Program Number B06-177F02M99R04

MULTI-MEDIA DIAGNOSTIC GENERATOR (32-BIT)

Consists of:

Program Description	**B06-177M95R04A15**
Program Listing	**06-177F02R04M91A13**

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1. PROGRAM TITLE

Multi Media Diagnostic Generator (MDG)

06-177 F01 16 Bit Processors
06-177 F02 32 Bit Processors

2. PURPOSE OF THE PROGRAM

The MDG provides the facilities necessary to build and maintain Perkin-Elmer diagnostics on Multi Media. The need for a paper tape reader is eliminated. Programs can be loaded from the magnetic media using the Multi Media Diagnostic Loader (06-176 F01 or F02).

These programs support the following devices:

800 BPI Mag Tape
1600 BPI Mag Tape
INTERTAPE (cassette)
13.5 MB Disc
10 MB Disc
67 MB Disc
256 MB Disc

NOTE: The 13.5 MB disc is only supported on 32-bit systems.

3. MINIMUM HARDWARE REQUIRED

Processor - Any 16 bit with the Basic 7/16 instruction set.
- Any 32 Bit

Memory - 16 bit processor - 32KB
- 32 bit processor - 40KB

Console - TTY or CRT or Carousel 30 or Carousel 300, on CLI or PASLA or STC.

Loading Device - HSPTR/P or
- TTY
- Used to load some diagnostics for the CREATE mode.

Output Device - Mag Tape w/wo SELCH
- Cassette
- Disc and SELCH
- Used as the magnetic output device for the CREATE and COPY functions.

Input Device - Mag Tape w/wo SELCH
- Cassette
- Disc and SELCH
- Used as the input device for the COPY function.

4. REQUIREMENTS OF THE MDG SYSTEM

Manually enter the X'50' Sequence shown as followed, into memory:

```
X'30'      0
X'32'      0
X'34'      0
X'36'    X'50'
X'50'    X'D500'
X'52'    X'00CF'
X'54'    X'4300'
X'56'    X'0080'
```

5. LOADING PROCEDURES

5.1 Tape Format

The MDG is supported by two separate Relocatable programs; one for 32 bit processors, and one for 16 bit processors.

16 Bit 06-177 F01 M17
32 Bit 06-177 F02 M17

The Location start + X'10' contains the console device code. Refer to Appendix C for details and devices supported.

Execute the MDG at its start address. Observe the following title is printed on the console device.

```
MDG
*
```

6. OPERATOR COMMAND/OPTION INFORMATION

6.1 Command/Option Input Structure

An asterisk (*) is output to the console device to indicate that the program is awaiting operator input. All options must be typed in from the Console, followed by a space and the desired arguments separated by commas. A carriage return (CR) is issued to terminate every command/option input. An invalid command/option or value will cause a (?) followed by a carriage return (CR), line feed (LF), and an asterisk (*) to occur. If, during entry of the option, an error is made, it can be handled in one of two ways.

The hash mark (#) can be input to delete the entire line. This will cause a carriage return (CR), and line feed (LF), asterisk (*) to be output. The left arrow (←) or BS can be input to delete the previous caracters, or a string of characters can be deleted by inputting a (←) left arrow or BS for each character to be deleted.

6.2 Operator Commands/Options

The list of operator Commands/Options.

OUTDEV	RW - rewind
INDEV	FF - forward file
LIMITS	BF - backward file
SEQNAM	EOV - write EOV
CREATE	INIT
COPY	

6.2.1 OUTDEV (Select Output Device). This command specifies the device addresses associated with the output device. This option is required before most commands can be honored.

Format: OUTDEV n,aa,ss,cc(CR)

where: n-1 - 9 track mag tape
800 or 1600 BPI

2 - INTERTAPE

3 - 13.5 MB Disc

4 - 10 MB Disc

5 - 67 MB Disc

6 - 256 MB Disc

NOTE

Devices 3, 4, 5, and 6 must have SELCH specified.

aa - Device address

ss - SELCH address if device (aa) is on a SELCH If no selch enter carriage return (CR).

cc - Controller address if n is greater than 2. If no controller enter carriage return (CR).

Examples: Assign a Mag Tape at address X'95' no SELCH

OUTDEV 1,95(CR)

Assign the same Mag Tape but on SELCH X'F0'.

OUTDEV 1,95,F0(CR)

Assign INTERTAPE device X'45'.

OUTDEV 2,45(CR)

Assign a 13.5 MB disc-device X'FC' controller X'FB', and SELCH X'F0'.

OUTDEV 3,FC,F0,FB(CR)

Assign a fixed platter of 10MB disc-device address X'C9' - controller address X'B8' - as SELCH address X'F0'.

OUTDEV 4,C9,F0,B8(CR)

6.2.2 INDEV (Select Input device). This command specifies the device addresses associated with the input device. The option is used for the COPY function only.

Format: INDEV n,aa,ss,cc(CR)

where: n,aa,ss,cc are defined as in OUTDEV.

Examples: Assign a Mag Tape at address X'85' no SELCH

INDEV 1,85(CR)

Same Mag Tape on SELCH X'F0'

INDEV 1,85,F0(CR)

Assign INTERTAPE at address X'55'

INDEV 2,55(CR)

Assign the removable platter of a 10 MB disc-device address X'C8' - controller X'B8' and SELCH X'F2'.

INDEV 4,C8,F2,B8(CR)

6.2.3 INIT (Initialize the Media). The INIT command will prepare a virgin media for use. On a mag tape, it will write the boot loader. On a disc it will initialize the directory and verify the integrity of cylinders eight and nine. This command also establishes the first EOV needed by the CREATE and COPY functions.

To perform initialization observe the following:

Mag Tape or Cassette	Must be at "Load Point" "On-Line" NOT "Write Protected"
Disc	Must be "Ready" and NOT "Write Protected"

With the media in the above condition, enter the INIT command. At job completion, EOJ will be printed. The media is now ready for use by CREATE or COPY.

Example:
```
*INIT(CR)
EOJ
*
```

6.2.4 LIMITS (Select Low, High Program Addresses). The LIMITS option specifies the low and high boundaries of the core image to be copied. It is required only when the CREATE command is used.

Format: LIMITS 11111,hhhhh(CR)

where *11111 is the 5 digit LOW memory address.

*hhhhh is the 5 digit HIGH memory address.

*For MDG 16 Bit (06-177F01), this is a 4 digit address only.

Example: Set the limits for a program with starting address of X'0A00' and ending address of X'27C5'.

LIMITS A00,27C5(CR)

6.2.5 SEQNAM (Assign a sequence number, name). This option is used to assign a unique three digit sequence number, the program 06-# and revision, and the program name. The sequence number is used for program identification on the media, and is the only means for identification at load time. Multiple defined sequence numbers may cause errors. This option is set to zero after completion of a CREATE.

Format: SEQNAM sss,ppppp[.R] ,nnnnn...(CR)

where sss is a three digit sequence number.

ppppp is the combination of the program 06# and revision level. Its structure is the three digit 06#, followed by the two digit revision #. This field for program 06-122R03 would be 12203.

nnnnn... is a 30 character free format description field. A program's functional variation and name should be included here.

[.R] is the optional extension field representing the number of change page packages installed; this field will be zeroed when the program is revised; if the field is zero, it will not be printed when the media is listed.

Example: For the 06-156F01 the series 32 Memory Test Part 1.

```
SEQNAM  03A,15600,F01 MEMORY TEST PART 1(CR)
```

6.2.6 CREATE (Copy a memory resident program to a media). The CREATE command writes memory between the low and high addresses specified in the LIMITS option to the OUTDEV media as a core image.

Core image is absolute, and when reloaded, occupies the same memory locations as at the time of the CREATE. The only restraint on the CREATE function is that 16 and 32 bit loader format tapes must be CREATED on their respective processors. When the CREATE terminates, "EOJ" is printed on the console and the SEQNAM option is set to zero.

Format: CREATE(CR)

CREATE writes an EOV indicator after every program written. This EOV indicator is removed (by the program) before the next program is written.

Example:
```
*CREATE
EOJ
*
```

6.2.7 COPY (Copy a program from an existing media to another). The COPY command generates a core image output media. However, it is not generated from a memory resident program, but by transferring programs from a previously CREATED media, INDEV to OUTDEV. The COPY function has no restraints and will copy any previously made media to any output media. When COPY terminates, "EOJ" is printed on the console. If the COPY terminates at EOV, then "EOV" "EOJ" is printed. While COPY can be used to copy all or part of the media, the user must maintain the proper media format. See Appendix B.

During COPY, the sequence number of the program being copied is shown on the display panel.

Format: COPY nnn(CR)

where nnn is the sequence # where the COPY is to terminate. If it is desired to copy to EOV, the following format is used:

COPY EOV(CR)

Example: Copy all the programs up to sequence number 126 from INDEV to OUTDEV.

```
*COPY 126(CR)
EOJ
*
Copy all the program up to sequence number 92C
*COPY 92C(CR)
EOV
EOJ
*
(The above printout indicates that 92C was not
found on the INDEV.)
```

NOTE

If no I/O errors occur, all programs from the present program to EOV or end termination have been copied successfully.

Copy to EOV

```
*COPY EOV(CR)
EOV
EOJ
*
```

6.2.8 RW (REWIND). The RW command will rewind the specified device to the beginning of the media. This command must be used on both Mag Tape and Disc. The Mag Tape returns to BOT (beginning of tape) or the pointers for the Disc are set to zero. When the RW is complete, "EOJ" is printed on the console.

Format: RW x(CR)

where x=O (letter O) for the rewind of the media associated with OUTDEV.

X = I (letter I) for the rewind of the media associated with INDEV.

Example:

```
*RW O(CR)
EOJ

*RW I(CR)
EOJ
```

6.2.9 FF (FORWARD FILES). The FF command will forward files. The command terminates when the desired file is found, or EOV is detected. If the file is located, "EOJ" is printed on the console. If EOV is detected, "EOV" "EOJ" is printed.

Format: FF x,sss(CR)

where x = O (letter O) for the media associated with OUTDEV, and I (letter I) for the media associated with INDEV

xxx is the three digit sequence # of the program up to which the pointer is moved, or the tape is positioned.

Example:

```
*FF O,027(CR)          (number found)
EOJ
*
*FF I,196(CR)          (number not found)
EOV
EOJ
*
*FF O,EOV(CR)          (forward to EOV)
EOV
EOJ
*
```

6.2.10 BF (BACKWARD FILES). The BF command will back up files. The command terminates when the desired file is found or beginning of volume (BOV) is detected. If the file is located, "EOJ" is printed. If the file is not found, "BOV" "EOJ" is printed.

Format: BF x,sss(CR)

where x - O (letter O) for the OUTDEV media, and
I (letter I) for the INDEV media.

xxx is the three digit sequence number of the program being sought.

Examples:

```
*BF O,128(CR)          (number found)
EOJ
*
*BF I,007(CR)          (number not found)
EOV
EOJ
*
```

6.2.11 EOV (WRITE EOV). This command will write END OF VOLUME on the media. The command will be accepted only when the position of the media is known. This command is NOT for general usage. It's primary purpose is in error recovery and will be discussed further in section 8.

Format: EOV(CR)

Example:
```
*EOV(CR)
EOJ
```

7. OPERATING PROCEDURES

This section gives instructions for performing MDG operations. The following procedures are discussed.

1. Device Assignments
2. Media INITialization
3. CREATE - how to use the CREATE function
4. COPY - to transfer the programs to another media.

An example of the commands necessary to perform the above functions will follow. For these examples, mag tape address X'85' on SELCH X'F0' will be the OUTDEV. Throughout these examples, refer to Section 6 for details on Option/Commands information.

7.1 Device Assignments

Device assignments must be made as follows. Refer to Section 6.

OUTDEV - if the CREATE function is to be used.

INDEV and OUTDEV - if the COPY function is to be used.

Example:
```
MDG
*OUTDEV 1,85,FO (CR)
*INDEV 2,45(CR)
```

7.2 Media Initialization

If the media to be used on OUTDEV is a virgin media, it must be initialized. Initialization establishes known information on the media and provides the first EOV indicator.

Example:
```
MDG
OUTDEV 1,85,FO(CR)
*INIT
EOJ
*
```

7.3 Create

To CREATE on a media, the following steps should be followed:

1. Start MDG at its bias address.

2. Assign OUTDEV as outlined in Section 6.2.1.

3. FF (Forward Files) the media to EOV. See Section 6.2.9 if the media is a virgin media, it must be INITialized instead of FF. See Section 6.2.3.

4. Load the program to be put on the media. Load it as instructed for the program.

   NOTE: When building a new media, the first two programs written must be the 16 bit and 32 bit Multi-Media Diagnostic Loaders. Refer to Appendix B.

5. Start the MDG at its bias address.

6. Enter the LIMITS option. See Section 6.2.4.

7. Enter the SEQNAM option. See Section 6.2.5.

8. Enter the CREATE command. See Section 6.2.6. The program will be written to the OUTDEV media. When the CREATE is complete EOJ is printed on the console.

9. To write another program on the media, return to step '4'. When all programs are written, rewind the media. Use the RW command as directed in 6.2.8. Remove the media.

Example: To put the desired Multi-Media Diagnostic Loaders (16 and 32 Bit) on the media. The loaders must be the first programs on all media and should immediately follow INITialization. The number on the right indicates the procedure step being performed.

