
0116 75124 070072 STA WORD
0117 75125 160075 LDA IDLCP,I OUTPUT
0118 75126 064562 LDB LIBD TO
0119 75127 016231 JSB DRUML DRUM
0120 75130 002001 RSS
0121 75131 026267 JMP LEND
0122 75132 060075 LDA IDLCP
0123 75133 164076 LDB IDLNP,I
0124 75134 116016 JSB SALVP,I
0125*
0126 75135 063155 NEWI2 LDA NEWIA OUTPUT TABLE FULL MESSAGE
0127 75136 064343 LDB NEWIB
0128 75137 027142 JMP NEWI8
0129 75140 063165 NEWI6 LDA NEWIE OUTPUT DUPLICATE ENTRY MESSAGE.
0130 75141 064342 LDB NEWIF
0131*
0132 75142 070050 NEWI8 STA MOVES SET UP FOR MOVE
0133 75143 060305 LDA T35B1 ROUTINE
0134 75144 070051 STA MOVED MOVE STRING
0135 75145 074030 STB LTEMP INTO BUFFER.
0136 75146 016257 JSB MOVEW
0137 75147 060030 LDA LTEMP
0138 75150 001000 ALS
0139 75151 003004 CMA,INA CALL
0140 75152 064305 LDB T35B1 DRIVER.
0141 75153 114522 JSB TTY35,I
0142 75154 026272 JMP LENDR TERMINATE.
0143*
0144* OUTPUT MESSAGES
0145*
0146 75155 075156 NEWIA DEF ++1
0147 75156 005111 OCT 5111
0148 75157 042040 ASC 6,D TABLE FULL
 75160 052101
 75161 041114
 75162 042440
 75163 043125
 75164 046114
0149 00343 NEWI8 EQU ,=++NEWIA+1
0150 75165 075166 NEWIE DEF ++1
0151 75166 005104 OCT 5104
0152 75167 052520 ASC 7,UPLICATE ENTRY
 75170 046111
 75171 041501
 75172 052105
 75173 020106
 75174 047124
 75175 051131
0153 00342 NEWIF EQU ,=++NEWIE+1
0154 75176 000000 NEWI# NOP SCAN FOR A NUMBER.

```

|      |       |        |                 |                              |
|------|-------|--------|-----------------|------------------------------|
| 0155 | 75177 | 002400 | CLA             | INITIALIZE                   |
| 0156 | 75200 | 073630 | STA NEWIT       | TO ZERO.                     |
| 0157 | 75201 | 114672 | JSB T35CH, I    | GET NEXT CHARACTER           |
| 0158 | 75202 | 027227 | JMP NEWIZ       | DONE                         |
| 0159 | 75203 | 040316 | ADA M72B        | TEST FOR DIGIT               |
| 0160 | 75204 | 002021 | SSA, RSS        |                              |
| 0161 | 75205 | 027227 | JMP NEWIZ       | NOT A DIGIT                  |
| 0162 | 75206 | 040364 | ADA ,+10        |                              |
| 0163 | 75207 | 002120 | CLE, SSA        |                              |
| 0164 | 75210 | 027227 | JMP NEWIZ       |                              |
| 0165 | 75211 | 067630 | LDB NEWIT       |                              |
| 0166 | 75212 | 005626 | ELB, ELB        |                              |
| 0167 | 75213 | 005051 | SEZ, SLB, RSS   |                              |
| 0168 | 75214 | 002001 | RSS             |                              |
| 0169 | 75215 | 026275 | JMP LFRER       |                              |
| 0170 | 75216 | 047630 | ADB NEWIT       |                              |
| 0171 | 75217 | 005600 | ELB             |                              |
| 0172 | 75220 | 006051 | SEZ, SLB, RSS   |                              |
| 0173 | 75221 | 002001 | RSS             |                              |
| 0174 | 75222 | 026275 | JMP LFRER       |                              |
| 0175 | 75223 | 040001 | ADA 1           |                              |
| 0176 | 75224 | 002040 | SEZ             |                              |
| 0177 | 75225 | 026275 | JMP LFRER       |                              |
| 0178 | 75226 | 027200 | JMP NEWI#+2     |                              |
| 0179 | 75227 | 063630 | NEWIZ LDA NEWIT |                              |
| 0180 | 75230 | 127176 | JMP NEWI#, I    |                              |
| 0181 | 75231 | 000000 | NEWIP NOP       | GET NEXT 2 PASSWORD LETTERS. |
| 0182 | 75232 | 002400 | CLA             |                              |
| 0183 | 75233 | 064055 | LDB T35LC       | IF LAST CHARACTER A          |
| 0184 | 75234 | 054426 | CPB ,+54B       | COMMA, RETURN ZERO.          |
| 0185 | 75235 | 127231 | JMP NEWIP, I    |                              |
| 0186 | 75236 | 114572 | JSB T35CH, I    | GET NEXT CHAR.               |
| 0187 | 75237 | 026275 | JMP LFRER       |                              |
| 0188 | 75240 | 050426 | CPA ,+54B       | IF A COMMA                   |
| 0189 | 75241 | 027232 | JMP NEWIP+1     |                              |
| 0190 | 75242 | 001727 | ALF, ALF        | SAVE 1ST                     |
| 0191 | 75243 | 073630 | STA NEWIT       | CHAR.                        |
| 0192 | 75244 | 114572 | JSB T35CH, I    |                              |
| 0193 | 75245 | 026275 | JMP LFRER       |                              |
| 0194 | 75246 | 050426 | CPA ,+54B       | IF COMMA TAKE AS             |
| 0195 | 75247 | 002400 | CLA             | ZERO.                        |
| 0196 | 75250 | 043630 | ADA NEWIT       |                              |
| 0197 | 75251 | 127231 | JMP NEWIP, I    |                              |

0198\*  
 0199\* THIS SECTION IS CALLED TO REDISTRIBUTE  
 0200\* THE ID TABLE ACCROSS ALL THREE ID TRACKS.  
 0201\*

|       |       |        |            |                           |
|-------|-------|--------|------------|---------------------------|
| 0202  | 75252 | NWSU   | EQU *      |                           |
| 0203  | 75252 | 074041 | STB NWSV   | SAVE POINTER TO ENTRY     |
| 0204* |       |        |            | PRECEEDING NEW ONE        |
| 0205  | 75253 | 060342 | LDA ,=8    | FIND THE                  |
| 0206  | 75254 | 040102 | ADA IDEC+2 | TOTAL LENGTH              |
| 0207  | 75255 | 040105 | ADA IDEC+5 | OF THE TABLE              |
| 0208  | 75256 | 040110 | ADA IDEC+8 |                           |
| 0209  | 75257 | 064111 | LDB NIDT   | CHECK NUMBER OF ID TRACKS |

|       |       |        |      |             |                                  |
|-------|-------|--------|------|-------------|----------------------------------|
| 0210  | 75260 | 054353 |      | CPB .+1     | CHECK FOR SINGLE TRACK           |
| 0211  | 75261 | 027135 |      | JMP NEWI2   | NO MORE ROOM                     |
| 0212  | 75262 | 054354 |      | CPB .+2     | ONLY TWO ID TRACKS?              |
| 0213  | 75263 | 027277 |      | JMP NWSW    | YES, DEAL WITH TWO               |
| 0214  | 75264 | 064347 |      | LDB .-3     | SET COUNT OF ID TRACKS           |
| 0215  | 75265 | 074045 |      | STB NWST    |                                  |
| 0216  | 75266 | 007400 |      | CCB         | FIND NUMBER OF                   |
| 0217  | 75267 | 101023 |      | ASR 3       | ENTRIES IN TABLE                 |
| 0218  | 75270 | 100400 |      | DIV .+3     | SPREAD OVER THREE TRACKS         |
|       |       | 75271  |      |             |                                  |
| 0219  | 75272 | 053607 |      | CPA N1024   |                                  |
| 0220  | 75273 | 006003 |      | 8ZB, RSS    |                                  |
| 0221  | 75274 | 053610 |      | CPA N1025   |                                  |
| 0222  | 75275 | 027135 |      | JMP NEWI2   | FULL, OUTPUT ERROR               |
| 0223  | 75276 | 027311 |      | JMP NWTB    |                                  |
| 0224  | 75277 |        | NWSW | EQU *       |                                  |
| 0225  | 75277 | 064350 |      | LDB .-2     |                                  |
| 0226  | 75300 | 074045 |      | STB NWST    | SET COUNT OF ID TRACKS           |
| 0227  | 75301 | 007400 |      | CCB         | FIND NUMBER OF ENTRIES           |
| 0228  | 75302 | 101023 |      | ASR 3       | IN TABLE                         |
| 0229  | 75303 | 100400 |      | DIV .+2     |                                  |
|       |       | 75304  |      |             |                                  |
| 0230  | 75305 | 053607 |      | CPA N1024   |                                  |
| 0231  | 75306 | 006003 |      | 8ZB, RSS    |                                  |
| 0232  | 75307 | 053610 |      | CPA N1025   |                                  |
| 0233  | 75310 | 027135 |      | JMP NEWI2   | FULL, OUTPUT ERROR               |
| 0234  | 75311 |        | NWTA | EQU *       |                                  |
| 0235  | 75311 | 040351 |      | ADA .-1     | INCREASE # OF ENTRIES/TRACK BY   |
| 0236  | 75312 | 070042 |      | STA NWS5    | ONE AND SAVE                     |
| 0237  | 75313 | 044351 |      | ADB .-1     | LET B COUNT HOW MANY TRACKS WILL |
| 0238  | 75314 | 074043 |      | STB NWSB    | BE THIS LARGER SIZE              |
| 0239* |       |        |      |             |                                  |
| 0240  | 75315 | 063613 |      | LDA NWSNN   | SET TABLE POINTER                |
| 0241  | 75316 | 070044 |      | STA NWSB    |                                  |
| 0242  | 75317 | 067617 |      | LDB NWSID   |                                  |
| 0243  | 75320 |        | NWTB | EQU *       |                                  |
| 0244  | 75320 | 100001 |      | LDA B, I    | GET DRUM ADDRESS                 |
| 0245  | 75321 | 002003 |      | SZA, RSS    | SKIP IF TRACK NOT ALLOCATED      |
| 0246  | 75322 | 027331 |      | JMP NWS5    |                                  |
| 0247  | 75323 | 034043 |      | ISZ NWSB    | TEST FOR BIG TRACK               |
| 0248  | 75324 | 002001 |      | RSS         | YES                              |
| 0249  | 75325 | 034042 |      | ISZ NWS5    | NO, SWITCH TO SMALLER SIZE       |
| 0250  | 75326 | 060042 |      | LDA NWS5    | GET TRACK SIZE                   |
| 0251  | 75327 | 001020 |      | ALS, ALS    | AND CONVERT TO WORDS             |
| 0252  | 75330 | 001000 |      | ALS         |                                  |
| 0253  | 75331 |        | NWS5 | EQU *       |                                  |
| 0254  | 75331 | 170044 |      | STA NWSB, I | STORE TRACK SIZE IN TABLE        |
| 0255  | 75332 | 044355 |      | ADB .+3     |                                  |
| 0256  | 75333 | 034044 |      | ISZ NWSB    | ADVANCE SIZE TABLE POINTER       |
| 0257  | 75334 | 034045 |      | ISZ NWST    | COUNT                            |
| 0258  | 75335 | 027320 |      | JMP NWTB    |                                  |
| 0259* |       |        |      |             |                                  |
| 0260* |       |        |      |             |                                  |
| 0261* |       |        |      |             |                                  |
| 0262* |       |        |      |             |                                  |

TABLE NN NOW CONTAINS THE NEW LENGTHS OF THE THREE ID TRACKS.



```

0263 75336 063613 LDA NWSNN SET UP POINTER
0264 75337 070044 STA NWSP TO LENGTH WORD

```

0265\*

```

0266* THE MAIN PART OF THIS ALGORITHM CONSISTS OF TWO
0267* SECTIONS. IN THE FIRST SECTION WE READ AS MUCH AS
0268* POSSIBLE INTO THE SWAP AREA. IN THE SECOND SECTION
0269* WE WRITE AS MUCH AS POSSIBLE. THE ENTIRE PROCEDURE
0270* IS THEN REPEATED UNTIL WE ARE FINISHED.

```

0271\*

```

 THE FOLLOWING MEANINGS ARE ASSOCIATED

```

0272\*

```

 WITH THESE VARIABLES:

```

0273\*

0274\*

```

NWSK1 => ID TABLE ENTRY FOR TRACK BEING READ

```

0275\*

```

NWSL1 => ID TABLE ENTRY FOR TRACK BEING WRITTEN

```

0276\*

```

NWSK2 = # OF WORDS READ SO FAR FROM K1

```

0277\*

```

NWSL2 = # OF WORDS WRITTEN SO FAR ON L1

```

0278\*

```

NWS = # OF WORDS IN CORE

```

0279\*

```

NWSP => = # OF WORDS TO BE WRITTEN ON L1

```

0280\*

0281

75340

NWS7

EQU \*

0282

75340 063624

LDA NWSL2

```

 IS # OF WORDS WRITTEN SO FAR TO
 L1 = # OF WORDS TO BE WRITTEN

```

0283

75341 003004

CMA,INA

```

 L1 = # OF WORDS TO BE WRITTEN

```

0284

75342 150044

CPA NWSP,I

0285

75343 027461

JMP NWS10

```

 YES GO

```

0286\*

0287

75344

NWS8

EQU \*

0288

75344 063626

LDA NWS

```

 IS THE SWAP AREA FULL?

```

0289

75345 043612

ADA NT232

0290

75346 002021

SSA,RSS

0291

75347 027472

JMP NWS11

```

 YES, GO TO WRITE SECTION

```

0292

75350 070072

STA WORD

```

 NO, SAVE AVAILABLE WORD COUNT
 HAVE WE READ ALL THREE TRACKS?

```

0293

75351 067620

LDB NWSK1

0294

75352 057623

CPB NIDC3

0295

75353 027472

JMP NWS11

```

 YES, GO TO WRITE SECTION

```

0296

75354 163620

LDA NWSK1,I

```

 A = # ON THIS TRACK

```

0297

75355 043625

ADA NWSK2

```

 A = # NOT READ YET

```

0298

75356 002002

SZA

```

 ENTIRE TRACK READ YET?

```

0299

75357 027364

JMP NWS9

```

 NO

```

0300

75360 044355

ADB ,+3

```

 YES, TRY NEXT TRACK

```

0301

75361 077620

STB NWSK1

0302

75362 073625

STA NWSK2

```

 SET # OF WORDS READ TO ZERO

```

0303

75363 027344

JMP NWS8

```

 TEST THIS TRACK

```

0304\*

0305

75364

NWS9

EQU \*

0306

75364 064000

LDB A

```

 B = # OF WORDS NOT YET READ

```

0307

75365 007004

CMB,INB

```

 MAKE POSITIVE

```

0308

75366 044072

ADB WORD

```

 IS # ON TRACK > # WE HAVE

```

0309

75367 006020

S98

```

 ROOM FOR?

```

0310

75370 027374

JMP NWS9A

```

 NO, READ ENTIRE TRACK

```

0311

75371 060072

LDA WORD

```

 GET # WE CAN FIT IN

```

0312

75372 040734

ADA B77

```

 REDUCE TO NEXT SMALLER

```

0313

75373 010610

AND M64

```

 SECTOR SIZE

```

0314

75374

NWS9A

EQU \*

0315

75374 002003

SZA,RSS

```

 IF WE CAN'T READ ANY,

```

0316

75375 027472

JMP NWS11

```

 THEN GO TO THE WRITE SECTION

```

0317\*

|       |       |        |             |                                  |
|-------|-------|--------|-------------|----------------------------------|
| 0318  | 75376 | 070072 | STA WORD    | SET WORD COUNT FOR READ          |
| 0319  | 75377 | 063625 | LDA NWSK2   | GET # READ SO FAR                |
| 0320  | 75400 | 006400 | CLB         | DIVIDE BY 64 TO GET              |
| 0321  | 75401 | 101026 | ASR 6       | SECTOR ADDRESS                   |
| 0322  | 75402 | 007400 | CCB         |                                  |
| 0323  | 75403 | 047620 | ADB NWSK1   | GET ID TRACK ADDRESS             |
| 0324  | 75404 | 140001 | ADA B,I     | COMPUTE READ ADDRESS             |
| 0325  | 75405 | 064566 | LDB LIBDI   |                                  |
| 0326  | 75406 | 047626 | ADB NWS     | GENERATE READ ADDRESS AND        |
| 0327  | 75407 | 016231 | JSB DRUML   | READ IT IN                       |
| 0328  | 75410 | 116017 | JSB DEADP,I | BLEW IT, ARRGH                   |
| 0329* |       |        |             |                                  |
| 0330  | 75411 | 064072 | LDB WORD    | UPDATE COUNT OF WORDS            |
| 0331  | 75412 | 007004 | CMB,INB     | IN CORE                          |
| 0332  | 75413 | 047626 | ADB NWS     |                                  |
| 0333  | 75414 | 077626 | STB NWS     |                                  |
| 0334  | 75415 | 064072 | LDB WORD    | UPDATE COUNT OF WORDS READ       |
| 0335  | 75416 | 007004 | CMB,INB     | FROM THIS TRACK                  |
| 0336  | 75417 | 047625 | ADB NWSK2   |                                  |
| 0337  | 75420 | 077625 | STB NWSK2   |                                  |
| 0338* |       |        |             |                                  |
| 0339  | 75421 | 063627 | LDA NWSTG   | HAVE WE INSERTED THE NEW         |
| 0340  | 75422 | 002002 | SZA         | ENTRY YET?                       |
| 0341  | 75423 | 027344 | JMP NWS8    | YES, TRY TO READ SOME MORE       |
| 0342  | 75424 | 063620 | LDA NWSK1   | ARE WE READING THE TRACK         |
| 0343  | 75425 | 050076 | CPA IDLNP   | IT WAS TO GO ON?                 |
| 0344  | 75426 | 002001 | RSS         | YES                              |
| 0345  | 75427 | 027344 | JMP NWS8    | NO, TRY TO READ SOME MORE        |
| 0346  | 75430 | 044562 | ADB LIBD    | DETERMINE IF WE HAVE READ THE    |
| 0347  | 75431 | 007000 | CMB         | ENTRY PRECEEDING THE NEW ONE     |
| 0348  | 75432 | 044041 | ADB NWSV    |                                  |
| 0349  | 75433 | 006021 | SSB,RSS     |                                  |
| 0350  | 75434 | 027344 | JMP NWS8    |                                  |
| 0351  | 75435 | 006004 | INB         |                                  |
| 0352* |       |        |             |                                  |
| 0353  | 75436 | 037627 | ISZ NWSTG   | INDICATE ENTRY HAS BEEN INSERTED |
| 0354  | 75437 | 060562 | LDA LIBD    | COMPUTE                          |
| 0355  | 75440 | 043626 | ADA NWS     | MOVE                             |
| 0356  | 75441 | 040361 | ADA .+7     | DESTINATION                      |
| 0357  | 75442 | 070051 | STA MOVED   |                                  |
| 0358  | 75443 | 040342 | ADA .-8     | COMPUTE MOVE SOURCE              |
| 0359  | 75444 | 070050 | STA MOVES   |                                  |
| 0360  | 75445 | 016243 | J9B MOVEB   | CALL THE REVERSE MOVER           |
| 0361* |       |        |             |                                  |
| 0362  | 75446 | 060050 | LDA MOVES   | NOW SET DESTINATION              |
| 0363  | 75447 | 002004 | INA         | TO POINT AT FIRST                |
| 0364  | 75450 | 070051 | STA MOVED   | WORD OF HOLE                     |
| 0365  | 75451 | 060520 | LDA DLTEM   | SET SOURCE AT LTEMP              |
| 0366  | 75452 | 070050 | STA MOVES   |                                  |
| 0367  | 75453 | 064342 | LDB .-8     | MOVE IN ENTRY                    |
| 0368  | 75454 | 016257 | JSB MOVEW   |                                  |
| 0369* |       |        |             |                                  |
| 0370  | 75455 | 063626 | LDA NWS     | EIGHT MORE                       |
| 0371  | 75456 | 040362 | ADA .+8     | WORDS ARE NOW                    |
| 0372  | 75457 | 073626 | STA NWS     | IN CORE                          |

```

0373 75460 027344 JMP NWS8 CONTINUE READING
0374*
0375* COME HERE WHEN THE CURRENT OUTPUT TRACK HAS BEEN FILLED
0376*
0377 75461 NWS10 EQU *
0378 75461 063621 LDA NWSL1 TEST FOR LAST TRACK
0379 75462 053622 CPA NIDC2
0380 75463 027576 JMP NWS16 ALL DONE, CLEAN UP IDEC
0381 75464 040355 ADA ,+3 ADVANCE TO NEXT TRACK
0382 75465 073621 STA NWSL1
0383 75466 002400 CLA SET NUMBER OF WORDS WRITTEN
0384 75467 073624 STA NWSL2 SO FAR TO ZERO
0385 75470 034044 ISZ NWSP ADVANCE POINTER TO WORDS
0386 75471 027340 JMP NWS7 TO BE WRITTEN
0387*
0388* THIS SECTION IS THE OUTPUT SECTION. THIS SECTION
0389* IS ONLY CALLED WHEN NO MORE CAN BE READ. THIS SECTION
0390* WRITES OUT AS MUCH AS POSSIBLE UNTIL WE HAVE EXHAUSTED
0391* ALL WE HAVE IN CORE OR UNTIL FURTHER OUTPUT WOULD
0392* OVERLAY INFORMATION THAT HAS NOT BEEN READ.
0393* THE FOLLOWING ADDITIONAL VARIABLES
0394* ARE USED IN THIS SECTION:
0395*
0396* NWS8 = COUNT OF WORDS THAT HAVE BEEN
0397* WRITTEN FROM THE CURRENT CORE LOAD.
0398*
0399 75472 NWS11 EQU *
0400 75472 002400 CLA
0401 75473 NWS15 EQU *
0402 75473 070042 STA NWS8 SET # OF WORDS WRITTEN OUT
0403 75474 063624 LDA NWSL2 SET WORD * = # OF WORDS LEFT TO
0404 75475 140044 ADA NWSP,1 BE WRITTEN ON L1
0405 75476 067621 LDB NWSL1 TEST FOR WRITING ON A TRACK
0406 75477 057620 CPB NWSK1 NOT YET READ
0407 75500 027514 JMP NWS12 WE ARE, CHECK FOR OVERLAY
0408 75501 NWS13 EQU *
0409 75501 064042 LDB NWS8 SET B = # LEFT IN CORE
0410 75502 007004 CMB,INB
0411 75503 047626 ADB NWS
0412 75504 074043 STB NWSB SAVE
0413 75505 044000 ADB A COMPARE WITH # WE WANT TO WRITE
0414 75506 006021 SSB,RSS
0415 75507 027523 JMP NWS14 HAVE ENOUGH. - COUNT IN A
0416 75510 060043 LDA NWSB ONLY WRITE WHAT WE HAVE
0417 75511 010610 AND M64 MAKE FULL SECTOR
0418 75512 003004 CMA,INA MAKE NEGATIVE
0419 75513 027523 JMP NWS14
0420 75514 NWS12 EQU *
0421 75514 067624 LDB NWSL2 IF WRITING ON UNREAD TRACK, MAKE
0422 75515 007004 CMB,INB -SURE WE DON'T GO INTO UNREAD
0423 75516 047625 ADB NWSK2 AREA
0424 75517 044000 ADB A
0425 75520 007025 CMB,SSB,INB,RSS
0426 75521 040001 ADA B CHANGE COUNT TO AVOID OVERLAYING
0427 75522 027501 JMP NWS13 UNREAD DATA

```

```

0428*
0429* A NOW CONTAINS THE NEGATIVE COUNT OF WORDS
0430* THAT ARE TO BE WRITTEN
0431*
0432 75523 NWS14 EQU *
0433 75523 070072 STA WORD IF NO WORDS ARE TO BE WRITTEN,
0434 75524 002003 SZA, RSS GO MOVE CORE FOR NEW INPUT
0435 75525 027561 JMP NWS17
0436 75526 003004 CMA, INA
0437 75527 070043 STA NWSB
0438 75530 063624 LDA NWSL2 TEST FOR FIRST WRITE ON
0439 75531 002002 SZA THIS TRACK
0440 75532 027542 JMP NWS18
0441*
0442 75533 063621 LDA NWSL1 IF THIS IS
0443 75534 040350 ADA .-2 THE FIRST
0444 75535 064562 LDB LIBD WRITE ON THIS
0445 75536 044042 ADB NWSB TRACK, THEN
0446 75537 164001 LDB B, I UPDATE THE
0447 75540 174000 STB A, I IDEC TABLE
0448 75541 002400 CLA
0449*
0450 75542 NWS18 EQU *
0451 75542 006400 CLB CONVERT WORD COUNT
0452 75543 101026 AGR 6 TO SECTOR ADDRESS
0453 75544 007400 CCB
0454 75545 047621 ADB NWSL1
0455 75546 140001 ADA B, I ADD IN TRACK ADDRESS
0456 75547 064562 LDB LIBD GENERATE
0457 75550 044042 ADB NWSB CORE ADDRESS
0458 75551 016231 JSB DRUML AND OUTPUT CURRENT PIECE
0459 75552 116017 JSB DEADP, I BLEW IT, ARRGH!
0460 75553 060043 LDA NWSB ADJUST NUMBER OF WORDS
0461 75554 043624 ADA NWSL2 OUTPUT TO TRACK
0462 75555 073624 STA NWSL2
0463 75556 064043 LDB NWSB
0464 75557 040042 ADA NWSB ADJUST NUMBER OF CORE WORDS
0465 75560 027473 JMP NWS15 WRITTEN OUT SO FAR
 LOOP FOR ANY MORE WRITING
0466*
0467* COME HERE WHEN WE CAN'T WRITE ANYMORE
0468*
0469 75561 NWS17 EQU *
0470 75561 050042 CPA NWSB IF NOTHING WRITTEN AT ALL, GO
0471 75562 027340 JMP NWS7 TRY TO READ AGAIN
0472 75563 064042 LDB NWSB ADJUST NUMBER OF WORDS
0473 75564 007004 CMB, INB IN CORE
0474 75565 047626 ADB NWS
0475 75566 077526 STB NWS
0476 75567 007004 CMB, INB
0477 75570 060562 LDA LIBD MAKE NEGATIVE FOR MOVE ROUTINE
0478 75571 070051 STA MOVED SET
0479 75572 040042 ADA NWSB . DESTINATION
0480 75573 070050 STA MOVES AND SOURCE
0481 75574 016257 JSB MOVEN
0482 75575 027340 JMP NWS7

```

0483\*  
 0484\*  
 0485\*  
 0486\*  
 0487\*

ALL OF THE ID TRACKS HAVE NOW BEEN WRITTEN.  
 BACK TO THE DRUM, UPDATE THE WORD COUNTS IN  
 THE IDEC TABLE

```

0488 75576 NWS16 EQU *
0489 75576 063614 LDA NWSNN+1
0490 75577 070102 STA IDEC+2
0491 75600 063615 LDA NWSNN+2
0492 75601 070105 STA IDEC+5
0493 75602 063616 LDA NWSNN+3
0494 75603 070110 STA IDEC+8
0495 75604 002400 CLA
0496 75605 070260 STA LIB
0497 75606 026267 JMP LEND

```

INDICATE TO SWAPR THAT  
 NO LIBRARY PROGRAM IS IN CORE

```

0498*
0499 75607 176000 N1024 DEC =1024
0500 75610 175777 N1025 DEC =1025
0501 75611 160000 N8192 DEC =8192
0502 75612 154010 NT232 ABS 8=ULEN
0503 75613 075614 NWSNN DEF **1
0504 75614 000000 BSS 3
0505 00041 NWSV EQU LTEMP+9
0506 00042 NWS8 EQU LTEMP+10
0507 00043 NWSB EQU LTEMP+11
0508 00044 NWSP EQU LTEMP+12
0509 00045 NWS1 EQU LTEMP+13
0510 75617 000101 NWSID DEF IDEC+1
0511 75620 000102 NWSK1 DEF IDEC+2
0512 75621 000102 NWSL1 DEF IDEC+2
0513 75622 000110 NIDC2 DEF IDEC+8
0514 75623 000113 NIDC3 DEF IDEC+11
0515 75624 000000 NWSL2 OCT 0
0516 75625 000000 NWSK2 OCT 0
0517 75626 000000 NWS OCT 0
0518 75627 000000 NWS1G OCT 0
0519 75630 000000 NEWIT BSS 1
0520 75631 $NEW EQU *

```

=> FIRST DRUM ADDRESS  
 => ID TABLE ENTRY FOR READ TRACK  
 => ID TABLE ENTRY FOR WRITE TRAC

■ LENGHT FOR WRITE TRACK  
 ■ LENGTH FOR READ TRACK  
 ■ # OF WORDS IN CORE

0002\* THE KILLID ROUTINE IS USED TO REMOVE ID CODES FROM THE SYSTEM  
 0003\* IDTABLE. THE FORMAT IS:  
 0004\*  
 0005\* KILLID = IDCODE  
 0006\*  
 0007\* IDCODE A000 CANNOT BE KILLED BY THIS COMMAND.  
 0008\* GROUP LIBRARIANS CANNOT BE KILLED IF ANY MEMBER OF  
 0009\* THEIR GROUP IS LOGGED ON.  
 0010\*  
 0011\* KILLID PERFORMS THE FOLLOWING FUNCTIONS:  
 0012\*  
 0013\* 1. THE ID-CODE IS REMOVED FROM THE IDT.  
 0014\* 2. ANY USERS LOGGED ON WITH THIS NUMBER ARE DUMPED.  
 0015\* 3. ALL LIBRARY SPACE ALLOCATED TO THIS ID IS RETURNED TO THE  
 0016\* SYSTEM.

|       |       |        |                                            |                               |
|-------|-------|--------|--------------------------------------------|-------------------------------|
| 0018  | 75000 |        | ORG LIBRA                                  |                               |
| 0019  | 75000 | 016315 | JSB GETID                                  | TRANSLATE THE IDCODE.         |
| 0020  | 75001 | 026275 | JMP LFRER                                  | ERROR IF NO CR FOLLOWD.       |
| 0021  | 75002 | 060052 | LDA ID                                     | TEST FOR A000.                |
| 0022  | 75003 | 050612 | CPA A000                                   |                               |
| 0023  | 75004 | 027164 | JMP KID31                                  |                               |
| 0024* |       |        |                                            |                               |
| 0025* |       |        | CHECK FOR GROUP LIBRARIAN                  |                               |
| 0026* |       |        |                                            |                               |
| 0027  | 75005 | 010602 | AND B1777                                  | MASK TO NUMBER PART           |
| 0028  | 75006 | 006400 | CLB                                        |                               |
| 0029  | 75007 | 100400 | DIV .100                                   |                               |
|       |       | 75010  | 000437                                     |                               |
| 0030  | 75011 | 006002 | SZB                                        | SKIP IF EVEN HUNDRED          |
| 0031  | 75012 | 027043 | JMP KIDAA                                  | NOT EVEN, NOT GROUP LIBRARIAN |
| 0032* |       |        |                                            |                               |
| 0033* |       |        | CHECK TO SEE IF ANY OF HIS SUBJECTS ARE ON |                               |
| 0034* |       |        |                                            |                               |
| 0035  | 75013 | 060317 | LDA M32                                    | COUNT OF USERS                |
| 0036  | 75014 | 070042 | STA KIDC                                   |                               |
| 0037  | 75015 | 064546 | LDB DTTY0                                  | => FIRST TTY TABLE            |
| 0038  | 75016 | 044356 | ADB .+?ID                                  | => FIRST ID                   |
| 0039  | 75017 |        | EQU *                                      |                               |
| 0040  | 75017 | 074031 | STB KIDP                                   | SAVE POINTER                  |
| 0041  | 75020 | 160001 | LDA B,I                                    | GET THE ID OF THIS USER       |
| 0042  | 75021 | 050052 | CPA ID                                     | THE SAME?                     |
| 0043  | 75022 | 027037 | JMP KIDAF                                  | YES, HE GETS KILLED ANYWAY    |
| 0044  | 75023 | 010602 | AND B1777                                  | LEAVE THE NUMBER PART         |
| 0045  | 75024 | 006400 | CLB                                        |                               |
| 0046  | 75025 | 100400 | DIV .100                                   |                               |
|       |       | 75026  | 000437                                     |                               |
| 0047  | 75027 | 100200 | MPY .100                                   | TURN BACK INTO NUMBER         |
|       |       | 75030  | 000437                                     |                               |
| 0048  | 75031 | 064000 | LDB A                                      | SAVE IN B                     |
| 0049  | 75032 | 160031 | LDA KIDP,I                                 | GET THE ID AGAIN              |
| 0050  | 75033 | 010732 | AND M2000                                  | LEAVE LETTER PART             |
| 0051  | 75034 | 030001 | IOR B                                      | CONSTRUCT THE GROUP ID        |
| 0052  | 75035 | 050052 | CPA ID                                     | IS THIS ONE IN HIS GROUP?     |

```

0053 75036 027172 JMP KIDAN YES, DISALLOW THE KILL.
0054 75037 KIDAF EQU *
0055 75037 064031 LDB KIDP GET THE POINTER
0056 75040 044375 ADB .+TTY01-TTY00
0057 75041 034042 ISZ KIDC CHECK COUNTER
0058 75042 027017 JMP KIDAD BACK TO CHECK REST
0059 75043 KIDAA EQU *
0060*
0061* READ IN IDT.
0062*
0063 75043 160076 LDA IDLNP,I SET LENGTH FOR DRUM DRIVER
0064 75044 070072 STA WORD
0065 75045 160075 LDA IDLCP,I
0066 75046 064566 LDB LIBDI
0067 75047 016231 JSB DRUML
0068 75050 116015 JSB SICKP,I DRUM ERROR WITH CHANCE OF RECOVER
0069*
0070* SEARCH IDT.
0071*
0072 75051 164076 LDB IDLNP,I
0073 75052 007004 CMB,INB
0074 75053 044562 ADB LIBD
0075 75054 060052 LDA ID
0076 75055 054562 KID33 CPB LIBD TEST FOR NOT THERE.
0077 75056 027167 JMP KID32
0078 75057 044342 ADB .-8 TEST FOR FOUND.
0079 75060 150001 CPA 1,I
0080 75061 002001 RSS
0081 75062 027055 JMP KID33 FOUND IT.
0082*
0083* REMOVE ID FROM TABLE.
0084*
0085 75063 074051 STB MOVED
0086 75064 044362 ADB .+8
0087 75065 074050 STB MOVES
0088 75066 044674 ADB MLIBD
0089 75067 144076 ADB IDLNP,I
0090 75070 016257 JSB MOVEW
0091*
0092* WRITE BACK TO DISC.
0093*
0094 75071 160076 LDA IDLNP,I
0095 75072 040362 ADA .+8
0096 75073 170076 STA IDLNP,I
0097 75074 070072 STA WORD
0098 75075 160075 LDA IDLCP,I
0099 75076 064562 LDB LIBD
0100 75077 016231 JSB DRUML
0101 75100 116017 JSB DEADP,I DRUM ERROR WITH NO HOPE
0102*
0103* SEARCH TTY TABLES FOR ANY USER TO BE DUMPED.
0104*
0105 75101 060317 LDA M32 SET COUNTER
0106 75102 070042 STA KIDC
0107 75103 003400 CCA SET KIDT TO SAY NONE

```

|       |                |        |       |                   |                                  |
|-------|----------------|--------|-------|-------------------|----------------------------------|
| 0108  | 75104          | 070033 |       | STA KIDT          | FOUND YET.                       |
| 0109  | 75105          | 064546 |       | LDB DTTY0         |                                  |
| 0110  | 75106          | 044356 |       | AOB .+?ID         |                                  |
| 0111  | 75107          | 160001 | KID34 | LDA 1,I           | GET ID FROM TABLE.               |
| 0112  | 75110          | 050052 |       | CPA ID            | IS IT THIS USER?                 |
| 0113  | 75111          | 027120 |       | JMP KID35         | YES--GO DUMP HIM.                |
| 0114  | 75112          | 044375 | KID37 | AOB .+TTY01-TTY00 |                                  |
| 0115  | 75113          | 034042 |       | ISZ KIDC          | ANY MORE TO TEST?                |
| 0116  | 75114          | 027107 |       | JMP KID34         | YES.                             |
| 0117  | 75115          | 034033 |       | ISZ KIDT          | NEED TO WRITE BACK FUSS?         |
| 0118  | 75116          | 027244 |       | JMP KID36         | YES--TRANSFER TO NEXT PART       |
| 0119  | 75117          | 027250 |       | JMP KILBR         | NO, NO USERS WERE DUMPED         |
| 0120* |                |        |       |                   |                                  |
| 0121* | DUMP THE USER. |        |       |                   |                                  |
| 0122* |                |        |       |                   |                                  |
| 0123  | 75120          | 074043 | KID35 | STB KIDB          | SAVE POINTER TO TABLE.           |
| 0124  | 75121          | 103100 |       | CLF 0             | INHIBIT INTERRUPT.               |
| 0125  | 75122          | 002400 |       | CLA               | CLEAR USER'S ID.                 |
| 0126  | 75123          | 170001 |       | STA 1,I           |                                  |
| 0127  | 75124          | 044362 |       | AOB .+?STAT=?ID   |                                  |
| 0128  | 75125          | 060350 |       | LDA .-2           | SET USER'S STATUS TO -2 TO FORCE |
| 0129  | 75126          | 170001 |       | STA 1,I           | DISCONNECT.                      |
| 0130  | 75127          | 044336 |       | AOB .-?STAT       |                                  |
| 0131  | 75130          | 160001 |       | LDA 1,I           | SET COM14 BIT                    |
| 0132  | 75131          | 030772 |       | IOR COM14         | TO FLAG                          |
| 0133  | 75132          | 170001 |       | STA 1,I           | SCHEDULER                        |
| 0134  | 75133          | 044367 |       | AOB .+?LINK       |                                  |
| 0135  | 75134          | 117163 |       | JSB KIDEQ,I       | REMOVE FROM QUEUE.               |
| 0136  | 75135          | 102100 |       | STF 0             |                                  |
| 0137  | 75136          | 034033 |       | ISZ KIDT          | IS FUSS TABLE IN CORE?           |
| 0138  | 75137          | 027146 |       | JMP KID38         | YES.                             |
| 0139  | 75140          | 060732 |       | LDA M2000         | NO, READ IT IN                   |
| 0140  | 75141          | 070072 |       | STA WORD          |                                  |
| 0141  | 75142          | 160540 |       | LDA FUSS,I        |                                  |
| 0142  | 75143          | 064566 |       | LDB LIBDI         |                                  |
| 0143  | 75144          | 016231 |       | JSB DRUML         |                                  |
| 0144  | 75145          | 116017 |       | JSB DEADP,I       | DRUM ERROR WITH NO HOPE          |
| 0145* |                |        |       |                   |                                  |
| 0146  | 75146          | 060042 | KID38 | LDA KIDC          | COMPUTE LOCATION OF USER'S FUSS  |
| 0147  | 75147          | 040412 |       | ADA .+32          | AREA                             |
| 0148  | 75150          | 001720 |       | ALF,ALS           |                                  |
| 0149  | 75151          | 040562 |       | ADA LIBD          |                                  |
| 0150  | 75152          | 070031 |       | STA KIDP          |                                  |
| 0151  | 75153          | 064317 |       | LDB M32           | ZERO OUT USER'S FUSS AREA        |
| 0152  | 75154          | 002400 |       | CLA               |                                  |
| 0153  | 75155          | 170031 |       | STA KIDP,I        |                                  |
| 0154  | 75156          | 034031 |       | ISZ KIDP          |                                  |
| 0155  | 75157          | 006006 |       | INB,SZB           |                                  |
| 0156  | 75160          | 027155 |       | JMP *-3           |                                  |
| 0157* |                |        |       |                   |                                  |
| 0158  | 75161          | 064043 |       | LDB KIDB          | GET POINTER AGAIN.               |
| 0159  | 75162          | 027112 |       | JMP KID37         | GO TEST NEXT USER.               |
| 0160* |                |        |       |                   |                                  |
| 0161  | 75163          | 071577 | KIDEQ | DEF DEQUE         |                                  |
| 0162* |                |        |       |                   |                                  |



```

0163 75164 063207 KID31 LDA KIDM1 PRINT "A000 NOT ALLOWED"
0164 75165 064331 LDB ,=-17
0165 75166 027174 JMP KIDAZ
0166 75167 063221 KID32 LDA KIDM2 PRINT "NO SUCH ID"
0167 75170 064337 LDB ,=-11
0168 75171 027174 JMP KIDAZ
0169 75172 063230 KIDAN LDA KIDM3 PRINT " GROUP LIBRARY IN USE"
0170 75173 064325 LDB ,=-21
0171 75174 KIDAZ EQU *
0172 75174 074042 STB KIDC
0173 75175 070050 STA MOVES
0174 75176 060305 LDA T35B1
0175 75177 070051 STA MOVED
0176 75200 005100 BRS
0177 75201 016257 JSB MOVEW
0178 75202 060042 LDA KIDC
0179 75203 003004 CMA,INA
0180 75204 064305 LDB T35B1
0181 75205 114522 JSB TTY35,1
0182 75206 026272 JMP LENDR
0183*
0184 75207 075210 KIDM1 DEF ++1
0185 75210 005101 OCT 5101
0186 75211 030060 ASC 8,000 NOT ALLOWED
 75212 030040
 75213 047117
 75214 052040
 75215 040514
 75216 046117
 75217 053505
 75220 042040
0187 75221 075222 KIDM2 DEF ++1
0188 75222 005116 OCT 5116
0189 75223 047440 ASC 5,0 SUCH ID
 75224 051525
 75225 041510
 75226 020111
 75227 042040
0190 75230 075231 KIDM3 DEF ++1
0191 75231 005107 OCT 5107
0192 75232 051117 ASC 10,ROUP LIBRARY IN USE
 75233 052520
 75234 020114
 75235 044502
 75236 051101
 75237 051131
 75240 020111
 75241 047040
 75242 052523
 75243 042440
0193*

```

```

0195 75244 160540 KID36 LDA FUSS,I WRITE BACK FUSS
0196 75245 064562 LDB LIBD IF ANY USERS
0197 75246 016231 JSB DRUML WERE DUMPED
0198 75247 116017 JSB DEADP,I DRUM ERROR WITH NO HOPE

```

0199\*

0200\*

```

0201* WE HAVE NOW GOTTEN RID OF THE USER. THE NEXT STEP IS TO
0202* RELEASE ANY SYSTEM SPACE CONSUMED BY THE USER.

```

0203\*

```

0204* THIS SECTION HAS THE JOB OF REMOVING ALL
0205* FILES BELONGING TO THE ID BEING KILLED FROM THE USER LIBRARY, AND
0206* UPDATING THE ADT APPROPRIATELY.

```

0207\*

```

0208 75250 KILBR EQU *
0209 75250 063552 LDA KDIRL TEST INDIVIDUAL DIRECTORIES
0210 75251 070032 KID4 STA KIDI KIDI POINTS TO THE ONE TESTED.
0211 75252 KIDRE EQU *
0212 75252 104200 OLD KIDI,I GET LENGTH AND FIRST ID.
75253 100032
0213 75254 074033 STB KIDT SAVE FIRST ID FOR LATER.
0214 75255 000040 CLE
0215 75256 044053 ADB MID B=FIRST ID= KEYID
0216 75257 002002 SZB FORGET TRACK IF IT'S EMPTY
0217 75260 006042 SEZ, SZB OR IF FIRSTID>KEYID
0218 75261 002001 RSS
0219 75262 027270 JMP KID2
0220 75263 060032 KID1 LDA KIDI
0221 75264 053551 CPA KDIR0
0222 75265 026267 JMP LEND
0223 75266 040343 ADA ,=7 BUMP TO NEXT TRACK.
0224 75267 027251 JMP KID4

```

0225\*

```

0226* PROCESS DIRECTORY TRACK IN ORDER TO REMOVE KEY ID ENTRIES. THE
0227* DIRECTORY IS READ INTO THE BEGINNING OF THE WORKSPACE AND IS
0228* SCANNED IN REVERSE ORDER. A TABLE OF PATCHES IS BUILT UP
0229* STARTING AT LIBUS+8192.

```

0230\* THE FOLLOWING POINTERS ARE USED:

0231\*

```

0232* KIDP1 => DIRECTORY ENTRY BEING TESTED
0233* KIDP2 => FIRST ENTRY FOLLOWING LAST KID ENTRY
0234* KIDP3 => LAST ENTRY IN DIRECTORY
0235* KIDP4 => LAST ENTRY IN PATCH TABLE

```

0236\*

```

0237 75270 KID2 EQU *
0238 75270 070072 STA WORD SET UP LENGTH FOR DRUM TRANSFER
0239 75271 003004 CMA, INA
0240 75272 040562 ADA LIBD
0241 75273 040336 ADA ,=12 SET KIDP3 TO POINT TO LAST
0242 75274 070040 STA KIDP3 ENTRY IN DIRECTORY.
0243 75275 070036 STA KIDP1 SET POINTER TO CURRENT ENTRY.
0244 75276 061002 LDA L8192 INITIALIZE PATCH TABLE
0245 75277 070041 STA KIDP4 POINTER.
0246 75300 002400 CLA
0247 75301 070030 STA LOCTC SET PATCH TABLE LENGTH
0248 75302 060032 LDA KIDI GET DIRECTORY

```

|       |                                                       |        |      |             |                               |
|-------|-------------------------------------------------------|--------|------|-------------|-------------------------------|
| 0249  | 75303                                                 | 040360 | ADA  | +.6         | DISC ADDRESS                  |
| 0250  | 75304                                                 | 160000 | LDA  | 0,I         | IN A,                         |
| 0251  | 75305                                                 | 064566 | LDB  | LIBDI       | ADDRESS OF WORKSPACE          |
| 0252  | 75306                                                 | 016231 | JSB  | DRUML       | IN B, AND READ DRUM           |
| 0253  | 75307                                                 | 116017 | JSB  | DEADP,I     | DRUM ERROR WITH NO HOPE       |
| 0254* |                                                       |        |      |             |                               |
| 0255  | 75310                                                 | 160036 | KID7 | LDA KIDP1,I | GET ID OF NEXT ENTRY          |
| 0256  | 75311                                                 | 001665 |      | ELA,CLE,ERA |                               |
| 0257  | 75312                                                 | 040053 |      | ADA MID     | COMPARE WITH KEY ID.          |
| 0258  | 75313                                                 | 002020 |      | SSA         | TEST FOR <                    |
| 0259  | 75314                                                 | 027407 |      | JMP KID6    |                               |
| 0260  | 75315                                                 | 002002 |      | SZA         | TEST FOR >                    |
| 0261  | 75316                                                 | 027353 |      | JMP KID8    |                               |
| 0262* |                                                       |        |      |             |                               |
| 0263* | FOUND AN ENTRY FOR KID. NOW REMOVE IT.                |        |      |             |                               |
| 0264* |                                                       |        |      |             |                               |
| 0265  | 75317                                                 | 064036 | LDB  | KIDP1       | IF THIS IS THE FIRST          |
| 0266  | 75320                                                 | 044366 | ADB  | +.12        | SUCH ENTRY, SET KIDP2 AS      |
| 0267  | 75321                                                 | 060041 | LDA  | KIDP4       | STATED ABOVE.                 |
| 0268  | 75322                                                 | 051002 | CPA  | L8192       | SET ONLY IF PATCH TABLE EMPTY |
| 0269  | 75323                                                 | 074037 | STB  | KIDP2       |                               |
| 0270  | 75324                                                 | 050530 | CPA  | LULEN       |                               |
| 0271  | 75325                                                 | 027361 | JMP  | KIDE        |                               |
| 0272* |                                                       |        |      |             |                               |
| 0273  | 75326                                                 | 160032 | LDA  | KIDI,I      | ADJUST THE DIRECTORY LENGTH.  |
| 0274  | 75327                                                 | 040366 | ADA  | +.12        |                               |
| 0275  | 75330                                                 | 170032 | STA  | KIDI,I      |                               |
| 0276  | 75331                                                 | 070072 | STA  | WORD        |                               |
| 0277* |                                                       |        |      |             |                               |
| 0278  | 75332                                                 | 064036 | LDB  | KIDP1       |                               |
| 0279  | 75333                                                 | 044361 | ADB  | +7          | => DRUM ADDRESS               |
| 0280  | 75334                                                 | 160001 | LDA  | B,I         |                               |
| 0281  | 75335                                                 | 170041 | STA  | KIDP4,I     | SET INTO PATCH TABLE          |
| 0282  | 75336                                                 | 034041 | ISZ  | KIDP4       | ADVANCE POINTER               |
| 0283  | 75337                                                 | 044356 | ADB  | +.4         | => LENGTH                     |
| 0284  | 75340                                                 | 160001 | LDA  | B,I         | A = LENGTH                    |
| 0285  | 75341                                                 | 170041 | STA  | KIDP4,I     | SAVE IN PATCH TABLE           |
| 0286  | 75342                                                 | 034041 | ISZ  | KIDP4       |                               |
| 0287  | 75343                                                 | 044347 | ADB  | -.3         | => DISK ADDRESS               |
| 0288  | 75344                                                 | 104200 | DLD  | B,I         | GET DISK ADDRESS              |
|       | 75345                                                 | 100001 |      |             |                               |
| 0289  | 75346                                                 | 104400 | DST  | KIDP4,I     | SAVE IN PATCH TABLE           |
|       | 75347                                                 | 100041 |      |             |                               |
| 0290  | 75350                                                 | 034041 | ISZ  | KIDP4       |                               |
| 0291  | 75351                                                 | 034041 | ISZ  | KIDP4       |                               |
| 0292  | 75352                                                 | 034030 | ISZ  | LOCTC       | INCREMENT ENTRY COUNT         |
| 0293* |                                                       |        |      |             |                               |
| 0294  | 75353                                                 | 064036 | KID8 | LDB KIDP1   | TEST FOR FINISHED             |
| 0295  | 75354                                                 | 054562 |      | CPB LIBD    | EXAMINING DIRECTORY ENTRIES.  |
| 0296  | 75355                                                 | 027407 |      | JMP KID6    |                               |
| 0297  | 75356                                                 | 044336 |      | ADB -.12    | IF NOT, MOVE POINTER BACK TO  |
| 0298  | 75357                                                 | 074036 |      | STB KIDP1   | NEXT ENTRY.                   |
| 0299  | 75360                                                 | 027310 |      | JMP KID7    |                               |
| 0300* |                                                       |        |      |             |                               |
| 0301* | MAKE ROOM BY PUSHING UP PARTIALLY EXAMINED DIRECTORY. |        |      |             |                               |

```

0302*
0303 75361 KIDE EQU *
0304 75361 064036 LDB KIDP1 SET UP
0305 75362 044366 ADB ,+12
0306 75363 074051 STB MOVED DEST AND
0307 75364 064037 LDB KIDP2 SOURCE,
0308 75365 074050 STB MOVES
0309 75366 007000 CMB COMPUTE #
0310 75367 044040 ADB KIDP3 OF WORDS
0311 75370 007000 CMB TO MOVE
0312 75371 044336 ADB ,=12 AND
0313 75372 016257 JSB MOVEW DO IT,
0314*
0315 75373 060032 LDA KIDI => DIREC ENTRY
0316 75374 040360 ADA ,+6 => DRUM ADDRESS
0317 75375 160000 LDA A,I
0318 75376 064562 LDB LIBD
0319 75377 016231 JSB DRUML
0320 75400 116017 JSB DEADP,I DRUM ERROR WITH NO HOPE
0321 75401 060030 LDA LOCTC GET ENTRY COUNT
0322 75402 003004 CMA,INA
0323 75403 070030 STA LOCTC SET NEGATIVE FOR OTHER USERS
0324 75404 017476 JSB KIDRR RESTORE DRUM SPACE
0325 75405 116013 JSB TBDAP,I RESTORE DISK SPACE
0326 75406 027252 JMP KIDRE CONTINUE ON
0327*
0328* THE PATCH TABLE IS NOW BUILT. THE NEXT STEP IS TO FIXUP THE DIREC.
0329*
0330 75407 KID6 EQU *
0331 75407 060030 LDA LOCTC CHECK LENGTH OF PATCH TABLE
0332 75410 003007 CMA,INA,SZA,RSS
0333 75411 027474 JMP KID18
0334 75412 070030 STA LOCTC SET NEGATIVE COUNT
0335*
0336 75413 160032 LDA KIDI,I
0337 75414 002003 SZA,RSS IF LENGTH=0 WE DONT HAVE TO
0338 75415 027453 JMP KID10 WRITE IT BACK OUT.
0339 75416 070072 STA WORD SET UP FOR DISC DRIVER.
0340*
0341* WE FIRST HAVE TO CLOSE UP THE HOLE. THERE ARE 2
0342* CASES, DEPENDING UPON WHETHER THE HOLE IS AT THE
0343* BEGINNING OR IN THE MIDDLE.
0344*
0345 75417 060037 LDA KIDP2 WE WILL MOVE FROM KIDP2 IN
0346 75420 070050 STA MOVES ANY CASE.
0347 75421 064033 LDB KIDT GET FIRST ID IN B.
0348 75422 054052 CPB ID IF = HOLE IS AT BEGINNING
0349 75423 027435 JMP KID11 GO SET NEW FIRST ID.
0350 75424 060036 LDA KIDP1 SET DEST. TO BE RIGHT AFTER
0351 75425 040366 ADA ,+12 LAST ENTRY EXAMINED
0352 75426 050050 CPA MOVES FORGET IT IF SAME AS SOURCE.
0353 75427 027442 JMP KID12
0354 75430 064040 LDB KIDP3 COMPUTE # OF WORDS TO MOVE.
0355 75431 007004 CMB,INB
0356 75432 044037 ADB KIDP2

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```

0357 75433 044336 ADB ,-12
0358 75434 027440 JMP KID13 GO MOVE IT.
0359*
0360 75435 060032 KID11 LDA KIDI SET UP NEW FIRST ID.
0361 75436 002004 INA
0362 75437 064345 LDB ,-5
0363 75440 070051 KID13 STA MOVED
0364 75441 016257 JSB MOVEW
0365*
0366* NOW WRITE DIRECTORY BACK TO DISC.
0367*
0368 75442 064562 KID12 LDB LIBD DETERMINE CORE ADDRESS.
0369 75443 060052 LDA ID
0370 75444 050033 CPA KIDT
0371 75445 064037 LDB KIDP2
0372 75446 060032 LDA KIDI GET DISC ADDRESS.
0373 75447 040360 ADA ,+6
0374 75450 160000 LDA 0,I
0375 75451 016231 JSB DRUML WRITE TO DRUM
0376 75452 116017 JSB DEADP,I DRUM ERROR WITH NO HOPE
0377*
0378 75453 KID10 EQU *
0379 75453 060113 LDA ADLEN READ IN ADT
0380 75454 070072 STA WORD
0381 75455 060112 LDA ADLOC
0382 75456 064566 LDB LIBDI
0383 75457 016231 JSB DRUML
0384 75460 116017 JSB DEADP,I DRUM ERROR WITH NO HOPE
0385 75461 017476 JSB KIDRR RESTORE DRUM SPACE
0386*
0387* WRITE ADT TO DISC
0388*
0389 75462 064113 LDB ADLEN
0390 75463 074072 STB WORD
0391 75464 060112 LDA ADLOC
0392 75465 064562 LDB LIBD
0393 75466 016231 JSB DRUML
0394 75467 116017 JSB DEADP,I DRUM ERROR WITH NO HOPE
0395*
0396 75470 116013 JSB TBDAP,I RESTORE DISK SPACE
0397 75471 060033 LDA KIDT IF FIRST DISC ENTRY
0398 75472 050052 CPA ID WAS NOT ID, WERE DONE.
0399 75473 027263 JMP KID1
0400 75474 103100 KID18 CLF 0
0401 75475 026267 JMP LEND
0402*
0403*
0404 75476 000000 KIDRR NOP
0405 75477 060113 LDA ADLEN READ IN ADT
0406 75500 070072 STA WORD
0407 75501 060112 LDA ADLOC
0408 75502 064566 LDB LIBDI
0409 75503 016231 JSB DRUML
0410 75504 116017 JSB DEADP,I DRUM ERROR WITH NO HOPE
0411*

```

0412\* WRITE ADT TO DRUM

0413\*

|      |       |        |       |             |                                  |
|------|-------|--------|-------|-------------|----------------------------------|
| 0414 | 75505 | 064113 |       | LDB ADLEN   |                                  |
| 0415 | 75506 | 074072 |       | STB WORD    |                                  |
| 0416 | 75507 | 060112 |       | LDA ADLOC   |                                  |
| 0417 | 75510 | 064562 |       | LDB LIBD    |                                  |
| 0418 | 75511 | 016231 |       | JSB DRUML   |                                  |
| 0419 | 75512 | 116017 |       | JSB DEADP,I | DRUM ERROR WITH NO HOPE          |
| 0420 | 75513 | 060030 |       | LDA LOCTC   | GET COUNT OF ENTRIES             |
| 0421 | 75514 | 070031 |       | STA KIDP    |                                  |
| 0422 | 75515 | 065002 |       | LDB L8192   | GET TABLE BEGINNING POINTER      |
| 0423 | 75516 |        | KIDRS | EQU *       |                                  |
| 0424 | 75516 | 074036 |       | STB KIDP1   | SET A CONVENIENT POINTER         |
| 0425 | 75517 | 160001 |       | LDA B,I     | GET THE DRUM ADDRESS             |
| 0426 | 75520 | 034036 |       | ISZ KIDP1   | ADVANCE POINTER TO LENGTH WORD   |
| 0427 | 75521 | 002003 |       | SZA,RSS     | SKIP IF DRUM SPACE               |
| 0428 | 75522 | 027535 |       | JMP KIDRV   | NO DRUM SPACE, JUST CONVERT LENG |
| 0429 | 75523 | 070044 |       | STA KILD    | SAVE ADDRESS FOR RSFS            |
| 0430 | 75524 | 160036 |       | LDA KIDP1,I | GET LENGTH WORD                  |
| 0431 | 75525 | 002021 |       | SSA,RSS     | SKIP IF NEGATIVE (WORD COUNT)    |
| 0432 | 75526 | 027532 |       | JMP KIDRT   | POSITIVE (BLOCKS)                |
| 0433 | 75527 | 007400 |       | CCB         |                                  |
| 0434 | 75530 | 101026 |       | ASR 6       | CONVERT TO SECTORS               |
| 0435 | 75531 | 003005 |       | CMA,INA,RSS |                                  |
| 0436 | 75532 | 001020 | KIDRT | ALS,ALS     | CONVERT BLOCKS TO SECTORS        |
| 0437 | 75533 | 070045 |       | STA KILDF   | SAVE LENGTH FOR RSFS             |
| 0438 | 75534 | 116012 |       | JSB RSFSP,I | RESTORE SPACE TO ADT             |
| 0439 | 75535 |        | KIDRV | EQU *       |                                  |
| 0440 | 75535 | 160036 |       | LDA KIDP1,I | GET LENGTH                       |
| 0441 | 75536 | 002021 |       | SSA,RSS     | SKIP IF NEGATIVE (WORD COUNT)    |
| 0442 | 75537 | 027544 |       | JMP KIDRW   | POSITIVE (BLOCK COUNT)           |
| 0443 | 75540 | 007400 |       | CCB         |                                  |
| 0444 | 75541 | 101030 |       | ASR 8       | MAKE INTO BLOCK COUNT            |
| 0445 | 75542 | 003004 |       | CMA,INA     |                                  |
| 0446 | 75543 | 170036 |       | STA KIDP1,I | ALTER TABLE FOR DISK SPACE RETUR |
| 0447 | 75544 |        | KIDRW | EQU *       |                                  |
| 0448 | 75544 | 064036 |       | LDB KIDP1   | GET PATCH TABLE POINTER          |
| 0449 | 75545 | 044355 |       | ADB ,+3     | ADVANCE TO NEXT ENTRY            |
| 0450 | 75546 | 034031 |       | ISZ KIDP    | CHECK FOR END                    |
| 0451 | 75547 | 027516 |       | JMP KIDRS   | NOT END, PROCESS NEXT            |
| 0452 | 75550 | 127476 |       | JMP KIDRR,I | RETURN                           |

0453\*

0454\*

|      |       |        |       |     |          |
|------|-------|--------|-------|-----|----------|
| 0455 | 75551 | 030000 | KDIR0 | DEF | DIREC    |
| 0456 | 75552 | 031051 | KDIRL | DEF | DIREL    |
| 0457 | 00031 |        | KIDP  | EQU | LTEMP+1  |
| 0458 | 00032 |        | KIDI  | EQU | LTEMP+2  |
| 0459 | 00033 |        | KIDT  | EQU | LTEMP+3  |
| 0460 | 00036 |        | KIDP1 | EQU | LTEMP+6  |
| 0461 | 00037 |        | KIDP2 | EQU | LTEMP+7  |
| 0462 | 00040 |        | KIDP3 | EQU | LTEMP+8  |
| 0463 | 00041 |        | KIDP4 | EQU | LTEMP+9  |
| 0464 | 00042 |        | KIDC  | EQU | LTEMP+10 |
| 0465 | 00043 |        | KIDB  | EQU | LTEMP+11 |
| 0466 | 75553 |        | SKID  | EQU | *        |

0468\* THE UNLOCK COMMAND IS USED TO RESTORE TO THE SYSTEM ANY DRUM  
 0469\* TRACKS WHICH HAVE PREVIOUSLY BEEN LOCKED. THE FORMAT FOR THE  
 0470\* COMMAND IS AS FOLLOWS:

0471\*  
 0472\* UNLOCK=DRUM, TRACKF [, TRACKL]

0473\*  
 0474\* DRUM IS THE DRUM NUMBER, TRACKF AND TRACKL SPECIFY THE FIRST &  
 0475\* LAST TRACKS TO BE UNLOCKED. IF TRACKL IS NOT SPECIFIED, IT IS  
 0476\* ASSUMED TO BE EQUAL TO TRACKF.

0477\*  
 0478 75000 ORG LIBRA  
 0479 75000 017160 JSB UNLNO GET DRUM NO. IN B  
 0480 75001 177774 OCT =4  
 0481 75002 050426 CPA ,+54B CHECK FOR COMMA FOLLOWING,  
 0482 75003 002001 RSS  
 0483 75004 026275 JMP LFRER  
 0484\*  
 0485 75005 074030 STB UNLD SAVE DRUM NUMBER  
 0486 75006 044676 ADB ?AT6L MAKE SURE  
 0487 75007 160001 LDA 1,I DRUM EXISTS  
 0488 75010 002003 SZA,RSS  
 0489 75011 027250 JMP UNL1 NO DRUM  
 0490\*  
 0491 75012 017160 JSB UNLNO GET FIRST TRACK  
 0492 75013 177700 OCT =100  
 0493 75014 074031 STB UNLF  
 0494 75015 050426 CPA ,+54B ONLY TRACK?  
 0495 75016 002001 RSS NO  
 0496 75017 027022 JMP ++3  
 0497\*  
 0498 75020 017160 JSB UNLNO GET LAST TRACK.  
 0499 75021 177700 OCT =100  
 0500 75022 050367 CPA ,+15B  
 0501 75023 002001 RSS  
 0502 75024 026275 JMP LFRER  
 0503 75025 074032 STB UNLL  
 0504 75026 007000 CMB CHECK FOR LAST TRACK >= FIRST.  
 0505 75027 044031 ADB UNLF  
 0506 75030 006021 SSB,RSS  
 0507 75031 027263 JMP UNL4 NOT OK.  
 0508\*  
 0509 75032 060030 LDA UNLD CONVERT DRUM/TRACK NO. INTO  
 0510 75033 100040 LSL 6 SINGLE TRACK NO.  
 0511 75034 040031 ADA UNLF  
 0512 75035 070031 STA UNLF  
 0513 75036 070033 STA UNLT  
 0514 75037 060030 LDA UNLD  
 0515 75040 100046 LSL 6  
 0516 75041 040032 ADA UNLL  
 0517 75042 070032 STA UNLL  
 0518\*  
 0519\* NOW SCAN TRAX TO DETERMINE HOW MANY TRACKS WILL  
 0520\* ACTUALLY BE OPENED.  
 0521\*  
 0522 75043 002400 CLA INITIALLY COUNT IS 0.

|       |                                                            |        |       |               |                                  |
|-------|------------------------------------------------------------|--------|-------|---------------|----------------------------------|
| 0523  | 75044                                                      | 070034 |       | STA UNLCN     |                                  |
| 0524  | 75045                                                      | 060033 | UNL5  | LDA UNLT      |                                  |
| 0525  | 75046                                                      | 017215 |       | JSB UNLFT     | FIND TRACK.                      |
| 0526  | 75047                                                      | 002002 |       | SZA           | IF LOCKED, BUMP                  |
| 0527  | 75050                                                      | 034034 |       | ISZ UNLCN     | COUNTER.                         |
| 0528  | 75051                                                      | 060033 |       | LDA UNLT      | GET TRACK VALUE.                 |
| 0529  | 75052                                                      | 050032 |       | CPA UNLL      | TEST FOR DONE.                   |
| 0530  | 75053                                                      | 027050 |       | JMP UNL6      |                                  |
| 0531  | 75054                                                      | 034033 |       | ISZ UNLT      | BUMP TRACK NO.                   |
| 0532  | 75055                                                      | 027045 |       | JMP UNL5      |                                  |
| 0533* |                                                            |        |       |               |                                  |
| 0534  | 75056                                                      |        | UNL6  | EQU *         |                                  |
| 0535  | 75056                                                      | 060542 |       | LDA P8192     | ## OF WORDS AVAIL FOR ADT        |
| 0536  | 75057                                                      | 040113 |       | ADA ADLEN     | ## OF NEW WORDS ALLOWED.         |
| 0537  | 75060                                                      | 001100 |       | ARS           | ## OF NEW ENTRIES ALLOWED.       |
| 0538  | 75061                                                      | 064034 |       | LDB UNLCN     | COMPARE WITH # WE WANT TO ADD.   |
| 0539  | 75062                                                      | 007004 |       | CMB, INB      |                                  |
| 0540  | 75063                                                      | 044000 |       | ADB 0         |                                  |
| 0541  | 75064                                                      | 006020 |       | SSB           |                                  |
| 0542  | 75065                                                      | 070034 |       | STA UNLCN     |                                  |
| 0543* |                                                            |        |       |               |                                  |
| 0544  | 75066                                                      | 060113 |       | LDA ADLEN     | READ IN ADT.                     |
| 0545  | 75067                                                      | 070072 |       | STA WORD      |                                  |
| 0546  | 75070                                                      | 060112 |       | LDA ADLOC     |                                  |
| 0547  | 75071                                                      | 064566 |       | LDB LIBDI     |                                  |
| 0548  | 75072                                                      | 044034 |       | ADB UNLCN     | LEAVE ROOM FOR                   |
| 0549  | 75073                                                      | 044034 |       | ADB UNLCN     | NEW ADDITIONS                    |
| 0550  | 75074                                                      | 016231 |       | JSB DRUML     |                                  |
| 0551  | 75075                                                      | 026311 |       | JMP DDERR     |                                  |
| 0552* |                                                            |        |       |               |                                  |
| 0553* | SEARCH ADT FOR FIRST ENTRY BEYOND FIRST ONE TO BE ENTERED. |        |       |               |                                  |
| 0554* |                                                            |        |       |               |                                  |
| 0555  | 75076                                                      | 064562 |       | LDB LIBD      |                                  |
| 0556  | 75077                                                      | 074051 |       | STB MOVED     |                                  |
| 0557  | 75100                                                      | 044034 |       | ADB UNLCN     |                                  |
| 0558  | 75101                                                      | 044034 |       | ADB UNLCN     |                                  |
| 0559  | 75102                                                      | 074050 |       | STB MOVES     |                                  |
| 0560  | 75103                                                      | 060031 | UNL9  | LDA UNLF      | DO WE WANT TO                    |
| 0561  | 75104                                                      | 017215 |       | JSB UNLFT     | UNLOCK THIS TRACK?               |
| 0562  | 75105                                                      | 002003 |       | SZA, RSS      |                                  |
| 0563  | 75106                                                      | 027140 |       | JMP UNL10     | NO--GO DO NEXT ONE.              |
| 0564  | 75107                                                      | 120001 |       | XOR 1, I      | YES--CLEAR TRAX                  |
| 0565  | 75110                                                      | 170001 |       | STA 1, I      | BIT.                             |
| 0566  | 75111                                                      | 060051 |       | LDA MOVED     | CAN WE INSERT ADT ENTRY?         |
| 0567  | 75112                                                      | 050050 |       | CPA MOVES     |                                  |
| 0568  | 75113                                                      | 027140 |       | JMP UNL10     | NO--GO DO NEXT ONE.              |
| 0569  | 75114                                                      | 060031 | UNL11 | LDA UNLF      | SEARCH ADT FOR A PLACE TO PUT IT |
| 0570  | 75115                                                      | 001727 |       | ALF, ALF      |                                  |
| 0571  | 75116                                                      | 003104 |       | CMA, CLE, INA |                                  |
| 0572  | 75117                                                      | 140050 |       | ADA MOVES, I  |                                  |
| 0573  | 75120                                                      | 002040 |       | SEZ           |                                  |
| 0574  | 75121                                                      | 027125 |       | JMP ++4       | FOUND ONE.                       |
| 0575  | 75122                                                      | 064350 |       | LDB .-2       | MOVE 2 WORDS UP                  |
| 0576  | 75123                                                      | 016257 |       | JSB MOVEW     | AND TEST NEXT ENTRY.             |
| 0577  | 75124                                                      | 027114 |       | JMP UNL11     |                                  |



|       |           |        |                                                     |                               |
|-------|-----------|--------|-----------------------------------------------------|-------------------------------|
| 0578* |           |        |                                                     |                               |
| 0579  | 75125     | 060031 | LDA UNLF                                            | INSERT                        |
| 0580  | 75126     | 001727 | ALF, ALF                                            | ENTRY,                        |
| 0581  | 75127     | 064442 | LDB B200                                            | TRACK LENGTH                  |
| 0582  | 75130     | 002002 | SZA                                                 |                               |
| 0583  | 75131     | 027134 | JMP ++3                                             |                               |
| 0584  | 75132     | 060355 | LDA ,+3                                             | TRACK 0 USES 3                |
| 0585  | 75133     | 067313 | LDB B175                                            | SECTORS FOR BOOTSTRAP         |
| 0586  | 75134     | 104400 | DST MOVED, I                                        |                               |
|       | 75135     | 100051 |                                                     |                               |
| 0587  | 75136     | 034051 | ISZ MOVED                                           |                               |
| 0588  | 75137     | 034051 | ISZ MOVED                                           |                               |
| 0589* |           |        |                                                     |                               |
| 0590  | 75140     | 060031 | UNL10 LDA UNLF                                      | WAST THAT THE LAST TRACK?     |
| 0591  | 75141     | 050032 | CPA UNLL                                            |                               |
| 0592  | 75142     | 027145 | JMP ++3                                             | YES.                          |
| 0593  | 75143     | 034031 | ISZ UNLF                                            | BUMP TO NEXT TRACK.           |
| 0594  | 75144     | 027103 | JMP UNL9                                            |                               |
| 0595* |           |        |                                                     |                               |
| 0596  | 75145     | 060034 | LDA UNLCN                                           | COMPUTE NEW ADLEN.            |
| 0597  | 75146     | 001000 | ALS                                                 |                               |
| 0598  | 75147     | 003004 | CMA, INA                                            |                               |
| 0599  | 75150     | 040113 | ADA ADLEN                                           |                               |
| 0600  | 75151     | 070113 | STA ADLEN                                           |                               |
| 0601* |           |        |                                                     |                               |
| 0602  | 75152     | 070072 | STA WORD                                            |                               |
| 0603  | 75153     | 060112 | LDA ADLOC                                           | WRITE ADT TO DRUM             |
| 0604  | 75154     | 064562 | LDB LIBD                                            |                               |
| 0605  | 75155     | 016231 | JSB DRUML                                           |                               |
| 0606  | 75156     | 116015 | JSB SICKP, I                                        |                               |
| 0607  | 75157     | 026267 | JMP LEND                                            |                               |
| 0608* |           |        |                                                     |                               |
| 0609* | UNLNO     | INPUTS | A DECIMAL NUMBER AND CHECKS THAT IT IS SMALLER THAN |                               |
| 0610* | =<JSB,+1> |        | IT RETURNS WITH THE NUMBER IN B AND THE FOLLOWING   |                               |
| 0611* | CHARACMER | IN A.  |                                                     |                               |
| 0612* |           |        |                                                     |                               |
| 0613  | 75160     | 000000 | UNLNO NOP                                           |                               |
| 0614  | 75161     | 017202 | JSB UNLDG                                           | GET A DIGIT.                  |
| 0615  | 75162     | 026275 | JMP LFRER                                           | ILLEGAL IF NONE               |
| 0616  | 75163     | 074035 | UNLN3 STB UNLN                                      | SAVE PARTIAL RESULT.          |
| 0617  | 75164     | 147160 | ADB UNLNO, I                                        |                               |
| 0618  | 75165     | 006021 | SSB, RSS                                            |                               |
| 0619  | 75166     | 027263 | JMP UNL4                                            |                               |
| 0620  | 75167     | 017202 | JSB UNLDG                                           | GET ANOTHER.                  |
| 0621  | 75170     | 027177 | JMP UNLN2                                           | END OF NUMBER                 |
| 0622  | 75171     | 060035 | LDA UNLN                                            | MULTIPLY RESULT SO FAR BY 10. |
| 0623  | 75172     | 001222 | RAL, RAL                                            |                               |
| 0624  | 75173     | 040035 | ADA UNLN                                            |                               |
| 0625  | 75174     | 001200 | RAL                                                 |                               |
| 0626  | 75175     | 044000 | ADB 0                                               | ADD IN NEW VALUE.             |
| 0627  | 75176     | 027163 | JMP UNLN3                                           |                               |
| 0628  | 75177     | 064035 | UNLN2 LDB UNLN                                      | RETURN NO.                    |
| 0629  | 75200     | 037160 | ISZ UNLNO                                           |                               |
| 0630  | 75201     | 127160 | JMP UNLNO, I                                        |                               |
| 0631* |           |        |                                                     |                               |

0632\*

|      |       |        |       |             |                    |
|------|-------|--------|-------|-------------|--------------------|
| 0633 | 75202 | 000000 | UNLDG | NOP         | GET DECIMAL DIGIT. |
| 0634 | 75203 | 016025 |       | JSB T35CQ   |                    |
| 0635 | 75204 | 127202 |       | JMP UNLDG,I | NOT A DIGIT.       |
| 0636 | 75205 | 064000 |       | LDB 0       |                    |
| 0637 | 75206 | 044316 |       | ADB M72B    |                    |
| 0638 | 75207 | 006021 |       | SSB,RSS     |                    |
| 0639 | 75210 | 127202 |       | JMP UNLDG,I |                    |
| 0640 | 75211 | 044364 |       | ADB ,+10    |                    |
| 0641 | 75212 | 006021 |       | SSB,RSS     |                    |
| 0642 | 75213 | 037202 |       | ISZ UNLDG   |                    |
| 0643 | 75214 | 127202 |       | JMP UNLDG,I |                    |

0644\*

0645\* UNLFT FINDS THE BIT IN THE TRAX TABLE SPECIFIED BY A. IT RETURNS  
 0646\* WITH B POINTING AT THE APPROPRIATE TRAX WORD & A THAT WORD MASKED  
 0647\* BY THE APPROPRIATE BIT.

0648\*

|      |       |        |       |             |                               |
|------|-------|--------|-------|-------------|-------------------------------|
| 0649 | 75215 | 000000 | UNLFT | NOP         |                               |
| 0650 | 75216 | 070001 |       | STA 1       | GET TRACK NO IN B.            |
| 0651 | 75217 | 001700 |       | ALF         | POSITION WORD NO IN           |
| 0652 | 75220 | 101044 |       | LSR 4       | LOW 4 BITS OF B, BIT NO       |
| 0653 | 75221 | 010371 |       | AND ,+17B   | IN LOW 4 OF A.                |
| 0654 | 75222 | 043227 |       | ADA UNLBT   | COMPUTE ADDRESS OF BIT MASK & |
| 0655 | 75223 | 160000 |       | LDA 0,I     | GET THE MASK.                 |
| 0656 | 75224 | 044512 |       | ADB DTRAX   | B=>TRAX WORD.                 |
| 0657 | 75225 | 110001 |       | AND 1,I     | MASK &                        |
| 0658 | 75226 | 127210 |       | JMP UNLFT,I | RETURN.                       |

0659\*

|      |       |        |       |                                               |  |
|------|-------|--------|-------|-----------------------------------------------|--|
| 0660 | 75227 | 075230 | UNLBT | DEF **1                                       |  |
| 0661 | 75230 | 000001 |       | OCT 1,2,4,10,20,40,100,200,400,1000,2000,4000 |  |

75231 000002

75232 000004

75233 000010

75234 000020

75235 000040

75236 000100

75237 000200

75240 000400

75241 001000

75242 002000

75243 004000

0662 75244 010000

OCT 10000,20000,40000,100000

75245 020000

75246 040000

75247 100000

0663 75250 064331

|      |                       |  |
|------|-----------------------|--|
| UNL1 | LDB ,=17              |  |
|      | JSB UNLER             |  |
|      | OCT 5116              |  |
|      | ASC 8,ONEXISTENT DRUM |  |

0664 75251 017277

0665 75252 005116

0666 75253 047516

75254 042530

75255 044523

75256 052105

75257 047124

75260 020104

75261 051125

|       |       |        |       |                         |
|-------|-------|--------|-------|-------------------------|
|       | 75262 | 046440 |       |                         |
| 0667  | 75263 | 064327 | UNL4  | LDB .-19                |
| 0668  | 75264 | 017277 |       | JSB UNLER               |
| 0669  | 75265 | 005111 |       | OCT 5111                |
| 0670  | 75266 | 046114 |       | ASC 9,LLEGAL PARAMETERS |
|       | 75267 | 042507 |       |                         |
|       | 75270 | 040514 |       |                         |
|       | 75271 | 020120 |       |                         |
|       | 75272 | 040522 |       |                         |
|       | 75273 | 040515 |       |                         |
|       | 75274 | 042524 |       |                         |
|       | 75275 | 042522 |       |                         |
|       | 75276 | 051440 |       |                         |
| 0671  | 75277 | 000000 | UNLER | NOP                     |
| 0672  | 75300 | 074033 |       | STB UNLT                |
| 0673  | 75301 | 005100 |       | BRS                     |
| 0674  | 75302 | 063277 |       | LDA UNLER               |
| 0675  | 75303 | 070050 |       | STA MOVES               |
| 0676  | 75304 | 060305 |       | LDA T35B1               |
| 0677  | 75305 | 070051 |       | STA MOVED               |
| 0678  | 75306 | 016257 |       | JSB MOVEW               |
| 0679  | 75307 | 060033 |       | LDA UNLT                |
| 0680  | 75310 | 003004 |       | CMA,INA                 |
| 0681  | 75311 | 064305 |       | LDB T35B1               |
| 0682  | 75312 | 026271 |       | JMP LEND+2              |
| 0683* |       |        |       |                         |
| 0684  | 75313 | 000175 | B175  | OCT 175                 |
| 0685* |       |        |       |                         |
| 0686  | 75314 |        | SUNL  | EQU *                   |
| 0687  | 00030 |        |       | ORG LTEMP               |
| 0688  | 00030 | 000000 | UNLD  | BSS 1                   |
| 0689  | 00031 | 000000 | UNLF  | BSS 1                   |
| 0690  | 00032 | 000000 | UNLL  | BSS 1                   |
| 0691  | 00033 | 000000 | UNLT  | BSS 1                   |
| 0692  | 00034 | 000000 | UNLCN | BSS 1                   |
| 0693  | 00035 | 000000 | UNLN  | BSS 1                   |

0002\* THE LOCK COMMAND IS USED TO TELL THE SYSTEM TO STOP USING CERTAIN  
 0003\* DRUM TRACKS. THIS CAN BE DONE EITHER BECAUSE THE TRACKS HAVE BEEN  
 0004\* FOUND FAULTY OR BECAUSE THEY HAVE INFORMATION ON THEM WHICH IS  
 0005\* UNRELATED TO TSB.

0006\*  
 0007\* THE ROUTINE WILL NOT LOCK TRACKS WHICH ARE BEING USED FOR SYSTEM  
 0008\* PURPOSES. THESE TRACKS CAN BE LOCKED BY THE LOADER AT SYSTEM INI-  
 0009\* TIATION.

0010\*  
 0011\* THE FORMAT FOR THE LOCK COMMAND IS:

0012\*  
 0013\* LOCK=DRUM, TRACKF [, TRACKL]  
 0014\*

0015\* ALL TRACKS ON THE SPECIFIED DRUM FROM TRACKF TO TRACKL ARE LOCKED.  
 0016\* IF TRACKL IS NOT SPECIFIED, ONLY ONE TRACK IS LOCKED.

0017\*  
 0018\* THE OPERATION OF THE LOCK ROUTINE IS AS FOLLOWS:

- 0019\*  
 0020\* 1) INTERPRET & VALIDATE PARAMETERS  
 0021\* 2) CHECK THAT THE SYSTEM IS NOT USING ANY OF THE  
 0022\* SPECIFIED TRACKS.  
 0023\* 3) SCAN THE DIRECTORY AND BUILD A TABLE CONTAINING  
 0024\* THE DISC ADDRESS OF EACH SANCTIFIED PROGRAM OR  
 0025\* FILE WHICH WILL BE REMOVED BY LOCKING.  
 0026\* 4) USING THIS TABLE, SCAN THE FUSS TABLE TO INSURE  
 0027\* THAT NONE OF THESE SANCTIFIED FILES ARE IN USE.  
 0028\* 5) UPDATE ADT AND TRAX.  
 0029\* 6) UPDATE DIRECTORY, ZEROING THE DRUM ADDRESS FOR  
 0030\* SANCTIFIED PROGRAMS AND REMOVING THE ENTRY FOR  
 0031\* SANCTIFIED FILES.  
 0032\* 7) UPDATE DISC ADT AND IDT WITH SPACE RETURNED  
 0033\* FROM SANCTIFIED FILES.

|       |       |        |           |                            |
|-------|-------|--------|-----------|----------------------------|
| 0034  | 75000 |        | ORG LIBRA |                            |
| 0035  | 75000 | 017561 | JSB LOCNO | GET DRUM NO.               |
| 0036  | 75001 | 177774 | OCT =4    |                            |
| 0037  | 75002 | 050426 | CPA .+548 | CHECK FOR COMMA FOLLOWING. |
| 0038  | 75003 | 002001 | RSS       |                            |
| 0039  | 75004 | 026275 | JMP LFRER |                            |
| 0040  | 75005 | 060001 | LDA 1     |                            |
| 0041  | 75006 | 005323 | RBR, RBR  |                            |
| 0042  | 75007 | 074042 | STB LOCD  |                            |
| 0043  | 75010 | 040676 | ADA ?ATBL | DOES DRUM                  |
| 0044  | 75011 | 160000 | LDA 0, I  | EXIST?                     |
| 0045  | 75012 | 002003 | SZA, RSS  |                            |
| 0046  | 75013 | 027667 | JMP LOCR1 | NO SUCH DRUM               |
| 0047* |       |        |           |                            |
| 0048  | 75014 | 017561 | JSB LOCNO | GET FIRST TRACK            |
| 0049  | 75015 | 177700 | OCT =100  |                            |
| 0050  | 75016 | 005727 | BLF, BLF  |                            |
| 0051  | 75017 | 044042 | ADB LOCD  |                            |
| 0052  | 75020 | 074046 | STB LOCF  |                            |
| 0053  | 75021 | 050426 | CPA .+548 | TEST FOR SECOND PARAMETER. |
| 0054  | 75022 | 002001 | RSS       |                            |
| 0055  | 75023 | 027030 | JMP ++5   |                            |
| 0056  | 75024 | 017561 | JSB LOCNO | GET LAST TRACK             |

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0057 75025 177700 OCT =100
0058 75026 005727 BLF,8LF
0059 75027 044042 ADB LOCD
0060 75030 074047 STB LOCL
0061 75031 050367 CPA .+15B CHECK FOR CR FOLLOWING.
0062 75032 002001 RSS
0063 75033 026275 JMP LFRER
0064*
0065 75034 007000 CMB MAKE SURE L>#F.
0066 75035 044046 ADB LOCF
0067 75036 006021 SSB,RSS
0068 75037 027700 JMP LOCR2 IT ISN'T,
0069*
0070** INSURE THAT NONE OF THE SPECIFIED TRACKS ARE BEING USED FOR
0071** SWAPPING, DIRECTORY, DISC ADT, IDT, ADT, SYSTEM LIBRARY OR
0072** BOOTSTRAP LOADER.
0073*
0074 75040 060177 LDA NPORT SWAP
0075 75041 070031 STA LOCNT TRACKS
0076 75042 063732 LDA LOCST => DRUM ADDRESS
0077 75043 073045 STA LOCSW OF TTY00
0078 75044 017616 JSB LOCTS CHECK SWAP TRACK
0079 75045 061130 LOCSW DEF TTY00+?DISC
0080 75046 163045 LDA LOCSW,I CHECK
0081 75047 040444 ADA B400 ADJACENT
0082 75050 070030 STA LOCTC TRACK
0083 75051 017616 JSB LOCTS ALSO
0084 75052 000030 DEF LOCTC
0085 75053 063045 LDA LOCSW
0086 75054 040375 ADA .+TTY01-TTY00 => NEXT DRUM ADDRESS
0087 75055 073045 STA LOCSW
0088 75056 034031 ISZ LOCNT
0089 75057 027044 JMP LOCSW-1
0090*
0091 75060 063742 LDA MM00 00 DIRECTORY
0092 75061 070031 STA LOCNT TRACKS
0093 75062 063730 LDA LOCDL => FIRST
0094 75063 073065 STA LOCDT DIREC ENTRY
0095 75064 017616 JSB LOCTS CHECK DIRECTORY TRACK
0096 75065 030006 LOCDT DEF DIREC+6
0097 75066 063065 LDA LOCDT
0098 75067 040361 ADA .+7 => NEXT DIREC ENTRY
0099 75070 073065 STA LOCDT
0100 75071 034031 ISZ LOCNT
0101 75072 027064 JMP LOCDT-1
0102*
0103 75073 060342 LDA .-8 8 DISC
0104 75074 070031 STA LOCNT ADT'S
0105 75075 063733 LDA LOCDL => DISC ADT
0106 75076 073100 STA LOCAD DRUM ADDRESS
0107 75077 017616 JSB LOCTS CHECK DISC ADT
0108 75100 000115 LOCAD DEF DADLC
0109 75101 037100 ISZ LOCAD => NEXT DISC ADT ENTRY
0110 75102 034031 ISZ LOCNT
0111 75103 027077 JMP LOCAD-1

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0112*
0113 75104 017616 JSB LOCTS
0114 75105 000101 DEF IDEC+1 FIRST IDT TRACK
0115 75106 017616 JSB LOCTS
0116 75107 000104 DEF IDEC+4 SECOND IDT TRACK
0117 75110 017616 JSB LOCTS
0118 75111 000107 DEF IDEC+7 THIRD IDT TRACK
0119*
0120 75112 017616 JSB LOCTS
0121 75113 000112 DEF ADLOC ADT
0122*
0123 75114 063734 LDA LOCCM NUMBER OF SYSTEM
0124 75115 070031 STA LOCNT LIBRARY PROGRAMS
0125 75116 063735 LDA LOCM6 *-> LIBRARY PROGRAM
0126 75117 073121 STA LOCSL DRUM ADDRESS
0127 75120 017616 JSB LOCTS
0128 75121 072034 LOCSL DEF COM6
0129 75122 037121 ISZ LOCSL *-> NEXT LIBRARY PROGRAM
0130 75123 034031 ISZ LOCNT
0131 75124 027120 JMP LOCSL-1
0132*
0133*
0134** SEARCH THE DIRECTORY FOR SANCTIFIED **
0135** ENTRIES ON SPECIFIED TRACKS **
0136*
0137*
0138* READ EACH DIRECTORY TRACK AND CHECK FOR DRUM ADDRESSES WHICH
0139* LIE IN THE RANGE OF THE TRACKS TO BE LOCKED. FOR EACH SUCH
0140* ENTRY FOUND, ADD A 4-WORD ENTRY TO A TABLE CONSISTING OF:
0141* 1) A POINTER TO THE DIREC ENTRY FOR THIS DIRECTORY TRACK
0142* 2) A POINTER TO THIS ENTRY'S POSITION IN THE DIRECTORY
0143* 3) THE TWO-WORD DISC ADDRESS OF THE FILE OR PROGRAM
0144* IF THE TABLE OVERFLOWS (MORE THAN 512 ENTRIES), TELL THE
0145* OPERATOR TO TRY LOCKING A SMALLER BLOCK OF TRACKS.
0146*
0147 75125 002400 CLA INITIALIZE COUNT OF
0148 75126 070030 STA LOCTC TABLE ENTRIES
0149 75127 065002 LDB L8192 *-> BEGINNING OF
0150 75130 074036 STB LOCTP TABLE BUFFER
0151 75131 067736 LDB LODIR DIREC
0152 75132 LOC10 EQU *
0153 75132 074032 STB LOCDI POINTER
0154 75133 160001 LDA B,I ANY ENTRIES
0155 75134 002002 SZA ON THIS TRACK?
0156 75135 027142 JMP LOC12 YES
0157 75136 LOC11 EQU *
0158 75136 044361 ADB .+7 NO, BUMP POINTER
0159 75137 057737 CPB LOCDU ALL FINISHED?
0160 75140 027241 JMP LOC20 YES
0161 75141 027132 JMP LOC10 NO
0162 75142 LOC12 EQU *
0163 75142 070072 STA WORD FOR DRUM TRANSFER
0164 75143 007400 CCB COMPUTE #
0165 75144 100400 DIV .+12 OF ENTRIES
75145 000366

```

|       |       |        |       |           |                                |
|-------|-------|--------|-------|-----------|--------------------------------|
| 0166  | 75146 | 070031 | STA   | LOCNT     | ON TRACK                       |
| 0167  | 75147 | 064032 | LDB   | LOC DI    |                                |
| 0168  | 75150 | 044360 | ADB   | .,+6      |                                |
| 0169  | 75151 | 160001 | LDA   | B,I       | DRUM ADDRESS                   |
| 0170  | 75152 | 064566 | LDB   | LIB DI    | READ IN                        |
| 0171  | 75153 | 016231 | JSB   | DRUML     | DIRECTORY TRACK                |
| 0172  | 75154 | 026311 | JMP   | DDERR     |                                |
| 0173* |       |        |       |           |                                |
| 0174  | 75155 | 064562 | LDB   | LIBD      | INITIALIZE                     |
| 0175  | 75156 | 044361 | ADB   | .,+7      | DIRECTORY                      |
| 0176  | 75157 |        | LOC13 | EQU *     |                                |
| 0177  | 75157 | 074033 | STB   | LOC DP    | ., POINTER                     |
| 0178  | 75160 | 164033 | LDB   | LOC DP, I | GET DRUM ADDRESS               |
| 0179  | 75161 | 006003 | SZB   | ,RSS      | CHECK FOR ZERO                 |
| 0180  | 75162 | 027220 | JMP   | LOC15     |                                |
| 0181  | 75163 | 054351 | CPB   | .,=1      | SKIP PSEUDO                    |
| 0182  | 75164 | 027220 | JMP   | LOC15     | ENTRIES                        |
| 0183  | 75165 | 060046 | LDA   | LOC F     | CHECK                          |
| 0184  | 75166 | 003104 | CMA   | ,CLE, INA | AGAINST                        |
| 0185  | 75167 | 040001 | ADA   | B         | LOWER                          |
| 0186  | 75170 | 002041 | SEZ   | ,RSS      | BOUND                          |
| 0187  | 75171 | 027220 | JMP   | LOC15     | NOT IN RANGE                   |
| 0188  | 75172 | 007104 | CMB   | ,CLE, INB | CHECK                          |
| 0189  | 75173 | 044047 | ADB   | LOCL      | AGAINST                        |
| 0190  | 75174 | 044442 | ADB   | B200      | UPPER                          |
| 0191  | 75175 | 002041 | SEZ   | ,RSS      | BOUND                          |
| 0192  | 75176 | 027220 | JMP   | LOC15     | NOT IN RANGE                   |
| 0193* |       |        |       |           |                                |
| 0194  | 75177 | 064032 | LDB   | LOC DI    | SAVE POINTER TO                |
| 0195  | 75200 | 174036 | STB   | LOCTP, I  | DIREC ENTRY                    |
| 0196  | 75201 | 034036 | ISZ   | LOCTP     | IN TABLE                       |
| 0197  | 75202 | 064033 | LDB   | LOC DP    | SAVE POINTER TO                |
| 0198  | 75203 | 174036 | STB   | LOCTP, I  | DIRECTORY ALSO                 |
| 0199  | 75204 | 034036 | ISZ   | LOCTP     |                                |
| 0200  | 75205 | 006004 | INB   |           | GET DISC                       |
| 0201  | 75206 | 104200 | DLD   | B, I      | ADDRESS                        |
|       | 75207 | 100001 |       |           |                                |
| 0202  | 75210 | 104400 | DST   | LOCTP, I  | AND SAVE                       |
|       | 75211 | 100036 |       |           |                                |
| 0203  | 75212 | 064036 | LDB   | LOCTP     | ADVANCE TABLE                  |
| 0204  | 75213 | 044354 | ADB   | .,+2      | POINTER                        |
| 0205  | 75214 | 054530 | CPB   | LULEN     | TABLE OVERFLOW?                |
| 0206  | 75215 | 027226 | JMP   | LOC16     | YES                            |
| 0207  | 75216 | 074036 | STB   | LOCTP     | NO                             |
| 0208  | 75217 | 034030 | ISZ   | LOCTC     | BUMP COUNT OF TABLE ENTRIES    |
| 0209  | 75220 |        | LOC15 | EQU *     |                                |
| 0210  | 75220 | 064033 | LDB   | LOC DP    | BUMP DIRECTORY                 |
| 0211  | 75221 | 044366 | ADB   | .,+12     | POINTER                        |
| 0212  | 75222 | 034031 | ISZ   | LOCNT     | FINISHED THIS DIRECTORY TRACK? |
| 0213  | 75223 | 027157 | JMP   | LOC13     | NO                             |
| 0214  | 75224 | 064032 | LDB   | LOC DI    | YES, CHECK                     |
| 0215  | 75225 | 027136 | JMP   | LOC11     | NEXT TRACK                     |
| 0216* |       |        |       |           |                                |
| 0217  | 75226 |        | LOC16 | EQU *     |                                |
| 0218  | 75226 | 064330 | LDB   | .,-18     | TABLE OVERFLOW                 |

|      |       |        |     |       |              |
|------|-------|--------|-----|-------|--------------|
| 0219 | 75227 | 017714 | JSB | LOCER |              |
| 0220 | 75230 | 005114 | OCT | 5114  |              |
| 0221 | 75231 | 047503 | ASC | 8,0CK | FEWER TRACKS |
|      | 75232 | 045440 |     |       |              |
|      | 75233 | 043105 |     |       |              |
|      | 75234 | 053505 |     |       |              |
|      | 75235 | 051040 |     |       |              |
|      | 75236 | 052122 |     |       |              |
|      | 75237 | 040503 |     |       |              |
|      | 75240 | 045523 |     |       |              |

0222\*

0223\*\* NOW COMPARE TABLE JUST BUILT WITH FUSS TABLE TO

0224\*\* DETERMINE IF THE TRACKS TO BE LOCKED CONTAIN ACTIVE FILES

0225\*

|      |       |        |       |             |                      |
|------|-------|--------|-------|-------------|----------------------|
| 0226 | 75241 |        | LOC20 | EQU *       |                      |
| 0227 | 75241 | 060030 | LDA   | LOCTC       | SKIP CHECKING        |
| 0228 | 75242 | 003007 | CMA,  | INA,SZA,RSS | FUSS IF NO           |
| 0229 | 75243 | 027340 | JMP   | LOC30       | TABLE ENTRIES        |
| 0230 | 75244 | 070030 | STA   | LOCTC       | SAVE NEGATIVE        |
| 0231 | 75245 | 060732 | LDA   | M2000       |                      |
| 0232 | 75246 | 070072 | STA   | WORD        |                      |
| 0233 | 75247 | 001100 | ARS   |             | NUMBER OF FUSS       |
| 0234 | 75250 | 070031 | STA   | LOCNT       | TABLE ENTRIES        |
| 0235 | 75251 | 160540 | LDA   | FUSS,I      | READ                 |
| 0236 | 75252 | 064566 | LDB   | LIBDI       | FUSS                 |
| 0237 | 75253 | 016231 | JSB   | DRUML       | TABLE                |
| 0238 | 75254 | 026311 | JMP   | DDERR       |                      |
| 0239 | 75255 | 064562 | LDB   | LIBD        | INITIALIZE           |
| 0240 | 75256 | 074036 | STB   | LOCTP       | FUSS POINTER         |
| 0241 | 75257 |        | LOC21 | EQU *       |                      |
| 0242 | 75257 | 104200 | DLD   | LOCTP,I     | GET FUSS ENTRY       |
|      | 75260 | 100036 |       |             |                      |
| 0243 | 75261 | 002003 | SZA,  | RSS         | CHECK                |
| 0244 | 75262 | 006002 | SZB   |             | FOR                  |
| 0245 | 75263 | 002001 | RSS   |             | ZERO                 |
| 0246 | 75264 | 027313 | JMP   | LOC23-1     | IT IS, SKIP IT       |
| 0247 | 75265 | 065002 | LDB   | L8192       | NON-ZERO, SET        |
| 0248 | 75266 | 044354 | ADB   | ,+2         | TABLE POINTER IN (B) |
| 0249 | 75267 | 060030 | LDA   | LOCTC       | NUMBER OF            |
| 0250 | 75270 | 070032 | STA   | LOCDI       | TABLE ENTRIES        |
| 0251 | 75271 |        | LOC22 | EQU *       |                      |
| 0252 | 75271 | 160001 | LDA   | B,I         | COMPARE              |
| 0253 | 75272 | 005004 | INB   |             | FIRST WORD           |
| 0254 | 75273 | 150036 | CPA   | LOCTP,I     | OF ENTRIES           |
| 0255 | 75274 | 027301 | JMP   | **+5        |                      |
| 0256 | 75275 | 031036 | IOR   | BIT15       |                      |
| 0257 | 75276 | 150036 | CPA   | LOCTP,I     |                      |
| 0258 | 75277 | 002001 | RSS   |             |                      |
| 0259 | 75300 | 027310 | JMP   | LOC25       | UNEQUAL              |
| 0260 | 75301 | 034036 | ISZ   | LOCTP       | EQUAL,               |
| 0261 | 75302 | 160001 | LDA   | B,I         | COMPARE              |
| 0262 | 75303 | 150036 | CPA   | LOCTP,I     | SECOND WORD          |
| 0263 | 75304 | 027320 | JMP   | LOC24       | EQUAL, FILE IN USE   |
| 0264 | 75305 | 003400 | CCA   |             | UNEQUAL, MOVE        |
| 0265 | 75306 | 040036 | ADA   | LOCTP       | POINTER BACK         |



|       |                                                           |        |       |             |         |  |                              |
|-------|-----------------------------------------------------------|--------|-------|-------------|---------|--|------------------------------|
| 0266  | 75307                                                     | 070036 |       | STA         | LOCTP   |  | TO FIRST WORD                |
| 0267  | 75310                                                     |        | LOC25 | EQU         | *       |  |                              |
| 0268  | 75310                                                     | 044355 |       | ADB         | .,+3    |  | BUMP TO NEXT TABLE ENTRY     |
| 0269  | 75311                                                     | 034032 |       | ISZ         | LOCDI   |  | ALL TABLE ENTRIES CHECKED?   |
| 0270  | 75312                                                     | 027271 |       | JMP         | LOC22   |  | NO                           |
| 0271  | 75313                                                     | 034036 |       | ISZ         | LOCTP   |  | YES                          |
| 0272  | 75314                                                     |        | LOC23 | EQU         | *       |  |                              |
| 0273  | 75314                                                     | 034036 |       | ISZ         | LOCTP   |  | BUMP TO NEXT FUSS ENTRY      |
| 0274  | 75315                                                     | 034031 |       | ISZ         | LOCNT   |  | ALL FUSS ENTRIES CHECKED?    |
| 0275  | 75316                                                     | 027257 |       | JMP         | LOC21   |  | NO                           |
| 0276  | 75317                                                     | 027340 |       | JMP         | LOC30   |  | YES                          |
| 0277  | 75320                                                     |        | LOC24 | EQU         | *       |  |                              |
| 0278  | 75320                                                     | 044347 |       | ADB         | .-3     |  | GET POINTER                  |
| 0279  | 75321                                                     | 074036 |       | STB         | LOCTP   |  | TO DIREC                     |
| 0280  | 75322                                                     | 164001 |       | LDB         | B,I     |  | IN (B)                       |
| 0281  | 75323                                                     | 160001 |       | LDA         | B,I     |  | TRACK                        |
| 0282  | 75324                                                     | 070072 |       | STA         | WORD    |  | LENGTH                       |
| 0283  | 75325                                                     | 044360 |       | ADB         | .,+6    |  |                              |
| 0284  | 75326                                                     | 160001 |       | LDA         | B,I     |  | READ                         |
| 0285  | 75327                                                     | 064566 |       | LDB         | LIBDI   |  | DIRECTORY                    |
| 0286  | 75330                                                     | 016231 |       | JSB         | DRUML   |  | TRACK                        |
| 0287  | 75331                                                     | 026311 |       | JMP         | DDERR   |  |                              |
| 0288  | 75332                                                     | 060036 |       | LDA         | LOCTP   |  | GET POINTER                  |
| 0289  | 75333                                                     | 002004 |       | INA         |         |  | TO DRUM                      |
| 0290  | 75334                                                     | 160000 |       | LDA         | A,I     |  | ADDRESS FOR                  |
| 0291  | 75335                                                     | 073337 |       | STA         | ++,2    |  | SUBROUTINE                   |
| 0292  | 75336                                                     | 017616 |       | JSB         | LOCTS   |  | OUTPUT "CAN'T                |
| 0293  | 75337                                                     | 000000 |       | BSS         | 1       |  | LOCK" MESSAGE                |
| 0294* |                                                           |        |       |             |         |  |                              |
| 0295* | IT IS NOW PERMISSIBLE TO DO THE LOCKING. FIRST PURGE ADT. |        |       |             |         |  |                              |
| 0296* |                                                           |        |       |             |         |  |                              |
| 0297  | 75340                                                     |        | LOC30 | EQU         | *       |  |                              |
| 0298  | 75340                                                     | 060113 |       | LDA         | ADLEN   |  |                              |
| 0299  | 75341                                                     | 070072 |       | STA         | WORD    |  |                              |
| 0300  | 75342                                                     | 060112 |       | LDA         | ADLOC   |  |                              |
| 0301  | 75343                                                     | 064566 |       | LDB         | LIBDI   |  |                              |
| 0302  | 75344                                                     | 016231 |       | JSB         | DRUML   |  |                              |
| 0303  | 75345                                                     | 116015 |       | JSB         | SICKP,I |  |                              |
| 0304  | 75346                                                     | 064562 |       | LDB         | LIBD    |  | FIND FIRST ENTRY >= LOCF.    |
| 0305  | 75347                                                     | 060046 | LOC3  | LDA         | LOCF    |  |                              |
| 0306  | 75350                                                     | 003104 |       | CMA,CLE,INA |         |  |                              |
| 0307  | 75351                                                     | 140001 |       | ADA         | 1,I     |  |                              |
| 0308  | 75352                                                     | 002040 |       | SEZ         |         |  |                              |
| 0309  | 75353                                                     | 027356 |       | JMP         | ++,3    |  | FOUND ONE.                   |
| 0310  | 75354                                                     | 044354 |       | ADB         | .,+2    |  |                              |
| 0311  | 75355                                                     | 027347 |       | JMP         | LOC3    |  |                              |
| 0312  | 75356                                                     | 074051 |       | STB         | MOVED   |  | SAVE POINTER TO IT.          |
| 0313  | 75357                                                     | 060047 | LOC4  | LDA         | LOCL    |  | FIND FIRST ENTRY >= LOCL+128 |
| 0314  | 75360                                                     | 040442 |       | ADA         | B200    |  |                              |
| 0315  | 75361                                                     | 003104 |       | CMA,CLE,INA |         |  |                              |
| 0316  | 75362                                                     | 140001 |       | ADA         | 1,I     |  |                              |
| 0317  | 75363                                                     | 002040 |       | SEZ         |         |  |                              |
| 0318  | 75364                                                     | 027367 |       | JMP         | ++,3    |  |                              |
| 0319  | 75365                                                     | 044354 |       | ADB         | .,+2    |  |                              |
| 0320  | 75366                                                     | 027357 |       | JMP         | LOC4    |  |                              |

|        |                                                                   |        |      |              |                             |
|--------|-------------------------------------------------------------------|--------|------|--------------|-----------------------------|
| 0321   | 75367                                                             | 074050 |      | STB MOVES    |                             |
| 0322*  |                                                                   |        |      |              |                             |
| 0323   | 75370                                                             | 044674 |      | ADB MLIBD    | PERFORM                     |
| 0324   | 75371                                                             | 044113 |      | ADB ADLEN    | MOVE                        |
| 0325   | 75372                                                             | 016257 |      | JSB MOVEW    | OPERATION                   |
| 0326*  |                                                                   |        |      |              |                             |
| 0327   | 75373                                                             | 060051 |      | LDA MOVED    | COMPUTE ADLEN.              |
| 0328   | 75374                                                             | 003004 |      | CMA, INA     |                             |
| 0329   | 75375                                                             | 040562 |      | ADA LIBD     |                             |
| 0330   | 75376                                                             | 070113 |      | STA ADLEN    |                             |
| 0331   | 75377                                                             | 070072 |      | STA WORD     |                             |
| 0332   | 75400                                                             | 060112 |      | LDA ADLOC    | WRITE ADT TO DRUM           |
| 0333   | 75401                                                             | 064562 |      | LDB LIBD     |                             |
| 0334   | 75402                                                             | 016231 |      | JSB DRUML    | WRITE TO DRUM               |
| 0335   | 75403                                                             | 116015 |      | JSB SICKP, I |                             |
| 0336*  |                                                                   |        |      |              |                             |
| 0337*  | NOW MODIFY TRAX TABLE.                                            |        |      |              |                             |
| 0338*  |                                                                   |        |      |              |                             |
| 0339   | 75404                                                             | 060046 |      | LDA LOCF     | GET FIRST TRACK NO IN LOCT. |
| 0340   | 75405                                                             | 070044 | LOC5 | STA LOCT     |                             |
| 0341   | 75406                                                             | 006400 |      | CLB          | POSITION WORD NO IN B,      |
| 0342   | 75407                                                             | 100104 |      | RRL 4        | BIT NO IN A.                |
| 0343   | 75410                                                             | 001700 |      | ALF          |                             |
| 0344   | 75411                                                             | 044512 |      | ADB DTRAX    | GET POINTER TO WORD         |
| 0345   | 75412                                                             | 074031 |      | STB LOCNT    | SAVE IT.                    |
| 0346   | 75413                                                             | 043731 |      | ADA LOCLL    | COMPUTE SHIFT INSTRUCTION.  |
| 0347   | 75414                                                             | 073416 |      | STA **2      |                             |
| 0348   | 75415                                                             | 002404 |      | CLA, INA     |                             |
| 0349   | 75416                                                             | 100040 |      | LSL 16       | POSITION BIT.               |
| 0350   | 75417                                                             | 002003 |      | SZA, RSS     | IF LOW BIT,                 |
| 0351   | 75420                                                             | 002004 |      | INA          | SET IT.                     |
| 0352   | 75421                                                             | 130031 |      | IOR LOCNT, I | SET BIT IN                  |
| 0353   | 75422                                                             | 170031 |      | STA LOCNT, I | WORD TO SAY LOCKED.         |
| 0354   | 75423                                                             | 060044 |      | LDA LOCT     | IS IT LAST TRACK?           |
| 0355   | 75424                                                             | 050047 |      | CPA LOCL     |                             |
| 0356   | 75425                                                             | 027430 |      | JMP **3      | YES.                        |
| 0357   | 75426                                                             | 040444 |      | ADA B400     | NO                          |
| 0358   | 75427                                                             | 027405 |      | JMP LOC5     |                             |
| 0359*  |                                                                   |        |      | *            |                             |
| 0360** | UPDATE DIRECTORY                                                  |        |      |              | **                          |
| 0361*  |                                                                   |        |      | *            |                             |
| 0362*  |                                                                   |        |      |              |                             |
| 0363*  | USING THE TABLE BUILT PREVIOUSLY, UPDATE THE DIRECTORY. THE DRUM  |        |      |              |                             |
| 0364*  | ADDRESS FOR PROGRAMS IS SET TO 0 (I.E. THE PROGRAM IS DESECRATED) |        |      |              |                             |
| 0365*  | SINCE A GOOD COPY OF IT EXISTS ON THE DISC, FOR FILES, THE        |        |      |              |                             |
| 0366*  | DIRECTORY ENTRY IS REMOVED. THIS REQUIRES THAT SPACE BE RETURNED  |        |      |              |                             |
| 0367*  | TO THE DISC ADT AND THE RECORD OF SPACE USED IN THE IDT BE        |        |      |              |                             |
| 0368*  | UPDATED. IN ORDER TO ACCOMPLISH THIS THE FIRST TWO WORDS OF THE   |        |      |              |                             |
| 0369*  | TABLE ARE REPLACED BY THE ID AND LENGTH. FOR PROGRAMS THE LENGTH  |        |      |              |                             |
| 0370*  | IS SET TO ZERO SINCE NO SPACE IS TO BE RETURNED.                  |        |      |              |                             |
| 0371*  |                                                                   |        |      |              |                             |
| 0372   | 75430                                                             | 060030 |      | LDA LOCTC    | SKIP UPDATE                 |
| 0373   | 75431                                                             | 002003 |      | SZA, RSS     | IF NO                       |
| 0374   | 75432                                                             | 026267 |      | JMP LEND     | ENTRIES                     |
| 0375   | 75433                                                             | 070031 |      | STA LOCNT    |                             |

|       |                           |        |             |                    |
|-------|---------------------------|--------|-------------|--------------------|
| 0376  | 75434                     | 065002 | LDB L8192   | POINTER TO         |
| 0377  | 75435                     | 074036 | STB LOCTP   | FIRST ONE          |
| 0378  | 75436                     |        | LOC40 EQU * |                    |
| 0379  | 75436                     | 164036 | LDB LOCTP,I | => DIREC ENTRY     |
| 0380  | 75437                     | 074032 | STB LOCDI   | SAVE DIREC POINTER |
| 0381  | 75440                     | 160001 | LDA B,I     | WORD               |
| 0382  | 75441                     | 070072 | STA WORD    | COUNT              |
| 0383  | 75442                     | 003004 | CMA,INA     | COMPUTE END        |
| 0384  | 75443                     | 040562 | ADA LIBD    | OF DIRECTORY       |
| 0385  | 75444                     | 070037 | STA LOCND   | BUFFER             |
| 0386  | 75445                     | 044360 | ADB .+6     | READ               |
| 0387  | 75446                     | 160001 | LDA B,I     | DIRECTORY          |
| 0388  | 75447                     | 064566 | LDB LIBDI   | TRACK              |
| 0389  | 75450                     | 016231 | JSB DRUML   |                    |
| 0390  | 75451                     | 116017 | JSB DEADP,I |                    |
| 0391  | 75452                     | 064562 | LDB LIBD    | INITIALIZE         |
| 0392  | 75453                     | 074050 | STB MOVES   | MOVE               |
| 0393  | 75454                     | 074051 | STB MOVED   | POINTERS           |
| 0394  | 75455                     |        | LOC41 EQU * |                    |
| 0395  | 75455                     | 034036 | ISZ LOCTP   |                    |
| 0396  | 75456                     | 164036 | LDB LOCTP,I | => DIRECTORY ENTRY |
| 0397  | 75457                     | 044345 | ADB .-5     |                    |
| 0398  | 75460                     | 160001 | LDA B,I     |                    |
| 0399  | 75461                     | 002020 | SSA         | PROGRAM?           |
| 0400  | 75462                     | 027477 | JMP LOC42   | NO                 |
| 0401  | 75463                     | 044357 | ADB .+5     | YES, ZERO          |
| 0402  | 75464                     | 002400 | CLA         | DRUM ADDRESS       |
| 0403  | 75465                     | 170001 | STA B,I     | AND LENGTH         |
| 0404  | 75466                     | 170036 | STA LOCTP,I | IN TABLE           |
| 0405  | 75467                     | 044343 | ADB .-7     | SAVE               |
| 0406  | 75470                     | 160001 | LDA B,I     |                    |
| 0407  | 75471                     | 007400 | CCB         | ID IN              |
| 0408  | 75472                     | 044036 | ADB LOCTP   |                    |
| 0409  | 75473                     | 170001 | STA B,I     | TABLE              |
| 0410  | 75474                     | 044356 | ADB .+4     |                    |
| 0411  | 75475                     | 074036 | STB LOCTP   |                    |
| 0412  | 75476                     | 027524 | JMP LOC44   |                    |
| 0413  | 75477                     |        | LOC42 EQU * |                    |
| 0414  | 75477                     | 044363 | ADB .+9     | SAVE               |
| 0415  | 75500                     | 160001 | LDA B,I     |                    |
| 0416  | 75501                     | 170036 | STA LOCTP,I | LENGTH             |
| 0417  | 75502                     | 044337 | ADB .-11    | UPDATE POINTER     |
| 0418  | 75503                     | 074033 | STB LOCDP   | FOR MOVE           |
| 0419  | 75504                     | 160001 | LDA B,I     | SAVE               |
| 0420  | 75505                     | 007400 | CCB         |                    |
| 0421  | 75506                     | 044036 | ADB LOCTP   | ID                 |
| 0422  | 75507                     | 170001 | STA B,I     |                    |
| 0423  | 75510                     | 044356 | ADB .+4     | UPDATE TABLE       |
| 0424  | 75511                     | 074036 | STB LOCTP   | POINTER            |
| 0425* |                           |        |             |                    |
| 0426* | MOVE PORTION OF DIRECTORY |        |             |                    |
| 0427* |                           |        |             |                    |
| 0428  | 75512                     | 064033 | LDB LOCDP   |                    |
| 0429  | 75513                     | 007004 | CMB,INB     |                    |
| 0430  | 75514                     | 044050 | ADB MOVES   |                    |

|        |                                                                  |        |                |                                 |
|--------|------------------------------------------------------------------|--------|----------------|---------------------------------|
| 0431   | 75515                                                            | 016257 | JSB MOVEW      |                                 |
| 0432   | 75516                                                            | 064033 | LDB LOCDP      |                                 |
| 0433   | 75517                                                            | 044366 | ADB .+12       |                                 |
| 0434   | 75520                                                            | 074050 | STB MOVES      |                                 |
| 0435   | 75521                                                            | 160032 | LDA LOCDI,I    | UPDATE                          |
| 0436   | 75522                                                            | 040366 | ADA .+12       | DIRECTORY                       |
| 0437   | 75523                                                            | 170032 | STA LOCDI,I    | LENGTH                          |
| 0438   | 75524                                                            |        | LOC44 EQU *    |                                 |
| 0439   | 75524                                                            | 034031 | ISZ LOCNT      | FINISHED TABLE?                 |
| 0440   | 75525                                                            | 002001 | RSS            | NO                              |
| 0441   | 75526                                                            | 027532 | JMP LOC43      | YES                             |
| 0442   | 75527                                                            | 164036 | LDB LOCTP,I    | GET NEXT DIREC ENTRY FROM TABLE |
| 0443   | 75530                                                            | 054032 | CPB LOCDI      | SAME DIRECTORY TRACK?           |
| 0444   | 75531                                                            | 027455 | JMP LOC41      | YES                             |
| 0445   | 75532                                                            |        | LOC43 EQU *    |                                 |
| 0446   | 75532                                                            | 064037 | LDB LOCND      | NO, MOVE                        |
| 0447   | 75533                                                            | 007004 | CMB,INB        | END                             |
| 0448   | 75534                                                            | 044050 | ADB MOVES      | OF                              |
| 0449   | 75535                                                            | 016257 | JSB MOVEW      | DIRECTORY                       |
| 0450   | 75536                                                            | 064032 | LDB LOCDI      | WRITE                           |
| 0451   | 75537                                                            | 160001 | LDA B,I        |                                 |
| 0452   | 75540                                                            | 070072 | STA WORD       |                                 |
| 0453   | 75541                                                            | 006004 | INB            |                                 |
| 0454   | 75542                                                            | 074051 | STB MOVED      |                                 |
| 0455   | 75543                                                            | 044357 | ADB .+5        | OUT                             |
| 0456   | 75544                                                            | 160001 | LDA B,I        |                                 |
| 0457   | 75545                                                            | 064562 | LDB LIBD       |                                 |
| 0458   | 75546                                                            | 074050 | STB MOVES      |                                 |
| 0459   | 75547                                                            | 016231 | JSB DRUML      | DIRECTORY                       |
| 0460   | 75550                                                            | 116017 | JSB DEADP,I    |                                 |
| 0461   | 75551                                                            | 064346 | LDB .-4        | RESET                           |
| 0462   | 75552                                                            | 016257 | JSB MOVEW      | DIREC                           |
| 0463   | 75553                                                            | 060031 | LDA LOCNT      | FINISHED                        |
| 0464   | 75554                                                            | 002002 | SZA            | TABLE?                          |
| 0465   | 75555                                                            | 027436 | JMP LOC40      | NO                              |
| 0466*  |                                                                  |        |                |                                 |
| 0467** | UPDATE DISC ADT AND IDT                                          |        |                |                                 |
| 0468*  |                                                                  |        |                |                                 |
| 0469   | 75556                                                            | 117740 | JSB LOCUD,I    | UPDATE DISC ADT                 |
| 0470   | 75557                                                            | 117741 | JSB LOCUI,I    | UPDATE IDT                      |
| 0471   | 75560                                                            | 026267 | JMP LEND       | TERMINATE                       |
| 0472*  |                                                                  |        |                |                                 |
| 0473*  | LOCNO SCANS THE INPUT FOR A NUMBER, THE NUMBER MUST BE LESS THAN |        |                |                                 |
| 0474*  | THE VALUE OF -(JSB+1), IT RETURNS WITH THE NUMBER IN B AND THE   |        |                |                                 |
| 0475*  | NEXT CHAR. IN A.                                                 |        |                |                                 |
| 0476*  |                                                                  |        |                |                                 |
| 0477   | 75561                                                            | 000000 | LOCNO NOP      |                                 |
| 0478   | 75562                                                            | 017603 | JSB LOCDG      | GET A DIGIT.                    |
| 0479   | 75563                                                            | 026275 | JMP LFRER      | ILLEGAL IF NONE.                |
| 0480   | 75564                                                            | 074043 | LUCN1 STB LOCN | SAVE PARTIAL RESULT.            |
| 0481   | 75565                                                            | 147561 | ADB LOCNO,I    | CHECK FOR OVERFLOW.             |
| 0482   | 75566                                                            | 006021 | SSB,RSS        |                                 |
| 0483   | 75567                                                            | 027700 | JMP LOCK2      | ERROR.                          |
| 0484   | 75570                                                            | 017603 | JSB LOCDG      | GET NEXT DIGIT.                 |
| 0485   | 75571                                                            | 027600 | JMP LOCN2      | END OF NUMBER                   |

|       |                                                                    |        |                |                                 |
|-------|--------------------------------------------------------------------|--------|----------------|---------------------------------|
| 0486  | 75572                                                              | 060043 | LDA LOCN       | MULTIPLY PREVIOUS RESULT BY 10. |
| 0487  | 75573                                                              | 001222 | RAL,RAL        |                                 |
| 0488  | 75574                                                              | 040043 | ADA LOCN       |                                 |
| 0489  | 75575                                                              | 001200 | RAL            |                                 |
| 0490  | 75576                                                              | 044000 | ADB 0          | ADD IN NEW VALUE.               |
| 0491  | 75577                                                              | 027564 | JMP LOCN1      | LOOP.                           |
| 0492  | 75600                                                              | 064043 | LOCN2 LDB LOCN | RETURN NO.                      |
| 0493  | 75601                                                              | 037561 | ISZ LOCNO      |                                 |
| 0494  | 75602                                                              | 127561 | JMP LOCNO,I    |                                 |
| 0495* |                                                                    |        |                |                                 |
| 0496* |                                                                    |        |                |                                 |
| 0497  | 75603                                                              | 000000 | LOCDG NOP      | GET DECIMAL DIGIT.              |
| 0498  | 75604                                                              | 016025 | JSB T35C0      | GET CHAR.                       |
| 0499  | 75605                                                              | 127603 | JMP LOCDG,I    | NONE THERE.                     |
| 0500  | 75606                                                              | 064000 | LDB 0          | DO DIGIT TEST.                  |
| 0501  | 75607                                                              | 044316 | ADB M72B       |                                 |
| 0502  | 75610                                                              | 006021 | SSB,RSS        |                                 |
| 0503  | 75611                                                              | 127603 | JMP LOCDG,I    |                                 |
| 0504  | 75612                                                              | 044364 | ADB ,+10       |                                 |
| 0505  | 75613                                                              | 006021 | SSB,RSS        |                                 |
| 0506  | 75614                                                              | 037603 | ISZ LOCDG      |                                 |
| 0507  | 75615                                                              | 127603 | JMP LOCDG,I    |                                 |
| 0508* | LOCTS DETERMINES WHETHER A GIVEN TRACK IS INCLUDED IN THE RANGE OF |        |                |                                 |
| 0509* | TRACKS BEING LOCKED. IF IT IS, AN ERROR MESSAGE IS PRINTED AND THE |        |                |                                 |
| 0510* | ROUTINE IS TERMINATED.                                             |        |                |                                 |
| 0511* |                                                                    |        |                |                                 |
| 0512* | CALLING SEQUENCE:                                                  |        |                |                                 |
| 0513* |                                                                    |        |                |                                 |
| 0514* | JSB LOCTS                                                          |        |                |                                 |
| 0515* | DEF <LOCATION OF DISC ADDRESS>                                     |        |                |                                 |
| 0516* | <RETURN IF OK>                                                     |        |                |                                 |
| 0517* |                                                                    |        |                |                                 |
| 0518  | 75616                                                              | 000000 | LOCTS NOP      |                                 |
| 0519  | 75617                                                              | 167616 | LDB LOCTS,I    | GET POINTER TO DISC ADDRESS.    |
| 0520  | 75620                                                              | 037616 | ISZ LOCTS      | BUMP RETURN ADDRESS.            |
| 0521  | 75621                                                              | 164001 | LDB 1,I        | GET DISC ADDRESS                |
| 0522  | 75622                                                              | 006003 | SZB,RSS        |                                 |
| 0523  | 75623                                                              | 127616 | JMP LOCTS,I    | IGNORE ZEROES                   |
| 0524  | 75624                                                              | 060046 | LDA LOCF       | TEST AGAINST FIRST TRACK.       |
| 0525  | 75625                                                              | 003104 | CMA,CLE,INA    |                                 |
| 0526  | 75626                                                              | 040001 | ADA 1          |                                 |
| 0527  | 75627                                                              | 002041 | SEZ,RSS        |                                 |
| 0528  | 75630                                                              | 127616 | JMP LOCTS,I    |                                 |
| 0529  | 75631                                                              | 007104 | CMB,CLE,INB    | TEST AGAINST LAST TRACK.        |
| 0530  | 75632                                                              | 044047 | ADB LOCL       |                                 |
| 0531  | 75633                                                              | 044442 | ADB B200       |                                 |
| 0532  | 75634                                                              | 002041 | SEZ,RSS        |                                 |
| 0533  | 75635                                                              | 127616 | JMP LOCTS,I    |                                 |
| 0534* |                                                                    |        |                |                                 |
| 0535* | ERROR--ATTEMPT TO LOCK SYSTEM TRACK.                               |        |                |                                 |
| 0536* |                                                                    |        |                |                                 |
| 0537  | 75636                                                              | 003400 | CCA            | GET DISC                        |
| 0538  | 75637                                                              | 043616 | ADA LOCTS      | ADDRESS                         |
| 0539  | 75640                                                              | 160000 | LDA 0,I        | AGAIN.                          |
| 0540  | 75641                                                              | 160000 | LDA 0,I        |                                 |

|       |       |        |                         |                      |
|-------|-------|--------|-------------------------|----------------------|
| 0541  | 75642 | 001727 | ALF,ALF                 | KEEP TRACK NO. ONLY. |
| 0542  | 75643 | 010734 | AND B77                 |                      |
| 0543  | 75644 | 006400 | CLB                     | CONVERT TO DECIMAL.  |
| 0544  | 75645 | 100400 | DIV .+10                |                      |
|       | 75646 | 000364 |                         |                      |
| 0545  | 75647 | 001727 | ALF,ALF                 |                      |
| 0546  | 75650 | 040001 | ADA 1                   |                      |
| 0547  | 75651 | 040574 | ADA ASC00               |                      |
| 0548  | 75652 | 073666 | STA LOCR1=1             | STORE IN BUFFER,     |
| 0549  | 75653 | 064326 | LDB .-20                |                      |
| 0550  | 75654 | 017714 | JSB LOCER               | PRINT ERROR MESS     |
| 0551  | 75655 | 005103 | OCT 5103                |                      |
| 0552  | 75656 | 040516 | ASC 9,AN'T LOCK TRACK   |                      |
|       | 75657 | 023524 |                         |                      |
|       | 75660 | 020114 |                         |                      |
|       | 75661 | 047503 |                         |                      |
|       | 75662 | 045440 |                         |                      |
|       | 75663 | 052122 |                         |                      |
|       | 75664 | 040503 |                         |                      |
|       | 75665 | 045440 |                         |                      |
|       | 75666 | 020040 |                         |                      |
| 0553+ |       |        |                         |                      |
| 0554  | 75667 | 064335 | LOCR1 LDB .-13          |                      |
| 0555  | 75670 | 017714 | JSB LOCER               |                      |
| 0556  | 75671 | 005116 | OCT 5116                |                      |
| 0557  | 75672 | 047440 | ASC 6,0 SUCH DRUM       |                      |
|       | 75673 | 051525 |                         |                      |
|       | 75674 | 041510 |                         |                      |
|       | 75675 | 020104 |                         |                      |
|       | 75676 | 051125 |                         |                      |
|       | 75677 | 046440 |                         |                      |
| 0558  | 75700 | 064327 | LOCR2 LDB .-19          |                      |
| 0559  | 75701 | 017714 | JSB LOCER               |                      |
| 0560  | 75702 | 005111 | OCT 5111                |                      |
| 0561  | 75703 | 046114 | ASC 9,LLEGAL PARAMETERS |                      |
|       | 75704 | 042507 |                         |                      |
|       | 75705 | 040514 |                         |                      |
|       | 75706 | 020120 |                         |                      |
|       | 75707 | 040522 |                         |                      |
|       | 75710 | 040515 |                         |                      |
|       | 75711 | 042524 |                         |                      |
|       | 75712 | 042522 |                         |                      |
|       | 75713 | 051440 |                         |                      |
| 0562  | 75714 | 000000 | LOCER NOP               | ERROR PRINTER.       |
| 0563  | 75715 | 074044 | STB LOCT                |                      |
| 0564  | 75716 | 060305 | LDA T35B1               |                      |
| 0565  | 75717 | 070051 | STA MOVED               |                      |
| 0566  | 75720 | 063714 | LDA LOCER               |                      |
| 0567  | 75721 | 070050 | STA MOVES               |                      |
| 0568  | 75722 | 005100 | BRS                     |                      |
| 0569  | 75723 | 016257 | JSB MOVEW               |                      |
| 0570  | 75724 | 060044 | LDA LOCT                |                      |
| 0571  | 75725 | 003004 | CMA,INA                 |                      |
| 0572  | 75726 | 064305 | LDB T35B1               |                      |
| 0573  | 75727 | 026271 | JMP LEND+2              |                      |

0574\*  
0575 75730 030006 LOCCL DEF DIREC+6  
0576 75731 100040 LOCLL LSL 16  
0577 75732 061130 LOCST DEF TTY00+?DISC  
0578 75733 000115 LOCDA DEF DADLC  
0579 75734 177675 LOCCM ABS COM6=COMTE  
0580 75735 072034 LOCM6 DEF COM6  
0581 75736 030000 LODIR DEF DIREC  
0582 75737 031060 LOCUD DEF DIREU  
0583 75740 072612 LOCUD DEF TBDAD  
0584 75741 072727 LOCUI DEF TBIDT  
0585 75742 177660 MM80 DEC =80  
0586 75743 \$LOC EQU \*  
0587\*  
0588 00030 LOCTC EQU LTEMP  
0589 00031 LOCNT EQU LTEMP+1  
0590 00032 LOC DI EQU LTEMP+2  
0591 00033 LOC DP EQU LTEMP+3  
0592 00036 LOCTP EQU LTEMP+6  
0593 00037 LOCND EQU LTEMP+7  
0594 00042 LOC D EQU LTEMP+10  
0595 00043 LOC N EQU LTEMP+11  
0596 00044 LOCT EQU LTEMP+12  
0597 00046 LOCF EQU LTEMP+14  
0598 00047 LOCL EQU LTEMP+15

0002\* THE MUNLOCK COMMAND IS USED TO RESTORE TO THE SYSTEM ANY DISC  
 0003\* BLOCKS WHICH HAVE PREVIOUSLY BEEN MLOCKED. THE FORMAT FOR THE  
 0004\* COMMAND IS:

0005\*

0006\* MUNLOCK=FBLOCK[,LBLOCK]

0007\*

0008\* FBLOCK AND LBLOCK SPECIFY THE FIRST AND LAST BLOCKS TO BE  
 0009\* MUNLOCKED. IF LBLOCK IS NOT SPECIFIED IT IS ASSUMED TO BE  
 0010\* EQUAL TO FBLOCK.

