

PAGE 0001 #01

12:13 PM TUE., 23 OCT., 1979

0001 ASMB,A,B,C,L 2000A TSB LOADER--VERSION F
** NO ERRORS PASS#1 **RTE ASMB 92067-16011**

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0001          ASMB,A,B,C,L    2000A TSB LOADER--VERSION F
0002*
0003*          AUGUST 1, 1970
0004*
0005 00004          ORG 4
0006          SUP PRESS EXTRA PRINTING
0007 00004 103004   HLT 4,C          LOADER POWER FAIL HALT
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0009	00100		ORG	100B		
0010	00100	000000	DIREC	BSS	28	DIRECTORY TRACK HEADERS
0011	00134	000000	IDLOC	BSS	1	ID TABLE DISC ADDRESS
0012	00135	000000	IDLEN	BSS	1	ID TABLE LENGTH IN -WORDS
0013	00136	000000	ADLOC	BSS	1	ADT DISC ADDRESS
0014	00137	000000	ADLEN	BSS	1	ADT LENGTH IN -WORDS
0015	00140	000000	TRAX	BSS	16	AVAILABLE TRACK TABLE
0016	00160	000000	DTBL	BSS	4	DISC SELECT CODE TABLE
0017	00164	000000	MAGSC	BSS	1	MAG TAPE SELECT CODE
0018	00165	000000	PHNSC	BSS	1	PHONES SELECT CODE

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0020*
0021** NORMAL ENTRY POINT **
0022*
0023 02000 ORG 2000B
0024 02000 126001 JMP *+1,I JUMP TO
0025 02001 004000 OCT 4000 LOADER
  
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0027*
0028** NON-SLEEP RELOAD ENTRY POINT **
0029*
0030 03000 ORG 3000B
0031 03000 107700 CLC 0,C
0032 03001 127002 JMP *+1,I
0033 03002 004122 DEF LDR6
  
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0035 03003 MTRLT EQU * SYSTEM SEGMENT TABLE BUFFER [F]
  
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0037*
0038** LOADER-SYSTEM LINKAGE TABLE **
0039*
0040*
0041* CONTENTS FILLED IN FROM TSB SYSTEM TAPE ON PAPER TAPE LOADS,
0042* FROM MAG TAPE ON MAG TAPE LOADS.
0043*
0044 04000 ORG 4000B
0045 04000 026030 JMP LDR INITIATE LOADING SEQUENCE
0046 04001 LSLTB EQU *
0047 04001 000000 LIBRA OCT 0 SYSTEM LIBRARY PROGRAM ORIGIN[E]
0048 04002 000000 COM6 BSS 1 ADDRESS OF SYSTEM LIBRARY DISC
0049* ADDRESSES
0050 04003 000000 INCRF BSS 1 LENGTH OF TTY TABLE
0051 04004 000000 TTYDA BSS 1 ADDRESS OF USER DISC ADDRESS
0052 04005 000000 ?MASK BSS 1 ADDRESS OF USER MASK
0053 04006 000000 ?BHED BSS 1 => START OF LOGICAL BUFFER
0054 04007 000000 ?BSTR BSS 1 => END OF LOGICAL BUFFER
0055 04010 000000 ?BGIN BSS 1 => START OF PHYSICAL BUFFER
0056 04011 000000 ?BEND BSS 1 => END OF PHYSICAL BUFFER
0057 04012 000000 ?ID BSS 1 ADDRESS OF ID-NAME
0058 04013 000000 SWPIA BSS 1 ADDRESS OF USER-DEPENDENT ITEMS
0059 04014 000000 SWPLN BSS 1 LENGTH OF SWAP AREA
0060 04015 000000 SWPAA BSS 1 CORE ADDRESS OF SWAP AREA
0061 04016 000000 DATE BSS 1 ADDRESS OF HOUR OF YEAR
0062 04017 000000 TIME BSS 1 ADDRESS OF TENTHS OF SECONDS
0063 04020 000000 YEAR BSS 1 ADDRESS OF YEAR
0064 04021 000000 TSB BSS 1 SYSTEM STARTING ADDRESS
  
```

0065	04022	000000	PHIN1	BSS	1
0066	04023	000000	PHIN2	BSS	1
0067	04024	000000	PHIN3	BSS	1
0068	04025	000000	PHIN4	BSS	1
0069	04026	000000	PWRFL	BSS	1
0070	04027	000000	ULTTA	BSS	1
0071	04030		LSLTE	EQU	*

ADDRESSES
OF PHONES
CODE
ADDRESS OF PHONE QUANTITY
POWER FAIL INTERRUPT CODE
USER LIBRARY TRACK TABLE ADDRESS

```
0073* *
0074** MAIN LOADING SEQUENCE **
0075* *
0076*
0077* BEGIN HERE FOR NORMAL LOADING SEQUENCES.
0078*
0079 04030 107700 LDR CLC 0,C SET I/O TO NULL STATE
0080 04031 002400 CLA ZERO
0081 04032 073667 STA SYSLF DIRECTORY TRACK
0082 04033 073670 STA SYSLF+1 COUNTERS
0083 04034 063557 LDA .12 ASK
0084 04035 067743 LDB LBRYA
0085 04036 117723 JSB ASR35,I IF LIBRARY
0086 04037 002400 CLA
0087 04040 117723 JSB ASR35,I EXISTS
0088 04041 117741 JSB GETCA,I ANSWER GIVEN?
0089 04042 026047 JMP ERR1 NO
0090 04043 053617 CPA Y YES, 'Y' ?
0091 04044 026142 JMP LDR7 YES, ASSUME 'YES'
0092 04045 053613 CPA N NO, 'N' ?
0093 04046 026053 JMP LDR1 YES, ASSUME 'NO'
0094 04047 063561 ERR1 LDA .15 NO
0095 04050 067744 LDB ILINA TRY
0096 04051 117723 JSB ASR35,I AGAIN
0097 04052 026030 JMP LDR
0098* *
0099** SYSTEM GENERATION **
0100* *
0101*
0102* CREATE NASCENT EQUIPMENT TABLE.
0103*
0104 04053 063544 LDR1 LDA M16 SET DIRECTORY LENGTH
0105 04054 070100 STA DIREC FOR TWO DUMMY ENTRIES
0106 04055 063622 LDA EQTLN ZERO OUT
0107 04056 073660 STA TEMPO
0108 04057 006400 CLB THE REST
0109 04060 063575 LDA EQTA
0110 04061 002004 LDR2 INA OF THE
0111 04062 174000 STB 0,I
0112 04063 037660 ISZ TEMPO EQUIPMENT TABLE
0113 04064 026061 JMP LDR2
0114 04065 002400 CLA SET
0115 04066 073661 STA TEMP1 FOR
0116 04067 063557 LDA B14 DISC
0117 04070 073662 STA TEMP2 0
0118 04071 063571 LDR3 LDA .26 REQUEST
0119 04072 067745 LDB S/TDA
0120 04073 117723 JSB ASR35,I NUMBER OF
0121 04074 002400 CLA
0122 04075 117723 JSB ASR35,I SECTORS FOR
0123 04076 117737 JSB SETDA,I
0124 04077 026071 JMP LDR3 DISC 0
0125 04100 063545 LDA M12 SET
0126 04101 073660 STA TEMPO
0127 04102 063634 LDA TRAXA TRACKS
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0128 04103 043553      ADA .4
0129 04104 007400      CCB                NOT ON
0130 04105 174000      LDR4 STB 0,I
0131 04106 002004      INA                DISC 0
0132 04107 037660      ISZ TEMPO
0133 04110 026105      JMP LDR4           'UNAVAILABLE'
0134 04111 077666      STB MFLG          SET FLAG TO 'SYSGEN' MODE
0135 04112 026177      JMP LDR8
0136*
0137**  INITIATE PAPER TAPE RELOAD **
0138*
0139*
0140*  PRIMARY USE IS FOR LINKING A NEW SYSTEM (FOR EXAMPLE, A
0141*  SYSTEM UPDATE) WITH THE LIBRARY OF A CURRENT SYSTEM.
0142*
0143 04113 063557      LDR5 LDA B14        FAKE DTBL ENTRY
0144 04114 070160      STA DTBL          FOR DISC DRIVER
0145 04115 063542      LDA M64          READ
0146 04116 173655      STA WORD,I       EQUIPMENT
0147 04117 063553      LDA DEQTA        TABLE
0148 04120 067633      LDB CEQTA        FROM
0149 04121 117724      JSB DISC,I       DISC 0
0150*
0151**  BEGIN EMERGENCY LOADING SEQUENCE **
0152*
0153*
0154*  ENTRY IS TO HERE WHEN ATTEMPTING TO RELOAD THE SYSTEM
0155*  USING THE EQUIPMENT TABLE IN CORE (I.E., SYSTEM WAS
0156*  HALTED BY OTHER THAN THE 'SLEEP' ROUTINE).
0157*
0158 04122 002400      LDR6 CLA          SET FLAG TO
0159 04123 073666      STA MFLG         'PAPER TAPE RELOAD'
0160 04124 073667      STA SYSLF       ZERO COUNTERS FOR
0161 04125 073670      STA SYSLF+1     DIRECTORY TRACKS
0162 04126 060137      LDA ADLEN       READ
0163 04127 013542      AND M64
0164 04130 173655      STA WORD,I      ADT
0165 04131 067637      LDB ADTBA
0166 04132 047603      ADB BIT15       FROM
0167 04133 060136      LDA ADLOC
0168 04134 117724      JSB DISC,I      DISC
0169 04135 060137      LDA ADLEN       RECOVER THE
0170 04136 026331      JMP LDR19       SYSTEM TRACKS
0171*
0172 04137 063561      ERR2 LDA .15     REPORT
0173 04140 067744      LDB ILINA       PROBABLE
0174 04141 117723      JSB ASR35,I    ERROR
0175*
0176**  REQUEST MAG TAPE SELECT CODE **
0177*
0178*
0179*  ANSWER IS THE HIGH PRIORITY SELECT CODE FOR THE MAG TAPE UNIT
0180*  OR A CARRIAGE RETURN, THE LATTER INDICATING A PAPER TAPE RELOAD.
0181*
0182 04142 117742      LDR7 JSB GTMTA,I  GET MAG TAPE SELECT CODE  [F]
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0183 04143 026113      JMP LDR5          PAPER TAPE RELOAD      [F]
0184*
0185**  INITIATE MAG TAPE RELOAD  **
0186*
0187*
0188 04144 067666      LDB MFLG        SAVE                      [E]
0189 04145 074164      STB MAGSC       SELECT CODE                    [F]
0190 04146 005665      ELB,CLE,ERB    CLEAR BIT15                       [F]
0191 04147 117726      JSB MTDIA,I    CONFIGURE MAG TAPE DRIVER
0192 04150 117725      JSB MTAPE,I    REWIND
0193 04151 000003      OCT 3          TAPE
0194 04152 063542      LDA M64        READ
0195 04153 067575      LDB EQTA       EQUIPMENT TABLE
0196 04154 117725      JSB MTAPE,I    FROM
0197 04155 000000      OCT 0          MAG TAPE
0198 04156 027420      JMP EOFER
0199 04157 027424      JMP TPERR
0200 04160 067666      LDB MFLG       RECORD NEW                      [E]
0201 04161 074164      STB MAGSC       SELECT CODE                    [E]
0202 04162 005665      ELB,CLE,ERB    CLEAR                             [F]
0203 04163 077666      STB MFLG       BIT15                          [F]
0204 04164 063547      LDA M4         COUNT
0205 04165 073660      STA TEMPO
0206 04166 067576      LDB DIRE6      NUMBER OF
0207 04167 160001      LDA 1,I
0208 04170 002002      SZA            DIRECTORY TRACKS
0209 04171 037670      ISZ SYSLF+1
0210 04172 002400      CLA            AND SET ALL
0211 04173 170001      STA 1,I
0212 04174 047555      ADB .7         DISC ADDRESSES
0213 04175 037660      ISZ TEMPO
0214 04176 026167      JMP *-7        TO ZERO
0215*
0216**  REQUEST DISC COMMANDS  **
0217*
0218*
0219*  DISC COMMANDS MAY ADD OR REMOVE DISCS.  DISC 0
0220*  MAY ONLY BE REFERENCED ALONG WITH SELECT CODE 14 OCT; I.E.,
0221*  DISC 0 MAY NOT BE MOVED OR REMOVED.  DISCS 1-3 MAY NOT HAVE
0222*  A SELECT CODE BELOW 14 OCT OR ABOVE 76 OCT.  THE SEQUENCE OF
0223*  DISC COMMAND REQUESTS IS TERMINATED BY ANSWERING WITH A
0224*  CARRIAGE RETURN.
0225*
0226 04177 063566      LDR8 LDA .22      REQUEST
0227 04200 067746      LDB DISMA
0228 04201 117723      JSB ASR35,I    DISC
0229 04202 002400      CLA
0230 04203 117723      JSB ASR35,I    COMMANDS
0231 04204 117741      JSB GETCA,I    ANY?
0232 04205 026264      JMP LDR14      NO
0233 04206 053610      CPA D          YES
0234 04207 117741      JSB GETCA,I
0235 04210 026216      JMP ERR3       'D'
0236 04211 053611      CPA I
0237 04212 117741      JSB GETCA,I    'I'

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0238 04213 026216      JMP ERR3
0239 04214 053615      CPA S           'S' ?
0240 04215 026222      JMP LDR9       YES
0241 04216 063563      ERR3 LDA .19    NO
0242 04217 067747      LDB RQSTA     PRINT
0243 04220 117723      JSB ASR35,I   ERROR
0244 04221 026177      JMP LDR8
0245 04222 002400      LDR9 CLA       PICK UP
0246 04223 117730      JSB GTDNA,I   DISC #
0247 04224 026177      JMP LDR8      NOT FOUND
0248 04225 073661      STA TEMP1     FOUND, SAVE IT
0249 04226 117741      JSB GETCA,I   NEXT
0250 04227 000000      NOP          CHARACTER
0251 04230 053574      CPA B60       A ZERO?
0252 04231 026257      JMP LDR13     YES
0253 04232 117736      JSB SELCA,I   NO, GET SELECT CODE
0254 04233 000063      OCT 63       IN [14 OCT, 76 OCT]
0255 04234 026177      JMP LDR8      NOT FOUND
0256 04235 053604      CPA COMMA     FOUND, COMMA FOLLOWING?
0257 04236 026243      JMP LDR10     YES
0258 04237 063561      LDA .15      NO,
0259 04240 067750      LDB BDLA     ERROR
0260 04241 026220      JMP ERR3+2
0261 04242 006400      CLB          STORE
0262 04243 077662      LDR10 STB TEMP2 SELECT CODE
0263 04244 002400      CLA          DISC
0264 04245 053661      CPA TEMP1    0 ?
0265 04246 026252      JMP LDR12     YES
0266 04247 117737      LDR11 JSB SETDA,I NO, SET DISC ENTRY
0267 04250 026177      JMP LDR8
0268 04251 026177      JMP LDR8     ASK AGAIN
0269 04252 057557      LDR12 CPB B14 SELECT CODE 14 OCT?
0270 04253 026247      JMP LDR11     YES
0271 04254 063567      LDA .23      NO,
0272 04255 067751      LDB DZMBA    ERROR
0273 04256 026220      JMP ERR3+2
0274 04257 117741      LDR13 JSB GETCA,I CARRIAGE RETURN?
0275 04260 026242      JMP LDR10-1  YES
0276 04261 063565      LDA .21      NO,
0277 04262 067752      LDB ILSCA    ERROR
0278 04263 026220      JMP ERR3+2
0279*                *
0280** BUILD ADT **
0281*                *
0282*
0283* CREATE AN ADT ENTRY OF ZERO SECTORS FOR EACH AVAILABLE TRACK
0284* (THE TRACK LENGTH WILL BE FILLED IN BELOW). THE ENTRY FOR
0285* TRACK 0, DISC 0 AND A TERMINATING PSUEDO-ENTRY BOUND THE ADT.
0286*
0287 04264 063634      LDR14 LDA TRAXA SET POINTER TO
0288 04265 073660      STA TEMPO    AVAILABLE TRACK TABLE
0289 04266 063637      LDA ADTBA    CREATE
0290 04267 006400      CLB
0291 04270 174000      STB 0,I     FIRST
0292 04271 002004      INA

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0293	04272	174000		STB 0,I	ADT
0294	04273	002004		INA	
0295	04274	073661		STA TEMP1	ENTRY
0296	04275	063541		LDA M255	INITIALIZE
0297	04276	073662		STA TEMP2	TRACK COUNTER
0298	04277	063551		LDA .2	AND MASK
0299	04300	026305		JMP LDR16	
0300	04301	063663	LDR15	LDA TEMP3	ROTATE MASK TO
0301	04302	001200		RAL	NEXT TRACK POSITION
0302	04303	000010		SLA	ADJUST ATT POINTER
0303	04304	037660		ISZ TEMPO	WHEN NECESSARY
0304	04305	073663	LDR16	STA TEMP3	
0305	04306	047600		ADB B400	ADVANCE DISC ADDRESS
0306	04307	113660		AND TEMPO,I	AVAILABLE
0307	04310	002002		SZA	TRACK?
0308	04311	026316		JMP LDR17	NO
0309	04312	177661		STB TEMP1,I	YES
0310	04313	037661		ISZ TEMP1	CREATE
0311	04314	173661		STA TEMP1,I	ZERO-LENGTH
0312	04315	037661		ISZ TEMP1	ADT ENTRY
0313	04316	037662	LDR17	ISZ TEMP2	ALL TRACKS CONSIDERED?
0314	04317	026301		JMP LDR15	NO
0315	04320	063661		LDA TEMP1	YES
0316	04321	007400		CCB	APPEND
0317	04322	174000		STB 0,I	
0318	04323	002004		INA	TERMINAL
0319	04324	006400		CLB	
0320	04325	174000		STB 0,I	PSUEDO-ENTRY
0321	04326	003000		CMA	RECORD -#
0322	04327	043637		ADA ADTBA	OF WORDS
0323	04330	070137		STA ADLEN	IN ADT
0324*				*	
0325**	RECOVER TRACKS			**	
0326*				*	
0327*					
0328*	ALL ADT ENTRIES WITH ZERO SECTORS AVAILABLE ARE RECOVERED AS				
0329*	FULL TRACKS. THIS PICKS UP ALL SYSTEM TRACKS ON PAPER TAPE				
0330*	RELOADS, OR ALL UNLOCKED TRACKS ON SYSTEM GENERATION OR				
0331*	MAG TAPE RELOAD, AND RETURNS THEM TO THE POOL OF TRACKS				
0332*	AVAILABLE FOR LOCKING AND LOADING BELOW.				
0333*					
0334	04331	043553	LDR18	ADA .4	SET ENTRY COUNTER
0335	04332	001100		ARS	(SKIPPING FIRST
0336	04333	073660		STA TEMPO	AND LAST ENTRIES)
0337	04334	063637		LDA ADTBA	LOAD ADDRESS
0338	04335	002004		INA	OF SECOND WORD
0339	04336	043551	LDR19	ADA .2	OF ENTRY
0340	04337	164000		LDB 0,I	IS LENGTH
0341	04340	006003		SZB,RSS	0 SECTORS?
0342	04341	026345		JMP LDR21	YES
0343	04342	037660	LDR20	ISZ TEMPO	NO, DONE?
0344	04343	026336		JMP LDR19	NO
0345	04344	026355		JMP LDR22	YES
0346	04345	007400	LDR21	CCB	LOAD
0347	04346	044000		ADB 0	ENTRY'S

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0348 04347 160001      LDA 1,I          DISC ADDRESS
0349 04350 117733      JSB ISOTA,I      GET TRACK LENGTH
0350 04351 006004      INB              IN SECTORS
0351 04352 170001      STA 1,I         RESTORE TO
0352 04353 060001      LDA 1           FULL TRACK
0353 04354 026342      JMP LDR20
0354*
0355**  PROCESS LOCK/UNLOCK COMMANDS **
0356*
0357 04355 063573  LDR22 LDA .38      REQUEST
0358 04356 067753      LDB LULCA       LOCK,
0359 04357 117723      JSB ASR35,I     UNLOCK,
0360 04360 002400      CLA             OR LOAD
0361 04361 117723      JSB ASR35,I     COMMAND
0362 04362 117741      JSB GETCA,I     FIRST
0363 04363 026402      JMP ERR4        CHARACTER
0364 04364 007400      CCB             A
0365 04365 053616      CPA U           'U' ?
0366 04366 127722      JMP LKUNA,I     YES, ASSUME 'UNLOCK'
0367 04367 053612      CPA L           NO, 'L' ?
0368 04370 117741      JSB GETCA,I     YES
0369 04371 026402      JMP ERR4        NO
0370 04372 053614      CPA O           'O' ?
0371 04373 117741      JSB GETCA,I     YES
0372 04374 026402      JMP ERR4        NO
0373 04375 053606      CPA A           'A' ?
0374 04376 026406      JMP LDR23       YES, ASSUME 'LOAD'
0375 04377 006400      CLB            NO
0376 04400 053607      CPA C           'C' ?
0377 04401 127722      JMP LKUNA,I     YES, ASSUME 'LOCK'
0378 04402 063561  ERR4 LDA .15       NO
0379 04403 067744      LDB ILINA       PRINT
0380 04404 117723      JSB ASR35,I     ERROR
0381 04405 026355      JMP LDR22
0382*
0383**  CLAIM DISC TRACKS **
0384*
0385*
0386*  CLAIM TRACKS FOR THE SYSTEM AND USER SWAPPING.  THE ADT
0387*  ENTRIES ARE SET TO LENGTH ZERO RATHER THAN BEING REMOVED.
0388*
0389 04406 063543  LDR23 LDA M20      GET
0390 04407 073660      STA TEMPO
0391 04410 063644      LDA TRKTA       TWO SYSTEM TRACKS,
0392 04411 073661      STA TEMP1
0393 04412 002400  LDR24 CLA             TWO SYSTEM LIBRARY TRACKS,
0394 04413 117731      JSB GTTRA,I
0395 04414 173661      STA TEMP1,I     AND
0396 04415 037661      ISZ TEMP1
0397 04416 037660      ISZ TEMPO       16 USER TRACKS
0398 04417 026412      JMP LDR24
0399 04420 104200      DLD TRKTB       SET DISC ADDRESSES OF TSB
0400 04422 104400      DST LDRTA,I     SYSTEM TRACKS INTO DISC LOADER

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0402*                               *
0403**  WRITE DISC LOADERS TO DISC **
0404*                               *
0405*
0406*  THIS SECTION WRITES THE TSB SYSTEM DISC LOADER ONTO SECTOR 1
0407*  OF TRACK 0, DISC 0 (I/O CHANNEL 14 OCT) AND WRITES THE DISC
0408*  BOOTSTRAP LOADER ONTO SECTOR 0, TRACK 0 AFTER CONFIGURING IT
0409*  FOR TSB. IF THE DISC OPERATING SYSTEM IS NOT PRESENT, THE
0410*  TSB DISC LOADER IS ALSO WRITTEN TO SECTOR 2, TRACK 0 FOR SAFETY.
0411*
0412  04424 063570  LDR25 LDA .24      ASK IF
0413  04425 067754          LDB RDMSA
0414  04426 117723          JSB ASR35,I    DISC MONITOR SYSTEM
0415  04427 002400          CLA
0416  04430 117723          JSB ASR35,I    IS PRESENT
0417  04431 117741          JSB GETCA,I  DEMAND A
0418  04432 026437          JMP LDR26    CHARACTER
0419  04433 053617          CPA Y      'Y' ?
0420  04434 026443          JMP LDR27    YES, ASSUME 'YES'
0421  04435 053613          CPA N      NO, 'N' ?
0422  04436 026460          JMP LDR28    YES, ASSUME 'NO'
0423  04437 063561  LDR26 LDA .15      NO
0424  04440 067744          LDB ILINA   TRY
0425  04441 117723          JSB ASR35,I  AGAIN
0426  04442 026424          JMP LDR25
0427*
0428  04443 063542  LDR27 LDA M64      READ
0429  04444 173655          STA WORD,I  'BOOTSTRAP'
0430  04445 002400          CLA        BOOTSTRAP
0431  04446 067656          LDB BSBSA   LOADER
0432  04447 047603          ADB BIT15  FROM
0433  04450 117724          JSB DISC,I  DISC
0434  04451 060016          LDA DSK7   ACCEPTABLE DISC
0435  04452 053624          CPA OTB15  SELECT CODE?
0436  04453 026476          JMP LDR29  YES
0437  04454 063572          LDA .32    NO
0438  04455 067755          LDB BLDRA  TERMINATE
0439  04456 117723          JSB ASR35,I  LOADING
0440  04457 027427          JMP ERRIN
0441*
0442  04460 063624  LDR28 LDA OTB15   CONFIGURE
0443  04461 070016          STA DSK7
0444  04462 063625          LDA STC14  'BOOTSTRAP'
0445  04463 070031          STA DSK8
0446  04464 063626          LDA LIA15  BOOTSTRAP
0447  04465 070035          STA DSK9
0448  04466 063627          LDA LINKA
0449  04467 070047          STA LINKG  LOADER
0450  04470 063542          LDA M64
0451  04471 173655          STA WORD,I  WRITE
0452  04472 063551          LDA .2     TSB
0453  04473 067657          LDB TSBBA  LOADER
0454  04474 074003          STB DMS    TO 0,2
0455  04475 117724          JSB DISC,I  FOR SAFETY
0456  04476 067657  LDR29 LDB TSBBA  SET TSB LOAD/ENTRY ADDRESS

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0457	04477	074002	STB RT/TS	IN LOADER
0458	04500	002404	CLA,INA	WRITE TSB LOADER
0459	04501	117724	JSB DISC,I	TO 0,1
0460	04502	002400	CLA	WRITE
0461	04503	067656	LDB BSBSA	'BOOTSTRAP' BOOTSTRAP
0462	04504	117724	JSB DISC,I	LOADER 0,0
0463*				
0464	04505	063666	LDA MTFLG	RELOAD SYSTEM FROM
0465	04506	002003	SZA,RSS	PAPER TAPE?
0466	04507	027013	JMP LDR43	YES
0467*				*
0468**	GET REST OF SYSTEM	TSACKS	**	**
0469*				*
0470*				
0471*	CLAIM ONE TRACK FOR THE	IDT AND ADT.	CLAIM ENOUGH DIRECTORY	
0472*	TRACKS TO HAVE ONE PER	DISC, BUT NOT FEWER THAN	THE NUMBER PRE-	
0473*	EXISTING IF THIS IS A	MAG TAPE RELOAD.		
0474*				
0475	04510	003400	CCA	CLAIM
0476	04511	117731	JSB GTTRA,I	TRACK FOR
0477	04512	070134	STA IDLOC	ADT AND
0478	04513	070136	STA ADLOC	ID TABLE
0479	04514	063547	LDA M4	SYSLF PREVIOUSLY
0480	04515	073660	STA TEMPO	
0481	04516	067635	LDR DTBLA	SET TO 0
0482	04517	160001	LDR30 LDA 1,I	COUNT
0483	04520	002002	SZA	
0484	04521	037667	ISZ SYSLF	NUMBER OF
0485	04522	006004	INB	
0486	04523	037660	ISZ TEMPO	DISCS
0487	04524	026517	JMP LDR30	
0488	04525	067667	LDB SYSLF	PRESENT
0489	04526	063670	LDA SYSLF+1	COMPUTE
0490	04527	003004	CMA,INA	
0491	04530	043667	ADA SYSLF	MAXIMUM OF
0492	04531	002020	SSA	
0493	04532	067670	LDB SYSLF+1	SYSFL AND SYSFL+1
0494	04533	007004	CMB,INB	STORE ITS
0495	04534	077660	STB TEMPO	NEGATION
0496	04535	067576	LDB DIRE6	CLAIM
0497	04536	077661	LDR31 STB TEMP1	
0498	04537	003400	CCA	THIS
0499	04540	117731	JSB GTTRA,I	
0500	04541	173661	STA TEMP1,I	MANY
0501	04542	067661	LDB TEMP1	
0502	04543	047555	ADB .7	DIRECTORY
0503	04544	037660	ISZ TEMPO	
0504	04545	026536	JMP LDR31	TRACKS
0505*				
0506	04546	063542	LDA M64	
0507	04547	173655	STA WORD,I	WRITE
0508	04550	163576	LDA DIRE6,I	NULL
0509	04551	073664	STA TEMP4	DIRECTORY
0510	04552	067641	LDB DIRBA	TO
0511	04553	117724	JSB DISC,I	DISC

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0512 04554 063666      LDA MFLG      MAG TAPE
0513 04555 002007      INA,SZA,RSS   RELOAD?
0514 04556 027013      JMP LDR43     NO
0515 04557 060135      LDA IDLEN     YES
0516 04560 067640      LDB IDTBA
0517 04561 117725      JSB MTAPE,I   READ IN
0518 04562 000000      OCT 0         ID TABLE
0519 04563 027420      JMP EOFER
0520 04564 027424      JMP TPERR
0521 04565 060135      LDA IDLEN     WRITE
0522 04566 173655      STA WORD,I    ID TABLE
0523 04567 060134      LDA IDLOC     TO ITS
0524 04570 067640      LDB IDTBA     DISC
0525 04571 117724      JSB DISC,I    TRACK
0526*                      *
0527**  LOAD USER LIBRARY **
0528*                      *
0529*
0530*  THE LIBRARY IS STORED ON MAG TAPE AS ONE RECORD PER TRACK UP
0531*  TO 5440 WORDS; LONGER TRACKS ARE STORED AS TWO RECORDS. THE
0532*  TRACK IMAGES ARE PRECEDED BY A TABLE OF LENGTH 255, EACH ENTRY
0533*  HOLDING THE 2'S COMPLEMENT OF THE LENGTH OF THE IMAGE IN WORDS
0534*  (TRACK 0, DISC 0 IS KNOWN NOT TO HAVE ANY USER FILES). AS EACH
0535*  TRACK IMAGE IS READ AND STORED, ITS ENTRY IN THE TABLE IS
0536*  REPLACED WITH (NEW DISC ADDRESS - OLD DISC ADDRESS) FOR USE IN
0537*  UPDATING THE DIRECTORY BELOW.
0538*
0539 04572 063541      LDA M255      LOAD
0540 04573 073660      STA TEMPO
0541 04574 067642      LDB ULTTR     USER LIBRARY
0542 04575 077661      STB TEMP1
0543 04576 117725      JSB MTAPE,I   TRACK TABLE
0544 04577 000000      OCT 0
0545 04600 027420      JMP EOFER
0546 04601 027424      JMP TPERR
0547 04602 063600      LDA B400      INITIALIZE TO DISC ADDRESS 0,1,0
0548 04603 167661  LDR32 LDB TEMP1,I  USER LIBRARY
0549 04604 006003      SZB,RSS       TRACK?
0550 04605 026714      JMP LDR37     NO
0551 04606 177655      STB WORD,I    YES, SAVE LENGTH AND
0552 04607 073662      STA TEMP2     OLD DISC ADDRESS
0553 04610 101026      ASR 6         COMPUTE
0554 04611 077665      STB COUNT     SECTOR REQUIREMENT
0555 04612 064137      LDB ADLEN     SET
0556 04613 005100      BRS          ADT ENTRY
0557 04614 077663      STB TEMP3     COUNTER
0558 04615 067637      LDB ADTBA
0559 04616 006004      INB
0560 04617 160001  LDR33 LDA 1,I      ENOUGH
0561 04620 043665      ADA COUNT     SPACE IN
0562 04621 002021      SSA,RSS       THIS ENTRY?
0563 04622 026640      JMP LDR35     YES
0564 04623 047551      ADB .2        NO
0565 04624 037663      ISZ TEMP3     MORE ENTRIES?
0566 04625 026617      JMP LDR33     YES

