

MULTI-MEDIA DIAGNOSTIC LOADER (32 BIT)

Consists of:

Program Description	B06-176M95R02A15
Program Listing	06-176F02M91R02A13
Program Listing	06-176F03M96R02A13
Bootstrap Loader Tape	06-176F03M17R02

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MULTI MEDIA DIAGNOSTIC LOADER
(MDL)

1. PROGRAM TITLE

Multi Media Diagnostic Loader (MDL)

06-176F01 16 Bit Processors
06-176F02 32 Bit Processors

2. PURPOSE OF THE PROGRAM

The MDL facilitates program retrieval from bulk storage media created using the Multi-Media Generator (06-177). It is an integral part of all INTERDATA Multi-Media Diagnostic Packages.

3. MINIMUM HARDWARE REQUIREMENTS

.Processor - Any 16-bit processor with 24KB of memory.

or

Any 32-bit processor with 32KB of memory.

.Display Panel

.Input Device - Mag Tape 9-Track (800 or 1600 BPI) or Intertape

or

2.5 MB or 10 MB disc with Selector Channel or
67 MB or 256 MB disc with Selector Channel.

3.1 Optional Output Devices

.Teletype or Carousel 30 on Current Loop Interface
.CRT on PASLA (FDPX) or
.Line Printer or
.Carousel 300 on PASLA (FDPX)
.CRT, TTY, or Carousel on System Terminal Controller

3.2 Optional Boot Loading Devices

.Teletype or
.High Speed Paper Tape Reader (HSPTR) or
.Carousel 35 with Paper Tape Reader

NOTE

The boot loading device option is only applicable with disc input.

4. REQUIREMENTS OF THE MMDL SYSTEM

The Device Definition Table, memory locations X'78' through X'7E', must be set up as indicated in the following table.

DEVICE DEFINITION TABLE

INPUT DEVICE	MEMORY LOCATION			
	X'78	X'7A	X'7C	X'7E
Mag Tape or Intertape	XXA1	0000	00SS	00LL
Disc	*1399 **0294	DDTT	CCSS	00LL

Where: XX = the Mag Tape or Intertape device address. Location X'7A' must be set to X'0000'.

CC = the disc controller address.

TT = 31 for a 2.5 MB disc
 33 for a 10 MB disc
 35 for a 67 MB disc
 36 for a 256 MB disc

DD = the disc device address

SS = the SELCH address (must be 0 if the mag tape is not on a SELCH)

LL = (the Loader Indicator) 00 = Retrieve the 16-bit loader
 01 = Retrieve the 32-bit loader

* If the Disc will be boot loaded from HSPTR

** If the Disc will be boot loaded from the TTY

5. LOADING

The two MDL's are the first programs on all Multi Media Diagnostic Packages. Follow the directions below for the type of media being used.

5.1 Mag Tape/Cassette Loading

To load the required MDL from the Mag Tape/Cassette Multi-Media Diagnostic Package perform the following steps.

1. Have the device "On-Line", at "Load Point" and Write Protected.
2. Enter the X'50' sequence shown in 5.3.
3. Set up the Device Definition Table as described in Section 4.
4. Execute at address X'30'. The MDL will be loaded into memory.

5. When the processor halts, observe the display panel. If X'EE' is displayed, the load resulted in parity error. Return to Step 2. If X'FFFF' is displayed MDL is awaiting data input. Refer to Section 6 for Operating Procedures.

5.2 Disc Boot Loading

To boot load the desired MDL from a disc requires the use of the Multi-Media Diagnostic Common Disc Boot Loader 06-176F03 (MDCBL). The loader can be entered with the MDCBL paper tape included in the Multi-Media Diagnostic Package, or can be manually entered.

5.2.1 Boot Loading the Disc with the MDCBL Paper Tape 06-176F03).

1. Have the Disc "Ready".
2. Enter the X'50' sequence as shown in 5.3.
3. Set up the Device Definition Table as described in Section 4.
4. Load the MDCBL paper tape in the reader.
5. Execute at address X'30'.
6. When the processor halts, observe the display panel. If X'EE' is displayed, the load resulted in a parity error. Restart at Step 2. If X'FFFF' is displayed, MDL is awaiting input data. Refer to Section 6 for the Operating Procedures.

5.2.2 Boot Loading the Disc Without the Paper Tape.

1. (Manually) load the MDCBL shown in the 06-176F03 listing. Start at location X'100'.
2. Set up the Device Definition Table as described in Section 4.
3. Execute at X'100'.
4. When the processor halts, observe the display panel. If X'EE' is displayed, the load resulted in a parity error. Repeat at Step 3. If X'FFFF' is displayed, MDL is awaiting input data. Refer to Section 6 for the Operating Procedures.

NOTE: Series 16 and Series 3200 processors do not have display hardware. All references to the display refer to the system console for these processors. Any reference to entering data from the display is now from the system console. Run/EXECUTE is replaced by CR. An * indicates that the program is ready for input.

5.3 X'50' Sequence

Manually enter the X'50' sequence shown as follows, into memory.

LOCATION	CONTENTS
X'30'	X'0000'
X'32'	X'0000'
X'34'	X'0000'
X'36'	X'0050'
X'50'	X'D500'
X'52'	X'00CF'
X'54'	X'4300'
X'56'	X'0080'

6. OPERATING PROCEDURES

MDL is in the input mode (waiting for data) when X'FFFF' is displayed, and the processor is in the wait state. At this time, two functions can be performed. The entire media can be listed to a print device or a program can be loaded from the MDL media.

6.1 To List the Media

The program will select the I/O device most logically to produce hard copy. The priority used is Line Printer, CLI, PASLA/STC. Enter X'0000' on the switches or Hex display panel. Press "EXE" or "RUN", depending on panel type. The program information will be listed on the specified device. See Appendix 1 for sample listing. If the listing is being output to any device except the line printer, the listing pauses after 20 lines are displayed. To continue printing, depress "EXE" or "RUN" depending on the panel type. Refer to Section 7 for error and completion displays.

6.2 To Load a Program

Enter the sequence number of the desired program on the switches or hex display panel. (The sequence numbers are included with the initial package and can be recreated with the list option. See Section 6.1.) Depress "EXE" or "RUN" depending on the panel type. The program specified is located and loaded if it exists on the media. Refer to Section 7 for error and completion displays.

NOTE: For Series 16 and Series 3200, the console mode may be entered at any time by depressing the @ key.

NOTE

If Mag Tape is the INPUT media, the program to be loaded must be forward of the present position of the tape.

7. ERROR AND COMPLETION DISPLAYS

If an error occurs while MDL is processing or when processing is complete, a code is output to the Display Panel. Refer to Table 1 for the meaning of each code.

X'6000 Progtestart

TABLE 1

- *XXE0 - Disc does not contain recognizable information
- *XXE3 - Unrecoverable Read Error
- *XXE7 - Mag Tape/Cassette Error
- *XXE8 - Disc Error
 - BB - Program not on the media
 - CC - Load Error
 - DD - Attempt to load over MDL

- EE - Chksum Error on the program loaded
- FF - Normal Termination - job complete without error
- FO - (16 bit) FLPT Arithmetic Fault
(32 bit) Arithmetic Fault
- F1 - Illegal Instruction
- F2 - Machine Malfunction
- F3 - Arithmetic Fault
(16 bit)
- F5 - System Queue Service
(32 bit only)
- F6 - MAC interrupt (32 bit only)
- F7 - SVC interrupt (32 bit only)
- *XX - When non-zero, is the device address

If an error is detected, the only possible recovery is to retry the operation. If the media is a Mag Tape or Cassette, rewind it to load point. If it is a disc no action is needed. Refer to Section 6 for desired operation.

If it is desired to perform another MDL operation after the X'FF' termination display, (provided that no other operation has destroyed MDL) restart the MDL at its bias X'4000' for 16-bit processors and X'6000' for 32-bit processors. Refer to Section 6 for desired operation.

APPENDIX A
SAMPLE LISTING

SEQ #	06- #	REV.	NAME	LOW	HIGH
001	176	00	F01 MULTI MEDIA DI. LDR. 16BIT	04000	04A1F
002	176	00	F02 MULTI MEDIA DI. LDR. 32BIT	06000	06B1F
003	177	00	F01 MULTI MEDIA DI. GEN. 16BIT	05000	06F37
004	177	00	F02 MULTI MEDIA DI. GEN. 32BIT	07000	09059
010	003	08	MEMORY TEST PART 1	01000	0152F
011	003	08	MEMORY TEST PART 2	000A0	0101P
012	003	08	MEMORY TEST PART 3	000A0	004CD
013	106	06	PROCESSOR TEST PART 1	002D0	01FFF
014	106	06	PROCESSOR TEST PART 2	002D0	01D62
016	135	01	MEMORY PROTECT TEST	00080	00BFA
017	143	00	MOS MEMORY HOLD TEST	00080	00305
018	144	00	MOS PARITY INITIALIZE TEST	00080	000A3
019	158	00	SERIES 32 BASIC TEST	00080	0029F
01A	153	00	MODEL 7/32 HW PROCESSOR TEST	00A00	02001
01B	154	01	SERIES 32 PROCESSOR TEST PART1	00A00	03F3F
01C	155	00	SERIES 32 PROCESSOR TEST PART2	00A00	02001
01D	156	01	F01 SER. 32 MEMORY TEST PART 1	02000	0266R
01E	156	01	F02 SER. 32 MEMORY TEST PART 2	00A00	0186R
01F	156	01	F03 SER. 32 MEMORY TEST PART 3	00A00	01453
020	148	00	SERIES 6A MEMORY TEST PART1	00080	004AR
021	148	00	SERIES 6A MEMORY TEST PART2	01000	012ER
022	159	02	SERIES 32 SYSTEM EXERCISER	00A00	05907
023	160	00	MEMORY ACCESS CONTROLLER TEST	00A00	01AB9
100	004	04	TELETYPE BASIC CONFIDENCE TEST	00080	00A51
102	071	00	801 AUTO CALL UNIT TEST	00080	002FD
103	101	00	DIGITAL MULTIPLEXOR TEST	00A00	00FBF
105	122	03	DISC TEST/FORMATTER	00A00	02903
106	127	01	PALS OFF-LINE TEST	00A00	02B7R
107	129	04	UNIVERSAL LOGIC INTERFACE TEST	00A00	00B99
108	131	01	MAG TAPE & CASSETTE TEST	00A00	0315D
109	132	02	201/301 DATA SFT ADAPTER TEST	00400	01C27
10A	133	01	UNIVERSAL CLOCK MODULE TEST	00A00	01647
10B	134	00	8 LINE INTERRUPT MODULE TEST	00A00	01465
10C	137	00	HIGH SPEED PAPER TAPE R/P	00A00	01E4D
10D	139	01	16 BIT LSU SUPPORT PROGRAM	00A00	01A1F
10E	140	00	DYNAMIC CONTROL STORAGE TEST	00A00	018B5
110	147	00	CONVERSION EQUIPMENT TEST	00A00	0233R
112	149	00	F02 MUX BUS SWITCH TEST PART2	00A00	00E61
113	150	00	SENSE CONTACT MODULE TEST	00A00	00F5F
114	151	00	RELAY DRIVER TEST	00A00	00E53
115	163	01	GRAP. DISPLAY TERMINAL TEST	00A00	017CB
116	164	00	20 SURFACE DISC TEST	00A00	02D97
118	167	00	F01 MA 360/370 IF. TEST INTER.	00A00	03955
200	161	01	EXTENDED SELECTOR CHANNEL TEST	00A00	01B11
201	165	01	SERIES 32 LSU SUPPORT PROGRAM	00A00	02789