0011\*

|      |              |      |               |                   |
|------|--------------|------|---------------|-------------------|
| 0012 | 75000        |      | ORG LIBRA     |                   |
| 0013 | 75000 017330 |      | JSB MUNNO     | GET FIRST BLOCK   |
| 0014 | 75001 027025 |      | JMP MUN2      | ILLEGAL FORMAT    |
| 0015 | 75002 050426 |      | CPA .+54B     | COMMA FOLLOWING?  |
| 0016 | 75003 027007 |      | JMP MUN1      | YES               |
| 0017 | 75004 050367 |      | CPA .+15B     | NO, CR?           |
| 0018 | 75005 027041 |      | JMP MUN3      | YES               |
| 0019 | 75006 026275 |      | JMP LFRER     | NO, ERROR         |
| 0020 | 75007        | MUN1 | EQU *         |                   |
| 0021 | 75007 104200 |      | DLD MUNIN     | SAVE FIRST        |
|      | 75010 000030 |      |               |                   |
| 0022 | 75011 104400 |      | DST MUNSB     | BLOCK             |
|      | 75012 000046 |      |               |                   |
| 0023 | 75013 017330 |      | JSB MUNNO     | GET LAST BLOCK    |
| 0024 | 75014 027025 |      | JMP MUN2      | ILLEGAL FORMAT    |
| 0025 | 75015 050367 |      | CPA .+15B     | CR FOLLOWS?       |
| 0026 | 75016 002001 |      | RSS           | YES               |
| 0027 | 75017 026275 |      | JMP LFRER     | NO, ERROR         |
| 0028 | 75020 064046 |      | LDB MUNSB     | COMPUTE           |
| 0029 | 75021 060047 |      | LDA MUNSB+1   | LAST BLOCK -      |
| 0030 | 75022 017377 |      | JSB MUNTS     | FIRST BLOCK       |
| 0031 | 75023 006003 |      | SZB, RSS      | DIFFERENCE VALID? |
| 0032 | 75024 027046 |      | JMP MUN4      | YES               |
| 0033 | 75025        | MUN2 | EQU *         |                   |
| 0034 | 75025 064327 |      | LDB .-19      | NO,               |
| 0035 | 75026 017421 |      | JSB MUNER     | ERROR             |
| 0036 | 75027 005111 |      | OCT 5111      |                   |
| 0037 | 75030 046114 |      | ASC 9, LLEGAL | PARAMETERS        |
|      | 75031 042507 |      |               |                   |
|      | 75032 040514 |      |               |                   |
|      | 75033 020120 |      |               |                   |
|      | 75034 040522 |      |               |                   |
|      | 75035 040515 |      |               |                   |
|      | 75036 042524 |      |               |                   |
|      | 75037 042522 |      |               |                   |
|      | 75040 051440 |      |               |                   |
| 0038 | 75041        | MUN3 | EQU *         |                   |
| 0039 | 75041 104200 |      | DLD MUNIN     | SAVE FIRST        |
|      | 75042 000030 |      |               |                   |
| 0040 | 75043 104400 |      | DST MUNSB     | BLOCK             |
|      | 75044 000046 |      |               |                   |
| 0041 | 75045 002400 |      | CLA           | SET FOR ONE BLOCK |
| 0042 | 75046        | MUN4 | EQU *         |                   |
| 0043 | 75046 002004 |      | INA           | SAVE              |
| 0044 | 75047 070032 |      | STA MUNLN     | LENGTH            |



|      |       |        |                        |                    |
|------|-------|--------|------------------------|--------------------|
| 0045 | 75050 | 060210 | LDA MHAD               | => LAST WORD       |
| 0046 | 75051 | 040432 | ADA .+48               |                    |
| 0047 | 75052 | 070033 | STA MUNTP              | OF DISC EQT        |
| 0048 | 75053 | 017411 | JSB MUNDS              | BLOCK TOO          |
| 0049 | 75054 | 006021 | SSB, RSS               | LARGE?             |
| 0050 | 75055 | 027025 | JMP MUN2               | YES                |
| 0051 | 75056 |        | MUN5 EQU *             |                    |
| 0052 | 75056 | 060033 | LDA MUNTP              | NO, MOVE           |
| 0053 | 75057 | 040344 | ADA .-6                | TO NEXT DISC       |
| 0054 | 75060 | 070033 | STA MUNTP              | EQT ENTRY          |
| 0055 | 75061 | 017411 | JSB MUNDS              | BLOCK ON           |
| 0056 | 75062 | 006020 | SSB                    | THIS DISC?         |
| 0057 | 75063 | 027056 | JMP MUN5               | NO                 |
| 0058 | 75064 | 002004 | INA                    | YES, SAVE          |
| 0059 | 75065 | 070037 | STA MUNLA              | LAST BLOCK         |
| 0060 | 75066 | 104200 | DLT MUNSB              | FIRST              |
|      | 75067 | 000046 |                        |                    |
| 0061 | 75070 | 104400 | DST MUNIN              | BLOCK              |
|      | 75071 | 000030 |                        |                    |
| 0062 | 75072 | 017411 | JSB MUNDS              | ON THIS            |
| 0063 | 75073 | 006120 | CLE, SSB               | DISC ALSO?         |
| 0064 | 75074 | 027025 | JMP MUN2               | NO                 |
| 0065 | 75075 | 070036 | STA MUNFA              | YES, SAVE IT       |
| 0066 | 75076 | 040346 | ADA .-4                | BLOCKS             |
| 0067 | 75077 | 002041 | SEZ, RSS               | 0-3 ARE            |
| 0068 | 75100 | 027025 | JMP MUN2               | ILLEGAL.           |
| 0069 | 75101 | 060033 | LDA MUNTP              | CHECK              |
| 0070 | 75102 | 040354 | ADA .+2                | FOR                |
| 0071 | 75103 | 164000 | LDB A, I               | DISC               |
| 0072 | 75104 | 164001 | LDB B, I               |                    |
| 0073 | 75105 | 006002 | SZB                    | PRESENT            |
| 0074 | 75106 | 027122 | JMP MUN6               | IT IS              |
| 0075 | 75107 | 064331 | LDB .-17               | ERROR              |
| 0076 | 75110 | 017421 | JSB MUNER              |                    |
| 0077 | 75111 | 005116 | OCT 5116               |                    |
| 0078 | 75112 | 047516 | ASC 8, ONEXISTENT DISC |                    |
|      | 75113 | 042530 |                        |                    |
|      | 75114 | 044523 |                        |                    |
|      | 75115 | 052105 |                        |                    |
|      | 75116 | 047124 |                        |                    |
|      | 75117 | 020104 |                        |                    |
|      | 75120 | 044523 |                        |                    |
|      | 75121 | 041440 |                        |                    |
| 0079 | 75122 |        | MUN6 EQU *             |                    |
| 0080 | 75122 | 060762 | LDA M256               | BAD BLOCKS IS      |
| 0081 | 75123 | 070215 | STA MWORD              | 256 WORDS LONG     |
| 0082 | 75124 | 104200 | DLT MUNTP, I           |                    |
|      | 75125 | 100033 |                        |                    |
| 0083 | 75126 | 000065 | CLE, ERA               |                    |
| 0084 | 75127 | 005540 | ERB, CLE               |                    |
| 0085 | 75130 | 044355 | ADB .+3                | RESIDES ON BLOCK 3 |
| 0086 | 75131 | 002040 | SEZ                    |                    |
| 0087 | 75132 | 002004 | INA                    |                    |
| 0088 | 75133 | 104400 | DST MUNSB              |                    |
|      | 75134 | 000046 |                        |                    |

|      |       |        |             |                          |
|------|-------|--------|-------------|--------------------------|
| 0089 | 75135 | 063571 | LDA MUNDA   | READ                     |
| 0090 | 75136 | 067572 | LDB MUNBI   | BAD BLOCKS               |
| 0091 | 75137 | 114217 | JSB DISCZ,I | TABLE                    |
| 0092 | 75140 | 026311 | JMP DDERR   |                          |
| 0093 | 75141 | 116007 | JSB FADTP,I | GET THIS DISC ADT        |
| 0094 | 75142 | 160045 | LDA KILDF,I | LENGTH OF                |
| 0095 | 75143 | 070072 | STA WORD    | DISC ADT                 |
| 0096 | 75144 | 160044 | LDA KILD,I  | READ                     |
| 0097 | 75145 | 064566 | LDB LIBDI   | DISC                     |
| 0098 | 75146 | 016231 | JSB DRUML   | ADT                      |
| 0099 | 75147 | 026311 | JMP DDERR   |                          |
| 0100 | 75150 | 065002 | LDB LB192   | ➔ FIRST ENTRY            |
| 0101 | 75151 |        | EQU *       |                          |
| 0102 | 75151 | 160001 | LDA B,I     | GET ITEM                 |
| 0103 | 75152 | 002003 | SZA,RSS     | FINISHED SEARCH?         |
| 0104 | 75153 | 027166 | JMP MUN11   | YES                      |
| 0105 | 75154 | 003104 | CMA,CLE,INA | NO, IS                   |
| 0106 | 75155 | 040036 | ADA MUNFA   | THIS ENTRY               |
| 0107 | 75156 | 002003 | SZA,RSS     | EQUAL?                   |
| 0108 | 75157 | 027171 | JMP MUN12   | YES                      |
| 0109 | 75160 | 002041 | SEZ,RSS     | NO, GREATER              |
| 0110 | 75161 | 027325 | JMP MUN18   | YES                      |
| 0111 | 75162 | 044354 | ADB .+2     | NO, FINISHED             |
| 0112 | 75163 | 057573 | CPB MUNLZ   | SEARCH?                  |
| 0113 | 75164 | 002001 | RSS         | YES                      |
| 0114 | 75165 | 027151 | JMP MUN10   | NO                       |
| 0115 | 75166 |        | EQU *       |                          |
| 0116 | 75166 | 017435 | JSB MUNPB   | CHECK PRECEEDING BLOCK   |
| 0117 | 75167 | 027273 | JMP MUN17   | ENTRIES COMBINED         |
| 0118 | 75170 | 026267 | JMP LEND    | NO WORK DONE             |
| 0119 | 75171 |        | EQU *       |                          |
| 0120 | 75171 | 006004 | INB         | IS THIS                  |
| 0121 | 75172 | 060032 | LDA MUNLN   | ENTRY                    |
| 0122 | 75173 | 003100 | CMA,CLE     | COMPLETELY               |
| 0123 | 75174 | 140001 | ADA B,I     | ENCLOSED?                |
| 0124 | 75175 | 002041 | SEZ,RSS     |                          |
| 0125 | 75176 | 027212 | JMP MUN13   | YES                      |
| 0126 | 75177 | 002004 | INA         | NO, SAVE                 |
| 0127 | 75200 | 170001 | STA B,I     | NEW LENGTH               |
| 0128 | 75201 | 044351 | ADB .-1     | SAVE NEW                 |
| 0129 | 75202 | 060037 | LDA MUNLA   | STARTING                 |
| 0130 | 75203 | 170001 | STA B,I     | ADDRESS                  |
| 0131 | 75204 | 060036 | LDA MUNFA   | ADDRESS OF BLOCK         |
| 0132 | 75205 | 070040 | STA MUNRA   | TO BE RETURNED           |
| 0133 | 75206 | 060032 | LDA MUNLN   | LENGTH OF RETURNED       |
| 0134 | 75207 | 070043 | STA MUNRL   | BLOCK                    |
| 0135 | 75210 | 017552 | JSB MUNRS   | RETURN BLOCK TO DISC ADT |
| 0136 | 75211 | 027273 | JMP MUN17   |                          |
| 0137 | 75212 |        | EQU *       |                          |
| 0138 | 75212 | 160001 | LDA B,I     | LENGTH AND               |
| 0139 | 75213 | 070043 | STA MUNRL   | ADDRESS OF               |
| 0140 | 75214 | 044351 | ADB .-1     | BLOCK TO                 |
| 0141 | 75215 | 160001 | LDA B,I     | RETURN TO                |
| 0142 | 75216 | 070040 | STA MUNRA   | DISC ADT                 |
| 0143 | 75217 | 074041 | STB MUNBR   | SAVE (B)                 |

|       |       |            |             |                          |
|-------|-------|------------|-------------|--------------------------|
| 0144  | 75220 | 074030     | STB MUNPP   | DESTINATION POINTER      |
| 0145  | 75221 | 044354     | ADB .+2     | SOURCE POINTER           |
| 0146  | 75222 |            | MUN14 EQU * |                          |
| 0147  | 75222 | 057573     | CPB MUNLZ   |                          |
| 0148  | 75223 | 027233     | JMP MUN15   |                          |
| 0149  | 75224 | 160001     | LDA B,I     | ELIMINATE                |
| 0150  | 75225 | 002003     | SZA,RSS     |                          |
| 0151  | 75226 | 027233     | JMP MUN15   | COMPLETELY               |
| 0152  | 75227 | 170030     | STA MUNPP,I |                          |
| 0153  | 75230 | 034030     | ISZ MUNPP   | ENCLOSED                 |
| 0154  | 75231 | 006004     | INB         |                          |
| 0155  | 75232 | 027222     | JMP MUN14   | ENTRY                    |
| 0156  | 75233 |            | MUN15 EQU * |                          |
| 0157  | 75233 | 002400     | CLA         | ZERO OUT                 |
| 0158  | 75234 | 170030     | STA MUNPP,I | TWO WORDS                |
| 0159  | 75235 | 034030     | ISZ MUNPP   | AFTER LAST               |
| 0160  | 75236 | 170030     | STA MUNPP,I | ENTRY                    |
| 0161  | 75237 | 064041     | LDB MUNBR   | RESTORE (B)              |
| 0162  | 75240 | 017552     | JSB MUNRS   | RETURN BLOCK TO DISC ADT |
| 0163* |       |            |             |                          |
| 0164* | CHECK | SUCCESSING | BLOCKS      |                          |
| 0165* |       |            |             |                          |
| 0166  | 75241 |            | MUN16 EQU * |                          |
| 0167  | 75241 | 160001     | LDA B,I     | ANY MORE                 |
| 0168  | 75242 | 002003     | SZA,RSS     | ENTRIES?                 |
| 0169  | 75243 | 027273     | JMP MUN17   | NO                       |
| 0170  | 75244 | 060037     | LDA MUNLA   | YES,                     |
| 0171  | 75245 | 003104     | CMA,CLE,INA | OVERLAP                  |
| 0172  | 75246 | 140001     | ADA B,I     | NEXT                     |
| 0173  | 75247 | 002040     | SEZ         | ENTRY?                   |
| 0174  | 75250 | 027273     | JMP MUN17   | NO                       |
| 0175  | 75251 | 006004     | INB         | YES,                     |
| 0176  | 75252 | 140001     | ADA B,I     | COMPLETELY               |
| 0177  | 75253 | 002003     | SZA,RSS     | ENCLOSE IT?              |
| 0178  | 75254 | 027212     | JMP MUN13   | YES                      |
| 0179  | 75255 | 002041     | SEZ,RSS     | MAYBE                    |
| 0180  | 75256 | 027212     | JMP MUN13   | YES                      |
| 0181  | 75257 | 070030     | STA MUNPP   | NO, SAVE LENGTH          |
| 0182  | 75260 | 003004     | CMA,INA     | LENGTH OF                |
| 0183  | 75261 | 140001     | ADA B,I     | RETURNED                 |
| 0184  | 75262 | 070043     | STA MUNRL   | BLOCK                    |
| 0185  | 75263 | 060030     | LDA MUNPP   | SAVE LENGTH OF           |
| 0186  | 75264 | 170001     | STA B,I     | LOCKED BLOCK             |
| 0187  | 75265 | 044351     | ADB .-1     | ADDRESS OF               |
| 0188  | 75266 | 160001     | LDA B,I     | RETURNED                 |
| 0189  | 75267 | 070040     | STA MUNRA   | BLOCK                    |
| 0190  | 75270 | 060037     | LDA MUNLA   | SAVE NEW                 |
| 0191  | 75271 | 170001     | STA B,I     | STARTING BLOCK           |
| 0192  | 75272 | 017552     | JSB MUNRS   | RETURN SPACE TO DISC ADT |
| 0193* | WRITE | DISC ADT   | AND LOCKED  | BLOCKS                   |
| 0194* |       |            |             |                          |
| 0195  | 75273 |            | MUN17 EQU * |                          |
| 0196  | 75273 | 060762     | LDA M256    | LENGTH OF                |
| 0197  | 75274 | 070215     | STA MWORD   | BAD BLOCKS               |
| 0198  | 75275 | 104200     | DLD MUNIP,I | COMPUTE                  |

|       |                                                                 |        |             |                        |  |
|-------|-----------------------------------------------------------------|--------|-------------|------------------------|--|
| 0199  | 75276                                                           | 100033 |             |                        |  |
| 0200  | 75277                                                           | 000065 | CLE,ERA     |                        |  |
| 0201  | 75300                                                           | 005540 | ERB,CLE     | ADDRESS                |  |
| 0202  | 75301                                                           | 044355 | ADB .+3     |                        |  |
| 0203  | 75302                                                           | 002040 | SEZ         | OF BLOCK               |  |
| 0204  | 75303                                                           | 002004 | INA         |                        |  |
|       | 75304                                                           | 104400 | DST MUNSB   | THREE                  |  |
|       | 75305                                                           | 000046 |             |                        |  |
| 0205  | 75306                                                           | 063571 | LDA MUNDA   | WRITE OUT              |  |
| 0206  | 75307                                                           | 065002 | LDB LB192   | LOCKED                 |  |
| 0207  | 75310                                                           | 114217 | JSB DISCZ,I | BLOCKS                 |  |
| 0208  | 75311                                                           | 116020 | JSB MDEDP,I |                        |  |
| 0209  | 75312                                                           | 160045 | LDA KILDF,I | WRITE                  |  |
| 0210  | 75313                                                           | 070072 | STA WORD    | OUT                    |  |
| 0211  | 75314                                                           | 160044 | LDA KILD,I  | DISC                   |  |
| 0212  | 75315                                                           | 064562 | LDB LIBD    | ADT                    |  |
| 0213  | 75316                                                           | 016231 | JSB DRUML   | TRACK                  |  |
| 0214  | 75317                                                           | 002001 | RSS         |                        |  |
| 0215  | 75320                                                           | 026267 | JMP LEND    |                        |  |
| 0216  | 75321                                                           | 002400 | CLA         |                        |  |
| 0217  | 75322                                                           | 170044 | STA KILD,I  | REMOVE                 |  |
| 0218  | 75323                                                           | 170044 | STA KILD,I  | DISC ADT               |  |
| 0219  | 75324                                                           | 026267 | JMP LEND    |                        |  |
| 0220  | 75325                                                           |        | MUN18 EQU * |                        |  |
| 0221  | 75325                                                           | 017435 | JSB MUNPB   | CHECK PRECEEDING BLOCK |  |
| 0222  | 75326                                                           | 027241 | JMP MUN16   | GO CHECK               |  |
| 0223  | 75327                                                           | 027241 | JMP MUN16   | NEXT ENTRY             |  |
| 0224* |                                                                 |        |             |                        |  |
| 0225* | MUNNO SCANS THE INPUT STRING FOR AN INTEGER LESS THAN 2**19. IF |        |             |                        |  |
| 0226* | FOUND IT RETURNS TO (P+2) WITH THE INTEGER IN MUNIN[0:1] AND    |        |             |                        |  |
| 0227* | THE FOLLOWING CHARACTER IN (A). ERRORS EXIT TO (P+1).           |        |             |                        |  |
| 0228* |                                                                 |        |             |                        |  |
| 0229  | 75330                                                           | 000000 | MUNNO NOP   |                        |  |
| 0230  | 75331                                                           | 007400 | CCB         | SET FLAG FOR           |  |
| 0231  | 75332                                                           | 074033 | STB MUNTP   | NUMBER OCCURRENCE      |  |
| 0232  | 75333                                                           | 006400 | CLB         | INITIALIZE             |  |
| 0233  | 75334                                                           | 074030 | STB MUNIN   | TWO-DIGIT              |  |
| 0234  | 75335                                                           | 074031 | STB MUNIN+1 | RESULT                 |  |
| 0235  | 75336                                                           |        | MUNN1 EQU * |                        |  |
| 0236  | 75336                                                           | 016025 | JSB T35CQ   | GET A CHARACTER        |  |
| 0237  | 75337                                                           | 027374 | JMP MUNN2   | CR                     |  |
| 0238  | 75340                                                           | 064000 | LDB A       |                        |  |
| 0239  | 75341                                                           | 044316 | ADB M72B    |                        |  |
| 0240  | 75342                                                           | 006021 | SSB,RSS     | DIGIT!                 |  |
| 0241  | 75343                                                           | 027374 | JMP MUNN2   | NO                     |  |
| 0242  | 75344                                                           | 044364 | ADB .+10    | MAYBE                  |  |
| 0243  | 75345                                                           | 006020 | SSB         |                        |  |
| 0244  | 75346                                                           | 027374 | JMP MUNN2   | NO                     |  |
| 0245  | 75347                                                           | 074033 | STB MUNTP   | YES, SAVE IT           |  |
| 0246  | 75350                                                           | 060031 | LDA MUNIN+1 | GET PREVIOUS           |  |
| 0247  | 75351                                                           | 064030 | LDB MUNIN   | RESULT                 |  |
| 0248  | 75352                                                           | 100022 | ASL 2       | MULTIPLY BY 4          |  |
| 0249  | 75353                                                           | 000040 | CLE         | ADD PREVIOUS           |  |
| 0250  | 75354                                                           | 040031 | ADA MUNIN+1 | RESULT,                |  |
| 0251  | 75355                                                           | 002040 | SEZ         | PRODUCING              |  |

|       |                                                                    |        |             |  |                          |
|-------|--------------------------------------------------------------------|--------|-------------|--|--------------------------|
| 0252  | 75356                                                              | 006004 | INB         |  | MULTIPLICATION           |
| 0253  | 75357                                                              | 044030 | ADB MUNIN   |  | BY 5                     |
| 0254  | 75360                                                              | 100021 | ASL 1       |  | NOW 10*PREVIOUS RESULT   |
| 0255  | 75361                                                              | 000040 | CLE         |  | ADD IN                   |
| 0256  | 75362                                                              | 040033 | ADA MUNTP   |  |                          |
| 0257  | 75363                                                              | 002040 | SEZ         |  | NEW DIGIT                |
| 0258  | 75364                                                              | 006004 | INB         |  |                          |
| 0259  | 75365                                                              | 074030 | STB MUNIN   |  | SAVE NEW                 |
| 0260  | 75366                                                              | 070031 | STA MUNIN+1 |  | RESULT                   |
| 0261  | 75367                                                              | 060001 | LDA B       |  | TOO                      |
| 0262  | 75370                                                              | 010361 | AND ,+7     |  |                          |
| 0263  | 75371                                                              | 050001 | CPA B       |  | BIG?                     |
| 0264  | 75372                                                              | 027336 | JMP MUNN1   |  | NO                       |
| 0265  | 75373                                                              | 127330 | JMP MUNNO,I |  | YES                      |
| 0266  | 75374                                                              |        | MUNN2 EQU * |  |                          |
| 0267  | 75374                                                              | 034033 | ISZ MUNTP   |  | DID NUMBER OCCUR?        |
| 0268  | 75375                                                              | 037330 | ISZ MUNNO   |  | YES                      |
| 0269  | 75376                                                              | 127330 | JMP MUNNO,I |  | NO                       |
| 0270* |                                                                    |        |             |  |                          |
| 0271* | MUNTS SUBTRACTS THE TWO-WORD INTEGER INTEGER IN [(B),(A)] FROM MUN |        |             |  |                          |
| 0272* | LEAVING THE RESULT IN [(B),(A)].                                   |        |             |  |                          |
| 0273* |                                                                    |        |             |  |                          |
| 0274  | 75377                                                              | 000000 | MUNTS NOP   |  |                          |
| 0275  | 75400                                                              | 003104 | CMA,CLE,INA |  | NEGATE                   |
| 0276  | 75401                                                              | 007040 | CMB,SEZ     |  |                          |
| 0277  | 75402                                                              | 006004 | INB         |  | SUBTRAHEND               |
| 0278  | 75403                                                              | 000040 | CLE         |  |                          |
| 0279  | 75404                                                              | 040031 | ADA MUNIN+1 |  | ADD IN                   |
| 0280  | 75405                                                              | 002040 | SEZ         |  |                          |
| 0281  | 75406                                                              | 006004 | INB         |  | MINUEND                  |
| 0282  | 75407                                                              | 044030 | ADB MUNIN   |  |                          |
| 0283  | 75410                                                              | 127377 | JMP MUNTS,I |  |                          |
| 0284* |                                                                    |        |             |  |                          |
| 0285* | MUNDS TAKES THE DISC ADDRESS IN MUNIN(0;1) AND COMPUTES IT         |        |             |  |                          |
| 0286* | RELATIVE TO THE DISC WHOSE EQT ENTRY IS POINTED TO BY MUNTP,       |        |             |  |                          |
| 0287* | EXITING WITH THE RESULT IN [(B),(A)].                              |        |             |  |                          |
| 0288* |                                                                    |        |             |  |                          |
| 0289  | 75411                                                              | 000000 | MUNDS NOP   |  |                          |
| 0290  | 75412                                                              | 104200 | OLD MUNTP,I |  | GET FIRST SECTOR NUMBER  |
|       | 75413                                                              | 100033 |             |  |                          |
| 0291  | 75414                                                              | 000065 | CLE,ERA     |  | CONVERT TO               |
| 0292  | 75415                                                              | 005500 | ERB         |  | BLOCKS                   |
| 0293  | 75416                                                              | 101100 | SWP         |  |                          |
| 0294  | 75417                                                              | 017377 | JSB MUNTS   |  | COMPUTE RELATIVE ADDRESS |
| 0295  | 75420                                                              | 127411 | JMP MUNDS,I |  |                          |
| 0296* |                                                                    |        |             |  |                          |
| 0297* | MUNER OUTPUTS AN ERROR MESSAGE TO THE CONSOLE                      |        |             |  |                          |
| 0298* |                                                                    |        |             |  |                          |
| 0299  | 75421                                                              | 000000 | MUNER NOP   |  |                          |
| 0300  | 75422                                                              | 074033 | STB MUNTP   |  |                          |
| 0301  | 75423                                                              | 060305 | LDA T35B1   |  | MOVE                     |
| 0302  | 75424                                                              | 070051 | STA MOVED   |  | MESSAGE                  |
| 0303  | 75425                                                              | 063421 | LDA MUNER   |  | INTO                     |
| 0304  | 75426                                                              | 070050 | STA MOVES   |  | CONSOLE                  |
| 0305  | 75427                                                              | 005100 | BRB         |  | BUFFER                   |

|       |                                                                 |        |       |               |                     |
|-------|-----------------------------------------------------------------|--------|-------|---------------|---------------------|
| 0306  | 75430                                                           | 016257 |       | JSB MOVEW     |                     |
| 0307  | 75431                                                           | 060033 |       | LDA MUNTP     |                     |
| 0308  | 75432                                                           | 003004 |       | CMA, INA      |                     |
| 0309  | 75433                                                           | 064305 |       | LDB T35B1     |                     |
| 0310  | 75434                                                           | 026271 |       | JMP LEND+2    | OUTPUT IT           |
| 0311* |                                                                 |        |       |               |                     |
| 0312* | MUNPB CHECKS THE PRECEEDING BLOCK TO SEE IF THE NEW ENTRY IS IN |        |       |               |                     |
| 0313* | ITS RANGE, IF SO, IT MODIFIES THE PRECEEDING ENTRY, RETURNS THE |        |       |               |                     |
| 0314* | APPROPRIATE SPACE TO THE DISC ADT, AND EXITS TO (P+1),          |        |       |               |                     |
| 0315* | OTHERWISE TO (P+2).                                             |        |       |               |                     |
| 0316* |                                                                 |        |       |               |                     |
| 0317  | 75435                                                           | 000000 | MUNPB | NOP           |                     |
| 0318  | 75436                                                           | 055002 |       | CPB L8192     | BEGINNING OF TABLE? |
| 0319  | 75437                                                           | 027452 |       | JMP MUNP1     |                     |
| 0320  | 75440                                                           | 044351 |       | ADB .-1       | NO, NEW             |
| 0321  | 75441                                                           | 160001 |       | LDA B, I      |                     |
| 0322  | 75442                                                           | 070046 |       | STA MUNSB     | BLOCK IN            |
| 0323  | 75443                                                           | 044351 |       | ADB .-1       |                     |
| 0324  | 75444                                                           | 140001 |       | ADA B, I      | RANGE OF            |
| 0325  | 75445                                                           | 003100 |       | CMA, CLE      |                     |
| 0326  | 75446                                                           | 040036 |       | ADA MUNFA     | PRECEEDING ONE?     |
| 0327  | 75447                                                           | 002041 |       | SEZ, RSS      |                     |
| 0328  | 75450                                                           | 027454 |       | JMP MUNP2     | YES                 |
| 0329  | 75451                                                           | 044354 |       | ADB .+2       | NO                  |
| 0330  | 75452                                                           |        | MUNP1 | EQU *         |                     |
| 0331  | 75452                                                           | 037435 |       | ISZ MUNPB     |                     |
| 0332  | 75453                                                           | 127435 |       | JMP MUNPB, I  |                     |
| 0333  | 75454                                                           |        | MUNP2 | EQU *         |                     |
| 0334  | 75454                                                           | 002007 |       | INA, SZA, RSS | ADJACENT?           |
| 0335  | 75455                                                           | 027451 |       | JMP MUNP1-1   | YES                 |
| 0336  | 75456                                                           | 003004 |       | CMA, INA      | NO, SAVE LENGTH     |
| 0337  | 75457                                                           | 070043 |       | STA MUNRL     | OF RETURNED BLOCK   |
| 0338  | 75460                                                           | 060036 |       | LDA MUNFA     | ADDRESS OF          |
| 0339  | 75461                                                           | 070040 |       | STA MUNRA     | RETURNED BLOCK      |
| 0340  | 75462                                                           | 160001 |       | LDA B, I      | COMPUTE             |
| 0341  | 75463                                                           | 003004 |       | CMA, INA      | NEW                 |
| 0342  | 75464                                                           | 040036 |       | ADA MUNFA     | LENGTH              |
| 0343  | 75465                                                           | 006004 |       | INB           | AND                 |
| 0344  | 75466                                                           | 170001 |       | STA B, I      | SAVE                |
| 0345  | 75467                                                           | 044351 |       | ADB .-1       | IS THE              |
| 0346  | 75470                                                           | 060037 |       | LDA MUNLA     | UNLOCKED            |
| 0347  | 75471                                                           | 003100 |       | CMA, CLE      | PORTION             |
| 0348  | 75472                                                           | 140001 |       | ADA B, I      | IN THE MIDDLE       |
| 0349  | 75473                                                           | 040046 |       | ADA MUNSB     | OF THE PREVIOUS     |
| 0350  | 75474                                                           | 002045 |       | SEZ, INA, RSS | BLOCK?              |
| 0351  | 75475                                                           | 027547 |       | JMP MUNP6     | NO                  |
| 0352  | 75476                                                           | 070046 |       | STA MUNSB     | YES                 |
| 0353  | 75477                                                           | 060032 |       | LDA MUNLN     | RESET RETURNED      |
| 0354  | 75500                                                           | 070043 |       | STA MUNRL     | BLOCK LENGTH        |
| 0355  | 75501                                                           | 044354 |       | ADB .+2       | SAVE                |
| 0356  | 75502                                                           | 074041 |       | STB MUNBR     | (B)                 |
| 0357  | 75503                                                           | 067574 |       | LDB MUNLY     | TABLE               |
| 0358  | 75504                                                           | 160001 |       | LDA B, I      |                     |
| 0359  | 75505                                                           | 002003 |       | SZA, RSS      | FULL                |
| 0360  | 75506                                                           | 027526 |       | JMP MUNP3     | NO                  |

|       |       |         |       |             |                                 |
|-------|-------|---------|-------|-------------|---------------------------------|
| 0361  | 75507 | 064321  | LDB   | .-25        | YES, OUTPUT                     |
| 0362  | 75510 | 017421  | JSB   | MUNER       | ERROR MESSAGE                   |
| 0363  | 75511 | 005114  | OCT   | 5114        |                                 |
| 0364  | 75512 | 047503  | ASC   | 12,0CKED    | BLOCKS TABLE FULL               |
|       | 75513 | 045505  |       |             |                                 |
|       | 75514 | 042040  |       |             |                                 |
|       | 75515 | 041114  |       |             |                                 |
|       | 75516 | 047503  |       |             |                                 |
|       | 75517 | 045523  |       |             |                                 |
|       | 75520 | 020124  |       |             |                                 |
|       | 75521 | 040502  |       |             |                                 |
|       | 75522 | 046105  |       |             |                                 |
|       | 75523 | 020106  |       |             |                                 |
|       | 75524 | 052514  |       |             |                                 |
|       | 75525 | 046040  |       |             |                                 |
| 0365  | 75526 |         | MUNP3 | EQU *       |                                 |
| 0366  | 75526 | 074030  |       | STB MUNPP   | SOURCE POINTER                  |
| 0367  | 75527 | 044350  |       | ADB .-2     | DESTINATION POINTER             |
| 0368  | 75530 |         | MUNP4 | EQU *       |                                 |
| 0369  | 75530 | 160001  |       | LDA B,I     | MAKE                            |
| 0370  | 75531 | 170030  |       | STA MUNPP,I |                                 |
| 0371  | 75532 | 054041  |       | CPB MUNBR   | ROOM                            |
| 0372  | 75533 | 027541  |       | JMP MUNP5   |                                 |
| 0373  | 75534 | 044351  |       | ADB .-1     | FOR                             |
| 0374  | 75535 | 003400  |       | CCA         |                                 |
| 0375  | 75536 | 040030  |       | ADA MUNPP   | NEW                             |
| 0376  | 75537 | 070030  |       | STA MUNPP   |                                 |
| 0377  | 75540 | 027530  |       | JMP MUNP4   | ENTRY                           |
| 0378  | 75541 |         | MUNP5 | EQU *       |                                 |
| 0379  | 75541 | 060037  |       | LDA MUNLA   | SAVE ADDRESS                    |
| 0380  | 75542 | 170001  |       | STA B,I     | OF NEW ENTRY                    |
| 0381  | 75543 | 006004  |       | INB         | SAVE                            |
| 0382  | 75544 | 060046  |       | LDA MUNSB   | LENGTH                          |
| 0383  | 75545 | 170001  |       | STA B,I     | ALSO                            |
| 0384  | 75546 | 006005  |       | INB,RSS     |                                 |
| 0385  | 75547 |         | MUNP6 | EQU *       |                                 |
| 0386  | 75547 | 044354  |       | ADB .+2     |                                 |
| 0387  | 75550 | 017552  |       | JSB MUNRS   | RETURN SPACE TO DISC ADT        |
| 0388  | 75551 | 127435  |       | JMP MUNPB,I |                                 |
| 0389* |       |         |       |             |                                 |
| 0390* | MUNRS | RETURNS | SPACE | TO THE DISC | ADT TRACK WHICH IS CURRENTLY IN |
| 0391* |       | CORE.   |       |             |                                 |
| 0392* |       |         |       |             |                                 |
| 0393  | 75552 | 000000  | MUNRS | NOP         |                                 |
| 0394  | 75553 | 074041  |       | STB MUNBR   | SAVE (B)                        |
| 0395  | 75554 | 104200  |       | OLD MUNTP,I | COMPUTE                         |
|       | 75555 | 100033  |       |             |                                 |
| 0396  | 75556 | 000065  |       | CLE,ERA     |                                 |
| 0397  | 75557 | 005540  |       | ERB,CLE     | DISC                            |
| 0398  | 75560 | 044040  |       | ADB MUNRA   |                                 |
| 0399  | 75561 | 002040  |       | SEZ         | ADDRESS                         |
| 0400  | 75562 | 002004  |       | INA         |                                 |
| 0401  | 75563 | 104400  |       | DST MUNSB   |                                 |
|       | 75564 | 000046  |       |             |                                 |
| 0402  | 75565 | 116011  |       | JSB RADTP,I | RETURN SPACE                    |

```

0403 75566 000000 NOP
0404 75567 064041 LDB MUNBR RESTORE (B)
0405 75570 127552 JMP MUNRS,I
0406*
0407 00030 MUNIN EQU LTEMP LTEMP+1 ALSO USED
0408 00046 MUNSB EQU LTEMP+14 LTEMP+15 ALSO USED
0409 00032 MUNLN EQU LTEMP+2
0410 00033 MUNTP EQU LTEMP+3
0411 00036 MUNFA EQU LTEMP+6
0412 00037 MUNLA EQU LTEMP+7
0413 00040 MUNRA EQU LTEMP+8
0414 00043 MUNRL EQU LTEMP+11
0415 00041 MUNBR EQU LTEMP+9
0416 00030 MUNPP EQU LTEMP
0417*
0418* ROUTINES CALLED USE 4,5,10,12, AND 13.
0419*
0420 75571 000046 MUNDA DEF MUNSB
0421 75572 121230 MUNBI DEF LIBUS+8192,I
0422 75573 021630 MUNLZ DEF LIBUS+8192+256
0423 75574 021627 MUNLY DEF LIBUS+8192+255
0424 75575 $MUN EQU *

```



0002\* THE MLOCK COMMAND IS USED TO TELL THE SYSTEM TO STOP USING CERTAIN  
 0003\* DISC BLOCKS. THIS CAN BE DONE EITHER BECAUSE THE BLOCKS HAVE BEEN  
 0004\* FOUND FAULTY OR BECAUSE THEY HAVE INFORMATION ON THEM WHICH IS  
 0005\* UNRELATED TO TSB. THE FORMAT FOR THE COMMAND:

0006\*

0007\* MLOCK=FBLOCK[,LBLOCK]

0008\*

0009\* FBLOCK AND LBLOCK SPECIFY THE FIRST AND LAST BLOCKS TO BE MLOCKED.  
 0010\* IF LBLOCK IS NOT SPECIFIED IT IS ASSUMED TO BE EQUAL TO FBLOCK.

0011\*

0012\* THE ACTION OF THE ROUTINE IS AS FOLLOWS:

- 0013\* 1) INTERPRET AND VERIFY PARAMETERS  
 0014\* 2) INSURE THAT THE SYSTEM IS NOT USING ANY OF THE  
 0015\* SPECIFIED BLOCKS  
 0016\* 3) SEARCH THE DIRECTORY, BUILDING A TABLE WITH ONE  
 0017\* ENTRY FOR EACH FILE OR PROGRAM WHOSE DISC ADDRESS  
 0018\* IS IN THE RANGE OF THE SPECIFIED BLOCKS.  
 0019\* 4) USE THIS TABLE TO SEARCH THE FUSS TABLE, INSURING  
 0020\* THAT NONE OF THE FILES ON THESE BLOCKS ARE ACTIVE  
 0021\* 5) CALL OVERLAY

0022\*

|      |       |        |             |                   |
|------|-------|--------|-------------|-------------------|
| 0023 | 75000 |        | ORG LIBRA   |                   |
| 0024 | 75000 | 017445 | JSB MLKNO   | GET FIRST BLOCK   |
| 0025 | 75001 | 027025 | JMP MLK2    | ILLEGAL FORMAT    |
| 0026 | 75002 | 050426 | CPA .+54B   | COMMA FOLLOWING?  |
| 0027 | 75003 | 027007 | JMP MLK1    | YES               |
| 0028 | 75004 | 050367 | CPA .+15B   | NO, CR?           |
| 0029 | 75005 | 027036 | JMP MLK3    | YES               |
| 0030 | 75006 | 026275 | JMP LFRER   | NO, ERROR         |
| 0031 | 75007 |        | MLK1 EQU *  |                   |
| 0032 | 75007 | 104200 | DLD MLKIN   | SAVE FIRST        |
|      | 75010 | 075764 |             |                   |
| 0033 | 75011 | 104400 | DST MLKFB   | BLOCK             |
|      | 75012 | 000046 |             |                   |
| 0034 | 75013 | 017445 | JSB MLKNO   | GET LAST BLOCK    |
| 0035 | 75014 | 027025 | JMP MLK2    | ILLEGAL FORMAT    |
| 0036 | 75015 | 050367 | CPA .+15B   | CR FOLLOWS?       |
| 0037 | 75016 | 002001 | RSS         | YES               |
| 0038 | 75017 | 026275 | JMP LFRER   | NO, ERROR         |
| 0039 | 75020 | 064046 | LDB MLKFB   | COMPUTE           |
| 0040 | 75021 | 060047 | LDA MLKFB+1 | LAST BLOCK =      |
| 0041 | 75022 | 017514 | JSB MLKTS   | FIRST BLOCK       |
| 0042 | 75023 | 006003 | SZB,RSS     | DIFFERENCE VALID? |
| 0043 | 75024 | 027043 | JMP MLK4    | YES               |
| 0044 | 75025 |        | MLK2 EQU *  |                   |
| 0045 | 75025 | 064334 | LDB .-14    | NO,               |
| 0046 | 75026 | 017536 | JSB MLKER   | ERROR             |
| 0047 | 75027 | 005102 | OCT 5102    |                   |
| 0048 | 75030 | 040504 | ASC 6,AD    | PARAMETER         |
|      | 75031 | 020120 |             |                   |
|      | 75032 | 040522 |             |                   |
|      | 75033 | 040515 |             |                   |
|      | 75034 | 042524 |             |                   |
|      | 75035 | 042522 |             |                   |
| 0049 | 75036 |        | MLK3 EQU *  |                   |

|      |       |        |      |                        |                   |
|------|-------|--------|------|------------------------|-------------------|
| 0050 | 75036 | 104200 |      | DLD MLKIN              | SAVE FIRST        |
|      | 75037 | 075764 |      |                        |                   |
| 0051 | 75040 | 104400 |      | DST MLKFB              | BLOCK             |
|      | 75041 | 000046 |      |                        |                   |
| 0052 | 75042 | 002400 |      | CLA                    | SET FOR ONE BLOCK |
| 0053 | 75043 |        | MLK4 | EQU *                  |                   |
| 0054 | 75043 | 002004 |      | INA                    | SAVE              |
| 0055 | 75044 | 073766 |      | STA MLKLN              | LENGTH            |
| 0056 | 75045 | 060210 |      | LDA MHAD               | => LAST WORD      |
| 0057 | 75046 | 040432 |      | ADA ,+48               |                   |
| 0058 | 75047 | 070033 |      | STA MLKLP              | OF DISC EQT       |
| 0059 | 75050 | 104200 |      | DLD MLKIN              | SAVE ADDRESS      |
|      | 75051 | 075764 |      |                        |                   |
| 0060 | 75052 | 006104 |      | CLE, INB               |                   |
| 0061 | 75053 | 002040 |      | SEZ                    | OF LAST           |
| 0062 | 75054 | 002004 |      | INA                    |                   |
| 0063 | 75055 | 104400 |      | DST MLKLB              | BLOCK             |
|      | 75056 | 075762 |      |                        |                   |
| 0064 | 75057 | 017526 |      | JSB MLKDS              | BLOCK TOO         |
| 0065 | 75060 | 006021 |      | SSB, RSS               | LARGE?            |
| 0066 | 75061 | 027025 |      | JMP MLK2               | YES               |
| 0067 | 75062 |        | MLK5 | EQU *                  |                   |
| 0068 | 75062 | 060033 |      | LDA MLKLP              | NO, MOVE          |
| 0069 | 75063 | 040344 |      | ADA ,=6                | TO NEXT DISC      |
| 0070 | 75064 | 070033 |      | STA MLKLP              | EQT ENTRY         |
| 0071 | 75065 | 017526 |      | JSB MLKDS              | BLOCK ON          |
| 0072 | 75066 | 006020 |      | SSB                    | THIS DISC?        |
| 0073 | 75067 | 027062 |      | JMP MLK5               | NO                |
| 0074 | 75070 | 002004 |      | INA                    | YES, SAVE         |
| 0075 | 75071 | 070031 |      | STA MLKLA              | LAST BLOCK        |
| 0076 | 75072 | 104200 |      | DLD MLKFB              | FIRST             |
|      | 75073 | 000046 |      |                        |                   |
| 0077 | 75074 | 104400 |      | DST MLKIN              | BLOCK             |
|      | 75075 | 075764 |      |                        |                   |
| 0078 | 75076 | 017526 |      | JSB MLKDS              | ON THIS           |
| 0079 | 75077 | 006120 |      | CLE, SSB               | DISC ALSO         |
| 0080 | 75100 | 027025 |      | JMP MLK2               | NO                |
| 0081 | 75101 | 070032 |      | STA MLKFA              | YES, SAVE IT      |
| 0082 | 75102 | 040346 |      | ADA ,=4                | BLOCKS            |
| 0083 | 75103 | 002041 |      | SEZ, RSS               | 0-3 ARE           |
| 0084 | 75104 | 027025 |      | JMP MLK2               | ILLEGAL           |
| 0085 | 75105 | 060033 |      | LDA MLKLP              | CHECK             |
| 0086 | 75106 | 040354 |      | ADA ,+2                | FOR               |
| 0087 | 75107 | 164000 |      | LDB A, I               | DISC              |
| 0088 | 75110 | 164001 |      | LDB B, I               |                   |
| 0089 | 75111 | 006002 |      | SZB                    | PRESENT           |
| 0090 | 75112 | 027126 |      | JMP MLK6               | IT IS             |
| 0091 | 75113 | 064331 |      | LDB ,=17               | ERROR             |
| 0092 | 75114 | 017536 |      | JSB MLKER              |                   |
| 0093 | 75115 | 005116 |      | OCT 5116               |                   |
| 0094 | 75116 | 047516 |      | ASC 8, ONEXISTENT DISC |                   |
|      | 75117 | 042530 |      |                        |                   |
|      | 75120 | 044523 |      |                        |                   |
|      | 75121 | 052106 |      |                        |                   |
|      | 75122 | 047124 |      |                        |                   |

75123 020104  
 75124 044523  
 75125 041440

0095\*

0096\* CHECK SST AND DAT TO INSURE THAT NONE OF THE BLOCKS TO BE LOCKED  
 0097\* ARE BEING USED BY THE SYSTEM

0098\*

|      |       |      |             |                              |
|------|-------|------|-------------|------------------------------|
| 0099 | 75126 | MLK6 | EQU *       |                              |
| 0100 | 75126 |      | LDA M512    | LENGTH OF                    |
| 0101 | 75127 |      | STA MWORD   | BOOTSTRAP                    |
| 0102 | 75130 |      | LDB LDBSA   | CORE ADDRESS                 |
| 0103 | 75131 |      | ADB BIT15   |                              |
| 0104 | 75132 |      | LDA MLKD.   | DISC ADDRESS OF 0,1          |
| 0105 | 75133 |      | JSB DISCZ,I | READ BOOTSTRAP               |
| 0106 | 75134 |      | JMP DDERR   |                              |
| 0107 | 75135 |      | LDA LDBSA,I | NUMBER                       |
| 0108 | 75136 |      | ADA .-5     | OF SYSTEM                    |
| 0109 | 75137 |      | STA MLKCT   | SEGMENTS                     |
| 0110 | 75140 |      | LDB LDBSA   | => FIRST                     |
| 0111 | 75141 |      | ADB .+3     | DISC                         |
| 0112 | 75142 |      | STB MLK8    | ADDRESS                      |
| 0113 | 75143 | MLK7 | EQU *       |                              |
| 0114 | 75143 |      | CCB         | PRINT MESSAGE ON ERROR       |
| 0115 | 75144 |      | LDA .-2     | DISTANCE FROM ADDR TO LENGTH |
| 0116 | 75145 |      | JSB MLKCK   | CHECK THIS ADDRESS           |
| 0117 | 75146 | MLK8 | NOP         |                              |
| 0118 | 75147 |      | LDA MLK8    | UPDATE                       |
| 0119 | 75150 |      | ADA .+4     | TO NEXT                      |
| 0120 | 75151 |      | STA MLK8    | ADDRESS                      |
| 0121 | 75152 |      | ISZ MLKCT   |                              |
| 0122 | 75153 |      | JMP MLK7    |                              |
| 0123 | 75154 |      | LDA DATLN   | LENGTH                       |
| 0124 | 75155 |      | STA MWORD   | OF DAT                       |
| 0125 | 75156 |      | CCB         | NUMBER                       |
| 0126 | 75157 |      | DIV .+3     | OF DAT                       |
| 0127 | 75160 |      |             |                              |
| 0128 | 75161 |      | STA MLKCT   | ENTRIES                      |
| 0129 | 75162 |      | INA         |                              |
| 0130 | 75163 |      | STA MLKTC   |                              |
| 0131 | 75164 |      | LDB LSTDA   |                              |
| 0132 | 75165 |      | ADB .+2     |                              |
| 0133 | 75166 |      | ULD B,I     | DISC                         |
| 0134 | 75167 |      |             |                              |
| 0135 | 75170 |      | DST MLKIN   | ADDRESS                      |
| 0136 | 75171 |      |             |                              |
| 0137 | 75172 |      | LDB LIBDI   | CORE ADDRESS                 |
| 0138 | 75173 |      | LDA MLKIP   |                              |
| 0139 | 75174 |      | JSB DISCZ,I | READ DAT                     |
| 0140 | 75175 |      | JMP DDERR   |                              |
| 0141 | 75176 |      | LDA LIBD    | FIRST                        |
| 0142 | 75177 |      | INA         | DAT DISC                     |
| 0143 | 75200 |      | STA MLK10   | ADDRESS                      |
| 0144 | 75201 |      | ADA .+2     | => SECOND ENTRY              |
| 0145 | 75202 |      | LDB .+32    | SET TO FULL                  |
| 0146 | 75203 |      | STB A,I     | LENGTH                       |

|        |       |        |       |     |       |                                                                  |
|--------|-------|--------|-------|-----|-------|------------------------------------------------------------------|
| 0144   | 75204 | 040355 |       | ADA | .,+3  |                                                                  |
| 0145   | 75205 | 034030 |       | ISZ | MLKTC |                                                                  |
| 0146   | 75206 | 027203 |       | JMP | .,-3  |                                                                  |
| 0147   | 75207 |        | MLK9  | EQU | *     |                                                                  |
| 0148   | 75207 | 007400 |       | CCB |       | PRINT MESSAGE ON ERROR                                           |
| 0149   | 75210 | 003400 |       | CCA |       | DISTANCE FROM ADDR TO LENGTH                                     |
| 0150   | 75211 | 017552 |       | JSB | MLKCK | CHECK THIS ADDRESS                                               |
| 0151   | 75212 | 000000 | MLK10 | NOP |       |                                                                  |
| 0152   | 75213 | 063212 |       | LDA | MLK10 | UPDATE                                                           |
| 0153   | 75214 | 040355 |       | ADA | .,+3  | TO NEXT                                                          |
| 0154   | 75215 | 073212 |       | STA | MLK10 | DAT ENTRY                                                        |
| 0155   | 75216 | 037761 |       | ISZ | MLKCT |                                                                  |
| 0156   | 75217 | 027207 |       | JMP | MLK9  |                                                                  |
| 0157*  |       |        |       |     |       |                                                                  |
| 0158** |       |        |       |     |       | SEARCH DIRECTORY FOR ENTRIES WHICH **                            |
| 0159** |       |        |       |     |       | LIE IN THE RANGE OF BLOCKS TO BE LOCKED **                       |
| 0160*  |       |        |       |     |       |                                                                  |
| 0161*  |       |        |       |     |       | READ EACH DIRECTORY TRACK AND CHECK FOR DISC ADDRESSES WHICH LIE |
| 0162*  |       |        |       |     |       | IN THE RANGE OF THE BLOCKS TO BE LOCKED, FOR EACH SUCH ENTRY     |
| 0163*  |       |        |       |     |       | FOUND, ADD A 4-WORD ENTRY TO A TABLE CONSISTING OF:              |
| 0164*  |       |        |       |     |       | 1) A POINTER TO THE DIREC ENTRY FOR THIS DIRECTORY TRACK         |
| 0165*  |       |        |       |     |       | 2) A POINTER TO THIS ENTRY'S POSITION IN THE DIRECTORY           |
| 0166*  |       |        |       |     |       | 3) THE TWO-WORD DISK ADDRESS OF THE FILE OR PROGRAM              |
| 0167*  |       |        |       |     |       |                                                                  |
| 0168   | 75220 | 063770 |       | LDA | MLKRP | BUFFER FOR ENTRIES TO                                            |
| 0169   | 75221 | 073767 |       | STA | MLKRD | RETURN TO DISC ADT                                               |
| 0170   | 75222 | 002400 |       | CLA |       | INITIALIZE COUNT                                                 |
| 0171   | 75223 | 070030 |       | STA | MLKTC | OF TABLE ENTRIES                                                 |
| 0172   | 75224 | 065002 |       | LDB | L8192 | ➤ BEGINNING                                                      |
| 0173   | 75225 | 074037 |       | STB | MLKTP | OF TABLE BUFFER                                                  |
| 0174   | 75226 | 067733 |       | LDB | MLDIR | DIREC                                                            |
| 0175   | 75227 |        | MLK11 | EQU | *     |                                                                  |
| 0176   | 75227 | 074036 |       | STB | MLKDI | POINTER                                                          |
| 0177   | 75230 | 160001 |       | LDA | B,I   | ANY ENTRIES                                                      |
| 0178   | 75231 | 002002 |       | SZA |       | ON THIS TRACK?                                                   |
| 0179   | 75232 | 027237 |       | JMP | MLK13 | YES                                                              |
| 0180   | 75233 |        | MLK12 | EQU | *     |                                                                  |
| 0181   | 75233 | 044361 |       | ADB | .,+7  | NO, BUMP POINTER                                                 |
| 0182   | 75234 | 057734 |       | CPB | MLKDU | ALL FINISHED?                                                    |
| 0183   | 75235 | 027345 |       | JMP | MLK20 | YES                                                              |
| 0184   | 75236 | 027227 |       | JMP | MLK11 | NO                                                               |
| 0185   | 75237 |        | MLK13 | EQU | *     |                                                                  |
| 0186   | 75237 | 070072 |       | STA | WORD  | FOR DRUM TRANSFER                                                |
| 0187   | 75240 | 007400 |       | CCB |       | COMPUTE #                                                        |
| 0188   | 75241 | 100400 |       | DIV | .,+12 | OF ENTRIES                                                       |
|        |       | 75242  |       |     |       |                                                                  |
| 0189   | 75243 | 073761 |       | STA | MLKCT | ON TRACK                                                         |
| 0190   | 75244 | 064036 |       | LDB | MLKDI |                                                                  |
| 0191   | 75245 | 044360 |       | ADB | .,+6  |                                                                  |
| 0192   | 75246 | 160001 |       | LDA | B,I   | DRUM ADDRESS                                                     |
| 0193   | 75247 | 064566 |       | LDB | LIBDI | READ IN                                                          |
| 0194   | 75250 | 016231 |       | JSB | DRUML | DIRECTORY TRACK                                                  |
| 0195   | 75251 | 026311 |       | JMP | DDERR |                                                                  |
| 0196*  |       |        |       |     |       |                                                                  |
| 0197   | 75252 | 064562 |       | LDB | LIBD  | INITIALIZE                                                       |

|      |       |        |       |             |                                  |
|------|-------|--------|-------|-------------|----------------------------------|
| 0198 | 75253 | 044362 |       | ADB .+8     | DIRECTORY                        |
| 0199 | 75254 |        | MLK14 | EQU *       |                                  |
| 0200 | 75254 | 077260 |       | STB MLKDP   | POINTER                          |
| 0201 | 75255 | 006400 |       | CLB         | SKIP RETURN ON FOUND             |
| 0202 | 75256 | 060355 |       | LDA .+3     | DISTANCE BETWEEN ADDR AND LENGTH |
| 0203 | 75257 | 017552 |       | JSB MLKCK   | CHECK THIS ADDRESS               |
| 0204 | 75260 | 000000 | MLKDP | NOP         |                                  |
| 0205 | 75261 | 027324 |       | JMP MLK15   | NOT IN RANGE                     |
| 0206 | 75262 | 027304 |       | JMP MLK17   | NO SPECIAL ENTRY FOUND           |
| 0207 | 75263 | 067260 |       | LDB MLKDP   | => DISC ADDRESS                  |
| 0208 | 75264 | 160001 |       | LDA B,I     |                                  |
| 0209 | 75265 | 173767 |       | STA MLKRD,I | SAVE FIRST WORD                  |
| 0210 | 75266 | 006004 |       | INB         |                                  |
| 0211 | 75267 | 037767 |       | ISZ MLKRD   |                                  |
| 0212 | 75270 | 160001 |       | LDA B,I     |                                  |
| 0213 | 75271 | 173767 |       | STA MLKRD,I | SAVE SECOND WORD                 |
| 0214 | 75272 | 037767 |       | ISZ MLKRD   |                                  |
| 0215 | 75273 | 044354 |       | ADB .+2     |                                  |
| 0216 | 75274 | 160001 |       | LDA B,I     | GET LENGTH                       |
| 0217 | 75275 | 002021 |       | SSA,RSS     |                                  |
| 0218 | 75276 | 027302 |       | JMP .+4     | IT POSITIVE                      |
| 0219 | 75277 | 001727 |       | ALF,ALF     | CONVERT                          |
| 0220 | 75300 | 030762 |       | IOR HIMSK   | TO                               |
| 0221 | 75301 | 003004 |       | CMA,INA     | BLOCKS                           |
| 0222 | 75302 | 173767 |       | STA MLKRD,I | SAVE THE LENGTH IN BLOCKS        |
| 0223 | 75303 | 037767 |       | ISZ MLKRD   |                                  |
| 0224 | 75304 |        | MLK17 | EQU *       |                                  |
| 0225 | 75304 | 064036 |       | LDB MLKDI   | SAVE POINTER                     |
| 0226 | 75305 | 174037 |       | STB MLKTP,I | TO DIREC                         |
| 0227 | 75306 | 034037 |       | ISZ MLKTP   | IN TABLE                         |
| 0228 | 75307 | 067260 |       | LDB MLKDP   | SAVE POINTER TO                  |
| 0229 | 75310 | 174037 |       | STB MLKTP,I | DIRECTORY ALSO                   |
| 0230 | 75311 | 034037 |       | ISZ MLKTP   | GET DISC                         |
| 0231 | 75312 | 104200 |       | DLD B,I     | ADDRESS                          |
|      | 75313 | 100001 |       |             |                                  |
| 0232 | 75314 | 104400 |       | DST MLKTP,I | AND SAVE                         |
|      | 75315 | 100037 |       |             |                                  |
| 0233 | 75316 | 064037 |       | LDB MLKTP   | ADVANCE TABLE                    |
| 0234 | 75317 | 044354 |       | ADB .+2     | POINTER                          |
| 0235 | 75320 | 054530 |       | CPB LULEN   | OVERFLOW?                        |
| 0236 | 75321 | 027332 |       | JMP MLK16   | YES                              |
| 0237 | 75322 | 074037 |       | STB MLKTP   | NO                               |
| 0238 | 75323 | 034030 |       | ISZ MLKTC   | BUMP COUNT OF TABLE ENTRIES      |
| 0239 | 75324 |        | MLK15 | EQU *       |                                  |
| 0240 | 75324 | 067260 |       | LDB MLKDP   | BUMP DIRECTORY                   |
| 0241 | 75325 | 044366 |       | ADB .+12    | POINTER                          |
| 0242 | 75326 | 037761 |       | ISZ MLKCT   | FINISHED THIS DIRECTORY TRACK?   |
| 0243 | 75327 | 027254 |       | JMP MLK14   | NO                               |
| 0244 | 75330 | 064036 |       | LDB MLKDI   | YES, CHECK                       |
| 0245 | 75331 | 027233 |       | JMP MLK12   | NEXT TRACK                       |
| 0246 | 75332 |        | MLK16 | EQU *       |                                  |
| 0247 | 75332 | 064330 |       | LDB .-18    | TABLE OVERFLOW                   |
| 0248 | 75333 | 017536 |       | JSB MLKER   |                                  |
| 0249 | 75334 | 005114 |       | OCT 5114    |                                  |
| 0250 | 75335 | 047503 |       | ASC B,UCK   | FEWER BLOCKS                     |

75336 045440  
 75337 043105  
 75340 053505  
 75341 051040  
 75342 041114  
 75343 047503  
 75344 045523

0251\*  
 0252\* NOW COMPARE TABLE JUST BUILT WITH FUSS TABLE TO  
 0253\* DETERMINE IF THE TRACKS TO BE LOCKED CONTAIN ACTIVE FILES  
 0254\*

|      |              |                    |                          |
|------|--------------|--------------------|--------------------------|
| 0255 | 75345        | MLK20 EQU *        |                          |
| 0256 | 75345 060030 | LDA MLKTC          | SKIP CHECKING            |
| 0257 | 75346 003007 | CMA, INA, SZA, RSS | FUSS IF NO               |
| 0258 | 75347 027723 | JMP MLK30          | TABLE ENTRIES            |
| 0259 | 75350 070030 | STA MLKTC          |                          |
| 0260 | 75351 060732 | LDA M2000          |                          |
| 0261 | 75352 070072 | STA WORD           |                          |
| 0262 | 75353 001100 | ARS                | NUMBER OF FUSS           |
| 0263 | 75354 073761 | STA MLKCT          | TABLE ENTRIES            |
| 0264 | 75355 160540 | LDA FUSS, I        | READ                     |
| 0265 | 75356 064566 | LDB LIBDI          | FUSS                     |
| 0266 | 75357 016231 | JSB DRUML          | TABLE                    |
| 0267 | 75360 026311 | JMP DDERR          |                          |
| 0268 | 75361 064562 | LDB LIBD           | INITIALIZE               |
| 0269 | 75362 074037 | STB MLKTP          | FUSS POINTER             |
| 0270 | 75363        | MLK21 EQU *        |                          |
| 0271 | 75363 104200 | DLD MLKTP, I       | GET FUSS ENTRY           |
|      | 75364 100037 |                    |                          |
| 0272 | 75365 030001 | IOR B              | CHECK                    |
| 0273 | 75366 002003 | SZA, RSS           | FOR ZERO                 |
| 0274 | 75367 027416 | JMP MLK23-1        | IT IS, SKIP IT           |
| 0275 | 75370 065002 | LDB L8192          | NON-ZERO, SET            |
| 0276 | 75371 044354 | ADB .+2            | TABLE POINTER IN (B)     |
| 0277 | 75372 060030 | LDA MLKTC          | NUMBER OF                |
| 0278 | 75373 070036 | STA MLKDI          | TABLE ENTRIES            |
| 0279 | 75374        | MLK22 EQU *        |                          |
| 0280 | 75374 160001 | LDA B, I           | COMPARE                  |
| 0281 | 75375 006004 | INB                | FIRST WORD               |
| 0282 | 75376 150037 | CPA MLKTP, I       | OF ENTRIES               |
| 0283 | 75377 027404 | JMP **5            |                          |
| 0284 | 75400 031036 | IOR BIT15          |                          |
| 0285 | 75401 150036 | CPA LOCTP, I       |                          |
| 0286 | 75402 002001 | RSS                |                          |
| 0287 | 75403 027413 | JMP MLK25          | UNEQUAL                  |
| 0288 | 75404 034037 | ISZ MLKTP          | EQUAL,                   |
| 0289 | 75405 160001 | LDA B, I           | COMPARE                  |
| 0290 | 75406 150037 | CPA MLKTP, I       | SECOND WORD              |
| 0291 | 75407 027423 | JMP MLK24          | EQUAL, FILE IN USE       |
| 0292 | 75410 003400 | CCA                | UNEQUAL, MOVE            |
| 0293 | 75411 040037 | ADA MLKTP          | POINTER BACK             |
| 0294 | 75412 070037 | STA MLKTP          | TO FIRST WORD            |
| 0295 | 75413        | MLK25 EQU *        |                          |
| 0296 | 75413 044355 | ADB .+3            | BUMP TO NEXT TABLE ENTRY |
| 0297 | 75414 034036 | ISZ MLKDI          | FINISHED TABLE?          |

|       |                                                                 |        |       |             |                         |
|-------|-----------------------------------------------------------------|--------|-------|-------------|-------------------------|
| 0298  | 75415                                                           | 027374 |       | JMP MLK22   | NO                      |
| 0299  | 75416                                                           | 034037 |       | ISZ MLKTP   | YES                     |
| 0300  | 75417                                                           |        | MLK23 | EQU *       |                         |
| 0301  | 75417                                                           | 034037 |       | ISZ MLKTP   | BUMP TO NEXT FUSS ENTRY |
| 0302  | 75420                                                           | 037761 |       | ISZ MLKCT   | FINISHED FUSS           |
| 0303  | 75421                                                           | 027363 |       | JMP MLK21   | NO                      |
| 0304  | 75422                                                           | 027723 |       | JMP MLK30   | YES                     |
| 0305* |                                                                 |        |       |             |                         |
| 0306  | 75423                                                           |        | MLK24 | EQU *       |                         |
| 0307  | 75423                                                           | 044347 |       | ADB .-3     | GET POINTER             |
| 0308  | 75424                                                           | 074037 |       | STB MLKTP   | TO DIREC                |
| 0309  | 75425                                                           | 164001 |       | LDB B,I     | IN (B)                  |
| 0310  | 75426                                                           | 160001 |       | LDA B,I     | TRACK                   |
| 0311  | 75427                                                           | 070072 |       | STA WORD    | LENGTH                  |
| 0312  | 75430                                                           | 044360 |       | ADB .+6     |                         |
| 0313  | 75431                                                           | 160001 |       | LDA B,I     | READ                    |
| 0314  | 75432                                                           | 064566 |       | LDB LIBDI   | DIRECTORY               |
| 0315  | 75433                                                           | 016231 |       | JSB DRUML   | TRACK                   |
| 0316  | 75434                                                           | 026311 |       | JMP ODERR   |                         |
| 0317  | 75435                                                           | 060037 |       | LDA MLKTP   | TO DRUM                 |
| 0318  | 75436                                                           | 002004 |       | INA         | TO DRUM                 |
| 0319  | 75437                                                           | 160000 |       | LDA A,I     | ADDRESS FOR             |
| 0320  | 75440                                                           | 073444 |       | STA MLK26   | SUBROUTINE              |
| 0321  | 75441                                                           | 007400 |       | CCB         | OUTPUT                  |
| 0322  | 75442                                                           | 060355 |       | LDA .+3     | 'CAN'T                  |
| 0323  | 75443                                                           | 017552 |       | JSB MLKCK   | LOCK!                   |
| 0324  | 75444                                                           | 000000 | MLK26 | NOP         | MESSAGE                 |
| 0325* |                                                                 |        |       |             |                         |
| 0326* | MLKNO SCANS THE INPUT STRING FOR AN INTEGER LESS THAN 2**19. IF |        |       |             |                         |
| 0327* | FOUND IT RETURNS TO (P+2) WITH THE INTEGER IN MLKIN[0:1] AND    |        |       |             |                         |
| 0328* | THE FOLLOWING CHARACTER IN (A). ERRORS EXIT TO (P+2).           |        |       |             |                         |
| 0329* |                                                                 |        |       |             |                         |
| 0330  | 75445                                                           | 000000 | MLKNO | NOP         |                         |
| 0331  | 75446                                                           | 007400 |       | CCB         | SET FLAG FOR            |
| 0332  | 75447                                                           | 074037 |       | STB MLKTP   | NUMBER OCCURRENCE       |
| 0333  | 75450                                                           | 006400 |       | CLB         | INITIALIZE              |
| 0334  | 75451                                                           | 077764 |       | STB MLKIN   | TWO-DIGIT               |
| 0335  | 75452                                                           | 077765 |       | STB MLKIN+1 | RESULT                  |
| 0336  | 75453                                                           |        | MLKN1 | EQU *       |                         |
| 0337  | 75453                                                           | 016025 |       | JSB T35CQ   | GET A CHARACTER         |
| 0338  | 75454                                                           | 027511 |       | JMP MLKN2   | CR                      |
| 0339  | 75455                                                           | 064000 |       | LDB A       |                         |
| 0340  | 75456                                                           | 044316 |       | ADB M72B    |                         |
| 0341  | 75457                                                           | 006021 |       | SSB,RSS     | DIGIT?                  |
| 0342  | 75460                                                           | 027511 |       | JMP MLKN2   | NO                      |
| 0343  | 75461                                                           | 044364 |       | ADB .+10    | MAYBE                   |
| 0344  | 75462                                                           | 006020 |       | SSB         |                         |
| 0345  | 75463                                                           | 027511 |       | JMP MLKN2   | NO                      |
| 0346  | 75464                                                           | 074037 |       | STB MLKTP   | YES, SAVE IT            |
| 0347  | 75465                                                           | 063765 |       | LDA MLKIN+1 | GET PREVIOUS            |
| 0348  | 75466                                                           | 067764 |       | LDB MLKIN   | RESULT                  |
| 0349  | 75467                                                           | 100022 |       | ASL 2       | MULTIPLY BY 4           |
| 0350  | 75470                                                           | 000040 |       | CLE         | ADD PREVIOUS            |
| 0351  | 75471                                                           | 043765 |       | ADA MLKIN+1 | RESULT,                 |
| 0352  | 75472                                                           | 002040 |       | SEZ         | PRODUCING               |

|       |                                                                    |        |             |                          |
|-------|--------------------------------------------------------------------|--------|-------------|--------------------------|
| 0353  | 75473                                                              | 006024 | INB         | MULTIPLICATION           |
| 0354  | 75474                                                              | 047764 | ADB MLKIN   | BY 5                     |
| 0355  | 75475                                                              | 100021 | ASL 1       | NOW 10*PREVIOUS RESULT   |
| 0356  | 75476                                                              | 000040 | CLE         | ADD IN                   |
| 0357  | 75477                                                              | 040037 | ADA MLKTP   |                          |
| 0358  | 75500                                                              | 002040 | SEZ         | NEW DIGIT                |
| 0359  | 75501                                                              | 006004 | INB         |                          |
| 0360  | 75502                                                              | 077764 | STB MLKIN   | SAVE NEW                 |
| 0361  | 75503                                                              | 073765 | STA MLKIN+1 | RESULT                   |
| 0362  | 75504                                                              | 060001 | LDA B       | TOO                      |
| 0363  | 75505                                                              | 010361 | AND ,+7     |                          |
| 0364  | 75506                                                              | 050001 | CPA B       | BIG?                     |
| 0365  | 75507                                                              | 027453 | JMP MLKN1   | NO                       |
| 0366  | 75510                                                              | 127445 | JMP MLKNO,I | YES                      |
| 0367  | 75511                                                              |        | MLKN2 EQU * |                          |
| 0368  | 75511                                                              | 034037 | ISZ MLKTP   | DID NUMBER OCCUR?        |
| 0369  | 75512                                                              | 037445 | ISZ MLKNO   | YES                      |
| 0370  | 75513                                                              | 127445 | JMP MLKNO,I | NO                       |
| 0371* |                                                                    |        |             |                          |
| 0372* | MLKTS SUBTRACTS THE TWO-WORD INTEGER IN [(B),(A)] FROM MLKIN[0;1], |        |             |                          |
| 0373* | LEAVING THE RESULT IN [(B),(A)].                                   |        |             |                          |
| 0374* |                                                                    |        |             |                          |
| 0375  | 75514                                                              | 000000 | MLKTS NOP   |                          |
| 0376  | 75515                                                              | 003104 | CMA,CLE,INA | NEGATE                   |
| 0377  | 75516                                                              | 007040 | CMB,SEZ     |                          |
| 0378  | 75517                                                              | 006004 | INB         | SUBTRAHEND               |
| 0379  | 75520                                                              | 000040 | CLE         |                          |
| 0380  | 75521                                                              | 043765 | ADA MLKIN+1 | ADD IN                   |
| 0381  | 75522                                                              | 002040 | SEZ         |                          |
| 0382  | 75523                                                              | 006004 | INB         | MINUEND                  |
| 0383  | 75524                                                              | 047764 | ADB MLKIN   |                          |
| 0384  | 75525                                                              | 127514 | JMP MLKTS,I |                          |
| 0385* |                                                                    |        |             |                          |
| 0386* | MLKDS TAKES THE DISC ADDRESS IN MLKIN[0;1] AND COMPUTES IT         |        |             |                          |
| 0387* | RELATIVE TO THE DISC WHOSE EQT ENTRY IS POINTED TO BY MLKTP,       |        |             |                          |
| 0388* | EXITING WITH THE RESULT IN [(B),(A)].                              |        |             |                          |
| 0389* |                                                                    |        |             |                          |
| 0390  | 75526                                                              | 000000 | MLKDS NOP   |                          |
| 0391  | 75527                                                              | 104200 | DLI MLKLP,I | GET FIRST SECTOR NUMBER  |
|       |                                                                    | 75530  |             |                          |
|       |                                                                    | 100033 |             |                          |
| 0392  | 75531                                                              | 000065 | CLE,ERA     | CONVERT TO               |
| 0393  | 75532                                                              | 005500 | ERB         | BLOCKS                   |
| 0394  | 75533                                                              | 101100 | SWP         |                          |
| 0395  | 75534                                                              | 017514 | JSB MLKTS   | COMPUTE RELATIVE ADDRESS |
| 0396  | 75535                                                              | 127526 | JMP MLKDS,I |                          |
| 0397* |                                                                    |        |             |                          |
| 0398* | MLKER OUTPUTS AN ERROR MESSAGE TO THE CONSOLE                      |        |             |                          |
| 0399* |                                                                    |        |             |                          |
| 0400  | 75536                                                              | 000000 | MLKER NOP   |                          |
| 0401  | 75537                                                              | 074037 | STB MLKTP   |                          |
| 0402  | 75540                                                              | 060305 | LDA T35B1   | MOVE                     |
| 0403  | 75541                                                              | 070051 | STA MOVED   | MESSAGE                  |
| 0404  | 75542                                                              | 063536 | LDA MLKER   | INTO                     |
| 0405  | 75543                                                              | 070050 | STA MOVES   | CONSOLE                  |
| 0406  | 75544                                                              | 005100 | BRB         | BUFFER                   |



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0407 75545 016257 JSB MOVEW
0408 75546 060037 LDA MLKTP
0409 75547 003004 CMA,INA
0410 75550 064305 LDB T35B1
0411 75551 026271 JMP LEND+2 OUTPUT IT
0412*
0413* MLKCK CHECKS WHETHER A GIVEN TABLE ENTRY IS IN THE RANGE OF THE
0414* BLOCK TO BE LOCKED UPON ENTRY (A) CONTAINS THE DISTANCE IN THE
0415* TABLE BETWEEN THE ADDRESS AND THE LENGTH AND JSB,I => THE DISC
0416* ADDRESS.
0417 75552 000000 MLKCK NOP
0418 75553 074040 STB MLKEX
0419 75554 070041 STA MLKTI SAVE TABLE INCREMENT
0420 75555 167552 LDB MLKCK,I => DISC
0421 75556 074043 STB MLKBR ADDRESS
0422 75557 037552 ISZ MLKCK
0423 75560 104200 DLD MLKBR,I GET DISC ADDRESS
 75561 100043
0424 75562 104400 DST MLKIN
 75563 075764
0425 75564 030001 IOR B SKIP
0426 75565 002003 SZA,RSS CHECK
0427 75566 127552 JMP MLKCK,I IF ZERO
0428 75567 104200 DLD MLKFB SUBTRACT FIRST
 75570 000046
0429 75571 017745 JSB MLKTIW BLOCK ADDRESS
0430 75572 002020 SSA IN RANGE?
0431 75573 027606 JMP MLKC1 NO
0432 75574 104200 DLD MLKLB YES, CHECK AGAINST
 75575 075762
0433 75576 017745 JSB MLKTIW LAST BLOCK
0434 75577 002021 SSA,RSS IN RANGE?
0435 75600 127552 JMP MLKCK,I NO
0436 75601 034040 ISZ MLKEX YES, PRINT ERROR?
0437 75602 027651 JMP MLKC5 NO
0438 75603 063765 LDA MLKIN+1 YES, GO
0439 75604 067764 LDB MLKIN OUTPUT
0440 75605 027615 JMP MLKC2 ERROR MESSAGE
0441 75606 MLKC1 EQU *
0442 75606 017657 JSB MLKEC CHECK FOR MIDDLE OF ENTRY
0443 75607 000046 DEF MLKFB OVERLAPPING FIRST BLOCK
0444 75610 127552 JMP MLKCK,I IT DOESN'T
0445 75611 034040 ISZ MLKEX ID DOES, PRINT ERROR?
0446 75612 027654 JMP MLKC4 NO
0447 75613 060047 LDA MLKFB+1 YES
0448 75614 064046 LDB MLKFB
0449 75615 MLKC2 EQU *
0450 75615 100400 DIV DVSR5 COMPUTE
 75616 001032
0451 75617 074032 STB MLKFA
0452 75620 067736 LDB MLKD3 FIRST PAIR
0453 75621 074031 STB MLKLA
0454 75622 017711 JSB MLKNM OF DIGITS
0455 75623 060032 LDA MLKFA COMPUTE
0456 75624 006400 CLB

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|       |       |        |       |             |                           |
|-------|-------|--------|-------|-------------|---------------------------|
| 0457  | 75625 | 100400 | DIV   | .100        | SECOND PAIR               |
|       | 75626 | 000437 |       |             |                           |
| 0458  | 75627 | 074032 | STB   | MLKFA       |                           |
| 0459  | 75630 | 017711 | JSB   | MLKNM       | OF DIGITS                 |
| 0460  | 75631 | 060032 | LDA   | MLKFA       | COMPUTE THIRD             |
| 0461  | 75632 | 017711 | JSB   | MLKNM       | PAIR OF DIGITS            |
| 0462  | 75633 | 064322 | LDB   | .-24        | OUTPUT                    |
| 0463  | 75634 | 017536 | JSB   | MLKER       | MESSAGE                   |
| 0464  | 75635 | 005103 | OCT   | 5103        |                           |
| 0465  | 75636 | 040516 | ASC   | 8,AN'IT     | LOCK BLOCK                |
|       | 75637 | 023524 |       |             |                           |
|       | 75640 | 020114 |       |             |                           |
|       | 75641 | 047503 |       |             |                           |
|       | 75642 | 045440 |       |             |                           |
|       | 75643 | 041114 |       |             |                           |
|       | 75644 | 047503 |       |             |                           |
|       | 75645 | 045440 |       |             |                           |
| 0466  | 75646 |        | MLKC3 | EQU *       |                           |
| 0467  | 75646 | 000000 |       | BSS 3       | FOR BLOCK NUMBER          |
| 0468  | 75651 |        | MLKC5 | EQU *       |                           |
| 0469  | 75651 | 017657 | JSB   | MLKEC       | CHECK FOR MIDDLE OF ENTRY |
| 0470  | 75652 | 075762 | DEF   | MLKLB       | IN RANGE OF LAST BLOCK    |
| 0471  | 75653 | 002001 |       | RSS         | IT ISN'IT                 |
| 0472  | 75654 |        | MLKC4 | EQU *       |                           |
| 0473  | 75654 | 037552 |       | ISZ MLKCK   |                           |
| 0474  | 75655 | 037552 |       | ISZ MLKCK   |                           |
| 0475  | 75656 | 127552 |       | JMP MLKCK,I |                           |
| 0476* |       |        |       |             |                           |
| 0477* |       |        |       |             |                           |
| 0478  | 75657 | 000000 | MLKEC | NOP         |                           |
| 0479  | 75660 | 060043 | LDA   | MLKBR       | (A) =>                    |
| 0480  | 75661 | 040041 | ADA   | MLKTI       | LENGTH                    |
| 0481  | 75662 | 164000 | LDB   | A,I         |                           |
| 0482  | 75663 | 006021 | SSB,  | RSS         |                           |
| 0483  | 75664 | 027670 | JMP   | ++4         | + BLOCKS                  |
| 0484  | 75665 | 003400 | CCA   |             | = WORDS                   |
| 0485  | 75666 | 101110 | RRR   | 8           | CONVERT TO                |
| 0486  | 75667 | 007004 | CMB,  | INB         | + BLOCKS                  |
| 0487  | 75670 | 044351 | ADB   | .-1         |                           |
| 0488  | 75671 | 160043 | LDA   | MLKBR,I     | COMPUTE                   |
| 0489  | 75672 | 034043 | ISZ   | MLKBR       |                           |
| 0490  | 75673 | 000040 | CLE   |             | FIRST                     |
| 0491  | 75674 | 144043 | ADB   | MLKBR,I     |                           |
| 0492  | 75675 | 002040 | SEZ   |             | UNUSED                    |
| 0493  | 75676 | 002004 | INA   |             |                           |
| 0494  | 75677 | 104400 | DST   | MLKIN       | BLOCK                     |
|       | 75700 | 075764 |       |             |                           |
| 0495  | 75701 | 163657 | LDA   | MLKEC,I     |                           |
| 0496  | 75702 | 104200 | DLA   | A,I         | SUBTRACT FIRST            |
|       | 75703 | 100000 |       |             |                           |
| 0497  | 75704 | 037657 | ISZ   | MLKEC       |                           |
| 0498  | 75705 | 017745 | JSB   | MLKTB       | BLOCK ADDRESS             |
| 0499  | 75706 | 002021 | SSA,  | RSS         | IN RANGE?                 |
| 0500  | 75707 | 037657 | ISZ   | MLKEC       | YES                       |
| 0501  | 75710 | 127657 | JMP   | MLKEC,I     | NO                        |

0502\*

0503\* MLKMN COMPUTES A NUMBER &lt;100 TO ASCII AND SAVES IT FOR OUTPUTTING

0504\*

|      |       |        |       |             |                  |
|------|-------|--------|-------|-------------|------------------|
| 0505 | 75711 | 000000 | MLKMN | NOP         |                  |
| 0506 | 75712 | 006400 |       | CLB         |                  |
| 0507 | 75713 | 100400 |       | DIV         | .+10             |
|      | 75714 | 000364 |       |             |                  |
| 0508 | 75715 | 001727 |       | ALF,ALF     |                  |
| 0509 | 75716 | 040001 |       | ADA B       |                  |
| 0510 | 75717 | 040574 |       | ADA ASC00   | CONVERT TO ASCII |
| 0511 | 75720 | 170031 |       | STA MLKLA,I |                  |
| 0512 | 75721 | 034031 |       | ISZ MLKLA   |                  |
| 0513 | 75722 | 127711 |       | JMP MLKMN,I |                  |

0514\*

0515\* READ IN OVERLAY

0516\*

|      |       |        |       |           |                |
|------|-------|--------|-------|-----------|----------------|
| 0517 | 75723 |        | MLK30 | EQU *     |                |
| 0518 | 75723 | 063735 |       | LDA MOLEN | WORD COUNT FOR |
| 0519 | 75724 | 070072 |       | STA WORD  | MLOCK OVERLAY  |
| 0520 | 75725 | 060260 |       | LDA LIB   |                |
| 0521 | 75726 | 002004 |       | INA       |                |
| 0522 | 75727 | 160000 |       | LDA A,I   | DRUM ADDRESS   |
| 0523 | 75730 | 064504 |       | LDB #LIBI |                |
| 0524 | 75731 | 027742 |       | JMP MORG  |                |

0525\*

|      |       |        |       |     |            |
|------|-------|--------|-------|-----|------------|
| 0526 | 75732 | 000352 | MLKD  | DEF |            |
| 0527 | 75733 | 030000 | MLDIR | DEF | DIREC      |
| 0528 | 75734 | 031060 | MLKDU | DEF | DIREU      |
| 0529 | 75735 | 177036 | MOLEN | ABS | LIBRA=MORG |
| 0530 | 75736 | 075646 | MLKD3 | DEF | MLKC3      |

0531\*

|      |       |        |      |             |              |
|------|-------|--------|------|-------------|--------------|
| 0532 | 75742 |        |      | ORG         | LIBRA+512-30 |
| 0533 | 75742 |        | MORG | EQU *       |              |
| 0534 | 75742 | 016231 |      | JSB DRUML   | READ OVERLAY |
| 0535 | 75743 | 116015 |      | JSB SICKP,I |              |
| 0536 | 75744 | 027000 |      | JMP LIBRA   | EXECUTE IT   |

0537\*

0538\* MLKTN SUBTRACTS THE TWO-WORD INTEGER IN [(A),(B)] FROM MLKIN[(0;1)],

0539\* LEAVING THE RESULT IN [(A),(B)].

0540\*

|      |       |        |       |             |            |
|------|-------|--------|-------|-------------|------------|
| 0541 | 75745 | 000000 | MLKTN | NOP         |            |
| 0542 | 75746 | 007104 |       | CMB,CLE,INB | NEGATE     |
| 0543 | 75747 | 003040 |       | CMA,SEZ     |            |
| 0544 | 75750 | 002004 |       | INA         | SUBTRAHEND |
| 0545 | 75751 | 000040 |       | CLE         |            |
| 0546 | 75752 | 047765 |       | ADB MLKIN+1 | ADD IN     |
| 0547 | 75753 | 002040 |       | SEZ         |            |
| 0548 | 75754 | 002004 |       | INA         | MINUEND    |
| 0549 | 75755 | 043764 |       | ADA MLKIN   |            |
| 0550 | 75756 | 127745 |       | JMP MLKTN,I |            |

0551\*

|      |       |        |       |     |       |
|------|-------|--------|-------|-----|-------|
| 0552 | 75757 | 000000 | MLKPP | BSS | 1     |
| 0553 | 75760 | 000000 | MLKND | BSS | 1     |
| 0554 | 75757 |        | MLKXB | EQU | MLKPP |
| 0555 | 75761 | 000000 | MLKCT | BSS | 1     |

|       |                                         |        |       |     |          |               |
|-------|-----------------------------------------|--------|-------|-----|----------|---------------|
| 0556  | 75762                                   | 000000 | MLKLB | BSS | 2        |               |
| 0557  | 75764                                   | 000000 | MLKIN | BSS | 2        |               |
| 0558  | 75766                                   | 000000 | MLKLN | BSS | 1        |               |
| 0559  | 75767                                   | 000000 | MLKRD | BSS | 1        |               |
| 0560  | 75770                                   | 075771 | MLKRP | DEF | **+1     |               |
| 0561  | 75771                                   | 000000 |       | BSS | 6        |               |
| 0562  | 75777                                   | 075764 | MLKIP | DEF | MLKIN    |               |
| 0563  | 76000                                   |        | SML0  | EQU | *        |               |
| 0564* |                                         |        |       |     |          |               |
| 0565  | 00030                                   |        | MLKTC | EQU | LTEMP    |               |
| 0566  | 00031                                   |        | MLKLA | EQU | LTEMP+1  |               |
| 0567  | 00032                                   |        | MLKFA | EQU | LTEMP+2  |               |
| 0568  | 00033                                   |        | MLKLP | EQU | LTEMP+3  |               |
| 0569  | 00036                                   |        | MLKDI | EQU | LTEMP+6  |               |
| 0570  | 00037                                   |        | MLKTP | EQU | LTEMP+7  |               |
| 0571  | 00040                                   |        | MLKEX | EQU | LTEMP+8  |               |
| 0572  | 00041                                   |        | MLKTI | EQU | LTEMP+9  |               |
| 0573  | 00043                                   |        | MLKBR | EQU | LTEMP+11 |               |
| 0574  | 00046                                   |        | MLKFB | EQU | LTEMP+14 | 15 ALSO USED. |
| 0575* |                                         |        |       |     |          |               |
| 0576* | LTEMP + 4, 5, 10, 12, AND 13 ALSO USED. |        |       |     |          |               |

0002\* THE MLOCK OVERLAY DOES ALL THE WORK FOR MLOCK. IT USES THE TABLE  
 0003\* BUILT BY MLOCK AND PROCEEDS AS FOLLOWS:

- 0004\*  
 0005\* 1) UPDATE LOCKED BLOCKS TABLE.  
 0006\* 2) UPDATE THE DIRECTORY BY REMOVING ENTRIES WHOSE DISC  
 0007\* ADDRESSES LIE IN THE RANGE OF THE BLOCKS TO BE LOCKED.  
 0008\* 3) UPDATE THE ADT WITH DRUM SPACE RETURNED FROM SANCTIFIED  
 0009\* PROGRAMS AND FILES WHICH HAVE BEEN REMOVED.  
 0010\* 4) UPDATE THE IDT WITH SPACE RETURNED FROM DELETED PROGRAMS  
 0011\* AND FILES.  
 0012\* 5) UPDATE DISC ADT BY REMOVING ENTRIES WHICH ARE IN THE RANGE  
 0013\* OF THE BLOCKS TO BE LOCKED.  
 0014\*

0015\* ISN'T THIS A RIDICULOUS AMOUNT OF THRASHING?

0016\*  
 0017 75000                   ORG LIBRA  
 0018 75000 060762       LDA M256           LENGTH OF  
 0019 75001 070215       STA MWORD           BAD BLOCKS  
 0020 75002 104200       ULD MLKLP,I  
       75003 100033  
 0021 75004 000065       CLE,ERA  
 0022 75005 005540       ERB,CLE  
 0023 75006 044355       ADB .+3           RESIDES ON BLOCK 3  
 0024 75007 002040       SEZ  
 0025 75010 002004       INA  
 0026 75011 104400       DST MLKIN  
       75012 075764  
 0027 75013 063777       LDA MLKIP           READ BAD  
 0028 75014 064566       LDB LIBDI           BLOCKS  
 0029 75015 114217       JSB DISCZ,I       TABLE  
 0030 75016 026311       JMP DDERR

0031\*  
 0032\*\* UPDATE LOCKED BLOCKS TABLE

0033\*  
 0034 75017 064562       LDB LIBD           => FIRST ENTRY  
       MLK71 EQU \*  
 0035 75020               LDA B,I  
 0036 75020 160001       SZA,RSS           FINISHED SEARCH?  
 0037 75021 002003       JMP MLK81       YES, GO INSERT AT END  
 0038 75022 027154       CMA,CLE,INA       THIS  
 0039 75023 003104       ADA MLKFA       ENTRY  
 0040 75024 040032       SZA,RSS           EQUAL?  
 0041 75025 002003       JMP MLK73       YES  
 0042 75026 027043       SEZ,RSS       NO, GREATER?  
 0043 75027 002041       JMP MLK78       YES  
 0044 75030 027124       ADB .+2       NO, TABLE  
 0045 75031 044354       CPB MLKLZ       FULL?  
 0046 75032 057736       RSS           YES  
 0047 75033 002001       JMP MLK71       NO, LOOP  
 0048 75034 027020       JSB MLKPB       CHECK PRECEEDING BLOCK  
 0049 75035 017556       JMP MLK82       ENTRIES MERGED  
 0050 75036 027163  
 0051 75037               MLK72 EQU \*  
 0052 75037 103100       CLF 0  
 0053 75040 002400       CLA  
 0054 75041 070260       STA LIB       NO ROUTINE IN CORE

|      |       |        |             |                           |
|------|-------|--------|-------------|---------------------------|
| 0055 | 75042 | 126024 | JMP MLFLA,I | OUTPUT TABLE FULL MESSAGE |
| 0056 | 75043 |        | MLK73 EQU * |                           |
| 0057 | 75043 | 006004 | INB         |                           |
| 0058 | 75044 | 063766 | LDA MLKLN   | IS THE                    |
| 0059 | 75045 | 003104 | CMA,CLE,INA | NEW                       |
| 0060 | 75046 | 140001 | ADA B,I     | BLOCK                     |
| 0061 | 75047 | 002040 | SEZ         | LONGER?                   |
| 0062 | 75050 | 027547 | JMP MLK99   | NO                        |
| 0063 | 75051 | 063766 | LDA MLKLN   | YES, RESET                |
| 0064 | 75052 | 170001 | STA B,I     | LENGTH                    |
| 0065 | 75053 | 006004 | INB         |                           |
| 0066 | 75054 |        | MLK74 EQU * |                           |
| 0067 | 75054 | 057736 | CPB MLKLZ   | END OF TABLE?             |
| 0068 | 75055 | 027163 | JMP MLK82   | YES                       |
| 0069 | 75056 | 160001 | LDA B,I     | ALL ENTRIES               |
| 0070 | 75057 | 002003 | SZA,RSS     | FINISHED?                 |
| 0071 | 75060 | 027163 | JMP MLK82   | YES                       |
| 0072 | 75061 | 044350 | ADB #-2     | NO                        |
| 0073 | 75062 | 160001 | LDA B,I     | DOES THIS                 |
| 0074 | 75063 | 006004 | INB         |                           |
| 0075 | 75064 | 140001 | ADA B,I     | ENTRY                     |
| 0076 | 75065 | 003100 | CMA,CLE     |                           |
| 0077 | 75066 | 006004 | INB         | OVERLAP THE               |
| 0078 | 75067 | 140001 | ADA B,I     |                           |
| 0079 | 75070 | 006044 | SEZ,INB     | NEXT ONE?                 |
| 0080 | 75071 | 027163 | JMP MLK82   | NO                        |
| 0081 | 75072 | 140001 | ADA B,I     | YES, ENCLOSE              |
| 0082 | 75073 | 002045 | SEZ,INA,RSS | THE ENTRY?                |
| 0083 | 75074 | 027101 | JMP MLK75   | YES                       |
| 0084 | 75075 | 044350 | ADB #-2     | NEW LENGTH                |
| 0085 | 75076 | 140001 | ADA B,I     | AND SAVE                  |
| 0086 | 75077 | 170001 | STA B,I     |                           |
| 0087 | 75100 | 006005 | INB,RSS     |                           |
| 0088 | 75101 |        | MLK75 EQU * |                           |
| 0089 | 75101 | 044351 | ADB #-1     | SAVE (B)                  |
| 0090 | 75102 | 074043 | STB MLKBR   | DESTINATION POINTER       |
| 0091 | 75103 | 077757 | STB MLKPP   | SOURCE POINTER            |
| 0092 | 75104 | 044354 | ADB #+2     |                           |
| 0093 | 75105 |        | MLK76 EQU * |                           |
| 0094 | 75105 | 057736 | CPB MLKLZ   |                           |
| 0095 | 75106 | 027116 | JMP MLK77   |                           |
| 0096 | 75107 | 160001 | LDA B,I     | MOVE                      |
| 0097 | 75110 | 002003 | SZA,RSS     |                           |
| 0098 | 75111 | 027116 | JMP MLK77   | TABLE,                    |
| 0099 | 75112 | 173757 | STA MLKPP,I |                           |
| 0100 | 75113 | 037757 | ISZ MLKPP   | ELIMINATING               |
| 0101 | 75114 | 006004 | INB         |                           |
| 0102 | 75115 | 027105 | JMP MLK76   | ONE ENTRY                 |
| 0103 | 75116 |        | MLK77 EQU * |                           |
| 0104 | 75116 | 002400 | CLA         |                           |
| 0105 | 75117 | 173757 | STA MLKPP,I | ZERO TWO                  |
| 0106 | 75120 | 037757 | ISZ MLKPP   | WORDS AFTER               |
| 0107 | 75121 | 173757 | STA MLKPP,I | LAST ENTRY                |
| 0108 | 75122 | 064043 | LDB MLKBR   | RESTORE (B)               |
| 0109 | 75123 | 027054 | JMP MLK74   | GO CHECK NEXT ENTRY       |

|        |                                                                   |             |                        |
|--------|-------------------------------------------------------------------|-------------|------------------------|
| 0110   | 75124                                                             | MLK78 EQU * |                        |
| 0111   | 75124 017556                                                      | JSB MLKPB   | CHECK PRECEEDING BLOCK |
| 0112   | 75125 027054                                                      | JMP MLK74   | GO CHECK NEXT ENTRY    |
| 0113   | 75126 074043                                                      | STB MLKBR   | SAVE (B)               |
| 0114   | 75127 067737                                                      | LDB MLKLY   | TABLE                  |
| 0115   | 75130 160001                                                      | LDA B,I     |                        |
| 0116   | 75131 002002                                                      | SZA         | FULL?                  |
| 0117   | 75132 027037                                                      | JMP MLK72   | YES                    |
| 0118   | 75133 077757                                                      | STB MLKPP   | DESTINATION POINTER    |
| 0119   | 75134 044350                                                      | ADB #-2     | SOURCE POINTER         |
| 0120   | 75135                                                             | MLK79 EQU * |                        |
| 0121   | 75135 160001                                                      | LDA B,I     | MOVE                   |
| 0122   | 75136 173757                                                      | STA MLKPP,I |                        |
| 0123   | 75137 054043                                                      | CPB MLKBR   | TABLE,                 |
| 0124   | 75140 027146                                                      | JMP MLK80   |                        |
| 0125   | 75141 044351                                                      | ADB #-1     | MAKING                 |
| 0126   | 75142 003400                                                      | CCA         |                        |
| 0127   | 75143 043757                                                      | ADA MLKPP   | ROOM FOR               |
| 0128   | 75144 073757                                                      | STA MLKPP   |                        |
| 0129   | 75145 027135                                                      | JMP MLK79   | NEW ENTRY              |
| 0130   | 75146                                                             | MLK80 EQU * |                        |
| 0131   | 75146 060032                                                      | LDA MLKFA   | INSERT                 |
| 0132   | 75147 170001                                                      | STA B,I     |                        |
| 0133   | 75150 006004                                                      | INB         | NEW                    |
| 0134   | 75151 063766                                                      | LDA MLKLN   |                        |
| 0135   | 75152 170001                                                      | STA B,I     | ENTRY                  |
| 0136   | 75153 027053                                                      | JMP MLK74-1 | GO CHECK NEXT ENTRY    |
| 0137   | 75154                                                             | MLK81 EQU * |                        |
| 0138   | 75154 017556                                                      | JSB MLKPB   | CHECK PRECEEDING BLOCK |
| 0139   | 75155 027163                                                      | JMP MLK82   | ENTRIES MERGED         |
| 0140   | 75156 060032                                                      | LDA MLKFA   | INSERT                 |
| 0141   | 75157 170001                                                      | STA B,I     |                        |
| 0142   | 75160 006004                                                      | INB         | NEW ENTRY              |
| 0143   | 75161 063766                                                      | LDA MLKLN   |                        |
| 0144   | 75162 170001                                                      | STA B,I     | AT TABLE END           |
| 0145   | 75163                                                             | MLK82 EQU * |                        |
| 0146   | 75163 063777                                                      | LDA MLKIP   | WRITE OUT              |
| 0147   | 75164 064562                                                      | LDB LIBD    | LOCKED BLOCKS          |
| 0148   | 75165 114217                                                      | JSB DISCZ,I | TABLE                  |
| 0149   | 75166 116020                                                      | JSB MDEDP,I |                        |
| 0150*  |                                                                   |             |                        |
| 0151*  |                                                                   | *           |                        |
| 0152** | UPDATE DIRECTORY                                                  | **          |                        |
| 0153*  |                                                                   | *           |                        |
| 0154*  |                                                                   |             |                        |
| 0155*  | USING THE TABLE BUILT PREVIOUSLY, REMOVE EACH REFERENCED ENTRY.   |             |                        |
| 0156*  | REPLACE THE FIRST TWO WORDS OF THE TABLE BY THE ID AND LENGTH IN  |             |                        |
| 0157*  | +BLOCKS FOR USE IN UPDATING THE IDT. FOR SANCTIFIED ENTRIES,      |             |                        |
| 0158*  | REPLACE THE THIRD AND FOURTH WORDS BY THE DRUM ADDRESS AND LENGTH |             |                        |
| 0159*  | IN +SECTORS FOR USE IN UPDATING THE ADT. SET THE THIRD WORD TO    |             |                        |
| 0160*  | ZERO FOR NON-SANCTIFIED ENTRIES.                                  |             |                        |
| 0161   | 75167 060030                                                      | LDA MLKTC   | SKIP UPDATE            |
| 0162   | 75170 002003                                                      | SZA,RSS     | IF NO                  |
| 0163   | 75171 027361                                                      | JMP MLK59   | ENTRIES                |
| 0164   | 75172 073761                                                      | STA MLKCT   |                        |

|      |       |        |             |                       |
|------|-------|--------|-------------|-----------------------|
| 0165 | 75173 | 065002 | LDB L8192   | POINTER TO            |
| 0166 | 75174 | 074037 | STB MLKTP   | FIRST ONE             |
| 0167 | 75175 |        | MLK40 EQU * |                       |
| 0168 | 75175 | 164937 | LDB MLKTP,I | SAVE DIREC            |
| 0169 | 75176 | 074036 | STB MLKDI   | POINTER               |
| 0170 | 75177 | 160001 | LDA B,I     | WORD                  |
| 0171 | 75200 | 070072 | STA WORD    | COUNT                 |
| 0172 | 75201 | 003004 | CMA,INA     | COMPUTE END           |
| 0173 | 75202 | 040562 | ADA LIBD    | OF DIRECTORY          |
| 0174 | 75203 | 073760 | STA MLKND   | BUFFER                |
| 0175 | 75204 | 044360 | ADB .+6     | READ                  |
| 0176 | 75205 | 160001 | LDA B,I     |                       |
| 0177 | 75206 | 064566 | LDB LIBDI   | DIRECTORY             |
| 0178 | 75207 | 016231 | JSB DRUML   |                       |
| 0179 | 75210 | 116017 | JSB DEADP,I |                       |
| 0180 | 75211 | 064562 | LDB LIBD    | INITIALIZE            |
| 0181 | 75212 | 074050 | STB MOVES   | MOVE                  |
| 0182 | 75213 | 074051 | STB MOVED   | POINTERS              |
| 0183 | 75214 |        | MLK41 EQU * |                       |
| 0184 | 75214 | 060037 | LDA MLKTP   |                       |
| 0185 | 75215 | 002004 | INA         | => DIRECTORY ENTRY    |
| 0186 | 75216 | 164000 | LDB A,I     |                       |
| 0187 | 75217 | 044342 | ADB .-8     | => ID WORD            |
| 0188 | 75220 | 040351 | ADA .-1     |                       |
| 0189 | 75221 | 070037 | STA MLKTP   |                       |
| 0190 | 75222 | 160001 | LDA B,I     | SAVE ID               |
| 0191 | 75223 | 170037 | STA MLKTP,I | IN TABLE              |
| 0192 | 75224 | 074043 | STB MLKBR   | SAVE POINTER FOR MOVE |
| 0193 | 75225 | 034037 | ISZ MLKTP   |                       |
| 0194 | 75226 | 044366 | ADB .+11    |                       |
| 0195 | 75227 | 160001 | LDA B,I     | GET LENGTH            |
| 0196 | 75230 | 002021 | SSA,RSS     | CONVERT               |
| 0197 | 75231 | 027235 | JMP .+4     |                       |
| 0198 | 75232 | 001727 | ALF,ALF     | TO BLOCKS             |
| 0199 | 75233 | 030762 | IOR HIMSK   |                       |
| 0200 | 75234 | 003004 | CMA,INA     | AND SAVE              |
| 0201 | 75235 | 170037 | STA MLKTP,I |                       |
| 0202 | 75236 | 034037 | ISZ MLKTP   | IN TABLE              |
| 0203 | 75237 | 044346 | ADB .-4     |                       |
| 0204 | 75240 | 160001 | LDA B,I     | SAVE DRUM             |
| 0205 | 75241 | 170037 | STA MLKTP,I | ADDRESS               |
| 0206 | 75242 | 034037 | ISZ MLKTP   |                       |
| 0207 | 75243 | 002003 | SZA,RSS     |                       |
| 0208 | 75244 | 027257 | JMP MLK42+2 |                       |
| 0209 | 75245 | 044356 | ADB .+4     |                       |
| 0210 | 75246 | 160001 | LDA B,I     | GET LENGTH AGAIN      |
| 0211 | 75247 | 002021 | SSA,RSS     |                       |
| 0212 | 75250 | 027255 | JMP MLK42   |                       |
| 0213 | 75251 | 001121 | ARS,ARS     | CONVERT               |
| 0214 | 75252 | 001121 | ARS,ARS     |                       |
| 0215 | 75253 | 001121 | ARS,ARS     | TO SECTORS            |
| 0216 | 75254 | 003005 | CMA,INA,RSS |                       |
| 0217 | 75255 |        | MLK42 EQU * |                       |
| 0218 | 75255 | 001020 | ALS,ALS     | AND SAVE              |
| 0219 | 75256 | 170037 | STA MLKTP,I |                       |



|        |                           |        |             |         |                                 |
|--------|---------------------------|--------|-------------|---------|---------------------------------|
| 0220   | 75257                     | 034037 | ISZ         | MLKTP   |                                 |
| 0221*  |                           |        |             |         |                                 |
| 0222*  | MOVE PORTION OF DIRECTORY |        |             |         |                                 |
| 0223*  |                           |        |             |         |                                 |
| 0224   | 75260                     | 064043 | LDB         | MLK8R   | COMPUTE                         |
| 0225   | 75261                     | 007004 | CMB,        | INB     | NUMBER                          |
| 0226   | 75262                     | 044050 | ADB         | MOVES   | OF WORDS                        |
| 0227   | 75263                     | 016257 | JSB         | MOVEW   |                                 |
| 0228   | 75264                     | 064043 | LDB         | MLK8R   | UPDATE                          |
| 0229   | 75265                     | 044366 | ADB         | .,+12   |                                 |
| 0230   | 75266                     | 074050 | STB         | MOVES   | POINTER                         |
| 0231   | 75267                     | 160036 | LDA         | MLKDI,I | UPDATE                          |
| 0232   | 75270                     | 040366 | ADA         | .,+12   | DIRECTORY                       |
| 0233   | 75271                     | 170036 | STA         | MLKDI,I | LENGTH                          |
| 0234   | 75272                     | 037761 | ISZ         | MLKCT   | FINISHED TABLE?                 |
| 0235   | 75273                     | 002001 | RSS         |         | NO                              |
| 0236   | 75274                     | 027300 | JMP         | MLK43   | YES                             |
| 0237   | 75275                     | 164037 | LDB         | MLKTP,I | GET NEXT DIREC ENTRY FROM TABLE |
| 0238   | 75276                     | 054036 | CPB         | MLKDI   | SAME DIRECTORY TRACK?           |
| 0239   | 75277                     | 027214 | JMP         | MLK41   | YES                             |
| 0240   | 75300                     |        | MLK43 EQU * |         |                                 |
| 0241   | 75300                     | 067760 | LDB         | MLKND   | NO, MOVE END                    |
| 0242   | 75301                     | 007004 | CMB,        | INB     |                                 |
| 0243   | 75302                     | 044050 | ADB         | MOVES   | OF DIRECTORY                    |
| 0244   | 75303                     | 016257 | JSB         | MOVEW   |                                 |
| 0245   | 75304                     | 064036 | LDB         | MLKDI   |                                 |
| 0246   | 75305                     | 160001 | LDA         | B,I     |                                 |
| 0247   | 75306                     | 070072 | STA         | WORD    |                                 |
| 0248   | 75307                     | 006004 | INB         |         |                                 |
| 0249   | 75310                     | 074051 | STB         | MOVED   |                                 |
| 0250   | 75311                     | 044357 | ADB         | .,+5    |                                 |
| 0251   | 75312                     | 160001 | LDA         | B,I     | WRITE                           |
| 0252   | 75313                     | 064562 | LDB         | LIBD    | OUT                             |
| 0253   | 75314                     | 074050 | STB         | MOVES   |                                 |
| 0254   | 75315                     | 016231 | JSB         | DRUML   | DIRECTORY                       |
| 0255   | 75316                     | 116017 | JSB         | DEADP,I |                                 |
| 0256   | 75317                     | 064346 | LDB         | .,-4    | RESET                           |
| 0257   | 75320                     | 016257 | JSB         | MOVEW   | DIREC                           |
| 0258   | 75321                     | 063761 | LDA         | MLKCT   | FINISHED                        |
| 0259   | 75322                     | 002002 | SZA         |         | TABLE?                          |
| 0260   | 75323                     | 027175 | JMP         | MLK40   | NO                              |
| 0261*  |                           |        |             |         |                                 |
| 0262** | UPDATE ADT AND IDT        |        |             |         |                                 |
| 0263*  |                           |        |             |         |                                 |
| 0264   | 75324                     | 060030 | LDA         | MLKTC   | NUMBER OF                       |
| 0265   | 75325                     | 073761 | STA         | MLKCT   | TABLE ENTRIES                   |
| 0266   | 75326                     | 060113 | LDA         | ADLEN   | READ                            |
| 0267   | 75327                     | 070072 | STA         | WORD    |                                 |
| 0268   | 75330                     | 060112 | LDA         | ADLOC   | IN                              |
| 0269   | 75331                     | 064566 | LDB         | LIBDI   |                                 |
| 0270   | 75332                     | 016231 | JSB         | DRUML   | ADT                             |
| 0271   | 75333                     | 116017 | JSB         | DEADP,I |                                 |
| 0272   | 75334                     | 065002 | LDB         | L8192   | => FIRST DRUM                   |
| 0273   | 75335                     | 044354 | ADB         | .,+2    | ADDRESS                         |
| 0274   | 75336                     |        | MLK50 EQU * |         |                                 |

|        |       |        |                 |                              |
|--------|-------|--------|-----------------|------------------------------|
| 0275   | 75336 | 074037 | STB MLKTP       |                              |
| 0276   | 75337 | 160037 | LDA MLKTP,I     |                              |
| 0277   | 75340 | 034037 | ISZ MLKTP       |                              |
| 0278   | 75341 | 002003 | SZA,RSS         |                              |
| 0279   | 75342 | 027347 | JMP MLK51       |                              |
| 0280   | 75343 | 070044 | STA KILD        | SET ADDRESS WORD             |
| 0281   | 75344 | 160037 | LDA MLKTP,I     |                              |
| 0282   | 75345 | 070045 | STA KILDF       | SET LENGTH WORD              |
| 0283   | 75346 | 116012 | JSB RSFSP,I     | RETURN SPACE TO ADT          |
| 0284   | 75347 |        | MLK51 EQU *     |                              |
| 0285   | 75347 | 064037 | LDB MLKTP       | UPDATE TABLE                 |
| 0286   | 75350 | 044355 | ADB ,+3         | POINTER                      |
| 0287   | 75351 | 037761 | ISZ MLKCT       | FINISHED TABLE?              |
| 0288   | 75352 | 027336 | JMP MLK50       | NO                           |
| 0289   | 75353 | 060113 | LDA ADLEN       | YES, WRITE                   |
| 0290   | 75354 | 070072 | STA WORD        |                              |
| 0291   | 75355 | 060112 | LDA ADLOC       |                              |
| 0292   | 75356 | 064562 | LDB LIBD        | ADT TO                       |
| 0293   | 75357 | 016231 | JSB DRUML       | DRUM                         |
| 0294   | 75360 | 116017 | JSB DEADP,I     |                              |
| 0295*  |       |        |                 |                              |
| 0296** |       |        | UPDATE DISC ADT |                              |
| 0297*  |       |        |                 |                              |
| 0298   | 75361 |        | MLK59 EQU *     |                              |
| 0299   | 75361 | 116007 | JSB FADTP,I     | GET THIS DISC ADT            |
| 0300   | 75362 | 166045 | LDA KILDF,I     |                              |
| 0301   | 75363 | 070072 | STA WORD        |                              |
| 0302   | 75364 | 160044 | LDA KILD,I      | READ                         |
| 0303   | 75365 | 064566 | LDB LIBDI       | DISC                         |
| 0304   | 75366 | 016231 | JSB DRUML       | ADT                          |
| 0305   | 75367 | 116017 | JSB DEADP,I     |                              |
| 0306   | 75370 | 104200 | DLD MLKFB       | COMPUTE                      |
|        | 75371 | 000046 |                 |                              |
| 0307   | 75372 | 104400 | DST MLKIN       | THIS ENTRY                   |
|        | 75373 | 075764 |                 |                              |
| 0308   | 75374 |        | MLK57 EQU *     |                              |
| 0309   | 75374 | 067767 | LDB MLKRD       | GET POINTER TO SPECIAL TABLE |
| 0310   | 75375 | 057770 | CPB MLKRP       | END OF TABLE?                |
| 0311   | 75376 | 027414 | JMP MLK58       | YES                          |
| 0312   | 75377 | 044351 | ADB ,=1         |                              |
| 0313   | 75400 | 160001 | LDA B,I         | GET LENGTH                   |
| 0314   | 75401 | 070043 | STA MLKBR       |                              |
| 0315   | 75402 | 044351 | ADB ,=1         |                              |
| 0316   | 75403 | 160001 | LDA B,I         | SECOND WORD OF DISC ADDRESS  |
| 0317   | 75404 | 070047 | STA MLKFB+1     |                              |
| 0318   | 75405 | 044351 | ADB ,=1         |                              |
| 0319   | 75406 | 160001 | LDA B,I         | FIRST WORD OF DISC ADDRESS   |
| 0320   | 75407 | 070046 | STA MLKFB       |                              |
| 0321   | 75410 | 077767 | STB MLKRD       | TABLE POINTER                |
| 0322   | 75411 | 115011 | JSB RADTP,I     | RETURN SPACE TO DISC ADT     |
| 0323   | 75412 | 000000 | NOP             |                              |
| 0324   | 75413 | 027374 | JMP MLK57       |                              |
| 0325   | 75414 |        | MLK58 EQU *     |                              |
| 0326   | 75414 | 104200 | DLD MLKIN       | RESTORE                      |
|        | 75415 | 075764 |                 |                              |

|      |       |        |               |                       |
|------|-------|--------|---------------|-----------------------|
| 0327 | 75416 | 104400 | DST MLKFB     | MLKFB                 |
|      | 75417 | 000046 |               |                       |
| 0328 | 75420 | 160045 | LDA KILDF, I  | COMPUTE               |
| 0329 | 75421 | 003004 | CMA, INA      | END OF                |
| 0330 | 75422 | 040562 | ADA LIBD      | TABLE                 |
| 0331 | 75423 | 073760 | STA MLKND     | BUFFER                |
| 0332 | 75424 | 064562 | LDB LIBD      | INITIALIZE            |
| 0333 | 75425 | 074037 | STB MLKTP     | TABLE POINTER         |
| 0334 | 75426 |        | MLK60 EQU *   |                       |
| 0335 | 75426 | 104200 | DLD MLKTP, I  | -STARTING             |
|      | 75427 | 100037 |               |                       |
| 0336 | 75430 | 017745 | JSB MLKTP     | BLOCK                 |
| 0337 | 75431 | 002003 | SZA, RSS      |                       |
| 0338 | 75432 | 006002 | SZB           | EQUAL?                |
| 0339 | 75433 | 002001 | RSS           | NO                    |
| 0340 | 75434 | 027450 | JMP MLK61     | YES                   |
| 0341 | 75435 | 002020 | SSA           | GREATER?              |
| 0342 | 75436 | 027553 | JMP MLK65     | YES                   |
| 0343 | 75437 | 064037 | LDB MLKTP     | UPDATE                |
| 0344 | 75440 | 044355 | ADB .+3       | TABLE                 |
| 0345 | 75441 | 074037 | STB MLKTP     | POINTER               |
| 0346 | 75442 | 057760 | CPB MLKND     | END OF TABLE?         |
| 0347 | 75443 | 002001 | RSS           | YES                   |
| 0348 | 75444 | 027426 | JMP MLK60     | NO                    |
| 0349 | 75445 | 017611 | JSB MLKPE     | CHECK PRECEDING ENTRY |
| 0350 | 75446 | 027536 | JMP MLK64     | MERGED                |
| 0351 | 75447 | 027544 | JMP MLK98     | NO WORK DONE          |
| 0352 | 75450 |        | MLK61 EQU *   |                       |
| 0353 | 75450 | 064037 | LDB MLKTP     |                       |
| 0354 | 75451 | 044354 | ADB .+2       |                       |
| 0355 | 75452 | 063766 | LDA MLKLN     | IS THIS               |
| 0356 | 75453 | 003100 | CMA, CLE      | ENTRY                 |
| 0357 | 75454 | 140001 | ADA B, I      | COMPLETELY            |
| 0358 | 75455 | 002045 | SEZ, INA, RSS | ENCLOSED?             |
| 0359 | 75456 | 027464 | JMP MLK62     | YES                   |
| 0360 | 75457 | 170001 | STA B, I      | NEW LENGTH            |
| 0361 | 75460 | 027532 | JMP MLK67     |                       |
| 0362 | 75461 |        | MLK66 EQU *   |                       |
| 0363 | 75461 | 064037 | LDB MLKTP     | UPDATE                |
| 0364 | 75462 | 044350 | ADB .+2       | TABLE                 |
| 0365 | 75463 | 074037 | STB MLKTP     | POINTER               |
| 0366 | 75464 |        | MLK62 EQU *   |                       |
| 0367 | 75464 | 064037 | LDB MLKTP     | SET UP                |
| 0368 | 75465 | 074051 | STB MOVED     | POINTERS              |
| 0369 | 75466 | 044355 | ADB .+3       | FOR                   |
| 0370 | 75467 | 074050 | STB MOVES     | MOVE                  |
| 0371 | 75470 | 063760 | LDA MLKND     | COMPUTE               |
| 0372 | 75471 | 003004 | CMA, INA      | LENGTH                |
| 0373 | 75472 | 044000 | ADB A         | OF MOVE               |
| 0374 | 75473 | 016257 | JSB MOVEW     | ELIMINATE ENTRY       |
| 0375 | 75474 | 164045 | LDB KILDF, I  | UPDATE                |
| 0376 | 75475 | 044355 | ADB .+3       | DISC ADT              |
| 0377 | 75476 | 174045 | STB KILDF, I  | LENGTH                |
| 0378 | 75477 | 067760 | LDB MLKND     | UPDATE END-           |
| 0379 | 75500 | 044347 | ADB .-3       | OF TABLE              |

|       |       |        |                      |                               |
|-------|-------|--------|----------------------|-------------------------------|
| 0380  | 75501 | 077760 | STB MLKND            | POINTER                       |
| 0381  | 75502 |        | MLK63 EQU *          |                               |
| 0382  | 75502 | 064037 | LDB MLKTP            | END OF                        |
| 0383  | 75503 | 057760 | CPB MLKND            | TABLE?                        |
| 0384  | 75504 | 027536 | JMP MLK64            | YES                           |
| 0385  | 75505 | 104200 | DLD MLKTP, I         | NO,                           |
|       | 75506 | 100037 |                      |                               |
| 0386  | 75507 | 104400 | DST MLKIN            | OVERLAP                       |
|       | 75510 | 075764 |                      |                               |
| 0387  | 75511 | 104200 | DLD MLKLB            | NEXT                          |
|       | 75512 | 075762 |                      |                               |
| 0388  | 75513 | 017745 | JSB MLKTP            | ENTRY?                        |
| 0389  | 75514 | 002021 | SSA, RSS             |                               |
| 0390  | 75515 | 027536 | JMP MLK64            | NO                            |
| 0391  | 75516 | 034037 | ISZ MLKTP            | YES,                          |
| 0392  | 75517 | 034037 | ISZ MLKTP            | COMPLETELY                    |
| 0393  | 75520 | 000040 | CLE                  | ENCLOSE                       |
| 0394  | 75521 | 144037 | ADB MLKTP, I         | IT?                           |
| 0395  | 75522 | 006003 | SZB, RSS             |                               |
| 0396  | 75523 | 027461 | JMP MLK66            | YES                           |
| 0397  | 75524 | 002041 | SEZ, RSS             | MAYBE                         |
| 0398  | 75525 | 027461 | JMP MLK66            | YES                           |
| 0399  | 75526 | 174037 | STB MLKTP, I         | NO, SAVE LENGTH               |
| 0400  | 75527 | 064037 | LDB MLKTP            |                               |
| 0401  | 75530 | 044350 | ADB .-2              |                               |
| 0402  | 75531 | 074037 | STB MLKTP            | STARTING                      |
| 0403  | 75532 |        | MLK67 EQU *          |                               |
| 0404  | 75532 | 104200 | DLD MLKLB            |                               |
|       | 75533 | 075762 |                      |                               |
| 0405  | 75534 | 104400 | DST MLKTP, I         | BLOCK                         |
|       | 75535 | 100037 |                      |                               |
| 0406  | 75536 |        | MLK64 EQU *          |                               |
| 0407  | 75536 | 160045 | LDA KILDF, I         | WRITE                         |
| 0408  | 75537 | 070072 | STA WORD             |                               |
| 0409  | 75540 | 160044 | LDA KILD, I          | DISC ADT                      |
| 0410  | 75541 | 064562 | LDB LIBD             |                               |
| 0411  | 75542 | 016231 | JSB DRUML            | TO DRUM                       |
| 0412  | 75543 | 116017 | JSB DEADP, I         |                               |
| 0413* |       |        |                      |                               |
| 0414  | 75544 |        | MLK98 EQU *          |                               |
| 0415  | 75544 | 060030 | LDA MLKTC            | ANY TABLE ENTRIES             |
| 0416  | 75545 | 002002 | SZA                  |                               |
| 0417  | 75546 | 117740 | JSB MLKUI, I         | YES, UPDATE IDT               |
| 0418* |       |        |                      |                               |
| 0419  | 75547 |        | MLK99 EQU *          |                               |
| 0420  | 75547 | 103100 | CLF 0                |                               |
| 0421  | 75550 | 002400 | CLA                  |                               |
| 0422  | 75551 | 070260 | STA LIB              |                               |
| 0423  | 75552 | 026267 | JMP LEND             |                               |
| 0424  | 75553 |        | MLK65 EQU *          |                               |
| 0425  | 75553 | 017611 | JSB MLKPE            | CHECK PRECEEDING ENTRY        |
| 0426  | 75554 | 027502 | JMP MLK63            | GO CHECK                      |
| 0427  | 75555 | 027502 | JMP MLK63            | SUCCEEDING ENTRY              |
| 0428* |       |        |                      |                               |
| 0429* | MLKPB | CHECKS | THE PRECEEDING BLOCK | TO SEE IF THE NEW ENTRY IS IN |

0430\* ITS RANGE, IF SO, IT MODIFIES THE PRECEEDING ENTRY AND RETURNS  
 0431\* TO (P+1), OTHERWISE TO (P+2).