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0567	04626	063564	ERR5	LDA .20	NO
0568	04627	067770		LDB OODSA	TERMINATE
0569	04630	117723		JSB ASR35,I	LOADING
0570	04631	027427		JMP ERRIN	
0571	04632	160001	LDR34	LDA 1,I	SAVE
0572	04633	073663		STA TEMP3	DISC ADDRESS
0573	04634	047551		ADB .2	ELIMINATE
0574	04635	060001		LDA 1	ENTRY
0575	04636	117734		JSB MOVUA,I	FROM ADT
0576	04637	026652		JMP LDR36	
0577	04640	170001	LDR35	STA 1,I	STORE REMAINING SECTOR COUNT
0578	04641	047550		ADB M1	ALL OF
0579	04642	002003		SZA,RSS	ENTRY USED?
0580	04643	026632		JMP LDR34	YES
0581	04644	160001		LDA 1,I	NO, SAVE
0582	04645	073663		STA TEMP3	DISC ADDRESS
0583	04646	003004		CMA,INA	CORRECT ENTRY TO
0584	04647	043665		ADA COUNT	DISC ADDRESS OF
0585	04650	003004		CMA,INA	REMAINING
0586	04651	170001		STA 1,I	SPACE
0587	04652	063662	LDR36	LDA TEMP2	COMPUTE
0588	04653	003004		CMA,INA	NEW DISC ADDRESS -
0589	04654	043663		ADA TEMP3	OLD DISC ADDRESS
0590	04655	173661		STA TEMP1,I	SAVE IN TRACK TABLE
0591	04656	163655		LDA WORD,I	DOES TRACK
0592	04657	043602		ADA .5440	EXCEED
0593	04660	002021		SSA,RSS	5440 WORDS?
0594	04661	026702		JMP LDRE1	NO
0595	04662	073665		STA COUNT	YES, SAVE DIFFERENCE
0596	04663	063537		LDA M5440	SET FOR
0597	04664	173655		STA WORD,I	INITIAL BLOCK
0598	04665	067640		LDB UPRBA	READ
0599	04666	117725		JSB MTAPE,I	5440
0600	04667	000000		OCT 0	WORDS
0601	04670	027420		JMP EOFER	
0602	04671	027424		JMP TPERR	
0603	04672	063663		LDA TEMP3	WRITE
0604	04673	067640		LDB UPRBA	THEM
0605	04674	117724		JSB DISC,I	TO DISC
0606	04675	063665		LDA COUNT	SET FOR
0607	04676	173655		STA WORD,I	REST OF TRACK
0608	04677	067663		LDB TEMP3	ADVANCE
0609	04700	047577		ADB .85	DISC
0610	04701	077663		STB TEMP3	ADDRESS
0611	04702	163655	LDRE1	LDA WORD,I	
0612	04703	067640		LDB UPRBA	READ TRACK
0613	04704	117725		JSB MTAPE,I	FROM TAPE
0614	04705	000000		OCT 0	
0615	04706	027420		JMP EOFER	
0616	04707	027424		JMP TPERR	
0617	04710	063663		LDA TEMP3	
0618	04711	067640		LDB UPRBA	WRITE TRACK
0619	04712	117724		JSB DISC,I	TO DISC
0620	04713	063662		LDA TEMP2	UPDATE OLD
0621	04714	043600	LDR37	ADA B400	TRACK ADDRESS

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0622 04715 037661
0623 04716 037660
0624 04717 026603

ISZ TEMP1
ISZ TEMP0
JMP LDR32

INCREMENT TABLE POINTER
ALL TRACKS CONSIDERED?
NO


```

0626*          *
0627**  LOAD DIRECTORY **
0628*          *
0629*
0630*  READ IN THE DIRECTORY TRACKS ONE BY ONE; AN END-OF-FILE MARK
0631*  FOLLOWS THE LAST TRACK. USING THE TABLE BUILT ABOVE, CORRECT
0632*  THE DISC ADDRESS IN EACH ENTRY TO THE NEW DISC ADDRESS OF THE
0633*  REFERENCED PROGRAM OR FILE.
0634*
0635  04720 063575          LDA DIREA          INITIALIZE POINTER TO
0636  04721 073660          STA TEMPO          DIREC TABLE ENTRY
0637  04722 006400          CLB
0638  04723 177643          STB ULTM1,I      COMPLETE USERS' LIBRARY TABLE(C)
0639  04724 174000          STB 0,I          SET LENGTHS
0640  04725 043555          ADA .7
0641  04726 174000          STB 0,I          OF ALL
0642  04727 043555          ADA .7
0643  04730 174000          STB 0,I          DIRECTORY TRACKS
0644  04731 043555          ADA .7
0645  04732 174000          STB 0,I          TO ZERO
0646  04733 063537  LDR38 LDA M5440          READ A
0647  04734 067640          LDB UPRBA          DIRECTORY
0648  04735 117725          JSB MTAPE,I       TRACK
0649  04736 000000          OCT 0
0650  04737 027011          JMP LDR42          NONE FOUND
0651  04740 027424          JMP TPERR
0652  04741 173655          STA WORD,I       SAVE LENGTH
0653  04742 067664          LDB TEMP4        AVAILABLE
0654  04743 006002  LDR39 SZB          TRACK?
0655  04744 026754          JMP LDR40        YES
0656  04745 067660          LDB TEMPO        NO, MOVE
0657  04746 047555          ADB .7          TO NEXT
0658  04747 077660          STB TEMPO        DIREC ENTRY
0659  04750 047554          ADB .6          SAVE ITS
0660  04751 164001          LDB 1,I          DISC
0661  04752 077664          STB TEMP4        ADDRESS
0662  04753 026743          JMP LDR39
0663  04754 173660  LDR40 STA TEMPO,I       RECORD LENGTH IN DIREC ENTRY
0664  04755 007400          CCB          SAVE
0665  04756 101023          ASR 3          COUNT OF
0666  04757 073661          STA TEMP1        ENTRIES
0667  04760 067640          LDB UPRBA        INITIALIZE ENTRY POINTER
0668  04761 047554  LDR41 ADB .6          LOAD ENTRY'S
0669  04762 160001          LDA 1,I          DISC ADDRESS
0670  04763 013540          AND M256        LOAD THE
0671  04764 001727          ALF,ALF        TRACK TABLE
0672  04765 043643          ADA ULTM1        ENTRY THAT
0673  04766 160000          LDA 0,I          CORRESPONDS
0674  04767 140001          ADA 1,I          COMPUTE AND RECORD
0675  04770 170001          STA 1,I          NEW DISC ADDRESS
0676  04771 047551          ADB .2          UPDATE ENTRY POINTER
0677  04772 037661          ISZ TEMP1        MORE ENTRIES?
0678  04773 026761          JMP LDR41        YES
0679  04774 063664          LDA TEMP4        NO
0680  04775 067640          LDB UPRBA        WRITE DIRECTORY

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0681	04776	117724		JSB DISC,I	TO DISC
0682	04777	063547		LDA M4	READ
0683	05000	173655		STA WORD,I	FIRST FOUR
0684	05001	063664		LDA TEMP4	WORDS OF
0685	05002	067660		LDB TEMPO	DIRECTORY
0686	05003	006004		INB	INTO
0687	05004	047603		ADB BIT15	DIREC TABLE
0688	05005	117724		JSB DISC,I	
0689	05006	002400		CLA	SET TRACK
0690	05007	073664		STA TEMP4	UNAVAILABLE
0691	05010	026733		JMP LDR38	
0692*					
0693	05011	053572	LDR42	CPA B40	END-OF-FILE?
0694	05012	027420		JMP EOFER	NO
0695*				*	
0696**	WRITE ADT TO DISC			**	
0697*				*	
0698*					
0699*	IF INSUFFICIENT ROOM EXISTS ON THE IDT/ADT TRACK, ELIMINATE				
0700*	ENOUGH ADT ENTRIES OF NON-ZERO LENGTHS TO FORCE A FIT.				
0701*					
0702	05013	060135	LDR43	LDA IDLEN	COMPUTE # OF
0703	05014	013542		AND M64	EXTRA WORDS
0704	05015	043602		ADA .5440	ON IDT/ADT
0705	05016	040137		ADA ADLEN	TRACK
0706	05017	002021		SSA,RSS	NEGATIVE?
0707	05020	027037		JMP LDR45	NO
0708	05021	001100		ARS	YES, SAVE COUNT OF
0709	05022	073660		STA TEMPO	EXCESS ADT ENTRIES
0710	05023	063637		LDA ADTBA	
0711	05024	002004	LDR44	INA	LOAD
0712	05025	164000		LDB 0,I	SECTOR LENGTH
0713	05026	002004		INA	OF ADT ENTRY
0714	05027	006003		SZB,RSS	NON-ZERO?
0715	05030	027024		JMP LDR44	NO
0716	05031	073661		STA TEMP1	YES, SAVE ADT POINTER
0717	05032	064000		LDB 0	ELIMINATE
0718	05033	117734		JSB MOVUA,I	ENTRY
0719	05034	063661		LDA TEMP1	RETRIEVE POINTER
0720	05035	037660		ISZ TEMPO	ENOUGH ENTRIES DELETED?
0721	05036	027024		JMP LDR44	NO
0722	05037	064135	LDR45	LDB IDLEN	YES
0723	05040	101026		ASR 6	COMPUTE
0724	05041	007004		CMB,INB	ADT
0725	05042	044134		ADB IDLOC	DISC
0726	05043	060001		LDA 1	ADDRESS
0727	05044	070136		STA ADLOC	RECORD IT
0728	05045	064137		LDB ADLEN	WRITE
0729	05046	177655		STB WORD,I	ADT
0730	05047	067637		LDB ADTBA	TO
0731	05050	117724		JSB DISC,I	DISC
0732*					
0733	05051	003400		CCA	INITIALIZE
0734	05052	073667		STA SYSLF	SYSTEM LIBRARY
0735	05053	073670		STA SYSLF+1	FLAGS

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0736 05054 063666
0737 05055 003026
0738 05056 027146

LDA MFLG
CMA,SSA,INA,SZA
JMP LDR50 YES

LOADING FROM
MAG TAPE?

```

0740*                               *
0741**  LOAD SYSTEM FROM PAPER TAPE **
0742*                               *
0743*
0744*  READS THE TSB SYSTEM TAPE, OR TAPES IF MORE THAN ONE (EXECUTING
0745*  A HLT 77 ON RECOGNIZING AN END-OF-TAPE CONDITION).  THE LAST
0746*  RECORD IS IDENTIFIED BY AN ORIGIN OF 0.  CHECKSUM'S ARE
0747*  COMPUTED FOR EACH RECORD: A FAILURE MAY RETRIED BY BACKING UP
0748*  TO THE START OF THE RECORD.  THE CORE TO BE OCCUPIED BY EACH
0749*  RECORD IS CHECKED AGAINST A TABLE OF ADMISSABLE AREAS TO HELP
0750*  CATCH ORIGIN MIS-READS BEFORE LOADING A RECORD.  RECOVERY
0751*  MAY BE ATTEMPTED BY BACKING UP TO THE BEGINNING OF THE RECORD.
0752*
0753  05057 002401 LDR46 CLA,RSS      SET FOR START OF TAPE
0754  05060 063546 LDA M10         SET FOR END-OF-TAPE CHECK
0755  05061 002300 CCE                GET RECORD'S
0756  05062 117735 LDR47 JSB READA,I    WORD COUNT
0757  05063 007306 CMB,CCE,INB,SZB  AS NEGATIVE
0758  05064 027074 JMP LDR48
0759  05065 002006 INA,SZA        FEED FRAME, END-OF-TAPE?
0760  05066 027062 JMP LDR47        NO
0761  05067 063560 LDA .13          YES
0762  05070 067756 LDB EOTMA       PRINT
0763  05071 117723 JSB ASR35,I     'END OF TAPE'
0764  05072 102077 HLT 77B        WAIT FOR NEXT TAPE
0765  05073 027057 JMP LDR46
0766  05074 077665 LDR48 STB COUNT  SAVE WORD COUNT
0767  05075 007000 CMB            SAVE TRUE
0768  05076 077661 STB TEMP1      WORD COUNT -1
0769  05077 117735 JSB READA,I    SKIP FEED FRAME
0770  05100 117735 JSB READA,I    READ LOAD ORIGIN
0771  05101 006003 SZB,RSS        ZERO ORIGIN?
0772  05102 027203 JMP LDR54      YES
0773  05103 060001 LDA 1           NO, INITIALIZE CHECKSUM COUNTER
0774  05104 077660 STB TEMPO     SAVE
0775  05105 077663 STB TEMP3     ORIGIN
0776  05106 057636 CPB LNKAD     SYSTEM LINKAGE ADDRESSES?
0777  05107 027114 JMP LDR49     YES
0778  05110 117727 JSB ADVLA,I   NO, VALIDATE ORIGIN
0779  05111 064000 LDB 0        COMPUTE LAST ADDRESS
0780  05112 047661 ADB TEMP1    TO BE LOADED
0781  05113 117727 JSB ADVLA,I   VALIDATE IT
0782  05114 052001 LDR49 CPA LIBRA  SYSTEM LIBRARY PROGRAM?
0783  05115 017434 JSB SYSLB    YES
0784  05116 000040 CLE          READ A
0785  05117 117735 JSB READA,I   WORD
0786  05120 040001 ADA 1           ADD TO CHECKSUM COUNTER
0787  05121 177660 STR TEMPO,I   STORE WORD
0788  05122 037660 ISZ TEMPO    ADVANCE ADDRESS
0789  05123 037665 ISZ COUNT    RECORD ALL READ?
0790  05124 027116 JMP LDR49+2   NO
0791  05125 000040 CLE          YES
0792  05126 117735 JSB READA,I   READ CHECKSUM
0793  05127 054000 CPB 0        DO CHECKSUMS AGREE?
0794  05130 027060 JMP LDR46+1   YES

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0795	05131	073661	STA TEMP1	NO, SAVE
0796	05132	077662	STB TEMP2	REGISTERS
0797	05133	007400	CCB	
0798	05134	063663	LDA TEMP3	FIRST RECORD OF
0799	05135	052001	CPA LIBRA	SYSTEM LIBRARY PROGRAM?
0800	05136	077670	STB SYSLF+1	YES, PROTECT AGAINST SPURIOUS
0801	05137	063562	LDA .17	CALL TO SYSLB
0802	05140	067757	LDB CHKSA	PRINT
0803	05141	117723	JSB ASR35,I	'CHECKSUM ERROR'
0804	05142	063661	LDA TEMP1	LOAD RESISTERS
0805	05143	067662	LDB TEMP2	FOR DISPLAY
0806	05144	102066	HLT 66B	WAIT FOR REREAD ATTEMPT
0807	05145	027057	JMP LDR46	
0808*				*
0809**	LOAD SYSTEM FROM MAG TAPE		**	**
0810*				*
0811*				
0812*	READ THE TABLE OF SYSTEM RECORDS, THEN READ IN THE RECORDS			
0813*	THEMSELVES (COMPRISING THE CORE-RESIDENT TSB SYSTEM). NEXT			
0814*	READ THE SYSTEM LIBRARY PROGRAMS ONE BY ONE, TERMINATING WITH			
0815*	AN END-OF-FILE.			
0816*				
0817	05146	002400	LDR50 CLA	TURN OFF
0818	05147	073670	STA SYSLF+1	PAPER TAPE FLAG
0819	05150	063540	LDA M256	LOAD
0820	05151	067646	LDB MTRLA	
0821	05152	077664	STB TEMP4	TABLE
0822	05153	002001	RSS	
0823	05154	037664	LDR51 ISZ TEMP4	
0824	05155	117725	JSB MTAPE,I	LOAD
0825	05156	000000	OCT 0	RECORD
0826	05157	027420	JMP EOFER	
0827	05160	027424	JMP TPERR	
0828	05161	037664	ISZ TEMP4	PREPARE FOR NEXT
0829	05162	104200	DLD TEMP4,I	SYSTEM SEGMENT
0830	05164	137646	ISZ MTRLA,I	ALL SEGMENTS READ?
0831	05165	027154	JMP LDR51	NO
0832	05166	063540	LDR52 LDA M256	YES
0833	05167	066001	LDB LIBRA	READ
0834	05170	117725	JSB MTAPE,I	SYSTEM LIBRARY
0835	05171	000000	OCT 0	PROGRAM
0836	05172	027176	JMP LDR53	END-OF-FILE/END-OF-TAPE
0837	05173	027424	JMP TPERR	
0838	05174	017434	JSB SYSLB	WRITE TO DISC
0839	05175	027166	JMP LDR52	
0840	05176	053572	LDR53 CPA B40	END-OF-FILE?
0841	05177	027420	JMP EOFER	NO
0842	05200	117725	JSB MTAPE,I	YES, REWIND
0843	05201	000005	OCT 5	AND STANDBY
0844	05202	002001	RSS	
0845	05203	017434	LDR54 JSB SYSLB	TRANSFER LAST PAPER TAPE PROGRAM

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0847* *
0848** INITIALIZE USER SWAP AREAS **
0849* *
0850*
0851* FOR EACH USER PORT, INITIALIZE THE SWAPPING PORTION OF THE
0852* LANGUAGE PROCESSOR, WRITE IT TO THE APPROPRIATE SWAP TRACK,
0853* AND INITIALIZE THE TELETYPE TABLE ENTRY CORRESPONDINGLY.
0854*
0855 05204 063544 LDA M16 SET FOR
0856 05205 073660 STA TEMPO 16 USERS
0857 05206 062004 LDA TTYDA FOR DISC ADDRESS
0858 05207 073661 STA TEMP1 IN TTY00
0859 05210 063645 LDA USTRA POINTER TO
0860 05211 073662 STA TEMP2 FIRST USER TRACK ADDRESS
0861 05212 002400 CLA INCREMENT FROM TTY00
0862 05213 073663 STA TEMP3 TO CURRENT TTY TABLE
0863 05214 062013 LDR58 LDA SWPIA SWAP AREA COMPILER QUANTITIES
0864 05215 066005 LDB ?MASK LOAD
0865 05216 047663 ADB TEMP3 USER
0866 05217 164001 LDB 1,I BIT MASK
0867 05220 174000 STB 0,I RECORD IT
0868 05221 002004 INA RECORD
0869 05222 007000 CMB COMPLEMENT
0870 05223 174000 STB 0,I MASK
0871 05224 002004 INA
0872 05225 066006 LDB ?BHED RECORD ADDRESS OF
0873 05226 047663 ADB TEMP3 CHARACTER ADDRESS
0874 05227 174000 STB 0,I OF LOGICAL BUFFER
0875 05230 002004 INA
0876 05231 066007 LDB ?BSTR RECORD ADDRESS OF ADDRESS OF
0877 05232 047663 ADB TEMP3 LAST CHARACTER +1
0878 05233 174000 STB 0,I OF LOGICAL BUFFER
0879 05234 002004 INA
0880 05235 066010 LDB ?BGIN RECORD ADDRESS OF
0881 05236 047663 ADB TEMP3 CHARACTER ADDRESS
0882 05237 174000 STB 0,I OF PHYSICAL BUFFER
0883 05240 002004 INA
0884 05241 066011 LDB ?BEND RECORD ADDRESS OF ADDRESS OF
0885 05242 047663 ADB TEMP3 LAST CHARACTER+1
0886 05243 174000 STB 0,I OF PHYSICAL BUFFER
0887 05244 002004 INA
0888 05245 066012 LDB ?ID LOAD ADDRESS OF
0889 05246 047663 ADB TEMP3 ID/NAME
0890 05247 174000 STB 0,I RECORD IT
0891 05250 067663 LDB TEMP3 UPDATE
0892 05251 046003 ADB INCRE TOTAL
0893 05252 077663 STB TEMP3 INCREMENT
0894 05253 163662 LDA TEMP2,I RECORD
0895 05254 037662 ISZ TEMP2 DISC ADDRESS
0896 05255 173661 STA TEMP1,I IN TTY TABLE
0897 05256 067661 LDB TEMP1 UPDATE TTY TABLE
0898 05257 046003 ADB INCRE POINTER TO
0899 05260 077661 STB TEMP1 DISC ADDRESS
0900 05261 066014 LDB SWPLN WRITE
0901 05262 177655 STB WORD,I SWAP
```

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0902 05263 066015      LDB SWPAA          AREA
0903 05264 117724      JSB DISC,I        TO DISC
0904 05265 037660      ISZ TEMPO        ALL DONE?
0905 05266 027214      JMP LDR58        NO
0906*
0907** WRITE SYSTEM TO DISC **
0908*
0909*
0910* DUMP THE CORE-RESIDENT TSB SYSTEM TO THE DISC FOR POTENTIAL
0911* BOOTSTRAP LOADING.
0912*
0913 05267 163650      LDA BSY1A,I      WRITE
0914 05270 173655      STA WORD,I
0915 05271 063552      LDA .3
0916 05272 006400      CLB              SYSTEM
0917 05273 117724      JSB DISC,I
0918 05274 163651      LDA BSY2A,I
0919 05275 173655      STA WORD,I      TO
0920 05276 063676      LDA TRKTB
0921 05277 067653      LDB RSYA1
0922 05300 117724      JSB DISC,I      DISC
0923 05301 163652      LDA BSY3A,I
0924 05302 173655      STA WORD,I
0925 05303 063677      LDA TRKTB+1
0926 05304 067654      LDB RSYA2
0927 05305 117724      JSB DISC,I
0928*
0929** GET DATE AND TIME **
0930*
0931*
0932* THE DISC-RESIDENT TSB BOOTSTRAP LOADER TRANSFERS HERE AFTER
0933* LOADING TSB FROM THE DISC. THIS SECTION REQUESTS THE DATE
0934* AND TIME OF DAY FOR THE INTERNAL CLOCKING ROUTINES.
0935*
0936 05306 063556      LDR59 LDA .8      PRINT
0937 05307 067760      LDB DATEA
0938 05310 117723      JSB ASR35,I      'DATE?'
0939 05311 002400      CLA              GET
0940 05312 117723      JSB ASR35,I      RESPONSE
0941 05313 117732      JSB INTGA,I      GET DAY OF YEAR
0942 05314 073660      STA TEMPO        SAVE FOLLOWING CHARACTER
0943 05315 006003      SZB,RSS          NON-ZERO?
0944 05316 027332      JMP ERR6         NO
0945 05317 060001      LDA 1            YES
0946 05320 047620      ADB MXDAY
0947 05321 006021      SSB,RSS          < 367 ?
0948 05322 027332      JMP ERR6         NO
0949 05323 006400      CLB              YES
0950 05324 100200      MPY .24          CONVERT
0951 05326 172016      STA DATE,I      TO HOURS
0952 05327 063660      LDA TEMPO        '\
0953 05330 053605      CPA SLSH         NEXT?
0954 05331 027336      JMP LDR60        YES
0955 05332 063561      ERR6 LDA .15     NO, PRINT
0956 05333 067761      LDB ILDTA       'ILLEGAL

```

```
0957 05334 117723      JSB ASR35,I      DATE'
0958 05335 027306      JMP LDR59
0959 05336 117732      LDR60 JSB INTGA,I  GET YEAR
0960 05337 053560      CPA B15          MORE CHARACTERS?
0961 05340 002001      RSS              NO
0962 05341 027332      JMP ERR6         YES
0963 05342 176020      STB YEAR,I      RECORD YEAR
0964 05343 047621      ADB MAXYR
0965 05344 006021      SSB,RSS         < 100 ?
0966 05345 027332      JMP ERR6         NO
0967 05346 063556      LDR61 LDA .8      YES
0968 05347 067762      LDB TIMEA       REQUEST
0969 05350 117723      JSB ASR35,I     TIME OF DAY
0970 05351 002400      CLA             GET
0971 05352 117723      JSB ASR35,I     RESPONSE
0972 05353 117740      JSB TWODA,I     GET TWO-DIGIT
0973 05354 177750      DEC -24         INTEGER < 24
0974 05355 077660      STB TEMPO       SAVE IT
0975 05356 117740      JSB TWODA,I     GET TWO-DIGIT
0976 05357 177704      DEC -60         INTEGER < 60
0977 05360 060001      LDA 1           CONVERT
0978 05361 006400      CLB             TO TENTHS
0979 05362 100200      MPY .600        OF SECONDS
0980 05364 043623      ADA MBIAS       SAVE IN SPECIAL
0981 05365 172017      STA TIME,I     INTERNAL FORM
0982 05366 117741      JSB GETCA,I     EXTRANEIOUS DIGITS?
0983 05367 027374      JMP LDR62       NO
0984 05370 063561      ERR7 LDA .15    YES
0985 05371 067763      LDB ILTIA      PRINT
0986 05372 117723      JSB ASR35,I     ERROR
0987 05373 027346      JMP LDR61
0988 05374 067660      LDR62 LDB TEMPO
0989 05375 146016      ADB DATE,I     CORRECT
0990 05376 176016      STB DATE,I     HOUR OF YEAR
0991*
0992**  INITIATE TIMESHARING **
0993*
0994*
0995*  IF A PHONES BOARD EXISTS, IT IS TURNED ON.  POWER FAIL, SET TO
0996*  HALT DURING LOADING, IS SET TO THE POWER FAIL ROUTINE IN THE
0997*  SYSTEM.  FINALLY, CONTROL TRANSFERS TO TSB.
0998*
0999 05377 060165      LDA PHNSC      PHONES
1000 05400 002003      SZA,RSS        BOARD?
1001 05401 027415      JMP LDR63      NO
1002 05402 064000      LDB 0          YES
1003 05403 033630      IOR PH1        CREATE
1004 05404 172022      STA PHIN1,I
1005 05405 060001      LDA 1
1006 05406 033631      IOR PH2        APPROPRIATE
1007 05407 172023      STA PHIN2,I
1008 05410 067632      LDB RSSA
1009 05411 176024      STB PHIN3,I   INSTRUCTIONS
1010 05412 073413      STA *+1       EXECUTE
1011 05413 000000      NOP           LAST ONE
```

[C]

1012	05414	172025		STA PHIN4,I	SET UP PHONES STATUS
1013	05415	062026	LDR63	LDA PWRFL	SET POWER-FAIL
1014	05416	070004		STA 4	INTERRUPT LINK
1015	05417	126021		JMP TSB,I	RUN

```
1017*           *
1018** TAPE ERRORS **
1019*           *
1020 05420 063573 EOFER LDA .38      NO RECORD
1021 05421 067764      LDB EOFMA      WHERE
1022 05422 117723      JSB ASR35,I     EXPECTED
1023 05423 027427      JMP ERRIN      TERMINATE LOADING
1024*
1025 05424 063566 TPERR LDA .22      TIMING
1026 05425 067765      LDB TAPEA      OR PARITY
1027 05426 117723      JSB ASR35,I     ERROR
1028*
1029 05427 063564 ERRIN LDA .20      OUTPUT
1030 05430 067766      LDB LABOA      TERMINATION
1031 05431 117723      JSB ASR35,I     MESSAGE
1032 05432 102001      HLT 1          IRRECOVERABLE
1033 05433 027432      JMP *-1        HALT
```

```

1035*                                     *
1036** RECORD SYSTEM LIBRARY PROGRAM **
1037*                                     *
1038*
1039* UPON FIRST ENTRY SYSLF = -1 AND SYSLF+1 = -1 FOR A PAPER TAPE
1040* LOAD OR 0 FOR A MAG TAPE LOAD. MAG TAPE LOADS CALL SYSLB AFTER
1041* LOADING A SYSTEM LIBRARY PROGRAM TO STORE IT ONTO THE DISC;
1042* PAPER TAPE LOADS CALL SYSLB BEFORE LOADING A SYSTEM LIBRARY
1043* PROGRAM TO STORE THE PRECEDING ONE ONTO THE DISC, HENCE THE
1044* FIRST CALL MUST BE IGNORED. THE FIRST SYSTEM LIBRARY PROGRAM,
1045* A TABLE OF LENGTHS IN WORDS OF THE SYSTEM LIBRARY PROGRAMS,
1046* IS COPIED INTO A CORE-RESIDENT TABLE. AS EACH PROGRAM IS STORED
1047* ONTO THE DISC, ITS DISC ADDRESS REPLACES ITS LENGTH IN THIS
1048* TABLE, WHICH BECOMES THE LINKAGE BETWEEN TSB AND THE SYSTEM
1049* LIBRARY. WHILE SWR(15) IS 'UP', THE LOADER HALTS TO ALLOW
1050* PATCHING JUST BEFORE WRITING EACH PROGRAM ONTO THE DISC.
1051*
1052 05434 000000 SYSLB NOP
1053 05435 037670 ISZ SYSLF+1 FIRST CALL FROM PAPER TAPE LOAD?
1054 05436 002001 RSS NO
1055 05437 127434 JMP SYSLB,I YES
1056*
1057 05440 106501 LIB 1 DEBUGGING AID:
1058 05441 006020 SSB HLT 15R BEFORE SYSLIB PROGRAM
1059 05442 102015 HLT 15B GOES TO DISC IF SWR(15) = 1
1060 05443 002400 CLA
1061 05444 053667 CPA SYSLF FIRST SYSTEM LIBRARY PROGRAM?
1062 05445 027472 JMP SYSL2 NO
1063*
1064 05446 162001 LDA LIBRA,I YES
1065 05447 073667 STA SYSLF SET MOVE COUNTER
1066 05450 066002 LDB COM6 SET
1067 05451 077675 STB SLDIR TABLE POINTER
1068 05452 062001 LDA LIBRA SET POINTER TO
1069 05453 073664 STA TEMP4 ADDRESS TABLE
1070 05454 163664 SYSL1 LDA TEMP4,I COPY
1071 05455 170001 STA 1,I LENGTH
1072 05456 037664 ISZ TEMP4 TABLE
1073 05457 006004 INB INTO
1074 05460 037667 ISZ SYSLF ADDRESS
1075 05461 027454 JMP SYSL1 TABLE
1076 05462 063700 LDA TRKTB+2 SET DISC ADDRESSES OF
1077 05463 073671 STA SYST1
1078 05464 117733 JSB ISOTA,I SYSTEM LIBRARY TRACKS AND
1079 05465 073673 STA SYSS1
1080 05466 063701 LDA TRKTB+3 # OF SECTORS AVAILABLE
1081 05467 073672 STA SYST2
1082 05470 117733 JSB ISOTA,I ON EACH ONE
1083 05471 073674 STA SYSS2
1084*
1085 05472 067540 SYSL2 LDB M256 SET WORD COUNT
1086 05473 177655 STB WORD,I FOR DISC TRANSFER
1087 05474 167675 LDB SLDIR,I COMPUTE # OF
1088 05475 101026 ASR 6 SECTORS NEEDED
1089 05476 063547 LDA M4 ROOM ON

```

1090	05477	043673		ADA SYSS1	FIRST
1091	05500	002020		SSA	TRACK?
1092	05501	027517		JMP SYSL5	NO
1093	05502	060001		LDA 1	YES, UPDATE
1094	05503	043673		ADA SYSS1	REMAINING
1095	05504	073673		STA SYSS1	SECTOR COUNT
1096	05505	063671		LDA SYST1	LOAD DISC ADDRESS
1097	05506	007004		CMB,INB	SAVE
1098	05507	047671		ADB SYST1	DISC ADDRESS OF
1099	05510	077671		STB SYST1	REMAINING SPACE
1100	05511	173675	SYSL4	STA SLDIR,I	SAVE DISC ADDRESS
1101	05512	037675		ISZ SLDIR	IN LOADER TABLE
1102*					
1103	05513	066001		LDB LIBRA	WRITE PROGRAM
1104	05514	117724		JSB DISC,I	TO DISC
1105	05515	062001		LDA LIBRA	
1106	05516	127434		JMP SYSLB,I	
1107	05517	063547	SYSL5	LDA M4	HANDLE
1108	05520	043674		ADA SYSS2	
1109	05521	002020		SSA	SECOND
1110	05522	027533		JMP SYSL6	
1111	05523	060001		LDA 1	TRACK
1112	05524	043674		ADA SYSS2	
1113	05525	073674		STA SYSS2	
1114	05526	063672		LDA SYST2	
1115	05527	007004		CMB,INB	
1116	05530	047672		ADB SYST2	
1117	05531	077672		STB SYST2	
1118	05532	027511		JMP SYSL4	
1119	05533	063571	SYSL6	LDA .26	OUTPUT
1120	05534	067767		LDB SYSLA	OVERFLOW
1121	05535	117723		JSB ASR35,I	MESSAGE
1122	05536	027427		JMP ERRIN	TERMINATE LOADING

CONSTANTS, TEMPORARIES, ETC.