PROG= MMD ASSEMBLED BY CAL 03-066R07-00 (32-BIT)

```

0000000I
0000 0000
0000 0000
0000 0001
0000 0002
0000 0003
0000 0004
0000 0005
0000 0006
0000 0007
0000 0008
0000 0009
0000 000A
0000 000B
0000 000C
0000 000D
0000 000E
0000 000F

1          SCRAT
2          CROSS
3          SQUEZ
4          SQCHK
5          WIDTH 120
6          IFZ   ADC-2
7 MMD     PROG MMD LOADER 06-176F01R02M96A13
8          ELSE
9 MMD     PROG MMD LOADER 06-176F02R02M91A13
10         ENDC
11 *      COPYRIGHT C PERKIN-ELMER CORPORATION APRIL 1979
12 *      MULTI - MEDIA DIAGNOSTIC LOADER R02
13 TETOS   EQU 0
14 R0      EQU 0
15 R1      EQU 1
16 R2      EQU 2
17 R3      EQU 3
18 R4      EQU 4
19 R5      EQU 5
20 R6      EQU 6
21 R7      EQU 7
22 R8      EQU 8
23 R9      EQU 9
24 RA      EQU 10
25 RB      EQU 11
26 RC      EQU 12
27 RD      EQU 13
28 RE      EQU 14
29 RF      EQU 15
30 *      FOR PROPER EXECUTION OF THIS PROGRAM THE DEVICE DEFINITION
31 *      TABLE MUST BE SET UP PRIOR TO LOADING THIS PROGRAM. THE
32 *      REQUIRED FORMAT IS:
33 *
34 *
35 *      DEVICE          X'78'   X'7A'   X'7C'   X'7E'
36 *
37 *      MAG TAPE &     DDA1     0000     00SS     00LL
38 *      CASSETTE
39 *
40 *
41 *      DISC           YYZZ     DDTT     CCSS     00LL
42 *
43 *
44 *      WHERE:         DD = THE DEVICE WITH THE MAGNETIC MEDIA
45 *                   CC = THE CONTROLLER ADDRESS IF DD IS A DISC
46 *                   TT = DISC TYPE INDICATOR
47 *                   31 = 2.5 MB DISC
48 *                   33 = 10 MB DISC
49 *                   35 = 67 MB DISC
50 *                   36 = 256 MB DISC
51 *                   SS = THE SELCH ADDRESS
52 *                   YY = THE DEVICE ADDRESS OF THE DISC BOOT LOADING
53 *                   DEVICE.
MDL00010
MDL00020
MDL00030
MDL00040
MDL00050
MDL00060
MDL00070
MDL00080
MDL00090
MDL00100
MDL00110
MDL00120
MDL00130
MDL00140
MDL00150
MDL00160
MDL00170
MDL00180
MDL00190
MDL00200
MDL00210
MDL00220
MDL00230
MDL00240
MDL00250
MDL00260
MDL00270
MDL00280
MDL00290
MDL00300
MDL00310
MDL00320
MDL00330
MDL00340
MDL00350
MDL00360
MDL00370
MDL00380
MDL00390
MDL00400
MDL00410
MDL00420
MDL00430
MDL00440
MDL00450
MDL00460
MDL00470
MDL00480
MDL00490
MDL00500
MDL00510
MDL00520
MDL00530

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		54 *	ZZ = THE READ COMMAND FOR THE BOOT LOAD DEVICE	MDL00540
		55 *	LL = THE LOADER INDICATOR	MDL00550
		56 *	00 = 16 BIT LOADER	MDL00560
		57 *	01 = 32 BIT LOADER	MDL00570
		58 *		MDL00580
000000I		59	IFZ TETOS-1	MDL00590
		60	IFZ ADC-2	MDL00600
		61	DS X'60'	FILLER
		62	BS BOOTSTR	SKIP SPT POINTER
		63	DC Z(DIRECT)	DUMMY SPT POINTER
		64	BOOTSTR B START	DO IT
		65	DS X'10'	FILLER
		66	DCX 0	MDL00650
		67	DCX C633	MDL00660
		68	DCX B6F0	MDL00670
		69	DCX 0	MDL00680
		70	DS 16256	FILLER
		71	ELSE	MDL00700
		72	CRG X'60'	MDL00710
		73	BS BOOTSTR	SKIP SPT POINTER
		74	DC Z(DIRECT)	DUMMY SPT POINTER
		75	BOOTSTR B START	DO IT
		76	ORG X'78'	MDL00750
		77	DCX 0	MDL00760
		78	DCX C633	MDL00770
		79	DCX B6F0	MDL00780
		80	DCX 1	MDL00790
		81	ORG X'6000'	MDL00800
		82	ENDC	MDL00810
		83	ENDC	MDL00820
		84	START EQU *	MDL00830
	0000 0000I	85	B LCORE	MDL00840
000000I	4300 8B4C =000B50I	86	DISFLG DCX 0	MDL00850
000004I	0000	87	PASWAD EQU X'11'	MDL00860
	0000 0011	88	PASRAD EQU X'10'	MDL00870
	0000 0010	89	LPAD DB X'62'	MDL00880
000006I	62	90	TTYAD DB X'02'	MDL00890
000007I	02	91	PASC2 DB X'EE'	MDL00900
000008I	EF	92	DB 0	MDL00910
000009I	00	93	SOD DB 0	FILLER
00000AI	00	94	SOP DB 1	START OF DIRECTORY
00000BI	01	95	STCADR EQU X'CO'	START OF PROGRAM SPACE
	0000 00C0	96	TTYRD EQU X'94'	MDL00950
	0000 0094	97	TTYWR EQU X'98'	MDL00960
	0000 0098	98	PASRD EQU X'A1'	MDL00970
	0000 00A1	99	PASWR EQU X'A3'	MDL00980
	0000 00A3	100	MBWR EQU X'02'	MDL00990
	0000 0002	101	MBRD EQU X'82'	MDL01000
	0000 0082	102	BEGIN EQU *	MDL01010
	0000 000CI	103	LHI RO,X'3030'	LOAD ZEROS
00000CI	C800 3030	104	STH RO,PGMNUM	CLEAR
000010I	4000 8D20 =000D34I	105	STH RO,PGMNUM+2	CLEAR
000014I	4000 8D1E =000D36I	106	LIS RO,15	SET
000018I	240F	107	STH RO,DISFLG	SET
00001AI	4000 FFE6 =000004I	108	LIS R1,1	MDL01070
00001EI	2411			MDL01080

000020I	DE10 8CF2 =000D16I	109	OC	R1,ABORT1		MDL01090
000024I	2420	110	LIS	R2,0		MDL01100
000026I	C830 00FF	111	LHI	R3,X'FF'		MDL01110
00002AI	9A13	112	WDR	R1,R3		MDL01120
00002CI	9A13	113	WDR	R1,R3		MDL01130
00002EI	9A12	114	WDR	R1,R2		MDL01140
000030I	9A12	115	WDR	R1,R2		MDL01150
000032I	DE10 8CE1 =000D17I	116	OC	R1,ABORT1+1		MDL01160
000036I	2143	117	BTFS	4,NODIS	FALSE SYNC	MDL01170
000038I	C200 8074 =0000B0I	118	LPSW	GETNUM		MDL01180
	0000 003CI	119	EQU	*		MDL01190
00003CI	2400	120	LIS	R0,0	CLEAR	MDL01200
00003EI	4000 FFC2 =000004I	121	STH	R0,DISFLG	CLEAR	MDL01210
000042I	E640 81C2 =000208I	122	LDAI	R4,MESOK	GET ADDRESS	MDL01220
000046I	E680 81DF =000229I	123	LDAI	R8,MESOKEND+1	GET END ADDRESS	MDL01230
	0000 004AI	124	EQU	*		MDL01240
00004AI		125	IFNZ	ADC-2		MDL01250
00004AI	C810 0011	126	LHI	R1,PASWAD	LOAD PASLA WRITE ADDRESS	MDL01260
00004EI	D320 FFB6 =000008I	127	LB	R2,PASC2	LOAD CMD2	MDL01270
000052I	9E12	128	OCR	R1,R2	ISSUE CMD2	MDL01280
000054I	C820 00A3	129	LHI	R2,PASWR	LOAD WRITE COMMAND	MDL01290
		130	ELSE			MDL01300
		131	LHI	R1,X'CO'	LOAD STC ADDRESS	MDL01310
		132	LHI	R2,MBWR	LOAD WRITE COMMAND	MDL01320
		133	ENDC			MDL01330
000058I	9E12	134	OCR	R1,R2	ISSUE WRITE COMMAND	MDL01340
00005AI	D354 0000	135	LB	R5,0(R4)	LOAD DATA BYTE	MDL01350
00005EI	9D12	136	SSR	R1,R2	SENSE STATUS	MDL01360
000060I	2081	137	BTBS	8,1	WAIT FOR BUSY NOT	MDL01370
000062I	9A15	138	WDR	R1,R5	WRITE DATA	MDL01380
000064I	2641	139	AIS	R4,1	INCREMENT	MDL01390
000066I	0548	140	CLAR	R4,R8	DONE??	MDL01400
*000068I	2037	141	BNE	OUT03	NO, LOOP	MDL01410
00006AI	2460	142	LIS	R6,0	CLEAR	MDL01420
00006CI		143	IFNZ	ADC-2		MDL01430
00006CI	C810 0010	144	LHI	R1,PASRAD	LOAD PASLA READ ADDRESS	MDL01440
000070I	C820 00A1	145	LHI	R2,PASRD	LOAD READ COMMAND	MDL01450
		146	ELSE			MDL01460
		147	LHI	R2,MBRD	LOAD READ COMMAND	MDL01470
		148	ENDC			MDL01480
000074I	9E12	149	OCR	R1,R2	ISSUE READ COMMAND	MDL01490
000076I	9B12	150	RDR	R1,R2	DUMMY READ	MDL01500
000078I	9D12	151	SSR	R1,R2	SENSE STATUS	MDL01510
00007AI	2081	152	BTBS	8,1	WAIT FOR BUSY NOT	MDL01520
00007CI	9B12	153	RDR	R1,R2	READ DATA	MDL01530
00007EI	9A12	154	WDR	R1,R2	ECHO DATA	MDL01540
000080I	C420 007F	155	NHI	R2,X'7F'	STRIP PARITY	MDL01550
000084I	C520 005F	156	CLHI	R2,X'5F'	POUND??	MDL01560
000088I	4330 FFB6 =00004AI	157	BE	OUT04	LOOP	MDL01570
00008CI	C520 000D	158	CLHI	R2,X'0D'	CR??	MDL01580
000090I	4330 8054 =0000E8I	159	BE	FINUM2	LOAD IT	MDL01590
000094I	C520 0040	160	CLHI	R2,C'a'	ADDRESS REQUEST??	MDL01600
000098I	2133	161	BNES	OUT05		MDL01610
00009AI	8800	162	DC	X'8800'	BREAKPOINT	MDL01620
00009CI	2201	163	DC	X'2201'	LOOP	MDL01630

00009EI	D226 8C92 =000D34I	164	OUT05	STB R2,PGMNUM(R6)	STORE	MDL01640
0000A2I	2661	165		AIS R6,1	INCRIMENT	MDL01650
*0000A4I	C560 0004	166		CLAI R6,4	DONE??	MDL01660
0000A8I	4280 FFCC =000078I	167		BL OUT02	NO, LOOP	MDL01670
0000ACI	4300 FF8C =00003CI	168		B MODIS	RESTART	MDL01680
0000B0I		169		ALIGN 8		MDL01690
	0000 00B0I	170	GETNUM	EQU *		MDL01700
0000B0I		171		IFZ ADC-2		MDL01710
		172		DC X'F000',Z(FINUM)		MDL01720
		173		ELSE		MDL01730
0000B0I	0000	174		DC X'0000',X'F0F0'		MDL01740
0000B2I	F0F0					
0000B4I	0000	175		DC X'0000',Z(FINUM)		MDL01750
0000B6I	00E8I					
		176		ENDC		MDL01760
0000B8I	2411	177	FINUM	LIS R1,1		MDL01770
0000BAI	DE10 8C58 =000D16I	178		OC R1,ABORT1		MDL01780
0000BEI	9B12	179		RDR R1,R2	READ THE NUMBER ENTERED	MDL01790
0000C0I	9B13	180		RDR R1,R3	IN HEX	MDL01800
0000C2I	1138	181		SLLS R3,8		MDL01810
0000C4I	0623	182		OAR R2,R3	GET THE THREE DIGITS	MDL01820
*0000C6I	C420 0FFF	183		NAI R2,X'FFF'		MDL01830
0000CAI	4020 8C82 =000D50I	184		STH R2,HEXNUM		MDL01840
0000CEI	2452	185		LIS R5,2		MDL01850
0000D0I	C830 0FFF	186		LHI R3,X'0FFF'	MASK OFF 3 DIGITS	MDL01860
0000D4I	0432	187		NAR R3,R2		MDL01870
0000D6I	242F	188	FINUM1	LIS R2,X'F'	CONVERT TO ASCII	MDL01880
0000D8I	0423	189		NAR R2,R3		MDL01890
0000DAI	D342 8C08 =000CE6I	190		LB R4,ASCII(R2)		MDL01900
0000DEI	D245 8C52 =000D34I	191		STB R4,PGMNUM(R5)		MDL01910
0000E2I	1034	192		SRLS R3,4		MDL01920
0000E4I	2751	193		SIS R5,1		MDL01930
0000E6I	2218	194		BNMS FINUM1	NUMBER IS NOW IN ASCII IN PGMNUM	MDL01940
	0000 00E8I	195	FINUM2	EQU *		MDL01950
0000E8I	24A0	196		LIS RA,0	SETUP	MDL01960
0000EAI	24B1	197		LIS RB,1	BXLE	MDL01970
0000ECI	24C2	198		LIS RC,2	COUNT	MDL01980
0000EEI	24D0	199		LIS RD,0	CLEAR	MDL01990
0000FOI	D30A 8C40 =000D34I	200	ATH	LB R0,PGMNUM(RA)	GET ASCII	MDL02000
0000F4I	C500 003A	201		CLHI R0,X'3A'	LEGAL 0-9??	MDL02010
*0000F8I	238E	202		BNC ATF	MAY BE A-F	MDL02020
0000FAI	C500 0030	203		CLHI R0,X'30'	LEGAL 0-9??	MDL02030
0000FEI	4280 8024 =000126I	204		BL NOTHEX	INVALID NUMBER	MDL02040
000102I	C400 000F	205	HSAV	NHI R0,X'F'	MASK	MDL02050
000106I	11D4	206		SLLS RD,4	SHIFT	MDL02060
000108I	06D0	207		OAR RD,R0	MERGE	MDL02070
00010AI	C1A0 FFE2 =0000FOI	208		BXLE RA,ATH	LOOP	MDL02080
00010EI	40D0 8C3E =000D50I	209		STH RD,HEXNUM	STORE	MDL02090
*000112I	230D	210		B FINUM3	GO	MDL02100
000114I	C500 0041	211	ATF	CLHI R0,X'41'	LEGAL A-F??	MDL02110
*000118I	2187	212		BL NOTHEX	INVALID NUMBER	MDL02120
00011AI	C500 0046	213		CLHI R0,X'46'	LEGAL A-F??	MDL02130
*00011EI	2384	214		BNC NOTHEX	INVALID NUMBER	MDL02140
000120I	2609	215		AIS R0,9	MAKE LSD HEX	MDL02150
000122I	4300 FFDC =000102I	216		B HSAV	CONTINUE	MDL02160

000126I	2400		217	NOTHEX	LIS	R0,0	CLEAR	MDL02170
000128I	4300	FFD6 =000102I	218		B	HSAV	CONTINUE	MDL02180
00012CI	4840	007A	219	FINUM3	LH	R4,X'7A'	LOAD INPUT DEVICE ADDRESSES	MDL02190
000130I	4330	805A =00018EI	220		BZ	MTDEV	0=MAG TAPE	MDL02200
000134I	D3A0	007A	221		LB	RA,X'7A'	GET DEVICE ADDRESS	MDL02210
000138I	D3B0	007D	222		LB	RB,X'7D'	GET SELCH ADDRESS	MDL02220
00013CI	DEB0	8BCC =000D0CI	223		OC	RB,STOP	STOP A SELCH	MDL02230
000140I	DEB0	8BC8 =000D0CI	224		OC	RB,STOP	STOP A SELCH	MDL02240
000144I	D3C0	007C	225		LB	RC,X'7C'	GET CONTROLLER ADDRESS	MDL02250
000148I	D370	007B	226		LB	R7,X'7B'		MDL02260
00014CI	2420		227		LIS	R2,0	LOAD DEVICE COUNT	MDL02270
00014EI	C570	0031	228		CLHI	R7,X'31'	2.5 MB DISC??	MDL02280
000152I	4280	FEB6 =00000CI	229		BL	BEGIN	ILLEGAL DEVICE	MDL02290
000156I	4330	802A =000184I	230		BE	FINUM4	YES	MDL02300
00015AI	2621		231		AIS	R2,1	BUMP	MDL02310
00015CI	C570	0032	232		CLHI	R7,X'32'	10 MB DISC (FIXED)??	MDL02320
000160I	4330	8020 =000184I	233		BE	FINUM4	YES, TREAT AS REMOVABLE	MDL02330
000164I	C570	0033	234		CLHI	R7,X'33'	10 MB DISC (REMOVABLE)??	MDL02340
*000168I	233E		235		BE	FINUM4	YES	MDL02350
00016AI	C570	0034	236		CLHI	R7,X'34'	40 MB DISC??	MDL02360
00016EI	4330	FE9A =00000CI	237		BE	BEGIN	NOT SUPPORTED	MDL02370
000172I	2621		238		AIS	R2,1	BUMP	MDL02380
000174I	C570	0035	239		CLHI	R7,X'35'	80 MB DISC??	MDL02390
*000178I	2336		240		BE	FINUM4	YES	MDL02400
00017AI	2621		241		AIS	R2,1	BUMP	MDL02410
00017CI	C570	0036	242		CLHI	R7,X'36'	300 MB DISC??	MDL02420
000180I	4230	FE88 =00000CI	243		BNE	BEGIN	ILLEGAL DEVICE	MDL02430
000184I	0872		244	FINUM4	LDAR	R7,R2	SETUP DEVICE TYPE	MDL02440
000186I	0A77		245		AAR	R7,R7	DOUBLE DEVICE POINTER	MDL02450
000188I	4070	8BC6 =000D52I	246		STH	R7,TRKDN		MDL02460
00018CI	2306		247		BS	CONTUE		MDL02470
	0000	02C6I	248	MTEOV	EQU	DEOV		MDL02480
00018EI	D3A0	0078	249	MTDEV	LB	RA,X'78'	GET MAG TAPE ADDRESS	MDL02490
000192I	D3P0	007D	250		LB	RB,X'7D'	SET SELCH	MDL02500
000196I	24C0		251		LIS	RC,0	SET CONTROLLER = 0	MDL02510
	0000	0198I	252	CONTUE	EQU	*	ADDRESSES ARE LOADED	MDL02520
000198I	4820	8BB4 =000D50I	253		LH	R2,HEXNUM	GET THE NUMBER ENTERED(IN HGX)	MDL02530
00019CI	4330	84DC =00067CI	254		BZ	LIST	IF ZERO - GO LIST	MDL02540
0001A0I	08CC		255		LDAR	RC,RC	MAG TAPE ?	MDL02550
0001A2I	4230	8084 =00022AI	256		BNZ	LODDIS	NO, LOAD DISC	MDL02560
			257	*			THIS ROUTINE WILL FORWARD FILE MARKS AND READ PDB'S UNTIL	MDL02570
			258	*			THE NUMBER IN THE PDB MATCHES THE NUMBER ENTERED ON THE	MDL02580
			259	*			DISPLAY, OR EOVS IS REACHED. IF THE NUMBER IS FOUND THE	MDL02590
			260	*			PROGRAM ASSOCIATED WITH THAT NUMBER IS LOADED.	MDL02600
0001A6I	DEA0	8B5A =000D04I	261		OC	RA,DISABL	DISABLE INTERRUPTS	MDL02610
0001AAI	DEA0	8B57 =000D05I	262		OC	RA,CLEAR	CLEAR CONTROLLER	MDL02620
0001AEI	DEA0	8B56 =000D08I	263	MAGFF1	OC	RA,FWFM	FORWARD FILE MARK	MDL02630
0001B2I	41C0	88D2 =000A88I	264		BAL	R0,NOMOTN	WAIT	MDL02640
0001B6I	E650	8C36 =000DF0I	265		LDAI	R5,PDB		MDL02650
0001BAI	E660	8C64 =000E22I	266		LDAI	R6,PDB+50		MDL02660
0001BEI	E610	8104 =0002C6I	267		LDAI	R1,MTEOV		MDL02670
0001C2I	4130	82B2 =000478I	268		BAL	R3,READPB	READ THE PDB	MDL02680
0001C6I	4830	8B6A =000D34I	269		LH	R3,PGMNUM	GET THE NUMBER ENTERED	MDL02690
0001CAI	4530	9C22 =000DF0I	270		CLH	R3,PDB	FIRST TWO DIGITS = ?	MDL02700
0001CEI	4230	FFDC =0001AEI	271		BNE	MAGFF1	NO	MDL02710

0001D2I	D330	8B60	=000D36I	272	LB	R3,PGMNUM+2	YES - COMPARE THIRD	MDL02720
0001D6I	D340	8C18	=000DF2I	273	LB	R4,PDB+2		MDL02730
0001DAI	0534			274	CLAR	R3,R4	= ?	MDL02740
0001DCI	4230	FFCE	=0001AEI	275	BNE	MAGFF1	NO, SKIP MORE	MDL02750
0001EOI	4130	8154	=000338I	276	BAL	R3,MISTR	SET THE NUMBER OF BLOCK TO BE COPIED	MDL02760