Load the 16 Bit MDB on a 16 Bit processor or 7/32 in HW mode. If building for use on only one type of processor, refer to Appendix B.

```
2.  *OUTDEV 1,85,FO(CR)
3.  *INIT(CR)
    EOJ
    *
4.  Load the 16 bit MDL.
5.  MDG
6.  *LIMITS 4000,4B4D
7.  *SEQNAM 001,17600,F01 MULTI MEDIA DI.LDR 16BIT(CR)
8.  *CREATE(CR)
    EOJ
9.  *RW O(CR)
    EOJ
    *
    (Remove Media)
```

Load the MDG on a 32 Bit machine and mount the media removed above.

```
1.  MDG
2.  *OUTDEV 1,85,FO(CR)
3.  *FF O,EOV(CR)
4.  Load the 32 bit MDL.
5.  MDG
6.  *LIMITS 6000,6C4E(CR)
7.  *SEQNAM 002,17600,F02 MULTI MEDIA DI LDR. 32 BIT(CR)
8.  *CREATE(CR)
    EOJ
9.  *RW O(CR)
    EOJ
    *
    (Remove Media)
```

Example: For this example the Disc Test/Formatter Program (06-122 R03) will be put on the media. The example media has been INITialized as in Section 6.2.3 and the 16 bit MDL has been prepared as shown in the previous example. The number on the left indicates the procedure step being performed.

```
1.  MDG
2.  *OUTDEV 1,85,FO(CR)
3.  *FF O,EOV(CR)
    EOJ
    *
4.  (Load the Disc Test/Formatter program using the
    Relocatable or General Loader) Relocation address -
    X'100'.
5.  MDG
6.  *LIMITS 100,22CE(CR)
7.  *SEQNAM 02C,12203,DISC TEST FORMAT/PROGRAM (CR)
8.  *CREATE(CR)
    EOJ
9.  *RW O(CR)
    EOJ
    *
    (Remove Media)
```

7.4 Copy

When using COPY be sure the required media format is maintained. See Appendix B. Follow the steps below to use COPY.

1. Start MDG at its bias.

2. Assign OUTDEV as in Section 6.2.1.

3. Assign INDEV as in Section 6.2.2.

4. FF (Forward Files) the INDEV to the desired starting position. See Section 6.2.9.

5. FF (Forward Files) the OUTDEV media to EOV. See Section 6.2.9. If the OUTDEV media is a virgin media, it must be INITialized instead of FF. See Section 6.2.3.

6. Enter the COPY command. See Section 6.2.7. The entire media from the current position (determined in step 5) to EOV can be copied, or individual programs or groups of programs can be selectively copied.

7. Rewind both medias.

Examples: To COPY the entire media to a virgin media, the INDEV is a Disc-device X'C8' - Controller X'B8' - SELCH X'FO'.

```
1.  MDG
2.  *OUTDEV 1,85,FO(CR)
3.  *INDEV 4,C8,FO,B8(CR)
4.  *FF I,001(CR)
    EOJ

5.  *INIT(CR)
    EOJ
6.  *COPY EOV(CR)        During the copy, the sequence num-
    EOV                  bers of the program are displayed
    EOJ                  on the display panel.
7.  *RW O(CR)
    EOJ
    *RW I(CR)
    EOJ
    *
```

Example: Copy only one program #27 to OUTDEV from INDEV. Same devices as above.

```
1.  MDG
2.  *OUTDEV 1,85,FO(CR)
3.  *INDEV 4,C8,FO,B8(CR)
4.  *FF I,027(CR)
    EOJ
5.  *FF O,EOV(CR)
    EOJ
6.  *COPY 028(CR)
    EOJ
7.  *RW O(CR)
    EOJ
    *RW I(CR)
    EOJ
    *
```

8. ERRORS/ERROR RECOVERY

When Errors occur in the MDG system, a message is logged on the console device. These errors appear in two formats:

1. ERROR xxyy
   *

2. ERROR xxyy
   JOB ABORTED

This section gives a list of errors and prescribed error recovery.

8.1 Errors

The error formats of MDG are broken-down as follows:

ERROR xxyy

where xx - the device address if the error is device related or is zero if it is not a device oriented error.

yy - the Hex error code. Table 1 gives the complete list of codes.

8.2 Error Recovery

When error format (1) is output (see Section 8) the condition of the media(s) remains unchanged as no I/O operation was in progress. No recovery is required except to correct the error condition. However, if error format (2) is output (see Section 8), the condition of the media(s) is unknown. Recovery in this case is up to the operator. Follow these guidelines in error recovery of format (2).

1. Always BF (Backward Files) the media(s) to the last known good program on the media. If a COPY was in progress, BF (Backward Files) both medias. BF to the program number shown on the display panel.

   NOTE

   If a Disc is the OUTDEV in a COPY operation the BF command may yield the "EOV" "EOJ" response. If this occurs, BF the INDEV and continue to step 2.

2. If the error was other than X'E3', correct the error condition and restart the operation.

3. If the error is X'E3', the media must be terminated (EOV written). After step 1 above is complete, enter the EOV command, The media can no longer be used, unless the media error can be corrected or skipped over.

4. If the error is X'D3', the media must be terminated (EOV written). After step 1 above is complete, enter the EOV command. If the media is a mag tape, it is full and can no longer be used. If it is a cassette, one side is full. It can be flipped over and continued on the other side.

NOTE

For convenience, a cassette must have both the 16 bit and 32 bit MMDL's on both sides. See Appendix B.

TABLE 1

ERROR CODES

YY CODE #	MEANING
E0	OUTDEV Media not initialized, or Media at beginning of volume (BOV)
E1	Tape is not at BOT when INIT command issued
E2	Disc Pack Unusable under the MDG; cylinger 0 or 1 has a defective sector
E3	Unrecoverable Read/Write error.
E4	OUTDEV not assigned.
E5	INDEV not assigned.
E6	False sync from an address assigned in OUTDEV.
E7	False sync from and address assigned in INDEV.
E8	Disc Status Error; Seek Incomplete or Write Check or Write Protect.
E9	Device Write Protected.
EA	Wrong Disc Type specified in OUTDEV
EB	Invalid conditions for COPY; FILE marks found when not expected or disc "locked" or no sequence # match found.
EC	Disc Pack Full
ED	Directory Full

TABLE 1

ERROR CODES (Continued)

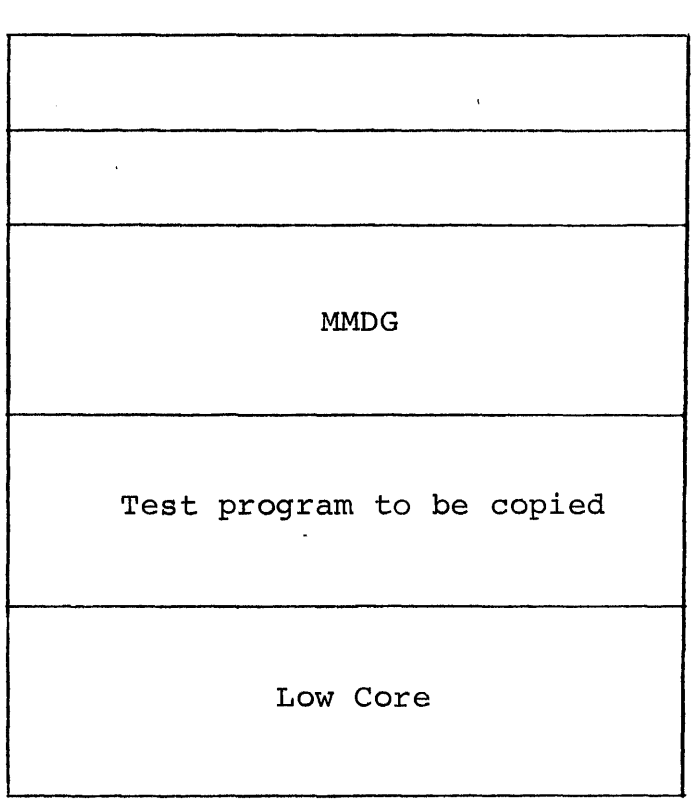
YY CODE #	MEANING
EE	"DU" from the device assigned in OUTDEV
EF	"DU" from the device assigned in INDEV.
D0	Copy parity error
D1	Invalid condition for EOV command; output device "locked". Use BF or FF before EOV command.
D2	Invalid or Unassigned SEQNAM
D3	END OF TAPE
D4	Sequence number already on the disc.
D5	OUTDEV = INDEV for COPY.
F0	(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)
F8	Boundary Error (Series 3200 only)

NOTE

When the position of either the input or output device is incorrect (not at BOT, BOV, or File Mark) the device is "locked" by the software; to correct this condition, position the file in question with a BF command.

APPENDIX A

MEMORY MAP FOR THE CREATE FUNCTION



Typical relocation addresses are *X'5000' for 16 bit *X'7000' for 32 bit processors. Relocation addresses must be large enough to contain the largest test program to be copied.

*When the MMDG programs are made resident on the media; they are resident at these addresses.

APPENDIX B

The format of the media is essential. When reloading from the media the 16 bit MMDL (06-176F01) and the 32 bit MMDL (06-176F02) are assumed to reside as the first programs on the media. The format required on all media is as follows:

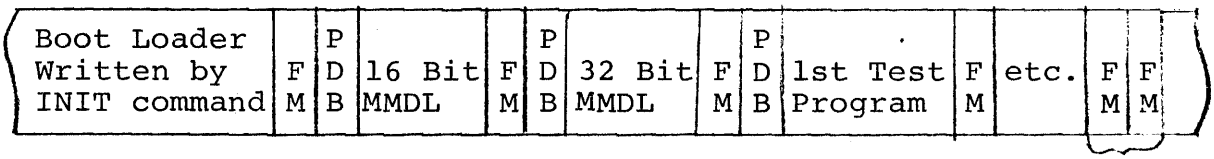
- Initialization of the media
- Generation of the 16 bit Multi-Media Diagnostic Loader (06-176F01) as the first program. It must have sequence #1.
- Generation of the 32 bit Multi Media Diagnostic Loader (06-176F02) as the second program. It must have sequence #2.

NOTE

If a media is being built to be used only on one type of processor, the appropriate Loader (06-176F01 or 06-176F02) must be put on the media twice, once with sequence #1 and once with sequence #2. This is required so that proper boot loading from the media can be accomplished.

- Generation of desired diagnostics.

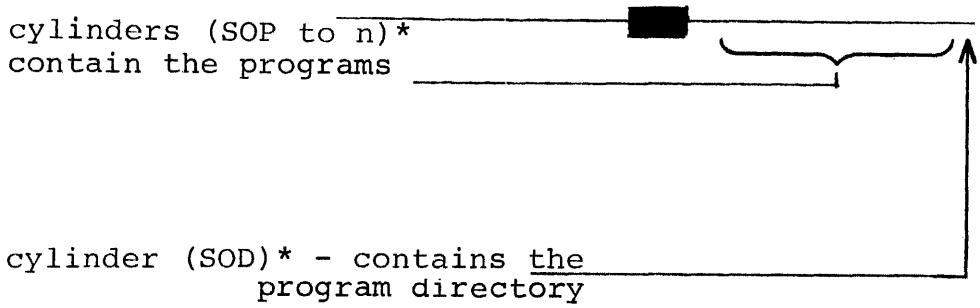
MAG TAPE/CASSETTE FORMAT



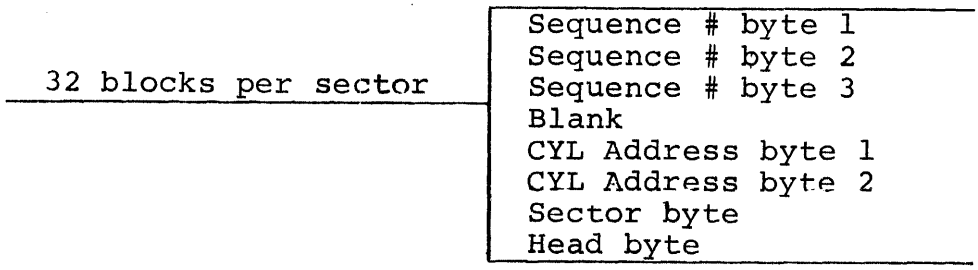
The Program Definition Block (PDB) contains all necessary information about the program that follows it.

A double file mark indicates EOV.

Disc Format



Directory Format - every sector of the directory is segmented into 32 parts. See the breakdown below. On INITialization, the directory is set to all zeros. As the programs are written, consecutive entries of the directory are filled. EOV on a disc is detected by zeros in the sequence number field.



* SOP (Start of Program) refers to the contents of the location labeled SOP in the listings.

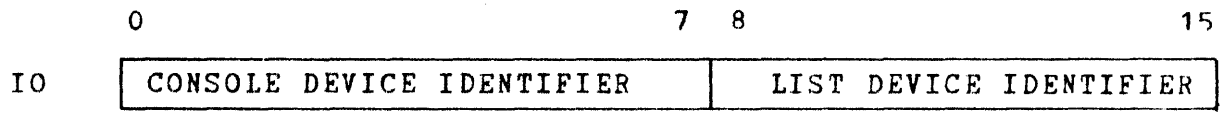
SOD (Start of Directory) refers to the contents of the location labeled SOD in the listings.

SOP and SOD can be any range (X'FF' maximum) within the limits of the disc used, and SOP must be greater than SOD. Loader/Generator compatibility requires SOP and SOD compatibility. In other words, if a parameter is changed in one, it must be changed in the other.

APPENDIX C

USER DEVICE DEFINITION

1. The halfword labeled IO (see the program listing) has the default value for a video display terminal on a PASLA/PALM/ Axynchronous Multiplexor interface as the console input-output device and the list device. If a different configuration is desired, location IO must be changed.