1124	05537	165300	M5440	DEC	-5440	
1125	05540	177400	M256	DEC	-256	
1126	05541	177401	M255	DEC	-255	
1127	05542	177700	M64	DEC	-64	
1128	05543	177754	M20	DEC	-20	
1129	05544	177760	M16	DEC	-16	
1130	05545	177764	M12	DEC	-12	
1131	05546	177766	M10	DEC	-10	
1132	05547	177774	M4	DEC	-4	
1133	05550	177777	M1	DEC	-1	
1134	05551	000002	.2	DEC	2	
1135	05552	000003	.3	DEC	3	
1136	05553	000004	.4	DEC	4	
1137	05554	000006	.6	DEC	6	
1138	05555	000007	.7	DEC	7	
1139	05556	000010	.8	DEC	8	
1140	05557	000014	.12	DEC	12	
1141	05557		B14	EQU	.12	
1142	05560	000015	.13	DEC	13	
1143	05560		B15	EQU	.13	
1144	05561	000017	.15	DEC	15	
1145	05562	000021	.17	DEC	17	
1146	05563	000023	.19	DEC	19	
1147	05564	000024	.20	DEC	20	
1148	05565	000025	.21	DEC	21	
1149	05566	000026	.22	DEC	22	
1150	05567	000027	.23	DEC	23	
1151	05570	000030	.24	DEC	24	
1152	05571	000032	.26	DEC	26	
1153	05572	000040	.32	DEC	32	
1154	05572		B40	EQU	.32	
1155	05573	000046	.38	DEC	38	
1156	05574	000060	B60	OCT	60	
1157	05575	000100	B100	OCT	100	
1158	05576	000106	B106	OCT	106	
1159	05577	000125	.85	DEC	85	
1160	05600	000400	B400	OCT	400	
1161	05601	001130	.600	DEC	600	
1162	05602	012500	.5440	DEC	5440	
1163	05603	100000	BIT15	OCT	100000	
1164	05604	000054	COMMA	OCT	54	','
1165	05605	000057	SLSH	OCT	57	'/'
1166	05606	000101	A	OCT	101	'A'
1167	05607	000103	C	OCT	103	'C'
1168	05610	000104	D	OCT	104	'D'
1169	05611	000111	I	OCT	111	'I'
1170	05612	000114	L	OCT	114	'L'
1171	05613	000116	N	OCT	116	'N'
1172	05614	000117	O	OCT	117	'O'
1173	05615	000123	S	OCT	123	'S'
1174	05616	000125	U	OCT	125	'U'
1175	05617	000131	Y	OCT	131	'Y'
1176	05620	177221	MXDAY	DEC	-367	1'S COMPLEMENT OF MAXIMUM DAY
1177	05621	177634	MAXYR	DEC	-100	1'S COMPLEMENT OF MAXIMUM YEAR
1178	05622	177713	EQTLEN	DEC	-53	LENGTH OF EQUIPMENT TABLE

PAGE 0030 #01
CONSTANTS, TEMPORARIES, ETC.

12:13 PM TUE., 23 OCT., 1979

1179 05623 071540 MBIAS ABS -30000-6000 TENTHS-OF-SECOND COUNTER

1181	05624	106615	OTB15	OTB	15B	'BOOTSTRAP'
1182	05625	102714	STC14	STC	14B	BOOTSTRAP LOADER
1183	05626	102515	LIA15	LIA	15B	INSTRUCTIONS
1184	05627	020014	LINKA	OCT	20014	
1185*						
1186	05630	102600	PH1	OTA	0	SKELETON CODE
1187	05631	102500	PH2	LIA	0	FOR PHONES
1188	05632	002001	RSSA	RSS		
1189*						
1190	05575		EQTA	EQU	B100	EQUIPMENT TABLE ADDRESS
1191	05633	100100	CEQTA	OCT	100100	EQT 'DISC READ' CORE ADDRESS
1192	05553		DEQTA	EQU	.4	EQT DISC ADDRESS
1193	05575		DIREA	EQU	B100	DIRECTORY TABLE ADDRESS
1194	05576		DIRE6	EQU	B106	
1195	05634	000140	TRAXA	DEF	TRAX	AVAILABLE TRACK TABLE ADDRESS
1196	05635	000160	DTBLA	DEF	DTBL	DISC SELECT CODE TABLE ADDRESS
1197	05636	004001	LNKAD	DEF	LSLTB	LINKAGE TABLE ADDRESS
1198	25200		ADTBL	EQU	37700B-12500B	ADT BUFFER
1199	05637	025200	ADTBA	DEF	ADTBL	ADT BUFFER ADDRESS
1200	12500		IDTBL	EQU	ADTBL-12500B	ID TABLE BUFFER
1201	05640	012500	IDTBA	DEF	IDTBL	ID TABLE BUFFER ADDRESS
1202	05640		UPRBA	EQU	IDTBA	USER PROGRAM BUFFER ADDRESS
1203	05641	005771	DIRBA	DEF	DIRBF	ADDRESS OF NULL DIRECTORY
1204	05642	012101	ULTTB	DEF	12101B	USER LIBRARY TRACK TABLE ADDRESS
1205	05643	012100	ULTM1	DEF	12100B	
1206	05644	005676	TRKTA	DEF	TRKTB	SYSTEM TRACK TABLE ADDRESS
1207	05645	005702	USTRA	DEF	TRKTB+4	USER TRACK DISC ADDRESSES
1208	05646	003003	MTRLA	DEF	MTRLT	BUFFER ADDRESS FOR SEGMENT TABLE
1209	05647	002504	LDRTA	DEF	LDRTT	=> DISC LOADER DISC ADDRESSES
1210	05650	002500	BSY1A	DEF	BSYS1	ADDRESSES OF
1211	05651	002501	BSY2A	DEF	BSYS2	SYSTEM SEGMENT
1212	05652	002502	BSY3A	DEF	BSYS3	WORD COUNTS
1213	05653	014000	RSYA1	OCT	14000	SYSTEM SEGMENT
1214	05654	026500	RSYA2	OCT	26500	CORE ADDRESSES
1215	05655	002423	WORD	DEF	WORDC	DISC BLOCK WORD COUNT ADDRESS
1216	05656	000000	BSBSA	DEF	BSBSO	ADDRESS OF 'BOOTSTRAP' BOOTSTRAP
1217	05657	002436	TSBBA	DEF	BSLDR	ADDRESS OF TSB BOOTSTRAP LOADER
1218*						
1219	05660	000000	TEMPO	BSS	1	
1220	05661	000000	TEMP1	BSS	1	
1221	05662	000000	TEMP2	BSS	1	
1222	05663	000000	TEMP3	BSS	1	
1223	05664	000000	TEMP4	BSS	1	
1224	05665	000000	COUNT	BSS	1	
1225	05666	000000	MFLG	BSS	1	LOADER MODE FLAG
1226	05667	000000	SYSLF	BSS	2	SYSTEM LIBRARY FLAGS
1227	05671	000000	SYST1	BSS	1	DISC ADDRESSES OF SPACE
1228	05672	000000	SYST2	BSS	1	ON SYSTEM LIBRARY TRACKS
1229	05673	000000	SYSS1	BSS	1	SPACE AVAILABLE ON
1230	05674	000000	SYSS2	BSS	1	SYSTEM LIBRARY TRACKS
1231	05675	000000	SLDIR	BSS	1	SYSTEM LIBRARY DIRECTORY POINTER
1232	05676	000000	TRKTB	BSS	20	CLAIMED TRACKS TABLE

1234	05722	006362	LKUNA	DEF	LKUNL	LOCK/UNLOCK CODE ADDRESS
1235	05723	002010	ASR35	DEF	TTY35	TTY DRIVER ADDRESS
1236	05724	002145	DISC	DEF	DISCD	DISC DRIVER ADDRESS
1237	05725	010356	MTAPE	DEF	MTD	MAG TAPE DRIVER ADDRESS
1238	05726	011457	MTDIA	DEF	MTDIN	MAG TAPE INITIALIZATION ROUTINE
1239	05727	007112	ADVLA	DEF	ADVAL	
1240	05730	006625	GTDNA	DEF	GTDNO	
1241	05731	006755	GTTRA	DEF	GTTRK	
1242	05732	007021	INTGA	DEF	INTGR	
1243	05733	007011	ISOTA	DEF	ISOTL	
1244	05734	007171	MOVUA	DEF	MOVUP	
1245	05735	007077	READA	DEF	READ	
1246	05736	006563	SELCA	DEF	SELCD	
1247	05737	006665	SETDA	DEF	SETDS	
1248	05740	007053	TWODA	DEF	TWODG	
1249	05741	007233	GETCA	DEF	GETCR	
1250	05742	007251	GTMTA	DEF	GETMT	
1251*						[F]
1252	05743	006011	LBRYA	DEF	LBRY	
1253	05744	011706	ILINA	DEF	ILIN	
1254	05745	006017	S/TDA	DEF	S/TDO	
1255*						[F]
1256	05746	006050	DISMA	DEF	DISMD	
1257	05747	006063	RQSTA	DEF	RQSTD	
1258	05750	006075	BDLA	DEF	BDDL	
1259	05751	006105	DZMBA	DEF	DZMBF	
1260	05752	006121	ILSCA	DEF	ILSCD	
1261	05753	006134	LULCA	DEF	LULC	
1262	05754	006157	RDMSA	DEF	RDMS	
1263	05755	006173	BLDRA	DEF	BLDRC	
1264	05756	006213	EOTMA	DEF	EOTM	
1265	05757	006222	CHKSA	DEF	CHKSM	
1266	05760	006233	DATEA	DEF	DATER	
1267	05761	006237	ILDTA	DEF	ILDTE	
1268	05762	006247	TIMEA	DEF	TIMER	
1269	05763	006253	ILTIA	DEF	ILTIM	
1270	05764	006263	EOFMA	DEF	EOFM	
1271	05765	006306	TAPEA	DEF	TAPER	
1272	05766	006321	LABOA	DEF	LABOR	
1273	05767	006333	SYSLA	DEF	SYSL	
1274	05770	006350	OODSA	DEF	OODSP	

1276*

1277* NULL DIRECTORY

1278*

1279 05771 000000 DIRBF DEC 0,0,0,0,0,-1,0,0 DIRECTORY

1280 06001 177777 DEC -1,-1,-1,-1,0,-1,0,0 PSUEDO-ENTRIES

CONSTANTS, TEMPORARIES, ETC.

1282	06011	006412	LBRY	OCT 6412	
1283	06012	046111		ASC 5,LIBRARY?	
1284	06017	005123	S/TDO	OCT 5123	
1285	06020	042503		ASC 12,ECTORS/TRACK ON DISC 0?	
1286	06034	005115	MTSC	OCT 5115	
1287	06035	040507		ASC 11,AG TAPE SELECT CODE?	
1288	06050	005104	DISMD	OCT 5104	
1289	06051	044523		ASC 10,ISC MODIFICATIONS?	
1290	06063	005102	RQSTD	OCT 5102	
1291	06064	042507		ASC 8,EGIN WITH 'DISC'	
1292	06074	006400		OCT 6400	
1293	06075	005102	BDDL	OCT 5102	
1294	06076	040504		ASC 6,AD DELIMITER	
1295	06104	006400		OCT 6400	
1296	06105	005104	DZMBF	OCT 5104	
1297	06106	044523		ASC 10,ISC 0 MUST BE IN 14	
1298	06120	006400		OCT 6400	
1299	06121	005111	ILSCD	OCT 5111	
1300	06122	046114		ASC 9,LLEGAL SELECT CODE	
1301	06133	006400		OCT 6400	
1302	06134	006412	LULC	OCT 6412	
1303	06135	043511		ASC 17,GIVE LOCK, UNLOCK, OR LOAD COMMAND	
1304	06156	006412		OCT 6412	
1305	06157	005104	RDMS	OCT 5104	
1306	06160	044523		ASC 11,ISC MONITOR PRESENT?	
1307	06173	005114	BLDRC	OCT 5114	
1308	06174	047501		ASC 15,OADER NOT CONFIGURED FOR TSB,	
1309	06213	005105	EOTM	OCT 5105	
1310	06214	047104		ASC 5,ND OF TAPE	
1311	06221	006400		OCT 6400	
1312	06222	005103	CHKSM	OCT 5103	
1313	06223	044105		ASC 7,HECKSUM ERROR	
1314	06232	006400		OCT 6400	
1315	06233	005104	DATER	OCT 5104	
1316	06234	040524		ASC 3,ATE?	
1317	06237	005111	ILDTE	OCT 5111	
1318	06240	046114		ASC 6,LLEGAL DATE	
1319	06246	006400		OCT 6400	
1320	06247	005124	TIMER	OCT 5124	
1321	06250	044515		ASC 3,IME?	
1322	06253	005111	ILTIM	OCT 5111	
1323	06254	046114		ASC 6,LLEGAL TIME	
1324	06262	006400		OCT 6400	
1325	06263	005000	EOFM	OCT 5000	
1326	06264	052516		ASC 18,UNEXPECTED END-OF-FILE/END-OF-TAPE,	
1327	06306	005124	TAPER	OCT 5124	
1328	06307	040520		ASC 10,APE CANNOT BE READ,	
1329	06321	046117	LABOR	ASC 9,LOAD/DUMP ABORTED	
1330	06332	006412		OCT 6412	
1331	06333	005123	SYSL	OCT 5123	
1332	06334	054523		ASC 12,YSTEM LIBRARY OVERFLOW,	
1333	06350	005117	OODSP	OCT 5117	
1334	06351	052524		ASC 9,UT OF DISC SPACE,	

```

1336*          *
1337** INTERPRET REQUEST **
1338*          *
1339*
1340* UPON ENTRY (B) = 0 FOR A 'LOCK' OR -1 FOR AN 'UNLOCK'. SEARCH
1341* THE INPUT RECORD FOR - <DISC #>,<TRACK #>,<TRACK #> OR FOR
1342* - <DISC #>,<TRACK #> . INSURE THAT <DISC #> DOES NOT EXCEED 3
1343* AND CORRESPONDS TO AN EXISTING DISC. INSURE THAT ANY <TRACK #>
1344* DOES NOT EXCEED 64 AND THAT THE SECOND <TRACK #>, IF PRESENT,
1345* IS AT LEAST AS GREAT AS THE FIRST.
1346*
1347 06362 077417 LKUNL STB MFLAG      SAVE MODE
1348 06363 003400          CCA          GET LEGAL
1349 06364 016625          JSB GTDNO      DISC #
1350 06365 127402          JMP L22A,I    NOT FOUND
1351 06366 001020          ALS,ALS      FOUND, SAVE POINTER
1352 06367 043373          ADA LTRAX      TO ITS
1353 06370 073411          STA LTMP1      TRAX TABLE
1354 06371 017021          JSB INTGR      GET TRACK #
1355 06372 073413          STA LTMP3      SAVE FOLLOWING CHARACTER
1356 06373 017145          JSB PARCK      VALIDATE AND SAVE
1357 06374 077412          STB LTMP2      TRACK NUMBER
1358 06375 063410          LDA LTMP0      SAVE
1359 06376 001323          RAR,RAR      DISC
1360 06377 005727          BLF,BLF      ADDRESS
1361 06400 040001          ADA 1        OF
1362 06401 073414          STA LTMP4      TRACK
1363 06402 063413          LDA LTMP3      WAS DELIMITER
1364 06403 053331          CPA LB54      A COMMA?
1365 06404 026414          JMP LKUN2      YES
1366 06405 007400          CCB          NO
1367 06406 053321          CPA LB15      CARRIAGE RETURN?
1368 06407 026425          JMP LKUN3-1    YES
1369 06410 063322 LKUN1 LDA L.15      NO
1370 06411 067424          LDB BDDLA     PRINT
1371 06412 117377          JSB ASRDA,I   ERROR
1372 06413 127402          JMP L22A,I
1373 06414 017021 LKUN2 JSB INTGR      GET SECOND TRACK #
1374 06415 053321          CPA LB15      FOLLOWED BY CARRIAGE RETURN?
1375 06416 002001          RSS          YES
1376 06417 026410          JMP LKUN1      NO
1377 06420 017145          JSB PARCK      VALIDATE PARAMETER
1378 06421 007000          CMB          COMPUTE # OF TRACKS
1379 06422 047412          ADB LTMP2      TO BE LOCKED/UNLOCKED
1380 06423 006021          SSB,RSS      ONE OR MORE?
1381 06424 027152          JMP PARC1      NO
1382 06425 077413          STB LTMP3      YES, SAVE COUNT
1383*
1384* FOR EACH TRACK IN TURN, EXTRACT ITS STATUS AND JUMP TO THE
1385* LOCK OR UNLOCK CODE.
1386*
1387 06426 063414 LKUN3 LDA LTMP4
1388 06427 001066          ALS,CLE,ELA  SET POINTER
1389 06430 006400          CLB          TO PROPER
1390 06431 100022          ASL 2        WORD OF

```

1391	06432	047411	ADB LTMP1	TRAX
1392	06433	077415	STB LTMP5	TABLE
1393	06434	001700	ALF	SAVE
1394	06435	043375	ADA BMSKA	APPROPRIATE
1395	06436	160000	LDA 0,I	BIT
1396	06437	073416	STA LTMP6	MASK
1397	06440	113415	AND LTMP5,I	EXTRACT TRACK STATUS
1398	06441	067417	LDB MFLAG	
1399	06442	006006	INB,SZB	UNLOCK?
1400	06443	026516	JMP LKUN6	NO
1401*			*	
1402**	UNLOCK A TRACK	**		
1403*		*		
1404*				
1405*	IF TRACK IS LOCKED, UNLOCK IT AND INSERT A FULL-TRACK ENTRY			
1406*	INTO THE ADT (IF THE ADT IS FULL, THE TRACK IS LOST UNTIL A			
1407*	SUBSEQUENT RELOAD).			
1408*				
1409	06444	002003	SZA,RSS	IS TRACK LOCKED?
1410	06445	026507	JMP LKUN5	NO
1411	06446	123415	XOR LTMP5,I	YES
1412	06447	173415	STA LTMP5,I	UNLOCK TRACK
1413	06450	064137	LDB ADLEN	IS ADT
1414	06451	057340	CPB MXADT	FULL?
1415	06452	026507	JMP LKUN5	YES, TRACK LOST
1416	06453	007004	CMB,INB	NO
1417	06454	047372	ADB ADTBF	SET POINTER TO
1418	06455	077415	STB LTMP5	LAST WORD +1 OF ADT
1419	06456	064137	LDB ADLEN	CORRECT
1420	06457	047313	ADB LM2	ADT
1421	06460	074137	STB ADLEN	LENGTH
1422	06461	017156	JSB FADTP	FIND POSITION FOR NEW ENTRY
1423	06462	063415	LDA LTMP5	COMPUTE
1424	06463	003004	CMA,INA	# OF
1425	06464	040001	ADA 1	ENTRIES
1426	06465	001100	ARS	TO BE
1427	06466	073410	STA LTMP0	MOVED
1428	06467	063415	LDA LTMP5	
1429	06470	043313	LKUN4 ADB LM2	SET
1430	06471	073416	STA LTMP6	SOURCE ADDRESS
1431	06472	104200	DLD LTMP6,I	MOVE
1432	06474	104400	DST LTMP5,I	ENTRY
1433	06476	063416	LDA LTMP6	UPDATE TO NEXT
1434	06477	073415	STA LTMP5	DESTINATION ADDRESS
1435	06500	037410	ISZ LTMP0	ALL ENTRIES MOVED?
1436	06501	026470	JMP LKUN4	NO
1437	06502	063414	LDA LTMP4	YES
1438	06503	173415	STA LTMP5,I	SET ENTRY'S DISC ADDRESS
1439	06504	017011	JSB ISOTL	SET
1440	06505	037415	ISZ LTMP5	ENTRY'S LENGTH
1441	06506	173415	STA LTMP5,I	IN SECTORS
1442*				
1443*	CHECK IF UNPROCESSED TRACKS REMAIN. IF SO, UPDATE REFERENCE			
1444*	QUANTITIES AND PROCEED TO PROCESS THE NEXT ONE; ELSE RETURN			
1445*	TO THE LOADER FOR FURTHER INSTRUCTIONS.			

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1446*
1447 06507 063414 LKUN5 LDA LTMP4 COMPUTE
1448 06510 043335 ADA LB400 DISC ADDRESS OF
1449 06511 073414 STA LTMP4 NEXT TRACK
1450 06512 037412 ISZ LTMP2 ADVANCE TRACK #
1451 06513 037413 ISZ LTMP3 ALL TRACKS CONSIDERED?
1452 06514 026426 JMP LKUN3 NO
1453 06515 127402 JMP L22A,I YES
1454* *
1455** LOCK A TRACK **
1456* *
1457*
1458* IF THE TRACK IS UNLOCKED AND LOCKABLE, LOCK IT AND REMOVE ITS
1459* ENTRY FROM THE ADT; ELSE PRINT A MESSAGE AND CONTINUE TO THE
1460* NEXT TRACK. A TRACK IS LOCKABLE IF IT HAS AN ADT ENTRY
1461* CORRESPONDING TO THE FULL LENGTH OF THE TRACK; I.E., NO PART
1462* OF THE TRACK IS IN USE.
1463*
1464 06516 002002 LKUN6 SZA TRACK LOCKED?
1465 06517 026507 JMP LKUN5 YES
1466 06520 017156 JSB FADTP NO, FIND ADT ENTRY FOR TRACK
1467 06521 063414 LDA LTMP4 ENTRY
1468 06522 150001 CPA 1,I FOUND?
1469 06523 006005 INB,RSS YES
1470 06524 026537 JMP LKUN7 NO
1471 06525 017011 JSB ISOTL GET TRACK LENGTH
1472 06526 150001 CPA 1,I IS PART OF TRACK IN USE?
1473 06527 006005 INB,RSS NO
1474 06530 026537 JMP LKUN7 YES
1475 06531 060001 LDA 1 DELETE
1476 06532 017171 JSB MOVUP ADT ENTRY
1477 06533 163415 LDA LTMP5,I LOCK
1478 06534 033416 IOR LTMP6
1479 06535 173415 STA LTMP5,I TRACK
1480 06536 026507 JMP LKUN5
1481*
1482 06537 063324 LKUN7 LDA L.20 PRINT 'CANNOT
1483 06540 067432 LDB TRKNA LOCK TRACK #'
1484 06541 117377 JSB ASRDA,I
1485 06542 006400 CLB COMPUTE
1486 06543 063412 LDA LTMP2 DIGITS OF
1487 06544 100400 DIV L.10 TRACK #
1488 06546 047332 ADB LB60 COMPUTE
1489 06547 002003 SZA,RSS
1490 06550 026553 JMP LKUN8 ASCII OF
1491 06551 043332 ADA LB60
1492 06552 001727 ALF,ALF TRACK #
1493 06553 030001 LKUN8 IOR 1
1494 06554 067344 LDB B6400 PRINT
1495 06555 104400 DST EBUFA,I
1496 06557 063316 LDA L.3 IT
1497 06560 067376 LDB EBUFA
1498 06561 117377 JSB ASRDA,I
1499 06562 026507 JMP LKUN5

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1501*          *
1502**  GET SELECT CODE  **
1503*          *
1504*
1505*  ENTER WITH A CHARACTER IN (A).  FIND A TWO-DIGIT OCTAL
1506*  INTEGER IN [(77 OCT - SELCD,I),76 OCT].  IF THIS CANNOT BE DONE,
1507*  PRINT AN ERROR AND EXIT TO (P+2), ELSE EXIT TO (P+3) WITH THE
1508*  INTEGER IN (B) AND THE FOLLOWING CHARACTER IN (A).
1509*
1510  06563 000000  SELCD NOP
1511  06564 017220          JSB DIGCK      DIGIT?
1512  06565 026621          JMP SELC2      NO
1513  06566 047311          ADB LM8        YES, OCTAL
1514  06567 006021          SSB,RSS        DIGIT?
1515  06570 026621          JMP SELC2      NO
1516  06571 001723          ALF,RAR        YES
1517  06572 073411          STA LTMP1     SAVE IT * 8
1518  06573 017233          JSB GETCR      NEXT
1519  06574 026621          JMP SELC2
1520  06575 017220          JSB DIGCK      CHARACTER AN
1521  06576 026621          JMP SELC2
1522  06577 047311          ADB LM8        OCTAL DIGIT?
1523  06600 006021          SSB,RSS
1524  06601 026621          JMP SELC2      NO
1525  06602 043411          ADA LTMP1     YES, SAVE
1526  06603 073411          STA LTMP1     SELECT CODE
1527  06604 017233          JSB GETCR
1528  06605 000000          NOP
1529  06606 067411          LDB LTMP1     SELECT CODE
1530  06607 047307          ADB LD77
1531  06610 006021          SSB,RSS        WITHIN
1532  06611 026621          JMP SELC2
1533  06612 146563          ADB SELCD,I   LEGAL RANGE?
1534  06613 006020          SSB
1535  06614 026621          JMP SELC2      NO
1536  06615 067411          LDB LTMP1     YES
1537  06616 036563          ISZ SELCD
1538  06617 036563  SELC1 ISZ SELCD
1539  06620 126563          JMP SELCD,I
1540  06621 063325  SELC2 LDA L.21      REPORT
1541  06622 067425          LDB ILSCL
1542  06623 117377          JSB ASRDA,I   ERROR
1543  06624 026617          JMP SELC1
1544*          *
1545**  GET DISC NUMBER  **
1546*          *
1547*  SEARCH THE INPUT RECORD FOR A '-' FOLLOWED BY AN INTEGER IN
1548*  [0,3] FOLLOWED BY A COMMA.  IF (A) = -1 UPON ENTRY, CHECK THAT
1549*  THE REFERENCED DISC EXISTS.  EXIT TO (P+2) WITH THE INTEGER IN
1550*  (A) IF ABOVE CONDITIONS ARE MET; OTHERWISE, PRINT AN ERROR AND
1551*  EXIT TO (P+1).
1552*
1553  06625 000000  GTDNO NOP
1554  06626 073410          STA LTMPO     SAVE FLAG
1555  06627 017233  GTDN1 JSB GETCR

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1556 06630 026637      JMP GTDN2
1557 06631 053343      CPA DASH      '- ' ?
1558 06632 002001      RSS          YES
1559 06633 026627      JMP GTDN1     NO
1560 06634 017021      JSB INTGR     GET DISC #
1561 06635 053331      CPA LB54      FOLLOWED BY A COMMA?
1562 06636 026643      JMP GTDN3     YES
1563 06637 063322      GTDN2 LDA L.15 NO
1564 06640 067424      LDB BDDLA     PRINT
1565 06641 117377      JSB ASRDA,I   ERROR
1566 06642 126625      JMP GTDNO,I
1567 06643 060001      GTDN3 LDA 1    DISC #
1568 06644 047312      ADB LM4
1569 06645 006020      SSB          < 4 ?
1570 06646 026653      JMP GTDN5     YES
1571 06647 063323      GTDN4 LDA L.17 NO
1572 06650 067430      LDB BADDA     PRINT
1573 06651 117377      JSB ASRDA,I   ERROR
1574 06652 126625      JMP GTDNO,I
1575 06653 037410      GTDN5 ISZ LTMP0 CHECK DISC TABLE?
1576 06654 026663      JMP GTDN6     NO
1577 06655 073410      STA LTMP0     YES, SAVE DISC #
1578 06656 043374      ADA LDTBL     DOES
1579 06657 006400      CLB          DISC
1580 06660 154000      CPB 0,I       EXIST?
1581 06661 026647      JMP GTDN4     NO
1582 06662 063410      LDA LTMP0     YES, LOAD DISC #
1583 06663 036625      GTDN6 ISZ GTDNO
1584 06664 126625      JMP GTDNO,I
1585*
1586**  SET DISC TABLE ENTRY **
1587*
1588*
1589*  UPON ENTRY TEMP1 HOLDS THE DISC # AND TEMP2 HOLDS THE DISC'S
1590*  SELECT CODE.  IF TEMP2 > 0 UPON ENTRY, SEARCH THE INPUT
1591*  BUFFER FOR AN INTEGER IN [90,128] FOLLOWED BY A CARRIAGE RETURN.
1592*  IF FOUND, RESET THE DISC TABLE ENTRY APPROPRIATELY AND UNLOCK THE
1593*  TRACKS ON THE DISC, EXITING TO (P+2).  IF NO PROPER
1594*  INTEGER IS FOUND, PRINT AN ERROR AND EXIT TO (P+1).  IF TEMP2 = 0
1595*  UPON ENTRY, ZERO THE DISC'S TABLE ENTRY AND LOCK ITS TRACKS,
1596*  EXITING TO (P+2).
1597*
1598 06665 000000      SETDS NOP
1599 06666 167406      LDB TMP1A,I   COMPUTE ADDRESS OF PROPER
1600 06667 047374      ADB LDTBL     DISC TABLE ENTRY
1601 06670 163407      LDA TMP2A,I   DISC
1602 06671 002002      SZA          REMOVAL?
1603 06672 026710      JMP SETD3     NO
1604 06673 170001      STA 1,I       YES, REMOVE DISC
1605 06674 067312      SETD1 LDB LM4  SET
1606 06675 077411      STB LTMP1     COUNTER
1607 06676 167406      LDB TMP1A,I   COMPUTE
1608 06677 005020      BLS,BLS      TRACK TABLE
1609 06700 047373      ADB LTRAX     ADDRESS
1610 06701 003000      CMA          SET DISC AVAILABLE