0001E4I	58E0	8B30	=000D18I	277	LDA	RD,LOW	LOAD START ADDRESS	MDL02770
0001E8I	58E0	8B30	=000D1CI	278	LDA	RE,HIGH	LOAD STOP ADDRESS	MDL02780
0001ECI	4130	8864	=000A54I	279	MOREMT	BAL R3,STBKAD	ADJUST ADDRESS	MDL02790
0001FOI	E610	800C	=000200I	280	LDAI	R1,MTENDX	WRITE TO MEMORY	MDL02800
0001F4I	4130	8280	=000478I	281	BAL	R3,READPB		MDL02810
0001F8I	0844			282	LDAR	R4,R4	GET END INDICATOR	MDL02820
0001FAI	2237			283	BZS	MOREMT	FINISHED - NO	MDL02830
0001FCI	4300	8232	=000432I	284	B	CHKSUM	YES	MDL02840
000200I	C810	09CC		285	MTENDX	LHI R1,X'CC'	SHORT FILE	MDL02850
000204I	4300	8A54	=000C5CI	286	B	ERROR	FILE MARK BEFORE END OF COUNT	MDL02860
000208I	4D4D	444C	5230 322D	287	MESOK	DC	C'MMDLRO2-INPUT SEQUENCE NUMBER',X'ODOA'	MDL02870
000210I	494E	5055	5420 5345					
000218I	5155	454E	4345 204E					
000220I	554D	4245	5220					
000226I	0DOA							
000228I	2A20			288	MESOKEND	DC C**		MDL02880
				289	*	THIS ROUTINE WILL SEARCH THE DISC DIRECTORY FOR A NUMBER		MDL02890
				290	*	THAT MATCHES THE NUMBER ENTERED ON THE DISPLAY, OR EOY.		MDL02900
				291	*	IF THE NUMBER IS FOUND THE PROGRAM ASSOCIATED WITH THAT		MDL02910
				292	*	NUMBER IS LOADED.		MDL02920
				293	LODDIS	EQU *		MDL02930
00022AI	0000	022AI		294	LB	R3,SOD	GET START	MDL02940
00022EI	D330	FDDC	=00000AI	295	STH	R3,CYL	SET CYL TO ONE	MDL02950
000232I	4030	8B12	=000D44I	296	XAR	R8,R8	SET SECTOR TO ZERO	MDL02960
000234I	0788			297	STH	R8,HEAD	SET HEAD TO ZERO	MDL02970
000238I	4080	8B0E	=000D46I	298	BAL	R3,WDFI		MDL02980
000238I	4130	8860	=000A9CI	299	OC	RA,SEEK	SEEK	MDL02990
00023CI	DEA0	8ACE	=000D0EI	300	BAL	R3,FRSRW	WAIT	MDL03000
000240I	4130	889A	=000ADEI	301	LDAI	R5,DIRECT		MDL03010
000244I	E650	8BDC	=000E24I	302	LDAI	R6,DIRECT+255		MDL03020
000248I	E660	8CD7	=000F23I	303	BAL	R3,WDFI		MDL03030
00024CI	4130	884C	=000A9CI	304	BAL	R3,RDISC	READ THE DISC	MDL03040
000250I	4130	8210	=000464I	305	LHI	R3,X'EEEE'	IS KNOW INFO ON THE PACK ?	MDL03050
000254I	C830	EEEE		306	CLH	R3,DIRECT		MDL03060
000258I	4530	8BC8	=000E24I	307	BES	DISCON	YES	MDL03070
00025CI	2335			308	LHI	R1,X'EO'	NO - DISC DOES NOT CONTAIN KNOWN INFO	MDL03080
00025EI	C810	00E0		309	B	ERRA		MDL03090
000262I	4300	8A12	=000C78I	310	DISCON	XAR R2,R2		MDL03100
000266I	0722			311	UPDTX3	LH R3,DIRECT(R2)	GET THE # FROM THE DIRECTORY	MDL03110
000268I	4832	8BB8	=000E24I	312	BZ	DEOV	END OF VOLUME - YES	MDL03120
00026CI	4330	8056	=0002C6I	313	CLH	R3,PGMNUM	NO	MDL03130
000270I	4530	8AC0	=000D34I	314	BNES	UPDTX2	IS THIS THE CURRENT	MDL03140
000274I	2138			315	LB	R3,DIRECT+2(R2)	NUMBER	MDL03150
000276I	D332	8BAC	=000E26I	316	LB	R1,PGMNUM+2		MDL03160
00027AI	D310	8AB8	=000D36I	317	CLAR	R3,R1		MDL03170
00027EI	0531			318	BE	FIND	YES	MDL03180
000280I	4330	8062	=0002E6I	319	UPDTX2	AIS R2,8	NO - BUMP DIRECTORY POINTER	MDL03190
000284I	2628			320	CLHI	R2,X'100'	MAX ?	MDL03200
000286I	C520	0100		321	BNE	UPDTX3	NO	MDL03210
00028AI	4230	FFDA	=000268I	322	AIS	R8,1	MAX # OF SECTORS ?	MDL03220
00028EI	2681							

000290I	4830	8ABE	=000D52I	323	LH	R3,TRKDEN		MDL03230
000294I	4583	803E	=0002D6I	324	CLH	R8,SECTAB(R3)		MDL03240
*000298I	233C			325	BE	UPDTX4	YES	MDL03250
00029AI	E650	8B86	=000E24I	326	UPDTX5	LDAI R5,DIRECT	NO	MDL03260
00029EI	E660	8C81	=000F23I	327	LDAI	R6,DIRECT+255		MDL03270
0002A2I	4130	87F6	=000A9CI	328	BAL	R3,WDFE		MDL03280
0002A6I	4130	81BA	=000464I	329	BAL	R3,RDISC	READ NEW DIRECTORY	MDL03290
0002AAI	2420			330	LIS	R2,0	ZERO POINTER	MDL03300
0002ACI	4300	FFB8	=000268I	331	B	UPDTX3		MDL03310
0002BOI	4820	8A92	=000D46I	332	UPDTX4	LH R2,HEAD		MDL03320
0002B4I	4523	8016	=0002CEI	333	CLH	R2,HDTAB(R3)		MDL03330
*0002B8I	2337			334	BE	DEOV		MDL03340
0002BAI	2621			335	AIS	R2,1		MDL03350
0002BCI	4020	8A86	=000D46I	336	STH	R2,HEAD	SAVE	MDL03360
0002COI	0788			337	XAR	R8,R8	ZERO SECTOR	MDL03370
0002C2I	4300	FFD4	=00029AI	338	B	UPDTX5		MDL03380
0002C6I	C810	00BB		339	DEOV	LHI R1,X'BB'		MDL03390
0002CAI	4300	898E	=000C5CI	340	B	ERROR		MDL03400
0002CEI	0001			341	HDTAB	DC H'1'		MDL03410
0002DOI	0001			342	DC	H'1'		MDL03420
0002D2I	0004			343	DC	H'4'		MDL03430
0002D4I	0012			344	DC	H'18'		MDL03440
0002D6I	0018			345	SECTAB	DC H'24'		MDL03450
0002D8I	0018			346	DC	H'24'		MDL03460
0002DAI	0040			347	DC	H'64'		MDL03470
0002DCI	0040			348	DC	H'64'		MDL03480
0002DEI	00CA			349	CYLTAB	DC H'202'		MDL03490
0002E0I	0197			350	DC	H'407'		MDL03500
0002E2I	0336			351	DC	H'822'		MDL03510
0002E4I	0336			352	DC	H'822'		MDL03520
	0000	02E6I		353	FIND	EQU *		MDL03530
0002E6I	4882	8B3E	=000E28I	354	LH	R8,DIRECT+4(R2)	THE STARTING HEAD	MDL03540
0002EAI	4080	8A56	=000D44I	355	STH	R8,CYL		MDL03550
0002EEI	D382	8B38	=000E2AI	356	LB	R8,DIRECT+6(R2)	SET THE SECTOR	MDL03560
0002F2I	D332	8B35	=000E2BI	357	LB	R3,DIRECT+7(R2)	SET THE HEAD	MDL03570
0002F6I	4030	8A4C	=000D46I	358	STH	R3,HEAD		MDL03580
0002FAI	4130	87E0	=000ADEI	359	BAL	R3,FRSRW	FILE READY	MDL03590
0002FEI	4130	879A	=000A9CI	360	BAL	R3,WDFE	SET UP FILE	MDL03600
000302I	DEA0	8A08	=000D0EI	361	QC	RA,SEEK	SEEK	MDL03610
000306I	4130	87D4	=000ADEI	362	BAL	R3,FRSRW	WAIT	MDL03620
00030AI	E650	8AE2	=000DFOI	363	LDAI	R5,PDB	SET UP ADDRESSES	MDL03630
00030EI	E660	8B10	=000E22I	364	LDAI	R6,PDB+50		MDL03640
000312I	4130	807A	=000390I	365	BAL	R3,AVAILR		MDL03650
000316I	4130	801E	=000338I	366	BAL	R3,MISTR	SET UP LOW AND HIGH	MDL03660
00031AI	58C0	89FA	=000D18I	367	LDA	RD,LOW		MDL03670
00031EI	58E0	89FA	=000D1CI	368	LDA	RE,HIGH		MDL03680
000322I	4130	872E	=000A54I	369	DTRIP	BAL R3,STBKAD	SET BLOCK LENGTH	MDL03690
000326I	4040	8A1E	=000D48I	370	STH	R4,AVAFLE	SAVE	MDL03700
00032AI	4130	8062	=000390I	371	BAL	R3,AVAILR		MDL03710
00032EI	4840	8A16	=000D48I	372	LH	R4,AVAFLE	RESTORE	MDL03720
000332I	2238			373	BZS	DTRIP		MDL03730
000334I	4300	80FA	=000432I	374	B	CHKSUM		MDL03740
				375	*	THIS ROUTINE WILL READ THE LOW AND HIGH LIMITS FROM THE PDB		MDL03750
				376	*	AND STORE THEM IN MEMORY AT THE LABELS LOW AND HIGH RESPECTIVELY.		MDL03760
				377	*			MDL03770

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378 * INPUT:
379 *
380 * REG 3 = RETURN ADDRESS
381 *
382 * OUTPUT:
383 *
384 * LOCATION LOW - LOW ADDRESS TO BE COPIED
385 * HIGH - HIGH ADDRESS TO BE COPIED
386 *
387 * REGISTERS USED:
388 *
389 * R1
390 * R2
391 *
000338I 2410 392 MISTR1 LIS R1,0 SET THE LOW FLAG
00033AI 5030 89F2 =000D30I 393 MISTR1 STA R3,MISTRN SAVE RETURN
00033EI 0733 394 MISTR2 XAR R3,R3 ZERO THE RESULT REG.
000340I D331 8ABE =000E02I 395 LB R3,PDB+18(R1) GET HO BYTE OF ADDRESS
000344I 1138 396 SLLS R3,8 SHIFT
000346I D321 8AB9 =000E03I 397 LB R2,PDB+19(R1) GET MO BYTE OF ADDRESS
00034AI 0632 398 OAR R3,R2 OR IT IN
00034CI 1138 399 SLLS R3,8 SHIFT
00034EI D321 8AB2 =000E04I 400 LB R2,PDB+20(R1) GET LO BYTE OF ADDRESS
000352I 0632 401 OAR R3,R2 OR IT IN
000354I 0811 402 LDAR R1,R1 R1 = 0
000356I 2136 403 BNZS MISHI NO
000358I 5030 89BC =000D18I 404 STA R3,LOW YES THEN LOW WAS READ
00035CI 2413 405 LIS R1,3
00035EI 4300 FFDC =00033EI 406 B MISTR2
000362I 5030 89B6 =000D1CI 407 MISHI STA R3,HIGH
000366I 5830 89AE =000D18I 408 LDA R3,LOW GET LOW
00036AI E620 FC92 =000000I 409 LDAI R2,START IS IT < TPL ?
00036EI 0532 410 CLAR R3,R2
000370I 2188 411 BLS PRGLOW LOW < MDL HIGH MUST BE < MDL
000372I E620 8AB3 =000E29I 412 LDAI R2,END+4 LOW IS > TPL START, THEREFORE IT
000376I 0532 413 CLAR R3,R2 CANNOT BE < END
000378I 2188 414 BLS MISERR ATTEMPT TO LOAD OVER LOADER
00037AI 5830 89B2 =000D30I 415 MISEND LDA R3,MISTRN LOW IS > END OK
00037EI 0303 416 BR R3 RETURN
000380I 5830 8998 =000D1CI 417 PRGLOW LDA R3,HIGH GET HIGH
000384I 0532 418 CLAR R3,R2 IS IT < START ALSO
000386I 2086 419 BLS MISEND YES, OK
000388I C810 00DD 420 MISERR LHI R1,X'DD' ATTEMPT TO LOAD OVER LOADER
00038CI 4300 88CC =000C5CI 421 B ERROR
422 * THIS ROUTINE WILL READ A SECTOR OF THE PROGRAM FROM THE DISC
423 * INTO THE SPECIFIED BUFFER AREA, AND RETURN WITH THE SECTOR, HEAD,
424 * AND CYLINDER UPDATED TO THE NEXT AVAILABLE SECTOR
425 *
426 * INPUT : R3 = RETURN ADDRESS
427 * R8 = SECTOR TO BE READ
428 * RA = DEVICE ADDRESS
429 * RB = SELCH ADDRESS
430 * RC = CONTROLLER ADDRESS
431 * HEAD = CURRENT HEAD
432 * CYL = CURRENT CYLINDER
MDL03780
MDL03790
MDL03800
MDL03810
MDL03820
MDL03830
MDL03840
MDL03850
MDL03860
MDL03870
MDL03880
MDL03890
MDL03900
MDL03910
MDL03920
MDL03930
MDL03940
MDL03950
MDL03960
MDL03970
MDL03980
MDL03990
MDL04000
MDL04010
MDL04020
MDL04030
MDL04040
MDL04050
MDL04060
MDL04070
MDL04080
MDL04090
MDL04100
MDL04110
MDL04120
MDL04130
MDL04140
MDL04150
MDL04160
MDL04170
MDL04180
MDL04190
MDL04200
MDL04210
MDL04220
MDL04230
MDL04240
MDL04250
MDL04260
MDL04270
MDL04280
MDL04290
MDL04300
MDL04310
MDL04320

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		433	*		R5 = START OF BUFFER TO BE READ		MDL04330
		434	*		R6 = END OF BUFFER TO BE READ		MDL04340
		435	*				MDL04350
		436	*	OUTPUT: R8 = NEW SECTOR NUMBER			MDL04360
		437	*	R5 = SAME			MDL04370
		438	*	R6 = SAME			MDL04380
		439	*	HEAD = HEAD ASSOCIATED WITH THE NEXT SECTOR			MDL04390
		440	*	CYL = CYL ASSOCIATED WITH THE NEXT SECTOR			MDL04400
		441	*				MDL04410
		442		AVAILR EQU *			MDL04420
		443		STA R3,AVARTN			MDL04430
		444		AVAILS BAL R3,WDFT			MDL04440
		445		OC RA,SEEK			MDL04450
		446		BAL R3,FRSRW			MDL04460
		447		LH R4,TRKDEN	LOAD TRKDEN		MDL04470
		448		CLH R8,SECTAB(R4)	MAXIMUM ?		MDL04480
		449		BE AVAIL4A	YES		MDL04490
		450		AVAIL4 BAL R3,WDFT			MDL04500
		451		BAL R3,RCHK	READ CHECK THE SECTOR		MDL04510
		452		LH R3,CONSTA	IS THIS SECTOR		MDL04520
		453		THI R3,X'20'	DEFECTIVE		MDL04530
		454		BZ AVAIL1	NO		MDL04540
		455		AIS R8,1	NO - GET ANOTHER SECTOR		MDL04550
		456		AVAIL4A CLH R8,SECTAB(R4)	MAXIMUM ?		MDL04560
		457		BNE AVAIL4			MDL04570
		458		LH R3,HEAD	NO - ANY ON THIS CYL ?		MDL04580
		459		CLH R3,HDTAB(R4)			MDL04590
		460		BE AVAI00			MDL04600
		461		AIS R3,1	YES		MDL04610
		462		STH R3,HEAD	INCREMENT HEAD		MDL04620
		463		XAR R8,R8	ZERO SECTOR		MDL04630
		464		B AVAIL4			MDL04640
		465		AVAI00 LH R3,CYL	GET NEXT CYL #		MDL04650
		466		AIS R3,1			MDL04660
		467		AVACON STH R3,CYL	SAVE NEW CYL VALUE		MDL04670
		468		XAR R8,R8	ZERO SECTOR		MDL04680
		469		STH R8,HEAD	ZERO OUT HEAD		MDL04690
		470		B AVAILS	GO SEEK		MDL04700
		471		AVAIL1 EQU *			MDL04710
		472		BAL R3,WDFT			MDL04720
		473		BAL R3,RDISC	READ		MDL04730
		474		AVACTN AIS R8,1			MDL04740
		475		LH R4,TRKDEN			MDL04750
		476		CLH R8,SECTAB(R4)			MDL04760
		477		BES AVAIL6	YES		MDL04770
		478		B AVAEND	NO - RETURN		MDL04780
		479		AVAIL6 LH R3,HEAD	INC. THE HEAD IF POSSIBLE		MDL04790
		480		CLH R3,HDTAB(R4)			MDL04800
		481		BE AVANCY	NOT POSSIBLE		MDL04810
		482		AIS R3,1	SET THE HEAD		MDL04820
		483		STH R3,HEAD	TO 1		MDL04830
		484		XAR R8,R8	SET SECTOR TO ZERO		MDL04840
		485		BS AVAEND			MDL04850
		486		AVANCY LH R3,CYL	GET THE CYLINDER VALUE		MDL04860
		487		AIS R3,1			MDL04870

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000422I 4030 891E =000D44I 488 AVACY1  STH  R3,CYL          SAVE THE NEW CYLINDER      MDL04880
000426I 0788                489          XAR  R8,R8          ZERO OUT THE SECTOR      MDL04890
000428I 4080 891A =000D46I 490          STH  R8,HEAD      ZERO OUT THE HEAD        MDL04900
00042CI 5830 890C =000D3CI 491 AVAEND  LDA  R3,AVARTN  GET THE RETURN ADDRESS   MDL04910
000430I 0303                492          BR   R3              MDL04920
493 *      THIS ROUTINE WILL CALCULATE CHKSUM ON THE PROGRAM LOADED   MDL04930
494 *      INTO MEMORY, AND COMPARE IT TO THE CHKSUM BYTE IN THE PDB OF MDL04940
495 *      THE LOADED PROGRAM.                                         MDL04950
496 *                                                                    MDL04960
497 *                                                                    MDL04970
498 *      IF CHKSUMS = X'FF' WILL BE DISPLAYED                       MDL04980
499 *      IF CHKSUMS NOT = X'EE' WILL BE DISPLAYED                   MDL04990
000432I 0000 0432I          499 CHKSUM  EQU  *          CALCULATE THE CHKSUM BYTE   MDL05000
000434I 2450                500          LIS  R5,0              MDL05010
000438I 5840 88E0 =000D18I 501          LDA  R4,LOW           MDL05020
000438I D324 0000          502 CHK1   LB   R2,0(R4)      GET A BYTE                 MDL05030
00043CI 0752                503          XAR  R5,R2          X OR INTO CHKSUM BYTE    MDL05040
00043EI 2641                504          AIS  R4,1          BUMP POINTER              MDL05050
000440I 5540 88D8 =000D1CI 505          CLA  R4,HIGH        = MAX ?                   MDL05060
000444I 2086                506          BLS  CHK1            NO                          MDL05070
000446I D324 0000          507          LB   R2,0(R4)      YES - X OR LAST BYTE     MDL05080
00044AI 0752                508          XAR  R5,R2          R5 = CHKSUM              MDL05090
00044CI D320 89B8 =000E08I 509          LB   R2,PDB+24     GET THE BYTE FROM THE PDB MDL05100
000450I 0552                510          CLAR R5,R2        CHKSUM OK ?              MDL05110
000452I 2135                511          BNES CHKERR       NO                          MDL05120
000454I C810 00FF          512 NORTRM LHI  R1,X'FF'   YES - DISPLAY FF         MDL05130
000458I 4300 8800 =000C5CI 513          B    ERROR         NORMAL TERMINATION      MDL05140