0432\*

|      |       |        |       |             |                     |
|------|-------|--------|-------|-------------|---------------------|
| 0433 | 75556 | 000000 | MLKPB | NOP         |                     |
| 0434 | 75557 | 054562 |       | CPB LIBD    | BEGINNING OF TABLE? |
| 0435 | 75560 | 027607 |       | JMP MLKP1   | YES                 |
| 0436 | 75561 | 044351 |       | ADB .-1     | NO, NEW             |
| 0437 | 75562 | 160001 |       | LDA B,I     |                     |
| 0438 | 75563 | 044351 |       | ADB .-1     | BLOCK IN            |
| 0439 | 75564 | 140001 |       | ADA B,I     |                     |
| 0440 | 75565 | 003100 |       | CMA,CLE     | RANGE OF            |
| 0441 | 75566 | 040032 |       | ADA MLKFA   |                     |
| 0442 | 75567 | 002040 |       | SEZ         | PRECEEDING ONE?     |
| 0443 | 75570 | 027606 |       | JMP MLKP1-1 | NO                  |
| 0444 | 75571 | 160001 |       | LDA B,I     | YES, COMPUTE        |
| 0445 | 75572 | 003004 |       | CMA,INA     |                     |
| 0446 | 75573 | 040031 |       | ADA MLKLA   | NEW LENGTH          |
| 0447 | 75574 | 006004 |       | INB         |                     |
| 0448 | 75575 | 073757 |       | STA MLKXB   |                     |
| 0449 | 75576 | 003104 |       | CMA,CLE,INA |                     |
| 0450 | 75577 | 140001 |       | ADA B,I     | BIGGER THAN         |
| 0451 | 75600 | 002040 |       | SEZ         | PREVIOUS LENGTH?    |
| 0452 | 75601 | 027604 |       | JMP ++3     | NO                  |
| 0453 | 75602 | 063757 |       | LDA MLKXB   | YES, SAVE NEW       |
| 0454 | 75603 | 170001 |       | STA B,I     | LENGTH              |
| 0455 | 75604 | 006004 |       | INB         | RESTORE (B)         |
| 0456 | 75605 | 127556 |       | JMP MLKPB,I |                     |
| 0457 | 75606 | 044354 |       | ADB .+2     | RESTORE (B)         |
| 0458 | 75607 |        | MLKP1 | EWU *       |                     |
| 0459 | 75607 | 037556 |       | ISZ MLKPB   |                     |
| 0460 | 75610 | 127556 |       | JMP MLKPB,I | EXIT TO (P+2)       |

0461\*

0462\*

|      |       |        |       |             |                 |
|------|-------|--------|-------|-------------|-----------------|
| 0463 | 75611 | 000000 | MLKPE | NOP         |                 |
| 0464 | 75612 | 104200 |       | DLD MLKFB   | FOR SUBTRACT    |
|      |       | 75613  |       |             |                 |
| 0465 | 75614 | 104400 |       | DST MLKIN   | ROUTINE         |
|      |       | 75615  |       |             |                 |
| 0466 | 75616 | 060037 |       | LDA MLKTP   | BEGINNING       |
| 0467 | 75617 | 050562 |       | CPA LIBD    | OF TABLE?       |
| 0468 | 75620 | 027641 |       | JMP MLKE1   | YES             |
| 0469 | 75621 | 040351 |       | ADA .-1     | NO              |
| 0470 | 75622 | 164000 |       | LDB A,I     | SAVE            |
| 0471 | 75623 | 077757 |       | STB MLKXB   | LENGTH          |
| 0472 | 75624 | 040350 |       | ADA .-2     | SAVE            |
| 0473 | 75625 | 070037 |       | STA MLKTP   | POINTER         |
| 0474 | 75626 | 160037 |       | LDA MLKTP,I | IS THE NEW      |
| 0475 | 75627 | 034037 |       | ISZ MLKTP   |                 |
| 0476 | 75630 | 000040 |       | CLE         | BLOCK IN        |
| 0477 | 75631 | 144037 |       | AOB MLKTP,I |                 |
| 0478 | 75632 | 002040 |       | SEZ         | RANGE OF THE    |
| 0479 | 75633 | 002004 |       | INA         |                 |
| 0480 | 75634 | 017746 |       | JSB MLKTP   | PRECEEDING ONE? |
| 0481 | 75635 | 034037 |       | ISZ MLKTP   |                 |
| 0482 | 75636 | 002020 |       | SSA         |                 |

|      |       |        |              |                         |
|------|-------|--------|--------------|-------------------------|
| 0483 | 75637 | 027643 | JMP MLKE2    | YES                     |
| 0484 | 75640 | 034037 | ISZ MLKTP    |                         |
| 0485 | 75641 |        | MLKE1 EQU *  |                         |
| 0486 | 75641 | 037611 | ISZ MLKPE    |                         |
| 0487 | 75642 | 127611 | JMP MLKPE, I |                         |
| 0488 | 75643 |        | MLKE2 EQU *  |                         |
| 0489 | 75643 | 060037 | LDA MLKTP    | COMPUTE                 |
| 0490 | 75644 | 040350 | ADA , -2     |                         |
| 0491 | 75645 | 104200 | DLA A, I     | NEW LENGTH              |
|      | 75646 | 100000 |              |                         |
| 0492 | 75647 | 017745 | JSB MLKTP    |                         |
| 0493 | 75650 | 174037 | STB MLKTP, I | AND SAVE                |
| 0494 | 75651 | 064037 | LDB MLKTP    |                         |
| 0495 | 75652 | 044350 | ADB , -2     |                         |
| 0496 | 75653 | 074037 | STB MLKTP    |                         |
| 0497 | 75654 | 104200 | DLA MLKTP, I | IS THE                  |
|      | 75655 | 100037 |              |                         |
| 0498 | 75656 | 000040 | CLE          |                         |
| 0499 | 75657 | 047757 | ADB MLKXB    | UNLOCKED                |
| 0500 | 75660 | 002040 | SEZ          |                         |
| 0501 | 75661 | 002004 | INA          | PORTION                 |
| 0502 | 75662 | 104400 | DST MLKIN    | IN THE MIDDLE           |
|      | 75663 | 075764 |              |                         |
| 0503 | 75664 | 104200 | DLA MLKLB    |                         |
|      | 75665 | 075762 |              |                         |
| 0504 | 75666 | 017745 | JSB MLKTP    | OF THE PREVIOUS         |
| 0505 | 75667 | 002003 | SZA, RSS     |                         |
| 0506 | 75670 | 006002 | SZB          | BLOCK?                  |
| 0507 | 75671 | 002001 | RSS          |                         |
| 0508 | 75672 | 027732 | JMP MLKE3    | NO                      |
| 0509 | 75673 | 002020 | SSA          | MAYBE                   |
| 0510 | 75674 | 027732 | JMP MLKE3    | NO                      |
| 0511 | 75675 | 077757 | STB MLKXB    | YES                     |
| 0512 | 75676 | 067760 | LDB MLKND    | TABLE                   |
| 0513 | 75677 | 057741 | CPB ML819    | FULL?                   |
| 0514 | 75700 | 027732 | JMP MLKE3    | YES                     |
| 0515 | 75701 | 074050 | STB MOVES    |                         |
| 0516 | 75702 | 044355 | ADB , +3     | SET UP                  |
| 0517 | 75703 | 074051 | STB MOVED    |                         |
| 0518 | 75704 | 077760 | STB MLKND    | FOR                     |
| 0519 | 75705 | 044345 | ADB , -5     |                         |
| 0520 | 75706 | 007004 | CMB, INB     | MOVE                    |
| 0521 | 75707 | 044037 | ADB MLKTP    |                         |
| 0522 | 75710 | 016243 | JSB MOVEB    | MAKE ROOM FOR NEW ENTRY |
| 0523 | 75711 | 164045 | LDB KILDF, I | UPDATE                  |
| 0524 | 75712 | 044347 | ADB , -3     | DISC ADT                |
| 0525 | 75713 | 174045 | STB KILDF, I | LENGTH                  |
| 0526 | 75714 | 064037 | LDB MLKTP    | UPDATE                  |
| 0527 | 75715 | 044355 | ADB , +3     | TABLE                   |
| 0528 | 75716 | 074037 | STB MLKTP    | POINTER                 |
| 0529 | 75717 | 104200 | DLA MLKLB    | SAVE ADDRESS            |
|      | 75720 | 075762 |              |                         |
| 0530 | 75721 | 104400 | DST MLKTP, I | OF NEW ENTRY            |
|      | 75722 | 100037 |              |                         |
| 0531 | 75723 | 064037 | LDB MLKTP    | SAVE                    |

|      |       |        |         |     |            |         |
|------|-------|--------|---------|-----|------------|---------|
| 0532 | 75724 | 044354 |         | AOB | .*+2       |         |
| 0533 | 75725 | 063757 |         | LDA | MLKXB      | LENGTH  |
| 0534 | 75726 | 170001 |         | STA | B,I        |         |
| 0535 | 75727 | 006004 |         | INB |            | ALSO    |
| 0536 | 75730 | 074037 |         | STB | MLKTP      |         |
| 0537 | 75731 | 127611 |         | JMP | MLKPE,I    |         |
| 0538 | 75732 |        | MLKE3   | EQU | *          |         |
| 0539 | 75732 | 064037 |         | LDB | MLKTP      | RESTORE |
| 0540 | 75733 | 044355 |         | AOB | .*+3       | TABLE   |
| 0541 | 75734 | 074037 |         | STB | MLKTP      | POINTER |
| 0542 | 75735 | 127611 |         | JMP | MLKPE,I    |         |
| 0543 | 75736 | 001630 | MLKLZ   | DEF | LIBUS+256  |         |
| 0544 | 75737 | 001627 | MLKLY   | DEF | LIBUS+255  |         |
| 0545 | 75740 | 072727 | MLKUI   | DEF | TBIDT      |         |
| 0546 | 75741 | 021226 | ML819   | DEF | LIBUS+8190 |         |
| 0547 | 75742 |        | \$\$MLU | EQU | *          |         |

0002\* THE COPY COMMAND IS USED TO COPY A PROGRAM OR FILE FROM ONE USER'S  
 0003\* LIBRARY TO ANOTHER USER'S LIBRARY. THE FORMAT IS:

0004\*  
 0005\*  
 0006\*

COPY\_OLDDID, OLDNAME, NEWID, NEWNAME

|      |       |        |             |                              |
|------|-------|--------|-------------|------------------------------|
| 0007 | 75000 |        | ORG LIBRA   |                              |
| 0008 | 75000 | 060520 | LDA DLTEM   |                              |
| 0009 | 75001 | 017512 | JSB COPIN   | GET OLD ID AND NAME          |
| 0010 | 75002 | 054426 | CPB ,+54B   | COMMA FOLLOWS?               |
| 0011 | 75003 | 002201 | RSS         | YES                          |
| 0012 | 75004 | 026275 | JMP LFRER   | NO, ERROR                    |
| 0013 | 75005 | 063742 | LDA COPPT   |                              |
| 0014 | 75006 | 017512 | JSB COPIN   | GET NEW ID AND NAME          |
| 0015 | 75007 | 054367 | CPB ,+15B   | CR FOLLOWS?                  |
| 0016 | 75010 | 002201 | RSS         | YES                          |
| 0017 | 75011 | 026275 | JMP LFRER   | NO, ERROR                    |
| 0018 | 75012 | 116005 | JSB DLOKP,I |                              |
| 0019 | 75013 | 027017 | JMP COP00   |                              |
| 0020 | 75014 | 063714 | LDA COPEG   | "NO SUCH ENTRY"              |
| 0021 | 75015 | 064342 | LDB COPFG   |                              |
| 0022 | 75016 | 027613 | JMP COPII   |                              |
| 0023 | 75017 |        | COP00 EQU * |                              |
| 0024 | 75017 | 064035 | LDB COPS    |                              |
| 0025 | 75020 | 044354 | ADB ,+2     |                              |
| 0026 | 75021 | 063742 | LDA COPPT   |                              |
| 0027 | 75022 | 040354 | ADA ,+2     |                              |
| 0028 | 75023 | 070042 | STA COPP    |                              |
| 0029 | 75024 | 160001 | LDA B,I     | MOVE                         |
| 0030 | 75025 | 011036 | AND BIT15   | FILE                         |
| 0031 | 75026 | 130042 | IOR COPP,I  | FLAG                         |
| 0032 | 75027 | 170042 | STA COPP,I  |                              |
| 0033 | 75030 | 006004 | INB         |                              |
| 0034 | 75031 | 034042 | ISZ COPP    |                              |
| 0035 | 75032 | 160001 | LDA B,I     | MOVE                         |
| 0036 | 75033 | 011036 | AND BIT15   | SEMI-                        |
| 0037 | 75034 | 130042 | IOR COPP,I  | COMPILED                     |
| 0038 | 75035 | 170042 | STA COPP,I  | FLAG                         |
| 0039 | 75036 | 006004 | INB         |                              |
| 0040 | 75037 | 160001 | LDA B,I     | GET WORD FOUR                |
| 0041 | 75040 | 002201 | SSA,RSS     | CHECK FOR ILL-STORED PROGRAM |
| 0042 | 75041 | 027045 | JMP COP0    |                              |
| 0043 | 75042 | 063701 | LDA COPEF   | "ILL-STORED PROGRAM"         |
| 0044 | 75043 | 064340 | LDB COPFF   |                              |
| 0045 | 75044 | 027613 | JMP COPII   |                              |
| 0046 | 75045 |        | COP0 EQU *  |                              |
| 0047 | 75045 | 070042 | STA COPP    | SAVE WORD 4                  |
| 0048 | 75046 | 044355 | ADB ,+3     |                              |
| 0049 | 75047 | 160001 | LDA B,I     |                              |
| 0050 | 75050 | 072137 | STA COPDR   | DRUM ADDRESS                 |
| 0051 | 75051 | 006004 | INB         |                              |
| 0052 | 75052 | 160001 | LDA B,I     | FIRST WORD OF DISC ADDRESS   |
| 0053 | 75053 | 070043 | STA COPDI   |                              |
| 0054 | 75054 | 006004 | INB         |                              |
| 0055 | 75055 | 160001 | LDA B,I     | SECOND WORD OF DISC ADDRESS  |
| 0056 | 75056 | 070044 | STA COPDI+1 |                              |



|       |       |        |      |             |                            |
|-------|-------|--------|------|-------------|----------------------------|
| 0057  | 75057 | 044354 |      | ADB .+2     |                            |
| 0058  | 75060 | 160001 |      | LDA B,I     |                            |
| 0059  | 75061 | 070040 |      | STA COPWD   | SAVE LENGTH                |
| 0060* |       |        |      |             |                            |
| 0061  | 75062 | 002021 |      | SSA,RSS     |                            |
| 0062  | 75063 | 027067 |      | JMP ++4     |                            |
| 0063  | 75064 | 001727 |      | ALF,ALF     | CONVERT                    |
| 0064  | 75065 | 030762 |      | IOR HIMSK   | LENGTH                     |
| 0065  | 75066 | 003004 |      | CMA,INA     | TO                         |
| 0066  | 75067 | 072315 |      | STA COPLN   | BLOCKS                     |
| 0067* |       |        |      |             |                            |
| 0068  | 75070 | 163742 |      | LDA COPPT,I | FIND WHAT                  |
| 0069  | 75071 | 070052 |      | STA ID      | TRACK NEW                  |
| 0070  | 75072 | 016370 |      | JSB GTIL    | ID IS ON                   |
| 0071  | 75073 | 060076 |      | LDA IDLNP   |                            |
| 0072  | 75074 | 164000 |      | LDB A,I     | LENGTH                     |
| 0073  | 75075 | 006003 |      | SZB,RSS     | ZERO?                      |
| 0074  | 75076 | 027124 |      | JMP COP2    | YES, ERROR                 |
| 0075  | 75077 | 074072 |      | STB WORD    | NO, SAVE IT                |
| 0076  | 75100 | 007004 |      | CMB,INB     | SET POINTER                |
| 0077  | 75101 | 044562 |      | ADB LIBD    | TO LAST                    |
| 0078  | 75102 | 074031 |      | STB LTEMP+1 | WORD +1                    |
| 0079  | 75103 | 040351 |      | ADA .-1     |                            |
| 0080  | 75104 | 160000 |      | LDA A,I     | DRUM ADDRESS               |
| 0081  | 75105 | 064566 |      | LDB LIBDI   |                            |
| 0082  | 75106 | 016231 |      | JSB DRUML   | READ ID TRACK              |
| 0083  | 75107 | 116015 |      | JSB SICKP,I |                            |
| 0084* |       |        |      |             |                            |
| 0085  | 75110 | 064562 |      | LDB LIBD    |                            |
| 0086  | 75111 |        | COP1 | EQU *       |                            |
| 0087  | 75111 | 054031 |      | CPB LTEMP+1 | END OF TABLE?              |
| 0088  | 75112 | 027124 |      | JMP COP2    | YES                        |
| 0089  | 75113 | 160001 |      | LDA B,I     | NO, GET CURRENT ID         |
| 0090  | 75114 | 003004 |      | CMA,INA     |                            |
| 0091  | 75115 | 040052 |      | ADA ID      |                            |
| 0092  | 75116 | 002003 |      | SZA,RSS     | EQUAL?                     |
| 0093  | 75117 | 027127 |      | JMP COP3    | YES, FOUND THE ONE WE WANT |
| 0094  | 75120 | 002020 |      | SSA         | NO, GREATER?               |
| 0095  | 75121 | 027124 |      | JMP COP2    | YES, ERROR                 |
| 0096  | 75122 | 044362 |      | ADB .+8     | NO, MOVE TO NEXT ONE       |
| 0097  | 75123 | 027111 |      | JMP COP1    |                            |
| 0098  | 75124 |        | COP2 | EQU *       |                            |
| 0099  | 75124 | 063635 |      | LDA COPEB   | "NO SUCH ID"               |
| 0100  | 75125 | 064344 |      | LDB COPFB   |                            |
| 0101  | 75126 | 027613 |      | JMP COPIL   |                            |
| 0102  | 75127 |        | COP3 | EQU *       |                            |
| 0103  | 75127 | 070045 |      | STA COPDU   | SET DRUM ADDRESS           |
| 0104  | 75130 | 044361 |      | ADB .+7     |                            |
| 0105  | 75131 | 076132 |      | STB COPF    | SAVE POINTER TO ENTRY      |
| 0106  | 75132 | 160001 |      | LDA B,I     | GET TOTAL                  |
| 0107  | 75133 | 042315 |      | ADA COPLN   | SPACE USED                 |
| 0108  | 75134 | 003004 |      | CMA,INA     |                            |
| 0109  | 75135 | 044351 |      | ADB .-1     |                            |
| 0110  | 75136 | 000040 |      | CLE         |                            |
| 0111  | 75137 | 140001 |      | ADA B,I     |                            |

|       |       |        |                   |                         |
|-------|-------|--------|-------------------|-------------------------|
| 0112  | 75140 | 002040 | SEZ               | COMPARE WITH ALLOTMENT  |
| 0113  | 75141 | 027145 | JMP COP4          | OK                      |
| 0114  | 75142 | 063644 | LDA COPEC         | "LIBRARY SPACE FULL"    |
| 0115  | 75143 | 064340 | LDB COPFC         |                         |
| 0116  | 75144 | 027613 | JMP COPIL         |                         |
| 0117  | 75145 |        | COP4 EQU *        |                         |
| 0118  | 75145 | 060342 | LDA ,=8           | 8 POSSIBLE DISC ADTS    |
| 0119  | 75146 | 072435 | STA COPDF         |                         |
| 0120  | 75147 |        | COP5 EQU *        |                         |
| 0121  | 75147 | 062010 | LDA RKCYP         | GET CYCLIC POINTER      |
| 0122  | 75150 | 002004 | INA               | AND ADVANCE             |
| 0123  | 75151 | 053752 | CPA CPLNA         | IT TO THE               |
| 0124  | 75152 | 063753 | LDA CPLCA         | NEXT ENTRY              |
| 0125  | 75153 | 072010 | STA RKCYP         | IN THE TABLE            |
| 0126  | 75154 | 040362 | ADA ,+DADLN=DADLC |                         |
| 0127  | 75155 | 072164 | STA COPD          |                         |
| 0128  | 75156 | 162164 | LDA COPD,I        |                         |
| 0129  | 75157 | 002003 | SZA,RSS           | IS THIS DISC AVAILABLE? |
| 0130  | 75160 | 027205 | JMP COP7          | NO                      |
| 0131  | 75161 | 070072 | STA WORD          | YES, SAVE LENGTH        |
| 0132  | 75162 | 162010 | LDA RKCYP,I       | GET DRUM ADDRESS        |
| 0133  | 75163 | 064566 | LDB LIBDI         |                         |
| 0134  | 75164 | 016231 | JSB DRUML         | READ IT                 |
| 0135  | 75165 | 027205 | JMP COP7          |                         |
| 0136  | 75166 | 007400 | CCB               | COMPUTE                 |
| 0137  | 75167 | 162164 | LDA COPD,I        | ENTRY                   |
| 0138  | 75170 | 100400 | DIV ,+3           | COUNT                   |
|       | 75171 | 000355 |                   |                         |
| 0139  | 75172 | 070041 | STA COPC          |                         |
| 0140  | 75173 | 064562 | LDB LIBD          |                         |
| 0141  | 75174 | 044354 | ADB ,+2           | *> LENGTH WORD          |
| 0142  | 75175 |        | COP6 EQU *        |                         |
| 0143  | 75175 | 160001 | LDA B,I           |                         |
| 0144  | 75176 | 003100 | CMA,CLE           |                         |
| 0145  | 75177 | 042315 | ADA COPLN         |                         |
| 0146  | 75200 | 002041 | SEZ,RSS           | ENTRY LARGE ENOUGH?     |
| 0147  | 75201 | 027215 | JMP COP10         | YES                     |
| 0148  | 75202 | 044355 | ADB ,+3           | NO                      |
| 0149  | 75203 | 034041 | ISZ COPC          | ANY LEFT?               |
| 0150  | 75204 | 027175 | JMP COP6          | YES                     |
| 0151  | 75205 |        | COP7 EQU *        |                         |
| 0152  | 75205 | 036435 | ISZ COPDF         | NO, ANY ADTS LEFT?      |
| 0153  | 75206 | 027147 | JMP COP5          | YES                     |
| 0154* |       |        |                   |                         |
| 0155  | 75207 |        | COP8 EQU *        |                         |
| 0156  | 75207 | 063657 | LDA COPEL         | "SYSTEM OVERLOAD"       |
| 0157  | 75210 | 064342 | LDB COPFD         |                         |
| 0158  | 75211 | 027613 | JMP COPIL         |                         |
| 0159* |       |        |                   |                         |
| 0160  | 75212 |        | COP9 EQU *        |                         |
| 0161  | 75212 | 063670 | LDA COPEE         | "DUPLICATE ENTRY"       |
| 0162  | 75213 | 064342 | LDB COPFE         |                         |
| 0163  | 75214 | 027613 | JMP COPIL         |                         |
| 0164* |       |        |                   |                         |
| 0165  | 75215 |        | COP10 EQU *       |                         |

|       |       |        |             |                      |
|-------|-------|--------|-------------|----------------------|
| 0166  | 75215 | 062315 | LDA COPLN   | SAVE                 |
| 0167  | 75216 | 003004 | CMA,INA     | NEGATIVE NUMBER      |
| 0168  | 75217 | 140001 | ADA B,I     | OF SECTORS LEFT      |
| 0169  | 75220 | 072435 | STA COPDF   |                      |
| 0170  | 75221 | 044350 | ADB .-2     | SAVE LOCATION OF     |
| 0171  | 75222 | 074041 | STB COPC    | DISC ADT ENTRY       |
| 0172  | 75223 | 104200 | DLD B,I     | GET DISC ADDRESS     |
|       | 75224 | 100001 |             |                      |
| 0173  | 75225 | 104400 | DST COPDS   | AND SAVE             |
|       | 75226 | 000036 |             |                      |
| 0174* |       |        |             |                      |
| 0175  | 75227 | 060520 | LDA DLTEM   | MOVE ID/NAME         |
| 0176  | 75230 | 070051 | STA MOVED   | TO LTEMP(0:3)        |
| 0177  | 75231 | 063742 | LDA COPPT   |                      |
| 0178  | 75232 | 070050 | STA MOVES   |                      |
| 0179  | 75233 | 064346 | LDB .-4     |                      |
| 0180  | 75234 | 016257 | JSB MOVEW   |                      |
| 0181  | 75235 | 116005 | JSB DLOKP,I | SEARCH FOR ENTRY     |
| 0182  | 75236 | 027212 | JMP COP9    | FOUND, ERROR         |
| 0183* |       |        |             |                      |
| 0184  | 75237 | 164034 | LDB COPI,I  | IF TRACK IS FULL, GO |
| 0185  | 75240 | 054714 | CPB M8184   | DO OVERLAY SECTION   |
| 0186  | 75241 | 027735 | JMP COP98   |                      |
| 0187* |       |        |             |                      |
| 0188  | 75242 | 007000 | CMB         | MAKE                 |
| 0189  | 75243 | 044562 | ADB LIBD    |                      |
| 0190  | 75244 | 074050 | STB MOVES   | ROOM                 |
| 0191  | 75245 | 044366 | ADB .+12    |                      |
| 0192  | 75246 | 074051 | STB MOVED   | FUR NEW              |
| 0193  | 75247 | 007000 | CMB         |                      |
| 0194  | 75250 | 044402 | ADB .+24    | DIRECTORY            |
| 0195  | 75251 | 044035 | ADB COPS    |                      |
| 0196  | 75252 | 016243 | JSB MOVEB   | ENTRY                |
| 0197* |       |        |             |                      |
| 0198  | 75253 | 060520 | LDA DLTEM   | MOVE                 |
| 0199  | 75254 | 070050 | STA MOVES   |                      |
| 0200  | 75255 | 060035 | LDA COPS    | ID/NAME              |
| 0201  | 75256 | 040366 | ADA .+12    |                      |
| 0202  | 75257 | 070051 | STA MOVED   | INTO                 |
| 0203  | 75260 | 064346 | LDB .-4     |                      |
| 0204  | 75261 | 016257 | JSB MOVEW   | DIRECTORY            |
| 0205  | 75262 | 060042 | LDA COPP    | WORD 4               |
| 0206  | 75263 | 170051 | STA MOVED,I |                      |
| 0207  | 75264 | 016076 | JSB DATE    | LAST REFERENCE DATE  |
| 0208  | 75265 | 034051 | ISZ MOVED   |                      |
| 0209  | 75266 | 170051 | STA MOVED,I |                      |
| 0210  | 75267 | 034051 | ISZ MOVED   |                      |
| 0211  | 75270 | 060201 | LDA DATIM   | LAST CHANGE DATE     |
| 0212  | 75271 | 170051 | STA MOVED,I |                      |
| 0213  | 75272 | 034051 | ISZ MOVED   |                      |
| 0214  | 75273 | 002400 | CLA         | DRUM ADDRESS         |
| 0215  | 75274 | 170051 | STA MOVED,I |                      |
| 0216  | 75275 | 034051 | ISZ MOVED   |                      |
| 0217  | 75276 | 104200 | DLD COPDS   | DISC ADDRESS         |
|       | 75277 | 000036 |             |                      |

|       |       |        |       |          |                            |
|-------|-------|--------|-------|----------|----------------------------|
| 0218  | 75300 | 104400 | DST   | MOVED, I |                            |
|       | 75301 | 100051 |       |          |                            |
| 0219  | 75302 | 064051 | LDB   | MOVED    |                            |
| 0220  | 75303 | 044355 | ADB   | .+3      |                            |
| 0221  | 75304 | 060040 | LDA   | COPWD    | LENGTH                     |
| 0222  | 75305 | 170001 | STA   | B, I     |                            |
| 0223* |       |        |       |          |                            |
| 0224  | 75306 | 160034 | LDA   | COPI, I  | ADJUST                     |
| 0225  | 75307 | 040336 | ADA   | .-12     | DIRECTORY                  |
| 0226  | 75310 | 170034 | STA   | COPI, I  | LENGTH                     |
| 0227  | 75311 | 070072 | STA   | WORD     |                            |
| 0228  | 75312 | 060034 | LDA   | COPI     |                            |
| 0229  | 75313 | 002004 | INA   |          |                            |
| 0230  | 75314 | 070051 | STA   | MOVED    |                            |
| 0231  | 75315 | 040357 | ADA   | .+5      |                            |
| 0232  | 75316 | 160000 | LDA   | A, I     |                            |
| 0233  | 75317 | 064562 | LDB   | LIBD     |                            |
| 0234  | 75320 | 074050 | STB   | MOVES    |                            |
| 0235  | 75321 | 016231 | JSB   | DRUML    | WRITE DIRECTORY BACK       |
| 0236  | 75322 | 115017 | JSB   | DEADP, I |                            |
| 0237* |       |        |       |          |                            |
| 0238  | 75323 | 064346 | LDB   | .-4      | RESET                      |
| 0239  | 75324 | 016257 | JSB   | MOVEW    | DIREC                      |
| 0240* |       |        |       |          |                            |
| 0241  | 75325 |        | COP11 | EGU *    |                            |
| 0242  | 75325 | 060076 | LDA   | IDLNP    |                            |
| 0243  | 75326 | 164000 | LDB   | A, I     |                            |
| 0244  | 75327 | 074072 | STB   | WORD     |                            |
| 0245  | 75330 | 040351 | ADA   | .-1      |                            |
| 0246  | 75331 | 160000 | LDA   | A, I     |                            |
| 0247  | 75332 | 064566 | LDB   | LIBDI    |                            |
| 0248  | 75333 | 015231 | JSB   | DRUML    | READ IOT AGAIN             |
| 0249  | 75334 | 116017 | JSB   | DEADP, I |                            |
| 0250* |       |        |       |          |                            |
| 0251  | 75335 | 162132 | LDA   | COPF, I  | UPDATE                     |
| 0252  | 75336 | 042315 | ADA   | COPLN    | DISC                       |
| 0253  | 75337 | 172132 | STA   | COPF, I  | USED                       |
| 0254* |       |        |       |          |                            |
| 0255  | 75340 | 160075 | LDA   | IDLCP, I |                            |
| 0256  | 75341 | 064562 | LDB   | LIBD     |                            |
| 0257  | 75342 | 016231 | JSB   | DRUML    | WRITE OUT IDT              |
| 0258  | 75343 | 116017 | JSB   | DEADP, I |                            |
| 0259* |       |        |       |          |                            |
| 0260  | 75344 | 162164 | LDA   | COPD, I  |                            |
| 0261  | 75345 | 070072 | STA   | WORD     |                            |
| 0262  | 75346 | 162010 | LDA   | RKCYP, I |                            |
| 0263  | 75347 | 064566 | LDB   | LIBDI    |                            |
| 0264  | 75350 | 016231 | JSB   | DRUML    | READ DISC ADT BACK         |
| 0265  | 75351 | 027373 | JMP   | COP14    | CAN'T, GO ZAP IT           |
| 0266* |       |        |       |          |                            |
| 0267  | 75352 | 062435 | LDA   | COPDF    |                            |
| 0268  | 75353 | 002002 | SZA   |          | ADT ENTRY COMPLETELY USED? |
| 0269  | 75354 | 027377 | JMP   | COP15    | NO                         |
| 0270* |       |        |       |          |                            |
| 0271  | 75355 | 064041 | LDB   | COPC     | YES, REMOVE IT             |

|       |       |        |       |             |                       |
|-------|-------|--------|-------|-------------|-----------------------|
| 0272  | 75356 | 074051 | STB   | MOVED       |                       |
| 0273  | 75357 | 044355 | ADB   | .+3         |                       |
| 0274  | 75360 | 074050 | STB   | MOVES       |                       |
| 0275  | 75361 | 044674 | ADB   | MLIBD       |                       |
| 0276  | 75362 | 044072 | ADB   | WORD        |                       |
| 0277  | 75363 | 016257 | JSB   | MOVEW       |                       |
| 0278* |       |        |       |             |                       |
| 0279  | 75364 | 060355 | LDA   | .+3         |                       |
| 0280  | 75365 | 166164 | LDB   | COPD,I      |                       |
| 0281  | 75366 | 044000 | ADB   | A           |                       |
| 0282  | 75367 | 176164 | STB   | COPD,I      | SHORTEN TABLE LENGTH  |
| 0283  | 75370 | 040072 | ADA   | WORD        |                       |
| 0284  | 75371 | 070072 | STA   | WORD        | SHORTEN WORD COUNT    |
| 0285  | 75372 | 027412 | JMP   | COP16       |                       |
| 0286* |       |        |       |             |                       |
| 0287  | 75373 |        | COP14 | EQU *       |                       |
| 0288  | 75373 | 002400 |       | CLA         |                       |
| 0289  | 75374 | 172164 |       | STA COPD,I  | ZERO LENGTH           |
| 0290  | 75375 | 172010 |       | STA RKCYP,I | ZERO ADDRESS          |
| 0291  | 75376 | 027416 |       | JMP COP17   |                       |
| 0292* |       |        |       |             |                       |
| 0293  | 75377 |        | COP15 | EQU *       |                       |
| 0294  | 75377 | 064041 |       | LDB COPC    |                       |
| 0295  | 75400 | 044354 |       | ADB .+2     |                       |
| 0296  | 75401 | 170001 |       | STA B,I     | UPDATE THE LENGTH     |
| 0297  | 75402 | 104200 |       | DLA COPC,I  | MOVE THE DISC ADDRESS |
|       | 75403 | 100041 |       |             |                       |
| 0298  | 75404 | 000040 |       | CLE         |                       |
| 0299  | 75405 | 046315 |       | ADB COPLN   | BY LOPLN BLOCKS       |
| 0300  | 75406 | 002040 |       | SEZ         |                       |
| 0301  | 75407 | 002004 |       | INA         | AND SAVE IT           |
| 0302  | 75410 | 104400 |       | DST COPC,I  |                       |
|       | 75411 | 100041 |       |             |                       |
| 0303* |       |        |       |             |                       |
| 0304  | 75412 |        | COP16 | EQU *       |                       |
| 0305  | 75412 | 162010 |       | LDA RKCYP,I |                       |
| 0306  | 75413 | 064562 |       | LDB LIBD    |                       |
| 0307  | 75414 | 016231 |       | JSB DRUML   | WRITE ADT BACK OUT    |
| 0308  | 75415 | 027373 |       | JMP COP14   |                       |
| 0309* |       |        |       |             |                       |
| 0310  | 75416 |        | COP17 | EQU *       |                       |
| 0311  | 75416 | 062137 |       | LDA COPDR   | GET DRUM ADDRESS      |
| 0312  | 75417 | 002003 |       | SZA,RSS     | ZERO?                 |
| 0313  | 75420 | 027436 |       | JMP COP20   | YES                   |
| 0314  | 75421 | 066315 |       | LDB COPLN   | NO,                   |
| 0315  | 75422 | 005727 |       | BLF,BLF     | COMPUTE               |
| 0316  | 75423 | 007004 |       | CMB,INB     | LENGTH                |
| 0317  | 75424 | 074072 |       | STB WORD    | OF                    |
| 0318  | 75425 | 074215 |       | STB MWORD   | TRANSFER              |
| 0319  | 75426 | 064566 |       | LDB LIBDI   |                       |
| 0320  | 75427 | 016231 |       | JSB DRUML   | READ FROM DRUM        |
| 0321  | 75430 | 027611 |       | JMP COPDE   | FAILURE               |
| 0322  | 75431 | 063750 |       | LDA COPAP   |                       |
| 0323  | 75432 | 064562 |       | LDB LIBD    |                       |
| 0324  | 75433 | 114217 |       | JSB DISCZ,I | WRITE TO DISC         |

|       |                           |        |       |         |                                                                        |
|-------|---------------------------|--------|-------|---------|------------------------------------------------------------------------|
| 0325  | 75434                     | 027611 | JMP   | COPDE   | FAILURE                                                                |
| 0326  | 75435                     | 026267 | JMP   | LEND    | DONE                                                                   |
| 0327  | 75436                     |        | COP20 | EQU *   |                                                                        |
| 0328  | 75436                     | 006400 |       | CLB     |                                                                        |
| 0329  | 75437                     | 062315 |       | LDA     | COPLN                                                                  |
| 0330  | 75440                     | 100400 |       | DIV     | +.40                                                                   |
|       | 75441                     | 000422 |       |         |                                                                        |
| 0331  | 75442                     | 003000 |       | CMA     |                                                                        |
| 0332  | 75443                     | 070041 |       | STA     | COPC                                                                   |
| 0333  | 75444                     | 074042 |       | STB     | COPP                                                                   |
| 0334  | 75445                     |        | COP21 | EQU *   | # OF 40 BLOCK READS + WRITES<br># OF BLOCKS IN LAST WRITE              |
| 0335  | 75445                     | 034041 |       | ISZ     | COPC                                                                   |
| 0336  | 75446                     | 027452 |       | JMP     | COP22                                                                  |
| 0337  | 75447                     | 060042 |       | LDA     | COPP                                                                   |
| 0338  | 75450                     | 017475 |       | JSB     | COPRW                                                                  |
| 0339  | 75451                     | 026267 |       | JMP     | LEND                                                                   |
| 0340  | 75452                     |        | COP22 | EQU *   | ANY 40 BLOCKERS LEFT?<br>YES<br>NO, READ AND<br>WRITE LAST ONE<br>DONE |
| 0341  | 75452                     | 060422 |       | LDA     | +.40                                                                   |
| 0342  | 75453                     | 017475 |       | JSB     | COPRW                                                                  |
| 0343  | 75454                     | 104200 |       | DLD     | CUPDS                                                                  |
|       | 75455                     | 000036 |       |         | READ AND WRITE<br>40 BLOCKS<br>UPDATE                                  |
| 0344  | 75456                     | 000040 |       | CLE     |                                                                        |
| 0345  | 75457                     | 044422 |       | ADB     | +.40                                                                   |
| 0346  | 75460                     | 002040 |       | SEZ     | WRITE                                                                  |
| 0347  | 75461                     | 002004 |       | INA     | ADDRESS                                                                |
| 0348  | 75462                     | 104400 |       | DST     | COPDS                                                                  |
|       | 75463                     | 000035 |       |         | UPDATE                                                                 |
| 0349  | 75464                     | 104200 |       | DLD     | COPDI                                                                  |
|       | 75465                     | 000043 |       |         | UPDATE                                                                 |
| 0350  | 75466                     | 000040 |       | CLE     |                                                                        |
| 0351  | 75467                     | 044422 |       | ADB     | +.40                                                                   |
| 0352  | 75470                     | 002040 |       | SEZ     | READ                                                                   |
| 0353  | 75471                     | 002004 |       | INA     | ADDRESS                                                                |
| 0354  | 75472                     | 104400 |       | DST     | COPDI                                                                  |
|       | 75473                     | 000043 |       |         |                                                                        |
| 0355  | 75474                     | 027445 |       | JMP     | COP21                                                                  |
| 0356* |                           |        |       |         | LOOP                                                                   |
| 0357* | COPRW READS AND WRITES    |        |       |         |                                                                        |
| 0358* |                           |        |       |         |                                                                        |
| 0359  | 75475                     | 000000 | COPRW | NOP     |                                                                        |
| 0360  | 75476                     | 001727 |       | ALF,ALF | COMPUTE                                                                |
| 0361  | 75477                     | 003004 |       | CMA,INA | # OF                                                                   |
| 0362  | 75500                     | 070215 |       | STA     | MWORD                                                                  |
| 0363  | 75501                     | 063747 |       | LDA     | COPIP                                                                  |
| 0364  | 75502                     | 064566 |       | LDB     | LIBDI                                                                  |
| 0365  | 75503                     | 114217 |       | JSB     | DISCZ,I                                                                |
| 0366  | 75504                     | 027611 |       | JMP     | COPDE                                                                  |
| 0367  | 75505                     | 063750 |       | LDA     | COPAP                                                                  |
| 0368  | 75506                     | 064562 |       | LDB     | LIBD                                                                   |
| 0369  | 75507                     | 114217 |       | JSB     | DISCZ,I                                                                |
| 0370  | 75510                     | 027611 |       | JMP     | COPDE                                                                  |
| 0371  | 75511                     | 127475 |       | JMP     | COPRW,I                                                                |
| 0372* |                           |        |       |         | READ IT<br>FAILURE                                                     |
| 0373* | COPIN GETS AN ID AND NAME |        |       |         |                                                                        |
| 0374* |                           |        |       |         | WRITE IT<br>FAILURE                                                    |

|       |                                      |        |       |             |                         |
|-------|--------------------------------------|--------|-------|-------------|-------------------------|
| 0375  | 75512                                | 000000 | COPIN | NOP         |                         |
| 0376  | 75513                                | 070042 |       | STA COPP    | ➔ WHERE TO PUT IT       |
| 0377  | 75514                                | 016315 |       | JSB GETID   | GET THE ID              |
| 0378  | 75515                                | 002001 |       | RSS         | YES                     |
| 0379  | 75516                                | 026275 |       | JMP LFRER   | CR CNNIT FOLLOW         |
| 0380  | 75517                                | 050426 |       | CPA .+54B   | COMMA FOLLOWS?          |
| 0381  | 75520                                | 002401 |       | CLA,RSS     |                         |
| 0382  | 75521                                | 026275 |       | JMP LFRER   | NO                      |
| 0383  | 75522                                | 072132 |       | STA COPF    | SAY 1ST CHAR            |
| 0384  | 75523                                | 060052 |       | LDA ID      |                         |
| 0385  | 75524                                | 170042 |       | STA COPP,I  | SAVE ID                 |
| 0386  | 75525                                | 060347 |       | LDA .-3     | 6 CHAR                  |
| 0387  | 75526                                | 070041 |       | STA COPC    | MAXIMUM                 |
| 0388  | 75527                                |        | COPI1 | EQU *       |                         |
| 0389  | 75527                                | 017546 |       | JSB COPR    | GET LEFT CHAR           |
| 0390  | 75530                                | 001727 |       | ALF,ALF     |                         |
| 0391  | 75531                                | 034042 |       | ISZ COPP    |                         |
| 0392  | 75532                                | 170042 |       | STA COPP,I  | SAVE IT                 |
| 0393  | 75533                                | 017546 |       | JSB COPR    | GET RIGHT CHAR          |
| 0394  | 75534                                | 130042 |       | IOR COPP,I  |                         |
| 0395  | 75535                                | 170042 |       | STA COPP,I  | SAVE IT                 |
| 0396  | 75536                                | 034041 |       | ISZ COPC    | FINISHED 6 CHARS?       |
| 0397  | 75537                                | 027527 |       | JMP COPI1   | NO                      |
| 0398  | 75540                                | 017546 |       | JSB COPR    | YES, NEXT MUST          |
| 0399  | 75541                                | 050412 |       | CPA .+40B   | BE A BLANK              |
| 0400  | 75542                                | 127512 |       | JMP COPIN,I | OK                      |
| 0401  | 75543                                |        | COPI2 | EQU *       |                         |
| 0402  | 75543                                | 063625 |       | LDA COPEA   | "INVALID NAME"          |
| 0403  | 75544                                | 064343 |       | LDB COPFA   |                         |
| 0404  | 75545                                | 027613 |       | JMP COPI1   |                         |
| 0405* |                                      |        |       |             |                         |
| 0406* | COPR FETCHES CHARACTERS FOR THE NAME |        |       |             |                         |
| 0407* |                                      |        |       |             |                         |
| 0408  | 75546                                | 000000 | COPR  | NOP         |                         |
| 0409  | 75547                                | 062132 |       | LDA COPF    | TEST TO RETURN BLANK    |
| 0410  | 75550                                | 050412 |       | CPA .+40B   |                         |
| 0411  | 75551                                | 127546 |       | JMP COPR,I  |                         |
| 0412  | 75552                                |        | CUPR1 | EQU *       |                         |
| 0413  | 75552                                | 114572 |       | JSB T35CH,I | GET A CHAR              |
| 0414  | 75553                                | 027607 |       | JMP COPR5   |                         |
| 0415  | 75554                                | 064000 |       | LDB A       |                         |
| 0416  | 75555                                | 010730 |       | AND .140    | SKIP CONTROL CHARACTERS |
| 0417  | 75556                                | 002002 |       | SZA         |                         |
| 0418  | 75557                                | 050730 |       | CPA .140    |                         |
| 0419  | 75560                                | 027552 |       | JMP COPR1   |                         |
| 0420  | 75561                                |        | COPR6 | EQU *       |                         |
| 0421  | 75561                                | 062132 |       | LDA COPF    |                         |
| 0422  | 75562                                | 002002 |       | SZA         | FIRST CHAR?             |
| 0423  | 75563                                | 027577 |       | JMP COPR2   | NO                      |
| 0424  | 75564                                | 054426 |       | CPB .+54B   | YES, COMMA?             |
| 0425  | 75565                                | 026275 |       | JMP LFRER   | YES                     |
| 0426  | 75566                                | 054416 |       | CPB .+44B   | NO, '5'?                |
| 0427  | 75567                                | 027543 |       | JMP COPI2   | YES                     |
| 0428  | 75570                                | 054424 |       | CPB .+62B   | NO, '1'?                |
| 0429  | 75571                                | 027543 |       | JMP COPI2   | YES                     |

|      |       |        |         |                     |                                 |
|------|-------|--------|---------|---------------------|---------------------------------|
| 0430 | 75572 | 054367 | CPB     | .,+15B              | NO, CR?                         |
| 0431 | 75573 | 026275 | JMP     | LFRER               |                                 |
| 0432 | 75574 |        | COPR3   | EQU *               |                                 |
| 0433 | 75574 | 060001 | LDA     | B                   | NO, RESTORE A                   |
| 0434 | 75575 | 036132 | ISZ     | COPF                |                                 |
| 0435 | 75576 | 127546 | JMP     | COPR,I              |                                 |
| 0436 | 75577 |        | COPR2   | EQU *               |                                 |
| 0437 | 75577 | 054426 | CPB     | .,+54B              | COMMA?                          |
| 0438 | 75600 | 027604 | JMP     | COPR4               | YES                             |
| 0439 | 75601 | 054367 | CPB     | .,+15B              | CR?                             |
| 0440 | 75602 | 002001 | RSS     |                     | YES                             |
| 0441 | 75603 | 027574 | JMP     | COPR3               | NO                              |
| 0442 | 75604 |        | COPR4   | EQU *               |                                 |
| 0443 | 75604 | 060412 | LDA     | .,+40B              | RETURN A BLANK                  |
| 0444 | 75605 | 072132 | STA     | COPF                |                                 |
| 0445 | 75606 | 127546 | JMP     | COPR,I              |                                 |
| 0446 | 75607 |        | COPR5   | EQU *               |                                 |
| 0447 | 75607 | 064000 | LDB     | A                   |                                 |
| 0448 | 75610 | 027561 | JMP     | COPR6               |                                 |
| 0449 | 75611 |        | COPDE   | EQU *               |                                 |
| 0450 | 75611 | 063725 | LDA     | COPEH               | "UNSUCCESSFUL; KILL AND REPEAT" |
| 0451 | 75612 | 064343 | LDB     | COPFH               |                                 |
| 0452 | 75613 |        | COFIL   | EQU *               |                                 |
| 0453 | 75613 | 070050 | STA     | MOVES               | MOVE ERROR                      |
| 0454 | 75614 | 060305 | LDA     | T35B1               |                                 |
| 0455 | 75615 | 070051 | STA     | MOVED               | MESSAGE TO                      |
| 0456 | 75616 | 074030 | STB     | LTEMP               |                                 |
| 0457 | 75617 | 016257 | JSB     | MOVEW               | TTY BUFFER                      |
| 0458 | 75620 | 060030 | LDA     | LTEMP               |                                 |
| 0459 | 75621 | 001000 | ALS     |                     |                                 |
| 0460 | 75622 | 003004 | CMA,INA |                     |                                 |
| 0461 | 75623 | 064305 | LDB     | T35B1               |                                 |
| 0462 | 75624 | 026271 | JMP     | LEND+2              |                                 |
| 0463 | 75625 | 075626 | COPEA   | DEF **+1            |                                 |
| 0464 | 75626 | 005111 | OCT     | 5111                |                                 |
| 0465 | 75627 | 047126 | ASC     | 6,NVALID NAME       |                                 |
|      | 75630 | 040514 |         |                     |                                 |
|      | 75631 | 044504 |         |                     |                                 |
|      | 75632 | 020116 |         |                     |                                 |
|      | 75633 | 040515 |         |                     |                                 |
|      | 75634 | 042440 |         |                     |                                 |
| 0466 | 00343 |        | COPFA   | EQU ,--+COPEA+1     |                                 |
| 0467 | 75635 | 075636 | COPEB   | DEF **+1            |                                 |
| 0468 | 75636 | 005116 | OCT     | 5116                |                                 |
| 0469 | 75637 | 047440 | ASC     | 5,0 SUCH ID         |                                 |
|      | 75640 | 051525 |         |                     |                                 |
|      | 75641 | 041510 |         |                     |                                 |
|      | 75642 | 020111 |         |                     |                                 |
|      | 75643 | 042040 |         |                     |                                 |
| 0470 | 00344 |        | COPFB   | EQU ,--+COPEB+1     |                                 |
| 0471 | 75644 | 075645 | COPEC   | DEF **+1            |                                 |
| 0472 | 75645 | 005114 | OCT     | 5114                |                                 |
| 0473 | 75646 | 044502 | ASC     | 9,IBRARY SPACE FULL |                                 |
|      | 75647 | 051101 |         |                     |                                 |
|      | 75650 | 051131 |         |                     |                                 |



|      |       |        |       |                          |
|------|-------|--------|-------|--------------------------|
|      | 75651 | 020123 |       |                          |
|      | 75652 | 050101 |       |                          |
|      | 75653 | 041503 |       |                          |
|      | 75654 | 020106 |       |                          |
|      | 75655 | 052514 |       |                          |
|      | 75656 | 046040 |       |                          |
| 0474 | 00340 |        | COPFC | EQU .-++COPEC+1          |
| 0475 | 75657 | 075660 | COPED | DEF ++1                  |
| 0476 | 75660 | 005123 |       | OCT 5123                 |
| 0477 | 75661 | 054523 |       | ASC 7, YSTEM OVERLOAD    |
|      | 75662 | 052105 |       |                          |
|      | 75663 | 046440 |       |                          |
|      | 75664 | 047526 |       |                          |
|      | 75665 | 042522 |       |                          |
|      | 75666 | 046117 |       |                          |
|      | 75667 | 040504 |       |                          |
| 0478 | 00342 |        | COPFD | EQU .-++COPEP+1          |
| 0479 | 75670 | 075671 | COPEE | DEF ++1                  |
| 0480 | 75671 | 005104 |       | OCT 5104                 |
| 0481 | 75672 | 052520 |       | ASC 7, UPLICATE ENTRY    |
|      | 75673 | 046111 |       |                          |
|      | 75674 | 041501 |       |                          |
|      | 75675 | 052105 |       |                          |
|      | 75676 | 020105 |       |                          |
|      | 75677 | 047124 |       |                          |
|      | 75700 | 051131 |       |                          |
| 0482 | 00342 |        | COPFE | EQU .-++COPEE+1          |
| 0483 | 75701 | 075702 | COPEF | DEF ++1                  |
| 0484 | 75702 | 005111 |       | OCT 5111                 |
| 0485 | 75703 | 046114 |       | ASC 9, LL=STORED PROGRAM |
|      | 75704 | 026523 |       |                          |
|      | 75705 | 052117 |       |                          |
|      | 75706 | 051105 |       |                          |
|      | 75707 | 042040 |       |                          |
|      | 75710 | 050122 |       |                          |
|      | 75711 | 047507 |       |                          |
|      | 75712 | 051101 |       |                          |
|      | 75713 | 046440 |       |                          |
| 0486 | 00340 |        | COPFF | EQU .-++COPEF+1          |
| 0487 | 75714 | 075715 | COPEG | DEF ++1                  |
| 0488 | 75715 | 005116 |       | OCT 5116                 |
| 0489 | 75716 | 047440 |       | ASC 7, 0 SUCH ENTRY      |
|      | 75717 | 051525 |       |                          |
|      | 75720 | 041510 |       |                          |
|      | 75721 | 020105 |       |                          |
|      | 75722 | 047124 |       |                          |
|      | 75723 | 051131 |       |                          |
|      | 75724 | 020040 |       |                          |
| 0490 | 00342 |        | COPFG | EQU .-++COPEG+1          |
| 0491 | 75725 | 075726 | COPEH | DEF ++1                  |
| 0492 | 75726 | 005125 |       | OCT 5125                 |
| 0493 | 75727 | 047123 |       | ASC 6, NSUCCESSFUL       |
|      | 75730 | 052503 |       |                          |
|      | 75731 | 041505 |       |                          |
|      | 75732 | 051523 |       |                          |

|       |       |        |       |     |                       |
|-------|-------|--------|-------|-----|-----------------------|
|       | 75733 | 043125 |       |     |                       |
|       | 75734 | 046040 |       |     |                       |
| 0494  | 00343 |        | COPFH | EQU | .,***COPEH+1          |
| 0495  | 75735 |        | COP98 | EQU | *                     |
| 0496  | 75735 | 063754 |       | LDA | CM507 SET UP          |
| 0497  | 75736 | 070072 |       | STA | WORD OVERLAY          |
| 0498  | 75737 | 163751 |       | LDA | COPOV,I               |
| 0499  | 75740 | 064504 |       | LDB | #LIBI                 |
| 0500  | 75741 | 027773 |       | JMP | COP99                 |
| 0501* |       |        |       |     |                       |
| 0502  | 75742 | 075743 | COPPT | DEF | **+1                  |
| 0503  | 75743 | 000000 |       | BSS | 4                     |
| 0504  | 75747 | 000043 | COPIP | DEF | COPDI                 |
| 0505  | 75750 | 000036 | COPAP | DEF | COPDS                 |
| 0506  | 75751 | 072044 | COPOV | DEF | SAVO+COM6-COM3        |
| 0507  | 75752 | 000125 | CPLNA | DEF | DADLN                 |
| 0508  | 75753 | 000115 | CPLCA | DEF | DADLC                 |
| 0509  | 75754 | 177005 | CM507 | DEC | -507                  |
| 0510  | 00034 |        | COPI  | EQU | LTEMP+4               |
| 0511  | 00035 |        | COPS  | EQU | LTEMP+5               |
| 0512  | 00036 |        | COPDS | EQU | LTEMP+6 7 ALSO USED   |
| 0513  | 00040 |        | COPWD | EQU | LTEMP+8               |
| 0514  | 00041 |        | COPC  | EQU | LTEMP+9               |
| 0515  | 00042 |        | COPP  | EQU | LTEMP+10              |
| 0516  | 00043 |        | COPDI | EQU | LTEMP+11 12 ALSO USED |
| 0517  | 00045 |        | COPDU | EQU | LTEMP+13              |
| 0518  | 74132 |        | COPF  | EQU | LOUT                  |
| 0519  | 74137 |        | COPDR | EQU | LTYPR                 |
| 0520  | 74315 |        | COPLN | EQU | GETID                 |
| 0521  | 74164 |        | COPD  | EQU | LCHAR                 |
| 0522  | 74435 |        | COPDF | EQU | SCHLQ                 |
| 0523* |       |        |       |     |                       |
| 0524  | 75773 |        |       | ORG | LIBRA+507             |
| 0525  | 75773 |        | COP99 | EQU | *                     |
| 0526  | 75773 | 016231 |       | JSB | DRUML CALL OVERLAY    |
| 0527  | 75774 | 116015 |       | JSB | SICKP,I               |
| 0528  | 75775 | 027000 |       | JMP | LIBRA                 |
| 0529  | 75776 | 027325 |       | JMP | COP11 NORMAL RETURN   |
| 0530  | 75777 | 027207 |       | JMP | COP8 ERROR RETURN     |
| 0531  | 76000 |        | SCOP  | EQU | *                     |

0002\* THE BESTOW COMMAND IS USED TO TRANSFER PROGRAMS AND FILES FROM  
 0003\* ONE USER'S LIBRARY TO ANOTHER USER'S LIBRARY. THE FORMAT OF THE  
 0004\* COMMAND IS:

0005\*

0006\* BES = OLDID, NEWID [,NAME]

0007\*

0008\* IF NAME IS OMITTED, ALL PROGRAMS ARE TRANSFERRED EXCEPT FOR THOSE  
 0009\* WHOSE NAMES ALREADY EXIST IN NEWID'S LIBRARY.

0010\*

|      |       |        |           |                             |
|------|-------|--------|-----------|-----------------------------|
| 0011 | 75000 |        | ORG LIBRA |                             |
| 0012 | 75000 | 016315 | JSB GETID | GET OLDID                   |
| 0013 | 75001 | 002001 | RSS       |                             |
| 0014 | 75002 | 026275 | JMP LFRER | CR IS ERROR                 |
| 0015 | 75003 | 050426 | CPA ,+54B | COMMA FOLLOWS?              |
| 0016 | 75004 | 002401 | CLA,RSS   | YES                         |
| 0017 | 75005 | 026275 | JMP LFRER | NO, ERROR                   |
| 0018 | 75006 | 072137 | STA BESDE | SET DUPLICATE ENTRY COUNTER |
| 0019 | 75007 | 060052 | LDA ID    | SAVE                        |
| 0020 | 75010 | 070030 | STA LTEMP |                             |
| 0021 | 75011 | 072132 | STA BESOI | ID                          |

0022\*

|      |       |        |           |             |
|------|-------|--------|-----------|-------------|
| 0023 | 75012 | 016315 | JSB GETID | GET NEWID   |
| 0024 | 75013 | 000000 | NOP       |             |
| 0025 | 75014 | 050367 | CPA ,+15B | CR FOLLOWS? |
| 0026 | 75015 | 027061 | JMP BES3  | YES         |
| 0027 | 75016 | 050426 | CPA ,+54B | NO, COMMA?  |
| 0028 | 75017 | 002401 | CLA,RSS   | YES         |
| 0029 | 75020 | 026275 | JMP LFRER | NO, ERROR   |
| 0030 | 75021 | 070043 | STA BESF  |             |
| 0031 | 75022 | 060520 | LDA DLTEM |             |
| 0032 | 75023 | 070042 | STA BESE  |             |
| 0033 | 75024 | 060347 | LDA ,=3   | 6 CHAR      |
| 0034 | 75026 | 070041 | STA BESE  | MAXIMUM     |

0035\*

|       |       |        |             |                   |
|-------|-------|--------|-------------|-------------------|
| 0036  | 75026 |        | BES1 EQU *  |                   |
| 0037  | 75026 | 017504 | JSB BE8R    | GET LEFT CHAR     |
| 0038  | 75027 | 001727 | ALF,ALF     |                   |
| 0039  | 75030 | 034042 | ISZ BESE    |                   |
| 0040  | 75031 | 170042 | STA BESE,I  | SAVE IT           |
| 0041  | 75032 | 017504 | JSB BE8R    | GET RIGHT CHAR    |
| 0042  | 75033 | 130042 | IOR BESE,I  |                   |
| 0043  | 75034 | 170042 | STA BESE,I  | SAVE IT           |
| 0044  | 75035 | 034041 | ISZ BESE    | FINISHED 6 CHARS? |
| 0045  | 75036 | 027026 | JMP BESE    | NO                |
| 0046  | 75037 | 017504 | JSB BE8R    | YES, NEXT MUST    |
| 0047  | 75040 | 050412 | CPA ,+40B   | BE A BLANK        |
| 0048  | 75041 | 002001 | RSS         | OK                |
| 0049  | 75042 | 026275 | JMP LFRER   |                   |
| 0050  | 75043 | 054367 | CPB ,+15B   | CR FOLLOWS?       |
| 0051  | 75044 | 003401 | CCA,RSS     | YES               |
| 0052  | 75045 | 026275 | JMP LFRER   | NO                |
| 0053* |       |        |             |                   |
| 0054  | 75046 | 072164 | STA BESMF   | SET MODE FLAG     |
| 0055  | 75047 | 116005 | JSB DLOKP,I | SEARCH FOR ENTRY  |
| 0056  | 75050 | 027054 | JMP BESE    | FOUND             |

|       |       |        |      |           |                       |
|-------|-------|--------|------|-----------|-----------------------|
| 0057  | 75051 | 063552 | LDA  | BES4      | "ENTRY NOT FOUND"     |
| 0058  | 75052 | 064342 | LDB  | BESFA     |                       |
| 0059  | 75053 | 027146 | JMP  | BESIL     |                       |
| 0060  | 75054 |        | EQU  | *         |                       |
| 0061  | 75054 | 104200 | OLD  | LTEMP+4   | SAVE                  |
|       | 75055 | 000034 |      |           |                       |
| 0062  | 75056 | 072025 | STA  | BESD4     | DIRECTORY             |
| 0063  | 75057 | 076315 | STB  | BESD5     | POINTERS              |
| 0064  | 75060 | 027164 | JMP  | BES10     |                       |
| 0065* |       |        |      |           |                       |
| 0066  | 75061 |        | BES3 | EQU       | *                     |
| 0067  | 75061 | 002400 | CLA  |           | SET MODE              |
| 0068  | 75062 | 072164 | STA  | BESMF     | FLAG                  |
| 0069  | 75063 | 070031 | STA  | LTEMP+1   | INITIALIZE            |
| 0070  | 75064 | 070032 | STA  | LTEMP+2   |                       |
| 0071  | 75065 | 070033 | STA  | LTEMP+3   | NAME                  |
| 0072* |       |        |      |           |                       |
| 0073  | 75066 |        | BES4 | EQU       | *                     |
| 0074  | 75066 | 116005 | JSB  | DLOKP,I   | SEARCH FOR ENTRY      |
| 0075  | 75067 | 027160 | JMP  | BES9      | FOUND                 |
| 0076  | 75070 | 064035 | LDB  | LTEMP+5   |                       |
| 0077  | 75071 | 044366 | ADB  | ,+12      |                       |
| 0078  | 75072 | 074035 | STB  | LTEMP+5   |                       |
| 0079  | 75073 | 164034 | LDB  | LTEMP+4,I | NOT FOUND             |
| 0080  | 75074 | 007004 | CMB  | INB       | DO WE POINT           |
| 0081  | 75075 | 044562 | ADB  | LIBD      | BEYOND THE            |
| 0082  | 75076 | 054035 | CPB  | LTEMP+5   | DIRECTORY?            |
| 0083  | 75077 | 002001 | RSS  |           | YES                   |
| 0084  | 75100 | 027131 | JMP  | BES6      | NO                    |
| 0085  | 75101 | 064034 | LDB  | LTEMP+4   |                       |
| 0086  | 75102 |        | BES5 | EQU       | *                     |
| 0087  | 75102 | 044361 | ADB  | ,+7       | => NEXT DIREC ENTRY   |
| 0088  | 75103 | 057650 | CPB  | BDIRU     | LAST ONE?             |
| 0089  | 75104 | 027134 | JMP  | BES7      | YES                   |
| 0090  | 75105 | 160001 | LDA  | B,I       | NO                    |
| 0091  | 75106 | 002003 | SZA  | RSS       | LENGTH ZERO?          |
| 0092  | 75107 | 027102 | JMP  | BES5      | YES                   |
| 0093  | 75110 | 006004 | INB  |           | NO                    |
| 0094  | 75111 | 160001 | LDA  | B,I       | GET FIRST ID ON TRACK |
| 0095  | 75112 | 050030 | CPA  | LTEMP     | SAME AS THIS ONE?     |
| 0096  | 75113 | 002001 | RSS  |           | YES                   |
| 0097  | 75114 | 027134 | JMP  | BES7      | NO                    |
| 0098  | 75115 | 044351 | ADB  | ,-1       | SAVE                  |
| 0099  | 75116 | 076025 | STB  | BESD4     | DIREC                 |
| 0100  | 75117 | 060562 | LDA  | LIBD      | POINTERS              |
| 0101  | 75120 | 072315 | STA  | BESD5     |                       |
| 0102  | 75121 | 160001 | LDA  | B,I       | READ                  |
| 0103  | 75122 | 070072 | STA  | WORD      |                       |
| 0104  | 75123 | 044360 | ADB  | ,+6       | NEW                   |
| 0105  | 75124 | 160001 | LDA  | B,I       |                       |
| 0106  | 75125 | 064566 | LDB  | LIBDI     | DIRECTORY             |
| 0107  | 75126 | 016231 | JSB  | DRUML     |                       |
| 0108  | 75127 | 116015 | JSB  | SICKP,I   | TRACK                 |
| 0109  | 75130 | 027164 | JMP  | BES10     |                       |
| 0110* |       |        |      |           |                       |

|       |              |       |                |                            |
|-------|--------------|-------|----------------|----------------------------|
| 0111  | 75131        | BES6  | EQU *          |                            |
| 0112  | 75131 164035 |       | LDB LTEMP+5, I | OLDID THE SAME             |
| 0113  | 75132 054030 |       | CPB LTEMP      | AS THIS ONE?               |
| 0114  | 75133 027160 |       | JMP BES9       | YES                        |
| 0115* |              |       |                |                            |
| 0116  | 75134        | BES7  | EQU *          |                            |
| 0117  | 75134 002400 |       | CLA            | FIRST TIME                 |
| 0118  | 75135 052164 |       | CPA BESMF      | THRU?                      |
| 0119  | 75136 027144 |       | JMP BES8       | YES                        |
| 0120  | 75137        | BES15 | EQU *          |                            |
| 0121  | 75137 052137 |       | CPA BESDE      | NO, ANY DUPLICATE ENTRIES? |
| 0122  | 75140 026267 |       | JMP LEND       | NO                         |
| 0123  | 75141 063563 |       | LDA BESEB      | "DUPLICATE ENTRY(IES)"     |
| 0124  | 75142 064337 |       | LDB BESFB      |                            |
| 0125  | 75143 027146 |       | JMP BESIL      |                            |
| 0126  | 75144        | BES8  | EQU *          |                            |
| 0127  | 75144 063577 |       | LDA BESEC      | "NO ENTRIES FOR OLDID"     |
| 0128  | 75145 064337 |       | LDB BESFC      |                            |
| 0129  | 75146        | BESIL | EQU *          |                            |
| 0130  | 75146 070050 |       | STA MOVES      | MOVE MESSAGE               |
| 0131  | 75147 060305 |       | LDA T35B1      |                            |
| 0132  | 75150 070051 |       | STA MOVED      | TO TTY                     |
| 0133  | 75151 074030 |       | STB LTEMP      |                            |
| 0134  | 75152 016257 |       | JSB MOVEW      | BUFFER                     |
| 0135  | 75153 060030 |       | LDA LTEMP      |                            |
| 0136  | 75154 001000 |       | ALS            |                            |
| 0137  | 75155 003004 |       | CMA, INA       |                            |
| 0138  | 75156 064305 |       | LDB T35B1      |                            |
| 0139  | 75157 026271 |       | JMP LEND+2     |                            |
| 0140  | 75160        | BES9  | EQU *          |                            |
| 0141  | 75160 104200 |       | OLD LTEMP+4    | SAVE                       |
|       | 75161 000034 |       |                |                            |
| 0142  | 75162 072025 |       | STA BESD4      | DIREC                      |
| 0143  | 75163 076315 |       | STB BESD5      | POINTERS                   |
| 0144  | 75164        | BES10 | EQU *          |                            |
| 0145  | 75164 066315 |       | LDB BESD5      |                            |
| 0146  | 75165 044365 |       | ADB .+11       |                            |
| 0147  | 75166 160001 |       | LDA B, I       | GET LENGTH                 |
| 0148  | 75167 070040 |       | STA BESWD      | SAVE IT                    |
| 0149  | 75170 002021 |       | SSA, RSS       |                            |
| 0150  | 75171 027175 |       | JMP **4        |                            |
| 0151  | 75172 001727 |       | ALF, ALF       | CONVERT                    |
| 0152  | 75173 030762 |       | IOR HIMSK      | TU                         |
| 0153  | 75174 003004 |       | CMA, INA       | BLOCKS                     |
| 0154  | 75175 070044 |       | STA BESLN      | SAVE # OF BLOCKS           |
| 0155  | 75176 044340 |       | ADB .-10       | MOVE                       |
| 0156  | 75177 160001 |       | LDA B, I       |                            |
| 0157  | 75200 010274 |       | AND INF        |                            |
| 0158  | 75201 070031 |       | STA LTEMP+1    |                            |
| 0159  | 75202 006004 |       | INB            | ID/NAME                    |
| 0160  | 75203 160001 |       | LDA B, I       |                            |
| 0161  | 75204 070032 |       | STA LTEMP+2    |                            |
| 0162  | 75205 006004 |       | INB            | INTO                       |
| 0163  | 75206 160001 |       | LDA B, I       |                            |
| 0164  | 75207 070033 |       | STA LTEMP+3    |                            |

|      |       |        |             |                         |
|------|-------|--------|-------------|-------------------------|
| 0165 | 75210 | 060052 | LDA ID      | LTEMP(0:3)              |
| 0166 | 75211 | 070030 | STA LTEMP   |                         |
| 0167 | 75212 | 116005 | JSB DLOKP,I | SEARCH FOR NEW ENTRY    |
| 0168 | 75213 | 027423 | JMP BES13   | FOUND, DUPLICATE        |
| 0169 | 75214 | 017440 | JSB BESIS   | GET TRACK FOR NEWID     |
| 0170 | 75215 | 044361 | ADB .+7     |                         |
| 0171 | 75216 | 160001 | LDA B,I     | COMPUTE                 |
| 0172 | 75217 | 040044 | ADA BESLN   | TOTAL                   |
| 0173 | 75220 | 003004 | CMA,INA     | DISC                    |
| 0174 | 75221 | 044351 | ADB .-1     | USED                    |
| 0175 | 75222 | 000040 | CLE         |                         |
| 0176 | 75223 | 140001 | ADA B,I     |                         |
| 0177 | 75224 | 002040 | SEZ         | GREATER THAN ALLOTMENT? |
| 0178 | 75225 | 027231 | JMP BES11   | NO                      |
| 0179 | 75226 | 063623 | LDA BESEE   | "LIBRARY SPACE FULL"    |
| 0180 | 75227 | 064340 | LDB BESFE   |                         |
| 0181 | 75230 | 027146 | JMP BESIL   |                         |
| 0182 | 75231 |        | BES11 EQU * |                         |
| 0183 | 75231 | 006004 | INB         | UPDATE                  |
| 0184 | 75232 | 160001 | LDA B,I     | DISC                    |
| 0185 | 75233 | 040044 | ADA BESLN   | USED                    |
| 0186 | 75234 | 170001 | STA B,I     |                         |
| 0187 | 75235 | 017476 | JSB BESIW   | WRITE OUT ID TRACK      |
| 0188 | 75236 | 062132 | LDA BESOI   |                         |
| 0189 | 75237 | 070052 | STA ID      |                         |
| 0190 | 75240 | 017440 | JSB BESIS   | GET TRACK FOR OLDID     |
| 0191 | 75241 | 044361 | ADB .+7     |                         |
| 0192 | 75242 | 060044 | LDA BESLN   | REDUCE                  |
| 0193 | 75243 | 003004 | CMA,INA     | DISC                    |
| 0194 | 75244 | 140001 | ADA B,I     | USED                    |
| 0195 | 75245 | 170001 | STA B,I     |                         |
| 0196 | 75246 | 017476 | JSB BESIW   | WRITE OUT ID TRACK      |
| 0197 | 75247 | 062025 | LDA BESD4   | READ                    |
| 0198 | 75250 | 160000 | LDB A,I     |                         |
| 0199 | 75251 | 074072 | STB WORD    | DIRECTORY               |
| 0200 | 75252 | 040360 | ADA .+6     |                         |
| 0201 | 75253 | 160000 | LDA A,I     | FOR OLD                 |
| 0202 | 75254 | 064566 | LDB LIBDI   |                         |
| 0203 | 75255 | 016231 | JSB DRUML   | ENTRY                   |
| 0204 | 75256 | 116015 | JSB SICKP,I |                         |
| 0205 | 75257 | 066315 | LDB BESD5   |                         |
| 0206 | 75260 | 074051 | STB MOVED   |                         |
| 0207 | 75261 | 044356 | ADB .+4     |                         |
| 0208 | 75262 | 160001 | LDA B,I     | SAVE                    |
| 0209 | 75263 | 070042 | STA BESP    | WORD 4                  |
| 0210 | 75264 | 044355 | ADB .+3     |                         |
| 0211 | 75265 | 160001 | LDA B,I     | SAVE DRUM               |
| 0212 | 75266 | 070045 | STA BESDU   | ADDRESS                 |
| 0213 | 75267 | 006004 | INB         |                         |
| 0214 | 75270 | 160001 | LDA B,I     | SAVE                    |
| 0215 | 75271 | 070036 | STA BESDS   |                         |
| 0216 | 75272 | 006004 | INB         | DISC                    |
| 0217 | 75273 | 160001 | LDA B,I     |                         |
| 0218 | 75274 | 070037 | STA BESDS+1 | ADDRESS                 |
| 0219 | 75275 | 044355 | ADB .+3     |                         |

|       |       |        |               |                       |
|-------|-------|--------|---------------|-----------------------|
| 0220  | 75276 | 074050 | SIB MOVES     | ELIMINATE             |
| 0221  | 75277 | 146025 | ADB BESD4,I   |                       |
| 0222  | 75300 | 044674 | ADB MLIBD     | ENTRY                 |
| 0223  | 75301 | 016257 | JSB MOVEW     |                       |
| 0224  | 75302 | 066025 | LDB BESD4     |                       |
| 0225  | 75303 | 160001 | LDA B,I       | UPDATE                |
| 0226  | 75304 | 040366 | ADA .+12      | TRACK                 |
| 0227  | 75305 | 170001 | STA B,I       | LENGTH                |
| 0228  | 75306 | 070072 | STA WORD      |                       |
| 0229  | 75307 | 006004 | INB           |                       |
| 0230  | 75310 | 074051 | STB MOVED     |                       |
| 0231  | 75311 | 044357 | ADB .+5       |                       |
| 0232  | 75312 | 076435 | STB BESRD     |                       |
| 0233  | 75313 | 160001 | LDA B,I       |                       |
| 0234  | 75314 | 064562 | LDB LIBD      |                       |
| 0235  | 75315 | 074050 | STB MOVES     |                       |
| 0236  | 75316 | 016231 | JSB DRUML     | WRITE DIRECTORY TRACK |
| 0237  | 75317 | 027416 | JMP BES12     | TRY TO SALVAGE        |
| 0238  | 75320 | 064346 | LDB .-4       | RESET                 |
| 0239  | 75321 | 016257 | JSB MOVEW     | DIREC                 |
| 0240  | 75322 | 060030 | LDA LTEMP     | RESET                 |
| 0241  | 75323 | 070052 | STA ID        | ID                    |
| 0242  | 75324 | 116005 | JSB DLOKP,I   | SEARCH FOR NEW ENTRY  |
| 0243  | 75325 | 000000 | NOP           |                       |
| 0244  | 75326 | 164034 | LDB LTEMP+4,I | IF TRACK IS FULL, GO  |
| 0245  | 75327 | 054714 | CPB M8184     | DO OVERLAY SECTION    |
| 0246  | 75330 | 027433 | JMP BES98     |                       |
| 0247* |       |        |               |                       |
| 0248  | 75331 | 007000 | CMB           | MAKE                  |
| 0249  | 75332 | 044562 | ADB LIBD      |                       |
| 0250  | 75333 | 074050 | STB MOVES     | ROOM                  |
| 0251  | 75334 | 044366 | ADB .+12      |                       |
| 0252  | 75335 | 074051 | STB MOVED     | FOR NEW               |
| 0253  | 75336 | 007000 | CMB           |                       |
| 0254  | 75337 | 044402 | ADB .+24      | DIRECTORY             |
| 0255  | 75340 | 044035 | ADB LTEMP+5   |                       |
| 0256  | 75341 | 016243 | JSB MOVEB     | ENTRY                 |
| 0257* |       |        |               |                       |
| 0258  | 75342 | 060520 | LDA DLTEM     | MOVE                  |
| 0259  | 75343 | 070050 | STA MOVES     |                       |
| 0260  | 75344 | 060035 | LDA LTEMP+5   | ID/NAME               |
| 0261  | 75345 | 040366 | ADA .+12      |                       |
| 0262  | 75346 | 070051 | STA MOVED     | INTO                  |
| 0263  | 75347 | 064346 | LDB .-4       |                       |
| 0264  | 75350 | 016257 | JSB MOVEW     | DIRECTORY             |
| 0265  | 75351 | 060042 | LDA BESP      | WORD 4                |
| 0266  | 75352 | 170051 | STA MOVED,I   |                       |
| 0267  | 75353 | 016076 | JSB DATE      | LAST REFERENCE DATE   |
| 0268  | 75354 | 034051 | ISZ MOVED     |                       |
| 0269  | 75355 | 170051 | STA MOVED,I   |                       |
| 0270  | 75356 | 034051 | ISZ MOVED     |                       |
| 0271  | 75357 | 060201 | LDA DATIM     | LAST CHANGE DATE      |
| 0272  | 75360 | 170051 | STA MOVED,I   |                       |
| 0273  | 75361 | 034051 | ISZ MOVED     |                       |
| 0274  | 75362 | 060045 | LDA BESDU     | DRUM ADDRESS          |

|       |       |          |       |           |                      |
|-------|-------|----------|-------|-----------|----------------------|
| 0275  | 75363 | 170051   | STA   | MOVED,I   |                      |
| 0276  | 75364 | 034051   | ISZ   | MOVED     |                      |
| 0277  | 75365 | 104200   | DLD   | BESDS     | DISC ADDRESS         |
|       |       | 75366    |       |           |                      |
| 0278  | 75367 | 104400   | DST   | MOVED,I   |                      |
|       |       | 75370    |       |           |                      |
| 0279  | 75371 | 064051   | LDB   | MOVED     |                      |
| 0280  | 75372 | 044355   | ADB   | .,+3      |                      |
| 0281  | 75373 | 060040   | LDA   | BESWD     | LENGTH               |
| 0282  | 75374 | 170001   | STA   | B,I       |                      |
| 0283* |       |          |       |           |                      |
| 0284  | 75375 | 160034   | LDA   | LTEMP+4,I | UPDATE               |
| 0285  | 75376 | 040336   | ADA   | .,-12     | DIRECTORY            |
| 0286  | 75377 | 170034   | STA   | LTEMP+4,I | LENGTH               |
| 0287  | 75400 | 070072   | STA   | WORD      |                      |
| 0288  | 75401 | 060034   | LDA   | LTEMP+4   |                      |
| 0289  | 75402 | 002004   | INA   |           |                      |
| 0290  | 75403 | 070051   | STA   | MOVED     |                      |
| 0291  | 75404 | 040357   | ADA   | .,+6      |                      |
| 0292  | 75405 | 072435   | STA   | BESRD     |                      |
| 0293  | 75406 | 160000   | LDA   | A,I       |                      |
| 0294  | 75407 | 064562   | LDB   | LIBD      |                      |
| 0295  | 75410 | 074050   | STB   | MOVES     |                      |
| 0296  | 75411 | 016231   | JSB   | DRUML     | W                    |
| 0297  | 75412 | 027416   | JMP   | BES12     |                      |
| 0298  | 75413 | 064346   | LDB   | .,-4      | RESET                |
| 0299  | 75414 | 016257   | JSB   | MOVEW     | DIREC                |
| 0300  | 75415 | 027424   | JMP   | BES13+1   |                      |
| 0301  | 75416 |          | BES12 | EQU *     |                      |
| 0302  | 75416 | 064346   | LDB   | .,-4 =    | RESET                |
| 0303  | 75417 | 016257   | JSB   | MOVEW     | DIREC                |
| 0304  | 75420 | 064072   | LDB   | WORD      |                      |
| 0305  | 75421 | 062435   | LDA   | BESRD     |                      |
| 0306  | 75422 | 116016   | JSB   | SALVP,I   | ATTEMPT TO SALVAGE   |
| 0307  | 75423 |          | BES13 | EQU *     |                      |
| 0308  | 75423 | 036137   | ISZ   | BESDE     | BUMP DUPLICATE FLAG  |
| 0309  | 75424 | 062132   | LDA   | BESOI     | RESET                |
| 0310  | 75425 | 070030   | STA   | LTEMP     | OLDID                |
| 0311  | 75426 | 034033   | ISZ   | LTEMP+3   | BUMP NAME FOR SEARCH |
| 0312  | 75427 | 036164   | ISZ   | BESMF     | MORE THAN ONE ENTRY? |
| 0313  | 75430 | 027066   | JMP   | BES4      | YES                  |
| 0314  | 75431 | 002400   | CLA   |           | NO                   |
| 0315  | 75432 | 027137   | JMP   | BES15     |                      |
| 0316* |       |          |       |           |                      |
| 0317  | 75433 |          | BES98 | EQU *     |                      |
| 0318  | 75433 | 063647   | LDA   | BM507     | SET UP OVERLAY       |
| 0319  | 75434 | 070072   | STA   | WORD      |                      |
| 0320  | 75435 | 163646   | LDA   | BESOV,I   |                      |
| 0321  | 75436 | 064504   | LDB   | #LIBI     |                      |
| 0322  | 75437 | 027773   | JMP   | BES99     |                      |
| 0323* |       |          |       |           |                      |
| 0324* | BESIS | SEARCHES | THE   | ID        | TABLE                |
| 0325* |       |          |       |           |                      |
| 0326  | 75440 | 000000   | BESIS | NOP       |                      |
| 0327  | 75441 | 016370   | JSB   | GTIL      | FIND OUT WHICH TRACK |



|       |       |         |             |                            |
|-------|-------|---------|-------------|----------------------------|
| 0328  | 75442 | 060076  | LDA IULNP   |                            |
| 0329  | 75443 | 164000  | LDB A,I     | LENGTH                     |
| 0330  | 75444 | 006003  | SZB,RSS     | ZERU?                      |
| 0331  | 75445 | 027473  | JMP BES12   | YES                        |
| 0332  | 75446 | 074072  | STB WORD    | NO, SAVE IT                |
| 0333  | 75447 | 007004  | CMB,INB     | GET POINTER                |
| 0334  | 75450 | 044562  | ADB LIBD    | TO LAST                    |
| 0335  | 75451 | 074036  | STB BESDS   | WORD +1                    |
| 0336  | 75452 | 040351  | ADA .-1     |                            |
| 0337  | 75453 | 160000  | LDA A,I     |                            |
| 0338  | 75454 | 064566  | LDB LIBDI   |                            |
| 0339  | 75455 | 016231  | JSB DRUML   | READ ID TRACK              |
| 0340  | 75456 | 116015  | JSB SICKP,I |                            |
| 0341  | 75457 | 064562  | LDB LIBD    |                            |
| 0342  | 75460 |         | BES11 EQU * |                            |
| 0343  | 75460 | 054036  | CPB BESDS   | END OF TABLE?              |
| 0344  | 75461 | 027473  | JMP BES12   | YES                        |
| 0345  | 75462 | 160001  | LDA B,I     | NO, GET CURRENT ID         |
| 0346  | 75463 | 003004  | CMA,INA     |                            |
| 0347  | 75464 | 040052  | ADA ID      |                            |
| 0348  | 75465 | 002003  | SZA,RSS     | EQUAL?                     |
| 0349  | 75466 | 127440  | JMP BES1S,I | YES, FOUND THE ONE WE WANT |
| 0350  | 75467 | 002020  | SSA         | NO, GREATER?               |
| 0351  | 75470 | 027473  | JMP BES12   | YES, ERROR                 |
| 0352  | 75471 | 044362  | ADB .+8     | NO, MOVE TO NEXT ONE       |
| 0353  | 75472 | 027460  | JMP BES11   |                            |
| 0354  | 75473 |         | BES12 EQU * |                            |
| 0355  | 75473 | 063613  | LDA BESED   | "NO SUCH NEWID"            |
| 0356  | 75474 | 064343  | LDB BESFD   |                            |
| 0357  | 75475 | 027146  | JMP BES1L   |                            |
| 0358* |       |         |             |                            |
| 0359* | BESIW | WRITES  | OUT THE ID  | TABLE                      |
| 0360* |       |         |             |                            |
| 0361  | 75476 | 000000  | BESIW NOP   |                            |
| 0362  | 75477 | 160075  | LDA IDLCP,I | DRUM ADDRESS               |
| 0363  | 75500 | 064562  | LDB LIBD    |                            |
| 0364  | 75501 | 016231  | JSB DRUML   | WRITE IT                   |
| 0365  | 75502 | 116017  | JSB DEADP,I | FAIL                       |
| 0366  | 75503 | 127476  | JMP BESIW,I |                            |
| 0367* |       |         |             |                            |
| 0368* | BESR  | FETCHES | CHARACTERS  | FOR THE NAME               |
| 0369* |       |         |             |                            |
| 0370  | 75504 | 000000  | BESR NOP    |                            |
| 0371  | 75505 | 060043  | LDA BESF    | THEST TO RETURN BLANK      |
| 0372  | 75506 | 050412  | CPA .+40B   |                            |
| 0373  | 75507 | 127504  | JMP BESR,I  |                            |
| 0374  | 75510 |         | BESR1 EQU * |                            |
| 0375  | 75510 | 114572  | JSB T35CH,I | GET A CHAR                 |
| 0376  | 75511 | 027545  | JMP BESR4   | CR                         |
| 0377  | 75512 | 064000  | LDB A       |                            |
| 0378  | 75513 | 010730  | AND .140    | SKIP CONTROL CHARACTERS    |
| 0379  | 75514 | 002002  | SZA         |                            |
| 0380  | 75515 | 050730  | CPA .140    |                            |
| 0381  | 75516 | 027510  | JMP BESR1   |                            |
| 0382  | 75517 |         | BESR5 EQU * |                            |

|      |       |        |             |                         |                |
|------|-------|--------|-------------|-------------------------|----------------|
| 0383 | 75517 | 060043 | LDA         | BESF                    |                |
| 0384 | 75520 | 002002 | SZA         |                         | FIRST CHAR?    |
| 0385 | 75521 | 027535 | JMP         | BESR2                   | NO             |
| 0386 | 75522 | 054426 | CPB         | +.54B                   | YES, COMMA?    |
| 0387 | 75523 | 026275 | JMP         | LFRRER                  | YES            |
| 0388 | 75524 | 054416 | CPB         | +.44B                   | NO, 'S'?       |
| 0389 | 75525 | 027547 | JMP         | BESR6                   | YES            |
| 0390 | 75526 | 054424 | CPB         | +.52B                   | NO, 'A'?       |
| 0391 | 75527 | 027547 | JMP         | BESR6                   | YES            |
| 0392 | 75530 | 054367 | CPB         | +.15B                   | NO, CR?        |
| 0393 | 75531 | 026275 | JMP         | LFRRER                  |                |
| 0394 | 75532 |        | BESR3 EQU * |                         |                |
| 0395 | 75532 | 060001 | LDA         | B                       | NO, RESTORE A  |
| 0396 | 75533 | 034043 | ISZ         | BESF                    |                |
| 0397 | 75534 | 127504 | JMP         | BESR,I                  |                |
| 0398 | 75535 |        | BESR2 EQU * |                         |                |
| 0399 | 75535 | 054426 | CPB         | +.54B                   | COMMA?         |
| 0400 | 75536 | 027547 | JMP         | BESR6                   | YES, ERROR     |
| 0401 | 75537 | 054367 | CPB         | +.15B                   | NO, CR?        |
| 0402 | 75540 | 002001 | RSS         |                         | YES            |
| 0403 | 75541 | 027532 | JMP         | BESR3                   | NO             |
| 0404 | 75542 | 060412 | LDA         | +.40B                   | RETURN A BLANK |
| 0405 | 75543 | 070043 | STA         | BESF                    |                |
| 0406 | 75544 | 127504 | JMP         | BESR,I                  |                |
| 0407 | 75545 |        | BESR4 EQU * |                         |                |
| 0408 | 75545 | 064000 | LDB         | A                       |                |
| 0409 | 75546 | 027517 | JMP         | BESR5                   |                |
| 0410 | 75547 |        | BESR6 EQU * |                         |                |
| 0411 | 75547 | 063636 | LDA         | BESEF                   | "INVALID NAME" |
| 0412 | 75550 | 064343 | LDB         | BESFF                   |                |
| 0413 | 75551 | 027146 | JMP         | BESIL                   |                |
| 0414 | 75552 | 075553 | BESEA DEF   | ++1                     |                |
| 0415 | 75553 | 005105 | OCT         | 5105                    |                |
| 0416 | 75554 | 047124 | ASC         | 7,NTRY NOT FOUND        |                |
|      | 75555 | 051131 |             |                         |                |
|      | 75556 | 020116 |             |                         |                |
|      | 75557 | 047524 |             |                         |                |
|      | 75560 | 020106 |             |                         |                |
|      | 75561 | 047525 |             |                         |                |
|      | 75562 | 047104 |             |                         |                |
| 0417 | 00342 |        | BESFA EQU   | .-++BESEA+1             |                |
| 0418 | 75563 | 075564 | BESFB DEF   | ++1                     |                |
| 0419 | 75564 | 005104 | OCT         | 5104                    |                |
| 0420 | 75565 | 052520 | ASC         | 10, UPLICATE ENTRY(IES) |                |
|      | 75566 | 046111 |             |                         |                |
|      | 75567 | 041501 |             |                         |                |
|      | 75570 | 052105 |             |                         |                |
|      | 75571 | 020106 |             |                         |                |
|      | 75572 | 047124 |             |                         |                |
|      | 75573 | 051131 |             |                         |                |
|      | 75574 | 024111 |             |                         |                |
|      | 75575 | 042523 |             |                         |                |
|      | 75576 | 024440 |             |                         |                |
| 0421 | 00337 |        | BESFB EQU   | .-++BESEB+1             |                |
| 0422 | 75577 | 075600 | BESEC DEF   | ++1                     |                |

|       |       |        |       |                        |
|-------|-------|--------|-------|------------------------|
| 0423  | 75600 | 005116 | OCT   | 5116                   |
| 0424  | 75601 | 047440 | ASC   | 10,0 ENTRIES FOR OLDID |
|       | 75602 | 042516 |       |                        |
|       | 75603 | 052122 |       |                        |
|       | 75604 | 044505 |       |                        |
|       | 75605 | 051440 |       |                        |
|       | 75606 | 043117 |       |                        |
|       | 75607 | 051040 |       |                        |
|       | 75610 | 047514 |       |                        |
|       | 75611 | 042111 |       |                        |
|       | 75612 | 042040 |       |                        |
| 0425  | 00337 |        | BESFC | EQU .-++BESEC+1        |
| 0426  | 75613 | 075614 | BESED | DEF ++1                |
| 0427  | 75614 | 005116 | OCT   | 5116                   |
| 0428  | 75615 | 047440 | ASC   | 6,0 SUCH NEWID         |
|       | 75616 | 051525 |       |                        |
|       | 75617 | 041510 |       |                        |
|       | 75620 | 020116 |       |                        |
|       | 75621 | 042527 |       |                        |
|       | 75622 | 044504 |       |                        |
| 0429  | 00343 |        | BESFD | EQU .-++BESED+1        |
| 0430  | 75623 | 075624 | BESEE | DEF ++1                |
| 0431  | 75624 | 005114 | OCT   | 5114                   |
| 0432  | 75625 | 044502 | ASC   | 9,IBRARY SPACE FULL    |
|       | 75626 | 051101 |       |                        |
|       | 75627 | 051131 |       |                        |
|       | 75630 | 020123 |       |                        |
|       | 75631 | 050101 |       |                        |
|       | 75632 | 041505 |       |                        |
|       | 75633 | 020106 |       |                        |
|       | 75634 | 052514 |       |                        |
|       | 75635 | 046040 |       |                        |
| 0433  | 00340 |        | BESFE | EQU .-++BESEE+1        |
| 0434  | 75636 | 075637 | BESFF | DEF ++1                |
| 0435  | 75637 | 005111 | OCT   | 5111                   |
| 0436  | 75640 | 047120 | ASC   | 6,NVALID NAME          |
|       | 75641 | 040514 |       |                        |
|       | 75642 | 044504 |       |                        |
|       | 75643 | 020115 |       |                        |
|       | 75644 | 040515 |       |                        |
|       | 75645 | 042440 |       |                        |
| 0437  | 00343 |        | BESFF | EQU .-++BESFF+1        |
| 0438* |       |        |       |                        |
| 0439  | 75646 | 072044 | BESOV | DEF SAVO+COM6=COM3     |
| 0440  | 75647 | 177005 | BM507 | DEC =507               |
| 0441  | 75650 | 031060 | BDIRU | DEF DIREU              |
| 0442* |       |        |       |                        |
| 0443  | 00036 |        | BESDS | EQU LTEMP+6            |
| 0444  | 00040 |        | BESWD | EQU LTEMP+8            |
| 0445  | 00041 |        | BESCS | EQU LTEMP+9            |
| 0446  | 00042 |        | BESPP | EQU LTEMP+10           |
| 0447  | 00043 |        | BESFP | EQU LTEMP+11           |
| 0448  | 00044 |        | BESLN | EQU LTEMP+12           |
| 0449  | 00045 |        | BESDU | EQU LTEMP+13           |
| 0450  | 74025 |        | BESD4 | EQU T35C0              |

|       |       |       |     |           |
|-------|-------|-------|-----|-----------|
| 0451  | 74315 | BESD5 | EQU | GETID     |
| 0452  | 74132 | BESOI | EQU | LOUT      |
| 0453  | 74137 | BESDE | EQU | LTYPR     |
| 0454  | 74164 | BESMF | EQU | LCHAR     |
| 0455  | 74435 | BESRD | EQU | SCHLQ     |
| 0456* |       |       |     |           |
| 0457* |       |       |     |           |
| 0458  | 75773 |       | ORG | LIBRA+507 |
| 0459  | 75773 | BES99 | EQU | *         |
| 0460  | 75773 |       | JSB | DRUML     |
| 0461  | 75774 |       | JSB | SICKP,1   |
| 0462  | 75775 |       | JMP | LIBRA     |
| 0463  | 75776 |       | JMP | BES13+1   |
| 0464  | 75777 |       | HLT | 41B       |
| 0465  | 76000 | SBES  | EQU | *         |

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0467*
0468* THIS ROUTINE IS USED TO COPY A FILE FROM THE
0469* DISK ONTO THE DRUM.
0470* THE PRIMARY PURPOSE IS TO PUT FREQUENTLY USED
0471* FILES AND PROGRAMS ONTO FASTER ACCESS STORAGE.
0472* FORMAT IS: SAN=<ID>,<NAME>(CR)
0473*
0474 75000 ORG LIBRA
0475*
0476 75000 016315 JSB GETID GET THE ID CODE IN QUESTION
0477 75001 002001 RSS
0478 75002 026275 JMP LFRER FORMAT ERROR - - NO FILE NAME
0479 75003 050426 CPA ,+54B COMMA?
0480 75004 002401 CLA,RSS
0481 75005 026275 JMP LFRER NO, FORMAT ERROR
0482*
0483* HAVE ID, NOW GET NAME
0484*
0485 75006 070055 STA T35LC
0486 75007 017257 JSB SANIP
0487 75010 070031 STA LTEMP+1
0488 75011 017257 JSB SANIP
0489 75012 070032 STA LTEMP+2
0490 75013 017257 JSB SANIP
0491 75014 070033 STA LTEMP+3
0492*
0493 75015 114572 JSB T35CH,I
0494 75016 002001 RSS
0495 75017 026275 JMP LFRER NAMES ARE <= SIX CHARACTERS
0496 75020 060052 LDA ID SAVE THE ID CODE
0497 75021 070030 STA LTEMP FOR THE DLOOK ROUTINE
0498*
0499* NOW SEARCH THE DIRECTORY FOR THIS ENTRY
0500*
0501 75022 116005 JSB DLOKP,I
0502 75023 027027 JMP SANC
0503*
0504 75024 063315 LDA SANEA "ENTRY NOT PRESENT"
0505 75025 064341 LDB SANFA
0506 75026 027300 JMP SANIL
0507*
0508 75027 SANC EQU *
0509 75027 064035 LDB LTEMP+5 GET POINTER TO THE ENTRY
0510 75030 044365 ADB ,+11 => LENGTH WORD
0511 75031 160001 LDA B,I A = LENGTH
0512 75032 070036 STA SANLA SAVE LENGTH
0513 75033 002020 SSA
0514 75034 027042 JMP SANCA PROGRAM
0515 75035 003004 CMA,INA
0516 75036 040412 ADA ,+32 32 IS LONGEST ALLOWABLE
0517 75037 002020 SSA
0518 75040 027270 JMP SANKB "ENTRY TOO LONG"
0519 75041 027045 JMP SANCB
0520 75042 SANCA EQU *
0521 75042 043402 ADA SAN8K

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|       |                                               |        |             |                                 |
|-------|-----------------------------------------------|--------|-------------|---------------------------------|
| 0522  | 75043                                         | 002020 | SSA         | PROGRAM TOO LONG CHECK          |
| 0523  | 75044                                         | 027270 | JMP SANKB   | "ENTRY TOO LONG"                |
| 0524* |                                               |        |             |                                 |
| 0525  | 75045                                         |        | SANCB EQU * |                                 |
| 0526  | 75045                                         | 064035 | LDB LTEMP+5 |                                 |
| 0527  | 75046                                         | 044361 | ADB ,+7     | => DRUM ADDRESS                 |
| 0528  | 75047                                         | 160001 | LDA B,I     |                                 |
| 0529  | 75050                                         | 002002 | SZA         |                                 |
| 0530  | 75051                                         | 027273 | JMP SANKC   | "ENTRY ALREADY SANCTIFIED"      |
| 0531* |                                               |        |             |                                 |
| 0532  | 75052                                         | 070215 | STA MWORD   |                                 |
| 0533  | 75053                                         | 060035 | LDA LTEMP+5 | => DIRECTORY ENTRY              |
| 0534  | 75054                                         | 040362 | ADA ,+8     | => DISK ADDRESS                 |
| 0535  | 75055                                         | 114212 | JSB DISCA,I | OVERLAP SEEK WITH DRUM DIDDLING |
| 0536  | 75056                                         | 102030 | HLT 30B     |                                 |
| 0537  | 75057                                         | 102031 | HLT 31B     |                                 |
| 0538* |                                               |        |             |                                 |
| 0539  | 75060                                         | 064035 | LDB LTEMP+5 |                                 |
| 0540  | 75061                                         | 044354 | ADB ,+2     | => WORD TWO                     |
| 0541  | 75062                                         | 160001 | LDA B,I     |                                 |
| 0542  | 75063                                         | 002021 | SSA,RSS     | BIT 15 SET SEZ FILE             |
| 0543  | 75064                                         | 027115 | JMP SANCM   | PROGRAM, WON'T BE IN FUSS       |
| 0544* |                                               |        |             |                                 |
| 0545* | THE FUSS TABLE IS NOW SEARCHED TO SEE IF THIS |        |             |                                 |
| 0546* | FILE IS IN USE.                               |        |             |                                 |
| 0547* |                                               |        |             |                                 |
| 0548  | 75065                                         | 044360 | ADB ,+6     | => DISK ADDRESS                 |
| 0549  | 75066                                         | 104200 | DLD B,I     |                                 |
|       | 75067                                         | 100001 |             |                                 |
| 0550  | 75070                                         | 104400 | DST SANLB   | SAVE DISK ADDRESS FOR SEARCH    |
|       | 75071                                         | 000037 |             |                                 |
| 0551  | 75072                                         | 060732 | LDA M2000   | LENGTH OF FUSS TABLE            |
| 0552  | 75073                                         | 070072 | STA WORD    | READ                            |
| 0553  | 75074                                         | 160540 | LDA FUSS,I  | IN                              |
| 0554  | 75075                                         | 064566 | LDB LIBDI   | FUSS                            |
| 0555  | 75076                                         | 016231 | JSB DRUML   | TABLE                           |
| 0556  | 75077                                         | 116015 | JSB SICKP,I | IT'S STUCK ON THE DRUM          |
| 0557* |                                               |        |             |                                 |
| 0558  | 75100                                         | 064562 | LDB LIBD    | => FIRST ENTRY OF FUSS          |
| 0559  | 75101                                         |        | SANCC EQU * |                                 |
| 0560  | 75101                                         | 160001 | LDA B,I     |                                 |
| 0561  | 75102                                         | 006004 | INB         | => SECOND WORD OF ENTRY         |
| 0562  | 75103                                         | 050037 | CPA SANLB   | CHECK FOR FIRST WORD FOR MATCH  |
| 0563  | 75104                                         | 002001 | RSS         | MATCH, MUST CHECK SECOND WORDS  |
| 0564  | 75105                                         | 027111 | JMP SANC0   | NO MATCH                        |
| 0565  | 75106                                         | 160001 | LDA B,I     | LOAD SECOND WORD                |
| 0566  | 75107                                         | 050040 | CPA SANLC   | SECOND WORD MATCH?              |
| 0567  | 75110                                         | 027276 | JMP SANKD   | "FILE IN USE"                   |
| 0568  | 75111                                         |        | SANC0 EQU * |                                 |
| 0569  | 75111                                         | 006004 | INB         | => NEXT ENTRY                   |
| 0570  | 75112                                         | 054536 | CPB L1024   | TEST FOR SEARCH DONE            |
| 0571  | 75113                                         | 027115 | JMP SANCM   |                                 |
| 0572  | 75114                                         | 027101 | JMP SANCC   | NOT DONE, TEST NEXT ENTRY       |
| 0573* |                                               |        |             |                                 |
| 0574* | NOW READ IN THE ADT AND FIND ROOM ON THE DRUM |        |             |                                 |

|       |       |        |                |                                  |  |
|-------|-------|--------|----------------|----------------------------------|--|
| 0575* |       |        |                |                                  |  |
| 0576  | 75115 |        | SANCM EQU *    |                                  |  |
| 0577  | 75115 | 060036 | LDA SANLA      | GET THE LENGTH WORD              |  |
| 0578  | 75116 | 002021 | SSA, RSS       | POSITIVE BLOCKS IF FILE          |  |
| 0579  | 75117 | 027123 | JMP SANCP      |                                  |  |
| 0580  | 75120 | 007400 | SANCU CCB      | CONVERT                          |  |
| 0581  | 75121 | 101026 | ASR 6          | NEGATIVE WORDS                   |  |
| 0582  | 75122 | 003005 | CMA, INA, RSS  | TO SECTORS                       |  |
| 0583  | 75123 | 001020 | SANCP ALS, ALS | CONVERT BLOCK CNT TO SECTOR CNT  |  |
| 0584  | 75124 | 070037 | STA SANLB      |                                  |  |
| 0585  | 75125 | 060113 | LDA ADLEN      |                                  |  |
| 0586  | 75126 | 070072 | STA WORD       | READ                             |  |
| 0587  | 75127 | 060112 | LDA ADLUC      | IN                               |  |
| 0588  | 75130 | 064566 | LDB LIBDI      | THE                              |  |
| 0589  | 75131 | 016231 | JSB DRUML      | ADT                              |  |
| 0590  | 75132 | 116015 | JSB SICKP, I   | DRUM ERROR, DIE WITH CONSIDERATI |  |
| 0591* |       |        |                |                                  |  |
| 0592  | 75133 | 060113 | LDA ADLEN      | GET COUNT                        |  |
| 0593  | 75134 | 001100 | ARS            | OF ADT                           |  |
| 0594  | 75135 | 070040 | STA SANLC      | ENTRIES                          |  |
| 0595  | 75136 | 064562 | LDB LIBD       | => FIRST ENTRY                   |  |
| 0596  | 75137 | 006004 | INB            | => LENGTH OF THIS ENTRY          |  |
| 0597  | 75140 |        | SANCR EQU *    |                                  |  |
| 0598  | 75140 | 060037 | LDA SANLB      | GET DESIRED LENGTH               |  |
| 0599  | 75141 | 003004 | CMA, INA       |                                  |  |
| 0600  | 75142 | 140001 | ADA B, I       | ADD IN ENTRY LENGTH              |  |
| 0601  | 75143 | 002021 | SSA, RSS       | SKIP IF TOO SHORT                |  |
| 0602  | 75144 | 027153 | JMP SANCT      | ENTRY IS BIG ENOUGH              |  |
| 0603  | 75145 | 044354 | ADB .+2        | ADVANCE TO NEXT ENTRY            |  |
| 0604  | 75146 | 034040 | ISZ SANLC      | CHECK COUNT                      |  |
| 0605  | 75147 | 027140 | JMP SANCR      |                                  |  |
| 0606* |       |        |                |                                  |  |
| 0607  | 75150 | 063365 | LDA SANEE      | "INSUFFICIENT DRUM SPACE"        |  |
| 0608  | 75151 | 064336 | LDB SANFE      |                                  |  |
| 0609  | 75152 | 027300 | JMP SANIL      |                                  |  |
| 0610* |       |        |                |                                  |  |
| 0611  | 75153 |        | SANCT EQU *    |                                  |  |
| 0612  | 75153 | 070041 | STA SANLD      | SAVE THE LENGTH REMAINING IN THI |  |
| 0613  | 75154 | 170001 | STA B, I       |                                  |  |
| 0614  | 75155 | 044351 | ADB .-1        |                                  |  |
| 0615  | 75156 | 160001 | LDA B, I       | GET THE DRUM ADDRESS,            |  |
| 0616  | 75157 | 070040 | STA SANLC      | SAVE A COPY,                     |  |
| 0617  | 75160 | 040037 | ADA SANLB      | AND UPDATE IT                    |  |
| 0618  | 75161 | 170001 | STA B, I       | IT                               |  |
| 0619  | 75162 | 060041 | LDA SANLD      | CHECK THE NEW LENGTH             |  |
| 0620  | 75163 | 002002 | SZA            | SKIP IF ENTRY REMOVED            |  |
| 0621  | 75164 | 027177 | JMP SANCV      |                                  |  |
| 0622  | 75165 | 074051 | STB MOVED      | SQUEEZE                          |  |
| 0623  | 75166 | 044354 | ADB .+2        | OUT                              |  |
| 0624  | 75167 | 074050 | STB MOVES      | THE                              |  |
| 0625  | 75170 | 044674 | ADB MLIBD      | OLD                              |  |
| 0626  | 75171 | 044072 | ADB WORD       | ENTRY                            |  |
| 0627  | 75172 | 016257 | JSB MOVEW      |                                  |  |
| 0628* |       |        |                |                                  |  |
| 0629  | 75173 | 060113 | LDA ADLEN      | UPDATE                           |  |

|       |       |        |       |           |                                  |
|-------|-------|--------|-------|-----------|----------------------------------|
| 0630  | 75174 | 040354 | ADA   | .,+2      | THE ADT AND                      |
| 0631  | 75175 | 070113 | STA   | ADLEN     | TRANSFER                         |
| 0632  | 75176 | 070072 | STA   | WORD      | LENGTH                           |
| 0633  | 75177 |        | SANCV | EQU *     |                                  |
| 0634  | 75177 | 060112 | LDA   | ADLOC     | WRITE OUT                        |
| 0635  | 75200 | 064562 | LDB   | LIBD      | THE UPDATED                      |
| 0636  | 75201 | 016231 | JSB   | DRUML     | ADT                              |
| 0637  | 75202 | 116015 | JSB   | SICKP,I   |                                  |
| 0638* |       |        |       |           |                                  |
| 0639  | 75203 | 160034 | LDA   | LTEMP+4,I | GET THE DIRECTORY TRACK LENGTH   |
| 0640  | 75204 | 070072 | STA   | WORD      |                                  |
| 0641  | 75205 | 064034 | LDB   | LTEMP+4   | => DIREC ENTRY                   |
| 0642  | 75206 | 044360 | ADB   | .,+6      | => DRUM ADDRESS OF DIR. TRACK    |
| 0643  | 75207 | 160001 | LDA   | B,I       |                                  |
| 0644  | 75210 | 064566 | LDB   | LIBDI     | READ BACK THE                    |
| 0645  | 75211 | 016231 | JSB   | DRUML     | DIRECTORY TRACK                  |
| 0646  | 75212 | 116015 | JSB   | SICKP,I   | DRUM ERROR                       |
| 0647* |       |        |       |           |                                  |
| 0648  | 75213 | 064035 | LDB   | LTEMP+6   |                                  |
| 0649  | 75214 | 044361 | ADB   | .,+7      | => DRUM ADDRESS                  |
| 0650  | 75215 | 060040 | LDA   | SANLC     | LOAD THE DRUM ADDRESS AND        |
| 0651  | 75216 | 170001 | STA   | B,I       | MODIFY THE DIRECTORY             |
| 0652  | 75217 | 064034 | LDB   | LTEMP+4   |                                  |
| 0653  | 75220 | 044360 | ADB   | .,+6      | => DRUM ADDRESS OF DIR. TRACK    |
| 0654  | 75221 | 160001 | LDA   | B,I       |                                  |
| 0655  | 75222 | 064562 | LDB   | LIBD      | WRITE OUT THE NEW                |
| 0656  | 75223 | 016231 | JSB   | DRUML     | DIRECTORY TRACK                  |
| 0657  | 75224 | 002001 | RSS   |           |                                  |
| 0658  | 75225 | 027232 | JMP   | SAND0     | CONTINUE                         |
| 0659  | 75226 | 060034 | LDA   | LTEMP+4   |                                  |
| 0660  | 75227 | 164000 | LDB   | A,I       | =LENGTH OF TRACK IN CORE         |
| 0661  | 75230 | 040360 | ADA   | .,+6      | => DRUM ADDRESS                  |
| 0662  | 75231 | 116016 | JSB   | SALVP,I   | SALVAGE TRACK                    |
| 0663* |       |        |       |           |                                  |
| 0664  | 75232 |        | SAND0 | EQU *     |                                  |
| 0665  | 75232 | 060037 | LDA   | SANLB     | CONVERT PROGRAM LENGTH FROM      |
| 0666  | 75233 | 100026 | ASL   | 6         | SECTORS TO WORDS                 |
| 0667  | 75234 | 003004 | CMA,  | INA       | MAKE NEGATIVE FOR DRUM AND DISK  |
| 0668  | 75235 | 070215 | STA   | MWORD     | SET DISK AND                     |
| 0669  | 75236 | 070072 | STA   | WORD      | DRUM TRANSFER LENGTHS            |
| 0670* |       |        |       |           |                                  |
| 0671  | 75237 | 060035 | LDA   | LTEMP+5   | => DIRECTORY ENTRY               |
| 0672  | 75240 | 040362 | ADA   | .,+8      | => DISK ADDRESS                  |
| 0673  | 75241 | 064566 | LDB   | LIBDI     | READ IN THE FILE OR PROGRAM      |
| 0674  | 75242 | 114212 | JSB   | DISCA,I   |                                  |
| 0675  | 75243 | 027242 | JMP   | **=1      | STILL BUSY DOING SEEK            |
| 0676  | 75244 | 102031 | HLT   | 31B       |                                  |
| 0677* |       |        |       |           |                                  |
| 0678  | 75245 | 060214 | LDA   | MBUSY     |                                  |
| 0679  | 75246 | 002020 | SSA   |           | WAIT FOR TRANSFER TO BE COMPLETE |
| 0680  | 75247 | 027245 | JMP   | **=2      |                                  |
| 0681  | 75250 | 002002 | SZA   |           |                                  |
| 0682  | 75251 | 116015 | JSB   | SICKP,I   |                                  |
| 0683* |       |        |       |           |                                  |
| 0684  | 75252 | 060040 | LDA   | SANLC     | LOAD THE DRUM ADDRESS            |



|       |                            |        |       |         |                        |
|-------|----------------------------|--------|-------|---------|------------------------|
| 0685  | 75253                      | 064562 | LDB   | LIBD    |                        |
| 0686  | 75254                      | 016231 | JSB   | DRUML   | COPY TO THE DRUM       |
| 0687  | 75255                      | 116015 | JSB   | SICKP,1 |                        |
| 0688* |                            |        |       |         |                        |
| 0689  | 75256                      | 026267 | JMP   | LEND    |                        |
| 0690* |                            |        |       |         |                        |
| 0691* | GET TWO CHARACTERS OF NAME |        |       |         |                        |
| 0692* |                            |        |       |         |                        |
| 0693  | 75257                      | 000000 | SANIP | NOP     |                        |
| 0694  | 75260                      | 114572 | JSB   | T35CH,I | GET NEXT CHARACTER     |
| 0695  | 75261                      | 060412 | LDA   | ,+40B   | RETURN BLANKS AT END   |
| 0696  | 75262                      | 001727 | ALF,  | ALF     | TO LEFT HALF           |
| 0697  | 75263                      | 070036 | STA   | SANLA   |                        |
| 0698  | 75264                      | 114572 | JSB   | T35CH,I | GET NEXT CHARACTER     |
| 0699  | 75265                      | 060412 | LDA   | ,+40B   | RETURN BLANKS AT END   |
| 0700  | 75266                      | 030036 | IOR   | SANLA   |                        |
| 0701  | 75267                      | 127257 | JMP   | SANIP,I | RETURN                 |
| 0702* |                            |        |       |         |                        |
| 0703* | ERROR MESSAGE PRINTER      |        |       |         |                        |
| 0704* |                            |        |       |         |                        |
| 0705  | 75270                      | 063327 | SANKB | LDA     | SANEB                  |
| 0706  | 75271                      | 064342 | LDB   | SANFB   |                        |
| 0707  | 75272                      | 027300 | JMP   | SANIL   |                        |
| 0708* |                            |        |       |         |                        |
| 0709  | 75273                      | 063340 | SANKC | LDA     | SANEC                  |
| 0710  | 75274                      | 064335 | LDB   | SANFC   |                        |
| 0711  | 75275                      | 027300 | JMP   | SANIL   |                        |
| 0712* |                            |        |       |         |                        |
| 0713  | 75276                      | 063356 | SANKD | LDA     | SANED                  |
| 0714  | 75277                      | 064344 | LDB   | SANFD   |                        |
| 0715* |                            |        |       |         |                        |
| 0716  | 75300                      |        | SANIL | EQU     | *                      |
| 0717  | 75300                      | 070050 | STA   | MOVES   |                        |
| 0718  | 75301                      | 060305 | LDA   | T35B1   | MOVE THE ERROR MESSAGE |
| 0719  | 75302                      | 070051 | STA   | MOVED   | INTO THE TTY           |
| 0720  | 75303                      | 074030 | STB   | LTEMP   | BUFFER                 |
| 0721  | 75304                      | 016267 | JSB   | MOVEW   |                        |
| 0722  | 75305                      | 060214 | LDA   | MBUSY   | WAIT FOR               |
| 0723  | 75306                      | 002020 | SSA   |         | SEEK TO                |
| 0724  | 75307                      | 027305 | JMP   | *+2     | COMPLETE               |
| 0725  | 75310                      | 060030 | LDA   | LTEMP   |                        |
| 0726  | 75311                      | 001000 | ALS   |         |                        |
| 0727  | 75312                      | 003004 | CMA,  | INA     | AND PRINT              |
| 0728  | 75313                      | 064305 | LDB   | T35B1   | THE MESSAGE            |
| 0729  | 75314                      | 026271 | JMP   | LEND+2  |                        |
| 0730* |                            |        |       |         |                        |
| 0731  | 75315                      | 075316 | SANEA | DEF     | *+1                    |
| 0732  | 75316                      | 005105 | OCT   | 5105    |                        |
| 0733  | 75317                      | 047124 | ASC   | 0,NTRY  | NOT PRESENT            |
|       | 75320                      | 051131 |       |         |                        |
|       | 75321                      | 020116 |       |         |                        |
|       | 75322                      | 047524 |       |         |                        |
|       | 75323                      | 020120 |       |         |                        |
|       | 75324                      | 051105 |       |         |                        |
|       | 75325                      | 051505 |       |         |                        |

|       |              |  |                                |
|-------|--------------|--|--------------------------------|
| 0734  | 75326 047124 |  |                                |
| 0735* | 00341        |  | SANFA EQU .-++SANE+1           |
| 0736  | 75327 075330 |  | SANEB DEF ++1                  |
| 0737  | 75330 005105 |  | OCT 5105                       |
| 0738  | 75331 047124 |  | ASC 7,NTRY TOO LONG            |
|       | 75332 051131 |  |                                |
|       | 75333 020124 |  |                                |
|       | 75334 047517 |  |                                |
|       | 75335 020114 |  |                                |
|       | 75336 047516 |  |                                |
|       | 75337 043440 |  |                                |
| 0739  | 00342        |  | SANFB EQU .-++SANEB+1          |
| 0740* |              |  |                                |
| 0741  | 75340 075341 |  | SANEC DEF ++1                  |
| 0742  | 75341 005105 |  | OCT 5105                       |
| 0743  | 75342 047124 |  | ASC 12,NTRY ALREADY SANCTIFIED |
|       | 75343 051131 |  |                                |
|       | 75344 020101 |  |                                |
|       | 75345 046122 |  |                                |
|       | 75346 042501 |  |                                |
|       | 75347 042131 |  |                                |
|       | 75350 020123 |  |                                |
|       | 75351 040516 |  |                                |
|       | 75352 041524 |  |                                |
|       | 75353 044506 |  |                                |
|       | 75354 044505 |  |                                |
|       | 75355 042040 |  |                                |
| 0744  | 00335        |  | SANFC EQU .-++SANEC+1          |
| 0745  | 75356 075357 |  | SANED DEF ++1                  |
| 0746  | 75357 005106 |  | OCT 5106                       |
| 0747  | 75360 044514 |  | ASC 5,ILE IN USE               |
|       | 75361 042440 |  |                                |
|       | 75362 044516 |  |                                |
|       | 75363 020125 |  |                                |
|       | 75364 051505 |  |                                |
| 0748  | 00344        |  | SANFD EQU .-++SANED+1          |
| 0749* |              |  |                                |
| 0750  | 75365 075366 |  | SANEE DEF ++1                  |
| 0751  | 75366 005111 |  | OCT 5111                       |
| 0752  | 75367 047123 |  | ASC 11,NSUFFICIENT DRUM SPACE  |
|       | 75370 052506 |  |                                |
|       | 75371 043111 |  |                                |
|       | 75372 041511 |  |                                |
|       | 75373 042516 |  |                                |
|       | 75374 052040 |  |                                |
|       | 75375 042122 |  |                                |
|       | 75376 052515 |  |                                |
|       | 75377 020123 |  |                                |
|       | 75400 050101 |  |                                |
|       | 75401 041505 |  |                                |
| 0753  | 00336        |  | SANFE EQU .-++SANE+1           |
| 0754  | 00036        |  | SANLA EQU LTEMP+6              |
| 0755  | 00037        |  | SANLB EQU LTEMP+7              |
| 0756  | 00040        |  | SANLC EQU LTEMP+8              |

|      |       |        |       |     |         |
|------|-------|--------|-------|-----|---------|
| 0757 | 00041 |        | SANLD | EQU | LTEMP+9 |
| 0758 | 75402 | 020000 | SANBK | DEC | 8192    |
| 0759 | 75403 |        | SSAN  | EQU | *       |

```

0002*
0003* THIS ROUTINE IS USED TO RESTORE FILES AND
0004* PROGRAMS TO THEIR DISC AREAS. THE DRUM SPACE
0005* IS RESTORE TO THE ADT.
0006* IF THE ENTRY IS A FILE, IT IS COPIED BACK TO
0007* THE DISC. IF THE ENTRY IS A PROGRAM, IT IS
0008* NOT NECESSARY TO COPY IT BACK, SINCE THE DRUM
0009* COPY CANNOT BE ALTERED.
0010*
0011*
0012 75000 ORG LIBRA
0013 75000 016315 JSB GETID GET THE ID CODE
0014 75001 002001 RSS
0015 75002 026275 JMP LFRER FORMAT ERROR
0016 75003 050426 CPA .+54B COMMA?
0017 75004 002401 CLA,RSS YES
0018 75005 026275 JMP LFRER NO, ERROR
0019 75006 070055 STA T35LC
0020 75007 017215 JSB DESIP GET THREE
0021 75010 070031 STA LTEMP+1
0022 75011 017215 JSB DESIP WORDS OF
0023 75012 070032 STA LTEMP+2
0024 75013 017215 JSB DESIP NAME
0025 75014 070033 STA LTEMP+3
0026*
0027 75015 114572 JSB T35CH,I CR FOLLOWS?
0028 75016 002001 RSS YES
0029 75017 026275 JMP LFRER NO, ERROR
0030 75020 060052 LDA ID SAVE ID
0031 75021 070030 STA LTEMP FOR DLOOK
0032*
0033* SEARCH DIRECTORY FOR THIS ENTRY
0034*
0035 75022 116005 JSB DLOKP,I
0036 75023 027027 JMP DES1 FOUND
0037*
0038 75024 063244 LDA DESEA "ENTRY NOT PRESENT"
0039 75025 064341 LDB DESFA
0040 75026 027200 JMP DESIL
0041*
0042 75027 DES1 EQU *
0043 75027 064035 LDB LTEMP+5
0044 75030 044361 ADB .+7
0045 75031 160001 LDA B,I GET DRUM ADDRESS
0046 75032 002002 SZA ZERO?
0047 75033 027037 JMP DES2 NO
0048 75034 063276 LDA DESEC "ENTRY NOT SANCTIFIED"
0049 75035 064337 LDB DESFC
0050 75036 027200 JMP DESIL
0051 75037 DES2 EQU *
0052 75037 070044 STA KILD SAVE DRUM ADDRESS
0053 75040 044356 ADB .+4
0054 75041 160001 LDA B,I GET LENGTH
0055 75042 002021 SSA,RSS FILE?
0056 75043 027056 JMP DES3 YES

```

|       |                                  |        |             |                        |
|-------|----------------------------------|--------|-------------|------------------------|
| 0057  | 75044                            | 001121 | ARS,ARS     | NO, CONVERT            |
| 0058  | 75045                            | 001121 | ARS,ARS     |                        |
| 0059  | 75046                            | 001121 | ARS,ARS     | PROGRAM LENGTH         |
| 0060  | 75047                            | 003004 | CMA,INA     |                        |
| 0061  | 75050                            | 070045 | STA KILDF   | TO SECTORS             |
| 0062  | 75051                            | 044346 | ADB ,=4     | ZERO                   |
| 0063  | 75052                            | 002400 | CLA         | DRUM                   |
| 0064  | 75053                            | 170001 | STA B,I     | ADDRESS                |
| 0065  | 75054                            | 017226 | JSB DESDW   | GO WRITE OUT DIRECTORY |
| 0066  | 75055                            | 027160 | JMP DES7    |                        |
| 0067* |                                  |        |             |                        |
| 0068  | 75056                            |        | DES3 EQU *  |                        |
| 0069  | 75056                            | 001020 | ALS,ALS     | CONVERT FILE           |
| 0070  | 75057                            | 070045 | STA KILDF   | LENGTH TO SECTORS      |
| 0071  | 75060                            | 002400 | CLA         | SET UP                 |
| 0072  | 75061                            | 070215 | STA MWORD   |                        |
| 0073  | 75062                            | 044347 | ADB ,=3     | FOR EARLY              |
| 0074  | 75063                            | 060001 | LDA B       |                        |
| 0075  | 75064                            | 114212 | JSB DISCA,I | SEEK                   |
| 0076  | 75065                            | 102030 | HLT 30B     |                        |
| 0077  | 75066                            | 102031 | HLT 31B     |                        |
| 0078* |                                  |        |             |                        |
| 0079* | CHECK FUSS TABLE FOR FILE IN USE |        |             |                        |
| 0080* |                                  |        |             |                        |
| 0081  | 75067                            | 104200 | DLD B,I     | SAVE DISC              |
|       | 75070                            | 100001 |             |                        |
| 0082  | 75071                            | 104400 | DST DESLB   | ADDRESS                |
|       | 75072                            | 000040 |             |                        |
| 0083  | 75073                            | 060732 | LDA M2000   |                        |
| 0084  | 75074                            | 070072 | STA WORD    |                        |
| 0085  | 75075                            | 001100 | ARS         | COUNT                  |
| 0086  | 75076                            | 070037 | STA DESCT   | OF ENTRIES             |
| 0087  | 75077                            | 160540 | LDA FUSS,I  | READ                   |
| 0088  | 75100                            | 067322 | LDB DESRA   | FUSS                   |
| 0089  | 75101                            | 016231 | JSB DRUML   | TABLE                  |
| 0090  | 75102                            | 116015 | JSB SICKP,I |                        |
| 0091* |                                  |        |             |                        |
| 0092  | 75103                            | 065002 | LDB L8192   | •> FIRST ENTRY         |
| 0093  | 75104                            |        | DES4 EQU *  |                        |
| 0094  | 75104                            | 160001 | LDA B,I     |                        |
| 0095  | 75105                            | 006004 | INB         |                        |
| 0096  | 75106                            | 050040 | CPA DESLB   | FIRST WORD MATCH       |
| 0097  | 75107                            | 002001 | RSS         | YES                    |
| 0098  | 75110                            | 027114 | JMP DES5    | NO                     |
| 0099  | 75111                            | 160001 | LDA B,I     |                        |
| 0100  | 75112                            | 050041 | CPA DESLB+1 | SECOND WORD MATCH?     |
| 0101  | 75113                            | 027176 | JMP DESIL-2 | YES, CAN'T DESECRATE   |
| 0102  | 75114                            |        | DES5 EQU *  |                        |
| 0103  | 75114                            | 006004 | INB         | NO                     |
| 0104  | 75115                            | 034037 | ISZ DESCT   | FINISHED TABLE?        |
| 0105  | 75116                            | 027104 | JMP DES4    | NO                     |
| 0106* |                                  |        |             |                        |
| 0107* | UPDATE DIRECTORY                 |        |             |                        |
| 0108* |                                  |        |             |                        |
| 0109  | 75117                            | 064035 | LDB LTEMP+5 |                        |

|       |                          |        |         |         |                               |
|-------|--------------------------|--------|---------|---------|-------------------------------|
| 0110  | 75120                    | 044361 | ADB     | +.7     |                               |
| 0111  | 75121                    | 002400 | CLA     |         | ZERO DRUM                     |
| 0112  | 75122                    | 170001 | STA     | B,I     | ADDRESS                       |
| 0113  | 75123                    | 006004 | INB     |         |                               |
| 0114  | 75124                    | 104200 | DLB     | B,I     | SAVE DISC                     |
|       | 75125                    | 100001 |         |         |                               |
| 0115  | 75126                    | 104400 | DST     | DESLB   | ADDRESS                       |
|       | 75127                    | 000040 |         |         |                               |
| 0116  | 75130                    | 017226 | JSB     | DESDW   | WRITE OUT                     |
| 0117  | 75131                    | 060045 | LDA     | KILDF   | CONVERT                       |
| 0118  | 75132                    | 001700 | ALF     |         |                               |
| 0119  | 75133                    | 001020 | ALS,ALS |         | SECTORS                       |
| 0120  | 75134                    | 003004 | CMA,INA |         |                               |
| 0121  | 75135                    | 070072 | STA     | WORD    | TO WORDS                      |
| 0122  | 75136                    | 070215 | STA     | MWORD   |                               |
| 0123* |                          |        |         |         |                               |
| 0124* | COP FILE TO DISC         |        |         |         |                               |
| 0125* |                          |        |         |         |                               |
| 0126  | 75137                    | 060044 | LDA     | KILD    | READ                          |
| 0127  | 75140                    | 064566 | LDB     | LIBDI   | FILES                         |
| 0128  | 75141                    | 016231 | JSB     | DRUML   |                               |
| 0129  | 75142                    | 027155 | JMP     | DES6    |                               |
| 0130* |                          |        |         |         |                               |
| 0131  | 75143                    | 063321 | LDA     | DESLP   | WRITE                         |
| 0132  | 75144                    | 064562 | LDB     | LIBD    | FILE                          |
| 0133  | 75145                    | 114212 | JSB     | DISCA,I | TO DISC                       |
| 0134  | 75146                    | 027145 | JMP     | *=1     | WAIT FOR READY                |
| 0135  | 75147                    | 102031 | HLT     | 31B     |                               |
| 0136  | 75150                    | 060214 | LDA     | MBUSY   | WAIT FOR                      |
| 0137  | 75151                    | 002020 | SSA     |         | TRANSFER                      |
| 0138  | 75152                    | 027150 | JMP     | *=2     | COMPLETE                      |
| 0139  | 75153                    | 002003 | SZA,RSS |         | SUCCESSFUL?                   |
| 0140  | 75154                    | 027160 | JMP     | DES7    | YES                           |
| 0141  | 75155                    |        | DES6    | EQU *   |                               |
| 0142  | 75155                    | 063256 | LDA     | DESEB   | "BAD TRASFER, FILE DESTROYED" |
| 0143  | 75156                    | 064333 | LDB     | DESF8   |                               |
| 0144  | 75157                    | 027200 | JMP     | DESIL   |                               |
| 0145* |                          |        |         |         |                               |
| 0146* | RETURN SPACE TO DRUM ADT |        |         |         |                               |
| 0147* |                          |        |         |         |                               |
| 0148  | 75160                    |        | DES7    | EQU *   |                               |
| 0149  | 75160                    | 060113 | LDA     | ADLEN   | READ                          |
| 0150  | 75161                    | 070072 | STA     | WORD    |                               |
| 0151  | 75162                    | 060112 | LDA     | ADLOC   | ADT TO                        |
| 0152  | 75163                    | 064566 | LDB     | LIBDI   |                               |
| 0153  | 75164                    | 016231 | JSB     | DRUML   | CORE                          |
| 0154  | 75165                    | 116015 | JSB     | SICKP,I |                               |
| 0155* |                          |        |         |         |                               |
| 0156  | 75166                    | 116012 | JSB     | RSFSP,I | RETURN SPACE TO ADT           |
| 0157* |                          |        |         |         |                               |
| 0158  | 75167                    | 060113 | LDA     | ADLEN   | WRITE                         |
| 0159  | 75170                    | 070072 | STA     | WORD    |                               |
| 0160  | 75171                    | 060112 | LDA     | ADLOC   | ADT TO                        |
| 0161  | 75172                    | 064562 | LDB     | LIBD    |                               |
| 0162  | 75173                    | 016231 | JSB     | DRUML   | DRUM                          |

|       |                            |        |       |                        |                      |
|-------|----------------------------|--------|-------|------------------------|----------------------|
| 0163  | 75174                      | 116015 |       | JSB SICKP,I            |                      |
| 0164* |                            |        |       |                        |                      |
| 0165  | 75175                      | 026267 |       | JMP LEND               |                      |
| 0166* |                            |        |       |                        |                      |
| 0167  | 75176                      | 063312 |       | LDA DESED              | "FILE IN USE         |
| 0168  | 75177                      | 064344 |       | LDB DESFD              |                      |
| 0169  | 75200                      |        | DESIL | EQU *                  |                      |
| 0170  | 75200                      | 070050 |       | STA MOVES              | MOVE ERROR           |
| 0171  | 75201                      | 060305 |       | LDA T35B1              |                      |
| 0172  | 75202                      | 070051 |       | STA MOVED              | MESSAGE TO           |
| 0173  | 75203                      | 074030 |       | STB LTEMP              |                      |
| 0174  | 75204                      | 016257 |       | JSB MOVEW              | TTY BUFFER           |
| 0175  | 75205                      | 060214 |       | LDA MBUSY              | WAIT FOR             |
| 0176  | 75206                      | 002020 |       | SSA                    | ADVANCE SEEK         |
| 0177  | 75207                      | 027205 |       | JMP +=2                | TO COMPLETE          |
| 0178  | 75210                      | 060030 |       | LDA LTEMP              |                      |
| 0179  | 75211                      | 001000 |       | ALS                    |                      |
| 0180  | 75212                      | 003004 |       | CMA,INA                |                      |
| 0181  | 75213                      | 064305 |       | LDB T35B1              |                      |
| 0182  | 75214                      | 026271 |       | JMP LEND+2             |                      |
| 0183* |                            |        |       |                        |                      |
| 0184* | GET TWO CHARACTERS OF NAME |        |       |                        |                      |
| 0185* |                            |        |       |                        |                      |
| 0186  | 75215                      | 000000 | DESIP | NOP                    |                      |
| 0187  | 75216                      | 114572 |       | JSB T35CH,I            | GET NEXT CHARACTER   |
| 0188  | 75217                      | 060412 |       | LDA ,+40B              | RETURN BLANKS AT END |
| 0189  | 75220                      | 001727 |       | ALF,ALF                | TO LEFT HALF         |
| 0190  | 75221                      | 070036 |       | STA DESLA              |                      |
| 0191  | 75222                      | 114572 |       | JSB T35CH,I            | GET NEXT CHARACTER   |
| 0192  | 75223                      | 060412 |       | LDA ,+40B              | RETURN BLANKS AT END |
| 0193  | 75224                      | 030036 |       | IOR DESLA              |                      |
| 0194  | 75225                      | 127215 |       | JMP DESIP,I            |                      |
| 0195* |                            |        |       |                        |                      |
| 0196* | WRITE OUT DIRECTORY        |        |       |                        |                      |
| 0197* |                            |        |       |                        |                      |
| 0198  | 75226                      | 000000 | DESDW | NOP                    |                      |
| 0199  | 75227                      | 064034 |       | LDB LTEMP+4            |                      |
| 0200  | 75230                      | 160001 |       | LDA B,I                |                      |
| 0201  | 75231                      | 070072 |       | STA WORD               |                      |
| 0202  | 75232                      | 044360 |       | ADB ,+6                |                      |
| 0203  | 75233                      | 160001 |       | LDA B,I                | DRUM ADDRESS         |
| 0204  | 75234                      | 064562 |       | LDB LIBD               | CORE ADDRESS         |
| 0205  | 75235                      | 016231 |       | JSB DRUML              | WRITE IT OUT         |
| 0206  | 75236                      | 002001 |       | RSS                    | ERROR                |
| 0207  | 75237                      | 127226 |       | JMP DESDW,I            |                      |
| 0208  | 75240                      | 060034 |       | LDA LTEMP+4            |                      |
| 0209  | 75241                      | 164000 |       | LDB A,I                | -LENGTH OF TRACK     |
| 0210  | 75242                      | 040360 |       | ADA ,+6                | => DRUM ADDRESS      |
| 0211  | 75243                      | 116016 |       | JSB SALVP,I            | ATTEMPT TO SALVAGE   |
| 0212* |                            |        |       |                        |                      |
| 0213  | 75244                      | 075245 | DESEA | DEF +=1                |                      |
| 0214  | 75245                      | 005105 |       | OCT 5105               |                      |
| 0215  | 75246                      | 047124 |       | ASC 0,NTRY NOT PRESENT |                      |
|       | 75247                      | 051131 |       |                        |                      |
|       | 75250                      | 020116 |       |                        |                      |

|       |       |        |       |                                    |
|-------|-------|--------|-------|------------------------------------|
|       | 75251 | 047524 |       |                                    |
|       | 75252 | 020120 |       |                                    |
|       | 75253 | 051105 |       |                                    |
|       | 75254 | 051505 |       |                                    |
|       | 75255 | 047124 |       |                                    |
| 0216  | 00341 |        | DESFA | EQU .***+DESEA+1                   |
| 0217  | 75256 | 075257 | DESEB | DEF **1                            |
| 0218  | 75257 | 005102 |       | OCT 5102                           |
| 0219  | 75260 | 040504 |       | ASC 14,AD TRANSFER, FILE DESTROYED |
|       | 75261 | 020124 |       |                                    |
|       | 75262 | 051101 |       |                                    |
|       | 75263 | 047123 |       |                                    |
|       | 75264 | 043105 |       |                                    |
|       | 75265 | 051054 |       |                                    |
|       | 75266 | 020106 |       |                                    |
|       | 75267 | 044514 |       |                                    |
|       | 75270 | 042440 |       |                                    |
|       | 75271 | 042105 |       |                                    |
|       | 75272 | 051524 |       |                                    |
|       | 75273 | 051117 |       |                                    |
|       | 75274 | 054505 |       |                                    |
|       | 75275 | 042040 |       |                                    |
| 0220  | 00333 |        | DESFB | EQU .***+DESEB+1                   |
| 0221  | 75276 | 075277 | DESEC | DEF **1                            |
| 0222  | 75277 | 005105 |       | OCT 5105                           |
| 0223  | 75300 | 047124 |       | ASC 10,NTRY NOT SANCTIFIED         |
|       | 75301 | 051131 |       |                                    |
|       | 75302 | 020116 |       |                                    |
|       | 75303 | 047524 |       |                                    |
|       | 75304 | 020123 |       |                                    |
|       | 75305 | 040516 |       |                                    |
|       | 75306 | 041524 |       |                                    |
|       | 75307 | 044506 |       |                                    |
|       | 75310 | 044505 |       |                                    |
|       | 75311 | 042040 |       |                                    |
| 0224  | 00337 |        | DESFC | EQU .***+DESEC+1                   |
| 0225  | 75312 | 075313 | DESED | DEF **1                            |
| 0226  | 75313 | 005106 |       | OCT 5106                           |
| 0227  | 75314 | 044514 |       | ASC 5,ILE IN USE                   |
|       | 75315 | 042440 |       |                                    |
|       | 75316 | 044516 |       |                                    |
|       | 75317 | 020125 |       |                                    |
|       | 75320 | 051505 |       |                                    |
| 0228  | 00344 |        | DESFD | EQU .***+DESED+1                   |
| 0229* |       |        |       |                                    |
| 0230  | 75321 | 000040 | DESLP | DEF DESLB                          |
| 0231  | 75322 | 121230 | DESRA | DEF LIBUS+8192,I                   |
| 0232* |       |        |       |                                    |
| 0233  | 00036 |        | DESLA | EQU LTEMP+6                        |
| 0234  | 00037 |        | DESCT | EQU LTEMP+7                        |
| 0235  | 00040 |        | DESLB | EQU LTEMP+8 9 USED ALSO            |
| 0236  | 75323 |        | SDES  | EQU *                              |