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1611 06702 170001 SETD2 STA 1,I
1612 06703 006004          INB          OR NOT AS
1613 06704 037411          ISZ LTMP1
1614 06705 026702          JMP SETD2          APPROPRIATE
1615 06706 036665          ISZ SETDS
1616 06707 126665          JMP SETDS,I
1617 06710 077412 SETD3 STB LTMP2    SAVE DTBL ADDRESS
1618 06711 017021          JSB INTGR        GET # OF SECTORS
1619 06712 053321          CPA LB15        END-OF-LINE?
1620 06713 026720          JMP SETD5        YES
1621 06714 063326 SETD4 LDA L.23     NO
1622 06715 067426          LDB ILTRA       PRINT
1623 06716 117377          JSB ASRDA,I     ERROR
1624 06717 126665          JMP SETDS,I
1625 06720 060001 SETD5 LDA 1
1626 06721 047305          ADB LM129      VERIFY RESULT
1627 06722 006021          SSB,RSS
1628 06723 026714          JMP SETD4      TO BE WITHIN
1629 06724 047330          ADB L.39
1630 06725 006020          SSB          [90,128]
1631 06726 026714          JMP SETD4
1632 06727 001727          ALF,ALF        POSITION AND
1633 06730 073411          STA LTMP1      SAVE LENGTH
1634 06731 006400          CLB          DELETE
1635 06732 177412          STB LTMP2,I   PRIOR ENTRY
1636 06733 167407          LDB TMP2A,I   COMPUTE
1637 06734 002001          RSS          TRIAL
1638 06735 047333 SETD6 ADB LB100  SELECT CODE PART
1639 06736 063374          LDA LDTEL     SET
1640 06737 073413          STA LTMP3     FOR
1641 06740 063312          LDA LM4       TABLE
1642 06741 073414          STA LTMP4     SEARCH
1643 06742 163413 SETD7 LDA LTMP3,I SELECT CODE PART
1644 06743 013334          AND LB377     ALREADY
1645 06744 050001          CPA 1         USED?
1646 06745 026735          JMP SETD6     YES
1647 06746 037413          ISZ LTMP3     NO, MORE
1648 06747 037414          ISZ LTMP4     TABLE ENTRIES?
1649 06750 026742          JMP SETD7     YES
1650 06751 047411          ADB LTMP1     NO, CREATE
1651 06752 177412          STB LTMP2,I  NEW ENTRY
1652 06753 003400          CCA          UNLOCK
1653 06754 026674          JMP SETD1     TRACKS
1654*
1655** GET A COMPLETE TRACK **
1656*
1657*
1658* SEARCH ADT FOR A FULL TRACK. IF NONE FOUND, TERMINATE
1659* LOADING. IF FOUND, RETURN WITH DISC ADDRESS IN (A). IF
1660* (A) = -1 UPON ENTRY, DELETE TRACK'S ADT ENTRY, ELSE SET
1661* ITS SECTOR COUNT TO ZERO.
1662*
1663 06755 000000 GTTRK NOP
1664 06756 073411          STA LTMP1     SAVE FLAG
1665 06757 067315          LDB L.2      SET

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1666	06760	044137	ADB ADLEN	ENTRY COUNTER,	[E]
1667	06761	005100	BRS	SKIPPING LAST	[E]
1668	06762	077412	STB LTMP2	PSUEDO-ENTRY	[E]
1669	06763	067372	LDB ADTBF	(B) WILL HOLD ENTRY ADDRESSES	
1670	06764	160001	GTTR1 LDA 1,I	LOAD ENTRY'S DISC ADDRESS	
1671	06765	017011	JSB ISOTL	GET TRACK LENGTH	
1672	06766	006004	INB	IN SECTORS	
1673	06767	150001	CPA 1,I	ALL OF TRACK AVAILABLE?	
1674	06770	026775	JMP GTTR2	YES	
1675	06771	006004	INB	NO	
1676	06772	037412	ISZ LTMP2	MORE ADT ENTRIES?	
1677	06773	026764	JMP GTTR1	YES	
1678	06774	127404	JMP ERR5A,I	NO	
1679	06775	002400	GTTR2 CLA	CLAIM	
1680	06776	170001	STA 1,I	TRACK	
1681	06777	047314	ADB LM1	LOAD	
1682	07000	160001	LDA 1,I	DISC ADDRESS	
1683	07001	037411	ISZ LTMP1	REMOVE ENTRY?	
1684	07002	126755	JMP GTTRK,I	NO	
1685	07003	073412	STA LTMP2	YES	
1686	07004	047315	ADB L.2	ELIMINATE	
1687	07005	060001	LDA 1		
1688	07006	017171	JSB MOVUP	ENTRY	
1689	07007	063412	LDA LTMP2	RETRIEVE	
1690	07010	126755	JMP GTTRK,I	DISC ADDRESS	
1691*			*		
1692**	ISOLATE TRACK LENGTH	**			
1693*		*			
1694*					
1695*	ENTER WITH A DISC ADDRESS IN (A). RETURN WITH THE LENGTH IN				
1696*	SECTORS OF THE REFERENCED TRACK IN (A).				
1697*					
1698	07011	000000	ISOTL NOP		
1699	07012	001222	RAL,RAL	GET	
1700	07013	013316	AND L.3	DISC #	
1701	07014	043374	ADA LDTBL	LOAD WORD FROM	
1702	07015	160000	LDA 0,I	DISC TABLE	
1703	07016	001727	ALF,ALF	EXTRACT TRACK LENGTH	
1704	07017	013334	AND LB377	IN SECTORS	
1705	07020	127011	JMP ISOTL,I		
1706*			*		
1707**	BUILD AN INTEGER	**			
1708*		*			
1709*					
1710*	SEARCH THE INPUT STRING FOR AN INTEGER. IF FOUND, RETURN WITH				
1711*	IT IN (B). IF NO DIGITS ARE FOUND OR THE INTEGER OVERFLOWS				
1712*	16 BITS, RETURN WITH 32767 IN (B).				
1713*					
1714	07021	000000	INTGR NOP		
1715	07022	003400	CCA	SET 'NO DIGITS'	
1716	07023	073415	STA LTMP5	FLAG	
1717	07024	002400	CLA	INITIALIZE TO ZERO	
1718	07025	073416	INTG1 STA LTMP6	STORE PARTIAL RESULT	
1719	07026	017233	JSB GETCR	MORE CHARACTERS?	
1720	07027	027046	JMP INTG2	NO	


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1721 07030 017220      JSB DIGCK      YES, DIGIT?
1722 07031 027046      JMP INTG2      NO
1723 07032 073415      STA LTMP5      YES, SAVE IT
1724 07033 063416      LDA LTMP6      MULTIPLY PARTIAL
1725 07034 100200      MPY L.10       RESULT BY 10
1726 07036 000040      CLE           ADD IN
1727 07037 043415      ADA LTMP5      NEW DIGIT
1728 07040 006043      SEZ,SZB,RSS
1729 07041 002020      SSA           OVERFLOW?
1730 07042 002001      RSS           YES
1731 07043 027025      JMP INTG1      NO
1732 07044 067336      LDB INF       REPLACE WITH
1733 07045 127021      JMP INTGR,I    MAXIMUM INTEGER
1734 07046 067416      INTG2 LDB LTMP6  LOAD INTEGER
1735 07047 037415      ISZ LTMP5     ANY DIGITS FOUND?
1736 07050 127021      JMP INTGR,I    YES
1737 07051 067336      LDB INF       NO, LOAD ILLEGAL INTEGER
1738 07052 127021      JMP INTGR,I
1739*                               *
1740**  CONVERT TWO-DIGIT INTEGER **
1741*                               *
1742*
1743*  SEARCH THE INPUT RECORD FOR A TWO-DIGIT INTEGER NOT TO EXCEED
1744*  -(TWODG,I UPON ENTRY).  IF FOUND, RETURN TO (P+2) WITH INTEGER
1745*  IN (B), ELSE EXIT TO ERROR ROUTINE.
1746*
1747 07053 000000      TWODG NOP
1748 07054 017233      JSB GETCR     FETCH
1749 07055 127405      JMP ERR7A,I   AND
1750 07056 017220      JSB DIGCK     VERIFY
1751 07057 127405      JMP ERR7A,I   DIGIT
1752 07060 006400      CLB           MULTIPLY
1753 07061 100200      MPY L.10     BY 10
1754 07063 073411      STA LTMP1     AND SAVE
1755 07064 017233      JSB GETCR     FETCH
1756 07065 127405      JMP ERR7A,I   AND
1757 07066 017220      JSB DIGCK     VERIFY
1758 07067 127405      JMP ERR7A,I   DIGIT
1759 07070 047411      ADB LTMP1     COMBINE WITH PRIOR RESULT
1760 07071 060001      LDA 1
1761 07072 143053      ADA TWODG,I   INTEGER
1762 07073 037053      ISZ TWODG     TOO
1763 07074 002020      SSA           LARGE?
1764 07075 127053      JMP TWODG,I   NO
1765 07076 127405      JMP ERR7A,I   YES
1766*                               *
1767**  READ FROM PAPER TAPE **
1768*                               *
1769*
1770*  RETURN WITH A WORD FROM PAPER TAPE IN (B).  IF (E) = 1 UPON
1771*  ENTRY, READ ONLY THE NEXT FRAME.  IF (E) = 0 UPON ENTRY,
1772*  COMBINE THE NEXT TWO FRAMES INTO A 16-BIT RESULT.
1773*
1774 07077 000000      READ  NOP
1775 07100 006600      CLB,CME

```

1776	07101	103713	READ1	STC 13B,C	READ
1777	07102	102313		SFS 13B	A
1778	07103	027102		JMP *-1	CHARACTER
1779	07104	106713		CLC 13B	INCLUSIVE OR
1780	07105	106413		MIB 13B	INTO (B)
1781	07106	002041		SEZ,RSS	SECOND CHARACTER TO BE READ?
1782	07107	127077		JMP READ,I	NO
1783	07110	005767		BLF,CLE,BLF	YES, MOVE FIRST CHARACTER
1784	07111	027101		JMP READ1	TO HIGH PART OF (B)

```

1786*                                     *
1787**  VALIDATE ADDRESS                 **
1788*                                     *
1789*
1790*  ENTER WITH AN ADDRESS IN (B).  VERIFY THAT THIS!ADDRESS LIES
1791*  WITHIN AN AREA OF CORE CONTAINING TSB SYSTEM CODE.  IF THIS IS
1792*  NOT THE CASE, HLT 55 OCT WITH THE OFFENDING ADDRESS IN (A).
1793*
1794  07112 000000  ADVAL NOP
1795  07113 077411          STB LTMP1      SAVE ADDRESS
1796  07114 000040          CLE            BELOW
1797  07115 047365          ADB MAXAD      PROTECTED
1798  07116 002040          SEZ            LOADER?
1799  07117 027137          JMP ADVA1     NO
1800  07120 047366          ADB SYSTA     YES, IN MAIN PART
1801  07121 006021          SSB,RSS      OF SYSTEM?
1802  07122 127112          JMP ADVAL,I  YES
1803  07123 047367          ADB MAXBA     NO, BELOW
1804  07124 006021          SSB,RSS      UNUSED SWAP AREA?
1805  07125 027137          JMP ADVA1     NO
1806  07126 047370          ADB BPAGA     YES, IN BASE PART
1807  07127 006021          SSB,RSS      OF SYSTEM?
1808  07130 127112          JMP ADVAL,I  YES
1809  07131 047371          ADB INRPA     NO, WITHIN LEGAL
1810  07132 006021          SSB,RSS      INTERRUPT AREA?
1811  07133 027137          JMP ADVA1     NO
1812  07134 047317          ADB LB11     YES,
1813  07135 006021          SSB,RSS      (A) OR (B) ?
1814  07136 127112          JMP ADVAL,I  NO
1815  07137 063323  ADVA1 LDA L.17        YES
1816  07140 067427          LDB BDADA     PRINT
1817  07141 117377          JSB ASRDA,I  ERROR
1818  07142 063411          LDA LTMP1     DISPLAY ADDRESS
1819  07143 102055          HLT 55B      WAIT FOR REREAD ATTEMPT
1820  07144 127403          JMP L46A,I
1821*                                     *
1822**  VALIDATE TRACK NUMBER           **
1823*                                     *
1824*
1825*  ENTER WITH AN INTEGER IN (B).  IF IT IS LESS THAN 64, EXIT WITH
1826*  (B) UNCHANGED; OTHERWISE, PRINT AN ERROR AND RETURN TO LOADER
1827*  SEQUENCE.
1828*
1829  07145 000000  PARCK NOP
1830  07146 060001          LDA 1
1831  07147 043306          ADA LM64     TRACK #
1832  07150 002020          SSA          < 64 ?
1833  07151 127145          JMP PARCK,I  YES
1834  07152 063321  PARC1 LDA L.13        NO
1835  07153 067431          LDB BADPA     PRINT 'BAD
1836  07154 117377          JSB ASRDA,I  TRACK #'
1837  07155 127402          JMP L22A,I

```

```

1839*                                     *
1840**  FIND ADT POSITION                 **
1841*                                     *
1842*
1843*  SEARCH THE ADT FOR THE FIRST ENTRY WHOSE DISC ADDRESS IS EQUAL
1844*  TO OR EXCEEDS THE DISC ADDRESS IN LTMP4.  RETURN WITH A POINTER
1845*  TO THIS ENTRY IN (B).
1846*
1847  07156 000000  FADTP NOP
1848  07157 063414          LDA LTMP4          2'S COMPLEMENT
1849  07160 003104          CMA,CLE,INA       DISC ADDRESS
1850  07161 073410          STA LTMP0         SAVE IT
1851  07162 067372          LDB ADTBF        INITIAL ADT POINTER
1852  07163 140001  FADT1 ADA 1,I           FIRST ADT ENTRY >=
1853  07164 002040          SEZ                TRACK DISC ADDRESS?
1854  07165 127156          JMP FADTP,I     YES
1855  07166 063410          LDA LTMP0         NO, TRY
1856  07167 047315          ADB L.2          NEXT ENTRY
1857  07170 027163          JMP FADT1
1858*                                     *
1859**  ELIMINATE ADT ENTRY             **
1860*                                     *
1861*
1862*  ENTER WITH THE ADDRESS OF THE SCRATCHED ADT ENTRY IN (A) AND (B).
1863*  MOVE THE TABLE BELOW IT OVER IT AND DECREMENT THE ADT LENGTH
1864*  BY 2.
1865*
1866  07171 000000  MOVUP NOP
1867  07172 073421          STA SOURC       SAVE SOURCE ADDRESS
1868  07173 047313          ADB LM2         SAVE
1869  07174 077420          STB DEST        DESTINATION ADDRESS
1870  07175 040137          ADA ADLEN       COMPUTE
1871  07176 003004          CMA,INA         NUMBER OF
1872  07177 043372          ADA ADTBF        ENTRIES
1873  07200 003004          CMA,INA         TO BE
1874  07201 001100          ARS                MOVED
1875  07202 073422          STA MCNT
1876  07203 104200  MOVU1 DLD SOURC,I       MOVE
1877  07205 104400          DST DEST,I     ENTRY
1878  07207 063421          LDA SOURC       UPDATE
1879  07210 073420          STA DEST
1880  07211 043315          ADA L.2         ADDRESSES
1881  07212 073421          STA SOURC
1882  07213 037422          ISZ MCNT        DONE?
1883  07214 027203          JMP MOVU1        NO
1884  07215 034137          ISZ ADLEN       YES, REDUCE TABLE LENGTH
1885  07216 034137          ISZ ADLEN       BY ONE ENTRY
1886  07217 127171          JMP MOVUP,I

```

```
1888* *
1889** CHECK FOR A DIGIT **
1890* *
1891*
1892* ENTER WITH A CHARACTER IN (A). IF IT IS A DIGIT, RETURN TO
1893* (P+2) WITH THE BINARY DIGIT IN (A) AND (B). OTHERWISE, RETURN
1894* TO (P+1) WITH THE CHARACTER IN (A).
1895*
1896 07220 000000 DIGCK NOP
1897 07221 064000 LDB 0 ASCII
1898 07222 047310 ADB LD72 72 OCT OR
1899 07223 006021 SSB,RSS GREATER?
1900 07224 127220 JMP DIGCK,I YES
1901 07225 047320 ADB LB12 NO, ASCII 57 OCT
1902 07226 006020 SSB OR LESS?
1903 07227 127220 JMP DIGCK,I YES
1904 07230 060001 LDA 1 NO
1905 07231 037220 ISZ DIGCK
1906 07232 127220 JMP DIGCK,I
1907* *
1908** FETCH INPUT CHARACTER **
1909* *
1910*
1911* RETURN TO (P+2) WITH THE NEXT NON-BLANK CHARACTER FROM THE INPUT
1912* RECORD IN (A). IF A CARRIAGE RETURN IS FOUND, RETURN TO (P+1)
1913* WITH IT IN (A).
1914*
1915 07233 000000 GETCR NOP
1916 07234 067423 LDB BADDR LOAD CHARACTER POINTER
1917 07235 037423 ISZ BADDR ADVANCE IT
1918 07236 004065 CLE,ERB LOAD
1919 07237 160001 LDA 1,I WORD
1920 07240 002041 SEZ,RSS ADJUST AS
1921 07241 001727 ALF,ALF NECESSARY
1922 07242 013334 AND LB377 MASK OFF CHARACTER
1923 07243 053341 CPA BLANK BLANK?
1924 07244 027234 JMP GETCR+1 YES, IGNORE IT
1925 07245 053321 CPA LB15 NO, CARRIAGE RETURN?
1926 07246 127233 JMP GETCR,I YES, EXIT TO (P+1)
1927 07247 037233 ISZ GETCR NO, EXIT
1928 07250 127233 JMP GETCR,I TO (P+2)
1929* * [F]
1930** GET MAG TAPE SELECT CODE ** [F]
1931* * [F]
1932* [F]
1933* REQUEST MAG TAPE SELECT CODE. IF THE ANSWER IS A CARRIAGE [F]
1934* RETURN, INDICATING PAPER TAPE RELOAD, RETURN TO (P+1). [F]
1935* OTHERWISE, LOOK FOR A SELECT CODE IN [16 OCT, 76 OCT]. A "*" [F]
1936* FOLLOWING THE SELECT CODE DESIGNATES THE MAG TAPE CONTROLLER [F]
1937* AS A 7970 TYPE. EXIT TO (P+2) AFTER FINDING A VALID SELECT [F]
1938* CODE. [F]
1939* [F]
1940 07251 000000 GETMT NOP [F]
1941 07252 063327 LDA L.24 ASK [F]
1942 07253 067400 LDB MTSCA FOR [F]
```

1943	07254	117377	JSB ASRDA,I	MAG TAPE	[F]
1944	07255	002400	CLA	SELECT	
1945	07256	117377	JSB ASRDA,I	CODE	[F]
1946	07257	017233	JSB GETCR	EMPTY INPUT RECORD?	[F]
1947	07260	127251	JMP GETMT,I	YES, PAPER TAPE RELOAD	[F]
1948	07261	016563	JSB SELCD	GET SELECT CODE	[F]
1949	07262	000061	OCT 61	IN [16 OCT, 76 OCT]	
1950	07263	027252	JMP GETMT+1	NOT FOUND	[F]
1951	07264	177401	STB MTFLA,I	FOUND, SET FLAG TO 'MAG TAPE'	[F]
1952	07265	053321	CPA LB15	CARRIAGE RETURN FOLLOWS?	[F]
1953	07266	027303	JMP GTMT3	YES	[F]
1954	07267	053342	CPA STAR	NO, ASTERISK?	[F]
1955	07270	027275	JMP GTMT2	YES	[F]
1956	07271	063325	GTMT1 LDA L.21	NO, OUTPUT	[F]
1957	07272	067425	LDB ILSCL	ERROR	[F]
1958	07273	117377	JSB ASRDA,I	MESSAGE	[F]
1959	07274	027252	JMP GETMT+1	REQUEST AGAIN	[F]
1960	07275	017233	GTMT2 JSB GETCR	CARRIAGE RETURN FOLLOWS?	[F]
1961	07276	002001	RSS	YES	[F]
1962	07277	027271	JMP GTMT1	NO	[F]
1963	07300	163401	LDA MTFLA,I	FLAG	[F]
1964	07301	033337	IOR SGNBT	AS	[F]
1965	07302	173401	STA MTFLA,I	7970	[F]
1966	07303	037251	GTMT3 ISZ GETMT		[F]
1967	07304	127251	JMP GETMT,I		[F]

1969	07305	177577	LM129	DEC	-129		
1970	07306	177700	LM64	DEC	-64		
1971	07307	177701	LD77	OCT	-77		
1972	07310	177706	LD72	OCT	-72		
1973	07311	177770	LM8	DEC	-8		
1974	07312	177774	LM4	DEC	-4		
1975	07313	177776	LM2	DEC	-2		
1976	07314	177777	LM1	DEC	-1		
1977	07315	000002	L.2	DEC	2		
1978	07316	000003	L.3	DEC	3		
1979	07317	000011	LB11	OCT	11		
1980	07320	000012	L.10	DEC	10		
1981	07320		LB12	EQU	L.10		
1982	07321	000015	L.13	DEC	13		
1983	07321		LB15	EQU	L.13		
1984	07322	000017	L.15	DEC	15		
1985	07323	000021	L.17	DEC	17		
1986	07324	000024	L.20	DEC	20		
1987	07325	000025	L.21	DEC	21		
1988	07326	000027	L.23	DEC	23		
1989	07327	000030	L.24	DEC	24		[F]
1990	07330	000047	L.39	DEC	39		
1991	07331	000054	LB54	OCT	54		
1992	07332	000060	LB60	OCT	60		
1993	07333	000100	LB100	OCT	100		
1994	07334	000377	LB377	OCT	377		
1995	07335	000400	LB400	OCT	400		
1996	07336	077777	INF	OCT	77777		
1997	07337	100000	SGNBT	OCT	100000		[F]
1998	07340	165300	MXADT	DEC	-5440		
1999	07341	000040	BLANK	OCT	40		
2000	07342	000052	STAR	OCT	52	'*'	[F]
2001	07343	000055	DASH	OCT	55	'-'	
2002	07344	006400	B6400	OCT	6400	CARRIAGE RETURN - NULL	
2003	07345	000001	BMASK	OCT	1,2,4,10,20,40,100,200,400,1000		
2004	07357	002000		OCT	2000,4000,10000,20000,40000,100000		
2005*							
2006	07365	140100	MAXAD	OCT	140100		
2007	07366	023700	SYSTA	ABS	37700B-14000B		
2008	07367	012000	MAXBA	ABS	14000B-2000B		
2009	07370	001600	BPAGA	ABS	2000B-200B		
2010	07371	000165	INRPA	ABS	200B-13B		
2011*							
2012	07372	025200	ADTBF	DEF	ADTBL	ADT BUFFER ADDRESS	
2013	07373	000140	LTRAX	DEF	TRAX	ADDRESS OF AVAILABLE TRACK TABLE	
2014	07374	000160	LDTBL	DEF	DTBL	DISC SELECT CODE TABLE ADDRESS	
2015	07375	007345	BMSKA	DEF	BMASK	ADDRESS OF BIT MASK TABLE	
2016	07376	011641	EBUFA	DEF	EBUF	ADDRESS OF ERROR BUFFER	
2017	07377	002010	ASRDA	DEF	TTY35	ADDRESS OF TTY DRIVER	
2018	07400	006034	MTSCA	DEF	MTSC		[F]
2019	07401	005666	MTFLA	DEF	MTFLG		[F]
2020	07402	004355	L22A	DEF	LDR22		
2021	07403	005057	L46A	DEF	LDR46		
2022	07404	004626	ERR5A	DEF	ERR5		
2023	07405	005370	ERR7A	DEF	ERR7		

PAGE 0048 #01
CONSTANTS, TEMPORARIES, ETC.

12:13 PM TUE., 23 OCT., 1979

2024 07406 005661 TMP1A DEF TEMP1
2025 07407 005662 TMP2A DEF TEMP2

2027	07410	000000	LTMP0	BSS	1	
2028	07411	000000	LTMP1	BSS	1	
2029	07412	000000	LTMP2	BSS	1	
2030	07413	000000	LTMP3	BSS	1	
2031	07414	000000	LTMP4	BSS	1	
2032	07415	000000	LTMP5	BSS	1	
2033	07416	000000	LTMP6	BSS	1	
2034	07417	000000	MFLAG	BSS	1	LOCK/UNLOCK MODE FLAG
2035	07420	000000	DEST	BSS	1	
2036	07421	000000	SOURC	BSS	1	
2037	07422	000000	MCNT	BSS	1	
2038	07423	000000	BADDR	BSS	1	POINTER TO NEXT INPUT CHARACTER
2039*						
2040	07424	006075	BDDLA	DEF	BDDL	
2041	07425	006121	ILSCL	DEF	ILSCD	
2042	07426	007433	ILTRA	DEF	ILTRL	
2043	07427	007447	BDADA	DEF	BADAD	
2044	07430	007460	BADDA	DEF	BADD	
2045	07431	007471	BADPA	DEF	BADP	
2046	07432	007500	TRKNA	DEF	TRKNL	
2047*						
2048	07433	005111	ILTRL	OCT	5111	
2049	07434	046114		ASC	10,LLEGAL TRACK LENGTH	
2050	07446	006400		OCT	6400	
2051	07447	005111	BADAD	OCT	5111	
2052	07450	046114		ASC	7,LLEGAL ADDRESS	
2053	07457	006400		OCT	6400	
2054	07460	005102	BADD	OCT	5102	
2055	07461	040504		ASC	7,AD DISC NUMBER	
2056	07470	006400		OCT	6400	
2057	07471	005102	BADP	OCT	5102	
2058	07472	040504		ASC	5,AD TRACK #	
2059	07477	006400		OCT	6400	
2060	07500	005103	TRKNL	OCT	5103	
2061	07501	040516		ASC	9,ANNOT LOCK TRACK #	

2063*

[F]

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2065*
2066* IF THE MAG TAPE SELECT CODE IS NON-ZERO, TSB IS DUMPED IN ITS
2067* ENTIRETY. ON MAG TAPE FAILURES (HLT 11 OCT) THE DUMP MAY BE
2068* RETRIED BY CORRECTING THE CAUSE OF ERROR AND PRESSING 'RUN'.
2069*
2070 10000          ORG 10000B
2071 10000 064164  MTDMP LDB MAGSC      LOAD MAG TAPE SELECT CODE
2072 10001 006003          SZB,RSS      NON-ZERO?
2073 10002 026260          JMP MTDMS      NO
2074 10003 005665          ELB,CLE,ERB   CLEAR BIT15                      [F]
2075 10004 017457          JSB MTDIN     YES, CONFIGURE MAG TAPE DRIVER
2076*
2077** MOVE USER LIBRARY TRACK TABLE **
2078*
2079*
2080* THE AREA OCCUPIED BY THE USER LIBRARY TRACK TABLE IS OVERWRITTEN
2081* DURING THE MAG TAPE DUMP. TO INSURE RESTARTIBILITY OF THE DUMP
2082* AFTER A MAG TAPE FAILURE, THE TABLE IS MOVED TO A SECTION OF
2083* CORE WHICH IS OTHERWISE UNUSED.
2084*
2085 10005 063562          LDA DM255     SET LENGTH
2086 10006 073626          STA DTMP0      OF MOVE
2087 10007 063666          LDA DULTB     SET
2088 10010 073627          STA DTMP1     DESTINATION ADDRESS
2089 10011 167665          LDB DULTT,I  LOAD SOURCE ADDRESS
2090 10012 160001  MTDMO LDA 1,I        MOVE
2091 10013 173627          STA DTMP1,I  A WORD
2092 10014 006004          INB          ADVANCE
2093 10015 037627          ISZ DTMP1     POINTERS
2094 10016 037626          ISZ DTMP0     DONE?
2095 10017 026012          JMP MTDMO     NO
2096 10020          MTDMS EQU *
2097 10020 067672          LDB MSTOC     B => STA XWNEC,I                [F]
2098 10021 002404          CLA,INA      A = WRITE REQUEST CODE        [F]
2099 10022          MTVFS EQU *
2100 10022 072305          STA MTVFL    STORE REQUEST CODE                [F]
2101 10023 076667          STB MTVLC    SET 3030 DRIVER FOR VERIFY [F]
2102 10024 077273          STB MTVLQ    SET 7970 FOR VERIFY            [F]
2103 10025 016356  MTRWD JSB MTD        REWIND                            [F]
2104 10026 000003          OCT 3        TAPE
2105 10027 016356          JSB MTD        GET                            [F]
2106 10030 000007          OCT 7        STATUS                    [F]
2107 10031 100111          RRL 9        [F]
2108 10032 006021          SSB,RSS      START OF TAPE?                    [F]
2109 10033 026025          JMP MTRWD     NO                            [F]
2110*
2111** DUMP EQUIPMENT TABLE **
2112*
2113 10034 062346          LDA BPLEN     READ
2114 10035 173660          STA WORDN,I  SYSTEM                      [F]
2115 10036 063573          LDA BSPGA     BASE PAGE
2116 10037 067646          LDB BASPG     INTO
2117 10040 117657          JSB DISCN,I  CORE                      [F]
2118 10041 063563          LDA DM64      WRITE
2119 10042 067611          LDB DDIRA     EQUIPMENT

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2120 10043 016302      JSB MTWR          TABLE TO TAPE          [F]
2121*                  *
2122**  DUMP ID TABLE **
2123*                  *
2124 10044 064135      LDB IDLEN        READ
2125 10045 177660      STB WORDN,I     [F]
2126 10046 060134      LDA IDLOC        ID TABLE
2127 10047 067670      LDB DTRKR
2128 10050 117657      JSB DISCN,I     FROM DISC          [F]
2129 10051 060135      LDA IDLEN        WRITE
2130 10052 067667      LDB DTRKB       ID TABLE
2131 10053 016302      JSB MTWR        ID TABLE TO TAPE [F]
2132*                  *
2133**  DUMP TRACK TABLE **
2134*                  *
2135 10054 063562      LDA DM255        WRITE
2136 10055 073626      STA DTMP0
2137 10056 067666      LDB DULTB       USER LIBRARY TRACK TABLE
2138 10057 077627      STB DTMP1
2139 10060 016302      JSB MTWR        TO TAPE          [F]
2140*                  *
2141**  DUMP USER LIBRARY TRACKS **
2142*                  *
2143*
2144*  NON-ZERO ENTRIES IN THE USER LIBRARY TRACK TABLE HOLD THE
2145*  LENGTH IN -WORDS FOR EACH DISC TRACK CONTAINING USER LIBRARY
2146*  PROGRAMS.  EACH SUCH TRACK IS DUMPED AS ONE RECORD IF NO
2147*  LONGER THAN 5440 WORDS, OTHERWISE AS TWO RECORDS.
2148*
2149 10061 063621      LDA DB400        LOAD DISC ADDRESS 0,1,0
2150 10062 167627      MTDM2 LDB DTMP1,I  USER LIBRARY
2151 10063 006003      SZB,RSS         TRACK?
2152 10064 026110      JMP MTDM3        NO
2153 10065 177660      STB WORDN,I     YES, SAVE LENGTH   [F]
2154 10066 073630      STA DTMP2        AND DISC ADDRESS
2155 10067 067670      LDB DTRKR       READ USER PROGRAMS
2156 10070 117657      JSB DISCN,I     FROM DISC          [F]
2157 10071 067667      LDB DTRKB       LOAD BUFFER ADDRESS
2158 10072 163660      LDA WORDN,I     WORD COUNT          [F]
2159 10073 043624      ADA D5440        GREATER
2160 10074 002021      SSA,RSS         THAN 5440?
2161 10075 026105      JMP MTDE1        NO
2162 10076 073631      STA CCNT        YES, SAVE EXCESS COUNT
2163 10077 063561      LDA N5440        WRITE BLOCK
2164 10100 016302      JSB MTWR        OF 5440 WORDS   [F]
2165 10101 063631      LDA CCNT        LOAD WORD COUNT
2166 10102 067667      LDB DTRKB       COMPUTE BUFFER
2167 10103 047624      ADB D5440        FOR REMAINDER
2168 10104 002001      RSS
2169 10105 163660      MTDE1 LDA WORDN,I  WRITE TRACK          [F]
2170 10106 016302      JSB MTWR        TO TAPE          [F]
2171 10107 063630      LDA DTMP2        UPDATE DISC ADDRESS
2172 10110 043621      MTDM3 ADA DB400    TO NEXT TRACK
2173 10111 037627      ISZ DTMP1        INCREMENT TABLE POINTER
2174 10112 037626      ISZ DTMP0        ALL TRACKS CONSIDERED?

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2175 10113 026062      JMP MTD M2      NO
2176*                  *
2177** DUMP DIRECTORY TRACKS **
2178*                  *
2179*
2180* EACH DIRECTORY TRACK OF NON-ZERO LENGTH IS DUMPED AS ONE
2181* RECORD. AN END-OF-FILE MARK FOLLOWS THE LAST TRACK DUMPED.
2182*
2183 10114 063566      LDA DM4        SET COUNTER FOR
2184 10115 073626      STA DTMP0     DIRECTORY TRACKS
2185 10116 063611      LDA DDIRA     LOAD DIRECTORY
2186 10117 164000      MTD M4 LDB 0,I LENGTH
2187 10120 043574      ADA D.6       COMPUTE POINTER TO DISC ADDRESS
2188 10121 006003      SZB,RSS      EMPTY DIRECTORY TRACK?
2189 10122 026134      JMP MTD M5     YES
2190 10123 073627      STA DTMP1     NO, SAVE TABLE POINTER
2191 10124 177660      STB WORDN,I  READ [F]
2192 10125 160000      LDA 0,I      DIRECTORY
2193 10126 067670      LDB DTRKR    TRACK
2194 10127 117657      JSB DISCN,I  FROM DISC [F]
2195 10130 163660      LDA WORDN,I  WRITE [F]
2196 10131 067667      LDB DTRKB    DIRECTORY TRACK
2197 10132 016302      JSB MTWR     TO TAPE [F]
2198 10133 063627      LDA DTMP1    UPDATE
2199 10134 002004      MTD M5 INA   TABLE POINTER
2200 10135 037626      ISZ DTMP0    ALL FOUR DISCS CONSIDERED?
2201 10136 026117      JMP MTD M4    NO
2202 10137 016320      JSB MTWF     YES, WRITE EOF MARK [F]
2203*                  *
2204** DUMP SYSTEM **
2205*                  *
2206*
2207* THE SYSTEM IS READ INTO CORE IN ITS ENTIRETY. IT IS DUMPED IN
2208* SEGMENTS AS DEFINED IN THE SYSTEM SEGMENT INFORMATION TABLE.
2209*
2210 10140 062355      LDA MTBLN    WRITE SYSTEM
2211 10141 066354      LDB MLTBA    SEGMENT TABLE
2212 10142 016302      JSB MTWR     TO TAPE [F]
2213 10143 163647      LDA JSYS2,I  LOAD [F]
2214 10144 173660      STA WORDN,I  [F]
2215 10145 163650      LDA JDRTT,I  [F]
2216 10146 167651      LDB JSAD2,I  SYSTEM [F]
2217 10147 117657      JSB DISCN,I  [F]
2218 10150 163652      LDA JSYS3,I  [F]
2219 10151 173660      STA WORDN,I  FROM [F]
2220 10152 163653      LDA JDRT1,I  [F]
2221 10153 167654      LDB JSAD3,I  [F]
2222 10154 117657      JSB DISCN,I  DISC [F]
2223 10155 062354      LDA MLTBA    SET TABLE
2224 10156 073627      STA DTMP1    POINTER
2225 10157 062343      LDA MLTBL    SET
2226 10160 002004      INA         SEGMENT
2227 10161 073626      STA DTMP0    COUNTER
2228 10162 037627      MTD M6 ISZ DTMP1 LOAD
2229 10163 104200      DLD DTMP1,I TABLE

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2230 10165 037627      ISZ DTMP1      ENTRY
2231 10166 016302      JSB MTWR       WRITE SEGMENT TO TAPE      [F]
2232 10167 037626      ISZ DTMP0      MORE SEGMENTS?
2233 10170 026162      JMP MTD6       YES
2234*
2235** DUMP SYSTEM LIBRARY **
2236*
2237*
2238* THE SYSTEM LIBRARY IS DUMPED ONE PROGRAM AT A TIME. AN
2239* END-OF-FILE MARK FOLLOWS THE LAST ONE.
2240*
2241 10171 163664      LDA COM6A,I    SET POINTER TO ADDRESS TABLE
2242 10172 073627      STA DTMP1      OF SYSTEM LIBRARY PROGRAMS
2243 10173 067563      LDB DM64       READ
2244 10174 177660      STB WORDN,I    [F]
2245 10175 163627      LDA DTMP1,I    LENGTH TABLE
2246 10176 067671      LDB DMTRL
2247 10177 077630      STB DTMP2      OF SYSTEM
2248 10200 047625      ADB B100K
2249 10201 117657      JSB DISCN,I    LIBRARY PROGRAMS      [F]
2250 10202 163630      LDA DTMP2,I    SET ENTRY COUNTER
2251 10203 073626      STA DTMP0      OF LENGTH TABLE
2252 10204 163630      MTD7 LDA DTMP2,I READ
2253 10205 173660      STA WORDN,I    SYSTEM [F]
2254 10206 163627      LDA DTMP1,I    LIBRARY
2255 10207 067670      LDB DTRKR      PROGRAM
2256 10210 117657      JSB DISCN,I    FROM DISC [F]
2257 10211 163630      LDA DTMP2,I    WRITE
2258 10212 067667      LDB DTRKB      IT TO
2259 10213 016302      JSB MTWR       TAPE [F]
2260 10214 037627      ISZ DTMP1      ADVANCE
2261 10215 037630      ISZ DTMP2      POINTERS
2262 10216 037626      ISZ DTMP0      DONE?
2263 10217 026204      JMP MTD7       NO
2264 10220 016320      JSB MTFW       YES, WRITE EOF MARK      [F]
2265 10221 062305      LDA MTVFL      WAS THIS PASS VERIFY     [F]
2266 10222 002003      SZA,RSS       [F]
2267 10223 026256      JMP MTD6V      VERIFY COMPLETED OKAY  [F]
2268 10224 016356      JSB MTD        REWIND [F]
2269 10225 000003      OCT 3 [F]
2270 10226          MTESQ EQU * [F]
2271 10226 063600      LDA D.10 [F]
2272 10227 067701      LDB VRFYA      PRINT "VERIFY" [F]
2273 10230 117656      JSB TT35I,I    QUESTION [F]
2274 10231 002400      CLA [F]
2275 10232 117656      JSB TT35I,I    CALL FOR INPUT [F]
2276 10233 117655      JSB MGTCA,I    GET THE FIRST CHARACTER  [F]
2277 10234 026241      JMP MTENR      EMPTY LINE IS ERROR [F]
2278 10235 053645      CPA .Y         OPERATOR TYPE "YES"? [F]
2279 10236 026245      JMP MTGVT      YES, GO VERIFY TAPE  [F]
2280 10237 053644      CPA .N         OPERATOR TYPE "NO"? [F]
2281 10240 026250      JMP MTD6U      MUST NOT DESIRE VERIFY  [F]
2282 10241          MTENR EQU * [F]
2283 10241 063602      LDA DB17 [F]
2284 10242 067675      LDB ILINM     "ILLEGAL INPUT" [F]

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2285	10243	117656		JSB TT35I,I	COMPLAIN ABOUT QUALITY OF	[F]
2286	10244	026226		JMP MTESQ	ANSWER.	[F]
2287	10245		MTGVT	EQU *		[F]
2288	10245	002400		CLA	CODE FOR VERIFY	[F]
2289	10246	067673		LDB MCPAC	LOAD COMPARE INSTRUCTION	[F]
2290	10247	026022		JMP MTVFS	REPEAT SLEEP PROCESS,	[F]
2291*					WITH MINOR CHANGES	[F]
2292	10250	002400	MTDMU	CLA	SPACE ZERO FILES AND	[F]
2293	10251	006404		CLB,INB	ONE RECORD FORWARD	[F]
2294	10252	016356		JSB MTD		[F]
2295	10253	000004		OCT 4		[F]
2296	10254	026312		JMP MTDER		[F]
2297	10255	026312		JMP MTDER		[F]
2298	10256		MTDMV	EQU *		[F]
2299	10256	016356		JSB MTD	REWIND AND	
2300	10257	000005		OCT 5	STANDBY	
2301	10260	162275	MTDM8	LDA ADD2K,I	SET	
2302	10261	172276		STA ADD3K,I	ALL	
2303	10262	066277		LDB ADD4K	STARTING	
2304	10263	062300		LDA HLT22	SEQUENCES	
2305	10264	170001		STA 1,I	TO PRODUCE	
2306	10265	006004		INB	AN IRRECOVERABLE	
2307	10266	062301		LDA JMPM1	HLT 22B	
2308	10267	170001		STA 1,I		
2309	10270	063576		LDA DB10	PRINT	
2310	10271	067674		LDB DONEA	'DONE'	
2311	10272	117656		JSB TT35I,I		[F]
2312	10273	102077		HLT 77B	ALLOW NEW DUMP	[E]
2313	10274	026020		JMP MTDM1	ON 'RUN'	[E]
2314*						
2315	10275	002000	ADD2K	OCT 2000	UTILITY WORDS FOR	
2316	10276	003000	ADD3K	OCT 3000		
2317	10277	004031	ADD4K	DEF LDR+1	DISABLING LOADER WITHOUT	[F]
2318	10300	102022	HLT22	HLT 22B		
2319	10301	026000	JMPM1	OCT 26000	RELOADING TSB LOADER TAPE	
2320*						[F]
2321	10302	000000	MTWR	NOP	WRITE OR VERIFY RECORD	[F]
2322	10303	072320		STA MTWF	SAVE BUFFER LENGTH	[F]
2323	10304	016356		JSB MTD		[F]
2324	10305	000001	MTVFL	OCT 1	THIS WORD IS A ONE FOR SLEEP,	[F]
2325*					CHANGED TO A ZERO FOR VERIFY	[F]
2326	10306	026312		JMP MTDER	TAPE	[F]
2327	10307	026312		JMP MTDER	ERRORS	[F]
2328	10310	052320		CPA MTWF	CHECK RECORD LENGTH	[F]
2329	10311	126302		JMP MTWR,I		[F]
2330*			*			
2331**	TAPE ERROR		**			
2332*			*			
2333	10312	107700	MTDER	CLC 0,C		[F]
2334	10313	063604		LDA D.24	PRINT	[F]
2335	10314	067676		LDB TAPMA	TAPE ERROR	
2336	10315	117656		JSB TT35I,I	MESSAGE	[F]
2337	10316	102011		HLT 11B	WAIT FOR	
2338	10317	026020		JMP MTDM1	RETRY	
2339*						[F]

2340	10320	000000	MTWF	NOP	TO WRITE OR VERIFY FILE MARK	[F]
2341	10321	002400		CLA		[F]
2342	10322	052305		CPA MTVFL	WRITE OR VERIFY?	[F]
2343	10323	026331		JMP MTWFI	VERIFY	[F]
2344	10324	016356		JSB MTD	WRITE AN EOF MARK	[F]
2345	10325	000002		OCT 2		[F]
2346	10326	026312		JMP MTDER	TAPE	[F]
2347	10327	026312		JMP MTDER	ERRORS	[F]
2348	10330	126320		JMP MTWF,I		[F]
2349	10331		MTWFI	EQU *		[F]
2350	10331	063565		LDA DM5	TRY TO READ A SHORT	[F]
2351	10332	067667		LDB DTRKB	RECORD INTO BUFFER	[F]
2352	10333	016356		JSB MTD		[F]
2353	10334	000000		OCT 0		[F]
2354	10335	026340		JMP MTWFZ		[F]
2355	10336	026312		JMP MTDER	EXPECT END OF FILE	[F]
2356	10337	026312		JMP MTDER	EXPECT END OF FILE	[F]
2357	10340	057616	MTWFZ	CPB DB200	EOF STATUS?	[F]
2358	10341	126320		JMP MTWF,I	YES, OKAY	[F]
2359	10342	026312		JMP MTDER	NO	[F]

2361* *

2362** SYSTEM SEGMENT INFORMATION TABLE **

2363* *

2364*

2365* THE FIRST WORD OF THE TABLE GIVES THE NUMBER OF SEGMENTS. THE

2366* TWO-WORD SEGMENT ENTRIES ARE THE LENGTH OF THE SEGMENT IN -WORDS

2367* AND THE ABSOLUTE CORE ADDRESS.

2368*

2369	10343	177773	MLTBL	DEC -5	SYSTEM	
2370	10344	177767		ABS 2-13B		
2371	10345	000002		OCT 2	SEGMENT	
2372	10346	176200	BPLEN	ABS 200B-2000B		[F]
2373	10347	000200		OCT 200	TABLE	
2374	10350	177751		ABS LSLTB-LSLTE		
2375	10351	004001		DEF LSLTB		
2376	10352	154500		ABS 14000B-37300B		
2377	10353	014000		OCT 14000		
2378	10354		MLTBE	EQU *		
2379	10354	010343	MLTBA	DEF MLTBL	SYSTEM SEGMENT TABLE ADDRESS	
2380	10355	177767	MTBLN	ABS MLTBL-MLTBE	SYSTEM SEGMENT TABLE LENGTH	