00045CI C810 00EE          514 CHKERR LHI  R1,X'EE'   CHKSUM ERROR            MDL05150
000460I 4300 87F8 =000C5CI 515          B    ERROR         TERMINATION              MDL05160
516 *      R E A D                                                    MDL05170
517 *      ENTRY POINT          OPERATION                               MDL05180
518 *                                                                    MDL05190
519 *      RDISC . . . . . THIS ROUTINE PERFORM A READ OF ONE        MDL05200
520 *      SECTOR FROM THE DISC.                                       MDL05210
521 *                                                                    MDL05220
522 *      READPB . . . . . THIS ENTRY WILL READ ONE RECORD FROM    MDL05230
523 *      MAG TAPE.                                                    MDL05240
524 *                                                                    MDL05250
525 *      INPUT : R3 = RETURN ADDRESS                                   MDL05260
526 *      R5 = LOW ADDRESS OF THE BUFFER TO BE READ                  MDL05270
527 *      R6 = HIGH ADDRESS OF THE BUFFER TO BE READ                 MDL05280
528 *      RA = DEVICE ADDRESS                                         MDL05290
529 *      RB = SELCH ADDRESS (IF ANY)                                  MDL05300
530 *      RC = CONTROLLER ADDRESS (IF ANY)                            MDL05310
531 *      R1 = EOY RETURN (IF A MAG TAPE READ)                       MDL05320
532 *                                                                    MDL05330
533 *      OUTPUT: R5 = SAME                                           MDL05340
534 *      RA = SAME                                                  MDL05350
535 *      RB = SAME                                                  MDL05360
536 *      RC = SAME                                                  MDL05370
537 *                                                                    MDL05380
538 *      REGISTERS USED:                                             MDL05390
539 *                                                                    MDL05400
540 *      R1                                                           MDL05410
541 *      R2                                                           MDL05420
542 *      DESIGNATED BUFFER AREA CONTAINS THE DATA

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		543	*		READ FROM THE MEDIA.	MDL05430
		544	*			MDL05440
		545	*			MDL05450
		546	RDISC	EQU *		MDL05460
000464I	5030 88B8 =000D20I	547		STA R3,WRTE		MDL05470
000468I	2435	548		LIS R3,5	SET THE RETRY COUNT	MDL05480
00046AI	4030 88F2 =000D60I	549		STH R3,RETRY		MDL05490
00046EI	243F	550		LIS R3,15	SET THE DISC INDICATOR	MDL05500
000470I	4030 88E2 =000D56I	551		STH R3,RWDEV		MDL05510
000474I	4300 8044 =0004BCI	552		B DISC		MDL05520
	0000 0478I	553	READPB	EQU *		MDL05530
000478I	5030 88A4 =000D20I	554		STA R3,WRTE		MDL05540
00047CI	5010 88A4 =000D24I	555		STA R1,EOVRN	SAVE THE EOVR BRANCH ADD.	MDL05550
000480I	2415	556		LIS R1,5	SET THE WRITE RETRY COUNTER	MDL05560
000482I	4010 88DA =000D60I	557		STH R1,RETRY	TO FIVE	MDL05570
000486I	2430	558		LIS R3,0	SET THE MAG TAPE INDICATOR	MDL05580
000488I	4030 88CA =000D56I	559		STH R3,RWDEV		MDL05590
00048CI	DEA0 8874 =000D04I	560		OC RA,DISABL		MDL05600
000490I	08EB	561	MTRY	LDAR RB,RB	SELCH ?	MDL05610
000492I	4230 8026 =0004BCI	562		BNZ SELWRT		MDL05620
000496I	2430	563		LIS R3,0	NO	MDL05630
000498I	4030 88BE =000D5AI	564		STH R3,SELERR	ZERO OUT THE SELCH ERROR FLAG	MDL05640
00049CI	D320 8867 =000D07I	565		LB R2,MTREAD	GET THE READ COMMAND	MDL05650
0004A0I	9EA2	566		OCR RA,R2	OUTPUT THE READ COMMAND	MDL05660
0004A2I	9DA7	567	SRB	SSR RA,R7	SENSE STATUS	MDL05670
0004A4I	2081	568		BTBS 8,1	WAIT FOR BUSY NOT	MDL05680
0004A6I	DBA5 0000	569		RD RA,0(R5)	READ DATA	MDL05690
0004AAI	2651	570		AIS R5,1	BUMP	MDL05700
0004ACI	0556	571		CLAR R5,R6	DONE??	MDL05710
*0004AEI	2086	572		BC SRB	NO, LOOP	MDL05720
*0004B0I	2237	573		BE SRB	NO, LOOP	MDL05730
0004B2I	9DA7	574		SSR RA,R7	SENSE STATUS	MDL05740
0004B4I	4270 80B8 =000570I	575		BTC 7,MTERR	ERROR	MDL05750
0004B8I	4300 809E =00055AI	576		B COMMT1		MDL05760
	0000 04BCI	577	DISC	EQU *		MDL05770
0004BCI	DEB0 884C =000D0CI	578	SELWRT	OC RB,STOP	STOP THE SELCH	MDL05780
0004C0I	C820 F000	579		LHI R2,X'F000'	IS THIS A 20	MDL05790
0004C4I	1124	580		SLLS R2,4	BIT ADDRESS ?	MDL05800
0004C6I	0425	581		NAR R2,R5		MDL05810
0004C8I	1028	582		SRLS R2,8	YES - SET UP THE SELCH WITH	MDL05820
0004CAI	1028	583		SRLS R2,8	6 BYTES OF ADDRESS	MDL05830
0004CCI	C830 F000	584		LHI R3,X'F000'		MDL05840
0004DOI	1134	585		SLLS R3,4	GET THE HIGH ORDER DIGITS	MDL05850
0004D2I	0436	586		NAR R3,R6	OF THE ADDRESSES IN R2 & R3	MDL05860
0004D4I	1038	587		SRLS R3,8		MDL05870
0004D6I	1038	588		SRLS R3,8		MDL05880
0004D8I	0833	589		LDAR R3,R3		MDL05890
0004DAI	2332	590		BZS CONT4B		MDL05900
0004DCI	9AB2	591		WDR RB,R2	WRITE THE FIRST BYTE	MDL05910
0004DEI	98E5	592	CONT4B	WHR RB,R5	WRITE THE 2ND + 3RD BYTES	MDL05920
0004EOI	0833	593		LDAR R3,R3		MDL05930
0004E2I	2332	594		BZS CONT4C		MDL05940
0004E4I	9AB3	595		WDR RB,R3	WRITE THE 4TH BYTE	MDL05950
0004E6I	98E6	596	CONT4C	WHR RB,R6	WRITE THE 5TH & 6TH BYTES	MDL05960
0004E8I	5050 883C =000D28I	597		STA R5,STADD	SAVE THE START ADDRESS.	MDL05970

0004ECI	5060	883C	=000D2CI	598	STA	R6,FADD		MDL05980
0004FOI	4030	8860	=000D54I	599	STH	R3,SELIND		MDL05990
0004F4I	4820	885E	=000D56I	600	LH	R2,RWDEV		MDL06000
0004F8I	4230	80B8	=00C5B4I	601	BNZ	SELDIS		MDL06010
0004FCI	0833			602	LDAR	R3,R3	GET SELCH TYPE	MDL06020
0004FEI	2337			603	BZS	SEL	NORMAL SELCH	MDL06030
000500I	D310	8803	=000D07I	604	LB	R1,MTREAD	GET MAG TAPE READ COMMAND	MDL06040
000504I	9EA1			605	OCR	RA,R1	OUTPUT THE MAG TAPE READ COMMAND	MDL06050
000506I	DEB0	8808	=000D12I	606	OC	RB,ESREAD	GIVE THE ESELCH READ COMMAND	MDL06060
00050AI	2306			607	BS	SEL1		MDL06070
00050CI	D310	87F7	=000D07I	608	SEL	LB R1,MTREAD	NORMAL SELCH	MDL06080
000510I	9EA1			609	OCR	RA,R1	OUTPUT THE MAG TAPE READ COMMAND	MDL06090
000512I	DEE0	87FD	=000D13I	610	OC	RB,SREAD	GIVE SELCH READ COMMAND	MDL06100
	0000	0516I		611	SEL1	EQU *		MDL06110
000516I	2400			612	LIS	RO,0		MDL06120
000518I	4000	883E	=000D5AI	613	STH	RO,SELERR		MDL06130
	0000	051CI		614	CONT5B	EQU *		MDL06140
00051CI	9DE0			615	SSR	RB,RO	SENSE STATUS	MDL06150
00051EI	2081			616	BTRS	8,1	WAIT FOR BUSY NOT	MDL06160
000520I				617	IFNZ	ADC-2		MDL06170
000520I	4850	8830	=000D54I	618	LH	R5,SELIND	2 OR 3 BYTES OF ADDRESS ?	MDL06180
000524I	0855			619	LDAR	R5,R5	SET THE CONDITION CODE	MDL06190
000526I	2334			620	BZS	SELST	5 DIGIT ADDRESS ?	MDL06200
000528I	DEB0	87E1	=000D0DI	621	OC	RB,ESTOP	GIVE THE ESELCH STOP COMMAND	MDL06210
00052CI	2303			622	BS	SELST1		MDL06220
00052EI	DEB0	87DA	=000D0CI	623	SELST	OC RB,STOP	GIVE THE SELCH STOP COMMAND	MDL06230
	0000	0532I		624	SELST1	EQU *		MDL06240
000532I	2460			625	LIS	R6,0		MDL06250
000534I	0855			626	LDAR	R5,R5		MDL06260
*000536I	2334			627	BZ	SELIN2	2 - BRANCH	MDL06270
000538I	9BB6			628	RDR	RB,R6	3 - READ THE MOST SIG. BYTE	MDL06280
00053AI	1168			629	SLLS	R6,8	SHIFT 8	MDL06290
00053CI	1168			630	SLLS	R6,8	SHIFT 8	MDL06300
00053EI	2470			631	SELIN2	LIS R7,0		MDL06310
000540I	99E7			632	RHR	RB,R7	READ A HALFWORD	MDL06320
000542I	0667			633	OAR	R6,R7	R6 = FINAL ADDRESS	MDL06330
000544I	5870	87E4	=000D2CI	634	LDA	R7,FADD	GET THE FINAL ADDRESS	MDL06340
000548I	0576			635	CLAR	R7,R6	COMPARE THE ADDRESSES	MDL06350
*00054AI	2135			636	BNE	SELIN9		MDL06360
00054CI	2400			637	LIS	RO,0		MDL06370
00054EI	4000	8808	=000D5AI	638	STH	RO,SELERR	SET NO SELCH ERROR	MDL06380
*000552I	2304			639	B	CONMT1	CONTINUE	MDL06390
000554I	240F			640	SELIN9	LIS RO,15	SET SELCH	MDL06400
000556I	4000	8800	=000D5AI	641	STH	RO,SELERR	ERROR	MDL06410
				642	ELSE			MDL06420
				643	OC	RB,STOP	YES	MDL06430
				644	RHR	RB,R9	READ END ADDRESS	MDL06440
				645	CLHR	R6,R9	COMPARE ADDRESSES ?	MDL06450
				646	BNES	SELIN4		MDL06460
				647	LIS	R9,0	SET NO	MDL06470
				648	STH	R9,SELERR	SELCH ERROR	MDL06480
				649	SELIN3	B CONMT1	CONTINUE	MDL06490
				650	SELIN4	LIS R9,15	SET SELCH	MDL06500
				651	STH	R9,SELERR	ERROR	MDL06510
				652	ENDC			MDL06520

00055AI	9DA1	653	CONMT1	SSR	RA,R1	NO - THE MAGTAPE	MDL06530
00055CI	C310 0010	654		THI	R1,X'10'	WAIT FOR NO MOTION	MDL06540
00056OI	2233	655		BZS	CONMT1		MDL06550
	0000 0562I	656	CONMT9	EQU	*		MDL06560
000562I	C310 00C0	657		THI	R1,X'CO'	ANY ERROR ?	MDL06570
000566I	2135	658		BNZS	MTERR	YES - TRY TO RECOVER	MDL05580
000568I	4830 87EE =000D5AI	659		LH	R3,SELERR	NO - SELCH ERROR ?	MDL06590
00056CI	4330 803A =0005AAI	660		BZ	MTEND		MDL06600
	0000 0570I	661	MTERR	EQU	*		MDL06610
00057OI	9DA1	662		SSR	RA,R1		MDL06620
000572I	C310 0010	663		THI	R1,X'10'		MDL06630
000576I	2233	664		BZS	MTERR		MDL06640
000578I	9DA1	665		SSR	RA,R1	YES - CHECK FOR EOF.	MDL06650
00057AI	C310 0040	666		THI	R1,X'40'	EOF ?	MDL06660
00057EI	2334	667		BZS	MTERRW	NO	MDL06670
00058OI	5830 87A0 =000D24I	668		LDA	R3,EOVRTN	YES - TAKE THE EOF RETURN	MDL06680
000584I	0303	669		BR	R3		MDL06690
000586I	4830 87D6 =000D60I	670	MTERRW	LH	R3,RETRY	TRY TO RECOVER	MDL06700
00058AI	2135	671		BNZS	MTERR1		MDL06710
00058CI	C810 00E3	672		LHI	R1,X'E3'	RECOVERY UNSUCCESSFUL	MDL06720
00059OI	4300 86E4 =000C78I	673		B	ERRA		MDL06730
000594I	2731	674	MTERR1	SIS	R3,1		MDL06740
000596I	4030 87C6 =000D60I	675		STH	R3,RETRY		MDL06750
00059AI	4100 84EA =000A88I	676		BAL	RO,NOMOTN	WAIT FOR NO MOTION	MDL06760
00059EI	DEA0 876D =000D0FI	677		CC	RA,BKSP	BACKSPACE THE FILE	MDL06770
0005A2I	4100 84E2 =000A88I	678		BAL	RO,NOMOTN	WAIT FOR NO MOTION	MDL06780
0005A6I	4300 FEE6 =000490I	679		B	MTRY		MDL06790
	0000 05AAI	680	MTEND	EQU	*		MDL06800
0005AAI	DEB0 875E =000D0CI	681		OC	RB,STOP	STOP SELCH	MDL06810
0005AEI	5830 876E =000D20I	682		LDA	R3,WRTEND		MDL06820
0005B2I	0303	683		BR	R3		MDL06830
0005B4I	9DC1	684	SELDIS	SSR	RC,R1	WAIT	MDL06840
0005B6I	2221	685		BFBS	2,SELDIS	CONTROLLER IDLE	MDL06850
0005B8I	4130 84E0 =000A9CI	686		BAL	R3,WDFE		MDL06860
0005BCI	4870 8792 =000D52I	687		LH	R7,TRKDEN		MDL06870
0005C0I	C570 0004	688		CLHI	R7,4		MDL06880
*0005C4I	218C	689		BL	SELD3		MDL06890
0005C6I	9AC8	690		WDR	RC,R8	WRITE SECTOR	MDL06900
0005C8I	4870 877A =000D46I	691		LH	R7,HEAD		MDL06910
0005CCI	117A	692		SLLS	R7,10	SCALE	MDL06920
0005CEI	4810 8772 =000D44I	693		LH	R1,CYL		MDL06930
0005D2I	0671	694		CAR	R7,R1	MERGE CYL	MDL06940
0005D4I	98C7	695		WHR	RC,R7		MDL06950
0005D6I	9DC7	696		SSR	RC,R7		MDL06960
0005D8I	2221	697		BFBS	2,1		MDL06970
*0005DAI	2306	698		B	SELD2		MDL06980
0005DCI	4810 8766 =000D46I	699	SELD3	LH	R1,HEAD		MDL06990
0005E0I	1115	700		SLLS	R1,5	POSITION THE HEAD BIT	MDL07000
0005E2I	0618	701		CAR	R1,R8		MDL07010
0005E4I	9AC1	702		WDR	RC,R1	SET UP THE HEADER	MDL07020
0005E6I	4830 876A =000D54I	703	SELD2	LH	R3,SELIND		MDL07030
0005EAI	0833	704		LDAR	R3,R3	ESELCH ?	MDL07040
0005ECI	2337	705		BZS	DSEL		MDL07050
0005EEI	D310 8719 =000D03I	706		LB	R1,DREAD	EXTENDED SELCH COMMANDS	MDL07060
0005F2I	9EC1	707		OCR	RC,R1	START DISC READ	MDL07070

0005F4I	DEB0 871A =000D12I	708	OC	RB,ESREAD	START THE ESELCH READ	MDL07080
0005F8I	2306	709	BS	SELD1		MDL07090
	0000 05FAI	710	ESEL	EQU	*	MDL07100
0005FAI	D310 870D =000DOBI	711	LB	R1,DREAD	NORMAL SELCH COMMAND READ / WRITE	MDL07110
0005FEI	9EC1	712	OCR	RC,R1	GET DISC READ CMD	MDL07120
000600I	DEB0 870F =000D13I	713	OC	RB,SREAD	START DISC READ	MDL07130
	0000 0604I	714	SELD1	EQU	*	MDL07140
000604I	2400	715	LIS	RO,0		MDL07150
000606I	4000 8750 =000D5AI	716	STH	RO,SELERR		MDL07160
00060AI	9EB0	717	SSR	RB,RO	SENSE STATUS	MDL07170
00060CI	2081	718	BTRB	8,1	WAIT FOR BUSY NOT	MDL07180
00060EI		719	IFNZ	ADC-2		MDL07190
00060EI	4850 8742 =000D54I	720	LH	R5,SELIND	2 OR 3 BYTES OF ADDRESS ?	MDL07200
000612I	0855	721	LDAR	R5,R5	SET THE CONDITION CODE	MDL07210
000614I	2334	722	BZS	SELSTD	5 DIGIT ADDRESS ?	MDL07220
000616I	DEB0 86F3 =000D0DI	723	OC	RB,ESTOP	GIVE THE ESELCH STOP COMMAND	MDL07230
00061AI	2303	724	BS	SELST1D		MDL07240
00061CI	DER0 86EC =000D0CI	725	SELSTD	OC	GIVE THE SELCH STOP COMMAND	MDL07250
	0000 0620I	726	SELST1D	EQU	*	MDL07260
000620I	2460	727	LIS	R6,0		MDL07270
000622I	0855	728	LDAR	R5,R5		MDL07280
*000624I	2334	729	BZ	SELIN2D	2 - BRANCH	MDL07290
000626I	9BB6	730	RDR	RB,R6	3 - READ THE MOST SIG. BYTE	MDL07300
000628I	1168	731	SLLS	R6,8	SHIFT 8	MDL07310
00062AI	1168	732	SLLS	R6,8	SHIFT 8	MDL07320
00062CI	2470	733	SELIN2D	LIS	R7,0	MDL07330
00062EI	99E7	734	RHR	RB,R7	READ A HALFWORD	MDL07340
000630I	0667	735	OAR	R6,R7	R6 = FINAL ADDRESS	MDL07350
000632I	5870 86F6 =000D2CI	736	LDA	R7,FADD	GET THE FINAL ADDRESS	MDL07360
000636I	0576	737	CLAR	R7,R6	COMPARE THE ADDRESSES	MDL07370
*000638I	2132	738	BNE	SELIN9D		MDL07380
*00063AI	2304	739	B	CONDS1	CONTINUE	MDL07390
00063CI	24CF	740	SELIN9D	LIS	RO,15	MDL07400
00063EI	4000 8718 =000D5AI	741	STH	RO,SELERR	SET SELCH	MDL07410
		742	ELSE		ERROR	MDL07420
		743	OC	RB,STOP	YES	MDL07430
		744	RHR	RB,R9	READ END ADDRESS	MDL07440
		745	CLHR	R6,R9	COMPARE ADDRESSES ?	MDL07450
		746	BNES	SELIN4D		MDL07460
		747	LIS	R9,0	SET NO	MDL07470
		748	STH	R9,SELERR	SELCH ERROR	MDL07480
		749	SELIN3D	B	CONTINUE	MDL07490