0238\* THE PURGE COMMAND MAKES IT POSSIBLE TO REMOVE FROM THE LIBRARY  
 0239\* PROGRAMS WHICH HAVE NOT BEEN ACCESSED FOR SOME PERIOD OF TIME.  
 0240\* THE FORMAT FOR THE COMMAND IS AS FOLLOWS:  
 0241\*  
 0242\* PURGE=DAY/YEAR  
 0243\*  
 0244\* WHERE DAY IS AN INTEGER FROM 1 TO 366 AND YEAR IS AN INTEGER FROM  
 0245\* 0 TO 99, ALL PROGRAMS OR FILES WHICH HAVE NOT BEEN ACCESSED SINCE  
 0246\* THE SPECIFIED DATE ARE DELETED FROM THE LIBRARY.  
 0247\*  
 0248\* PURGE WILL REFUSE TO OPERATE IF THE SPECIFIED DATE IS BEYOND  
 0249\* TODAY'S DATE,  
 0250\*

|       |                 |        |                |                                 |
|-------|-----------------|--------|----------------|---------------------------------|
| 0252  | 75000           |        | ORG LIBRA      |                                 |
| 0253  | 75000           | 104200 | DLD PZ999      | PREVENT HELLO PROGRAM           |
|       | 75001           | 075460 |                |                                 |
| 0254  | 75002           | 104400 | DST LTEMP      | FROM BEING PURGED.              |
|       | 75003           | 000030 |                |                                 |
| 0255  | 75004           | 104200 | DLD PURHE+1    |                                 |
|       | 75005           | 075462 |                |                                 |
| 0256  | 75006           | 104400 | DST LTEMP+2    |                                 |
|       | 75007           | 000032 |                |                                 |
| 0257  | 75010           | 116005 | JSB DLOKP,I    | SEARCH DIRECTORY FOR ENTRY      |
| 0258  | 75011           | 002001 | RSS            |                                 |
| 0259  | 75012           | 027032 | JMP PUR2       |                                 |
| 0260  | 75013           | 016076 | JSB DATE       |                                 |
| 0261  | 75014           | 064035 | LDB LTEMP+5    |                                 |
| 0262  | 75015           | 044357 | ADB .+5        |                                 |
| 0263  | 75016           | 170001 | STA 1,I        |                                 |
| 0264  | 75017           | 060034 | LDA LTEMP+4    |                                 |
| 0265  | 75020           | 040360 | ADA .+6        |                                 |
| 0266  | 75021           | 070037 | STA PURP       |                                 |
| 0267  | 75022           | 160000 | LDA 0,I        |                                 |
| 0268  | 75023           | 064562 | LDB LIBD       |                                 |
| 0269  | 75024           | 016231 | JSB DRUML      |                                 |
| 0270  | 75025           | 002001 | RSS            |                                 |
| 0271  | 75026           | 027032 | JMP PUR2       |                                 |
| 0272  | 75027           | 064072 | LDB WORD       |                                 |
| 0273  | 75030           | 060037 | LDA PURP       |                                 |
| 0274  | 75031           | 116016 | JSB SALVP,I    |                                 |
| 0275* |                 |        |                |                                 |
| 0276* | INTERPRET DATE. |        |                |                                 |
| 0277* |                 |        |                |                                 |
| 0278  | 75032           | 017074 | PUR2 JSB PURNO | GET DAY OF YEAR.                |
| 0279  | 75033           | 177221 | DEC =367       |                                 |
| 0280  | 75034           | 050431 | CPA .+57B      | TEST FOR NONZERO AND SLASH FOL- |
| 0281  | 75035           | 006003 | SZB,RSS        | LOWING.                         |
| 0282  | 75036           | 027131 | JMP PUR1       | PARAMETER ERROR.                |
| 0283  | 75037           | 074040 | STB PURDT      | SAVE DATE.                      |
| 0284  | 75040           | 017074 | JSB PURNO      | NOW GET THE YEAR.               |
| 0285  | 75041           | 177634 | DEC =100       |                                 |
| 0286  | 75042           | 050367 | CPA .+15B      | CHECK FOR RETURN FOLLOWING.     |

|       |                                                                 |        |       |               |                                 |
|-------|-----------------------------------------------------------------|--------|-------|---------------|---------------------------------|
| 0287  | 75043                                                           | 002401 |       | CLA, RSS      |                                 |
| 0288  | 75044                                                           | 027131 |       | JMP PUR1      |                                 |
| 0289* |                                                                 |        |       |               |                                 |
| 0290  | 75045                                                           | 101107 |       | RRR 7         | MERGE YEAR AND DATE.            |
| 0291  | 75046                                                           | 030040 |       | IOR PURDT     |                                 |
| 0292  | 75047                                                           | 070040 |       | STA PURDT     |                                 |
| 0293  | 75050                                                           | 016076 |       | JSB DATE      | NOW GET TODAY'S DATE.           |
| 0294  | 75051                                                           | 064040 |       | LDB PURDT     | MAKE SURE SPECIFIED DATE IS     |
| 0295  | 75052                                                           | 007104 |       | CMB, CLE, INB | <= TODAY'S DATE                 |
| 0296  | 75053                                                           | 040001 |       | ADA 1         |                                 |
| 0297  | 75054                                                           | 002041 |       | SEZ, RSS      |                                 |
| 0298  | 75055                                                           | 027131 |       | JMP PUR1      |                                 |
| 0299* |                                                                 |        |       |               |                                 |
| 0300* | THE NEXT STEP IS TO GUARANTEE THAT WE DON'T KILL ANY FILES CUR- |        |       |               |                                 |
| 0301* | RENTLY IN USE. TO DO THIS WE WILL CHECK THAT THE FUSS TABLE IS  |        |       |               |                                 |
| 0302* | EMPTY.                                                          |        |       |               |                                 |
| 0303* |                                                                 |        |       |               |                                 |
| 0304  | 75056                                                           | 060732 |       | LDA M2000     | INPUT FUSS                      |
| 0305  | 75057                                                           | 070072 |       | STA WORD      | TABLE.                          |
| 0306  | 75060                                                           | 160540 |       | LDA FUSS, I   |                                 |
| 0307  | 75061                                                           | 064566 |       | LDB LIBDI     |                                 |
| 0308  | 75062                                                           | 016231 |       | JSB DRUML     |                                 |
| 0309  | 75063                                                           | 116015 |       | JSB SICKP, I  |                                 |
| 0310* |                                                                 |        |       |               |                                 |
| 0311  | 75064                                                           | 064562 |       | LDB LIBD      |                                 |
| 0312  | 75065                                                           | 054536 | PUR4  | CPB L1024     | DONE?                           |
| 0313  | 75066                                                           | 027171 |       | JMP PUR3      | YES.                            |
| 0314  | 75067                                                           | 160001 |       | LDA 1, I      |                                 |
| 0315  | 75070                                                           | 002002 |       | SZA           |                                 |
| 0316  | 75071                                                           | 027144 |       | JMP PUR7      |                                 |
| 0317  | 75072                                                           | 006004 |       | INB           |                                 |
| 0318  | 75073                                                           | 027065 |       | JMP PUR4      |                                 |
| 0319* |                                                                 |        |       |               |                                 |
| 0320* | ROUTINE TO INPUT A NUMBER                                       |        |       |               |                                 |
| 0321* |                                                                 |        |       |               |                                 |
| 0322  | 75074                                                           | 000000 | PURNO | NOP           |                                 |
| 0323  | 75075                                                           | 017116 |       | JSB PURDG     | GET A DIGIT                     |
| 0324  | 75076                                                           | 026275 |       | JMP LFRER     | ILLEGAL IF NONE.                |
| 0325  | 75077                                                           | 074041 | PURN1 | STB PURN      | SAVE PARTIAL RESULT.            |
| 0326  | 75100                                                           | 147074 |       | ADB PURNO, I  | CHECK FOR OVERFLOW.             |
| 0327  | 75101                                                           | 006021 |       | SSB, RSS      |                                 |
| 0328  | 75102                                                           | 027131 |       | JMP PUR1      |                                 |
| 0329  | 75103                                                           | 017116 |       | JSB PURDG     | GET NEXT DIGIT.                 |
| 0330  | 75104                                                           | 027113 |       | JMP PURN2     | END OF NUMBER.                  |
| 0331  | 75105                                                           | 060041 |       | LDA PURN      | MULTIPLY PREVIOUS RESULT BY 10. |
| 0332  | 75106                                                           | 001222 |       | RAL, RAL      |                                 |
| 0333  | 75107                                                           | 040041 |       | ADA PURN      |                                 |
| 0334  | 75110                                                           | 001200 |       | RAL           |                                 |
| 0335  | 75111                                                           | 044000 |       | ADB 0         | ADD IN NEW VALUE                |
| 0336  | 75112                                                           | 027077 |       | JMP PURN1     | LOOP                            |
| 0337  | 75113                                                           | 064041 | PURN2 | LDB PURN      | RETURN NO.                      |
| 0338  | 75114                                                           | 037074 |       | ISZ PURNO     |                                 |
| 0339  | 75115                                                           | 127074 |       | JMP PURNO, I  |                                 |
| 0340* |                                                                 |        |       |               |                                 |
| 0341* |                                                                 |        |       |               |                                 |

|       |        |           |       |                        |                   |
|-------|--------|-----------|-------|------------------------|-------------------|
| 0342  | 75116  | 000000    | PURDG | NOP                    | GET DECIMAL DIGIT |
| 0343  | 75117  | 016025    |       | JSB T35CQ              | GET CHAR.         |
| 0344  | 75120  | 127116    |       | JMP PURDG,I            | NONE THERE.       |
| 0345  | 75121  | 064000    |       | LDB 0                  | DO DIGIT TEST.    |
| 0346  | 75122  | 044316    |       | ADB M72B               |                   |
| 0347  | 75123  | 006021    |       | SSB,RSS                |                   |
| 0348  | 75124  | 127116    |       | JMP PURDG,I            |                   |
| 0349  | 75125  | 044364    |       | ADB ,+10               |                   |
| 0350  | 75126  | 006021    |       | SSB,RSS                |                   |
| 0351  | 75127  | 037116    |       | ISZ PURDG              |                   |
| 0352  | 75130  | 127116    |       | JMP PURDG,I            |                   |
| 0353* |        |           |       |                        |                   |
| 0354* | ERROR  | PRINT,    |       |                        |                   |
| 0355* |        |           |       |                        |                   |
| 0356  | 75131  | 064330    | PUR1  | LDB ,=18               |                   |
| 0357  | 75132  | 017155    |       | JSB PURER              |                   |
| 0358  | 75133  | 005111    |       | OCT 5111               |                   |
| 0359  | 75134  | 046114    |       | ASC 8,LLEGAL PARAMETER |                   |
|       | 75135  | 042507    |       |                        |                   |
|       | 75136  | 040514    |       |                        |                   |
|       | 75137  | 020120    |       |                        |                   |
|       | 75140  | 040522    |       |                        |                   |
|       | 75141  | 040515    |       |                        |                   |
|       | 75142  | 042524    |       |                        |                   |
|       | 75143  | 042522    |       |                        |                   |
| 0360  | 75144  | 064337    | PUR7  | LDB ,=11               |                   |
| 0361  | 75145  | 017155    |       | JSB PURER              |                   |
| 0362  | 75146  | 005102    |       | OCT 5102               |                   |
| 0363  | 75147  | 052523    |       | ASC 6,USY FILES        |                   |
|       | 75150  | 054440    |       |                        |                   |
|       | 75151  | 043111    |       |                        |                   |
|       | 75152  | 046105    |       |                        |                   |
|       | 75153  | 051440    |       |                        |                   |
|       | 75154  | 020040    |       |                        |                   |
| 0364  | 75155  | 000000    | PURER | NOP                    |                   |
| 0365  | 75156  | 074041    |       | STB PURN               |                   |
| 0366  | 75157  | 060305    |       | LDA T35B1              |                   |
| 0367  | 75160  | 070051    |       | STA MOVED              |                   |
| 0368  | 75161  | 063155    |       | LDA PURER              |                   |
| 0369  | 75162  | 070050    |       | STA MOVES              |                   |
| 0370  | 75163  | 005100    |       | BRS                    |                   |
| 0371  | 75164  | 016257    |       | JSB MOVEW              |                   |
| 0372  | 75165  | 060041    |       | LDA PURN               |                   |
| 0373  | 75166  | 003004    |       | CMA,INA                |                   |
| 0374  | 75167  | 064305    |       | LDB T35B1              |                   |
| 0375  | 75170  | 026271    |       | JMP LEND+2             |                   |
| 0376* |        |           |       |                        |                   |
| 0377* |        |           |       |                        |                   |
| 0378* | SEARCH | DIRECTORY |       |                        |                   |
| 0379* |        |           |       |                        |                   |
| 0380  | 75171  |           | PUR3  | EQU *                  |                   |
| 0381  | 75171  | 002400    |       | CLA                    |                   |
| 0382  | 75172  | 070031    |       | STA PURCT              |                   |
| 0383  | 75173  | 065002    |       | LDB L8192              |                   |
| 0384  | 75174  | 074033    |       | STB PURTP              |                   |

|      |       |        |       |             |                           |
|------|-------|--------|-------|-------------|---------------------------|
| 0385 | 75175 | 067452 |       | LDB PUDIR   | FIRST DIRECTORY TRACK     |
| 0386 | 75176 |        | PUR11 | EQU *       |                           |
| 0387 | 75176 | 074032 |       | STB PURDI   |                           |
| 0388 | 75177 | 160001 |       | LDA B,I     |                           |
| 0389 | 75200 | 002002 |       | SZA         | LENGTH ZERO?              |
| 0390 | 75201 | 027210 |       | JMP PUR13   | NO                        |
| 0391 | 75202 |        | PUR12 | EQU *       |                           |
| 0392 | 75202 | 044361 |       | ADB .+7     | YES                       |
| 0393 | 75203 | 057453 |       | CPB PURDU   | LAST ONE?                 |
| 0394 | 75204 | 002001 |       | RSS         | YES                       |
| 0395 | 75205 | 027176 |       | JMP PUR11   | NO                        |
| 0396 | 75206 | 017362 |       | JSB PURFX   | FINISHE FIXUPS            |
| 0397 | 75207 | 026267 |       | JMP LEND    |                           |
| 0398 | 75210 |        | PUR13 | EQU *       |                           |
| 0399 | 75210 | 070072 |       | STA WORD    |                           |
| 0400 | 75211 | 003004 |       | CMA,INA     |                           |
| 0401 | 75212 | 040562 |       | ADA LIBD    |                           |
| 0402 | 75213 | 070036 |       | STA PURND   | END OF TABLE POINTER      |
| 0403 | 75214 | 044360 |       | ADB .+6     |                           |
| 0404 | 75215 | 160001 |       | LDA B,I     |                           |
| 0405 | 75216 | 064566 |       | LDB LIBDI   |                           |
| 0406 | 75217 | 016231 |       | JSB DRUML   | HEAD DIRECTORY TRACK      |
| 0407 | 75220 | 116017 |       | JSB DEADP,I |                           |
| 0408 | 75221 | 064562 |       | LDB LIBD    |                           |
| 0409 | 75222 | 074050 |       | STB MOVES   |                           |
| 0410 | 75223 | 074051 |       | STB MOVED   |                           |
| 0411 | 75224 |        | PUR15 | EQU *       |                           |
| 0412 | 75224 | 074037 |       | STB PURP    | TABLE POINTER             |
| 0413 | 75225 | 044357 |       | ADB .+5     |                           |
| 0414 | 75226 | 060040 |       | LDA PURDT   |                           |
| 0415 | 75227 | 003104 |       | CMA,CLE,INA |                           |
| 0416 | 75230 | 140001 |       | ADA B,I     |                           |
| 0417 | 75231 | 002040 |       | SEZ         | THIS ENTRY TO BE DELETED? |
| 0418 | 75232 | 027333 |       | JMP PUR16   | NO                        |
| 0419 | 75233 | 044345 |       | ADB .-5     | YES                       |
| 0420 | 75234 | 160001 |       | LDA B,I     | SAVE ID                   |
| 0421 | 75235 | 170033 |       | STA PURTP,I |                           |
| 0422 | 75236 | 044365 |       | ADB .+11    |                           |
| 0423 | 75237 | 034033 |       | ISZ PURTP   |                           |
| 0424 | 75240 | 160001 |       | LDA B,I     | GET LENGTH                |
| 0425 | 75241 | 002021 |       | SSA,RSS     |                           |
| 0426 | 75242 | 027246 |       | JMP **4     |                           |
| 0427 | 75243 | 001727 |       | ALF,ALF     |                           |
| 0428 | 75244 | 030762 |       | IOR HIMSK   |                           |
| 0429 | 75245 | 003004 |       | CMA,INA     |                           |
| 0430 | 75246 | 170033 |       | STA PURTP,I | SAVE + BLOCKS             |
| 0431 | 75247 | 034033 |       | ISZ PURTP   |                           |
| 0432 | 75250 | 044347 |       | ADB .-3     |                           |
| 0433 | 75251 | 160001 |       | LDA B,I     | FIRST DISC WORD           |
| 0434 | 75252 | 170033 |       | STA PURTP,I |                           |
| 0435 | 75253 | 034033 |       | ISZ PURTP   |                           |
| 0436 | 75254 | 006004 |       | INB         |                           |
| 0437 | 75255 | 160001 |       | LDA B,I     | SECOND DISC WORD          |
| 0438 | 75256 | 170033 |       | STA PURTP,I |                           |
| 0439 | 75257 | 034033 |       | ISZ PURTP   |                           |

|       |       |        |             |                     |
|-------|-------|--------|-------------|---------------------|
| 0440  | 75260 | 044350 | ADB ,=2     |                     |
| 0441  | 75261 | 160001 | LDA B,I     | DRUM ADDRESS        |
| 0442  | 75262 | 170033 | STA PURTP,I |                     |
| 0443  | 75263 | 034033 | ISZ PURTP   |                     |
| 0444* |       |        |             |                     |
| 0445  | 75264 | 064037 | LDB PURP    | MOVE                |
| 0446  | 75265 | 007004 | CMB,INB     | PORTION             |
| 0447  | 75266 | 044050 | ADB MOVES   | OF                  |
| 0448  | 75267 | 016257 | JSB MOVEW   | DIRECTORY           |
| 0449  | 75270 | 064037 | LDB PURP    |                     |
| 0450  | 75271 | 044366 | ADB ,+12    |                     |
| 0451  | 75272 | 074050 | STB MOVES   | UPDATE POINTER      |
| 0452  | 75273 | 160032 | LDA PURDI,I | UPDATE              |
| 0453  | 75274 | 040366 | ADA ,+12    | DIRECTORY           |
| 0454  | 75275 | 170032 | STA PURDI,I | LENGTH              |
| 0455  | 75276 | 064031 | LDB PURCT   | COUNT               |
| 0456  | 75277 | 006004 | INB         | OF TABLE            |
| 0457  | 75300 | 074031 | STB PURCT   | ENTRIES             |
| 0458  | 75301 | 057454 | CPB P409    | FULL?               |
| 0459  | 75302 | 002001 | RSS         | YES                 |
| 0460  | 75303 | 027333 | JMP PUR16   | NO                  |
| 0461  | 75304 | 060050 | LDA MOVES   |                     |
| 0462  | 75305 | 073450 | STA PUKES   |                     |
| 0463  | 75306 | 060051 | LDA MOVED   |                     |
| 0464  | 75307 | 073451 | STA PUKED   |                     |
| 0465  | 75310 | 064562 | LDB LIBD    | WRITE               |
| 0466  | 75311 | 060032 | LDA PURDI   | OUT                 |
| 0467  | 75312 | 040360 | ADA ,+6     | INTERIM             |
| 0468  | 75313 | 160000 | LDA A,I     | DIRECTORY           |
| 0469  | 75314 | 016231 | JSB DRUML   |                     |
| 0470  | 75315 | 116017 | JSB DEADP,I |                     |
| 0471  | 75316 | 017362 | JSB PURFX   | CALL FIXUP ROUTINE  |
| 0472  | 75317 | 063450 | LDA PUKES   |                     |
| 0473  | 75320 | 070050 | STA MOVES   |                     |
| 0474  | 75321 | 063451 | LDA PUKED   |                     |
| 0475  | 75322 | 070051 | STA MOVED   |                     |
| 0476  | 75323 | 063455 | LDA K8192   |                     |
| 0477  | 75324 | 070072 | STA WORD    |                     |
| 0478  | 75325 | 060032 | LDA PURDI   |                     |
| 0479  | 75326 | 040360 | ADA ,+6     |                     |
| 0480  | 75327 | 160000 | LDA A,I     |                     |
| 0481  | 75330 | 064566 | LDB LIBDI   |                     |
| 0482  | 75331 | 016231 | JSB DRUML   | READ DIRECTORY BACK |
| 0483  | 75332 | 116017 | JSB DEADP,I |                     |
| 0484* |       |        |             |                     |
| 0485  | 75333 |        | PUR16 EQU * |                     |
| 0486  | 75333 | 064037 | LDB PURP    |                     |
| 0487  | 75334 | 044366 | ADB ,+12    |                     |
| 0488  | 75335 | 054036 | CPB PURND   | FINISHED TRACK      |
| 0489  | 75336 | 002001 | RSS         | YES                 |
| 0490  | 75337 | 027224 | JMP PUR15   | NO                  |
| 0491  | 75340 | 007004 | CMB,INB     | END                 |
| 0492  | 75341 | 044050 | ADB MOVES   | OF                  |
| 0493  | 75342 | 016257 | JSB MOVEW   | DIRECTORY           |
| 0494  | 75343 | 064032 | LDB PURDI   |                     |

|       |                                       |        |                 |                     |
|-------|---------------------------------------|--------|-----------------|---------------------|
| 0495  | 75344                                 | 160001 | LDA B,I         |                     |
| 0496  | 75345                                 | 070072 | STA WORD        |                     |
| 0497  | 75346                                 | 006004 | INB             |                     |
| 0498  | 75347                                 | 074051 | STB MOVED       |                     |
| 0499  | 75350                                 | 044357 | ADB .+5         |                     |
| 0500  | 75351                                 | 160001 | LDA B,I         |                     |
| 0501  | 75352                                 | 064562 | LDB LIBD        |                     |
| 0502  | 75353                                 | 074050 | STB MOVES       |                     |
| 0503  | 75354                                 | 016231 | JSB DRUML       | WRITE OUT DIRECTORY |
| 0504  | 75355                                 | 116017 | JSB DEADP,I     |                     |
| 0505  | 75356                                 | 064346 | LDB .-4         | RESET               |
| 0506  | 75357                                 | 016257 | JSB MOVEW       | DIREC               |
| 0507  | 75360                                 | 064032 | LDB PURDI       | GO DO               |
| 0508  | 75361                                 | 027202 | JMP PUR12       | NEXT TRACK          |
| 0509* |                                       |        |                 |                     |
| 0510* | RETURN SPACE TO IDT, ADT AND DISC ADT |        |                 |                     |
| 0511* |                                       |        |                 |                     |
| 0512  | 75362                                 | 000000 | PURFX NOP       |                     |
| 0513  | 75363                                 | 060031 | LDA PURCT       |                     |
| 0514  | 75364                                 | 003007 | CMA,INA,SZA,RSS |                     |
| 0515  | 75365                                 | 127362 | JMP PURFX,I     | NO WORK TO DO       |
| 0516  | 75366                                 | 070030 | STA PURTC       |                     |
| 0517  | 75367                                 | 070031 | STA PURCT       |                     |
| 0518  | 75370                                 | 060113 | LDA ADLEN       |                     |
| 0519  | 75371                                 | 070072 | STA WORD        |                     |
| 0520  | 75372                                 | 060112 | LDA ADLOC       |                     |
| 0521  | 75373                                 | 064566 | LDB LIBDI       |                     |
| 0522  | 75374                                 | 016231 | JSB DRUML       | READ ADT            |
| 0523  | 75375                                 | 116017 | JSB DEADP,I     |                     |
| 0524  | 75376                                 | 065002 | LDB LB192       |                     |
| 0525  | 75377                                 | 074050 | STB MOVES       |                     |
| 0526  | 75400                                 | 074051 | STB MOVED       |                     |
| 0527  | 75401                                 | 044356 | ADB .+4         |                     |
| 0528  | 75402                                 |        | PURF1 EQU *     |                     |
| 0529  | 75402                                 | 074033 | STB PURTP       |                     |
| 0530  | 75403                                 | 160001 | LDA B,I         | GET DRUM ADDRESS    |
| 0531  | 75404                                 | 002003 | SZA,RSS         | ZERO?               |
| 0532  | 75405                                 | 027424 | JMP PURF2       | YES                 |
| 0533  | 75406                                 | 070044 | STA KILD        | NO, SAVE IT         |
| 0534  | 75407                                 | 044347 | ADB .-3         |                     |
| 0535  | 75410                                 | 160001 | LDA B,I         |                     |
| 0536  | 75411                                 | 001020 | ALS,ALS         |                     |
| 0537  | 75412                                 | 070045 | STA KILDF       | SAVE # OF SECTORS   |
| 0538  | 75413                                 | 064050 | LDB MOVES       |                     |
| 0539  | 75414                                 | 077446 | STB PURES       |                     |
| 0540  | 75415                                 | 064051 | LDB MOVED       |                     |
| 0541  | 75416                                 | 077447 | STB PURED       |                     |
| 0542  | 75417                                 | 116012 | JSB RSFSP,I     | RETURN SPACE TO ADT |
| 0543  | 75420                                 | 067446 | LDB PURES       |                     |
| 0544  | 75421                                 | 074050 | STB MOVES       |                     |
| 0545  | 75422                                 | 067447 | LDB PURED       |                     |
| 0546  | 75423                                 | 074051 | STB MOVED       |                     |
| 0547  | 75424                                 |        | PURF2 EQU *     |                     |
| 0548  | 75424                                 | 064346 | LDB .-4         | MOVE TABLE          |
| 0549  | 75425                                 | 016257 | JSB MOVEW       | TO DELETE           |

```

0550 75426 034050 ISZ MOVES
0551 75427 064033 LDB PURTP
0552 75430 044357 ADB .+5
0553 75431 034031 ISZ PURCT
0554 75432 027402 JMP PURF1
0555 75433 060113 LDA ADLEN
0556 75434 070072 STA WORD
0557 75435 060112 LDA ADLOC
0558 75436 064562 LDB LIBD
0559 75437 016231 JSB DRUML
0560 75440 116017 JSB DEADP,I
0561 75441 117456 JSB PURUD,I
0562 75442 117457 JSB PURUI,I
0563 75443 065002 LDB LB192
0564 75444 074033 STB PURTP
0565 75445 127362 JMP PURFX,I
0566+
0567 00030 PURTC EQU LTEMP
0568 00031 PURCT EQU LTEMP+1
0569 00032 PURDI EQU LTEMP+2
0570 00033 PURTP EQU LTEMP+3
0571 00036 PURND EQU LTEMP+6
0572 00037 PURP EQU LTEMP+7
0573 00040 PURDT EQU LTEMP+8
0574 00041 PURN EQU LTEMP+9
0575 75446 000000 PURES BSS 1
0576 75447 000000 PURED BSS 1
0577 75450 000000 PUKES BSS 1
0578 75451 000000 PUKED BSS 1
0579 75452 030000 PUDIR DEF DIREC
0580 75453 031060 PURDU DEF DIREU
0581 75454 000631 P409 DEC 409
0582 75455 160000 K0192 DEC -0192
0583 75456 072612 PURUD DEF TBDAD
0584 75457 072727 PURUI DEF TBIDT
0585 75460 065747 PZ999 OCT 65747
0586 75461 044105 PURHE ASC 3,HELLO
 75462 046114
 75463 047440
0587 75464 SPUR EQU *
```

```

DRUM ADDRESS
BUMP
POINTER
TABLE DONE ?
NO
YES
```

WRITE OUT ADT

```

RETURN SPACE TO DISC ADT
RETURN SPACE TO IDT
```

USER NUMBER Z999

0002\* THE MAGTAPE COMMAND IS USED TO TELL THE SYSTEM OF THE EXISTENCE  
 0003\* OF A MAGTAPE UNIT. THE FORMAT IS:  
 0004\* MAGTAPE=SELECT CODE, TYPE  
 0005\* THE SELECT CODE SPECIFIED IS THE LOWER NUMBERED OF THE 2  
 0006\* CODES FOR THE TAPE, A CODE OF 0 INDICATES THAT NO TAPE EXISTS.

|       |       |        |                |                                |
|-------|-------|--------|----------------|--------------------------------|
| 0008  | 75000 |        | ORG LIBRA      |                                |
| 0009  | 75000 | 017036 | JSB MAGDG      | GET FIRST DIGIT,               |
| 0010  | 75001 | 001723 | ALF,RAR        | MULTIPLY BY 8 AND SAVE.        |
| 0011  | 75002 | 070030 | STA LTEMP      |                                |
| 0012  | 75003 | 002003 | SZA,RSS        |                                |
| 0013  | 75004 | 027033 | JMP MAG1       | GET 2ND DIGIT,                 |
| 0014  | 75005 | 017036 | JSB MAGDG      | COMPUTE #.                     |
| 0015  | 75006 | 040030 | ADA LTEMP      |                                |
| 0016  | 75007 | 070030 | STA LTEMP      |                                |
| 0017  | 75010 | 050734 | CPA B77        | ILLEGAL IF 77.                 |
| 0018  | 75011 | 026275 | JMP LFRER      |                                |
| 0019  | 75012 | 040333 | ADA ,-17B      | LESS THAN                      |
| 0020  | 75013 | 002020 | SSA            | 17 OCTAL?                      |
| 0021  | 75014 | 026275 | JMP LFRER      | YES                            |
| 0022  | 75015 | 016025 | JSB T35CQ      | NO, NEXT CHARACTER             |
| 0023  | 75016 | 027030 | JMP MAG5       | CR, MUST BE OLD STANDBY (3030) |
| 0024  | 75017 | 050424 | CPA ,+52B      | ASTERISK?                      |
| 0025  | 75020 | 002001 | RSS            | YES                            |
| 0026  | 75021 | 026275 | JMP LFRER      | NO                             |
| 0027  | 75022 | 016025 | JSB T35CQ      | YES, CARRIAGE RETURN FOLLOWS?  |
| 0028  | 75023 | 002001 | RSS            | YES                            |
| 0029  | 75024 | 026275 | JMP LFRER      | NO                             |
| 0030  | 75025 | 060030 | LDA LTEMP      | FLAG                           |
| 0031  | 75026 | 031036 | IOR BIT15      | AS                             |
| 0032  | 75027 | 002001 | RSS            | 7970                           |
| 0033  | 75030 | 060030 | MAG5 LDA LTEMP |                                |
| 0034  | 75031 | 070176 | STA MAG5C      | STORE IN SYSTEM LOCATION.      |
| 0035  | 75032 | 026267 | JMP LEND       |                                |
| 0036  | 75033 | 016025 | MAG1 JSB T35CQ | MORE CHARACTERS                |
| 0037  | 75034 | 027030 | JMP MAG5       | NO                             |
| 0038  | 75035 | 026275 | JMP LFRER      | NO--ERROR                      |
| 0039* |       |        |                |                                |
| 0040  | 75036 | 000000 | MAGDG NOP      | GET AN OCTAL DIGIT.            |
| 0041  | 75037 | 016025 | JSB T35CQ      |                                |
| 0042  | 75040 | 026275 | JMP LFRER      | FAIL IF NONE.                  |
| 0043  | 75041 | 070001 | STA 1          |                                |
| 0044  | 75042 | 010342 | AND ,-8        | TEST FOR OCTAL DIGIT.          |
| 0045  | 75043 | 050432 | CPA ,+60B      |                                |
| 0046  | 75044 | 002001 | RSS            |                                |
| 0047  | 75045 | 026275 | JMP LFRER      | FAIL.                          |
| 0048  | 75046 | 020001 | XOR 1          | CONVERT TO BINARY.             |
| 0049  | 75047 | 127036 | JMP MAGDG,I    | RETURN.                        |
| 0050  | 75050 |        | SMAG EQU *     |                                |



0052+ THE FORMAT FOR THE PHONES COMMAND IS:

0053+

0054+ PHONES=TIME LIMIT

0055+

0056+ TIME LIMIT REFERS TO THE NUMBER OF SECONDS ALLOWED A USER TO  
 0057+ LOG ON, IT IS ORIGINALLY ASSUMED TO BE 120.

0058+

|      |       |        |                |                              |
|------|-------|--------|----------------|------------------------------|
| 0059 | 75000 |        | ORG LIBRA      |                              |
| 0060 | 75000 | 002400 | CLA            | INITIALIZE COUNT TO 0.       |
| 0061 | 75001 | 070030 | PH06 STA LTEMP |                              |
| 0062 | 75002 | 040762 | ADA M256       | TEST FOR                     |
| 0063 | 75003 | 002021 | SSA,RSS        | TOO                          |
| 0064 | 75004 | 026275 | JMP LFRER      | BIG                          |
| 0065 | 75005 | 016025 | JSB T35CQ      | GET A CHAR.                  |
| 0066 | 75006 | 027023 | JMP PH05       | LAST CHAR.                   |
| 0067 | 75007 | 040316 | ADA M72B       | TEST FOR DIGIT.              |
| 0068 | 75010 | 002021 | SSA,RSS        |                              |
| 0069 | 75011 | 026275 | JMP LFRER      |                              |
| 0070 | 75012 | 040364 | ADA .+10       |                              |
| 0071 | 75013 | 002020 | SSA            |                              |
| 0072 | 75014 | 026275 | JMP LFRER      |                              |
| 0073 | 75015 | 064030 | LDB LTEMP      | MULTIPLY OLD VALUE BY 10 AND |
| 0074 | 75016 | 005222 | RBL,RBL        | ADD IN NEW.                  |
| 0075 | 75017 | 044030 | ADB LTEMP      |                              |
| 0076 | 75020 | 005200 | RBL            |                              |
| 0077 | 75021 | 040001 | ADA 1          |                              |
| 0078 | 75022 | 027001 | JMP PH06       |                              |
| 0079 | 75023 | 060030 | PH05 LDA LTEMP | A=INPUT VALUE                |
| 0080 | 75024 | 002003 | SZA,RSS        | TEST FOR ZERO                |
| 0081 | 75025 | 026275 | JMP LFRER      | ERROR                        |
| 0082 | 75026 | 030223 | IOR PH0        | SEND TIME LIMIT              |
| 0083 | 75027 | 114500 | JSB S14SC,I    | TO 2114                      |
| 0084 | 75030 | 026267 | JMP LEND       | TERMINATE                    |
| 0085 | 75031 |        | SPHO EQU *     |                              |

0087\* THE PRINTER COMMAND IS USED TO TELL THE SYSTEM OF THE EXISTANCE  
 0088\* OF A LINE PRINTER. THE FORMAT IS:  
 0089\* PRINTER=SELECT CODE[\*] [\*]  
 0090\* A CODE OF 0 INDICATES THAT NO PRINTER EXISTS.

|       |       |        |                |                        |
|-------|-------|--------|----------------|------------------------|
| 0092  | 75000 |        | ORG LIBRA      |                        |
| 0093  | 75000 | 017050 | JSB PRIDG      | GET FIRST DIGIT        |
| 0094  | 75001 | 001723 | ALF, RAK       | MULTIPLY BY 8          |
| 0095  | 75002 | 070030 | STA LTEMP      | AND SAVE               |
| 0096  | 75003 | 002003 | SZA, RSS       | TEST FOR ZERO          |
| 0097  | 75004 | 027036 | JMP PRI1       | YES                    |
| 0098  | 75005 | 017050 | JSB PRIDG      | GET SECOND DIGIT       |
| 0099  | 75006 | 040030 | ADA LTEMP      | COMPUTE NUMBER         |
| 0100  | 75007 | 070030 | STA LTEMP      |                        |
| 0101  | 75010 | 040334 | ADA, =16B      | LESS THAN              |
| 0102  | 75011 | 002020 | SSA            | OCTAL 16?              |
| 0103  | 75012 | 026275 | JMP LFRER      | YES = ILLEGAL          |
| 0104  | 75013 | 040343 | ADA, =7B       | GREATER THAN           |
| 0105  | 75014 | 002021 | SSA, RSS       | OCTAL 24?              |
| 0106  | 75015 | 026276 | JMP LFRER      | YES = ILLEGAL          |
| 0107  | 75016 | 016025 | JSB T35CQ      | GET NEXT CHARACTER     |
| 0108  | 75017 | 027041 | JMP PRI2       | CR = MUST BE 2778A     |
| 0109  | 75020 | 050424 | CPA, +52B      | ASTERISK?              |
| 0110  | 75021 | 002001 | RSS            | YES                    |
| 0111  | 75022 | 026275 | JMP LFRER      | NO = ERROR             |
| 0112  | 75023 | 060030 | LDA LTEMP      | FLAG                   |
| 0113  | 75024 | 031036 | IOR BIT15      | AS                     |
| 0114  | 75025 | 070030 | STA LTEMP      | 2610A                  |
| 0115  | 75026 | 016025 | JSB T35CQ      | GET NEXT CHARACTER     |
| 0116  | 75027 | 027041 | JMP PRI2       | CR                     |
| 0117  | 75030 | 050424 | CPA, +52B      | ASTERISK?              |
| 0118  | 75031 | 002001 | RSS            | YES                    |
| 0119  | 75032 | 026275 | JMP LFRER      | NO = ERROR             |
| 0120  | 75033 | 060030 | LDA LTEMP      | FLAG                   |
| 0121  | 75034 | 030222 | IOR BIT14      | AS                     |
| 0122  | 75035 | 070030 | STA LTEMP      | 2767A                  |
| 0123  | 75036 | 016025 | PRI1 JSB T35CQ | NEXT CHARACTER         |
| 0124  | 75037 | 002001 | RSS            | CARRIAGE RETURN?       |
| 0125  | 75040 | 026275 | JMP LFRER      | NO = ERROR             |
| 0126  | 75041 | 060030 | PRI2 LDA LTEMP |                        |
| 0127  | 75042 | 001727 | ALF, ALF       | MOVE TO BITS 12-8      |
| 0128  | 75043 | 030245 | IOR P3C        | TELL I/O               |
| 0129  | 75044 | 114500 | JSB S14SC, I   | PROCESSOR              |
| 0130  | 75045 | 002400 | CLA            | CLEAR THE LINE PRINTER |
| 0131  | 75046 | 070255 | STA PRIST      | USER INDICATOR         |
| 0132  | 75047 | 026267 | JMP LEND       | TERMINATE              |
| 0133* |       |        |                |                        |
| 0134  | 75050 | 000000 | PRIDG NOP      | GET OCTAL DIGIT        |
| 0135  | 75051 | 016025 | JSB T35CQ      |                        |
| 0136  | 75052 | 026275 | JMP LFRER      | ERROR = NO INPUT       |
| 0137  | 75053 | 070001 | STA 1          |                        |
| 0138  | 75054 | 010342 | AND, =8        | TEST FOR OCTAL DIGIT   |
| 0139  | 75055 | 050432 | CPA, +60B      |                        |
| 0140  | 75056 | 002001 | RSS            |                        |
| 0141  | 75057 | 026275 | JMP LFRER      | ERROR = NOT OCTAL      |

0142 75060 020001  
0143 75061 127050  
0144 75062

XOR 1  
JMP PRIDG,I  
SPRI EQU \*

CONVERT TO BINARY

```

0146* THIS COMMAND IS USED TO CONFIGURE A PORT FOR A
0147* SPECIFIED SPEED & CHAR. SIZE.
0148*
0149* THE FORMAT FOR THIS OPERATORS COMMAND IS:
0150*
0151* SPEED=BAUD RATE,CHAR. SIZE OR *,PORT#,PORT#,...CR
0152* OR
0153* SPEED=BAUD RATE,CHAR. SIZE OR *,ALL CR
0154*
0155 75000 ORG LIBRA
0156 75000 060177 LDA NPORT SET UP LIMIT.
0157 75001 070032 STA SPDCN
0158 75002 063305 LDA PTABL SET TABLE ADDRESS.
0159 75003 070034 STA TABPN
0160 75004 002400 CLA ZERO OUT COUNTERS.
0161 75005 070031 STA SPDTM
0162 75006 070035 STA SPDOC
0163 75007 070030 STA SPDNR ZERO OUT SPEED INDICATOR.
0164 75010 070036 STA SPDSZ ZERO OUT CHAR.SIZE INDICATOR.
0165 75011 114572 JSB T35CH,I GET 1ST DIGIT OF SPEED.
0166 75012 026275 JMP LFRER CR, ERROR!
0167 75013 SPD01 EQU *
0168 75013 017176 JSB SPDDG NO CR, DIGIT?
0169 75014 017232 JSB SPDCK YES. COMPUTE SPEED INDICATOR.
0170*
0171 75015 114572 JSB T35CH,I GET NEXT CHAR.
0172 75016 026275 JMP LFRER CR, ERROR!
0173 75017 050426 CPA ,+54B NO CR, COMMA?
0174 75020 002001 RSS
0175 75021 027013 JMP SPD01 NO.
0176 75022 060030 LDA SPDNR YES. CHECK BAUD RATE.
0177 75023 043350 ADA BAUDL
0178 75024 002020 SSA LESS THAN 5B?
0179 75025 026275 JMP LFRER YES, ERROR!
0180 75026 060030 LDA SPDNR
0181 75027 043347 ADA BAUDH
0182 75030 002021 SSA,RSS GREATER THAN 277B?
0183 75031 026275 JMP LFRER YES, ERROR!
0184*
0185 75032 114572 JSB T35CH,I NO, GET NEXT CHAR.
0186 75033 026275 JMP LFRER CR, ERROR!
0187 75034 050424 CPA ,+52B NO CR, ASTERIK?
0188 75035 002001 RSS
0189 75036 027044 JMP SPD14 NO.
0190 75037 114572 JSB T35CH,I YES, GET NEXT CHAR.
0191 75040 026275 JMP LFRER CR, ERROR!
0192 75041 050426 CPA ,+54B NO CR, COMMA?
0193 75042 027061 JMP SPD03 YES.
0194 75043 026275 JMP LFRER NO, ERROR!
0195 75044 SPD14 EQU *
0196 75044 017176 JSB SPDDG DIGIT?
0197 75045 017242 JSB SPDCL YES. COMPUTE CHAR. SIZE.
0198 75046 114572 JSB T35CH,I GET NEXT CHAR.
0199 75047 026275 JMP LFRER CR, ERROR!
0200 75050 050426 CPA ,+54B NO CR, COMMA?

```

|       |       |        |         |         |                           |
|-------|-------|--------|---------|---------|---------------------------|
| 0201  | 75051 | 002001 | RSS     |         |                           |
| 0202  | 75052 | 027044 | JMP     | SPD14   | NO.                       |
| 0203  | 75053 | 060036 | LDA     | SPDSZ   | CHECK SPEED INDICATOR.    |
| 0204  | 75054 | 050354 | CPA     | ,+2     | =2?                       |
| 0205  | 75055 | 027061 | JMP     | SPD03   | YES.                      |
| 0206  | 75056 | 050353 | CPA     | ,+1     | NO. =1?                   |
| 0207  | 75057 | 002001 | RSS     |         | YES.                      |
| 0208  | 75060 | 026275 | JMP     | LFRRER  | NO, ERROR!                |
| 0209  | 75061 |        | SPD03   | EQU *   |                           |
| 0210  | 75061 | 114572 | JSB     | T35CH,I | GET NEXT CHAR.            |
| 0211  | 75062 | 026275 | JMP     | LFRRER  | CR, ERROR!                |
| 0212  | 75063 | 053351 | CPA     | SP,A    | NO CR, #A?                |
| 0213  | 75064 | 027114 | JMP     | SPD9    | YES.                      |
| 0214  | 75065 |        | SPD16   | EQU *   |                           |
| 0215  | 75065 | 017176 | JSB     | SPDDG   | NO, DIGIT?                |
| 0216  | 75066 |        | SPD17   | EQU *   |                           |
| 0217  | 75066 | 017252 | JSB     | SPDSP   | YES, COMPUTE PORT NR.     |
| 0218  | 75067 | 114572 | JSB     | T35CH,I | GET NEXT CHAR.            |
| 0219  | 75070 | 027074 | JMP     | SPD4    | CR.                       |
| 0220  | 75071 | 050426 | CPA     | ,+54B   | NO CR. COMMA?             |
| 0221  | 75072 | 002001 | RSS     |         | YES.                      |
| 0222  | 75073 | 027065 | JMP     | SPD16   | NO.                       |
| 0223  | 75074 |        | SPD4    | EQU *   |                           |
| 0224  | 75074 | 060031 | LDA     | SPDTM   | CHECK LIMIT.              |
| 0225  | 75075 | 040032 | ADA     | SPDCN   |                           |
| 0226  | 75076 | 002021 | SSA,RSS |         | GREATER THAN LIMIT?       |
| 0227  | 75077 | 026275 | JMP     | LFRRER  | YES, ERROR!               |
| 0228* |       |        |         |         |                           |
| 0229  | 75100 | 060031 | LDA     | SPDTM   | NO, PORT LOGGED ON?       |
| 0230  | 75101 | 017262 | JSB     | SPD11   |                           |
| 0231  | 75102 | 060031 | LDA     | SPDTM   | NO, SET PORT# INTO TABLE. |
| 0232  | 75103 | 017206 | JSB     | SPSET   |                           |
| 0233  | 75104 | 060055 | LDA     | T35LC   | PICK UP LAST CHAR.        |
| 0234  | 75105 | 050367 | CPA     | ,+15B   | WAS IT A CR?              |
| 0235  | 75106 | 027216 | JMP     | SPD10   | YES, CONFIGURE PORT(S).   |
| 0236  | 75107 | 002400 | CLA     |         | NO.                       |
| 0237  | 75110 | 070031 | STA     | SPDTM   |                           |
| 0238  | 75111 | 114572 | JSB     | T35CH,I | GET NEXT CHAR.            |
| 0239  | 75112 | 027216 | JMP     | SPD10   | CR.                       |
| 0240  | 75113 | 027065 | JMP     | SPD16   | NO CR.                    |
| 0241* |       |        |         |         |                           |
| 0242  | 75114 |        | SPD9    | EQU *   |                           |
| 0243  | 75114 | 114572 | JSB     | T35CH,I | GET NEXT CHAR.            |
| 0244  | 75115 | 026275 | JMP     | LFRRER  | CR, ERROR!                |
| 0245  | 75116 | 053352 | CPA     | SP,L    | NO CR, #L?                |
| 0246  | 75117 | 002001 | RSS     |         |                           |
| 0247  | 75120 | 026275 | JMP     | LFRRER  | NO, ERROR!                |
| 0248  | 75121 | 114572 | JSB     | T35CH,I | YES, GET NEXT CHAR.       |
| 0249  | 75122 | 026275 | JMP     | LFRRER  | CR, ERROR!                |
| 0250  | 75123 | 053352 | CPA     | SP,L    | NO CR, #L?                |
| 0251  | 75124 | 002001 | RSS     |         |                           |
| 0252  | 75125 | 026275 | JMP     | LFRRER  | NO, ERROR!                |
| 0253  | 75126 | 114572 | JSB     | T35CH,I | YES, GET NEXT CHAR.       |
| 0254  | 75127 | 002001 | RSS     |         | CR, START CONFIGURATION.  |
| 0255  | 75130 | 026275 | JMP     | LFRRER  | NO CR, ERROR!             |

|       |       |        |             |  |                                 |
|-------|-------|--------|-------------|--|---------------------------------|
| 0256  | 75131 | 002400 | CLA         |  |                                 |
| 0257  | 75132 | 070035 | STA SPDOC   |  |                                 |
| 0258  | 75133 |        | SPD18 EQU * |  |                                 |
| 0259  | 75133 | 017262 | JSB SPD11   |  | PORT LOGGED ON?                 |
| 0260  | 75134 | 034032 | ISZ SPDCN   |  | NO. BUMP COUNTER,               |
| 0261  | 75135 | 002001 | RSS         |  |                                 |
| 0262  | 75136 | 027142 | JMP SPD19   |  | PORTS CHECKED,                  |
| 0263  | 75137 | 034035 | ISZ SPDOC   |  | BUMP PORT NUMBER,               |
| 0264  | 75140 | 060035 | LDA SPDOC   |  |                                 |
| 0265  | 75141 | 027133 | JMP SPD18   |  |                                 |
| 0266  | 75142 |        | SPD19 EQU * |  |                                 |
| 0267  | 75142 | 060177 | LDA NPORT   |  | SET UP COUNTER,                 |
| 0268  | 75143 | 070032 | STA SPDCN   |  |                                 |
| 0269  | 75144 | 002400 | CLA         |  | SET UP FOR PORT#00,             |
| 0270  | 75145 | 070035 | STA SPDOC   |  |                                 |
| 0271  | 75146 |        | SPD6 EQU *  |  |                                 |
| 0272  | 75146 | 017155 | JSB SPD7    |  | CONFIGURE PORT,                 |
| 0273  | 75147 | 034032 | ISZ SPDCN   |  | BUMP COUNTER,                   |
| 0274  | 75150 | 002001 | RSS         |  |                                 |
| 0275  | 75151 | 026267 | JMP LEND    |  | DONE!                           |
| 0276  | 75152 | 034035 | ISZ SPDOC   |  | NOT DONE,                       |
| 0277  | 75153 | 060035 | LDA SPDOC   |  |                                 |
| 0278  | 75154 | 027146 | JMP SPD6    |  | TREAT NEXT PORT,                |
| 0279* |       |        |             |  |                                 |
| 0280  | 75155 |        | SPD7 EQU *  |  |                                 |
| 0281  | 75155 | 000000 | NOP         |  | PORT CONFIGURATION SUBROUTINE,  |
| 0282  | 75156 | 070033 | STA SPDPO   |  | SAVE PORT NR.                   |
| 0283  | 75157 | 066773 | LDB CHS     |  | B= CHAR, SIZE OPCODE,           |
| 0284  | 75160 | 001727 | ALF,ALF     |  | ROTATE PORT NR.                 |
| 0285  | 75161 | 030001 | IOR B       |  | MERGE PORT NR.                  |
| 0286  | 75162 | 064036 | LDB SPDSZ   |  | B= CHAR, SIZE INDICATOR,        |
| 0287  | 75163 | 005722 | BLF,RBL     |  | ROTATE INTO POSITION,           |
| 0288  | 75164 | 030001 | IOR B       |  | MERGE CHAR, SIZE,               |
| 0289  | 75165 | 114500 | JSB S149C,I |  | TELL 2114,                      |
| 0290  | 75166 | 060033 | LDA SPDPO   |  | A=PORT NR,                      |
| 0291  | 75167 | 066772 | LDB SPE     |  | B= SPEED OPCODE,                |
| 0292  | 75170 | 001727 | ALF,ALF     |  | ROTATE PORT NR,                 |
| 0293  | 75171 | 030001 | IOR B       |  | MERGE PORT NR,                  |
| 0294  | 75172 | 064030 | LDB SPDNR   |  | B= SPEED INDICATOR,             |
| 0295  | 75173 | 030001 | IOR B       |  | MERGE SPEED,                    |
| 0296  | 75174 | 114500 | JSB S149C,I |  | TELL 2114,                      |
| 0297  | 75175 | 127155 | JMP SPD7,I  |  | RETURN,                         |
| 0298* |       |        |             |  |                                 |
| 0299  | 75176 |        | SPDDG EQU * |  |                                 |
| 0300  | 75176 | 000000 | NOP         |  | DETERMINES IF CHAR, IS A DIGIT, |
| 0301  | 75177 | 040316 | ADA M72B    |  |                                 |
| 0302  | 75200 | 002021 | SSA,RSS     |  | DIGIT?                          |
| 0303  | 75201 | 026275 | JMP LFRER   |  | NO. ERROR?                      |
| 0304  | 75202 | 040364 | ADA .+10    |  | MAY BE.                         |
| 0305  | 75203 | 002020 | SSA         |  |                                 |
| 0306  | 75204 | 026275 | JMP LFRER   |  | NOT A DIGIT, ERROR!             |
| 0307  | 75205 | 127176 | JMP SPDDG,I |  | DIGIT, OK! EXIT!                |
| 0308* |       |        |             |  |                                 |
| 0309  | 75206 |        | SPSET EQU * |  |                                 |
| 0310  | 75206 | 000000 | NOP         |  | SET PORT NR, INTO TABLE,        |

|       |       |        |             |                              |
|-------|-------|--------|-------------|------------------------------|
| 0311  | 75207 | 064034 | LDB TABPN   | GET POINTER.                 |
| 0312  | 75210 | 057346 | CPB PEND    | TABLE LIMIT EXCEEDED?        |
| 0313  | 75211 | 026275 | JMP LFRER   | YES, ERROR!                  |
| 0314  | 75212 | 170001 | STA B,I     | NO, SET PORT NR. INTO TABLE. |
| 0315  | 75213 | 034035 | ISZ SPDOC   | BUMP COUNTER.                |
| 0316  | 75214 | 034034 | ISZ TABPN   | BUMP POINTER.                |
| 0317  | 75215 | 127206 | JMP SPSET,I | EXIT.                        |
| 0318* |       |        |             |                              |
| 0319  | 75216 |        | SPD10 EQU * |                              |
| 0320  | 75216 | 060038 | LDA SPDOC   | SET UP COUNTER FOR NUMBER    |
| 0321  | 75217 | 003004 | CMA,INA     | OF PORTS                     |
| 0322  | 75220 | 070035 | STA SPDOC   | TO BE CONFIGURED.            |
| 0323  | 75221 | 063305 | LDA PTABL   | SET UP TABLE POINTER.        |
| 0324  | 75222 | 070034 | STA TABPN   |                              |
| 0325  | 75223 |        | SPD13 EQU * |                              |
| 0326  | 75223 | 160034 | LDA TABPN,I | GET PORT NR.                 |
| 0327  | 75224 | 017155 | JSB SPD7    | CONFIGURE PORT.              |
| 0328  | 75225 | 034035 | ISZ SPDOC   | BUMP COUNTER.                |
| 0329  | 75226 | 002001 | RSS         |                              |
| 0330  | 75227 | 026267 | JMP LEND    | DONE!                        |
| 0331  | 75230 | 034034 | ISZ TABPN   | NOT YET, BUMP POINTER.       |
| 0332  | 75231 | 027223 | JMP SPD13   | GO BACK.                     |
| 0333* |       |        |             |                              |
| 0334* |       |        |             |                              |
| 0335  | 75232 |        | SPDCK EQU * |                              |
| 0336  | 75232 | 000000 | NOP         |                              |
| 0337  | 75233 | 070033 | STA SPDPO   | SAVE (A).                    |
| 0338  | 75234 | 060030 | LDA SPDNR   | UPDATE                       |
| 0339  | 75235 | 100200 | MPY .+10    |                              |
|       | 75236 | 000364 |             |                              |
| 0340  | 75237 | 040033 | ADA SPDPO   | SPEED                        |
| 0341  | 75240 | 070030 | STA SPDNR   | INDICATOR.                   |
| 0342  | 75241 | 127232 | JMP SPDCK,I |                              |
| 0343* |       |        |             |                              |
| 0344* |       |        |             |                              |
| 0345  | 75242 |        | SPDCL EQU * |                              |
| 0346  | 75242 | 000000 | NOP         |                              |
| 0347  | 75243 | 070033 | STA SPDPO   | SAVE (A).                    |
| 0348  | 75244 | 060036 | LDA SPDSZ   | UPDATE                       |
| 0349  | 75245 | 100200 | MPY .+10    | CHAR.                        |
|       | 75246 | 000364 |             |                              |
| 0350  | 75247 | 040033 | ADA SPDPO   | SIZE                         |
| 0351  | 75250 | 070036 | STA SPDSZ   | INDICATOR.                   |
| 0352  | 75251 | 127242 | JMP SPDCL,I |                              |
| 0353* |       |        |             |                              |
| 0354* |       |        |             |                              |
| 0355  | 75252 |        | SPDSP EQU * |                              |
| 0356  | 75252 | 000000 | NOP         |                              |
| 0357  | 75253 | 070033 | STA SPDPO   | SAVE (A).                    |
| 0358  | 75254 | 060031 | LDA SPDIM   | UPDATE                       |
| 0359  | 75255 | 100200 | MPY .+10    |                              |
|       | 75256 | 000364 |             |                              |
| 0360  | 75257 | 040033 | ADA SPDPO   | PORT                         |
| 0361  | 75260 | 070031 | STA SPDIM   | NUMBER.                      |
| 0362  | 75261 | 127252 | JMP SPDSP,I |                              |

0363\*

0364\*

0365\* ENTER WITH (A)\*PORT NR.

0366\*

```

0367 75262 000000 SPD11 NOP
0368 75263 100200 MPY .+TTY01=TTY00
 75264 000375
0369 75265 040546 ADA DTTY0 A=> ?FLAG
0370 75266 040356 ADA ,+?ID A=> ?ID
0371 75267 160000 LDA A,I A= ?ID
0372 75270 002003 SZA,RSS USER LOGGED ON?
0373 75271 127262 JMP SPD11,I NO.
0374 75272 060370 LDA ,+14 YES. GIVE ERROR MESSAGE.
0375 75273 067275 LDB SPD12
0376 75274 026271 JMP LEND+2
0377 75275 075276 SPD12 DEF ++1
0378 75276 005116 OCT 5116 LF=N
0379 75277 047440 ASC 6,0 CONF. DONE
 75300 041517
 75301 047106
 75302 027040
 75303 042117
 75304 047105

```

0380\*

0381\*

0382\*

0383\*

```

0384 75305 075306 PTABL DEF ++1
0385 75306 000000 BSS 32
0386 75346 075346 PEND DEF *
0387 00030 SPDNR EQU LTEMP
0388 00031 SPDTM EQU LTEMP+1
0389 00032 SPDCN EQU LTEMP+2
0390 00033 SPDPO EQU LTEMP+3
0391 00034 TABPN EQU LTEMP+4
0392 00035 SPDOC EQU LTEMP+5
0393 00036 SPDSZ EQU LTEMP+6
0394 75347 177500 BAUDH OCT =300
0395 75350 177773 BAUDL OCT =5
0396 75351 000101 SP.A OCT 101
0397 75352 000114 SP.L OCT 114
0398 75353 SSPE EQU *

```



0400\*

0401\* THIS COMMAND IS USED TO ENABLE THE ABORT CAPA-  
 0402\* BILITY WITH THE "BREAK" KEY DESPITE THE FACT  
 0403\* THAT THE ABORT CAPABILITY WAS DISABLED BY EVA-  
 0404\* LUATION OF THE BRK(0) FUNCTION.

0405\*

0406\* THE FORMAT OF THIS OPERATORS COMMAND IS;

0407\*

0408\*

BREAK=PORT NR

0409\*

0410\*

|       |       |        |                   |                                 |
|-------|-------|--------|-------------------|---------------------------------|
| 0411  | 75000 |        | ORG LIBRA         |                                 |
| 0412  | 75000 | 002400 | CLA               | CLEAR STORAGE OF                |
| 0413  | 75001 | 070031 | STA BRKPN         | PORT NR.                        |
| 0414  | 75002 | 114572 | JSB T35CH,I       | GET 1ST DIGIT OF PORT NR.       |
| 0415  | 75003 | 026275 | JMP LFRER         | CR, ERROR?                      |
| 0416  | 75004 | 017061 | JSB BRKDG         | NO CR, DIGIT?                   |
| 0417  | 75005 | 017071 | JSB BRKSP         | YES, COMPUTE PORT NR.           |
| 0418  | 75006 | 114572 | JSB T35CH,I       | GET NEXT CHAR.                  |
| 0419  | 75007 | 027015 | JMP BREK1         | CR.                             |
| 0420  | 75010 | 017061 | JSB BRKDG         | NO CR, DIGIT?                   |
| 0421  | 75011 | 017071 | JSB BRKSP         | YES, COMPUTE PORT NR.           |
| 0422  | 75012 | 114572 | JSB T35CH,I       | GET NEXT CHAR.                  |
| 0423  | 75013 | 002001 | RSS               | CR.                             |
| 0424  | 75014 | 026275 | JMP LFRER         | NO CR, ERROR!                   |
| 0425  | 75015 |        | BREK1 EQU *       |                                 |
| 0426  | 75015 | 060031 | LDA BRKPN         | CHECK LIMIT.                    |
| 0427  | 75016 | 064177 | LDB NPORT         |                                 |
| 0428  | 75017 | 040001 | ADA B             |                                 |
| 0429  | 75020 | 002021 | SSA,RSS           | PORT NR. > AVAILABLE PORTS?     |
| 0430  | 75021 | 026275 | JMP LFRER         | YES, ERROR!                     |
| 0431  | 75022 | 060031 | LDA BRKPN         | NO, CHECK IF USER IS LOGGED ON. |
| 0432  | 75023 | 100200 | MPY .+TTY01-TTY00 |                                 |
|       | 75024 | 000375 |                   |                                 |
| 0433  | 75025 | 040546 | ADA DTTY0         | A=>?FLAG                        |
| 0434  | 75026 | 040356 | ADA .+?ID         | A=> ?ID                         |
| 0435  | 75027 | 160000 | LDA A,I           | A= ?ID                          |
| 0436  | 75030 | 002003 | SZA,RSS           | USER LOGGED ON?                 |
| 0437  | 75031 | 027043 | JMP BREK2         | NO, PRINT ERROR MESSAGE.        |
| 0438  | 75032 | 060031 | LDA BRKPN         | YES, SET CBFLG BIT.             |
| 0439  | 75033 | 100200 | MPY .+TTY01-TTY00 |                                 |
|       | 75034 | 000375 |                   |                                 |
| 0440  | 75035 | 040546 | ADA DTTY0         | A=> ?FLAG                       |
| 0441  | 75036 | 064000 | LDB A             | B=> ?FLAG                       |
| 0442  | 75037 | 160000 | LDA A,I           | A= ?FLAG                        |
| 0443  | 75040 | 030446 | IOR CBFLG         | SET CBFLG BIT,                  |
| 0444  | 75041 | 170001 | STA B,I           |                                 |
| 0445  | 75042 | 026267 | JMP LEND          | DONE,                           |
| 0446* |       |        |                   |                                 |
| 0447  | 75043 |        | BREK2 EQU *       |                                 |
| 0448  | 75043 | 060376 | LDA .+20          | OUTPUT ERROR MESSAGE,           |
| 0449  | 75044 | 067046 | LDB BREK3         |                                 |
| 0450  | 75045 | 026271 | JMP LEND+2        |                                 |
| 0451  | 75046 | 075047 | BREK3 DEF **1     |                                 |
| 0452  | 75047 | 005125 | OCT 5125          | LF=U                            |

0453 75050 051505           ASC 9, SER NOT LOGGED ON  
 75051 051040  
 75052 047117  
 75053 052040  
 75054 046117  
 75055 043507  
 75056 042504  
 75057 020117  
 75060 047040

0454\*

0455\*

|      |       |        |              |                                 |
|------|-------|--------|--------------|---------------------------------|
| 0456 | 75061 |        | BRKDG EQU *  |                                 |
| 0457 | 75061 | 000000 | NOP          | DETERMINES IF CHAR. IS A DIGIT. |
| 0458 | 75062 | 040316 | ADA M728     |                                 |
| 0459 | 75063 | 002021 | SSA, RSS     | DIGIT?                          |
| 0460 | 75064 | 026275 | JMP LFRER    | NO. ERROR!                      |
| 0461 | 75065 | 040364 | ADA .+10     | MAY BE.                         |
| 0462 | 75066 | 002020 | SSA          |                                 |
| 0463 | 75067 | 026275 | JMP LFRER    | NOT A DIGIT! ERROR!             |
| 0464 | 75070 | 127061 | JMP BRKDG, I | DIGIT, OK! EXIT!                |

0465\*

0466\*

|      |       |              |              |             |
|------|-------|--------------|--------------|-------------|
| 0467 | 75071 |              | BRKSP EQU *  |             |
| 0468 | 75071 | 000000       | NOP          |             |
| 0469 | 75072 | 070030       | STA BRKPO    | SAVE DIGIT. |
| 0470 | 75073 | 060031       | LDA BRKPN    | UPDATE      |
| 0471 | 75074 | 100200       | MPY .+10     |             |
|      |       | 75075 000364 |              |             |
| 0472 | 75076 | 040030       | ADA BRKPO    | PORT        |
| 0473 | 75077 | 070031       | STA BRKPN    | NUMBER.     |
| 0474 | 75100 | 127071       | JMP BRKSP, I |             |

0475\*

0476\*

|      |       |                   |
|------|-------|-------------------|
| 0477 | 00030 | BRKPO EQU LTEMP   |
| 0478 | 00031 | BRKPN EQU LTEMP+1 |
| 0479 | 75101 | SORE EQU *        |

|      |       |        |                                       |
|------|-------|--------|---------------------------------------|
| 0481 |       |        | SUP                                   |
| 0482 | 75000 |        | ORG LIBRA                             |
| 0483 | 75000 | 177771 | DEC =7                                |
| 0484 | 75001 | 047525 | ASC 15,OUT OF STORAGE                 |
| 0485 | 75020 | 177763 | DEC =13                               |
| 0486 | 75021 | 044514 | ASC 15,ILLEGAL OR MISSING INTEGER     |
| 0487 | 75040 | 177763 | DEC =13                               |
| 0488 | 75041 | 042530 | ASC 15,EXTRANEIOUS LIST DELIMITER     |
| 0489 | 75060 | 177762 | DEC =14                               |
| 0490 | 75061 | 046511 | ASC 15,MISSING ASSIGNMENT OPERATOR    |
| 0491 | 75100 | 177761 | DEC =15                               |
| 0492 | 75101 | 041510 | ASC 15,CHARACTERS AFTER STATEMENT END |
| 0493 | 75120 | 177762 | DEC =14                               |
| 0494 | 75121 | 046511 | ASC 15,MISSING OR ILLEGAL SUBSCRIPT   |
| 0495 | 75140 | 177761 | DEC =15                               |
| 0496 | 75141 | 046511 | ASC 15,MISSING OR BAD LIST DELIMITER  |
| 0497 | 75160 | 177762 | DEC =14                               |
| 0498 | 75161 | 046511 | ASC 15,MISSING OR BAD FUNCTION NAME   |
| 0499 | 75200 | 177761 | DEC =15                               |
| 0500 | 75201 | 046511 | ASC 15,MISSING OR BAD SIMPLE VARIABLE |
| 0501 | 75220 | 177764 | DEC =12                               |
| 0502 | 75221 | 046511 | ASC 15,MISSING OR ILLEGAL 'OF'        |
| 0503 | 75240 | 177763 | DEC =13                               |
| 0504 | 75241 | 046511 | ASC 15,MISSING OR ILLEGAL 'THEN'      |
| 0505 | 75260 | 177764 | DEC =12                               |
| 0506 | 75261 | 046511 | ASC 15,MISSING OR ILLEGAL 'TO'        |
| 0507 | 75300 | 177763 | DEC =13                               |
| 0508 | 75301 | 046511 | ASC 15,MISSING OR ILLEGAL 'STEP'      |
| 0509 | 75320 | 177762 | DEC =14                               |
| 0510 | 75321 | 046511 | ASC 15,MISSING OR ILLEGAL DATA ITEM   |
| 0511 | 75340 | 177770 | DEC =8                                |
| 0512 | 75341 | 044514 | ASC 15,ILLEGAL EXPONENT               |
| 0513 | 75360 | 177766 | DEC =10                               |
| 0514 | 75361 | 051511 | ASC 15,SIGN WITHOUT NUMBER            |
| 0515 | 75400 | 177762 | DEC =14                               |
| 0516 | 75401 | 046511 | ASC 15,MISSING RELATIONAL OPERATOR    |
| 0517 | 75420 | 177765 | DEC =11                               |
| 0518 | 75421 | 044514 | ASC 15,ILLEGAL READ VARIABLE          |
| 0519 | 75440 | 177762 | DEC =14                               |
| 0520 | 75441 | 044514 | ASC 15,ILLEGAL SYMBOL FOLLOWS 'MAT'   |
| 0521 | 75460 | 177761 | DEC =15                               |
| 0522 | 75461 | 046501 | ASC 15,MATRIX CANNOT BE ON BOTH SIDES |
| 0523 | 75500 | 177761 | DEC =15                               |
| 0524 | 75501 | 047117 | ASC 15,NO '*' AFTER RIGHT PARENTHESIS |
| 0525 | 75520 | 177761 | DEC =15                               |
| 0526 | 75521 | 047117 | ASC 15,NO LEGAL BINARY OPERATOR FOUND |
| 0527 | 75540 | 177764 | DEC =12                               |
| 0528 | 75541 | 046511 | ASC 15,MISSING LEFT PARENTHESIS       |
| 0529 | 75560 | 177763 | DEC =13                               |
| 0530 | 75561 | 046511 | ASC 15,MISSING RIGHT PARENTHESIS      |
| 0531 | 75600 | 177761 | DEC =15                               |
| 0532 | 75601 | 050101 | ASC 15,PARAMETER NOT STRING VARIABLE  |
| 0533 | 75620 | 177765 | DEC =11                               |
| 0534 | 75621 | 052516 | ASC 15,UNDECIPHERABLE OPERAND         |
| 0535 | 75640 | 177761 | DEC =15                               |

|      |       |        |                                       |
|------|-------|--------|---------------------------------------|
| 0536 | 75641 | 046511 | ASC 15,MISSING OR BAD ARRAY VARIABLE  |
| 0537 | 75660 | 177761 | DEC -15                               |
| 0538 | 75661 | 051524 | ASC 15,STRING VARIABLE NOT LEGAL HERE |
| 0539 | 75700 | 177761 | DEC -15                               |
| 0540 | 75701 | 046511 | ASC 15,MISSING OR BAD STRING OPERAND  |
| 0541 | 75720 | 177770 | DEC -8                                |
| 0542 | 75721 | 047117 | ASC 15,NO CLOSING QUOTE               |
| 0543 | 75740 | 177762 | DEC -14                               |
| 0544 | 75741 | 033462 | ASC 15,72 CHARACTERS MAX FOR STRING   |
| 0545 | 75760 | 177761 | DEC -15                               |
| 0546 | 75761 | 051524 | ASC 15,STATEMENT HAS EXCESSIVE LENGTH |
| 0548 | 75000 |        | ORG LIBRA                             |
| 0549 | 75000 | 177761 | DEC -15                               |
| 0550 | 75001 | 046511 | ASC 15,MISSING OR BAD FILE REFERENCE  |
| 0551 | 75020 | 177762 | DEC -14                               |
| 0552 | 75021 | 023520 | ASC 15,'PRINT' MUST PRECEDE 'USING'   |
| 0553 | 75040 | 177761 | DEC -15                               |
| 0554 | 75041 | 044514 | ASC 15,ILLEGAL OPERAND AFTER 'USING'  |
| 0555 | 75060 | 177761 | DEC -15                               |
| 0556 | 75061 | 053101 | ASC 15,VARIABLE MISSING OR WRONG TYPE |
| 0557 | 75100 | 000017 | DEC 15                                |
| 0558 | 75101 | 052516 | ASC 15,UNDEFINED STATEMENT REFERENCE  |
| 0559 | 75120 | 000015 | DEC 13                                |
| 0560 | 75121 | 047105 | ASC 15,NEXT WITHOUT MATCHING FOR      |
| 0561 | 75140 | 000014 | DEC 12                                |
| 0562 | 75141 | 051501 | ASC 15,SAME FOR=VARIABLE NESTED       |
| 0563 | 75160 | 000013 | DEC 11                                |
| 0564 | 75161 | 043125 | ASC 15,FUNCTION DEFINED TWICE         |
| 0565 | 75200 | 000015 | DEC 13                                |
| 0566 | 75201 | 053101 | ASC 15,VARIABLE DIMENSIONED TWICE     |
| 0567 | 75220 | 000014 | DEC 12                                |
| 0568 | 75221 | 046101 | ASC 15,LAST STATEMENT NOT 'END'       |
| 0569 | 75240 | 177771 | DEC -7                                |
| 0570 | 75241 | 052516 | ASC 15,UNMATCHED FOR                  |
| 0571 | 75260 | 177767 | DEC -9                                |
| 0572 | 75261 | 052516 | ASC 15,UNDEFINED FUNCTION             |
| 0573 | 75300 | 177770 | DEC -8                                |
| 0574 | 75301 | 040522 | ASC 15,ARRAY TOO LARGE                |
| 0575 | 75320 | 177762 | DEC -14                               |
| 0576 | 75321 | 040522 | ASC 15,ARRAY OF UNKNOWN DIMENSIONS    |
| 0577 | 75340 | 000007 | DEC 7                                 |
| 0578 | 75341 | 047525 | ASC 15,OUT OF STORAGE                 |
| 0579 | 75360 | 000015 | DEC 13                                |
| 0580 | 75361 | 042111 | ASC 15,DIMENSIONS NOT COMPATIBLE      |
| 0581 | 75400 | 177762 | DEC -14                               |
| 0582 | 75401 | 041510 | ASC 15,CHARACTERS AFTER COMMAND END   |
| 0583 | 75420 | 177763 | DEC -13                               |
| 0584 | 75421 | 041101 | ASC 15,BAD FORMAT OR ILLEGAL NAME     |
| 0585 | 75440 | 177763 | DEC -13                               |
| 0586 | 75441 | 046511 | ASC 15,MISSING OR PROTECTED FILE      |
| 0587 | 75460 | 000013 | DEC 11                                |
| 0588 | 75461 | 043517 | ASC 15,GOSUBS NESTED TEN DEEP         |
| 0589 | 75500 | 000015 | DEC 13                                |

|      |       |        |                                       |
|------|-------|--------|---------------------------------------|
| 0590 | 75501 | 051105 | ASC 15,RETURN WITH NO PRIOR GOSUB     |
| 0591 | 75520 | 000014 | DEC 12                                |
| 0592 | 75521 | 051525 | ASC 15,SUBSCRIPT OUT OF BOUNDS        |
| 0593 | 75540 | 000013 | DEC 11                                |
| 0594 | 75541 | 047105 | ASC 15,NEGATIVE STRING LENGTH         |
| 0595 | 75560 | 000017 | DEC 15                                |
| 0596 | 75561 | 047117 | ASC 15,NON-CONTIGUOUS STRING CREATED  |
| 0597 | 75600 | 000010 | DEC 8                                 |
| 0598 | 75601 | 051524 | ASC 15,STRING OVERFLOW                |
| 0599 | 75620 | 000006 | DEC 6                                 |
| 0600 | 75621 | 047525 | ASC 15,OUT OF DATA                    |
| 0601 | 75640 | 000011 | DEC 9                                 |
| 0602 | 75641 | 042101 | ASC 15,DATA OF WRONG TYPE             |
| 0603 | 75660 | 000014 | DEC 12                                |
| 0604 | 75661 | 052516 | ASC 15,UNDEFINED VALUE ACCESSED       |
| 0605 | 75700 | 000011 | DEC 9                                 |
| 0606 | 75701 | 046501 | ASC 15,MATRIX NOT SQUARE              |
| 0607 | 75720 | 000017 | DEC 15                                |
| 0608 | 75721 | 051105 | ASC 15,REDIMENSIONED ARRAY TOO LARGE  |
| 0609 | 75740 | 000013 | DEC 11                                |
| 0610 | 75741 | 047105 | ASC 15,NEARLY SINGULAR MATRIX         |
| 0611 | 75760 | 000014 | DEC 12                                |
| 0612 | 75761 | 046117 | ASC 15,LOG OF NEGATIVE ARGUMENT       |
| 0614 | 75000 |        | ORG LIBRA                             |
| 0615 | 75000 | 000014 | DEC 12                                |
| 0616 | 75001 | 051521 | ASC 15,SQR OF NEGATIVE ARGUMENT       |
| 0617 | 75020 | 000011 | DEC 9                                 |
| 0618 | 75021 | 055105 | ASC 15,ZERO TO ZERO POWER             |
| 0619 | 75040 | 000017 | DEC 15                                |
| 0620 | 75041 | 047105 | ASC 15,NEGATIVE NUMBER TO REAL POWER  |
| 0621 | 75060 | 000017 | DEC 15                                |
| 0622 | 75061 | 040522 | ASC 15,ARGUMENT OF SIN OR TAN TOO BIG |
| 0623 | 75100 | 177761 | DEC =15                               |
| 0624 | 75101 | 047526 | ASC 15,OVER/UNDERFLOWS - WARNING ONLY |
| 0625 | 75120 | 177761 | DEC =15                               |
| 0626 | 75121 | 046101 | ASC 15,LAST INPUT IGNORED, RETYPE IT  |
| 0627 | 75140 | 177763 | DEC =13                               |
| 0628 | 75141 | 052117 | ASC 15,TOO MANY FILES STATEMENTS      |
| 0629 | 75160 | 000016 | DEC 14                                |
| 0630 | 75161 | 047117 | ASC 15,NON-EXISTENT FILE REQUESTED    |
| 0631 | 75200 | 000017 | DEC 15                                |
| 0632 | 75201 | 053522 | ASC 15,WRITE TRIED ON READ-ONLY FILE  |
| 0633 | 75220 | 000015 | DEC 13                                |
| 0634 | 75221 | 042516 | ASC 15,END-OF-FILE/END OF RECORD      |
| 0635 | 75240 | 000012 | DEC 10                                |
| 0636 | 75241 | 051524 | ASC 15,STATEMENT NOT IMAGE            |
| 0637 | 75260 | 000017 | DEC 15                                |
| 0638 | 75261 | 047117 | ASC 15,NON-EXISTENT PROGRAM REQUESTED |
| 0639 | 75300 | 000014 | DEC 12                                |
| 0640 | 75301 | 041510 | ASC 15,CHAIN REQUEST IS A FILE        |
| 0641 | 75320 | 000016 | DEC 14                                |
| 0642 | 75321 | 050122 | ASC 15,PROGRAM CHAINED IS TOO LARGE   |
| 0643 | 75340 | 177763 | DEC =13                               |

|      |       |        |                                       |
|------|-------|--------|---------------------------------------|
| 0644 | 75341 | 041517 | ASC 15,COM STATEMENT OUT OF ORDER     |
| 0645 | 75360 | 000016 | DEC 14                                |
| 0646 | 75361 | 040522 | ASC 15,ARGUMENT OF TIM OUT OF RANGE   |
| 0647 | 75400 | 000016 | DEC 14                                |
| 0648 | 75401 | 041101 | ASC 15,BAD FORMAT STRING SUBSCRIPT    |
| 0649 | 75420 | 000007 | DEC 7                                 |
| 0650 | 75421 | 041101 | ASC 15,BAD FILE READ                  |
| 0651 | 75440 | 000014 | DEC 12                                |
| 0652 | 75441 | 041101 | ASC 15,BAD FILE WRITE DETECTED        |
| 0653 | 75460 | 000017 | DEC 15                                |
| 0654 | 75461 | 041501 | ASC 15,CAN'T READ PROGRAM CHAINED TO  |
| 0655 | 75500 | 000017 | DEC 15                                |
| 0656 | 75501 | 044514 | ASC 15,ILL-STORED PROGRAM CHAINED TO  |
| 0657 | 75520 | 177772 | DEC -6                                |
| 0658 | 75521 | 050122 | ASC 15,PROGRAM BAD                    |
| 0659 | 75540 | 000016 | DEC 14                                |
| 0660 | 75541 | 046511 | ASC 15,MISSING FORMAT SPECIFICATION   |
| 0661 | 75560 | 000016 | DEC 14                                |
| 0662 | 75561 | 044514 | ASC 15,ILLEGAL OR MISSING DELIMITER   |
| 0663 | 75600 | 000010 | DEC 8                                 |
| 0664 | 75601 | 047117 | ASC 15,NO CLOSING QUOTE               |
| 0665 | 75620 | 000017 | DEC 15                                |
| 0666 | 75621 | 041101 | ASC 15,BAD CHARACTER AFTER REPLICATOR |
| 0667 | 75640 | 000012 | DEC 10                                |
| 0668 | 75641 | 051105 | ASC 15,REPLICATOR TOO LARGE           |
| 0669 | 75660 | 000010 | DEC 8                                 |
| 0670 | 75661 | 051105 | ASC 15,REPLICATOR ZERO                |
| 0671 | 75700 | 000014 | DEC 12                                |
| 0672 | 75701 | 046525 | ASC 15,MULTIPLE DECIMAL POINTS        |
| 0673 | 75720 | 000015 | DEC 13                                |
| 0674 | 75721 | 041101 | ASC 15,BAD FLOATING SPECIFICATION     |
| 0675 | 75740 | 000016 | DEC 14                                |
| 0676 | 75741 | 044514 | ASC 15,ILLEGAL CHARACTER IN FORMAT    |
| 0677 | 75760 | 000015 | DEC 13                                |
| 0678 | 75761 | 044514 | ASC 15,ILLEGAL FORMAT FOR STRING      |
| 0680 | 75000 |        | ORG LIBRA                             |
| 0681 | 75000 | 000015 | DEC 13                                |
| 0682 | 75001 | 046511 | ASC 15,MISSING RIGHT PARENTHESIS      |
| 0683 | 75020 | 000011 | DEC 9                                 |
| 0684 | 75021 | 046511 | ASC 15,MISSING REPLICATOR             |
| 0685 | 75040 | 000016 | DEC 14                                |
| 0686 | 75041 | 052117 | ASC 15,TOO MANY PARENTHESIS LEVELS    |
| 0687 | 75060 | 000014 | DEC 12                                |
| 0688 | 75061 | 046511 | ASC 15,MISSING LEFT PARENTHESIS       |
| 0689 | 75100 | 000015 | DEC 13                                |
| 0690 | 75101 | 044514 | ASC 15,ILLEGAL FORMAT FOR NUMBER      |
| 0691 | 75120 | 177762 | DEC -14                               |
| 0692 | 75121 | 041101 | ASC 15,BAD INPUT, RETYPE FROM ITEM    |
| 0693 | 75140 | 000015 | DEC 13                                |
| 0694 | 75141 | 046117 | ASC 15,LOG OF ZERO - WARNING ONLY     |
| 0695 | 75160 | 000017 | DEC 15                                |
| 0696 | 75161 | 055105 | ASC 15,ZERO TO NEGATIVE POWER-WARNING |
| 0697 | 75200 | 000017 | DEC 15                                |

PAGE 0710 #59 LANGUAGE PROCESSOR ERROR MESSAGES

0698 75201 042111  
0699 75220 000016  
0700 75221 042530  
0701 75240 000014  
0702 75241 047526  
0703 75260 000014  
0704 75261 052516  
0705 75300 177763  
0706 75301 042530  
0707 75320 177770  
0708 75321 051105  
0709 75340 177775  
0710 75341 011423  
0711 75342 005012  
0712 75343 025040

ASC 15, DIVIDE BY ZERO = WARNING ONLY  
DEC 14  
ASC 15, EXP OVERFLOW = WARNING ONLY  
DEC 12  
ASC 15, OVERFLOW = WARNING ONLY  
DEC 12  
ASC 15, UNDERFLOW = WARNING ONLY  
DEC =13  
ASC 15, EXTRA INPUT = WARNING ONLY  
DEC =8  
ASC 15, READ-ONLY FILES:  
DEC =3  
OCT 11423  
OCT 5012  
ASC 13,\*

0714 00000  
0715 00000 000000  
0716

ORG 0  
NOP  
END

SIGNAL LOADER THAT WE'RE DONE.

\*\* NO ERRORS\*

\*\*\*\*\*

CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |
|-------|---------|---------|---------|
| #ALCO | 0420/06 | 0434    |         |
| #ARID | 0116/05 | 0259    |         |
| #ARIN | 0095/16 | 0346    |         |
| #ASYM | 0198/08 | 0306    |         |
| #BKSP | 0389/19 | 0396    |         |
| #BLDI | 0097/06 | 0408    | 0109/06 |
| #BNOP | 0386/14 | 0348    |         |
| #CHEB | 0185/20 | 0386    |         |
| #CHOU | 0025/22 | 0416    |         |
| #CMPR | 0118/14 | 0332    |         |
| #CRST | 0461/05 | 0276    |         |
| #CUSP | 0517/06 | 0312    |         |
| #DB10 | 0317/22 | 0292    |         |
| #DCMP | 0385/07 | 0308    |         |
| #DGCK | 0326/06 | 0278    |         |
| #DLPR | 0497/05 | 0300    |         |
| #DSCH | 0352/25 | 0450    |         |
| #DTL1 | 0256/25 | 0442    |         |
| #EDAB | 0070/21 | 0470    |         |
| #EDB1 | 0082/21 | 0076/21 |         |
| #EDLM | 0329/19 | 0378    | 0334/19 |
| #ENOT | 0019/19 | 0370    |         |
| #EPRU | 0121/11 | 0462    |         |
| #EVEP | 0408/25 | 0454    |         |
| #EXP  | 0454/20 | 0382    |         |
| #FAD  | 0560/15 | 0356    |         |
| #FCUC | 0318/14 | 0468    |         |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |      |         |
|-------|---------|------|---------|
| #FDAT | 0111/12 | 0340 |         |
| #FDPS | 0017/06 | 0302 |         |
| #FDV  | 0040/16 | 0362 |         |
| #FENC | 0358/14 | 0438 |         |
| #FILR | 0159/06 | 0422 |         |
| #FILS | 0297/15 | 0428 | 0367/15 |
| #FINC | 0344/14 | 0286 |         |
| #FLOT | 0250/20 | 0320 |         |
| #FLUN | 0133/16 | 0366 |         |
| #FMP  | 0005/16 | 0360 |         |
| #FORM | 0335/12 | 0320 |         |
| #FPOP | 0446/04 | 0255 |         |
| #FRCK | 0415/04 | 0253 |         |
| #FRMT | 0021/23 | 0460 |         |
| #FSB  | 0568/15 | 0358 |         |
| #FSC  | 0199/04 | 0249 |         |
| #FSCH | 0298/14 | 0342 |         |
| #FTCH | 0279/12 | 0336 |         |
| #GTGR | 0403/19 | 0394 | 0416/19 |
| #GTDG | 0273/19 | 0374 |         |
| #GTPF | 0062/06 | 0265 |         |
| #GTST | 0180/05 | 0318 |         |
| #GTTY | 0379/15 | 0430 |         |
| #IENT | 0229/20 | 0388 |         |
| #IFIX | 0043/15 | 0368 |         |
| #INCL | 0208/12 | 0392 |         |
| #LCDL | 0230/32 | 0466 |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                 |                    |         |         |         |         |         |
|-------|-----------------|--------------------|---------|---------|---------|---------|---------|
| #LIB# | 0277            | 0133/29            | 0529/29 | 0306/30 | 0563/42 | 0125/47 |         |
| #LIBI | 0275<br>0499/56 | 0324/30<br>0321/57 | 0389/33 | 0347/36 | 0507/37 | 0596/44 | 0523/54 |
| #LOG  | 0007/21         | 0384               |         |         |         |         |         |
| #LPCK | 0547/06         | 0267               |         |         |         |         |         |
| #LTCK | 0343/06         | 0280               |         |         |         |         |         |
| #LTEN | 0034/30         | 0078/29            | 0083/29 | 0090/29 | 0093/29 | 0040/30 |         |
| #LTR  | 0269/06         | 0272               |         |         |         |         |         |
| #MB10 | 0191/22         | 0290               |         |         |         |         |         |
| #MCHR | 0377/25         | 0452               |         |         |         |         |         |
| #MCOT | 0573/21         | 0402               |         |         |         |         |         |
| #MOVE | 0287/16         | 0418               | 0294/16 |         |         |         |         |
| #MTG1 | 0243/25         | 0440               |         |         |         |         |         |
| #NMCK | 0057/22         | 0288               |         |         |         |         |         |
| #NMOT | 0042/19         | 0372               |         |         |         |         |         |
| #NRML | 0224/22         | 0294               |         |         |         |         |         |
| #OPCK | 0403/14         | 0352               |         |         |         |         |         |
| #OTBL | 0322/25         | 0446               |         |         |         |         |         |
| #OTCL | 0331/25         | 0448               |         |         |         |         |         |
| #OTCR | 0368/19         | 0398               |         |         |         |         |         |
| #OTIN | 0300/19         | 0400               |         |         |         |         |         |
| #OTLN | 0349/19         | 0376               |         |         |         |         |         |
| #OTST | 0611/21         | 0404               |         |         |         |         |         |
| #OUTC | 0474/30         | 0333               | 0487/30 | 0501/30 | 0519/30 | 0722/32 |         |
| #OVFL | 0010/22         | 0298               |         |         |         |         |         |
| #PACK | 0260/22         | 0296               |         |         |         |         |         |
| #PCHK | 0094/14         | 0334               |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|
| #PFSH | 0390/06 | 0458    |         |         |         |
| #PGIN | 0081/06 | 0261    |         |         |         |
| #PNST | 0017/08 | 0310    |         |         |         |
| #PSMS | 0474/14 | 0344    |         |         |         |
| #PSTR | 0185/14 | 0326    |         |         |         |
| #PWR2 | 0264/20 | 0390    |         |         |         |
| #RDIM | 0321/18 | 0410    |         |         |         |
| #RECK | 0134/06 | 0420    |         |         |         |
| #RPCK | 0308/06 | 0269    |         |         |         |
| #RQST | 0093/15 | 0426    |         |         |         |
| #RSCK | 0437/14 | 0354    |         |         |         |
| #RSTO | 0158/05 | 0316    |         |         |         |
| #RSTP | 0254/08 | 0436    | 0268/08 | 0290/08 | 0303/08 |
| #RUND | 0278/25 | 0444    |         |         |         |
| #SBCK | 0027/05 | 0251    |         |         |         |
| #SBFX | 0020/15 | 0324    |         |         |         |
| #SBPU | 0533/06 | 0282    |         |         |         |
| #SCR  | 0546/29 | 0105/31 |         |         |         |
| #SERR | 0309/16 | 0414    |         |         |         |
| #SINI | 0308/12 | 0406    |         |         |         |
| #SLCK | 0560/06 | 0464    |         |         |         |
| #SSYM | 0127/08 | 0304    |         |         |         |
| #STDP | 0034/12 | 0338    | 0044/12 |         |         |
| #STOP | 0293/06 | 0274    |         |         |         |
| #STPT | 0291/12 | 0380    |         |         |         |
| #STRI | 0128/05 | 0314    |         |         |         |
| #STST | 0272/14 | 0322    |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|        |         |         |         |         |
|--------|---------|---------|---------|---------|
| #STP   | 0371/14 | 0350    |         |         |
| #SYCK  | 0362/06 | 0284    |         |         |
| #TAP   | 0004/30 | 0106/31 |         |         |
| #TAP1  | 0022/30 | 0015/30 |         |         |
| #TBSR  | 0185/06 | 0263    |         |         |
| #TRST  | 0515/15 | 0330    | 0533/15 |         |
| #UNPK  | 0538/15 | 0364    |         |         |
| #USCK  | 0205/05 | 0456    |         |         |
| #VCHK  | 0284/18 | 0412    |         |         |
| #VLFI  | 0062/12 | 0424    |         |         |
| #VROP  | 0399/05 | 0257    |         |         |
| #WRBU  | 0422/15 | 0432    |         |         |
| \$SML0 | 0547/55 | 0061/34 |         |         |
| \$SSAV | 0539/37 | 0017/34 |         |         |
| \$ANN  | 0655/48 | 0050/34 |         |         |
| \$APP  | 0452/38 | 0019/34 |         |         |
| \$ASN  | 0360/35 | 0013/34 |         |         |
| \$BES  | 0465/57 | 0063/34 |         |         |
| \$BRE  | 0479/59 | 0071/34 |         |         |
| \$BYE  | 0579/39 | 0021/34 |         |         |
| \$CAT  | 0248/41 | 0025/34 | 0026/34 | 0027/34 |
| \$CHA  | 0160/49 | 0052/34 |         |         |
| \$CHN  | 0672/35 | 0014/34 |         |         |
| \$COP  | 0531/56 | 0062/34 |         |         |
| \$DEL  | 0530/43 | 0033/34 |         |         |
| \$DES  | 0236/58 | 0065/34 |         |         |
| \$DIR  | 0280/40 | 0044/34 | 0045/34 |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |
|-------|---------|---------|---------|
| SDIRS | 0623/41 | 0028/34 | 0029/34 |
| SECH  | 0096/45 | 0039/34 |         |
| SFLB  | 0559/34 | 0012/34 |         |
| SGET  | 0249/38 | 0018/34 |         |
| SHEL  | 0395/39 | 0020/34 |         |
| SKID  | 0466/51 | 0056/34 |         |
| SKIL  | 0045/39 | 0022/34 |         |
| SLEN  | 0052/45 | 0038/34 |         |
| SLOC  | 0586/52 | 0058/34 |         |
| SLPR  | 0252/45 | 0041/34 |         |
| SMAG  | 0050/59 | 0067/34 |         |
| SMES  | 0200/45 | 0040/34 |         |
| SMLO  | 0563/54 | 0060/34 |         |
| SMUN  | 0424/53 | 0059/34 |         |
| SNAM  | 0550/40 | 0024/34 |         |
| SNEW  | 0520/50 | 0055/34 |         |
| SOPE  | 0625/44 | 0037/34 |         |
| SPHO  | 0085/59 | 0068/34 |         |
| SPOR  | 0425/48 | 0048/34 |         |
| SPORS | 0577/45 | 0042/34 |         |
| SPRI  | 0144/59 | 0069/34 |         |
| SPRO  | 0090/44 | 0035/34 | 0036/34 |
| SPUR  | 0587/58 | 0066/34 |         |
| SREN  | 0471/40 | 0023/34 |         |
| SREP  | 0010/45 | 0043/34 |         |
| SREPS | 0233/42 | 0030/34 |         |
| SRES  | 0816/48 | 0051/34 |         |

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CROSS-REFERENCE SYMBOL TABLE

|        |                            |                               |                               |                               |                               |                               |                    |
|--------|----------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|
| \$ROS  | 0515/48                    | 0049/34                       |                               |                               |                               |                               |                    |
| \$SAN  | 0759/57                    | 0064/34                       |                               |                               |                               |                               |                    |
| \$SAV  | 0375/36                    | 0015/34                       | 0016/34                       |                               |                               |                               |                    |
| \$SLE  | 0470/49                    | 0053/34                       | 0054/34                       |                               |                               |                               |                    |
| \$SLPL | 0074/34                    | 0018                          | 0009/34                       |                               |                               |                               |                    |
| \$SPE  | 0398/59                    | 0070/34                       |                               |                               |                               |                               |                    |
| \$STA  | 0266/47                    | 0046/34                       | 0047/34                       |                               |                               |                               |                    |
| \$STAS | 0713/42                    | 0031/34                       | 0032/34                       |                               |                               |                               |                    |
| \$TIM  | 0621/43                    | 0034/34                       |                               |                               |                               |                               |                    |
| \$UNL  | 0686/51                    | 0057/34                       |                               |                               |                               |                               |                    |
| XABOR  | 0233                       |                               |                               |                               |                               |                               |                    |
| XDISC  | 0237                       | 0567/28                       | 0366/30                       | 0190/49                       |                               |                               |                    |
| XENTO  | 0238                       | 0549/28                       |                               |                               |                               |                               |                    |
| XINPT  | 0234                       | 0458/28                       | 0348/30                       |                               |                               |                               |                    |
| XOUTW  | 0235<br>0178/33            | 0070/27                       | 0516/28                       | 0527/28                       | 0109/29                       | 0203/30                       | 0490/30            |
| XPUN   | 0239                       | 0461/27                       | 0590/28                       |                               |                               |                               |                    |
| XSUNT  | 0236<br>0141/29<br>0220/30 | 0073/27<br>0182/29<br>0297/30 | 0488/28<br>0325/29<br>0311/30 | 0490/28<br>0399/29<br>0243/32 | 0493/28<br>0521/29<br>0366/33 | 0500/28<br>0526/29<br>0337/39 | 0557/28<br>0197/30 |
|        | 0217                       | 0233                          | 0234                          | 0235                          | 0236                          | 0237                          | 0238               |
|        | 0239                       | 0502                          | 0503                          | 0510                          | 0511                          | 0512                          | 0513               |
|        | 0514                       | 0515                          | 0026/03                       | 0036/03                       | 0039/03                       | 0053/03                       | 0079/03            |
|        | 0080/03                    | 0114/03                       | 0154/03                       | 0159/03                       | 0273/03                       | 0284/03                       | 0287/03            |
|        | 0290/03                    | 0292/03                       | 0325/03                       | 0349/03                       | 0385/03                       | 0401/03                       | 0438/03            |
|        | 0454/03                    | 0457/03                       | 0460/03                       | 0493/03                       | 0500/03                       | 0537/03                       | 0577/03            |
|        | 0580/03                    | 0585/03                       | 0612/03                       | 0644/03                       | 0658/03                       | 0669/03                       | 0680/03            |
|        | 0684/03                    | 0688/03                       | 0690/03                       | 0720/03                       | 0015/04                       | 0018/04                       | 0036/04            |
|        | 0048/04                    | 0061/04                       | 0075/04                       | 0077/04                       | 0093/04                       | 0109/04                       | 0150/04            |
|        | 0153/04                    | 0155/04                       | 0201/04                       | 0217/04                       | 0234/04                       | 0251/04                       | 0261/04            |
|        | 0269/04                    | 0273/04                       | 0285/04                       | 0289/04                       | 0302/04                       | 0307/04                       | 0316/04            |
|        | 0318/04                    | 0323/04                       | 0349/04                       | 0355/04                       | 0371/04                       | 0375/04                       | 0393/04            |
|        | 0448/04                    | 0027/05                       | 0033/05                       | 0041/05                       | 0049/05                       | 0058/05                       | 0074/05            |
|        | 0076/05                    | 0128/05                       | 0133/05                       | 0143/05                       | 0182/05                       | 0206/05                       | 0215/05            |
|        | 0224/05                    | 0238/05                       | 0284/05                       | 0316/05                       | 0363/05                       | 0402/05                       | 0406/05            |
|        | 0412/05                    | 0428/05                       | 0463/05                       | 0482/05                       | 0612/05                       | 0624/05                       | 0626/05            |
|        | 0036/06                    | 0062/06                       | 0105/06                       | 0137/06                       | 0208/06                       | 0211/06                       | 0308/06            |

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CROSS-REFERENCE SYMBOL TABLE

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| 0330/06 | 0347/06 | 0364/06 | 0367/06 | 0375/06 | 0390/06 | 0450/06 |
| 0456/06 | 0467/06 | 0492/06 | 0547/06 | 0560/06 | 0004/07 | 0041/07 |
| 0085/07 | 0124/07 | 0130/07 | 0147/07 | 0166/07 | 0178/07 | 0195/07 |
| 0198/07 | 0204/07 | 0210/07 | 0227/07 | 0228/07 | 0232/07 | 0291/07 |
| 0312/07 | 0317/07 | 0320/07 | 0321/07 | 0350/07 | 0352/07 | 0362/07 |
| 0387/07 | 0410/07 | 0428/07 | 0446/07 | 0447/07 | 0450/07 | 0025/08 |
| 0046/08 | 0060/08 | 0109/08 | 0127/08 | 0135/08 | 0149/08 | 0158/08 |
| 0204/08 | 0208/08 | 0210/08 | 0219/08 | 0225/08 | 0239/08 | 0273/08 |
| 0278/08 | 0279/08 | 0293/08 | 0301/08 | 0304/08 | 0308/08 | 0319/08 |
| 0320/08 | 0322/08 | 0334/08 | 0345/08 | 0348/08 | 0415/08 | 0416/08 |
| 0420/08 | 0442/08 | 0445/08 | 0450/08 | 0004/09 | 0018/09 | 0025/09 |
| 0049/09 | 0065/09 | 0074/09 | 0086/09 | 0092/09 | 0094/09 | 0130/09 |
| 0155/09 | 0316/09 | 0326/09 | 0344/09 | 0346/09 | 0350/09 | 0359/09 |
| 0374/09 | 0376/09 | 0378/09 | 0381/09 | 0384/09 | 0422/09 | 0431/09 |
| 0434/09 | 0437/09 | 0440/09 | 0444/09 | 0068/10 | 0082/10 | 0084/10 |
| 0093/10 | 0100/10 | 0103/10 | 0110/10 | 0112/10 | 0131/10 | 0141/10 |
| 0147/10 | 0158/10 | 0165/10 | 0174/10 | 0175/10 | 0190/10 | 0194/10 |
| 0206/10 | 0229/10 | 0243/10 | 0246/10 | 0251/10 | 0261/10 | 0263/10 |
| 0269/10 | 0276/10 | 0283/10 | 0293/10 | 0297/10 | 0318/10 | 0338/10 |
| 0351/10 | 0356/10 | 0362/10 | 0378/10 | 0387/10 | 0061/11 | 0065/11 |
| 0069/11 | 0083/11 | 0084/11 | 0085/11 | 0086/11 | 0089/11 | 0098/11 |
| 0105/11 | 0140/11 | 0154/11 | 0163/11 | 0183/11 | 0197/11 | 0235/11 |
| 0260/11 | 0271/11 | 0285/11 | 0287/11 | 0296/11 | 0298/11 | 0309/11 |
| 0318/11 | 0321/11 | 0332/11 | 0389/11 | 0400/11 | 0413/11 | 0418/11 |
| 0428/11 | 0430/11 | 0439/11 | 0442/11 | 0458/11 | 0469/11 | 0471/11 |
| 0473/11 | 0475/11 | 0483/11 | 0487/11 | 0507/11 | 0515/11 | 0523/11 |
| 0534/11 | 0540/11 | 0542/11 | 0563/11 | 0578/11 | 0586/11 | 0597/11 |
| 0614/11 | 0618/11 | 0620/11 | 0036/12 | 0038/12 | 0043/12 | 0090/12 |
| 0154/12 | 0163/12 | 0165/12 | 0220/12 | 0222/12 | 0226/12 | 0235/12 |
| 0239/12 | 0292/12 | 0294/12 | 0296/12 | 0308/12 | 0358/12 | 0364/12 |
| 0365/12 | 0395/12 | 0397/12 | 0423/12 | 0430/12 | 0453/12 | 0454/12 |
| 0471/12 | 0025/13 | 0034/13 | 0052/13 | 0063/13 | 0068/13 | 0127/13 |
| 0170/13 | 0194/13 | 0209/13 | 0227/13 | 0255/13 | 0264/13 | 0278/13 |
| 0386/13 | 0401/13 | 0104/14 | 0124/14 | 0130/14 | 0140/14 | 0154/14 |
| 0191/14 | 0194/14 | 0201/14 | 0348/14 | 0417/14 | 0421/14 | 0426/14 |
| 0438/14 | 0446/14 | 0457/14 | 0460/14 | 0463/14 | 0475/14 | 0025/15 |
| 0048/15 | 0051/15 | 0054/15 | 0103/15 | 0110/15 | 0118/15 | 0137/15 |
| 0158/15 | 0173/15 | 0185/15 | 0187/15 | 0213/15 | 0237/15 | 0242/15 |
| 0255/15 | 0259/15 | 0271/15 | 0282/15 | 0299/15 | 0313/15 | 0320/15 |
| 0357/15 | 0396/15 | 0400/15 | 0402/15 | 0409/15 | 0410/15 | 0412/15 |
| 0423/15 | 0430/15 | 0434/15 | 0439/15 | 0452/15 | 0456/15 | 0468/15 |
| 0470/15 | 0471/15 | 0477/15 | 0520/15 | 0602/15 | 0606/15 | 0033/16 |
| 0098/16 | 0117/16 | 0181/16 | 0189/16 | 0207/16 | 0276/16 | 0327/16 |
| 0346/16 | 0367/16 | 0369/16 | 0375/16 | 0393/16 | 0403/16 | 0405/16 |
| 0463/16 | 0465/16 | 0469/16 | 0471/16 | 0493/16 | 0494/16 | 0498/16 |
| 0054/17 | 0056/17 | 0117/17 | 0155/17 | 0166/17 | 0168/17 | 0182/17 |
| 0184/17 | 0194/17 | 0196/17 | 0276/17 | 0340/17 | 0341/17 | 0383/17 |
| 0385/17 | 0409/17 | 0025/18 | 0060/18 | 0069/18 | 0075/18 | 0235/18 |
| 0344/18 | 0022/19 | 0049/19 | 0051/19 | 0064/19 | 0066/19 | 0082/19 |
| 0122/19 | 0130/19 | 0136/19 | 0143/19 | 0151/19 | 0156/19 | 0162/19 |
| 0166/19 | 0174/19 | 0176/19 | 0186/19 | 0209/19 | 0211/19 | 0223/19 |
| 0225/19 | 0235/19 | 0249/19 | 0253/19 | 0258/19 | 0259/19 | 0260/19 |
| 0300/19 | 0311/19 | 0319/19 | 0332/19 | 0336/19 | 0352/19 | 0354/19 |
| 0356/19 | 0377/19 | 0380/19 | 0417/19 | 0446/19 | 0500/19 | 0513/19 |

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CROSS-REFERENCE SYMBOL TABLE

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| 0018/20 | 0034/20 | 0047/20 | 0052/20 | 0104/20 | 0128/20 | 0161/20 |
| 0168/20 | 0179/20 | 0234/20 | 0250/20 | 0292/20 | 0313/20 | 0339/20 |
| 0345/20 | 0511/20 | 0109/21 | 0124/21 | 0171/21 | 0185/21 | 0195/21 |
| 0253/21 | 0259/21 | 0261/21 | 0274/21 | 0295/21 | 0308/21 | 0310/21 |
| 0313/21 | 0315/21 | 0344/21 | 0347/21 | 0357/21 | 0376/21 | 0378/21 |
| 0380/21 | 0401/21 | 0404/21 | 0419/21 | 0428/21 | 0432/21 | 0436/21 |
| 0437/21 | 0441/21 | 0444/21 | 0447/21 | 0471/21 | 0472/21 | 0474/21 |
| 0501/21 | 0507/21 | 0512/21 | 0547/21 | 0562/21 | 0580/21 | 0581/21 |
| 0586/21 | 0010/22 | 0026/22 | 0028/22 | 0065/22 | 0080/22 | 0107/22 |
| 0121/22 | 0123/22 | 0138/22 | 0195/22 | 0281/22 | 0320/22 | 0053/23 |
| 0055/23 | 0057/23 | 0074/23 | 0104/23 | 0122/23 | 0144/23 | 0163/23 |
| 0238/23 | 0248/23 | 0265/23 | 0282/23 | 0305/23 | 0307/23 | 0308/23 |
| 0309/23 | 0312/23 | 0314/23 | 0369/23 | 0370/23 | 0371/23 | 0374/23 |
| 0376/23 | 0398/23 | 0408/23 | 0420/23 | 0422/23 | 0449/23 | 0048/24 |
| 0051/24 | 0066/24 | 0077/24 | 0084/24 | 0089/24 | 0091/24 | 0116/24 |
| 0120/24 | 0125/24 | 0126/24 | 0127/24 | 0148/24 | 0157/24 | 0164/24 |
| 0168/24 | 0190/24 | 0192/24 | 0216/24 | 0224/24 | 0226/24 | 0252/24 |
| 0268/24 | 0273/24 | 0276/24 | 0289/24 | 0292/24 | 0295/24 | 0308/24 |
| 0004/25 | 0007/25 | 0009/25 | 0031/25 | 0033/25 | 0035/25 | 0039/25 |
| 0080/25 | 0112/25 | 0162/25 | 0165/25 | 0170/25 | 0181/25 | 0183/25 |
| 0192/25 | 0196/25 | 0201/25 | 0202/25 | 0203/25 | 0215/25 | 0218/25 |
| 0220/25 | 0227/25 | 0230/25 | 0279/25 | 0290/25 | 0294/25 | 0296/25 |
| 0298/25 | 0332/25 | 0334/25 | 0336/25 | 0356/25 | 0358/25 | 0360/25 |
| 0431/25 | 0456/25 | 0458/25 | 0082/26 | 0085/26 | 0170/26 | 0179/26 |
| 0192/26 | 0212/26 | 0219/26 | 0245/26 | 0277/26 | 0288/26 | 0360/26 |
| 0364/26 | 0366/26 | 0383/26 | 0387/26 | 0392/26 | 0410/26 | 0429/26 |
| 0463/26 | 0073/27 | 0073/27 | 0088/27 | 0143/27 | 0148/27 | 0153/27 |
| 0158/27 | 0160/27 | 0182/27 | 0457/27 | 0460/27 | 0463/27 | 0467/27 |
| 0476/27 | 0504/27 | 0511/27 | 0026/28 | 0051/28 | 0070/28 | 0209/28 |
| 0213/28 | 0256/28 | 0262/28 | 0270/28 | 0272/28 | 0274/28 | 0290/28 |
| 0292/28 | 0294/28 | 0372/28 | 0428/28 | 0466/28 | 0486/28 | 0490/28 |
| 0490/28 | 0493/28 | 0493/28 | 0500/28 | 0500/28 | 0504/28 | 0508/28 |
| 0539/28 | 0544/28 | 0548/28 | 0556/28 | 0557/28 | 0557/28 | 0566/28 |
| 0569/28 | 0583/28 | 0584/28 | 0588/28 | 0601/28 | 0658/28 | 0689/28 |
| 0010/29 | 0012/29 | 0034/29 | 0041/29 | 0052/29 | 0068/29 | 0074/29 |
| 0082/29 | 0095/29 | 0119/29 | 0130/29 | 0137/29 | 0141/29 | 0144/29 |
| 0168/29 | 0171/29 | 0180/29 | 0184/29 | 0201/29 | 0214/29 | 0257/29 |
| 0262/29 | 0267/29 | 0269/29 | 0271/29 | 0286/29 | 0288/29 | 0291/29 |
| 0294/29 | 0312/29 | 0321/29 | 0324/29 | 0325/29 | 0325/29 | 0327/29 |
| 0331/29 | 0334/29 | 0341/29 | 0363/29 | 0368/29 | 0370/29 | 0390/29 |
| 0395/29 | 0398/29 | 0418/29 | 0429/29 | 0440/29 | 0463/29 | 0489/29 |
| 0512/29 | 0523/29 | 0525/29 | 0526/29 | 0526/29 | 0531/29 | 0532/29 |
| 0554/29 | 0556/29 | 0016/30 | 0036/30 | 0047/30 | 0091/30 | 0099/30 |
| 0115/30 | 0130/30 | 0141/30 | 0197/30 | 0197/30 | 0217/30 | 0219/30 |
| 0221/30 | 0224/30 | 0235/30 | 0241/30 | 0255/30 | 0261/30 | 0266/30 |
| 0275/30 | 0276/30 | 0297/30 | 0297/30 | 0300/30 | 0302/30 | 0304/30 |
| 0308/30 | 0310/30 | 0312/30 | 0334/30 | 0338/30 | 0345/30 | 0347/30 |
| 0361/30 | 0365/30 | 0370/30 | 0384/30 | 0387/30 | 0389/30 | 0415/30 |
| 0419/30 | 0431/30 | 0433/30 | 0491/30 | 0495/30 | 0497/30 | 0502/30 |
| 0506/30 | 0521/30 | 0531/30 | 0132/31 | 0135/31 | 0145/31 | 0153/31 |
| 0157/31 | 0177/31 | 0183/31 | 0207/31 | 0210/31 | 0252/31 | 0297/31 |
| 0323/31 | 0335/31 | 0337/31 | 0354/31 | 0359/31 | 0365/31 | 0376/31 |
| 0378/31 | 0406/31 | 0409/31 | 0415/31 | 0419/31 | 0499/31 | 0531/31 |
| 0015/32 | 0035/32 | 0040/32 | 0047/32 | 0049/32 | 0067/32 | 0090/32 |



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CROSS-REFERENCE SYMBOL TABLE

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| 0094/32 | 0098/32 | 0100/32 | 0104/32 | 0107/32 | 0115/32 | 0134/32 |
| 0142/32 | 0153/32 | 0155/32 | 0157/32 | 0159/32 | 0163/32 | 0176/32 |
| 0178/32 | 0182/32 | 0185/32 | 0189/32 | 0191/32 | 0195/32 | 0197/32 |
| 0206/32 | 0208/32 | 0210/32 | 0218/32 | 0220/32 | 0223/32 | 0232/32 |
| 0237/32 | 0242/32 | 0245/32 | 0251/32 | 0260/32 | 0266/32 | 0271/32 |
| 0306/32 | 0328/32 | 0342/32 | 0354/32 | 0356/32 | 0364/32 | 0368/32 |
| 0372/32 | 0382/32 | 0388/32 | 0398/32 | 0412/32 | 0034/33 | 0045/33 |
| 0047/33 | 0057/33 | 0063/33 | 0076/33 | 0087/33 | 0099/33 | 0115/33 |
| 0120/33 | 0141/33 | 0150/33 | 0153/33 | 0161/33 | 0163/33 | 0182/33 |
| 0230/33 | 0237/33 | 0264/33 | 0269/33 | 0278/33 | 0313/33 | 0323/33 |
| 0337/33 | 0353/33 | 0361/33 | 0365/33 | 0368/33 | 0374/33 | 0398/33 |
| 0401/33 | 0404/33 | 0405/33 | 0407/33 | 0452/33 | 0453/33 | 0463/33 |
| 0481/33 | 0503/33 | 0509/33 | 0519/33 | 0531/33 | 0118/34 | 0121/34 |
| 0137/34 | 0143/34 | 0145/34 | 0147/34 | 0161/34 | 0172/34 | 0175/34 |
| 0185/34 | 0200/34 | 0210/34 | 0228/34 | 0260/34 | 0264/34 | 0268/34 |
| 0279/34 | 0287/34 | 0297/34 | 0303/34 | 0324/34 | 0340/34 | 0370/34 |
| 0391/34 | 0401/34 | 0402/34 | 0414/34 | 0416/34 | 0427/34 | 0441/34 |
| 0447/34 | 0449/34 | 0452/34 | 0462/34 | 0471/34 | 0482/34 | 0489/34 |
| 0498/34 | 0501/34 | 0519/34 | 0539/34 | 0025/35 | 0043/35 | 0045/35 |
| 0051/35 | 0064/35 | 0080/35 | 0085/35 | 0105/35 | 0125/35 | 0129/35 |
| 0133/35 | 0138/35 | 0147/35 | 0158/35 | 0168/35 | 0173/35 | 0190/35 |
| 0207/35 | 0210/35 | 0215/35 | 0219/35 | 0238/35 | 0256/35 | 0270/35 |
| 0275/35 | 0277/35 | 0281/35 | 0290/35 | 0298/35 | 0309/35 | 0315/35 |
| 0319/35 | 0376/35 | 0384/35 | 0388/35 | 0390/35 | 0393/35 | 0395/35 |
| 0401/35 | 0407/35 | 0419/35 | 0422/35 | 0431/35 | 0433/35 | 0453/35 |
| 0456/35 | 0482/35 | 0492/35 | 0500/35 | 0513/35 | 0516/35 | 0523/35 |
| 0550/35 | 0552/35 | 0561/35 | 0567/35 | 0590/35 | 0639/35 | 0653/35 |
| 0020/36 | 0022/36 | 0024/36 | 0031/36 | 0037/36 | 0073/36 | 0077/36 |
| 0083/36 | 0092/36 | 0100/36 | 0112/36 | 0115/36 | 0122/36 | 0130/36 |
| 0140/36 | 0152/36 | 0167/36 | 0183/36 | 0186/36 | 0193/36 | 0195/36 |
| 0212/36 | 0217/36 | 0223/36 | 0230/36 | 0235/36 | 0259/36 | 0265/36 |
| 0285/36 | 0317/36 | 0322/36 | 0334/36 | 0337/36 | 0392/36 | 0407/36 |
| 0412/36 | 0420/36 | 0436/36 | 0017/37 | 0019/37 | 0029/37 | 0035/37 |
| 0040/37 | 0047/37 | 0049/37 | 0053/37 | 0066/37 | 0069/37 | 0083/37 |
| 0088/37 | 0091/37 | 0111/37 | 0123/37 | 0147/37 | 0157/37 | 0180/37 |
| 0192/37 | 0195/37 | 0202/37 | 0213/37 | 0224/37 | 0228/37 | 0230/37 |
| 0275/37 | 0296/37 | 0317/37 | 0323/37 | 0324/37 | 0328/37 | 0336/37 |
| 0351/37 | 0353/37 | 0363/37 | 0380/37 | 0384/37 | 0393/37 | 0451/37 |
| 0458/37 | 0498/37 | 0013/38 | 0020/38 | 0024/38 | 0026/38 | 0031/38 |
| 0036/38 | 0039/38 | 0042/38 | 0074/38 | 0080/38 | 0087/38 | 0095/38 |
| 0100/38 | 0109/38 | 0122/38 | 0125/38 | 0132/38 | 0154/38 | 0163/38 |
| 0165/38 | 0175/38 | 0183/38 | 0206/38 | 0208/38 | 0219/38 | 0264/38 |
| 0271/38 | 0285/38 | 0293/38 | 0295/38 | 0298/38 | 0305/38 | 0312/38 |
| 0333/38 | 0335/38 | 0342/38 | 0412/38 | 0414/38 | 0424/38 | 0436/38 |
| 0445/38 | 0012/39 | 0042/39 | 0054/39 | 0086/39 | 0106/39 | 0122/39 |
| 0127/39 | 0137/39 | 0152/39 | 0171/39 | 0181/39 | 0186/39 | 0193/39 |
| 0196/39 | 0201/39 | 0215/39 | 0227/39 | 0245/39 | 0256/39 | 0259/39 |
| 0268/39 | 0272/39 | 0284/39 | 0291/39 | 0332/39 | 0336/39 | 0344/39 |
| 0352/39 | 0363/39 | 0406/39 | 0415/39 | 0420/39 | 0435/39 | 0454/39 |
| 0474/39 | 0488/39 | 0503/39 | 0519/39 | 0526/39 | 0530/39 | 0532/39 |
| 0535/39 | 0538/39 | 0543/39 | 0563/39 | 0594/39 | 0600/39 | 0603/39 |
| 0607/39 | 0620/39 | 0630/39 | 0641/39 | 0648/39 | 0659/39 | 0667/39 |
| 0681/39 | 0726/39 | 0734/39 | 0741/39 | 0747/39 | 0758/39 | 0764/39 |
| 0823/39 | 0826/39 | 0016/40 | 0022/40 | 0036/40 | 0042/40 | 0044/40 |

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CROSS-REFERENCE SYMBOL TABLE

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| 0048/40 | 0050/40 | 0054/40 | 0056/40 | 0060/40 | 0164/40 | 0192/40 |
| 0209/40 | 0231/40 | 0241/40 | 0258/40 | 0261/40 | 0267/40 | 0273/40 |
| 0299/40 | 0314/40 | 0325/40 | 0349/40 | 0365/40 | 0370/40 | 0397/40 |
| 0436/40 | 0438/40 | 0478/40 | 0484/40 | 0501/40 | 0514/40 | 0523/40 |
| 0525/40 | 0529/40 | 0535/40 | 0538/40 | 0541/40 | 0013/41 | 0015/41 |
| 0018/41 | 0035/41 | 0039/41 | 0045/41 | 0049/41 | 0060/41 | 0068/41 |
| 0077/41 | 0087/41 | 0101/41 | 0104/41 | 0110/41 | 0113/41 | 0119/41 |
| 0122/41 | 0137/41 | 0141/41 | 0143/41 | 0145/41 | 0152/41 | 0154/41 |
| 0156/41 | 0166/41 | 0175/41 | 0178/41 | 0195/41 | 0205/41 | 0220/41 |
| 0227/41 | 0262/41 | 0275/41 | 0301/41 | 0305/41 | 0317/41 | 0327/41 |
| 0332/41 | 0354/41 | 0363/41 | 0371/41 | 0378/41 | 0396/41 | 0398/41 |
| 0405/41 | 0413/41 | 0427/41 | 0449/41 | 0454/41 | 0458/41 | 0460/41 |
| 0471/41 | 0484/41 | 0486/41 | 0494/41 | 0496/41 | 0500/41 | 0502/41 |
| 0509/41 | 0536/41 | 0545/41 | 0546/41 | 0548/41 | 0554/41 | 0561/41 |
| 0566/41 | 0568/41 | 0570/41 | 0576/41 | 0578/41 | 0582/41 | 0593/41 |
| 0595/41 | 0598/41 | 0633/41 | 0009/42 | 0013/42 | 0025/42 | 0034/42 |
| 0058/42 | 0062/42 | 0073/42 | 0095/42 | 0117/42 | 0121/42 | 0129/42 |
| 0134/42 | 0136/42 | 0142/42 | 0146/42 | 0148/42 | 0150/42 | 0152/42 |
| 0163/42 | 0171/42 | 0173/42 | 0175/42 | 0178/42 | 0187/42 | 0189/42 |
| 0192/42 | 0200/42 | 0202/42 | 0205/42 | 0215/42 | 0241/42 | 0245/42 |
| 0262/42 | 0268/42 | 0272/42 | 0277/42 | 0299/42 | 0301/42 | 0303/42 |
| 0312/42 | 0319/42 | 0331/42 | 0336/42 | 0339/42 | 0345/42 | 0353/42 |
| 0359/42 | 0361/42 | 0422/42 | 0432/42 | 0441/42 | 0456/42 | 0475/42 |
| 0484/42 | 0515/42 | 0529/42 | 0546/42 | 0548/42 | 0561/42 | 0603/42 |
| 0629/42 | 0638/42 | 0647/42 | 0674/42 | 0681/42 | 0683/42 | 0685/42 |
| 0693/42 | 0697/42 | 0705/42 | 0709/42 | 0011/43 | 0015/43 | 0034/43 |
| 0066/43 | 0075/43 | 0081/43 | 0090/43 | 0100/43 | 0109/43 | 0118/43 |
| 0122/43 | 0127/43 | 0158/43 | 0173/43 | 0177/43 | 0183/43 | 0196/43 |
| 0197/43 | 0206/43 | 0207/43 | 0216/43 | 0219/43 | 0229/43 | 0234/43 |
| 0243/43 | 0260/43 | 0268/43 | 0270/43 | 0275/43 | 0280/43 | 0296/43 |
| 0305/43 | 0307/43 | 0313/43 | 0330/43 | 0373/43 | 0394/43 | 0397/43 |
| 0399/43 | 0435/43 | 0438/43 | 0478/43 | 0483/43 | 0485/43 | 0506/43 |
| 0537/43 | 0542/43 | 0562/43 | 0568/43 | 0573/43 | 0598/43 | 0602/43 |
| 0600/43 | 0610/43 | 0013/44 | 0022/44 | 0031/44 | 0039/44 | 0043/44 |
| 0046/44 | 0049/44 | 0059/44 | 0072/44 | 0078/44 | 0086/44 | 0111/44 |
| 0116/44 | 0131/44 | 0133/44 | 0142/44 | 0154/44 | 0156/44 | 0158/44 |
| 0163/44 | 0166/44 | 0170/44 | 0183/44 | 0188/44 | 0205/44 | 0229/44 |
| 0239/44 | 0248/44 | 0256/44 | 0268/44 | 0271/44 | 0277/44 | 0284/44 |
| 0295/44 | 0315/44 | 0318/44 | 0325/44 | 0327/44 | 0343/44 | 0349/44 |
| 0355/44 | 0362/44 | 0367/44 | 0388/44 | 0394/44 | 0409/44 | 0428/44 |
| 0444/44 | 0455/44 | 0467/44 | 0468/44 | 0470/44 | 0487/44 | 0490/44 |
| 0504/44 | 0508/44 | 0512/44 | 0570/44 | 0585/44 | 0008/45 | 0013/45 |
| 0028/45 | 0030/45 | 0037/45 | 0039/45 | 0042/45 | 0047/45 | 0087/45 |
| 0112/45 | 0122/45 | 0126/45 | 0138/45 | 0154/45 | 0162/45 | 0174/45 |
| 0209/45 | 0234/45 | 0237/45 | 0270/45 | 0274/45 | 0298/45 | 0310/45 |
| 0357/45 | 0377/45 | 0400/45 | 0431/45 | 0434/45 | 0436/45 | 0447/45 |
| 0461/45 | 0487/45 | 0496/45 | 0520/45 | 0529/45 | 0549/45 | 0553/45 |
| 0561/45 | 0565/45 | 0618/45 | 0623/45 | 0642/45 | 0662/45 | 0678/45 |
| 0710/45 | 0724/45 | 0735/45 | 0748/45 | 0752/45 | 0765/45 | 0038/46 |
| 0040/46 | 0054/46 | 0062/46 | 0071/46 | 0087/46 | 0118/46 | 0123/46 |
| 0142/46 | 0203/46 | 0215/46 | 0216/46 | 0223/46 | 0226/46 | 0229/46 |
| 0230/46 | 0245/46 | 0265/46 | 0291/46 | 0313/46 | 0319/46 | 0322/46 |
| 0327/46 | 0350/46 | 0352/46 | 0354/46 | 0363/46 | 0370/46 | 0382/46 |
| 0387/46 | 0390/46 | 0396/46 | 0404/46 | 0410/46 | 0412/46 | 0470/46 |

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CROSS-REFERENCE SYMBOL TABLE

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| 0480/46 | 0486/46 | 0497/46 | 0015/47 | 0024/47 | 0055/47 | 0069/47 |
| 0083/47 | 0085/47 | 0104/47 | 0108/47 | 0194/47 | 0203/47 | 0211/47 |
| 0252/47 | 0272/47 | 0304/47 | 0313/47 | 0319/47 | 0328/47 | 0341/47 |
| 0350/47 | 0356/47 | 0360/47 | 0365/47 | 0396/47 | 0408/47 | 0412/47 |
| 0418/47 | 0434/47 | 0438/47 | 0439/47 | 0448/47 | 0449/47 | 0458/47 |
| 0461/47 | 0477/47 | 0482/47 | 0491/47 | 0507/47 | 0515/47 | 0517/47 |
| 0520/47 | 0523/47 | 0014/48 | 0023/48 | 0025/48 | 0031/48 | 0057/48 |
| 0098/48 | 0101/48 | 0103/48 | 0148/48 | 0159/48 | 0202/48 | 0210/48 |
| 0228/48 | 0247/48 | 0280/48 | 0292/48 | 0307/48 | 0332/48 | 0384/48 |
| 0392/48 | 0410/48 | 0435/48 | 0443/48 | 0448/48 | 0453/48 | 0464/48 |
| 0489/48 | 0500/48 | 0533/48 | 0539/48 | 0544/48 | 0549/48 | 0557/48 |
| 0573/48 | 0581/48 | 0583/48 | 0585/48 | 0596/48 | 0598/48 | 0603/48 |
| 0607/48 | 0609/48 | 0689/48 | 0719/48 | 0722/48 | 0738/48 | 0741/48 |
| 0754/48 | 0761/48 | 0769/48 | 0784/48 | 0793/48 | 0798/48 | 0811/48 |
| 0019/49 | 0036/49 | 0045/49 | 0047/49 | 0062/49 | 0071/49 | 0077/49 |
| 0087/49 | 0093/49 | 0098/49 | 0103/49 | 0138/49 | 0143/49 | 0152/49 |
| 0189/49 | 0192/49 | 0196/49 | 0213/49 | 0215/49 | 0217/49 | 0226/49 |
| 0228/49 | 0238/49 | 0253/49 | 0258/49 | 0266/49 | 0272/49 | 0282/49 |
| 0292/49 | 0326/49 | 0331/49 | 0340/49 | 0354/49 | 0364/49 | 0373/49 |
| 0388/49 | 0393/49 | 0395/49 | 0410/49 | 0447/49 | 0453/49 | 0456/49 |
| 0496/49 | 0017/50 | 0026/50 | 0045/50 | 0049/50 | 0056/50 | 0066/50 |
| 0081/50 | 0099/50 | 0106/50 | 0114/50 | 0149/50 | 0153/50 | 0162/50 |
| 0184/50 | 0188/50 | 0194/50 | 0205/50 | 0210/50 | 0212/50 | 0214/50 |
| 0218/50 | 0225/50 | 0229/50 | 0235/50 | 0237/50 | 0255/50 | 0300/50 |
| 0356/50 | 0358/50 | 0367/50 | 0371/50 | 0381/50 | 0443/50 | 0038/51 |
| 0056/51 | 0078/51 | 0086/51 | 0095/51 | 0110/51 | 0114/51 | 0127/51 |
| 0128/51 | 0130/51 | 0134/51 | 0147/51 | 0164/51 | 0167/51 | 0170/51 |
| 0223/51 | 0241/51 | 0249/51 | 0266/51 | 0274/51 | 0279/51 | 0283/51 |
| 0287/51 | 0297/51 | 0305/51 | 0312/51 | 0316/51 | 0351/51 | 0357/51 |
| 0362/51 | 0373/51 | 0449/51 | 0481/51 | 0494/51 | 0500/51 | 0575/51 |
| 0584/51 | 0640/51 | 0653/51 | 0663/51 | 0667/51 | 0037/52 | 0053/52 |
| 0061/52 | 0086/52 | 0098/52 | 0103/52 | 0158/52 | 0165/52 | 0168/52 |
| 0175/52 | 0181/52 | 0204/52 | 0211/52 | 0218/52 | 0248/52 | 0266/52 |
| 0278/52 | 0283/52 | 0310/52 | 0319/52 | 0386/52 | 0397/52 | 0401/52 |
| 0405/52 | 0410/52 | 0414/52 | 0417/52 | 0423/52 | 0433/52 | 0436/52 |
| 0455/52 | 0461/52 | 0504/52 | 0544/52 | 0549/52 | 0554/52 | 0558/52 |
| 0015/53 | 0017/53 | 0025/53 | 0034/53 | 0046/53 | 0053/53 | 0066/53 |
| 0070/53 | 0075/53 | 0085/53 | 0111/53 | 0128/53 | 0140/53 | 0145/53 |
| 0187/53 | 0201/53 | 0242/53 | 0262/53 | 0320/53 | 0323/53 | 0329/53 |
| 0345/53 | 0355/53 | 0361/53 | 0307/53 | 0373/53 | 0386/53 | 0026/54 |
| 0020/54 | 0036/54 | 0045/54 | 0057/54 | 0069/54 | 0082/54 | 0086/54 |
| 0091/54 | 0108/54 | 0111/54 | 0115/54 | 0119/54 | 0126/54 | 0131/54 |
| 0141/54 | 0142/54 | 0144/54 | 0153/54 | 0181/54 | 0188/54 | 0191/54 |
| 0198/54 | 0202/54 | 0215/54 | 0234/54 | 0241/54 | 0247/54 | 0276/54 |
| 0296/54 | 0307/54 | 0312/54 | 0322/54 | 0343/54 | 0363/54 | 0462/54 |
| 0487/54 | 0507/54 | 0526/54 | 0023/55 | 0045/55 | 0072/55 | 0084/55 |
| 0089/55 | 0092/55 | 0119/55 | 0125/55 | 0175/55 | 0187/55 | 0188/55 |
| 0194/55 | 0203/55 | 0209/55 | 0229/55 | 0232/55 | 0250/55 | 0256/55 |
| 0273/55 | 0286/55 | 0312/55 | 0315/55 | 0318/55 | 0344/55 | 0354/55 |
| 0364/55 | 0369/55 | 0376/55 | 0379/55 | 0401/55 | 0436/55 | 0438/55 |
| 0457/55 | 0469/55 | 0472/55 | 0490/55 | 0495/55 | 0516/55 | 0519/55 |
| 0524/55 | 0527/55 | 0532/55 | 0540/55 | 0010/56 | 0015/56 | 0025/56 |
| 0027/56 | 0048/56 | 0057/56 | 0079/56 | 0096/56 | 0104/56 | 0109/56 |
| 0118/56 | 0126/56 | 0138/56 | 0141/56 | 0148/56 | 0170/56 | 0179/56 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                                |                                                                |                                                     |                                                     |                                                     |                                                     |
|-------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| .73   | 0008/12                                                        | 0220/14                                                        |                                                                |                                                     |                                                     |                                                     |                                                     |
| .74   | 0006/19                                                        | 0070/19                                                        |                                                                |                                                     |                                                     |                                                     |                                                     |
| .75   | 0007/19                                                        | 0180/19                                                        |                                                                |                                                     |                                                     |                                                     |                                                     |
| .A    | 0006/23                                                        | 0189/23                                                        | 0362/23                                                        |                                                     |                                                     |                                                     |                                                     |
| .CHEB | 0150/02<br>0218/20                                             | 0317/02<br>0316/20                                             | 0344/02<br>0364/20                                             | 0436/02<br>0413/20                                  | 0471/02                                             | 0188/20                                             | 0217/20                                             |
| .EXP  | 0146/02<br>0505/20                                             | 0320/02<br>0512/20                                             | 0343/02                                                        | 0467/02                                             | 0364/13                                             | 0452/20                                             | 0502/20                                             |
| .EXP1 | 0503/20                                                        | 0468/20                                                        | 0508/20                                                        |                                                     |                                                     |                                                     |                                                     |
| .EXP2 | 0506/20                                                        | 0458/20                                                        | 0465/20                                                        |                                                     |                                                     |                                                     |                                                     |
| .FAD  | 0120/02<br>0562/15<br>0289/20<br>0017/21                       | 0339/02<br>0300/17<br>0298/20<br>0034/21                       | 0444/02<br>0245/18<br>0336/20<br>0040/21                       | 0469/02<br>0085/19<br>0346/20<br>0115/21            | 0180/10<br>0090/19<br>0476/20<br>0121/21            | 0319/13<br>0208/20<br>0486/20<br>0129/21            | 0561/15<br>0281/20<br>0496/20<br>0140/21            |
| .FDy  | 0126/02<br>0007/16<br>0032/21                                  | 0342/02<br>0142/18<br>0119/21                                  | 0464/02<br>0373/20<br>0127/21                                  | 0337/13<br>0404/20                                  | 0402/13<br>0480/20                                  | 0041/16<br>0494/20                                  | 0083/16<br>0023/21                                  |
| .FDy1 | 0081/16                                                        | 0047/16                                                        |                                                                |                                                     |                                                     |                                                     |                                                     |
| .FDV2 | 0084/16                                                        | 0044/16                                                        |                                                                |                                                     |                                                     |                                                     |                                                     |
| .FLUN | 0130/02<br>0096/19                                             | 0348/02<br>0267/20                                             | 0349/02<br>0012/21                                             | 0045/15<br>0106/21                                  | 0541/15<br>0260/23                                  | 0553/15                                             | 0139/16                                             |
| .FMP  | 0124/02<br>0006/16<br>0215/18<br>0310/20<br>0409/20<br>0042/21 | 0341/02<br>0036/16<br>0260/18<br>0318/20<br>0415/20<br>0113/21 | 0463/02<br>0298/17<br>0185/20<br>0333/20<br>0454/20<br>0138/21 | 0331/13<br>0044/18<br>0204/20<br>0358/20<br>0473/20 | 0362/13<br>0154/18<br>0215/20<br>0360/20<br>0484/20 | 0408/13<br>0167/18<br>0286/20<br>0366/20<br>0026/21 | 0416/13<br>0199/18<br>0296/20<br>0407/20<br>0036/21 |
| .FSB  | 0122/02<br>0122/14<br>0219/18<br>0314/20<br>0488/20            | 0340/02<br>0563/15<br>0249/18<br>0349/20<br>0490/20            | 0470/02<br>0569/15<br>0267/18<br>0355/20<br>0021/21            | 0183/10<br>0032/15<br>0206/20<br>0362/20<br>0028/21 | 0325/13<br>0088/18<br>0213/20<br>0411/20<br>0038/21 | 0046/14<br>0137/18<br>0301/20<br>0432/20            | 0055/14<br>0203/18<br>0306/20<br>0470/20            |
| .FSB1 | 0579/15                                                        | 0573/15                                                        | 0576/15                                                        |                                                     |                                                     |                                                     |                                                     |
| .IENT | 0152/02<br>0489/19                                             | 0318/02<br>0236/20                                             | 0345/02<br>0237/20                                             | 0437/02<br>0242/20                                  | 0472/02<br>0293/20                                  | 0430/19<br>0340/20                                  | 0456/19<br>0457/20                                  |
| .LNJM | 0242/02                                                        | 0425/06                                                        | 0030/08                                                        | 0399/09                                             | 0233/16                                             | 0395/16                                             |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| .LOG  | 0148/02                                                                                                                                                           | 0473/02                                                                                                                                                           | 0361/13                                                                                                                                                           | 0005/21                                                                                                                                                           | 0044/21                                                                                                                                                           | 0048/21                                                                                                                                                           |                                                                                                                                                                   |
| .LOG1 | 0045/21                                                                                                                                                           | 0008/21                                                                                                                                                           |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |
| .PACK | 0060/02<br>0253/20                                                                                                                                                | 0347/02<br>0175/22                                                                                                                                                | 0031/15<br>0262/22                                                                                                                                                | 0035/16<br>0297/22                                                                                                                                                | 0082/16<br>0300/22                                                                                                                                                | 0021/20<br>0305/22                                                                                                                                                | 0103/20<br>0310/22                                                                                                                                                |
| .PWR2 | 0154/02<br>0291/20                                                                                                                                                | 0319/02<br>0312/20                                                                                                                                                | 0346/02<br>0338/20                                                                                                                                                | 0438/02<br>0344/20                                                                                                                                                | 0269/20<br>0500/20                                                                                                                                                | 0276/20<br>0123/21                                                                                                                                                | 0277/20<br>0131/21                                                                                                                                                |
| .X    | 0003/23                                                                                                                                                           | 0187/23                                                                                                                                                           | 0330/23                                                                                                                                                           | 0357/23                                                                                                                                                           | 0009/24                                                                                                                                                           | 0109/24                                                                                                                                                           |                                                                                                                                                                   |
| ?ABP2 | 0007/33                                                                                                                                                           | 0142/33                                                                                                                                                           |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |
| ?ADIN | 0268                                                                                                                                                              | 0030                                                                                                                                                              | 0557/26                                                                                                                                                           |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                   |
| ?ATBL | 0397<br>0486/51                                                                                                                                                   | 0056/26<br>0043/62                                                                                                                                                | 0267/30                                                                                                                                                           | 0273/42                                                                                                                                                           | 0381/42                                                                                                                                                           | 0323/46                                                                                                                                                           | 0429/46                                                                                                                                                           |
| ?CLOC | 0254/27                                                                                                                                                           | 0258/27                                                                                                                                                           | 0180/29                                                                                                                                                           | 0184/29                                                                                                                                                           | 0401/33                                                                                                                                                           | 0404/33                                                                                                                                                           | 0452/33                                                                                                                                                           |
| ?DISC | 0234/27<br>0388/32<br>0264/47                                                                                                                                     | 0010<br>0063/33<br>0258/49                                                                                                                                        | 0238/27<br>0374/33<br>0079/52                                                                                                                                     | 0241/30<br>0024/36<br>0577/52                                                                                                                                     | 0261/30<br>0419/43                                                                                                                                                | 0251/32<br>0420/43                                                                                                                                                | 0271/32<br>0263/47                                                                                                                                                |
| ?FLAG | 0212/27                                                                                                                                                           | 0230/27                                                                                                                                                           | 0467/27                                                                                                                                                           | 0037/36                                                                                                                                                           | 0415/39                                                                                                                                                           | 0420/39                                                                                                                                                           | 0013/45                                                                                                                                                           |
| ?ID   | 0242/27<br>0267/29<br>0025/35<br>0436/38<br>0241/42<br>0442/48<br>0453/49                                                                                         | 0011<br>0269/29<br>0393/35<br>0420/39<br>0013/44<br>0447/48<br>0038/51                                                                                            | 0422/09<br>0260/32<br>0395/35<br>0594/39<br>0111/44<br>0452/48<br>0110/51                                                                                         | 0026/22<br>0342/32<br>0401/35<br>0039/41<br>0487/44<br>0266/49<br>0127/51                                                                                         | 0246/27<br>0398/32<br>0020/36<br>0275/41<br>0490/44<br>0282/49<br>0370/59                                                                                         | 0463/27<br>0099/33<br>0022/36<br>0301/41<br>0270/45<br>0292/49<br>0434/59                                                                                         | 0467/27<br>0210/34<br>0013/38<br>0009/42<br>0434/48<br>0447/49                                                                                                    |
| ?LINK | 0267/27<br>0457/27<br>0361/30<br>0260/32<br>0353/33<br>0340/34<br>0013/38<br>0042/39<br>0415/39<br>0016/40<br>0178/41<br>0427/41<br>0178/42<br>0542/43<br>0087/45 | 0085/07<br>0566/28<br>0370/30<br>0266/32<br>0398/33<br>0025/35<br>0183/38<br>0054/39<br>0454/39<br>0022/40<br>0275/41<br>0576/41<br>0241/42<br>0013/44<br>0122/45 | 0350/07<br>0689/28<br>0384/30<br>0057/33<br>0452/33<br>0347/35<br>0206/38<br>0215/39<br>0543/39<br>0325/40<br>0301/41<br>0009/42<br>0561/42<br>0111/44<br>0209/45 | 0387/07<br>0012/29<br>0387/30<br>0076/33<br>0463/33<br>0393/35<br>0333/38<br>0227/39<br>0578/39<br>0478/40<br>0317/41<br>0025/42<br>0693/42<br>0455/44<br>0270/45 | 0422/09<br>0294/29<br>0521/30<br>0099/33<br>0503/33<br>0567/35<br>0412/38<br>0245/39<br>0594/39<br>0541/40<br>0327/41<br>0034/42<br>0705/42<br>0467/44<br>0549/45 | 0380/19<br>0331/29<br>0531/30<br>0120/33<br>0531/33<br>0590/35<br>0424/38<br>0332/39<br>0681/39<br>0039/41<br>0354/41<br>0058/42<br>0478/43<br>0487/44<br>0561/45 | 0271/27<br>0334/30<br>0232/32<br>0153/33<br>0210/34<br>0020/36<br>0436/38<br>0406/39<br>0823/39<br>0154/41<br>0396/41<br>0117/42<br>0483/43<br>0008/45<br>0134/51 |
| ?NAME | 0246/27                                                                                                                                                           | 0250/27                                                                                                                                                           | 0489/29                                                                                                                                                           | 0556/29                                                                                                                                                           | 0445/38                                                                                                                                                           | 0478/40                                                                                                                                                           | 0541/40                                                                                                                                                           |
| ?PLEV | 0271/27                                                                                                                                                           | 0276/27                                                                                                                                                           | 0012/29                                                                                                                                                           | 0171/29                                                                                                                                                           | 0286/29                                                                                                                                                           | 0288/29                                                                                                                                                           | 0291/29                                                                                                                                                           |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0294/29 | 0321/29 | 0324/29 | 0370/29 | 0390/29 | 0395/29 | 0532/29 |
|       | 0300/30 | 0302/30 | 0345/30 | 0347/30 | 0495/30 | 0497/30 | 0237/32 |
|       | 0242/32 | 0361/33 | 0365/33 | 0404/33 | 0407/33 | 0467/44 | 0470/44 |
| ?PROG | 0238/27 | 0242/27 | 0554/29 | 0556/29 | 0235/30 | 0241/30 | 0255/30 |
|       | 0261/30 | 0245/32 | 0251/32 | 0266/32 | 0271/32 | 0382/32 | 0388/32 |
|       | 0057/33 | 0063/33 | 0368/33 | 0374/33 | 0567/35 | 0590/35 | 0022/36 |
|       | 0024/36 | 0037/36 | 0183/38 | 0208/38 | 0245/39 | 0016/40 | 0008/45 |
|       | 0013/45 | 0253/49 | 0258/49 |         |         |         |         |
| ?RSTR | 0258/27 | 0262/27 | 0539/28 | 0544/28 | 0171/29 | 0327/29 | 0331/29 |
|       | 0363/29 | 0368/29 | 0370/29 | 0395/29 | 0398/29 | 0525/29 | 0532/29 |
|       | 0304/30 | 0308/30 | 0338/30 | 0502/30 | 0506/30 | 0407/33 | 0470/44 |
| ?RTIM | 0276/27 | 0298/11 | 0280/27 | 0466/28 | 0327/41 | 0354/41 | 0396/41 |
|       | 0576/41 | 0034/42 | 0058/42 | 0117/42 | 0170/42 | 0455/44 | 0490/44 |
| ?SC   | 0033    | 0365/26 | 0394/26 | 0468/26 | 0470/26 | 0052/27 | 0068/27 |
|       | 0103/27 | 0108/27 | 0122/27 | 0140/27 | 0198/27 | 0190/28 | 0347/28 |
|       | 0363/28 | 0364/28 | 0365/28 | 0205/29 | 0470/32 | 0515/32 | 0567/32 |
|       | 0569/32 | 0570/32 |         |         |         |         |         |
| ?STAT | 0262/27 | 0350/07 | 0185/21 | 0026/22 | 0267/27 | 0460/27 | 0463/27 |
|       | 0486/28 | 0504/28 | 0508/28 | 0548/28 | 0556/28 | 0566/28 | 0569/28 |
|       | 0588/28 | 0601/28 | 0180/29 | 0269/29 | 0286/29 | 0288/29 | 0291/29 |
|       | 0324/29 | 0327/29 | 0334/29 | 0368/29 | 0398/29 | 0523/29 | 0525/29 |
|       | 0224/30 | 0300/30 | 0302/30 | 0304/30 | 0308/30 | 0345/30 | 0347/30 |
|       | 0365/30 | 0387/30 | 0491/30 | 0495/30 | 0497/30 | 0502/30 | 0531/30 |
|       | 0242/32 | 0245/32 | 0412/32 | 0365/33 | 0368/33 | 0398/33 | 0401/33 |
|       | 0481/33 | 0336/39 | 0561/42 | 0607/48 | 0189/49 | 0192/49 | 0127/51 |
|       | 0130/51 |         |         |         |         |         |         |
| ?TBL  | 0085    | 0397    |         |         |         |         |         |
| ?TEMP | 0280/27 | 0154/41 | 0178/41 | 0427/41 | 0693/42 | 0705/42 | 0549/45 |
|       | 0561/45 |         |         |         |         |         |         |
| ?TIME | 0250/27 | 0254/27 | 0378/39 | 0454/39 | 0542/43 | 0292/49 |         |
| ?TNUM | 0230/27 | 0494/16 | 0234/27 | 0476/27 | 0334/30 | 0338/30 | 0370/30 |
|       | 0153/33 | 0340/34 | 0042/39 | 0054/39 | 0215/39 | 0406/39 | 0543/39 |
|       | 0563/39 | 0681/39 | 0317/41 | 0025/42 | 0087/45 | 0122/45 | 0209/45 |
|       | 0192/49 | 0196/49 |         |         |         |         |         |
| ?TT2  | 0060/27 | 0200    | 0538/26 | 0552/26 | 0044/27 | 0110/27 | 0695/32 |
| ?TT35 | 0037/27 | 0289    | 0043/27 | 0056/27 | 0694/32 |         |         |
| A     | 0020    | 0031/06 | 0032/06 | 0275/07 | 0279/07 | 0402/09 | 0324/14 |
|       | 0134/15 | 0139/15 | 0142/15 | 0200/15 | 0438/19 | 0024/23 | 0457/25 |
|       | 0160/26 | 0163/26 | 0166/26 | 0175/26 | 0185/29 | 0329/29 | 0176/30 |
|       | 0269/30 | 0277/30 | 0314/31 | 0338/31 | 0347/31 | 0353/31 | 0355/31 |
|       | 0356/31 | 0379/31 | 0365/32 | 0491/32 | 0239/34 | 0261/34 | 0424/34 |
|       | 0081/35 | 0106/35 | 0441/35 | 0267/36 | 0323/36 | 0085/37 | 0098/37 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0105/37 | 0112/37 | 0141/37 | 0148/37 | 0181/37 | 0189/37 | 0229/37 |
|       | 0234/37 | 0350/37 | 0059/38 | 0650/39 | 0682/39 | 0080/40 | 0105/40 |
|       | 0139/40 | 0154/40 | 0177/40 | 0182/40 | 0295/40 | 0298/40 | 0304/40 |
|       | 0159/41 | 0182/41 | 0263/41 | 0634/41 | 0067/42 | 0082/42 | 0090/42 |
|       | 0107/42 | 0165/42 | 0304/42 | 0322/42 | 0330/42 | 0340/42 | 0342/42 |
|       | 0354/42 | 0356/42 | 0383/42 | 0476/42 | 0577/42 | 0239/43 | 0085/44 |
|       | 0346/44 | 0396/44 | 0118/45 | 0123/45 | 0443/45 | 0612/45 | 0624/45 |
|       | 0737/45 | 0751/45 | 0292/46 | 0355/46 | 0373/46 | 0381/46 | 0391/46 |
|       | 0393/46 | 0405/46 | 0407/46 | 0431/46 | 0016/47 | 0138/47 | 0487/47 |
|       | 0288/48 | 0605/48 | 0390/49 | 0306/50 | 0413/50 | 0424/50 | 0447/50 |
|       | 0048/51 | 0317/51 | 0290/52 | 0071/53 | 0238/53 | 0087/54 | 0143/54 |
|       | 0319/54 | 0339/54 | 0481/54 | 0496/54 | 0522/54 | 0186/55 | 0373/55 |
|       | 0470/55 | 0491/55 | 0072/56 | 0000/56 | 0232/56 | 0243/56 | 0246/56 |
|       | 0281/56 | 0415/56 | 0447/56 | 0198/57 | 0201/57 | 0293/57 | 0329/57 |
|       | 0337/57 | 0377/57 | 0408/57 | 0660/57 | 0209/58 | 0468/58 | 0480/58 |
|       | 0371/59 | 0435/59 | 0441/59 | 0442/59 |         |         |         |
| A, 10 | 0004/07 | 0066/09 |         |         |         |         |         |
| A000  | 0505    | 0425/09 | 0219/34 | 0360/34 | 0044/35 | 0231/35 | 0447/35 |
|       | 0049/38 | 0258/41 | 0303/41 | 0011/42 | 0243/42 | 0272/45 | 0022/51 |
| A1    | 0439/02 | 0538/15 | 0589/15 | 0592/15 | 0618/15 | 0622/15 | 0630/15 |
|       | 0012/16 | 0024/16 | 0045/16 | 0085/16 |         |         |         |
| A2    | 0441/02 | 0550/15 | 0570/15 | 0580/15 | 0590/15 | 0591/15 | 0608/15 |
|       | 0017/16 | 0025/16 | 0042/16 | 0054/16 | 0058/16 | 0063/16 |         |
| AAA   | 0053/21 | 0035/21 |         |         |         |         |         |
| AAAA  | 0516/20 | 0477/20 |         |         |         |         |         |
| ABCHK | 0461/33 | 0299    | 0760/32 | 0472/33 | 0342/35 | 0610/35 | 0642/35 |
|       | 0656/35 |         |         |         |         |         |         |
| ABCK  | 0299    | 0471/07 | 0303/09 | 0569/11 | 0475/16 | 0279/32 |         |
| ABR   | 0472/28 | 0434/28 |         |         |         |         |         |
| ABR1  | 0485/28 | 0480/28 |         |         |         |         |         |
| ABR2  | 0503/28 | 0492/28 |         |         |         |         |         |
| ABT   | 0158    | 0609/28 |         |         |         |         |         |
| ABTRY | 0517    | 0482/28 | 0356/29 | 0405/32 | 0470/33 |         |         |
| ABUCD | 0380/32 | 0113/31 |         |         |         |         |         |
| ACC5A | 0293    | 0209/03 | 0210/03 | 0215/03 | 0260/03 |         |         |
| ACCS1 | 0586/05 | 0580/05 | 0593/05 | 0608/05 |         |         |         |
| ACCS2 | 0594/05 | 0574/05 | 0582/05 |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| ACCS3 | 0607/05 | 0615/05 |         |         |         |         |         |
| ACCS4 | 0616/05 | 0573/05 |         |         |         |         |         |
| ACCS5 | 0618/05 | 0293    | 0592/05 |         |         |         |         |
| ACCS6 | 0629/05 | 0567/05 | 0621/05 |         |         |         |         |
| ACCSA | 0291    | 0326/03 | 0350/03 | 0411/03 | 0467/03 | 0538/03 | 0564/03 |
|       | 0613/03 | 0641/03 | 0645/03 | 0659/03 | 0670/03 | 0685/03 | 0709/03 |
|       | 0721/03 | 0724/03 | 0037/04 | 0049/04 | 0062/04 | 0076/04 | 0087/04 |
|       | 0124/04 | 0154/04 | 0272/05 | 0287/05 | 0517/16 |         |         |
| ACCS7 | 0561/05 | 0291    | 0317/05 |         |         |         |         |
| ADB10 | 0429/26 | 0436/26 |         |         |         |         |         |
| ADLEN | 0081    | 0027/28 | 0217/31 | 0219/31 | 0258/31 | 0259/31 | 0781/39 |
|       | 0788/39 | 0056/43 | 0294/47 | 0379/51 | 0389/51 | 0405/51 | 0414/51 |
|       | 0536/51 | 0544/51 | 0599/51 | 0600/51 | 0298/52 | 0324/52 | 0330/52 |
|       | 0266/55 | 0289/55 | 0585/57 | 0592/57 | 0629/57 | 0631/57 | 0149/58 |
|       | 0158/58 | 0518/58 | 0555/58 |         |         |         |         |
| ADLOC | 0080    | 0029/28 | 0783/39 | 0790/39 | 0055/43 | 0293/47 | 0381/51 |
|       | 0391/51 | 0407/51 | 0416/51 | 0546/51 | 0603/51 | 0121/52 | 0300/52 |
|       | 0332/52 | 0268/55 | 0291/55 | 0587/57 | 0634/57 | 0151/58 | 0160/58 |
|       | 0520/58 | 0557/58 |         |         |         |         |         |
| ADMU1 | 0585/15 | 0564/15 | 0601/15 |         |         |         |         |
| ADMU2 | 0602/15 | 0588/15 |         |         |         |         |         |
| ADMU3 | 0610/15 | 0636/15 |         |         |         |         |         |
| ADMU4 | 0630/15 | 0605/15 | 0620/15 | 0624/15 | 0628/15 |         |         |
| ADMU5 | 0633/15 | 0611/15 |         |         |         |         |         |
| AEND  | 0532/04 | 0477/03 | 0704/03 |         |         |         |         |
| ALC00 | 0446/06 | 0454/06 |         |         |         |         |         |
| ALC01 | 0424/06 | 0505/06 |         |         |         |         |         |
| ALC02 | 0455/06 | 0433/06 | 0502/06 |         |         |         |         |
| ALC03 | 0467/06 | 0458/06 |         |         |         |         |         |
| ALC04 | 0472/06 | 0469/06 |         |         |         |         |         |
| ALC05 | 0487/06 | 0481/06 |         |         |         |         |         |
| ALC06 | 0434/06 | 0504/06 |         |         |         |         |         |