CONSOLE DEVICE IDENTIFIER	MEANING
X'01'	Video display terminal (GDT, CRT, or Model 550, 1100, or 1200 terminal) on a PASLA, PALM, or Asynchronous Multiplexor strapped for full duplex operation and highest baud rate.
X'02'	Teletype type device, video display terminal, or Carousel 15 or 30 on a current loop interface.
X'03'	Reserved; interpreted as X'02'.
X'04'	Carousel 300 on PASLA, PALM, or Asynchronous Multiplexor strapped for full duplex, highest baud rate.
X'00' and X'05' thru X'FF'	Reserved; interpreted as X'02'.

2. The video display terminal, if used on a PASLA, PALM, or Asynchronous Multiplexor, should be strapped for device addresses X'10' and X'11'. If the base address (X'10') is different, then the halfword labeled PASLADR (see the listing) must be changed.

3. The current loop interface, if used, should be strapped for device address X'02'. If it is different, the halfword labeled CLIFADR (see the listing) must be changed.

4. The line printer, if used, should be strapped for device address X'62'. If it is different, the halfword labeled LPADR (see the listing) must be changed.

5. The Carousel 300, if used on PASLA, PALM, or Asynchronous Multiplexor, should be strapped for device addresses X'10' and X'11'. If the base address (X'10') is different, the halfword labeled C300ADR (see the listing) must be changed.