		750	SELIN4D	LIS	R9,15	MDL07500
		751	STH	R9,SELERR	SET SELCH	MDL07510
		752	ENDC		ERROR	MDL07520
000642I	4130 84FC =000R42I	753	CONDS1	BAL	R3,SETCON	MDL07530
000646I	4810 870E =000D58I	754	CONDS3	LH	R1,CONSTA	MDL07540
00064AI	C310 0001	755		THI	R1,X'01'	MDL07550
00064EI	2134	756		BNZS	DSCERR	MDL07560
000650I	4810 8706 =000D5AI	757		LH	R1,SELERR	MDL07570
*000654I	233D	758		BZ	DSCEND	MDL07580
000656I	4830 8706 =000D60I	759	DSCERR	LH	R3,RETRY	MDL07590
00065AI	2135	760		BNZS	DSERR1	MDL07600
00065CI	C810 00E3	761		LHI	R1,X'E3'	MDL07610
000660I	4300 8614 =000C78I	762		B	ERRA	MDL07620
					RECOVERY UNSUCCESSFUL	

000664I	2731	763	DSERR1	SIS	R3,1		MDL07630
000666I	4030 86F6 =000D60I	764		STH	R3,RETRY		MDL07640
00066AI	4300 FE4E =00048CI	765		B	SELWRT		MDL07650
00066EI	4130 846C =000ADEI	766	DSCEND	BAL	R3,FRSRW	WAIT FOR DISC ADD. INTERLOCK	MDL07660
000672I	DEB0 8696 =000D0CI	767		QC	RB,STOP	STOP SELCH	MDL07670
000676I	5830 86A6 =000D20I	768		LDA	R3,WRTEND		MDL07680
00067AI	0303	769		BR	R3		MDL07690
	0000 067CI	770	LIST	EQU	*		MDL07700
00067CI	0722	771		XAR	R2,R2	ZERO LINE COUNT	MDL07710
00067EI	4020 86DA =000D5CI	772		STH	R2,LINCNT		MDL07720
000682I	E630 8008 =00068EI	773		LDAI	R3,STPRIN	SAVE RETURN	MDL07730
000686I	5030 83BA =000A44I	774		STA	R3,FMTRTN	DO A CR - LF	MDL07740
00068AI	4300 81AC =00083AI	775		B	LINEND		MDL07750
	0000 068EI	776	STPRIN	EQU	*		MDL07760
00068EI	C800 0047	777		LHI	R0,71	PRINT THE HEADER	MDL07770
000692I	E670 835A =0009FOI	778		LDAI	R7,HEADER		MDL07780
000696I	4130 82BC =000956I	779		BAL	R3,PRINT		MDL07790
00069AI	E630 8008 =0006A6I	780		LDAI	R3,PRNTTL		MDL07800
00069EI	5030 83A2 =000A44I	781		STA	R3,FMTRTN		MDL07810
0006A2I	4300 8194 =00083AI	782		B	LINEND		MDL07820
	0000 06A6I	783	PRNTTL	EQU	*		MDL07830
0006A6I	4840 007A	784		LH	R4,X'7A'	LIST OF MAG TAPE ?	MDL07840
0006AAI	4230 8022 =0006D0I	785		BNZ	LSTDIS	NO - DISC	MDL07850
0006AEI	DEA0 8653 =000D05I	786		OC	RA,CLEAR	YES - MAG TAPE	MDL07860
0006B2I	DEA0 8652 =000D08I	787	LISMT1	OC	RA,FWFM	FORWARD FILE MARK	MDL07870
0006B6I	4100 83CE =000A88I	788		BAL	R0,NOMOTN		MDL07880
0006BAI	E650 8732 =000DF0I	789		LDAI	R5,PDB		MDL07890
0006BEI	E660 8760 =000E22I	790		LDAI	R6,PDB+50		MDL07900
0006C2I	E610 FD8E =000454I	791		LDAI	R1,NORTRM	END IF EOY	MDL07910
0006C6I	4130 FDAE =000478I	792		BAL	R3,READPB	GO READ	MDL07920
0006CAI	4130 80BC =00078AI	793		BAL	R3,FORMAT		MDL07930
*0006CEI	220E	794		B	LISMT1		MDL07940
	0000 06D0I	795	LSTDIS	EQU	*	LIST THE DISC	MDL07950
0006D0I	4130 840A =000ADEI	796		BAL	R3,FRSRW		MDL07960
0006D4I	D330 F932 =00000AI	797		LB	R3,SOD	GET START	MDL07970
0006D8I	4030 8668 =000D44I	798		STH	R3,CYL	SET CYL TO ONE	MDL07980
0006DCI	0788	799		XAR	R8,R8	SET SECTOR TO ZERO	MDL07990
0006DEI	4080 8664 =000D46I	800		STH	R8,HEAD	SET HEAD TO ZERO	MDL08000
0006E2I	4130 83B6 =000A9CI	801	LSTD50	BAL	R3,WDFT		MDL08010
0006E6I	DEA0 8627 =000D11I	802		OC	RA,RESTOR	RESTORE THE FILE	MDL08020
0006EAI	4130 83F0 =000ADEI	803		BAL	R3,FRSRW		MDL08030
0006EEI	E650 8732 =000E24I	804		LDAI	R5,DIRECT		MDL08040
0006F2I	E660 882D =000F23I	805		LDAI	R6,DIRECT+255		MDL08050
0006F6I	4130 FC96 =000390I	806		BAL	R3,AVAILR	READ THE DIRECTORY	MDL08060
0006FAI	4080 834E =000A4CI	807		STH	R8,DIRPRM	SAVE THE PARAMETERS FOR	MDL08070
0006FEI	4880 8642 =000D44I	808		LH	R8,CYL	THE NEXT SECTOR	MDL08080
000702I	4080 8348 =000A4EI	809		STH	R8,DIRPRM+2	OF DIRECTORY.	MDL08090
000706I	4880 863C =000D46I	810		LH	R8,HEAD		MDL08100
00070AI	4080 8342 =000A50I	811		STH	R8,DIRPRM+4		MDL08110
00070EI	0722	812		XAR	R2,R2	ZERO POINTER	MDL08120
000710I	4832 8712 =000E26I	813	LSTD51	LH	R3,DIRECT+2(R2)	GET THE THIRD DIGIT OF THE NUMBER	MDL08130
000714I	4330 FD3C =000454I	814		BZ	NORIRM	= ZERO ? - YES END	MDL08140
000718I	C530 EEEE	815		CLHI	R3,X'EEEE'	IS IT THE KNOWN INFO. INDICATOR ?	MDL08150
00071CI	4330 8040 =000760I	816		BE	LSTXYZ	YES	MDL08160
000720I	4882 8704 =000E28I	817		LH	R8,DIRECT+4(R2)	NO - LIST	MDL08170

0007E4I	E670	8254	=000A3CI	873	FORMAT2	LDAI	R7,SPACE		MDL08730
0007E6I	4130	816A	=000956I	874		BAL	R3,PRINT		MDL08740
0007ECI	240A			875		LIS	R0,10	PRINT THE NAME	MDL08750
0007EEI	E670	8606	=000DF8I	876		LDAI	R7,PDB+8		MDL08760
0007F2I	4130	8160	=000956I	877		BAL	R3,PRINT		MDL08770
0007F6I	C800	0014		878		LHI	R0,20	PRINT THE REST OF THE NAME	MDL08780
0007FAI	E670	8610	=000E0EI	879		LDAI	R7,PDB+30		MDL08790
0007FEI	4130	8154	=000956I	880		BAL	R3,PRINT		MDL08800
000802I	2404			881		LIS	R0,4	PRINT 4 SPACES	MDL08810
000804I	E670	8234	=000A3CI	882		LDAI	R7,SPACE		MDL08820
000808I	4130	814A	=000956I	883		BAL	R3,PRINT		MDL08830
00080CI	E610	85F2	=000E02I	884		LDAI	R1,PDB+18		MDL08840
000810I	4130	80FC	=000910I	885		BAL	R3,SEQASC		MDL08850
000814I	2405			886		LIS	R0,5		MDL08860
000816I	E670	8548	=000D62I	887		LDAI	R7,ASCSEQ		MDL08870
00081AI	4130	8138	=000956I	888		BAL	R3,PRINT		MDL08880
00081EI	2403			889		LIS	R0,3	PRINT 3 SPACES	MDL08890
000820I	E670	8218	=000A3CI	890		LDAI	R7,SPACE		MDL08900
000824I	4130	812E	=000956I	891		BAL	R3,PRINT		MDL08910
000828I	E610	85D9	=000E05I	892		LDAI	R1,PDB+21		MDL08920
00082CI	4130	80E0	=000910I	893		BAL	R3,SEQASC		MDL08930
000830I	2405			894		LIS	R0,5		MDL08940
000832I	E670	852C	=000D62I	895		LDAI	R7,ASCSEQ		MDL08950
000836I	4130	811C	=000956I	896		BAL	R3,PRINT		MDL08960
	0000	083AI		897	LINEND	EQU	*		MDL08970
00083AI	D320	F7C8	=000006I	898		LB	R2,LPAD	LOAD ADDRESS	MDL08980
00083EI	9D23			899		SSR	R2,R3	SENSE STATUS	MDL08990
*000840I	2159			900		BTC	5,PRNTLN	NOT LINE PRINTER	MDL09000
000842I	2402			901		LIS	R0,2	YES	MDL09010
000844I	E670	81F2	=000A3AI	902		LDAI	R7,LINECR		MDL09020
000848I	4130	810A	=000956I	903		BAL	R3,PRINT		MDL09030
00084CI	5830	81F4	=000A44I	904	FMTEND	LDA	R3,FMTRIN		MDL09040
000850I	0303			905		BR	R3		MDL09050
000852I	2402			906	PRNTLN	LIS	R0,2		MDL09060
000854I	E670	81E0	=000A38I	907		LDAI	R7,CRLF		MDL09070
000858I	4130	80FA	=000956I	908		BAL	R3,PRINT		MDL09080
00085CI	4830	84FC	=000D5CI	909		LH	R3,LINCNT	YES	MDL09090
000860I	C530	0016		910		CLHI	R3,22	LINE COUNT = MAX ?	MDL09100
000864I	2336			911		BES	LINWT		MDL09110
000866I	2631			912		AIS	R3,1		MDL09120
000868I	4030	84F0	=000D5CI	913		STH	R3,LINCNT		MDL09130
00086CI	4300	FFDC	=00084CI	914		B	FMTEND		MDL09140
	0000	0870I		915	LINWT	EQU	*		MDL09150
000870I	4830	F790	=000004I	916		LH	R3,DISFLG	GET FLAG	MDL09160
000874I	4230	802E	=0008A6I	917		BNZ	LINWTD	USE DISPLAY	MDL09170
000878I	C800	002B		918		LHI	R0,43	LOAD COUNT	MDL09180
00087CT	E670	8064	=0008E4I	919		LDAI	R7,MSGCON	LOAD START ADDRESS	MDL09190
000880I	4130	80D2	=000956I	920		BAL	R3,PRINT	PRINT MESSAGE	MDL09200
000880I				921		IFZ	ADC-2		MDL09210
				922		LHI	R3,M3RD	LOAD COMMAND	MDL09220
				923		ELSE			MDL09230
000884I	C830	00A1		924		LHI	R3,PASRD	LOAD COMMAND	MDL09240
				925		ENDC			MDL09250
000888I	9E23			926		OCR	R2,R3	ISSUE COMMAND	MDL09260
00088AI	9D23			927	LINWTD	SSR	R2,R3	SENSE STATUS	MDL09270

00088CI	2081	928		BTBS	8,1	WAIT FOR BUSY NOT	MDL09280
00088EI	9B23	929		RDR	R2,R3	READ CHARACTER	MDL09290
000890I	9A23	930		WDR	R2,R3	ECHO	MDL09300
000892I	C530 000A	931		CLHI	R3,X'0A'	LF???	MDL09310
000896I	4330 8026 =0008C0I	932		BE	CONTLINE	YES, RESUME	MDL09320
00089AI	C530 000D	933		CLHI	R3,X'0D'	CR???	MDL09330
00089EI	4330 F79A =00003CI	934		BE	NODIS	YES, PRINT RESTART	MDL09340
*0008A2I	220C	935		B	LINWTD	NOT CR OR LF SO IGNORE	MDL09350
*0008A4I	23CE	936		B	CONTLINE	CONTINUE LIST	MDL09360
0008A6I	C800 0019	937	LINWTD	LHI	R0,25		MDL09370
0008AAI	E670 801C =0008CAI	938		LDAI	R7,MSGWT		MDL09380
0008AEI	4130 80A4 =000956I	939		BAL	R3,PRINT		MDL09390
0008B2I	C200 8002 =0008B8I	940		LPSW	LINEWT		MDL09400
0008B8I		941		ALIGN	8		MDL09410
	00C0 08B8I	942	LINEWT	EQU	*		MDL09420
0008B8I		943		IFNZ	ADC-2		MDL09430
0008B8I	0000	944		DC	X'0000',X'BOFO'		MDL09440
0008BAI	BOFO						
0008BCI	0000	945		DC	X'0000',Z(CONTLINE)		MDL09450
0008BEI	08C0I						
		946		ELSE			MDL09460
		947		DC	X'BO00',Z(CONTLINE)		MDL09470
		948		ENDC			MDL09480
0008C0I	0733	949	CONTLINE	XAR	R3,R3		MDL09490
0008C2I	4030 8496 =000D5CI	950		STH	R3,LINCNT		MDL09500
0008C6I	43C0 FF70 =00083AI	951		B	LINEND		MDL09510
0008CAI	5052 4553 5320 2252	952	MSGWT	DC	C'PRESS "RUN" TO CONTINUE',X'0DOA'		MDL09520
0008D2I	554E 2220 544F 2043						
0008DAI	4F4E 5449 4E55 4520						
0008E2I	0D0A						
0008E4I	4445 5052 4553 5320	953	MSGCON	DC	C'DEPRESS LF TO CONTINUE OR CR TO TERMINATE',X'0DOA'		MDL09530
0008ECI	4C46 2054 4F20 434F						
0008F4I	4E54 494E 5545 204F						
0008FCI	5220 4352 2054 4F20						
000904I	5445 524D 494E 4154						
00090CI	4520						
00090EI	0D0A						
	0000 0910I	954	SEQASC	EQU	*		MDL09540
000910I	242F	955		LIS	R2,X'F'	SET UP MASK	MDL09550
000912I	2450	956		LIS	R5,0		MDL09560
000914I	D341 0000	957		LB	R4,0(R1)	GET THE HO BYTE	MDL09570
000918I	0442	958		NAR	R4,R2	MASK OFF THE HO DIGIT	MDL09580
00091AI	D324 83C8 =000CE6I	959		LB	R2,ASCII(R4)	GET THE ASCII EQUIV. DIGIT	MDL09590
00091EI	D220 8440 =000D62I	960		STB	R2,ASCSEQ		MDL09600
000922I	2651	961		AIS	R5,1		MDL09610
000924I	2611	962	SEQXX	AIS	R1,1		MDL09620
000926I	C550 0005	963		CLHI	R5,5		MDL09630
00092AI	0333	964		BER	R3		MDL09640
00092CI	C820 00F0	965		LHI	R2,X'FO'		MDL09650
000930I	D341 0000	966	SEQX1	LB	R4,0(R1)	GET THE HO BYTE	MDL09660
000934I	0442	967		NAR	R4,R2		MDL09670
000936I	C350 0001	968		THI	R5,1		MDL09680
00093AI	2332	969		BZS	SEQ1XY		MDL09690
00093CI	1044	970		SRLS	R4,4		MDL09700
00093EI	D374 83A4 =000CE6I	971	SEQ1XY	LB	R7,ASCII(R4)	GET THE ASCII EQUIV.	MDL09710

000942I	D275	841C	=000D62I	972	STB	R7,ASCSEQ(R5)		MDL09720
000946I	2651			973	AIS	R5,1		MDL09730
000948I	1024			974	SRLS	R2,4		MDL09740
00094AI	C350	0001		975	THI	R5,1		MDL09750
00094EI	4230	FFD2	=000924I	976	BNZ	SEQXX		MDL09760
000952I	4300	FFDA	=000930I	977	B	SEQX1		MDL09770
	0000	0956I		978	EQU	*		MDL09780
000956I	5030	80EE	=00CA48I	979	STA	R3,PRTRTN	SAVE	MDL09790
00095AI	D320	F6A8	=000006I	980	LB	R2,LPAD	LOAD ADDRESS	MDL09800
00095EI	9D23			981	SSR	R2,R3	SENSE STATUS	MDL09810
000960I	4370	8030	=000994I	982	BFC	7,TTYLP	USE LINE PRINTER	MDL09820
000964I	4830	F69C	=000004I	983	LH	R3,DISFLG	GET FLAG	MDL09830
000968I	4330	807C	=0009E8I	984	BZ	CONOUT	USE SYSTEM CONSOLE	MDL09840
00096CI	D320	F697	=000007I	985	LB	R2,TTYAD	LOAD ADDRESS	MDL09850
000970I	9D23			986	SSR	R2,R3	SENSE STATUS	MDL09860
000972I	4350	801E	=000994I	987	BFC	5,TTYLP	USE TTY	MDL09870
000976I	C820	0011		988	LHI	R2,PASWAD	LOAD, WRITE ADDRESS	MDL09880
00097AI	9D23			989	SSR	R2,R3	SENSE STATUS	MDL09890
00097CI	4250	8062	=0009E2I	990	BTC	5,PEXIT	NO DEVICES READY, IGNORE	MDL09900
000980I	D330	F684	=000008I	991	LB	R3,PASC2	LOAD COMMAND	MDL09910
000984I	9E23			992	OCR	R2,R3	ISSUE COMMAND	MDL09920
000986I	C830	00A3		993	LHI	R3,PASWR	LOAD COMMAND	MDL09930
00098AI	9E23			994	OCR	R2,R3	ISSUE COMMAND	MDL09940
00098CI	9B23			995	RDR	R2,R3	DUMMY READ	MDL09950
00098EI	9D23			996	SSR	R2,R3		MDL09960
000990I	2081			997	BTBS	8,1		MDL09970
*000992I	2304			998	B	PRIN1		MDL09980
000994I	C830	0098		999	LHI	R3,TTYWR	LOAD COMMAND	MDL09990
000998I	9E23			1000	OCR	R2,R3	ISSUE COMMAND	MDL10000
00099AI	9D24			1001	SSR	R2,R4		MDL10010
00099CI	2091			1002	BTBS	9,PRIN1	DU OR BUSY = WAIT	MDL10020
00099EI	DA27	0000		1003	WD	R2,0(R7)		MDL10030
0009A2I	C520	0011		1004	CLHI	R2,PASWAD	PASLA??	MDL10040
0009A6I	4230	8020	=0009CAI	1005	BNE	PRIN3	NO, SKIP DC2/DC4 CHECK	MDL10050
0009AAI	2721			1006	SIS	R2,1		MDL10060
0009ACI	9D23			1007	SSR	R2,R3		MDL10070
*0009AEI	2383			1008	BFC	8,PRIN6		MDL10080
0009BOI	2621			1009	AIS	R2,1		MDL10090
*0009B2I	230C			1010	B	PRIN3		MDL10100
0009B4I	9B23			1011	RDR	R2,R3		MDL10110
0009B6I	C530	0014		1012	CLHI	R3,X'14'		MDL10120
*0009BAI	20E5			1013	BTC	11,PRIN4		MDL10130
0009BCI	9D23			1014	SSR	R2,R3		MDL10140
0009BEI	2081			1015	BTBS	8,1		MDL10150
0009COI	9B23			1016	RDR	R2,R3		MDL10160
0009C2I	C530	0012		1017	CLHI	R3,X'12'		MDL10170
*0009C6I	20E5			1018	BTC	11,PRIN5		MDL10180
*0009C8I	220C			1019	B	PRIN4		MDL10190
0009CAI	2671			1020	PRIN3	AIS	BUMP POINTER	MDL10200
0009CCI	2701			1021	SIS	R0,1	DECREMENT CHARACTER COUNT	MDL10210
0009CEI	4230	FFC8	=00099AI	1022	BNZ	PRIN1	MORE CHARACTERS ? - YES	MDL10220
0009D2I	2430			1023	LIS	R3,0	NO	MDL10230
0009D4I	9D24			1024	PRIN2	SSR	OUTPUT NULL	MDL10240
0009D6I	2081			1025	BTBS	8,PRIN2		MDL10250
0009D8I	9A23			1026	WDR	R2,R3	FOR ALL DEVICES	MDL10260

0009DAI	9D24			1027	SSR	R2,R4						MDL10270
0009DCI	2081			1028	BTBS	8,1						MDL10280
0009DEI				1029	IFNZ	ADC-2						MDL10290
0009DEI	C820	0010		1030	LHI	R2,PASRAD		RELOAD PASLA	READ ADDRESS			MDL10300
				1031	ELSE							MDL10310
				1032	LHI	R2,STCADR		RELOAD STC	ADDRESS			MDL10320
				1033	ENDC							MDL10330
0009E2I	5830	8062	=000A48I	1034	PEXIT	LDA	R3,PRTRTN					MDL10340
0009E6I	0303			1035		BR	R3		RETURN			MDL10350
	0000	09E8I		1036	CONOUT	EQU	*					MDL10360
0009E6I				1037		IFZ	ADC-2					MDL10370
				1038		LHI	R2,STCADR		LOAD ADDRESS			MDL10380
				1039		LHI	R3,MBWR		LOAD COMMAND			MDL10390
				1040		B	PRINA		PRINT			MDL10400
				1041		ELSE						MDL10410
0009E8I	C820	0011		1042		LHI	R2,PASWAD		LOAD PASLA WRITE ADDRESS			MDL10420
0009ECI	4300	FF96	=000986I	1043		B	PRINB		PRINT			MDL10430
				1044		ENDC						MDL10440
0009FOI	2053	4551	2023 2020	1045	HEADER	DC	C* SEQ #	06- #	REV.	NAME		MDL10450