```
2382 00000          CMND EQU 0
2383 00000          DATA EQU 0
2384*
2385* CALLING SEQUENCE: (WRITE/READ)
2386*   LDA <BUFFER LENGTH> (>0=CHARS, <0=WORDS)
2387*   LDB <BUFFER ADDRESS>
2388*   JSB MTAPE,I
2389*   OCT <COMMAND CODE> (0=READ, 1=WRITE)
2390*   <EOF/EOT RETURN>
2391*   <ERROR RETURN>
2392*   <NORMAL RETURN> (A)=RECORD LENGTH, (B)=STATUS
2393*
2394* READ AND WRITE REQUESTS OF 0 LENGTH ARE RETURNED
2395* BY THE DRIVER TO THE NORMAL RETURN LOCATION
2396* WITHOUT ANY TAPE MOVEMENT.
2397*
2398* THE FIRST WORD OF 2 BYTES WRITTEN ON TAPE IS THE
2399* USER'S REQUEST LENGTH. THIS WORD IS NOT STORED
2400* IN THE USER'S BUFFER BY A READ REQUEST, BUT IS
2401* LEFT IN THE A REGISTER IN THE FORM WHICH THE
2402* USER SPECIFIED (+CHARACTERS OR -WORDS) AS THE
2403* TAPE RECORD LENGTH IF THE TAPE RECORD < THE
2404* BUFFER REQUEST LENGTH.
2405*
2406* SINCE THE MINIMUM TAPE RECORD LENGTH WHICH CAN BE
2407* WRITTEN OR READ IS 12 CHARACTERS OR 6 WORDS,
2408* WRITE REQUESTS SMALLER THAN 5 WORDS WILL BE
2409* WRITTEN AS AN EXTENDED RECORD OF 6 WORDS
2410* (INCLUDING THE RECORD LENGTH WORD).
2411*
2412* ALL USER READ BUFFERS SHOULD HAVE A MINIMUM STORAGE
2413* AREA OF 5 WORDS SINCE THE SMALLEST RECORD THAT CAN
2414* BE READ FROM THE TAPE IS 6 WORDS. THE RECORD LENGTH
2415* WORD IS STRIPPED BY THE DRIVER AND IS NOT STORED IN
2416* THE USER BUFFER.
2417*
2418* CALLING SEQUENCE: (REWIND/REWIND STANDBY/STATUS)
2419*   JSB MTAPE,I
2420*   OCT <COMMAND CODE> (3=REWIND, 7=STATUS,
2421*   <NORMAL RETURN>          5=REWIND & STANDBY)
2422*
2423*
2424* CALLING SEQUENCE: (GAP/WRITE END OF FILE)
2425*   JSB MTAPE,I
2426*   OCT <COMMAND CODE> (6=GAP, 2=END OF FILE)
2427*   <EOF/EOT RETURN>
2428*   <ERROR RETURN>
2429*   <NORMAL RETURN> (B) = STATUS
2430*
2431*
2432* CALLING SEQUENCE: (POSITION)
2433*   LDA <FILE COUNT>      (+=FORWARD, -=REVERSE)
2434*   LDB <RECORD COUNT>   "          "
2435*   JSB MTAPE,I
2436*   OCT 4
```


2437* <EOF/EOT RETURN>
2438* <ERROR RETURN>
2439* <NORMAL RETURN> (A)=FILE COUNT, (B)=STATUS
2440*
2441* A BACKFILE LEAVES THE TAPE POSITIONED ON THE SIDE OF
2442* THE N-TH FILE MARK (-N IN A FOR BACKFILE) AWAY FROM
2443* LOAD POINT. THUS (A) = -2 LEAVES THE TAPE AT THE
2444* BEGINNING OF THE FILE PRECEEDING THE CURRENT FILE.
2445*
2446* RECORD OPERATIONS WILL MOVE THE TAPE THE APPROPRIATE
2447* # OF RECORDS. THE FILE MARK IS COUNTED AS 1 RECORD.
2448*
2449* COMMANDS TRYING TO CROSS THE SOT OR EOT MARKERS WILL
2450* CAUSE AN EXIT TO THE END OF TAPE RETURN POINT.
2451*
2452* END OF TAPE ON READ, WRITE OR GAP WILL BE CHECKED
2453* BEFORE THE OPERATION IS INITIATED.
2454*
2455* TAPE COMMANDS -
2456* OCT 0 - READ
2457* 1 - WRITE
2458* 2 - WRITE END OF FILE
2459* 3 - REWIND
2460* 4 - POSITION
2461* 5 - REWIND AND STANDBY
2462* 6 - GAP (3" BLANK TAPE)
2463* 7 - STATUS (RETURNS STATUS IN -B-)
2464*
2465* [F]
2466*
2467* THE STATUS WORD BIT ASSIGNMENTS FOR THE 3030 ARE: [F]
2468*
2469* BIT MEANING
2470* 0 BUSY (TAPE IN MOTION OR LOCAL STATUS)
2471* 1 PARITY ERROR
2472* 2 WRITE NOT ENABLED OR TAPE REWINDING
2473* 3 REJECT: 1 MOTION REQ'D AND CONTROLLER BUSY
2474* 2 BACKWARD MOTION REQ'D & AT LOAD POINT
2475* 3 WRITE COMMAND GIVEN AND NO WRITE RING
2476* 4 TIMING ERROR
2477* 5 END OF TAPE
2478* 6 START OF TAPE
2479* 7 END OF FILE
2480* 8 LOCAL MODE
2481* [F]
2482* THE STATUS WORD BIT ASSIGNMENTS FOR THE 7970 ARE: [F]
2483* [F]
2484* BIT MEANING [F]
2485* [F]
2486* 0 TAPE UNIT NOT ON-LINE [F]
2487* 1 PARITY AND/OR TIMING ERROR [F]
2488* 2 FILE PROTECTED (NO WRITE ENABLE RING) [F]
2489* 3 REJECT: 1 MOTION REQ'D AND CONTROLLER BUSY [F]
2490* 2 BACKWARD MOTION REQ'D & AT LOAD POINT [F]
2491* 3 WRITE COMMAND GIVEN AND NO WRITE RING [F]

2492*	4	TIMING ERROR	[F]
2493*	5	END OF TAPE	[F]
2494*	6	START OF TAPE	[F]
2495*	7	END OF FILE	[F]
2496*	8	CONTROLLER BUSY	[F]
2497*	9	TAPE UNIT NOT READY	[F]
2498*	10	TAPE UNIT REWINDING	[F]
2499*	11	ODD NUMBER OF BYTES READ	[F]

2501	10356	000000	MTD	NOP	** MAG TAPE DRIVER ENTRY **		
2502	10357	073633		STA BUFL	SAVE LENGTH AND		
2503	10360	077632		STB BUFA	ADDRESS OF BUFFER		
2504	10361	060164		LDA MAGSC		[F]	
2505	10362	002020		SSA	7970?	[F]	
2506	10363	027026		JMP XMTD	YES	[F]	
2507	10364	102500	MT.21	LIA CMND	SET EOT FLAG		
2508	10365	013607		AND DB40			
2509	10366	073636		STA EOTF			
2510	10367	016774		JSB AUTCK	INSURE TAPE UNIT IN AUTO	[E]	
2511	10370	063620	MT.52	LDA DB300	ISSUE A CLEAR COMMAND TO		
2512	10371	017006		JSB CMAND	THE CONTROLLER AND WAIT.		
2513	10372	162356		LDA MTD,I	FETCH OPERATION CODE		
2514	10373	036356		ISZ MTD	INCREMENT RETURN POINT (P+2)		
2515	10374	013575		AND DB7			
2516	10375	042377		ADA TBASE	LOOK UP PROCESSOR IN TABLE		
2517	10376	124000		JMP 0,I	CALL PROCESSOR		
2518*							
2519	10377	110400	TBASE	DEF *+1,I	COMMAND PROCESSOR ENTRY		
2520	10400	010623		DEF READT	POINT TABLE		
2521	10401	010553		DEF WRITE			
2522	10402	010543		DEF WEOF			
2523	10403	010415		DEF REW			
2524	10404	010424		DEF POS			
2525	10405	010422		DEF RES			
2526	10406	010536		DEF GAP			
2527	10407	010534		DEF STAT			
2528*							
2529	10410	016530	EXIT	JSB STIN	GET STATUS, RECORD COUNT		
2530	10411	036356		ISZ MTD	AND EXIT		
2531	10412	036356		ISZ MTD			
2532	10413	063633		LDA BUFL			
2533	10414	126356		JMP MTD,I			
2534*							
2535	10415	063617	REW	LDA DB201	REWIND		
2536	10416	102600	MT.20	OTA CMND			
2537	10417	002006		INA,SZA	TIME OUT FOR TAPE UNIT		
2538	10420	026417		JMP *-1	TO ACCEPT COMMAND		
2539	10421	126356		JMP MTD,I			
2540*							
2541	10422	063612	RES	LDA DB101	REWIND AND STANDBY		
2542	10423	026416		JMP MT.20			
2543*							
2544*	TAPE POSITIONING ROUTINE						
2545*							
2546*	ENTER WITH COMMANDS STORED IN BUFL AND BUFA.						
2547*							
2548	10424	067633	POS	LDB BUFL	GET FILE COUNT		
2549	10425	016502		JSB ABS	SET FLAGS, COMMANDS AND COUNT		
2550	10426	026436		JMP P.1	# FILES = 0, DO RECORDS		
2551	10427	063633		LDA BUFL			
2552	10430	002020		SSA	TEST FWD/REV		
2553	10431	026451		JMP P.2	BACKSPACE FILES		
2554	10432	016515		JSB SPACE	FORWARD SPACE		
2555	10433	026432		JMP *-1	REPEAT UNTIL FILE		

2556	10434	037635		ISZ CNT	CHECK FOR FINISHED
2557	10435	026432		JMP *-3	NO, LOOP
2558	10436	067632	P.1	LDB BUFA	PROCESS RECORDS
2559	10437	016502		JSB ABS	SET FOR FWD/REV RECORD SPACING
2560	10440	026410		JMP EXIT	NO RECORDS, EXIT
2561	10441	063632		LDA BUFA	
2562	10442	002020		SSA	TEST FWD/REV
2563	10443	026472		JMP P.3	BACKSPACE RECORD
2564	10444	016515		JSB SPACE	FORWARD SPACE
2565	10445	000000		NOP	COUNT FILE MARK AS ONE RECORD
2566	10446	037635		ISZ CNT	FINISHED?
2567	10447	026444		JMP *-3	NO, LOOP
2568	10450	026410		JMP EXIT	YES RETURN
2569*					
2570	10451	016530	P.2	JSB STIN	GET TAPE STATUS (BACKFILE)
2571	10452	013611		AND DB100	MASK FOR SOT
2572	10453	002002		SZA	
2573	10454	026467		JMP P.4	SOT SET - EXIT IF CNT > 1
2574	10455	063634		LDA WCNT	
2575	10456	017006		JSB CMAND	BACKSPACE
2576	10457	013616		AND DB200	
2577	10460	002003		SZA,RSS	EOF?
2578	10461	026451		JMP P.2	NO, LOOP
2579	10462	037635		ISZ CNT	DONE?
2580	10463	026451		JMP P.2	NO, LOOP AGAIN
2581	10464	037632		ISZ BUFA	BUMP RECORD COUNTER TO RECROSS
2582	10465	026436		JMP P.1	LAST FILE MARK AND DO RECORDS
2583	10466	026410		JMP EXIT	NO RECORDS NOW, EXIT
2584*					
2585	10467	037635	P.4	ISZ CNT	CNT = -1?
2586	10470	126356		JMP MTD,I	NO, TRIED TO CROSS SOT, ERROR
2587	10471	026436		JMP P.1	YES, DO RECORD SPACING
2588*					
2589	10472	063634	P.3	LDA WCNT	BACKSPACE RECORD
2590	10473	017006		JSB CMAND	
2591	10474	013611		AND DB100	
2592	10475	002002		SZA	SOT?
2593	10476	126356		JMP MTD,I	YES - EOT EXIT
2594	10477	037635		ISZ CNT	DONE?
2595	10500	026472		JMP P.3	NO, LOOP
2596	10501	026410		JMP EXIT	
2597*					
2598	10502	000000	ABS	NOP	SET-UP ROUTINE
2599	10503	063571		LDA D.3	FORWARD SPACE COMMAND
2600	10504	006020		SSB	IF # IS < 0 SET FOR
2601	10505	063610		LDA DB41	BACKSPACE COMMAND
2602	10506	073634		STA WCNT	
2603	10507	006021		SSB,RSS	GET -ABS(#) FOR CNT
2604	10510	007004		CMB,INB	
2605	10511	077635		STB CNT	
2606	10512	006002		SZB	IF = 0 EXIT CALL + 1
2607	10513	036502		ISZ ABS	OTHERWISE CALL + 2
2608	10514	126502		JMP ABS,I	
2609*					
2610	10515	000000	SPACE	NOP	SPACE TAPE

2611	10516	016530		JSB STIN	GET TAPE STATUS
2612	10517	013607		AND DB40	CHECK FOR EOT
2613	10520	002002		SZA	
2614	10521	126356		JMP MTD,I	EOT EXIT
2615	10522	063634		LDA WCNT	
2616	10523	017006		JSB CMAND	SPACE
2617	10524	013616		AND DB200	CHECK FOR EOF
2618	10525	002002		SZA	RETURN CALL + 1 FOR EOF
2619	10526	036515		ISZ SPACE	
2620	10527	126515		JMP SPACE,I	
2621*					
2622	10530	000000	STIN	NOP	GET TAPE STATUS
2623	10531	102500	S.1	LIA CMND	
2624	10532	106500	S.2	LIB CMND	
2625	10533	126530		JMP STIN,I	
2626*					
2627	10534	016530	STAT	JSB STIN	GET TAPE STATUS
2628	10535	126356		JMP MTD,I	EXIT DRIVER
2629*					
2630*					WRITE 3" BLANK TAPE
2631*					
2632	10536	016761	GAP	JSB WNEC	CHECK FOR WRITE RING IN
2633	10537	017014		JSB EOTC	CHECK FOR END OF TAPE
2634	10540	063577		LDA DB11	COMMAND
2635	10541	017006		JSB CMAND	
2636	10542	026410		JMP EXIT	NORMAL EXIT
2637*					
2638*					WRITE END OF FILE
2639*					
2640	10543	016761	WEOF	JSB WNEC	CHECK FOR WRITE RING IN
2641	10544	063606		LDA DB35	WRITE FILE MARK CODE
2642	10545	017006		JSB CMAND	
2643	10546	023616		XOR DB200	
2644	10547	033636		IOR EOTF	CHECK EOT
2645	10550	002002		SZA	
2646	10551	126356		JMP MTD,I	
2647	10552	026410		JMP EXIT	
2648	10553	017014	WRITE	JSB EOTC	WRITE **
2649	10554	016761		JSB WNEC	CHECK FOR WRITE RING IN
2650	10555	016746		JSB CNTR	GET NEG # WORDS
2651	10556	006021		SSB,RSS	IS REQUEST AT LEAST 5 WORDS?
2652	10557	063565		LDA DM5	NO, PAD BUFFER
2653	10560	043570		ADA DM1	ADD 1 FOR RECORD LENGTH
2654	10561	073635		STA CNT	
2655	10562	073634	RETRY	STA WCNT	SAVE WORD COUNT [F]
2656	10563	067632		LDB BUFA	GET BUFFER ADDRESS
2657	10564	047570		ADB DM1	INITIALIZE BUFFER POINTER
2658	10565	063605		LDA DB31	WRITE CHARACTERS CODE
2659	10566	102600	MT.10	OTA CMND	START FORWARD TAPE MOTION
2660	10567	063633		LDA BUFL	FIRST WRITTEN WORD IS BUFL
2661	10570	001727	OUT	ALF,ALF	POSITION FIRST BYTE
2662	10571	102300	MT.8	SFS DATA	
2663	10572	026571		JMP *-1	WAIT FOR DATA CHANNEL FLAG
2664	10573	103600	MT.9	OTA DATA,C	WRITE FIRST BYTE
2665	10574	006004		INB	STEP BUFFER POINTER

2666	10575	001727		ALF,ALF	POSITION SECOND BYTE	
2667	10576	102300	MT.2	SFS DATA		
2668	10577	026576		JMP *-1	WAIT FOR DATA FLAG	
2669	10600	103600	MT.3	OTA DATA,C	WRITE SECOND BYTE	
2670	10601	160001		LDA 1,I	GET NEXT WORD	
2671	10602	037634		ISZ WCNT	STEP AND TEST WORD COUNT	
2672	10603	026570		JMP OUT	NOT END, LOOP	
2673	10604	106700	MT.5	CLC DATA	INITIATE END OF RECORD SEQUENCE	
2674	10605	002400		CLA	WAIT FOR CONTROL FLAG	
2675	10606	017006		JSB CMAND	AND GET STATUS	
2676	10607	013622		AND DB733	DISCARD EOT BIT	
2677	10610	002003		SZA,RSS	TEST FOR ERRORS DURING WRITE	
2678	10611	026410		JMP EXIT	NORMAL EXIT	
2679	10612	063610		LDA DB41	BACKSPACE	[F]
2680	10613	017006		JSB CMAND		[F]
2681	10614	063577		LDA DB11	GAP	[F]
2682	10615	017006		JSB CMAND		[F]
2683	10616	013607		AND DB40		[F]
2684	10617	002002		SZA	EOT?	[F]
2685	10620	027022		JMP ERR	YES	[F]
2686	10621	063635		LDA CNT	NO,	[F]
2687	10622	026562		JMP RETRY	RETRY	[F]
2688*						
2689	10623	017014	READT	JSB EOTC	READ	
2690	10624	063564		LDA DM10		
2691	10625	073637		STA ECNT	SET RETRY COUNTER TO -10	
2692	10626	016746		JSB CNTR	GET NEG # OF WORDS	
2693	10627	006021		SSB,RSS	IS REQUEST AT LEAST 5 WORDS?	
2694	10630	063565		LDA DM5	NO, PAD BUFFER	
2695	10631	073635		STA CNT		
2696	10632	067635	RERED	LDB CNT	NEGATIVE WORD COUNT	
2697	10633	063632		LDA BUFA		
2698	10634	043570		ADA DM1		
2699	10635	073400		STA XWNEC	INITIALIZE BUFFER POINTER	[F]
2700	10636	063603		LDA DB23	READ CHARACTERS CODE	
2701	10637	102600	MT.40	OTA CMND	START TAPE MOTION	
2702	10640	103700	MT.41	STC CMND,C		
2703	10641	102300	MT.42	SFS DATA		
2704	10642	026641		JMP *-1	WAIT FOR DATA FLAG	
2705	10643	103500	MT.43	LIA DATA,C	READ TAPE RECORD LENGTH	
2706	10644	001727		ALF,ALF		
2707	10645	102200	MT.30	SFC CMND	CHECK FOR EOF/EOT	
2708	10646	026727		JMP ENDR		
2709	10647	102300	MT.44	SFS DATA		
2710	10650	026645		JMP *-3	WAIT FOR DATA FLAG	
2711	10651	103400	MT.45	MIA DATA,C		
2712	10652	073140		STA XABS	SAVE RECORD LENGTH	[F]
2713	10653	102200	LOOP	SFC CMND	CHECK FOR END OF TAPE	
2714	10654	026727		JMP ENDR		
2715	10655	102300	MT.46	SFS DATA	OR NEXT WORD	
2716	10656	026653		JMP *-3		
2717	10657	103500	MT.47	LIA DATA,C	READ FIRST BYTE	
2718	10660	001727		ALF,ALF	POSITION BYTE	
2719	10661	037400		ISZ XWNEC	STEP BUFFER POINTER	[F]
2720	10662	102200	MT.51	SFC CMND		

2721	10663	026727		JMP ENDR			
2722	10664	102300	MT.48	SFS DATA			
2723	10665	026662		JMP *-3			
2724	10666	103400	MT.49	MIA DATA,C	READ AND MERGE SECOND BYTE		
2725	10667	173400	MTVLC	STA XWNEC,I	*** THIS WORD CHANGED ***	[F]	
2726	10670	006007		INB,SZB,RSS	END OF BUFFER?	[F]	
2727	10671	002001		RSS	NO COMPARE OR BUFFER END	[F]	
2728	10672	026655		JMP MT.46	NOT END, READ NEXT WORD		
2729	10673	006002		SZB	SKIP IF BUFFER END	[F]	
2730	10674	026312		JMP MTDER	NO COMPARE ON VERIFY	[F]	
2731	10675	106700	MT.50	CLC DATA	START END OF RECORD SEQUENCE		
2732	10676	002400		CLA			
2733	10677	017006		JSB CMAND	WAIT FOR END OF RECORD		
2734	10700	013623		AND DB757	DISCARD TIMING ERROR BIT		
2735	10701	002001		RSS	PROCESS END OF RECORD		
2736	10702	016530	READX	JSB STIN	RESTORE STATUS		
2737	10703	013622		AND DB733	DISCARD NW AND EOT BITS		
2738	10704	002003		SZA,RSS	ANY ERRORS?		
2739	10705	026410		JMP EXIT	NO,DONE		
2740	10706	013616		AND DB200	CHECK FOR END OF FILE		
2741	10707	002002		SZA			
2742	10710	126356		JMP MTD,I	EOF EXIT		
2743	10711	074000		STR 0	RESTORE STATUS		
2744	10712	037637		ISZ ECNT	HAVE WE TRIED 10 TIMES?		
2745	10713	002001		RSS	NO		
2746	10714	026720		JMP SHORT	YES, CHECK FOR SHORT RECORD	[F]	
2747	10715	063610		LDA DB41	BACKSPACE		
2748	10716	017006		JSB CMAND			
2749	10717	026632		JMP RERED	TRY AGAIN		
2750	10720	063632	SHORT	LDA BUFA	RECORD	[F]	
2751	10721	003004		CMA,INA		[F]	
2752	10722	043400		ADA XWNEC	< 5	[F]	
2753	10723	043565		ADA DM5		[F]	
2754	10724	002020		SSA	WORDS?	[F]	
2755	10725	026623		JMP READT	YES	[F]	
2756	10726	027022		JMP ERR	NO	[F]	
2757*	RECORD < BUFFER LENGTH, GET TAPE LENGTH IN USER'S BUFFER						
2758*							
2759	10727	063140	ENDR	LDA XABS	GET TAPE RECORD LENGTH	[F]	
2760	10730	067633		LDB BUFL	GET USER BUFFER LENGTH		
2761	10731	006020		SSB	CHECK USER'S SPECIFICATIONS:		
2762	10732	026740		JMP *+6	USER SPECIFIED WORDS		
2763	10733	002021		SSA,RSS	USER SPECIFIED CHARACTERS		
2764	10734	026744		JMP ENDR1	BOTH ARE WORDS		
2765	10735	001000		ALS	DIFFERENT, CONVERT TO CHARS		
2766	10736	003004		CMA,INA			
2767	10737	026744		JMP ENDR1			
2768	10740	002020		SSA	CHECK TAPE TYPE		
2769	10741	026744		JMP ENDR1	WORDS,		
2770	10742	003004		CMA,INA	CHARACTERS, MAKE WORDS		
2771	10743	001100		ARS			
2772	10744	073633	ENDR1	STA BUFL	SAVE TAPE LENGTH FOR USER		
2773	10745	026702		JMP READX	CONTINUE READ PROCESSING		
2774*							
2775	10746	000000	CNTR	NOP	GET NEG # WORDS IN A		

2776	10747	063633	LDA BUFL	USER'S BUFFER LENGTH
2777	10750	002003	SZA,RSS	
2778	10751	026410	JMP EXIT	0 LENGTH, DON'T READ OR WRITE
2779	10752	002020	SSA	WORDS OR CHARACTERS?
2780	10753	026756	JMP *+3	WORDS, LEAVE AS IS
2781	10754	003004	CMA,INA	CHARACTERS, CONVERT TO WORDS
2782	10755	001100	ARS	
2783	10756	064000	LDB 0	
2784	10757	047573	ADB D.5	RETURN WITH (NEG # WORDS + 5)
2785	10760	126746	JMP CNTR,I	IN B

2787	10761	000000	WNEC	NOP	CHECK FOR WRITE RING	
2788	10762	102500	MT.12	LIA CMND		
2789	10763	013572		AND D.4		
2790	10764	002003		SZA,RSS		
2791	10765	126761		JMP WNEC,I	EXIT WITH WRITE ENABLED	
2792	10766	063603		LDA D.19	REQUEST	
2793	10767	067700		LDB WNEA	WRITE	
2794	10770	117656		JSB TT35I,I	RING	[F]
2795	10771	102033		HLT 33B	WAIT	
2796	10772	016774		JSB AUTCK	INSURE TAPE UNIT IN AUTO	[E]
2797	10773	026762		JMP MT.12		
2798*						[E]
2799*				CHECK FOR TAPE UNIT IN AUTO		[E]
2800*						[E]
2801	10774	000000	AUTCK	NOP		[E]
2802	10775	102500	MT.1	LIA CMND	IS	[E]
2803	10776	013621		AND DB400	STATUS	[E]
2804	10777	002003		SZA,RSS	AUTO?	[E]
2805	11000	126774		JMP AUTCK,I	YES	[E]
2806	11001	063605		LDA D.25	NO	[E]
2807	11002	067677		LDB MTLMA	REQUEST	[E]
2808	11003	117656		JSB TT35I,I	AUTO	[F]
2809	11004	102044		HLT 44B	WAIT	[E]
2810	11005	026775		JMP MT.1		[E]
2811*						
2812	11006	000000	CMAND	NOP	ISSUE THE COMMAND IN -A-	
2813	11007	102600	MT.14	OTA CMND		
2814	11010	102300	MT.15	SFS CMND		
2815	11011	027010		JMP *-1		
2816	11012	016530		JSB STIN	GET TAPE STATUS	
2817	11013	127006		JMP CMAND,I		
2818*						
2819	11014	000000	EOTC	NOP	CHECK FOR EOT	
2820	11015	016530		JSB STIN		
2821	11016	063636		LDA EOTF		
2822	11017	002002		SZA		
2823	11020	126356		JMP MTD,I		
2824	11021	127014		JMP EOTC,I		
2825*						
2826	11022	016530	ERR	JSB STIN	ERROR EXIT	
2827	11023	002400		CLA		
2828	11024	036356		ISZ MTD		
2829	11025	126356		JMP MTD,I		

2831	11026	017165	XMTD	JSB XSTIN	GET STATUS	[F]
2832	11027	000010		SLA	CONTROLLER BUSY?	[F]
2833	11030	027166		JMP XS.1	YES, CONTINUE	[F]
2834	11031	106700	XT.13	CLC DATA	CLEAR CONTROL BIT	[F]
2835	11032	106700	XT.16	CLC CMND	ON BOTH CHANNELS	[F]
2836	11033	063116		LDA SLO	NO	[F]
2837	11034	102600	XT.1	OTA CMND	SELECT UNIT 0	[F]
2838	11035	017432		JSB XATCK	INSURE TAPE UNIT IN AUTO	[F]
2839	11036	162356		LDA MTD,I	FETCH OPERATION CODE	[F]
2840	11037	013575		AND DB7	USE LOWER 3 BITS	[F]
2841	11040	053575		CPA DB7	STATUS REQUEST?	[F]
2842	11041	027123		JMP ERR.1	YES, STATUS IN (B)	[F]
2843	11042	073140		STA XABS	NO	[F]
2844	11043	063614		LDA DB110	ISSUE CLEAR	[F]
2845	11044	017415		JSB XCMND	COMMAND	[F]
2846	11045	063140		LDA XABS		[F]
2847	11046	036356		ISZ MTD	INCREMENT RETURN POINT (P+2)	[F]
2848	11047	043051		ADA XBASE	LOOK UP PROCESSOR IN TABLE	[F]
2849	11050	124000		JMP 0,I	CALL PROCESSOR	[F]
2850*						[F]
2851	11051	111052	XBASE	DEF *+1,I	COMMAND PROCESSOR ENTRY	[F]
2852	11052	011251		DEF XREAD	POINT TABLE	[F]
2853	11053	011212		DEF XWRTE		[F]
2854	11054	011202		DEF XWEOF		[F]
2855	11055	011063		DEF XREW		[F]
2856	11056	011070		DEF XPOS		[F]
2857	11057	011061		DEF XRES		[F]
2858	11060	011172		DEF XGAP		[F]
2860	11061	063613	XRES	LDA DB105	REWIND/STANDBY COMMAND	[F]
2861	11062	002301		CCE,RSS		[F]
2862	11063	063612	XREW	LDA DB101	REWIND COMMAND	[F]
2863	11064	002300		CCE		[F]
2864	11065	017415		JSB XCMND	INITIATE COMMAND EXECUTION	[F]
2865	11066	017165		JSB XSTIN	GET STATUS	[F]
2866	11067	027124		JMP XIT1		[F]
2867*						[F]
2868**	TAPE POSITIONING ROUTINE **					[F]
2869*						[F]
2870*	ENTER WITH COMMANDS STORED IN BUFA AND BUFL					[F]
2871*						[F]
2872	11070	067633	XPOS	LDB BUFL	GET FILE COUNT	[F]
2873	11071	063616		LDA DB200		[F]
2874	11072	017140		JSB XABS	SET FLAGS, COMMANDS AND COUNT	[F]
2875	11073	027107		JMP XP.1	# FILES = 0, DO RECORDS	[F]
2876	11074	003741	XP.5	CCA,SEZ,CCE,RSS	BACKWARDS MOTION?	[F]
2877	11075	017127		JSB XP.2	YES, GO CHECK FOR "BOT"	[F]
2878	11076	017153		JSB XSPACE	FORWARD SPACE	[F]
2879	11077	027074		JMP XP.5	REPEAT UNTIL FILE	[F]
2880	11100	037370		ISZ XCNT	FINISHED?	[F]
2881	11101	027074		JMP XP.5	NO, LOOP	[F]
2882	11102	063633		LDA BUFL		[F]
2883	11103	001276		RAL,CLE,SLA,ELA	BACKFILE REQUEST?	[F]

2884	11104	037632		ISZ BUFA		[F]
2885	11105	000031		SLA,ARS	SKIP	[F]
2886	11106	027121		JMP XIT		[F]
2887	11107	067632	XP.1	LDB BUFA	PROCESS RECORDS	[F]
2888	11110	002400		CLA		[F]
2889	11111	017140		JSB XABS	SET FOR FWD/REV RECORD SPACE	[F]
2890	11112	027121		JMP XIT	NO RECORDS, EXIT	[F]
2891	11113	003541	XP.0	CCA,SEZ,CLE,RSS	BACKWARDS MOTION?	[F]
2892	11114	017127		JSB XP.2	YES, GO CHECK FOR "BOT"	[F]
2893	11115	017153		JSB XSPACE	FORWARD SPACE	[F]
2894	11116	001400	SLO	ALR	SELECT UNIT 0 COMMAND	[F]
2895	11117	037370		ISZ XCNTN	FINISHED?	[F]
2896	11120	027113		JMP XP.0	NO, LOOP	[F]
2897*						[F]
2898	11121	036356	XIT	ISZ MTD		[F]
2899	11122	017165		JSB XSTIN	GO LOAD THE MT STATUS	[F]
2900	11123	036356	ERR.1	ISZ MTD		[F]
2901	11124	063633	XIT1	LDA BUFL		[F]
2902	11125	106700	XT.4	CLC CMND	CLEAR MT COMMAND CONTROL BIT	[F]
2903	11126	126356		JMP MTD,I		[F]
2905	11127	000000	XP.2	NOP		[F]
2906	11130	017165		JSB XSTIN	GET STATUS	[F]
2907	11131	001200		RAL	SHIFT SOT BIT TO A15.	[F]
2908	11132	002021		SSA,RSS	MT UNIT AT "SOT"?	[F]
2909	11133	127127		JMP XP.2,I	NO, RETURN	[F]
2910	11134	002040		SEZ	YES, FILE SKIPPING?	[F]
2911	11135	037370		ISZ XCNTN	CNT=-1?	[F]
2912	11136	027124		JMP XIT1	NO, TRIED TO CROSS SOT	[F]
2913	11137	027107		JMP XP.1	YES, DO RECORD SPACING	[F]
2915	11140	000000	XABS	NOP	SET-UP ROUTINE	[F]
2916	11141	006021		SSB,RSS		[F]
2917	11142	043571		ADA D.3	FORWARD SPACE COMMAND	[F]
2918	11143	006020		SSB	IF # IS < 0 SET FOR	[F]
2919	11144	043610		ADA DB41	BACKSPACE COMMAND	[F]
2920	11145	073400		STA XWNEC		[F]
2921	11146	006121		CLE,SSB,RSS	GET -ABS(#) FOR CNT	[F]
2922	11147	007306		CMB,CCE,INB,SZB	IS THE MT TO BE MOVED?	[F]
2923	11150	037140		ISZ XABS	YES, EXIT TO (P+2)	[F]
2924	11151	077370		STB XCNTN		[F]
2925	11152	127140		JMP XABS,I		[F]
2926	11153	000000	XSPACE	NOP		[F]
2927	11154	002120		CLE,SSA	IS TAPE MOTION BACKWARDS	[F]
2928	11155	017451		JSB XEOTC		[F]
2929	11156	063400		LDA XWNEC		[F]
2930	11157	017415		JSB XCMND	SPACE	[F]
2931	11160	001210		RAL,SLA	EOF MARK?	[F]
2932	11161	037153		ISZ XSPACE	YES	[F]
2933	11162	002320		CCE,SSA	NO, IS THE TAPE AT SOT?	[F]
2934	11163	027124		JMP XIT1	YES	[F]
2935	11164	127153		JMP XSPACE,I	NO	[F]

2937	11165	000000	XSTIN	NOP	GET TAPE STATUS	[F]
2938	11166	102500	XS.1	LIA CMND		[F]
2939	11167	064000		LDB 0	(B)= STATUS	[F]
2940	11170	001727		ALF,ALF	(A)= STATUS SHIFTED 8 BITS	[F]
2941	11171	127165		JMP XSTIN,I		[F]
2942*						[F]
2943**	WRITE 4" BLANK TAPE	**				[F]
2944*						[F]
2945	11172	017400	XGAP	JSB XWNEC	CHECK FOR WRITE RING	[F]
2946	11173	017451		JSB XEOTC	CHECK FOR END OF TAPE	[F]
2947	11174	063601		LDA DB15	COMMAND	[F]
2948	11175	017415		JSB XCMND		[F]
2949	11176	027121		JMP XIT		[F]
2950*						[F]
2951**	WRITE END OF FILE	**				[F]
2952*						[F]
2953	11177	063610	XWEOR	LDA DB41	BACKSPACE RECORD COMMAND	[F]
2954	11200	017415		JSB XCMND	EXECUTE COMMAND	[F]
2955	11201	027204		JMP RWEOF		[F]
2956	11202	017400	XWEOF	JSB XWNEC	CHECK FOR WRITE	[F]
2957	11203	103100	XT.12	CLF DATA		[F]
2958	11204	063615	RWEOF	LDA DB215	WRITE FILE MARK CODE	[F]
2959	11205	017415		JSB XCMND		[F]
2960	11206	005332		RBR,SLB,RBL	PARITY OR TIMING ERROR OCCUR?	[F]
2961	11207	027177		JMP XWEOR	YES, GO BACKSPACE	[F]
2962	11210	017451		JSB XEOTC		[F]
2963	11211	027121		JMP XIT		[F]
2965	11212	017400	XWRTE	JSB XWNEC	CHECK FOR WRITE ENABLED	[F]
2966	11213	017451		JSB XEOTC	CHECK FOR END OF TAPE	[F]
2967	11214	017370		JSB XCNTR	GET NEG # WORDS	[F]
2968	11215	043570		ADA DM1	ADD 1 FOR RECORD LENGTH	[F]
2969	11216	073400		STA XWNEC	SAVE WORD COUNT	[F]
2970	11217	063605		LDA DB31	WRITE RECORD COMMAND	[F]
2971	11220	017415		JSB XCMND	GO INITIATE WRITE SEQUENCE	[F]
2972	11221	103700	XT.9	STC DATA,C	INITIALIZE DATA CHANNEL	[F]
2973	11222	047632		ADB BUFA	BUFFER ADDRESS - 1	[F]
2974	11223	063633		LDA BUFL	FIRST WRITTEN WORD IS BUFL	[F]
2975	11224	006004	XOUT	INB	STEP BUFFER POINTER	[F]
2976	11225	102200	XT.20	SFC CMND		[F]
2977	11226	027235		JMP XT.5		[F]
2978	11227	102300	XT.2	SFS DATA	WAIT FOR	[F]
2979	11230	027225		JMP XT.20	DATA FLAG	[F]
2980	11231	103600	XT.3	OTA DATA,C	WRITE RECORD HEADER WORD	[F]
2981	11232	160001		LDA 1,I	GET NEXT WORD	[F]
2982	11233	037400		ISZ XWNEC	DONE	[F]
2983	11234	027224		JMP XOUT	NO, LOOP	[F]
2984	11235	106700	XT.5	CLC DATA	INITIATE END RECORD SEQUENCE	[F]
2985	11236	102300	XT.10	SFS CMND	WRITE COMPLETE?	[F]
2986	11237	027236		JMP XT.10	NO, CONTINUE	[F]
2987	11240	017165		JSB XSTIN	YES, GET STATUS	[F]
2988	11241	005310		PBR,SLB	PARITY OR TIMING ERROR?	[F]
2989	11242	002101		CLE,RSS	YES	[F]
2990	11243	027121		JMP XIT	NO	[F]

2991	11244	063610		LDA DB41	BACKSPACE	[F]
2992	11245	017415		JSB XCMND		[F]
2993	11246	063601		LDA DB15	GAP	[F]
2994	11247	017415		JSB XCMND		[F]
2995	11250	027452		JMP XEOTC+1	RETRY	[F]
2997	11251	017451	XREAD	JSB XEOTC	READ	[F]
2998	11252	063567		LDA DM3	SET RETRY	[F]
2999	11253	073153		STA XSPCE	COUNTER TO -3	[F]
3000	11254	017370		JSB XCNTN	GET NEG # OF WORDS	[F]
3001	11255	073370		STA XCNTN		[F]
3002	11256	003700	XRERD	CCA,CCE		[F]
3003	11257	043632		ADA BUFA	BUFFER ADDRESS - 1	[F]
3004	11260	073400		STA XWNEC		[F]
3005	11261	002400		CLA	INITIALIZE RECORD	[F]
3006	11262	073140		STA XABS	LENGTH COUNTER	[F]
3007	11263	063603		LDA DB23	READ CHARACTERS CODE	[F]
3008	11264	017415		JSB XCMND	INITIATE READ RECORD SEQUENCE	[F]
3009	11265	103700	XT.11	STC DATA,C	INITIALIZE DATA CHANNEL	[F]
3010	11266	067370		LDB XCNTN	LOAD NEG WORD COUNT	[F]
3011	11267	017361		JSB XWAIT	WAIT FOR 1ST WORD	[F]
3012	11270	073140		STA XABS	SAVE RECORD LENGTH	[F]
3013	11271	017361		JSB XWAIT	WAIT FOR NEXT WORD OR EOR	[F]
3014	11272	037400		ISZ XWNEC	STEP BUFFER POINTER	[F]
3015	11273	173400	MTVLO	STA XWNEC,I	*** THIS WORD CHANGED ***	[F]
3016	11274	006007		INB,SZB,RSS	END OF BUFFER?	[F]
3017	11275	002001		RSS	END OF BUFFER OR NO COMPARE.	[F]
3018	11276	027362		JMP XLOOP		[F]
3019	11277	006002		SZB	END OF BUFFER	[F]
3020	11300	026312		JMP MTDER	NO, NO COMPARE	[F]
3021	11301	106700	XT.50	CLC DATA	YES, START EOR SEQUENCE	[F]
3022	11302	102300	XT.8	SFS CMND	READ FUNCTION COMPLETE?	[F]
3023	11303	027302		JMP XT.8	NO	[F]
3024	11304	017165		JSB XSTIN	YES, RESTORE STATUS	[F]
3025	11305	002020		SSA	WAN AN "EOF" READ?	[F]
3026	11306	027124		JMP XIT1	YES, RETURN TO (P+2)	[F]
3027	11307	005332		RBR,SLB,RBL	PARITY OR TIMING ERROR	[F]
3028	11310	002001		RSS	YES	[F]
3029	11311	027327		JMP XENDR	NO	[F]
3030	11312	037153	NOISE	ISZ XSPCE	HAVE WE TRIED 3 TIMES?	[F]
3031	11313	002101		CLE,RSS	NO	[F]
3032	11314	027320		JMP XSHRT	YES	[F]
3033	11315	063610		LDA DB41	BACKSPACE	[F]
3034	11316	017415		JSB XCMND		[F]
3035	11317	027256		JMP XRERD	TRY AGAIN	[F]
3036	11320	063632	XSHRT	LDA BUFA	RECORD	[F]
3037	11321	003004		CMA,INA		[F]
3038	11322	043400		ADA XWNEC	< 5	[F]
3039	11323	043565		ADA DM5		[F]
3040	11324	002020		SSA	WORDS?	[F]
3041	11325	027251		JMP XREAD	YES	[F]
3042	11326	027123		JMP ERR.1	NO	[F]
3043*						[F]
3044**	RECORD < BUFFER LENGTH, GET TAPE LENGTH IN USER'S BUFFER **					[F]

3045*						[F]
3046	11327	063140	XENDR	LDA XABS	GET TAPE RECORD LENGTH	[F]
3047	11330	002003		SZA,RSS	IS LENGTH 0?	[F]
3048	11331	027312		JMP NOISE	YES, ASSUME TAPE NOISE	[F]
3049	11332	067633		LDB BUFL	GET USER BUFFER LENGTH	[F]
3050	11333	077632		STB BUFA	SAVE USER REUQUEST	[F]
3051	11334	002020		SSA		[F]
3052	11335	027341		JMP XEND2		[F]
3053	11336	006020		SSB		[F]
3054	11337	001100		ARS		[F]
3055	11340	027344		JMP XEND1		[F]
3056*						[F]
3057	11341	006021	XEND2	SSB,RSS		[F]
3058	11342	001000		ALS		[F]
3059	11343	003004		CMA,INA		[F]
3060	11344	073633	XEND1	STA BUFL	SAVE TAPE LENGTH FOR USER	[F]