PROG= MMDG ASSEMBLED BY CAL 03-066R08-00 (32-BIT)

```
                                  1          SCRAT                                                   MDG00010
                                  2          CROSS                                                   MDG00020
                                  3          NORX3                                                   MDG00030
                                  4          SQUEZ                                                   MDG00040
                                  5  *       SQCHK                                                   MDG00050
                                  6          WIDTH 120                                               MDG00060
000000I                           7          IFZ   ADC-2                                             MDG00070
                                  8  MMDG    PROG  MMD GENERATOR 06-177F01R04M96A13                  MDG00080
                                  9          ELSE                                                    MDG00090
                                 10  MMDG    PROG  MMD GENERATOR 06-177F02R04M91A13                  MDG00100
                                 11          ENDC                                                    MDG00110
                                 12  *   MULTI - MEDIA DIAGNOSTIC GENERATOR   R04                    MDG00120
                                 13  *                                                               MDG00130
                                 14  * COPYRIGHT  C  PERKIN-ELMER CORPORATION  MAY 1979              MDG00140
                                 15  *                                                               MDG00150
         0000 0000               16  R0      EQU   0                                                 MDG00160
         0000 0001               17  R1      EQU   1                                                 MDG00170
         0000 0002               18  R2      EQU   2                                                 MDG00180
         0000 0003               19  R3      EQU   3                                                 MDG00190
         0000 0004               20  R4      EQU   4                                                 MDG00200
         0000 0005               21  R5      EQU   5                                                 MDG00210
         0000 0006               22  R6      EQU   6                                                 MDG00220
         0000 0007               23  R7      EQU   7                                                 MDG00230
         0000 0008               24  R8      EQU   8                                                 MDG00240
         0000 0009               25  R9      EQU   9                                                 MDG00250
         0000 000A               26  RA      EQU   10                                                MDG00260
         0000 000B               27  RB      EQU   11                                                MDG00270
         0000 000C               28  RC      EQU   12                                                MDG00280
         0000 000D               29  RD      EQU   13                                                MDG00290
         0000 000E               30  RE      EQU   14                                                MDG00300
         0000 000F               31  RF      EQU   15                                                MDG00310
         0000 000F               32  LINK    EQU   15                                                MDG00320
000000I  4300 9ADA =001ADEI      33  START   B     LCORE                                             MDG00330
000004I                          34          DS    12               FILLER                           MDG00340
                                 35  *   TEST CONSTANTS                     *                        MDG00350
000010I  0101                    36  IO      DC    X'0101'          I/O DEVICE(S) IDENTIFIER         MDG00360
000012I  0010                    37  PASLADR DC    X'0010'          PALSA/PALM READ ADDRESS          MDG00370
000014I  0011                    38          DC    X'0011'          PASLA/PALM WRITE ADDRES#S        MDG00380
000016I  0002                    39  CLIFADR DC    X'0002'          CURRENT LOOP INTERFACE READ ADDRESS  MDG00390
000018I  0002                    40          DC    X'0002'          CURRENT LOOP INTERFACE WRITE ADDRESS MDG00400
00001AI  0062                    41  LPADR   DC    X'0062'          DUMMY FOR LINE PRINTER           MDG00410
00001CI  0062                    42          DC    X'0062'          WRITE ADDRESS                    MDG00420
00001EI  0010                    43  C300ADR DC    X'0010'          CAROUSEL/PASLA READ ADDRESS      MDG00430
000020I  0011                    44          DC    X'0011'          CAROUSEL/PASLA WRITE ADDRESS     MDG00440
000022I  00C0                    45  MICROBUS DC   X'00C0'          MICROBUS READ ADDRESS            MDG00450
000024I  00C0                    46          DC    X'00C0'          MICROBUS WRITE ADDRESS           MDG00460
                                 47  **IO =  0101  FOR CRT ON PASLA                                  MDG00470
                                 48  *       0202  FOR TELETYPE, CAROUSEL 15/30                      MDG00480
                                 49  *       XX03  FOR LINE PRINTER                                  MDG00490
                                 50  *       0404  FOR CAROUSEL 300                                  MDG00500
                                 51  *       0505  FOR MICROBUS                                      MDG00510
                                 52  *   ETPE IO COMMANDS                                            MDG00520
000026I  0000                    53  CONRADR DCX   0                CONSOLE DEVICE READ ADDRESS      MDG00530
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000028I 0000                CONWADR  DCX   0                CONSOLE DEVICE WRITE ADDRESS   MDG00540
00002AI 0000                CONRD    DCX   0                CONSOLE READ/WRITE COMMANDS    MDG00550
        0000 002BI          CONWRT   EQU   CONRD+1                                         MDG00560
00002CI 0000                CON2ND   DCX   0                                               MDG00570
00002EI 0000                CONCMD   DCX   0                DUMMY HW AS POINTER            MDG00580
000030I A1A3                CRTRD    DCX   A1A3             FOR CRT                        MDG00590
000032I EE61                CRT2ND   DCX   EE61                                            MDG00600
000034I 9498                CLIFRD   DCX   9498             *   CURRENT LOOP INTERFACE     MDG00610
000036I 0054                CLIF2ND  DCX   0054                                            MDG00620
000038I 0080                LPWRT    DCX   0080             *   LINE PRINTER               MDG00630
00003AI 0000                         DCX   0                DUMMY FOR LP                   MDG00640
00003CI A1A3                CARRD    DCX   A1A3             *   CAROUSEL 300               MDG00650
00003EI F061                CAR2ND   DCX   F061                                            MDG00660
000040I 8202                MREADC   DCX   8202             *   MICROBUS                   MDG00670
000042I 0000                         DCX   0                DUMMY HW FOR MICROBUS          MDG00680
000044I 00                  CONRQ2S  DB    0                CONSOLE REQUEST TO SEND CMD    MDG00690
000045I 23                  CRTRQ2S  DB    X'23'            FOR CRT                        MDG00700
000046I 00                           DB    0                *   DUMMY BYTE FOR CLI         MDG00710
000047I 00                           DB    0                *   DUMMY BYTE FOR LP          MDG00720
000048I 23                  CARRQ2S  DB    X'23'            *   CAROUSEL 300               MDG00730
000049I 00                           DB    0                *   DUMMY BYTE FOR MICROBUS    MDG00740
00004AI                              DB    *                (ALIGN ON HW BOUNDRY)          MDG00750
00004AI 08                  SOD      DB    8                START OF DIRECTORY             MDG00760
00004BI 09                  SOP      DB    9                START OF PROGRAM AREA          MDG00770
        0000 004CI          BEGIN    EQU   *                                               MDG00780
00004CI 0744                         XAR   R4,R4                                           MDG00790
00004EI D310 FFBE =000010I           LB    R1,IO            GET KEYBD TYPE                 MDG00800
000052I 1112                         SLLS  R1,2             MAKE FW INDEX                  MDG00810
000054I 4821 FFB8 =000010I           LH    R2,IO(R1)        GET WRITE ADDRESS              MDG00820
000058I 4020 FFCC =000028I           STH   R2,CONWADR       SAVE                           MDG00830
00005CI 4821 FFAE =00000EI           LH    R2,IO-2(R1)      GET READ ADDRESS               MDG00840
000060I 4020 FFC2 =000026I           STH   R2,CONRADR       SAVE                           MDG00850
000064I D331 FFC5 =00002DI           LB    R3,CONCMD-1(R1)  GET WRITE CMD                  MDG00860
000068I D230 FFBF =00002BI           STB   R3,CONWRT        SAVE                           MDG00870
00006CI D331 FFBC =00002CI           LB    R3,CONCMD-2(R1)  GET READ CMD                   MDG00880
000070I D230 FFB6 =00002AI           STB   R3,CONRD         SAVE                           MDG00890
000074I D331 FFB6 =00002EI           LB    R3,CONCMD(R1)    GET 2ND CMD                    MDG00900
000078I 4030 FFB0 =00002CI           STH   R3,CON2ND        SAVE                           MDG00910
00007CI 0833                         LDAR  R3,R3            SET CC                         MDG00920
00007EI 2332                         BZS   SKP2ND           SKIP SECOND COMMAND            MDG00930
000080I 9E23                         OCR   R2,R3            ISSUE 2ND CMD                  MDG00940
000082I D330 FFA5 =00002BI  SKP2ND   LB    R3,CONWRT        GET WRITE CMD                  MDG00950
000086I 9E23                         OCR   R2,R3            ISSUE CMD                      MDG00960
000088I 4130 9938 =0019C4I           BAL   R3,LOKOUT        LOCK THE OUTPUT DEVICE         MDG00970
00008CI 4130 9928 =0019B8I           BAL   R3,LOKIN         LOCK THE INPUT DEVICE          MDG00980
000090I 4130 993C =0019D0I           BAL   R3,ZSEQ                                         MDG00990
000094I E620 98BC =001954I           LDAI  R2,TITLE         PRINT THE TITLE                MDG01000
000098I 4130 982A =0018C6I  REDPTX   BAL   R3,PRINT                                        MDG01010
        0000 009CI          REDTTY   EQU   *                                               MDG01020
00009CI 41E0 981C =0018BCI           BAL   RE,CRLF          DO CR/LF                       MDG01030
0000A0I                              IFNZ  ADC-2                                           MDG01040
0000A0I 2420                         LIS   R2,0             CLEAR                          MDG01050
0000A2I 5020 0040                    ST    R2,X'40'         CLEAR S3200 INDICATOR          MDG01060
                                     ENDC                                                  MDG01070
0000A6I E620 9882 =00195CI           LDAI  R2,AST           PRINT AN *                     MDG01080
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0000AAI  4130 9818 =0018C6I   109  REOPT   BAL   R3,PRINT                                  MDGV1090
0000AEI  0744                 110          XAR   R4,R4          ZERO THE                   MDG01100
0000B0I  4040 A156 =0022UAI   111          STH   R4,EOJFLG      EOJ FLAG                   MDGV1110
0000B4I  0722                 112          XAR   R2,R2          BLANK                      MDG01120
0000B6I  C830 2020            113          LHI   R3,X'2020'     OUT                        MDG01130
0000BAI  4032 9E32 =001EF0I   114  REDINB   STH   R3,INBUF(R2)   THE                        MDGV1140
0000BEI  2622                 115          AIS   R2,2           BUFFER                     MDG01150
0000C0I  C520 0032            116          CLHI  R2,50                                     MDG01160
0000C4I  2085                 117          BLS   REDINB                                    MDG01170
0000C6I  4820 FF5C =000026I   118  REDAB    LH    R2,CONRADR     GET READ ADDRESS           MDG01180
0000CAI  D330 FF5C =00002AI   119          LB    R3,CONRD       GET READ CMD               MDG01190
0000CEI  9E23                 120          OCR   R2,R3          ISSUE CMD                  MDG01200
0000D0I  9D23                 121          SSR   R2,R3                                     MDG01210
0000D2I  2081                 122          BTBS  8,1            BUSY ?                     MDG01220
0000D4I  9B25                 123          RDR   R2,R5          NO - READ THE CHARACTER    MDG01230
0000D6I  4820 FF4E =000028I   124          LH    R2,CONWADR     GET WRITE ADDRESS          MDG01240
0000DAI  D330 FF4D =00002BI   125          LB    R3,CONWRT      GET WRITE COMMAND          MDG01250
0000DEI  9E23                 126          OCR   R2,R3          TURN LINE AROUND           MDG01260
0000E0I  9D23                 127          SSR   R2,R3          SENSE STATUS               MDG01270
0000E2I  2081                 128          BTBS  8,1            WAIT FOR BUSY NOT          MDG01280
0000E4I  9A25                 129          WDR   R2,R5          ECHO DATA                  MDG01290
0000E6I  C450 007F            130          NHI   R5,X'7F'       MASK OFF PARITY BIT        MDG01300
0000EAI  C550 0060            131          CLHI  R5,X'60'       LOWER CASE CHECK           MDG01310
*0000EEI 2183                 132          BL    NOECHO1        SKIP                       MDG01320
0000F0I  CB50 0020            133          SHI   R5,X'20'       MAKE UPPER CASE            MDG01330
0000F4I  C550 0008            134  NOECHO1  CLHI  R5,X'08'       BS??                       MDG01340
0000F8I  4330 807C =000178I   135          BE    DELCHR         YES                        MDG01350
0000FCI  D254 9DF0 =001EF0I   136          STB   R5,INBUF(R4)   STORE THE BYTE             MDGV1360
000100I  C550 0023            137          CLHI  R5,X'23'       # ?                        MDG01370
000104I  4330 FF94 =00009CI   138          BE    REDTTY         YES - START THE INPUT OVER MDG01380
000108I  C550 000D            139          CLHI  R5,X'0D'       CR ?                       MDG01390
00010CI  2336                 140          BES   REDAC          YES - GO LOOK FOR A        MDG01400
                              141  *                                 MATCH                 MDG01410
00010EI  2641                 142          AIS   R4,1                                      MDG01420
000110I  C540 0032            143          CLHI  R4,50          FIFTY CHARACTERS?          MDG01430
000114I  4280 FFAE =0000C6I   144          BL    REDAB          NO -                       MDG01440
                              145  *                           YES - LOOK FOR MATCH       MDG01450
                              146  *     R E D A C                                         MDG01460
                              147  *  CONTROL COMES HERE WHEN THE CR IS HIT ON OPTION ENTRY,OR MDG01470
                              148  *     THIRTY (30) CHARACTERS HAVE BEEN INPUT.           MDG01480
000118I  C810 2020            149  REDAC    LHI   R1,X'2020'     BLANK                      MDG01490
00011CI  4010 9EU8 =001F28I   150          STH   R1,CMD         OUT                        MDGV1500
000120I  4010 9EU6 =001F2AI   151          STH   R1,CMD+2       THE                        MDGV1510
000124I  4010 9EU4 =001F2CI   152          STH   R1,CMD+4       COMMAND                    MDGV1520
000128I  0711                 153          XAR   R1,R1          WORD                       MDG01530
00012AI  4010 9E00 =001F2EI   154          STH   R1,CMD+6                                  MDG01540
00012EI  4130 9834 =001966I   155  CMDAB    BAL   R3,GETCHR                                 MDGV1550
000132I  C500 0020            156          CLHI  R0,X'20'       END OF NAME ?              MDG01560
000136I  2339                 157          BES   CMDAA          YES                        MDG01570
000138I  C500 000D            158          CLHI  R0,X'0D'       NAME ENDED BY CR ?         MDG01580
00013CI  2396                 159          BES   CMDAA          YES - GO MATCH IT          MDG01590
00013EI  D2U1 9DE5 =001F27I   160          STB   R0,CMD-1(R1)   NO - SAVE THE CHARACTER    MDGV1600
000142I  C510 0007            161          CLHI  R1,7           6 CHAR ?                   MDG01610
000146I  208C                 162          BLS   CMDAB          NO                         MDG01620
                              163  *                           YES                        MDG01630
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                             * COMMAND NAME IS IN CMD, CMD+2, CMD+4                         MDG01640
000148I  2528                CMDAA   LCS   R2,8              SET UP THE POINTER              MDG01650
00014AI  2628                CMDAA1  AIS   R2,8              ADJUST POINTER                  MDG01660
00014CI  4802 803C =00018CI          LH    R0,INNAME(R2)     GET THE FIRST TWO CHARACTERS    MDG01670
000150I  4330 9820 =001974I          BZ    QUEST             ZERO? - END OF TABLE            MDG01680
000154I  4500 9D00 =001F28I          CLH   R0,CMD            EQUAL ?                         MDG01690
000158I  2037                        BNES  CMDAA1            NO - TRY AGAIN                  MDG01700
00015AI  4802 8030 =00018EI          LH    R0,INNAME+2(R2)   YES - GET THE NEXT TWO CHAR.    MDG01710
00015EI  4500 9DC8 =001F2AI          CLH   R0,CMD+2          EQUAL ?                         MDG01720
000162I  203C                        BNES  CMDAA1            NO - TRY AGAIN                  MDG01730
000164I  4802 8028 =000190I          LH    R0,INNAME+4(R2)   YES - GET THE NEXT TWO CHAR     MDG01740
000168I  4500 9DC0 =001F2CI          CLH   R0,CMD+4          EQUAL ?                         MDG01750
00016CI  4230 FFDA =00014AI          BNE   CMDAA1            NO - TRY AGAIN                  MDG01760
                             *                               MATCH                           MDG01770