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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |         |         |         |                    |
|-------|--------------------|--------------------|---------|---------|---------|--------------------|
| ALC07 | 0493/06            | 0466/06            | 0471/06 |         |         |                    |
| ALCOM | 0198/02            | 0436/06            | 0449/06 | 0051/07 | 0048/36 | 0389/36            |
| ALI   | 0144               | 0632/05            | 0414/29 |         |         |                    |
| ANN,A | 0652/48            | 0528/48            |         |         |         |                    |
| ANN,L | 0653/48            | 0567/48            | 0570/48 |         |         |                    |
| ANN1  | 0560/48            | 0540/48            |         |         |         |                    |
| ANN2  | 0564/48            | 0529/48            |         |         |         |                    |
| ANN3  | 0580/48            | 0563/48            |         |         |         |                    |
| ANN4  | 0587/48            | 0593/48            |         |         |         |                    |
| ANN5  | 0594/48            | 0591/48            |         |         |         |                    |
| ANN6  | 0602/48            | 0619/48            |         |         |         |                    |
| ANN7  | 0616/48            | 0611/48            |         |         |         |                    |
| ANNC1 | 0628/48            | 0637/48            | 0650/48 |         |         |                    |
| ANNC2 | 0645/48            | 0642/48            |         |         |         |                    |
| ANNC3 | 0648/48            | 0644/48            |         |         |         |                    |
| ANNCH | 0622/48<br>0599/48 | 0582/48<br>0651/48 | 0584/48 | 0586/48 | 0592/48 | 0595/48<br>0597/48 |
| ANNJM | 0654/48            | 0600/48            |         |         |         |                    |
| ANOT  | 0266               | 0335/04            |         |         |         |                    |
| APP01 | 0278/38            | 0267/38            |         |         |         |                    |
| APP02 | 0291/38            | 0281/38            |         |         |         |                    |
| APP1  | 0346/38            | 0328/38            |         |         |         |                    |
| APP10 | 0341/38            | 0316/38            |         |         |         |                    |
| APP2  | 0394/38            | 0373/38            | 0380/38 |         |         |                    |
| APP3  | 0433/38            | 0409/38            |         |         |         |                    |
| APP5  | 0384/38            | 0377/38            | 0388/38 |         |         |                    |
| APP6  | 0445/38            | 0440/38            |         |         |         |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                                          |                                          |                               |                               |                               |                               |
|-------|------------------------------------------|------------------------------------------|------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| APP7  | 0359/38                                  | 0349/38                                  |                                          |                               |                               |                               |                               |
| APP8  | 0368/38                                  | 0358/38                                  |                                          |                               |                               |                               |                               |
| APP9  | 0421/38                                  | 0400/38                                  | 0405/38                                  |                               |                               |                               |                               |
| APPDP | 0448/38                                  | 0354/38                                  |                                          |                               |                               |                               |                               |
| APPLS | 0450/38                                  | 0297/38                                  | 0441/38                                  |                               |                               |                               |                               |
| APPS  | 0451/38                                  | 0384/38                                  | 0391/38                                  |                               |                               |                               |                               |
| APTR1 | 0006/07                                  | 0202/08                                  |                                          |                               |                               |                               |                               |
| APTR2 | 0005/07                                  | 0231/08                                  |                                          |                               |                               |                               |                               |
| ARBAS | 0003/12                                  | 0435/12                                  |                                          |                               |                               |                               |                               |
| AREG  | 0006/02                                  | 0577/28                                  | 0196/29                                  | 0505/30                       |                               |                               |                               |
| ARG1  | 0058/14                                  | 0048/14                                  |                                          |                               |                               |                               |                               |
| ARG2  | 0049/14                                  | 0057/14                                  |                                          |                               |                               |                               |                               |
| ARIN1 | 0120/16                                  | 0105/16                                  | 0111/16                                  |                               |                               |                               |                               |
| ARIN2 | 0100/16                                  | 0097/16                                  |                                          |                               |                               |                               |                               |
| ARIN3 | 0122/16                                  | 0099/16                                  |                                          |                               |                               |                               |                               |
| ARINV | 0110/02<br>0047/19                       | 0381/11<br>0006/20                       | 0133/13<br>0156/20                       | 0121/16<br>0343/20            | 0125/16                       | 0086/18                       | 0265/18                       |
| ARRID | 0024/02<br>0147/04                       | 0356/02<br>0163/04                       | 0381/02<br>0118/05                       | 0033/04                       | 0060/04                       | 0074/04                       | 0135/04                       |
| ARYAD | 0538/04<br>0046/05                       | 0399/03<br>0056/05                       | 0408/03<br>0064/05                       | 0410/03<br>0131/05            | 0090/04<br>0146/05            | 0032/05<br>0181/05            | 0034/05<br>0189/05            |
| ASBFA | 0624/11                                  | 0403/11                                  | 0445/11                                  | 0511/11                       |                               |                               |                               |
| ASBFP | 0493/02<br>0092/35                       | 0446/11<br>0333/35                       | 0512/11                                  | 0517/11                       | 0527/11                       | 0530/11                       | 0070/35                       |
| ASBUF | 0356/35<br>0151/35<br>0218/35<br>0280/35 | 0039/35<br>0153/35<br>0233/35<br>0297/35 | 0047/35<br>0155/35<br>0235/35<br>0318/35 | 0098/35<br>0157/35<br>0237/35 | 0140/35<br>0159/35<br>0240/35 | 0146/35<br>0165/35<br>0255/35 | 0149/35<br>0206/35<br>0266/35 |
| ASC00 | 0331<br>0198/41                          | 0280/26<br>0129/45                       | 0291/26<br>0768/45                       | 0507/27<br>0248/46            | 0039/30<br>0492/48            | 0145/32<br>0547/52            | 0139/41<br>0510/54            |
| ASC0B | 0625/28                                  | 0076/29                                  |                                          |                               |                               |                               |                               |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| ASCB0 | 0278/46 | 0188/46 |         |         |         |         |         |
| ASCBA | 0624/28 | 0069/29 |         |         |         |         |         |
| ASCB8 | 0327    | 0028/36 | 0614/39 | 0132/45 | 0718/45 | 0469/48 |         |
| ASCC  | 0242/41 | 0092/41 |         |         |         |         |         |
| ASCEB | 0520/16 | 0325/16 |         |         |         |         |         |
| ASCF  | 0243/41 | 0099/41 |         |         |         |         |         |
| ASCFE | 0623/28 | 0065/29 |         |         |         |         |         |
| ASCIN | 0622/28 | 0063/29 |         |         |         |         |         |
| ASCP  | 0244/41 | 0108/41 |         |         |         |         |         |
| ASCS  | 0245/41 | 0117/41 |         |         |         |         |         |
| ASCSS | 0279/46 |         |         |         |         |         |         |
| ASFBF | 0358/35 | 0038/35 |         |         |         |         |         |
| ASFCB | 0348/35 | 0053/35 | 0268/35 | 0269/35 | 0272/35 | 0273/35 | 0279/35 |
|       | 0285/35 | 0288/35 | 0289/35 | 0291/35 | 0293/35 | 0294/35 | 0295/35 |
|       | 0307/35 | 0308/35 | 0310/35 | 0312/35 | 0313/35 | 0314/35 | 0323/35 |
|       | 0324/35 | 0326/35 | 0327/35 | 0328/35 | 0329/35 | 0331/35 | 0332/35 |
|       | 0335/35 | 0337/35 | 0339/35 |         |         |         |         |
| ASGNA | 0044/31 | 0121/31 |         |         |         |         |         |
| ASINP | 0292/02 | 0071/07 | 0332/09 | 0402/11 |         |         |         |
| ASN1  | 0041/35 |         |         |         |         |         |         |
| ASN10 | 0227/35 | 0223/35 |         |         |         |         |         |
| ASN11 | 0237/35 | 0212/35 | 0232/35 |         |         |         |         |
| ASN12 | 0297/35 | 0284/35 |         |         |         |         |         |
| ASN13 | 0314/35 | 0296/35 |         |         |         |         |         |
| ASN14 | 0341/35 | 0123/35 |         |         |         |         |         |
| ASN2  | 0049/35 |         |         |         |         |         |         |
| ASN20 | 0087/35 | 0078/35 |         |         |         |         |         |
| ASN21 | 0092/35 | 0061/35 |         |         |         |         |         |
| ASN22 | 0098/35 | 0091/35 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |         |         |         |         |         |  |
|-------|--------------------|--------------------|---------|---------|---------|---------|---------|--|
| ASN23 | 0111/35            | 0108/35            |         |         |         |         |         |  |
| ASN24 | 0113/35            | 0128/35            | 0137/35 |         |         |         |         |  |
| ASN25 | 0138/35            | 0132/35            |         |         |         |         |         |  |
| ASN26 | 0122/35            | 0116/35            |         |         |         |         |         |  |
| ASN28 | 0346/35            |                    |         |         |         |         |         |  |
| ASN3  | 0114/35            | 0144/35            |         |         |         |         |         |  |
| ASN30 | 0248/35            | 0242/35            |         |         |         |         |         |  |
| ASN31 | 0252/35            | 0246/35            |         |         |         |         |         |  |
| ASN32 | 0254/35            | 0247/35            |         |         |         |         |         |  |
| ASN4  | 0124/35            | 0112/35            |         |         |         |         |         |  |
| ASN5  | 0147/35            |                    |         |         |         |         |         |  |
| ASN50 | 0179/35            |                    |         |         |         |         |         |  |
| ASN6  | 0205/35            | 0225/35            |         |         |         |         |         |  |
| ASN7  | 0209/35            | 0216/35            |         |         |         |         |         |  |
| ASN9  | 0218/35            | 0214/35            |         |         |         |         |         |  |
| ASNFS | 0350/35            | 0197/35            | 0200/35 | 0258/35 |         |         |         |  |
| ASNIB | 0121/31            | 0491/11            |         |         |         |         |         |  |
| ASNID | 0351/35<br>0229/35 | 0027/35<br>0244/35 | 0031/35 | 0041/35 | 0062/35 | 0135/35 | 0161/35 |  |
| ASNIF | 0357/35            | 0203/35            | 0228/35 | 0249/35 |         |         |         |  |
| ASNS  | 0358/05            | 0514/05            |         |         |         |         |         |  |
| ASNS4 | 0366/05            |                    |         |         |         |         |         |  |
| ASNSP | 0347/35            | 0188/35            |         |         |         |         |         |  |
| ASORD | 0349/35            | 0050/35            | 0194/35 |         |         |         |         |  |
| ASSAV | 0355/35            | 0059/35            | 0142/35 | 0320/35 |         |         |         |  |
| ASSCH | 0354/35            | 0299/35            | 0303/35 | 0311/35 |         |         |         |  |
| ASSOP | 0505/04            | 0316/03            | 0383/03 | 0523/03 | 0098/04 | 0391/04 |         |  |
| ASTEP | 0540/04            | 0541/03            |         |         |         |         |         |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |                    |         |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|
| ASTYP | 0494/02            | 0417/11            | 0434/11            | 0042/35            |                    |                    |         |
| ASUFS | 0353/35            | 0193/35            | 0209/35            |                    |                    |                    |         |
| ASYMT | 0070/02            | 0303/02            | 0301/07            | 0198/08            | 0203/08            | 0222/08            | 0232/08 |
| ATAB  | 0279               | 0391/06            | 0479/21            |                    |                    |                    |         |
| ATHEN | 0459               | 0507/03            |                    |                    |                    |                    |         |
| ATIM  | 0257/02            | 0255/11            | 0263/11            |                    |                    |                    |         |
| ATMP  | 0263/02<br>0264/15 | 0419/02<br>0459/15 | 0420/02<br>0461/15 | 0457/11<br>0201/20 | 0460/11<br>0207/20 | 0538/11<br>0214/20 | 0262/15 |
| B     | 0021               | 0468/05            | 0029/06            | 0399/06            | 0401/06            | 0075/08            | 0345/09 |
|       | 0347/09            | 0349/09            | 0400/09            | 0106/11            | 0108/11            | 0123/11            | 0129/11 |
|       | 0134/11            | 0139/11            | 0141/11            | 0164/11            | 0167/11            | 0172/11            | 0179/11 |
|       | 0184/11            | 0188/11            | 0192/11            | 0225/11            | 0406/11            | 0423/11            | 0347/14 |
|       | 0361/14            | 0164/15            | 0175/15            | 0188/15            | 0238/15            | 0280/15            | 0314/15 |
|       | 0397/15            | 0401/15            | 0403/15            | 0424/15            | 0429/15            | 0431/15            | 0435/15 |
|       | 0472/15            | 0474/15            | 0478/15            | 0075/21            | 0081/21            | 0083/21            | 0186/21 |
|       | 0180/21            | 0206/26            | 0235/26            | 0279/26            | 0290/26            | 0462/27            | 0466/27 |
|       | 0468/27            | 0477/27            | 0506/27            | 0060/28            | 0071/28            | 0217/28            | 0227/28 |
|       | 0283/28            | 0358/28            | 0477/28            | 0495/28            | 0498/28            | 0605/28            | 0606/28 |
|       | 0608/28            | 0045/29            | 0186/29            | 0189/29            | 0309/29            | 0318/29            | 0319/29 |
|       | 0323/29            | 0326/29            | 0330/29            | 0007/30            | 0182/30            | 0262/30            | 0296/30 |
|       | 0301/30            | 0305/30            | 0309/30            | 0325/31            | 0326/31            | 0417/31            | 0463/31 |
|       | 0500/31            | 0043/32            | 0044/32            | 0099/32            | 0114/32            | 0144/32            | 0233/32 |
|       | 0240/32            | 0244/32            | 0247/32            | 0252/32            | 0254/32            | 0267/32            | 0272/32 |
|       | 0302/32            | 0320/32            | 0323/32            | 0345/32            | 0346/32            | 0369/32            | 0374/32 |
|       | 0384/32            | 0389/32            | 0391/32            | 0407/32            | 0408/32            | 0496/32            | 0064/33 |
|       | 0306/33            | 0310/33            | 0314/33            | 0406/33            | 0409/33            | 0414/33            | 0242/34 |
|       | 0280/34            | 0284/34            | 0294/34            | 0298/34            | 0304/34            | 0442/34            | 0454/34 |
|       | 0459/34            | 0475/34            | 0477/34            | 0126/35            | 0130/35            | 0134/35            | 0139/35 |
|       | 0396/35            | 0413/35            | 0427/35            | 0444/35            | 0483/35            | 0501/35            | 0505/35 |
|       | 0514/35            | 0553/35            | 0556/35            | 0568/35            | 0592/35            | 0647/35            | 0648/35 |
|       | 0117/36            | 0150/36            | 0154/36            | 0214/36            | 0237/36            | 0287/36            | 0318/36 |
|       | 0320/36            | 0122/37            | 0124/37            | 0156/37            | 0158/37            | 0168/37            | 0212/37 |
|       | 0214/37            | 0318/37            | 0382/37            | 0496/37            | 0062/38            | 0088/38            | 0110/38 |
|       | 0114/38            | 0123/38            | 0166/38            | 0169/38            | 0184/38            | 0210/38            | 0299/38 |
|       | 0302/38            | 0306/38            | 0375/38            | 0216/39            | 0230/39            | 0231/39            | 0269/39 |
|       | 0285/39            | 0288/39            | 0292/39            | 0566/39            | 0567/39            | 0642/39            | 0645/39 |
|       | 0649/39            | 0765/39            | 0072/40            | 0078/40            | 0098/40            | 0102/40            | 0137/40 |
|       | 0152/40            | 0179/40            | 0543/40            | 0096/41            | 0105/41            | 0114/41            | 0276/41 |
|       | 0279/41            | 0302/41            | 0328/41            | 0355/41            | 0372/41            | 0376/41            | 0379/41 |
|       | 0397/41            | 0472/41            | 0479/41            | 0501/41            | 0010/42            | 0026/42            | 0035/42 |
|       | 0059/42            | 0118/42            | 0179/42            | 0242/42            | 0305/42            | 0477/42            | 0549/42 |
|       | 0562/42            | 0578/42            | 0026/43            | 0076/43            | 0110/43            | 0139/43            | 0254/43 |
|       | 0257/43            | 0374/43            | 0398/43            | 0014/44            | 0073/44            | 0293/44            | 0411/44 |
|       | 0423/44            | 0457/44            | 0460/44            | 0469/44            | 0472/44            | 0477/44            | 0488/44 |
|       | 0491/44            | 0494/44            | 0497/44            | 0505/44            | 0509/44            | 0128/45            | 0190/45 |
|       | 0191/45            | 0271/45            | 0637/45            | 0663/45            | 0190/46            | 0210/46            | 0218/46 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                 |                    |                    |                    |                    |                    |                    |
|-------|-----------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|       | 0227/46         | 0356/46            | 0017/47            | 0086/47            | 0119/47            | 0139/47            | 0314/47            |
|       | 0351/47         | 0378/47            | 0435/47            | 0501/47            | 0504/47            | 0102/48            | 0608/48            |
|       | 0643/48         | 0193/49            | 0254/49            | 0259/49            | 0271/49            | 0389/49            | 0396/49            |
|       | 0111/50         | 0244/50            | 0324/50            | 0426/50            | 0446/50            | 0455/50            | 0041/51            |
|       | 0051/51         | 0280/51            | 0284/51            | 0288/51            | 0425/51            | 0154/52            | 0169/52            |
|       | 0185/52         | 0201/52            | 0252/52            | 0261/52            | 0280/52            | 0281/52            | 0284/52            |
|       | 0381/52         | 0387/52            | 0398/52            | 0403/52            | 0406/52            | 0409/52            | 0415/52            |
|       | 0419/52         | 0422/52            | 0451/52            | 0456/52            | 0072/53            | 0102/53            | 0123/53            |
|       | 0127/53         | 0130/53            | 0138/53            | 0141/53            | 0149/53            | 0167/53            | 0172/53            |
|       | 0176/53         | 0183/53            | 0186/53            | 0188/53            | 0191/53            | 0261/53            | 0263/53            |
|       | 0321/53         | 0324/53            | 0340/53            | 0344/53            | 0348/53            | 0358/53            | 0369/53            |
|       | 0380/53         | 0383/53            | 0088/54            | 0132/54            | 0177/54            | 0192/54            | 0208/54            |
|       | 0212/54         | 0216/54            | 0231/54            | 0272/54            | 0280/54            | 0289/54            | 0309/54            |
|       | 0310/54         | 0313/54            | 0362/54            | 0364/54            | 0425/54            | 0509/54            | 0036/55            |
|       | 0060/55         | 0064/55            | 0069/55            | 0073/55            | 0075/55            | 0078/55            | 0081/55            |
|       | 0085/55         | 0086/55            | 0096/55            | 0115/55            | 0121/55            | 0132/55            | 0135/55            |
|       | 0141/55         | 0144/55            | 0170/55            | 0176/55            | 0190/55            | 0195/55            | 0204/55            |
|       | 0210/55         | 0246/55            | 0251/55            | 0313/55            | 0316/55            | 0319/55            | 0357/55            |
|       | 0360/55         | 0437/55            | 0439/55            | 0444/55            | 0450/55            | 0454/55            | 0534/55            |
|       | 0029/56         | 0035/56            | 0040/56            | 0049/56            | 0052/56            | 0055/56            | 0058/56            |
|       | 0089/56         | 0106/56            | 0111/56            | 0143/56            | 0168/56            | 0172/56            | 0222/56            |
|       | 0296/56         | 0433/56            | 0090/57            | 0094/57            | 0102/57            | 0105/57            | 0147/57            |
|       | 0156/57         | 0160/57            | 0163/57            | 0171/57            | 0176/57            | 0184/57            | 0186/57            |
|       | 0194/57         | 0195/57            | 0208/57            | 0211/57            | 0214/57            | 0217/57            | 0225/57            |
|       | 0227/57         | 0233/57            | 0282/57            | 0345/57            | 0395/57            | 0511/57            | 0528/57            |
|       | 0541/57         | 0549/57            | 0560/57            | 0565/57            | 0600/57            | 0613/57            | 0615/57            |
|       | 0618/57         | 0643/57            | 0651/57            | 0654/57            | 0045/58            | 0054/58            | 0064/58            |
|       | 0074/58         | 0081/58            | 0094/58            | 0099/58            | 0112/58            | 0114/58            | 0200/58            |
|       | 0203/58         | 0388/58            | 0404/58            | 0416/58            | 0420/58            | 0424/58            | 0433/58            |
|       | 0437/58         | 0441/58            | 0495/58            | 0500/58            | 0530/58            | 0535/58            | 0285/59            |
|       | 0288/59         | 0293/59            | 0295/59            | 0314/59            | 0428/59            | 0444/59            |                    |
| B100  | 0457<br>0154/47 | 0516               | 0433/21            | 0064/26            | 0406/41            | 0122/42            | 0593/42            |
| B1000 | 0229<br>0391/15 | 0519<br>0450/15    | 0099/08            | 0036/11            | 0453/11            | 0253/15            | 0335/15            |
| B120  | 0092/21         | 0255/21            | 0268/21            | 0278/21            |                    |                    |                    |
| B120K | 0005/26         | 0118/27            | 0196/27            |                    |                    |                    |                    |
| B130K | 0006/26         | 0120/27            |                    |                    |                    |                    |                    |
| B133  | 0252/05         | 0291/04            |                    |                    |                    |                    |                    |
| B140  | 0616/28         | 0433/30            |                    |                    |                    |                    |                    |
| B160K | 0007/26         | 0101/27            |                    |                    |                    |                    |                    |
| B175  | 0684/51         | 0585/51            |                    |                    |                    |                    |                    |
| B177  | 0225<br>0130/27 | 0199/06<br>0141/27 | 0373/06<br>0145/27 | 0369/19<br>0286/28 | 0400/21<br>0361/28 | 0263/22<br>0042/33 | 0229/26<br>0532/34 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
|-------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|       | 0465/41<br>0370/48                                                                           | 0557/41                                                                              | 0316/43                                                                              | 0132/46                                                                              | 0154/46                                                                              | 0234/47                                                                              | 0034/48                                                                              |
| B1777 | 0337<br>0125/42                                                                              | 0072/29<br>0016/44                                                                   | 0235/34<br>0693/45                                                                   | 0437/35<br>0092/46                                                                   | 0055/38<br>0475/48                                                                   | 0280/41<br>0027/51                                                                   | 0409/41<br>0044/51                                                                   |
| B200  | 0226<br>0165/34                                                                              | 0517<br>0581/51                                                                      | 0284/22<br>0190/52                                                                   | 0290/22<br>0314/52                                                                   | 0368/26<br>0531/52                                                                   | 0131/27                                                                              | 0362/28                                                                              |
| B2000 | 0345                                                                                         | 0505                                                                                 | 0520                                                                                 | 0140/06                                                                              | 0032/11                                                                              | 0501/11                                                                              | 0085/12                                                                              |
| B20M  | 0230                                                                                         | 0523                                                                                 |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| B3000 | 0347                                                                                         | 0143/06                                                                              | 0034/11                                                                              | 0098/17                                                                              |                                                                                      |                                                                                      |                                                                                      |
| B30M  | 0231                                                                                         | 0079/21                                                                              | 0474/28                                                                              | 0603/28                                                                              | 0564/39                                                                              |                                                                                      |                                                                                      |
| B377  | 0227<br>0426/11<br>0162/14<br>0327/14<br>0231/20<br>0292/22<br>0168/32<br>0607/41<br>0511/45 | 0219/09<br>0142/12<br>0208/14<br>0258/15<br>0272/20<br>0033/23<br>0171/32<br>0610/41 | 0224/09<br>0192/12<br>0224/14<br>0455/15<br>0398/20<br>0382/25<br>0430/35<br>0046/42 | 0303/10<br>0408/12<br>0234/14<br>0119/16<br>0135/21<br>0075/27<br>0025/41<br>0049/42 | 0157/11<br>0417/12<br>0260/14<br>0428/16<br>0555/21<br>0465/28<br>0028/41<br>0617/42 | 0252/11<br>0434/12<br>0278/14<br>0435/16<br>0596/21<br>0414/30<br>0339/41<br>0620/42 | 0338/11<br>0070/13<br>0307/14<br>0280/19<br>0620/21<br>0476/30<br>0342/41<br>0508/45 |
| B37TK | 0638/32                                                                                      | 0465/32                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| B400  | 0228<br>0213/44                                                                              | 0518<br>0424/44                                                                      | 0103/16<br>0081/52                                                                   | 0490/19<br>0357/52                                                                   | 0495/19                                                                              | 0510/19                                                                              | 0180/34                                                                              |
| B4000 | 0429                                                                                         | 0521                                                                                 | 0227/11                                                                              | 0068/12                                                                              | 0441/26                                                                              | 0039/28                                                                              |                                                                                      |
| B40M  | 0004/16                                                                                      | 0095/16                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| B63   | 0091/21                                                                                      | 0396/21                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| B72   | 0222                                                                                         | 0403/42                                                                              | 0451/46                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| B73   | 0417                                                                                         | 0614/03                                                                              | 0671/03                                                                              | 0027/04                                                                              | 0070/04                                                                              | 0144/06                                                                              |                                                                                      |
| B77   | 0427<br>0257/26<br>0311/43<br>0542/52                                                        | 0224/12<br>0270/30<br>0149/46<br>0017/59                                             | 0241/12<br>0286/37<br>0325/46                                                        | 0038/17<br>0552/41<br>0375/46                                                        | 0059/26<br>0275/42<br>0102/47                                                        | 0066/26<br>0324/42<br>0029/48                                                        | 0226/26<br>0009/43<br>0312/50                                                        |
| B776  | 0050/21                                                                                      | 0047/21                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| B777  | 0273<br>0452/41                                                                              | 0388/03<br>0121/46                                                                   | 0119/04                                                                              | 0437/05                                                                              | 0089/10                                                                              | 0155/10                                                                              | 0313/16                                                                              |
| BASS0 | 0314/13                                                                                      | 0310/13                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| BAUDH | 0394/59 | 0181/59 |         |         |         |         |         |
| BAUDL | 0395/59 | 0177/59 |         |         |         |         |         |
| BB133 | 0255/05 | 0404/05 |         |         |         |         |         |
| BB776 | 0095/21 | 0012/22 |         |         |         |         |         |
| BBBB  | 0517/20 | 0479/20 |         |         |         |         |         |
| BCKSP | 0160/02 | 0323/02 | 0261/03 | 0308/03 | 0484/03 | 0617/03 | 0674/03 |
|       | 0714/03 | 0030/04 | 0083/04 | 0141/04 | 0226/05 | 0240/05 | 0268/05 |
|       | 0324/05 | 0404/06 | 0038/07 | 0274/10 | 0320/10 | 0289/11 | 0237/12 |
|       | 0515/16 | 0394/19 | 0257/21 | 0270/21 |         |         |         |
| BDIRU | 0441/57 | 0088/57 |         |         |         |         |         |
| BES1  | 0036/57 | 0045/57 |         |         |         |         |         |
| BES10 | 0144/57 | 0064/57 | 0109/57 |         |         |         |         |
| BES11 | 0182/57 | 0178/57 |         |         |         |         |         |
| BES12 | 0301/57 | 0237/57 | 0297/57 |         |         |         |         |
| BES13 | 0307/57 | 0168/57 | 0300/57 | 0463/57 |         |         |         |
| BES15 | 0120/57 | 0315/57 |         |         |         |         |         |
| BES2  | 0060/57 | 0056/57 |         |         |         |         |         |
| BES3  | 0066/57 | 0026/57 |         |         |         |         |         |
| BES4  | 0073/57 | 0313/57 |         |         |         |         |         |
| BES5  | 0086/57 | 0092/57 |         |         |         |         |         |
| BES6  | 0111/57 | 0084/57 |         |         |         |         |         |
| BES7  | 0116/57 | 0089/57 | 0097/57 |         |         |         |         |
| BES8  | 0126/57 | 0119/57 |         |         |         |         |         |
| BES9  | 0140/57 | 0075/57 | 0114/57 |         |         |         |         |
| BES98 | 0317/57 | 0246/57 |         |         |         |         |         |
| BES99 | 0459/57 | 0322/57 |         |         |         |         |         |
| BESC  | 0445/57 | 0034/57 | 0044/57 |         |         |         |         |
| BESD4 | 0450/57 | 0062/57 | 0099/57 | 0142/57 | 0197/57 | 0221/57 | 0224/57 |
| BESD5 | 0451/57 | 0063/57 | 0101/57 | 0143/57 | 0145/57 | 0205/57 |         |



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CROSS-REFERENCE SYMBOL TABLE

|       |                    |         |         |         |         |                    |
|-------|--------------------|---------|---------|---------|---------|--------------------|
| BESDE | 0453/57            | 0018/57 | 0121/57 | 0308/57 |         |                    |
| BESDS | 0443/57            | 0215/57 | 0218/57 | 0277/57 | 0335/57 | 0343/57            |
| BESDU | 0449/57            | 0212/57 | 0274/57 |         |         |                    |
| BESEA | 0414/57            | 0057/57 | 0417/57 |         |         |                    |
| BESEB | 0418/57            | 0123/57 | 0421/57 |         |         |                    |
| BESEC | 0422/57            | 0127/57 | 0425/57 |         |         |                    |
| BESED | 0426/57            | 0355/57 | 0429/57 |         |         |                    |
| BESEE | 0430/57            | 0179/57 | 0433/57 |         |         |                    |
| BESEF | 0434/57            | 0411/57 | 0437/57 |         |         |                    |
| BESF  | 0447/57            | 0030/57 | 0371/57 | 0383/57 | 0396/57 | 0405/57            |
| BESFA | 0417/57            | 0058/57 |         |         |         |                    |
| BESFB | 0421/57            | 0124/57 |         |         |         |                    |
| BESFC | 0425/57            | 0128/57 |         |         |         |                    |
| BESFD | 0429/57            | 0356/57 |         |         |         |                    |
| BESFE | 0433/57            | 0180/57 |         |         |         |                    |
| BESFF | 0437/57            | 0412/57 |         |         |         |                    |
| BESI1 | 0342/57            | 0353/57 |         |         |         |                    |
| BESI2 | 0354/57            | 0331/57 | 0344/57 | 0351/57 |         |                    |
| BESIL | 0129/57            | 0059/57 | 0125/57 | 0181/57 | 0357/57 | 0413/57            |
| BESIS | 0326/57            | 0169/57 | 0190/57 | 0349/57 |         |                    |
| BESIW | 0361/57            | 0187/57 | 0196/57 | 0366/57 |         |                    |
| BESLN | 0448/57            | 0154/57 | 0172/57 | 0185/57 | 0192/57 |                    |
| BESMF | 0454/57            | 0054/57 | 0068/57 | 0118/57 | 0312/57 |                    |
| BESOI | 0452/57            | 0021/57 | 0188/57 | 0309/57 |         |                    |
| BESOV | 0439/57            | 0320/57 |         |         |         |                    |
| BESP  | 0446/57<br>0266/57 | 0032/57 | 0039/57 | 0040/57 | 0042/57 | 0043/57<br>0209/57 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                              |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
|-------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| BESR  | 0370/57                                                                                      | 0037/57                                                                                         | 0041/57                                                                                         | 0046/57                                                                                         | 0373/57                                                                                         | 0397/57                                                                              | 0406/57                                                                              |
| BESR1 | 0374/57                                                                                      | 0391/57                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BESR2 | 0398/57                                                                                      | 0385/57                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BESR3 | 0394/57                                                                                      | 0403/57                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BESR4 | 0407/57                                                                                      | 0376/57                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BESR5 | 0382/57                                                                                      | 0409/57                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BESR6 | 0410/57                                                                                      | 0389/57                                                                                         | 0391/57                                                                                         | 0400/57                                                                                         |                                                                                                 |                                                                                      |                                                                                      |
| BESRD | 0455/57                                                                                      | 0232/57                                                                                         | 0292/57                                                                                         | 0305/57                                                                                         |                                                                                                 |                                                                                      |                                                                                      |
| BESWD | 0444/57                                                                                      | 0148/57                                                                                         | 0201/57                                                                                         |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BFE   | 0526/28                                                                                      | 0436/28                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BFL   | 0515/28                                                                                      | 0435/28                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BIN01 | 0266/02<br>0418/13                                                                           | 0360/13<br>0094/14                                                                              | 0381/13<br>0387/14                                                                              | 0382/13<br>0392/14                                                                              | 0406/13                                                                                         | 0414/13                                                                              | 0417/13                                                                              |
| BIN02 | 0267/02<br>0070/14                                                                           | 0363/13<br>0079/14                                                                              | 0383/13<br>0095/14                                                                              | 0407/13<br>0390/14                                                                              | 0415/13                                                                                         | 0419/13                                                                              | 0049/14                                                                              |
| BIN0P | 0112/02<br>0378/13<br>0388/14                                                                | 0268/02<br>0045/14                                                                              | 0318/13<br>0054/14                                                                              | 0324/13<br>0066/14                                                                              | 0330/13<br>0075/14                                                                              | 0336/13<br>0121/14                                                                   | 0355/13<br>0386/14                                                                   |
| BIT14 | 0232                                                                                         | 0473/15                                                                                         | 0303/32                                                                                         | 0121/59                                                                                         |                                                                                                 |                                                                                      |                                                                                      |
| BIT15 | 0504<br>0217/15<br>0527/19<br>0293/34<br>0579/35<br>0195/38<br>0326/39<br>0303/44<br>0284/54 | 0343/09<br>0315/15<br>0248/21<br>0397/34<br>0596/35<br>0224/38<br>0482/39<br>0071/48<br>0030/56 | 0107/11<br>0398/15<br>0089/27<br>0419/34<br>0319/36<br>0353/38<br>0701/39<br>0348/49<br>0036/56 | 0411/14<br>0432/15<br>0092/27<br>0164/35<br>0424/36<br>0363/38<br>0283/40<br>0407/49<br>0031/59 | 0123/15<br>0299/18<br>0054/28<br>0234/35<br>0110/37<br>0442/38<br>0482/40<br>0418/49<br>0113/59 | 0189/15<br>0452/19<br>0373/28<br>0243/35<br>0146/37<br>0081/39<br>0362/43<br>0256/52 | 0207/15<br>0483/19<br>0169/34<br>0316/35<br>0178/37<br>0319/39<br>0069/44<br>0103/54 |
| BKs   | 0151                                                                                         | 0392/19                                                                                         | 0108/30                                                                                         | 0443/30                                                                                         | 0319/41                                                                                         | 0027/42                                                                              |                                                                                      |
| BKSPC | 0008/26                                                                                      | 0156/27                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |
| BLANK | 0245/02<br>0286/11<br>0024/24                                                                | 0465/05<br>0347/11<br>0323/25                                                                   | 0483/05<br>0390/11<br>0385/25                                                                   | 0252/10<br>0309/12<br>0640/35                                                                   | 0322/10<br>0415/19<br>0393/36                                                                   | 0363/10<br>0475/19<br>0346/39                                                        | 0282/11<br>0368/23                                                                   |
| BLDI1 | 0110/06                                                                                      | 0116/06                                                                                         | 0119/06                                                                                         |                                                                                                 |                                                                                                 |                                                                                      |                                                                                      |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |
|-------|----------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| BLDI2 | 0114/06                                                        | 0100/06                                             | 0102/06                                             |                                                     |                                                     |                                                     |                                                     |
| BLDIN | 0172/02<br>0258/21                                             | 0386/02<br>0271/21                                  | 0270/03                                             | 0451/03                                             | 0085/06                                             | 0121/06                                             | 0039/07                                             |
| BM507 | 0440/57                                                        | 0318/57                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BREG  | 0007/02                                                        | 0683/28                                             | 0197/29                                             | 0507/30                                             |                                                     |                                                     |                                                     |
| BREK1 | 0425/59                                                        | 0419/59                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BREK2 | 0447/59                                                        | 0437/59                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BREK3 | 0451/59                                                        | 0449/59                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BRKDG | 0456/59                                                        | 0416/59                                             | 0420/59                                             | 0464/59                                             |                                                     |                                                     |                                                     |
| BRKPN | 0478/59                                                        | 0413/59                                             | 0426/59                                             | 0431/59                                             | 0438/59                                             | 0470/59                                             | 0473/59                                             |
| BRKPO | 0477/59                                                        | 0469/59                                             | 0472/59                                             |                                                     |                                                     |                                                     |                                                     |
| BRKSP | 0467/59                                                        | 0417/59                                             | 0421/59                                             | 0474/59                                             |                                                     |                                                     |                                                     |
| BS1   | 0410/02<br>0251/17<br>0288/17<br>0355/17<br>0005/18<br>0174/18 | 0169/17<br>0252/17<br>0294/17<br>0356/17<br>0006/18 | 0211/17<br>0253/17<br>0301/17<br>0361/17<br>0007/18 | 0223/17<br>0260/17<br>0302/17<br>0388/17<br>0022/18 | 0227/17<br>0265/17<br>0308/17<br>0392/17<br>0026/18 | 0230/17<br>0275/17<br>0309/17<br>0393/17<br>0050/18 | 0235/17<br>0279/17<br>0353/17<br>0411/17<br>0064/18 |
| BS2   | 0411/02<br>0245/17<br>0295/17<br>0394/17<br>0008/18            | 0185/17<br>0249/17<br>0296/17<br>0399/17<br>0010/18 | 0222/17<br>0250/17<br>0297/17<br>0400/17<br>0062/18 | 0226/17<br>0261/17<br>0319/17<br>0405/17<br>0176/18 | 0228/17<br>0266/17<br>0321/17<br>0415/17<br>0274/18 | 0229/17<br>0267/17<br>0374/17<br>0417/17            | 0234/17<br>0289/17<br>0386/17<br>0004/18            |
| BS3   | 0412/02<br>0248/17<br>0303/17<br>0063/18                       | 0197/17<br>0268/17<br>0305/17<br>0104/18            | 0213/17<br>0278/17<br>0322/17<br>0112/18            | 0216/17<br>0280/17<br>0326/17<br>0246/18            | 0218/17<br>0290/17<br>0023/18<br>0250/18            | 0221/17<br>0291/17<br>0049/18                       | 0247/17<br>0299/17<br>0054/18                       |
| BTMP  | 0264/02                                                        | 0421/02                                             | 0422/02                                             | 0193/20                                             | 0194/20                                             | 0200/20                                             | 0203/20                                             |
| BYBY  | 0541/39                                                        | 0423/39                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BYE   | 0052/31                                                        | 0474/29                                             | 0220/30                                             | 0311/30                                             |                                                     |                                                     |                                                     |
| BYE1  | 0569/39                                                        | 0514/39                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BYE2  | 0414/39                                                        | 0409/39                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BYE3  | 0555/39                                                        | 0551/39                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| BYE4  | 0558/39                                                        | 0554/39                                             |                                                     |                                                     |                                                     |                                                     |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| BYEID | 0572/39 | 0424/39 | 0401/39 | 0517/39 |         |         |         |
| BYEM  | 0576/39 | 0539/39 |         |         |         |         |         |
| BYEPT | 0575/39 | 0436/39 | 0497/39 |         |         |         |         |
| BYESP | 0578/39 | 0433/39 |         |         |         |         |         |
| BYET  | 0574/39 | 0491/39 | 0495/39 | 0525/39 | 0528/39 | 0531/39 | 0534/39 |
| BYETM | 0573/39 | 0458/39 | 0460/39 | 0462/39 | 0463/39 | 0465/39 | 0466/39 |
|       | 0470/39 | 0471/39 | 0486/39 | 0492/39 | 0506/39 | 0522/39 |         |
| C1    | 0440/02 | 0542/15 | 0593/15 | 0596/15 | 0603/15 | 0612/15 | 0014/16 |
|       | 0016/16 | 0018/16 | 0052/16 |         |         |         |         |
| C2    | 0442/02 | 0554/15 | 0579/15 | 0594/15 | 0595/15 | 0609/15 | 0013/16 |
|       | 0020/16 | 0023/16 | 0027/16 | 0060/16 |         |         |         |
| CARRD | 0319/26 | 0168/26 | 0177/26 | 0204/26 | 0205/26 | 0222/26 | 0223/26 |
|       | 0233/26 | 0234/26 | 0238/26 | 0239/26 | 0261/26 | 0269/26 | 0271/26 |
|       | 0281/26 | 0282/26 | 0292/26 | 0293/26 |         |         |         |
| CARRS | 0318/26 | 0180/26 | 0191/26 | 0211/26 | 0244/26 | 0250/26 | 0252/26 |
|       | 0268/26 | 0270/26 |         |         |         |         |         |
| CARRY | 0265/26 | 0181/26 | 0193/26 | 0213/26 | 0246/26 | 0267/26 | 0272/26 |
| CAT   | 0056/31 | 0493/28 |         |         |         |         |         |
| CAT00 | 0017/41 | 0034/41 |         |         |         |         |         |
| CAT01 | 0022/41 | 0032/41 |         |         |         |         |         |
| CAT1  | 0038/41 | 0187/41 | 0257/41 | 0273/41 |         |         |         |
| CAT10 | 0061/41 | 0151/41 | 0226/41 |         |         |         |         |
| CAT11 | 0204/41 | 0063/41 | 0209/41 |         |         |         |         |
| CAT12 | 0072/41 | 0066/41 | 0260/41 |         |         |         |         |
| CAT13 | 0068/41 | 0218/41 |         |         |         |         |         |
| CAT15 | 0079/41 | 0086/41 |         |         |         |         |         |
| CAT2  | 0043/41 | 0041/41 | 0259/41 |         |         |         |         |
| CAT20 | 0094/41 | 0091/41 |         |         |         |         |         |
| CAT21 | 0102/41 | 0093/41 |         |         |         |         |         |
| CAT22 | 0059/41 | 0265/41 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                          |                                          |                                          |                                          |                                          |                                          |
|-------|-----------------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| CAT23 | 0077/41                                             | 0072/41                                  |                                          |                                          |                                          |                                          |                                          |
| CAT24 | 0188/41                                             | 0132/41                                  | 0134/41                                  | 0136/41                                  | 0138/41                                  | 0202/41                                  |                                          |
| CAT25 | 0198/41                                             | 0194/41                                  |                                          |                                          |                                          |                                          |                                          |
| CAT26 | 0199/41                                             | 0196/41                                  |                                          |                                          |                                          |                                          |                                          |
| CAT27 | 0197/41                                             | 0191/41                                  |                                          |                                          |                                          |                                          |                                          |
| CAT28 | 0227/41                                             | 0224/41                                  |                                          |                                          |                                          |                                          |                                          |
| CAT29 | 0180/41                                             | 0186/41                                  |                                          |                                          |                                          |                                          |                                          |
| CAT30 | 0158/41                                             | 0164/41                                  |                                          |                                          |                                          |                                          |                                          |
| CATC  | 0238/41                                             | 0078/41                                  | 0085/41                                  |                                          |                                          |                                          |                                          |
| CATI  | 0233/41                                             | 0054/41                                  | 0204/41                                  | 0206/41                                  |                                          |                                          |                                          |
| CATII | 0247/41                                             | 0246/41                                  |                                          |                                          |                                          |                                          |                                          |
| CATJ  | 0235/41<br>0179/41                                  | 0016/41<br>0181/41                       | 0033/41<br>0184/41                       | 0048/41                                  | 0155/41                                  | 0160/41                                  | 0161/41                                  |
| CATLN | 0239/41                                             | 0189/41                                  | 0200/41                                  |                                          |                                          |                                          |                                          |
| CATN  | 0236/41<br>0176/41                                  | 0019/41<br>0185/41                       | 0031/41                                  | 0046/41                                  | 0150/41                                  | 0157/41                                  | 0163/41                                  |
| CATP  | 0234/41<br>0089/41<br>0148/41                       | 0059/41<br>0095/41<br>0149/41            | 0061/41<br>0103/41<br>0261/41            | 0064/41<br>0112/41                       | 0079/41<br>0121/41                       | 0080/41<br>0123/41                       | 0083/41<br>0127/41                       |
| CATQ  | 0237/41                                             | 0057/41                                  | 0062/41                                  | 0213/41                                  |                                          |                                          |                                          |
| CATS  | 0240/41                                             | 0021/41                                  | 0023/41                                  | 0027/41                                  | 0030/41                                  |                                          |                                          |
| CATTP | 0246/41                                             | 0020/41                                  |                                          |                                          |                                          |                                          |                                          |
| CATZS | 0241/41                                             | 0125/41                                  | 0192/41                                  | 0197/41                                  |                                          |                                          |                                          |
| CBFLG | 0523                                                | 0228/39                                  | 0443/59                                  |                                          |                                          |                                          |                                          |
| CC    | 0270/02<br>0110/23<br>0339/24<br>0094/25<br>0365/25 | 0026/23<br>0111/23<br>0013/25<br>0105/25 | 0034/23<br>0113/23<br>0014/25<br>0117/25 | 0039/23<br>0116/23<br>0025/25<br>0125/25 | 0060/23<br>0126/23<br>0041/25<br>0127/25 | 0078/23<br>0127/23<br>0085/25<br>0137/25 | 0079/23<br>0324/24<br>0093/25<br>0363/25 |
| CC1   | 0271/02                                             | 0042/23                                  | 0328/24                                  | 0053/25                                  | 0061/25                                  | 0116/25                                  | 0123/25                                  |
| CC2   | 0272/02                                             | 0043/23                                  | 0065/25                                  | 0073/25                                  | 0084/25                                  | 0091/25                                  |                                          |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                   |                                                                                      |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
|-------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|
| CCC   | 0055/21                                                                           | 0029/21                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CCCC  | 0518/20                                                                           | 0483/20                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CDFLG | 0349/02                                                                           | 0339/03                                                                              | 0347/03                                                                              |                                                                |                                                                           |                                                                           |                                                                           |
| CFLAG | 0511<br>0039/36                                                                   | 0190/03<br>0023/40                                                                   | 0083/07<br>0015/45                                                                   | 0385/07                                                        | 0238/21                                                                   | 0504/33                                                                   | 0533/33                                                                   |
| CH1   | 0031<br>0458/32                                                                   | 0458/26<br>0179/49                                                                   | 0426/28<br>0462/49                                                                   | 0451/28                                                        | 0464/28                                                                   | 0581/28                                                                   | 0213/29                                                                   |
| CH2   | 0032<br>0466/26<br>0408/28<br>0428/30<br>0578/32<br>0549/39<br>0423/45<br>0274/48 | 0410/19<br>0559/26<br>0204/29<br>0430/30<br>0579/32<br>0005/43<br>0425/45<br>0633/48 | 0412/19<br>0308/28<br>0211/29<br>0460/32<br>0611/32<br>0007/43<br>0098/47<br>0635/48 | 0363/26<br>0310/28<br>0457/29<br>0633/32<br>0223/45<br>0100/47 | 0460/26<br>0404/28<br>0459/29<br>0462/32<br>0157/33<br>0225/45<br>0261/48 | 0461/26<br>0406/28<br>0011/30<br>0464/32<br>0159/33<br>0412/45<br>0263/48 | 0465/26<br>0407/28<br>0013/30<br>0570/32<br>0547/39<br>0414/45<br>0272/48 |
| CHA#  | 0132/49                                                                           | 0105/49                                                                              | 0110/49                                                                              | 0153/49                                                        |                                                                           |                                                                           |                                                                           |
| CHA1  | 0034/49                                                                           | 0039/49                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CHA10 | 0113/49                                                                           | 0076/49                                                                              | 0086/49                                                                              | 0092/49                                                        | 0151/49                                                                   |                                                                           |                                                                           |
| CHA2  | 0041/49                                                                           | 0035/49                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CHA2E | 0051/49                                                                           | 0041/49                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CHA3  | 0057/49                                                                           | 0038/49                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CHA4  | 0073/49                                                                           | 0089/49                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CHA5  | 0097/49                                                                           | 0063/49                                                                              | 0078/49                                                                              | 0088/49                                                        |                                                                           |                                                                           |                                                                           |
| CHA6  | 0091/49                                                                           | 0083/49                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CHA7  | 0135/49                                                                           | 0154/49                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |
| CHAC  | 0158/49                                                                           | 0072/49                                                                              | 0081/49                                                                              |                                                                |                                                                           |                                                                           |                                                                           |
| CHAD  | 0159/49                                                                           | 0141/49                                                                              | 0145/49                                                                              |                                                                |                                                                           |                                                                           |                                                                           |
| CHAI1 | 0157/49                                                                           | 0059/49                                                                              | 0069/49                                                                              | 0097/49                                                        |                                                                           |                                                                           |                                                                           |
| CHAI0 | 0156/49<br>0074/49<br>0134/49                                                     | 0058/49<br>0079/49<br>0142/49                                                        | 0065/49<br>0080/49<br>0149/49                                                        | 0066/49<br>0084/49                                             | 0067/49<br>0099/49                                                        | 0068/49<br>0106/49                                                        | 0070/49<br>0107/49                                                        |
| CHAN0 | 0392/35                                                                           | 0379/35                                                                              |                                                                                      |                                                                |                                                                           |                                                                           |                                                                           |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|
| CHAN2 | 0446/35 | 0432/35 |         |         |         |         |
| CHAN3 | 0451/35 | 0435/35 |         |         |         |         |
| CHAN4 | 0465/35 | 0423/35 |         |         |         |         |
| CHAN5 | 0474/35 | 0469/35 |         |         |         |         |
| CHAN6 | 0634/35 | 0629/35 |         |         |         |         |
| CHAN7 | 0655/35 | 0480/35 | 0489/35 | 0495/35 | 0545/35 | 0593/35 |
| CHAN8 | 0638/35 | 0650/35 |         |         |         |         |
| CHAN9 | 0642/35 | 0623/35 | 0631/35 |         |         |         |
| CHANS | 0292/05 | 0537/05 |         |         |         |         |
| CHEB1 | 0195/20 | 0211/20 |         |         |         |         |
| CHEB2 | 0212/20 | 0199/20 |         |         |         |         |
| CHLIB | 0120/31 | 0015/12 |         |         |         |         |
| CHN00 | 0411/35 | 0415/35 |         |         |         |         |
| CHN01 | 0377/35 | 0391/35 |         |         |         |         |
| CHN10 | 0513/35 | 0503/35 |         |         |         |         |
| CHN11 | 0546/35 | 0535/35 | 0540/35 |         |         |         |
| CHN12 | 0594/35 | 0576/35 |         |         |         |         |
| CHN13 | 0599/35 | 0588/35 |         |         |         |         |
| CHN14 | 0490/35 | 0485/35 |         |         |         |         |
| CHN15 | 0589/35 | 0598/35 |         |         |         |         |
| CHN16 | 0651/35 | 0565/35 |         |         |         |         |
| CHN17 | 0405/35 | 0399/35 |         |         |         |         |
| CHN18 | 0537/35 | 0532/35 |         |         |         |         |
| CHN19 | 0541/35 | 0536/35 |         |         |         |         |
| CHNC  | 0667/35 | 0569/35 | 0591/35 |         |         |         |
| CHND  | 0669/35 | 0554/35 | 0574/35 |         |         |         |
| CHND1 | 0670/35 | 0557/35 | 0658/35 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                               |                               |                               |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| CHNDP | 0658/35                       | 0580/35                       |                               |                               |                               |                               |                               |
| CHNFG | 0519                          | 0307/09                       | 0483/16                       | 0474/33                       | 0618/35                       | 0643/35                       |                               |
| CHNI  | 0666/35<br>0605/35            | 0394/35<br>0607/35            | 0405/35                       | 0486/35                       | 0599/35                       | 0600/35                       | 0604/35                       |
| CHNLN | 0668/35                       | 0525/35                       | 0573/35                       |                               |                               |                               |                               |
| CHNP  | 0664/35<br>0651/35            | 0373/35<br>0652/35            | 0400/35                       | 0408/35                       | 0414/35                       | 0558/35                       | 0560/35                       |
| CHNPD | 0665/35                       | 0481/35                       | 0549/35                       |                               |                               |                               |                               |
| CHOU1 | 0037/22                       | 0030/22                       |                               |                               |                               |                               |                               |
| CHOUF | 0180/02<br>0306/22            | 0331/02                       | 0035/22                       | 0036/22                       | 0039/22                       | 0040/22                       | 0301/22                       |
| CHRCT | 0244/02<br>0025/19<br>0378/19 | 0296/10<br>0067/19<br>0442/19 | 0077/11<br>0177/19<br>0470/19 | 0388/11<br>0329/19<br>0518/19 | 0216/12<br>0340/19<br>0460/21 | 0229/12<br>0350/19<br>0225/25 | 0414/16<br>0373/19<br>0339/25 |
| CHRS1 | 0466/05                       | 0479/05                       |                               |                               |                               |                               |                               |
| CHRS2 | 0476/05                       | 0473/05                       |                               |                               |                               |                               |                               |
| CHRS3 | 0480/05                       | 0467/05                       | 0470/05                       |                               |                               |                               |                               |
| CHRST | 0040/02                       | 0388/02                       | 0402/03                       | 0185/05                       | 0286/05                       | 0480/05                       | 0484/05                       |
| CHS   | 0544/33                       | 0283/59                       |                               |                               |                               |                               |                               |
| CLADR | 0238/28                       | 0192/28                       |                               |                               |                               |                               |                               |
| CLC0  | 0656/28                       | 0651/28                       |                               |                               |                               |                               |                               |
| CLC1  | 0666/28<br>0716/32            | 0363                          | 0657/28                       | 0679/28                       | 0164/29                       | 0377/30                       | 0511/30                       |
| CLC2  | 0671/28                       | 0367                          | 0163/29                       |                               |                               |                               |                               |
| CLF0  | 0445/26                       | 0406/26                       |                               |                               |                               |                               |                               |
| CLKDR | 0264                          | 0037                          | 0564/26                       |                               |                               |                               |                               |
| CLKED | 0682/28                       | 0555/26                       |                               |                               |                               |                               |                               |
| CLKIN | 0648/28                       | 0264                          | 0541/26                       | 0555/26                       | 0670/28                       | 0080/28                       | 0715/32                       |
| CLN1  | 0207/28                       | 0189/28                       | 0220/28                       | 0240/28                       |                               |                               |                               |
| CLN1P | 0240/28                       | 0200/28                       |                               |                               |                               |                               |                               |



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CROSS-REFERENCE SYMBOL TABLE

|       |                 |         |         |         |         |         |         |
|-------|-----------------|---------|---------|---------|---------|---------|---------|
| CLN2  | 0224/26         | 0210/28 |         |         |         |         |         |
| CLN3  | 0230/28         | 0226/28 |         |         |         |         |         |
| CLNB  | 0237/28         | 0183/28 | 0224/28 |         |         |         |         |
| CLNOT | 0180/28         | 0085/28 | 0092/28 | 0122/28 | 0141/28 | 0161/28 | 0234/28 |
| CLNUP | 0189/03         | 0238/03 |         |         |         |         |         |
| CLOCK | 0037<br>0203/29 | 0367/26 | 0388/26 | 0467/26 | 0669/28 | 0682/28 | 0202/29 |
| CLTOG | 0239/28         | 0194/28 |         |         |         |         |         |
| CM507 | 0509/56         | 0496/56 |         |         |         |         |         |
| CMA   | 0056            | 0420/28 | 0449/28 |         |         |         |         |
| CMB   | 0057            | 0421/28 | 0450/28 |         |         |         |         |
| CME   | 0058            | 0425/28 | 0445/28 |         |         |         |         |
| CMP00 | 0081/07         | 0067/07 | 0397/36 |         |         |         |         |
| CMP01 | 0122/07         | 0128/07 |         |         |         |         |         |
| CMP02 | 0129/07         | 0126/07 |         |         |         |         |         |
| CMP03 | 0147/07         | 0164/07 |         |         |         |         |         |
| CMP04 | 0169/07         | 0161/07 |         |         |         |         |         |
| CMP05 | 0186/07         | 0194/07 |         |         |         |         |         |
| CMP06 | 0198/07         | 0190/07 |         |         |         |         |         |
| CMP07 | 0205/07         | 0197/07 |         |         |         |         |         |
| CMP08 | 0208/07         | 0215/07 |         |         |         |         |         |
| CMP09 | 0216/07         | 0200/07 | 0214/07 |         |         |         |         |
| CMP10 | 0324/07         | 0277/07 | 0310/07 | 0453/07 |         |         |         |
| CMP11 | 0330/07         | 0172/07 | 0184/07 |         |         |         |         |
| CMP12 | 0339/07         | 0336/07 |         |         |         |         |         |
| CMP13 | 0370/07         | 0363/07 |         |         |         |         |         |
| CMP14 | 0060/07         | 0348/39 |         |         |         |         |         |
| CMP15 | 0044/07         | 0037/07 |         |         |         |         |         |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| COM4  | 0074/31 | 0130/30 |         |         |         |         |         |
| COM5  | 0105/31 | 0409    | 0635/28 | 0511/29 | 0537/29 | 0118/31 |         |
| COM6  | 0118/31 | 0008    | 0303    | 0626/28 | 0119/31 | 0120/31 | 0121/31 |
|       | 0726/32 | 0351/36 | 0415/43 | 0614/44 | 0258/47 | 0128/52 | 0579/52 |
|       | 0580/52 | 0506/56 | 0439/57 |         |         |         |         |
| COMCH | 0045/31 | 0120/31 |         |         |         |         |         |
| COMFL | 0043/31 | 0119/31 |         |         |         |         |         |
| COMMA | 0479/04 | 0353/03 | 0593/03 | 0631/03 | 0662/03 | 0692/03 | 0040/04 |
|       | 0065/04 | 0079/04 | 0097/05 | 0295/05 | 0320/05 | 0332/05 | 0339/05 |
|       | 0361/05 | 0368/05 | 0375/05 |         |         |         |         |
| COMOP | 0433    | 0432/06 | 0237/07 | 0303/07 | 0438/07 | 0038/08 | 0264/08 |
|       | 0487/21 |         |         |         |         |         |         |
| COMP1 | 0124/14 | 0120/14 |         |         |         |         |         |
| COMP2 | 0135/14 | 0150/14 |         |         |         |         |         |
| COMP3 | 0139/14 | 0136/14 |         |         |         |         |         |
| COMP4 | 0142/14 | 0138/14 |         |         |         |         |         |
| COMP5 | 0145/14 | 0155/14 | 0164/14 |         |         |         |         |
| COMP6 | 0151/14 | 0143/14 |         |         |         |         |         |
| COMP7 | 0156/14 | 0153/14 |         |         |         |         |         |
| COMPR | 0096/02 | 0412/02 | 0457/02 | 0005/14 | 0012/14 | 0017/14 | 0024/14 |
|       | 0031/14 | 0038/14 | 0123/14 | 0149/14 |         |         |         |
| COMPT | 0369/02 | 0405/08 | 0448/08 | 0451/08 | 0084/09 | 0101/09 | 0125/09 |
|       | 0134/09 | 0135/09 | 0136/09 | 0137/09 | 0138/09 | 0139/09 | 0140/09 |
|       | 0141/09 | 0151/09 | 0152/09 | 0158/09 | 0214/09 | 0217/09 | 0223/09 |
|       | 0233/09 | 0238/09 | 0239/09 |         |         |         |         |
| COMS  | 0339/03 | 0355/03 | 0517/05 |         |         |         |         |
| COMS0 | 0345/03 | 0257/05 |         |         |         |         |         |
| COMS1 | 0349/03 | 0345/03 |         |         |         |         |         |
| COMSN | 0367/02 | 0023/08 | 0040/08 | 0042/08 |         |         |         |
| COMTE | 0123/31 | 0416/43 | 0259/47 | 0579/52 |         |         |         |
| CONTR | 0273/02 | 0040/23 | 0063/23 | 0210/25 |         |         |         |
| COP0  | 0046/56 | 0042/56 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|---------|
| COP00 | 0023/56            | 0019/56            |                    |                    |                    |         |         |
| COP1  | 0086/56            | 0097/56            |                    |                    |                    |         |         |
| COP10 | 0165/56            | 0147/56            |                    |                    |                    |         |         |
| COP11 | 0241/56            | 0529/56            |                    |                    |                    |         |         |
| COP14 | 0287/56            | 0265/56            | 0308/56            |                    |                    |         |         |
| COP15 | 0293/56            | 0269/56            |                    |                    |                    |         |         |
| COP16 | 0304/56            | 0285/56            |                    |                    |                    |         |         |
| COP17 | 0310/56            | 0291/56            |                    |                    |                    |         |         |
| COP2  | 0098/56            | 0074/56            | 0088/56            | 0095/56            |                    |         |         |
| COP20 | 0327/56            | 0313/56            |                    |                    |                    |         |         |
| COP21 | 0334/56            | 0355/56            |                    |                    |                    |         |         |
| COP22 | 0340/56            | 0336/56            |                    |                    |                    |         |         |
| COP3  | 0102/56            | 0093/56            |                    |                    |                    |         |         |
| COP4  | 0117/56            | 0113/56            |                    |                    |                    |         |         |
| COP5  | 0120/56            | 0153/56            |                    |                    |                    |         |         |
| COP6  | 0142/56            | 0150/56            |                    |                    |                    |         |         |
| COP7  | 0151/56            | 0130/56            | 0135/56            |                    |                    |         |         |
| COP8  | 0155/56            | 0530/56            |                    |                    |                    |         |         |
| COP9  | 0160/56            | 0182/56            |                    |                    |                    |         |         |
| COP98 | 0495/56            | 0186/56            |                    |                    |                    |         |         |
| COP99 | 0525/56            | 0500/56            |                    |                    |                    |         |         |
| COPAP | 0505/56            | 0322/56            | 0367/56            |                    |                    |         |         |
| COPC  | 0514/56<br>0302/56 | 0139/56<br>0332/56 | 0149/56<br>0335/56 | 0171/56<br>0387/56 | 0271/56<br>0396/56 | 0294/56 | 0297/56 |
| COPD  | 0521/56<br>0289/56 | 0127/56            | 0128/56            | 0137/56            | 0260/56            | 0280/56 | 0282/56 |
| COPDE | 0449/56            | 0321/56            | 0325/56            | 0366/56            | 0370/56            |         |         |
| COPDF | 0522/56            | 0119/56            | 0152/56            | 0169/56            | 0267/56            |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |         |         |         |         |         |
|-------|--------------------|--------------------|---------|---------|---------|---------|---------|
| COPDI | 0516/56            | 0053/56            | 0056/56 | 0349/56 | 0354/56 | 0504/56 |         |
| COPDR | 0519/56            | 0050/56            | 0311/56 |         |         |         |         |
| COPDS | 0512/56            | 0173/56            | 0217/56 | 0343/56 | 0348/56 | 0505/56 |         |
| COPDU | 0517/56            | 0103/56            |         |         |         |         |         |
| COPEA | 0463/56            | 0402/56            | 0466/56 |         |         |         |         |
| COPEB | 0467/56            | 0099/56            | 0470/56 |         |         |         |         |
| COPEC | 0471/56            | 0114/56            | 0474/56 |         |         |         |         |
| COPED | 0475/56            | 0156/56            | 0478/56 |         |         |         |         |
| COPEE | 0479/56            | 0161/56            | 0482/56 |         |         |         |         |
| COPEF | 0483/56            | 0043/56            | 0486/56 |         |         |         |         |
| COPEG | 0487/56            | 0020/56            | 0490/56 |         |         |         |         |
| COPEH | 0491/56            | 0450/56            | 0494/56 |         |         |         |         |
| COPF  | 0518/56<br>0434/56 | 0105/56<br>0444/56 | 0251/56 | 0253/56 | 0383/56 | 0409/56 | 0421/56 |
| COPFA | 0466/56            | 0403/56            |         |         |         |         |         |
| COPFB | 0470/56            | 0100/56            |         |         |         |         |         |
| COPFC | 0474/56            | 0115/56            |         |         |         |         |         |
| COPFD | 0478/56            | 0157/56            |         |         |         |         |         |
| COPFE | 0482/56            | 0162/56            |         |         |         |         |         |
| COPFF | 0486/56            | 0044/56            |         |         |         |         |         |
| COPFG | 0490/56            | 0021/56            |         |         |         |         |         |
| COPFH | 0494/56            | 0451/56            |         |         |         |         |         |
| COPI  | 0510/56            | 0184/56            | 0224/56 | 0226/56 | 0228/56 |         |         |
| COPI1 | 0388/56            | 0397/56            |         |         |         |         |         |
| COPI2 | 0401/56            | 0427/56            | 0429/56 |         |         |         |         |
| COPIL | 0452/56<br>0404/56 | 0022/56            | 0045/56 | 0101/56 | 0116/56 | 0158/56 | 0163/56 |
| COPIN | 0375/56            | 0009/56            | 0014/56 | 0400/56 |         |         |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                    |                    |                    |                    |
|-------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| COPIP | 0504/56                       | 0363/56                       |                               |                    |                    |                    |                    |
| COPLN | 0520/56<br>0314/56            | 0066/56<br>0329/56            | 0107/56                       | 0145/56            | 0166/56            | 0252/56            | 0299/56            |
| COPOV | 0506/56                       | 0498/56                       |                               |                    |                    |                    |                    |
| COPP  | 0515/56<br>0047/56<br>0392/56 | 0028/56<br>0205/56<br>0394/56 | 0031/56<br>0333/56<br>0395/56 | 0032/56<br>0337/56 | 0034/56<br>0376/56 | 0037/56<br>0385/56 | 0038/56<br>0391/56 |
| COPPT | 0502/56                       | 0013/56                       | 0026/56                       | 0068/56            | 0177/56            |                    |                    |
| COPR  | 0408/56                       | 0389/56                       | 0393/56                       | 0398/56            | 0411/56            | 0435/56            | 0445/56            |
| COPR1 | 0412/56                       | 0419/56                       |                               |                    |                    |                    |                    |
| COPR2 | 0436/56                       | 0423/56                       |                               |                    |                    |                    |                    |
| COPR3 | 0432/56                       | 0441/56                       |                               |                    |                    |                    |                    |
| COPR4 | 0442/56                       | 0438/56                       |                               |                    |                    |                    |                    |
| COPR5 | 0446/56                       | 0414/56                       |                               |                    |                    |                    |                    |
| COPR6 | 0420/56                       | 0448/56                       |                               |                    |                    |                    |                    |
| COPRW | 0359/56                       | 0338/56                       | 0342/56                       | 0371/56            |                    |                    |                    |
| COPS  | 0511/56                       | 0024/56                       | 0195/56                       | 0200/56            |                    |                    |                    |
| COPWD | 0513/56                       | 0059/56                       | 0221/56                       |                    |                    |                    |                    |
| CORE  | 0138/26                       | 0045/26                       | 0083/26                       | 0105/26            | 0185/26            | 0492/26            |                    |
| COUNT | 0344/02                       | 0204/06                       | 0214/06                       | 0362/06            | 0370/06            |                    |                    |
| CP0   | 0467/02                       | 0129/14                       | 0135/14                       |                    |                    |                    |                    |
| CP1   | 0468/02                       | 0132/14                       | 0151/14                       | 0156/14            |                    |                    |                    |
| CPLCA | 0508/56                       | 0124/56                       |                               |                    |                    |                    |                    |
| CPLNA | 0507/56                       | 0123/56                       |                               |                    |                    |                    |                    |
| CRLF  | 0457/33                       | 0758/32                       | 0007/33                       | 0117/45            |                    |                    |                    |
| CSAV  | 0047/31                       | 0352/07                       | 0496/29                       |                    |                    |                    |                    |
| CSAV1 | 0398/36                       | 0386/36                       |                               |                    |                    |                    |                    |
| CSAV2 | 0401/36                       | 0008/07                       |                               |                    |                    |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |                    |                    |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| CSAV3 | 0438/36            | 0443/36            |                    |                    |                    |                    |                    |
| CSAV4 | 0418/36            | 0411/36            |                    |                    |                    |                    |                    |
| CSVRT | 0008/07            | 0353/07            |                    |                    |                    |                    |                    |
| CTAPR | 0036/31            | 0447/29            |                    |                    |                    |                    |                    |
| CTEMP | 0630/28            | 0649/28            | 0660/28            | 0668/28            | 0712/32            |                    |                    |
| CTMP  | 0474/02            | 0189/20            | 0195/20            | 0196/20            | 0197/20            | 0209/20            |                    |
| CU1   | 0331/02            | 0518/06            | 0525/06            |                    |                    |                    |                    |
| CUS1A | 0507/05            | 0486/06            | 0491/06            |                    |                    |                    |                    |
| CUSP  | 0076/02<br>0060/09 | 0497/06<br>0197/09 | 0526/06<br>0251/09 | 0128/08<br>0351/09 | 0205/08<br>0290/13 | 0443/08<br>0447/14 | 0019/09            |
| CUSP1 | 0523/06            | 0507/06            |                    |                    |                    |                    |                    |
| D     | 0005/23            | 0191/23            | 0016/24            |                    |                    |                    |                    |
| D100  | 0343               | 0500               | 0259/04            | 0293/06            | 0348/16            |                    |                    |
| D1111 | 0250/05            | 0190/05            |                    |                    |                    |                    |                    |
| D133  | 0256/05            | 0344/06            |                    |                    |                    |                    |                    |
| D36K  | 0403               | 0041/20            | 0128/32            | 0202/32            | 0368/39            | 0493/39            | 0359/49            |
| D53   | 0259/05            | 0294/06            |                    |                    |                    |                    |                    |
| D577  | 0251/05            | 0120/04            |                    |                    |                    |                    |                    |
| D60   | 0419<br>0302/49    | 0088/29<br>0356/49 | 0071/39            | 0365/39            | 0464/39            | 0490/39            | 0552/43            |
| D600  | 0252<br>0494/39    | 0043/20<br>0557/43 | 0130/32<br>0307/49 | 0204/32<br>0360/49 | 0076/39            | 0369/39            | 0469/39            |
| D62   | 0093/21            | 0393/21            |                    |                    |                    |                    |                    |
| D65   | 0006/17            | 0039/17            |                    |                    |                    |                    |                    |
| D66   | 0004/12            | 0400/12            |                    |                    |                    |                    |                    |
| D72   | 0210               | 0211               | 0327/06            |                    |                    |                    |                    |
| DADDR | 0137/26<br>0493/26 | 0044/26<br>0686/32 | 0118/26            | 0217/26            | 0224/26            | 0228/26            | 0487/26            |
| DADLC | 0083<br>0414/43    | 0157/31<br>0256/44 | 0160/31<br>0616/44 | 0011/33<br>0257/47 | 0100/36<br>0313/47 | 0349/36<br>0108/52 | 0076/43<br>0578/52 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                  |                                                     |                                                     |                                          |                                          |                                          |                                          |
|-------|--------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
|       | 0126/56                                          | 0508/56                                             |                                                     |                                          |                                          |                                          |                                          |
| DADLN | 0084<br>0617/44                                  | 0157/31<br>0262/47                                  | 0100/36<br>0313/47                                  | 0350/36<br>0126/56                       | 0075/43<br>0507/56                       | 0418/43                                  | 0256/44                                  |
| DADRR | 0459/02                                          | 0307/15                                             | 0336/15                                             | 0345/15                                  | 0356/15                                  |                                          |                                          |
| DALCA | 0616/44                                          | 0254/44                                             |                                                     |                                          |                                          |                                          |                                          |
| DALNA | 0617/44                                          | 0253/44                                             |                                                     |                                          |                                          |                                          |                                          |
| DASCC | 0274/46                                          | 0213/46                                             |                                                     |                                          |                                          |                                          |                                          |
| DASCF | 0275/46                                          | 0208/46                                             |                                                     |                                          |                                          |                                          |                                          |
| DASCP | 0276/46                                          | 0221/46                                             |                                                     |                                          |                                          |                                          |                                          |
| DASCS | 0277/46                                          |                                                     |                                                     |                                          |                                          |                                          |                                          |
| DATA1 | 0582/03                                          | 0604/03                                             |                                                     |                                          |                                          |                                          |                                          |
| DATA2 | 0591/03                                          | 0600/03                                             |                                                     |                                          |                                          |                                          |                                          |
| DATA3 | 0596/03                                          | 0583/03                                             |                                                     |                                          |                                          |                                          |                                          |
| DATA4 | 0601/03                                          | 0578/03                                             | 0581/03                                             |                                          |                                          |                                          |                                          |
| DATAS | 0571/03                                          | 0595/03                                             | 0530/05                                             |                                          |                                          |                                          |                                          |
| DATE  | 0084/33<br>0368/37<br>0293/58                    | 0091/33<br>0161/38                                  | 0145/33<br>0291/38                                  | 0301/34<br>0332/44                       | 0166/35<br>0207/56                       | 0548/35<br>0267/57                       | 0199/36<br>0260/58                       |
| DATIM | 0092<br>0102/32<br>0203/36<br>0485/39<br>0498/49 | 0040/20<br>0127/32<br>0371/37<br>0547/43<br>0211/56 | 0045/20<br>0100/32<br>0066/39<br>0071/44<br>0271/57 | 0050/20<br>0201/32<br>0238/39<br>0335/44 | 0650/28<br>0373/32<br>0361/39<br>0297/49 | 0653/28<br>0085/33<br>0367/39<br>0299/49 | 0654/28<br>0083/35<br>0459/39<br>0351/49 |
| DATLN | 0105                                             | 0235/43                                             | 0377/43                                             | 0483/47                                  | 0081/48                                  | 0123/54                                  |                                          |
| DATOP | 0377                                             | 0052/08                                             | 0040/12                                             |                                          |                                          |                                          |                                          |
| DBLNK | 0623/11                                          | 0404/11                                             | 0518/11                                             |                                          |                                          |                                          |                                          |
| DBY10 | 0056/02<br>0262/25                               | 0109/19                                             | 0116/19                                             | 0160/22                                  | 0319/22                                  | 0340/22                                  | 0249/25                                  |
| DCCNT | 0388/02<br>0151/12                               | 0050/12<br>0174/20                                  | 0114/12                                             | 0120/12                                  | 0123/12                                  | 0135/12                                  | 0150/12                                  |
| DCFLG | 0373/02                                          | 0270/08                                             | 0294/08                                             |                                          |                                          |                                          |                                          |
| DCHAN | 0139/26                                          | 0068/26                                             |                                                     |                                          |                                          |                                          |                                          |



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CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |
|-------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| DCLC1 | 0363<br>0474/16<br>0402/28<br>0071/33<br>0280/49    | 0458/07<br>0477/16<br>0412/28<br>0411/33            | 0473/07<br>0408/19<br>0264/32<br>0480/33            | 0302/09<br>0414/19<br>0278/32<br>0474/44            | 0305/09<br>0024/28<br>0281/32<br>0182/49            | 0568/11<br>0182/28<br>0411/32<br>0201/49            | 0571/11<br>0399/28<br>0066/33<br>0245/49            |
| DCLC2 | 0367<br>0280/32                                     | 0472/07<br>0070/33                                  | 0304/09<br>0200/49                                  | 0570/11<br>0279/49                                  | 0476/16                                             | 0413/19                                             | 0409/28                                             |
| DCMP1 | 0413/07                                             | 0423/07                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DCMP2 | 0428/07                                             | 0406/07                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DCMP3 | 0454/07                                             | 0397/07                                             | 0416/07                                             | 0444/07                                             | 0094/08                                             |                                                     |                                                     |
| DCMP4 | 0458/07                                             | 0390/07                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DCMP5 | 0471/07                                             | 0461/07                                             | 0463/07                                             |                                                     |                                                     |                                                     |                                                     |
| DCMP6 | 0441/07                                             | 0437/07                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DCMPL | 0072/02<br>0296/07<br>0228/08<br>0021/39            | 0304/02<br>0325/07<br>0459/08<br>0448/43            | 0247/03<br>0337/07<br>0063/09                       | 0523/06<br>0342/07<br>0168/09                       | 0221/07<br>0474/07<br>0255/34                       | 0249/07<br>0048/08<br>0045/36                       | 0263/07<br>0064/08<br>0319/38                       |
| DCOM0 | 0257/05                                             | 0424/05                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DCOM6 | 0626/28                                             | 0316/30                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DCRLF | 0314/26                                             | 0162/26                                             | 0260/26                                             |                                                     |                                                     |                                                     |                                                     |
| DCTR  | 0490/02                                             | 0277/24                                             | 0283/24                                             | 0290/24                                             | 0294/24                                             | 0303/24                                             | 0311/24                                             |
| DDDD  | 0519/20                                             | 0487/20                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DDERL | 0073/32                                             | 0240/33                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DDERR | 0236/33<br>0287/52<br>0316/54                       | 0033/47<br>0092/53<br>0030/55                       | 0074/48<br>0099/53                                  | 0085/48<br>0106/54                                  | 0551/51<br>0137/54                                  | 0172/52<br>0195/54                                  | 0238/52<br>0267/54                                  |
| DEAD  | 0138/28                                             | 0142/28                                             | 0426/32                                             | 0707/32                                             | 0019/33                                             |                                                     |                                                     |
| DEADA | 0426/32                                             | 0026/32                                             | 0057/32                                             | 0064/32                                             |                                                     |                                                     |                                                     |
| DEADM | 0146/28                                             | 0140/28                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| DEADP | 0019/33<br>0161/37<br>0374/44<br>0320/51<br>0460/52 | 0108/33<br>0183/37<br>0328/50<br>0376/51<br>0179/55 | 0228/36<br>0218/37<br>0459/50<br>0384/51<br>0255/55 | 0243/36<br>0301/37<br>0101/51<br>0394/51<br>0271/55 | 0114/37<br>0463/37<br>0144/51<br>0410/51<br>0294/55 | 0127/37<br>0537/37<br>0198/51<br>0419/51<br>0305/55 | 0151/37<br>0360/44<br>0253/51<br>0390/52<br>0412/55 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0236/56 | 0249/56 | 0258/56 | 0365/57 | 0407/58 | 0470/58 | 0483/58 |
|       | 0504/58 | 0523/58 | 0560/58 |         |         |         |         |
| DEATH | 0022    | 0315/36 |         |         |         |         |         |
| DEFNN | 0509/37 | 0075/37 | 0495/37 | 0497/37 |         |         |         |
| DEFOP | 0293/02 | 0202/07 |         |         |         |         |         |
| DEFS  | 0361/03 | 0520/05 |         |         |         |         |         |
| DEH   | 0389    | 0147/29 | 0222/33 | 0203/49 |         |         |         |
| DEL2  | 0442/43 | 0439/43 |         |         |         |         |         |
| DEL3  | 0468/43 | 0461/43 |         |         |         |         |         |
| DEL4  | 0482/43 | 0470/43 |         |         |         |         |         |
| DEL6  | 0520/43 | 0505/43 | 0508/43 |         |         |         |         |
| DEL7  | 0498/43 | 0518/43 |         |         |         |         |         |
| DEL99 | 0520/43 | 0434/43 | 0460/43 |         |         |         |         |
| DELM  | 0525/43 | 0433/43 | 0443/43 | 0451/43 |         |         |         |
| DELMX | 0529/43 | 0510/43 |         |         |         |         |         |
| DELN  | 0526/43 | 0437/43 | 0458/43 |         |         |         |         |
| DELMN | 0496/43 | 0432/43 | 0436/43 | 0522/43 |         |         |         |
| DELP1 | 0500/05 | 0506/05 |         |         |         |         |         |
| DELP2 | 0507/05 | 0501/05 |         |         |         |         |         |
| DELPR | 0064/02 | 0413/02 | 0214/03 | 0509/05 | 0585/05 |         |         |
| DELST | 0207/03 | 0274/03 |         |         |         |         |         |
| DELT  | 0527/43 | 0499/43 | 0509/43 | 0513/43 | 0515/43 | 0520/43 |         |
| DEND  | 0094/26 | 0050/26 |         |         |         |         |         |
| DEND1 | 0095/26 | 0126/26 |         |         |         |         |         |
| DEND2 | 0090/26 | 0133/26 |         |         |         |         |         |
| DENRT | 0595/28 | 0541/28 |         |         |         |         |         |
| DEQ1  | 0452/30 | 0457/30 |         |         |         |         |         |
| DEQ2  | 0458/30 | 0453/30 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                                          |                               |                               |                               |                               |                               |
|-------|------------------------------------------|------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| DEQUE | 0450/30<br>0721/32                       | 0522/27<br>0161/51                       | 0301/29                       | 0353/29                       | 0200/30                       | 0456/30                       | 0460/30                       |
| DES1  | 0042/58                                  | 0036/58                                  |                               |                               |                               |                               |                               |
| DES2  | 0051/58                                  | 0047/58                                  |                               |                               |                               |                               |                               |
| DES3  | 0068/58                                  | 0056/58                                  |                               |                               |                               |                               |                               |
| DES4  | 0093/58                                  | 0105/58                                  |                               |                               |                               |                               |                               |
| DES5  | 0102/58                                  | 0098/58                                  |                               |                               |                               |                               |                               |
| DES6  | 0141/58                                  | 0129/58                                  |                               |                               |                               |                               |                               |
| DES7  | 0148/58                                  | 0066/58                                  | 0140/58                       |                               |                               |                               |                               |
| DESCT | 0234/58                                  | 0086/58                                  | 0104/58                       |                               |                               |                               |                               |
| DESDW | 0198/58                                  | 0065/58                                  | 0116/58                       | 0207/58                       |                               |                               |                               |
| DESEA | 0213/58                                  | 0038/58                                  | 0216/58                       |                               |                               |                               |                               |
| DESEB | 0217/58                                  | 0142/58                                  | 0220/58                       |                               |                               |                               |                               |
| DESEC | 0221/58                                  | 0048/58                                  | 0224/58                       |                               |                               |                               |                               |
| DESED | 0225/58                                  | 0167/58                                  | 0228/58                       |                               |                               |                               |                               |
| DESFA | 0216/58                                  | 0039/58                                  |                               |                               |                               |                               |                               |
| DESFb | 0220/58                                  | 0143/58                                  |                               |                               |                               |                               |                               |
| DESFC | 0224/58                                  | 0049/58                                  |                               |                               |                               |                               |                               |
| DESFD | 0228/58                                  | 0168/58                                  |                               |                               |                               |                               |                               |
| DESIL | 0169/58                                  | 0040/58                                  | 0050/58                       | 0101/58                       | 0144/58                       |                               |                               |
| DESIP | 0186/58                                  | 0020/58                                  | 0022/58                       | 0024/58                       | 0194/58                       |                               |                               |
| DESLA | 0233/58                                  | 0190/58                                  | 0193/58                       |                               |                               |                               |                               |
| DESLB | 0235/58                                  | 0082/58                                  | 0096/58                       | 0100/58                       | 0115/58                       | 0230/58                       |                               |
| DESLP | 0230/58                                  | 0131/58                                  |                               |                               |                               |                               |                               |
| DESRA | 0231/58                                  | 0088/58                                  |                               |                               |                               |                               |                               |
| DEST  | 0327/02<br>0453/06<br>0173/16<br>0289/16 | 0421/06<br>0494/06<br>0192/16<br>0290/16 | 0434/06<br>0495/06<br>0248/16 | 0442/06<br>0464/07<br>0258/16 | 0443/06<br>0469/07<br>0263/16 | 0447/06<br>0080/10<br>0273/16 | 0452/06<br>0083/10<br>0277/16 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                    |                    |                    |                    |                    |                    |
|-------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DFAIL | 0140/26                       | 0072/26            | 0130/26            |                    |                    |                    |                    |
| DFCHK | 0518<br>0186/49               | 0366/09<br>0250/49 | 0313/29            | 0357/29            | 0234/32            | 0343/32            | 0397/35            |
| DFCNT | 0445/32                       | 0295/32            | 0309/32            | 0315/32            | 0330/32            | 0352/32            |                    |
| DFILT | 0248                          | 0020/08            | 0517/33            | 0124/34            | 0434/36            |                    |                    |
| DFLAG | 0528/04<br>0057/05            | 0298/03<br>0066/05 | 0340/03<br>0072/05 | 0032/04<br>0073/05 | 0126/04<br>0086/05 | 0037/05            | 0039/05            |
| DFNAM | 0422/32                       | 0296/32            | 0316/32            |                    |                    |                    |                    |
| DGCNT | 0325/02                       | 0301/19            | 0316/19            |                    |                    |                    |                    |
| DIGCK | 0042/02<br>0335/06<br>0174/23 | 0445/02<br>0071/22 | 0409/05<br>0129/22 | 0101/06<br>0134/22 | 0329/06<br>0143/22 | 0332/06<br>0148/23 | 0334/06<br>0159/23 |
| DIGCT | 0310/02<br>0240/19            | 0123/19<br>0324/21 | 0133/19<br>0327/21 | 0187/19<br>0540/21 | 0204/19<br>0543/21 | 0208/19            | 0229/19            |
| DIMOP | 0365                          | 0305/07            | 0436/07            | 0266/08            | 0485/21            |                    |                    |
| DIMS  | 0333/03                       | 0519/05            |                    |                    |                    |                    |                    |
| DINT  | 0079/26                       | 0268               | 0047/26            | 0097/26            | 0535/26            | 0549/26            | 0684/32            |
| DINT1 | 0086/26                       | 0062/26            |                    |                    |                    |                    |                    |
| DINT2 | 0123/26                       | 0065/26            |                    |                    |                    |                    |                    |
| DINT3 | 0125/26                       | 0067/26            |                    |                    |                    |                    |                    |
| DIR0S | 0272/46                       | 0125/46            | 0144/46            |                    |                    |                    |                    |
| DIR1  | 0266/46                       | 0034/46            |                    |                    |                    |                    |                    |
| DIR2  | 0051/46                       | 0239/46            |                    |                    |                    |                    |                    |
| DIR3  | 0080/46                       | 0059/46            | 0209/46            |                    |                    |                    |                    |
| DIR4  | 0106/46                       | 0090/46            |                    |                    |                    |                    |                    |
| DIR5  | 0210/46                       | 0207/46            |                    |                    |                    |                    |                    |
| DIR6  | 0216/46                       | 0209/46            |                    |                    |                    |                    |                    |
| DIR7  | 0163/46                       | 0140/46            |                    |                    |                    |                    |                    |
| DIR8  | 0053/46                       | 0294/46            |                    |                    |                    |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                            |                    |                    |                    |                    |                    |                    |
|-------|----------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| DIR9  | 0085/46                    | 0080/46            |                    |                    |                    |                    |                    |
| DIRC1 | 0139/03                    | 0115/03            | 0127/03            |                    |                    |                    |                    |
| DIRC2 | 0140/03                    | 0113/03            | 0120/03            | 0126/03            |                    |                    |                    |
| DIRC3 | 0117/03                    | 0128/03            |                    |                    |                    |                    |                    |
| DIRC4 | 0130/03                    | 0124/03            |                    |                    |                    |                    |                    |
| DIRC5 | 0141/03                    | 0116/03            | 0117/03            | 0125/03            |                    |                    |                    |
| DIRCM | 0112/03<br>0132/03         | 0030/03<br>0520/37 | 0067/03            | 0087/03            | 0097/03            | 0129/03            | 0131/03            |
| DIRCS | 0520/37                    | 0331/37            | 0343/37            |                    |                    |                    |                    |
| DIRDL | 0135/03                    | 0020/03            |                    |                    |                    |                    |                    |
| DIREC | 0004/03<br>0575/52         | 0679/32<br>0581/52 | 0517/37<br>0527/54 | 0412/43<br>0579/58 | 0255/47            | 0455/51            | 0096/52            |
| DIREL | 0005/03                    | 0135/03            | 0518/37            | 0456/51            |                    |                    |                    |
| DIREU | 0006/03<br>0580/58         | 0519/37            | 0413/43            | 0256/47            | 0582/52            | 0528/54            | 0441/57            |
| DIRFM | 0250/46                    | 0075/46            |                    |                    |                    |                    |                    |
| DIRFX | 0271/46                    | 0100/46            |                    |                    |                    |                    |                    |
| DIRMS | 0270/46                    | 0098/46            |                    |                    |                    |                    |                    |
| DIRNI | 0028/46                    | 0022/46            |                    |                    |                    |                    |                    |
| DIRNM | 0243/46<br>0175/46         | 0103/46<br>0178/46 | 0127/46<br>0194/46 | 0133/46<br>0197/46 | 0150/46<br>0249/46 | 0160/46            | 0169/46            |
| DIRS0 | 0273/45                    | 0157/46            |                    |                    |                    |                    |                    |
| DIRSO | 0262/46                    | 0251/46            | 0260/46            | 0265/46            | 0265/46            |                    |                    |
| DIRSP | 0265/46                    | 0255/46            | 0258/46            |                    |                    |                    |                    |
| DIRWA | 0425/32                    | 0333/32            | 0337/32            | 0366/32            |                    |                    |                    |
| DIRWD | 0133/03                    | 0041/03            | 0043/03            | 0425/32            | 0009/33            |                    |                    |
| DIRWP | 0009/33<br>0110/35         | 0254/34<br>0114/35 | 0262/34<br>0118/35 | 0313/34<br>0171/35 | 0509/34            | 0082/35            | 0107/35            |
| DISCA | 0108<br>0304/36<br>0133/58 | 0171/03<br>0116/38 | 0218/15<br>0197/38 | 0494/15<br>0355/38 | 0507/35<br>0535/57 | 0581/35<br>0674/57 | 0159/36<br>0075/58 |

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CROSS-REFERENCE SYMBOL TABLE

DISCB 0109

DISCZ 0118 0321/39 0492/42 0364/43 0380/43 0440/44 0560/44  
 0032/47 0073/48 0084/48 0408/49 0420/49 0091/53 0207/53  
 0105/54 0136/54 0029/55 0148/55 0324/56 0366/56 0369/56

DKTBL 0086

DLCHR 0341/33 0255/33

DLK9A 0424/32 0340/32

DLK9P 0558/34 0318/34

DLK9Q 0352/35 0121/35 0177/35

DL010 0142/03 0054/03 0102/03

DLOK1 0028/03 0024/03

DLOK2 0025/03 0031/03

DLOK3 0021/03 0027/03

DLOK4 0063/03 0042/03

DLOK5 0072/03 0068/03 0089/03

DLOK6 0075/03 0094/03

DLOK7 0092/03 0088/03

DLOK8 0096/03 0085/03

DLOK9 0102/03 0048/03 0424/32 0558/34 0352/35

DLOKA 0423/32 0325/32

DLOKB 0049/03 0045/03

DLOKP 0008/33 0249/34 0076/35 0101/35 0478/35 0173/36 0313/36  
 0071/38 0252/39 0627/39 0052/41 0359/41 0056/44 0305/44  
 0500/44 0051/46 0018/56 0181/56 0055/57 0074/57 0167/57  
 0242/57 0501/57 0035/58 0257/58

DLOOK 0019/03 0069/03 0070/03 0090/03 0098/03 0100/03 0423/32  
 0680/32 0008/33

DLTEM 0287 0029/03 0065/03 0083/03 0410/35 0459/35 0165/36  
 0190/36 0330/37 0342/37 0361/37 0017/38 0597/39 0173/41  
 0573/41 0695/42 0707/42 0029/44 0114/44 0322/44 0551/45  
 0563/45 0030/47 0072/48 0104/50 0365/50 0008/56 0175/56  
 0198/56 0031/57 0258/57

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                                     |                                                     |                                                     |                                                     |                                          |                                          |
|-------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------|------------------------------------------|
| DMA   | 0030<br>0124/26<br>0612/32                          | 0069/26<br>0359/26                                  | 0094/26<br>0603/32                                  | 0106/26<br>0605/32                                  | 0107/26<br>0607/32                                  | 0111/26<br>0608/32                       | 0112/26<br>0610/32                       |
| DONEA | 0007/07                                             | 0032/07                                             | 0057/07                                             |                                                     |                                                     |                                          |                                          |
| DP    | 0274/02<br>0102/23<br>0168/23<br>0022/25<br>0134/25 | 0028/23<br>0107/23<br>0172/23<br>0028/25<br>0352/25 | 0051/23<br>0131/23<br>0210/23<br>0087/25<br>0362/25 | 0068/23<br>0134/23<br>0214/23<br>0097/25<br>0364/25 | 0072/23<br>0139/23<br>0341/24<br>0102/25<br>0395/25 | 0077/23<br>0153/23<br>0001/25<br>0119/25 | 0082/23<br>0157/23<br>0017/25<br>0126/25 |
| DPFLG | 0275/02<br>0295/23                                  | 0064/22<br>0061/24                                  | 0066/22<br>0074/24                                  | 0152/22<br>0093/24                                  | 0085/23                                             | 0194/23                                  | 0220/23                                  |
| DR.66 | 0316/26                                             | 0159/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DR8NM | 0286/26                                             | 0251/26                                             | 0255/26                                             | 0258/26                                             | 0294/26                                             |                                          |                                          |
| DRA0S | 0312/26                                             | 0221/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRA1  | 0174/26                                             | 0158/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRA2  | 0180/26                                             | 0171/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRA3  | 0190/25                                             | 0187/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRAB0 | 0311/26                                             | 0203/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRAIL | 0152/26                                             | 0093/26                                             | 0154/26                                             | 0262/26                                             | 0687/32                                             |                                          |                                          |
| DRANM | 0275/26                                             | 0207/26                                             | 0227/26                                             | 0236/26                                             | 0283/26                                             |                                          |                                          |
| DRAS0 | 0313/26                                             | 0232/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRATS | 0143/26                                             | 0074/26                                             | 0091/26                                             | 0129/26                                             | 0247/25                                             | 0256/26                                  |                                          |
| DRBLS | 0309/26                                             | 0165/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRDF  | 0298/26                                             | 0297/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRDFP | 0297/26                                             | 0169/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRDOT | 0310/26                                             | 0237/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRDR  | 0300/26                                             | 0299/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRDRP | 0299/26                                             | 0178/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DREDP | 0112                                                | 0515/26                                             |                                                     |                                                     |                                                     |                                          |                                          |
| DRIVE | 0099/26                                             | 0061/26                                             | 0075/26                                             | 0101/26                                             | 0104/26                                             | 0131/26                                  |                                          |

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CROSS-REFERENCE SYMBOL TABLE

|       |                 |                    |                    |                    |         |         |         |
|-------|-----------------|--------------------|--------------------|--------------------|---------|---------|---------|
| DRMER | 0128/26         | 0063/26            | 0089/26            |                    |         |         |         |
| DRRE  | 0302/26         | 0301/26            |                    |                    |         |         |         |
| DRREP | 0301/26         | 0188/26            |                    |                    |         |         |         |
| DRSA  | 0306/26         | 0305/26            |                    |                    |         |         |         |
| DRSAP | 0305/26         | 0210/26            |                    |                    |         |         |         |
| DRST  | 0308/26         | 0307/26            |                    |                    |         |         |         |
| DRSTP | 0307/26         | 0243/26            |                    |                    |         |         |         |
| DRUM  | 0455<br>0326/30 | 0208/15<br>0187/33 | 0485/15<br>0364/38 | 0353/16<br>0027/50 | 0494/26 | 0244/30 | 0288/30 |
| DRUML | 0186/33         | 0136/03            | 0105/28            | 0416/32            | 0749/32 | 0068/33 | 0107/33 |
|       | 0193/33         | 0195/33            | 0379/33            | 0390/33            | 0317/34 | 0336/34 | 0433/34 |
|       | 0120/35         | 0176/35            | 0184/35            | 0262/35            | 0564/35 | 0597/35 | 0058/36 |
|       | 0108/36         | 0227/36            | 0242/36            | 0250/36            | 0292/36 | 0325/36 | 0370/36 |
|       | 0113/37         | 0126/37            | 0150/37            | 0160/37            | 0182/37 | 0217/37 | 0300/37 |
|       | 0462/37         | 0536/37            | 0178/38            | 0225/38            | 0315/38 | 0021/39 | 0038/39 |
|       | 0096/39         | 0114/39            | 0327/39            | 0429/39            | 0449/39 | 0513/39 | 0677/39 |
|       | 0722/39         | 0752/39            | 0771/39            | 0785/39            | 0792/39 | 0807/39 | 0813/39 |
|       | 0223/41         | 0381/41            | 0084/42            | 0109/42            | 0081/44 | 0264/44 | 0359/44 |
|       | 0373/44         | 0379/44            | 0416/44            | 0620/44            | 0626/45 | 0682/45 | 0074/46 |
|       | 0693/48         | 0731/48            | 0027/49            | 0118/49            | 0261/49 | 0320/49 | 0370/49 |
|       | 0119/50         | 0327/50            | 0458/50            | 0067/51            | 0100/51 | 0143/51 | 0197/51 |
|       | 0252/51         | 0319/51            | 0376/51            | 0383/51            | 0393/51 | 0409/51 | 0418/51 |
|       | 0550/51         | 0605/51            | 0171/52            | 0237/52            | 0286/52 | 0302/52 | 0334/52 |
|       | 0389/52         | 0459/52            | 0098/53            | 0213/53            | 0194/54 | 0266/54 | 0315/54 |
|       | 0534/54         | 0178/55            | 0254/55            | 0270/55            | 0293/55 | 0304/55 | 0411/55 |
|       | 0082/56         | 0134/56            | 0235/56            | 0248/56            | 0257/56 | 0264/56 | 0307/56 |
|       | 0320/56         | 0526/56            | 0107/57            | 0203/57            | 0236/57 | 0296/57 | 0339/57 |
|       | 0364/57         | 0460/57            | 0555/57            | 0589/57            | 0636/57 | 0645/57 | 0656/57 |
|       | 0686/57         | 0089/58            | 0128/58            | 0153/58            | 0162/58 | 0205/58 | 0269/58 |
|       | 0308/58         | 0406/58            | 0469/58            | 0482/58            | 0503/58 | 0522/58 | 0559/58 |
| DRUMP | 0416/32         | 0485/31            | 0494/31            | 0025/32            | 0056/32 | 0063/32 | 0256/32 |
|       | 0274/32         | 0339/32            | 0393/32            |                    |         |         |         |
| DRUMS | 0106/28         | 0473/27            | 0491/27            | 0055/28            | 0076/28 |         |         |
| DRUMW | 0136/03         | 0047/03            | 0057/03            |                    |         |         |         |
| DRWR  | 0304/26         | 0303/26            |                    |                    |         |         |         |
| DRWRP | 0303/26         | 0190/26            |                    |                    |         |         |         |
| DSAVE | 0141/26         | 0081/26            | 0095/26            |                    |         |         |         |
| DSCED | 0134/26         | 0549/26            | 0573/26            |                    |         |         |         |



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CROSS-REFERENCE SYMBOL TABLE

|       |                            |                            |                               |                    |                    |                    |                    |
|-------|----------------------------|----------------------------|-------------------------------|--------------------|--------------------|--------------------|--------------------|
| DSCH7 | 0421/32                    | 0413/32                    |                               |                    |                    |                    |                    |
| DSCST | 0054/26                    | 0490/26                    | 0573/26                       | 0574/26            |                    |                    |                    |
| DSERA | 0122/31                    | 0009/15                    |                               |                    |                    |                    |                    |
| DSERR | 0009/15                    | 0341/16                    |                               |                    |                    |                    |                    |
| DSRCH | 0214/02<br>0120/25         | 0047/23<br>0130/25         | 0083/23<br>0357/25            | 0132/23<br>0359/25 | 0018/25<br>0361/25 | 0088/25<br>0367/25 | 0098/25            |
| DSTV2 | 0265/47                    | 0080/48                    |                               |                    |                    |                    |                    |
| DSYID | 0429/32                    | 0092/32                    | 0161/32                       |                    |                    |                    |                    |
| DTAPR | 0447/29                    | 0481/29                    |                               |                    |                    |                    |                    |
| DTEMP | 0142/26                    | 0058/26                    | 0114/26                       |                    |                    |                    |                    |
| DTL1  | 0206/02                    | 0404/23                    | 0144/24                       | 0241/24            | 0156/25            | 0260/25            |                    |
| DTL10 | 0257/25                    | 0265/25                    |                               |                    |                    |                    |                    |
| DTMP  | 0265/02                    | 0423/02                    | 0424/02                       | 0191/20            | 0202/20            | 0210/20            | 0212/20            |
| DTMT0 | 0057/20                    | 0038/20                    |                               |                    |                    |                    |                    |
| DTRAX | 0281                       | 0573/42                    | 0134/47                       | 0656/51            | 0344/52            |                    |                    |
| DTT32 | 0311                       | 0254/29                    | 0197/49                       | 0273/49            |                    |                    |                    |
| DTTY0 | 0309<br>0281/49            | 0586/28<br>0446/49         | 0023/29<br>0037/51            | 0606/48<br>0109/51 | 0185/49<br>0369/59 | 0231/49<br>0433/59 | 0246/49<br>0440/59 |
| DVSR5 | 0493<br>0524/41<br>0218/47 | 0486<br>0213/42<br>0011/48 | 0472/35<br>0655/42<br>0450/54 | 0131/41<br>0293/43 | 0133/41<br>0773/45 | 0135/41<br>0167/46 | 0507/41<br>0187/46 |
| E     | 0415                       | 0247/19                    | 0116/22                       | 0146/23            | 0190/25            |                    |                    |
| EABS  | 0005/20                    | 0481                       |                               |                    |                    |                    |                    |
| EALCA | 0349/36                    | 0098/36                    |                               |                    |                    |                    |                    |
| EALNA | 0350/36                    | 0097/36                    |                               |                    |                    |                    |                    |
| EAND  | 0066/14                    | 0154/13                    |                               |                    |                    |                    |                    |
| EAS00 | 0437/11                    | 0432/11                    |                               |                    |                    |                    |                    |
| EAS01 | 0433/11                    | 0429/11                    |                               |                    |                    |                    |                    |
| EAS02 | 0451/11                    | 0419/11                    |                               |                    |                    |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |         |         |         |         |         |         |
|-------|--------------------|---------|---------|---------|---------|---------|---------|
| EASN  | 0399/11            | 0247/12 |         |         |         |         |         |
| EASN0 | 0405/11            | 0409/11 |         |         |         |         |         |
| EASN1 | 0467/11            |         |         |         |         |         |         |
| EASN2 | 0496/11            |         |         |         |         |         |         |
| EASN3 | 0536/11            | 0498/11 | 0503/11 | 0541/11 | 0543/11 |         |         |
| EASN4 | 0540/11            | 0493/11 |         |         |         |         |         |
| EASN5 | 0542/11            | 0492/11 |         |         |         |         |         |
| EATN  | 0396/20            | 0478    |         |         |         |         |         |
| EATN1 | 0406/20            | 0428/20 |         |         |         |         |         |
| EATN2 | 0427/20            | 0402/20 |         |         |         |         |         |
| EATN3 | 0429/20            | 0421/20 |         |         |         |         |         |
| EATN4 | 0431/20            | 0424/20 | 0426/20 |         |         |         |         |
| EBRK  | 0166/21            | 0491    |         |         |         |         |         |
| EBRK1 | 0192/21            | 0181/21 |         |         |         |         |         |
| EBRK2 | 0197/21            | 0191/21 | 0194/21 |         |         |         |         |
| EC    | 0475/02<br>0338/24 | 0021/23 | 0032/23 | 0041/23 | 0289/23 | 0350/23 | 0331/24 |
| ECF   | 0139               | 0557/39 | 0070/45 |         |         |         |         |
| ECH1  | 0080/45            | 0069/45 |         |         |         |         |         |
| ECHAN | 0014/12            | 0270/12 |         |         |         |         |         |
| ECHF  | 0094/45            | 0070/45 | 0075/45 |         |         |         |         |
| ECHN  | 0093/45            | 0068/45 |         |         |         |         |         |
| ECHO  | 0095/45            | 0063/45 |         |         |         |         |         |
| ECO   | 0138               | 0553/39 | 0080/45 |         |         |         |         |
| ECOS  | 0281/20            | 0490    |         |         |         |         |         |
| EDABR | 0234/02            | 0599/11 | 0495/16 | 0085/21 | 0183/21 | 0196/21 |         |
| EDELM | 0142/02            | 0314/02 | 0397/02 | 0018/11 | 0134/17 | 0331/19 | 0344/19 |
| EDSTA | 0276/02            | 0334/24 | 0427/25 | 0438/25 | 0476/25 |         |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| EEN10 | 0335/11 | 0307/11 |         |         |         |         |         |
| EEN13 | 0363/11 | 0354/11 |         |         |         |         |         |
| EEN14 | 0367/11 | 0352/11 |         |         |         |         |         |
| EEN15 | 0369/11 | 0371/11 |         |         |         |         |         |
| EEN16 | 0372/11 | 0368/11 |         |         |         |         |         |
| EEN17 | 0378/11 | 0315/11 | 0326/11 | 0329/11 | 0331/11 | 0334/11 |         |
| EEN18 | 0387/11 | 0279/11 | 0333/11 | 0362/11 | 0366/11 | 0370/11 | 0373/11 |
| EENT3 | 0248/11 | 0222/11 | 0229/11 |         |         |         |         |
| EENT6 | 0280/11 | 0266/11 |         |         |         |         |         |
| EENT7 | 0324/11 | 0319/11 |         |         |         |         |         |
| EENT8 | 0327/11 | 0323/11 |         |         |         |         |         |
| EENT9 | 0332/11 |         |         |         |         |         |         |
| EENTR | 0219/11 | 0271/12 |         |         |         |         |         |
| EEQL  | 0024/14 | 0152/13 | 0034/14 | 0085/14 |         |         |         |
| EEXP  | 0452/20 | 0479    |         |         |         |         |         |
| EFAD  | 0318/13 | 0144/13 |         |         |         |         |         |
| EFDV  | 0336/13 | 0147/13 |         |         |         |         |         |
| EFLAG | 0277/02 | 0086/23 | 0227/23 | 0292/23 | 0057/24 | 0152/25 | 0300/25 |
| EFMP  | 0330/13 | 0146/13 |         |         |         |         |         |
| EFN0  | 0398/02 | 0079/10 | 0086/10 | 0109/10 | 0116/10 | 0173/10 | 0184/10 |
| EFN1  | 0399/02 | 0111/10 | 0121/10 | 0167/10 | 0181/10 | 0182/10 |         |
| EFN2  | 0400/02 | 0125/10 | 0176/10 | 0179/10 | 0185/10 |         |         |
| EFN3  | 0401/02 | 0130/10 | 0137/10 |         |         |         |         |
| EFOR  | 0088/10 | 0257/12 |         |         |         |         |         |
| EFOR0 | 0077/10 | 0099/10 |         |         |         |         |         |
| EFOR1 | 0096/10 | 0101/10 |         |         |         |         |         |
| EFOR2 | 0102/10 | 0097/10 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |
|-------|---------|---------|---------|
| EFOR3 | 0121/10 | 0148/10 |         |
| EFOR4 | 0128/10 | 0136/10 | 0140/10 |
| EFOR5 | 0105/10 | 0078/10 | 0087/10 |
| EFOR6 | 0146/10 | 0119/10 |         |
| EF98  | 0324/13 | 0145/13 |         |
| EGORE | 0017/14 | 0159/13 |         |
| EGOS1 | 0061/10 | 0050/10 |         |
| EGOSB | 0043/10 | 0259/12 |         |
| EGOTO | 0037/10 | 0255/12 |         |
| EGTRT | 0005/14 | 0149/13 |         |
| EH    | 0431/29 | 0389    |         |
| EHERR | 0425/29 | 0383/29 | 0461/29 |
| EIF   | 0023/10 | 0256/12 |         |
| EIF1  | 0016/10 | 0027/10 |         |
| EIN10 | 0272/10 | 0264/10 |         |
| EIN11 | 0289/10 | 0244/10 | 0247/10 |
| EIN12 | 0293/10 | 0258/10 | 0003/17 |
| EIN13 | 0300/10 | 0227/10 |         |
| EIN14 | 0312/10 | 0288/10 |         |
| EIN15 | 0354/10 | 0348/10 |         |
| EIN16 | 0349/10 | 0353/10 |         |
| EIN17 | 0321/10 |         |         |
| EIN18 | 0338/10 | 0346/10 |         |
| EIN19 | 0340/10 | 0352/10 | 0357/10 |
| EIN20 | 0343/10 | 0329/10 |         |
| EIN21 | 0347/10 | 0327/10 |         |
| EINP0 | 0256/10 | 0004/17 |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|
| EINP1 | 0216/10 | 0205/17 |         |         |         |
| EINP2 | 0220/10 | 0262/10 | 0271/10 | 0275/10 |         |
| EINP3 | 0232/10 | 0223/10 |         |         |         |
| EINP4 | 0239/10 | 0235/10 | 0279/10 | 0287/10 |         |
| EINP5 | 0248/10 | 0292/10 |         |         |         |
| EINP6 | 0251/10 | 0339/10 | 0342/10 | 0350/10 | 0355/10 |
| EINP7 | 0276/10 | 0249/10 |         |         |         |
| EINP8 | 0280/10 | 0250/10 | 0277/10 | 0291/10 | 0364/10 |
| EINP9 | 0265/10 | 0260/10 | 0273/10 |         |         |
| EINPT | 0214/10 | 0264/12 |         |         |         |
| EINT  | 0014/20 | 0483    |         |         |         |
| EINT1 | 0023/20 | 0016/20 |         |         |         |
| EIOR  | 0075/14 | 0155/13 |         |         |         |
| ELBRC | 0169/13 | 0138/13 |         |         |         |
| ELCNT | 0491/02 | 0034/17 | 0443/25 | 0466/25 | 0469/25 |
| ELET  | 0007/10 | 0251/12 | 0272/12 |         |         |
| ELIN  | 0489/19 | 0475    |         |         |         |
| ELIN1 | 0507/19 | 0494/19 |         |         |         |
| ELIN2 | 0527/19 | 0506/19 | 0519/19 |         |         |
| ELIN3 | 0520/19 | 0512/19 |         |         |         |
| ELOG  | 0005/21 | 0480    |         |         |         |
| ELORE | 0031/14 | 0160/13 |         |         |         |
| ELST  | 0012/14 | 0150/13 |         |         |         |
| EMAT  | 0025/17 | 0268/12 |         |         |         |
| EMAT1 | 0162/17 | 0028/17 |         |         |         |
| EMAT2 | 0175/17 | 0337/17 |         |         |         |
| EMAT3 | 0222/17 | 0189/17 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                       |                               |                               |                               |                               |                               |                               |
|-------|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| EMAT4 | 0260/17                               | 0202/17                       |                               |                               |                               |                               |                               |
| EMAT5 | 0331/17                               | 0179/17                       |                               |                               |                               |                               |                               |
| EMAT6 | 0339/17                               | 0173/17                       |                               |                               |                               |                               |                               |
| EMAT7 | 0370/17                               | 0360/17                       |                               |                               |                               |                               |                               |
| EMAT8 | 0378/17                               | 0344/17                       |                               |                               |                               |                               |                               |
| EMAX  | 0045/14                               | 0157/13                       |                               |                               |                               |                               |                               |
| EMIN  | 0054/14                               | 0156/13                       |                               |                               |                               |                               |                               |
| ENDIN | 0003/17                               | 0157/17                       |                               |                               |                               |                               |                               |
| ENDOP | 0375                                  | 0335/07                       | 0024/10                       | 0038/11                       |                               |                               |                               |
| ENDRM | 0166<br>0052/26<br>0209/30<br>0070/50 | 0209/15<br>0090/26<br>0211/30 | 0220/15<br>0156/26<br>0189/33 | 0486/15<br>0474/26<br>0194/33 | 0504/15<br>0188/29<br>0351/38 | 0354/16<br>0159/30<br>0396/38 | 0360/16<br>0170/30<br>0422/38 |
| END8  | 0562/03                               | 0527/05                       | 0528/05                       | 0529/05                       |                               |                               |                               |
| ENDST | 0520                                  | 0187/29                       | 0172/30                       | 0177/30                       |                               |                               |                               |
| ENEQL | 0038/14                               | 0151/13                       | 0158/13                       | 0008/14                       | 0071/14                       | 0080/14                       |                               |
| ENEX1 | 0161/10                               | 0166/10                       |                               |                               |                               |                               |                               |
| ENEX2 | 0167/10                               | 0164/10                       |                               |                               |                               |                               |                               |
| ENEX3 | 0183/10                               | 0145/10                       |                               |                               |                               |                               |                               |
| ENEX4 | 0193/10                               | 0188/10                       |                               |                               |                               |                               |                               |
| ENEXT | 0154/10                               | 0258/12                       |                               |                               |                               |                               |                               |
| ENOT  | 0084/14                               | 0161/13                       |                               |                               |                               |                               |                               |
| ENOUF | 0256/02                               | 0331/09                       | 0317/11                       | 0330/11                       | 0386/11                       | 0037/22                       |                               |
| ENOUT | 0134/02                               | 0058/11                       | 0136/17                       | 0028/19                       |                               |                               |                               |
| ENTR1 | 0323/05                               | 0312/05                       |                               |                               |                               |                               |                               |
| ENTR2 | 0328/05                               | 0322/05                       |                               |                               |                               |                               |                               |
| ENTRS | 0306/05                               | 0538/05                       |                               |                               |                               |                               |                               |
| ENTRT | 0265/11                               | 0595/28                       |                               |                               |                               |                               |                               |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                               |                               |                               |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| ENTVR | 0348/02                       |                               |                               |                               |                               |                               |                               |
| EOF   | 0502                          | 0250/15                       | 0388/15                       | 0447/15                       |                               |                               |                               |
| EOFOP | 0417/22                       | 0532/04                       |                               |                               |                               |                               |                               |
| EOL   | 0408/02<br>0074/11<br>0433/19 | 0008/10<br>0102/11<br>0459/19 | 0028/10<br>0411/11<br>0492/19 | 0017/11<br>0505/11<br>0416/25 | 0021/11<br>0094/13<br>0422/25 | 0046/11<br>0335/19<br>0483/25 | 0055/11<br>0338/19<br>0417/35 |
| EOPF  | 0409/02                       | 0024/19                       | 0069/19                       | 0179/19                       | 0349/19                       | 0351/19                       |                               |
| EOR   | 0503                          | 0233/15                       | 0248/15                       | 0329/15                       | 0355/15                       | 0386/15                       | 0445/15                       |
| EORFL | 0455/02                       | 0096/11                       | 0159/12                       | 0407/15                       | 0153/20                       |                               |                               |
| EOST  | 0325/03<br>0594/03            | 0319/03<br>0632/03            | 0392/03<br>0129/04            | 0456/03<br>0140/04            | 0512/03<br>0148/04            | 0546/03<br>0171/04            | 0555/03<br>0261/05            |
| EOSTA | 0261/05                       | 0270/05                       | 0296/05                       | 0300/05                       | 0346/05                       | 0378/05                       |                               |
| EPR10 | 0093/11                       | 0081/11                       | 0088/11                       |                               |                               |                               |                               |
| EPR11 | 0096/11                       | 0039/11                       |                               |                               |                               |                               |                               |
| EPR12 | 0102/11                       | 0029/11                       |                               |                               |                               |                               |                               |
| EPR13 | 0105/11                       | 0011/11                       |                               |                               |                               |                               |                               |
| EPR11 | 0013/11                       | 0033/11                       |                               |                               |                               |                               |                               |
| EPR12 | 0019/11                       | 0012/11                       | 0015/11                       | 0035/11                       | 0112/11                       |                               |                               |
| EPR13 | 0022/11                       | 0041/11                       |                               |                               |                               |                               |                               |
| EPR14 | 0027/11                       | 0056/11                       | 0059/11                       | 0063/11                       | 0095/11                       | 0099/11                       |                               |
| EPR15 | 0045/11                       | 0025/11                       |                               |                               |                               |                               |                               |
| EPR17 | 0060/11                       | 0054/11                       | 0072/11                       | 0101/11                       |                               |                               |                               |
| EPR18 | 0064/11                       | 0037/11                       | 0050/11                       |                               |                               |                               |                               |
| EPR19 | 0082/11                       | 0094/11                       |                               |                               |                               |                               |                               |
| EPRIN | 0006/11                       | 0266/12                       |                               |                               |                               |                               |                               |
| EPRU1 | 0151/11                       | 0137/11                       |                               |                               |                               |                               |                               |
| EPRU2 | 0172/11                       | 0168/11                       |                               |                               |                               |                               |                               |
| EPRU3 | 0183/11                       | 0171/11                       |                               |                               |                               |                               |                               |
| EPRU4 | 0191/11                       | 0152/11                       |                               |                               |                               |                               |                               |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                       |                                       |                                          |                                          |                                          |                                          |  |
|-------|-----------------------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|--|
| EPRUS | 0226/02                                             | 0007/11                               | 0126/11                               | 0128/11                                  | 0133/11                                  | 0035/17                                  |                                          |  |
| EPWR  | 0349/13                                             | 0148/13                               |                                       |                                          |                                          |                                          |                                          |  |
| EREA1 | 0383/10                                             | 0371/10                               | 0393/10                               |                                          |                                          |                                          |                                          |  |
| EREA2 | 0387/10                                             | 0375/10                               |                                       |                                          |                                          |                                          |                                          |  |
| ERead | 0370/10                                             | 0386/10                               | 0265/12                               |                                          |                                          |                                          |                                          |  |
| EREG  | 0000/02                                             | 0687/28                               | 0192/29                               |                                          |                                          |                                          |                                          |  |
| ERND  | 0072/20                                             | 0484                                  |                                       |                                          |                                          |                                          |                                          |  |
| ERND1 | 0079/20                                             | 0074/20                               |                                       |                                          |                                          |                                          |                                          |  |
| ERR   | 0521/16                                             | 0520/16                               |                                       |                                          |                                          |                                          |                                          |  |
| ERRCT | 0335/02<br>0512/16                                  | 0244/03<br>0514/16                    | 0042/06                               | 0043/06                                  | 0167/16                                  | 0212/16                                  | 0213/16                                  |  |
| ERs32 | 0371                                                | 0160/07                               | 0192/07                               | 0201/07                                  | 0224/40                                  | 0254/40                                  | 0264/40                                  |  |
| ERSCA | 0307<br>0247/40                                     | 0137/07                               | 0185/07                               | 0214/15                                  | 0351/16                                  | 0377/16                                  | 0199/40                                  |  |
| ERsEC | 0269/02<br>0452/02<br>0477/02<br>0484/02<br>0624/11 | 0307<br>0453/02<br>0478/02<br>0485/02 | 0371<br>0455/02<br>0479/02<br>0486/02 | 0300/02<br>0459/02<br>0480/02<br>0487/02 | 0449/02<br>0460/02<br>0481/02<br>0488/02 | 0450/02<br>0475/02<br>0482/02<br>0489/02 | 0451/02<br>0476/02<br>0483/02<br>0490/02 |  |
| ERSTR | 0207/11                                             | 0267/12                               |                                       |                                          |                                          |                                          |                                          |  |
| ERTRN | 0202/10                                             | 0260/12                               |                                       |                                          |                                          |                                          |                                          |  |
| ESCM1 | 0196/13                                             | 0175/13                               |                                       |                                          |                                          |                                          |                                          |  |
| ESCM2 | 0209/13                                             | 0203/13                               |                                       |                                          |                                          |                                          |                                          |  |
| ESMA  | 0189/13                                             | 0142/13                               |                                       |                                          |                                          |                                          |                                          |  |
| ESGN  | 0124/20                                             | 0485                                  |                                       |                                          |                                          |                                          |                                          |  |
| ESIN  | 0286/20                                             | 0489                                  |                                       |                                          |                                          |                                          |                                          |  |
| ESIN1 | 0309/20                                             | 0304/20                               |                                       |                                          |                                          |                                          |                                          |  |
| ESPA  | 0456/19                                             | 0476                                  |                                       |                                          |                                          |                                          |                                          |  |
| ESPA1 | 0475/19                                             | 0468/19                               | 0478/19                               |                                          |                                          |                                          |                                          |  |
| ESPA4 | 0483/19                                             | 0461/19                               | 0463/19                               | 0474/19                                  |                                          |                                          |                                          |  |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|
| ESQR  | 0101/21 | 0482    |         |         |         |         |
| ESQR1 | 0117/21 | 0142/21 |         |         |         |         |
| ESQR2 | 0134/21 | 0108/21 |         |         |         |         |
| EST   | 0278/02 | 0218/23 | 0337/23 | 0386/23 | 0095/24 | 0101/24 |
| EST1  | 0436/02 | 0271/13 | 0297/13 | 0305/13 |         |         |
| EST2  | 0437/02 | 0282/13 | 0301/13 |         |         |         |
| EST3  | 0438/02 | 0287/13 | 0294/13 |         |         |         |
| ESTR  | 0245/13 | 0143/13 |         |         |         |         |
| ESTR1 | 0250/13 | 0263/13 |         |         |         |         |
| ESTR2 | 0258/13 | 0249/13 |         |         |         |         |
| ESTR3 | 0264/13 | 0260/13 |         |         |         |         |
| ESTR4 | 0303/13 | 0276/13 | 0280/13 |         |         |         |
| ESTR5 | 0308/13 | 0247/13 |         |         |         |         |
| ETAB  | 0430/19 | 0474    |         |         |         |         |
| ETAB1 | 0446/19 | 0449/19 |         |         |         |         |
| ETAB2 | 0441/19 | 0436/19 |         |         |         |         |
| ETAB4 | 0452/19 | 0440/19 | 0444/19 |         |         |         |
| ETAN  | 0333/20 | 0477    |         |         |         |         |
| ETAN1 | 0357/20 | 0377/20 |         |         |         |         |
| ETAN2 | 0376/20 | 0353/20 |         |         |         |         |
| ETAN3 | 0378/20 | 0371/20 |         |         |         |         |
| ETIM  | 0029/20 | 0488    |         |         |         |         |
| ETIM0 | 0040/20 | 0058/20 |         |         |         |         |
| ETIM1 | 0045/20 | 0059/20 |         |         |         |         |
| ETIM2 | 0050/20 | 0060/20 |         |         |         |         |
| ETIM3 | 0054/20 | 0044/20 | 0049/20 | 0061/20 |         |         |
| ETO   | 0538/28 | 0437/28 |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                           |                                                                           |                                                                           |                                                                |                                                                |                                                                |                                                                |
|-------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|
| ETYP  | 0145/20                                                                   | 0487                                                                      |                                                                           |                                                                |                                                                |                                                                |                                                                |
| ETYP1 | 0164/20                                                                   | 0171/20                                                                   | 0180/20                                                                   |                                                                |                                                                |                                                                |                                                                |
| ETYP2 | 0168/20                                                                   | 0175/20                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| ETYP3 | 0173/20                                                                   | 0149/20                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EUMIN | 0132/13                                                                   | 0141/13                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEX0 | 0412/25                                                                   | 0423/25                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEX3 | 0431/25                                                                   | 0420/25                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEX4 | 0440/25                                                                   | 0430/25                                                                   | 0481/25                                                                   |                                                                |                                                                |                                                                |                                                                |
| EVEX5 | 0443/25                                                                   | 0411/25                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEX6 | 0445/25                                                                   | 0486/25                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEX7 | 0468/25                                                                   | 0444/25                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEX8 | 0482/25                                                                   | 0453/25                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEX9 | 0475/25                                                                   | 0471/25                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EVEXP | 0218/02<br>0447/25                                                        | 0255/23<br>0451/25                                                        | 0345/23<br>0480/25                                                        | 0414/25                                                        | 0429/25                                                        | 0441/25                                                        | 0442/25                                                        |
| EXIT  | 0550/11                                                                   | 0315                                                                      | 0261/12                                                                   | 0262/12                                                        |                                                                |                                                                |                                                                |
| EXIT0 | 0564/11                                                                   | 0621/11                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EXIT1 | 0630/11                                                                   | 0572/11                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EXIT2 | 0610/11                                                                   | 0565/11                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EXIT3 | 0567/11                                                                   | 0007/07                                                                   | 0005/12                                                                   | 0379/39                                                        |                                                                |                                                                |                                                                |
| EXIT4 | 0589/11                                                                   | 0583/11                                                                   |                                                                           |                                                                |                                                                |                                                                |                                                                |
| EXIT7 | 0276/32                                                                   | 0236/32                                                                   | 0262/32                                                                   |                                                                |                                                                |                                                                |                                                                |
| EXITA | 0315                                                                      | 0288/11                                                                   | 0236/12                                                                   |                                                                |                                                                |                                                                |                                                                |
| EXP   | 0304/02<br>0627/15<br>0104/19<br>0058/22<br>0231/22<br>0277/23<br>0153/25 | 0055/15<br>0007/16<br>0111/19<br>0077/22<br>0247/22<br>0286/23<br>0244/25 | 0062/15<br>0009/16<br>0274/19<br>0097/22<br>0248/22<br>0395/23<br>0257/25 | 0543/15<br>0050/16<br>0282/19<br>0108/22<br>0279/22<br>0139/24 | 0586/15<br>0051/16<br>0019/20<br>0194/22<br>0321/22<br>0141/24 | 0597/15<br>0098/19<br>0089/20<br>0196/22<br>0322/22<br>0238/24 | 0600/15<br>0101/19<br>0251/20<br>0210/22<br>0261/23<br>0149/25 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
|-------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| EXP2  | 0443/02<br>0610/15                                                                   | 0555/15<br>0055/16                                                                   | 0578/15<br>0065/16                                                                   | 0581/15<br>0079/16                                                                   | 0598/15                                                                              | 0599/15                                                                              | 0607/15                                                                              |
| EXPON | 0305/02<br>0154/19<br>0261/19<br>0161/22<br>0068/24<br>0145/24<br>0193/25<br>0261/25 | 0100/19<br>0158/19<br>0263/19<br>0164/22<br>0117/24<br>0151/24<br>0197/25<br>0264/25 | 0107/19<br>0192/19<br>0061/22<br>0166/22<br>0121/24<br>0208/24<br>0199/25<br>0303/25 | 0110/19<br>0216/19<br>0069/22<br>0393/23<br>0123/24<br>0237/24<br>0204/25            | 0115/19<br>0250/19<br>0073/22<br>0405/23<br>0128/24<br>0243/24<br>0206/25            | 0118/19<br>0254/19<br>0153/22<br>0411/23<br>0130/24<br>0151/25<br>0247/25            | 0121/19<br>0256/19<br>0159/22<br>0064/24<br>0137/24<br>0158/25<br>0256/25            |
| EXPDP | 0249/05                                                                              | 0386/04                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| EXPW  | 0478/02                                                                              | 0287/23                                                                              | 0148/25                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| EXT1  | 0605/11                                                                              | 0630/11                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| EXT1A | 0601/11                                                                              | 0584/11                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| EXT3A | 0005/12                                                                              | 0021/12                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| F     | 0096/21                                                                              | 0449/21                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| F0.0  | 0021/17                                                                              | 0020/17                                                                              | 0293/17                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| F0.0A | 0020/17                                                                              | 0373/17                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| F1.0  | 0023/17                                                                              | 0022/17                                                                              | 0141/18                                                                              | 0257/18                                                                              |                                                                                      |                                                                                      |                                                                                      |
| F1.0A | 0022/17                                                                              | 0371/17                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| FADBC | 0136/31                                                                              | 0147/31                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| FADBF | 0150/31                                                                              | 0143/31                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| FADBN | 0148/31                                                                              | 0154/31                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| FADDB | 0426/31                                                                              | 0141/31                                                                              | 0293/31                                                                              | 0435/31                                                                              |                                                                                      |                                                                                      |                                                                                      |
| FADT  | 0131/31                                                                              | 0159/31                                                                              | 0476/31                                                                              | 0510/31                                                                              | 0727/32                                                                              | 0010/33                                                                              |                                                                                      |
| FADTP | 0010/33                                                                              | 0799/39                                                                              | 0093/53                                                                              | 0299/55                                                                              |                                                                                      |                                                                                      |                                                                                      |
| FALSE | 0123/13                                                                              | 0007/14                                                                              | 0019/14                                                                              | 0026/14                                                                              | 0041/14                                                                              | 0069/14                                                                              | 0101/14                                                                              |
| FBASE | 0454/02<br>0610/11<br>0185/12<br>0125/15<br>0147/15<br>0174/15<br>0191/15<br>0275/15 | 0018/10<br>0613/11<br>0198/12<br>0126/15<br>0148/15<br>0179/15<br>0199/15<br>0278/15 | 0021/10<br>0153/12<br>0105/15<br>0127/15<br>0149/15<br>0180/15<br>0236/15<br>0279/15 | 0472/11<br>0168/12<br>0106/15<br>0128/15<br>0154/15<br>0181/15<br>0243/15<br>0281/15 | 0482/11<br>0169/12<br>0109/15<br>0130/15<br>0155/15<br>0182/15<br>0245/15<br>0283/15 | 0484/11<br>0170/12<br>0111/15<br>0133/15<br>0163/15<br>0184/15<br>0270/15<br>0298/15 | 0533/11<br>0184/12<br>0122/15<br>0138/15<br>0167/15<br>0186/15<br>0272/15<br>0303/15 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                  |                                                     |                                                     |                                                     |                                                     |                                          |                                          |
|-------|--------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------|------------------------------------------|
|       | 0312/15<br>0467/15                               | 0326/15<br>0469/15                                  | 0380/15<br>0483/15                                  | 0395/15<br>0493/15                                  | 0422/15<br>0380/35                                  | 0440/15<br>0383/35                       | 0442/15                                  |
| FBP   | 0131                                             | 0462/03                                             | 0245/06                                             |                                                     |                                                     |                                          |                                          |
| FCNTR | 0379/02<br>0556/11<br>0369/35                    | 0329/09<br>0558/11<br>0371/35                       | 0336/09<br>0564/11<br>0377/35                       | 0363/09<br>0099/15<br>0263/49                       | 0433/09<br>0102/15                                  | 0439/09<br>0448/16                       | 0464/11<br>0395/32                       |
| FCORE | 0378/02                                          | 0402/08                                             | 0257/09                                             | 0561/11                                             | 0374/35                                             |                                          |                                          |
| FCUC  | 0232/02                                          | 0467                                                | 0320/14                                             | 0333/14                                             | 0334/14                                             |                                          |                                          |
| FCUCA | 0467                                             | 0449/11                                             | 0463/35                                             |                                                     |                                                     |                                          |                                          |
| FD0   | 0444/02                                          | 0059/16                                             | 0067/16                                             | 0074/16                                             | 0281/19                                             | 0290/19                                  |                                          |
| FDAT1 | 0123/12                                          | 0115/12                                             |                                                     |                                                     |                                                     |                                          |                                          |
| FDAT2 | 0137/12                                          | 0131/12                                             |                                                     |                                                     |                                                     |                                          |                                          |
| FDAT3 | 0153/12                                          | 0113/12                                             |                                                     |                                                     |                                                     |                                          |                                          |
| FDAT4 | 0168/12                                          | 0469                                                | 0164/12                                             |                                                     |                                                     |                                          |                                          |
| FDAT5 | 0176/12                                          | 0162/12                                             |                                                     |                                                     |                                                     |                                          |                                          |
| FDAT6 | 0187/12                                          | 0178/12                                             |                                                     |                                                     |                                                     |                                          |                                          |
| FDATA | 0104/02<br>0186/12                               | 0308/02<br>0199/12                                  | 0429/02<br>0090/17                                  | 0381/10                                             | 0380/10                                             | 0136/12                                  | 0152/12                                  |
| FDT4A | 0469                                             | 0156/15                                             | 0363/15                                             |                                                     |                                                     |                                          |                                          |
| FDTTY | 0580/28<br>0592/28                               | 0456/28                                             | 0472/28                                             | 0515/28                                             | 0526/28                                             | 0538/28                                  | 0555/28                                  |
| FENCA | 0626/11                                          | 0348/11                                             |                                                     |                                                     |                                                     |                                          |                                          |
| FENCH | 0202/02                                          | 0626/11                                             | 0358/14                                             | 0362/14                                             |                                                     |                                          |                                          |
| FERRA | 0007/15                                          | 0227/16                                             | 0239/16                                             | 0398/16                                             | 0454/16                                             | 0479/16                                  |                                          |
| FERRS | 0533<br>0115/23<br>0179/23<br>0349/23<br>0052/25 | 0007/15<br>0141/23<br>0182/23<br>0364/23<br>0067/25 | 0008/15<br>0154/23<br>0221/23<br>0111/24<br>0096/25 | 0062/23<br>0158/23<br>0228/23<br>0330/24<br>0107/25 | 0076/23<br>0169/23<br>0240/23<br>0011/25<br>0111/25 | 0081/23<br>0173/23<br>0257/23<br>0032/25 | 0103/23<br>0176/23<br>0332/23<br>0040/25 |
| FETCH | 0100/02<br>0451/11<br>0470/35                    | 0310/02<br>0079/12                                  | 0029/10<br>0096/12                                  | 0051/10<br>0282/12                                  | 0115/10<br>0331/17                                  | 0120/10<br>0322/18                       | 0248/11<br>0332/18                       |
| FFLAG | 0306/02                                          | 0083/19                                             | 0093/19                                             | 0173/19                                             | 0175/19                                             | 0190/19                                  | 0214/19                                  |