0009F8I	2030	362D	2023 2020									
000A00I	2052	4556	2E20 2020									
000A08I	2020	2020	2020 2020									
000A10I	2020	2020	2020 4E41									
000A18I	4D45	2020										
000A1CI	2020	2020	2020 2020	1046		DC	C*	LOW	HIGH*			MDL10460
000A24I	2020	2020	2020 204C									
000A2CI	4F57	2020	2020 2048									
000A34I	4947	4820										
000A38I	0D0A			1047	CRLF	DC	X'D0A'					MDL10470
000A3AI	0D01			1048	LINECR	DC	X'D01'					MDL10480
000A3CI	2020	2020	2020 2020	1049	SPACE	DC	C*					MDL10490
000A44I				1050		ALIGN	4					MDL10500
000A44I				1051	FMTRTN	DS	4					MDL10510
000A48I				1052	PRTRTN	DS	4					MDL10520
000A4CI				1053	DIRPRM	DS	8					MDL10530
				1054	*	S T B K A D						MDL10540
				1055	*							MDL10550
				1056	*	THIS ROUTINE WILL RETURN THE PROPER VALUES TO SET UP THE						MDL10560
				1057	*	SELCH OR TO SET UP THE WRITE BLOCK.						MDL10570
				1058	*							MDL10580
				1059	*	INPUT = RD = LOW ADDRESS TO BE COPIED						MDL10590
				1060	*	RE = HIGH ADDRESS TO BE COPIED						MDL10600
				1061	*	R3 = RETURN ADDRESS						MDL10610
				1062	*	OUTPUT = R4 = 0 MORE DATA BLOCKS REQUIRED TO FINISH						MDL10620
				1063	*	THE ENTIRE TRANSFER						MDL10630
				1064	*	= F INDICATES THAT THIS IS THE LAST						MDL10640
				1065	*	BLOCK OF THE TRANSFER						MDL10650
				1066	*	R5 = LOW ADDRESS FOR THIS BLOCK						MDL10660
				1067	*	R6 = HIGH ADDRESS FOR THIS BLOCK						MDL10670
				1068	*	RD = ENTRY VALUE + X'100'						MDL10680
				1069	*	RE = ENTRY VALUE (NEVER ALTERED)						MDL10690
				1070	*							MDL10700
000A54I	085D			1071	STBKAD	LDAR	R5,RD		COPY THE LOW POINTER			MDL10710
000A56I	086E			1072		LDAR	R6,RE		COPY THE HIGH POINTER			MDL10720
000A58I	0865			1073		SAR	R6,R5		SUBTRACT (HIGH - LOW)			MDL10730

000A5AI	C560	00FF	1074	CLHI	R6,X'FF'		MDL10740
000A5EI	218A		1075	BLS	NOMORE		MDL10750
000A6OI	2339		1076	BES	NOMORE		MDL10760
000A62I	085D		1077	LDAR	R5,RD		MDL10770
*000A64I	CAD0	0100	1078	AAI	RD,X'100'		MDL10780
000A68I	0865		1079	LDAR	R6,R5		MDL10790
*000A6AI	CA60	00FF	1080	AAI	R6,X'FF'		MDL10800
000A6EI	2440		1081	LIS	R4,0		MDL10810
000A7OI	0303		1082	BR	R3		MDL10820
000A72I	244F		1083	NOMORE	LIS R4,15		MDL10830
000A74I	C560	0000	1084	CLHI	R6,X'00'	DIFFERENCE = 0 ?	MDL10840
000A78I	2334		1085	BES	NOMO1		MDL10850
000A7AI	085D		1086	LDAR	R5,RD		MDL10860
000A7CI	086E		1087	LDAR	R6,RE		MDL10870
000A7EI	0303		1088	BR	R3		MDL10880
000A8OI	085D		1089	NOMO1	LDAR R5,RD		MDL10890
000A82I	0865		1090	LDAR	R6,R5		MDL10900
000A84I	2661		1091	AIS	R6,1	ADD 1 SO THAT A MIN. OF 2 BYTES	MDL10910
000A86I	0303		1092	BR	R3		MDL10920
			1093	*	N O M O T N		MDL10930
			1094	*			MDL10940
			1095	*	WAIT FOR NO MOTION		MDL10950
			1096	*			MDL10960
			1097	*	RO = RETURN ADDRESS		MDL10970
			1098	*	R1 = SCRATCH REGISTER		MDL10980
			1099	*	RA = THE DEVICE ADDRESS		MDL10990
			1100	*			MDL11000
000A88I	9DA1		1101	NOMOTN	SSR RA,R1	SENSE THE STATUS	MDL11010
*000A8AI	2115		1102	BTC	1,MTERXY		MDL11020
000A8CI	C310	0010	1103	THI	R1,X'10'	NOMOTION SET ?	MDL11030
000A9OI	2234		1104	BZS	NOMOTN	NO - WAIT	MDL11040
000A92I	0300		1105	BR	RO	YES - RETURN	MDL11050
000A94I	C810	00E7	1106	MTERXY	LHI R1,X'E7'		MDL11060
000A98I	4300	81DC =000C78I	1107	B	ERRA		MDL11070
			1108	*	W D F T		MDL11080
			1109	*			MDL11090
			1110	*	WRITE THE DATA TO THE FILE		MDL11100
			1111	*			MDL11110
			1112	*	RA = FILE ADDRESS		MDL11120
			1113	*	R3 = RETURN ADDRESS		MDL11130
			1114	*	RF = USED AS SCRATCH		MDL11140
			1115	*	R1 = USED AS SCRATCH		MDL11150
000A9CI	4810	82B2 =000D52I	1116	WDFT	LH R1,TRKDN		MDL11160
000AAOI	C510	0004	1117	CLHI	R1,4		MDL11170
*000AA4I	218E		1118	BL	WDFT2		MDL11180
000AA6I	4810	829A =000D44I	1119	LH	R1,CYL		MDL11190
000AAAI	C8F0	0010	1120	LHI	RF,X'10'		MDL11200
000AAEI	98A1		1121	WHR	RA,R1		MDL11210
000ABOI	9EAF		1122	OCR	RA,RF		MDL11220
000AB2I	4810	8290 =000D46I	1123	LH	R1,HEAD		MDL11230
000AB6I	C8F0	0020	1124	LHI	RF,X'20'		MDL11240
000ABAI	98A1		1125	WHR	RA,R1		MDL11250
000ABCI	9EAF		1126	OCR	RA,RF		MDL11260
000ABEI	0303		1127	BR	R3		MDL11270
000ACOI	4810	8280 =000D44I	1128	WDFT2	LH R1,CYL		MDL11280

000B40I	0303		1184	BR	R3	RETURN	MDL11840
			1185	* S E T	C O N		MDL11850
	0000	0B42I	1186	SETCCN	EQU	*	MDL11860
000B42I	9DC1		1187	SSR	RC,R1		MDL11870
000B44I	2221		1188	BFBS	2,SETCON		MDL11880
000B46I	4010	820E =000D58I	1189	STH	R1,CONSTA		MDL11890
000B4AI	DECO	81C6 =000D14I	1190	OC	RC,RESET		MDL11900
000B4EI	0303		1191	BR	R3		MDL11910
	0000	0B50I	1192	LCORE	EQU	*	MDL11920
000B50I			1193	IFNZ	ADC-2	INITIALIZE	MDL11930
			1194	* INITIALIZE	FOR THE 32 SERIES PROCESSOR		MDL11940
000B50I	C200	8074 =000BC8I	1195	LPSW	INIT32		MDL11950
*000B54I	C800	00F0	1196	G032	LI	RO,Y'000000F0'	MDL11960
000B58I	5000	0020	1197	ST	RO,X'20'		MDL11970
000B5CI	5000	0024	1198	ST	RO,X'24'		MDL11980
000B60I	5000	0028	1199	ST	RO,X'28'		MDL11990
000B64I	5000	002C	1200	ST	RO,X'2C'		MDL12000
000B68I	5000	0030	1201	ST	RO,X'30'		MDL12010
000B6CI	E610	809E =000C0EI	1202	LA	R1,ILLIST		MDL12020
000B70I	5010	0034	1203	ST	R1,X'34'		MDL12030
000B74I	5000	0038	1204	ST	RO,X'38'		MDL12040
000B78I	E610	809A =000C16I	1205	LA	R1,MCHMAL		MDL12050
000B7CI	5010	003C	1206	ST	R1,X'3C'		MDL12060
000B80I	5000	0040	1207	ST	RO,X'40'		MDL12070
000B84I	5000	0044	1208	ST	RO,X'44'		MDL12080
000B88I	5000	0048	1209	ST	RO,X'48'		MDL12090
000B8CI	E610	8076 =000C06I	1210	LA	R1,ARFLT		MDL12100
000B90I	5010	004C	1211	ST	R1,X'4C'		MDL12110
000B94I	5000	0080	1212	ST	RO,X'80'		MDL12120
000B98I	E610	81CC =000D68I	1213	LA	R1,OLDPSW		MDL12130
000B9CI	4010	0084	1214	STH	R1,X'84'		MDL12140
000BA0I	E610	81CC =000D70I	1215	LA	R1,REGSAV		MDL12150
000BA4I	4010	0086	1216	STH	R1,X'86'		MDL12160
000BA8I	4000	0088	1217	STH	RO,X'88'		MDL12170
000BACI	E610	8096 =000C46I	1218	LA	R1,I0VQU		MDL12180
000BB0I	5010	008C	1219	ST	R1,X'8C'		MDL12190
000BB4I	5000	0090	1220	ST	RO,X'90'		MDL12200
000BB8I	E610	8090 =000C4CI	1221	LA	R1,MACINT		MDL12210
000BBCI	5010	0094	1222	ST	R1,X'94'		MDL12220
000BC0I	5000	0098	1223	ST	RO,X'98'		MDL12230
*000BC4I	2306		1224	B	INTCOM		MDL12240
000BC8I			1225	ALIGN	8		MDL12250
000BC8I	0000		1226	INIT32	DC	Y'0000',X'30F0'	MDL12260
000BCAI	30F0						
000BCCI	0000		1227	DC	X'0000',Z(G032)		MDL12270
000BCEI	0B54I		1228	ELSE			MDL12280
			1229	LPSW	INIT16		MDL12290
			1230	G016	XHR	RO,RO	MDL12300
			1231	STH	RO,X'2C'		MDL12310
			1232	STH	RO,X'34'		MDL12320
			1233	STH	RO,X'3C'		MDL12330
			1234	STH	RO,X'44'		MDL12340
			1235	STH	RO,X'4C'		MDL12350
			1236	LHI	RO,REGSAV		MDL12360

		1237	STH	RO,X'22'		MDL12370
		1238	LHI	RO,ARFLT		MDL12380
		1239	STH	RO,X'2E'		MDL12390
		1240	LHI	RO,ILLIST		MDL12400
		1241	STH	RO,X'36'		MDL12410
		1242	LHI	RO,MCHMAL		MDL12420
		1243	STH	RO,X'3E'		MDL12430
		1244	LHI	RO,INTER		MDL12440
		1245	STH	RO,X'46'		MDL12450
		1246	LHI	RO,DIVFLT		MDL12460
		1247	STH	RO,X'4E'		MDL12470
		1248	B	BEGIN		MDL12480
		1249	INIT16	DC	X'3000',Z(G016)	MDL12490
		1250		ENDC		MDL12500
		1251	INTCOM	LH	R3,SVCERR	MDL12510
000BD0I	4830 807E =000C52I	1252		LHI	R1,X'9C'	MDL12520
000BD4I	C810 009C	1253	X9C	STH	R3,0(R1)	MDL12530
000BD8I	4031 0000	1254		AIS	R1,2	MDL12540
000BDCI	2612	1255		CLHI	R1,X'BC'	MDL12550
000BDEI	C510 00BC	1256		BNES	X9C	MDL12560
000BE2I	2035	1257		XAR	RO,RO	MDL12570
000BE4I	0700	1258	XBC	STH	RO,0(R1)	MDL12580
000BE6I	4001 0000	1259		AIS	R1,2	MDL12590
000BEAI	2612	1260		CLHI	R1,X'D0'	MDL12600
000BECI	C510 00D0	1261		BNES	XBC	MDL12610
000BFOI	2035	1262		LHI	RO,INTER	MDL12620
000BF2I	C800 0C58I	1263	XCC	STH	RO,0(R1)	MDL12630
000BF6I	40C1 0000	1264		AIS	R1,2	MDL12640
000BFAI	2612	1265		CLHI	R1,X'2D0'	MDL12650
000BF0I	C510 02D0	1266		BNES	XCC	MDL12660
000C00I	2035	1267		B	BEGIN	MDL12670
000C02I	4300 F406 =00000CI	1268	ARFLT	LHI	RO,X'FO'	MDL12680
000C06I	C800 00F0	1269		B	PSWE	MDL12690
000C0AI	4300 804C =000C5AI	1270	ILLIST	LHI	RO,X'F1'	MDL12700
000C0EI	C800 00F1	1271		B	PSWE	MDL12710
000C12I	4300 8044 =000C5AI	1272	MCHMAL	BTC	1,PFAIL	MDL12720
*000C16I	211D	1273		LPSW	MCHPSW	MDL12730
000C18I	C200 8004 =000C20I	1274		ALIGN	8	MDL12740
000C20I		1275	MCHPSW	EQU	*	MDL12750
000C20I	0000 0C20I	1276		IFNZ	ADC-2	MDL12760
000C20I	00C0	1277		DC	X'0000',X'30F0'	MDL12770
000C22I	30F0					
000C24I	0000	1278		DC	X'0000',Z(MCH1)	MDL12780
000C26I	0C28I					
		1279		ELSE		MDL12790
		1280		DC	X'3000',Z(MCH1)	MDL12800
		1281		ENDC		MDL12810
000C28I	C800 00F2	1282	MCH1	LHI	RO,X'F2'	MDL12820
000C2CI	4300 802A =000C5AI	1283		B	PSWE	MDL12830
000C30I	C200 8004 =000C38I	1284	PFAIL	LPSW	PFL	MDL12840
000C38I		1285		ALIGN	8	MDL12850
	0000 0C38I	1286	PFL	EQU	*	MDL12860
000C38I		1287		IFNZ	ADC-2	MDL12870
000C38I	0000	1288		DC	X'0000',X'BOFO'	MDL12880
000C3AI	BOFO					

SET THE ADDRESS

FLPT ARIT FAULT

ILLEGAL INST.

000C3CI	0000		1289		DC	X'0000',Z(PFAIL)		MDL12890
000C3EI	0C30I							
			1290		ELSE			MDL12900
			1291		DC	X'B000',Z(PFAIL)		MDL12910
			1292		ENDC			MDL12920
000C40I	0800 00F3		1293	DIVFLT	LHI	RO,X'F3'	DIVIDE FAULT	MDL12930
*000C44I	230B		1294		B	PSWE		MDL12940
000C46I	0800 00F5		1295	IOVQU	LHI	RO,X'F5'	I/O QUEUE OVERFLOW	MDL12950
*000C4AI	2308		1296		B	PSWE		MDL12960
000C4CI	0800 00F6		1297	MACINT	LHI	RO,X'F6'	MAC INTERRUPT	MDL12970
000C50I	2305		1298		BS	PSWE		MDL12980
000C52I	0800 00F7		1299	SVCERR	LHI	RO,X'F7'	SVC INTERRUPT	MDL12990
000C56I	2302		1300		BS	PSWE		MDL13000
	0000 0C58I		1301	INTER	EQU	*		MDL13010
000C58I			1302		IFNZ	ADC-2		MDL13020
000C58I	1800		1303		LPSWR	RO	RETURN TO WHERE INTERRUPTED	MDL13030
			1304		ELSE			MDL13040
			1305		ACK	RF,SCRAP		MDL13050
			1306		LPSW	X'40'	RETURN TO WHERE INTERRUPTED	MDL13060
			1307		ENDC			MDL13070
			1308	PSWE	EQU	*		MDL13080
000C5AI	0000 0C5AI		1309		LDAR	R1,R0		MDL13090
	0810				EQU	*		MDL13100
000C5CI	0000 0C5CI		1310	ERROR	EQU	*		MDL13110
	0722		1311		XAR	R2,R2		MDL13120
	0000 0C5EI		1312	ERR1X	EQU	*		MDL13130
000C5EI	07BB		1313		XAR	RB,RB		MDL13140
000C60I	24A1		1314		LIS	RA,1		MDL13150
000C62I	0EAO 80B0 =000D16I		1315		OC	RA,ABORT1		MDL13160
000C66I	9AA1		1316		WDR	RA,R1		MDL13170
000C68I	9AA2		1317		WDR	RA,R2		MDL13180
000C6AI	9AAB		1318		WDR	RA,RB		MDL13190
000C6CI	9AAB		1319		WDR	RA,RB		MDL13200
000C6EI	0EAO 80A5 =000D17I		1320		OC	RA,ABORT1+1	FALSE SYNC	MDL13210
000C72I	2145		1321		BTFS	4,NODIS2		MDL13220
000C74I	0200 F438 =0000B0I		1322		LPSW	GETNUM		MDL13230
000C78I	082A		1323	ERRA	LDAR	R2,RA		MDL13240
*000C7AI	220E		1324		B	ERR1X		MDL13250
	0000 0C7CI		1325	NODIS2	EQU	*		MDL13260
*000C7CI	0510 00FF		1326		CLAI	R1,X'FF'	EOJ TERMINATION??	MDL13270
000C80I	4330 8048 =000CCCI		1327		BE	EOJPR	YES	MDL13280
000C84I	0832		1328		LDAR	R3,R2	PUT ERROR CODE IN R3	MDL13290
000C86I	0430 00F0		1329		NHI	R3,X'F0'	MASK	MDL13300
000C8AI	1034		1330		SRLS	R3,4	SCALE	MDL13310
000C8CI	D333 8055 =000CE6I		1331		LB	R3,ASCI(R3)	MAKE ASCII	MDL13320
000C90I	D230 8068 =000CFCI		1332		STB	R3,ERRMES+6	STORE TO MESSAGE	MDL13330
000C94I	0832		1333		LDAR	R3,R2	RELOAD	MDL13340
000C96I	0430 000F		1334		NHI	R3,X'F'	MASK	MDL13350
000C9AI	D333 8048 =000CE6I		1335		LB	R3,ASCI(R3)	MAKE ASCII	MDL13360
000C9EI	D230 805B =000CFDI		1336		STB	R3,ERRMES+7	STORE TO MESSAGE	MDL13370
000CA2I	0831		1337		LDAR	R3,R1	PUT ERROR CODE IN R3	MDL13380
000CA4I	0430 00F0		1338		NHI	R3,X'F0'	MASK	MDL13390
000CA8I	1034		1339		SRLS	R3,4	SCALE	MDL13400
000CAAI	D333 8038 =000CE6I		1340		LB	R3,ASCI(R3)	MAKE ASCII	MDL13410
000CAEI	D230 804C =000CFEI		1341		STB	R3,ERRMES+8	STORE TO MESSAGE	MDL13420
000CB2I	0831		1342		LDAR	R3,R1	RELOAD	

000CB4I	C430	000F	1343	NHI	R3,X'F'	MASK	MDL13430	
000CB8I	D333	802A	=000CE6I	1344	LB	R3,ASCII(R3)	MAKE ASCII	MDL13440
000CBCI	D230	803F	=000CFFI	1345	STB	R3,ERRMES+9	STORE TO MESSAGE	MDL13450
000CCOI	E640	8032	=000CF6I	1346	LDAI	R4,ERRMES	LOAD START ADDRESS	MDL13460
000CC4I	E680	803B	=000D03I	1347	LDAI	R8,ERRMESE+1	LOAD END ADDRESS	MDL13470
000CC8I	4300	F37E	=00004AI	1348	B	OUT04	PRINT TO CONSOLE	MDL13480
000CCCI	E640	8008	=000CD8I	1349	EOJPR	LDAI R4,EOJMES	LOAD START	MDL13490
000CDOI	E680	8011	=000CE5I	1350	LDAI	R8,EOJMESE+1	LOAD END	MDL13500
000CD4I	4300	F372	=00004AI	1351	B	OUT04	PRINT	MDL13510
000CD8I	454E	4420	4F46 204A	1352	EOJMES	DC	C'END OF JOB',X'0DOA'	MDL13520
000CEOI	4F42							
000CE2I	0DOA							
000CE4I	2A20		1353	EOJMESE	DC	C'*		MDL13530
000CE6I	3031	3233	3435 3637	1354	ASCII	DC	C'0123456789ABCDEF'	MDL13540
000CEEI	3839	4142	4344 4546					
000CF6I	45E2	524F	5220 4040	1355	ERRMES	DC	C'ERROR @@@@',X'0DOA'	MDL13550
000CFEI	4040							
000DOOI	0DOA							
000D02I	2A20		1356	ERRMESE	DC	C'*		MDL13560
000D04I	C020		1357	DISABL	DC	X'C020'	DISABLE / CLEAR	MDL13570
	0000	OD05I	1358	CLEAR	EQU	DISABL+1		MDL13580
000D06I	2221		1359	MTWRT	DC	X'2221'	MAG TAPE WRITE/READ	MDL13590
	0000	OD07I	1360	MTREAD	EQU	MTWRT+1		MDL13600
000D08I	2300		1361	FWFM	DC	X'2300'	FORWARD FILEMARK	MDL13610
000D0AI	0201		1362	DWRIT	DC	X'0201'	DISC WRITE / READ	MDL13620
	0000	OD0BI	1363	DREAD	EQU	DWRIT+1		MDL13630
000D0CI	0848		1364	STOP	DC	X'0848'	STOP / EXT. STOP	MDL13640
	0000	OD0DI	1365	ESTOP	EQU	STOP+1		MDL13650
000D0EI	C211		1366	SEEK	DC	X'C211'	SEEK / BACKSPACE	MDL13660
	0000	OD0FI	1367	BKSP	EQU	SEEK+1		MDL13670
000D10I	03C1		1368	RCHECK	DC	X'03C1'	READ CHECK / RESTORE	MDL13680
	0000	OD11I	1369	RESTOR	EQU	RCHECK+1		MDL13690
000D12I	7030		1370	ESREAD	DC	X'7030'	EXT READ / READ	MDL13700