000170I  4842 801E =000192I          LH    R4,INNAME+6(R2)   BRANCH TO THE ROUTINE SPECIFIED MDG01780
000174I  4304 8014 =00018CI          B     INNAME(R4)        IN THE TABLE                    MDG01790
         0000 0178I          DELCHR  EQU   *                                                 MDG01800
000178I  0844                        LDAR  R4,R4             IS THE POINTER ZERO ?         ROMDG01810
00017AI  4330 FF48 =0000C6I          BZ    REDAB             YES - THEN NOTHING IN THE BUFFER. MDG01820
00017EI  2741                        SIS   R4,1              NO - DECREMENT  COUNTER       ROMDG01830
000180I  C820 0020                   LHI   R2,X'20'          LOAD A SPACE                    MDG01840
000184I  D223 9D68 =001EF0I          STB   R2,INBUF(R3)      STORE THE SPACE                 MDG01850
000188I  4300 FF3A =0000C6I          B     REDAB             CONTINUE                        MDG01860
                             * ************************************************************* MDG01870
                             *                                                             * MDG01880
                             *  O P T I O N   T A B L E                                    * MDG01890
                             *                                                             * MDG01900
                             *        THIS TABLE CONTAINS THE 6 CHARACTER ASCII MNEMONIC OF THE * MDG01910
                             *        OPTION, AND THE ADDRESS OF THE OPTION INPUT ROUTINE  * MDG01920
                             *        DESIGNED TO HANDLE THAT PARTICULAR OPTION.           * MDG01930
                             *                                                             * MDG01940
                             * ************************************************************* MDG01950
00018CI  4F55 5444 4556      INNAME  DC    C'OUTDEV',Z(OUT-INNAME)                           MDG01960
000192I  00CA
000194I  494E 4445 5620              DC    C'INDEV ',Z(IN-INNAME)                            MDG01970
00019AI  0180
00019CI  4C49 4D49 5453              DC    C'LIMITS',Z(LIMITS-INNAME)                        MDG01980
0001A2I  005A
0001A4I  5345 514E 414D              DC    C'SEQNAM',Z(SEQ-INNAME)                           MDG01990
0001AAI  0494
0001ACI  4352 4541 5445              DC    C'CREATE',Z(CREA-INNAME)                          MDG02000
0001B2I  0DB4
0001B4I  5257 2020 2020              DC    C'RW    ',Z(RW-INNAME)                            MDG02010
0001BAI  0438
0001BCI  4646 2020 2020              DC    C'FF    ',Z(FF-INNAME)                            MDG02020
0001C2I  01C2
0001C4I  4246 2020 2020              DC    C'BF    ',Z(BF-INNAME)                            MDG02030
0001CAI  01B8
0001CCI  454F 5620 2020              DC    C'EOV   ',Z(EV-INNAME)                            MDG02040
0001D2I  03F4
0001D4I  434F 5059 2020              DC    C'COPY  ',Z(COPY-INNAME)                          MDG02050
0001DAI  0586
0001DCI  494E 4954 2020              DC    C'INIT  ',Z(INIT-INNAME)                          MDG02060
0001E2I  0C4C
0001E4I  0000                        DC    X'0000'                                           MDG02070
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                                208  *  THE FOLLOWING ROUTINES ARE USED FOR SPECIFIC INPUT                    MDG02080
                                209  *        FUNCTIONS.  CONTROL COMES HERE AS A RESULT OF                  MDG02090
                                210  *          THE LABEL IN THE OPTION TABLE.                              MDG02100
                                211  *************************************************************          MDG02110
                                212  *                                                           *          MDG02120
                                213  *  L I M I T S                                              *          MDG02130
                                214  *                                                           *          MDG02140
                                215  *        THIS ROUTINE WILL HANDLE THE INPUT OF THE LIMITS OPTION.    *  MDG02150
                                216  *                                                           *          MDG02160
                                217  *        INPUT: R1 = THE CURRENT INCREMENT INTO THE INPUT BUFFER.    *  MDG02170
                                218  *                    IT POINTS TO THE FIRST CHARACTER TO BE USED     *  MDG02180
                                219  *                    AS DATA.                                       *  MDG02190
                                220  *                                                           *          MDG02200
                                221  *       OUTPUT:  THE FOLLOWING LOCATIONS CONTAIN THE INPUT DATA      *  MDG02210
                                222  *                  "LOW"  - THE LOW LIMIT ENTERED                   *  MDG02220
                                223  *                  "HIGH" - THE HIGH LIMIT ENTERED                  *  MDG02230
                                224  *                                                           *          MDG02240
                                225  *              THIS ROUTINE ALSO ROUNDS LOW AND HIGH TO A HALFWORD   *  MDG02250
                                226  *              BOUNDRY, AND TESTS THAT LOW < HIGH.                  *  MDG02260
                                227  *                                                           *          MDG02270
                                228  *************************************************************          MDG02280
     0000 01E6I                 229  LIMITS   EQU   *                                                       MDG02290
0001E6I E640 9CE2 =001ECCI      230           LDAI  R4,LOW              SET THE DISTINATION ADDRESS          MDGV2300
0001EAI 24E0                    231           LIS   RE,0                SET THE LOW FLAG                     MDG02310
0001ECI 0722                    232  LOHI     XAR   R2,R2               ZERO OUT THE ADDRESS ACCUMULATOR     MDG02320
0001EEI 5024 0000               233           STA   R2,0(R4)                                                 MDG02330
0001F2I                         234           IFNZ  ADC-2                                                    MDG02340
0001F2I 2456                    235           LIS   R5,6                SET THE CHARACTER COUNT              MDG02350
                                236           ELSE                                                           MDG02360
                                237           LIS   R5,5                SET THE CHARACTER COUNT              MDG02370
                                238           ENDC                                                           MDG02380
0001F4I 4130 976E =001966I      239  LOHI1    BAL   R3,GETCHR           GET A CHARACTER                      MDGV2390
0001F8I C500 0020               240           CLHI  R0,X'20'            SPACE ?                              MDG02400
0001FCI 4330 9774 =001974I      241           BE    QUEST               YES - PRINT "?"                      MDGV2410
000200I C500 000D               242           CLHI  R0,X'0D'            CR ?                                 MDG02420
000204I 4330 802C =000234I      243           BE    LOHIEN                                                   MDG02430
000208I C500 002C               244           CLHI  R0,C','             COMMA ?                              MDG02440
00020CI 233C                    245           BES   HIPRT                                                    MDG02450
00020EI 4130 9A7A =001C8CI      246           BAL   R3,ISHXCO           TRANSLATE ASCII TO HEX               MDGV2460
000212I 1124                    247           SLLS  R2,4                SAVE                                 MDG02470
000214I 0620                    248           OAR   R2,R0                                                    MDG02480
000216I 5024 0000               249           STA   R2,0(R4)                                                 MDG02490
00021AI 2751                    250           SIS   R5,1                MAX CHARACTERS ?                     MDG02500
00021CI 4230 FFD4 =0001F4I      251           BNZ   LOHI1               NO                                   MDGV2510
000220I 4300 9750 =001974I      252           B     QUEST               YES - PRINT "?"                      MDGV2520
000224I 08EE                    253  HIPRT    LDAR  RE,RE                                                    MDG02530
000226I 4230 974A =001974I      254           BNZ   QUEST                                                    MDGV2540
00022AI 24E1                    255           LIS   RE,1                SET THE HIGH FLAG                    MDG02550
00022CI E640 9CA0 =001ED0I      256           LDAI  R4,HIGH             SET THE DESTINATION ADDRESS          MDGV2560
000230I 4300 FF88 =0001ECI      257           B     LOHI                BRANCH TO COMMON ROUTINE             MDGV2570
000234I 08EE                    258  LOHIEN   LDAR  RE,RE               WAS HIGH ENTERED                     MDG02580
000236I 4330 973A =001974I      259           BZ    QUEST               NO - ERROR                           MDGV2590
00023AI 5800 9C8E =001ECCI      260           LDA   R0,LOW              GET THE LOW ADDRESS                  MDGV2600
00023EI 1001                    261           SRLS  R0,1                MAKE IT EVEN                         MDG02610
000240I 1101                    262           SLLS  R0,1                                                     MDG02620
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000242I 5000 9C86 =001ECCI  263          STA   R0,LOW                                          MDG02630
000246I 5800 9C82 =001ECCI  264          LDA   R0,LOW              YES                   MDG02640
00024AI 5500 9C82 =001ED0I  265          CLA   R0,HIGH             IS LOW < HIGH ?       MDG02650
00024EI 428C FE4A =00009CI  266          BL    REDTTY                                    MDG02660
000252I 4300 971E =001974I  267          B     QUEST                                     MDG02670
                            268 ********************************************************** MDG02680
                            269 *                                                        * MDG02690
                            270 *  O U T D E V                                           * MDG02700
                            271 *                                                        * MDG02710
                            272 *                                                        * MDG02720
                            273 *       THIS ROUTINE WILL HANDLE THE INPUT OF THE "OUTDEV" OPTION * MDG02730
                            274 *                                                        * MDG02740
                            275 *       INPUT: R1 = THE CURRENT INCREMENT INTO THE INPUT BUFFER, * MDG02750
                            276 *                   IT POINTS TO THE FIRST CHARACTER TO BE USED * MDG02760
                            277 *                   AS DATA.                             * MDG02770
                            278 *                                                        * MDG02780
                            279 *      OUTPUT: THE FOLLOWING LOCATIONS CONTAIN THE INPUT DATA. * MDG02790
                            280 *              "OUTDEV"    - THE DEVICE INDICATOR          * MDG02800
                            281 *              "OUTDEV+2"  - THE DEVICE ADDRESS            * MDG02810
                            282 *              "OUTDEV+4"  - THE SELCH ADDRESS (IF OUTDEV NOT = 2 * MDG02820
                            283 *              "OUTDEV+6"  - THE CONTROLLER ADDRESS (IF OUTDEV > 2) * MDG02830
                            284 *                                                        * MDG02840
                            285 *              THIS ROUTINE VERIFIES THAT:               * MDG02850
                            286 *               1. A SELCH IS NOT INDICATED WITH A CASSETTE * MDG02860
                            287 *               2. A SELCH AND CONTROLLER ARE INDICATED ON A DISC * MDG02870
                            288 *                                                        * MDG02880
                            289 ********************************************************** MDG02890
      0000 0256I            290 OUT      EQU   *                                         MDG02900
000256I E640 9C7E =001ED8I  291          LDAI  R4,OUTDEV           SET THE DESTINATION ADDRESS MDG02910
00025AI 2451                292 OUINA    LIS   R5,1                SET THE ROUTINE INDICATOR MDG02920
00025CI 08F4                293          LDAR  RF,R4                                     MDG02930
00025EI 0874                294          LDAR  R7,R4                                     MDG02940
000260I 0788                295          XAR   R8,R8                                     MDG02950
000262I 4087 0000           296 OUINL    STH   R8,0(R7)                                  MDG02960
000266I 2672                297          AIS   R7,2                                      MDG02970
000268I C574 0008           298          CLHI  R7,8(R4)                                  MDG02980
00026CI 2035                299          BNES  OUINL                                     MDG02990
00026EI 4130 96F4 =001966I  300 OUIN     BAL   R3,GETCHR           GET A CHARACTER       MDG03000
000272I C500 0020           301          CLHI  R0,X'20'            SPACE ?               MDG03010
000276I 4330 96FA =001974I  302          BE    QUEST               YES - PRINT "?"       MDG03020
00027AI C500 002C           303          CLHI  R0,C','             COMMA ?               MDG03030
00027EI 4330 8032 =0002B4I  304          BE    OUINFL              YES - GO PROCESS THE NEXT FIELD MDG03040
000282I C500 000D           305          CLHI  R0,X'0D'            CR                    MDG03050
000286I 4330 8052 =0002DCI  306          BE    CHKIOF              YES                   MDG03060
00028AI C550 0001           307          CLHI  R5,1                NO - FIRST FIELD ?    MDG03070
00028EI 2333                308          BES   OUIN1                                     MDG03080
000290I 4300 96E0 =001974I  309          B     QUEST                                     MDG03090
000294I 4130 99F4 =001C8CI  310 OUIN1    BAL   R3,ISHXCO                                  MDG03100
000298I 0800                311          LDAR  R0,R0               = ZERO ?              MDG03110
00029AI 4330 96D6 =001974I  312          BZ    QUEST               YES - INVALID         MDG03120
00029EI C500 0007           313          CLHI  R0,X'7'             < 7 ?                 MDG03130
0002A2I 2183                314          BLS   OUIN2                                     MDG03140
0002A4I 4300 96CC =001974I  315          B     QUEST                                     MDG03150
0002A8I 4004 0000           316 OUIN2    STH   R0,0(R4)                                  MDG03160
0002ACI 2651                317          AIS   R5,1                                      MDG03170
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0002AEI  0870                          LDAR  R7,R0                                                  MDG03180
0002B0I  4300 FFBA =00026EI            B     OUIN                                                   MDG03190
0002B4I  C550 0005            OUINFL   CLHI  R5,5         EXCEEDED MAXIMUM # OF FIELDS              MDG03200
0002B8I  4330 96B8 =001974I            BE    QUEST        YES                                       MDG03210
0002BCI  2642                 IOFUN2   AIS   R4,2         BUMP POINTER BY 2                         MDG03220
0002BEI  0722                          XAR   R2,R2                                                  MDG03230
0002C0I  2462                          LIS   R6,2                                                   MDG03240
0002C2I  4130 96A0 =001966I   OUINX    BAL   R3,GETCHR    GET CHARACTER                             MDG03250
0002C6I  4130 99C2 =001C8CI            BAL   R3,ISHXCO    CONVERT                                   MDG03260
0002CAI  1124                          SLLS  R2,4         SAVE                                      MDG03270
0002CCI  0620                          OAR   R2,R0                                                  MDG03280
0002CEI  4024 0000                     STH   R2,0(R4)     STORE                                     MDG03290
0002D2I  2761                          SIS   R6,1         MORE CHAR ?                               MDG03300
0002D4I  2039                          BNZS  OUINX        YES                                       MDG03310
0002D6I  2651                          AIS   R5,1         NO - BUMP FUNCTION COUNT                  MDG03320
0002D8I  4300 FF92 =00026EI            B     OUIN                                                   MDG03330
0002DCI  C550 0003            CHKIOF   CLHI  R5,3                                                   MDG03340
0002E0I  4280 9690 =001974I            BL    QUEST                                                  MDG03350
0002E4I  C570 0003                     CLHI  R7,X'03'                                               MDG03360
0002E8I  4280 8028 =000314I            BL    CHKI01                                                 MDG03370
0002ECI  C550 0005                     CLHI  R5,X'05'                                               MDG03380
0002F0I  4230 9680 =001974I            BNE   QUEST                                                  MDG03390
0002F4I  F5F0 0000 1ED8I               CLAI  RF,OUTDEV    SHOULD TRKDEN - MAXCYL BE UPDATED         MDG03400
0002FAI  2333                          BES   OUTMX        OUTDEV                                    MDG03410
0002FCI  24F2                          LIS   RF,2         SET THE INDEV INDICATOR                   MDG03420
0002FEI  2302                          BS    UPCHKCOM                                               MDG03430
000300I  07FF                 OUTMX    XAR   RF,RF        SET THE OUTDEV INDICATOR                  MDG03440
         0000 0302I           UPCHKCOM EQU   *                                                      MDG03450