3061	11345	006021		SSB,RSS	USER LENGTH IN CHARS?	[F]
3062	11346	007004		CMB,INB	YES	[F]
3063	11347	040001		ADA 1	NO	[F]
3064	11350	007004		CMB,INB		[F]
3065	11351	002021		SSA,RSS	RECORD LENGTH > USER REQUEST?	[F]
3066	11352	077633		STB BUFL	YES, STORE USER REQUEST LENGT	[F]
3067	11353	063633		LDA BUFL		[F]
3068	11354	067632		LDB BUFA	GET ORIGINAL REQUEST	[F]
3069	11355	006020		SSB	USER REQUEST FOR WORDS?	[F]
3070	11356	003004		CMA,INA	YES, NEGATE ACTUAL LENGTH	[F]
3071	11357	073633		STA BUFL	NO	[F]
3072	11360	027121		JMP XIT	CONTINUE READ PROCESSING	[F]
3074	11361	000000	XWAIT	NOP		[F]
3075	11362	102200	XLOOP	SFC CMND	END-OF-RECORD?	[F]
3076	11363	027301		JMP XT.50	YES	[F]
3077	11364	102300	XT.46	SFS DATA	NO, NEXT WORD READY?	[F]
3078	11365	027362		JMP XLOOP	NO	[F]
3079	11366	103500	XT.43	LIA DATA,C	YES, LOAD DATA WORD	[F]
3080	11367	127361		JMP XWAIT,I		[F]
3082	11370	000000	XCNTR	NOP		[F]
3083	11371	063633		LDA BUFL	USER'S BUFFER LENGTH	[F]
3084	11372	002320		CCE,SSA	WORDS?	[F]
3085	11373	127370		JMP XCNTR,I	YES	[F]
3086	11374	003007		CMA,INA,SZA,RSS	NO, CHARACTERS	[F]
3087	11375	027121		JMP XIT	DONE IF REQUEST=0	[F]
3088	11376	001100		ARS		[F]
3089	11377	127370		JMP XCNTR,I		[F]
3091	11400	000000	XWNEC	NOP		[F]
3092	11401	017165		JSB XSTIN	GET STATUS	[F]
3093	11402	001310		RAR,SLA	UNIT READY?	[F]
3094	11403	027166		JMP XS.1	NO	[F]
3095	11404	005363		RBR,CLE,RBR	YES	[F]
3096	11405	006011		SLB,RSS	WRITE ENABLED?	[F]

3097	11406	127400	JMP	XWNEC,I	YES	[F]
3098	11407	063603	LDA	D.19	NO	[F]
3099	11410	067700	LDB	WNEA	OUTPUT	[F]
3100	11411	117656	JSB	TT35I,I	MESSAGE	[F]
3101	11412	102033	HLT	33B	HALT	[F]
3102	11413	017432	JSB	XATCK	CHECK FOR AUTO	[F]
3103	11414	027401	JMP	XWNEC+1		[F]
3105	11415	000000	XCMND	NOP		[F]
3106	11416	102600	XT.14	OTA CMND	OUTPUT COMMAND	[F]
3107	11417	106500	XS.0	LIB CMND	LOAD STATUS WORD	[F]
3108	11420	005323		RBR,RBR		[F]
3109	11421	005310		RBR,SLB	REQUEST REJECTED	[F]
3110	11422	027443		JMP REJCT	YES	[F]
3111	11423	103700	XT.7	STC CMND,C	NO, INITIATE EXECUTION	[F]
3112	11424	007540		CCB,SEZ,CLE	READ OR WRITE?	[F]
3113	11425	127415		JMP XCMND,I	YES, RETURN	[F]
3114	11426	102300	XT.15	SFS CMND		[F]
3115	11427	027426		JMP XT.15		[F]
3116	11430	017165	JSB	XSTIN	GET STATUS	[F]
3117	11431	127415	JMP	XCMND,I		[F]
3118*						[F]
3119**	CHECK FOR TAPE UNIT IN AUTO **					[F]
3120*						[F]
3121	11432	000000	XATCK	NOP		[F]
3122	11433	017165	JSB	XSTIN	GET STATUS	[F]
3123	11434	006111		CLE,SLB,RSS	UNIT IN AUTO?	[F]
3124	11435	127432	JMP	XATCK,I	YES	[F]
3125	11436	063605	LDA	D.25	OUTPUT	[F]
3126	11437	067677	LDB	MTLMA		[F]
3127	11440	117656	JSB	TT35I,I	MESSAGE	[F]
3128	11441	102044	HLT	44B	HALT	[F]
3129	11442	027433	JMP	XATCK+1		[F]
3131	11443	067614	REJCT	LDB DB110	LOAD CLEAR COMMAND	[F]
3132	11444	106600	D.B	OTB CMND	OUTPUT IT	[F]
3133	11445	103700	XT.6	STC CMND,C	INITIATE IT	[F]
3134	11446	102300	XT.0	SFS CMND	COMPLETED?	[F]
3135	11447	027446	JMP	XT.0	NO	[F]
3136	11450	027416	JMP	XT.14	YES	[F]
3138	11451	000000	XEOTC	NOP		[F]
3139	11452	017165	JSB	XSTIN	GET STATUS	[F]
3140	11453	001763		ALF,CLE,RAR	SHIFT "EOT" TO A0	[F]
3141	11454	000010		SLA	AT "EOT"	[F]
3142	11455	027124	JMP	XIT1	YES	[F]
3143	11456	127451	JMP	XEOTC,I	NO	[F]

MAG TAPE DRIVERS CONFIGURATOR

[F]

3145*

3146* ENTER WITH THE LOWER MAG TAPE SELECT CODE IN (B). ALL I/O

3147* INSTRUCTIONS IN THE MAG TAPE DRIVER ARE MODIFIED TO

3148* REFERENCE THE GIVEN I/O PORT.

3149*

3150	11457	000000	MTDIN	NOP		
3151	11460	077640		STB MTSCD	SAVE SELECT CODE	[F]
3152	11461	067661		LDR CON1A	GET STARTING POINTER	[F]
3153	11462	160001	MTDI1	LDA 1,I	GET INSTRUCTION	[F]
3154	11463	013563		AND DM64	MASK OUT OLD SELECT CODE	[F]
3155	11464	033640		IOR MTSCD	MERGE IN NEW SELECT CODE	[F]
3156	11465	170001		STA 1,I	SAVE IT	[F]
3157	11466	006004		INB		[F]
3158	11467	057662		CPB CON2A	FINISHED DATA CHANNEL?	[F]
3159	11470	037640		ISZ MTSCD	YES, BUMP SELECT CODE	[F]
3160	11471	057663		CPB CON3A	FINISHED COMMAND CHANNEL?	[F]
3161	11472	127457		JMP MTDIN,I	YES	[F]
3162	11473	027462		JMP MTDI1	NO	[F]
3163*						[F]
3164	11474	010600	CON1	DEF MT.3	DATA CHANNEL INSTRUCTIONS	[F]
3165	11475	010573		DEF MT.9		[F]
3166	11476	011231		DEF XT.3		[F]
3167	11477	010643		DEF MT.43		[F]
3168	11500	010657		DEF MT.47		[F]
3169	11501	011366		DEF XT.43		[F]
3170	11502	010651		DEF MT.45		[F]
3171	11503	010666		DEF MT.49		[F]
3172	11504	010604		DEF MT.5		[F]
3173	11505	010675		DEF MT.50		[F]
3174	11506	011235		DEF XT.5		[F]
3175	11507	011301		DEF XT.50		[F]
3176	11510	011031		DEF XT.13		[F]
3177	11511	010576		DEF MT.2		[F]
3178	11512	010571		DEF MT.8		[F]
3179	11513	010641		DEF MT.42		[F]
3180	11514	010647		DEF MT.44		[F]
3181	11515	010655		DEF MT.46		[F]
3182	11516	010664		DEF MT.48		[F]
3183	11517	011227		DEF XT.2		[F]
3184	11520	011364		DEF XT.46		[F]
3185	11521	011221		DEF XT.9		[F]
3186	11522	011265		DEF XT.11		[F]
3187	11523	011203		DEF XT.12		[F]
3188	11524	010775	CON2	DEF MT.1	COMMAND CHANNEL INSTRUCTIONS	[F]
3189	11525	010762		DEF MT.12		[F]
3190	11526	010364		DEF MT.21		[F]
3191	11527	010531		DEF S.1		[F]
3192	11530	011166		DEF XS.1		[F]
3193	11531	010532		DEF S.2		[F]
3194	11532	011417		DEF XS.0		[F]
3195	11533	010653		DEF LOOP		[F]
3196	11534	010645		DEF MT.30		[F]
3197	11535	010662		DEF MT.51		[F]
3198	11536	011362		DEF XLOOP		[F]
3199	11537	011225		DEF XT.20		[F]

3200	11540	011010	DEF MT.15	[F]
3201	11541	011426	DEF XT.15	[F]
3202	11542	011446	DEF XT.0	[F]
3203	11543	011236	DEF XT.10	[F]
3204	11544	011302	DEF XT.8	[F]
3205	11545	010566	DEF MT.10	[F]
3206	11546	011007	DEF MT.14	[F]
3207	11547	010416	DEF MT.20	[F]
3208	11550	010637	DEF MT.40	[F]
3209	11551	011416	DEF XT.14	[F]
3210	11552	011034	DEF XT.1	[F]
3211	11553	010640	DEF MT.41	[F]
3212	11554	011423	DEF XT.7	[F]
3213	11555	011445	DEF XT.6	[F]
3214	11556	011444	DEF O.B	[F]
3215	11557	011125	DEF XT.4	[F]
3216	11560	011032	DEF XT.16	[F]
3217	11561	CON3	EQU *	[F]

CONSTANTS, TEMPORARIES, ETC.

3219	11561	165300	N5440	DEC	-5440	
3220	11562	177401	DM255	DEC	-255	
3221	11563	177700	DM64	DEC	-64	
3222	11564	177766	DM10	DEC	-10	
3223	11565	177773	DM5	DEC	-5	
3224	11566	177774	DM4	DEC	-4	
3225	11567	177775	DM3	DEC	-3	[F]
3226	11570	177777	DM1	DEC	-1	
3227	11571	000003	D.3	OCT	3	
3228	11572	000004	D.4	DEC	4	
3229	11573	000005	D.5	DEC	5	
3230	11574	000006	D.6	DEC	6	
3231	11575	000007	DB7	OCT	7	
3232	11576	000010	DB10	OCT	10	
3233	11577	000011	DB11	OCT	11	
3234	11600	000012	D.10	DEC	10	[F]
3235*						[F]
3236	11601	000015	DB15	OCT	15	
3237*						[F]
3238	11602	000017	DB17	OCT	17	[F]
3239	11603	000023	DB23	OCT	23	
3240	11603		D.19	EQU	DB23	
3241	11604	000030	D.24	DEC	24	
3242	11605	000031	DB31	OCT	31	
3243	11605		D.25	EQU	DB31	
3244*						[F]
3245	11606	000035	DB35	OCT	35	
3246	11607	000040	DB40	OCT	40	
3247	11610	000041	DB41	OCT	41	
3248*						[F]
3249	11611	000100	DB100	OCT	100	
3250	11612	000101	DB101	OCT	101	
3251	11613	000105	DB105	OCT	105	[F]
3252*						[F]
3253	11614	000110	DB110	OCT	110	[F]
3254	11615	000215	DB215	OCT	215	[F]
3255*						[F]
3256	11616	000200	DB200	OCT	200	
3257	11617	000201	DB201	OCT	201	
3258	11620	000300	DB300	OCT	300	
3259	11621	000400	DB400	OCT	400	
3260	11622	000733	DB733	OCT	733	
3261	11623	000757	DB757	OCT	757	
3262	11624	012500	D5440	DEC	5440	
3263*						[F]
3264	11625	100000	B100K	OCT	100000	
3265*						[F]

3267*						[F]
3268	11626	000000	DTMPO	BSS	1	
3269	11627	000000	DTMP1	BSS	1	
3270	11630	000000	DTMP2	BSS	1	
3271*						[F]
3272	11631	000000	CCNT	BSS	1	TTY CHARACTER COUNT
3273*						[F]
3274	11632	000000	BUFA	BSS	1	MTD BUFFER ADDRESS
3275	11633	000000	BUFL	BSS	1	MTD BUFFER LENGTH
3276	11634	000000	WCNT	BSS	1	MTD WORD COUNT
3277	11635	000000	CNT	BSS	1	MTD RECORD COUNT
3278	11636	000000	EOTF	BSS	1	END-OF-TAPE FLAG
3279	11637	000000	ECNT	BSS	1	MTD RETRY COUNTER
3280	11640	000000	MTSCD	BSS	1	
3281	11641	000000	EBUF	BSS	2	
3282	11643	026040		ASC	1,,	
3283*						
3284	11644	000116	.N	OCT	116	[F]
3285	11645	000131	.Y	OCT	131	[F]
3286	11573		BSPGA	EQU	D.5	BASE PAGE DISC ADDRESS
3287	11646	100200	BASPG	OCT	100200	BASE PAGE CORE ADDRESS
3288	11647	002501	JSYS2	DEF	BSYS2	[F]
3289	11650	002504	JDRTT	DEF	LDRTT	[F]
3290	11651	002507	JSAD2	DEF	BSAD2	[F]
3291	11652	002502	JSYS3	DEF	BSYS3	[F]
3292	11653	002505	JDRT1	DEF	LDRTT+1	[F]
3293	11654	002510	JSAD3	DEF	BSAD3	[F]
3294	11655	007233	MGTCA	DEF	GETCR	[F]
3295	11656	002010	TT35I	DEF	TTY35	[F]
3296	11657	002145	DISCN	DEF	DISCD	[F]
3297	11660	002423	WORDN	DEF	WORDC	[F]
3298	11661	111474	CON1A	DEF	CON1,I	[F]
3299	11662	111524	CON2A	DEF	CON2,I	[F]
3300	11663	111561	CON3A	DEF	CON3,I	[F]
3301	11664	004002	COM6A	DEF	COM6	
3302	11665	004027	DULTT	DEF	ULTTA	=> USER LIBRARY TRACK TABLE
3303	11666	006000	DULTB	DEF	6000B	DUMP BUFFER ADDRESS FOR ULTTB
3304	11611		DDIRA	EQU	DB100	
3305	11667	012500	DTRKB	DEF	IDTBL	DUMP TRACK BUFFER ADDRESS
3306	11670	112500	DTRKR	ABS	IDTBL+100000B	DISC READ FORM OF DTRKB
3307	11671	003003	DMTRL	DEF	MTRLT	=> SYSTEM LIBRARY LENGTHS BUFFER
3308	11672	173400	MSTOC	STA	XWNEC,I	WORD TO RESTORE READ [F]
3309	11673	153400	MCPAC	CPA	XWNEC,I	WORD READ MATCH BUFFER? [F]
3310*						[F]
3311*						
3312	11674	011702	DONEA	DEF	DONEM	
3313	11675	011706	ILINM	DEF	ILIN	[F]
3314	11676	011716	TAPMA	DEF	TAPMS	
3315*						[F]
3316	11677	011742	MTLMA	DEF	MTLM	
3317	11700	011757	WNEA	DEF	WNE	
3318	11701	011771	VRFYA	DEF	VRFY	[F]
3319*						
3320	11702	006412	DONEM	OCT	6412	
3321	11703	042117		ASC	2,DONE	

CONSTANTS, TEMPORARIES, ETC.

3322	11705	006412		OCT 6412	
3323	11706	005111	ILIN	OCT 5111	
3324	11707	046114		ASC 6,LLEGAL INPUT	
3325	11715	006400		OCT 6400	
3326	11716	005124	TAPMS	OCT 5124	
3327	11717	040520		ASC 10,APE BAD OR TOO SHORT	
3328	11731	006412		OCT 6412	
3329	11732	005104	DISCF	OCT 5104	
3330	11733	044523		ASC 7,ISC FAILURE:	
3331	11742	005103	MTLM	OCT 5103	
3332	11743	044101		ASC 11,HANGE MAG TAPE TO AUTO	
3333	11756	006400		OCT 6400	
3334	11757	005127	WNE	OCT 5127	[E]
3335	11760	051111		ASC 8,RITE NOT ENABLED	
3336	11770	006400		OCT 6400	
3337	11771	005126	VRFY	OCT 5126	[F]
3338	11772	042522		ASC 4,ERIFY ?	[F]

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3340*
3341* UPON ENTRY (A) HOLDS THE NUMBER OF CHARACTERS TO BE OUTPUT OR
3342* IS ZERO TO REQUEST INPUT. FOR OUTPUT REQUESTS (B) POINTS TO
3343* THE FIRST WORD OF THE BUFFER. A LINE FEED, RUBOUT, NULL, OR
3344* X-OFF IS IGNORED BY INPUT. ON INPUT A CARRIAGE RETURN ENDS THE
3345* RECORD, A _ BACKSPACES ONE CHARACTER, AND AN ESCAPE OR ALT-MODE
3346* DELETES THE INPUT RECORD.
3347*
3348 02010          ORG 2010B          [F]
3349 02010 000000  TTY35 NOP
3350 02011 072351  STA CCNTY      SET CHARACTER COUNT      [F]
3351 02012 002003  SZA,RSS      OUTPUT REQUEST?
3352 02013 026120  JMP TTY6      NO
3353 02014 005000  BLS          YES, INITIALIZE
3354 02015 076416  STB BUFAD    CHARACTER POINTER
3355 02016 003400  CCA          SET FLAG
3356 02017 072417  STA TFLAG    AS 'OUTPUT'
3357 02020 062343  LDA B120K    SEND BITS FOR
3358 02021 102611  OTA TTYSC    'PRINT ONLY'
3359 02022 062351  TTY1 LDA CCNTY  ALL CHARACTERS      [F]
3360 02023 002003  SZA,RSS      OUTPUT?
3361 02024 126010  JMP TTY35,I  YES
3362 02025 042316  ADA NMI      NO, CORRECT          [F]
3363 02026 072351  STA CCNTY    CHARACTER COUNT    [F]
3364 02027 066416  LDB BUFAD    COMPUTE
3365 02030 036416  ISZ BUFAD    WORD-CHARACTER
3366 02031 004065  CLE,ERB      ADDRESS
3367 02032 160001  LDA 1,I      LOAD WORD
3368 02033 002041  SEZ,RSS      POSITION
3369 02034 001727  ALF,ALF      CHARACTER
3370 02035 012335  AND DB177    EXTRACT CHARACTER
3371 02036 032336  IOR NB200    ADD IN BIT 7          [F]
3372 02037 102611  OTA TTYSC    OUTPUT IT
3373 02040 103711  TTY2 STC TTYSC,C  REQUEST CHARACTER TRANSFER
3374 02041 102311  SFS TTYSC    WAIT FOR
3375 02042 026041  JMP *-1      COMPLETION FLAG
3376 02043 062417  LDA TFLAG
3377 02044 002002  SZA          OUTPUT?
3378 02045 026022  JMP TTY1     YES
3379 02046 102511  LIA TTYSC    NO, EXTRACT
3380 02047 012335  AND DB177    CHARACTER
3381 02050 052322  CPA DB12     LINE FEED?
3382 02051 026040  JMP TTY2     YES
3383 02052 052335  CPA DB177    NO, RUBOUT?
3384 02053 026040  JMP TTY2     YES
3385 02054 002002  SZA          NO, NULL
3386 02055 052325  CPA NB23     OR X-OFF?          [F]
3387 02056 026040  JMP TTY2     YES
3388 02057 052340  CPA BKSPC    NO, '_' ?
3389 02060 026110  JMP TTY4     YES
3390 02061 007400  CCB          NO
3391 02062 052327  CPA DB33     EXIT ON
3392 02063 026112  JMP TTY5     VARIOUS
3393 02064 052341  CPA ALTMD    FORMS OF
3394 02065 026112  JMP TTY5     ESCAPE

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3395	02066	052334	CPA DB176	OR		
3396	02067	026112	JMP TTY5	ALT MODE		
3397	02070	072420	STA TTYTM	SAVE CHARACTER		
3398	02071	066351	LDB CCNTY	BACKSPACE		[F]
3399	02072	056333	CPB D.72	IF BUFFER		
3400	02073	016126	JSB BKSP	IS FULL		
3401	02074	066416	LDB BUFAD	COMPUTE		
3402	02075	036416	ISZ BUFAD	NEXT BUFFER		
3403	02076	004065	CLE,ERB	ADDRESS		
3404	02077	002041	SEZ,RSS	POSITION		
3405	02100	001737	ALF,SLA,ALF	AND FORM		
3406	02101	130001	IOR 1,I	BUFFER WORD		
3407	02102	170001	STA 1,I	STORE AND		
3408	02103	036351	ISZ CCNTY	COUNT CHARACTER		[F]
3409	02104	062420	LDA TTYTM	WAS IT A		
3410	02105	052323	CPA NB15	CARRIAGE RETURN?		[F]
3411	02106	126010	JMP TTY35,I	YES		
3412	02107	026040	JMP TTY2	NO		
3413	02110	016126	TTY4 JSB BKSP	BACKSPACE		
3414	02111	026040	JMP TTY2			
3415	02112	076417	TTY5 STB TFLAG	SET TO OUTPUT MODE		
3416	02113	046010	ADB TTY35	SET RETURN		
3417	02114	076010	STB TTY35	TO INPUT CALL		
3418	02115	062317	LDA N.3	OUTPUT '\ ' AND		[F]
3419	02116	066427	LDB RVRSA	CARRIAGE RETURN -		
3420	02117	026011	JMP TTY35+1	LINE FEED		
3421	02120	066426	TTY6 LDB IBUFA	SET UP INPUT		
3422	02121	176430	STB BADRA,I	BUFFER		
3423	02122	076416	STB BUFAD	POINTERS		
3424	02123	072417	STA TFLAG	SET TO INPUT MODE		
3425	02124	062345	LDA B160K	SEND INPUT BITS		
3426	02125	026037	JMP TTY2-1	TO ASR 35		
3428*				*		
3429**	BACKSPACE ONE CHARACTER		**			
3430*			*			
3431	02126	000000	BKSP NOP			
3432	02127	066351	LDB CCNTY	DECREMENT		[F]
3433	02130	006003	SZB,RSS	CHARACTER		
3434	02131	126126	JMP BKSP,I	COUNT		
3435	02132	046316	ADB NM1	IF		[F]
3436	02133	076351	STB CCNTY	NON-ZERO		[F]
3437	02134	007400	CCB	BACKSPACE		
3438	02135	046416	ADB BUFAD	CHARACTER		
3439	02136	076416	STB BUFAD	ADDRESS		
3440	02137	004065	CLE,ERB	INSURE		
3441	02140	160001	LDA 1,I	NEXT CHARACTER		
3442	02141	012346	AND HIMSK	WILL NOT BE		
3443	02142	170001	STA 1,I	GARBLED		
3444	02143	062420	LDA TTYTM	RETRIEVE CHARACTER FOR CALLS		
3445	02144	126126	JMP BKSP,I	FROM BUFFER OVERFLOW		

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3447*
3448* UPON ENTRY (A) HOLDS THE DISC ADDRESS (BITS 15-14 DETERMINE
3449* THE DISC REFERENCED) AND (B) HOLDS THE CORE ADDRESS. BIT 15
3450* OF (B) IS 1 FOR A TRANSFER TO CORE, 0 FOR A TRANSFER TO DISC.
3451* IT IS ASSUMED THAT WORDC HOLDS THE NEGATIVE TRANSFER LENGTH
3452* IN WORDS.
3453*
3454 02145 000000 DISCD NOP
3455 02146 072422 STA DADDR SAVE DISC AND
3456 02147 076421 STB CORE CORE ADDRESSES
3457 02150 062423 LDA WORDC EXIT ON
3458 02151 002003 SZA,RSS WORD COUNT
3459 02152 126145 JMP DISCD,I OF ZERO
3460 02153 006021 SSB,RSS ROUND UP
3461 02154 012314 AND NM64 TO FULL SECTOR [F]
3462 02155 072423 STA WORDC ON WRITE
3463 02156 062422 LDA DADDR LOAD
3464 02157 001222 RAL,RAL DISC
3465 02160 012317 AND N.3 SELECT [F]
3466 02161 072424 STA DISC# CODE
3467 02162 042431 ADA DSTBL WORD
3468 02163 160000 LDA 0,I
3469 02164 072425 STA FAIL SAVE IT
3470 02165 012331 AND DB77 EXTRACT SELECT CODE
3471 02166 064000 LDB 0 COPY INTO (B)
3472 02167 042342 ADA DCHN OUTPUT DMA/DISC
3473 02170 102607 OTA DMA LINKAGE CONTROL WORD
3474 02171 022344 XOR DSTC COMPUTE
3475 02172 072237 STA DISC3
3476 02173 002004 INA AND
3477 02174 022336 XOR NB200 [F]
3478 02175 072220 STA DISC1 STORE
3479 02176 072242 STA DISC4
3480 02177 072251 STA DISC5 I/O
3481 02200 042332 ADA NB100 [F]
3482 02201 072227 STA DISC2 COMMANDS
3483 02202 066421 LDB CORE SET B[0]
3484 02203 007000 CMB TO PROPER
3485 02204 005200 RBL DIRECTION BIT
3486 02205 062425 LDA FAIL SET B[2:0]
3487 02206 001727 ALF,ALF TO PROPER
3488 02207 100042 LSL 2 ADDRESS PREFIX
3489 02210 062422 LDA DADDR EXTRACT
3490 02211 001222 RAL,RAL TRACK
3491 02212 100046 LSL 6 NUMBER
3492 02213 001200 RAL REMOVE BIT 7
3493 02214 101051 LSR 9 SHIFT HARDWARE ADDRESS INTO (A)
3494 02215 072422 STA DADDR
3495 02216 066315 LDB NM10 SET RETRY [F]
3496 02217 076425 STB FAIL COUNTER
3497 02220 102500 DISC1 LIA 0 WAIT FOR
3498 02221 000010 SLA DISC CONTROLLER
3499 02222 026220 JMP DISC1 FREE AND
3500 02223 001727 ALF,ALF DISC
3501 02224 002021 SSA,RSS UP TO

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3502	02225	026220		JMP DISC1	SPEED	
3503	02226	062422		LDA DADDR	OUTPUT	
3504	02227	102600	DISC2	OTA 0	DISC ADDRESS	
3505	02230	106703		CLC MAR	OUTPUT	
3506	02231	062421		LDA CORE	CORE	
3507	02232	102603		OTA MAR	ADDRESS	
3508	02233	102703		STC MAR	OUTPUT	
3509	02234	062423		LDA WORDC	TRANSFER	
3510	02235	102603		OTA MAR	LENGTH	
3511	02236	103707		STC DMA,C	INITIATE	
3512	02237	102700	DISC3	STC 0	TRANSFER	
3513	02240	102307		SFS DMA	WAIT FOR	
3514	02241	026240		JMP *-1	COMPLETION FLAG	
3515	02242	102500	DISC4	LIA 0	ABORT	
3516	02243	012321		AND NB10	BIT	[F]
3517	02244	002002		SZA	SET?	
3518	02245	026255		JMP DISC6	YES	
3519	02246	062421		LDA CORE	NO	
3520	02247	002021		SSA,RSS	READ?	
3521	02250	026312		JMP DISC7	NO	
3522	02251	102500	DISC5	LIA 0	YES	
3523	02252	012326		AND DB32	FAULTY	
3524	02253	002003		SZA,RSS	TRANSFER?	
3525	02254	026312		JMP DISC7	NO	
3526	02255	036425	DISC6	ISZ FAIL	YES, TRY AGAIN?	
3527	02256	026220		JMP DISC1	YES	
3528	02257	062324		LDA D.16	NO, PRINT	
3529	02260	066435		LDB DISFA	'DISC	
3530	02261	016010		JSB TTY35	'FAILURE'	
3531	02262	062424		LDA DISC#	STORE	
3532	02263	042330		ADA DB60	DISC NUMBER	
3533	02264	001727		ALF,ALF	AND '/'	
3534	02265	042337		ADA SLASH	IN	
3535	02266	172433		STA EBFDA,I	BUFFER	[F]
3536	02267	006400		CLB	COMPUTE	
3537	02270	062422		LDA DADDR		
3538	02271	001727		ALF,ALF	ASCII	
3539	02272	001200		RAL		[F]
3540	02273	012331		AND DB77		
3541	02274	100400		DIV DB12	FOR	
3542	02276	046330		ADB DB60		
3543	02277	002003		SZA,RSS	TRACK	
3544	02300	026303		JMP *+3		
3545	02301	042330		ADA DB60	NUMBER	
3546	02302	001727		ALF,ALF		
3547	02303	030001		IOR 1		
3548	02304	172434		STA EB1DA,I	STORE IT	[F]
3549	02305	062320		LDA N.6	PRINT	[F]
3550	02306	062320		LDA N.6	PRINT	[F]
3551	02307	066433		LDB EBFDA	'X/XX, '	
3552	02310	016010		JSB TTY35		
3553	02311	126432		JMP ERR1A,I	TERMINATE LOAD/DUMP	
3554	02312	107707	DISC7	CLC DMA,C	CLEAN UP	
3555	02313	126145		JMP DISCD,I		

3557	02314	177700	NM64	DEC	-64		[F]
3558	02315	177766	NM10	DEC	-10		[F]
3559	02316	177777	NM1	DEC	-1		[F]
3560	02317	000003	N.3	DEC	3		[F]
3561	02320	000006	N.6	DEC	6		[F]
3562	02321	000010	NB10	OCT	10		[F]
3563	02322	000012	DB12	OCT	12		
3564	02323	000015	NB15	OCT	15		[F]
3565	02324	000020	D.16	DEC	16		
3566	02325	000023	NB23	OCT	23		[F]
3567	02326	000032	DB32	OCT	32		
3568	02327	000033	DB33	OCT	33		
3569	02330	000060	DB60	OCT	60		
3570	02331	000077	DB77	OCT	77		
3571	02332	000100	NB100	OCT	100		[F]
3572	02333	000110	D.72	DEC	72		
3573	02334	000176	DB176	OCT	176		
3574	02335	000177	DB177	OCT	177		
3575	02336	000200	NB200	OCT	200		[F]
3576	02337	000057	SLASH	OCT	57	"/"	
3577	02340	000137	BKSPC	OCT	137	" "	
3578	02341	000175	ALTMD	OCT	175		
3579	02342	020000	DCHN	OCT	20000		
3580	02343	120000	B120K	OCT	120000	'PRINT ONLY' TTY CONTROL BITS	
3581	02344	122700	DSTC	OCT	122700		
3582	02345	160000	B160K	OCT	160000	'INPUT' TTY CONTROL BITS	
3583	02346	177400	HIMSK	OCT	177400		
3584	00011		TTYSC	EQU	11B	ASR35 SELECT CODE	
3585	02347	056015	RVRSL	OCT	56015,5000	'\ CR LF' FOR LINE DELETION	
3586	02351	000000	CCNTY	BSS	1		[F]
3587	02352	000000	INBUF	BSS	36	TTY INPUT BUFFER	
3588	02416	000000	BUFAD	BSS	1	TTY CHARACTER ADDRESS	
3589	02417	000000	TFLAG	BSS	1	TTY I/O MODE	
3590	02420	000000	TTYTM	BSS	1	TTY TEMPORARY	
3591	02421	000000	CORE	BSS	1	CORE ADDRESS FOR DISC	
3592	02422	000000	DADDR	BSS	1	DISC ADDRESS	
3593	02423	000000	WORDC	BSS	1	BLOCK WORD COUNT FOR DISC	
3594	02424	000000	DISC#	BSS	1	DISC NUMBER	
3595	02425	000000	FAIL	BSS	1	DISC RETRY COUNTER	
3596	02426	004724	IBUFA	ABS	INBUF+INBUF		
3597	02427	002347	RVRSA	DEF	RVRSL		
3598	02430	007423	BADRA	DEF	BADDR	ADDRESS OF CHARACTER POINTER	
3599	02431	000160	DSTBL	DEF	DTBL	DISC SELECT CODE TABLE ADDRESS	
3600	02432	005427	ERRIA	DEF	ERRIN	ADDRESS OF ABORT MESSAGE CODE	
3601	02433	011641	EBFDA	DEF	EBUF	ADDRESS OF ERROR BUFFER	
3602	02434	011642	EB1DA	DEF	EBUF+1		[F]
3603	02435	011732	DISFA	DEF	DISCF		

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3605*
3606*   HLT 2 IF A SYSTEM READ IS BAD.   PRESS 'RUN' TO RETRY SYSTEM
3607*   LOADING.
3608*
3609   02436 107700   BSLDR CLC 0,C
3610   02437 062477           LDA BLINK           OUTPUT DMA/DISC
3611   02440 102607           OTA DMA             LINKAGE
3612   02441 062500           LDA BSYS1          OUTPUT
3613   02442 102703           STC WCR             FIRST SEGMENT
3614   02443 102603           OTA WCR             WORD COUNT
3615   02444 066506           LDB BSAD1         FIRST CORE ADDRESS
3616   02445 062503           LDA BDAD          ESTABLISH
3617   02446 102615           OTA BDISC+1      DISC ADDRESS
3618   02447 106703           CLC MAR          ESTABLISH
3619   02450 106603           OTB MAR          CORE ADDRESS
3620   02451 103707           STC DMA,C        INITIATE DMA
3621   02452 102714           STC BDISC        START TRANSFER
3622   02453 102307           SFS DMA          WAIT FOR
3623   02454 026453           JMP *-1           END OF TRANSFER
3624   02455 102515           LIA BDISC+1      TRANSFER
3625   02456 012512           AND BSL32
3626   02457 002003           SZA,PSS          OK?
3627   02460 026463           JMP *+3          YES
3628   02461 102002           HLT 2            NO
3629   02462 026436           JMP BSLDR        TRY AGAIN ON 'RUN'
3630   02463 062501           LDA BSYS2        READ
3631   02464 072423           STA WORDC
3632   02465 062504           LDA LDRTT        SECOND
3633   02466 066507           LDB BSAD2
3634   02467 016145           JSB DISCD        SEGMENT
3635   02470 062502           LDA BSYS3        READ
3636   02471 072423           STA WORDC
3637   02472 062505           LDA LDRTT+1      THIRD
3638   02473 066510           LDB BSAD3
3639   02474 016145           JSB DISCD        SEGMENT
3640   02475 107700           CLC 0,C          GET DATE
3641   02476 126511           JMP DATEP,I      AND TIME
3642*
3643   02477 020014   BLINK ABS 20000B+BDISC
3644   02500 166000   BSYS1 ABS -12000B      SEGMENT
3645   02501 165300   BSYS2 ABS 14000B-26500B  WORD
3646   02502 167200   BSYS3 ABS 26500B-37300B  COUNTS
3647   02503 000003   BDAD  OCT 3           SEGMENT
3648   02504 000000   LDRTT OCT 0,0         DISC ADDRESSES
3649   02506 100000   BSAD1 OCT 100000      SEGMENT
3650   02507 114000   BSAD2 OCT 114000      CORE
3651   02510 126500   BSAD3 OCT 126500      ADDRESSES
3652   02511 005306   DATEP DEF LDR59      ENTRY POINT TO DATE-TIME CODE
3653   02512 000032   BSL32 OCT 32
3654*
3655   00007           DMA EQU 7            DMA CHANNEL
3656   00014           BDISC EQU 14B       DISC SELECT CODE (LOWER)
3657   00003           MAR EQU 3           MEMORY ADDRESS REGISTER
3658   00003           WCR EQU 3           WORD COUNT REGISTER
  
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3660*
3661* THE FOLLOWING IS THE FORMAT FOR THE PORTION OF THE
3662* BOOTSTRAP LOADER TO BE SET IN 0,0. THIS SECTION OF THE
3663* BOOTSTRAP IS LOADED INTO 2 TO 77B BY THE PROTECTED BINARY
3664* LOADER. WHEN IT IS READ COMPLETELY INTO CORE IT CHECKS FOR
3665* READ PARITY ERRORS DURING ITS INPUT. FOLLOWING THIS, A HALT
3666* INSTRUCTION PERMITS THE OPERATOR TO PROTECT THE BASIC
3667* BINARY LOADER AND SET SWITCH 0 OF THE SWITCH REGISTER
3668* TO 0 (EITHER REAL TIME EXECUTIVE OR TIME-SHARED BASIC)
3669* OR 1 (DISC MONITOR SYSTEM). PRESSING 'RUN' READS THE
3670* SELECTED SYSTEM LOADER FROM 0,1 OR 0,2 RESPECTIVELY. THIS
3671* PORTION OF THE BOOTSTRAP OPERATION WILL THEN LOAD INTO
3672* CORE THE SELECTED SYSTEM AND TRANSFER CONTROL TO IT.
3673*
3674 00000          BSBSO EQU 0
3675 00000          ORG BSBSO      ASSEMBLY ORIGIN
3676*
3677 00000 000000   RLOAD OCT 0,0   DON'T USE (A) AND (B)
3678 00002 000000   RT/TS OCT 0     REAL TIME EXEC/TIME-SHARED BASIC
3679 00003 000000   DMS   OCT 0     DISC MONITOR SYSTEM
3680 00004 103004   HLT   4,C      IN CASE OF POWER FAIL
3681*
3682 00005 070044   BSLD0 STA BSLD2-BSBSO+1 CHANGE IRRECOVERABLE HLT 0
3683 00006 034043   ISZ BSLD2-BSBSO   INTO RECOVERABLE HLT 1
3684 00007 102077   HLT 77B      PROTECT BBL, SET SWR FOR SYSTEM
3685 00010 060047   LDA LINKG-BSBSO  SET UP DISC/DMA
3686 00011 102606   OTA 6        LINKAGE
3687*
3688 00012 102501   BSLD1 LIA 1      SELECT SYSTEM LOADER
3689 00013 006404   CLB,INB      FROM SWITCH REGISTER:
3690 00014 000010   SLA          SWR = 0 IMPLIES SECTOR 1
3691 00015 006004   INB          SWR = 1 IMPLIES SECTOR 2
3692 00016 106600   DSK7 OTB 0     OUTPUT DISC ADDRESS
3693 00017 006304   CCE,INB     SAVE
3694 00020 160001   LDA 1,I     CHOSEN LOADER'S
3695 00021 070046   STA CORAD-BSBSO ENTRY POINT
3696 00022 001225   RAL,ERA     OUTPUT 'READ' FORM
3697 00023 106702   CLC 2      OF LOADER'S
3698 00024 102602   OTA 2      CORE ADDRESS
3699 00025 060051   LDA .N64-BSBSO OUTPUT
3700 00026 102702   STC 2      TRANSFER
3701 00027 102602   OTA 2      LENGTH
3702 00030 103706   STC 6,C    START DMA
3703 00031 102700   DSK8 STC 0    START DISC TRANSFER
3704 00032 014034   JSB TSTAT-BSBSO VALIDATE READ
3705 00033 124046   JMP CORAD-BSBSO,I TRANSFER TO SYSTEM LOADER
3706*
3707 00034 000005   TSTAT DEF BSLD0-BSBSO (INITIAL EXIT)
3708 00035 102500   DSK9 LIA 0    WAIT FOR
3709 00036 000010   SLA        TRANSFER
3710 00037 024035   JMP *-BSBSO-2 COMPLETION
3711 00040 010050   AND BSB32-BSBSO TRANSFER
3712 00041 002003   SZA,RSS   OK?
3713 00042 124034   JMP TSTAT-BSBSO,I YES
3714 00043 102000   BSLD2 HLT 0  NO (HLT 1, NOP AFTER CHECK

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3715 00044 024043      JMP *-BSBSO-1          ON BOOTSTRAP ITSELF)
3716 00045 024012      JMP BSLD1-BSBSO       RETRY LOAD
3717*
3718 00046 000000      CORAD OCT 0           SYSTEM LOADER ENTRY ADDRESS
3719 00047 020000      LINKG OCT 20000       DISC/DMA LINKAGE TEMPLATE
3720 00050 000032      BSB32 OCT 32         TRANSFER VALIDATION MASK
3721 00051 177700      .N64 DEC -64
3722*
3723 00077              ORG BSBSO+77B
3724 00077 024035      JMP DSK9-BSBSO       TEST BOOTSTRAP LOAD
3725                      END
** NO ERRORS *TOTAL **RTE ASMB 92067-16011**
```