	0000	OD13I	1371	SREAD	EQU	ESREAD+1		MDL13710
000D14I	C800		1372	RESET	DC	X'C800'		MDL13720
000D16I	4080		1373	ABORT1	DC	X'4080'	INCRIMENTAL/NORMAL	MDL13730
000D18I			1374	ALIGN	4			MDL13740
000D18I			1375	LOW	DS	4		MDL13750
000D1CI			1376	HIGH	DS	4		MDL13760
000D20I			1377	WRTEND	DS	4		MDL13770
000D24I			1378	EOVRTN	DS	4		MDL13780
000D28I			1379	STADD	DS	4		MDL13790
000D2CI			1380	FADD	DS	4		MDL13800
000D30I			1381	MISTRN	DS	4		MDL13810
000D34I			1382	PGMNUM	DS	4		MDL13820
000D38I			1383	ADDRES	DS	4		MDL13830
000D3CI			1384	AVARTN	DS	4		MDL13840
000D40I			1385	UPDTRN	DS	4		MDL13850
000D44I			1386	CYL	DS	2		MDL13860
000D46I			1387	HEAD	DS	2		MDL13870
000D48I			1388	AVAF LG	DS	2		MDL13880
000D4AI			1389	INTADD	DS	2		MDL13890
000D4CI			1390	LSTBLK	DS	2		MDL13900
000D4EI			1391	NUMBLK	DS	2		MDL13910
000D50I			1392	HEXNUM	DS	2		MDL13920

000D52I		1393	TRKDEN	DS	2		MDL13930
000D54I		1394	SELIND	DS	2		MDL13940
000D56I		1395	RWDEV	DS	2		MDL13950
000D58I		1396	CONSTA	DS	2		MDL13960
000D5AI		1397	SELERR	DS	2		MDL13970
000D5CI		1398	LINCNT	DS	2		MDL13980
000D5EI		1399	SCRAP	DS	2		MDL13990
000D60I		1400	RETRY	DS	2		MDL14000
000D62I		1401	ASCSEQ	DS	6		MDL14010
000D68I		1402		IFNZ	ADC-2		MDL14020
000D68I		1403		ALIGN	8		MDL14030
000D68I		1404	OLDPSW	DS	8		MDL14040
		1405		ENDC			MDL14050
000D70I		1406	REGSAV	DS	128		MDL14060
000DFOI		1407		ALIGN	4		MDL14070
000DFOI		1408	PDB	DS	51		MDL14080
000E24I		1409		ALIGN	4		MDL14090
000E24I		1410	DIRECT	DS	1		MDL14100
000E26I	0000 0E25I	1411	END	EQU	*	THIS MUST BE THE LAST CARD	MDL14110
		1412		END			MDL14120

ASSEMBLED BY CAL 03-066R07-00 (32-BIT)

START OPTICNS: T=32,ERLST

NO CAL ERRORS
 NO CAL WARNINGS
 10 PASSES

ABORT1	0000 0D16I	109	116	178	1315	1320	1373*							
ABSTOP	0000 0000													
ADC	0000 0004	6	125	143	171	617	719	921	943	1029	1037	1193	1276	1287
		1302	1402											
ADDRFS	0000 0E38I	1163	1183	1383*										
ARFLT	0000 0C06I	1210	1268*											
ASCI	0000 0CE6I	190	959	971	1331	1335	1340	1344	1354*					
ASCSEQ	0000 0E62I	887	895	960	972	1401*								
ATF	0000 0114I	202	211*											
ATH	0000 00F0I	200*	208											
AVACON	0000 03E2I	467*												
AVACTN	0000 03F8I	474*												
AVACY1	0000 0422I	488*												
AVAEND	0000 042CI	478	485	491*										
AVAFLG	0000 0E48I	370	372	1388*										
AVAI00	0000 03DCI	460	465*											
AVAIL1	0000 03F0I	454	471*											
AVAIL4	0000 03AAI	450*	457	464										
AVAIL4A	0000 03C0I	449	456*											
AVAIL5	0000 0394I	444*	470											
AVAIL6	0000 0408I	477	479*											
AVAILR	0000 0390I	365	371	442*	806									
AVANCY	0000 041CI	481	486*											
AVARTN	0000 0E3CI	443	491	1384*										
BEGIN	0000 000CI	102*	229	237	243	1267								
BKSP	0000 0D0FI	677	1367*											
CHK1	0000 0438I	502*	506											
CHKERR	0000 045CI	511	514*											
CHKSUM	0000 0432I	284	374	499*										
CLEAR	0000 0D05I	262	786	1358*										
CONDS1	0000 0642I	739	753*											
CONDS3	0000 0646I	754*												
CONMT1	0000 055AI	576	639	653*	655									
CONMT9	0000 0562I	656*												
CONOUT	0000 09E8I	984	1036*											
CONSTA	0000 0E58I	452	754	1189	1396*									
CONT4B	0000 04DEI	590	592*											
CONT4C	0000 04E6I	594	596*											
CONT5B	0000 051CI	614*												
CONTLINE	0000 08C0I	932	936	945	949*									
CONTUE	0000 0198I	247	252*											
CRLF	0000 0A38I	907	1047*											
CYL	0000 0D44I	295	355	465	467	486	488	693	798	808	818	839	1119	1128
		1171	1386*											
CYLTAB	0000 02DEI	349*												
DEOV	0000 02C6I	248	312	334	339*									
DIRECT	0000 0E24I	301	302	306	311	315	326	327	354	356	357	804	805	813

INTCOM	0000	0BD0I	1224	1251*				
INTER	0000	0C58I	1262	1301*				
IOVQU	0000	0C46I	1218	1295*				
LADC	0000	0002						
LCORE	0000	0B50I	85	1192*				
LINCNT	0000	0E5CI	772	909	913	950	1398*	
LINECR	0000	0A3AI	902	1048*				
LINEND	0000	083AI	775	782	897*	951		
LINEWT	0000	08B8I	940	942*				
LINWT	0000	0870I	911	915*				
LINWTD	0000	08A6I	917	937*				
LINWTND	0000	088AI	927*	935				
LISMT1	0000	06B2I	787*	794				
LIST	0000	067CI	254	770*				
LODDIS	0000	022AI	256	293*				
LOW	0000	0D18I	277	367	404	408	501	1375*
LPAD	0000	0006I	89*	898	980			
LSTBLK	0000	0E4CI	1390*					
LSTDIS	0000	06D0I	785	795*				
LSTDS0	0000	06E2I	801*	843				
LSTDS1	0000	0710I	813*	835				
LSTXYZ	0000	0760I	816	833*				
MACINT	0000	0C4CI	1221	1297*				
MAGFF1	0000	01AEI	263*	271	275			
MBRD	0000	0082	101*					
MBWR	0000	0002	100*					
MCH1	0000	0C28I	1278	1282*				
MCHMAL	0000	0C16I	1205	1272*				
MCHPSW	0000	0C20I	1273	1275*				
MESOK	0000	0208I	122	287*				
MESOKEND	0000	0228I	123	288*				
MISEND	0000	037AI	415*	419				
MISERR	0000	0388I	414	420*				
MISHI	0000	0362I	403	407*				
MISTR1	0000	033AI	393*					
MISTR2	0000	033EI	394*	406				
MISTRN	0000	0D30I	393	415	1381*			
MISTRT	0000	0338I	276	366	392*			
MOREMT	0000	01ECI	279*	283				
MSGCON	0000	08E4I	919	953*				
MSGWT	0000	08CAI	938	952*				
MTDEV	0000	018EI	220	249*				
MTEND	0000	05AAI	660	680*				
MTENDX	0000	0200I	280	285*				
MTEOV	0000	02C6I	248*	267				
MTERR	0000	0570I	575	658	661*	664		
MTERR1	0000	0594I	671	674*				
MTERRW	0000	0586I	667	670*				
MTERXY	0000	0A94I	1102	1106*				
MTHREAD	0000	0D07I	565	604	608	1360*		
MTRY	0000	0490I	561*	679				
MTWRT	0000	0D06I	1359*	1360				
NODIS	0000	003CI	117	119*	168	934		
NODIS2	0000	0C7CI	1321	1325*				
NOM01	0000	0A80I	1085	1089*				

NOMORE	0000	0A72I	1075	1076	1083*													
NOMOTN	0000	0A88I	264	676	678	788	1101*	1104										
NORTRM	0000	0454I	512*	791	814	838												
NOTHEX	0000	0126I	204	212	214	217*												
NUMBLK	0000	0D4EI	1391*															
CLDPSW	0000	0D68I	1213	1404*														
OUTO2	0000	0078I	151*	167														
OUTO3	0000	005AI	135*	141														
OUTO4	0000	004AI	124*	157	1348	1351												
OUTO5	0000	009EI	161	164*														
PASC2	0000	0008I	91*	127	991													
PASRAD	0000	0010	88*	144	1030													
PASRD	0000	00A1	98*	145	924													
PASWAD	0000	0011	87*	126	988	1004	1042											
PASWR	0000	00A3	99*	129	993													
PDB	0000	0DFOI	265	266	270	273	363	364	395	397	400	509	789	790	827			
			828	850	856	862	864	868	876	879	884	892	1408*					
PEXIT	0000	09E2I	990	1034*														
PFALL	0000	0C30I	1272	1284*	1289													
PFL	0000	0C38I	1284	1286*														
PGMNUM	0000	0D34I	104	105	164	191	200	269	272	313	316	1382*						
PRGLOW	0000	0380I	411	417*														
PRIN1	0000	099AI	998	1001*	1002	1022												
PRIN2	0000	09D4I	1024*	1025														
PRIN3	0000	09CAI	1005	1010	1020*													
PRIN4	0000	09B0I	1009*	1013	1019													
PRIN5	0000	09BCI	1014*	1018														
PRIN6	0000	09B4I	1008	1011*														
PRINA	0000	098AI	994*															
PRINB	0000	0986I	993*	1043														
PRINT	0000	0956I	779	848	851	854	857	860	863	869	874	877	880	883	888			
			891	896	903	908	920	939	978*									
PRNTLN	0000	0852I	900	906*														
PRNTTL	0000	06A6I	780	783*														
PRTRTN	0000	0A48I	979	1034	1052*													
PSWE	0000	0C5AI	1269	1271	1283	1294	1296	1298	1300	1308*								
PURETOP	0000	0000P	1412															
RO	0000	0000	14*	103	104	105	106	107	120	121	200	201	203	205	207			
			211	213	215	217	264	612	613	615	637	638	640	641	676			
			678	715	716	717	740	741	777	788	846	849	852	855	858			
			861	864	865	867	870	872	875	878	881	886	889	894	901			
			906	918	937	1021	1105	1196	1197	1198	1199	1200	1201	1204	1207			
			1208	1209	1212	1217	1220	1223	1257	1257	1258	1262	1263	1268	1270			
			1282	1293	1295	1297	1299	1303	1309									
R1	0000	0001	15*	108	109	112	113	114	115	116	126	128	134	136	138			
			144	149	150	151	153	154	177	178	179	180	267	280	285			
			308	316	317	339	392	395	397	400	402	402	405	420	512			
			514	555	556	557	604	605	608	609	653	654	657	662	663			
			665	666	672	684	693	694	699	700	701	702	706	707	711			
			712	754	755	757	761	791	884	892	957	962	966	1101	1103			
			1106	1116	1117	1119	1121	1123	1125	1128	1132	1138	1144	1146	1148			
			1152	1155	1187	1189	1202	1203	1205	1206	1210	1211	1213	1214	1215			
			1216	1218	1219	1221	1222	1252	1253	1254	1255	1258	1259	1260	1263			
			1264	1265	1309	1316	1326	1337	1342									
R2	0000	0002	16*	110	114	115	127	128	129	134	136	145	149	150	151			

RB	0000	000B	25*	197	222	223	224	250	561	561	578	591	592	595	596
			606	610	615	621	623	628	632	681	708	713	717	723	725
			730	734	767	1313	1313	1318	1319						
RC	0000	000C	26*	198	225	251	255	255	684	690	695	696	702	707	712
			1144	1168	1173	1180	1181	1187	1190						
RCHECK	0000	OD10I	1181	1368*	1369										
RCHK	0000	0AFEI	451	1163*											
RCHK1	0000	0B22I	1166	1175*											
RCHK2	0000	0B3CI	1183*												
RCHK3	0000	0B34I	1174	1181*											
RD	0000	000D	27*	199	206	207	209	277	367	1071	1077	1078	1086	1089	
RDISC	0000	0464I	304	329	473	546*	830								
RE	0000	000E	28*	278	368	1072	1087								
READPB	0000	0478I	268	281	553*	792									
REGSAY	0000	0D70I	1215	1406*											
RESET	0000	0D14I	1190	1372*											
RESTOR	0000	0D11I	802	1369*											
RETRY	0000	0D60I	549	557	670	675	759	764	1400*						
RF	0000	000F	29*	1120	1122	1124	1126	1129	1129	1130	1134	1136	1137		
RWDEV	0000	0D56I	551	559	600	1395*									
SCRAP	0000	0D5EI	1399*												
SECTAB	0000	02D6I	324	345*	448	456	476								
SEEK	0000	0D0EI	299	361	445	825	1366*	1367							
SEL	0000	050CI	603	608*											
SEL1	0000	0516I	607	611*											
SELD1	0000	0604I	709	714*											
SELD2	0000	05E6I	698	703*											
SELD3	0000	05DCI	689	699*											
SELDIS	0000	05B4I	601	684*	685										
SELERP	0000	0D5AI	564	613	638	641	659	716	741	757	1397*				
SELIN2	0000	053EI	627	631*											
SELIN2D	0000	062CI	729	733*											
SELIN9	0000	0554I	636	640*											
SELIN9D	0000	063CI	738	740*											
SELIND	0000	0D54I	599	618	703	720	1394*								
SELST	0000	052EI	620	623*											
SELST1	0000	0532I	622	624*											
SELST1D	0000	0620I	724	726*											
SELSTD	0000	061CI	722	725*											
SELWRT	0000	04BCI	562	578*	765										
SEQ1XY	0000	093EI	969	971*											
SEQASC	0000	0910I	885	893	954*										
SEQX1	0000	0930I	966*	977											
SEQXX	0000	0924I	962*	976											
SETCON	0000	0B42I	753	1182	1186*	1188									
SOD	0000	000AI	93*	294	797										
SOP	0000	000BI	94*	837											
SPACE	0000	0A3CI	847	853	859	873	882	890	1049*						
SRB	0000	04A2I	567*	572	573										
SREAD	0000	0E13I	610	713	1371*										
STADD	0000	0E28I	597	1379*											
START	0000	0000I	84*	409											
STBKAD	0000	0A54I	279	369	1071*										
STCADR	0000	00CO	95*												
STOP	0000	0D0CI	223	224	578	623	581	725	767	1364*	1365				

PROG= MDCBL ASSEMBLED BY CAL 03-066R07-00 (32-BIT)

		1	SCRAT			MDL00010
		2	MDCBL	PROG	MMD COMMON BOOT LOADER 06-176F03R02M96A13	MDL00020
		3		CROSS		MDL00030
		4		SQCHK		MDL00040
		5		SQUEZ		MDL00050
		6		WIDTH	120	MDL00060
		7		NORX3		MDL00070
		8		NLSTC		MDL00080
		9	*			MDL00090
		10	*	COPYRIGHT	C PERKIN-ELMER CORPORATION MAY 1979	MDL00100
		11	*			MDL00110
	0000	12	R0	EQU	0	MDL00120
	0000	13	R1	EQU	1	MDL00130
	0000	14	R2	EQU	2	MDL00140
	0000	15	R3	EQU	3	MDL00150
	0000	16	R4	EQU	4	MDL00160
	0000	17	R5	EQU	5	MDL00170
	0000	18	R6	EQU	6	MDL00180
	0000	19	R7	EQU	7	MDL00190
	0000	20	R8	EQU	8	MDL00200
	0000	21	R9	EQU	9	MDL00210
	0000	22	RA	EQU	10	MDL00220
	0000	23	RB	EQU	11	MDL00230
	0000	24	RC	EQU	12	MDL00240
	0000	25	RD	EQU	13	MDL00250
	0000	26	RE	EQU	14	MDL00260
	0000	27	RF	EQU	15	MDL00270
0000R		28	ORG	X'80'		MDL00280
0080	2421	29	LIS	R2,1		MDL00290
0082	2303	30	BS	BOOT		MDL00300
0084	0100	31	DC	X'100'	SET PSW SAVE AREA	MDL00310
0086	0108	32	DC	X'108'	SET REG SAVE AREA	MDL00320
0088	4020 0022	33	BOOT	STH R2,X'22'	REG SAVE FOR 16 BIT MACHINE	MDL00330
008C	C850 0100	34	LHI	R5,X'100'	SET START ADDRESS	MDL00340
0090	C860 0267	35	LHI	R6,DISBTE-DISBT+X'101'	SET END ADDRESS	MDL00350
0094	D340 0078	36	WTBOOT	LB R4,X'78'	GET LOADER DEVICE ADDRESS	MDL00360
0098	9D41	37	LEADER	SSR R4,R1		MDL00370
009A	2091	38		BTBS 9,1		MDL00380
009C	9B4A	39		RDR R4,RA		MDL00390
009E	08AA	40		LDAR RA,RA		MDL00400
*	00A0 2338	41		BZ LEADEX		MDL00410
	00A2 D2A5 0000	42	GOOBYT	STB RA,0(R5)	STORE THE BYTE	MDL00420
	00A6 2651	43		AIS R5,1	INCREMENT THE LOC.	MDL00430
	00A8 0556	44		CLAR R5,R6	EOM ?	MDL00440
*	00AA 2039	45		BNE LEADER	NO	MDL00450
	00AC 4300 0100	46		B X'100'	YES	MDL00460
	00B0 C550 0100	47	LEADEX	CLHI R5,X'100'		MDL00470
*	00B4 223E	48		BE LEADER		MDL00480
*	00B6 220A	49		B GOOBYT		MDL00490
		50	*			MDL00500
		51	*			MDL00510
		52	*			MDL00520
		53	*			MDL00530

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54 *      BEFCRE THIS BOOT LOADER IS EXECUTED THE DEVICE DEFINITION
55 *      TABLE MUST BE SET UP AS FOLLOWS.
56 *
57 *                      LOCATIONS
58 *      DEVICE          X'78'   X'7A'   X'7C'   X'7E'
59 *
60 *
61 *
62 *      DISC           YZZZ     DDTT     CCSS     OOLL
63 *
64 *
65 *      WHERE:      DD = THE DEVICE WITH THE MMD PACK
66 *                CC = THE CONTROLLER ADDRESS
67 *                TT = DISC TYPE INDICATOR
68 *                31 = 2.5 MB DISC
69 *                33 = 10 MB DISC
70 *                35 = 67 MB DISC
71 *                36 = 256 MB DISC