000302I  0A77                          AAR   R7,R7        DOUBLE DEVICE POINTER                     MDG03460
000304I  4897 8026 =00032EI            LH    R9,CYLTAB(R7) LOAD MAXCYL                              MDG03470
000308I  407F 9EB8 =0021C4I            STH   R7,TRKDEN(RF) SAVE                                     MDG03480
00030CI  409F 9EB8 =0021C8I            STH   R9,MAXCYL(RF) SAVE                                     MDG03490
000310I  4300 FD88 =00009CI            B     REDTTY                                                 MDG03500
000314I  C550 0005            CHKI01   CLHI  R5,X'05'     < 3 - SHOULD NOT HAVE 4 FIELDS            MDG03510
000318I  4330 965A =001974I            BE    QUEST        = 4 - NG                                  MDG03520
00031CI  C570 0002                     CLHI  R7,2         CASSETTE ?                                MDG03530
000320I  2135                          BNES  CHKCMD       NO                                        MDG03540
000322I  C550 0003                     CLHI  R5,3         YES - MORE THAN TWO FIELDS ?              MDG03550
000326I  4230 964A =001974I            BNE   QUEST        YES - ERROR                               MDG03560
00032AI  4300 FD6E =00009CI   CHKCMD   B     REDTTY       NO - RETURN                               MDG03570
00032EI  0000                 CYLTAB   DC    H'0'         0                                         MDG03580
000330I  0000                          DC    H'0'         1                                         MDG03590
000332I  0000                          DC    H'0'         2                                         MDG03600
000334I  0336                          DC    H'822'       3=13.5 MB DISK                     R04    MDG03610
000336I  0197                          DC    H'407'       4=10 MB DISK                              MDG03620
000338I  0336                          DC    H'822'       5=80 MB DISK                              MDG03630
00033AI  0336                          DC    H'822'       6=300 MB DISK                             MDG03640
                              ***************************************************************  MDG03650
                              *                                                             *  MDG03660
                              *  I N D E V                                                  *  MDG03670
                              *                                                             *  MDG03680
                              *                                                             *  MDG03690
                              *        THIS ROUTINE WILL HANDLE THE INPUT OF THE "INDEV" OPTION  *  MDG03700
                              *                                                             *  MDG03710
                              *        INPUT: R1 = THE CURRENT INCREMENT INTO THE INPUT BUFFER,  *  MDG03720
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0003CCI  C500 0056             483          CLHI  R0,C'V'          IS IT V ?                          MDG04830
0003D0I  4230 95A0 =0019741    484          BNE   QUEST            NO                                 MDG04840
0003D4I  C800 3030             485          LHI   R0,X'3030'                                           MDG04850
0003D8I  4000 9DE4 =0021C0I    486          STH   R0,PGMNUM                                           MDG04860
0003DCI  D200 9DE2 =0021C2I    487          STB   R0,PGMNUM+2                                         MDG04870
0003E0I  2453                  488          LIS   R5,3                                                MDG04880
0003E2I  4300 FF9C =000382I    489          B     FFMORE                                              MDG04890
0003E6I  24F2                  490  FFCOMI  LIS   RF,2               SET FLAG                           MDG04900
0003E8I  4300 FF88 =0003741    491          B     FFCOM                                               MDG04910
0003ECI  C550 0003             492  FFIT    CLHI  R5,3               COUNT = 3                          MDG04920
0003F0I  4230 9580 =0019741    493          BNE   QUEST              NO                                 MDG04930
0003F4I  40A0 9E06 =0021FEI    494          STH   RA,IOFLAG                                           MDG04940
0003F8I  08AA                  495          LDAR  RA,RA              YES - SET CONDITION                MDG04950
0003FAI  2136                  496          BNZS  FFIT1                                               MDG04960
0003FCI  4130 95C4 =0019C4I    497          BAL   R3,LOKOUT                                           MDG04970
000400I  4130 937E =001782I    498          BAL   R3,LODAD           ZERO THE FF THE OUTDEV             MDG04980
000404I  2305                  499          BS    FFIT2                                               MDG04990
000406I  4130 95AE =0019B8I    500  FFIT1   BAL   R3,LOKIN           LOCK THE INPUT DEVICE              MDG05000
00040AI  4130 93EC =0017FAI    501          BAL   R3,LIDAD           LOAD THE INPUT ADDRESSES           MDG05010
00040EI  DEA0 9498 =0018AAI    502  FFIT2   OC    RA,DISABL          IDSABLE INT                        MDG05020
000412I  C510 0003             503          CLHI  R1,X'3'            TAPE ?                             MDG05030
000416I  4380 8098 =0004B2I    504          BNL   FFDISC             NO - DISC                          MDG05040
00041AI  DEA0 9496 =0018B4I    505          OC    RA,CLEAR           YES -CLEAR                         MDG05050
00041EI  4830 9DD4 =0021F6I    506  FFBF1   LH    R3,FFBFFL          GET THE FLAG                       MDG05060
000422I  4230 803E =000464I    507          BNZ   BFIT                                                MDG05070
         0000 0426I            508  FFIT3   EQU   *                                                   MDG05080
000426I  DEA0 947C =0018A6I    509          OC    RA,FWFM            FORWARD FM                         MDG05090
00042AI  4100 9552 =001980I    510          BAL   R0,NOMOTN          WAIT                               MDG05100
00042EI  E650 9AFE =001F30I    511          LDAI  R5,FFBUF           SET UP TO READ                     MDG05110
000432I  E660 9B2C =001F62I    512          LDAI  R6,FFBUF+50                                         MDG05120
000436I  E610 804E =000488I    513          LDAI  R1,FFEOV                                            MDG05130
00043AI  4130 9108 =001546I    514          BAL   R3,READPB          READ THE PDB                       MDG05140
00043EI  4830 9D7E =0021C0I    515          LH    R3,PGMNUM          GET THE NUMBER ENTERED             MDG05150
000442I  4530 9AEA =001F30I    516          CLH   R3,FFBUF                                            MDG05160
000446I  4230 FFD4 =00041EI    517          BNE   FFBF1              NO                                 MDG05170
00044AI  D330 9D74 =0021C2I    518          LB    R3,PGMNUM+2        YES - GET THE THIRD DIGIT          MDG05180
00044EI  D340 9AE0 =001F32I    519          LB    R4,FFBUF+2                                          MDG05190
000452I  0534                  520          CLAR  R3,R4                                               MDG05200
000454I  4230 FFC6 =00041EI    521          BNE   FFBF1              NO                                 MDG05210
000458I  DEA0 9451 =0018ADI    522          OC    RA,BKSP            YES - REPOSITION THE TAPE AT       MDG05220
00045CI  4100 9520 =001980I    523          BAL   R0,NOMOTN                                           MDG05230
000460I  4300 809E =000502I    524          B     FFDSC5                                              MDG05240
         0000 0464I            525  BFIT    EQU   *                                                   MDG05250
000464I  4100 9526 =00198EI    526          BAL   R0,BKFMNM          WAIT FOR NO MOTION OF BOT          MDG05260
000468I  4800 9D8E =0021FAI    527  BFIT1   LH    R0,BKSPFL          BACKSPACE FLAG SET ?               MDG05270
00046CI  2335                  528          BZS   BFIT4              NO - DO 1 BACKSPACE                MDG05280
00046EI  DEA0 9435 =0018A7I    529          OC    RA,BKFM            YES - DO 2 BACKSPACES              MDG05290
000472I  4100 9518 =00198EI    530          BAL   R0,BKFMNM          WAIT FOR NO MOTION OF BOT          MDG05300
000476I  240F                  531  BFIT4   LIS   R0,15                                               MDG05310
000478I  4000 9D7E =0021FAI    532          STH   R0,BKSPFL          SET THE DOUBLE BACKSPACE FLAG      MDG05320
00047CI  DEA0 9427 =0018A7I    533          OC    RA,BKFM                                             MDG05330
000480I  4100 950A =00198EI    534          BAL   R0,BKFMNM          WAIT FOR NO MOTION OF BOT          MDG05340
000484I  4300 FF9E =000426I    535          B     FFIT3                                               MDG05350
         0000 0488I            536  FFEOV   EQU   *                                                   MDG05360
000488I  4100 94F4 =001980I    537          BAL   R0,NOMOTN                                           MDG05370
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00048CI DEA0 9417 =0018A7I   538          OC    RA,BKFM          BACKSPACE FILE MARK              MDG05380
000490I 4100 94EC =00198UI   539          BAL   R0,NOMOTN        WAIT FOR NO MOTION               MDG05390
000494I 4830 9D5E =0021F6I   540          LH    R3,FFBFFL        GET THE FF BF FLAG               MDG05400
000498I 4230 FF82 =00041EI   541          BNZ   FFBF1                                             MDG05410
00049CI 41E0 941C =0018BCI   542 PEOV     BAL   RE,CRLF          DO CR/LF                         MDG05420
0004A0I E620 8008 =0004ACI   543          LDAI  R2,EOVX          PRINT EOV                        MDG05430
0004A4I 4130 941E =0018C6I   544          BAL   R3,PRINT                                          MDG05440
0004A8I 4300 9214 =0016CUI   545          B     PEOJ             PRINT EOJ                        MDG05450
0004ACI 454F 5620            546 EOVX     DC    C'EOV',X'0D0A'                                    MDG05460
0004B0I 0D0A
        0000 04B2I           547 FFDISC   EQU   *                                                 MDG05470
0004B2I D380 FB94 =00004AI   548          LB    R8,SOD           GET START                        MDG05480
0004B6I 4080 9D46 =0022U0I   549          STH   R8,CYL           SET CYLINDER TO START            MDG05490
0004BAI 0788                 550          XAR   R8,R8            SET SECTOR TO ZERO               MDG05500
0004BCI 4130 951E =0019DEI   551          BAL   R3,WDFT                                           MDG05510
0004C0I DEA0 93EB =0018AFI   552          OC    RA,SEEK          SEEK                             MDG05520
0004C4I 4130 9548 =001A1UI   553          BAL   R3,FRSRW         WAIT                             MDG05530
0004C8I 2430                 554          LIS   R3,0                                              MDG05540
0004CAI 4030 9D34 =0022U2I   555 FFDS1B    STH   R3,HEAD          SET HEAD TO ZERO                 MDG05550
0004CEI E650 98DA =0020ACI   556 FFDS1A    LDAI  R5,DIRECT        SET UP THE SELCH                 MDG05560
0004D2I 0865                 557          LDAR  R6,R5            ADDRESS                          MDG05570
*0004D4I CA60 00FF           558          AAI   R6,X'FF'                                          MDG05580
0004D8I 4130 9502 =0019DEI   559          BAL   R3,WDFT                                           MDG05590
0004DCI 4130 9U3A =00151AI   560          BAL   R3,RDISC         READ                             MDG05600
0004E0I 0722                 561          XAR   R2,R2            ZERO BLOCK POINTER               MDG05610
0004E2I 4830 9CDA =0021CUI   562 FFDS1    LH    R3,PGMNUM                                         MDG05620
0004E6I 4842 9BC2 =0020ACI   563          LH    R4,DIRECT(R2)    EOV ?                            MDG05630
0004EAI 4330 806A =000558I   564          BZ    TSTBOV           YES - # NOT FOUND                MDG05640
0004EEI 0534                 565          CLAR  R3,R4            EQUAL ?                          MDG05650
0004F0I 4230 8034 =000528I   566          BNE   FFDSC1           NO                               MDG05660
0004F4I D330 9CCA =0021C2I   567          LB    R3,PGMNUM+2      YES - GET THE NEXT DIGIT         MDG05670
0004F8I D342 9BB2 =0020AEI   568          LB    R4,DIRECT+2(R2)                                   MDG05680
0004FCI 0534                 569          CLAR  R3,R4            EQUAL ?                          MDG05690
0004FEI 4230 8026 =000528I   570          BNE   FFDSC1           NO                               MDG05700
000502I 4830 9CBA =0021CUI   571 FFDSC5    LH    R3,PGMNUM                                         MDG05710
000506I D340 9CB8 =0021C2I   572          LB    R4,PGMNUM+2      AND STORE IT IN THE LOCK         MDG05720
00050AI 4810 9CFU =0021FEI   573          LH    R1,IOFLAG        GET THE FLAG - OUTPUT            MDG05730
00050EI 2337                 574          BZS   FFBFED           YES                              MDG05740
000510I 4030 99D8 =001EECI   575          STH   R3,PGMIPN        NO - RESET THE INPUT DEV. FLG    MDG05750
000514I D240 99D6 =001EEEI   576          STB   R4,PGMIPN+2                                       MDG05760
000518I 4300 91A4 =0016CUI   577          B     PEOJ                                              MDG05770
00051CI 4030 99C8 =001EE8I   578 FFBFED    STH   R3,PGMOPN                                         MDG05780
000520I D240 99C6 =001EEAI   579          STB   R4,PGMOPN+2                                       MDG05790
000524I 4300 9198 =0016CUI   580          B     PEOJ                                              MDG05800
        0000 0528I           581 FFDSC1   EQU   *                                                 MDG05810
000528I 2628                 582          AIS   R2,8             BUMP POINTER                     MDG05820
00052AI C520 0100            583          CLHI  R2,X'100'        THIS BLOCK FINISHED ?            MDG05830
00052EI 4230 FFB0 =0004E2I   584          BNE   FFDS1            NO                               MDG05840
000532I 2681                 585          AIS   R8,1             YES - INCREMENT THE SECTOR       MDG05850
000534I 484F 9C8C =0021C4I   586          LH    R4,TRKDFN(RF)    LOAD TRKDEN                      MDG05860
000538I 4584 8028 =000564I   587          CLH   R8,SECTAB(R4)    MAXIMUM?                         MDG05870
00053CI 4230 FF8E =0004CEI   588          BNE   FFDS1A           NO                               MDG05880
000540I 4880 9CBE =0022U2I   589          LH    R8,HEAD          YES - INCREMENT THE HEAD         MDG05890
000544I 484F 9C7C =0021C4I   590          LH    R4,TRKDFN(RF)    LOAD TRKDEN                      MDG05900
000548I 4584 8026 =000572I   591          CLH   R8,HDTAB(R4)     MAXIMUM?                         MDG05910
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00054CI  4330 9734 =001C84I          BE    DIRFUL                 YES-ERROR                         MDG05920
000550I  2631                        AIS   R3,1                   INCRIMENT HEAD                    MDG05930
000552I  0788                        XAR   R8,R8                  ZERO SECTOR                       MDG05940
000554I  4300 FF72 =0004CAI          B     FFDS1B                                                   MDG05950
000558I  4840 9C9A =0021F6I  TSTBOV  LH    R4,FFBFFL              EOV ON BF ?                       MDG05960
00055CI  4330 FF3C =00049CI          BZ    PEOV                   NO - PRINT "EOV"                  MDG05970
000560I  4300 943E =0019A2I          B     PBOV                   YES - PRINT "BOV"                 MDG05980
000564I  0000                SECTAB  DC    H'0'                                                     MDG05990
000566I  0000                        DC    H'0'                                                     MDG06000
000568I  0000                        DC    H'0'                                                     MDG06010
00056AI  0040                        DC    H'64'                  *                           R04   MDG06020
00056CI  0018                        DC    H'24'                                                    MDG06030
00056EI  0040                        DC    H'64'                                                    MDG06040
000570I  0040                        DC    H'64'                                                    MDG06050
000572I  0000                HDTAB   DC    H'0'                                                     MDG06060
000574I  0000                        DC    H'0'                                                     MDG06070
000576I  0000                        DC    H'0'                                                     MDG06080
000578I  0000                        DC    H'0'                   *                           R04   MDG06090
00057AI  0001                        DC    H'1'                                                     MDG06100
00057CI  0004                        DC    H'4'                                                     MDG06110
00057EI  0012                        DC    H'18'                                                    MDG06120
                             ********************************************************************** MDG06130
                             *                                                                    * MDG06140
                             *  E O V                                                             * MDG06150
                             *                                                                    * MDG06160
                             *    THIS ROUTINE WILL WRITE "EOV" ON THE MEDIA.  IT CAN ONLY BE     * MDG06170
                             *    EXECUTED WHEN THE POSITION OF THE MEDIA IS KNOWN.  THE COMMAND  * MDG06180
                             *    IS ALWAYS DIRECTED AT OUTDEV                                    * MDG06190
                             *                                                                    * MDG06200
                             ********************************************************************** MDG06210
         0000 0580I          EV      EQU   *                      CAN ONLY BE USED ON OUTPUT DEVICE MDG06220
000580I  2441                        LIS   R4,1                   SET THE EOJ                       MDG06230