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## CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0242/19 |         |         |         |         |         |         |
| FFLG  | 0279/02 | 0009/11 | 0121/11 | 0434/19 | 0466/19 | 0409/25 |         |
| FILBF | 0447/32 | 0737/32 | 0557/34 | 0509/37 | 0526/37 |         |         |
| FILBP | 0557/34 | 0115/34 |         |         |         |         |         |
| FILCT | 0253/02 | 0361/07 | 0026/08 | 0061/08 | 0516/33 | 0120/34 | 0432/36 |
| FILE# | 0456/02 | 0415/09 | 0013/11 | 0052/11 | 0070/11 | 0082/12 | 0091/12 |
|       | 0111/12 | 0364/15 | 0377/15 | 0109/17 | 0146/20 | 0159/20 | 0160/20 |
|       | 0165/20 |         |         |         |         |         |         |
| FILES | 0278/05 | 0536/05 |         |         |         |         |         |
| FILIB | 0119/31 | 0365/07 |         |         |         |         |         |
| FILOP | 0383    | 0056/08 | 0516/21 |         |         |         |         |
| FILPT | 0252/02 | 0021/08 | 0067/08 | 0068/08 | 0518/33 | 0523/33 | 0524/33 |
|       | 0435/36 | 0439/36 | 0441/36 |         |         |         |         |
| FILRF | 0186/02 | 0355/02 | 0481/03 | 0668/03 | 0701/03 | 0703/03 | 0723/03 |
|       | 0073/04 | 0086/04 | 0134/06 | 0161/06 | 0165/06 | 0167/06 | 0168/06 |
| FILS0 | 0355/15 | 0325/15 |         |         |         |         |         |
| FILS1 | 0360/15 | 0306/15 |         |         |         |         |         |
| FILS2 | 0318/15 | 0309/15 |         |         |         |         |         |
| FILS3 | 0321/15 | 0354/15 |         |         |         |         |         |
| FILS4 | 0331/15 | 0328/15 |         |         |         |         |         |
| FILS5 | 0340/15 | 0332/15 |         |         |         |         |         |
| FILS6 | 0347/15 | 0319/15 |         |         |         |         |         |
| FILS7 | 0312/15 | 0339/15 | 0346/15 |         |         |         |         |
| FILST | 0192/02 | 0326/02 | 0062/11 | 0317/15 | 0118/17 |         |         |
| FILT  | 0460/02 | 0297/15 | 0308/15 | 0318/15 | 0331/15 | 0358/15 | 0359/15 |
| FILTB | 0355/02 | 0081/07 | 0348/07 | 0370/07 | 0402/07 | 0415/07 | 0443/07 |
|       | 0093/08 | 0315/08 | 0409/08 | 0333/09 | 0470/11 | 0562/11 | 0104/15 |
|       | 0298/32 | 0511/33 | 0437/34 | 0052/35 | 0375/35 | 0403/36 | 0406/36 |
|       | 0419/35 | 0428/36 |         |         |         |         |         |
| FINCA | 0627/11 | 0323/10 |         |         |         |         |         |
| FINCH | 0050/02 | 0315/02 | 0627/11 | 0344/14 | 0350/14 |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|
| FLB5  | 0545/34 | 0141/34 | 0150/34 | 0166/34 | 0170/34 |
| FLB1  | 0137/34 | 0194/34 |         |         |         |
| FLB10 | 0410/34 | 0361/34 |         |         |         |
| FLB11 | 0364/34 | 0405/34 |         |         |         |
| FLB12 | 0394/34 | 0387/34 |         |         |         |
| FLB13 | 0401/34 | 0382/34 | 0392/34 |         |         |
| FLB14 | 0376/34 | 0384/34 |         |         |         |
| FLB15 | 0413/34 | 0429/34 |         |         |         |
| FLB16 | 0440/34 | 0504/34 |         |         |         |
| FLB18 | 0385/34 | 0377/34 |         |         |         |
| FLB19 | 0379/34 | 0388/34 |         |         |         |
| FLB2  | 0165/34 | 0144/34 |         |         |         |
| FLB20 | 0470/34 | 0456/34 |         |         |         |
| FLB21 | 0488/34 | 0469/34 |         |         |         |
| FLB22 | 0169/34 | 0146/34 |         |         |         |
| FLB23 | 0244/34 | 0224/34 |         |         |         |
| FLB24 | 0232/34 | 0222/34 |         |         |         |
| FLB25 | 0149/34 | 0174/34 |         |         |         |
| FLB26 | 0186/34 | 0183/34 |         |         |         |
| FLB27 | 0226/34 | 0216/34 |         |         |         |
| FLB28 | 0306/34 | 0230/34 |         |         |         |
| FLB29 | 0319/34 | 0315/34 |         |         |         |
| FLB3  | 0151/34 | 0159/34 |         |         |         |
| FLB30 | 0390/34 | 0369/34 |         |         |         |
| FLB4  | 0185/34 | 0162/34 |         |         |         |
| FLB5  | 0147/34 | 0168/34 |         |         |         |
| FLB6  | 0214/34 | 0308/34 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                                |                                                                |                                                                |                                                                |                                                     |                                                     |
|-------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| FLB7  | 0258/34                                                        | 0250/34                                                        |                                                                |                                                                |                                                                |                                                     |                                                     |
| FLB8  | 0252/34                                                        | 0148/34                                                        | 0163/34                                                        | 0191/34                                                        | 0267/34                                                        | 0275/34                                             | 0329/34                                             |
| FLB9  | 0277/34                                                        | 0271/34                                                        |                                                                |                                                                |                                                                |                                                     |                                                     |
| FLBA  | 0126/34                                                        | 0197/34                                                        |                                                                |                                                                |                                                                |                                                     |                                                     |
| FLBC1 | 0549/34<br>0404/34                                             | 0119/34<br>0411/34                                             | 0189/34<br>0428/34                                             | 0199/34                                                        | 0202/34                                                        | 0307/34                                             | 0322/34                                             |
| FLBC2 | 0550/34                                                        | 0138/34                                                        | 0158/34                                                        | 0203/34                                                        | 0321/34                                                        | 0410/34                                             | 0503/34                                             |
| FLBCH | 0518/34<br>0526/34                                             | 0142/34<br>0534/34                                             | 0153/34<br>0541/34                                             | 0157/34<br>0543/34                                             | 0167/34                                                        | 0171/34                                             | 0522/34                                             |
| FLBCM | 0546/34                                                        | 0140/34                                                        | 0192/34                                                        | 0520/34                                                        | 0542/34                                                        |                                                     |                                                     |
| FLBCP | 0552/34                                                        | 0135/34                                                        | 0523/34                                                        | 0527/34                                                        |                                                                |                                                     |                                                     |
| FLBFC | 0555/34                                                        | 0123/34                                                        | 0196/34                                                        |                                                                |                                                                |                                                     |                                                     |
| FLBFF | 0556/34                                                        | 0125/34                                                        | 0127/34                                                        | 0195/34                                                        |                                                                |                                                     |                                                     |
| FLBFP | 0548/34<br>0470/34                                             | 0117/34<br>0491/34                                             | 0206/34<br>0493/34                                             | 0363/34<br>0495/34                                             | 0412/34<br>0500/34                                             | 0439/34<br>0502/34                                  | 0453/34                                             |
| FLBFS | 0554/34                                                        | 0345/34                                                        | 0421/34                                                        | 0422/34                                                        | 0425/34                                                        | 0426/34                                             |                                                     |
| FLBID | 0553/34                                                        | 0212/34                                                        | 0217/34                                                        | 0241/34                                                        | 0273/34                                                        | 0290/34                                             | 0358/34                                             |
| FLBP  | 0551/34                                                        | 0132/34                                                        | 0525/34                                                        |                                                                |                                                                |                                                     |                                                     |
| FLBUF | 0547/34<br>0177/34<br>0229/34<br>0281/34<br>0299/34<br>0394/34 | 0116/34<br>0181/34<br>0234/34<br>0283/34<br>0300/34<br>0395/34 | 0152/34<br>0187/34<br>0243/34<br>0285/34<br>0365/34<br>0396/34 | 0154/34<br>0188/34<br>0245/34<br>0288/34<br>0367/34<br>0398/34 | 0155/34<br>0207/34<br>0246/34<br>0289/34<br>0371/34<br>0403/34 | 0156/34<br>0214/34<br>0277/34<br>0295/34<br>0375/34 | 0176/34<br>0227/34<br>0278/34<br>0296/34<br>0383/34 |
| FLGBT | 0298/02<br>0129/20                                             | 0375/03<br>0172/21                                             | 0588/03                                                        | 0304/04                                                        | 0443/05                                                        | 0107/16                                             | 0352/16                                             |
| FLINK | 0354/02<br>0340/07                                             | 0170/07                                                        | 0244/07                                                        | 0251/07                                                        | 0253/07                                                        | 0269/07                                             | 0271/07                                             |
| FLOAT | 0092/02<br>0055/20                                             | 0241/11<br>0166/20                                             | 0274/11<br>0254/20                                             | 0300/11<br>0295/20                                             | 0459/11<br>0342/20                                             | 0537/11<br>0460/20                                  | 0071/13<br>0014/21                                  |
| FLSTS | 0251/02                                                        | 0248                                                           |                                                                |                                                                |                                                                |                                                     |                                                     |
| FM0   | 0038/23                                                        | 0031/23                                                        |                                                                |                                                                |                                                                |                                                     |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| FM00  | 0087/24 | 0083/24 |         |         |         |         |         |
| FM01  | 0091/24 | 0086/24 |         |         |         |         |         |
| FM02  | 0109/24 | 0105/24 |         |         |         |         |         |
| FM03  | 0147/24 | 0152/24 |         |         |         |         |         |
| FM04  | 0175/24 | 0159/24 |         |         |         |         |         |
| FM10  | 0227/25 | 0217/25 |         |         |         |         |         |
| FM11  | 0031/25 | 0024/25 |         |         |         |         |         |
| FMAIN | 0632/28 | 0690/28 | 0166/30 | 0181/30 | 0183/30 | 0186/30 | 0714/32 |
| FMEND | 0210/25 | 0037/23 | 0052/23 | 0256/23 | 0346/23 | 0333/24 | 0336/24 |
| FMT0  | 0142/23 | 0106/23 | 0216/23 |         |         |         |         |
| FMT00 | 0122/25 | 0115/25 |         |         |         |         |         |
| FMT01 | 0074/23 | 0070/23 |         |         |         |         |         |
| FMT02 | 0046/24 | 0037/24 |         |         |         |         |         |
| FMT05 | 0366/23 | 0382/23 |         |         |         |         |         |
| FMT06 | 0009/24 | 0005/24 |         |         |         |         |         |
| FMT07 | 0030/24 | 0023/24 |         |         |         |         |         |
| FMT08 | 0217/23 | 0211/23 |         |         |         |         |         |
| FMT09 | 0328/24 | 0043/25 |         |         |         |         |         |
| FMT1  | 0060/23 | 0054/23 | 0056/23 |         |         |         |         |
| FMT10 | 0223/23 | 0190/23 |         |         |         |         |         |
| FMT11 | 0225/23 |         |         |         |         |         |         |
| FMT13 | 0227/23 | 0147/23 |         |         |         |         |         |
| FMT14 | 0230/23 | 0143/23 |         |         |         |         |         |
| FMT15 | 0238/23 | 0193/23 |         |         |         |         |         |
| FMT16 | 0112/23 | 0124/23 |         |         |         |         |         |
| FMT18 | 0241/23 | 0219/23 |         |         |         |         |         |
| FMT2  | 0047/23 | 0342/24 |         |         |         |         |         |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |  |
|-------|---------|---------|---------|---------|---------|---------|---------|--|
| FMT20 | 0324/23 | 0254/23 | 0340/23 |         |         |         |         |  |
| FMT21 | 0330/23 | 0326/23 |         |         |         |         |         |  |
| FMT24 | 0344/23 | 0247/23 |         |         |         |         |         |  |
| FMT25 | 0347/23 | 0250/23 | 0388/23 |         |         |         |         |  |
| FMT26 | 0357/23 | 0353/23 |         |         |         |         |         |  |
| FMT27 | 0362/23 | 0359/23 |         |         |         |         |         |  |
| FMT28 | 0383/23 | 0361/23 |         |         |         |         |         |  |
| FMT29 | 0379/23 | 0373/23 |         |         |         |         |         |  |
| FMT3  | 0084/23 | 0059/23 | 0037/25 | 0064/25 | 0076/25 | 0089/25 | 0121/25 |  |
| FMT30 | 0392/23 | 0298/23 |         |         |         |         |         |  |
| FMT31 | 0282/23 | 0264/23 | 0271/23 | 0274/23 |         |         |         |  |
| FMT32 | 0404/23 | 0397/23 | 0412/23 |         |         |         |         |  |
| FMT33 | 0413/23 | 0403/23 |         |         |         |         |         |  |
| FMT34 | 0436/23 | 0003/24 | 0097/24 | 0206/24 | 0318/24 |         |         |  |
| FMT35 | 0001/24 | 0446/23 |         |         |         |         |         |  |
| FMT36 | 0004/24 | 0439/23 |         |         |         |         |         |  |
| FMT37 | 0016/24 | 0011/24 | 0070/24 |         |         |         |         |  |
| FMT4  | 0104/23 |         |         |         |         |         |         |  |
| FMT40 | 0069/24 | 0029/24 | 0040/24 | 0059/24 | 0062/24 |         |         |  |
| FMT42 | 0098/24 | 0076/24 | 0079/24 |         |         |         |         |  |
| FMT43 | 0425/23 | 0418/23 | 0421/23 |         |         |         |         |  |
| FMT45 | 0136/24 | 0297/23 |         |         |         |         |         |  |
| FMT46 | 0302/23 | 0129/23 | 0135/23 | 0140/23 | 0320/23 |         |         |  |
| FMT47 | 0317/23 | 0311/23 |         |         |         |         |         |  |
| FMT5  | 0177/23 | 0160/23 |         |         |         |         |         |  |
| FMT50 | 0153/24 | 0174/24 | 0212/24 | 0225/24 | 0232/24 |         |         |  |
| FMT51 | 0183/24 | 0155/24 |         |         |         |         |         |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |         |         |         |         |         |         |  |
|-------|--------------------|---------|---------|---------|---------|---------|---------|--|
| FMT54 | 0195/24            | 0188/24 | 0191/24 |         |         |         |         |  |
| FMT55 | 0226/24            | 0215/24 | 0218/24 | 0222/24 |         |         |         |  |
| FMT56 | 0042/24            | 0032/24 |         |         |         |         |         |  |
| FMT57 | 0074/24            | 0018/24 |         |         |         |         |         |  |
| FMT58 | 0050/24            | 0041/24 | 0045/24 |         |         |         |         |  |
| FMT59 | 0094/24            | 0443/23 | 0451/23 | 0015/24 | 0053/24 | 0073/24 |         |  |
| FMT6  | 0187/23            | 0149/23 |         |         |         |         |         |  |
| FMT61 | 0207/24            | 0140/24 | 0143/24 |         |         |         |         |  |
| FMT62 | 0236/24            | 0294/23 |         |         |         |         |         |  |
| FMT67 | 0266/24            | 0250/24 | 0253/24 |         |         |         |         |  |
| FMT68 | 0281/24            | 0275/24 |         |         |         |         |         |  |
| FMT7  | 0201/23            | 0196/23 |         |         |         |         |         |  |
| FMT70 | 0287/24            | 0271/24 |         |         |         |         |         |  |
| FMT72 | 0304/24            | 0280/24 | 0286/24 | 0297/24 | 0312/24 |         |         |  |
| FMT76 | 0100/24            | 0115/24 |         |         |         |         |         |  |
| FMT78 | 0116/24            | 0102/24 |         |         |         |         |         |  |
| FMT8  | 0204/23            | 0188/23 | 0200/23 | 0222/23 | 0226/23 | 0229/23 | 0237/23 |  |
| FMT80 | 0144/25<br>0315/24 | 0426/23 | 0430/23 | 0196/24 | 0203/24 | 0257/24 | 0263/24 |  |
| FMT9  | 0220/23            | 0145/23 |         |         |         |         |         |  |
| FMT90 | 0322/24            | 0306/23 | 0330/23 | 0387/23 | 0096/24 | 0132/24 | 0209/25 |  |
| FMT91 | 0331/24            | 0129/25 | 0139/25 |         |         |         |         |  |
| FMT92 | 0001/25            | 0327/24 | 0104/25 | 0108/25 | 0136/25 | 0140/25 |         |  |
| FMT93 | 0012/25            | 0008/25 | 0044/25 |         |         |         |         |  |
| FMT94 | 0038/25            | 0016/25 | 0027/25 | 0034/25 |         |         |         |  |
| FMT95 | 0048/25            | 0239/23 |         |         |         |         |         |  |
| FMT96 | 0065/25            | 0055/25 |         |         |         |         |         |  |
| FMT97 | 0077/25            | 0005/25 | 0036/25 |         |         |         |         |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                                          |                                          |                                          |                                          |                               |                               |
|-------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|-------------------------------|-------------------------------|
| FMT98 | 0109/25                                  | 0079/25                                  |                                          |                                          |                                          |                               |                               |
| FMT99 | 0090/25                                  | 0083/25                                  |                                          |                                          |                                          |                               |                               |
| FN    | 0488/04                                  | 0365/03                                  | 0230/04                                  |                                          |                                          |                               |                               |
| FNDP1 | 0020/06                                  | 0034/06                                  |                                          |                                          |                                          |                               |                               |
| FNDP2 | 0035/06                                  | 0026/06                                  |                                          |                                          |                                          |                               |                               |
| FNDP3 | 0052/06                                  | 0021/06                                  | 0028/06                                  | 0040/06                                  | 0045/06                                  |                               |                               |
| FNDPS | 0066/02<br>0056/07                       | 0414/02<br>0291/21                       | 0208/03<br>0630/35                       | 0572/05<br>0452/43                       | 0052/06<br>0463/43                       | 0053/06                       | 0055/06                       |
| FOJT  | 0138/13                                  | 0003/12                                  |                                          |                                          |                                          |                               |                               |
| FOPBS | 0323                                     | 0406/12                                  | 0397/21                                  |                                          |                                          |                               |                               |
| FOPI  | 0381/20                                  | 0334/20                                  |                                          |                                          |                                          |                               |                               |
| FOR10 | 0046/13                                  | 0319                                     |                                          |                                          |                                          |                               |                               |
| FOR12 | 0060/13                                  | 0472/12                                  | 0075/13                                  |                                          |                                          |                               |                               |
| FOR13 | 0093/13                                  | 0396/12                                  |                                          |                                          |                                          |                               |                               |
| FOR14 | 0104/13<br>0338/13                       | 0125/13<br>0365/13                       | 0128/13<br>0399/13                       | 0134/13<br>0404/13                       | 0320/13<br>0050/14                       | 0326/13<br>0062/14            | 0332/13<br>0105/14            |
| FORM0 | 0377/12                                  | 0372/12                                  |                                          |                                          |                                          |                               |                               |
| FORM1 | 0341/12                                  | 0428/12                                  | 0139/13                                  | 0208/13                                  | 0229/13                                  |                               |                               |
| FORM2 | 0380/12                                  | 0345/12                                  | 0369/12                                  | 0376/12                                  | 0451/12                                  | 0457/12                       | 0056/13                       |
| FORM3 | 0402/12                                  | 0390/12                                  | 0096/13                                  |                                          |                                          |                               |                               |
| FORM4 | 0416/12                                  | 0109/13                                  | 0140/13                                  | 0257/13                                  | 0312/13                                  |                               |                               |
| FORM5 | 0429/12                                  | 0421/12                                  | 0307/13                                  |                                          |                                          |                               |                               |
| FORM6 | 0445/12                                  | 0349/12                                  |                                          |                                          |                                          |                               |                               |
| FORM7 | 0452/12                                  | 0447/12                                  |                                          |                                          |                                          |                               |                               |
| FORM8 | 0004/13                                  | 0366/12                                  |                                          |                                          |                                          |                               |                               |
| FORMX | 0084/02<br>0153/11<br>0506/11<br>0048/13 | 0306/02<br>0231/11<br>0279/12<br>0119/13 | 0009/10<br>0267/11<br>0476/12<br>0417/25 | 0106/10<br>0290/11<br>0478/12<br>0484/25 | 0224/10<br>0304/11<br>0010/13<br>0418/35 | 0372/10<br>0412/11<br>0012/13 | 0047/11<br>0455/11<br>0023/13 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                                          |                                          |                               |                               |                               |                               |
|-------|------------------------------------------|------------------------------------------|------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| FOROP | 0294/02                                  | 0239/07                                  |                                          |                               |                               |                               |                               |
| FORQ  | 0382/02                                  | 0385/09                                  | 0096/10                                  | 0161/10                       |                               |                               |                               |
| FORS  | 0518/03                                  | 0524/05                                  |                                          |                               |                               |                               |                               |
| FORST | 0383/02<br>0143/10<br>0291/12            | 0077/10<br>0160/10                       | 0081/10<br>0160/10                       | 0095/10<br>0171/10            | 0102/10<br>0189/10            | 0105/10<br>0193/10            | 0107/10<br>0173/12            |
| FPOP  | 0020/02                                  | 0358/02                                  | 0454/02                                  | 0465/04                       | 0093/05                       | 0071/06                       |                               |
| FRCUR | 0018/02                                  | 0354/02                                  | 0456/02                                  | 0439/04                       | 0042/05                       | 0063/06                       |                               |
| FRET  | 0319<br>0056/20<br>0375/20<br>0133/21    | 0453/19<br>0106/20<br>0379/20<br>0199/21 | 0484/19<br>0189/20<br>0430/20            | 0528/19<br>0126/20<br>0434/20 | 0007/20<br>0132/20<br>0453/20 | 0022/20<br>0167/20<br>0006/21 | 0025/20<br>0320/20<br>0102/21 |
| FRMAT | 0224/02<br>0201/11                       | 0321/02<br>0560/11                       | 0374/02<br>0449/16                       | 0407/02<br>0258/32            | 0492/02                       | 0150/11                       | 0190/11                       |
| FSC   | 0014/02<br>0525/03<br>0433/04<br>0068/06 | 0236/02<br>0536/03<br>0462/04<br>0142/06 | 0387/02<br>0545/03<br>0051/05<br>0166/06 | 0312/03<br>0657/03<br>0068/05 | 0390/03<br>0719/03<br>0299/05 | 0437/03<br>0370/04<br>0329/05 | 0489/03<br>0404/04<br>0365/05 |
| FSC0  | 0263/04                                  | 0250/04                                  |                                          |                               |                               |                               |                               |
| FSC1  | 0203/04                                  | 0287/04                                  | 0395/04                                  |                               |                               |                               |                               |
| FSC10 | 0323/04                                  | 0345/04                                  | 0387/04                                  |                               |                               |                               |                               |
| FSC11 | 0330/04                                  | 0236/04                                  |                                          |                               |                               |                               |                               |
| FSC12 | 0349/04                                  | 0392/04                                  |                                          |                               |                               |                               |                               |
| FSC13 | 0371/04                                  | 0210/04                                  | 0212/04                                  | 0254/04                       | 0309/04                       | 0364/04                       |                               |
| FSC14 | 0401/04                                  | 0331/04                                  | 0338/04                                  | 0352/04                       | 0359/04                       | 0363/04                       | 0372/04                       |
| FSC2  | 0208/04                                  | 0325/04                                  |                                          |                               |                               |                               |                               |
| FSC3  | 0240/04                                  | 0262/04                                  |                                          |                               |                               |                               |                               |
| FSC4  | 0255/04                                  | 0231/04                                  |                                          |                               |                               |                               |                               |
| FSC5  | 0282/04                                  | 0290/04                                  | 0292/04                                  |                               |                               |                               |                               |
| FSC6  | 0285/04                                  | 0222/04                                  | 0380/04                                  | 0380/04                       |                               |                               |                               |
| FSC7  | 0288/04                                  | 0209/04                                  |                                          |                               |                               |                               |                               |
| FSC8  | 0307/04                                  | 0278/04                                  |                                          |                               |                               |                               |                               |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                                |                                                                |                                                                |                                                                |                                                                |                                                     |
|-------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------|
| FSC9  | 0313/04                                                        | 0299/04                                                        |                                                                |                                                                |                                                                |                                                                |                                                     |
| FsCH  | 0106/02<br>0310/14                                             | 0335<br>0367/23                                                | 0418/02                                                        | 0082/11                                                        | 0139/14                                                        | 0300/14                                                        | 0309/14                                             |
| FsCHA | 0335<br>0337/15                                                | 0335/10                                                        | 0391/10                                                        | 0360/11                                                        | 0525/11                                                        | 0292/13                                                        | 0303/13                                             |
| FSP   | 0280/02<br>0208/23<br>0328/23<br>0365/23<br>0080/24<br>0181/24 | 0098/23<br>0217/23<br>0329/23<br>0385/23<br>0094/24<br>0182/24 | 0120/23<br>0242/23<br>0336/23<br>0436/23<br>0098/24<br>0300/24 | 0121/23<br>0303/23<br>0339/23<br>0440/23<br>0100/24<br>0301/24 | 0185/23<br>0304/23<br>0351/23<br>0007/24<br>0103/24<br>0049/25 | 0186/23<br>0319/23<br>0355/23<br>0008/24<br>0106/24<br>0322/25 | 0206/23<br>0324/23<br>0356/23<br>0019/24<br>0108/24 |
| FST   | 0476/02<br>0117/23<br>0166/23<br>0068/25                       | 0049/23<br>0125/23<br>0167/23<br>0072/25                       | 0064/23<br>0130/23<br>0207/23<br>0100/25                       | 0065/23<br>0133/23<br>0209/23<br>0132/25                       | 0099/23<br>0138/23<br>0020/25<br>0353/25                       | 0109/23<br>0151/23<br>0056/25<br>0393/25                       | 0112/23<br>0152/23<br>0060/25<br>0394/25            |
| FTEL  | 0023<br>0051/35                                                | 0469/11<br>0384/35                                             | 0614/11                                                        | 0103/15                                                        | 0306/32                                                        | 0324/34                                                        | 0498/34                                             |
| FUSCH | 0560/34<br>0386/34                                             | 0374/34<br>0472/34                                             | 0376/34<br>0476/34                                             | 0378/34<br>0485/34                                             | 0379/34                                                        | 0381/34                                                        | 0385/34                                             |
| FUSS  | 0303<br>0019/39<br>0195/51                                     | 0471/27<br>0036/39<br>0235/52                                  | 0489/27<br>0427/39<br>0264/54                                  | 0334/34<br>0447/39<br>0553/57                                  | 0431/34<br>0675/39<br>0087/58                                  | 0182/35<br>0720/39<br>0306/58                                  | 0260/35<br>0141/51                                  |
| FVT   | 0397/02                                                        | 0090/10                                                        | 0138/10                                                        |                                                                |                                                                |                                                                |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| GET1  | 0042/38 | 0023/38 | 0052/38 | 0065/38 |         |         |         |
| GET10 | 0109/38 | 0098/38 |         |         |         |         |         |
| GET13 | 0161/38 | 0144/38 | 0149/38 |         |         |         |         |
| GET14 | 0054/38 | 0027/38 |         |         |         |         |         |
| GET15 | 0122/38 | 0112/38 | 0262/38 |         |         |         |         |
| GET16 | 0222/38 | 0192/38 |         |         |         |         |         |
| GET17 | 0227/38 | 0204/38 |         |         |         |         |         |
| GET18 | 0086/38 | 0072/38 |         |         |         |         |         |
| GET19 | 0074/38 | 0094/38 |         |         |         |         |         |
| GET2  | 0049/38 | 0025/38 |         |         |         |         |         |
| GET20 | 0205/38 | 0226/38 |         |         |         |         |         |
| GET21 | 0218/38 | 0179/38 |         |         |         |         |         |
| GET22 | 0080/38 | 0093/38 |         |         |         |         |         |
| GET25 | 0146/38 | 0141/38 |         |         |         |         |         |
| GET26 | 0150/38 | 0145/38 |         |         |         |         |         |
| GET3  | 0028/38 | 0038/38 | 0053/38 | 0066/38 |         |         |         |
| GET4  | 0068/38 | 0040/38 |         |         |         |         |         |
| GET9  | 0095/38 | 0090/38 |         |         |         |         |         |
| GETC  | 0243/38 | 0021/38 | 0037/38 | 0185/38 | 0209/38 |         |         |
| GETCH | 0249/33 | 0258/33 | 0269/33 | 0273/33 | 0293/33 | 0334/33 |         |
| GETCR | 0158/02 | 0259/03 | 0442/03 | 0474/03 | 0528/03 | 0563/03 | 0574/03 |
|       | 0602/03 | 0640/03 | 0651/03 | 0676/03 | 0708/03 | 0044/04 | 0055/04 |
|       | 0081/04 | 0123/04 | 0132/04 | 0255/04 | 0264/04 | 0275/04 | 0362/04 |
|       | 0083/05 | 0147/05 | 0193/05 | 0266/05 | 0306/05 | 0415/05 | 0466/05 |
|       | 0065/06 | 0099/06 | 0160/06 | 0216/06 | 0269/06 | 0275/06 | 0315/06 |
|       | 0036/07 | 0239/10 | 0272/10 | 0290/10 | 0314/10 | 0340/10 | 0349/10 |
|       | 0354/10 | 0283/11 | 0314/11 | 0325/11 | 0369/11 | 0372/11 | 0233/12 |
|       | 0345/14 | 0359/14 | 0331/16 | 0516/16 | 0418/19 | 0424/19 | 0425/19 |
|       | 0250/21 | 0266/21 | 0276/21 | 0284/21 | 0101/22 | 0119/22 | 0127/22 |
|       | 0132/22 | 0141/22 |         |         |         |         |         |
|       |         |         |         |         |         |         |         |
| GETD  | 0246/38 | 0167/38 | 0190/38 | 0300/38 | 0347/38 |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                               |                               |                    |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|
| GETDG | 0138/02<br>0167/24            | 0399/02<br>0307/24            | 0129/19<br>0164/25            | 0135/19<br>0278/25            | 0291/19                       | 0407/23                       | 0147/24            |
| GETDI | 0247/38                       | 0170/38                       | 0238/38                       | 0303/38                       | 0448/38                       |                               |                    |
| GETDP | 0238/38                       | 0196/38                       |                               |                               |                               |                               |                    |
| GETI  | 0242/38<br>0235/38            | 0014/38                       | 0091/38                       | 0227/38                       | 0228/38                       | 0232/38                       | 0233/38            |
| GETI1 | 0250/33                       | 0268/33                       | 0288/33                       |                               |                               |                               |                    |
| GETI2 | 0251/33                       | 0270/33                       | 0286/33                       |                               |                               |                               |                    |
| GETI3 | 0252/33                       | 0272/33                       | 0281/33                       | 0283/33                       |                               |                               |                    |
| GETI4 | 0272/33                       | 0287/33                       |                               |                               |                               |                               |                    |
| GETID | 0253/33<br>0592/45<br>0520/56 | 0752/32<br>0026/46<br>0012/57 | 0294/33<br>0682/48<br>0023/57 | 0295/33<br>0016/49<br>0451/57 | 0103/39<br>0014/50<br>0476/57 | 0321/41<br>0019/51<br>0013/58 | 0029/42<br>0377/56 |
| GETLN | 0244/38                       | 0134/38                       | 0189/38                       | 0307/38                       | 0321/38                       | 0346/38                       |                    |
| GETP  | 0240/38<br>0174/38            | 0019/38<br>0218/38            | 0029/38<br>0220/38            | 0032/38<br>0309/38            | 0033/38<br>0311/38            | 0034/38<br>0341/38            | 0172/38<br>0343/38 |
| GETPD | 0241/38                       | 0086/38                       | 0162/38                       | 0292/38                       | 0304/38                       |                               |                    |
| GETPF | 0030/02<br>0402/06            | 0383/02                       | 0142/04                       | 0253/04                       | 0430/04                       | 0461/04                       | 0072/06            |
| GETS  | 0245/38                       | 0070/38                       | 0186/38                       |                               |                               |                               |                    |
| GETST | 0082/02                       | 0387/02                       | 0599/03                       | 0683/03                       | 0166/05                       | 0195/05                       | 0233/05            |
| GFLAG | 0299/02                       | 0423/03                       | 0459/03                       | 0228/05                       | 0110/06                       | 0310/12                       |                    |
| GMQB  | 0152/03                       | 0017                          | 0155/03                       | 0163/03                       | 0164/03                       |                               |                    |
| GMQBP | 0107                          | 0153/26                       | 0499/27                       |                               |                               |                               |                    |
| GOSOP | 0465/40                       | 0402/40                       |                               |                               |                               |                               |                    |
| GOTO1 | 0427/03                       | 0461/03                       |                               |                               |                               |                               |                    |
| GOTO2 | 0451/03                       | 0455/03                       |                               |                               |                               |                               |                    |
| GOTO3 | 0457/03                       | 0425/03                       |                               |                               |                               |                               |                    |
| GOTO4 | 0462/03                       | 0458/03                       |                               |                               |                               |                               |                    |
| GOTOP | 0464/40                       | 0400/40                       |                               |                               |                               |                               |                    |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                                     |                                                     |                                          |                                          |                                          |                                          |
|-------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| GOTOS | 0417/03                                             | 0522/05                                             | 0526/05                                             |                                          |                                          |                                          |                                          |
| GTC   | 0126                                                | 0232                                                | 0403/19                                             | 0411/29                                  | 0426/30                                  | 0155/33                                  |                                          |
| GTFER | 0334/33<br>0105/39<br>0198/39                       | 0260/33<br>0108/39                                  | 0263/33<br>0173/39                                  | 0266/33<br>0176/39                       | 0274/33<br>0180/39                       | 0277/33<br>0183/39                       | 0280/33<br>0195/39                       |
| GTIL  | 0301/33<br>0608/45                                  | 0417/32<br>0772/48                                  | 0753/32<br>0315/49                                  | 0102/33<br>0070/56                       | 0292/33<br>0327/57                       | 0330/33                                  | 0061/42                                  |
| GTILP | 0417/32                                             | 0020/32                                             |                                                     |                                          |                                          |                                          |                                          |
| GTMP  | 0396/02                                             | 0044/10                                             | 0062/10                                             |                                          |                                          |                                          |                                          |
| GTSA  | 0303/33                                             | 0324/33                                             |                                                     |                                          |                                          |                                          |                                          |
| GTSB  | 0319/33                                             | 0308/33                                             | 0312/33                                             |                                          |                                          |                                          |                                          |
| GTSC  | 0325/33                                             | 0318/33                                             | 0322/33                                             |                                          |                                          |                                          |                                          |
| GTTY1 | 0377/15                                             | 0408/15                                             |                                                     |                                          |                                          |                                          |                                          |
| GTTY2 | 0393/15                                             | 0411/15                                             |                                                     |                                          |                                          |                                          |                                          |
| GTTY3 | 0395/15                                             | 0383/15                                             | 0387/15                                             |                                          |                                          |                                          |                                          |
| GTTY4 | 0410/15                                             | 0309/15                                             |                                                     |                                          |                                          |                                          |                                          |
| GTTY5 | 0412/15                                             | 0404/15                                             |                                                     |                                          |                                          |                                          |                                          |
| GTTY6 | 0405/15                                             | 0399/15                                             |                                                     |                                          |                                          |                                          |                                          |
| GTTYP | 0194/02                                             | 0327/02                                             | 0097/11                                             | 0160/12                                  | 0394/15                                  | 0413/15                                  | 0163/20                                  |
| HALF  | 0499<br>0039/21                                     | 0146/10                                             | 0126/13                                             | 0384/13                                  | 0400/13                                  | 0216/20                                  | 0497/20                                  |
| HATCH | 0483/04                                             | 0311/05                                             | 0164/06                                             |                                          |                                          |                                          |                                          |
| HB    | 0479/02                                             | 0447                                                |                                                     |                                          |                                          |                                          |                                          |
| HBP   | 0480/02<br>0052/24<br>0173/24<br>0161/25<br>0187/25 | 0291/23<br>0054/24<br>0205/24<br>0166/25<br>0203/25 | 0399/23<br>0056/24<br>0227/24<br>0167/25<br>0299/25 | 0400/23<br>0149/24<br>0228/24<br>0177/25 | 0409/23<br>0150/24<br>0309/24<br>0170/25 | 0410/23<br>0158/24<br>0310/24<br>0180/25 | 0432/23<br>0169/24<br>0317/24<br>0185/25 |
| HDATE | 0096                                                | 0499/49                                             |                                                     |                                          |                                          |                                          |                                          |
| HDBFA | 0021/33                                             | 0597/45                                             | 0032/46                                             | 0299/46                                  |                                          |                                          |                                          |
| HDBUF | 0081/32                                             | 0136/32                                             | 0733/32                                             | 0021/33                                  |                                          |                                          |                                          |



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CROSS-REFERENCE SYMBOL TABLE

|         |         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|---------|
| HEL1    | 0103/39 | 0050/39 |         |         |         |         |         |
| HEL10   | 0204/39 | 0097/39 |         |         |         |         |         |
| HEL12   | 0305/39 | 0300/39 |         |         |         |         |         |
| HEL13   | 0311/39 | 0303/39 |         |         |         |         |         |
| HEL2    | 0120/39 | 0125/39 |         |         |         |         |         |
| HEL3    | 0130/39 | 0164/39 |         |         |         |         |         |
| HEL3A   | 0210/39 | 0170/39 |         |         |         |         |         |
| HEL3B   | 0212/39 | 0200/39 |         |         |         |         |         |
| HEL3C   | 0141/39 | 0133/39 | 0135/39 |         |         |         |         |
| HEL3D   | 0156/39 | 0148/39 | 0150/39 |         |         |         |         |
| HEL3F   | 0174/39 | 0168/39 |         |         |         |         |         |
| HEL3G   | 0143/39 | 0139/39 |         |         |         |         |         |
| HEL3H   | 0158/39 | 0154/39 |         |         |         |         |         |
| HEL3I   | 0177/39 | 0191/39 |         |         |         |         |         |
| HEL4    | 0256/39 | 0271/39 | 0275/39 | 0304/39 | 0308/39 | 0322/39 | 0328/39 |
| HEL6    | 0267/39 | 0253/39 |         |         |         |         |         |
| HEL7    | 0047/39 | 0015/39 |         |         |         |         |         |
| HEL7A   | 0062/39 | 0057/39 |         |         |         |         |         |
| HEL8    | 0324/39 | 0316/39 |         |         |         |         |         |
| HEL9    | 0329/39 | 0323/39 |         |         |         |         |         |
| HEL C   | 0390/39 | 0128/39 | 0163/39 | 0293/39 | 0313/39 |         |         |
| HEL D I | 0393/39 | 0289/39 | 0380/39 |         |         |         |         |
| HEL D P | 0380/39 | 0320/39 |         |         |         |         |         |
| HEL F   | 0201/39 | 0121/39 | 0162/39 |         |         |         |         |
| HEL G   | 0259/39 | 0224/39 |         |         |         |         |         |
| HEL G T | 0392/39 | 0145/39 | 0159/39 | 0366/39 | 0370/39 |         |         |
| HEL H   | 0425/33 | 0260/39 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |         |         |         |         |
|-------|--------------------|--------------------|--------------------|---------|---------|---------|---------|
| HELID | 0387/39            | 0014/39            | 0048/39            | 0080/39 | 0099/39 | 0242/39 |         |
| HELK  | 0422/33            | 0202/39            |                    |         |         |         |         |
| HELLO | 0051/31            | 0446/29            | 0470/29            |         |         |         |         |
| HELM  | 0382/39            | 0249/39            |                    |         |         |         |         |
| HELOG | 0350/39            | 0082/39            | 0237/39            | 0377/39 |         |         |         |
| HELP  | 0391/39<br>0314/39 | 0129/39            | 0130/39            | 0160/39 | 0219/39 | 0220/39 | 0286/39 |
| HELPT | 0386/39            | 0013/39            | 0024/39            | 0373/39 |         |         |         |
| HELRT | 0379/39            | 0342/39            |                    |         |         |         |         |
| HELST | 0378/39            | 0010/39            |                    |         |         |         |         |
| HELTM | 0389/39<br>0077/39 | 0055/39<br>0078/39 | 0067/39<br>0089/39 | 0069/39 | 0070/39 | 0072/39 | 0073/39 |
| HELTP | 0388/39            | 0009/39            | 0062/39            | 0239/39 |         |         |         |
| HFLAG | 0512               | 0075/11            | 0030/30            | 0334/39 |         |         |         |
| HFLG  | 0383/39            | 0131/39            | 0140/39            | 0146/39 | 0155/39 | 0166/39 |         |
| HI    | 0446/29            | 0438/29            |                    |         |         |         |         |
| HI6   | 0344/35            | 0029/35            |                    |         |         |         |         |
| HI8   | 0345/35            |                    |                    |         |         |         |         |
| HIBA  | 0497/49            | 0480/49            |                    |         |         |         |         |
| HIBR1 | 0493/49            | 0482/49            | 0496/49            | 0496/49 |         |         |         |
| HIBS1 | 0496/49            | 0486/49            | 0489/49            |         |         |         |         |
| HIMSK | 0501<br>0064/56    | 0187/27<br>0152/57 | 0402/43<br>0428/58 | 0106/48 | 0439/48 | 0220/54 | 0199/55 |
| HLT4C | 0464/49            | 0427/49            |                    |         |         |         |         |
| HM28  | 0431/32            |                    |                    |         |         |         |         |
| HMASK | 0003/19            | 0276/19            |                    |         |         |         |         |
| HQDIS | 0167               | 0564/28            | 0355/30            | 0359/30 |         |         |         |
| HTEMP | 0385/39            | 0104/39            | 0187/39            |         |         |         |         |
| HTEST | 0536/30            | 0347/29            | 0385/30            | 0540/30 | 0546/30 | 0724/32 |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| HTYPE | 0384/39 | 0185/39 | 0188/39 | 0192/39 |         |         |         |
| HUU   | 0136    | 0561/39 | 0235/49 |         |         |         |         |
| HVL   | 0456/28 | 0433/28 |         |         |         |         |         |
| IBF   | 0146    | 0306/28 | 0631/48 |         |         |         |         |
| ID    | 0042    | 0019/32 | 0101/33 | 0111/33 | 0289/33 | 0316/33 | 0119/39 |
|       | 0236/39 | 0240/39 | 0313/41 | 0325/41 | 0021/42 | 0032/42 | 0060/42 |
|       | 0092/42 | 0586/45 | 0595/45 | 0601/45 | 0639/45 | 0020/46 | 0030/46 |
|       | 0670/48 | 0697/48 | 0733/48 | 0033/49 | 0314/49 | 0028/50 | 0021/51 |
|       | 0042/51 | 0052/51 | 0075/51 | 0112/51 | 0348/51 | 0369/51 | 0398/51 |
|       | 0069/56 | 0091/56 | 0384/56 | 0019/57 | 0165/57 | 0189/57 | 0241/57 |
|       | 0347/57 | 0496/57 | 0030/58 |         |         |         |         |
| ID0   | 0428/02 | 0342/17 | 0359/17 | 0365/17 | 0372/17 | 0406/17 | 0048/18 |
|       | 0066/18 | 0068/18 | 0070/18 | 0102/18 | 0110/18 | 0178/18 | 0255/18 |
| ID1   | 0429/02 | 0354/17 | 0362/17 | 0367/17 | 0106/18 | 0159/18 | 0208/18 |
|       | 0253/18 | 0256/18 |         |         |         |         |         |
| IDEC  | 0075    | 0331/33 | 0332/33 | 0232/42 | 0417/43 | 0794/45 | 0261/47 |
|       | 0807/48 | 0206/50 | 0207/50 | 0208/50 | 0490/50 | 0492/50 | 0494/50 |
|       | 0510/50 | 0511/50 | 0512/50 | 0513/50 | 0514/50 | 0114/52 | 0116/52 |
|       | 0118/52 |         |         |         |         |         |         |
| IDECL | 0332/33 | 0302/33 |         |         |         |         |         |
| IDECM | 0331/33 | 0321/33 |         |         |         |         |         |
| IDLCP | 0062    | 0023/32 | 0054/32 | 0061/32 | 0105/33 | 0304/33 | 0320/33 |
|       | 0327/33 | 0240/36 | 0094/39 | 0112/39 | 0204/39 | 0511/39 | 0569/39 |
|       | 0767/39 | 0769/39 | 0371/44 | 0691/48 | 0729/48 | 0740/48 | 0742/48 |
|       | 0745/48 | 0750/48 | 0025/49 | 0116/49 | 0122/49 | 0318/49 | 0368/49 |
|       | 0434/49 | 0024/50 | 0110/50 | 0117/50 | 0122/50 | 0065/51 | 0098/51 |
|       | 0255/56 | 0362/57 |         |         |         |         |         |
| IDLNP | 0063    | 0021/32 | 0027/32 | 0103/33 | 0329/33 | 0110/39 | 0064/42 |
|       | 0609/45 | 0686/48 | 0727/48 | 0737/48 | 0739/48 | 0751/48 | 0023/49 |
|       | 0030/49 | 0114/49 | 0123/49 | 0316/49 | 0022/50 | 0076/50 | 0091/50 |
|       | 0113/50 | 0115/50 | 0123/50 | 0343/50 | 0063/51 | 0072/51 | 0089/51 |
|       | 0094/51 | 0096/51 | 0071/56 | 0242/56 | 0328/57 |         |         |
| IDN   | 0253/18 | 0017/17 |         |         |         |         |         |
| IDNA  | 0017/17 | 0368/17 |         |         |         |         |         |
| IENT1 | 0237/20 | 0233/20 |         |         |         |         |         |
| IF0   | 0484/03 | 0480/03 |         |         |         |         |         |
| IF1   | 0504/03 | 0483/03 | 0491/03 | 0498/03 |         |         |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |
|-------|----------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| IFCNT | 0403/02                                                        | 0220/10                                             | 0238/10                                             | 0266/10                                             | 0281/10                                             | 0313/10                                             | 0230/12                                             |
| IFIX  | 0132/02<br>0055/19                                             | 0249/11<br>0015/20                                  | 0351/13<br>0029/20                                  | 0020/15<br>0239/20                                  | 0053/15                                             | 0064/15                                             | 0065/15                                             |
| IFIX1 | 0058/15                                                        | 0063/15                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| IFIX2 | 0062/15                                                        | 0057/15                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| IFIX3 | 0066/15                                                        | 0047/15                                             | 0072/15                                             |                                                     |                                                     |                                                     |                                                     |
| IFOP  | 0466/40                                                        | 0404/40                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| IFS   | 0473/03                                                        | 0523/05                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| IFSS  | 0281/02                                                        | 0249/09                                             | 0097/23                                             | 0241/23                                             | 0302/23                                             | 0050/25                                             |                                                     |
| IFSTR | 0282/02<br>0118/25                                             | 0417/16                                             | 0027/23                                             | 0340/24                                             | 0058/25                                             | 0070/25                                             | 0086/25                                             |
| IHB   | 0447<br>0316/24                                                | 0290/23<br>0160/25                                  | 0431/23<br>0176/25                                  | 0050/24<br>0292/25                                  | 0065/24                                             | 0156/24                                             | 0204/24                                             |
| ILFER | 0337/33<br>0523/43<br>0210/44<br>0072/45<br>0305/45<br>0489/45 | 0547/40<br>0145/44<br>0222/44<br>0074/45<br>0321/45 | 0322/41<br>0155/44<br>0226/44<br>0077/45<br>0324/45 | 0030/42<br>0107/44<br>0575/44<br>0084/45<br>0326/45 | 0440/43<br>0190/44<br>0062/45<br>0171/45<br>0329/45 | 0445/43<br>0204/44<br>0065/45<br>0229/45<br>0332/45 | 0512/43<br>0207/44<br>0067/45<br>0289/45<br>0486/45 |
| ILI   | 0141                                                           | 0455/29                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| IMAGS | 0398/03                                                        | 0516/05                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| IMGOP | 0437                                                           | 0054/08                                             | 0143/11                                             | 0518/21                                             |                                                     |                                                     |                                                     |
| INCAL | 0156/02                                                        | 0322/02                                             | 0219/10                                             | 0237/10                                             | 0312/10                                             | 0238/12                                             |                                                     |
| INCHR | 0662/35                                                        |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |
| INCL1 | 0224/12                                                        | 0219/12                                             | 0243/12                                             |                                                     |                                                     |                                                     |                                                     |
| INCL2 | 0239/12                                                        | 0215/12                                             | 0234/12                                             |                                                     |                                                     |                                                     |                                                     |
| INF   | 0181<br>0013/22                                                | 0098/12<br>0349/41                                  | 0103/14<br>0044/40                                  | 0431/10<br>0157/57                                  | 0457/19                                             | 0107/20                                             | 0510/20                                             |
| INFST | 0374/02                                                        | 0218/07                                             | 0422/07                                             | 0086/00                                             |                                                     |                                                     |                                                     |
| INI   | 0132                                                           | 0007/26                                             | 0209/20                                             |                                                     |                                                     |                                                     |                                                     |
| INITF | 0402/02                                                        | 0216/10                                             | 0222/10                                             |                                                     |                                                     |                                                     |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| INPOP | 0248/05 | 0023/04 |         |         |         |         |         |
| INPTS | 0624/03 | 0615/03 | 0633/03 | 0531/05 |         |         |         |
| INSEQ | 0434/33 | 0636/28 | 0755/32 | 0416/33 | 0455/33 | 0479/44 |         |
| INSQA | 0636/28 | 0015/29 |         |         |         |         |         |
| INTFL | 0391    | 0082/06 | 0049/10 | 0423/40 | 0434/40 |         |         |
| INTMP | 0406/02 | 0234/10 | 0286/10 | 0310/10 | 0330/10 | 0337/10 | 0358/10 |
|       | 0345/11 | 0355/11 | 0374/11 |         |         |         |         |
| INV   | 0019/10 | 0408/17 |         |         |         |         |         |
| INV1  | 0042/18 | 0039/18 |         |         |         |         |         |
| INV10 | 0159/18 | 0147/18 |         |         |         |         |         |
| INV11 | 0164/18 | 0173/18 |         |         |         |         |         |
| INV12 | 0170/18 | 0166/18 |         |         |         |         |         |
| INV13 | 0180/18 | 0231/18 |         |         |         |         |         |
| INV14 | 0194/18 | 0207/18 |         |         |         |         |         |
| INV15 | 0208/18 | 0190/18 |         |         |         |         |         |
| INV16 | 0212/18 | 0227/18 |         |         |         |         |         |
| INV17 | 0222/18 | 0214/18 |         |         |         |         |         |
| INV18 | 0228/18 | 0241/18 |         |         |         |         |         |
| INV19 | 0238/18 | 0182/18 | 0186/18 |         |         |         |         |
| INV2  | 0058/18 | 0055/18 |         |         |         |         |         |
| INV3  | 0068/18 | 0233/18 |         |         |         |         |         |
| INV4  | 0076/18 | 0067/18 |         |         |         |         |         |
| INV5  | 0083/18 | 0100/18 |         |         |         |         |         |
| INV6  | 0097/18 | 0092/18 |         |         |         |         |         |
| INV7  | 0114/18 | 0135/18 |         |         |         |         |         |
| INV8  | 0136/18 | 0109/18 |         |         |         |         |         |
| INV9  | 0151/18 | 0158/18 |         |         |         |         |         |
| INVL  | 0353/17 | 0057/18 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |         |         |         |         |
|-------|--------------------|--------------------|--------------------|---------|---------|---------|---------|
| INWRD | 0661/35            | 0477/35            | 0570/35            |         |         |         |         |
| IOSTS | 0424/22            | 0526/04            |                    |         |         |         |         |
| IPWR  | 0374/13            | 0354/13            |                    |         |         |         |         |
| IPWR1 | 0380/13            | 0420/13            |                    |         |         |         |         |
| IPWR2 | 0392/13            | 0413/13            |                    |         |         |         |         |
| IPWR3 | 0400/13            | 0396/13            |                    |         |         |         |         |
| IPWR4 | 0405/13            | 0390/13            |                    |         |         |         |         |
| IPWR5 | 0414/13            | 0393/13            |                    |         |         |         |         |
| ITEMP | 0006/12            | 0208/12            | 0213/12            |         |         |         |         |
| IWT   | 0135               | 0231/12            | 0329/10            | 0614/40 |         |         |         |
| JDEQU | 0522/27            | 0458/27            |                    |         |         |         |         |
| JET1  | 0512/27            | 0517/27            |                    |         |         |         |         |
| JET2  | 0518/27            | 0500/27            |                    |         |         |         |         |
| JETMS | 0525/27            | 0509/27            |                    |         |         |         |         |
| JETNO | 0529/27            | 0508/27            |                    |         |         |         |         |
| JETPA | 0633/28            | 0214/30            |                    |         |         |         |         |
| JETPP | 0016/33            | 0077/33            |                    |         |         |         |         |
| JETPT | 0455/27            | 0520/27            | 0633/28            | 0700/32 | 0016/33 |         |         |
| JETT1 | 0523/27<br>0510/27 | 0456/27<br>0512/27 | 0459/27<br>0514/27 | 0475/27 | 0479/27 | 0493/27 | 0502/27 |
| JETT2 | 0524/27            | 0402/27            | 0406/27            | 0486/27 | 0501/27 | 0513/27 | 0515/27 |
| JTD   | 0236/02            | 0015/02            | 0017/02            | 0019/02 | 0021/02 | 0023/02 | 0025/02 |
|       | 0027/02            | 0029/02            | 0031/02            | 0033/02 | 0035/02 | 0037/02 | 0039/02 |
|       | 0041/02            | 0043/02            | 0045/02            | 0047/02 | 0049/02 | 0051/02 | 0053/02 |
|       | 0055/02            | 0057/02            | 0059/02            | 0061/02 | 0063/02 | 0065/02 | 0067/02 |
|       | 0069/02            | 0071/02            | 0073/02            | 0075/02 | 0077/02 | 0079/02 | 0081/02 |
|       | 0083/02            | 0085/02            | 0087/02            | 0089/02 | 0091/02 | 0093/02 | 0095/02 |
|       | 0097/02            | 0099/02            | 0101/02            | 0103/02 | 0105/02 | 0107/02 | 0109/02 |
|       | 0111/02            | 0113/02            | 0115/02            | 0117/02 | 0119/02 | 0121/02 | 0123/02 |
|       | 0125/02            | 0127/02            | 0129/02            | 0131/02 | 0133/02 | 0135/02 | 0137/02 |
|       | 0139/02            | 0141/02            | 0143/02            | 0145/02 | 0147/02 | 0149/02 | 0151/02 |
|       | 0153/02            | 0155/02            | 0157/02            | 0159/02 | 0161/02 | 0163/02 | 0165/02 |
|       | 0167/02            | 0169/02            | 0171/02            | 0173/02 | 0175/02 | 0177/02 | 0179/02 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0181/02 | 0183/02 | 0185/02 | 0187/02 | 0189/02 | 0191/02 | 0193/02 |
|       | 0195/02 | 0197/02 | 0199/02 | 0201/02 | 0203/02 | 0205/02 | 0207/02 |
|       | 0209/02 | 0211/02 | 0213/02 | 0215/02 | 0217/02 | 0219/02 | 0221/02 |
|       | 0223/02 | 0225/02 | 0227/02 | 0229/02 | 0231/02 | 0233/02 | 0235/02 |
| K1    | 0382/20 | 0290/20 | 0302/20 | 0315/20 | 0337/20 | 0350/20 | 0363/20 |
|       | 0372/20 | 0403/20 | 0412/20 |         |         |         |         |
| K2    | 0383/20 | 0186/20 | 0305/20 | 0354/20 | 0361/20 | 0410/20 |         |
| K8192 | 0582/58 | 0476/58 |         |         |         |         |         |
| KAO   | 0143    | 0310/29 | 0194/49 |         |         |         |         |
| KDIR0 | 0455/51 | 0221/51 |         |         |         |         |         |
| KDIRL | 0456/51 | 0209/51 |         |         |         |         |         |
| KID1  | 0220/51 | 0399/51 |         |         |         |         |         |
| KID10 | 0378/51 | 0338/51 |         |         |         |         |         |
| KID11 | 0360/51 | 0349/51 |         |         |         |         |         |
| KID12 | 0368/51 | 0353/51 |         |         |         |         |         |
| KID13 | 0363/51 | 0358/51 |         |         |         |         |         |
| KID18 | 0400/51 | 0333/51 |         |         |         |         |         |
| KID2  | 0237/51 | 0219/51 |         |         |         |         |         |
| KID31 | 0163/51 | 0023/51 |         |         |         |         |         |
| KID32 | 0166/51 | 0077/51 |         |         |         |         |         |
| KID33 | 0076/51 | 0081/51 |         |         |         |         |         |
| KID34 | 0111/51 | 0116/51 |         |         |         |         |         |
| KID35 | 0123/51 | 0113/51 |         |         |         |         |         |
| KID36 | 0195/51 | 0118/51 |         |         |         |         |         |
| KID37 | 0114/51 | 0159/51 |         |         |         |         |         |
| KID38 | 0146/51 | 0138/51 |         |         |         |         |         |
| KID4  | 0210/51 | 0224/51 |         |         |         |         |         |
| KID6  | 0330/51 | 0259/51 | 0296/51 |         |         |         |         |
| KID7  | 0255/51 | 0299/51 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                    |                    |                    |                    |                    |                    |  |
|-------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|
| KIDB  | 0294/51                       | 0261/51            |                    |                    |                    |                    |                    |  |
| KIDAA | 0059/51                       | 0031/51            |                    |                    |                    |                    |                    |  |
| KIDAD | 0039/51                       | 0058/51            |                    |                    |                    |                    |                    |  |
| KIDAF | 0054/51                       | 0043/51            |                    |                    |                    |                    |                    |  |
| KIDAN | 0169/51                       | 0053/51            |                    |                    |                    |                    |                    |  |
| KIDAZ | 0171/51                       | 0165/51            | 0168/51            |                    |                    |                    |                    |  |
| KIDB  | 0465/51                       | 0123/51            | 0158/51            |                    |                    |                    |                    |  |
| KIDC  | 0464/51<br>0178/51            | 0036/51            | 0057/51            | 0106/51            | 0115/51            | 0146/51            | 0172/51            |  |
| KIDE  | 0303/51                       | 0271/51            |                    |                    |                    |                    |                    |  |
| KIDEQ | 0161/51                       | 0135/51            |                    |                    |                    |                    |                    |  |
| KIDI  | 0458/51<br>0315/51            | 0210/51<br>0336/51 | 0212/51<br>0360/51 | 0220/51<br>0372/51 | 0248/51            | 0273/51            | 0275/51            |  |
| KIDM1 | 0184/51                       | 0163/51            |                    |                    |                    |                    |                    |  |
| KIDM2 | 0187/51                       | 0166/51            |                    |                    |                    |                    |                    |  |
| KIDM3 | 0190/51                       | 0169/51            |                    |                    |                    |                    |                    |  |
| KIDP  | 0457/51<br>0421/51            | 0040/51<br>0450/51 | 0049/51            | 0055/51            | 0150/51            | 0153/51            | 0154/51            |  |
| KIDP1 | 0460/51<br>0304/51<br>0448/51 | 0243/51<br>0350/51 | 0255/51<br>0424/51 | 0265/51<br>0426/51 | 0278/51<br>0438/51 | 0294/51<br>0440/51 | 0298/51<br>0446/51 |  |
| KIDP2 | 0461/51                       | 0269/51            | 0307/51            | 0345/51            | 0356/51            | 0371/51            |                    |  |
| KIDP3 | 0462/51                       | 0242/51            | 0310/51            | 0354/51            |                    |                    |                    |  |
| KIDP4 | 0463/51<br>0289/51            | 0245/51<br>0290/51 | 0267/51<br>0291/51 | 0281/51            | 0282/51            | 0285/51            | 0286/51            |  |
| KIDRE | 0211/51                       | 0326/51            |                    |                    |                    |                    |                    |  |
| KIDRR | 0404/51                       | 0324/51            | 0385/51            | 0452/51            |                    |                    |                    |  |
| KIDRS | 0423/51                       | 0451/51            |                    |                    |                    |                    |                    |  |
| KIDRT | 0436/51                       | 0432/51            |                    |                    |                    |                    |                    |  |
| KIDRV | 0439/51                       | 0428/51            |                    |                    |                    |                    |                    |  |



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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                    |                    |                    |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|--------------------|
| KIDRW | 0447/51                       | 0442/51                       |                               |                               |                    |                    |                    |
| KIDT  | 0459/51<br>0397/51            | 0108/51                       | 0117/51                       | 0137/51                       | 0213/51            | 0347/51            | 0370/51            |
| KIL1  | 0602/39                       | 0612/39                       |                               |                               |                    |                    |                    |
| KIL10 | 0639/39                       | 0628/39                       |                               |                               |                    |                    |                    |
| KIL11 | 0661/39                       | 0654/39                       |                               |                               |                    |                    |                    |
| KIL12 | 0180/31                       | 0176/31                       |                               |                               |                    |                    |                    |
| KIL13 | 0172/31                       | 0178/31                       |                               |                               |                    |                    |                    |
| KIL14 | 0234/31                       | 0188/31                       |                               |                               |                    |                    |                    |
| KIL15 | 0225/31                       | 0194/31                       |                               |                               |                    |                    |                    |
| KIL17 | 0246/31                       | 0240/31                       |                               |                               |                    |                    |                    |
| KIL18 | 0733/39                       | 0665/39                       | 0670/39                       |                               |                    |                    |                    |
| KIL19 | 0726/39                       | 0716/39                       |                               |                               |                    |                    |                    |
| KIL2  | 0619/39                       | 0615/39                       |                               |                               |                    |                    |                    |
| KIL3  | 0626/39                       | 0617/39                       | 0724/39                       |                               |                    |                    |                    |
| KILAD | 0698/39                       | 0711/39                       |                               |                               |                    |                    |                    |
| KILAE | 0705/39                       | 0717/39                       |                               |                               |                    |                    |                    |
| KILAF | 0713/39                       | 0700/39                       | 0703/39                       |                               |                    |                    |                    |
| KILAJ | 0718/39                       | 0709/39                       |                               |                               |                    |                    |                    |
| KILB  | 0798/39                       | 0776/39                       | 0786/39                       |                               |                    |                    |                    |
| KILBR | 0208/51                       | 0119/51                       |                               |                               |                    |                    |                    |
| KILC  | 0839/39<br>0601/39<br>0706/39 | 0286/31<br>0611/39<br>0708/39 | 0290/31<br>0674/39<br>0714/39 | 0377/31<br>0696/39<br>0715/39 | 0381/31<br>0699/39 | 0391/31<br>0702/39 | 0392/31<br>0704/39 |
| KILCD | 0288/31                       | 0298/31                       |                               |                               |                    |                    |                    |
| KILCF | 0300/31                       | 0295/31                       |                               |                               |                    |                    |                    |
| KILCG | 0372/31                       | 0291/31                       | 0312/31                       | 0316/31                       |                    |                    |                    |
| KILCN | 0399/31                       | 0375/31                       | 0386/31                       | 0389/31                       |                    |                    |                    |
| KILCP | 0422/31                       | 0334/31                       | 0345/31                       | 0349/31                       | 0368/31            | 0393/31            |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| KILCS | 0815/39 | 0808/39 | 0810/39 | 0834/39 |         |         |         |
| KILD  | 0841/39 | 0133/31 | 0146/31 | 0151/31 | 0156/31 | 0172/31 | 0187/31 |
|       | 0191/31 | 0213/31 | 0227/31 | 0237/31 | 0479/31 | 0481/31 | 0511/31 |
|       | 0523/31 | 0643/39 | 0774/39 | 0803/39 | 0811/39 | 0832/39 | 0429/51 |
|       | 0096/53 | 0211/53 | 0217/53 | 0218/53 | 0280/55 | 0302/55 | 0409/55 |
|       | 0052/58 | 0126/58 | 0533/58 |         |         |         |         |
| KILDF | 0842/39 | 0137/31 | 0138/31 | 0144/31 | 0158/31 | 0192/31 | 0214/31 |
|       | 0226/31 | 0235/31 | 0238/31 | 0364/31 | 0366/31 | 0418/31 | 0420/31 |
|       | 0477/31 | 0524/31 | 0652/39 | 0658/39 | 0686/39 | 0688/39 | 0689/39 |
|       | 0801/39 | 0833/39 | 0437/51 | 0094/53 | 0209/53 | 0282/55 | 0300/55 |
|       | 0328/55 | 0375/55 | 0377/55 | 0407/55 | 0523/55 | 0525/55 | 0061/58 |
|       | 0070/58 | 0117/58 | 0537/58 |         |         |         |         |
| KILDI | 0843/39 | 0305/31 | 0320/31 | 0384/31 | 0387/31 | 0412/31 | 0431/31 |
|       | 0434/31 | 0472/31 | 0509/31 | 0646/39 | 0697/39 | 0710/39 |         |
| KILDM | 0831/39 | 0814/39 |         |         |         |         |         |
| KILN  | 0840/39 | 0280/31 | 0307/31 | 0324/31 | 0390/31 | 0416/31 | 0464/31 |
|       | 0501/31 | 0662/39 | 0762/39 |         |         |         |         |
| KILP  | 0836/39 | 0180/31 | 0193/31 | 0211/31 | 0215/31 | 0225/31 | 0228/31 |
|       | 0239/31 | 0246/31 | 0248/31 | 0289/31 | 0292/31 | 0296/31 | 0310/31 |
|       | 0313/31 | 0321/31 | 0322/31 | 0332/31 | 0343/31 | 0346/31 | 0357/31 |
|       | 0373/31 | 0410/31 | 0413/31 | 0414/31 | 0599/39 | 0605/39 | 0608/39 |
|       | 0609/39 | 0610/39 | 0736/39 | 0740/39 | 0742/39 | 0744/39 | 0755/39 |
|       |         |         |         |         |         |         |         |
| KILPC | 0160/31 | 0155/31 |         |         |         |         |         |
| KILPD | 0837/39 | 0336/31 | 0340/31 | 0639/39 | 0647/39 | 0666/39 | 0733/39 |
| KILRC | 0826/39 | 0753/39 | 0772/39 |         |         |         |         |
| KILRD | 0835/39 | 0748/39 | 0768/39 | 0829/39 |         |         |         |
| KILTS | 0838/39 | 0592/39 | 0664/39 | 0817/39 |         |         |         |
| L1024 | 0301    | 0380/34 | 0211/35 | 0707/39 | 0570/57 | 0312/58 |         |
| L2E   | 0520/20 | 0455/20 |         |         |         |         |         |
| L8192 | 0465    | 0053/28 | 0057/28 | 0460/31 | 0014/32 | 0050/32 | 0244/51 |
|       | 0268/51 | 0422/51 | 0149/52 | 0247/52 | 0376/52 | 0100/53 | 0206/53 |
|       | 0318/53 | 0172/54 | 0275/54 | 0165/55 | 0272/55 | 0092/58 | 0383/58 |
|       | 0524/58 | 0563/58 |         |         |         |         |         |
| LBOP  | 0353    | 0035/05 | 0375/12 | 0067/17 |         |         |         |
| LBAC  | 0495/04 | 0029/05 | 0549/06 |         |         |         |         |
| LBTMP | 0473/02 | 0445/19 | 0448/19 | 0014/20 | 0017/20 | 0020/20 | 0024/20 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0145/20 | 0154/20 | 0229/20 | 0238/20 | 0351/20 | 0369/20 | 0399/20 |
|       | 0418/20 | 0459/20 | 0462/20 | 0498/20 | 0501/20 | 0506/20 | 0110/21 |
|       | 0132/21 | 0134/21 |         |         |         |         |         |
| LCALL | 0004/19 | 0197/19 |         |         |         |         |         |
| LCD   | 0209/32 | 0261/32 | 0313/32 | 0348/32 | 0399/32 | 0734/32 | 0663/35 |
|       | 0461/49 |         |         |         |         |         |         |
| LCD1  | 0302/32 | 0308/32 |         |         |         |         |         |
| LCD2  | 0352/32 | 0305/32 |         |         |         |         |         |
| LCD3  | 0306/32 | 0359/32 |         |         |         |         |         |
| LCD5  | 0363/32 | 0326/32 |         |         |         |         |         |
| LCD6  | 0320/32 | 0331/32 |         |         |         |         |         |
| LCD7  | 0327/32 | 0371/32 | 0375/32 |         |         |         |         |
| LCD9  | 0341/32 | 0293/32 | 0311/32 | 0335/32 |         |         |         |
| LCDBS | 0446/32 | 0300/32 | 0317/32 | 0327/32 | 0329/32 | 0353/32 | 0358/32 |
| LCDFC | 0443/32 | 0290/32 | 0307/32 |         |         |         |         |
| LCDID | 0444/32 | 0291/32 | 0318/32 | 0341/32 |         |         |         |
| LCDLP | 0230/02 | 0566/11 | 0450/16 | 0282/32 |         |         |         |
| LCDP  | 0663/35 | 0402/35 |         |         |         |         |         |
| LCH   | 0481/02 | 0006/25 | 0038/25 |         |         |         |         |
| LCHAR | 0148/33 | 0748/32 | 0151/33 | 0164/33 | 0169/33 | 0170/33 | 0341/33 |
|       | 0022/38 | 0030/38 | 0035/38 | 0051/38 | 0064/38 | 0134/39 | 0149/39 |
|       | 0169/39 | 0175/39 | 0189/39 | 0602/39 | 0606/39 | 0616/39 | 0344/40 |
|       | 0362/40 | 0513/40 | 0314/41 | 0022/42 | 0500/43 | 0033/44 | 0038/44 |
|       | 0042/44 | 0144/44 | 0181/44 | 0200/44 | 0061/45 | 0066/45 | 0073/45 |
|       | 0082/45 | 0142/45 | 0149/45 | 0288/45 | 0296/45 | 0314/45 | 0320/45 |
|       | 0325/45 | 0330/45 | 0521/56 | 0454/57 |         |         |         |
| LCHCR | 0174    | 0307/30 | 0149/33 | 0160/33 | 0309/45 |         |         |
| LCHR1 | 0152/33 | 0162/33 | 0196/45 |         |         |         |         |
| LCHR2 | 0162/33 | 0141/45 | 0159/45 | 0170/45 |         |         |         |
| LDBSA | 0103    | 0267/43 | 0361/43 | 0514/47 | 0070/48 | 0406/49 | 0102/54 |
|       | 0107/54 | 0110/54 |         |         |         |         |         |
| LDRUM | 0042/26 | 0455    | 0046/26 | 0683/32 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| LDVSR | 0486    | 0302/19 |         |         |         |         |         |
| LE2   | 0052/21 | 0043/21 |         |         |         |         |         |
| LEN1  | 0020/45 | 0012/45 | 0017/45 |         |         |         |         |
| LEN2  | 0036/45 | 0046/45 |         |         |         |         |         |
| LEN2A | 0434/32 | 0069/32 |         |         |         |         |         |
| LENCN | 0246/05 | 0249/04 |         |         |         |         |         |
| LEND  | 0221/33 | 0434/32 | 0232/33 | 0239/33 | 0653/45 | 0088/46 | 0261/46 |
|       | 0526/47 | 0229/48 | 0465/48 | 0620/48 | 0714/48 | 0735/48 | 0744/48 |
|       | 0120/49 | 0492/49 | 0121/50 | 0497/50 | 0222/51 | 0401/51 | 0607/51 |
|       | 0682/51 | 0374/52 | 0471/52 | 0573/52 | 0118/53 | 0215/53 | 0219/53 |
|       | 0310/53 | 0411/54 | 0423/55 | 0326/56 | 0339/56 | 0462/56 | 0122/57 |
|       | 0139/57 | 0689/57 | 0729/57 | 0165/58 | 0182/58 | 0375/58 | 0397/58 |
|       | 0035/59 | 0084/59 | 0132/59 | 0275/59 | 0330/59 | 0376/59 | 0445/59 |
|       | 0450/59 |         |         |         |         |         |         |
| LENDR | 0224/33 | 0050/49 | 0142/50 | 0182/51 |         |         |         |
| LENT  | 0469/40 | 0329/40 |         |         |         |         |         |
| LET0  | 0306/03 | 0539/05 |         |         |         |         |         |
| LET1  | 0320/03 | 0314/03 |         |         |         |         |         |
| LETCK | 0044/02 | 0301/02 | 0446/02 | 0009/04 | 0102/04 | 0211/04 | 0257/04 |
|       | 0271/06 | 0346/06 | 0349/06 | 0350/06 |         |         |         |
| LETOP | 0421    | 0289/03 | 0306/03 | 0390/21 |         |         |         |
| LETS  | 0309/03 | 0518/05 |         |         |         |         |         |
| LFLAG | 0163    | 0374/30 | 0380/30 | 0217/45 | 0232/45 |         |         |
| LFRDF | 0233/33 | 0231/33 | 0338/33 |         |         |         |         |
| LFREK | 0230/33 | 0336/33 | 0593/45 | 0027/46 | 0139/48 | 0156/48 | 0170/48 |
|       | 0173/48 | 0175/48 | 0178/48 | 0181/48 | 0331/48 | 0334/48 | 0527/48 |
|       | 0532/48 | 0535/48 | 0538/48 | 0543/48 | 0546/48 | 0554/48 | 0556/48 |
|       | 0559/48 | 0566/48 | 0569/48 | 0572/48 | 0575/48 | 0673/48 | 0766/48 |
|       | 0774/48 | 0777/48 | 0786/48 | 0792/48 | 0795/48 | 0803/48 | 0018/49 |
|       | 0021/49 | 0061/49 | 0095/49 | 0102/49 | 0109/49 | 0111/49 | 0137/49 |
|       | 0140/49 | 0148/49 | 0016/50 | 0019/50 | 0048/50 | 0051/50 | 0058/50 |
|       | 0068/50 | 0169/50 | 0174/50 | 0177/50 | 0187/50 | 0193/50 | 0020/51 |
|       | 0483/51 | 0502/51 | 0615/51 | 0039/52 | 0063/52 | 0479/52 | 0019/53 |
|       | 0027/53 | 0030/54 | 0038/54 | 0012/56 | 0017/56 | 0379/56 | 0382/56 |
|       | 0425/56 | 0431/56 | 0014/57 | 0017/57 | 0029/57 | 0049/57 | 0052/57 |
|       | 0387/57 | 0393/57 | 0478/57 | 0481/57 | 0495/57 | 0015/58 | 0018/58 |
|       | 0029/58 | 0324/58 | 0018/59 | 0021/59 | 0026/59 | 0029/59 | 0038/59 |
|       | 0042/59 | 0047/59 | 0064/59 | 0069/59 | 0072/59 | 0081/59 | 0103/59 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0100/59 | 0111/59 | 0119/59 | 0125/59 | 0136/59 | 0141/59 | 0166/59 |
|       | 0172/59 | 0179/59 | 0183/59 | 0186/59 | 0191/59 | 0194/59 | 0199/59 |
|       | 0208/59 | 0211/59 | 0227/59 | 0244/59 | 0247/59 | 0249/59 | 0252/59 |
|       | 0255/59 | 0303/59 | 0306/59 | 0313/59 | 0415/59 | 0424/59 | 0430/59 |
|       | 0460/59 | 0463/59 |         |         |         |         |         |
| LFSPA | 0436/32 | 0084/32 |         |         |         |         |         |
| LIA1  | 0313    | 0060/26 | 0271/30 |         |         |         |         |
| LIB   | 0165    | 0317/30 | 0319/30 | 0383/33 | 0385/33 | 0506/37 | 0496/50 |
|       | 0520/54 | 0054/55 | 0422/55 |         |         |         |         |
| LIBD  | 0321    | 0035/03 | 0046/03 | 0063/03 | 0096/03 | 0481/27 | 0490/27 |
|       | 0075/28 | 0171/31 | 0181/31 | 0205/31 | 0285/31 | 0287/31 | 0333/31 |
|       | 0374/31 | 0404/31 | 0493/31 | 0029/32 | 0033/32 | 0055/32 | 0062/32 |
|       | 0338/32 | 0110/33 | 0316/34 | 0344/34 | 0373/34 | 0432/34 | 0119/35 |
|       | 0175/35 | 0192/35 | 0205/35 | 0261/35 | 0563/35 | 0114/36 | 0181/36 |
|       | 0225/36 | 0241/36 | 0291/36 | 0324/36 | 0325/37 | 0348/37 | 0448/37 |
|       | 0460/37 | 0480/37 | 0177/38 | 0314/38 | 0026/39 | 0037/39 | 0095/39 |
|       | 0118/39 | 0120/39 | 0439/39 | 0448/39 | 0512/39 | 0685/39 | 0695/39 |
|       | 0721/39 | 0750/39 | 0770/39 | 0791/39 | 0812/39 | 0056/41 | 0212/41 |
|       | 0225/41 | 0384/41 | 0078/42 | 0086/42 | 0103/42 | 0111/42 | 0472/42 |
|       | 0218/43 | 0238/43 | 0253/43 | 0324/43 | 0080/44 | 0270/44 | 0313/44 |
|       | 0357/44 | 0372/44 | 0415/44 | 0421/44 | 0439/44 | 0559/44 | 0630/45 |
|       | 0632/45 | 0685/45 | 0077/46 | 0012/47 | 0460/47 | 0486/47 | 0500/47 |
|       | 0042/48 | 0696/48 | 0730/48 | 0032/49 | 0034/49 | 0117/49 | 0323/49 |
|       | 0369/49 | 0078/50 | 0082/50 | 0097/50 | 0102/50 | 0118/50 | 0346/50 |
|       | 0354/50 | 0444/50 | 0456/50 | 0477/50 | 0074/51 | 0076/51 | 0099/51 |
|       | 0149/51 | 0196/51 | 0240/51 | 0295/51 | 0318/51 | 0368/51 | 0392/51 |
|       | 0417/51 | 0555/51 | 0604/51 | 0174/52 | 0239/52 | 0304/52 | 0329/52 |
|       | 0333/52 | 0384/52 | 0391/52 | 0457/52 | 0212/53 | 0138/54 | 0197/54 |
|       | 0268/54 | 0034/55 | 0147/55 | 0173/55 | 0180/55 | 0252/55 | 0292/55 |
|       | 0330/55 | 0332/55 | 0410/55 | 0434/55 | 0467/55 | 0077/56 | 0085/56 |
|       | 0140/56 | 0189/56 | 0233/56 | 0256/56 | 0306/56 | 0323/56 | 0368/56 |
|       | 0081/57 | 0100/57 | 0234/57 | 0249/57 | 0294/57 | 0334/57 | 0341/57 |
|       | 0363/57 | 0558/57 | 0595/57 | 0635/57 | 0655/57 | 0685/57 | 0132/58 |
|       | 0161/58 | 0204/58 | 0268/58 | 0311/58 | 0401/58 | 0408/58 | 0465/58 |
|       | 0501/58 | 0558/58 |         |         |         |         |         |
| LIBD1 | 0325    | 0056/03 | 0472/27 | 0484/31 | 0024/32 | 0106/33 | 0335/34 |
|       | 0183/35 | 0107/36 | 0249/36 | 0298/37 | 0020/39 | 0113/39 | 0428/39 |
|       | 0676/39 | 0784/39 | 0806/39 | 0222/41 | 0380/41 | 0083/42 | 0108/42 |
|       | 0491/42 | 0379/43 | 0263/44 | 0378/44 | 0625/45 | 0681/45 | 0073/46 |
|       | 0031/47 | 0083/48 | 0692/48 | 0026/49 | 0319/49 | 0025/50 | 0325/50 |
|       | 0066/51 | 0142/51 | 0251/51 | 0382/51 | 0408/51 | 0547/51 | 0170/52 |
|       | 0236/52 | 0285/52 | 0301/52 | 0388/52 | 0097/53 | 0134/54 | 0193/54 |
|       | 0265/54 | 0314/54 | 0028/55 | 0177/55 | 0269/55 | 0303/55 | 0081/56 |
|       | 0133/56 | 0247/56 | 0263/56 | 0319/56 | 0364/56 | 0106/57 | 0202/57 |
|       | 0338/57 | 0554/57 | 0588/57 | 0644/57 | 0673/57 | 0127/58 | 0152/58 |
|       | 0307/58 | 0405/58 | 0481/58 | 0521/58 |         |         |         |
| LIBER | 0339/33 | 0084/36 | 0132/36 | 0142/36 | 0329/36 | 0339/36 | 0414/36 |
|       | 0044/38 | 0076/38 | 0082/38 | 0102/38 | 0156/38 | 0214/38 | 0273/38 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0287/38 | 0337/38 | 0416/38 | 0428/38 | 0203/39 | 0258/39 | 0261/39 |
|       | 0621/39 | 0632/39 | 0728/39 | 0331/40 | 0372/40 | 0506/40 | 0531/40 |
|       | 0229/41 | 0307/41 | 0584/41 | 0015/42 | 0247/42 | 0605/42 | 0487/43 |
|       | 0024/44 | 0051/44 | 0061/44 | 0135/44 | 0172/44 | 0240/44 | 0286/44 |
|       | 0579/44 | 0567/44 | 0049/45 | 0176/45 | 0236/45 | 0239/45 | 0276/45 |
| LIBPB | 0547/33 | 0500/33 | 0508/33 | 0528/35 | 0137/38 | 0324/38 | 0433/38 |
|       | 0296/39 |         |         |         |         |         |         |
| LIBRA | 0173    | 0007    | 0018    | 0275    | 0277    | 0763/32 | 0764/32 |
|       | 0384/33 | 0392/33 | 0008/34 | 0009/34 | 0012/34 | 0013/34 | 0014/34 |
|       | 0015/34 | 0016/34 | 0017/34 | 0018/34 | 0019/34 | 0020/34 | 0021/34 |
|       | 0022/34 | 0023/34 | 0024/34 | 0025/34 | 0026/34 | 0027/34 | 0028/34 |
|       | 0029/34 | 0030/34 | 0031/34 | 0032/34 | 0033/34 | 0034/34 | 0035/34 |
|       | 0036/34 | 0037/34 | 0038/34 | 0039/34 | 0040/34 | 0041/34 | 0042/34 |
|       | 0043/34 | 0044/34 | 0045/34 | 0046/34 | 0047/34 | 0048/34 | 0049/34 |
|       | 0050/34 | 0051/34 | 0052/34 | 0053/34 | 0054/34 | 0055/34 | 0056/34 |
|       | 0057/34 | 0058/34 | 0059/34 | 0060/34 | 0061/34 | 0062/34 | 0063/34 |
|       | 0064/34 | 0065/34 | 0066/34 | 0067/34 | 0068/34 | 0069/34 | 0070/34 |
|       | 0071/34 | 0083/34 | 0088/34 | 0113/34 | 0023/35 | 0368/35 | 0017/36 |
|       | 0368/36 | 0372/36 | 0381/36 | 0011/37 | 0514/37 | 0534/37 | 0538/37 |
|       | 0010/38 | 0260/38 | 0007/39 | 0404/39 | 0589/39 | 0014/40 | 0475/40 |
|       | 0007/41 | 0255/41 | 0271/41 | 0299/41 | 0629/41 | 0007/42 | 0239/42 |
|       | 0602/42 | 0002/43 | 0431/43 | 0535/43 | 0010/44 | 0094/44 | 0109/44 |
|       | 0619/44 | 0622/44 | 0005/45 | 0060/45 | 0110/45 | 0207/45 | 0268/45 |
|       | 0584/45 | 0017/46 | 0287/46 | 0298/46 | 0162/47 | 0268/47 | 0130/48 |
|       | 0430/48 | 0525/48 | 0667/48 | 0014/49 | 0173/49 | 0476/49 | 0010/50 |
|       | 0018/51 | 0478/51 | 0034/52 | 0012/53 | 0023/54 | 0529/54 | 0532/54 |
|       | 0536/54 | 0017/55 | 0007/56 | 0524/56 | 0528/56 | 0011/57 | 0458/57 |
|       | 0462/57 | 0474/57 | 0012/58 | 0252/58 | 0008/59 | 0059/59 | 0092/59 |
|       | 0155/59 | 0411/59 | 0482/59 | 0548/59 | 0614/59 | 0680/59 |         |
| LIBSC | 0548/33 | 0495/33 | 0518/35 | 0530/35 | 0127/38 | 0139/38 | 0279/39 |
|       | 0298/39 |         |         |         |         |         |         |
| LIBSP | 0549/33 | 0536/33 | 0522/35 | 0527/35 | 0578/35 | 0595/35 | 0131/38 |
|       | 0136/38 | 0194/38 | 0223/38 | 0283/39 | 0295/39 | 0318/39 | 0325/39 |
| LIBUS | 0010/02 | 0295    | 0301    | 0321    | 0325    | 0395    | 0465    |
|       | 0422/32 | 0644/32 | 0645/32 | 0516/37 | 0600/42 | 0200/47 | 0108/50 |
|       | 0421/53 | 0422/53 | 0423/53 | 0543/55 | 0544/55 | 0546/55 | 0231/58 |
| LINEA | 0523/16 | 0300/16 |         |         |         |         |         |
| LIS   | 0032/31 | 0498/29 |         |         |         |         |         |
| LIS10 | 0471/21 | 0004/19 | 0459/21 |         |         |         |         |
| LIS11 | 0482/21 | 0473/21 | 0503/21 |         |         |         |         |
| LIS12 | 0507/21 | 0395/21 |         |         |         |         |         |
| LIS13 | 0528/21 | 0515/21 | 0517/21 |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                          |                                          |                                          |                                          |                                          |                                          |
|-------|-----------------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| LIS14 | 0553/21                                             | 0402/21                                  |                                          |                                          |                                          |                                          |                                          |
| LIS15 | 0535/21                                             | 0336/21                                  | 0340/21                                  |                                          |                                          |                                          |                                          |
| LIS16 | 0547/21                                             | 0232/21                                  | 0292/21                                  |                                          |                                          |                                          |                                          |
| LIS17 | 0562/21                                             | 0557/21                                  |                                          |                                          |                                          |                                          |                                          |
| LIS18 | 0522/21                                             | 0519/21                                  |                                          |                                          |                                          |                                          |                                          |
| LISCM | 0264/21                                             | 0254/21                                  |                                          |                                          |                                          |                                          |                                          |
| LISCP | 0281/21                                             | 0256/21                                  | 0269/21                                  |                                          |                                          |                                          |                                          |
| LISCO | 0287/21                                             | 0251/21                                  | 0275/21                                  |                                          |                                          |                                          |                                          |
| LISCR | 0289/21                                             | 0260/21                                  |                                          |                                          |                                          |                                          |                                          |
| LISCU | 0312/21                                             | 0305/21                                  |                                          |                                          |                                          |                                          |                                          |
| LISPF | 0346/21                                             | 0350/21                                  |                                          |                                          |                                          |                                          |                                          |
| LISPM | 0353/21                                             | 0343/21                                  |                                          |                                          |                                          |                                          |                                          |
| LIST  | 0226/21                                             | 0224/21                                  | 0110/31                                  |                                          |                                          |                                          |                                          |
| LIST0 | 0427/21                                             | 0418/21                                  |                                          |                                          |                                          |                                          |                                          |
| LIST2 | 0334/21                                             | 0322/21                                  | 0382/21                                  |                                          |                                          |                                          |                                          |
| LIST3 | 0369/21<br>0481/21                                  | 0366/21<br>0486/21                       | 0416/21<br>0488/21                       | 0438/21<br>0497/21                       | 0443/21<br>0526/21                       | 0446/21<br>0531/21                       | 0470/21<br>0564/21                       |
| LIST4 | 0386/21                                             | 0371/21                                  | 0500/21                                  |                                          |                                          |                                          |                                          |
| LIST5 | 0409/21                                             | 0389/21                                  | 0391/21                                  | 0521/21                                  |                                          |                                          |                                          |
| LIST6 | 0430/21                                             | 0453/21                                  | 0476/21                                  |                                          |                                          |                                          |                                          |
| LIST7 | 0447/21                                             | 0440/21                                  |                                          |                                          |                                          |                                          |                                          |
| LIST8 | 0449/21                                             | 0429/21                                  |                                          |                                          |                                          |                                          |                                          |
| LIST9 | 0457/21                                             | 0413/21                                  |                                          |                                          |                                          |                                          |                                          |
| LLEND | 0182/33<br>0819/39<br>0194/42<br>0519/44<br>0378/45 | 0357/33<br>0825/39<br>0282/43<br>0554/44 | 0311/36<br>0019/40<br>0480/43<br>0562/44 | 0237/38<br>0327/40<br>0575/43<br>0091/45 | 0447/38<br>0502/40<br>0083/44<br>0166/45 | 0568/39<br>0070/41<br>0502/44<br>0218/45 | 0805/39<br>0399/41<br>0507/44<br>0233/45 |
| LNAME | 0243/02                                             | 0012                                     | 0318/09                                  | 0300/21                                  | 0025/22                                  |                                          |                                          |
| LNTH  | 0341/02                                             | 0186/06                                  | 0203/06                                  |                                          |                                          |                                          |                                          |

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CROSS-REFERENCE SYMBOL TABLE

|        |         |         |         |         |         |         |         |  |
|--------|---------|---------|---------|---------|---------|---------|---------|--|
| LOC10  | 0152/52 | 0161/52 |         |         |         |         |         |  |
| LOC11  | 0157/52 | 0215/52 |         |         |         |         |         |  |
| LOC12  | 0162/52 | 0156/52 |         |         |         |         |         |  |
| LOC13  | 0176/52 | 0213/52 |         |         |         |         |         |  |
| LOC15  | 0209/52 | 0180/52 | 0182/52 | 0187/52 | 0192/52 |         |         |  |
| LOC16  | 0217/52 | 0206/52 |         |         |         |         |         |  |
| LOC20  | 0226/52 | 0160/52 |         |         |         |         |         |  |
| LOC21  | 0241/52 | 0275/52 |         |         |         |         |         |  |
| LOC22  | 0251/52 | 0270/52 |         |         |         |         |         |  |
| LOC23  | 0272/52 | 0246/52 |         |         |         |         |         |  |
| LOC24  | 0277/52 | 0263/52 |         |         |         |         |         |  |
| LOC25  | 0267/52 | 0259/52 |         |         |         |         |         |  |
| LOC3   | 0305/52 | 0311/52 |         |         |         |         |         |  |
| LOC30  | 0297/52 | 0229/52 | 0276/52 |         |         |         |         |  |
| LOC4   | 0313/52 | 0320/52 |         |         |         |         |         |  |
| LOC40  | 0378/52 | 0465/52 |         |         |         |         |         |  |
| LOC41  | 0394/52 | 0444/52 |         |         |         |         |         |  |
| LOC42  | 0413/52 | 0400/52 |         |         |         |         |         |  |
| LOC43  | 0445/52 | 0441/52 |         |         |         |         |         |  |
| LOC44  | 0438/52 | 0412/52 |         |         |         |         |         |  |
| LOC5   | 0340/52 | 0358/52 |         |         |         |         |         |  |
| LOCAD  | 0108/52 | 0106/52 | 0109/52 | 0111/52 |         |         |         |  |
| LOCCM  | 0579/52 | 0123/52 |         |         |         |         |         |  |
| LOCOD  | 0594/52 | 0042/52 | 0051/52 | 0059/52 |         |         |         |  |
| LOCDA  | 0578/52 | 0105/52 |         |         |         |         |         |  |
| LOCODG | 0497/52 | 0478/52 | 0484/52 | 0499/52 | 0503/52 | 0506/52 | 0507/52 |  |
| LOCODI | 0590/52 | 0153/52 | 0167/52 | 0194/52 | 0214/52 | 0250/52 | 0269/52 |  |



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## CROSS-REFERENCE SYMBOL TABLE

|        |                               |                               |                               |                               |                               |                    |                    |
|--------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|
|        | 0380/52                       | 0435/52                       | 0437/52                       | 0443/52                       | 0450/52                       |                    |                    |
| LOC DL | 0575/52                       | 0093/52                       |                               |                               |                               |                    |                    |
| LOC DP | 0591/52<br>0432/52            | 0177/52                       | 0178/52                       | 0197/52                       | 0210/52                       | 0418/52            | 0428/52            |
| LOC DT | 0096/52                       | 0094/52                       | 0097/52                       | 0099/52                       | 0101/52                       |                    |                    |
| LOC DU | 0582/52                       | 0159/52                       |                               |                               |                               |                    |                    |
| LOC ER | 0562/52                       | 0219/52                       | 0550/52                       | 0555/52                       | 0559/52                       | 0566/52            |                    |
| LOC F  | 0597/52                       | 0052/52                       | 0066/52                       | 0183/52                       | 0305/52                       | 0339/52            | 0524/52            |
| LOC F1 | 0030/32                       | 0052/32                       |                               |                               |                               |                    |                    |
| LOC FB | 0017/32                       | 0065/32                       |                               |                               |                               |                    |                    |
| LOC FG | 0032/32                       | 0038/32                       |                               |                               |                               |                    |                    |
| LOC FR | 0060/32                       | 0034/32                       |                               |                               |                               |                    |                    |
| LOC L  | 0598/52                       | 0060/52                       | 0189/52                       | 0313/52                       | 0355/52                       | 0530/52            |                    |
| LOC LL | 0576/52                       | 0346/52                       |                               |                               |                               |                    |                    |
| LOC M6 | 0580/52                       | 0125/52                       |                               |                               |                               |                    |                    |
| LOC N  | 0595/52                       | 0480/52                       | 0486/52                       | 0488/52                       | 0492/52                       |                    |                    |
| LOC N1 | 0480/52                       | 0491/52                       |                               |                               |                               |                    |                    |
| LOC N2 | 0492/52                       | 0485/52                       |                               |                               |                               |                    |                    |
| LOC ND | 0593/52                       | 0385/52                       | 0446/52                       |                               |                               |                    |                    |
| LOC NO | 0477/52                       | 0035/52                       | 0048/52                       | 0056/52                       | 0481/52                       | 0493/52            | 0494/52            |
| LOC NT | 0589/52<br>0124/52<br>0352/52 | 0075/52<br>0130/52<br>0353/52 | 0088/52<br>0166/52<br>0375/52 | 0092/52<br>0212/52<br>0439/52 | 0100/52<br>0234/52<br>0463/52 | 0104/52<br>0274/52 | 0110/52<br>0345/52 |
| LOC R1 | 0554/52                       | 0046/52                       | 0548/52                       |                               |                               |                    |                    |
| LOC R2 | 0558/52                       | 0068/52                       | 0483/52                       |                               |                               |                    |                    |
| LOC SL | 0128/52                       | 0126/52                       | 0129/52                       | 0131/52                       |                               |                    |                    |
| LOC ST | 0577/52                       | 0076/52                       |                               |                               |                               |                    |                    |
| LOC SW | 0079/52                       | 0077/52                       | 0080/52                       | 0085/52                       | 0087/52                       | 0089/52            |                    |
| LOC T  | 0596/52                       | 0340/52                       | 0354/52                       | 0563/52                       | 0570/52                       |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |
|-------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| LOCTC | 0588/52<br>0331/51<br>0227/52                                                                                                    | 0456/31<br>0334/51<br>0230/52                                                                                                    | 0009/32<br>0420/51<br>0249/52                                                                                                    | 0247/51<br>0002/52<br>0372/52                                                                                                    | 0292/51<br>0084/52                                                                                                               | 0321/51<br>0148/52                                                                                                               | 0323/51<br>0208/52                                                                                                               |
| LOCTP | 0592/52<br>0203/52<br>0262/52<br>0377/52<br>0416/52                                                                              | 0150/52<br>0207/52<br>0265/52<br>0379/52<br>0421/52                                                                              | 0195/52<br>0240/52<br>0266/52<br>0395/52<br>0424/52                                                                              | 0196/52<br>0242/52<br>0271/52<br>0396/52<br>0442/52                                                                              | 0198/52<br>0254/52<br>0273/52<br>0404/52<br>0285/54                                                                              | 0199/52<br>0257/52<br>0279/52<br>0408/52                                                                                         | 0202/52<br>0260/52<br>0288/52<br>0411/52                                                                                         |
| LOCTS | 0518/52<br>0117/52<br>0528/52                                                                                                    | 0078/52<br>0120/52<br>0533/52                                                                                                    | 0083/52<br>0127/52<br>0538/52                                                                                                    | 0095/52<br>0292/52                                                                                                               | 0107/52<br>0519/52                                                                                                               | 0113/52<br>0520/52                                                                                                               | 0115/52<br>0523/52                                                                                                               |
| LOCUD | 0583/52                                                                                                                          | 0469/52                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |
| LOCUI | 0584/52                                                                                                                          | 0470/52                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |
| LODIR | 0581/52                                                                                                                          | 0151/52                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |
| LOGBF | 0100/29<br>0094/29                                                                                                               | 0066/29                                                                                                                          | 0070/29                                                                                                                          | 0077/29                                                                                                                          | 0079/29                                                                                                                          | 0084/29                                                                                                                          | 0091/29                                                                                                                          |
| LOGBG | 0357                                                                                                                             | 0060/29                                                                                                                          | 0357/39                                                                                                                          | 0479/39                                                                                                                          | 0345/49                                                                                                                          |                                                                                                                                  |                                                                                                                                  |
| LOGCT | 0339<br>0499/39                                                                                                                  | 0051/29<br>0339/49                                                                                                               | 0056/29<br>0366/49                                                                                                               | 0190/30<br>0378/49                                                                                                               | 0351/39                                                                                                                          | 0375/39                                                                                                                          | 0473/39                                                                                                                          |
| LOGGR | 0124/31                                                                                                                          | 0341                                                                                                                             | 0351                                                                                                                             | 0357                                                                                                                             | 0359                                                                                                                             |                                                                                                                                  |                                                                                                                                  |
| LOGND | 0359                                                                                                                             | 0059/29                                                                                                                          | 0356/39                                                                                                                          | 0478/39                                                                                                                          | 0344/49                                                                                                                          |                                                                                                                                  |                                                                                                                                  |
| LOGP1 | 0341<br>0085/29                                                                                                                  | 0057/29<br>0089/29                                                                                                               | 0061/29<br>0092/29                                                                                                               | 0062/29                                                                                                                          | 0071/29                                                                                                                          | 0080/29                                                                                                                          | 0081/29                                                                                                                          |
| LOGP2 | 0351<br>0480/39<br>0350/49                                                                                                       | 0354/39<br>0483/39<br>0365/49                                                                                                    | 0359/39<br>0484/39                                                                                                               | 0360/39<br>0498/39                                                                                                               | 0371/39<br>0342/49                                                                                                               | 0374/39<br>0346/49                                                                                                               | 0476/39<br>0349/49                                                                                                               |
| LOGR2 | 0099/29                                                                                                                          | 0096/29                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |
| LOUT  | 0118/33<br>0520/39<br>0036/41<br>0111/41<br>0199/41<br>0488/41<br>0562/41<br>0611/41<br>0147/42<br>0188/42<br>0278/42<br>0516/42 | 0435/32<br>0527/39<br>0050/41<br>0120/41<br>0340/41<br>0495/41<br>0567/41<br>0047/42<br>0149/42<br>0190/42<br>0313/42<br>0618/42 | 0745/32<br>0533/39<br>0069/41<br>0140/41<br>0343/41<br>0497/41<br>0569/41<br>0050/42<br>0151/42<br>0193/42<br>0320/42<br>0621/42 | 0122/33<br>0536/39<br>0082/41<br>0142/41<br>0407/41<br>0510/41<br>0571/41<br>0123/42<br>0153/42<br>0203/42<br>0337/42<br>0648/42 | 0129/33<br>0014/41<br>0084/41<br>0144/41<br>0414/41<br>0547/41<br>0596/41<br>0130/42<br>0172/42<br>0206/42<br>0404/42<br>0675/42 | 0134/33<br>0026/41<br>0088/41<br>0146/41<br>0459/41<br>0549/41<br>0599/41<br>0137/42<br>0174/42<br>0216/42<br>0423/42<br>0682/42 | 0183/33<br>0029/41<br>0102/41<br>0167/41<br>0461/41<br>0555/41<br>0608/41<br>0143/42<br>0176/42<br>0264/42<br>0442/42<br>0684/42 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0686/42 | 0014/43 | 0019/43 | 0261/43 | 0297/43 | 0308/43 | 0314/43 |
|       | 0395/43 | 0574/43 | 0599/43 | 0609/43 | 0029/45 | 0040/45 | 0043/45 |
|       | 0401/45 | 0432/45 | 0435/45 | 0437/45 | 0509/45 | 0512/45 | 0530/45 |
|       | 0518/56 | 0452/57 |         |         |         |         |         |
| LOUTA | 0435/32 | 0154/32 | 0156/32 | 0158/32 | 0160/32 | 0169/32 | 0172/32 |
|       | 0177/32 | 0179/32 | 0190/32 | 0192/32 | 0196/32 | 0198/32 | 0207/32 |
|       | 0209/32 | 0211/32 | 0221/32 | 0224/32 |         |         |         |
| LPCK  | 0032/02 | 0391/02 | 0374/03 | 0134/04 | 0266/04 | 0067/06 | 0553/06 |
| LPD   | 0149    | 0053/30 | 0058/39 | 0410/39 | 0208/49 |         |         |
| LPM1  | 0242/45 | 0235/45 |         |         |         |         |         |
| LPM2  | 0246/45 | 0238/45 |         |         |         |         |         |
| LPOP  | 0355    | 0282/04 | 0551/06 |         |         |         |         |
| LPR   | 0148    | 0221/45 |         |         |         |         |         |
| LPR1  | 0220/45 | 0213/45 |         |         |         |         |         |
| LPR2  | 0234/45 | 0216/45 |         |         |         |         |         |
| LPR3  | 0237/45 | 0227/45 |         |         |         |         |         |
| LPS   | 0150    | 0003/43 | 0096/47 |         |         |         |         |
| LPSTK | 0636/32 | 0459/32 |         |         |         |         |         |
| LSD   | 0461/49 | 0267/49 |         |         |         |         |         |
| LSTDA | 0104    | 0372/43 | 0433/47 | 0412/49 | 0130/54 |         |         |
| LT0   | 0313/02 | 0227/21 | 0321/21 | 0373/21 | 0537/21 |         |         |
| LT1   | 0314/02 | 0319/09 | 0573/11 | 0585/11 | 0326/16 | 0368/16 | 0371/16 |
|       | 0378/16 | 0391/16 | 0419/16 | 0426/16 | 0434/16 | 0437/16 | 0301/21 |
|       | 0330/21 | 0334/21 | 0337/21 | 0355/21 | 0359/21 | 0360/21 | 0362/21 |
|       | 0367/21 | 0369/21 | 0386/21 | 0409/21 | 0462/21 | 0464/21 | 0465/21 |
|       | 0482/21 | 0490/21 | 0494/21 | 0509/21 | 0554/21 | 0614/21 | 0616/21 |
|       | 0619/21 |         |         |         |         |         |         |
| LT2   | 0315/02 | 0325/09 | 0590/11 | 0324/16 | 0386/16 | 0307/21 | 0365/21 |
|       | 0370/21 | 0463/21 | 0466/21 | 0483/21 | 0495/21 | 0523/21 | 0529/21 |
|       | 0615/21 |         |         |         |         |         |         |
| LT3   | 0316/02 | 0314/16 | 0336/16 | 0340/16 | 0343/16 | 0373/16 | 0499/16 |
|       | 0234/21 | 0265/21 | 0288/21 | 0294/21 | 0329/21 | 0411/21 | 0415/21 |
|       | 0423/21 | 0430/21 | 0435/21 | 0477/21 | 0589/21 | 0599/21 |         |
| LT4   | 0317/02 | 0484/21 | 0498/21 | 0513/21 | 0574/21 | 0577/21 | 0611/21 |
|       | 0623/21 |         |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LT5   | 0318/02<br>0242/16<br>0478/16                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0401/11<br>0316/16<br>0240/21                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0408/11<br>0362/16<br>0417/21                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0516/11<br>0397/16<br>0489/21                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0521/11<br>0399/16                                                                                                                                                                                                                                                                                                                                                      | 0229/16<br>0407/16                                                                                                                                                                                                                                                                                                                                                      | 0241/16<br>0453/16                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| LT6   | 0319/02<br>0335/21                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0231/16                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0338/16                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0383/16                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0388/16                                                                                                                                                                                                                                                                                                                                                                 | 0247/21                                                                                                                                                                                                                                                                                                                                                                 | 0290/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| LT7   | 0320/02                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0249/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0273/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0338/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| LT8   | 0321/02                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0229/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0283/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0342/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0345/21                                                                                                                                                                                                                                                                                                                                                                 | 0349/21                                                                                                                                                                                                                                                                                                                                                                 | 0352/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| LTEMP | 0039<br>0038/03<br>0074/03<br>0083/32<br>0110/32<br>0125/32<br>0170/32<br>0219/32<br>0249/33<br>0244/34<br>0302/34<br>0548/34<br>0555/34<br>0063/35<br>0087/35<br>0104/35<br>0349/35<br>0487/35<br>0666/35<br>0333/36<br>0362/36<br>0054/38<br>0234/38<br>0246/38<br>0032/39<br>0388/39<br>0442/39<br>0613/39<br>0842/39<br>0453/40<br>0460/40<br>0487/40<br>0498/40<br>0011/41<br>0235/41<br>0278/41<br>0345/41<br>0365/41<br>0412/41<br>0436/41<br>0448/41<br>0487/41 | 0287<br>0050/03<br>0076/03<br>0085/32<br>0113/32<br>0126/32<br>0173/32<br>0222/32<br>0250/33<br>0247/34<br>0346/34<br>0549/34<br>0556/34<br>0066/35<br>0088/35<br>0124/35<br>0350/35<br>0515/35<br>0667/35<br>0356/36<br>0363/36<br>0061/38<br>0240/38<br>0247/38<br>0248/39<br>0389/39<br>0443/39<br>0836/39<br>0843/39<br>0454/40<br>0461/40<br>0490/40<br>0499/40<br>0012/41<br>0236/41<br>0284/41<br>0350/41<br>0370/41<br>0415/41<br>0437/41<br>0450/41<br>0489/41 | 0021/03<br>0052/03<br>0081/03<br>0087/32<br>0116/32<br>0132/32<br>0174/32<br>0319/32<br>0251/33<br>0259/34<br>0349/34<br>0550/34<br>0030/35<br>0069/35<br>0089/35<br>0162/35<br>0351/35<br>0601/35<br>0668/35<br>0357/36<br>0364/36<br>0063/38<br>0241/38<br>0439/38<br>0250/39<br>0390/39<br>0572/39<br>0837/39<br>0448/40<br>0455/40<br>0462/40<br>0492/40<br>0521/40<br>0043/41<br>0237/41<br>0333/41<br>0351/41<br>0375/41<br>0428/41<br>0438/41<br>0451/41<br>0499/41 | 0022/03<br>0064/03<br>0082/03<br>0088/32<br>0119/32<br>0133/32<br>0183/32<br>0321/32<br>0252/33<br>0263/34<br>0350/34<br>0551/34<br>0032/35<br>0072/35<br>0090/35<br>0167/35<br>0406/35<br>0602/35<br>0669/35<br>0358/36<br>0423/36<br>0092/38<br>0242/38<br>0450/38<br>0267/39<br>0391/39<br>0573/39<br>0838/39<br>0449/40<br>0456/40<br>0479/40<br>0493/40<br>0522/40<br>0065/41<br>0238/41<br>0335/41<br>0352/41<br>0385/41<br>0431/41<br>0440/41<br>0455/41<br>0503/41 | 0025/03<br>0066/03<br>0084/03<br>0097/32<br>0121/32<br>0162/32<br>0186/32<br>0324/32<br>0547/33<br>0272/34<br>0545/34<br>0552/34<br>0036/35<br>0075/35<br>0094/35<br>0172/35<br>0436/35<br>0606/35<br>0670/35<br>0359/36<br>0425/36<br>0124/38<br>0243/38<br>0451/38<br>0290/39<br>0392/39<br>0574/39<br>0839/39<br>0450/40<br>0457/40<br>0480/40<br>0494/40<br>0539/40 | 0033/03<br>0072/03<br>0092/03<br>0101/32<br>0122/32<br>0164/32<br>0188/32<br>0363/32<br>0548/33<br>0286/34<br>0546/34<br>0553/34<br>0037/35<br>0079/35<br>0097/35<br>0245/35<br>0443/35<br>0664/35<br>0316/36<br>0360/36<br>0016/38<br>0229/38<br>0244/38<br>0027/39<br>0386/39<br>0393/39<br>0575/39<br>0840/39<br>0451/40<br>0458/40<br>0483/40<br>0495/40<br>0545/40 | 0037/03<br>0073/03<br>0093/03<br>0105/32<br>0123/32<br>0166/32<br>0199/32<br>0367/32<br>0549/33<br>0291/34<br>0547/34<br>0554/34<br>0046/35<br>0084/35<br>0099/35<br>0348/35<br>0448/35<br>0665/35<br>0321/36<br>0361/36<br>0050/38<br>0230/38<br>0245/38<br>0031/39<br>0387/39<br>0440/39<br>0596/39<br>0841/39<br>0452/40<br>0459/40<br>0485/40<br>0497/40<br>0010/41<br>0233/41<br>0234/41<br>0241/41<br>0344/41<br>0364/41<br>0408/41<br>0435/41<br>0443/41<br>0470/41<br>0514/41 |

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CROSS-REFERENCE SYMBOL TABLE

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| 0516/41 | 0521/41 | 0522/41 | 0523/41 | 0525/41 | 0527/41 | 0530/41 |
| 0532/41 | 0535/41 | 0537/41 | 0538/41 | 0543/41 | 0550/41 | 0556/41 |
| 0560/41 | 0563/41 | 0594/41 | 0597/41 | 0605/41 | 0609/41 | 0632/41 |
| 0040/42 | 0042/42 | 0044/42 | 0048/42 | 0051/42 | 0052/42 | 0063/42 |
| 0066/42 | 0079/42 | 0081/42 | 0088/42 | 0098/42 | 0104/42 | 0106/42 |
| 0114/42 | 0115/42 | 0124/42 | 0128/42 | 0131/42 | 0133/42 | 0135/42 |
| 0138/42 | 0140/42 | 0141/42 | 0144/42 | 0154/42 | 0156/42 | 0160/42 |
| 0164/42 | 0168/42 | 0183/42 | 0201/42 | 0204/42 | 0214/42 | 0217/42 |
| 0220/42 | 0222/42 | 0269/42 | 0271/42 | 0279/42 | 0296/42 | 0298/42 |
| 0308/42 | 0314/42 | 0321/42 | 0329/42 | 0338/42 | 0352/42 | 0367/42 |
| 0376/42 | 0377/42 | 0379/42 | 0382/42 | 0388/42 | 0398/42 | 0401/42 |
| 0409/42 | 0411/42 | 0425/42 | 0427/42 | 0431/42 | 0446/42 | 0454/42 |
| 0458/42 | 0468/42 | 0471/42 | 0473/42 | 0474/42 | 0481/42 | 0487/42 |
| 0497/42 | 0500/42 | 0503/42 | 0507/42 | 0509/42 | 0511/42 | 0514/42 |
| 0517/42 | 0519/42 | 0526/42 | 0527/42 | 0528/42 | 0542/42 | 0545/42 |
| 0552/42 | 0571/42 | 0574/42 | 0579/42 | 0588/42 | 0590/42 | 0591/42 |
| 0596/42 | 0646/42 | 0649/42 | 0656/42 | 0658/42 | 0661/42 | 0663/42 |
| 0712/42 | 0008/43 | 0012/43 | 0016/43 | 0035/43 | 0037/43 | 0039/43 |
| 0040/43 | 0043/43 | 0046/43 | 0047/43 | 0048/43 | 0067/43 | 0070/43 |
| 0071/43 | 0074/43 | 0078/43 | 0082/43 | 0084/43 | 0089/43 | 0101/43 |
| 0104/43 | 0105/43 | 0108/43 | 0112/43 | 0119/43 | 0121/43 | 0126/43 |
| 0135/43 | 0138/43 | 0141/43 | 0143/43 | 0146/43 | 0159/43 | 0162/43 |
| 0163/43 | 0167/43 | 0174/43 | 0176/43 | 0182/43 | 0217/43 | 0223/43 |
| 0230/43 | 0233/43 | 0242/43 | 0255/43 | 0262/43 | 0269/43 | 0288/43 |
| 0290/43 | 0303/43 | 0309/43 | 0315/43 | 0323/43 | 0329/43 | 0331/43 |
| 0339/43 | 0340/43 | 0360/43 | 0375/43 | 0388/43 | 0391/43 | 0396/43 |
| 0400/43 | 0408/43 | 0525/43 | 0526/43 | 0527/43 | 0617/43 | 0618/43 |
| 0619/43 | 0620/43 | 0015/44 | 0066/44 | 0075/44 | 0084/44 | 0088/44 |
| 0089/44 | 0113/44 | 0302/44 | 0304/44 | 0308/44 | 0319/44 | 0324/44 |
| 0348/44 | 0350/44 | 0352/44 | 0459/44 | 0463/44 | 0489/44 | 0495/44 |
| 0498/44 | 0503/44 | 0604/44 | 0605/44 | 0606/44 | 0608/44 | 0609/44 |
| 0610/44 | 0611/44 | 0010/45 | 0020/45 | 0026/45 | 0031/45 | 0032/45 |
| 0035/45 | 0038/45 | 0041/45 | 0044/45 | 0045/45 | 0081/45 | 0089/45 |
| 0251/45 | 0282/45 | 0283/45 | 0284/45 | 0356/45 | 0360/45 | 0364/45 |
| 0372/45 | 0376/45 | 0380/45 | 0384/45 | 0392/45 | 0402/45 | 0408/45 |
| 0419/45 | 0450/45 | 0452/45 | 0476/45 | 0479/45 | 0528/45 | 0531/45 |
| 0573/45 | 0574/45 | 0575/45 | 0576/45 | 0797/45 | 0798/45 | 0799/45 |
| 0800/45 | 0045/46 | 0046/46 | 0047/46 | 0049/46 | 0053/46 | 0055/46 |
| 0056/46 | 0061/46 | 0068/46 | 0078/46 | 0085/46 | 0089/46 | 0096/46 |
| 0110/46 | 0111/46 | 0113/46 | 0114/46 | 0117/46 | 0119/46 | 0120/46 |
| 0129/46 | 0136/46 | 0137/46 | 0138/46 | 0147/46 | 0153/46 | 0163/46 |
| 0164/46 | 0165/46 | 0166/46 | 0181/46 | 0182/46 | 0183/46 | 0202/46 |
| 0225/46 | 0236/46 | 0238/46 | 0290/46 | 0320/46 | 0321/46 | 0329/46 |
| 0359/46 | 0372/46 | 0380/46 | 0389/46 | 0403/46 | 0436/46 | 0446/46 |
| 0459/46 | 0475/46 | 0479/46 | 0491/46 | 0008/47 | 0027/47 | 0047/47 |
| 0054/47 | 0057/47 | 0059/47 | 0066/47 | 0067/47 | 0079/47 | 0089/47 |
| 0101/47 | 0105/47 | 0109/47 | 0219/47 | 0221/47 | 0224/47 | 0226/47 |
| 0233/47 | 0242/47 | 0273/47 | 0275/47 | 0277/47 | 0278/47 | 0281/47 |
| 0284/47 | 0285/47 | 0286/47 | 0305/47 | 0316/47 | 0320/47 | 0327/47 |
| 0342/47 | 0353/47 | 0357/47 | 0364/47 | 0374/47 | 0377/47 | 0380/47 |
| 0382/47 | 0385/47 | 0397/47 | 0405/47 | 0409/47 | 0417/47 | 0459/47 |
| 0474/47 | 0478/47 | 0490/47 | 0502/47 | 0509/47 | 0006/48 | 0008/48 |
| 0021/48 | 0027/48 | 0033/48 | 0041/48 | 0044/48 | 0045/48 | 0056/48 |
| 0058/48 | 0069/48 | 0092/48 | 0112/48 | 0418/48 | 0421/48 | 0422/48 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0423/48 | 0424/48 | 0507/48 | 0508/48 | 0510/48 | 0511/48 | 0536/48 |
|       | 0547/48 | 0548/48 | 0550/48 | 0551/48 | 0562/48 | 0577/48 | 0579/48 |
|       | 0604/48 | 0512/48 | 0617/48 | 0618/48 | 0623/48 | 0624/48 | 0625/48 |
|       | 0626/48 | 0627/48 | 0629/48 | 0638/48 | 0646/48 | 0648/48 | 0649/48 |
|       | 0813/48 | 0814/48 | 0815/48 | 0156/49 | 0157/49 | 0158/49 | 0159/49 |
|       | 0234/49 | 0239/49 | 0248/49 | 0249/49 | 0265/49 | 0269/49 | 0284/49 |
|       | 0288/49 | 0301/49 | 0303/49 | 0304/49 | 0308/49 | 0309/49 | 0313/49 |
|       | 0322/49 | 0334/49 | 0347/49 | 0352/49 | 0357/49 | 0358/49 | 0361/49 |
|       | 0363/49 | 0372/49 | 0374/49 | 0443/49 | 0445/49 | 0451/49 | 0452/49 |
|       | 0455/49 | 0457/49 | 0029/50 | 0036/50 | 0038/50 | 0040/50 | 0054/50 |
|       | 0061/50 | 0063/50 | 0064/50 | 0135/50 | 0137/50 | 0505/50 | 0506/50 |
|       | 0507/50 | 0508/50 | 0509/50 | 0457/51 | 0458/51 | 0459/51 | 0460/51 |
|       | 0461/51 | 0462/51 | 0463/51 | 0464/51 | 0465/51 | 0687/51 | 0588/52 |
|       | 0589/52 | 0590/52 | 0591/52 | 0592/52 | 0593/52 | 0594/52 | 0595/52 |
|       | 0596/52 | 0597/52 | 0598/52 | 0407/53 | 0408/53 | 0409/53 | 0410/53 |
|       | 0411/53 | 0412/53 | 0413/53 | 0414/53 | 0415/53 | 0416/53 | 0565/54 |
|       | 0566/54 | 0567/54 | 0568/54 | 0569/54 | 0570/54 | 0571/54 | 0572/54 |
|       | 0573/54 | 0574/54 | 0078/56 | 0087/56 | 0456/56 | 0458/56 | 0510/56 |
|       | 0511/56 | 0512/56 | 0513/56 | 0514/56 | 0515/56 | 0516/56 | 0517/56 |
|       | 0020/57 | 0061/57 | 0069/57 | 0070/57 | 0071/57 | 0076/57 | 0078/57 |
|       | 0079/57 | 0082/57 | 0085/57 | 0095/57 | 0112/57 | 0113/57 | 0133/57 |
|       | 0135/57 | 0141/57 | 0158/57 | 0161/57 | 0164/57 | 0166/57 | 0240/57 |
|       | 0244/57 | 0255/57 | 0260/57 | 0284/57 | 0286/57 | 0288/57 | 0310/57 |
|       | 0311/57 | 0443/57 | 0444/57 | 0445/57 | 0446/57 | 0447/57 | 0448/57 |
|       | 0449/57 | 0487/57 | 0489/57 | 0491/57 | 0497/57 | 0509/57 | 0526/57 |
|       | 0533/57 | 0539/57 | 0639/57 | 0641/57 | 0648/57 | 0652/57 | 0659/57 |
|       | 0671/57 | 0720/57 | 0725/57 | 0754/57 | 0755/57 | 0756/57 | 0757/57 |
|       | 0021/58 | 0023/58 | 0025/58 | 0031/58 | 0043/58 | 0109/58 | 0173/58 |
|       | 0178/58 | 0199/58 | 0208/58 | 0233/58 | 0234/58 | 0235/58 | 0254/58 |
|       | 0256/58 | 0261/58 | 0264/58 | 0567/58 | 0568/58 | 0569/58 | 0570/58 |
|       | 0571/58 | 0572/58 | 0573/58 | 0574/58 | 0011/59 | 0015/59 | 0016/59 |
|       | 0030/59 | 0033/59 | 0061/59 | 0073/59 | 0075/59 | 0079/59 | 0095/59 |
|       | 0099/59 | 0100/59 | 0112/59 | 0114/59 | 0120/59 | 0122/59 | 0126/59 |
|       | 0387/59 | 0388/59 | 0389/59 | 0390/59 | 0391/59 | 0392/59 | 0393/59 |
|       | 0477/59 | 0478/59 |         |         |         |         |         |
| LTR   | 0036/02 | 0393/02 | 0361/03 | 0368/03 | 0007/04 | 0100/04 | 0267/04 |
|       | 0116/05 | 0213/05 | 0399/05 | 0272/06 | 0273/06 | 0278/06 |         |
| LTP1  | 0145/33 | 0125/33 | 0130/33 | 0136/33 |         |         |         |
| LTP2  | 0146/33 | 0126/33 | 0127/33 | 0133/33 | 0135/33 |         |         |
| LTP3  | 0127/33 | 0137/33 |         |         |         |         |         |
| LTYPE | 0139/33 | 0747/32 | 0144/33 | 0339/33 | 0540/39 |         |         |
| LTYPR | 0124/33 | 0746/32 | 0132/33 | 0138/33 | 0140/33 | 0143/33 | 0539/43 |
|       | 0564/43 | 0612/43 | 0519/56 | 0453/57 |         |         |         |
| LULEN | 0295    | 0109/37 | 0144/37 | 0167/37 | 0177/37 | 0216/37 | 0270/51 |
|       | 0205/52 | 0235/54 |         |         |         |         |         |
| LW200 | 0185/03 | 0278/03 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                       |                                          |                                          |                                          |                                          |                               |                               |
|-------|---------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|-------------------------------|-------------------------------|
| LW97  | 0379                                  | 0538/35                                  | 0147/38                                  | 0326/38                                  | 0306/39                                  |                               |                               |
| LWAUS | 0256<br>0198/16<br>0142/38            | 0418/04<br>0201/16<br>0301/39            | 0602/05<br>0028/18                       | 0520/06<br>0032/18                       | 0185/09<br>0327/34                       | 0299/12<br>0533/35            | 0477/14<br>0409/36            |
| M1000 | 0010/19                               | 0063/19                                  |                                          |                                          |                                          |                               |                               |
| M103  | 0260/05                               | 0563/06                                  |                                          |                                          |                                          |                               |                               |
| M10K  | 0598/44                               | 0430/44                                  |                                          |                                          |                                          |                               |                               |
| M124  | 0514/20                               | 0463/20                                  |                                          |                                          |                                          |                               |                               |
| M128  | 0451                                  | 0140/43                                  | 0379/47                                  |                                          |                                          |                               |                               |
| M133. | 0003/33                               | 0261/33                                  |                                          |                                          |                                          |                               |                               |
| M133B | 0619/28                               | 0125/30                                  |                                          |                                          |                                          |                               |                               |
| M2000 | 0425<br>0230/35<br>0050/51            | 0424/09<br>0442/35<br>0139/51            | 0469/27<br>0060/38<br>0231/52            | 0240/34<br>0017/39<br>0260/54            | 0332/34<br>0425/39<br>0551/57            | 0359/34<br>0672/39<br>0083/58 | 0180/35<br>0277/41<br>0304/58 |
| M256  | 0449<br>0449/15<br>0488/42            | 0501<br>0527/15<br>0028/47               | 0209/09<br>0102/16<br>0080/53            | 0273/11<br>0498/19<br>0196/53            | 0255/14<br>0507/19<br>0018/55            | 0252/15<br>0108/20<br>0062/59 | 0390/15<br>0287/22            |
| M32   | 0212<br>0437/30<br>0055/36<br>0283/49 | 0330/14<br>0253/32<br>0212/38<br>0444/49 | 0422/19<br>0390/32<br>0426/38<br>0035/51 | 0389/25<br>0167/33<br>0030/39<br>0105/51 | 0484/27<br>0376/33<br>0441/39<br>0151/51 | 0030/28<br>0347/34<br>0687/39 | 0263/30<br>0537/34<br>0233/49 |
| M36K  | 0621/26                               | 0652/28                                  |                                          |                                          |                                          |                               |                               |
| M40   | 0601/44                               | 0419/44                                  | 0434/44                                  |                                          |                                          |                               |                               |
| M41B  | 0618/28                               | 0112/30                                  |                                          |                                          |                                          |                               |                               |
| M46   | 0007/23                               | 0302/24                                  |                                          |                                          |                                          |                               |                               |
| M512  | 0439                                  | 0320/30                                  | 0387/33                                  | 0356/43                                  | 0065/48                                  | 0403/49                       | 0100/54                       |
| M60B  | 0617/28                               | 0096/30                                  |                                          |                                          |                                          |                               |                               |
| M64   | 0500                                  | 0110/26                                  | 0287/37                                  | 0423/37                                  | 0220/44                                  | 0313/50                       | 0417/50                       |
| M682  | 0512/37                               | 0043/37                                  |                                          |                                          |                                          |                               |                               |
| M683  | 0513/37                               | 0045/37                                  |                                          |                                          |                                          |                               |                               |
| M71B  | 0094/21                               | 0282/21                                  |                                          |                                          |                                          |                               |                               |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                         |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
|-------|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| M72   | 0007/12                                                                                                 | 0217/12                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| M72B  | 0211<br>0503/43<br>0790/48<br>0346/58                                                                   | 0323/21<br>0185/44<br>0135/49<br>0067/59                                                                   | 0351/21<br>0202/44<br>0159/50<br>0301/59                                                                   | 0539/21<br>0484/45<br>0637/51<br>0458/59                                                                   | 0275/33<br>0329/48<br>0501/52                                                                              | 0170/39<br>0530/48<br>0239/53                                                                              | 0346/40<br>0541/48<br>0340/54                                                                              |
| M73   | 0441                                                                                                    | 0405/03                                                                                                    | 0103/05                                                                                                    | 0180/23                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |
| M74   | 0629/11                                                                                                 | 0078/11                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| M80   | 0510/37                                                                                                 | 0491/37                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| M8184 | 0411                                                                                                    | 0177/36                                                                                                    | 0117/37                                                                                                    | 0153/37                                                                                                    | 0309/44                                                                                                    | 0185/56                                                                                                    | 0245/57                                                                                                    |
| M8190 | 0430/32                                                                                                 | 0401/31                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| M8192 | 0432/32                                                                                                 | 0202/31                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| M96   | 0453<br>0535/34                                                                                         | 0328/14                                                                                                    | 0420/19                                                                                                    | 0387/25                                                                                                    | 0071/26                                                                                                    | 0435/30                                                                                                    | 0165/33                                                                                                    |
| MADD  | 0245/18                                                                                                 | 0014/17                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| MADDA | 0014/17                                                                                                 | 0207/17                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| MAG1  | 0036/59                                                                                                 | 0013/59                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| MAG5  | 0033/59                                                                                                 | 0023/59                                                                                                    | 0037/59                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |
| MAG06 | 0040/59                                                                                                 | 0009/59                                                                                                    | 0014/59                                                                                                    | 0049/59                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |
| MAGSC | 0089                                                                                                    | 0259/42                                                                                                    | 0261/42                                                                                                    | 0310/46                                                                                                    | 0312/46                                                                                                    | 0478/49                                                                                                    | 0034/59                                                                                                    |
| MAIN  | 0164<br>0619/05<br>0045/07<br>0369/09<br>0579/11<br>0444/16<br>0404/19<br>0225/30<br>0402/32<br>0413/38 | 0192/03<br>0529/05<br>0047/07<br>0237/11<br>0592/11<br>0446/16<br>0167/21<br>0227/30<br>0410/32<br>0425/38 | 0193/03<br>0049/06<br>0060/07<br>0256/11<br>0598/11<br>0458/16<br>0178/21<br>0230/30<br>0535/33<br>0446/38 | 0240/03<br>0050/06<br>0306/09<br>0297/11<br>0209/12<br>0506/16<br>0239/21<br>0254/30<br>0615/35<br>0824/39 | 0418/03<br>0187/06<br>0312/09<br>0552/11<br>0253/16<br>0508/16<br>0032/22<br>0313/30<br>0645/35<br>0326/40 | 0433/03<br>0242/06<br>0313/09<br>0554/11<br>0254/16<br>0510/16<br>0465/27<br>0381/32<br>0207/38<br>0479/43 | 0463/03<br>0254/06<br>0368/09<br>0574/11<br>0320/16<br>0389/19<br>0552/29<br>0397/32<br>0334/38<br>0484/43 |
| MANT1 | 0302/02<br>0205/22<br>0258/23                                                                           | 0095/19<br>0212/22<br>0262/23                                                                              | 0287/19<br>0232/22<br>0268/23                                                                              | 0059/22<br>0244/22<br>0279/23                                                                              | 0092/22<br>0249/22<br>0145/25                                                                              | 0168/22<br>0317/22                                                                                         | 0191/22<br>0332/22                                                                                         |
| MANT2 | 0303/02<br>0202/22<br>0147/25                                                                           | 0097/19<br>0213/22                                                                                         | 0288/19<br>0233/22                                                                                         | 0060/22<br>0323/22                                                                                         | 0088/22<br>0331/22                                                                                         | 0169/22<br>0335/22                                                                                         | 0197/22<br>0284/23                                                                                         |
| MAT10 | 0074/04                                                                                                 | 0084/04                                                                                                    |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |                                                                                                            |