DRG	***	00005	00009	00023	00030	00044	02070
	03348	03675	03723				
.12	01140	00083	01141				
.13	01142	00761	01143				
.15	01144	00094	00172	00258	00378	00423	00955
	00984						
.17	01145	00801					
.19	01146	00241					
.2	01134	00298	00339	00452	00564	00573	00676
.20	01147	00567	01029				
.21	01148	00276					
.22	01149	00226	01025				
.23	01150	00271					
.24	01151	00412	00950				
.26	01152	00118	01119				
.3	01135	00915					
.32	01153	00437	01154				
.38	01155	00357	01020				
.4	01136	00128	00334	01192			
.5440	01162	00592	00704				
.6	01137	00659	00668				
.600	01161	00979					
.7	01138	00212	00502	00640	00642	00644	00657
.8	01139	00936	00967				
.85	01159	00609					
.N	03284	02280					
.N64	03721	03699					
.Y	03285	02278					

?BEND	00056	00884					
?BGIN	00055	00880					
?BHED	00053	00872					
?BSTR	00054	00876					
?ID	00057	00888					
?MASK	00052	00864					
A	01166	00373					
ABS	02598	02549	02559	02607	02608		
ADD2K	02315	02301					
ADD3K	02316	02302					
ADD4K	02317	02303					
ADLEN	00014 01413	00162 01419	00169 01421	00323 01666	00555 01870	00705 01884	00728 01885
ADLOC	00013	00167	00478	00727			
ADTBA	01199 00730	00165	00289	00322	00337	00558	00710
ADTBF	02012	01417	01669	01851	01872		
ADTBL	01198	01199	01200	02012			
ADVA1	01815	01799	01805	01811			
ADVAL	01794	01239	01802	01808	01814		
ADVLA	01239	00778	00781				
ALTMD	03578	03393					
ASR35	01235 00228 00416 00940 01031	00085 00230 00425 00957 01121	00087 00243 00439 00969	00096 00359 00569 00971	00120 00361 00763 00986	00122 00380 00803 01022	00174 00414 00938 01027
ASRDA	02017 01623	01371 01817	01484 01836	01498 01943	01542 01945	01565 01958	01573
AUTCK	02801	02510	02796	02805			
B100	01157	01190	01193				