72 *                SS = THE DISC SELCH ADDRESS
73 *                YY = THE DEVICE ADDRESS OF THE DISC BOOT LOAD
74 *                   DEVICE
75 *                ZZ = THE READ COMMAND FOR THE BOOT LOAD DEVICE
76 *                LL = THE LOADER INDICATOR
77 *                00 = 16 BIT LOADER
78 *                01 = 32 BIT LOADER
79 *
80 *
81 *
82 *
83 *
84 *      00B8          ORG      X'100'
85 *                0000 0100  EQU      *
86 *                0000 0100  EQU      *
87 *                C8D0 00F0  LHI      RD,X'F0'      LOAD PSW CONSTANT
88 *                954D          EPSR    R4,RD          SWAP (DISABLE INTERRUPTS)
89 *                D310 007D  LB       R1,X'7D'      GET SELCH ADDRESS
90 *                2448          LIS     R4,8          LOAD THE SELCH STOP COMMAND
91 *                9E14          OCR     R1,R4          STOP THE SELCH
92 *                D320 007A  LB       R2,X'7A'      GET THE DEVICE ADDRESS
93 *                D330 007C  LB       R3,X'7C'      GET THE CONTROLLER ADDRESS
94 *                C840 00C8  LHI      R4,X'C8'      LOAD CLEAR COMMAND
95 *                9E34          OCR     R3,R4          CLEAR CONTROLLER
96 *                41F0 0200  BAL      RF,FRSRW      WAIT FOR FRSRW
97 *                2441          LIS     R4,1          LOAD RESTORE COMMAND
98 *                9E24          OCR     R2,R4          RESTORE THE FILE
99 *                41F0 0200  BAL      RF,FRSRW      WAIT FOR COMPLETE
100 *                D3E0 007B  LB       RB,X'7B'      LOAD TYPE INDICATOR
101 *                2470          LIS     R7,0          SET THE SECTOR TO 0
102 *                D380 01BC  LB       R8,SOD          GET START
103 *                2490          LIS     R9,0          SET HEAD TO 0
104 *                41E0 01BE  BAL      RE,READ      READ THE DIRECTORY
105 *
106 *                LIS     RA,8          SET POINTER
107 *                C8E0 4000  LHI      RE,X'4000'      LOAD TEST CONSTANT
108 *                0AEE          AAR     RE,RE          DOUBLE

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MDL00540
MDL00550
MDL00560
MDL00570
MDL00580
MDL00590
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MDL00990
MDL01000
MDL01010
MDL01020
MDL01030
MDL01040
MDL01050
MDL01060
MDL01070
MDL01080

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0140	2112	109	BMS	LD16	16 BIT BRANCH	MDL01090
0142	26A8	110	AIS	RA,8	32 BIT-BUMP POINTER	MDL01100
0144	D37A 024C	111	LD16	LB R7,PDB+6(RA)	LOAD THE SECTOR NUMBER	MDL01110
0148	488A 024A	112	LH	R8,PDB+4(RA)	LOAD THE CYLINDER NUMBER	MDL01120
014C	D39A 024D	113	LB	R9,PDB+7(RA)	GET THE HEAD #	MDL01130
0150	41E0 01BE	114	BAL	RE,READ	READ THE PROGRAM DEFINITION BLOCK	MDL01140
		115	*			MDL01150
0154	D350 0259	116	LB	R5,PDB+19		MDL01160
0158	9158	117	DC	X'9158'		MDL01170
015A	D360 025A	118	LB	R6,PDB+20		MDL01180
015E	0656	119	OAR	R5,R6	R5 = THE STARTING ADDRESS	MDL01190
0160	4860 025C	120	LH	R6,PDB+22	R6 = THE ENDING ADDRESS	MDL01200
0164	C5B0 0002	121	CLHI	RB,2	CHECK TYPE INDICATOR	MDL01210
* 0168	2187	122	BL	CONT1A	NOT MSM	MDL01220
016A	C570 003F	123	CLHI	R7,63	MAXIMUM?	MDL01230
* 016E	213A	124	BNE	CONT1	NO	MDL01240
0170	2691	125	AIS	R9,1	INCRIMENT HEAD	MDL01250
0172	2470	126	LIS	R7,0	ZERO SECTOR	MDL01260
* 0174	2308	127	B	CONT1B	SKIP	MDL01270
0176	C570 0017	128	CONT1A	CLHI R7,23	MAXIMUM?	MDL01280
017A	213A	129	BNES	CONT1	NO	MDL01290
017C	2691	130	AIS	R9,1	INCRIMENT HEAD	MDL01300
017E	2470	131	LIS	R7,0	ZERO SECTOR	MDL01310
0180	2302	132	BS	CONT1B	SKIP	MDL01320
0182	2671	133	CONT1	AIS R7,1	BUMP TO NEXT SECTOR	MDL01330
0184	41E0 01C6	134	CONT1B	BAL RE,READ1	GO READ THE MMD LOADER	MDL01340
		135	*			MDL01350
		136	*	CALCULATE CHKSUM		MDL01360
		137	*			MDL01370
0188	08D5	138	LDAR	RD,R5		MDL01380
018A	07FF	139	XAR	RF,RF	ZERO THE CHKSUM ACCUM.	MDL01390
018C	D3ED 0000	140	CKLP	LB RE,0(RD)		MDL01400
0190	07FE	141	XAR	RF,RE		MDL01410
0192	26D1	142	AIS	RD,1		MDL01420
0194	05D6	143	CLAR	RD,R6		MDL01430
0196	2085	144	BLS	CKLP		MDL01440
0198	2236	145	BES	CKLP		MDL01450
019A	D3C0 025E	146	LB	RC,PDB+24	GET THE CHKSUM BYTE	MDL01460
019E	05FC	147	CLAR	RF,RC		MDL01470
01A0	0335	148	BER	R5	CHKSUM -OK - PASS CONTROL TO THE PROGRAM	MDL01480
		149	*			MDL01490
01A2	24D1	150	LIS	RD,1	DISPLAY	MDL01500
01A4	C8F0 0040	151	LHI	RF,X'40'		MDL01510
01A8	9EDF	152	OCR	RD,RF	THE CHKSUM	MDL01520
01AA	C8F0 EE00	153	LHI	RF,X'EE00'		MDL01530
01AE	98DF	154	WHR	RD,RF		MDL01540
01B0	07EE	155	XAR	RE,RE	ERROR CODE	MDL01550
01B2	98DE	156	WHR	RD,RE		MDL01560
01B4	C8F0 0080	157	LHI	RF,X'80'		MDL01570
01B8	9ECE	158	OCR	RD,RE		MDL01580
01BA	2200	159	HERE	BS HERE		MDL01590
		160	*			MDL01600
01BC	00	161	SOD	DB 0		MDL01610
01BE		162		ALIGN 2		MDL01620
		163	*			MDL01630

01BE	C850	0246	164	READ	LHI	R5,PDB	SET UP THE SELCH	MDL01640
01C2	C860	0264	165		LHI	R6,PDB+30	ADDRESSES	MDL01650
01C6	C5E0	0035	166	READ1	CLHI	RB,X'35'	MSM?	MDL01660
01CA	4380	020A	167		BNL	MSM	YES	MDL01670
01CE	9828		168		WHR	R2,R8	WRITE CYLINDER TO FILE	MDL01680
01D0	2442		169		LIS	R4,2	LOAD SEEK COMMAND	MDL01690
01D2	9E24		170		CCR	R2,R4	SEEK	MDL01700
01D4	41F0	0200	171		BAL	RF,FRSRW		MDL01710
01D8	2441		172		LIS	R4,1	LOAD THE DISC READ COMMAND	MDL01720
01DA	08C9		173		LDAR	RC,R9	SAVE REGISTER	MDL01730
01DC	91C5		174		DC	X'91C5'	SCALE	MDL01740
01DE	06C7		175		OAR	RC,R7	MERGE HEAD AND SECTOR	MDL01750
01E0	9A3C		176		WDR	R3,RC	SET UP THE CONTROLLER	MDL01760
01E2	41F0	0200	177		BAL	RF,FRSRW	WAIT	MDL01770
01E6	9815		178		WHR	R1,R5	SET UP THE SELCH	MDL01780
01E8	9816		179		WHR	R1,R6	SET UP THE SELCH	MDL01790
01EA	9E34		180		OCR	R3,R4	START THE CONTROLLER	MDL01800
01EC	C840	0030	181		LHI	R4,X'30'	LOAD SELCH START	MDL01810
01F0	9E14		182		OCR	R1,R4	START THE SELCH	MDL01820
01F2	9D10		183	READ1B	SSR	R1,R0	WAIT FOR SELCH	MDL01830
01F4	2081		184		BTBS	8,1	NOT BUSY	MDL01840
01F6	2448		185		LIS	R4,3	LOAD SELCH STOP	MDL01850
01F8	9E14		186		OCR	R1,R4	STOP THE SELCH	MDL01860
01FA	41F0	0200	187		BAL	RF,FRSRW	WAIT	MDL01870
01FE	030E		188		BR	RE		MDL01880
			189	*				MDL01890
	0000	0200	190	FRSRW	EQU	*		MDL01900
0200	9D30		191		SSR	R3,R0	WAIT FOR CONTROLLER	MDL01910
0202	2221		192		BFBS	2,1	IDLE	MDL01920
0204	9D20		193		SSR	R2,R0	WAIT FOR FILE	MDL01930
0206	20F1		194		BTBS	15,1	STATUS = 0	MDL01940
0208	030F		195		BR	RF		MDL01950
020A	9828		196	MSM	WHR	R2,R8	WRITE CYL TO DRIVE	MDL01960
020C	C840	0010	197		LHI	R4,X'10'	SCT	MDL01970
0210	9E24		198		CCR	R2,R4	COMMAND	MDL01980
0212	41F0	0200	199		BAL	RF,FRSRW	WAIT	MDL01990
0216	2442		200		LIS	R4,2	LOAD SEEK COMMAND	MDL02000
0218	9E24		201		CCR	R2,R4	SEEK	MDL02010
021A	41F0	0200	202		BAL	RF,FRSRW	WAIT	MDL02020
021E	9829		203		WHR	R2,R9	WRITE HEAD TO DRIVE	MDL02030
0220	C840	0020	204		LHI	R4,X'20'	SHT	MDL02040
0224	9E24		205		OCR	R2,R4	COMMAND	MDL02050
0226	41F0	0200	206		BAL	RF,FRSRW	WAIT	MDL02060
022A	9A37		207		WDR	R3,R7	WRITE WDO TO CONT	MDL02070
022C	08C9		208		LDAR	RC,R9	SAVE REGISTER	MDL02080
022E	91CA		209		DC	X'91CA'	SCALE	MDL02090
0230	06C8		210		OAR	RC,R8	MERGE	MDL02100
0232	983C		211		WHR	R3,RC	WRITE WD1 AND WD2 TO CCNT	MDL02110
0234	9815		212		WHR	R1,R5	WRITE TO SELCH	MDL02120
0236	9816		213		WHR	R1,R6	WRITE TO SELCH	MDL02130
0238	2441		214		LIS	R4,1	READ CMD	MDL02140
023A	9E34		215		OCR	R3,R4	COMMAND	MDL02150
023C	C840	0030	216		LHI	R4,X'30'	SELCH READ	MDL02160
0240	9E14		217		OCR	R1,R4	START SELCH	MDL02170
0242	4300	01F2	218		B	READ1B		MDL02180

	0000 0245	219	LNZB	EQU	*-1		MDL02190
0246		220		ALIGN	2		MDL02200
0246		221	PDB	DS	32		MDL02210
	0000 0266	222	DISBTE	EQU	*		MDL02220
		223	*				MDL02230
		224		NOSQZ			MDL02240
0266	D360 007A	225	\$PUNCH	LB	R6,X'7A'	GET BOUTDV (PUNCH) ADDRESS.	MDL02250
026A	DE60 007B	226		OC	R6,X'7B'	START TAPE PUNCH	MDL02260
026E	9D60	227		SSR	R6,R0		MDL02270
0270	2081	228		BTBS	8,1		MDL02280
0272	41F0 02B4	229		BAL	RF,STAPL	PUNCH LEADER	E MDL02290
0276	C810 0080	230		LHI	R1,X'80'	LOAD START	MDL02300
027A	2421	231		LIS	R2,1		MDL02310
027C	C830 00CF	232		LHI	R3,X'CF'		MDL02320
0280	DA61 0000	233	\$PNCH1	WD	R6,0(R1)	PUNCH BOOT LOADER	MDL02330
0284	9D60	234		SSR	R6,R0		MDL02340
0286	2081	235		BTBS	8,1		MDL02350
0288	C110 0280	236		BXLE	R1,\$PNCH1		MDL02360
028C	41F0 02BA	237		BAL	RF,STAPL1	PUNCH ONE-FOLD GAP.	E MDL02370
		238	*			(NORMALLY X'A00')	MDL02380
0290	C810 0100	239		LDAI	R1,ORIGIN1		MDL02390
0294	C830 0245	240		LDAI	R3,LNZB		MDL02400
0298	D351 0000	241	\$PNCH2	LB	R5,0(R1)	PUNCH PROGRAM	MDL02410
029C	9A65	242		WDR	R6,R5		MDL02420
029E	9D60	243		SSR	R6,R0		MDL02430
02A0	2081	244		BTBS	8,1		MDL02440
02A2	C110 0298	245		BXLE	R1,\$PNCH2		MDL02450
02A6	41F0 02B4	246		BAL	RF,STAPL	PUNCH TRAILER.	E MDL02460
02AA	C810 0080	247		LHI	R1,X'80'		MDL02470
02AE	9411	248		EXBR	R1,R1		MDL02480
02B0	9501	249		EPSR	R0,R1	HALT PROCESSOR.	MDL02490
02B2	22C0	250		DCX	2200		MDL02500
		251	*	CHKSUM/M17	PUNCHER (CONTINUED)		MDL02510
		252	*				MDL02520
		253	*				MDL02530
02B4	C800 0100	254	\$TAPL	LHI	R0,256	TO PUNCH BLANK LEADER	MDL02540
02B8	2303	255		BS	\$TAPLP		MDL02550
		256	*				MDL02560
02BA	C800 0080	257	\$TAPL1	LHI	R0,128	TO PUNCH 1-FOLD GAP+	MDL02570
		258	*				MDL02580
02BE	27C1	259	\$TAPLP	SIS	R0,1		MDL02590
02C0	032F	260		BNPR	RF	RETURN	E MDL02600
02C2	2430	261		LIS	R3,0		MDL02610
02C4	9A63	262		WDR	R6,R3	PUNCH BLANK FRAME	MDL02620
02C6	9D68	263		SSR	R6,R8		MDL02630
02C8	2081	264		BTBS	8,1		MDL02640
02CA	22C6	265		BS	\$TAPLP	CONTINUE.	MDL02650
		266	*				MDL02660
02CC		267		END			MDL02670

New mmd

50 - D

52 - 00CF

56 - 4300

58 - 0000

78 - 85A1

7A - 8540

7C - B650

7E - 0 for Low Loader

CLR PSW

exc at 50

LOAD X'ADD' ON Front Panel & RUN

DISPLAY - LIST

TAINT -

TIME -

START

HELP

MULTI-MEDIA DIAGNOSTIC LOADER (16 BIT)

Consists of:

Program Description	B06-176M95R02A15
Program Listing	06-176F01M96R02A13
Program Listing	06-176F03M96R02A13
Bootstrap Loader Tape	06-176F03M17R02
OS/16 Bootstrap Loader Tape	03-098M17
R03 Supplementary Loading Information	Sheets i, ii, iii/iv

PERKIN-ELMER

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R03 SUPPLEMENTARY LOADING INFORMATION
FOR TEST PROGRAM 06-176F01

The 06-250M67 Multimedia disk pack is built in such a way as to be boot-loadable using the Automatic Load Option (ALO) or the Loader Storage Unit (LSU). This capability can be used on 16-bit or 32-bit systems. The following paragraphs describe the procedures. In all cases, the multimedia disk pack must be mounted and hardware write protected.

On Processors With Displays

- Set up low memory as though you would load an Operating System:

<u>Location</u>	<u>Contents</u>	
0030	0000	
0032	0000	
0034	0000	
0036	0050	
0050	D500	Autoload instruction
0052	00CF	
0054	4300	
0056	0080	
0078	1399	Paper tape device number/command
007A	C633	Disk address and O.S. device code
007C	B6F0	Controller address and SELCH address
007E	0111	O.S. extension (.111 means MMD)

- If the system does not have an LSU or ALO, mount the O.S. boot load paper tape (03-074M17 for 32-bit systems or 03-098M17 for 16-bit systems) in the paper tape reader. Select address X'30' and execute. If the system does have an LSU or ALO, only locations X'7A', X'7C', and X'7E' need be set up. Enable the LSU/ALO and press initialize.
- As soon as the Initial Program Load (IPL) is complete, X'FFFF' will appear on the display panel. Disable the LSU/ALO and proceed as with normal MMD.

R03 SUPPLEMENTARY LOADING INFORMATION (Continued)

On Processors Without Display (1620, etc.)

- Enable the IPL and depress initialize. Observe that the following is output to the system console:

Non-Extended Memory or Extended Memory

BASIC TEST COMPLETE
MEMORY OK

BASIC TEST COMPLETE
MEMORY 00000-07FFF OK
MEMORY 08000-0FFFF OK

·
·
·

SERIES SIXTEEN CPU $nnKB$ where $nnKB$ is the memorysize.
LOAD DSC1.002?

- Type the letter 'N' on the system console. N means no.
- The system then responds with available devices

LOAD DEVICES
DSC2 OK
DSC1 OK

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·
·

ENTER DEVN.OSID

- Enter the following:

DSC1.111

- The following should be output:

MMDL-INPUT SEQUENCE NUMBER

- Memory locations X'7A' through X'7E' have been set up by the IPL sequence with default values for the 10 MB removable platter. If necessary, modify these locations and re-execute from address X'4000'.
- Proceed as with normal MMD.

R03 SUPPLEMENTARY LOADING INFORMATION (Continued)

On Processors Without Display (3200, etc.)

- Enable the IPL and depress initialize. Observe that the following is output to the system console:

```
3200 LSU LOADER R00-00
DEVS
MG85
MGC5
DS5R
DS5F
DS67
D256
FLPY
OTHR
DEVICE=
```

- If the system has default addresses, enter "DS5R", otherwise, enter "OTHR" and the applicable addresses. For example:

```
DEVICE = OTHR
DEV#    = C6
CODE    = 33
CTLR    = B6
SLCH    = F0
```

- The following should be output:

```
VOL = MMD, FILE =
```

- Enter:

```
OS32MDL2.111
```

- The following should be output:

```
MMDL-INPUT SEQUENCE NUMBER
```

- Memory locations X'7A' through X'7E' have been set up by the IPL sequence with default values for the 10 MB removable platter. If necessary, modify these locations and re-execute from address X'6000'.
- Proceed as with normal MMD.