000582I  4040 9C84 =00220AI          STH   R4,EOJFLG              FLAG                              MDG06240
000586I  4130 91F8 =001782I          BAL   R3,LODAD               LOAD OUTPUT ADDRESSES             MDG06250
00058AI  2531                        LCS   R3,1                                                     MDG06260
00058CI  4530 9958 =001EE8I          CLH   R3,PGMOPN              IS OUTPUT DEVICE LOCKED ?         MDG06270
000590I  2135                        BNES  EV1                                                      MDG06280
000592I  C810 00D1                   LHI   R1,X'D1'               YES ERROR                         MDG06290
000596I  4300 973A =001CD4I          B     ERRA                                                     MDG06300
00059AI  4130 91E4 =001782I  EV1     BAL   R3,LODAD               GET R1                            MDG06310
00059EI  C510 0003                   CLHI  R1,X'03'               < 3 ?                             MDG06320
0005A2I  2187                        BLS   EVMT                   YES - MAG TAPE                    MDG06330
0005A4I  4130 8DDC =001384I          BAL   R3,UPDTXX              ZERO OUT THE PROPER PART OF THE   MDG06340
0005A8I  4130 9418 =0019C4I          BAL   R3,LOKOUT                                                MDG06350
0005ACI  4300 9110 =0016C0I          B     PEOJ                   DIRECTORY                         MDG06360
         0000 05B0I          EVMT    EQU   *                                                        MDG06370
0005B0I  4100 93CC =001980I          BAL   R0,NOMOTN                                                MDG06380
0005B4I  DEA0 92EF =0018A7I          OC    RA,BKFM                                                  MDG06390
0005B8I  4100 93C4 =001980I          BAL   R0,NOMOTN                                                MDG06400
0005BCI  4130 9404 =0019C4I          BAL   R3,LOKOUT                                                MDG06410
0005C0I  4300 90E4 =0016A8I          B     EOV                                                      MDG06420
                             ********************************************************************** MDG06430
                             *                                                                    * MDG06440
                             *  R E W I N D                                                       * MDG06450
                             *                                                                    * MDG06460
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                          *                                                              *   MDG06470
                          *          THIS ROUTINE WILL REWIND THE SPECIFIED MEDIA        *   MDG06480
                          *                                                              *   MDG06490
                          *      INPUT: R1 = THE CURRENT INDEX INTO THE INPUT BUFFER.    *   MDG06500
                          *               IT POINTS TO THE DEVICE IDENTIFER CHARACTER.(I-O)*   MDG06510
                          *                                                              *   MDG06520
                          *     OUTPUT: A MAG TAPE IS REWOUND TO LOAD POINT AND THE LOCK WORD *   MDG06530
                          *          IS SET. ON A DISC THE LOCK WORD IS SET.              *   MDG06540
                          *                                                              *   MDG06550
                          ****************************************************************   MDG06560
         0000 05C4I       RW       EQU   *                                                   MDG06570
0005C4I  2441                      LIS   R4,1              SET THE EOJ                       MDG06580
0005C6I  4040 9C40 =00220AI        STH   R4,EOJFLG         FLAG                              MDG06590
0005CAI  4130 9398 =001966I        BAL   R3,GETCHR         GET A CHARACTER                   MDG06600
0005CEI  24FF                      LIS   RF,15             SET THE I INDICATOR               MDG06610
0005D0I  C500 0049                 CLHI  R0,C'I'           I ?                               MDG06620
0005D4I  2134                      BNES  RWX                                                 MDG06630
0005D6I  4130 9220 =0017FAI        BAL   R3,LIDAD                                            MDG06640
0005DAI  2308                      BS    RWO                                                 MDG06650
         0000 05DCI       RWX      EQU   *                                                   MDG06660
0005DCI  24F0                      LIS   RF,0              SET THE O INDICATOR               MDG06670
0005DEI  C500 004F                 CLHI  R0,C'O'           NO - O ?                          MDG06680
0005E2I  4230 938E =001974I        BNE   QUEST             NO - ERROR                        MDG06690
0005E6I  4130 9198 =001782I        BAL   R3,LODAD                                            MDG06700
0005EAI  C510 0003        RWO      CLHI  R1,X'03'          < 3 ?                             MDG06710
*0005EEI 238F                      BNL   RWDISC            NO - REWIND THE DISC              MDG06720
0005F0I  DEA0 9286 =0018AAI        OC    RA,DISARL         YES - REWIND THE TAPE             MDG06730
0005F4I  08BB                      LDAR  RB,RB                                               MDG06740
0005F6I  2333                      BZS   RWO1                                                MDG06750
0005F8I  DEB0 9280 =0018ACI        OC    RB,STOP                                             MDG06760
0005FCI  DEA0 9284 =0018B4I RWO1   OC    RA,CLEAR                                            MDG06770
000600I  4100 937C =001980I        BAL   R0,NOMOTN                                           MDG06780
000604I  DEA0 92AD =0018B5I        OC    RA,REWIND                                           MDG06790
000608I  4100 9374 =001980I        BAL   R0,NOMOTN                                           MDG06800
         0000 060CI       RWDISC   EQU   *                                                   MDG06810
00060CI  08FF                      LDAR  RF,RF             SET THE CONDITION CODE            MDG06820
00060EI  2335                      BZS   RWOPDS            OUTPUT DEVICE WAS SPECIFIED       MDG06830
000610I  4130 93A4 =001988I        BAL   R3,LOKIN          LOCKOUT THE INPUT DEVICE          MDG06840
000614I  4300 90A8 =0016C0I        B     PEOJ                                                MDG06850
000618I  4130 93A8 =0019C4I RWOPDS BAL   R3,LOKOUT         LOCKOUT THE OUTPUT DEVICE         MDG06860
00061CI  4300 90A0 =0016C0I        B     PEOJ                                                MDG06870
                          ****************************************************************   MDG06880
                          *                                                              *   MDG06890
                          *  S E Q N A M                                                 *   MDG06900
                          *                                                              *   MDG06910
                          *                                                              *   MDG06920
                          *          THIS ROUTINE WILL SET THE SEQUENCE NUMBER, AND      *   MDG06930
                          *          NAME UP IN MEMORY. THIS NUMBER AND NAME WILL BE     *   MDG06940
                          *          COPIED TO THE MEDIA ON A CREATE OPERATION.          *   MDG06950
                          *                                                              *   MDG06960
                          *      INPUT: R1 = THE CURRENT INDEX INTO THE INPUT BUFFER.    *   MDG06970
                          *               IT POINTS TO THE FIRST CHARACTER OF THE        *   MDG06980
                          *               SEQUENCE NUMBER.                               *   MDG06990
                          *                                                              *   MDG07000
                          *     OUTPUT:  THE SEQUENCE NUMBER AND NAME ARE STORED IN      *   MDG07010
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                                  702  *              ASCII IN THE SEQNAM BUFFER                          *   MDG07020
                                  703  *                                                                  *   MDG07030
                                  704  ********************************************************************   MDG07040
000620I  0722                     705  SEQ      XAR   R2,R2            ZERO OUT                               MDG07050
000622I  C800 2020                706  SEQZ     LHI   R0,X'2020'       THE                                    MDG07060
000626I  4002 993E =001F68I       707           STH   R0,SEQNAM(R2)    SEQUENCE - NAME                        MDG07070
00062AI  2622                     708           AIS   R2,2             FIELD                                  MDG07080
00062CI  C520 0032                709           CLHI  R2,50                                                   MDG07090
000630I  2037                     710           BNES  SEQZ                                                    MDG07100
000632I  2450                     711           LIS   R5,0                                                    MDG07110
000634I  4130 932E =001966I       712  SEQ1     BAL   R3,GETCHR                                               MDG07120
000638I  C500 0020                713           CLHI  R0,X'20'                                                MDG07130
00063CI  4330 808C =0006FCI       714           BE    ZSQEST                                                  MDG07140
000640I  C500 000D                715           CLHI  R0,X'0D'         IS IT CR                               MDG07150
000644I  4330 80B4 =0006FCI       716           BE    ZSQEST                                                  MDG07160
000648I  C500 002C                717           CLHI  R0,C','                                                 MDG07170
00064CI  233D                     718           BES   SEQ2                                                    MDG07180
00064EI  C550 0003                719           CLHI  R5,3                                                    MDG07190
000652I  4330 80A6 =0006FCI       720           BE    ZSQEST                                                  MDG07200
000656I  0870                     721           LDAR  R7,R0                                                   MDG07210
000658I  4130 9630 =001C8CI       722           BAL   R3,ISHXCO                                               MDG07220
00065CI  D275 9908 =001F68I       723           STB   R7,SEQNAM(R5)                                           MDG07230
000660I  2651                     724           AIS   R5,1                                                    MDG07240
000662I  4300 FFCE =000634I       725           B     SEQ1                                                    MDG07250
000666I  C550 0003                726  SEQ2     CLHI  R5,3                                                    MDG07260
00066AI  4230 808E =0006FCI       727           BNE   ZSQEST                                                  MDG07270
00066EI  4130 92F4 =001966I       728  SEQ9     BAL   R3,GETCHR                                               MDG07280
000672I  C500 0020                729           CLHI  R0,C' '                                                 MDG07290
000676I  4330 8082 =0006FCI       730           BE    ZSQEST                                                  MDG07300
00067AI  C500 000D                731           CLHI  R0,X'0D'         IS IT CR                               MDG07310
00067EI  4330 807A =0006FCI       732           BE    ZSQEST                                                  MDG07320
000682I  C500 002C                733           CLHI  R0,C','                                                 MDG07330
000686I  4330 8044 =0006CEI       734           BE    SEQ99                                                   MDG07340
00068AI  C500 002E                735           CLHI  R0,C'.'          EXTENSION DELIMITER?                   MDG07350
00068EI  4230 8024 =0006B6I       736           BNE   SEQ91            NO                                     MDG07360
000692I  C550 0008                737           CLHI  R5,8                                                    MDG07370
000696I  4230 8062 =0006FCI       738           BNE   ZSQEST                                                  MDG07380
00069AI  4130 92C8 =001966I       739           BAL   R3,GETCHR        GET NEXT                               MDG07390
00069EI  C870 002E                740           LHI   R7,C'.'          LOAD DECIMAL POINT                     MDG07400
0006A2I  D270 98DB =001F81I       741           STB   R7,SEQNAM+25     STORE                                  MDG07410
0006A6I  0870                     742           LDAR  R7,R0            SAVE R0                                MDG07420
0006A8I  4130 95E0 =001C8CI       743           BAL   R3,ISHXCO                                               MDG07430
0006ACI  D270 98D2 =001F82I       744           STB   R7,SEQNAM+26     STORE                                  MDG07440
0006B0I  4130 92B2 =001966I       745           BAL   R3,GETCHR                                               MDG07450
*0006B4I 230D                     746           B     SEQ99                                                   MDG07460
0006B6I  C550 0008                747  SEQ91    CLHI  R5,8                                                    MDG07470
0006BAI  4330 803E =0006FCI       748           BE    ZSQEST                                                  MDG07480
0006BEI  0870                     749           LDAR  R7,R0                                                   MDG07490
0006C0I  4130 95C8 =001C8CI       750           BAL   R3,ISHXCO                                               MDG07500
0006C4I  D275 98A0 =001F68I       751           STB   R7,SEQNAM(R5)                                           MDG07510
0006C8I  2651                     752           AIS   R5,1                                                    MDG07520
0006CAI  4300 FFA0 =00066EI       753           B     SEQ9                                                    MDG07530
0006CEI  C550 0008                754  SEQ99    CLHI  R5,8                                                    MDG07540
0006D2I  4230 8026 =0006FCI       755           BNE   ZSQEST                                                  MDG07550
0006D6I  4130 928C =001966I       756  SEQ2A    BAL   R3,GETCHR                                               MDG07560
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0006DAI  C500 000D            757          CLHI  R0,X'0D'                                          MDG07570
0006DEI  4330 F9BA =00009CI   758          BE    REDTTY                                              MDG07580
0006E2I  C550 0012            759          CLHI  R5,18                                               MDG07590
0006E6I  2338                 760          BES   SETGAP                                             MDG07600
0006E8I  C550 0032            761          CLHI  R5,50                                               MDG07610
0006ECI  2338                 762          BES   ZSQEST                                            MDG07620
0006EEI  D205 9876 =001F68I   763  SET1    STH   R0,SEQNAM(R5)                                       MDG07630
0006F2I  2651                 764          AIS   R5,1                                                MDG07640
0006F4I  220F                 765          BS    SEQ2A                                               MDG07650
0006F6I  C850 001E            766  SETGAP  LHI   R5,30              THIS LEAVES A GAP IN THE TABLE   MDG07660
0006FAI  2206                 767          BS    SET1                                                MDG07670
0006FCI  C800 2020            768  ZSQEST  LHI   R0,X'2020'                                         MDG07680
0006FEI  0722                 769          XAR   R2,R2                                               MDG07690
000700I  4002 9862 =001F68I   770  ZSQZ    STH   R0,SEQNAM(R2)                                       MDG07700
000704I  2622                 771          AIS   R2,2                                                MDG07710
000706I  C520 0032            772          CLHI  R2,50                                               MDG07720
00070CI  2035                 773          BNES  ZSQZ                                                MDG07730
00070EI  4300 9262 =0019741   774          B     QUEST                                               MDG07740
                              775  ********************************************************************MDG07750
                              776  *                                                                  *MDG07760
                              777  *  C O P Y                                                         *MDG07770
                              778  *                                                                  *MDG07780
                              779  *   THIS ROUTINE IS USED TO COPY ONE MEDIA TO ANOTHER.  THE ENTRY   *MDG07790
                              780  *   TO THIS PROGRAM INTERRIGATES "INDEV" AND "OUTDEV" TO DETERMINE  *MDG07800
                              781  *   WHICH OF THE FOUR (4) INTERNAL ROUTINES WILL BE USED. THE       *MDG07810
                              782  *   INTERNAL ROUTINES ARE:                                         *MDG07820
                              783  *                                                                  *MDG07830
                              784  *       DIDO - DISC INPUT / DISC OUTPUT                            *MDG07840
                              785  *       DIMO - DISC INPUT / MAG TAPE OUTPUT                        *MDG07850
                              786  *       MIMO - MAG TAPE INPUT / MAG TAPE OUTPUT                    *MDG07860
                              787  *       MIDO - MAG TAPE INPUT / DISC OUTPUT                        *MDG07870
                              788  *                                                                  *MDG07880