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CROSS-REFERENCE SYMBOL TABLE

|       |                                       |                               |                               |                               |                               |                               |                               |
|-------|---------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| MAT11 | 0083/04                               | 0069/04                       |                               |                               |                               |                               |                               |
| MAT12 | 0054/04                               | 0067/04                       |                               |                               |                               |                               |                               |
| MAT13 | 0068/04                               | 0047/04                       |                               |                               |                               |                               |                               |
| MATFN | 0525/04                               | 0108/04                       |                               |                               |                               |                               |                               |
| MATFS | 0521/22                               | 0525/04                       |                               |                               |                               |                               |                               |
| MATIU | 0526/04                               | 0017/04                       |                               |                               |                               |                               |                               |
| MATOP | 0009/07                               | 0072/08                       |                               |                               |                               |                               |                               |
| MATS  | 0007/04                               | 0535/05                       |                               |                               |                               |                               |                               |
| MATS1 | 0033/04                               | 0024/04                       | 0026/04                       | 0028/04                       | 0042/04                       |                               |                               |
| MATS2 | 0043/04                               | 0022/04                       |                               |                               |                               |                               |                               |
| MATS3 | 0089/04                               | 0010/04                       |                               |                               |                               |                               |                               |
| MATS4 | 0130/04                               | 0122/04                       |                               |                               |                               |                               |                               |
| MATS5 | 0141/04                               | 0101/04                       |                               |                               |                               |                               |                               |
| MATS6 | 0149/04                               | 0103/04                       |                               |                               |                               |                               |                               |
| MATS7 | 0162/04                               | 0176/04                       |                               |                               |                               |                               |                               |
| MATS8 | 0170/04                               | 0166/04                       |                               |                               |                               |                               |                               |
| MATS9 | 0172/04                               | 0161/04                       |                               |                               |                               |                               |                               |
| MAXCR | 0339/02<br>0207/05                    | 0285/03<br>0239/05            | 0293/03<br>0219/06            | 0506/03                       | 0540/03                       | 0016/04                       | 0202/04                       |
| MAXE  | 0433/02<br>0094/18<br>0217/18         | 0035/18<br>0136/18<br>0220/18 | 0036/18<br>0144/18<br>0268/18 | 0043/18<br>0155/18<br>0273/18 | 0079/18<br>0168/18            | 0080/18<br>0201/18            | 0089/18<br>0204/18            |
| MAXFX | 0031/19                               | 0086/19                       |                               |                               |                               |                               |                               |
| MAXSN | 0413                                  | 0117/06                       | 0171/40                       |                               |                               |                               |                               |
| MB    | 0054/21                               | 0031/21                       |                               |                               |                               |                               |                               |
| MBUST | 0521                                  | 0190/29                       | 0175/30                       | 0178/30                       |                               |                               |                               |
| MBUSY | 0110<br>0542/35<br>0282/38<br>0175/58 | 0174/03<br>0584/35<br>0329/38 | 0221/15<br>0137/36<br>0361/38 | 0497/15<br>0307/36<br>0401/38 | 0191/29<br>0151/38<br>0678/57 | 0160/30<br>0200/38<br>0722/57 | 0173/30<br>0268/38<br>0136/58 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                  |                                                  |                                                     |                                                     |                                                     |                                                     |                                                     |
|-------|--------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| MESS2 | 0144/45                                          | 0151/45                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MESS4 | 0153/45                                          | 0147/45                                          | 0150/45                                             |                                                     |                                                     |                                                     |                                                     |
| MESWK | 0196/45                                          | 0158/45                                          | 0169/45                                             |                                                     |                                                     |                                                     |                                                     |
| MEXIT | 0418/02                                          | 0163/17                                          | 0256/17                                             | 0040/18                                             | 0056/18                                             |                                                     |                                                     |
| MHAD  | 0106<br>0084/47                                  | 0134/31<br>0387/49                               | 0302/42<br>0045/53                                  | 0469/42<br>0056/54                                  | 0547/42                                             | 0353/46                                             | 0009/47                                             |
| MID   | 0043                                             | 0291/33                                          | 0085/50                                             | 0215/51                                             | 0257/51                                             |                                                     |                                                     |
| MINFX | 0030/19                                          | 0091/19                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MINP1 | 0005/17                                          | 0083/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MINP2 | 0004/17                                          | 0085/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI01  | 0046/17                                          | 0154/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI02  | 0098/17                                          | 0066/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI03  | 0128/17                                          | 0111/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI04  | 0117/17                                          | 0122/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI05  | 0132/17                                          | 0140/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI06  | 0135/17                                          | 0131/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI07  | 0149/17                                          | 0628/11                                          | 0096/17                                             | 0123/17                                             |                                                     |                                                     |                                                     |
| MI08  | 0130/17                                          | 0145/17                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MI09  | 0089/17                                          | 0077/17                                          | 0095/17                                             |                                                     |                                                     |                                                     |                                                     |
| MI0EN | 0628/11                                          | 0255/10                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| ML819 | 0546/55                                          | 0513/55                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MLDIR | 0527/54                                          | 0174/54                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MLFLA | 0024/33                                          | 0055/55                                          |                                                     |                                                     |                                                     |                                                     |                                                     |
| MLIBD | 0395<br>0390/44<br>0625/57                       | 0254/31<br>0645/45                               | 0361/31<br>0057/46                                  | 0261/36<br>0088/51                                  | 0338/37<br>0323/52                                  | 0737/39<br>0275/56                                  | 0366/41<br>0222/57                                  |
| MLINK | 0178<br>0561/28<br>0333/30<br>0508/30<br>0056/33 | 0181<br>0688/28<br>0360/30<br>0509/30<br>0075/33 | 0084/07<br>0008/29<br>0369/30<br>0520/30<br>0098/33 | 0349/07<br>0014/29<br>0381/30<br>0530/30<br>0119/33 | 0386/07<br>0165/29<br>0386/30<br>0231/32<br>0152/33 | 0421/09<br>0187/30<br>0451/30<br>0259/32<br>0254/33 | 0379/19<br>0188/30<br>0455/30<br>0265/32<br>0352/33 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0397/33 | 0413/33 | 0415/33 | 0440/33 | 0462/33 | 0502/33 | 0530/33 |
|       | 0209/34 | 0339/34 | 0024/35 | 0187/35 | 0392/35 | 0566/35 | 0589/35 |
|       | 0019/36 | 0382/36 | 0012/38 | 0182/38 | 0205/38 | 0261/38 | 0332/38 |
|       | 0411/38 | 0423/38 | 0435/38 | 0008/39 | 0041/39 | 0053/39 | 0214/39 |
|       | 0226/39 | 0244/39 | 0331/39 | 0405/39 | 0414/39 | 0432/39 | 0453/39 |
|       | 0542/39 | 0593/39 | 0600/39 | 0822/39 | 0015/40 | 0021/40 | 0324/40 |
|       | 0477/40 | 0540/40 | 0030/41 | 0153/41 | 0177/41 | 0274/41 | 0300/41 |
|       | 0316/41 | 0326/41 | 0353/41 | 0395/41 | 0426/41 | 0575/41 | 0630/41 |
|       | 0008/42 | 0024/42 | 0033/42 | 0057/42 | 0116/42 | 0177/42 | 0240/42 |
|       | 0560/42 | 0692/42 | 0704/42 | 0477/43 | 0482/43 | 0541/43 | 0012/44 |
|       | 0095/44 | 0110/44 | 0454/44 | 0466/44 | 0476/44 | 0478/44 | 0486/44 |
|       | 0007/45 | 0086/45 | 0121/45 | 0208/45 | 0269/45 | 0548/45 | 0560/45 |
|       | 0183/49 |         |         |         |         |         |         |
| MLK1  | 0031/54 | 0027/54 |         |         |         |         |         |
| MLK10 | 0151/54 | 0140/54 | 0152/54 | 0154/54 |         |         |         |
| MLK11 | 0175/54 | 0184/54 |         |         |         |         |         |
| MLK12 | 0180/54 | 0245/54 |         |         |         |         |         |
| MLK13 | 0185/54 | 0179/54 |         |         |         |         |         |
| MLK14 | 0199/54 | 0243/54 |         |         |         |         |         |
| MLK15 | 0239/54 | 0205/54 |         |         |         |         |         |
| MLK16 | 0246/54 | 0236/54 |         |         |         |         |         |
| MLK17 | 0224/54 | 0206/54 |         |         |         |         |         |
| MLK2  | 0044/54 | 0025/54 | 0035/54 | 0066/54 | 0080/54 | 0084/54 |         |
| MLK20 | 0255/54 | 0183/54 |         |         |         |         |         |
| MLK21 | 0270/54 | 0303/54 |         |         |         |         |         |
| MLK22 | 0279/54 | 0298/54 |         |         |         |         |         |
| MLK23 | 0300/54 | 0274/54 |         |         |         |         |         |
| MLK24 | 0306/54 | 0291/54 |         |         |         |         |         |
| MLK25 | 0295/54 | 0287/54 |         |         |         |         |         |
| MLK26 | 0324/54 | 0320/54 |         |         |         |         |         |
| MLK3  | 0049/54 | 0029/54 |         |         |         |         |         |
| MLK30 | 0517/54 | 0258/54 | 0304/54 |         |         |         |         |
| MLK4  | 0053/54 | 0043/54 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |
|-------|---------|---------|---------|---------|
| MLK40 | 0167/55 | 0260/55 |         |         |
| MLK41 | 0183/55 | 0239/55 |         |         |
| MLK42 | 0217/55 | 0208/55 | 0212/55 |         |
| MLK43 | 0240/55 | 0236/55 |         |         |
| MLK5  | 0067/54 | 0073/54 |         |         |
| MLK50 | 0274/55 | 0288/55 |         |         |
| MLK51 | 0284/55 | 0279/55 |         |         |
| MLK57 | 0308/55 | 0324/55 |         |         |
| MLK58 | 0325/55 | 0311/55 |         |         |
| MLK59 | 0298/55 | 0163/55 |         |         |
| MLK6  | 0099/54 | 0090/54 |         |         |
| MLK60 | 0334/55 | 0348/55 |         |         |
| MLK61 | 0352/55 | 0340/55 |         |         |
| MLK62 | 0366/55 | 0359/55 |         |         |
| MLK63 | 0381/55 | 0426/55 | 0427/55 |         |
| MLK64 | 0406/55 | 0350/55 | 0384/55 | 0390/55 |
| MLK65 | 0424/55 | 0342/55 |         |         |
| MLK66 | 0362/55 | 0396/55 | 0398/55 |         |
| MLK67 | 0403/55 | 0361/55 |         |         |
| MLK7  | 0113/54 | 0122/54 |         |         |
| MLK71 | 0035/55 | 0048/55 |         |         |
| MLK72 | 0051/55 | 0117/55 |         |         |
| MLK73 | 0056/55 | 0042/55 |         |         |
| MLK74 | 0066/55 | 0109/55 | 0112/55 | 0136/55 |
| MLK75 | 0088/55 | 0083/55 |         |         |
| MLK76 | 0093/55 | 0102/55 |         |         |
| MLK77 | 0103/55 | 0095/55 | 0098/55 |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                    |                    |                    |                    |                    |                    |  |
|-------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--|
| MLK78 | 0110/55                       | 0044/55            |                    |                    |                    |                    |                    |  |
| MLK79 | 0120/55                       | 0129/55            |                    |                    |                    |                    |                    |  |
| MLK8  | 0117/54                       | 0112/54            | 0118/54            | 0120/54            |                    |                    |                    |  |
| MLK80 | 0130/55                       | 0124/55            |                    |                    |                    |                    |                    |  |
| MLK81 | 0137/55                       | 0038/55            |                    |                    |                    |                    |                    |  |
| MLK82 | 0145/55                       | 0050/55            | 0060/55            | 0071/55            | 0080/55            | 0139/55            |                    |  |
| MLK9  | 0147/54                       | 0156/54            |                    |                    |                    |                    |                    |  |
| MLK98 | 0414/55                       | 0351/55            |                    |                    |                    |                    |                    |  |
| MLK99 | 0419/55                       | 0062/55            |                    |                    |                    |                    |                    |  |
| MLKBR | 0573/54<br>0090/55<br>0314/55 | 0421/54<br>0108/55 | 0423/54<br>0113/55 | 0479/54<br>0123/55 | 0488/54<br>0192/55 | 0489/54<br>0224/55 | 0491/54<br>0228/55 |  |
| MLKC1 | 0441/54                       | 0431/54            |                    |                    |                    |                    |                    |  |
| MLKC2 | 0449/54                       | 0440/54            |                    |                    |                    |                    |                    |  |
| MLKC3 | 0466/54                       | 0530/54            |                    |                    |                    |                    |                    |  |
| MLKC4 | 0472/54                       | 0446/54            |                    |                    |                    |                    |                    |  |
| MLKC5 | 0468/54                       | 0437/54            |                    |                    |                    |                    |                    |  |
| MLKCK | 0417/54<br>0427/54            | 0116/54<br>0435/54 | 0150/54<br>0444/54 | 0203/54<br>0473/54 | 0323/54<br>0474/54 | 0420/54<br>0475/54 | 0422/54            |  |
| MLKCT | 0555/54<br>0263/54            | 0109/54<br>0302/54 | 0121/54<br>0164/55 | 0127/54<br>0234/55 | 0155/54<br>0258/55 | 0189/54<br>0265/55 | 0242/54<br>0287/55 |  |
| MLKD. | 0526/54                       | 0104/54            |                    |                    |                    |                    |                    |  |
| MLKD3 | 0530/54                       | 0452/54            |                    |                    |                    |                    |                    |  |
| MLKDI | 0569/54<br>0169/55            | 0176/54<br>0231/55 | 0190/54<br>0233/55 | 0225/54<br>0238/55 | 0244/54<br>0245/55 | 0278/54            | 0297/54            |  |
| MLKDP | 0204/54                       | 0200/54            | 0207/54            | 0228/54            | 0240/54            |                    |                    |  |
| MLKDS | 0390/54                       | 0064/54            | 0071/54            | 0078/54            | 0396/54            |                    |                    |  |
| MLKDU | 0528/54                       | 0182/54            |                    |                    |                    |                    |                    |  |
| MLKE1 | 0485/55                       | 0468/55            |                    |                    |                    |                    |                    |  |
| MLKE2 | 0488/55                       | 0483/55            |                    |                    |                    |                    |                    |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                          |                                          |                                          |                                          |                                          |                                          |
|-------|-----------------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| MLKE3 | 0538/55                                             | 0508/55                                  | 0510/55                                  | 0514/55                                  |                                          |                                          |                                          |
| MLKEC | 0478/54                                             | 0442/54                                  | 0469/54                                  | 0495/54                                  | 0497/54                                  | 0500/54                                  | 0501/54                                  |
| MLKER | 0400/54                                             | 0046/54                                  | 0092/54                                  | 0248/54                                  | 0404/54                                  | 0463/54                                  |                                          |
| MLKEX | 0571/54                                             | 0418/54                                  | 0436/54                                  | 0445/54                                  |                                          |                                          |                                          |
| MLKFA | 0567/54<br>0131/55                                  | 0081/54<br>0140/55                       | 0451/54<br>0441/55                       | 0455/54                                  | 0458/54                                  | 0460/54                                  | 0040/55                                  |
| MLKFB | 0574/54<br>0443/54<br>0464/55                       | 0033/54<br>0447/54                       | 0039/54<br>0448/54                       | 0040/54<br>0306/55                       | 0051/54<br>0317/55                       | 0076/54<br>0320/55                       | 0428/54<br>0327/55                       |
| MLKFL | 0066/32                                             | 0024/33                                  |                                          |                                          |                                          |                                          |                                          |
| MLKIN | 0557/54<br>0335/54<br>0380/54<br>0549/54<br>0502/55 | 0032/54<br>0347/54<br>0383/54<br>0562/54 | 0050/54<br>0348/54<br>0424/54<br>0026/55 | 0059/54<br>0351/54<br>0438/54<br>0307/55 | 0077/54<br>0354/54<br>0439/54<br>0326/55 | 0133/54<br>0360/54<br>0494/54<br>0386/55 | 0334/54<br>0361/54<br>0546/54<br>0465/55 |
| MLKIP | 0562/54                                             | 0135/54                                  | 0027/55                                  | 0146/55                                  |                                          |                                          |                                          |
| MLKLA | 0566/54                                             | 0075/54                                  | 0453/54                                  | 0511/54                                  | 0512/54                                  | 0446/55                                  |                                          |
| MLKLB | 0556/54<br>0529/55                                  | 0063/54                                  | 0432/54                                  | 0470/54                                  | 0387/55                                  | 0404/55                                  | 0503/55                                  |
| MLKLN | 0558/54                                             | 0055/54                                  | 0058/55                                  | 0063/55                                  | 0134/55                                  | 0143/55                                  | 0355/55                                  |
| MLKLP | 0568/54                                             | 0058/54                                  | 0068/54                                  | 0070/54                                  | 0085/54                                  | 0391/54                                  | 0020/55                                  |
| MLKLY | 0544/55                                             | 0114/55                                  |                                          |                                          |                                          |                                          |                                          |
| MLKLZ | 0543/55                                             | 0046/55                                  | 0067/55                                  | 0094/55                                  |                                          |                                          |                                          |
| MLKN1 | 0336/54                                             | 0365/54                                  |                                          |                                          |                                          |                                          |                                          |
| MLKN2 | 0367/54                                             | 0338/54                                  | 0342/54                                  | 0345/54                                  |                                          |                                          |                                          |
| MLKND | 0553/54<br>0380/55                                  | 0174/55<br>0383/55                       | 0241/55<br>0512/55                       | 0331/55<br>0518/55                       | 0346/55                                  | 0371/55                                  | 0378/55                                  |
| MLKNM | 0505/54                                             | 0454/54                                  | 0459/54                                  | 0461/54                                  | 0513/54                                  |                                          |                                          |
| MLKNO | 0330/54                                             | 0024/54                                  | 0034/54                                  | 0366/54                                  | 0369/54                                  | 0370/54                                  |                                          |
| MLKP1 | 0458/55                                             | 0435/55                                  | 0443/55                                  |                                          |                                          |                                          |                                          |
| MLKPB | 0433/55                                             | 0049/55                                  | 0111/55                                  | 0138/55                                  | 0456/55                                  | 0459/55                                  | 0460/55                                  |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
|-------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| MLKPE | 0463/55                                                                                                                          | 0349/55                                                                                                                          | 0425/55                                                                                                                          | 0486/55                                                                                                                          | 0487/55                                                                                                               | 0537/55                                                                                                               | 0542/55                                                                                                               |
| MLKPP | 0552/54<br>0107/55                                                                                                               | 0554/54<br>0118/55                                                                                                               | 0091/55<br>0122/55                                                                                                               | 0099/55<br>0127/55                                                                                                               | 0100/55<br>0128/55                                                                                                    | 0105/55                                                                                                               | 0106/55                                                                                                               |
| MLKRD | 0559/54<br>0223/54                                                                                                               | 0169/54<br>0309/55                                                                                                               | 0209/54<br>0321/55                                                                                                               | 0211/54                                                                                                                          | 0213/54                                                                                                               | 0214/54                                                                                                               | 0222/54                                                                                                               |
| MLKRP | 0560/54                                                                                                                          | 0168/54                                                                                                                          | 0310/55                                                                                                                          |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLKTC | 0565/54<br>0277/54                                                                                                               | 0129/54<br>0161/55                                                                                                               | 0145/54<br>0264/55                                                                                                               | 0171/54<br>0415/55                                                                                                               | 0238/54                                                                                                               | 0256/54                                                                                                               | 0259/54                                                                                                               |
| MLKTI | 0572/54                                                                                                                          | 0419/54                                                                                                                          | 0480/54                                                                                                                          |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLKTP | 0570/54<br>0233/54<br>0293/54<br>0346/54<br>0184/55<br>0206/55<br>0281/55<br>0363/55<br>0394/55<br>0474/55<br>0494/55<br>0531/55 | 0173/54<br>0237/54<br>0294/54<br>0357/54<br>0189/55<br>0219/55<br>0285/55<br>0365/55<br>0399/55<br>0475/55<br>0496/55<br>0536/55 | 0226/54<br>0269/54<br>0299/54<br>0368/54<br>0191/55<br>0220/55<br>0333/55<br>0367/55<br>0400/55<br>0477/55<br>0497/55<br>0539/55 | 0227/54<br>0271/54<br>0301/54<br>0401/54<br>0193/55<br>0237/55<br>0335/55<br>0382/55<br>0402/55<br>0481/55<br>0521/55<br>0541/55 | 0229/54<br>0282/54<br>0308/54<br>0408/54<br>0201/55<br>0275/55<br>0343/55<br>0385/55<br>0405/55<br>0484/55<br>0526/55 | 0230/54<br>0288/54<br>0317/54<br>0166/55<br>0202/55<br>0276/55<br>0345/55<br>0391/55<br>0466/55<br>0489/55<br>0528/55 | 0232/54<br>0290/54<br>0332/54<br>0168/55<br>0205/55<br>0277/55<br>0353/55<br>0392/55<br>0473/55<br>0493/55<br>0530/55 |
| MLKTS | 0375/54                                                                                                                          | 0041/54                                                                                                                          | 0384/54                                                                                                                          | 0395/54                                                                                                                          |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLKTH | 0541/54<br>0480/55                                                                                                               | 0429/54<br>0492/55                                                                                                               | 0433/54<br>0504/55                                                                                                               | 0498/54                                                                                                                          | 0550/54                                                                                                               | 0336/55                                                                                                               | 0388/55                                                                                                               |
| MLKUI | 0545/55                                                                                                                          | 0417/55                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLKXB | 0554/54                                                                                                                          | 0448/55                                                                                                                          | 0453/55                                                                                                                          | 0471/55                                                                                                                          | 0499/55                                                                                                               | 0511/55                                                                                                               | 0533/55                                                                                                               |
| MLOOP | 0245/17                                                                                                                          | 0255/17                                                                                                                          | 0376/17                                                                                                                          | 0041/18                                                                                                                          |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLOP1 | 0247/17                                                                                                                          | 0247/18                                                                                                                          | 0251/18                                                                                                                          |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLOP2 | 0249/17                                                                                                                          | 0012/17                                                                                                                          | 0262/18                                                                                                                          |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLOP3 | 0251/17                                                                                                                          | 0013/17                                                                                                                          | 0254/18                                                                                                                          | 0258/18                                                                                                                          |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLP2A | 0012/17                                                                                                                          | 0174/17                                                                                                                          | 0275/18                                                                                                                          |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MLP3A | 0013/17                                                                                                                          | 0370/17                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MM4   | 0323/20                                                                                                                          | 0297/20                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MM72  | 0008/19                                                                                                                          | 0437/19                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |
| MM74  | 0009/19                                                                                                                          | 0341/19                                                                                                                          |                                                                                                                                  |                                                                                                                                  |                                                                                                                       |                                                                                                                       |                                                                                                                       |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                              |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |
|-------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| MM80  | 0585/52                                                                                      | 0091/52                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |
| MMT0  | 0419/02<br>0210/18                                                                           | 0264/17                                                                                         | 0316/17                                                                                         | 0403/17                                                                                         | 0013/18                                                                                         | 0071/18                                                                                         | 0161/18                                                                                         |
| MMT1  | 0420/02<br>0188/18                                                                           | 0271/17<br>0232/18                                                                              | 0310/17                                                                                         | 0397/17                                                                                         | 0413/17                                                                                         | 0081/18                                                                                         | 0145/18                                                                                         |
| MMT2  | 0421/02<br>0072/18                                                                           | 0272/17<br>0134/18                                                                              | 0306/17<br>0162/18                                                                              | 0311/17<br>0230/18                                                                              | 0398/17                                                                                         | 0414/17                                                                                         | 0011/18                                                                                         |
| MMT3  | 0422/02<br>0098/18                                                                           | 0283/17<br>0229/18                                                                              | 0314/17<br>0239/18                                                                              | 0390/17                                                                                         | 0404/17                                                                                         | 0009/18                                                                                         | 0074/18                                                                                         |
| MMT4  | 0423/02<br>0096/18                                                                           | 0284/17<br>0107/18                                                                              | 0312/17<br>0211/18                                                                              | 0315/17<br>0226/18                                                                              | 0410/17                                                                                         | 0416/17                                                                                         | 0077/18                                                                                         |
| MMT5  | 0424/02<br>0117/18<br>0191/18                                                                | 0287/17<br>0126/18<br>0206/18                                                                   | 0304/17<br>0127/18                                                                              | 0082/18<br>0148/18                                                                              | 0099/18<br>0157/18                                                                              | 0105/18<br>0163/18                                                                              | 0114/18<br>0172/18                                                                              |
| MMT6  | 0425/02<br>0113/18<br>0152/18<br>0171/18<br>0224/18                                          | 0274/17<br>0116/18<br>0153/18<br>0193/18<br>0225/18                                             | 0320/17<br>0119/18<br>0156/18<br>0194/18                                                        | 0083/18<br>0128/18<br>0160/18<br>0195/18                                                        | 0084/18<br>0129/18<br>0164/18<br>0200/18                                                        | 0095/18<br>0150/18<br>0169/18<br>0209/18                                                        | 0097/18<br>0151/18<br>0170/18<br>0212/18                                                        |
| MMT7  | 0426/02<br>0131/18                                                                           | 0277/17<br>0183/18                                                                              | 0323/17<br>0184/18                                                                              | 0103/18<br>0196/18                                                                              | 0120/18<br>0197/18                                                                              | 0123/18<br>0202/18                                                                              | 0130/18<br>0205/18                                                                              |
| MMT8  | 0427/02<br>0133/18                                                                           | 0292/17<br>0180/18                                                                              | 0325/17<br>0228/18                                                                              | 0111/18                                                                                         | 0122/18                                                                                         | 0125/18                                                                                         | 0132/18                                                                                         |
| MNEG  | 0497                                                                                         | 0504                                                                                            | 0298/02                                                                                         | 0046/21                                                                                         | 0015/22                                                                                         | 0295/22                                                                                         | 0298/22                                                                                         |
| MOLEN | 0529/54                                                                                      | 0518/54                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |
| MOP   | 0417/02                                                                                      | 0175/17                                                                                         | 0210/17                                                                                         | 0246/17                                                                                         | 0375/17                                                                                         | 0038/18                                                                                         |                                                                                                 |
| MORG  | 0533/54                                                                                      | 0524/54                                                                                         | 0529/54                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |
| MOVEB | 0197/33<br>0320/44                                                                           | 0418/32<br>0360/50                                                                              | 0750/32<br>0522/55                                                                              | 0199/33<br>0196/56                                                                              | 0208/33<br>0256/57                                                                              | 0188/36                                                                                         | 0357/37                                                                                         |
| MOVED | 0041<br>0201/33<br>0194/36<br>0207/36<br>0352/37<br>0373/37<br>0640/39<br>0469/43<br>0334/44 | 0208/31<br>0203/33<br>0198/36<br>0208/36<br>0360/37<br>0375/37<br>0746/39<br>0475/43<br>0336/44 | 0251/31<br>0204/33<br>0200/36<br>0210/36<br>0366/37<br>0376/37<br>0757/39<br>0316/44<br>0337/44 | 0358/31<br>0214/33<br>0201/36<br>0211/36<br>0367/37<br>0378/37<br>0574/41<br>0326/44<br>0339/44 | 0407/31<br>0216/33<br>0202/36<br>0222/36<br>0369/37<br>0379/37<br>0694/42<br>0330/44<br>0340/44 | 0091/32<br>0166/36<br>0204/36<br>0258/36<br>0370/37<br>0447/37<br>0708/42<br>0331/44<br>0342/44 | 0297/32<br>0184/36<br>0205/36<br>0169/37<br>0372/37<br>0481/37<br>0455/43<br>0333/44<br>0344/44 |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0354/44 | 0387/44 | 0550/45 | 0564/45 | 0603/45 | 0037/46 | 0254/46 |
|       | 0707/48 | 0044/49 | 0485/49 | 0098/50 | 0134/50 | 0357/50 | 0364/50 |
|       | 0478/50 | 0085/51 | 0175/51 | 0306/51 | 0363/51 | 0556/51 | 0566/51 |
|       | 0586/51 | 0587/51 | 0588/51 | 0677/51 | 0312/52 | 0327/52 | 0393/52 |
|       | 0454/52 | 0565/52 | 0302/53 | 0403/54 | 0182/55 | 0249/55 | 0368/55 |
|       | 0517/55 | 0176/56 | 0192/56 | 0202/56 | 0206/56 | 0208/56 | 0209/56 |
|       | 0210/56 | 0212/56 | 0213/56 | 0215/56 | 0216/56 | 0218/56 | 0219/56 |
|       | 0230/56 | 0272/56 | 0455/56 | 0132/57 | 0206/57 | 0230/57 | 0252/57 |
|       | 0262/57 | 0256/57 | 0268/57 | 0269/57 | 0270/57 | 0272/57 | 0273/57 |
|       | 0275/57 | 0276/57 | 0278/57 | 0279/57 | 0290/57 | 0622/57 | 0719/57 |
|       | 0172/58 | 0367/58 | 0410/58 | 0463/58 | 0475/58 | 0498/58 | 0526/58 |
|       | 0540/58 | 0546/58 |         |         |         |         |         |
| MOVER | 0182/02 | 0328/02 | 0396/02 | 0405/02 | 0468/07 | 0085/10 | 0194/16 |
|       | 0220/16 | 0272/16 | 0293/16 |         |         |         |         |
| MOVES | 0040    | 0206/31 | 0253/31 | 0360/31 | 0405/31 | 0093/32 | 0355/32 |
|       | 0200/33 | 0206/33 | 0207/33 | 0213/33 | 0215/33 | 0021/36 | 0026/36 |
|       | 0182/36 | 0191/36 | 0226/36 | 0260/36 | 0145/37 | 0165/37 | 0354/37 |
|       | 0362/37 | 0450/37 | 0483/37 | 0735/39 | 0751/39 | 0577/41 | 0696/42 |
|       | 0706/42 | 0459/43 | 0466/43 | 0468/43 | 0314/44 | 0323/44 | 0358/44 |
|       | 0389/44 | 0552/45 | 0562/45 | 0605/45 | 0035/46 | 0252/46 | 0705/48 |
|       | 0042/49 | 0483/49 | 0100/50 | 0105/50 | 0132/50 | 0359/50 | 0362/50 |
|       | 0366/50 | 0480/50 | 0087/51 | 0173/51 | 0308/51 | 0346/51 | 0352/51 |
|       | 0559/51 | 0567/51 | 0572/51 | 0675/51 | 0321/52 | 0392/52 | 0430/52 |
|       | 0434/52 | 0448/52 | 0458/52 | 0567/52 | 0304/53 | 0405/54 | 0181/55 |
|       | 0226/55 | 0230/55 | 0243/55 | 0253/55 | 0370/55 | 0515/55 | 0178/56 |
|       | 0190/56 | 0199/56 | 0234/56 | 0274/56 | 0453/56 | 0130/57 | 0220/57 |
|       | 0235/57 | 0250/57 | 0259/57 | 0295/57 | 0624/57 | 0717/57 | 0170/58 |
|       | 0369/58 | 0409/58 | 0447/58 | 0451/58 | 0461/58 | 0473/58 | 0492/58 |
|       | 0502/58 | 0525/58 | 0538/58 | 0544/58 | 0550/58 |         |         |
| MOVEW | 0210/33 | 0419/32 | 0751/32 | 0212/33 | 0217/33 | 0168/36 | 0196/36 |
|       | 0231/36 | 0263/36 | 0170/37 | 0364/37 | 0452/37 | 0484/37 | 0738/39 |
|       | 0759/39 | 0827/39 | 0579/41 | 0698/42 | 0710/42 | 0474/43 | 0328/44 |
|       | 0363/44 | 0392/44 | 0554/45 | 0566/45 | 0607/45 | 0039/46 | 0257/46 |
|       | 0710/48 | 0046/49 | 0488/49 | 0103/50 | 0107/50 | 0136/50 | 0368/50 |
|       | 0481/50 | 0090/51 | 0177/51 | 0313/51 | 0364/51 | 0576/51 | 0678/51 |
|       | 0325/52 | 0431/52 | 0449/52 | 0462/52 | 0569/52 | 0306/53 | 0407/54 |
|       | 0227/55 | 0244/55 | 0257/55 | 0374/55 | 0180/56 | 0204/56 | 0239/56 |
|       | 0277/56 | 0457/56 | 0134/57 | 0223/57 | 0239/57 | 0264/57 | 0299/57 |
|       | 0303/57 | 0627/57 | 0721/57 | 0174/58 | 0371/58 | 0448/58 | 0493/58 |
|       | 0506/58 | 0549/58 |         |         |         |         |         |
| MOVFB | 0418/32 | 0212/31 | 0411/31 |         |         |         |         |
| MOVFW | 0419/32 | 0256/31 | 0363/31 | 0095/32 | 0357/32 |         |         |
| MP2   | 0437/20 | 0431/20 |         |         |         |         |         |
| MPR1  | 0293/17 | 0327/17 |         |         |         |         |         |
| MPR2  | 0295/17 | 0307/17 |         |         |         |         |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |         |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|---------|---------|---------|
| MPR3  | 0319/17            | 0313/17            |                    |                    |         |         |         |
| MPR4  | 0325/17            | 0317/17            |                    |                    |         |         |         |
| MPT   | 0461/02            | 0196/14            | 0213/14            | 0216/14            | 0228/14 |         |         |
| MRELS | 0365/22            | 0245/05            |                    |                    |         |         |         |
| MSFLG | 0530/04<br>0382/04 | 0291/03<br>0421/04 | 0311/03<br>0452/04 | 0252/04<br>0050/05 | 0286/04 | 0308/04 | 0324/04 |
| MSQBG | 0198               | 0161/03            | 0215/28            | 0043/29            | 0164/45 |         |         |
| MSQCT | 0194<br>0111/45    | 0153/03<br>0160/45 | 0156/03            | 0208/28            | 0211/28 | 0033/29 | 0039/29 |
| MSQHD | 0490/25            | 0195               | 0196               | 0197               | 0198    |         |         |
| MSQND | 0197               | 0160/03            | 0214/28            | 0042/29            | 0163/45 |         |         |
| MSQP1 | 0195               | 0212/28            | 0216/28            | 0040/29            | 0044/29 |         |         |
| MSQP2 | 0198/45<br>0185/45 | 0120/45<br>0192/45 | 0130/45            | 0131/45            | 0133/45 | 0134/45 | 0137/45 |
| MSQP3 | 0196<br>0165/45    | 0157/03            | 0158/03            | 0162/03            | 0115/45 | 0157/45 | 0161/45 |
| MSSCT | 0197/45            | 0139/45            | 0146/45            | 0156/45            | 0193/45 |         |         |
| MSUB  | 0249/18            | 0015/17            |                    |                    |         |         |         |
| MSUBA | 0015/17            | 0209/17            |                    |                    |         |         |         |
| MT0   | 0413/02<br>0153/17 | 0042/17            | 0081/17            | 0084/17            | 0106/17 | 0115/17 | 0144/17 |
| MT1   | 0414/02            | 0040/17            | 0064/17            | 0076/17            | 0156/17 |         |         |
| MT2   | 0415/02            | 0130/17            | 0139/17            |                    |         |         |         |
| MT3   | 0416/02            | 0129/17            | 0143/17            |                    |         |         |         |
| MTG1  | 0204/02            | 0207/24            | 0240/24            | 0155/25            | 0248/25 | 0250/25 |         |
| MTOPR | 0467/40            | 0406/40            |                    |                    |         |         |         |
| MULEN | 0463               | 0280/30            |                    |                    |         |         |         |
| MULOP | 0361               | 0160/04            | 0201/17            |                    |         |         |         |
| MUN1  | 0020/53            | 0016/53            |                    |                    |         |         |         |
| MUN10 | 0101/53            | 0114/53            |                    |                    |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| MUN11 | 0115/53 | 0104/53 |         |         |         |         |         |
| MUN12 | 0119/53 | 0108/53 |         |         |         |         |         |
| MUN13 | 0137/53 | 0125/53 | 0178/53 | 0180/53 |         |         |         |
| MUN14 | 0146/53 | 0155/53 |         |         |         |         |         |
| MUN15 | 0156/53 | 0148/53 | 0151/53 |         |         |         |         |
| MUN16 | 0166/53 | 0222/53 | 0223/53 |         |         |         |         |
| MUN17 | 0195/53 | 0117/53 | 0136/53 | 0169/53 | 0174/53 |         |         |
| MUN18 | 0220/53 | 0110/53 |         |         |         |         |         |
| MUN2  | 0033/53 | 0014/53 | 0024/53 | 0050/53 | 0064/53 | 0068/53 |         |
| MUN3  | 0038/53 | 0018/53 |         |         |         |         |         |
| MUN4  | 0042/53 | 0032/53 |         |         |         |         |         |
| MUN5  | 0051/53 | 0057/53 |         |         |         |         |         |
| MUN6  | 0079/53 | 0074/53 |         |         |         |         |         |
| MUNBI | 0421/53 | 0090/53 |         |         |         |         |         |
| MUNBR | 0415/53 | 0143/53 | 0161/53 | 0356/53 | 0371/53 | 0394/53 | 0404/53 |
| MUNDA | 0420/53 | 0089/53 | 0205/53 |         |         |         |         |
| MUNDS | 0289/53 | 0048/53 | 0055/53 | 0062/53 | 0295/53 |         |         |
| MUNER | 0299/53 | 0035/53 | 0076/53 | 0303/53 | 0362/53 |         |         |
| MUNFA | 0411/53 | 0065/53 | 0106/53 | 0131/53 | 0326/53 | 0338/53 | 0342/53 |
| MUNIN | 0407/53 | 0021/53 | 0039/53 | 0061/53 | 0233/53 | 0234/53 | 0246/53 |
|       | 0247/53 | 0250/53 | 0253/53 | 0259/53 | 0260/53 | 0279/53 | 0282/53 |
| MUNLA | 0412/53 | 0059/53 | 0129/53 | 0170/53 | 0190/53 | 0346/53 | 0379/53 |
| MUNLN | 0409/53 | 0044/53 | 0121/53 | 0133/53 | 0353/53 |         |         |
| MUNLY | 0423/53 | 0357/53 |         |         |         |         |         |
| MUNLZ | 0422/53 | 0112/53 | 0147/53 |         |         |         |         |
| MUNN1 | 0235/53 | 0264/53 |         |         |         |         |         |
| MUNN2 | 0266/53 | 0237/53 | 0241/53 | 0244/53 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                  |                                                     |                                                     |                                                     |                                          |                                          |                                          |
|-------|--------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| MUNNU | 0229/53                                          | 0013/53                                             | 0023/53                                             | 0265/53                                             | 0268/53                                  | 0269/53                                  |                                          |
| MUNP1 | 0330/53                                          | 0319/53                                             | 0335/53                                             |                                                     |                                          |                                          |                                          |
| MUNP2 | 0333/53                                          | 0328/53                                             |                                                     |                                                     |                                          |                                          |                                          |
| MUNP3 | 0365/53                                          | 0360/53                                             |                                                     |                                                     |                                          |                                          |                                          |
| MUNP4 | 0368/53                                          | 0377/53                                             |                                                     |                                                     |                                          |                                          |                                          |
| MUNP5 | 0378/53                                          | 0372/53                                             |                                                     |                                                     |                                          |                                          |                                          |
| MUNP6 | 0385/53                                          | 0351/53                                             |                                                     |                                                     |                                          |                                          |                                          |
| MUNPB | 0317/53                                          | 0116/53                                             | 0221/53                                             | 0331/53                                             | 0332/53                                  | 0388/53                                  |                                          |
| MUNPP | 0416/53<br>0181/53                               | 0144/53<br>0185/53                                  | 0152/53<br>0366/53                                  | 0153/53<br>0370/53                                  | 0158/53<br>0375/53                       | 0159/53<br>0376/53                       | 0160/53                                  |
| MUNRA | 0413/53                                          | 0132/53                                             | 0142/53                                             | 0189/53                                             | 0339/53                                  | 0398/53                                  |                                          |
| MUNRL | 0414/53                                          | 0134/53                                             | 0139/53                                             | 0184/53                                             | 0337/53                                  | 0354/53                                  |                                          |
| MUNRS | 0393/53                                          | 0135/53                                             | 0162/53                                             | 0192/53                                             | 0387/53                                  | 0405/53                                  |                                          |
| MUNSB | 0408/53<br>0204/53                               | 0022/53<br>0322/53                                  | 0028/53<br>0349/53                                  | 0029/53<br>0352/53                                  | 0040/53<br>0382/53                       | 0060/53<br>0401/53                       | 0088/53<br>0420/53                       |
| MUNTP | 0410/53<br>0231/53<br>0395/53                    | 0047/53<br>0245/53                                  | 0052/53<br>0256/53                                  | 0054/53<br>0267/53                                  | 0069/53<br>0290/53                       | 0082/53<br>0300/53                       | 0198/53<br>0307/53                       |
| MUNTS | 0274/53                                          | 0030/53                                             | 0283/53                                             | 0294/53                                             |                                          |                                          |                                          |
| MVEND | 0330/02                                          | 0287/16                                             | 0292/16                                             |                                                     |                                          |                                          |                                          |
| MWORD | 0111<br>0113/38<br>0431/44<br>0081/53<br>0532/57 | 0215/15<br>0193/38<br>0557/44<br>0197/53<br>0668/57 | 0490/15<br>0350/38<br>0029/47<br>0101/54<br>0072/58 | 0504/35<br>0317/39<br>0066/48<br>0124/54<br>0122/58 | 0577/35<br>0489/42<br>0082/48<br>0019/55 | 0157/36<br>0357/43<br>0404/49<br>0318/56 | 0297/36<br>0378/43<br>0415/49<br>0362/56 |
| N     | 0097/21                                          | 0451/21                                             |                                                     |                                                     |                                          |                                          |                                          |
| N1024 | 0499/50                                          | 0219/50                                             | 0230/50                                             |                                                     |                                          |                                          |                                          |
| N1025 | 0500/50                                          | 0221/50                                             | 0232/50                                             |                                                     |                                          |                                          |                                          |
| N8192 | 0501/50                                          | 0092/50                                             |                                                     |                                                     |                                          |                                          |                                          |
| NAD   | 0482/02                                          | 0093/23                                             | 0138/24                                             | 0160/24                                             | 0165/24                                  | 0199/24                                  | 0209/24                                  |
| NAM27 | 0510/40                                          | 0504/40                                             |                                                     |                                                     |                                          |                                          |                                          |

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## CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| NAMBL | 0549/40 | 0542/40 |         |         |         |         |         |
| NAME1 | 0488/40 | 0496/40 |         |         |         |         |         |
| NAME2 | 0535/40 | 0527/40 |         |         |         |         |         |
| NAMER | 0512/40 | 0488/40 | 0491/40 | 0500/40 | 0519/40 | 0537/40 |         |
| NAMFL | 0543/40 | 0546/40 |         |         |         |         |         |
| NBD   | 0483/02 | 0094/23 | 0146/24 | 0183/24 |         |         |         |
| NBLK  | 0484/02 | 0427/23 | 0021/24 | 0027/24 | 0028/24 | 0030/24 | 0034/24 |
|       | 0197/24 | 0279/24 | 0285/24 | 0293/24 | 0171/25 | 0307/25 | 0310/25 |
| NCH   | 0283/02 | 0149/11 | 0170/11 | 0177/11 | 0200/11 | 0420/16 | 0422/16 |
|       | 0430/16 | 0438/16 | 0029/23 | 0035/23 | 0061/23 | 0080/23 | 0114/23 |
|       | 0128/23 | 0325/24 | 0015/25 | 0026/25 | 0042/25 | 0095/25 | 0106/25 |
|       | 0128/25 | 0138/25 | 0366/25 |         |         |         |         |
| NDIRT | 0002    |         |         |         |         |         |         |
| NEWI# | 0154/50 | 0053/50 | 0060/50 | 0178/50 | 0180/50 |         |         |
| NEWI2 | 0126/50 | 0211/50 | 0222/50 | 0233/50 |         |         |         |
| NEWI4 | 0053/50 | 0046/50 |         |         |         |         |         |
| NEWI5 | 0090/50 | 0083/50 |         |         |         |         |         |
| NEWI6 | 0129/50 | 0087/50 |         |         |         |         |         |
| NEWI7 | 0080/50 | 0089/50 |         |         |         |         |         |
| NEWI8 | 0132/50 | 0128/50 |         |         |         |         |         |
| NEWIA | 0146/50 | 0126/50 | 0149/50 |         |         |         |         |
| NEWIB | 0149/50 | 0127/50 |         |         |         |         |         |
| NEWIE | 0150/50 | 0129/50 | 0153/50 |         |         |         |         |
| NEWIF | 0153/50 | 0130/50 |         |         |         |         |         |
| NEWIP | 0181/50 | 0035/50 | 0037/50 | 0039/50 | 0185/50 | 0189/50 | 0197/50 |
| NEWIT | 0519/50 | 0156/50 | 0165/50 | 0170/50 | 0179/50 | 0191/50 | 0196/50 |
| NEWIZ | 0179/50 | 0158/50 | 0161/50 | 0164/50 |         |         |         |
| NEXTS | 0552/03 | 0525/05 |         |         |         |         |         |
| NHBN  | 0485/02 | 0402/23 | 0406/23 | 0414/23 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                    |                    |                    |                    |                    |                    |
|-------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| NIDC2 | 0513/50                       | 0379/50            |                    |                    |                    |                    |                    |
| NIDC3 | 0514/50                       | 0294/50            |                    |                    |                    |                    |                    |
| NIDT  | 0079                          | 0209/50            |                    |                    |                    |                    |                    |
| NMBFA | 0005/19                       | 0124/19            | 0149/19            | 0230/19            |                    |                    |                    |
| NM010 | 0164/19                       | 0168/19            |                    |                    |                    |                    |                    |
| NM011 | 0174/19                       | 0160/19            | 0171/19            |                    |                    |                    |                    |
| NM012 | 0204/19                       | 0212/19            |                    |                    |                    |                    |                    |
| NM013 | 0225/19                       | 0228/19            |                    |                    |                    |                    |                    |
| NM014 | 0230/19                       | 0200/19            | 0215/19            | 0218/19            |                    |                    |                    |
| NM015 | 0233/19                       | 0241/19            |                    |                    |                    |                    |                    |
| NM016 | 0209/19                       | 0195/19            | 0199/19            |                    |                    |                    |                    |
| NMPTR | 0308/02<br>0231/19            | 0125/19<br>0237/19 | 0131/19<br>0238/19 | 0132/19            | 0142/19            | 0163/19            | 0188/19            |
| NMTMP | 0307/02<br>0219/19            | 0161/19<br>0227/19 | 0164/19<br>0233/19 | 0169/19            | 0194/19            | 0196/19            | 0206/19            |
| NORM1 | 0233/22                       | 0250/22            |                    |                    |                    |                    |                    |
| NORM2 | 0235/22                       | 0230/22            | 0239/22            | 0241/22            |                    |                    |                    |
| NORML | 0058/02                       | 0289/19            | 0099/22            | 0234/22            | 0260/22            | 0339/22            |                    |
| NOT   | 0374/22                       | 0266               |                    |                    |                    |                    |                    |
| NPORT | 0090<br>0074/52               | 0254/28<br>0156/59 | 0206/29<br>0267/59 | 0286/45<br>0427/59 | 0136/48            | 0552/48            | 0576/48            |
| NQT   | 0462/02                       | 0214/14            | 0236/14            | 0256/14            | 0262/14            |                    |                    |
| NSPTR | 0358/02<br>0095/08            | 0428/06<br>0260/08 | 0500/06<br>0289/08 | 0183/07<br>0302/08 | 0417/07            | 0033/08            | 0069/08            |
| NT0   | 0311/02                       | 0224/22            | 0227/22            |                    |                    |                    |                    |
| NT232 | 0502/50                       | 0289/50            |                    |                    |                    |                    |                    |
| NUC   | 0142                          | 0044/39            |                    |                    |                    |                    |                    |
| NUM1  | 0284/02<br>0184/24<br>0287/24 | 0088/23<br>0210/24 | 0201/23<br>0230/24 | 0203/23<br>0231/24 | 0230/23<br>0244/24 | 0251/23<br>0255/24 | 0413/23<br>0258/24 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |                    |         |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|
| NUM11 | 0146/22            | 0133/22            | 0135/22            | 0142/22            |                    |                    |         |
| NUM12 | 0151/22            | 0102/22            | 0118/22            |                    |                    |                    |         |
| NUM13 | 0164/22            | 0157/22            |                    |                    |                    |                    |         |
| NUM14 | 0168/22            | 0155/22            | 0163/22            |                    |                    |                    |         |
| NUM15 | 0175/22            | 0171/22            |                    |                    |                    |                    |         |
| NUM16 | 0182/22            | 0120/22            | 0128/22            | 0130/22            | 0145/22            |                    |         |
| NUM2  | 0285/02<br>0171/24 | 0089/23<br>0172/24 | 0197/23<br>0175/24 | 0199/23<br>0213/24 | 0231/23<br>0245/24 | 0252/23<br>0266/24 | 0153/24 |
| NUMBF | 0309/02<br>0076/19 | 0005/19<br>0084/19 | 0042/19<br>0089/19 | 0048/19<br>0094/19 | 0053/19            | 0054/19            | 0062/19 |
| NUMC1 | 0065/22            | 0103/22            |                    |                    |                    |                    |         |
| NUMC2 | 0071/22            | 0067/22            |                    |                    |                    |                    |         |
| NUMC3 | 0085/22            | 0106/22            |                    |                    |                    |                    |         |
| NUMC4 | 0099/22            | 0070/22            | 0094/22            | 0111/22            |                    |                    |         |
| NUMC5 | 0104/22            | 0086/22            |                    |                    |                    |                    |         |
| NUMC6 | 0107/22            | 0079/22            |                    |                    |                    |                    |         |
| NUMC7 | 0112/22            | 0072/22            |                    |                    |                    |                    |         |
| NUMC8 | 0127/22            | 0122/22            |                    |                    |                    |                    |         |
| NUMC9 | 0129/22            | 0125/22            |                    |                    |                    |                    |         |
| NUMCK | 0052/02<br>0182/22 | 0582/03<br>0183/22 | 0298/04            | 0248/10            | 0327/11            | 0115/22            | 0181/22 |
| NUM00 | 0103/19            | 0108/19            |                    |                    |                    |                    |         |
| NUM01 | 0054/19            | 0044/19            |                    |                    |                    |                    |         |
| NUM02 | 0082/19            | 0056/19            | 0058/19            |                    |                    |                    |         |
| NUM03 | 0094/19            | 0088/19            |                    |                    |                    |                    |         |
| NUM04 | 0111/19            | 0119/19            |                    |                    |                    |                    |         |
| NUM05 | 0120/19            | 0102/19            | 0114/19            |                    |                    |                    |         |
| NUM06 | 0129/19            | 0134/19            |                    |                    |                    |                    |         |
| NUM07 | 0143/19            | 0153/19            |                    |                    |                    |                    |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |         |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|---------|---------|---------|
| NUM08 | 0154/19            | 0150/19            |                    |                    |         |         |         |
| NUM09 | 0157/19            | 0138/19            | 0148/19            |                    |         |         |         |
| NUM0T | 0136/02<br>0198/19 | 0299/02<br>0243/19 | 0398/02<br>0265/19 | 0403/02<br>0469/21 | 0404/02 | 0020/19 | 0078/19 |
| NUMPT | 0255/02            | 0138/07            | 0150/07            | 0151/07            | 0159/07 |         |         |
| NUMW1 | 0486/02            | 0259/23            | 0280/23            | 0144/25            |         |         |         |
| NUMW2 | 0487/02            | 0285/23            | 0146/25            |                    |         |         |         |
| NWS   | 0517/50<br>0372/50 | 0288/50<br>0411/50 | 0326/50<br>0474/50 | 0332/50<br>0475/50 | 0333/50 | 0355/50 | 0370/50 |
| NWS10 | 0377/50            | 0285/50            |                    |                    |         |         |         |
| NWS11 | 0399/50            | 0291/50            | 0295/50            | 0316/50            |         |         |         |
| NWS12 | 0420/50            | 0407/50            |                    |                    |         |         |         |
| NWS13 | 0408/50            | 0427/50            |                    |                    |         |         |         |
| NWS14 | 0432/50            | 0415/50            | 0419/50            |                    |         |         |         |
| NWS15 | 0401/50            | 0465/50            |                    |                    |         |         |         |
| NWS16 | 0488/50            | 0380/50            |                    |                    |         |         |         |
| NWS17 | 0469/50            | 0435/50            |                    |                    |         |         |         |
| NWS18 | 0450/50            | 0440/50            |                    |                    |         |         |         |
| NWS5  | 0253/50            | 0246/50            |                    |                    |         |         |         |
| NWS7  | 0281/50            | 0386/50            | 0471/50            | 0482/50            |         |         |         |
| NWS8  | 0287/50            | 0303/50            | 0341/50            | 0345/50            | 0350/50 | 0373/50 |         |
| NWS9  | 0305/50            | 0299/50            |                    |                    |         |         |         |
| NWS9A | 0314/50            | 0310/50            |                    |                    |         |         |         |
| NWSB  | 0507/50<br>0463/50 | 0238/50            | 0247/50            | 0412/50            | 0416/50 | 0437/50 | 0460/50 |
| NWSID | 0510/50            | 0242/50            |                    |                    |         |         |         |
| NWSK1 | 0511/50            | 0293/50            | 0296/50            | 0301/50            | 0323/50 | 0342/50 | 0406/50 |
| NWSK2 | 0516/50            | 0297/50            | 0302/50            | 0319/50            | 0336/50 | 0337/50 | 0423/50 |



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## CROSS-REFERENCE SYMBOL TABLE

|       |                               |                    |                    |                    |                    |                    |                    |
|-------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| NWSL1 | 0512/50                       | 0378/50            | 0382/50            | 0405/50            | 0442/50            | 0454/50            |                    |
| NWSL2 | 0515/50<br>0462/50            | 0282/50            | 0384/50            | 0403/50            | 0421/50            | 0438/50            | 0461/50            |
| NWSNN | 0503/50                       | 0240/50            | 0263/50            | 0489/50            | 0491/50            | 0493/50            |                    |
| NWSP  | 0508/50<br>0404/50            | 0241/50            | 0254/50            | 0256/50            | 0264/50            | 0284/50            | 0385/50            |
| NWSS  | 0506/50<br>0457/50            | 0236/50<br>0464/50 | 0249/50<br>0470/50 | 0250/50<br>0472/50 | 0402/50<br>0479/50 | 0409/50            | 0445/50            |
| NWST  | 0509/50                       | 0215/50            | 0226/50            | 0257/50            |                    |                    |                    |
| NWSTG | 0518/50                       | 0339/50            | 0353/50            |                    |                    |                    |                    |
| NWSU  | 0202/50                       | 0093/50            |                    |                    |                    |                    |                    |
| NWSV  | 0505/50                       | 0203/50            | 0348/50            |                    |                    |                    |                    |
| NWSW  | 0224/50                       | 0213/50            |                    |                    |                    |                    |                    |
| NWTA  | 0234/50                       | 0223/50            |                    |                    |                    |                    |                    |
| NWTB  | 0243/50                       | 0258/50            |                    |                    |                    |                    |                    |
| NXTDT | 0389/02<br>0134/12<br>0176/20 | 0051/12<br>0137/12 | 0117/12<br>0138/12 | 0124/12<br>0139/12 | 0125/12<br>0148/12 | 0132/12<br>0149/12 | 0133/12<br>0169/20 |
| NXTOP | 0373                          | 0241/07            | 0134/10            |                    |                    |                    |                    |
| OCR   | 0124                          | 0315/28            | 0405/30            | 0645/40            |                    |                    |                    |
| OCTMP | 0312/02                       | 0368/19            | 0376/19            |                    |                    |                    |                    |
| OF    | 0490/04                       | 0445/03            |                    |                    |                    |                    |                    |
| OFOP  | 0405                          | 0448/03            | 0441/40            |                    |                    |                    |                    |
| OM193 | 0600/44                       | 0224/44            |                    |                    |                    |                    |                    |
| OM31  | 0602/44                       | 0577/44            |                    |                    |                    |                    |                    |
| OM507 | 0599/44                       | 0593/44            |                    |                    |                    |                    |                    |
| ONEI  | 0385                          | 0142/29            | 0221/33            | 0202/49            |                    |                    |                    |
| OP17P | 0613/44                       | 0471/44            |                    |                    |                    |                    |                    |
| OPCH1 | 0418/14                       | 0410/14            |                    |                    |                    |                    |                    |
| OPCH2 | 0420/14                       | 0428/14            |                    |                    |                    |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
|-------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| OPCH3 | 0425/14                                                                                         | 0405/14                                                                                         | 0419/14                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPCHK | 0116/02<br>0189/13<br>0485/25                                                                   | 0427/02<br>0261/13                                                                              | 0462/02<br>0186/14                                                                              | 0474/02<br>0371/14                                                                              | 0051/11<br>0389/14                                                                              | 0461/11<br>0423/14                                                                              | 0280/12<br>0421/25                                                                   |
| OPDMK | 0399<br>0062/13<br>0449/25                                                                      | 0272/08<br>0026/17                                                                              | 0048/10<br>0046/17                                                                              | 0023/11<br>0177/17                                                                              | 0193/11<br>0191/17                                                                              | 0220/11<br>0380/17                                                                              | 0343/12<br>0410/21                                                                   |
| OPDST | 0385/02<br>0048/11<br>0291/11<br>0295/12<br>0015/13<br>0050/13<br>0224/13<br>0058/14<br>0403/14 | 0225/10<br>0232/11<br>0294/11<br>0346/12<br>0024/13<br>0074/13<br>0225/13<br>0059/14<br>0420/14 | 0228/10<br>0234/11<br>0296/11<br>0347/12<br>0026/13<br>0104/13<br>0250/13<br>0060/14<br>0422/14 | 0230/10<br>0236/11<br>0305/11<br>0384/12<br>0027/13<br>0105/13<br>0254/13<br>0118/14<br>0459/14 | 0373/10<br>0268/11<br>0308/11<br>0477/12<br>0028/13<br>0108/13<br>0256/13<br>0272/14<br>0461/14 | 0377/10<br>0270/11<br>0310/11<br>0011/13<br>0030/13<br>0169/13<br>0258/13<br>0273/14<br>0418/25 | 0379/10<br>0272/11<br>0456/11<br>0013/13<br>0047/13<br>0201/13<br>0349/13<br>0276/14 |
| OPE   | 0068/31                                                                                         | 0297/30                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE1  | 0120/44                                                                                         | 0128/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE10 | 0413/44                                                                                         | 0400/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE11 | 0365/44                                                                                         | 0623/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE12 | 0283/44                                                                                         | 0624/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE13 | 0551/44                                                                                         | 0436/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE14 | 0564/44                                                                                         | 0380/44                                                                                         | 0417/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE15 | 0419/44                                                                                         | 0522/44                                                                                         | 0567/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE16 | 0170/44                                                                                         | 0157/44                                                                                         | 0159/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE17 | 0486/44                                                                                         | 0613/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE18 | 0520/44                                                                                         | 0515/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE19 | 0535/44                                                                                         | 0528/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE2  | 0179/44                                                                                         | 0132/44                                                                                         | 0194/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE3  | 0215/44                                                                                         | 0201/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE4  | 0247/44                                                                                         | 0236/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE4A | 0250/44                                                                                         | 0282/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |
| OPE5  | 0291/44                                                                                         | 0276/44                                                                                         |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                                 |                                                                                      |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                               |                               |                               |                               |                               |                               |
|-------|------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| OPE50 | 0198/44                                  | 0184/44                       | 0211/44                       |                               |                               |                               |                               |
| OPE51 | 0213/44                                  | 0182/44                       |                               |                               |                               |                               |                               |
| OPE52 | 0433/44                                  | 0450/44                       |                               |                               |                               |                               |                               |
| OPE6  | 0272/44                                  | 0279/44                       |                               |                               |                               |                               |                               |
| OPE6A | 0280/44                                  | 0260/44                       | 0265/44                       |                               |                               |                               |                               |
| OPE7  | 0239/44                                  |                               |                               |                               |                               |                               |                               |
| OPE8  | 0584/44                                  | 0306/44                       |                               |                               |                               |                               |                               |
| OPE9  | 0402/44                                  | 0384/44                       |                               |                               |                               |                               |                               |
| OPE98 | 0592/44                                  | 0310/44                       |                               |                               |                               |                               |                               |
| OPEC  | 0608/44<br>0296/44<br>0429/44<br>0572/44 | 0117/44<br>0386/44<br>0449/44 | 0127/44<br>0402/44<br>0462/44 | 0191/44<br>0407/44<br>0464/44 | 0208/44<br>0408/44<br>0511/44 | 0269/44<br>0420/44<br>0525/44 | 0278/44<br>0425/44<br>0529/44 |
| OPEDA | 0611/44<br>0510/44                       | 0298/44<br>0516/44            | 0341/44<br>0544/44            | 0442/44<br>0547/44            | 0447/44<br>0615/44            | 0456/44                       | 0492/44                       |
| OPEDE | 0576/44                                  | 0441/44                       | 0561/44                       |                               |                               |                               |                               |
| OPEDF | 0605/44                                  | 0249/44                       | 0281/44                       | 0294/44                       | 0382/44                       | 0410/44                       |                               |
| OPEDI | 0615/44                                  | 0438/44                       | 0558/44                       |                               |                               |                               |                               |
| OPEDS | 0539/44                                  | 0526/44                       | 0533/44                       | 0548/44                       |                               |                               |                               |
| OPEDU | 0610/44                                  | 0300/44                       |                               |                               |                               |                               |                               |
| OPEF  | 0604/44<br>0192/44<br>0404/44            | 0119/44<br>0215/44<br>0433/44 | 0141/44<br>0234/44<br>0437/44 | 0151/44<br>0274/44<br>0521/44 | 0161/44<br>0291/44<br>0552/44 | 0167/44<br>0345/44            | 0180/44<br>0368/44            |
| OPELN | 0609/44<br>0565/44                       | 0257/44                       | 0258/44                       | 0267/44                       | 0375/44                       | 0395/44                       | 0397/44                       |
| OPEOR | 0620/44                                  | 0597/44                       |                               |                               |                               |                               |                               |
| OPEOV | 0614/44                                  | 0595/44                       |                               |                               |                               |                               |                               |
| OPEP  | 0606/44<br>0209/44                       | 0115/44<br>0214/44            | 0122/44<br>0219/44            | 0123/44<br>0329/44            | 0125/44<br>0513/44            | 0126/44<br>0530/44            | 0199/44                       |
| OPER  | 0140/44                                  | 0120/44                       | 0124/44                       | 0130/44                       | 0143/44                       | 0162/44                       | 0168/44                       |
| OPER1 | 0144/44                                  | 0150/44                       |                               |                               |                               |                               |                               |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| OPER2 | 0163/44 | 0153/44 |         |         |         |         |         |
| OPER3 | 0160/44 | 0165/44 |         |         |         |         |         |
| OPERC | 0524/44 | 0514/44 | 0517/44 | 0535/44 | 0536/44 |         |         |
| OPESB | 0569/44 | 0193/44 | 0210/44 | 0574/44 |         |         |         |
| OPMSK | 0387    | 0430/03 | 0245/04 | 0343/04 | 0038/06 | 0248/06 | 0377/06 |
|       | 0431/06 | 0477/06 | 0432/07 | 0036/08 | 0076/08 | 0081/08 | 0098/08 |
|       | 0171/08 | 0263/08 | 0306/08 | 0411/09 | 0133/10 | 0031/11 | 0130/11 |
|       | 0142/11 | 0226/11 | 0500/11 | 0039/12 | 0067/12 | 0074/12 | 0084/12 |
|       | 0374/12 | 0392/12 | 0184/16 | 0063/17 | 0200/17 | 0387/21 | 0573/21 |
|       | 0576/21 | 0395/40 | 0411/40 | 0418/40 |         |         |         |
| OPTRQ | 0386/02 | 0297/12 | 0302/12 | 0456/12 | 0014/13 | 0016/13 | 0029/13 |
|       | 0441/14 | 0462/14 | 0464/14 |         |         |         |         |
| ORDNO | 0492/02 | 0454/11 | 0462/11 | 0468/11 | 0049/35 |         |         |
| OT1   | 0322/02 | 0303/19 | 0307/19 | 0315/19 |         |         |         |
| OT3   | 0323/02 | 0308/19 | 0314/19 |         |         |         |         |
| OT4   | 0324/02 | 0305/19 | 0309/19 | 0312/19 |         |         |         |
| OTCRA | 0374/19 | 0370/19 |         |         |         |         |         |
| UTST1 | 0614/21 | 0624/21 |         |         |         |         |         |
| UTST2 | 0619/21 | 0613/21 |         |         |         |         |         |
| OUTBL | 0210/02 | 0333/23 | 0360/23 | 0012/24 | 0112/24 | 0178/24 | 0299/24 |
|       | 0327/25 |         |         |         |         |         |         |
| OUTC1 | 0491/30 | 0481/30 | 0532/30 |         |         |         |         |
| OUTCH | 0333    | 0381/19 | 0420/29 | 0072/30 | 0121/33 | 0454/49 |         |
| OUTCL | 0212/02 | 0441/16 | 0522/19 | 0012/25 | 0159/25 | 0208/25 | 0213/25 |
|       | 0340/25 |         |         |         |         |         |         |
| OUTCR | 0162/02 | 0627/05 | 0317/09 | 0375/09 | 0377/09 | 0379/09 | 0432/09 |
|       | 0438/09 | 0443/09 | 0445/09 | 0270/10 | 0284/10 | 0298/10 | 0090/11 |
|       | 0092/11 | 0261/11 | 0392/11 | 0221/12 | 0223/12 | 0225/12 | 0227/12 |
|       | 0240/12 | 0242/12 | 0366/16 | 0370/16 | 0404/16 | 0406/16 | 0429/16 |
|       | 0436/16 | 0464/16 | 0466/16 | 0470/16 | 0472/16 | 0023/19 | 0075/19 |
|       | 0185/19 | 0226/19 | 0239/19 | 0248/19 | 0255/19 | 0262/19 | 0264/19 |
|       | 0313/19 | 0320/19 | 0337/19 | 0353/19 | 0355/19 | 0357/19 | 0382/19 |
|       | 0447/19 | 0476/19 | 0501/19 | 0514/19 | 0516/19 | 0296/21 | 0311/21 |
|       | 0314/21 | 0316/21 | 0326/21 | 0348/21 | 0358/21 | 0377/21 | 0379/21 |
|       | 0381/21 | 0405/21 | 0434/21 | 0445/21 | 0450/21 | 0452/21 | 0502/21 |
|       | 0508/21 | 0520/21 | 0527/21 | 0542/21 | 0548/21 | 0553/21 | 0563/21 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0594/21 | 0598/21 | 0618/21 | 0622/21 | 0313/23 | 0315/23 | 0318/23 |
|       | 0375/23 | 0377/23 | 0380/23 | 0448/23 | 0025/24 | 0047/24 | 0055/24 |
|       | 0088/24 | 0092/24 | 0099/24 | 0122/24 | 0129/24 | 0131/24 | 0175/25 |
|       | 0179/25 | 0182/25 | 0186/25 | 0191/25 | 0198/25 | 0205/25 | 0207/25 |
|       | 0219/25 | 0221/25 | 0223/25 | 0231/25 | 0324/25 | 0333/25 | 0335/25 |
|       | 0337/25 |         |         |         |         |         |         |
| OUTI1 | 0306/19 | 0317/19 |         |         |         |         |         |
| OUTI2 | 0314/19 | 0310/19 |         |         |         |         |         |
| OUTIN | 0164/02 | 0268/10 | 0282/10 | 0396/16 | 0077/19 | 0321/19 | 0356/21 |
|       | 0368/21 | 0493/21 |         |         |         |         |         |
| OUTLN | 0140/02 | 0400/02 | 0080/11 | 0103/11 | 0141/17 | 0142/17 | 0072/19 |
|       | 0182/19 | 0343/19 | 0358/19 | 0451/19 | 0482/19 |         |         |
| OUTM1 | 0628/28 | 0477/30 | 0484/30 | 0504/30 | 0711/32 |         |         |
| OUTST | 0168/02 | 0327/09 | 0591/11 | 0328/16 | 0387/16 | 0394/16 | 0309/21 |
|       | 0525/21 | 0530/21 | 0561/21 | 0590/21 | 0591/21 | 0592/21 | 0595/21 |
|       | 0625/21 |         |         |         |         |         |         |
| OUTWT | 0515    | 0519/28 | 0530/28 | 0303/29 | 0479/30 | 0523/30 | 0416/39 |
| OVFLW | 0062/02 | 0312/02 | 0443/02 | 0086/16 | 0016/22 | 0309/22 |         |
| OWT   | 0145    | 0527/30 |         |         |         |         |         |
| P409  | 0581/58 | 0458/58 |         |         |         |         |         |
| P8192 | 0305    | 0535/51 |         |         |         |         |         |
| PACK1 | 0275/22 | 0272/22 |         |         |         |         |         |
| PACK3 | 0301/22 | 0286/22 |         |         |         |         |         |
| PACK4 | 0306/22 | 0289/22 | 0299/22 |         |         |         |         |
| PBFLG | 0522    | 0074/21 | 0078/21 | 0168/21 | 0475/28 |         |         |
| PBPTR | 0046    | 0207/03 | 0236/03 | 0249/03 | 0250/03 | 0277/03 | 0500/05 |
|       | 0508/05 | 0570/05 | 0606/05 | 0617/05 | 0440/06 | 0445/06 | 0503/06 |
|       | 0517/06 | 0031/07 | 0054/07 | 0115/07 | 0125/07 | 0347/07 | 0395/07 |
|       | 0455/07 | 0462/07 | 0467/07 | 0470/07 | 0131/08 | 0143/08 | 0144/08 |
|       | 0153/08 | 0154/08 | 0220/08 | 0357/08 | 0403/08 | 0444/08 | 0016/09 |
|       | 0020/09 | 0045/09 | 0061/09 | 0182/09 | 0187/09 | 0198/09 | 0248/09 |
|       | 0252/09 | 0256/09 | 0352/09 | 0380/09 | 0303/12 | 0337/12 | 0416/12 |
|       | 0427/12 | 0429/12 | 0431/12 | 0432/12 | 0475/12 | 0480/12 | 0007/13 |
|       | 0009/13 | 0020/13 | 0022/13 | 0031/13 | 0033/13 | 0035/13 | 0036/13 |
|       | 0051/13 | 0053/13 | 0193/13 | 0195/13 | 0270/13 | 0291/13 | 0306/13 |
|       | 0308/13 | 0309/13 | 0311/13 | 0445/14 | 0448/14 | 0474/14 | 0480/14 |
|       | 0481/14 | 0170/16 | 0195/16 | 0203/16 | 0245/16 | 0249/16 | 0271/16 |
|       | 0274/16 | 0497/16 | 0033/18 | 0236/18 | 0231/21 | 0236/21 | 0553/29 |

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## CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0237/30 | 0256/30 | 0246/32 | 0383/32 | 0059/33 | 0369/33 | 0501/33 |
|       | 0510/33 | 0325/34 | 0505/34 | 0622/35 | 0626/35 | 0049/36 | 0323/38 |
|       | 0352/38 | 0362/38 | 0370/38 | 0378/38 | 0407/38 | 0434/38 | 0341/39 |
|       | 0025/40 | 0259/40 | 0387/40 | 0450/43 | 0457/43 | 0472/43 | 0476/43 |
| PBUFF | 0401    | 0195/03 | 0237/03 | 0422/06 | 0437/06 | 0448/06 | 0030/07 |
|       | 0049/07 | 0396/07 | 0459/07 | 0404/08 | 0172/16 | 0230/21 | 0551/29 |
|       | 0032/36 | 0047/36 | 0388/36 | 0280/38 | 0243/39 | 0018/40 | 0011/45 |
| PC1   | 0286/02 | 0044/23 | 0063/25 | 0109/25 | 0113/25 |         |         |
| PC2   | 0287/02 | 0045/23 | 0075/25 | 0077/25 | 0081/25 |         |         |
| PCHK  | 0098/02 | 0406/02 | 0357/13 | 0380/13 | 0108/14 |         |         |
| PCHK1 | 0106/14 | 0097/14 |         |         |         |         |         |
| PDFBS | 0431    | 0473/12 |         |         |         |         |         |
| PDFFL | 0393    | 0114/04 | 0239/04 | 0400/06 | 0427/21 |         |         |
| PDFNS | 0443    | 0233/04 |         |         |         |         |         |
| PDFTB | 0474    | 0431    |         |         |         |         |         |
| PEND  | 0386/59 | 0312/59 |         |         |         |         |         |
| PFLAG | 0350/02 | 0295/03 | 0389/03 | 0679/03 | 0687/03 | 0697/03 | 0162/04 |
|       | 0165/04 | 0432/05 | 0438/05 |         |         |         |         |
| PFSH1 | 0404/06 | 0393/06 |         |         |         |         |         |
| PFSRH | 0222/02 | 0654/03 | 0711/03 | 0058/04 | 0403/06 | 0408/06 | 0409/06 |
| PH0   | 0127    | 0082/59 |         |         |         |         |         |
| PH05  | 0079/59 | 0066/59 |         |         |         |         |         |
| PH06  | 0061/59 | 0078/59 |         |         |         |         |         |
| PIBY2 | 0436/20 | 0282/20 | 0425/20 |         |         |         |         |
| PINTG | 0300/02 | 0098/06 | 0103/06 | 0104/06 | 0107/06 | 0114/06 | 0120/06 |
|       | 0147/20 | 0164/20 |         |         |         |         |         |
| PIVEL | 0435/02 | 0073/18 | 0076/18 | 0101/18 | 0108/18 | 0143/18 | 0149/18 |
|       | 0181/18 | 0192/18 |         |         |         |         |         |
| PKCNT | 0660/35 | 0475/35 | 0627/35 |         |         |         |         |
| PLUS  | 0507/04 | 0157/04 | 0384/04 |         |         |         |         |
| PMASK | 0290/02 | 0156/12 | 0180/12 | 0182/12 | 0241/15 | 0267/15 | 0301/15 |
|       | 0341/15 | 0343/15 | 0438/15 | 0464/15 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |         |         |         |         |
|-------|--------------------|--------------------|--------------------|---------|---------|---------|---------|
| POFFP | 0576/26            | 0513/26            |                    |         |         |         |         |
| POR.A | 0419/48            | 0140/48            |                    |         |         |         |         |
| POR.L | 0420/48            | 0171/48            | 0176/48            |         |         |         |         |
| POR0  | 0144/48            |                    |                    |         |         |         |         |
| POR11 | 0279/48            | 0276/48            |                    |         |         |         |         |
| POR13 | 0142/48            | 0150/48            | 0165/48            |         |         |         |         |
| POR2  | 0152/48            | 0147/48            |                    |         |         |         |         |
| POR22 | 0226/48            | 0211/48            | 0242/48            |         |         |         |         |
| POR3  | 0168/48            | 0141/48            |                    |         |         |         |         |
| POR4  | 0193/48            | 0160/48            | 0164/48            | 0187/48 |         |         |         |
| POR5  | 0208/48            | 0224/48            |                    |         |         |         |         |
| POR6  | 0246/48            | 0220/48            | 0238/48            | 0278/48 | 0282/48 |         |         |
| POR7  | 0222/48            | 0219/48            |                    |         |         |         |         |
| POR8  | 0240/48            | 0237/48            |                    |         |         |         |         |
| POR9  | 0183/48            | 0191/48            |                    |         |         |         |         |
| PORC1 | 0421/48<br>0317/48 | 0135/48<br>0409/48 | 0153/48<br>0412/48 | 0162/48 | 0184/48 | 0189/48 | 0287/48 |
| PORC2 | 0422/48            | 0408/48            | 0411/48            |         |         |         |         |
| PORCN | 0418/48            | 0137/48            | 0154/48            | 0185/48 |         |         |         |
| PORDG | 0328/48            | 0143/48            | 0335/48            |         |         |         |         |
| PORI1 | 0300/48            | 0305/48            |                    |         |         |         |         |
| PORI2 | 0306/48            | 0302/48            |                    |         |         |         |         |
| PORI3 | 0310/48            | 0315/48            |                    |         |         |         |         |
| PORI4 | 0316/48            | 0312/48            |                    |         |         |         |         |
| PORI5 | 0324/48            | 0321/48            |                    |         |         |         |         |
| PORIN | 0286/48            | 0157/48            | 0188/48            | 0326/48 |         |         |         |
| PORS1 | 0540/33            | 0132/48            | 0213/48            | 0217/48 | 0296/48 | 0322/48 |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|---------|
| PORS2 | 0541/33            | 0133/48            | 0231/48            | 0235/48            | 0298/48            | 0325/48 |         |
| PORSP | 0406/48            | 0145/48            | 0413/48            |                    |                    |         |         |
| PORTL | 0542/33<br>0257/48 | 0134/48<br>0268/48 | 0209/48            | 0223/48            | 0227/48            | 0241/48 | 0252/48 |
| POW   | 0325/26            | 0254               | 0341/26            | 0352/26            | 0689/32            |         |         |
| POW1  | 0380/26            | 0327/26            | 0568/26            | 0569/26            |                    |         |         |
| POW14 | 0457/26            | 0411/26            |                    |                    |                    |         |         |
| POW2  | 0375/26            | 0339/26            | 0347/26            |                    |                    |         |         |
| POW27 | 0500/26            |                    |                    |                    |                    |         |         |
| POW28 | 0574/26            | 0480/26            |                    |                    |                    |         |         |
| POW29 | 0491/26            | 0482/26            | 0485/26            |                    |                    |         |         |
| POW31 | 0573/26            | 0483/26            |                    |                    |                    |         |         |
| POW4  | 0399/26            | 0413/26            |                    |                    |                    |         |         |
| POW40 | 0517/26            | 0569/26            |                    |                    |                    |         |         |
| POW5  | 0419/26            | 0403/26            |                    |                    |                    |         |         |
| POW50 | 0512/26            | 0486/26            | 0498/26            | 0516/26            |                    |         |         |
| POW52 | 0497/26            | 0476/26            |                    |                    |                    |         |         |
| POW6  | 0409/26            | 0428/26            | 0432/26            | 0451/26            |                    |         |         |
| POWAB | 0522/26            | 0351/26            | 0508/26            |                    |                    |         |         |
| POWCL | 0446/26            | 0444/26            |                    |                    |                    |         |         |
| POWD1 | 0568/26            | 0342/26            |                    |                    |                    |         |         |
| POWD2 | 0569/26            | 0345/26            |                    |                    |                    |         |         |
| POWEO | 0523/26            | 0349/26            | 0504/26            |                    |                    |         |         |
| POWF  | 0526/26            | 0390/26            | 0399/26            | 0401/26            |                    |         |         |
| POWFF | 0519/26<br>0691/32 | 0336/26            | 0338/26            | 0471/26            | 0489/26            | 0502/26 | 0576/26 |
| POWFL | 0525/26            | 0369/26            | 0389/26            | 0462/26            |                    |         |         |
| POWI  | 0520/26<br>0424/26 | 0331/26<br>0437/26 | 0350/26<br>0438/26 | 0386/26<br>0448/26 | 0405/26<br>0449/26 | 0409/26 | 0412/26 |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |  |
|-------|---------|---------|---------|---------|---------|---------|---------|--|
| POWIN | 0254    | 0016    |         |         |         |         |         |  |
| POWJ  | 0521/26 | 0384/26 | 0420/26 | 0450/26 |         |         |         |  |
| POWND | 0510/26 | 0373/26 |         |         |         |         |         |  |
| POWP  | 0524/26 | 0353/26 | 0479/26 | 0511/26 | 0514/26 | 0534/26 |         |  |
| POWST | 0442/26 | 0440/26 |         |         |         |         |         |  |
| POWSW | 0527/26 | 0355/26 | 0381/26 | 0692/32 |         |         |         |  |
| POWTB | 0529/26 | 0419/26 | 0423/26 |         |         |         |         |  |
| POX1  | 0539/26 | 0567/26 |         |         |         |         |         |  |
| POX2  | 0553/26 | 0571/26 |         |         |         |         |         |  |
| POX3  | 0566/26 | 0575/26 |         |         |         |         |         |  |
| PRCCN | 0423/48 | 0294/48 | 0299/48 | 0309/48 |         |         |         |  |
| PRDFS | 0473/22 | 0443    |         |         |         |         |         |  |
| PREG  | 0009/02 | 0681/28 | 0174/29 | 0199/29 |         |         |         |  |
| PRGCT | 0387/02 | 0034/07 | 0040/07 | 0055/07 | 0059/07 | 0397/09 | 0407/09 |  |
|       | 0058/10 | 0064/10 | 0113/10 | 0118/10 | 0126/10 | 0127/10 | 0142/10 |  |
|       | 0257/10 | 0384/10 | 0028/11 | 0110/11 | 0127/11 | 0246/11 | 0497/11 |  |
|       | 0064/12 | 0172/12 | 0371/12 | 0389/12 | 0060/17 | 0151/17 | 0188/17 |  |
|       | 0350/17 | 0413/25 | 0425/25 | 0436/25 | 0446/25 | 0473/25 | 0468/35 |  |
|       | 0636/35 | 0391/36 | 0343/39 |         |         |         |         |  |
| PRGIN | 0026/02 | 0389/02 | 0424/03 | 0511/03 | 0070/05 | 0100/05 | 0229/05 |  |
|       | 0269/05 | 0088/06 | 0112/06 | 0113/06 |         |         |         |  |
| PRI1  | 0123/59 | 0097/59 |         |         |         |         |         |  |
| PRI2  | 0126/59 | 0108/59 | 0116/59 |         |         |         |         |  |
| PRIDG | 0134/59 | 0093/59 | 0098/59 | 0143/59 |         |         |         |  |
| PRIN0 | 0675/03 | 0666/03 | 0672/03 | 0694/03 |         |         |         |  |
| PRIN1 | 0683/03 | 0689/03 |         |         |         |         |         |  |
| PRIN2 | 0688/03 | 0710/03 | 0722/03 |         |         |         |         |  |
| PRIN3 | 0697/03 | 0682/03 |         |         |         |         |         |  |
| PRIN4 | 0711/03 | 0702/03 |         |         |         |         |         |  |
| PRIN5 | 0714/03 | 0706/03 |         |         |         |         |         |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| PRIN6 | 0720/03 | 0712/03 |         |         |         |         |         |
| PRIN7 | 0723/03 | 0677/03 |         |         |         |         |         |
| PRIN8 | 0718/03 | 0713/03 |         |         |         |         |         |
| PRINS | 0639/03 | 0533/05 |         |         |         |         |         |
| PRIST | 0162    | 0258/11 | 0581/11 | 0588/11 | 0211/12 | 0460/16 | 0468/16 |
|       | 0338/29 | 0427/29 | 0046/30 | 0371/30 | 0055/39 | 0061/39 | 0407/39 |
|       | 0413/39 | 0023/43 | 0211/45 | 0231/45 | 0116/47 | 0640/48 | 0131/59 |
| PRITY | 0251/45 | 0210/45 | 0214/45 | 0220/45 | 0230/45 |         |         |
| PRN01 | 0665/03 | 0643/03 |         |         |         |         |         |
| PRN10 | 0650/03 | 0664/03 |         |         |         |         |         |
| PRN11 | 0658/03 | 0655/03 |         |         |         |         |         |
| PRNS1 | 0028/08 | 0332/07 | 0404/07 | 0418/07 |         |         |         |
| PRNS2 | 0091/08 | 0180/07 | 0220/07 | 0243/07 | 0258/07 | 0273/07 | 0280/07 |
|       | 0284/07 | 0294/07 | 0307/07 | 0323/07 | 0412/07 | 0424/07 | 0440/07 |
|       | 0449/07 | 0044/08 | 0051/08 | 0053/08 | 0055/08 | 0070/08 | 0103/08 |
|       | 0113/08 |         |         |         |         |         |         |
| PRNS3 | 0108/08 | 0100/08 |         |         |         |         |         |
| PRNS4 | 0050/08 | 0041/08 |         |         |         |         |         |
| PRNS5 | 0071/08 | 0058/08 |         |         |         |         |         |
| PRNS6 | 0086/08 | 0079/08 |         |         |         |         |         |
| PRNS1 | 0074/02 | 0305/02 | 0171/07 | 0403/07 | 0017/08 | 0019/08 | 0107/08 |
| PRO1  | 0029/44 | 0020/44 |         |         |         |         |         |
| PRO2  | 0049/44 | 0034/44 |         |         |         |         |         |
| PRO20 | 0390/48 | 0253/48 | 0395/48 | 0403/48 |         |         |         |
| PRO3  | 0035/44 | 0045/44 |         |         |         |         |         |
| PRO30 | 0399/48 | 0264/48 | 0404/48 |         |         |         |         |
| PRO4  | 0056/44 | 0047/44 |         |         |         |         |         |
| PRO6  | 0066/44 | 0057/44 |         |         |         |         |         |
| PRO7  | 0069/44 | 0096/44 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                               |                    |                    |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|
| PROC  | 0089/44                       | 0030/44                       | 0036/44                       | 0037/44                       | 0040/44                       | 0041/44            |                    |
| PROCH | 0368/48                       | 0248/48                       | 0281/48                       | 0360/48                       | 0362/48                       | 0379/48            | 0385/48            |
| PROD  | 0088/44                       | 0032/44                       | 0044/44                       |                               |                               |                    |                    |
| PRODG | 0383/48                       | 0277/48                       | 0386/48                       | 0393/48                       | 0394/48                       | 0402/48            |                    |
| PROGB | 0297/02                       | 0013                          | 0401                          | 0249/02                       |                               |                    |                    |
| PROPR | 0342/48                       | 0221/48                       | 0239/48                       | 0343/48                       |                               |                    |                    |
| PROST | 0355/48<br>0361/48            | 0196/48<br>0363/48            | 0249/48<br>0364/48            | 0254/48                       | 0265/48                       | 0356/48            | 0358/48            |
| PRTOP | 0381                          | 0021/04                       | 0077/08                       | 0124/11                       | 0075/12                       | 0413/40            |                    |
| PS0   | 0465/02                       | 0185/14                       | 0205/14                       | 0226/14                       | 0232/14                       | 0238/14            | 0245/14            |
| PS1   | 0466/02<br>0252/14            | 0328/10                       | 0347/10                       | 0353/11                       | 0367/11                       | 0187/14            | 0210/14            |
| PSC   | 0147                          | 0128/59                       |                               |                               |                               |                    |                    |
| PSHST | 0108/02<br>0482/14            | 0401/02                       | 0335/12                       | 0426/12                       | 0474/12                       | 0005/13            | 0006/13            |
| PSTR  | 0090/02<br>0343/11<br>0249/14 | 0435/02<br>0414/11<br>0258/14 | 0468/02<br>0508/11<br>0265/14 | 0308/10<br>0265/13<br>0432/25 | 0390/10<br>0269/13<br>0420/35 | 0066/11<br>0125/14 | 0155/11<br>0131/14 |
| PSTR1 | 0210/14                       | 0206/14                       |                               |                               |                               |                    |                    |
| PSTR2 | 0214/14                       | 0203/14                       | 0209/14                       |                               |                               |                    |                    |
| PSTR3 | 0245/14                       | 0230/14                       |                               |                               |                               |                    |                    |
| PSTR4 | 0248/14                       | 0244/14                       |                               |                               |                               |                    |                    |
| PSTR5 | 0250/14                       | 0239/14                       |                               |                               |                               |                    |                    |
| PSTR6 | 0254/14                       | 0264/14                       |                               |                               |                               |                    |                    |
| PSTR7 | 0259/14                       | 0253/14                       |                               |                               |                               |                    |                    |
| PTABL | 0384/59                       | 0158/59                       | 0323/59                       |                               |                               |                    |                    |
| PUDIR | 0579/58                       | 0385/58                       |                               |                               |                               |                    |                    |
| PUKED | 0578/58                       | 0464/58                       | 0474/58                       |                               |                               |                    |                    |
| PUKES | 0577/58                       | 0462/58                       | 0472/58                       |                               |                               |                    |                    |
| PUN   | 0033/31                       | 0500/29                       |                               |                               |                               |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |         |         |         |         |         |         |
|-------|--------------------|---------|---------|---------|---------|---------|---------|
| PUNCH | 0225/21            | 0111/31 |         |         |         |         |         |
| PUR1  | 0356/58            | 0282/58 | 0288/58 | 0298/58 | 0328/58 |         |         |
| PUR11 | 0386/58            | 0395/58 |         |         |         |         |         |
| PUR12 | 0391/58            | 0508/58 |         |         |         |         |         |
| PUR13 | 0398/58            | 0390/58 |         |         |         |         |         |
| PUR15 | 0411/58            | 0490/58 |         |         |         |         |         |
| PUR16 | 0485/58            | 0418/58 | 0460/58 |         |         |         |         |
| PUR2  | 0278/58            | 0259/58 | 0271/58 |         |         |         |         |
| PUR3  | 0380/58            | 0313/58 |         |         |         |         |         |
| PUR4  | 0312/58            | 0318/58 |         |         |         |         |         |
| PUR7  | 0360/58            | 0316/58 |         |         |         |         |         |
| PURCT | 0568/58            | 0382/58 | 0455/58 | 0457/58 | 0513/58 | 0517/58 | 0553/58 |
| PURDG | 0342/58            | 0323/58 | 0329/58 | 0344/58 | 0348/58 | 0351/58 | 0352/58 |
| PURDI | 0569/58<br>0507/58 | 0387/58 | 0452/58 | 0454/58 | 0466/58 | 0478/58 | 0494/58 |
| PURDI | 0573/58            | 0283/58 | 0291/58 | 0292/58 | 0294/58 | 0414/58 |         |
| PURDU | 0580/58            | 0393/58 |         |         |         |         |         |
| PURED | 0576/58            | 0541/58 | 0545/58 |         |         |         |         |
| PURER | 0364/58            | 0357/58 | 0361/58 | 0368/58 |         |         |         |
| PURES | 0575/58            | 0539/58 | 0543/58 |         |         |         |         |
| PURF1 | 0528/58            | 0554/58 |         |         |         |         |         |
| PURF2 | 0547/58            | 0532/58 |         |         |         |         |         |
| PURFX | 0512/58            | 0396/58 | 0471/58 | 0515/58 | 0565/58 |         |         |
| PURHE | 0586/58            | 0255/58 |         |         |         |         |         |
| PURN  | 0574/58            | 0325/58 | 0331/58 | 0333/58 | 0337/58 | 0365/58 | 0372/58 |
| PURN1 | 0325/58            | 0336/58 |         |         |         |         |         |
| PURN2 | 0337/58            | 0330/58 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| PURND | 0571/58 | 0402/58 | 0488/58 |         |         |         |         |
| PURNO | 0322/58 | 0278/58 | 0284/58 | 0326/58 | 0338/58 | 0339/58 |         |
| PURP  | 0572/58 | 0266/58 | 0273/58 | 0412/58 | 0445/58 | 0449/58 | 0486/58 |
| PURTC | 0567/58 | 0516/58 |         |         |         |         |         |
| PURTP | 0570/58 | 0384/58 | 0421/58 | 0423/58 | 0430/58 | 0431/58 | 0434/58 |
|       | 0435/58 | 0438/58 | 0439/58 | 0442/58 | 0443/58 | 0529/58 | 0551/58 |
|       | 0564/58 |         |         |         |         |         |         |
| PURUD | 0583/58 | 0561/58 |         |         |         |         |         |
| PURUI | 0584/58 | 0562/58 |         |         |         |         |         |
| PWR2A | 0276/20 | 0265/20 |         |         |         |         |         |
| PZ99  | 0585/58 | 0253/58 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                               |                               |                               |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| QUOTE | 0477/04                       | 0323                          | 0187/06                       |                               |                               |                               |                               |
| R14CM | 0419/28                       | 0258                          | 0536/26                       | 0537/26                       | 0550/26                       | 0452/28                       | 0710/32                       |
| R14DR | 0258                          | 0031                          | 0558/26                       |                               |                               |                               |                               |
| R14ED | 0593/28                       | 0550/26                       |                               |                               |                               |                               |                               |
| R14RT | 0445/28<br>0489/28<br>0543/28 | 0439/28<br>0497/28<br>0551/28 | 0440/28<br>0502/28<br>0565/28 | 0460/28<br>0511/28<br>0573/28 | 0468/28<br>0517/28<br>0591/28 | 0476/28<br>0521/28            | 0484/28<br>0535/28            |
| R22   | 0051/21                       | 0018/21                       | 0022/21                       |                               |                               |                               |                               |
| RADT  | 0279/31<br>0730/32            | 0282/31<br>0013/33            | 0402/31                       | 0423/31                       | 0424/31                       | 0487/31                       | 0517/31                       |
| RADTP | 0013/33                       | 0809/39                       | 0402/53                       | 0322/55                       |                               |                               |                               |
| RBOP  | 0487/04                       | 0080/05                       |                               |                               |                               |                               |                               |
| RBP   | 0130                          | 0432/03                       | 0257/06                       | 0532/11                       |                               |                               |                               |
| RCRD# | 0457/02                       | 0088/12                       | 0158/12                       | 0361/15                       |                               |                               |                               |
| RD0   | 0430/02                       | 0327/18                       | 0337/18                       | 0342/18                       | 0350/18                       |                               |                               |
| RDIDT | 0097/33<br>0501/39            | 0744/32<br>0761/39            | 0114/33<br>0566/43            | 0146/33<br>0228/44            | 0072/36<br>0366/44            | 0234/36                       | 0084/39                       |
| RDIM1 | 0335/18                       | 0331/18                       |                               |                               |                               |                               |                               |
| RDPJP | 0420/32                       | 0257/32                       | 0275/32                       | 0394/32                       |                               |                               |                               |
| RDPRG | 0055/33<br>0404/35<br>0211/38 | 0743/32<br>0572/35<br>0318/38 | 0072/33<br>0655/35<br>0312/39 | 0252/34<br>0035/36<br>0820/39 | 0436/34<br>0295/36<br>0020/40 | 0122/35<br>0068/38<br>0447/43 | 0265/35<br>0188/38<br>0006/45 |
| RDPRJ | 0074/33                       | 0420/32                       | 0069/33                       | 0380/33                       | 0059/36                       |                               |                               |
| READ1 | 0617/03                       | 0611/03                       |                               |                               |                               |                               |                               |
| READS | 0610/03                       | 0532/05                       |                               |                               |                               |                               |                               |
| READY | 0175                          | 0215/29                       | 0257/39                       |                               |                               |                               |                               |
| RECR0 | 0143/06                       | 0139/06                       |                               |                               |                               |                               |                               |
| RECR1 | 0147/06                       | 0135/06                       |                               |                               |                               |                               |                               |
| RECRF | 0184/02<br>0146/06            | 0379/02<br>0150/06            | 0610/03                       | 0665/03                       | 0025/04                       | 0068/04                       | 0136/06                       |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| REDIM | 0174/02 | 0324/02 | 0465/02 | 0494/02 | 0068/17 | 0352/17 | 0354/18 |
| RELOS | 0517/04 | 0502/03 |         |         |         |         |         |
| REMOP | 0369    | 0050/08 | 0514/21 |         |         |         |         |
| REMS  | 0284/05 | 0521/05 |         |         |         |         |         |
| REN0  | 0332/40 | 0330/40 |         |         |         |         |         |
| REN1  | 0130/40 | 0040/40 | 0043/40 | 0049/40 |         |         |         |
| REN10 | 0292/40 | 0300/40 |         |         |         |         |         |
| REN11 | 0309/40 |         |         |         |         |         |         |
| REN12 | 0316/40 | 0323/40 |         |         |         |         |         |
| REN13 | 0324/40 | 0109/40 | 0311/40 | 0317/40 |         |         |         |
| REN14 | 0239/40 | 0225/40 |         |         |         |         |         |
| REN15 | 0209/40 | 0229/40 |         |         |         |         |         |
| REN16 | 0271/40 | 0278/40 |         |         |         |         |         |
| REN17 | 0282/40 | 0265/40 | 0275/40 |         |         |         |         |
| REN18 | 0280/40 | 0263/40 |         |         |         |         |         |
| REN2  | 0145/40 | 0136/40 |         |         |         |         |         |
| REN20 | 0069/40 | 0081/40 |         |         |         |         |         |
| REN21 | 0082/40 | 0071/40 | 0076/40 |         |         |         |         |
| REN22 | 0089/40 | 0055/40 |         |         |         |         |         |
| REN23 | 0095/40 | 0106/40 |         |         |         |         |         |
| REN24 | 0107/40 | 0097/40 | 0101/40 |         |         |         |         |
| REN25 | 0149/40 | 0156/40 |         |         |         |         |         |
| REN26 | 0160/40 | 0151/40 |         |         |         |         |         |
| REN27 | 0134/40 | 0141/40 |         |         |         |         |         |
| REN28 | 0301/40 | 0294/40 |         |         |         |         |         |
| REN29 | 0121/40 | 0112/40 |         |         |         |         |         |
| REN3  | 0187/40 | 0176/40 | 0181/40 |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                    |                    |                    |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|--------------------|
| REN4  | 0244/40                       | 0285/40                       |                               |                               |                    |                    |                    |
| REN5  | 0261/40                       | 0252/40                       |                               |                               |                    |                    |                    |
| REN6  | 0268/40                       | 0260/40                       |                               |                               |                    |                    |                    |
| REN7  | 0248/40                       | 0256/40                       |                               |                               |                    |                    |                    |
| REN8  | 0284/40                       | 0277/40                       |                               |                               |                    |                    |                    |
| REN9  | 0289/40                       | 0189/40                       | 0245/40                       |                               |                    |                    |                    |
| RENBA | 0455/40<br>0122/40            | 0034/40<br>0148/40            | 0053/40<br>0290/40            | 0090/40                       | 0092/40            | 0099/40            | 0110/40            |
| RENC  | 0451/40                       | 0026/40                       | 0187/40                       | 0309/40                       |                    |                    |                    |
| RENC1 | 0458/40                       | 0197/40                       | 0218/40                       | 0219/40                       | 0269/40            | 0274/40            |                    |
| RENC2 | 0459/40                       | 0198/40                       | 0215/40                       |                               |                    |                    |                    |
| RENC3 | 0460/40                       | 0221/40                       | 0227/40                       |                               |                    |                    |                    |
| RENE  | 0456/40<br>0175/40            | 0029/40<br>0180/40            | 0070/40<br>0302/40            | 0096/40                       | 0108/40            | 0135/40            | 0163/40            |
| RENF1 | 0370/40                       | 0046/40                       | 0052/40                       | 0058/40                       | 0062/40            | 0126/40            | 0355/40            |
| RENF2 | 0328/40                       | 0120/40                       | 0168/40                       | 0173/40                       | 0186/40            |                    |                    |
| RENL  | 0448/40<br>0147/40<br>0356/40 | 0068/40<br>0155/40<br>0358/40 | 0077/40<br>0161/40<br>0361/40 | 0083/40<br>0170/40<br>0366/40 | 0094/40<br>0184/40 | 0104/40<br>0343/40 | 0118/40<br>0352/40 |
| RENLA | 0461/40<br>0162/40            | 0035/40<br>0174/40            | 0059/40<br>0293/40            | 0074/40                       | 0084/40            | 0124/40            | 0150/40            |
| RENM  | 0449/40                       | 0037/40                       | 0041/40                       | 0116/40                       | 0169/40            | 0291/40            |                    |
| RENN  | 0450/40                       | 0038/40                       | 0047/40                       | 0165/40                       | 0296/40            |                    |                    |
| RENN5 | 0457/40                       | 0132/40                       | 0140/40                       | 0191/40                       |                    |                    |                    |
| RENP  | 0452/40<br>0318/40            | 0242/40<br>0322/40            | 0250/40<br>0377/40            | 0270/40<br>0382/40            | 0282/40<br>0430/40 | 0284/40<br>0437/40 | 0315/40            |
| RENG  | 0453/40<br>0393/40<br>0428/40 | 0240/40<br>0394/40<br>0431/40 | 0313/40<br>0409/40<br>0435/40 | 0378/40<br>0410/40<br>0445/40 | 0386/40<br>0416/40 | 0391/40<br>0417/40 | 0392/40<br>0422/40 |
| RENK  | 0454/40                       | 0379/40                       | 0390/40                       | 0427/40                       |                    |                    |                    |
| RENS1 | 0384/40                       | 0432/40                       | 0440/40                       | 0443/40                       |                    |                    |                    |



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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                                |                                                                |                                                                |                                                     |                                                     |                                                     |
|-------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| RENS2 | 0387/40                                                        | 0381/40                                                        | 0383/40                                                        | 0415/40                                                        | 0421/40                                             | 0425/40                                             | 0446/40                                             |
| RENS3 | 0434/40                                                        | 0401/40                                                        | 0403/40                                                        | 0405/40                                                        | 0447/40                                             |                                                     |                                                     |
| RENS4 | 0437/40                                                        | 0444/40                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| RENS5 | 0445/40                                                        | 0399/40                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| RENS6 | 0412/40                                                        | 0408/40                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| RENSK | 0376/40                                                        | 0244/40                                                        | 0316/40                                                        | 0384/40                                                        | 0385/40                                             | 0388/40                                             |                                                     |
| RENSN | 0462/40                                                        | 0200/40                                                        | 0212/40                                                        | 0213/40                                                        | 0223/40                                             |                                                     |                                                     |
| RENU1 | 0346/40                                                        | 0364/40                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| RENU2 | 0365/40                                                        | 0348/40                                                        | 0351/40                                                        |                                                                |                                                     |                                                     |                                                     |
| RENUM | 0341/40<br>0369/40                                             | 0039/40                                                        | 0045/40                                                        | 0051/40                                                        | 0057/40                                             | 0345/40                                             | 0367/40                                             |
| REP1  | 0655/45                                                        | 0649/45                                                        | 0744/45                                                        | 0760/45                                                        |                                                     |                                                     |                                                     |
| REP2  | 0652/45                                                        | 0755/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| REP29 | 0806/45                                                        | 0606/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| REP3  | 0757/45                                                        | 0727/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| REP4  | 0692/45                                                        | 0761/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| REP56 | 0808/45                                                        | 0741/45                                                        | 0757/45                                                        |                                                                |                                                     |                                                     |                                                     |
| REP57 | 0807/45                                                        | 0648/45                                                        | 0651/45                                                        |                                                                |                                                     |                                                     |                                                     |
| REPAB | 0610/45                                                        | 0619/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| REPAF | 0620/45                                                        | 0614/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| REPBO | 0805/45                                                        | 0774/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |
| REPBF | 0797/45<br>0708/45<br>0775/45                                  | 0631/45<br>0719/45<br>0776/45                                  | 0635/45<br>0720/45<br>0782/45                                  | 0659/45<br>0721/45<br>0783/45                                  | 0703/45<br>0742/45<br>0786/45                       | 0704/45<br>0749/45<br>0787/45                       | 0707/45<br>0758/45                                  |
| REPCT | 0295/02<br>0521/19<br>0164/23<br>0327/23<br>0069/24<br>0306/24 | 0465/19<br>0523/19<br>0165/23<br>0335/23<br>0072/24<br>0062/25 | 0477/19<br>0526/19<br>0177/23<br>0354/23<br>0107/24<br>0074/25 | 0480/19<br>0096/23<br>0198/23<br>0381/23<br>0114/24<br>0325/25 | 0499/19<br>0150/23<br>0202/23<br>0384/23<br>0177/24 | 0502/19<br>0161/23<br>0205/23<br>0006/24<br>0180/24 | 0505/19<br>0162/23<br>0244/23<br>0014/24<br>0298/24 |
| REPET | 0731/45                                                        | 0740/45                                                        |                                                                |                                                                |                                                     |                                                     |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                   |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
|-------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| REPEV | 0747/45                                                                           | 0734/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPFX | 0804/45                                                                           | 0702/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPHD | 0790/45                                                                           | 0604/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPID | 0798/45<br>0698/45<br>0722/45                                                     | 0668/45<br>0709/45                                                                   | 0676/45<br>0711/45                                                                   | 0677/45<br>0712/45                                                                   | 0684/45<br>0714/45                                                                   | 0686/45<br>0715/45                                                                   | 0692/45<br>0716/45                                                                   |
| REPK  | 0800/45                                                                           | 0664/45                                                                              | 0672/45                                                                              | 0780/45                                                                              | 0784/45                                                                              |                                                                                      |                                                                                      |
| REPLN | 0796/45<br>0738/45                                                                | 0596/45                                                                              | 0600/45                                                                              | 0647/45                                                                              | 0667/45                                                                              | 0723/45                                                                              | 0725/45                                                                              |
| REPMS | 0803/45                                                                           | 0700/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPND | 0802/45                                                                           | 0743/45                                                                              | 0759/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPNI | 0594/45                                                                           | 0588/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPNM | 0763/45                                                                           | 0706/45                                                                              | 0769/45                                                                              | 0781/45                                                                              | 0785/45                                                                              |                                                                                      |                                                                                      |
| REPNT | 0660/45                                                                           | 0745/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPPT | 0795/45<br>0736/45                                                                | 0611/45                                                                              | 0622/45                                                                              | 0634/45                                                                              | 0661/45                                                                              | 0665/45                                                                              | 0732/45                                                                              |
| REPS  | 0650/45                                                                           | 0617/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPSC | 0633/45                                                                           | 0643/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPSE | 0644/45                                                                           | 0641/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPSG | 0615/45                                                                           | 0636/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPSL | 0809/45                                                                           | 0750/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPT  | 0799/45                                                                           | 0696/45                                                                              | 0705/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| REPTR | 0771/45                                                                           | 0713/45                                                                              | 0717/45                                                                              | 0788/45                                                                              |                                                                                      |                                                                                      |                                                                                      |
| REPTT | 0801/45                                                                           | 0753/45                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| RERRA | 0000/15                                                                           | 0315/16                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| RERRS | 0530<br>0250/07<br>0367/07<br>0169/09<br>0187/11<br>0122/12<br>0214/13<br>0251/14 | 0625/05<br>0264/07<br>0368/07<br>0186/09<br>0016/12<br>0129/12<br>0219/13<br>0413/14 | 0524/06<br>0297/07<br>0049/08<br>0070/10<br>0017/12<br>0167/12<br>0359/13<br>0416/14 | 0562/06<br>0326/07<br>0065/08<br>0204/10<br>0018/12<br>0171/12<br>0099/14<br>0479/14 | 0566/06<br>0338/07<br>0229/08<br>0145/11<br>0019/12<br>0301/12<br>0218/14<br>0006/15 | 0043/07<br>0343/07<br>0460/08<br>0176/11<br>0020/12<br>0192/13<br>0222/14<br>0007/15 | 0222/07<br>0366/07<br>0064/09<br>0182/11<br>0081/12<br>0199/13<br>0246/14<br>0101/15 |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0100/15 | 0116/15 | 0229/15 | 0505/15 | 0256/16 | 0215/17 | 0220/17 |
|       | 0225/17 | 0232/17 | 0263/17 | 0270/17 | 0282/17 | 0364/17 | 0396/17 |
|       | 0402/17 | 0031/18 | 0140/18 | 0301/18 | 0304/18 | 0324/18 | 0334/18 |
|       | 0341/18 | 0352/18 | 0030/20 | 0032/20 | 0037/20 | 0158/20 | 0294/20 |
|       | 0341/20 | 0010/21 | 0104/21 | 0263/21 | 0267/21 | 0277/21 | 0280/21 |
|       | 0286/21 |         |         |         |         |         |         |
| RES1  | 0685/48 | 0748/48 | 0780/48 | 0789/48 |         |         |         |
| RES2  | 0784/48 | 0683/48 |         |         |         |         |         |
| RES3  | 0788/48 | 0802/48 |         |         |         |         |         |
| RES4  | 0754/48 | 0699/48 |         |         |         |         |         |
| RES42 | 0756/48 | 0762/48 |         |         |         |         |         |
| RES5  | 0701/48 | 0720/48 |         |         |         |         |         |
| RES51 | 0716/48 | 0702/48 |         |         |         |         |         |
| RES6  | 0726/48 | 0759/48 |         |         |         |         |         |
| RES61 | 0736/48 | 0747/48 |         |         |         |         |         |
| RES62 | 0749/48 | 0732/48 |         |         |         |         |         |
| RESC  | 0813/48 | 0690/48 | 0701/48 | 0757/48 |         |         |         |
| RESCA | 0805/48 | 0675/48 |         |         |         |         |         |
| RESCL | 0806/48 | 0767/48 | 0775/48 |         |         |         |         |
| RESD  | 0815/48 | 0796/48 | 0799/48 |         |         |         |         |
| RESEK | 0808/48 | 0704/48 | 0713/48 | 0811/48 | 0811/48 |         |         |
| RESES | 0811/48 | 0708/48 | 0711/48 |         |         |         |         |
| RESLE | 0807/48 | 0743/48 |         |         |         |         |         |
| RESOP | 0463/40 | 0398/40 |         |         |         |         |         |
| REST  | 0814/48 | 0671/48 | 0723/48 | 0755/48 | 0797/48 | 0800/48 |         |
| RESX1 | 0764/48 | 0676/48 |         |         |         |         |         |
| RESX2 | 0771/48 | 0768/48 |         |         |         |         |         |
| RESX3 | 0778/48 | 0776/48 |         |         |         |         |         |
| RESXE | 0678/48 | 0770/48 |         |         |         |         |         |
| RETAD | 0238/16 | 0224/16 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|        |                               |                               |                               |                               |                               |                    |                    |
|--------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|
| RETCU  | 0291/02                       | 0489/11                       | 0494/11                       | 0495/11                       | 0530/11                       |                    |                    |
| RIDCL  | 0794/45                       | 0616/45                       | 0733/45                       |                               |                               |                    |                    |
| RKCYP  | 0011/33<br>0251/44<br>0125/56 | 0095/36<br>0255/44<br>0132/56 | 0099/36<br>0262/44<br>0262/56 | 0106/36<br>0377/44<br>0290/56 | 0248/36<br>0414/44<br>0305/56 | 0274/36<br>0566/44 | 0290/36<br>0121/56 |
| RNDA1  | 0112/20                       | 0084/20                       |                               |                               |                               |                    |                    |
| RNDA2  | 0113/20                       | 0081/20                       | 0091/20                       |                               |                               |                    |                    |
| RNDC1  | 0114/20                       | 0086/20                       |                               |                               |                               |                    |                    |
| RNDC2  | 0115/20                       | 0092/20                       |                               |                               |                               |                    |                    |
| RNDX1  | 0240/02<br>0100/20            | 0077/20                       | 0080/20                       | 0082/20                       | 0085/20                       | 0087/20            | 0098/20            |
| RNDX2  | 0241/02                       | 0078/20                       | 0083/20                       | 0090/20                       | 0096/20                       |                    |                    |
| ROND1  | 0284/25                       | 0295/25                       |                               |                               |                               |                    |                    |
| ROND2  | 0306/25                       | 0302/25                       |                               |                               |                               |                    |                    |
| ROS    | 0080/31                       | 0073/27                       | 0197/30                       |                               |                               |                    |                    |
| ROS1   | 0469/48                       | 0503/48                       |                               |                               |                               |                    |                    |
| ROS2   | 0472/48                       | 0468/48                       |                               |                               |                               |                    |                    |
| ROS3   | 0494/48                       | 0474/48                       |                               |                               |                               |                    |                    |
| ROS4   | 0497/48                       | 0493/48                       |                               |                               |                               |                    |                    |
| ROSC   | 0508/48                       | 0465/48                       | 0502/48                       |                               |                               |                    |                    |
| ROSDU  | 0514/48                       | 0494/48                       |                               |                               |                               |                    |                    |
| ROSF X | 0513/48                       | 0484/48                       |                               |                               |                               |                    |                    |
| ROSID  | 0510/48                       | 0467/48                       | 0472/48                       | 0480/48                       | 0499/48                       | 0501/48            |                    |
| ROSLB  | 0509/48                       | 0431/48                       |                               |                               |                               |                    |                    |
| ROSMS  | 0512/48                       | 0482/48                       |                               |                               |                               |                    |                    |
| ROSP   | 0507/48<br>0496/48            | 0463/48<br>0497/48            | 0470/48<br>0498/48            | 0471/48                       | 0485/48                       | 0486/48            | 0495/48            |
| ROST   | 0511/48                       | 0478/48                       | 0487/48                       |                               |                               |                    |                    |
| ROSTB  | 0460/48                       | 0433/48                       | 0441/48                       | 0446/48                       | 0451/48                       | 0466/48            | 0504/48            |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|---------|
|       | 0505/48            |                    |                    |                    |                    |         |         |
| ROUND | 0208/02<br>0305/25 | 0428/23<br>0309/25 | 0201/24<br>0311/25 | 0313/24            | 0172/25            | 0281/25 | 0289/25 |
| RPARN | 0491/04            | 0351/04            | 0078/05            | 0310/06            |                    |         |         |
| RPCK  | 0034/02            | 0392/02            | 0300/03            | 0136/04            | 0277/04            | 0070/06 | 0317/06 |
| RPOP  | 0349               | 0522               | 0353/04            | 0312/06            |                    |         |         |
| RQ1   | 0449/02            | 0090/15            | 0114/15            | 0195/15            | 0230/15            |         |         |
| RQ2   | 0450/02            | 0093/15            | 0117/15            | 0120/15            | 0168/15            | 0204/15 | 0274/15 |
| RQ3   | 0451/02<br>0244/15 | 0480/11<br>0441/15 | 0611/11<br>0484/15 | 0183/15<br>0491/15 | 0206/15<br>0381/35 | 0216/15 | 0234/15 |
| RQ4   | 0452/02            | 0172/15            | 0276/15            |                    |                    |         |         |
| RQ5   | 0453/02            | 0178/15            | 0197/15            |                    |                    |         |         |
| RQS10 | 0224/15            | 0212/15            |                    |                    |                    |         |         |
| RQS11 | 0245/15            | 0256/15            | 0265/15            |                    |                    |         |         |
| RQS12 | 0263/15            | 0269/15            |                    |                    |                    |         |         |
| RQS13 | 0270/15            | 0246/15            | 0249/15            | 0251/15            |                    |         |         |
| RQS14 | 0273/15            | 0232/15            | 0235/15            | 0240/15            |                    |         |         |
| RQS15 | 0194/15            | 0190/15            |                    |                    |                    |         |         |
| RQST2 | 0147/15            | 0121/15            |                    |                    |                    |         |         |
| RQST3 | 0230/15            | 0192/15            |                    |                    |                    |         |         |
| RQST4 | 0233/15            | 0196/15            |                    |                    |                    |         |         |
| RQST5 | 0236/15            | 0226/15            |                    |                    |                    |         |         |
| RQST6 | 0146/15            | 0124/15            |                    |                    |                    |         |         |
| RQST7 | 0150/15            | 0145/15            |                    |                    |                    |         |         |
| RQST8 | 0213/15            | 0203/15            |                    |                    |                    |         |         |
| RQST9 | 0281/15            | 0119/15            |                    |                    |                    |         |         |
| RQSTR | 0190/02            | 0094/12            | 0284/15            | 0366/15            | 0378/15            | 0162/20 |         |
| RSCH1 | 0450/14            | 0458/14            |                    |                    |                    |         |         |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |         |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|---------|---------|---------|
| RSCH2 | 0459/14            | 0453/14            |                    |                    |         |         |         |
| RSCHK | 0118/02<br>0285/14 | 0313/02<br>0372/14 | 0431/02<br>0443/14 | 0461/02<br>0466/14 | 0378/12 | 0018/13 | 0060/13 |
| RSFAE | 0190/31            | 0182/31            |                    |                    |         |         |         |
| RSFS  | 0170/31<br>0014/33 | 0203/31            | 0220/31            | 0229/31            | 0242/31 | 0260/31 | 0729/32 |
| RSFSP | 0014/33            | 0787/39            | 0438/51            | 0283/55            | 0156/58 | 0542/58 |         |
| RSPTR | 0404/02            | 0293/11            | 0378/11            | 0379/11            | 0380/11 | 0382/11 | 0384/11 |
| RST01 | 0165/05            | 0161/05            |                    |                    |         |         |         |
| RSTOP | 0080/02<br>0358/05 | 0385/02<br>0377/05 | 0318/03            | 0504/03            | 0164/05 | 0167/05 | 0292/05 |
| RSTP1 | 0269/08            | 0265/08            |                    |                    |         |         |         |
| RSTP2 | 0271/08            | 0291/08            |                    |                    |         |         |         |
| RSTP3 | 0287/08            | 0309/08            |                    |                    |         |         |         |
| RSTP4 | 0292/08            | 0281/08            |                    |                    |         |         |         |
| RSTP5 | 0314/08            | 0257/08            | 0335/08            |                    |         |         |         |
| RSTP6 | 0333/08            | 0324/08            | 0330/08            | 0354/08            |         |         |         |
| RSTP7 | 0339/08            | 0321/08            | 0349/08            |                    |         |         |         |
| RSTP8 | 0350/08            | 0344/08            | 0347/08            |                    |         |         |         |
| RSTP9 | 0355/08            | 0316/08            |                    |                    |         |         |         |
| RSTPT | 0200/02            | 0074/07            | 0358/08            | 0400/36            |         |         |         |
| RSTR1 | 0271/05            | 0267/05            |                    |                    |         |         |         |
| RSTRS | 0266/05            | 0534/05            |                    |                    |         |         |         |
| RT0   | 0471/02            | 0444/14            | 0465/14            |                    |         |         |         |
| RT1   | 0472/02            | 0449/14            | 0451/14            | 0455/14            | 0456/14 |         |         |
| RTNST | 0381/02<br>0067/10 | 0330/09<br>0202/10 | 0383/09<br>0207/10 | 0427/09            | 0430/09 | 0065/10 | 0066/10 |
| RTRNQ | 0380/02            | 0382/09            | 0420/09            | 0446/09            | 0069/10 | 0203/10 |         |
| RVRSL | 0003/26            | 0199/27            |                    |                    |         |         |         |