B100K	03264	02248			
B106	01158	01194			
B120K	03580	03357			
B14	01141	00116	00143	00269	
B15	01143	00960			
B160K	03582	03425			
B40	01154	00693	00840		
B400	01160	00305	00547	00621	
B60	01156	00251			
B6400	02002	01494			
BADAD	02051	02043			
BADD	02054	02044			
BADDA	02044	01572			
BADDR	02038	01916	01917	03598	
BADP	02057	02045			
BADPA	02045	01835			
BADRA	03598	03422			
BASPG	03287	02116			
BDAD	03647	03616			
BDADA	02043	01816			
BDDL	01293	01258	02040		
BDDLA	02040	01370	01564		
BDISC	03656	03617	03621	03624	03643
BDLA	01258	00259			
BIT15	01163	00166	00432	00687	
BKSP	03431	03400	03413	03434	03445
BKSPC	03577	03388			
BLANK	01999	01923			

BLDRA	01263	00438					
BLDRC	01307	01263					
BLINK	03643	03610					
BMASK	02003	02015					
BMSKA	02015	01394					
BPAGA	02009	01806					
BPLEN	02372	02113					
BSAD1	03649	03615					
BSAD2	03650	03290	03633				
BSAD3	03651	03293	03638				
BSB32	03720	03711					
BSBSA	01216	00431	00461				
BSBSO	03674	01216	03675	03682	03683	03685	03695
	03699	03704	03705	03707	03710	03711	03713
	03715	03716	03723	03724			
BSL32	03653	03625					
BSLD0	03682	03707					
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BSLD2	03714	03682	03683				
BSLDR	03609	01217	03629				
BSPGA	03286	02115					
BSY1A	01210	00913					
BSY2A	01211	00918					
BSY3A	01212	00923					
BSYS1	03644	01210	03612				
BSYS2	03645	01211	03288	03630			
BSYS3	03646	01212	03291	03635			
BUFA	03274	02503	02558	02561	02581	02656	02697
	02750	02884	02887	02973	03003	03036	03050

	03068						
BUFAD	03588 03438	03354 03439	03364	03365	03401	03402	03423
BUFL	03275 02772 03060	02502 02776 03066	02532 02872 03067	02548 02882 03071	02551 02901 03083	02660 02974	02760 03049
C	01167	00376					
CCNT	03272	02162	02165				
CCNTY	03586 03436	03350	03359	03363	03398	03408	03432
CEQTA	01191	00148					
CHKSA	01265	00802					
CHKSM	01312	01265					
CMAND	02812 02675	02512 02680	02575 02682	02590 02733	02616 02748	02635 02817	02642
CMND	02382 02702 02814 03022 03133	02507 02707 02835 03075 03134	02536 02713 02837 03106	02623 02720 02902 03107	02624 02788 02938 03111	02659 02802 02976 03114	02701 02813 02985 03132
CNT	03277 02654	02556 02686	02566 02695	02579 02696	02585	02594	02605
CNTR	02775	02650	02692	02785			
COM6	00048	01066	03301				
COM6A	03301	02241					
COMMA	01164	00256					
CON1	03164	03298					
CON1A	03298	03152					
CON2	03188	03299					
CON2A	03299	03158					
CON3	03217	03300					
CON3A	03300	03160					
CORAD	03718	03695	03705				

CORE	03591	03456	03483	03506	03519		
COUNT	01224 00789	00554	00561	00584	00595	00606	00766
D	01168	00233					
D.10	03234	02271					
D.16	03565	03528					
D.19	03240	02792	03098				
D.24	03241	02334					
D.25	03243	02806	03125				
D.3	03227	02599	02917				
D.4	03228	02789					
D.5	03229	02784	03286				
D.6	03230	02187					
D.72	03572	03399					
D5440	03262	02159	02167				
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DASH	02001	01557					
DATA	02383 02705 02731 03009	02662 02709 02834 03021	02664 02711 02957 03077	02667 02715 02972 03079	02669 02717 02978	02673 02722 02980	02703 02724 02984
DATE	00061	00951	00989	00990			
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DATEP	03652	03641					
DATER	01315	01266					
DB10	03232	02309					
DB100	03249	02571	02591	03304			
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DB105	03251	02860					

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DB110	03253	02844	03131				
DB12	03563	03381	03541				
DB15	03236	02947	02993				
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DB176	03573	03395					
DB177	03574	03370	03380	03383			
DB200	03256	02357	02576	02617	02643	02740	02873
DB201	03257	02535					
DB215	03254	02958					
DB23	03239	02700	03007	03240			
DB300	03258	02511					
DB31	03242	02658	02970	03243			
DB32	03567	03523					
DB33	03568	03391					
DB35	03245	02641					
DB40	03246	02508	02612	02683			
DB400	03259	02149	02172	02803			
DB41	03247 03033	02601	02679	02747	02919	02953	02991
DB60	03569	03532	03542	03545			
DB7	03231	02515	02840	02841			
DB733	03260	02676	02737				
DB757	03261	02734					
DB77	03570	03470	03540				
DCHN	03579	03472					
DDIRA	03304	02119	02185				
DEGTA	01192	00147					

DEST	02035	01869	01877	01879			
DIGCK	01896 01903	01511 01905	01520 01906	01721	01750	01757	01900
DIRBA	01203	00510					
DIRBF	01279	01203					
DIRE6	01194	00206	00496	00508			
DIREA	01193	00635					
DIREC	00010	00105					
DISC	01236 00511 00903	00149 00525 00917	00168 00605 00922	00433 00619 00927	00455 00681 01104	00459 00688	00462 00731
DISC#	03594	03466	03531				
DISC1	03497	03478	03499	03502	03527		
DISC2	03504	03482					
DISC3	03512	03475					
DISC4	03515	03479					
DISC5	03522	03480					
DISC6	03526	03518					
DISC7	03554	03521	03525				
DISCD	03454	01236	03296	03459	03555	03634	03639
DISCF	03329	03603					
DISCN	03296 02249	02117 02256	02128	02156	02194	02217	02222
DISFA	03603	03529					
DISMA	01256	00227					
DISMD	01288	01256					
DM1	03226	02653	02657	02698	02968		
DM10	03222	02690					
DM255	03220	02085	02135				
DM3	03225	02998					

DM4	03224	02183					
DM5	03223	02350	02652	02694	02753	03039	
DM64	03221	02118	02243	03154			
DMA	03655 03622	03473	03511	03513	03554	03611	03620
DMS	03679	00454					
DMTRL	03307	02246					
DONEA	03312	02310					
DONEM	03320	03312					
DSK7	03692	00434	00443				
DSK8	03703	00445					
DSK9	03708	00447	03724				
DSTBL	03599	03467					
DSTC	03581	03474					
DTBL	00016	00144	01196	02014	03599		
DTBLA	01196	00481					
DTMPO	03268 02227	02086 02232	02094 02251	02136 02262	02174	02184	02200
DTMP1	03269 02190 02245	02088 02198 02254	02091 02224 02260	02093 02228	02138 02229	02150 02230	02173 02242
DTMP2	03270 02261	02154	02171	02247	02250	02252	02257
DTRKB	03305	02130	02157	02166	02196	02258	02351
DTRKR	03306	02127	02155	02193	02255		
DULTB	03303	02087	02137				
DULTT	03302	02089					
DZMBA	01259	00272					
DZMBF	01296	01259					
EB1DA	03602	03548					

EBFDA	03601	03535	03551				
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EBUFA	02016	01495	01497				
ECNT	03279	02691	02744				
ENDR	02759	02708	02714	02721			
ENDR1	02772	02764	02767	02769			
EOFER	01020 00826	00198 00841	00519	00545	00601	00615	00694
EOFM	01325	01270					
EOFMA	01270	01021					
EOTC	02819	02633	02648	02689	02824		
EOTF	03278	02509	02644	02821			
EOTM	01309	01264					
EOTMA	01264	00762					
EQTA	01190	00109	00195				
EQTLN	01178	00106					
ERR	02826	02685	02756				
ERR.1	02900	02842	03042				
ERR1	00094	00089					
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ERR3	00241	00235	00238	00260	00273	00278	
ERR4	00378	00363	00369	00372			
ERR5	00567	02022					
ERR5A	02022	01678					
ERR6	00955	00944	00948	00962	00966		
ERR7	00984	02023					
ERR7A	02023	01749	01751	01756	01758	01765	
ERRIA	03600	03553					

ERRIN	01029	00440	00570	01023	01122	03600	
EXIT	02529 02678	02560 02739	02568 02778	02583	02596	02636	02647
FADT1	01852	01857					
FADTP	01847	01422	01466	01854			
FAIL	03595	03469	03486	03496	03526		
GAP	02632	02526					
GETCA	01249 00362	00088 00368	00231 00371	00234 00417	00237 00982	00249	00274
GETCR	01915 01755 03294	01249 01924	01518 01926	01527 01927	01555 01928	01719 01946	01748 01960
GETMT	01940	01250	01947	01950	01959	01966	01967
GTDN1	01555	01559					
GTDN2	01563	01556					
GTDN3	01567	01562					
GTDN4	01571	01581					
GTDN5	01575	01570					
GTDN6	01583	01576					
GTDNA	01240	00246					
GTDNO	01553	01240	01349	01566	01574	01583	01584
GTMT1	01956	01962					
GTMT2	01960	01955					
GTMT3	01966	01953					
GTMTA	01250	00182					
GTTR1	01670	01677					
GTTR2	01679	01674					
GTTRA	01241	00394	00476	00499			
GTTRK	01663	01241	01684	01690			

HIMSK	03583	03442					
HLT22	02318	02304					
I	01169	00236					
IBUFA	03596	03421					
IDLEN	00012	00515	00521	00702	00722	02124	02129
IDLOC	00011	00477	00523	00725	02126		
IDTBA	01201	00516	00524	01202			
IDTBL	01200	01201	03305	03306			
ILDTA	01267	00956					
ILDTE	01317	01267					
ILIN	03323	01253	03313				
ILINA	01253	00095	00173	00379	00424		
ILINM	03313	02284					
ILSCA	01260	00277					
ILSCD	01299	01260	02041				
ILSCL	02041	01541	01957				
ILTIA	01269	00985					
ILTIM	01322	01269					
ILTRA	02042	01622					
ILTRL	02048	02042					
INBUF	03587	03596	03596				
INCRE	00050	00892	00898				
INF	01996	01732	01737				
INRPA	02010	01809					
INTG1	01718	01731					
INTG2	01734	01720	01722				
INTGA	01242	00941	00959				
INTGR	01714	01242	01354	01373	01560	01618	01733

	01736	01738				
ISOTA	01243	00349	01078	01082		
ISOTL	01698	01243	01439	01471	01671	01705
JDRT1	03292	02220				
JDRTT	03289	02215				
JMPM1	02319	02307				
JSAD2	03290	02216				
JSAD3	03293	02221				
JSYS2	03288	02213				
JSYS3	03291	02218				
L	01170	00367				
L.10	01980	01487	01725	01753	01981	
L.13	01982	01834	01983			
L.15	01984	01369	01563			
L.17	01985	01571	01815			
L.2	01977	01665	01686	01856	01880	
L.20	01986	01482				
L.21	01987	01540	01956			
L.23	01988	01621				
L.24	01989	01941				
L.3	01978	01496	01700			
L.39	01990	01629				
L22A	02020	01350	01372	01453	01837	
L46A	02021	01820				
LABOA	01272	01030				
LABOR	01329	01272				
LB100	01993	01638				
LB11	01979	01812				

LB12	01981	01901				
LB15	01983	01367	01374	01619	01925	01952
LB377	01994	01644	01704	01922		
LB400	01995	01448				
LB54	01991	01364	01561			
LB60	01992	01488	01491			
LBRY	01282	01252				
LBRYA	01252	00084				
LD72	01972	01898				
LD77	01971	01530				
LDR	00079	00045	00097	02317		
LDR1	00104	00093				
LDR10	00262	00257	00275			
LDR11	00266	00270				
LDR12	00269	00265				
LDR13	00274	00252				
LDR14	00287	00232				
LDR15	00300	00314				
LDR16	00304	00299				
LDR17	00313	00308				
LDR18	00334	00170				
LDR19	00339	00344				
LDR2	00110	00113				
LDR20	00343	00353				
LDR21	00346	00342				
LDR22	00357	00345	00381	02020		
LDR23	00389	00374				

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LDR26	00423	00418			
LDR27	00428	00420			
LDR28	00442	00422			
LDR29	00456	00436			
LDR3	00118	00124			
LDR30	00482	00487			
LDR31	00497	00504			
LDR32	00548	00624			
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LDR34	00571	00580			
LDR35	00577	00563			
LDR36	00587	00576			
LDR37	00621	00550			
LDR38	00646	00691			
LDR39	00654	00662			
LDR4	00130	00133			
LDR40	00663	00655			
LDR41	00668	00678			
LDR42	00693	00650			
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LDR44	00711	00715	00721		
LDR45	00722	00707			
LDR46	00753	00765	00794	00807	02021
LDR47	00756	00760			
LDR48	00766	00758			
LDR49	00782	00777	00790		

LDR5	00143	00183					
LDR50	00817	00738					
LDR51	00823	00831					
LDR52	00832	00839					
LDR53	00840	00836					
LDR54	00845	00772					
LDR58	00863	00905					
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LDR60	00959	00954					
LDR61	00967	00987					
LDR62	00988	00983					
LDR63	01013	01001					
LDR7	00182	00091					
LDR8	00226	00135	00244	00247	00255	00267	00268
LDR9	00245	00240					
LDRE1	00611	00594					
LDRTA	01209	00400					
LDRTT	03648	01209	03289	03292	03632	03637	
LDTBL	02014	01578	01600	01639	01701		
LIA15	01183	00446					
LIBRA	00047 01105	00782	00799	00833	01064	01068	01103
LINKA	01184	00448					
LINKG	03719	00449	03685				
LKUN1	01369	01376					
LKUN2	01373	01365					
LKUN3	01387	01368	01452				

LKUN4	01429	01436					
LKUN5	01447	01410	01415	01465	01480	01499	
LKUN6	01464	01400					
LKUN7	01482	01470	01474				
LKUN8	01493	01490					
LKUNA	01234	00366	00377				
LKUNL	01347	01234					
LM1	01976	01681					
LM129	01969	01626					
LM2	01975	01420	01429	01868			
LM4	01974	01568	01605	01641			
LM64	01970	01831					
LM8	01973	01513	01522				
LNKAD	01197	00776					
LOOP	02713	03195					
LSLTB	00046	01197	02374	02375			
LSLTE	00071	02374					
LTMP0	02027 01582	01358 01850	01427 01855	01435	01554	01575	01577
LTMP1	02028 01536 01754	01353 01606 01759	01391 01613 01795	01517 01633 01818	01525 01650	01526 01664	01529 01683
LTMP2	02029 01651	01357 01668	01379 01676	01450 01685	01486 01689	01617	01635
LTMP3	02030 01647	01355	01363	01382	01451	01640	01643
LTMP4	02031 01642	01362 01648	01387 01848	01437	01447	01449	01467
LTMP5	02032 01428 01479	01392 01432 01716	01397 01434 01723	01411 01438 01727	01412 01440 01735	01418 01441	01423 01477

LTMP6	02033 01724	01396 01734	01430	01431	01433	01478	01718
LTRAX	02013	01352	01609				
LULC	01302	01261					
LULCA	01261	00358					
M1	01133	00578					
M10	01131	00754					
M12	01130	00125					
M16	01129	00104	00855				
M20	01128	00389					
M255	01126	00296	00539				
M256	01125	00670	00819	00832	01085		
M4	01132	00204	00479	00682	01089	01107	
M5440	01124	00596	00646				
M64	01127 00703	00145	00163	00194	00428	00450	00506
MAGSC	00017	00189	00201	02071	02504		
MAR	03657	03505	03507	03508	03510	03618	03619
MAXAD	02006	01797					
MAXBA	02008	01803					
MAXYR	01177	00964					
MBIAS	01179	00980					
MCNT	02037	01875	01882				
MCPAC	03309	02289					
MFLAG	02034	01347	01398				
MGTCA	03294	02276					
MLTBA	02379	02211	02223				
MLTBE	02378	02380					
MLTBL	02369	02225	02379	02380			

MOVU1	01876	01883			
MOVUA	01244	00575	00718		
MOVUP	01866	01244	01476	01688	01886
MSTOC	03308	02097			
MT.1	02802	02810	03188		
MT.10	02659	03205			
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MT.15	02814	03200			
MT.2	02667	03177			
MT.20	02536	02542	03207		
MT.21	02507	03190			
MT.3	02669	03164			
MT.30	02707	03196			
MT.40	02701	03208			
MT.41	02702	03211			
MT.42	02703	03179			
MT.43	02705	03167			
MT.44	02709	03180			
MT.45	02711	03170			
MT.46	02715	02728	03181		
MT.47	02717	03168			
MT.48	02722	03182			
MT.49	02724	03171			
MT.5	02673	03172			
MT.50	02731	03173			
MT.51	02720	03197			

@MT.52	02511						
MT.8	02662	03178					
MT.9	02664	03165					
MTAPE	01237 00648	00192 00824	00196 00834	00517 00842	00543	00599	00613
MTBLN	02380	02210					
MTD	02501 02323 02533 02742 02900	01237 02344 02539 02823 02903	02103 02352 02586 02828	02105 02513 02593 02829	02268 02514 02614 02839	02294 02530 02628 02847	02299 02531 02646 02898
MTDE1	02169	02161					
MTDER	02333 02355	02296 02356	02297 02359	02326 02730	02327 03020	02346	02347
MTDI1	03153	03162					
MTDIA	01238	00191					
MTDIN	03150	01238	02075	03161			
MTDM0	02090	02095					
MTDM1	02096	02313	02338				
MTDM2	02150	02175					
MTDM3	02172	02152					
MTDM4	02186	02201					
MTDM5	02199	02189					
MTDM6	02228	02233					
MTDM7	02252	02263					
MTDM8	02301	02073					
@MTDMP	02071						
MTDMU	02292	02281					
MTDMV	02298	02267					
MTENR	02282	02277					
MTESQ	02270	02286					

MTFLA	02019	01951	01963	01965			
MTFLG	01225 00512	00134 00736	00159 02019	00188	00200	00203	00464
MTGVT	02287	02279					
MTLM	03331	03316					
MTLMA	03316	02807	03126				
MTRLA	01208	00820	00830				
MTRLT	00035	01208	03307				
MTRWD	02103	02109					
MTSC	01286	02018					
MTSCA	02018	01942					
MTSCD	03280	03151	03155	03159			
MTVFL	02324	02100	02265	02342			
MTVFS	02099	02290					
MTVLC	02725	02101					
MTVLQ	03015	02102					
MTWF	02340	02202	02264	02322	02328	02348	02358
MTWFY	02349	02343					
MTWFZ	02357	02354					
MTWR	02321 02212	02120 02231	02131 02259	02139 02329	02164	02170	02197
MXADT	01998	01414					
MXDAY	01176	00946					
N	01171	00092	00421				
N.3	03560	03418	03465				
N.6	03561	03549	03550				
N5440	03219	02163					
NB10	03562	03516					

NB100	03571	03481		
NB15	03564	03410		
NB200	03575	03371	03477	
NB23	03566	03386		
NM1	03559	03362	03435	
NM10	03558	03495		
NM64	03557	03461		
NOISE	03030	03048		
O	01172	00370		
O.B	03132	03214		
OODSA	01274	00568		
OODSP	01333	01274		
OTB15	01181	00435	00442	
OUT	02661	02672		
P.1	02558	02550	02582	02587
P.2	02570	02553	02578	02580
P.3	02589	02563	02595	
P.4	02585	02573		
PARC1	01834	01381		
PARCK	01829	01356	01377	01833
PH1	01186	01003		
PH2	01187	01006		
PHIN1	00065	01004		
PHIN2	00066	01007		
PHIN3	00067	01009		
PHIN4	00068	01012		
PHNSC	00018	00999		
POS	02548	02524		

PWRFL	00069	01013				
RDMS	01305	01262				
RDMSA	01262	00413				
READ	01774	01245	01782			
READ1	01776	01784				
READA	01245	00756	00769	00770	00785	00792
READT	02689	02520	02755			
READX	02736	02773				
REJCT	03131	03110				
RERED	02696	02749				
RES	02541	02525				
RETRY	02655	02687				
REW	02535	02523				
@RLOAD	03677					
RQSTA	01257	00242				
RQSTD	01290	01257				
RSSA	01188	01008				
RSYA1	01213	00921				
RSYA2	01214	00926				
RT/TS	03678	00457				
RVRSA	03597	03419				
RVRSL	03585	03597				
RWEOF	02958	02955				
S	01173	00239				
S.1	02623	03191				
S.2	02624	03193				
S/TD0	01284	01254				

S/TDA	01254	00119					
SELC1	01538	01543					
SELC2	01540 01535	01512	01515	01519	01521	01524	01532
SELCA	01246	00253					
SELCD	01510	01246	01533	01537	01538	01539	01948
SETD1	01605	01653					
SETD2	01611	01614					
SETD3	01617	01603					
SETD4	01621	01628	01631				
SETD5	01625	01620					
SETD6	01638	01646					
SETD7	01643	01649					
SETDA	01247	00123	00266				
SETDS	01598	01247	01615	01616	01624		
SGNBT	01997	01964					
SHORT	02750	02746					
SLO	02894	02836					
SLASH	03576	03534					
SLDIR	01231	01067	01087	01100	01101		
SLSH	01165	00953					
SOURC	02036	01867	01876	01878	01881		
SPACE	02610	02554	02564	02619	02620		
STAR	02000	01954					
STAT	02627	02527					
STC14	01182	00444					
STIN	02622 02816	02529 02820	02570 02826	02611	02625	02627	02736
SWPAA	00060	00902					

SWPIA	00058	00863					
SWPLN	00059	00900					
SYSL	01331	01273					
SYSL1	01070	01075					
SYSL2	01085	01062					
SYSL4	01100	01118					
SYSL5	01107	01092					
SYSL6	01119	01110					
SYSLA	01273	01120					
SYSLB	01052	00783	00838	00845	01055	01106	
SYSLF	01226	00081	00082	00160	00161	00209	00484
	00488	00489	00491	00493	00734	00735	00800
	00818	01053	01061	01065	01074		
SYSS1	01229	01079	01090	01094	01095		
SYSS2	01230	01083	01108	01112	01113		
SYST1	01227	01077	01096	01098	01099		
SYST2	01228	01081	01114	01116	01117		
SYSTA	02007	01800					
TAPEA	01271	01026					
TAPER	01327	01271					
TAPMA	03314	02335					
TAPMS	03326	03314					
TBASE	02519	02516					
TEMPO	01219	00107	00112	00126	00132	00205	00213
	00288	00303	00306	00336	00343	00390	00397
	00480	00486	00495	00503	00540	00623	00636
	00656	00658	00663	00685	00709	00720	00774
	00787	00788	00856	00904	00942	00952	00974
	00988						
TEMP1	01220	00115	00248	00264	00295	00309	00310
	00311	00312	00315	00392	00395	00396	00497
	00500	00501	00542	00548	00590	00622	00666

	00677	00716	00719	00768	00780	00795	00804
	00858	00896	00897	00899	02024		
TEMP2	01221	00117	00262	00297	00313	00552	00587
	00620	00796	00805	00860	00894	00895	02025
TEMP3	01222	00300	00304	00557	00565	00572	00582
	00589	00603	00608	00610	00617	00775	00798
	00862	00865	00873	00877	00881	00885	00889
	00891	00893					
TEMP4	01223	00509	00653	00661	00679	00684	00690
	00821	00823	00828	00829	01069	01070	01072
TFLAG	03589	03356	03376	03415	03424		
TIME	00062	00981					
TIMEA	01268	00968					
TIMER	01320	01268					
TMP1A	02024	01599	01607				
TMP2A	02025	01601	01636				
TPERR	01025	00199	00520	00546	00602	00616	00651
	00827	00837					
TRAX	00015	01195	02013				
TRAXA	01195	00127	00287				
TRKNA	02046	01483					
TRKNL	02060	02046					
TRKTA	01206	00391					
TRKTB	01232	00399	00920	00925	01076	01080	01206
	01207						
TSB	00064	01015					
TSBBA	01217	00453	00456				
TSTAT	03707	03704	03713				
TT35I	03295	02273	02275	02285	02311	02336	02794
	02808	03100	03127				
TTY1	03359	03378					
TTY2	03373	03382	03384	03387	03412	03414	03426

TTY35	03349 03417	01235 03420	02017 03530	03295 03552	03361	03411	03416
TTY4	03413	03389					
TTY5	03415	03392	03394	03396			
TTY6	03421	03352					
TTYDA	00051	00857					
TTYSC	03584	03358	03372	03373	03374	03379	
TTYTM	03590	03397	03409	03444			
TWODA	01248	00972	00975				
TWODG	01747	01248	01761	01762	01764		
U	01174	00365					
ULTM1	01205	00638	00672				
ULTTA	00070	03302					
ULTTB	01204	00541					
UPRBA	01202 00680	00598	00604	00612	00618	00647	00667
USTRA	01207	00859					
VERFY	03337	03318					
VERFYA	03318	02272					
WCNT	03276	02574	02589	02602	02615	02655	02671
WCR	03658	03613	03614				
WEOF	02640	02522					
WNE	03334	03317					
WNEA	03317	02793	03099				
WNEC	02787	02632	02640	02649	02791		
WORD	01215 00551 00729	00146 00591 00901	00164 00597 00914	00429 00607 00919	00451 00611 00924	00507 00652 01086	00522 00683
WORDC	03593 03636	01215	03297	03457	03462	03509	03631

WORDN	03297 02195	02114 02214	02125 02219	02153 02244	02158 02253	02169	02191
WRITE	02648	02521					
XABS	02915 02923	02712 02925	02759 03006	02843 03012	02846 03046	02874	02889
XATCK	03121	02838	03102	03124	03129		
XBASE	02851	02848					
XCMND	03105 02971	02845 02992	02864 02994	02930 03008	02948 03034	02954 03113	02959 03117
XCNTR	03082 03001	02880 03010	02895 03085	02911 03089	02924	02967	03000
XEND1	03060	03055					
XEND2	03057	03052					
XENDR	03046	03029					
XEOTC	03138 03143	02928	02946	02962	02966	02995	02997
XGAP	02945	02858					
XIT	02898 03087	02886	02890	02949	02963	02990	03072
XIT1	02901	02866	02912	02934	03026	03142	
XLOOP	03075	03018	03078	03198			
XMTD	02831	02506					
XOUT	02975	02983					
XP.0	02891	02896					
XP.1	02887	02875	02913				
XP.2	02905	02877	02892	02909			
XP.5	02876	02879	02881				
XPOS	02872	02856					
XREAD	02997	02852	03041				
XRERD	03002	03035					
XRES	02860	02857					

XREW	02862	02855					
XS.0	03107	03194					
XS.1	02938	02833	03094	03192			
XSHRT	03036	03032					
XSPACE	02926	02878	02893	02932	02935	02999	03030
XSTIN	02937 03024	02831 03092	02865 03116	02899 03122	02906 03139	02941	02987
XT.0	03134	03135	03202				
XT.1	02837	03210					
XT.10	02985	02986	03203				
XT.11	03009	03186					
XT.12	02957	03187					
XT.13	02834	03176					
XT.14	03106	03136	03209				
XT.15	03114	03115	03201				
XT.16	02835	03216					
XT.2	02978	03183					
XT.20	02976	02979	03199				
XT.3	02980	03166					
XT.4	02902	03215					
XT.43	03079	03169					
XT.46	03077	03184					
XT.5	02984	02977	03174				
XT.50	03021	03076	03175				
XT.6	03133	03213					
XT.7	03111	03212					
XT.8	03022	03023	03204				
XT.9	02972	03185					

XWAIT	03074	03011	03013	03080			
XWEOF	02956	02854					
XWEOR	02953	02961					
XWNEC	03091	02699	02719	02725	02752	02920	02929
	02945	02956	02965	02969	02982	03004	03014
	03015	03038	03097	03103	03308	03309	
XWRTE	02965	02853					
Y	01175	00090	00419				
YEAR	00063	00963					