CROSS-REFERENCE SYMBOL TABLE

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|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| S     | 0004/23 | 0142/23 | 0437/23 |         |         |         |         |
| S14LP | 0271    | 0064/07 | 0596/11 | 0492/16 | 0393/19 | 0486/30 | 0528/30 |
| S14SC | 0270    | 0271    | 0421/03 | 0436/03 | 0466/03 | 0633/05 | 0191/06 |
|       | 0246/06 | 0258/06 | 0409/19 | 0307/28 | 0317/28 | 0610/28 | 0210/29 |
|       | 0311/29 | 0412/29 | 0415/29 | 0456/29 | 0009/30 | 0030/30 | 0054/30 |
|       | 0109/30 | 0336/30 | 0427/30 | 0444/30 | 0156/33 | 0045/39 | 0059/39 |
|       | 0217/39 | 0235/39 | 0411/39 | 0546/39 | 0559/39 | 0562/39 | 0320/41 |
|       | 0028/42 | 0004/43 | 0090/45 | 0222/45 | 0411/45 | 0422/45 | 0097/47 |
|       | 0260/48 | 0271/48 | 0615/48 | 0632/48 | 0647/48 | 0195/49 | 0209/49 |
|       | 0237/49 | 0083/59 | 0129/59 | 0289/59 | 0296/59 |         |         |
| S14SH | 0395/28 | 0270    | 0415/28 | 0709/32 |         |         |         |
| S8184 | 0515/37 | 0102/37 |         |         |         |         |         |
| SA1   | 0144/21 | 0139/21 |         |         |         |         |         |
| SA2   | 0145/21 | 0114/21 |         |         |         |         |         |
| SAD   | 0288/02 | 0091/23 | 0236/23 | 0416/23 | 0186/24 | 0219/24 | 0248/24 |
| SAL1  | 0036/28 | 0067/28 |         |         |         |         |         |
| SAL2  | 0090/28 | 0038/28 | 0056/28 | 0077/28 |         |         |         |
| SAL3  | 0045/28 | 0042/28 |         |         |         |         |         |
| SAL4  | 0059/28 | 0066/28 |         |         |         |         |         |
| SAL5  | 0070/28 | 0063/28 |         |         |         |         |         |
| SALCP | 0097/28 | 0022/28 | 0083/28 | 0703/32 |         |         |         |
| SALDA | 0100/28 | 0031/28 | 0050/28 | 0052/28 | 0072/28 | 0082/28 |         |
| SALEC | 0102/28 | 0049/28 | 0065/28 | 0704/32 |         |         |         |
| SALFA | 0110/28 | 0091/28 |         |         |         |         |         |
| SALSU | 0106/28 | 0094/28 |         |         |         |         |         |
| SALTL | 0098/28 | 0025/28 | 0032/28 | 0073/28 |         |         |         |
| SALTS | 0101/28 | 0035/28 | 0061/28 |         |         |         |         |
| SALVA | 0428/32 |         |         |         |         |         |         |
| SALVG | 0021/28 | 0137/03 | 0086/28 | 0093/28 | 0428/32 | 0701/32 | 0018/33 |
| SALVP | 0018/33 | 0654/35 | 0336/36 | 0221/38 | 0344/38 | 0206/39 | 0571/39 |
|       | 0830/39 | 0087/44 | 0752/48 | 0124/49 | 0436/49 | 0124/50 | 0306/57 |
|       | 0662/57 | 0211/58 | 0274/58 |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|
| SALVN | 0137/03 | 0104/03 |         |         |         |
| SALWL | 0099/28 | 0028/28 | 0036/28 | 0043/28 | 0046/28 |
| SAM2K | 0104/28 | 0045/28 |         |         |         |
| SAN8K | 0758/57 | 0521/57 |         |         |         |
| SANC  | 0508/57 | 0502/57 |         |         |         |
| SANCA | 0520/57 | 0514/57 |         |         |         |
| SANCB | 0525/57 | 0519/57 |         |         |         |
| SANCC | 0559/57 | 0572/57 |         |         |         |
| SANCD | 0568/57 | 0564/57 |         |         |         |
| SANCM | 0576/57 | 0543/57 | 0571/57 |         |         |
| SANCO | 0580/57 |         |         |         |         |
| SANCP | 0583/57 | 0579/57 |         |         |         |
| SANCR | 0597/57 | 0605/57 |         |         |         |
| SANCT | 0611/57 | 0602/57 |         |         |         |
| SANCV | 0633/57 | 0621/57 |         |         |         |
| SANDD | 0664/57 | 0658/57 |         |         |         |
| SANEA | 0731/57 | 0504/57 | 0734/57 |         |         |
| SANEB | 0736/57 | 0705/57 | 0739/57 |         |         |
| SANEC | 0741/57 | 0709/57 | 0744/57 |         |         |
| SANED | 0745/57 | 0713/57 | 0748/57 |         |         |
| SANEE | 0750/57 | 0607/57 | 0753/57 |         |         |
| SANFA | 0734/57 | 0505/57 |         |         |         |
| SANFB | 0739/57 | 0706/57 |         |         |         |
| SANFC | 0744/57 | 0710/57 |         |         |         |
| SANFD | 0748/57 | 0714/57 |         |         |         |
| SANFE | 0753/57 | 0608/57 |         |         |         |
| SANIL | 0716/57 | 0506/57 | 0609/57 | 0707/57 | 0711/57 |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| SANIP | 0693/57 | 0486/57 | 0488/57 | 0490/57 | 0701/57 |         |         |
| SANKB | 0705/57 | 0518/57 | 0523/57 |         |         |         |         |
| SANKC | 0709/57 | 0530/57 |         |         |         |         |         |
| SANKD | 0713/57 | 0567/57 |         |         |         |         |         |
| SANLA | 0754/57 | 0512/57 | 0577/57 | 0697/57 | 0700/57 |         |         |
| SANLB | 0755/57 | 0550/57 | 0562/57 | 0584/57 | 0598/57 | 0617/57 | 0665/57 |
| SANLC | 0756/57 | 0566/57 | 0594/57 | 0604/57 | 0616/57 | 0650/57 | 0684/57 |
| SANLD | 0757/57 | 0612/57 | 0619/57 |         |         |         |         |
| SAV0  | 0040/36 | 0304/36 |         |         |         |         |         |
| SAV10 | 0169/36 | 0422/36 |         |         |         |         |         |
| SAV11 | 0172/36 | 0169/36 |         |         |         |         |         |
| SAV12 | 0137/36 | 0174/36 |         |         |         |         |         |
| SAV21 | 0233/36 | 0373/36 |         |         |         |         |         |
| SAV23 | 0129/36 | 0374/36 |         |         |         |         |         |
| SAV24 | 0298/36 | 0427/36 |         |         |         |         |         |
| SAV25 | 0301/36 | 0298/36 |         |         |         |         |         |
| SAV3  | 0337/36 | 0029/36 |         |         |         |         |         |
| SAV30 | 0272/36 | 0251/36 | 0293/36 |         |         |         |         |
| SAV31 | 0295/36 | 0275/36 |         |         |         |         |         |
| SAV32 | 0333/36 | 0326/36 |         |         |         |         |         |
| SAV4  | 0338/36 | 0033/36 |         |         |         |         |         |
| SAV5  | 0046/36 | 0041/36 | 0042/36 |         |         |         |         |
| SAV50 | 0060/36 | 0405/36 |         |         |         |         |         |
| SAV51 | 0062/36 | 0060/36 |         |         |         |         |         |
| SAV6  | 0091/36 | 0081/36 |         |         |         |         |         |
| SAV7  | 0147/36 | 0121/36 |         |         |         |         |         |
| SAV9  | 0083/36 |         |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |         |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|---------|---------|---------|
| SAV98 | 0343/36            | 0178/36            |                    |                    |         |         |         |
| SAV99 | 0369/36            | 0348/36            |                    |                    |         |         |         |
| SAVBA | 0094/36            | 0127/36            |                    |                    |         |         |         |
| SAVBD | 0116/36            | 0124/36            |                    |                    |         |         |         |
| SAVBF | 0125/36            | 0104/36            | 0109/36            |                    |         |         |         |
| SAVC  | 0360/36<br>0284/36 | 0113/36            | 0123/36            | 0153/36            | 0257/36 | 0278/36 | 0283/36 |
| SAVCF | 0277/36            | 0255/36            |                    |                    |         |         |         |
| SAVCG | 0289/36            | 0271/36            |                    |                    |         |         |         |
| SAVD  | 0362/36<br>0246/36 | 0025/36<br>0266/36 | 0054/36<br>0268/36 | 0056/36<br>0273/36 | 0101/36 | 0102/36 | 0111/36 |
| SAVDF | 0363/36            | 0093/36            | 0126/36            | 0151/36            | 0253/36 | 0286/36 |         |
| SAVDP | 0352/36            | 0158/36            | 0302/36            |                    |         |         |         |
| SAVDS | 0358/36            | 0155/36            | 0209/36            | 0352/36            | 0377/37 |         |         |
| SAVDU | 0364/36            | 0164/36            | 0374/37            |                    |         |         |         |
| SAVE  | 0046/31            | 0494/29            |                    |                    |         |         |         |
| SAVI  | 0356/36            | 0176/36            | 0216/36            | 0218/36            | 0220/36 |         |         |
| SAVLN | 0365/36            | 0068/36            | 0075/36            | 0119/36            | 0148/36 | 0236/36 | 0280/36 |
| SAVO  | 0048/31            | 0351/36            | 0614/44            | 0506/56            | 0439/57 |         |         |
| SAVOV | 0351/36            | 0346/36            |                    |                    |         |         |         |
| SAVP  | 0361/36<br>0197/36 | 0023/36<br>0303/36 | 0030/36<br>0365/37 | 0036/36            | 0050/36 | 0062/36 | 0070/36 |
| SAVS  | 0357/36            | 0187/36            | 0192/36            |                    |         |         |         |
| SAVWD | 0359/36            | 0065/36            | 0213/36            | 0296/36            | 0381/37 |         |         |
| SB1   | 0146/21            | 0141/21            |                    |                    |         |         |         |
| SB2   | 0147/21            | 0116/21            |                    |                    |         |         |         |
| SBD   | 0289/02<br>0220/24 | 0090/23<br>0247/24 | 0233/23            | 0234/23            | 0415/23 | 0444/23 | 0185/24 |
| SBFIX | 0088/02            | 0052/10            | 0452/11            | 0080/12            | 0097/12 | 0191/13 | 0198/13 |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | 0021/15<br>0471/35                                                                                                                                                                                                                                                   | 0023/15                                                                                                                                                                                                                                                              | 0027/15                                                                                                                                                                                                                                                              | 0028/15                                                                                                                                                                                                                                                              | 0323/18                                                                                                                                                                                                                                                   | 0333/18                                                                                                                                                                                                                                                   | 0157/20                                                                                                                                                                                                                                                   |
| SBHED | 0049                                                                                                                                                                                                                                                                 | 0116/29                                                                                                                                                                                                                                                              | 0128/29                                                                                                                                                                                                                                                              | 0378/29                                                                                                                                                                                                                                                              | 0406/30                                                                                                                                                                                                                                                   | 0418/30                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                           |
| SBJTB | 0249                                                                                                                                                                                                                                                                 | 0236/02                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
| SBP   | 0129                                                                                                                                                                                                                                                                 | 0131                                                                                                                                                                                                                                                                 | 0417/03                                                                                                                                                                                                                                                              | 0190/06                                                                                                                                                                                                                                                              | 0345/28                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
| SBPTR | 0246/02<br>0307/03<br>0428/03<br>0486/03<br>0586/03<br>0011/04<br>0218/04<br>0301/04<br>0376/04<br>0180/05<br>0326/05<br>0591/05<br>0141/06<br>0198/06<br>0313/06<br>0535/06<br>0233/11<br>0277/11<br>0199/14<br>0072/17<br>0107/17<br>0326/18<br>0349/18<br>0464/25 | 0410/02<br>0309/03<br>0429/03<br>0487/03<br>0624/03<br>0014/04<br>0232/04<br>0322/04<br>0402/04<br>0205/05<br>0327/05<br>0598/05<br>0145/06<br>0223/06<br>0378/06<br>0552/06<br>0242/11<br>0292/11<br>0340/15<br>0091/17<br>0108/17<br>0328/18<br>0176/22<br>0477/25 | 0251/03<br>0341/03<br>0431/03<br>0494/03<br>0653/03<br>0057/04<br>0242/04<br>0332/04<br>0036/05<br>0218/05<br>0341/05<br>0599/05<br>0148/06<br>0224/06<br>0395/06<br>0231/10<br>0243/11<br>0301/11<br>0502/16<br>0092/17<br>0119/17<br>0336/18<br>0178/22<br>0478/25 | 0271/03<br>0376/03<br>0449/03<br>0505/03<br>0695/03<br>0089/04<br>0243/04<br>0334/04<br>0081/05<br>0236/05<br>0435/05<br>0616/05<br>0149/06<br>0233/06<br>0396/06<br>0360/10<br>0244/11<br>0302/11<br>0057/17<br>0093/17<br>0120/17<br>0338/18<br>0459/25<br>0479/25 | 0272/03<br>0386/03<br>0452/03<br>0535/03<br>0699/03<br>0104/04<br>0247/04<br>0339/04<br>0130/05<br>0237/05<br>0476/05<br>0081/06<br>0159/06<br>0252/06<br>0406/06<br>0376/10<br>0269/11<br>0303/11<br>0069/17<br>0101/17<br>0135/17<br>0343/18<br>0461/25 | 0275/03<br>0398/03<br>0473/03<br>0539/03<br>0716/03<br>0107/04<br>0263/04<br>0341/04<br>0138/05<br>0271/05<br>0477/05<br>0083/06<br>0192/06<br>0297/06<br>0407/06<br>0382/10<br>0275/11<br>0311/11<br>0070/17<br>0103/17<br>0137/17<br>0347/18<br>0462/25 | 0276/03<br>0427/03<br>0476/03<br>0562/03<br>0717/03<br>0116/04<br>0283/04<br>0354/04<br>0158/05<br>0308/05<br>0565/05<br>0086/06<br>0196/06<br>0298/06<br>0534/06<br>0060/11<br>0276/11<br>0376/11<br>0071/17<br>0104/17<br>0138/17<br>0348/18<br>0463/25 |
| SBPUD | 0046/02<br>0675/03<br>0361/04<br>0064/06<br>0539/06                                                                                                                                                                                                                  | 0391/03<br>0696/03<br>0075/05<br>0069/06<br>0177/22                                                                                                                                                                                                                  | 0450/03<br>0707/03<br>0082/05<br>0084/06<br>0179/22                                                                                                                                                                                                                  | 0453/03<br>0043/04<br>0165/05<br>0087/06                                                                                                                                                                                                                             | 0571/03<br>0054/04<br>0232/05<br>0226/06                                                                                                                                                                                                                  | 0639/03<br>0085/04<br>0474/05<br>0299/06                                                                                                                                                                                                                  | 0650/03<br>0288/04<br>0481/05<br>0314/06                                                                                                                                                                                                                  |
| SBSC1 | 0060/05                                                                                                                                                                                                                                                              | 0099/05                                                                                                                                                                                                                                                              | 0102/05                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
| SBSC3 | 0070/05                                                                                                                                                                                                                                                              | 0063/05                                                                                                                                                                                                                                                              | 0067/05                                                                                                                                                                                                                                                              | 0098/05                                                                                                                                                                                                                                                              | 0106/05                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
| SBSC4 | 0095/05                                                                                                                                                                                                                                                              | 0059/05                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
| SBSC5 | 0100/05                                                                                                                                                                                                                                                              | 0040/05                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
| SBSCK | 0016/02<br>0087/05                                                                                                                                                                                                                                                   | 0378/02<br>0092/05                                                                                                                                                                                                                                                   | 0034/04<br>0094/05                                                                                                                                                                                                                                                   | 0127/04<br>0221/05                                                                                                                                                                                                                                                   | 0030/05<br>0420/05                                                                                                                                                                                                                                        | 0031/05                                                                                                                                                                                                                                                   | 0043/05                                                                                                                                                                                                                                                   |
| SBT0  | 0347/02                                                                                                                                                                                                                                                              | 0533/06                                                                                                                                                                                                                                                              | 0538/06                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                           |
| SBUFA | 0336/02                                                                                                                                                                                                                                                              | 0252/03                                                                                                                                                                                                                                                              | 0561/05                                                                                                                                                                                                                                                              | 0563/05                                                                                                                                                                                                                                                              | 0571/05                                                                                                                                                                                                                                                   | 0586/05                                                                                                                                                                                                                                                   | 0595/05                                                                                                                                                                                                                                                   |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                               |                               |                               |                               |                               |                               |
|-------|------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
|       | 0596/05                                  | 0605/05                       |                               |                               |                               |                               |                               |
| SCALR | 0432/02<br>0124/18                       | 0332/17<br>0187/18            | 0087/18<br>0198/18            | 0093/18<br>0216/18            | 0115/18<br>0261/18            | 0118/18<br>0266/18            | 0121/18<br>0272/18            |
| SCH1  | 0252/29<br>0421/29<br>0245/30<br>0481/44 | 0695/28<br>0432/29<br>0289/30 | 0017/29<br>0445/29<br>0327/30 | 0261/29<br>0021/30<br>0512/30 | 0273/29<br>0162/30<br>0079/33 | 0348/29<br>0189/30<br>0418/33 | 0416/29<br>0215/30<br>0486/33 |
| SCH11 | 0436/29                                  | 0384/29                       |                               |                               |                               |                               |                               |
| SCH12 | 0521/29                                  | 0508/29                       |                               |                               |                               |                               |                               |
| SCH13 | 0538/29                                  | 0528/29                       |                               |                               |                               |                               |                               |
| SCH14 | 0532/29                                  | 0542/29                       |                               |                               |                               |                               |                               |
| SCH15 | 0152/29                                  | 0027/29                       | 0048/29                       | 0098/29                       | 0106/29                       | 0112/29                       |                               |
| SCH16 | 0104/29                                  | 0029/29                       | 0053/29                       |                               |                               |                               |                               |
| SCH17 | 0142/29                                  | 0122/29                       |                               |                               |                               |                               |                               |
| SCH18 | 0144/29                                  | 0123/29                       | 0124/29                       |                               |                               |                               |                               |
| SCH19 | 0141/29                                  | 0135/29                       |                               |                               |                               |                               |                               |
| SCH2  | 0441/33                                  | 0448/33                       |                               |                               |                               |                               |                               |
| SCH20 | 0418/29                                  | 0408/29                       | 0517/29                       | 0548/29                       | 0031/30                       | 0107/31                       |                               |
| SCH21 | 0097/29                                  | 0148/29                       |                               |                               |                               |                               |                               |
| SCH22 | 0448/29                                  | 0439/29                       |                               |                               |                               |                               |                               |
| SCH23 | 0136/29                                  | 0110/29                       |                               |                               |                               |                               |                               |
| SCH24 | 0469/29                                  | 0452/29                       |                               |                               |                               |                               |                               |
| SCH25 | 0440/29                                  | 0393/29                       |                               |                               |                               |                               |                               |
| SCH26 | 0489/29                                  | 0479/29                       | 0483/29                       |                               |                               |                               |                               |
| SCH27 | 0485/29                                  | 0471/29                       | 0473/29                       | 0475/29                       |                               |                               |                               |
| SCH28 | 0505/29                                  | 0492/29                       |                               |                               |                               |                               |                               |
| SCH29 | 0512/29                                  | 0495/29                       | 0497/29                       | 0499/29                       | 0501/29                       | 0503/29                       |                               |
| SCH3  | 0015/29                                  | 0140/29                       | 0295/29                       | 0332/29                       | 0402/29                       | 0536/29                       |                               |
| SCH30 | 0404/29                                  | 0381/29                       |                               |                               |                               |                               |                               |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                                       |                                          |                               |                               |                               |                               |
|-------|------------------------------------------|---------------------------------------|------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| SCH4  | 0368/29                                  | 0277/29                               |                                          |                               |                               |                               |                               |
| SCH5  | 0025/29                                  | 0281/29                               |                                          |                               |                               |                               |                               |
| SCH51 | 0287/29                                  | 0371/29                               |                                          |                               |                               |                               |                               |
| SCH52 | 0050/29                                  | 0035/29                               |                                          |                               |                               |                               |                               |
| SCH6  | 0376/29                                  | 0280/29                               |                                          |                               |                               |                               |                               |
| SCH61 | 0529/29                                  | 0364/29                               |                                          |                               |                               |                               |                               |
| SCH7  | 0299/29                                  | 0279/29                               | 0421/32                                  |                               |                               |                               |                               |
| SCH75 | 0333/29                                  | 0316/29                               |                                          |                               |                               |                               |                               |
| SCH78 | 0346/29                                  |                                       |                                          |                               |                               |                               |                               |
| SCH8  | 0352/29                                  | 0278/29                               |                                          |                               |                               |                               |                               |
| SCH9  | 0389/29                                  | 0382/29                               |                                          |                               |                               |                               |                               |
| SCHAR | 0405/30<br>0422/30                       | 0093/30<br>0439/30                    | 0123/30<br>0440/30                       | 0139/30<br>0445/30            | 0416/30<br>0720/32            | 0420/30                       | 0421/30                       |
| SCHB1 | 0419/33                                  | 0403/33                               |                                          |                               |                               |                               |                               |
| SCHBL | 0396/33                                  | 0256/34                               | 0510/34                                  | 0343/35                       | 0641/35                       | 0657/35                       |                               |
| SCHED | 0677/28                                  | 0671/28                               |                                          |                               |                               |                               |                               |
| SCHEN | 0283<br>0549/21                          | 0628/05<br>0184/33                    | 0634/05<br>0226/33                       | 0600/11<br>0340/33            | 0451/16                       | 0538/21                       | 0545/21                       |
| SCHEQ | 0354/30                                  | 0283                                  |                                          |                               |                               |                               |                               |
| SCHID | 0052                                     | 0268/29                               | 0392/29                                  | 0436/29                       |                               |                               |                               |
| SCHIN | 0285                                     | 0264/11                               | 0232/12                                  | 0330/16                       |                               |                               |                               |
| SCHIQ | 0331/30                                  | 0285                                  | 0339/30                                  |                               |                               |                               |                               |
| SCHL  | 0050                                     | 0118/29                               | 0435/33                                  | 0449/33                       | 0450/33                       |                               |                               |
| SCHLB | 0297                                     | 0364/07                               | 0490/11                                  | 0014/12                       |                               |                               |                               |
| SCHLQ | 0350/33<br>0205/34<br>0253/35<br>0637/35 | 0297<br>0320/34<br>0488/35<br>0522/56 | 0754/32<br>0331/34<br>0490/35<br>0455/57 | 0381/33<br>0113/35<br>0491/35 | 0382/33<br>0145/35<br>0496/35 | 0408/33<br>0179/35<br>0547/35 | 0421/33<br>0251/35<br>0608/35 |
| SCH00 | 0514/30                                  | 0516/30                               | 0723/32                                  | 0023/33                       |                               |                               |                               |
| SCH0U | 0023/33                                  | 0168/41                               | 0330/41                                  | 0347/41                       | 0572/41                       | 0037/42                       | 0054/42                       |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0180/42 | 0253/42 | 0282/42 | 0294/42 | 0365/42 | 0437/42 | 0451/42 |
|       | 0466/42 | 0539/42 | 0065/43 | 0093/43 | 0116/43 | 0157/43 | 0171/43 |
|       | 0199/43 | 0214/43 | 0227/43 | 0251/43 | 0273/43 | 0278/43 | 0353/45 |
|       | 0369/45 | 0389/45 |         |         |         |         |         |
| SCHP  | 0053    | 0120/29 | 0379/29 | 0469/29 | 0482/29 | 0493/29 | 0505/29 |
|       | 0102/30 | 0118/30 | 0122/30 | 0138/30 | 0144/30 | 0441/33 | 0451/33 |
| SCHPR | 0055    | 0430/33 | 0446/33 |         |         |         |         |
| SCHQ1 | 0369/30 | 0357/30 |         |         |         |         |         |
| SCHQ2 | 0379/30 | 0376/30 |         |         |         |         |         |
| SCHQ3 | 0381/30 | 0373/30 |         |         |         |         |         |
| SCHR1 | 0423/30 | 0408/30 | 0432/30 |         |         |         |         |
| SCHR2 | 0441/30 | 0434/30 |         |         |         |         |         |
| SCHS1 | 0022/29 | 0255/29 |         |         |         |         |         |
| SCHSQ | 0518/30 | 0599/42 |         |         |         |         |         |
| SCLPR | 0044/30 | 0339/29 | 0428/29 | 0055/30 | 0378/30 |         |         |
| SCMMA | 0503/04 | 0062/05 |         |         |         |         |         |
| SCNT  | 0054    | 0092/30 | 0119/30 |         |         |         |         |
| SCOM  | 0090/30 | 0121/29 | 0300/29 | 0094/30 | 0095/30 | 0098/30 | 0104/30 |
|       | 0110/30 | 0111/30 | 0114/30 | 0117/30 | 0124/30 | 0134/30 | 0137/30 |
|       | 0145/30 | 0718/32 |         |         |         |         |         |
| SCOM1 | 0407    | 0128/30 |         |         |         |         |         |
| SCOM5 | 0409    | 0133/30 |         |         |         |         |         |
| SCOMA | 0128/30 | 0121/30 |         |         |         |         |         |
| SCOMB | 0113/30 | 0126/30 |         |         |         |         |         |
| SCOMC | 0137/30 | 0132/30 |         |         |         |         |         |
| SCOMD | 0131/30 | 0136/30 |         |         |         |         |         |
| SCOME | 0111/30 | 0101/30 |         |         |         |         |         |
| SCOMM | 0435    | 0478/06 | 0307/08 |         |         |         |         |
| SCR   | 0025/31 | 0472/29 |         |         |         |         |         |
| SCRAT | 0550/29 | 0547/29 | 0560/29 | 0545/30 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| SDIR0 | 0517/37 | 0013/37 | 0052/37 | 0200/37 | 0222/37 | 0254/37 | 0493/37 |
| SDIRL | 0518/37 | 0033/37 | 0067/37 | 0081/37 | 0391/37 |         |         |
| SDIRU | 0519/37 | 0269/37 |         |         |         |         |         |
| SEMI  | 0481/04 | 0648/03 | 0052/04 |         |         |         |         |
| SEMI1 | 0508/33 | 0497/33 |         |         |         |         |         |
| SEMI2 | 0521/33 | 0526/33 |         |         |         |         |         |
| SEMI3 | 0534/33 | 0507/33 |         |         |         |         |         |
| SEMIC | 0493/33 | 0761/32 | 0539/33 | 0609/35 | 0236/38 | 0329/39 |         |
| SER1  | 0355/25 | 0368/25 |         |         |         |         |         |
| SER10 | 0425/16 | 0439/16 |         |         |         |         |         |
| SER11 | 0433/16 | 0424/16 |         |         |         |         |         |
| SER12 | 0440/16 | 0432/16 |         |         |         |         |         |
| SER13 | 0442/16 | 0409/16 |         |         |         |         |         |
| SER5A | 0469/16 | 0457/16 | 0462/16 |         |         |         |         |
| SER7A | 0184/03 | 0258/03 |         |         |         |         |         |
| SERR  | 0178/02 | 0527    | 0529    | 0530    | 0532    | 0533    | 0535    |
|       | 0536    | 0538    | 0329/02 | 0330/02 | 0242/10 | 0259/10 | 0317/10 |
|       | 0225/16 | 0310/16 | 0415/16 |         |         |         |         |
| SERR1 | 0336/16 | 0237/16 | 0310/16 |         |         |         |         |
| SERR2 | 0373/16 | 0482/16 | 0496/16 |         |         |         |         |
| SERR3 | 0397/16 | 0389/16 |         |         |         |         |         |
| SERR4 | 0405/16 | 0332/16 |         |         |         |         |         |
| SERR5 | 0453/16 | 0364/16 |         |         |         |         |         |
| SERR6 | 0497/16 | 0322/16 |         |         |         |         |         |
| SERR7 | 0516/16 | 0184/03 |         |         |         |         |         |
| SERR8 | 0414/16 | 0402/16 |         |         |         |         |         |
| SERR9 | 0416/16 | 0412/16 |         |         |         |         |         |
| SERRA | 0005/15 | 0312/16 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| SERRB | 0362/16 | 0358/16 |         |         |         |         |         |
| SERRS | 0527    | 0280/03 | 0317/03 | 0321/03 | 0327/03 | 0344/03 | 0348/03 |
|       | 0354/03 | 0362/03 | 0367/03 | 0369/03 | 0379/03 | 0384/03 | 0407/03 |
|       | 0439/03 | 0443/03 | 0447/03 | 0475/03 | 0482/03 | 0503/03 | 0510/03 |
|       | 0520/03 | 0524/03 | 0529/03 | 0533/03 | 0544/03 | 0554/03 | 0565/03 |
|       | 0575/03 | 0584/03 | 0598/03 | 0603/03 | 0616/03 | 0627/03 | 0649/03 |
|       | 0652/03 | 0663/03 | 0673/03 | 0698/03 | 0725/03 | 0808/04 | 0820/04 |
|       | 0829/04 | 0841/04 | 0845/04 | 0853/04 | 0856/04 | 0866/04 | 0872/04 |
|       | 0880/04 | 0888/04 | 0899/04 | 0111/04 | 0128/04 | 0133/04 | 0139/04 |
|       | 0146/04 | 0158/04 | 0169/04 | 0175/04 | 0256/04 | 0258/04 | 0265/04 |
|       | 0268/04 | 0271/04 | 0276/04 | 0300/04 | 0314/04 | 0320/04 | 0405/04 |
|       | 0420/04 | 0079/05 | 0105/05 | 0117/05 | 0140/05 | 0163/05 | 0184/05 |
|       | 0186/05 | 0192/05 | 0217/05 | 0231/05 | 0307/05 | 0314/05 | 0321/05 |
|       | 0333/05 | 0335/05 | 0340/05 | 0344/05 | 0352/05 | 0362/05 | 0369/05 |
|       | 0371/05 | 0425/05 | 0604/05 | 0866/06 | 0111/06 | 0311/06 | 0537/06 |
|       | 0550/06 | 0805/15 | 0806/15 |         |         |         |         |
| SETD1 | 0045/12 | 0041/12 |         |         |         |         |         |
| SETD2 | 0049/12 | 0035/12 |         |         |         |         |         |
| SETDP | 0102/02 | 0307/02 | 0388/09 | 0212/11 | 0052/12 | 0118/12 | 0172/20 |
| SETPT | 0144/02 | 0316/02 | 0386/09 | 0104/10 | 0170/10 | 0195/10 | 0174/12 |
|       | 0304/12 |         |         |         |         |         |         |
| SFC7  | 0570/26 |         |         |         |         |         |         |
| SFLAG | 0534/04 | 0297/03 | 0310/03 | 0313/03 | 0320/03 | 0342/03 | 0488/03 |
|       | 0490/03 | 0625/03 | 0656/03 | 0718/03 | 0369/04 | 0394/04 | 0437/04 |
|       | 0438/04 | 0463/04 | 0101/05 | 0137/05 | 0141/05 | 0159/05 | 0162/05 |
|       | 0219/05 | 0258/05 |         |         |         |         |         |
| SFLG  | 0477/02 | 0046/23 | 0223/23 | 0225/23 | 0245/23 | 0323/24 | 0092/25 |
|       | 0124/25 |         |         |         |         |         |         |
| SFLGA | 0258/05 | 0298/05 | 0342/05 | 0364/05 |         |         |         |
| SICK  | 0119/28 | 0138/03 | 0010/15 | 0474/27 | 0492/27 | 0123/28 | 0634/28 |
|       | 0427/32 | 0706/32 | 0017/33 |         |         |         |         |
| SICKA | 0427/32 |         |         |         |         |         |         |
| SICKL | 0010/15 | 0361/16 |         |         |         |         |         |
| SICKM | 0127/28 | 0121/28 |         |         |         |         |         |
| SICKP | 0017/33 | 0391/33 | 0337/34 | 0434/34 | 0185/35 | 0263/35 | 0371/36 |
|       | 0022/39 | 0039/39 | 0115/39 | 0430/39 | 0450/39 | 0678/39 | 0723/39 |
|       | 0793/39 | 0085/42 | 0110/42 | 0621/44 | 0627/45 | 0683/45 | 0694/48 |
|       | 0028/49 | 0321/49 | 0409/49 | 0421/49 | 0074/50 | 0068/51 | 0606/51 |
|       | 0303/52 | 0335/52 | 0535/54 | 0083/56 | 0527/56 | 0108/57 | 0204/57 |
|       | 0340/57 | 0461/57 | 0556/57 | 0590/57 | 0637/57 | 0646/57 | 0682/57 |



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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |  |
|-------|---------|---------|---------|---------|---------|---------|---------|--|
|       | 0687/57 | 0090/58 | 0154/58 | 0163/58 | 0309/58 |         |         |  |
| SICKW | 0130/03 | 0058/03 |         |         |         |         |         |  |
| SICKZ | 0634/28 | 0213/30 |         |         |         |         |         |  |
| SIGN  | 0301/02 | 0573/03 | 0596/03 | 0601/03 | 0297/04 | 0233/10 | 0236/10 |  |
|       | 0278/10 | 0289/10 | 0313/11 | 0324/11 | 0052/19 | 0073/19 | 0183/19 |  |
|       | 0461/21 | 0170/22 | 0266/23 | 0283/23 | 0419/23 | 0447/23 | 0046/24 |  |
|       | 0087/24 | 0189/24 | 0223/24 | 0251/24 | 0174/25 |         |         |  |
| SINIT | 0170/02 | 0466/02 | 0246/03 | 0035/07 | 0311/12 | 0235/21 |         |  |
| SLE0  | 0235/49 | 0240/49 |         |         |         |         |         |  |
| SLE1  | 0186/49 | 0199/49 |         |         |         |         |         |  |
| SLE2  | 0285/49 | 0375/49 |         |         |         |         |         |  |
| SLE3  | 0373/49 | 0287/49 |         |         |         |         |         |  |
| SLE4  | 0414/49 | 0425/49 |         |         |         |         |         |  |
| SLE5  | 0389/49 | 0394/49 |         |         |         |         |         |  |
| SLE6  | 0434/49 | 0371/49 |         |         |         |         |         |  |
| SLE7  | 0247/49 | 0275/49 |         |         |         |         |         |  |
| SLE8  | 0268/49 | 0252/49 | 0262/49 |         |         |         |         |  |
| SLEBA | 0468/49 | 0402/49 | 0463/49 |         |         |         |         |  |
| SLEBD | 0463/49 | 0405/49 |         |         |         |         |         |  |
| SLEC1 | 0448/49 | 0458/49 |         |         |         |         |         |  |
| SLEC2 | 0456/49 | 0450/49 |         |         |         |         |         |  |
| SLECA | 0432/49 | 0431/49 |         |         |         |         |         |  |
| SLECH | 0442/49 | 0214/49 | 0216/49 | 0218/49 | 0222/49 | 0225/49 | 0227/49 |  |
|       | 0229/49 | 0459/49 |         |         |         |         |         |  |
| SLECT | 0466/49 | 0411/49 | 0424/49 |         |         |         |         |  |
| SLEHI | 0430/49 | 0500/49 |         |         |         |         |         |  |
| SLENG | 0343/02 | 0195/06 | 0202/06 | 0209/06 | 0218/06 | 0240/06 |         |  |
| SLEPT | 0097    |         |         |         |         |         |         |  |
| SLERE | 0177/49 | 0175/49 |         |         |         |         |         |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |                    |                    |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| SLEST | 0462/49            | 0178/49            |                    |                    |                    |                    |                    |
| SLETP | 0467/49<br>0423/49 | 0413/49            | 0414/49            | 0416/49            | 0417/49            | 0419/49            | 0422/49            |
| SM31  | 0354/36            | 0327/36            |                    |                    |                    |                    |                    |
| SM504 | 0511/37            | 0504/37            |                    |                    |                    |                    |                    |
| SM507 | 0353/36            | 0344/36            |                    |                    |                    |                    |                    |
| SMAIN | 0631/28            | 0163/30            | 0208/30            | 0234/30            | 0253/30            | 0323/30            | 0713/32            |
| SMBGN | 0342/02            | 0193/06            | 0231/06            | 0249/06            | 0251/06            |                    |                    |
| SMSK  | 0004/15            | 0114/16            | 0138/16            |                    |                    |                    |                    |
| SMULA | 0016/17            | 0336/17            |                    |                    |                    |                    |                    |
| SMULT | 0260/18            | 0016/17            |                    |                    |                    |                    |                    |
| SNFLG | 0488/02<br>0038/24 | 0092/23<br>0043/24 | 0424/23<br>0049/24 | 0441/23<br>0081/24 | 0450/23<br>0090/24 | 0002/24<br>0194/24 | 0036/24<br>0265/24 |
| SOURC | 0326/02<br>0269/16 | 0174/16<br>0275/16 | 0187/16            | 0188/16            | 0210/16            | 0218/16            | 0267/16            |
| SP,A  | 0396/59            | 0212/59            |                    |                    |                    |                    |                    |
| SP,L  | 0397/59            | 0245/59            | 0250/59            |                    |                    |                    |                    |
| SPD01 | 0167/59            | 0175/59            |                    |                    |                    |                    |                    |
| SPD03 | 0209/59            | 0193/59            | 0205/59            |                    |                    |                    |                    |
| SPD10 | 0319/59            | 0235/59            | 0239/59            |                    |                    |                    |                    |
| SPD11 | 0367/59            | 0230/59            | 0259/59            | 0373/59            |                    |                    |                    |
| SPD12 | 0377/59            | 0375/59            |                    |                    |                    |                    |                    |
| SPD13 | 0325/59            | 0332/59            |                    |                    |                    |                    |                    |
| SPD14 | 0195/59            | 0189/59            | 0202/59            |                    |                    |                    |                    |
| SPD16 | 0214/59            | 0222/59            | 0240/59            |                    |                    |                    |                    |
| SPD17 | 0216/59            |                    |                    |                    |                    |                    |                    |
| SPD18 | 0258/59            | 0265/59            |                    |                    |                    |                    |                    |
| SPD19 | 0266/59            | 0262/59            |                    |                    |                    |                    |                    |
| SPD4  | 0223/59            | 0219/59            |                    |                    |                    |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |  |
|-------|---------|---------|---------|---------|---------|---------|---------|--|
| SPD6  | 0271/59 | 0278/59 |         |         |         |         |         |  |
| SPD7  | 0280/59 | 0272/59 | 0297/59 | 0327/59 |         |         |         |  |
| SPD9  | 0242/59 | 0213/59 |         |         |         |         |         |  |
| SPDCK | 0335/59 | 0169/59 | 0342/59 |         |         |         |         |  |
| SPDCL | 0345/59 | 0197/59 | 0352/59 |         |         |         |         |  |
| SPDCN | 0389/59 | 0157/59 | 0225/59 | 0260/59 | 0268/59 | 0273/59 |         |  |
| SPDDG | 0299/59 | 0168/59 | 0196/59 | 0215/59 | 0307/59 |         |         |  |
| SPDNR | 0387/59 | 0163/59 | 0176/59 | 0180/59 | 0294/59 | 0338/59 | 0341/59 |  |
| SPDOC | 0392/59 | 0102/59 | 0257/59 | 0263/59 | 0264/59 | 0270/59 | 0276/59 |  |
|       | 0277/59 | 0315/59 | 0320/59 | 0322/59 | 0328/59 |         |         |  |
| SPDPO | 0390/59 | 0282/59 | 0290/59 | 0337/59 | 0340/59 | 0347/59 | 0350/59 |  |
|       | 0357/59 | 0360/59 |         |         |         |         |         |  |
| SPDSP | 0355/59 | 0217/59 | 0362/59 |         |         |         |         |  |
| SPUSZ | 0393/59 | 0164/59 | 0203/59 | 0286/59 | 0348/59 | 0351/59 |         |  |
| SPDTM | 0388/59 | 0161/59 | 0224/59 | 0229/59 | 0231/59 | 0237/59 | 0358/59 |  |
|       | 0361/59 |         |         |         |         |         |         |  |
| SPE   | 0543/33 | 0291/59 |         |         |         |         |         |  |
| SPROG | 0249/02 | 0196/03 | 0019/06 | 0438/06 | 0050/07 | 0121/07 | 0146/07 |  |
|       | 0460/07 | 0465/07 | 0466/07 | 0027/08 | 0254/08 | 0387/09 | 0209/11 |  |
|       | 0537/33 | 0476/35 | 0621/35 | 0635/35 | 0046/36 | 0064/36 | 0069/36 |  |
|       | 0387/36 | 0390/36 | 0069/38 | 0368/38 | 0379/38 | 0382/38 | 0340/39 |  |
|       | 0033/40 | 0067/40 | 0093/40 | 0111/40 | 0133/40 | 0208/40 | 0239/40 |  |
|       | 0312/40 | 0022/45 |         |         |         |         |         |  |
| SPS2  | 0424/48 | 0369/48 | 0378/48 |         |         |         |         |  |
| SPSET | 0309/59 | 0232/59 | 0317/59 |         |         |         |         |  |
| SPSP  | 0437/32 | 0086/32 | 0096/32 | 0120/32 |         |         |         |  |
| SPTR  | 0357/02 | 0068/07 | 0076/07 | 0079/07 | 0181/07 | 0182/07 | 0188/07 |  |
|       | 0207/07 | 0217/07 | 0236/07 | 0290/07 | 0292/07 | 0295/07 | 0311/07 |  |
|       | 0316/07 | 0322/07 | 0324/07 | 0333/07 | 0398/07 | 0401/07 | 0413/07 |  |
|       | 0414/07 | 0419/07 | 0421/07 | 0431/07 | 0434/07 | 0441/07 | 0028/08 |  |
|       | 0029/08 | 0031/08 | 0032/08 | 0034/08 | 0035/08 | 0045/08 | 0047/08 |  |
|       | 0059/08 | 0063/08 | 0071/08 | 0091/08 | 0092/08 | 0097/08 | 0101/08 |  |
|       | 0108/08 | 0111/08 | 0112/08 | 0170/08 | 0173/08 | 0255/08 | 0258/08 |  |
|       | 0259/08 | 0261/08 | 0262/08 | 0271/08 | 0286/08 | 0288/08 | 0292/08 |  |
|       | 0300/08 | 0171/16 | 0216/16 | 0219/16 | 0232/16 | 0234/16 | 0235/16 |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |
|-------|----------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
|       | 0243/16<br>0402/36                                             | 0244/16<br>0437/36                                  | 0265/16<br>0442/36                                  | 0266/16                                             | 0520/33                                             | 0525/33                                             | 0398/36                                             |
| SSTAK | 0338/02<br>0200/04<br>0422/04<br>0432/04<br>0047/05<br>0145/05 | 0254/03<br>0284/04<br>0423/04<br>0434/04<br>0048/05 | 0092/04<br>0357/04<br>0425/04<br>0435/04<br>0053/05 | 0131/04<br>0360/04<br>0426/04<br>0447/04<br>0054/05 | 0138/04<br>0403/04<br>0428/04<br>0449/04<br>0089/05 | 0168/04<br>0415/04<br>0429/04<br>0044/05<br>0090/05 | 0174/04<br>0416/04<br>0431/04<br>0045/05<br>0091/05 |
| SSYMT | 0068/02                                                        | 0302/02                                             | 0235/07                                             | 0281/07                                             | 0298/07                                             | 0175/08                                             | 0199/08                                             |
| ST.6J | 0160/47                                                        | 0488/46                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STA   | 0063/31                                                        | 0500/28                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STA2D | 0192/47<br>0225/47                                             | 0458/46<br>0227/47                                  | 0474/46<br>0251/47                                  | 0489/46<br>0030/48                                  | 0121/47                                             | 0197/47                                             | 0220/47                                             |
| STA3D | 0247/47                                                        | 0254/47                                             | 0510/47                                             | 0013/48                                             | 0035/48                                             | 0108/48                                             |                                                     |
| STA6D | 0217/47<br>0506/47                                             | 0399/46<br>0051/48                                  | 0413/46<br>0097/48                                  | 0048/47                                             | 0062/47                                             | 0228/47                                             | 0470/47                                             |
| STAA1 | 0043/48                                                        | 0059/48                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAA2 | 0055/48                                                        | 0049/48                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STABF | 0428/33<br>0206/48                                             | 0302/46<br>0347/48                                  | 0171/47<br>0349/48                                  | 0173/47<br>0371/48                                  | 0235/47<br>0377/48                                  | 0241/47                                             | 0195/48                                             |
| STABR | 0064/48                                                        | 0432/47                                             | 0075/48                                             | 0093/48                                             |                                                     |                                                     |                                                     |
| STACH | 0232/47<br>0471/46<br>0212/47<br>0099/48                       | 0315/46<br>0487/46<br>0243/47                       | 0328/46<br>0056/47<br>0253/47                       | 0364/46<br>0107/47<br>0508/47                       | 0371/46<br>0112/47<br>0015/48                       | 0388/46<br>0184/47<br>0026/48                       | 0452/46<br>0186/47<br>0032/48                       |
| STAD1 | 0321/46                                                        | 0330/46                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAD6 | 0255/47                                                        | 0343/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STADA | 0040/48                                                        | 0440/47                                             | 0450/47                                             | 0060/48                                             |                                                     |                                                     |                                                     |
| STADC | 0257/47                                                        | 0306/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STADG | 0210/47<br>0205/47                                             | 0366/46<br>0213/47                                  | 0383/46<br>0250/47                                  | 0450/46<br>0012/48                                  | 0195/47<br>0024/48                                  | 0196/47                                             | 0204/47                                             |
| STADI | 0348/46                                                        | 0416/46                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STADJ | 0307/47                                                        | 0326/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STADK | 0321/47                                                        | 0311/47                                             | 0317/47                                             |                                                     |                                                     |                                                     |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|        |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |                                                     |
|--------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| STADL  | 0262/47                                             | 0324/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STADR  | 0079/48                                             | 0437/47                                             | 0447/47                                             | 0457/47                                             | 0479/47                                             | 0499/47                                             | 0086/48                                             |
| STADS  | 0020/48                                             | 0383/47                                             | 0404/47                                             | 0007/48                                             | 0036/48                                             |                                                     |                                                     |
| STADU  | 0256/47                                             | 0361/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STADX  | 0344/47                                             | 0363/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STADY  | 0358/47                                             | 0348/47                                             | 0354/47                                             |                                                     |                                                     |                                                     |                                                     |
| STADID | 0261/47                                             | 0274/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAIQ  | 0283/47                                             | 0280/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAIR  | 0276/47                                             | 0287/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STALL  | 0005/48                                             | 0282/47                                             | 0295/47                                             | 0315/47                                             | 0352/47                                             | 0016/48                                             |                                                     |
| STALT  | 0417/46                                             | 0351/46                                             | 0358/46                                             |                                                     |                                                     |                                                     |                                                     |
| STALV  | 0010/47                                             | 0088/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STALX  | 0081/47                                             | 0019/47                                             | 0039/47                                             |                                                     |                                                     |                                                     |                                                     |
| STALY  | 0020/47                                             | 0080/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STALZ  | 0036/47                                             | 0075/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STANE  | 0376/47                                             | 0389/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STANG  | 0384/47                                             | 0381/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAOC  | 0201/47                                             | 0311/46                                             | 0326/46                                             | 0376/46                                             | 0103/47                                             | 0206/47                                             |                                                     |
| STAPL  | 0076/47                                             | 0071/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAPR  | 0166/47<br>0493/46<br>0288/47<br>0394/47<br>0456/47 | 0331/46<br>0006/47<br>0303/47<br>0407/47<br>0476/47 | 0340/46<br>0077/47<br>0318/47<br>0420/47<br>0493/47 | 0345/46<br>0091/47<br>0330/47<br>0431/47<br>0498/47 | 0414/46<br>0122/47<br>0340/47<br>0441/47<br>0519/47 | 0422/46<br>0126/47<br>0355/47<br>0446/47<br>0522/47 | 0483/46<br>0167/47<br>0367/47<br>0451/47<br>0525/47 |
| STAPZ  | 0064/47                                             | 0053/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAQV  | 0260/47                                             | 0035/47                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAS1  | 0094/48                                             | 0113/48                                             |                                                     |                                                     |                                                     |                                                     |                                                     |
| STAS8  | 0091/48                                             | 0518/47                                             | 0521/47                                             | 0524/47                                             | 0114/48                                             |                                                     |                                                     |
| STAST  | 0179/47                                             | 0306/46                                             | 0316/46                                             | 0333/46                                             | 0341/46                                             | 0360/46                                             | 0367/46                                             |

CROSS-REFERENCE SYMBOL TABLE

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|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
|       | 0377/46 | 0384/46 | 0400/46 | 0418/46 | 0454/46 | 0002/47 | 0072/47 |
|       | 0092/47 | 0113/47 | 0180/47 | 0182/47 | 0185/47 | 0187/47 | 0188/47 |
|       | 0269/47 | 0289/47 | 0299/47 | 0336/47 | 0369/47 | 0390/47 | 0424/47 |
|       | 0442/47 | 0452/47 | 0471/47 | 0494/47 | 0511/47 | 0052/48 | 0109/48 |
| STASH | 0263/47 | 0398/47 |         |         |         |         |         |
| STASX | 0399/47 | 0415/47 |         |         |         |         |         |
| STASY | 0410/47 | 0406/47 |         |         |         |         |         |
| STASZ | 0416/47 | 0403/47 |         |         |         |         |         |
| STATB | 0258/47 | 0375/47 |         |         |         |         |         |
| STATE | 0259/47 | 0387/47 |         |         |         |         |         |
| STATX | 0462/47 | 0489/47 |         |         |         |         |         |
| STATY | 0480/47 | 0468/47 | 0475/47 |         |         |         |         |
| STATZ | 0131/47 | 0438/46 | 0462/46 | 0467/46 | 0142/47 | 0143/47 |         |
| STAUS | 0264/47 | 0413/47 |         |         |         |         |         |
| STAV1 | 0004/33 | 0739/32 | 0347/46 | 0349/46 | 0365/46 | 0415/46 | 0424/46 |
|       | 0457/46 | 0473/46 | 0011/47 | 0014/47 | 0021/47 | 0040/47 | 0082/47 |
|       | 0135/47 | 0152/47 | 0157/47 | 0308/47 | 0309/47 | 0312/47 | 0322/47 |
|       | 0345/47 | 0346/47 | 0349/47 | 0359/47 | 0400/47 | 0401/47 | 0411/47 |
|       | 0463/47 | 0464/47 | 0481/47 | 0516/47 | 0095/48 | 0100/48 | 0104/48 |
| STAV2 | 0005/33 | 0740/32 | 0427/46 | 0013/47 | 0037/47 | 0043/47 | 0049/47 |
|       | 0051/47 | 0068/47 | 0140/47 | 0149/47 | 0151/47 | 0265/47 | 0436/47 |
| STAV3 | 0006/33 | 0741/32 | 0425/46 | 0430/46 | 0449/46 | 0495/46 | 0499/46 |
|       | 0132/47 |         |         |         |         |         |         |
| STBAS | 0445    | 0299/03 |         |         |         |         |         |
| STC0  | 0572/26 | 0439/26 |         |         |         |         |         |
| STCT1 | 0370/02 | 0135/07 | 0155/07 | 0156/07 | 0206/07 | 0211/07 |         |
| STCT2 | 0371/02 | 0136/07 | 0152/07 |         |         |         |         |
| STCT3 | 0372/02 | 0158/07 | 0162/07 |         |         |         |         |
| STE   | 0125    | 0262/11 |         |         |         |         |         |
| STEND | 0356/02 | 0018/08 | 0096/08 |         |         |         |         |
| STEP  | 0458/22 | 0540/04 |         |         |         |         |         |
| STF0  | 0443/26 | 0372/26 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                               |                               |                               |                               |                               |                               |  |
|-------|------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--|
| STL10 | 0001/47                                  | 0498/46                       |                               |                               |                               |                               |                               |  |
| STLBP | 0148/47                                  | 0441/46                       | 0460/46                       | 0465/46                       | 0477/46                       | 0156/47                       | 0158/47                       |  |
| STLCK | 0228/02                                  | 0493/02                       | 0033/06                       | 0565/06                       | 0403/09                       | 0361/21                       |                               |  |
| STLE  | 0521/37                                  | 0264/37                       |                               |                               |                               |                               |                               |  |
| STLP  | 0122/47                                  | 0118/47                       |                               |                               |                               |                               |                               |  |
| STLT0 | 0428/46                                  | 0500/46                       |                               |                               |                               |                               |                               |  |
| STLT1 | 0434/46                                  | 0484/46                       |                               |                               |                               |                               |                               |  |
| STLT2 | 0444/46                                  | 0440/46                       |                               |                               |                               |                               |                               |  |
| STLT3 | 0453/46                                  | 0448/46                       |                               |                               |                               |                               |                               |  |
| STLT4 | 0464/46                                  | 0469/46                       |                               |                               |                               |                               |                               |  |
| STLT5 | 0437/46                                  | 0443/46                       | 0482/46                       |                               |                               |                               |                               |  |
| STLT6 | 0490/46                                  | 0442/46                       | 0461/46                       | 0478/46                       |                               |                               |                               |  |
| STLT7 | 0494/46                                  | 0433/46                       |                               |                               |                               |                               |                               |  |
| STLT8 | 0476/46                                  | 0463/46                       |                               |                               |                               |                               |                               |  |
| STLT9 | 0485/46                                  | 0466/46                       |                               |                               |                               |                               |                               |  |
| STMP1 | 0360/02<br>0207/08<br>0317/08            | 0226/07<br>0223/08<br>0333/08 | 0299/07<br>0226/08<br>0351/08 | 0318/07<br>0235/08            | 0129/08<br>0276/08            | 0140/08<br>0283/08            | 0159/08<br>0297/08            |  |
| STMP2 | 0361/02<br>0270/07<br>0165/08            | 0247/07<br>0274/07<br>0201/08 | 0252/07<br>0285/07<br>0230/08 | 0257/07<br>0288/07<br>0233/08 | 0259/07<br>0308/07<br>0339/08 | 0265/07<br>0315/07<br>0342/08 | 0266/07<br>0145/08            |  |
| STP   | 0545/33                                  | 0213/39                       |                               |                               |                               |                               |                               |  |
| STPTR | 0368/02<br>0455/06<br>0474/06<br>0499/06 | 0423/06<br>0459/06<br>0475/06 | 0424/06<br>0460/06<br>0476/06 | 0426/06<br>0461/06<br>0483/06 | 0427/06<br>0465/06<br>0484/06 | 0429/06<br>0472/06<br>0487/06 | 0430/06<br>0473/06<br>0498/06 |  |
| STRI1 | 0137/05                                  | 0129/05                       |                               |                               |                               |                               |                               |  |
| STRID | 0078/02                                  | 0384/02                       | 0119/05                       | 0136/05                       | 0149/05                       | 0220/05                       | 0419/05                       |  |
| STRLN | 0407/02                                  | 0161/11                       | 0180/11                       | 0185/11                       |                               |                               |                               |  |
| STROP | 0038/02<br>0144/05                       | 0395/02<br>0414/05            | 0372/03<br>0429/05            | 0094/04<br>0300/06            | 0151/04                       | 0274/04                       | 0134/05                       |  |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |                    |                    |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| STSTR | 0086/02            | 0417/02            | 0064/11            | 0095/13            | 0288/14            |                    |                    |
| STTOP | 0114/02<br>0374/14 | 0325/02<br>0391/14 | 0479/12            | 0038/13            | 0132/13            | 0197/13            | 0084/14            |
| STTYP | 0244/05            | 0286/03            |                    |                    |                    |                    |                    |
| STYPE | 0359/02            | 0272/07            | 0289/07            | 0334/07            | 0435/07            | 0037/08            | 0174/08            |
| STYPS | 0380/22            | 0244/05            |                    |                    |                    |                    |                    |
| SUP   | 0524/37<br>0383/37 | 0263/37<br>0385/37 | 0299/37<br>0417/37 | 0305/37<br>0477/37 | 0306/37<br>0478/37 | 0321/37<br>0492/37 | 0349/37<br>0499/37 |
| SUP1  | 0018/37            | 0036/37            |                    |                    |                    |                    |                    |
| SUP10 | 0390/37            | 0261/37            |                    |                    |                    |                    |                    |
| SUP11 | 0408/37            | 0266/37            | 0270/37            | 0289/37            |                    |                    |                    |
| SUP12 | 0426/37            | 0414/37            |                    |                    |                    |                    |                    |
| SUP13 | 0415/37            | 0432/37            |                    |                    |                    |                    |                    |
| SUP14 | 0436/37            | 0421/37            | 0425/37            |                    |                    |                    |                    |
| SUP15 | 0409/37            | 0469/37            |                    |                    |                    |                    |                    |
| SUP16 | 0490/37            | 0392/37            |                    |                    |                    |                    |                    |
| SUP17 | 0473/37            | 0438/37            |                    |                    |                    |                    |                    |
| SUP18 | 0455/37            | 0443/37            |                    |                    |                    |                    |                    |
| SUP2  | 0032/37            | 0021/37            | 0024/37            |                    |                    |                    |                    |
| SUP20 | 0084/37            | 0089/37            |                    |                    |                    |                    |                    |
| SUP21 | 0090/37            | 0087/37            |                    |                    |                    |                    |                    |
| SUP22 | 0097/37            | 0204/37            |                    |                    |                    |                    |                    |
| SUP23 | 0132/37            | 0104/37            |                    |                    |                    |                    |                    |
| SUP24 | 0185/37            | 0130/37            |                    |                    |                    |                    |                    |
| SUP25 | 0188/37            | 0193/37            |                    |                    |                    |                    |                    |
| SUP26 | 0194/37            | 0191/37            |                    |                    |                    |                    |                    |
| SUP27 | 0198/37            | 0100/37            | 0119/37            |                    |                    |                    |                    |
| SUP28 | 0205/37            | 0201/37            |                    |                    |                    |                    |                    |



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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                               |                    |                    |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|
| SUP29 | 0221/37                       | 0232/37                       | 0235/37                       |                               |                               |                    |                    |
| SUP3  | 0503/37                       | 0046/37                       |                               |                               |                               |                    |                    |
| SUP30 | 0226/37                       | 0209/37                       |                               |                               |                               |                    |                    |
| SUP31 | 0250/37                       | 0223/37                       |                               |                               |                               |                    |                    |
| SUP32 | 0333/37                       | 0344/37                       |                               |                               |                               |                    |                    |
| SUP33 | 0346/37                       | 0340/37                       |                               |                               |                               |                    |                    |
| SUP4  | 0054/37                       | 0071/37                       |                               |                               |                               |                    |                    |
| SUP5  | 0065/37                       | 0056/37                       |                               |                               |                               |                    |                    |
| SUP6  | 0075/37                       | 0068/37                       |                               |                               |                               |                    |                    |
| SUP7  | 0258/37                       | 0398/37                       | 0474/37                       | 0485/37                       |                               |                    |                    |
| SUP8  | 0263/37                       | 0278/37                       | 0314/37                       | 0332/37                       | 0386/37                       |                    |                    |
| SUP9  | 0280/37                       | 0274/37                       |                               |                               |                               |                    |                    |
| SUPB  | 0525/37<br>0440/37            | 0031/37<br>0464/37            | 0042/37<br>0467/37            | 0050/37                       | 0057/37                       | 0418/37            | 0422/37            |
| SUPES | 0533/37                       | 0137/37                       | 0149/37                       | 0335/37                       | 0356/37                       | 0359/37            |                    |
| SUPEX | 0532/37<br>0337/37            | 0140/37<br>0341/37            | 0172/37                       | 0320/37                       | 0326/37                       | 0329/37            | 0334/37            |
| SUPK1 | 0528/37<br>0268/37            | 0082/37<br>0271/37            | 0096/37<br>0276/37            | 0179/37<br>0295/37            | 0199/37<br>0413/37            | 0203/37            | 0255/37            |
| SUPK2 | 0529/37<br>0143/37<br>0277/37 | 0094/37<br>0166/37<br>0292/37 | 0101/37<br>0175/37<br>0309/37 | 0107/37<br>0176/37<br>0310/37 | 0108/37<br>0207/37<br>0420/37 | 0116/37<br>0252/37 | 0129/37<br>0272/37 |
| SUPL1 | 0530/37<br>0220/37<br>0457/37 | 0092/37<br>0227/37            | 0121/37<br>0256/37            | 0155/37<br>0390/37            | 0187/37<br>0394/37            | 0196/37<br>0412/37 | 0211/37<br>0445/37 |
| SUPL2 | 0531/37<br>0441/37            | 0253/37<br>0465/37            | 0258/37<br>0466/37            | 0315/37                       | 0396/37                       | 0410/37            | 0426/37            |
| SUPLL | 0494/37                       | 0500/37                       |                               |                               |                               |                    |                    |
| SUPP  | 0526/37                       | 0065/37                       | 0070/37                       | 0076/37                       | 0260/37                       | 0397/37            | 0411/37            |
| SUPR  | 0538/37                       | 0502/37                       |                               |                               |                               |                    |                    |
| SUPR1 | 0514/37                       | 0501/37                       |                               |                               |                               |                    |                    |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                               |                               |                               |                               |                    |
|-------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|
| SUPRR | 0535/37                       | 0508/37                       |                               |                               |                               |                               |                    |
| SUPS  | 0523/37<br>0048/37<br>0449/37 | 0025/37<br>0059/37<br>0461/37 | 0026/37<br>0060/37<br>0468/37 | 0027/37<br>0062/37<br>0473/37 | 0030/37<br>0064/37<br>0475/37 | 0038/37<br>0409/37<br>0482/37 | 0039/37<br>0415/37 |
| SUPTG | 0527/37                       | 0312/37                       | 0347/37                       |                               |                               |                               |                    |
| SUSP  | 0508/30<br>0494/30            | 0202/21<br>0181/33            | 0344/30                       | 0350/30                       | 0368/30                       | 0390/30                       | 0393/30            |
| SUSPN | 0202/21                       | 0189/21                       |                               |                               |                               |                               |                    |
| SUSPP | 0181/33                       | 0180/33                       |                               |                               |                               |                               |                    |
| SVBC2 | 0594/28                       | 0398/28                       | 0413/28                       |                               |                               |                               |                    |
| SVCH2 | 0060                          | 0459/26                       | 0397/28                       |                               |                               |                               |                    |
| SWAP1 | 0251/30                       | 0229/30                       |                               |                               |                               |                               |                    |
| SWAP2 | 0252/30                       | 0315/30                       |                               |                               |                               |                               |                    |
| SWAP3 | 0295/30                       | 0223/30                       |                               |                               |                               |                               |                    |
| SWAP4 | 0216/30                       | 0194/30                       | 0199/30                       |                               |                               |                               |                    |
| SWAP5 | 0207/30                       | 0165/30                       |                               |                               |                               |                               |                    |
| SWAP6 | 0303/30                       | 0299/30                       |                               |                               |                               |                               |                    |
| SWAP7 | 0187/30                       | 0168/30                       | 0210/30                       |                               |                               |                               |                    |
| SWAPR | 0150/30                       | 0016/29                       | 0152/29                       | 0205/30                       | 0226/30                       | 0318/30                       | 0719/32            |
| SYBIT | 0383/28                       | 0202/28                       | 0346/28                       |                               |                               |                               |                    |
| SYC1  | 0348/28                       | 0367/28                       | 0378/28                       |                               |                               |                               |                    |
| SYC2  | 0370/28                       | 0351/28                       |                               |                               |                               |                               |                    |
| SYC3  | 0347/28                       | 0203/28                       |                               |                               |                               |                               |                    |
| SYCBA | 0382/28                       | 0197/28                       | 0344/28                       | 0355/28                       | 0356/28                       | 0377/28                       |                    |
| SYCC  | 0381/28                       | 0199/28                       | 0342/28                       | 0348/28                       | 0353/28                       | 0354/28                       | 0374/28            |
| SYCCL | 0384/28                       | 0375/28                       |                               |                               |                               |                               |                    |
| SYCON | 0341/28<br>0371/28            | 0201/28                       | 0219/28                       | 0229/28                       | 0231/28                       | 0232/28                       | 0233/28            |
| SYMC1 | 0367/06                       | 0371/06                       |                               |                               |                               |                               |                    |

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CROSS-REFERENCE SYMBOL TABLE

|        |         |         |         |         |         |         |         |
|--------|---------|---------|---------|---------|---------|---------|---------|
| SYMC2  | 0375/06 | 0369/06 |         |         |         |         |         |
| SYMCK  | 0048/02 | 0394/02 | 0315/03 | 0352/03 | 0382/03 | 0501/03 | 0522/03 |
|        | 0592/03 | 0630/03 | 0647/03 | 0661/03 | 0691/03 | 0039/04 | 0051/04 |
|        | 0064/04 | 0078/04 | 0097/04 | 0144/04 | 0156/04 | 0350/04 | 0383/04 |
|        | 0390/04 | 0028/05 | 0061/05 | 0077/05 | 0096/05 | 0294/05 | 0310/05 |
|        | 0319/05 | 0331/05 | 0338/05 | 0360/05 | 0367/05 | 0374/05 | 0163/06 |
|        | 0309/06 | 0365/06 | 0366/06 | 0374/06 | 0379/06 | 0380/06 | 0548/06 |
| SYMT1  | 0131/08 | 0136/08 |         |         |         |         |         |
| SYMT2  | 0140/08 | 0221/08 |         |         |         |         |         |
| SYMT3  | 0153/08 | 0132/08 | 0142/08 |         |         |         |         |
| SYMT4  | 0156/08 | 0147/08 | 0242/08 |         |         |         |         |
| SYMT5  | 0164/08 | 0134/08 | 0224/08 | 0236/08 |         |         |         |
| SYMT6  | 0210/08 | 0006/07 |         |         |         |         |         |
| SYMT7  | 0217/08 | 0005/07 | 0209/08 | 0234/08 |         |         |         |
| SYMT8  | 0223/08 | 0212/08 | 0215/08 |         |         |         |         |
| SYMT9  | 0235/08 | 0218/08 |         |         |         |         |         |
| SYMTB  | 0247/02 | 0198/03 | 0257/03 | 0622/05 | 0623/05 | 0052/07 | 0065/07 |
|        | 0075/07 | 0116/07 | 0196/07 | 0330/07 | 0400/07 | 0430/07 | 0454/07 |
|        | 0457/07 | 0130/08 | 0167/08 | 0206/08 | 0256/08 | 0275/08 | 0314/08 |
|        | 0328/08 | 0340/08 | 0406/08 | 0092/10 | 0157/10 | 0034/12 | 0360/12 |
|        | 0065/13 | 0169/16 | 0504/16 | 0053/17 | 0165/17 | 0181/17 | 0193/17 |
|        | 0382/17 | 0170/20 | 0246/21 | 0421/21 | 0034/22 | 0455/25 | 0499/33 |
|        | 0513/33 | 0624/35 | 0395/36 | 0429/36 | 0028/40 | 0018/45 |         |
| SYNT1  | 0246/03 | 0199/03 | 0242/03 |         |         |         |         |
| SYNTA  | 0250    | 0396/29 |         |         |         |         |         |
| SYNTB  | 0514/05 | 0445    |         |         |         |         |         |
| SYNTC  | 0337/02 | 0255/03 | 0536/06 | 0218/10 |         |         |         |
| SYNTAX | 0236/03 | 0250    |         |         |         |         |         |
| SYSID  | 0088    | 0429/32 |         |         |         |         |         |
| T35B1  | 0191    | 0169/27 | 0185/27 | 0082/32 | 0089/32 | 0135/32 | 0602/45 |
|        | 0652/45 | 0655/45 | 0658/45 | 0036/46 | 0041/46 | 0231/46 | 0253/46 |
|        | 0174/47 | 0203/48 | 0350/48 | 0436/48 | 0444/48 | 0449/48 | 0454/48 |
|        | 0461/48 | 0706/48 | 0043/49 | 0048/49 | 0484/49 | 0491/49 | 0133/50 |
|        | 0140/50 | 0174/51 | 0180/51 | 0676/51 | 0681/51 | 0564/52 | 0572/52 |
|        | 0301/53 | 0309/53 | 0402/54 | 0410/54 | 0454/56 | 0461/56 | 0131/57 |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
|-------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|       | 0138/57                                                                                      | 0718/57                                                                              | 0728/57                                                                              | 0171/58                                                                              | 0181/58                                                                              | 0366/58                                                                              | 0374/58                                                                              |
| T35B2 | 0189<br>0345/48                                                                              | 0115/29<br>0348/48                                                                   | 0301/46                                                                              | 0169/47                                                                              | 0172/47                                                                              | 0194/48                                                                              | 0205/48                                                                              |
| T35BF | 0456/33<br>0795/45<br>0095/46<br>0115/46<br>0161/46<br>0179/46<br>0200/46<br>0440/48         | 0189<br>0796/45<br>0099/46<br>0126/46<br>0168/46<br>0189/46<br>0224/46               | 0189<br>0801/45<br>0101/46<br>0128/46<br>0170/46<br>0193/46<br>0234/46               | 0190<br>0802/45<br>0106/46<br>0134/46<br>0171/46<br>0195/46<br>0235/46               | 0190<br>0031/46<br>0107/46<br>0145/46<br>0174/46<br>0196/46<br>0237/46               | 0191<br>0048/46<br>0108/46<br>0151/46<br>0176/46<br>0198/46<br>0432/48               | 0757/32<br>0086/46<br>0112/46<br>0158/46<br>0177/46<br>0199/46<br>0438/48            |
| T35C0 | 0036/33                                                                                      | 0049/33                                                                              | 0654/48                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| T35C1 | 0048/33                                                                                      | 0589/48                                                                              | 0601/48                                                                              | 0181/49                                                                              |                                                                                      |                                                                                      |                                                                                      |
| T35CH | 0329<br>0163/48<br>0565/48<br>0779/48<br>0101/49<br>0413/56<br>0191/58<br>0218/59<br>0422/59 | 0257/33<br>0169/48<br>0568/48<br>0785/48<br>0108/49<br>0375/57<br>0165/59<br>0238/59 | 0335/33<br>0174/48<br>0571/48<br>0788/48<br>0150/49<br>0493/57<br>0171/59<br>0243/59 | 0587/45<br>0179/48<br>0590/48<br>0060/49<br>0047/50<br>0694/57<br>0185/59<br>0248/59 | 0021/46<br>0526/48<br>0672/48<br>0075/49<br>0157/50<br>0698/57<br>0190/59<br>0253/59 | 0138/48<br>0537/48<br>0765/48<br>0085/49<br>0186/50<br>0027/58<br>0198/59<br>0414/59 | 0146/48<br>0555/48<br>0773/48<br>0091/49<br>0192/50<br>0187/58<br>0210/59<br>0418/59 |
| T35CL | 0183                                                                                         |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| T35CP | 0044<br>0025/46                                                                              | 0129/29<br>0679/48                                                                   | 0037/33<br>0680/48                                                                   | 0044/33                                                                              | 0590/45                                                                              | 0591/45                                                                              | 0024/46                                                                              |
| T35C0 | 0032/33<br>0365/36<br>0343/58<br>0115/59                                                     | 0329<br>0220/49<br>0022/59<br>0123/59                                                | 0742/32<br>0634/51<br>0027/59<br>0135/59                                             | 0035/33<br>0498/52<br>0036/59                                                        | 0046/33<br>0236/53<br>0041/59                                                        | 0050/33<br>0337/54<br>0065/59                                                        | 0051/33<br>0450/57<br>0107/59                                                        |
| T35DR | 0260                                                                                         | 0033                                                                                 | 0560/26                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| T35F1 | 0202<br>0191/30                                                                              | 0042/27<br>0381/49                                                                   | 0065/27                                                                              | 0100/27                                                                              | 0192/27                                                                              | 0187/28                                                                              | 0026/29                                                                              |
| T35F2 | 0203                                                                                         | 0078/27                                                                              | 0136/27                                                                              | 0159/27                                                                              | 0104/29                                                                              | 0146/29                                                                              | 0225/33                                                                              |
| T35F3 | 0204                                                                                         | 0047/27                                                                              | 0161/27                                                                              | 0028/29                                                                              |                                                                                      |                                                                                      |                                                                                      |
| T35FG | 0168                                                                                         |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |                                                                                      |
| T35LC | 0045<br>0055/50                                                                              | 0131/29<br>0065/50                                                                   | 0033/33<br>0183/50                                                                   | 0043/33<br>0485/57                                                                   | 0158/48<br>0019/58                                                                   | 0034/50<br>0233/59                                                                   | 0044/50                                                                              |
| T35LK | 0186                                                                                         | 0188                                                                                 | 0104/49                                                                              |                                                                                      |                                                                                      |                                                                                      |                                                                                      |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                               |                    |                    |                    |                    |                    |
|-------|-------------------------------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| T35LN | 0188                          | 0139/29                       | 0192/30            | 0382/30            | 0256/33            |                    |                    |
| T35ND | 0190                          | 0117/29                       |                    |                    |                    |                    |                    |
| T35PR | 0187                          | 0071/27                       | 0108/29            | 0138/29            | 0202/30            | 0177/33            |                    |
| T35RS | 0184                          | 0134/29                       | 0175/33            |                    |                    |                    |                    |
| T35SP | 0171/33<br>0300/46<br>0445/48 | 0174/33<br>0168/47<br>0450/48 | 0598/45<br>0175/47 | 0656/45<br>0204/48 | 0033/46<br>0344/48 | 0042/46<br>0351/48 | 0232/46<br>0437/48 |
| T35ST | 0185<br>0204/30               | 0069/27<br>0176/33            | 0079/27<br>0179/33 | 0107/29<br>0124/47 | 0136/29            | 0195/30            | 0201/30            |
| TAB   | 0464/22                       | 0279                          |                    |                    |                    |                    |                    |
| TABLE | 0340/02                       | 0185/06                       | 0205/06            |                    |                    |                    |                    |
| TABPN | 0391/59                       | 0159/59                       | 0311/59            | 0316/59            | 0324/59            | 0326/59            | 0331/59            |
| TADR  | 0013/26<br>0238/28            | 0040/27                       | 0091/27            | 0094/27            | 0117/27            | 0126/27            | 0195/27            |
| TAP0  | 0328/02                       | 0196/16                       | 0205/16            | 0206/16            | 0209/16            | 0264/16            | 0268/16            |
| TAP1  | 0329/02                       | 0261/16                       | 0270/16            |                    |                    |                    |                    |
| TAPE1 | 0178/16                       | 0186/16                       | 0215/16            |                    |                    |                    |                    |
| TAPE2 | 0195/16                       | 0191/16                       | 0260/16            | 0278/16            |                    |                    |                    |
| TAPE3 | 0224/16                       | 0217/16                       |                    |                    |                    |                    |                    |
| TAPE4 | 0230/16                       | 0247/16                       |                    |                    |                    |                    |                    |
| TAPE5 | 0248/16                       | 0168/16                       |                    |                    |                    |                    |                    |
| TAPE6 | 0258/16                       | 0193/16                       |                    |                    |                    |                    |                    |
| TAPE7 | 0261/16                       | 0199/16                       | 0202/16            |                    |                    |                    |                    |
| TAPEA | 0183/03                       | 0245/03                       |                    |                    |                    |                    |                    |
| TAPEF | 0513<br>0024/30               | 0618/05                       | 0319/16            | 0031/22            | 0405/29            | 0450/29            | 0464/29            |
| TAPER | 0166/16                       | 0183/03                       | 0114/31            |                    |                    |                    |                    |
| TB12C | 0633/32                       | 0609/32                       |                    |                    |                    |                    |                    |
| TB130 | 0634/32                       | 0469/32                       | 0514/32            |                    |                    |                    |                    |
| TB160 | 0635/32                       | 0606/32                       |                    |                    |                    |                    |                    |

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## CROSS-REFERENCE SYMBOL TABLE

|        |                               |                               |                               |                               |                    |                    |                    |
|--------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------|--------------------|--------------------|
| TBDAD  | 0454/31                       | 0459/31                       | 0529/31                       | 0731/32                       | 0015/33            | 0583/52            | 0583/58            |
| TBDAP  | 0015/33                       | 0325/51                       | 0396/51                       |                               |                    |                    |                    |
| TBDDBA | 0462/31                       | 0532/31                       |                               |                               |                    |                    |                    |
| TBDDBB | 0455/31                       | 0496/31                       |                               |                               |                    |                    |                    |
| TBDDBC | 0489/31                       | 0508/31                       | 0514/31                       | 0519/31                       |                    |                    |                    |
| TBDDBE | 0497/31                       | 0491/31                       |                               |                               |                    |                    |                    |
| TBDDBU | 0526/31                       | 0471/31                       | 0483/31                       |                               |                    |                    |                    |
| TBDDBY | 0521/31                       | 0486/31                       | 0495/31                       |                               |                    |                    |                    |
| TBDT1  | 0440/32<br>0039/32            | 0457/31<br>0041/32            | 0490/31<br>0046/32            | 0527/31<br>0048/32            | 0016/32<br>0736/32 | 0018/32            | 0031/32            |
| TBDT2  | 0441/32<br>0516/31            | 0466/31<br>0530/31            | 0467/31                       | 0475/31                       | 0498/31            | 0503/31            | 0504/31            |
| TBDT3  | 0442/32                       | 0480/31                       | 0492/31                       | 0512/31                       |                    |                    |                    |
| TBDIT  | 0008/32                       | 0011/32                       | 0058/32                       | 0732/32                       | 0584/52            | 0545/55            | 0584/58            |
| TBITS  | 0004/26                       | 0391/26                       | 0469/26                       | 0102/27                       | 0121/27            | 0197/27            | 0303/28            |
| TBLPT  | 0345/02                       | 0206/06                       | 0207/06                       | 0213/06                       | 0229/06            | 0247/06            |                    |
| TBSRH  | 0028/02<br>0705/03<br>0210/05 | 0382/02<br>0019/04<br>0250/06 | 0288/03<br>0110/04<br>0253/06 | 0479/03<br>0220/04<br>0392/06 | 0496/03<br>0235/04 | 0509/03<br>0337/04 | 0543/03<br>0378/04 |
| TBT15  | 0632/32                       | 0604/32                       |                               |                               |                    |                    |                    |
| TCNT   | 0061<br>0165/27               | 0039/27<br>0173/27            | 0081/27<br>0179/27            | 0090/27<br>0183/27            | 0099/27<br>0194/27 | 0115/27<br>0198/28 | 0116/27            |
| TCR02  | 0333/28                       | 0299/28                       | 0316/28                       |                               |                    |                    |                    |
| TCR03  | 0334/28                       | 0301/28                       | 0319/28                       |                               |                    |                    |                    |
| TCR04  | 0335/28                       | 0303/28                       | 0304/28                       | 0313/28                       | 0318/28            |                    |                    |
| TCR1   | 0260/28                       | 0252/28                       |                               |                               |                    |                    |                    |
| TCR2   | 0265/28                       | 0258/28                       |                               |                               |                    |                    |                    |
| TCR3   | 0277/28                       | 0288/28                       |                               |                               |                    |                    |                    |
| TCR4   | 0290/28                       | 0279/28                       |                               |                               |                    |                    |                    |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TCR5  | 0304/28                                                                                                                                                                                            | 0312/28                                                                                                                                                                                            | 0320/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TCRBA | 0332/28                                                                                                                                                                                            | 0268/28                                                                                                                                                                                            | 0280/28                                                                                                                                                                                            | 0281/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TCRCC | 0331/28                                                                                                                                                                                            | 0266/28                                                                                                                                                                                            | 0277/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TCRIR | 0249/28                                                                                                                                                                                            | 0494/27                                                                                                                                                                                            | 0185/28                                                                                                                                                                                            | 0296/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TCROT | 0298/28<br>0295/28                                                                                                                                                                                 | 0271/28<br>0321/28                                                                                                                                                                                 | 0273/28                                                                                                                                                                                            | 0275/28                                                                                                                                                                                            | 0287/28                                                                                                                                                                                            | 0291/28                                                                                                                                                                                            | 0293/28                                                                                                                                                                                            |
| TCRPC | 0330/28                                                                                                                                                                                            | 0255/28                                                                                                                                                                                            | 0261/28                                                                                                                                                                                            | 0300/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TCRPT | 0329/28                                                                                                                                                                                            | 0250/28                                                                                                                                                                                            | 0253/28                                                                                                                                                                                            | 0302/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TCRPU | 0324/28                                                                                                                                                                                            | 0263/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TCRSD | 0326/28                                                                                                                                                                                            | 0257/28                                                                                                                                                                                            |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |                                                                                                                                                                                                    |
| TNUM  | 0140/32                                                                                                                                                                                            | 0111/32                                                                                                                                                                                            | 0118/32                                                                                                                                                                                            | 0124/32                                                                                                                                                                                            | 0131/32                                                                                                                                                                                            | 0146/32                                                                                                                                                                                            |                                                                                                                                                                                                    |
| TEMP  | 0258/02<br>0362/02<br>0369/02<br>0440/02<br>0373/03<br>0527/03<br>0137/04<br>0227/04<br>0374/04<br>0142/05<br>0440/05<br>0498/05<br>0583/05<br>0610/05<br>0054/06<br>0085/22<br>0136/22<br>0180/22 | 0309/02<br>0363/02<br>0370/02<br>0441/02<br>0404/03<br>0530/03<br>0149/04<br>0229/04<br>0381/04<br>0188/05<br>0461/05<br>0499/05<br>0588/05<br>0611/05<br>0274/06<br>0100/22<br>0137/22<br>0226/22 | 0336/02<br>0364/02<br>0371/02<br>0442/02<br>0409/03<br>0590/03<br>0152/04<br>0240/04<br>0400/04<br>0411/05<br>0462/05<br>0503/05<br>0589/05<br>0614/05<br>0277/06<br>0109/22<br>0139/22<br>0235/22 | 0338/02<br>0365/02<br>0372/02<br>0447/02<br>0441/03<br>0013/04<br>0164/04<br>0246/04<br>0446/04<br>0413/05<br>0469/05<br>0504/05<br>0594/05<br>0017/06<br>0062/22<br>0113/22<br>0140/22<br>0245/22 | 0350/02<br>0366/02<br>0373/02<br>0448/02<br>0444/03<br>0091/04<br>0167/04<br>0248/04<br>0464/04<br>0417/05<br>0471/05<br>0507/05<br>0597/05<br>0018/06<br>0075/22<br>0114/22<br>0146/22<br>0276/22 | 0360/02<br>0367/02<br>0390/02<br>0364/03<br>0492/03<br>0095/04<br>0170/04<br>0272/04<br>0132/05<br>0427/05<br>0478/05<br>0569/05<br>0600/05<br>0020/06<br>0082/22<br>0126/22<br>0147/22<br>0294/22 | 0361/02<br>0368/02<br>0439/02<br>0370/03<br>0499/03<br>0106/04<br>0173/04<br>0306/04<br>0135/05<br>0430/05<br>0497/05<br>0578/05<br>0607/05<br>0024/06<br>0083/22<br>0131/22<br>0151/22<br>0308/22 |
| TEMP1 | 0390/02<br>0045/10<br>0383/10<br>0109/11<br>0207/11<br>0496/11<br>0370/12<br>0019/13<br>0277/14<br>0058/17<br>0190/17<br>0379/17<br>0445/25                                                        | 0409/09<br>0047/10<br>0022/11<br>0122/11<br>0208/11<br>0062/12<br>0373/12<br>0021/13<br>0283/14<br>0149/17<br>0199/17<br>0321/18<br>0448/25                                                        | 0410/09<br>0054/10<br>0026/11<br>0135/11<br>0211/11<br>0073/12<br>0388/12<br>0032/13<br>0284/14<br>0150/17<br>0333/17<br>0329/18<br>0467/25                                                        | 0016/10<br>0088/10<br>0027/11<br>0146/11<br>0219/11<br>0078/12<br>0391/12<br>0054/13<br>0025/17<br>0170/17<br>0334/17<br>0353/18<br>0472/25                                                        | 0019/10<br>0117/10<br>0030/11<br>0147/11<br>0223/11<br>0083/12<br>0448/12<br>0055/13<br>0032/17<br>0171/17<br>0335/17<br>0412/25<br>0467/35                                                        | 0020/10<br>0154/10<br>0043/11<br>0196/11<br>0230/11<br>0341/12<br>0449/12<br>0061/13<br>0036/17<br>0176/17<br>0348/17<br>0424/25                                                                   | 0023/10<br>0256/10<br>0044/11<br>0198/11<br>0245/11<br>0342/12<br>0450/12<br>0274/14<br>0045/17<br>0187/17<br>0378/17<br>0435/25                                                                   |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                                          |                                          |                                          |                                          |                               |                               |
|-------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|-------------------------------|-------------------------------|
| TEMP2 | 0391/02<br>0452/12                       | 0308/09<br>0468/12                       | 0337/09<br>0245/13                       | 0371/09                                  | 0409/12                                  | 0419/12                       | 0422/12                       |
| TEMP3 | 0392/02                                  | 0412/12                                  | 0425/12                                  | 0248/13                                  | 0252/13                                  | 0262/13                       |                               |
| TEMP4 | 0393/02<br>0190/12<br>0266/13<br>0332/14 | 0067/11<br>0377/12<br>0272/13<br>0433/25 | 0415/11<br>0382/12<br>0300/13<br>0421/35 | 0421/11<br>0196/13<br>0126/14<br>0425/35 | 0435/11<br>0206/13<br>0302/14<br>0449/35 | 0509/11<br>0217/13<br>0308/14 | 0141/12<br>0222/13<br>0322/14 |
| TEMP5 | 0394/02<br>0157/12<br>0302/13<br>0349/15 | 0361/10<br>0161/12<br>0157/14<br>0522/15 | 0377/11<br>0215/13<br>0163/14<br>0532/15 | 0448/11<br>0221/13<br>0189/14<br>0462/35 | 0514/11<br>0274/13<br>0197/14            | 0116/12<br>0281/13<br>0198/14 | 0119/12<br>0285/13<br>0248/14 |
| TEMP6 | 0395/02<br>0251/13<br>0257/14            | 0343/10<br>0253/13<br>0259/14            | 0345/10<br>0192/14<br>0043/15            | 0156/11<br>0207/14<br>0056/15            | 0189/11<br>0223/14<br>0066/15            | 0363/11<br>0231/14<br>0023/20 | 0365/11<br>0254/14            |
| TENTH | 0090/21                                  | 0325/22                                  | 0333/22                                  |                                          |                                          |                               |                               |
| TERR  | 0510                                     | 0239/03                                  | 0047/06                                  | 0251/16                                  | 0507/16                                  | 0477/29                       | 0485/29                       |
| THEN  | 0454/22                                  | 0459                                     |                                          |                                          |                                          |                               |                               |
| THNOP | 0468/40                                  | 0433/40                                  |                                          |                                          |                                          |                               |                               |
| TIM1  | 0577/43                                  | 0538/43                                  |                                          |                                          |                                          |                               |                               |
| TIM2  | 0580/43                                  | 0563/43                                  |                                          |                                          |                                          |                               |                               |
| TIM3  | 0582/43                                  | 0611/43                                  |                                          |                                          |                                          |                               |                               |
| TIMDV | 0620/43                                  | 0592/43                                  | 0594/43                                  | 0600/43                                  | 0603/43                                  |                               |                               |
| TIMEF | 0170<br>0339/39                          | 0692/28                                  | 0177/29                                  | 0183/29                                  | 0241/32                                  | 0363/33                       | 0400/33                       |
| TIMER | 0048                                     | 0694/28                                  | 0181/29                                  |                                          |                                          |                               |                               |
| TIMES | 0511/04                                  | 0145/04                                  |                                          |                                          |                                          |                               |                               |
| TIMN  | 0617/43                                  | 0595/43                                  | 0606/43                                  |                                          |                                          |                               |                               |
| TIMNM | 0619/43                                  | 0590/43                                  | 0596/43                                  |                                          |                                          |                               |                               |
| TIMP1 | 0608/43                                  | 0589/43                                  |                                          |                                          |                                          |                               |                               |
| TIMP2 | 0600/43                                  | 0597/43                                  |                                          |                                          |                                          |                               |                               |
| TIMP3 | 0610/43                                  | 0605/43                                  |                                          |                                          |                                          |                               |                               |
| TIMP4 | 0593/43                                  | 0607/43                                  |                                          |                                          |                                          |                               |                               |



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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |         |         |         |         |
|-------|--------------------|--------------------|--------------------|---------|---------|---------|---------|
| TIMPR | 0587/43            | 0560/43            | 0571/43            | 0614/43 |         |         |         |
| TIMT  | 0618/43<br>0558/43 | 0546/43<br>0559/43 | 0548/43<br>0570/43 | 0550/43 | 0551/43 | 0553/43 | 0554/43 |
| TIMXK | 0616/43            | 0591/43            |                    |         |         |         |         |
| TK    | 0523/32            | 0475/32            | 0487/32            | 0519/32 | 0547/32 |         |         |
| TK1   | 0617/32<br>0542/32 | 0509/32            | 0517/32            | 0525/32 | 0531/32 | 0536/32 | 0538/32 |
| TK1WD | 0489/32            | 0483/32            |                    |         |         |         |         |
| TK2   | 0618/32            | 0510/32            | 0518/32            | 0527/32 | 0543/32 |         |         |
| TK3   | 0619/32            | 0530/32            | 0539/32            |         |         |         |         |
| TK4   | 0620/32            | 0590/32            | 0595/32            |         |         |         |         |
| TK5   | 0621/32            | 0558/32            | 0581/32            |         |         |         |         |
| TK6   | 0622/32            | 0557/32            | 0566/32            | 0573/32 |         |         |         |
| TKA   | 0528/32            | 0545/32            |                    |         |         |         |         |
| TKB   | 0533/32            | 0540/32            |                    |         |         |         |         |
| TKCO  | 0556/32<br>0594/32 | 0494/32            | 0535/32            | 0551/32 | 0553/32 | 0582/32 | 0588/32 |
| TKCOL | 0572/32            | 0565/32            |                    |         |         |         |         |
| TKCRL | 0549/32            | 0471/32            | 0498/32            | 0516/32 | 0541/32 | 0546/32 | 0554/32 |
| TKCRN | 0580/32            | 0571/32            |                    |         |         |         |         |
| TKDLN | 0499/32            | 0488/32            |                    |         |         |         |         |
| TKDLP | 0481/32            | 0500/32            |                    |         |         |         |         |
| TKDON | 0501/32            | 0490/32            | 0520/32            |         |         |         |         |
| TKLP  | 0640/32            | 0466/32            | 0511/32            | 0563/32 |         |         |         |
| TKOTK | 0637/32            | 0575/32            |                    |         |         |         |         |
| TKTBL | 0642/32            | 0479/32            |                    |         |         |         |         |
| TKTBP | 0641/32            | 0480/32            | 0481/32            | 0484/32 | 0485/32 | 0495/32 | 0499/32 |
| TKWB  | 0591/32            | 0596/32            |                    |         |         |         |         |
| TKWO  | 0584/32            | 0492/32            | 0497/32            | 0532/32 | 0537/32 | 0597/32 |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| TM5   | 0624/32 | 0589/32 |         |         |         |         |         |
| TM8   | 0623/32 | 0524/32 | 0529/32 |         |         |         |         |
| TMPST | 0384/02 | 0305/10 | 0162/11 | 0340/11 | 0293/12 | 0381/12 | 0006/13 |
|       | 0017/13 | 0037/13 | 0046/13 | 0049/13 | 0072/13 | 0073/13 | 0106/13 |
|       | 0107/13 | 0200/13 | 0204/13 | 0212/13 | 0220/13 | 0226/13 | 0228/13 |
|       | 0133/14 | 0134/14 | 0193/14 | 0287/14 | 0418/14 | 0425/14 | 0427/14 |
|       | 0437/14 | 0439/14 | 0452/14 | 0024/18 | 0052/18 | 0059/18 | 0234/18 |
| TNULL | 0463/02 | 0309/10 | 0326/10 | 0333/10 | 0334/10 | 0344/10 | 0359/10 |
|       | 0075/11 | 0093/11 | 0344/11 | 0351/11 | 0358/11 | 0359/11 | 0364/11 |
|       | 0375/11 | 0444/11 | 0524/11 | 0286/13 | 0295/13 | 0128/14 | 0142/14 |
|       | 0219/14 | 0240/14 | 0333/15 | 0351/15 | 0516/15 | 0456/35 |         |
| TO    | 0489/04 | 0531/03 |         |         |         |         |         |
| TOG   | 0012/26 | 0046/27 | 0087/27 | 0124/27 | 0129/27 | 0239/28 |         |
| TOL   | 0434/02 | 0046/18 | 0138/18 |         |         |         |         |
| TOLC  | 0019/17 | 0045/18 |         |         |         |         |         |
| TOUP  | 0247/05 | 0534/03 |         |         |         |         |         |
| TOPI  | 0322/20 | 0287/20 |         |         |         |         |         |
| TOTDG | 0489/02 | 0246/24 | 0260/24 | 0261/24 | 0272/24 | 0281/24 | 0163/25 |
|       | 0168/25 | 0184/25 | 0188/25 |         |         |         |         |
| TP12  | 0626/32 | 0552/32 |         |         |         |         |         |
| TP15  | 0627/32 | 0550/32 |         |         |         |         |         |
| TP21H | 0631/32 | 0473/32 |         |         |         |         |         |
| TP377 | 0630/32 | 0562/32 |         |         |         |         |         |
| TP40  | 0628/32 | 0493/32 | 0534/32 |         |         |         |         |
| TP6   | 0625/32 | 0592/32 |         |         |         |         |         |
| TP60  | 0629/32 | 0585/32 |         |         |         |         |         |
| TP0   | 0140    | 0029/30 |         |         |         |         |         |
| TPRME | 0464/02 | 0306/10 | 0332/10 | 0068/11 | 0341/11 | 0357/11 | 0420/11 |
|       | 0436/11 | 0438/11 | 0443/11 | 0510/11 | 0144/12 | 0194/12 | 0267/13 |
|       | 0277/13 | 0296/13 | 0127/14 | 0211/14 | 0298/14 | 0301/14 | 0318/14 |
|       | 0321/14 | 0434/25 | 0439/25 | 0424/35 | 0450/35 | 0452/35 | 0457/35 |
| TRAX  | 0087    | 0281    |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| TRFCH | 0469/02 | 0515/15 | 0519/15 |         |         |         |         |
| TRN   | 0004/18 | 0412/17 | 0012/18 |         |         |         |         |
| TRN1  | 0413/17 | 0014/18 |         |         |         |         |         |
| TRNFP | 0637/28 | 0336/29 |         |         |         |         |         |
| TRNOF | 0600/28 | 0611/28 | 0637/28 |         |         |         |         |
| TRSD  | 0470/02 | 0521/15 | 0528/15 |         |         |         |         |
| TRSTR | 0094/02 | 0411/02 | 0324/10 | 0336/10 | 0392/10 | 0349/11 | 0361/11 |
|       | 0450/11 | 0526/11 | 0293/13 | 0304/13 | 0346/14 | 0549/14 | 0360/14 |
|       | 0338/15 | 0518/15 | 0464/36 |         |         |         |         |
| TRUE  | 0126/13 | 0020/14 | 0027/14 | 0033/14 | 0040/14 | 0078/14 | 0107/14 |
| TSB   | 0201/29 | 0015    |         |         |         |         |         |
| TSPTR | 0346/02 | 0230/06 | 0236/06 | 0237/06 |         |         |         |
| TSR10 | 0254/06 | 0217/06 | 0220/06 |         |         |         |         |
| TSRC1 | 0202/06 | 0225/06 |         |         |         |         |         |
| TSRC2 | 0206/06 | 0215/06 |         |         |         |         |         |
| TSRC3 | 0211/06 | 0241/06 |         |         |         |         |         |
| TSRC4 | 0216/06 | 0201/06 |         |         |         |         |         |
| TSRC5 | 0226/06 | 0222/06 |         |         |         |         |         |
| TSRC6 | 0229/06 | 0210/06 |         |         |         |         |         |
| TSRC7 | 0233/06 | 0239/06 |         |         |         |         |         |
| TSRC8 | 0242/06 | 0234/06 |         |         |         |         |         |
| TSRC9 | 0251/06 | 0259/06 |         |         |         |         |         |
| TT1   | 0445/02 | 0374/13 | 0394/13 |         |         |         |         |
| TT10  | 0104/27 | 0139/27 | 0144/27 | 0146/27 | 0149/27 | 0167/27 | 0175/27 |
|       | 0181/27 |         |         |         |         |         |         |
| TT11  | 0192/27 | 0154/27 |         |         |         |         |         |
| TT12  | 0179/27 | 0157/27 |         |         |         |         |         |
| TT15  | 0130/27 | 0200/27 |         |         |         |         |         |
| TT16  | 0174/27 | 0188/27 |         |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                                |                                                  |                                                  |                                                  |                                                  |                                                     |                                                     |
|-------|----------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| TT17  | 0136/27                                                        | 0067/27                                          |                                                  |                                                  |                                                  |                                                     |                                                     |
| TT18  | 0081/27                                                        | 0054/27                                          | 0076/27                                          | 0095/27                                          |                                                  |                                                     |                                                     |
| TT2   | 0446/02                                                        | 0377/13                                          | 0388/13                                          | 0391/13                                          | 0405/13                                          | 0412/13                                             |                                                     |
| TT3   | 0447/02                                                        | 0385/13                                          | 0397/13                                          | 0403/13                                          | 0409/13                                          | 0410/13                                             |                                                     |
| TT4   | 0448/02                                                        | 0387/13                                          | 0398/13                                          | 0411/13                                          |                                                  |                                                     |                                                     |
| TT5   | 0114/27                                                        | 0084/27                                          |                                                  |                                                  |                                                  |                                                     |                                                     |
| TT6   | 0099/27                                                        | 0086/27                                          |                                                  |                                                  |                                                  |                                                     |                                                     |
| TT8   | 0103/27                                                        | 0132/27                                          |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTA   | 0009/26                                                        | 0061/27                                          | 0106/27                                          |                                                  |                                                  |                                                     |                                                     |
| TTB   | 0010/26                                                        | 0062/27                                          | 0107/27                                          |                                                  |                                                  |                                                     |                                                     |
| TTE   | 0011/26                                                        | 0064/27                                          | 0104/27                                          |                                                  |                                                  |                                                     |                                                     |
| TTQ   | 0051<br>0404/29<br>0022/30                                     | 0266/29<br>0419/29<br>0071/30                    | 0302/29<br>0425/29<br>0105/30                    | 0340/29<br>0448/29<br>0423/30                    | 0346/29<br>0522/29<br>0403/32                    | 0354/29<br>0546/29                                  | 0389/29<br>0005/30                                  |
| TTXCP | 0201/27                                                        | 0093/27                                          |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTY00 | 0284/27<br>0257/29<br>0435/39<br>0500/48<br>0056/51<br>0439/59 | 0009<br>0262/29<br>0578/39<br>0603/48<br>0114/51 | 0010<br>0697/32<br>0177/43<br>0196/49<br>0079/52 | 0011<br>0190/35<br>0419/43<br>0238/49<br>0086/52 | 0309<br>0347/35<br>0263/47<br>0272/49<br>0577/52 | 0584/28<br>0012/39<br>0412/47<br>0373/49<br>0368/59 | 0627/28<br>0378/39<br>0434/48<br>0456/49<br>0432/59 |
| TTY01 | 0289/27<br>0435/39<br>0272/49<br>0432/59                       | 0009<br>0177/43<br>0373/49<br>0439/59            | 0584/28<br>0412/47<br>0456/49                    | 0257/29<br>0500/48<br>0056/51                    | 0262/29<br>0603/48<br>0114/51                    | 0190/35<br>0196/49<br>0086/52                       | 0012/39<br>0238/49<br>0368/59                       |
| TTY02 | 0294/27                                                        |                                                  |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTY03 | 0299/27                                                        |                                                  |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTY04 | 0304/27                                                        |                                                  |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTY05 | 0309/27                                                        |                                                  |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTY06 | 0314/27                                                        |                                                  |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTY07 | 0319/27                                                        |                                                  |                                                  |                                                  |                                                  |                                                     |                                                     |
| TTY08 | 0324/27                                                        | 0442/48                                          |                                                  |                                                  |                                                  |                                                     |                                                     |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| TTY09 | 0329/27 |         |         |         |         |         |         |
| TTY10 | 0334/27 |         |         |         |         |         |         |
| TTY11 | 0339/27 |         |         |         |         |         |         |
| TTY12 | 0344/27 |         |         |         |         |         |         |
| TTY13 | 0349/27 |         |         |         |         |         |         |
| TTY14 | 0354/27 |         |         |         |         |         |         |
| TTY15 | 0359/27 |         |         |         |         |         |         |
| TTY16 | 0364/27 | 0447/48 |         |         |         |         |         |
| TTY17 | 0369/27 |         |         |         |         |         |         |
| TTY18 | 0374/27 |         |         |         |         |         |         |
| TTY19 | 0379/27 |         |         |         |         |         |         |
| TTY20 | 0384/27 |         |         |         |         |         |         |
| TTY21 | 0389/27 |         |         |         |         |         |         |
| TTY22 | 0394/27 |         |         |         |         |         |         |
| TTY23 | 0399/27 |         |         |         |         |         |         |
| TTY24 | 0404/27 | 0452/48 |         |         |         |         |         |
| TTY25 | 0409/27 |         |         |         |         |         |         |
| TTY26 | 0414/27 |         |         |         |         |         |         |
| TTY27 | 0419/27 |         |         |         |         |         |         |
| TTY28 | 0424/27 |         |         |         |         |         |         |
| TTY29 | 0429/27 |         |         |         |         |         |         |
| TTY30 | 0434/27 |         |         |         |         |         |         |
| TTY31 | 0439/27 |         |         |         |         |         |         |
| TTY32 | 0443/27 | 0311    | 0698/32 | 0420/43 | 0264/47 |         |         |
| TTY35 | 0289    | 0047/29 | 0097/29 | 0216/29 | 0172/33 | 0223/33 | 0049/49 |
|       | 0204/49 | 0141/50 | 0181/51 |         |         |         |         |
| TTYCK | 0627/28 | 0024/29 | 0253/29 | 0258/29 |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|---------|
| TTYED | 0200/27            | 0552/26            |                    |                    |                    |         |         |
| TWOSP | 0659/35            | 0409/35            |                    |                    |                    |         |         |
| TYPE  | 0063/30<br>0065/30 | 0342/29<br>0070/30 | 0430/29<br>0075/30 | 0441/29<br>0717/32 | 0513/29            | 0017/30 | 0040/30 |
| TYPEL | 0065/30            | 0074/30            |                    |                    |                    |         |         |
| TYPET | 0076/30<br>0286/30 | 0064/30            | 0066/30            | 0073/30            | 0268/30            | 0283/30 | 0285/30 |
| UCDAB | 0035/31            | 0325/29            |                    |                    |                    |         |         |
| UDHDA | 0618/41            | 0334/41            |                    |                    |                    |         |         |
| UDI10 | 0478/41            | 0475/41            |                    |                    |                    |         |         |
| UDI11 | 0485/41            | 0477/41            | 0481/41            |                    |                    |         |         |
| UDI12 | 0565/41            | 0540/41            |                    |                    |                    |         |         |
| UDI13 | 0581/41            | 0382/41            |                    |                    |                    |         |         |
| UDIHD | 0613/41            | 0618/41            |                    |                    |                    |         |         |
| UDINM | 0591/41<br>0531/41 | 0416/41<br>0533/41 | 0456/41<br>0553/41 | 0466/41<br>0564/41 | 0515/41<br>0600/41 | 0517/41 | 0526/41 |
| UDIOW | 0604/41<br>0440/41 | 0421/41<br>0469/41 | 0423/41<br>0520/41 | 0430/41<br>0542/41 | 0434/41<br>0612/41 | 0439/41 | 0444/41 |
| UDIR1 | 0311/41            | 0304/41            |                    |                    |                    |         |         |
| UDIR2 | 0323/41            | 0315/41            |                    |                    |                    |         |         |
| UDIR3 | 0336/41            | 0346/41            |                    |                    |                    |         |         |
| UDIR4 | 0358/41            | 0580/41            |                    |                    |                    |         |         |
| UDIR5 | 0361/41            | 0636/41            |                    |                    |                    |         |         |
| UDIR6 | 0387/41            | 0368/41            | 0631/41            |                    |                    |         |         |
| UDIR7 | 0393/41            | 0388/41            |                    |                    |                    |         |         |
| UDIR8 | 0419/41            | 0401/41            |                    |                    |                    |         |         |
| UDIR9 | 0425/41            | 0417/41            |                    |                    |                    |         |         |
| UDIRC | 0621/41            | 0482/41            |                    |                    |                    |         |         |
| UDIRF | 0620/41            | 0476/41            |                    |                    |                    |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |         |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|---------|---------|---------|
| UDIRP | 0622/41            | 0492/41            |                    |                    |         |         |         |
| UDISS | 0619/41<br>0541/41 | 0420/41            | 0422/41            | 0429/41            | 0445/41 | 0468/41 | 0519/41 |
| UDL14 | 0712/42            | 0490/42            | 0363/43            | 0376/43            |         |         |         |
| UFLAG | 0536/04            | 0204/04            | 0313/04            | 0330/04            | 0373/04 | 0424/04 | 0455/04 |
| UHDB1 | 0165/32            | 0175/32            |                    |                    |         |         |         |
| UHDBA | 0022/33            | 0329/41            | 0036/42            | 0252/42            |         |         |         |
| UHDBF | 0152/32            | 0212/32            | 0022/33            |                    |         |         |         |
| UHU   | 0555/20            | 0438/20            |                    |                    |         |         |         |
| UHU1  | 0567/20            | 0550/20            | 0563/20            |                    |         |         |         |
| UIR   | 0133               | 0063/07            |                    |                    |         |         |         |
| ULEN  | 0172<br>0502/50    | 0256               | 0295               | 0379               | 0463    | 0616/37 | 0521/37 |
| ULO   | 0137               | 0234/39            |                    |                    |         |         |         |
| UNABT | 0514<br>0404/32    | 0046/07<br>0359/33 | 0553/11<br>0464/33 | 0445/16<br>0617/35 | 0478/28 | 0317/29 | 0355/29 |
| UNL1  | 0663/51            | 0489/51            |                    |                    |         |         |         |
| UNL10 | 0590/51            | 0563/51            | 0568/51            |                    |         |         |         |
| UNL11 | 0569/51            | 0577/51            |                    |                    |         |         |         |
| UNL4  | 0667/51            | 0507/51            | 0619/51            |                    |         |         |         |
| UNL5  | 0524/51            | 0532/51            |                    |                    |         |         |         |
| UNL6  | 0534/51            | 0530/51            |                    |                    |         |         |         |
| UNL9  | 0560/51            | 0594/51            |                    |                    |         |         |         |
| UNLBT | 0660/51            | 0654/51            |                    |                    |         |         |         |
| UNLCN | 0692/51<br>0557/51 | 0523/51<br>0558/51 | 0527/51<br>0596/51 | 0538/51            | 0542/51 | 0548/51 | 0549/51 |
| UNLD  | 0688/51            | 0485/51            | 0509/51            | 0514/51            |         |         |         |
| UNLDG | 0633/51            | 0614/51            | 0620/51            | 0635/51            | 0639/51 | 0642/51 | 0643/51 |
| UNLER | 0671/51            | 0664/51            | 0668/51            | 0674/51            |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |         |         |         |         |
|-------|--------------------|--------------------|--------------------|---------|---------|---------|---------|
| UNLF  | 0689/51<br>0579/51 | 0493/51<br>0590/51 | 0505/51<br>0593/51 | 0511/51 | 0512/51 | 0560/51 | 0569/51 |
| UNLFT | 0649/51            | 0525/51            | 0561/51            | 0658/51 |         |         |         |
| UNLL  | 0690/51            | 0503/51            | 0516/51            | 0517/51 | 0529/51 | 0591/51 |         |
| UNLN  | 0693/51            | 0616/51            | 0622/51            | 0624/51 | 0628/51 |         |         |
| UNLN2 | 0628/51            | 0621/51            |                    |         |         |         |         |
| UNLN3 | 0616/51            | 0627/51            |                    |         |         |         |         |
| UNLNO | 0613/51            | 0479/51            | 0491/51            | 0498/51 | 0617/51 | 0629/51 | 0630/51 |
| UNLT  | 0691/51            | 0513/51            | 0524/51            | 0528/51 | 0531/51 | 0672/51 | 0679/51 |
| UNMNC | 0485/04            | 0315/04            |                    |         |         |         |         |
| UNNRM | 0003/15            | 0109/16            | 0112/16            |         |         |         |         |
| UNPAK | 0128/02<br>0040/16 | 0544/15            | 0545/15            | 0556/15 | 0560/15 | 0568/15 | 0005/16 |
| UNPLC | 0486/04            | 0321/04            |                    |         |         |         |         |
| UNR   | 0134               | 0595/11            | 0491/16            |         |         |         |         |
| UPCCN | 0576/45            | 0449/45            | 0453/45            | 0463/45 |         |         |         |
| UPD2D | 0518/45            | 0403/45            | 0523/45            | 0541/45 |         |         |         |
| UPD3D | 0537/45            | 0415/45            | 0542/45            |         |         |         |         |
| UPDDG | 0527/45            | 0428/45            | 0521/45            | 0522/45 | 0532/45 | 0540/45 |         |
| UP0.A | 0571/45            | 0290/45            |                    |         |         |         |         |
| UP0.L | 0572/45            | 0322/45            | 0327/45            |         |         |         |         |
| UP00  | 0280/45            | 0273/45            |                    |         |         |         |         |
| UP01  | 0294/45            |                    |                    |         |         |         |         |
| UP012 | 0430/45            | 0427/45            |                    |         |         |         |         |
| UP013 | 0433/45            | 0429/45            |                    |         |         |         |         |
| UP014 | 0375/45            | 0358/45            | 0393/45            |         |         |         |         |
| UP015 | 0292/45            | 0300/45            | 0316/45            |         |         |         |         |
| UP016 | 0371/45            | 0366/45            |                    |         |         |         |         |



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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |         |         |         |         |
|-------|--------------------|--------------------|--------------------|---------|---------|---------|---------|
| UP017 | 0391/45            | 0386/45            |                    |         |         |         |         |
| UP018 | 0334/45            | 0342/45            |                    |         |         |         |         |
| UP03  | 0301/45            | 0297/45            |                    |         |         |         |         |
| UP04  | 0319/45            | 0291/45            |                    |         |         |         |         |
| UP05  | 0344/45            | 0311/45            | 0315/45            | 0338/45 |         |         |         |
| UP06  | 0355/45            | 0373/45            |                    |         |         |         |         |
| UP07  | 0396/45            | 0367/45            | 0387/45            | 0438/45 |         |         |         |
| UP09  | 0404/45            |                    |                    |         |         |         |         |
| UPOC1 | 0574/45<br>0471/45 | 0285/45<br>0495/45 | 0302/45<br>0498/45 | 0313/45 | 0335/45 | 0340/45 | 0442/45 |
| UPOC2 | 0575/45            | 0494/45            | 0497/45            |         |         |         |         |
| UPOCN | 0573/45            | 0287/45            | 0303/45            | 0336/45 |         |         |         |
| UPODG | 0483/45            | 0293/45            | 0490/45            |         |         |         |         |
| UPOIN | 0441/45            | 0306/45            | 0339/45            | 0480/45 |         |         |         |
| UPON1 | 0454/45            | 0459/45            |                    |         |         |         |         |
| UPON2 | 0460/45            | 0456/45            |                    |         |         |         |         |
| UPON3 | 0464/45            | 0469/45            |                    |         |         |         |         |
| UPON4 | 0470/45            | 0466/45            |                    |         |         |         |         |
| UPON5 | 0478/45            | 0475/45            |                    |         |         |         |         |
| UPOPR | 0503/45<br>0510/45 | 0345/45<br>0513/45 | 0397/45<br>0514/45 | 0405/45 | 0416/45 | 0504/45 | 0506/45 |
| UPOSP | 0493/45            | 0295/45            | 0499/45            |         |         |         |         |
| UPTRV | 0559/45            | 0354/45            | 0370/45            | 0390/45 | 0567/45 |         |         |
| UPTSV | 0547/45            | 0352/45            | 0368/45            | 0388/45 | 0555/45 |         |         |
| URDCL | 0232/42            | 0071/42            | 0161/42            |         |         |         |         |
| URE10 | 0159/42            | 0167/42            |                    |         |         |         |         |
| URE11 | 0100/42            | 0169/42            |                    |         |         |         |         |
| URE12 | 0182/42            | 0158/42            |                    |         |         |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                               |                    |                    |                    |                    |                    |                    |
|-------|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| URE13 | 0170/42                       | 0185/42            |                    |                    |                    |                    |                    |
| URE14 | 0186/42                       | 0162/42            |                    |                    |                    |                    |                    |
| URE15 | 0191/42                       | 0072/42            |                    |                    |                    |                    |                    |
| URE21 | 0070/42                       | 0099/42            |                    |                    |                    |                    |                    |
| URE22 | 0056/42                       | 0181/42            |                    |                    |                    |                    |                    |
| URE25 | 0097/42                       | 0089/42            |                    |                    |                    |                    |                    |
| URE30 | 0231/42                       | 0039/42            |                    |                    |                    |                    |                    |
| URENM | 0198/42                       | 0132/42            | 0207/42            | 0221/42            | 0223/42            |                    |                    |
| UREP1 | 0019/42                       | 0012/42            |                    |                    |                    |                    |                    |
| UREP2 | 0031/42                       | 0023/42            |                    |                    |                    |                    |                    |
| UREP3 | 0043/42                       | 0053/42            |                    |                    |                    |                    |                    |
| UREP4 | 0065/42                       | 0074/42            |                    |                    |                    |                    |                    |
| UREP5 | 0075/42                       | 0069/42            |                    |                    |                    |                    |                    |
| UREP6 | 0087/42                       | 0096/42            |                    |                    |                    |                    |                    |
| UREP9 | 0113/42                       | 0094/42            | 0184/42            |                    |                    |                    |                    |
| URETR | 0211/42                       | 0139/42            | 0145/42            | 0224/42            |                    |                    |                    |
| URHDA | 0225/42                       | 0041/42            |                    |                    |                    |                    |                    |
| URPHD | 0226/42                       | 0225/42            |                    |                    |                    |                    |                    |
| US,63 | 0598/42                       | 0443/42            |                    |                    |                    |                    |                    |
| USCK1 | 0224/05                       | 0214/05            |                    |                    |                    |                    |                    |
| USCK2 | 0232/05                       | 0225/05            |                    |                    |                    |                    |                    |
| USCK3 | 0235/05                       | 0211/05            |                    |                    |                    |                    |                    |
| USE   | 0002/02<br>0386/32<br>0256/49 | 0239/30<br>0392/32 | 0259/30<br>0061/33 | 0287/30<br>0372/33 | 0249/32<br>0378/33 | 0255/32<br>0052/36 | 0269/32<br>0057/36 |
| USEI  | 0003/02                       | 0243/30            | 0273/32            | 0067/33            | 0260/49            |                    |                    |
| USEOP | 0461                          | 0082/08            | 0131/11            | 0499/21            | 0419/40            |                    |                    |
| USER  | 0005/02<br>0296/02            | 0013<br>0185/03    | 0014               | 0256               | 0379               | 0002/02            | 0003/02            |

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CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |         |         |         |  |  |
|-------|--------------------|--------------------|--------------------|--------------------|---------|---------|---------|--|--|
| USESN | 0254/02            | 0024/08            | 0085/08            | 0245/09            | 0529/33 | 0445/36 |         |  |  |
| USINS | 0352/05            | 0515/05            |                    |                    |         |         |         |  |  |
| UST10 | 0405/42            | 0400/42            |                    |                    |         |         |         |  |  |
| UST11 | 0416/42            | 0421/42            |                    |                    |         |         |         |  |  |
| UST12 | 0428/42            | 0415/42            |                    |                    |         |         |         |  |  |
| UST13 | 0440/42            | 0418/42            |                    |                    |         |         |         |  |  |
| UST14 | 0445/42            | 0394/42            | 0413/42            | 0430/42            |         |         |         |  |  |
| UST15 | 0453/42            | 0385/42            | 0448/42            |                    |         |         |         |  |  |
| UST16 | 0460/42            | 0457/42            |                    |                    |         |         |         |  |  |
| UST17 | 0470/42            | 0551/42            |                    |                    |         |         |         |  |  |
| UST18 | 0480/42            | 0543/42            |                    |                    |         |         |         |  |  |
| UST19 | 0496/42            | 0535/42            |                    |                    |         |         |         |  |  |
| UST20 | 0524/42            | 0513/42            |                    |                    |         |         |         |  |  |
| UST21 | 0536/42            | 0531/42            |                    |                    |         |         |         |  |  |
| UST22 | 0544/42            | 0479/42            | 0499/42            |                    |         |         |         |  |  |
| UST20 | 0627/42<br>0664/42 | 0410/42<br>0673/42 | 0426/42<br>0028/43 | 0444/42<br>0312/43 | 0632/42 | 0657/42 | 0662/42 |  |  |
| UST30 | 0038/43            | 0049/43            |                    |                    |         |         |         |  |  |
| UST31 | 0045/43            | 0042/43            |                    |                    |         |         |         |  |  |
| UST32 | 0069/43            | 0088/43            |                    |                    |         |         |         |  |  |
| UST33 | 0083/43            | 0073/43            | 0079/43            |                    |         |         |         |  |  |
| UST34 | 0103/43            | 0125/43            |                    |                    |         |         |         |  |  |
| UST35 | 0120/43            | 0107/43            | 0113/43            |                    |         |         |         |  |  |
| UST36 | 0145/43            | 0142/43            |                    |                    |         |         |         |  |  |
| UST37 | 0161/43            | 0180/43            |                    |                    |         |         |         |  |  |
| UST38 | 0175/43            | 0168/43            |                    |                    |         |         |         |  |  |
| UST39 | 0181/43            | 0165/43            |                    |                    |         |         |         |  |  |

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## CROSS-REFERENCE SYMBOL TABLE

|       |                    |                    |                    |                    |                    |         |         |
|-------|--------------------|--------------------|--------------------|--------------------|--------------------|---------|---------|
| UST30 | 0669/42            | 0676/42            | 0263/43            | 0295/43            | 0317/43            | 0404/43 |         |
| UST40 | 0220/43            | 0241/43            |                    |                    |                    |         |         |
| UST41 | 0232/43            | 0222/43            | 0224/43            |                    |                    |         |         |
| UST50 | 0137/43            | 0150/43            |                    |                    |                    |         |         |
| UST60 | 0654/42<br>0346/43 | 0348/42<br>0393/43 | 0362/42            | 0508/42            | 0522/42            | 0665/42 | 0259/43 |
| USTA0 | 0251/42            | 0244/42            |                    |                    |                    |         |         |
| USTA1 | 0270/42            | 0280/42            |                    |                    |                    |         |         |
| USTA2 | 0029/43            | 0025/43            |                    |                    |                    |         |         |
| USTA4 | 0297/42            | 0368/42            |                    |                    |                    |         |         |
| USTA5 | 0369/42            | 0300/42            | 0307/42            |                    |                    |         |         |
| USTA6 | 0380/42            | 0459/42            |                    |                    |                    |         |         |
| USTA7 | 0386/42            | 0439/42            |                    |                    |                    |         |         |
| USTA8 | 0389/42            | 0395/42            | 0434/42            |                    |                    |         |         |
| USTA9 | 0396/42            | 0392/42            |                    |                    |                    |         |         |
| USTBP | 0587/42            | 0393/42            | 0412/42            | 0417/42            | 0429/42            | 0595/42 | 0597/42 |
| USTBR | 0355/43            | 0366/43            | 0371/43            | 0389/43            |                    |         |         |
| USTCK | 0220/02<br>0241/05 | 0642/03            | 0046/04            | 0212/05            | 0223/05            | 0230/05 | 0234/05 |
| USTD1 | 0325/43            | 0332/43            |                    |                    |                    |         |         |
| USTD2 | 0328/43            |                    |                    |                    |                    |         |         |
| USTD6 | 0412/43            | 0102/43            |                    |                    |                    |         |         |
| USTDA | 0322/43            | 0198/43            | 0208/43            | 0334/43            |                    |         |         |
| USTDC | 0414/43            | 0068/43            |                    |                    |                    |         |         |
| USTDG | 0645/42<br>0640/42 | 0315/42<br>0650/42 | 0332/42<br>0672/42 | 0402/42<br>0294/43 | 0630/42<br>0306/43 | 0631/42 | 0639/42 |
| USTDL | 0418/43            | 0086/43            |                    |                    |                    |         |         |
| USTDR | 0370/43            | 0195/43            | 0205/43            | 0215/43            | 0231/43            | 0252/43 | 0382/43 |
| USTDS | 0302/43            | 0144/43            | 0166/43            | 0289/43            | 0318/43            |         |         |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                                     |                                                     |                                                     |                                                     |                                          |                                          |  |
|-------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------|------------------------------------------|--|
| USTDU | 0413/43                                             | 0123/43                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTER | 0603/42                                             | 0493/42                                             | 0365/43                                             | 0381/43                                             |                                                     |                                          |                                          |  |
| USTID | 0417/43                                             | 0036/43                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTLL | 0287/43                                             | 0044/43                                             | 0057/43                                             | 0077/43                                             | 0111/43                                             | 0298/43                                  |                                          |  |
| USTMA | 0243/05                                             | 0209/05                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTMT | 0382/22                                             | 0243/05                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTOC | 0636/42                                             | 0260/42                                             | 0276/42                                             | 0325/42                                             | 0641/42                                             | 0010/43                                  |                                          |  |
| USTQV | 0600/42                                             | 0495/42                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTRV | 0703/42<br>0172/43                                  | 0366/42<br>0228/43                                  | 0438/42<br>0274/43                                  | 0452/42<br>0279/43                                  | 0540/42                                             | 0711/42                                  | 0117/43                                  |  |
| USTS1 | 0390/43                                             | 0409/43                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTSQ | 0599/42                                             | 0565/42                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTSR | 0338/43                                             | 0221/43                                             | 0326/43                                             | 0344/43                                             | 0350/43                                             | 0351/43                                  |                                          |  |
| USTSS | 0387/43                                             | 0271/43                                             | 0276/43                                             | 0281/43                                             | 0411/43                                             |                                          |                                          |  |
| USTST | 0612/42<br>0333/42<br>0613/42<br>0051/43<br>0209/43 | 0255/42<br>0349/42<br>0615/42<br>0060/43<br>0246/43 | 0265/42<br>0370/42<br>0619/42<br>0095/43<br>0264/43 | 0283/42<br>0406/42<br>0622/42<br>0130/43<br>0347/43 | 0309/42<br>0461/42<br>0623/42<br>0152/43<br>0405/43 | 0316/42<br>0532/42<br>0020/43<br>0187/43 | 0326/42<br>0555/42<br>0030/43<br>0200/43 |  |
| USTSV | 0691/42<br>0170/43                                  | 0364/42<br>0226/43                                  | 0436/42<br>0272/43                                  | 0450/42<br>0277/43                                  | 0538/42                                             | 0699/42                                  | 0115/43                                  |  |
| USTSW | 0419/43                                             | 0160/43                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTTB | 0415/43                                             | 0136/43                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTTE | 0416/43                                             | 0148/43                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| USTTZ | 0570/42                                             | 0390/42                                             | 0414/42                                             | 0419/42                                             | 0581/42                                             | 0582/42                                  |                                          |  |
| USTUS | 0420/43                                             | 0178/43                                             |                                                     |                                                     |                                                     |                                          |                                          |  |
| UTDNM | 0216/32                                             | 0187/32                                             | 0194/32                                             | 0200/32                                             | 0205/32                                             | 0225/32                                  |                                          |  |
| UTEMP | 0261/02<br>0019/21                                  | 0434/02<br>0024/21                                  | 0406/20<br>0025/21                                  | 0408/20<br>0027/21                                  | 0416/20<br>0037/21                                  | 0475/20                                  | 0485/20                                  |  |
| VAL10 | 0063/09                                             | 0039/09                                             | 0057/09                                             | 0144/09                                             | 0150/09                                             |                                          |                                          |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |                                          |                                          |                                          |                                          |                                          |                                          |                                          |  |
|-------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|--|
| VAL11 | 0065/09                                  | 0023/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL12 | 0068/09                                  | 0011/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL13 | 0161/09                                  | 0005/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL14 | 0168/09                                  | 0414/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL15 | 0174/09                                  | 0419/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL16 | 0199/09                                  | 0211/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL17 | 0201/09                                  | 0177/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL18 | 0212/09                                  | 0180/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL19 | 0235/09                                  | 0230/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL20 | 0231/09                                  | 0222/09                                  | 0228/09                                  |                                          |                                          |                                          |                                          |  |
| VAL31 | 0448/08                                  | 0441/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL51 | 0080/09                                  | 0014/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL52 | 0128/09<br>0121/09                       | 0091/09                                  | 0100/09                                  | 0105/09                                  | 0109/09                                  | 0116/09                                  | 0118/09                                  |  |
| VAL53 | 0154/09                                  | 0157/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VAL98 | 0253/09                                  | 0244/09                                  | 0247/09                                  |                                          |                                          |                                          |                                          |  |
| VAL99 | 0241/09                                  | 0410/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VALTB | 0248/02<br>0445/34<br>0467/34<br>0488/34 | 0335/02<br>0451/34<br>0468/34<br>0490/34 | 0371/07<br>0457/34<br>0481/34<br>0492/34 | 0334/09<br>0461/34<br>0483/34<br>0494/34 | 0438/34<br>0463/34<br>0484/34<br>0496/34 | 0443/34<br>0464/34<br>0486/34<br>0497/34 | 0444/34<br>0466/34<br>0487/34<br>0499/34 |  |
| VALU1 | 0408/08<br>0127/09                       | 0433/08<br>0160/09                       | 0438/08<br>0163/09                       | 0452/08<br>0167/09                       | 0458/08<br>0200/09                       | 0053/09<br>0205/09                       | 0072/09<br>0240/09                       |  |
| VALU2 | 0435/08                                  | 0447/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VALU3 | 0439/08                                  | 0428/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VALU4 | 0456/08                                  | 0417/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VALU5 | 0004/09                                  | 0422/08                                  |                                          |                                          |                                          |                                          |                                          |  |
| VALU6 | 0026/09                                  | 0067/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VALU7 | 0032/09                                  | 0079/09                                  |                                          |                                          |                                          |                                          |                                          |  |
| VALU8 | 0047/09                                  | 0051/09                                  | 0062/09                                  |                                          |                                          |                                          |                                          |  |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |  |
|-------|---------|---------|---------|---------|---------|---------|---------|--|
| VALU9 | 0054/09 | 0046/09 |         |         |         |         |         |  |
| VALUE | 0402/08 | 0073/07 | 0369/07 | 0372/07 |         |         |         |  |
| VAR01 | 0427/05 | 0410/05 |         |         |         |         |         |  |
| VAR02 | 0431/05 | 0418/05 |         |         |         |         |         |  |
| VAR03 | 0440/05 | 0445/05 |         |         |         |         |         |  |
| VAR04 | 0419/05 | 0403/05 | 0405/05 | 0407/05 |         |         |         |  |
| VAROP | 0022/02 | 0359/02 | 0380/02 | 0343/03 | 0377/03 | 0510/03 | 0552/03 |  |
|       | 0626/03 | 0208/04 | 0427/04 | 0458/04 | 0160/05 | 0313/05 | 0334/05 |  |
|       | 0343/05 | 0370/05 | 0400/05 | 0401/05 | 0408/05 | 0422/05 | 0423/05 |  |
|       | 0426/05 | 0433/05 | 0441/05 |         |         |         |         |  |
| VCHK  | 0176/02 | 0337/02 | 0408/02 | 0430/02 | 0491/02 | 0102/17 | 0186/17 |  |
|       | 0198/17 | 0387/17 | 0293/18 | 0460/25 |         |         |         |  |
| VCHK1 | 0291/18 | 0305/18 | 0307/18 |         |         |         |         |  |
| VCHK2 | 0306/18 | 0298/18 |         |         |         |         |         |  |
| VL0   | 0458/02 | 0077/12 | 0092/12 |         |         |         |         |  |
| VLF10 | 0070/12 | 0065/12 |         |         |         |         |         |  |
| VLF11 | 0072/12 | 0069/12 |         |         |         |         |         |  |
| VLF12 | 0088/12 | 0099/12 |         |         |         |         |         |  |
| VLF13 | 0096/12 | 0086/12 |         |         |         |         |         |  |
| VLFIL | 0188/02 | 0017/10 | 0370/10 | 0010/11 | 0070/12 | 0071/12 | 0095/12 |  |
|       | 0043/17 |         |         |         |         |         |         |  |
| VLFLG | 0250/02 | 0346/07 | 0356/08 | 0426/08 | 0009/09 | 0161/09 | 0175/09 |  |
|       | 0242/09 | 0255/09 |         |         |         |         |         |  |
| VT0   | 0431/02 | 0175/18 | 0218/18 | 0221/18 | 0222/18 | 0223/18 | 0238/18 |  |
|       | 0240/18 | 0286/18 | 0287/18 | 0288/18 | 0290/18 | 0291/18 |         |  |
| VTMP1 | 0362/02 | 0435/08 | 0437/08 | 0006/09 | 0015/09 | 0021/09 | 0052/09 |  |
|       | 0073/09 | 0080/09 | 0083/09 | 0087/09 | 0122/09 | 0126/09 | 0159/09 |  |
|       | 0174/09 | 0181/09 | 0188/09 | 0199/09 | 0207/09 |         |         |  |
| VTMP2 | 0363/02 | 0008/09 | 0026/09 | 0042/09 | 0050/09 | 0093/09 | 0131/09 |  |
|       | 0146/09 | 0156/09 |         |         |         |         |         |  |
| VTMP3 | 0364/02 | 0017/09 | 0029/09 | 0030/09 | 0031/09 | 0032/09 | 0033/09 |  |
|       | 0034/09 | 0035/09 | 0036/09 | 0043/09 | 0075/09 | 0076/09 | 0077/09 |  |
|       | 0078/09 | 0085/09 | 0089/09 | 0097/09 | 0098/09 | 0102/09 | 0110/09 |  |

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CROSS-REFERENCE SYMBOL TABLE

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|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       | 0111/09<br>0220/09                                                                                                                                                                                                                                                                      | 0112/09<br>0229/09                                                                                                                                                                                                                                                              | 0113/09<br>0231/09                                                                                                                                                                                                                                                              | 0183/09                                                                                                                                                                                                                                                                         | 0193/09                                                                                                                                                                                                                                                                         | 0213/09                                                                                                                                                                                                                                                                         | 0220/09                                                                                                                                                                                                                                                                         |
| VTMP4 | 0365/02                                                                                                                                                                                                                                                                                 | 0040/09                                                                                                                                                                                                                                                                         | 0058/09                                                                                                                                                                                                                                                                         | 0106/09                                                                                                                                                                                                                                                                         | 0119/09                                                                                                                                                                                                                                                                         | 0123/09                                                                                                                                                                                                                                                                         | 0124/09                                                                                                                                                                                                                                                                         |
| VTMP5 | 0366/02                                                                                                                                                                                                                                                                                 | 0082/09                                                                                                                                                                                                                                                                         | 0128/09                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| WCS   | 0155                                                                                                                                                                                                                                                                                    | 0421/45                                                                                                                                                                                                                                                                         | 0270/48                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| WERRA | 0008/15                                                                                                                                                                                                                                                                                 | 0226/16                                                                                                                                                                                                                                                                         | 0400/16                                                                                                                                                                                                                                                                         | 0410/16                                                                                                                                                                                                                                                                         | 0455/16                                                                                                                                                                                                                                                                         | 0480/16                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |
| WERRS | 0536<br>0102/14<br>0307/22                                                                                                                                                                                                                                                              | 0428/09<br>0008/15                                                                                                                                                                                                                                                              | 0265/10<br>0084/16                                                                                                                                                                                                                                                              | 0280/10<br>0122/16                                                                                                                                                                                                                                                              | 0295/10<br>0509/20                                                                                                                                                                                                                                                              | 0259/11<br>0045/21                                                                                                                                                                                                                                                              | 0212/12<br>0302/22                                                                                                                                                                                                                                                              |
| WORD  | 0059<br>0108/26<br>0282/30<br>0400/31<br>0062/33<br>0594/35<br>0270/36<br>0174/37<br>0303/37<br>0359/38<br>0570/39<br>0210/41<br>0376/44<br>0646/45<br>0257/49<br>0311/50<br>0140/51<br>0415/51<br>0331/52<br>0311/54<br>0408/55<br>0283/56<br>0287/57<br>0632/57<br>0201/58<br>0556/58 | 0051/03<br>0197/26<br>0321/30<br>0421/31<br>0104/33<br>0053/36<br>0335/36<br>0210/37<br>0307/37<br>0018/39<br>0673/39<br>0377/41<br>0391/44<br>0680/45<br>0317/49<br>0318/50<br>0238/51<br>0545/51<br>0382/52<br>0519/54<br>0075/56<br>0284/56<br>0304/57<br>0640/57<br>0272/58 | 0103/03<br>0470/27<br>0201/31<br>0478/31<br>0373/33<br>0105/36<br>0345/36<br>0215/37<br>0436/37<br>0111/39<br>0743/39<br>0076/42<br>0398/44<br>0070/46<br>0435/49<br>0330/50<br>0276/51<br>0602/51<br>0452/52<br>0171/55<br>0131/56<br>0317/56<br>0319/57<br>0669/57<br>0305/58 | 0205/15<br>0047/28<br>0255/31<br>0022/32<br>0388/33<br>0219/36<br>0106/37<br>0267/37<br>0505/37<br>0116/39<br>0782/39<br>0101/42<br>0399/44<br>0687/48<br>0023/50<br>0334/50<br>0339/51<br>0163/52<br>0095/53<br>0247/55<br>0227/56<br>0497/56<br>0332/57<br>0084/58<br>0399/58 | 0482/15<br>0074/28<br>0283/31<br>0250/32<br>0333/34<br>0247/36<br>0120/37<br>0282/37<br>0173/38<br>0205/39<br>0789/39<br>0077/44<br>0594/44<br>0728/48<br>0116/50<br>0433/50<br>0380/51<br>0232/52<br>0210/53<br>0267/55<br>0244/56<br>0103/57<br>0552/57<br>0121/58<br>0477/58 | 0350/16<br>0240/30<br>0362/31<br>0270/32<br>0181/35<br>0262/36<br>0142/37<br>0285/37<br>0222/38<br>0324/39<br>0802/39<br>0261/44<br>0621/45<br>0024/49<br>0292/50<br>0064/51<br>0390/51<br>0282/52<br>0186/54<br>0290/55<br>0261/56<br>0199/57<br>0586/57<br>0150/58<br>0496/58 | 0049/26<br>0260/30<br>0367/31<br>0387/32<br>0559/35<br>0269/36<br>0154/37<br>0291/37<br>0310/38<br>0426/39<br>0828/39<br>0351/44<br>0628/45<br>0115/49<br>0308/50<br>0097/51<br>0406/51<br>0299/52<br>0261/54<br>0301/55<br>0276/56<br>0228/57<br>0626/57<br>0159/58<br>0519/58 |
| WRBU1 | 0490/15                                                                                                                                                                                                                                                                                 | 0481/15                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| WRBU2 | 0500/15                                                                                                                                                                                                                                                                                 | 0489/15                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| WRBU4 | 0442/15                                                                                                                                                                                                                                                                                 | 0453/15                                                                                                                                                                                                                                                                         | 0462/15                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| WRBU5 | 0460/15                                                                                                                                                                                                                                                                                 | 0466/15                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| WRBU6 | 0467/15                                                                                                                                                                                                                                                                                 | 0443/15                                                                                                                                                                                                                                                                         | 0446/15                                                                                                                                                                                                                                                                         | 0448/15                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| WRBU7 | 0471/15                                                                                                                                                                                                                                                                                 | 0437/15                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |



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CROSS-REFERENCE SYMBOL TABLE

|       |                                                     |                                                     |                                                     |                                                     |                                          |                                          |                                          |
|-------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------|------------------------------------------|------------------------------------------|
| WRBUF | 0196/02<br>0433/15                                  | 0428/02<br>0502/15                                  | 0458/02<br>0382/35                                  | 0481/11                                             | 0612/11                                  | 0193/15                                  | 0427/15                                  |
| WSP   | 0546/33                                             | 0410/45                                             | 0259/48                                             |                                                     |                                          |                                          |                                          |
| WTP   | 0156                                                | 0008/30                                             | 0545/39                                             |                                                     |                                          |                                          |                                          |
| X     | 0629/28                                             | 0656/28                                             | 0659/28                                             |                                                     |                                          |                                          |                                          |
| X2056 | 0516/37                                             | 0125/37                                             | 0159/37                                             | 0163/37                                             |                                          |                                          |                                          |
| X2TMP | 0262/02<br>0274/20                                  | 0425/02<br>0275/20                                  | 0426/02                                             | 0187/20                                             | 0205/20                                  | 0266/20                                  | 0268/20                                  |
| XCOM5 | 0635/28                                             | 0328/29                                             |                                                     |                                                     |                                          |                                          |                                          |
| XCRLF | 0680/42<br>0465/42<br>0064/43<br>0156/43<br>0245/43 | 0281/42<br>0537/42<br>0080/43<br>0169/43<br>0250/43 | 0293/42<br>0554/42<br>0092/43<br>0185/43<br>0333/43 | 0363/42<br>0687/42<br>0099/43<br>0194/43<br>0410/43 | 0374/42<br>0029/43<br>0114/43<br>0204/43 | 0435/42<br>0050/43<br>0129/43<br>0213/43 | 0449/42<br>0059/43<br>0151/43<br>0225/43 |
| XEC   | 0301/09                                             |                                                     |                                                     |                                                     |                                          |                                          |                                          |
| XEC0  | 0328/09                                             | 0315/09                                             | 0323/09                                             |                                                     |                                          |                                          |                                          |
| XEC01 | 0316/09                                             | 0310/09                                             |                                                     |                                                     |                                          |                                          |                                          |
| XEC1  | 0397/09<br>0063/10<br>0385/10<br>0393/11<br>0253/12 | 0317<br>0071/10<br>0104/11<br>0466/11<br>0254/12    | 0010/10<br>0162/10<br>0111/11<br>0539/11<br>0263/12 | 0022/10<br>0192/10<br>0159/11<br>0248/12<br>0269/12 | 0031/10<br>0196/10<br>0174/11<br>0249/12 | 0053/10<br>0208/10<br>0213/11<br>0250/12 | 0060/10<br>0299/10<br>0247/11<br>0252/12 |
| XEC1A | 0317<br>0237/18                                     | 0175/12<br>0214/25                                  | 0048/17<br>0226/25                                  | 0158/17<br>0229/25                                  | 0162/17<br>0232/25                       | 0318/17                                  | 0015/18                                  |
| XEC2  | 0334/09                                             | 0362/09                                             |                                                     |                                                     |                                          |                                          |                                          |
| XEC3  | 0343/09                                             | 0241                                                | 0339/09                                             |                                                     |                                          |                                          |                                          |
| XEC3I | 0241                                                | 0447/09                                             |                                                     |                                                     |                                          |                                          |                                          |
| XEC4  | 0363/09                                             | 0335/09                                             |                                                     |                                                     |                                          |                                          |                                          |
| XEC5  | 0420/09                                             | 0242                                                |                                                     |                                                     |                                          |                                          |                                          |
| XEC5I | 0242                                                | 0342/09                                             |                                                     |                                                     |                                          |                                          |                                          |
| XEC6  | 0442/09                                             | 0436/09                                             |                                                     |                                                     |                                          |                                          |                                          |
| XEC7  | 0446/09                                             | 0426/09                                             |                                                     |                                                     |                                          |                                          |                                          |
| XEC8  | 0380/09                                             | 0373/09                                             |                                                     |                                                     |                                          |                                          |                                          |

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CROSS-REFERENCE SYMBOL TABLE

|       |         |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|---------|
| XEC9  | 0371/09 | 0365/09 |         |         |         |         |         |
| XECBR | 0625/11 | 0414/09 |         |         |         |         |         |
| XECTB | 0247/12 | 0625/11 |         |         |         |         |         |
| XPNCH | 0223/21 | 0112/31 |         |         |         |         |         |
| XPUN  | 0034/31 | 0502/29 |         |         |         |         |         |
| XTEMP | 0259/02 | 0415/02 | 0416/02 | 0432/02 | 0288/20 | 0299/20 | 0300/20 |
|       | 0307/20 | 0308/20 | 0309/20 | 0311/20 | 0319/20 | 0335/20 | 0347/20 |
|       | 0348/20 | 0356/20 | 0376/20 | 0396/20 | 0405/20 | 0422/20 | 0427/20 |
|       | 0456/20 | 0469/20 | 0472/20 | 0474/20 | 0489/20 | 0493/20 | 0011/21 |
|       | 0013/21 | 0016/21 | 0020/21 | 0030/21 | 0033/21 | 0105/21 | 0111/21 |
|       | 0112/21 | 0118/21 | 0126/21 | 0136/21 | 0137/21 | 0166/21 | 0179/21 |
| YEAR  | 0091    | 0054/20 | 0117/32 | 0193/32 | 0089/33 |         |         |
| YTEMP | 0260/02 | 0433/02 | 0357/20 | 0359/20 | 0367/20 | 0368/20 | 0374/20 |
|       | 0378/20 | 0417/20 | 0429/20 | 0433/20 | 0461/20 | 0471/20 | 0478/20 |
|       | 0481/20 | 0482/20 | 0491/20 | 0492/20 | 0495/20 | 0015/21 | 0041/21 |
|       | 0117/21 | 0120/21 | 0122/21 | 0125/21 | 0128/21 | 0130/21 | 0176/21 |
|       | 0198/21 |         |         |         |         |         |         |
| Z999  | 0381/39 | 0247/39 |         |         |         |         |         |
| ZDISC | 0169/03 | 0118    | 0178/03 | 0179/03 | 0682/32 |         |         |
| ZERSL | 0438/32 | 0109/42 |         |         |         |         |         |