                              789  *                                                                  *MDG07890
                              790  *   CONTROL COME TO THE TEST FROM THE OPTION INPUT ROUTINE          *MDG07900
                              791  *                                                                  *MDG07910
                              792  *       INPUT - R1 = AN INDEX INTO THE INPUT BUFFER. IT POINTS      *MDG07920
                              793  *                    TO THE FIRST CHARACTER TO BE USED AS THE      *MDG07930
                              794  *                    THREE (3) DIGIT SEQUENCE NUMBER.             *MDG07940
                              795  *                                                                  *MDG07950
                              796  *    THE ROUTINE FIRST CHECKS TO SEE IF THE CONDITION AND POSITION *MDG07960
                              797  *    OF BOTH OUTPUT AND INPUT DEVICES IS KNOWN. THIS IS DONE FROM  *MDG07970
                              798  *    THE HISTORY OF THE DEVICE MAINTAINED IN MEMORY. IF AN UNKNOWN *MDG07980
                              799  *    CONDITION IS FOUND AN ERROR IS PRINTED. IF NO ERROR IS FOUND  *MDG07990
                              800  *    THE TRANSFER BEGINS. IF THE OUTPUT DEVICE IS NOT AT EOV THE   *MDG08000
                              801  *    COPY WILL START AT THE CURRENT POSITION OF THE MEDIA. THE COPY *MDG08010
                              802  *    CONTINUES UNTIL THE NUMBER SPECIFIED IS FOUND OR UNTIL EOV IS  *MDG08020
                              803  *    DETECTED.                                                     *MDG08030
                              804  *                                                                  *MDG08040
                              805  *    WHEN THE JOB IS COMPLETE "EOJ" IS PRINTED ON THE CONSOLE.     *MDG08050
                              806  *                                                                  *MDG08060
                              807  ********************************************************************MDG08070
                              808  *                                                                   MDG08080
      0000 0712I              809  COPY    EQU   *                                                   MDG08090
0000712I 2450                 810          LIS   R5,0               SET CHARACTER COUNT TO ZERO       MDG08100
000714I 4130 924E =001966I    811  CPYMOR  BAL   R3,GETCHR          GET A CHARACTER                   MDG08110
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000718I  C500 000D                     CLHI  R0,X'0D'         CR                                 MDG08120
00071CI  4330 8020 =000740I            BE    COPYA            YES                                MDG08130
000720I  C550 0003                     CLHI  R5,3             TO MANY CHAR ?                     MDG08140
000724I  4220 924C =001974I            BP    QUEST            YES                                MDG08150
000728I  0870                          LDAR  R7,R0            NO                                 MDG08160
00072AI  C570 004F                     CLHI  R7,C'O'          IS IT O ?                          MDG08170
00072EI  4330 802E =000760I            BE    COPYEV           YES                                MDG08180
000732I  4130 9556 =001C8CI            BAL   R3,ISHXCO        VALID HEX CHARACTER ?              MDG08190
000736I  D275 9A86 =0021C0I            STB   R7,PGMNUM(R5)    YES                                MDG08200
00073AI  2651                          AIS   R5,1                                                MDG08210
00073CI  4300 FFD4 =000714I            B     CPYMOR                                              MDG08220
000740I  C550 0003            COPYA    CLHI  R5,3             ENOUGH CHAR?                       MDG08230
000744I  4230 922C =001974I            BNE   QUEST            NO                                 MDG08240
000748I  C810 1EECI                    LHI   R1,PGMIPN        GET THE INDEV LOCK                 MDG08250
00074CI  C510 FFFF                     CLHI  R1,X'FFFF'       = -1 ?                             MDG08260
000750I  4230 803E =000792I            BNE   COPY1            THE INDEV POSITION KNOWN           MDG08270
000754I  4130 90A2 =0017FAI            BAL   R3,LIDAD         YES - THEN INDEV NOT POSITIONED    MDG08280
000758I  C810 00EB                     LHI   R1,X'EB'                                            MDG08290
00075CI  4300 9574 =001CD4I            B     ERRA             PRINT ERROR                        MDG08300
000760I  C550 0001            COPYEV   CLHI  R5,1                                                MDG08310
000764I  4230 920C =001974I            BNE   QUEST                                               MDG08320
000768I  D330 9A54 =0021C0I            LB    R3,PGMNUM                                           MDG08330
00076CI  C530 0045                     CLHI  R3,C'E'                                             MDG08340
000770I  4230 9200 =001974I            BNE   QUEST                                               MDG08350
000774I  4130 91EE =001966I            BAL   R3,GETCHR                                           MDG08360
000778I  C500 0056                     CLHI  R0,C'V'          IS IT V ?                          MDG08370
00077CI  4230 91F4 =001974I            BNE   QUEST            NO                                 MDG08380
000780I  C800 3030                     LHI   R0,X'3030'                                          MDG08390
000784I  4000 9A38 =0021C0I            STH   R0,PGMNUM                                           MDG08400
000788I  D200 9A36 =0021C2I            STB   R0,PGMNUM+2                                         MDG08410
00078CI  2453                          LIS   R5,3                                                MDG08420
00078EI  4300 FF82 =000714I            B     CPYMOR                                              MDG08430
         0000 0792I           COPY1    EQU   *                                                   MDG08440
000792I  4130 8FEC =001782I            BAL   R3,LODAD         GET THE OUTDEV ADDRESS             MDG08450
000796I  45A0 9748 =001EE2I            CLH   RA,INDEV+2       IS OUTDEV = INDEV ?                MDG08460
00079AI  2135                          BNES  COPY2            NO - CONTINUE                      MDG08470
00079CI  C800 4435                     LHI   R0,C'D5'         YES - ERROR                        MDG08480
0007A0I  4300 946C =001C10I            B     ERROR                                               MDG08490
         0000 07A4I           COPY2    EQU   *                                                   MDG08500
0007A4I  4130 9052 =0017FAI            BAL   R3,LIDAD         GET THE INPUT DEVICE TYPE          MDG08510
0007A8I  C510 0003                     CLHI  R1,X'03'         MAG TAPE ?                         MDG08520
0007ACI  2189                          BLS   MTIN             YES                                MDG08530
0007AEI  4130 8FD0 =001782I            BAL   R3,LODAD         GET THE OUTPUT DEVICE TYPE         MDG08540
0007B2I  C510 0003                     CLHI  R1,X'03'         MAG TAPE ?                         MDG08550
0007B6I  4280 82B2 =000A6CI            BL    DIMO             THEN DISC INPUT - MAG TAPE OUTPUT  MDG08560
0007BAI  4300 848C =000C4AI            B     DIDO             NO THEN DISC TO DISC               MDG08570
         0000 07BEI           MTIN     EQU   *                MAG TAPE INPUT                     MDG08580
0007BEI  4130 8FC0 =001782I            BAL   R3,LODAD                                            MDG08590
0007C2I  C510 0003                     CLHI  R1,X'03'         GET THE OUTPUT DEVICE TYPE         MDG08600
0007C6I  2183                          BLS   MIMO             MAG TAPE TO MAG TAPE               MDG08610
0007C8I  4300 8138 =000904I            B     MIDO             MAG TAPE TO DISC                   MDG08620
         0000 07CCI           MIMO     EQU   *                                                   MDG08630
0007CCI  2441                          LIS   R4,1                                                MDG08640
0007CEI  4040 9A38 =00220AI            STH   R4,EOJFLG                                           MDG08650
                              *                                                                  MDG08660
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                                867  *  MAG TAPE IN - MAG TAPE OUT                                                    MDG08670
                                868  *                                                                               MDG08680
 0007D2I  4130 9024 =0017FAI    869          BAL   R3,LIDAD      LOAD THE INPUT DEVICE ADDRESSES                     MDG08690
 0007D6I  E650 978E =001F68I    870          LDAI  R5,PDB        SET UP THE STORAGE AREA                             MDG08700
 0007DAI  E660 978D =001F9BI    871          LDAI  R6,PDB+51     *                                 R04               MDG08710
 0007DEI  E610 8098 =00087AI    872          LDAI  R1,MIMOFM     SET FILE MARK RETURN                                MDG08720
 0007E2I  4130 8D60 =001546I    873          BAL   R3,READPB     GO READ                                             MDG08730
 0007E6I  4130 81CC =0009B6I    874          BAL   R3,MISTRT                                                         MDG08740
 0007EAI  4130 8F94 =001782I    875          BAL   R3,LODAD      LOAD THE OUTPUT DEVICE ADDRESSES                    MDG08750
 0007EEI  9DA1                  876          SSR   RA,R1         BOT ?                                               MDG08760
 0007F0I  C310 0020             877          THI   R1,X'20'                                                          MDG08770
 0007F4I  2335                  878          BZS   WTMIMO        NO                                                  MDG08780
 0007F6I  C810 00E0             879          LHI   R1,X'E0'      YES                                                 MDG08790
 0007FAI  4300 94D6 =001CD4I    880          B     ERRA          ERROR                                               MDG08800
 0007FEI  E650 9766 =001F68I    881  WTMIMO  LDAI  R5,PDB        SET UP THE ADDRESS                                  MDG08810
 000802I  E660 9795 =001F9BI    882          LDAI  R6,PDB+51     *                                 R04               MDG08820
 000806I  4130 8D32 =00153CI    883          BAL   R3,WRTPB      GO WRITE THE PDB                                    MDG08830
 00080AI  4130 8FEC =0017FAI    884  MIMONX  BAL   R3,LIDAD      LOAD THE INPUT DEVICE ADDRESSES                     MDG08840
 00080EI  E650 978A =001F9CI    885          LDAI  R5,WRTBUF     SET UP THE                                          MDG08850
 000812I  0865                  886          LDAR  R6,R5         BUFFER TO READ                                      MDG08860
 000814I  4830 9A00 =002218I    887          LH    R3,NUMBLK     GET THE NUMBER OF BLOCKS                            MDG08870
 000818I  4330 801E =00083AI    888          BZ    MIMOLB                                                            MDG08880
*00081CI  CA60 00FF             889          AAI   R6,X'FF'                                                          MDG08890
 000820I  2731                  890          SIS   R3,1          DECREMENT THE COUNT                                 MDG08900
 000822I  4030 99F2 =002218I    891          STH   R3,NUMBLK                                                         MDG08910
 000826I  C830 00FF             892          LHI   R3,X'FF'      SET THE CURRENT BLOCK                               MDG08920
 00082AI  4030 99EC =00221AI    893  MIMO2X  STH   R3,CURBLK     SIZE                                                MDG08930
 00082EI  E610 8150 =000982I    894          LDAI  R1,MIDOFR     SET FILE MARK RETURN                                MDG08940
 000832I  4130 8D10 =001546I    895          BAL   R3,READPB                                                         MDG08950
 000836I  4300 8028 =000862I    896          B     MIMO1                                                             MDG08960
          0000 083AI            897  MIMOLB  EQU   *                                                               MDG08970
 00083AI  4830 99D8 =002216I    898          LH    R3,LSTBLK     LAST BLOCK                                          MDG08980
 00083EI  2336                  899          BZS   MIMONL        NO LAST BLOCK                                       MDG08990
 000840I  0A63                  900          AAR   R6,R3                                                           MDG09000
 000842I  0711                  901          XAR   R1,R1                                                           MDG09010
 000844I  4010 99CE =002216I    902          STH   R1,LSTBLK                                                       MDG09020
 000848I  220F                  903          BS    MIMO2X                                                          MDG09030
          0000 084AI            904  MIMONL  EQU   *             NO LAST BLOCK                                       MDG09040
 00084AI  E650 974E =001F9CI    905          LDAI  R5,WRTBUF     THERE MUST BE A FILE MARK                           MDG09050
 00084EI  0865                  906          LDAR  R6,R5         OR ELSE ERROR                                       MDG09060
 000850I  2664                  907          AIS   R6,4                                                            MDG09070
 000852I  E610 802C =000882I    908          LDAI  R1,MIMOFN     SET FM RETURN                                       MDG09080
 000856I  4130 8CEC =001546I    909          BAL   R3,READPB                                                         MDG09090
 00085AI  C810 00D0             910  MIMOER  LHI   R1,X'D0'      FM BEFORE END OF COUNT OR                           MDG09100
 00085EI  4300 9472 =001CD4I    911          B     ERRA          END OF COUNT BEFORE FM                              MDG09110
                                912  *                                                                               MDG09120
          0000 0862I            913  MIMO1   EQU   *                                                               MDG09130
 000862I  4130 8F1C =001782I    914          BAL   R3,LODAD      GET THE OUTPUT DEVICE ADDRESSES                     MDG09140
 000866I  E650 9732 =001F9CI    915          LDAI  R5,WRTBUF     SET UP THE                                          MDG09150
 00086AI  0865                  916          LDAR  R6,R5         BUFFER VALUES                                       MDG09160
                                917  *                                                                               MDG09170
 00086CI  4830 99AA =00221AI    918          LH    R3,CURBLK                                                         MDG09180
 000870I  0A63                  919          AAR   R6,R3                                                           MDG09190
 000872I  4130 8CC6 =00153CI    920          BAL   R3,WRTPB                                                        MDG09200
 000876I  4300 FF90 =00080AI    921          B     MIMONX                                                          MDG09210
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          0000 087AI      MIMOFM   EQU   *                                       MDG09220
00087AI   C810 00EB                LHI   R1,X'EB'    READ A FILE MARK WHEN EXPECTING PDB   MDG09230
00087EI   4300 9452 =001CD4I       B     ERRA        ERROR                       MDG09240
          0000 0882I      MIMOEN   EQU   *           READ A FILE MARK DURING AN INPUT RE   MDG09250
000882I   4130 8EFC =001782I       BAL   R3,LODAD    WRITE A FILE MARK ON OUTDEV MDG09260
000886I   DEA0 9021 =0018ABI       OC    RA,WFM      WRITE A FILE MARK           MDG09270
00088AI   4100 90F2 =001980I       BAL   R0,NOMOTN                               MDG09280
00088EI   DEA0 9019 =0018ABI       OC    RA,WFM      WRITE A SECOND FILE MARK    MDG09290
000892I   4100 90EA =001980I       BAL   R0,NOMOTN   WAIT                        MDG09300
000896I   DEA0 9013 =0018ADI       OC    RA,BKSP     BACK SPACE OVER IT          MDG09310
00089AI   4100 90E2 =001980I       BAL   R0,NOMOTN                               MDG09320
          0000 089EI      COPMTI   EQU   *                                       MDG09330
00089EI   4130 8F58 =0017FAI       BAL   R3,LIDAD    GET THE INDEV ADDRESSES     MDG09340
0008A2I   E650 96C2 =001F68I       LDAI  R5,PDB      SET UP THE STORAGE AREA     MDG09350
0008A6I   E660 96F1 =001F9BI       LDAI  R6,PDB+51   *                      R04  MDG09360
0008AAI   E610 803E =0008ECI       LDAI  R1,MIMOEV   SET EOV RETURN              MDG09370
0008AEI   4130 8C94 =001546I       BAL   R3,READPB   GO READ                     MDG09380
0008B2I   DEA0 8FF7 =0018ADI       OC    RA,BKSP                                 MDG09390
0008B6I   4100 90C6 =001980I       BAL   R0,NOMOTN                               MDG09400
0008BAI   4830 9902 =0021C0I       LH    R3,PGMNUM   GET THE COPY VALUE          MDG09410
0008BEI   4530 96A6 =001F68I       CLH   R3,PDB      FIRST TWO DIGITS = ?        MDG09420
0008C2I   4230 FECC =000792I       BNE   COPY1       NO - DO ANOTHER             MDG09430
0008C6I   D330 98F8 =0021C2I       LB    R3,PGMNUM+2 YES                         MDG09440
0008CAI   D340 969C =001F6AI       LB    R4,PDB+2    THIRD DIGIT = ?             MDG09450
0008CEI   0534                     CLAR  R3,R4                                   MDG09460
0008D0I   4230 FEBE =000792I       BNE   COPY1       NO - DO ANOTHER             MDG09470
0008D4I   4830 98E8 =0021C0I       LH    R3,PGMNUM   UPDATE                      MDG09480
0008D8I   4030 9610 =001EECI       STH   R3,PGMIPN   THE INDEV                   MDG09490
0008DCI   D330 98E2 =0021C2I       LB    R3,PGMNUM+2 LOCKOUT                     MDG09500
0008E0I   D230 960A =001EEEI       STB   R3,PGMIPN+2                             MDG09510
0008E4I   4130 90E8 =0019D0I       BAL   R3,ZSEQ                                 MDG09520
0008E8I   4300 8DD4 =0016C0I       B     PEOJ        YES                         MDG09530
          0000 08ECI      MIMOEV   EQU   *                                       MDG09540
0008ECI   4100 9090 =001980I       BAL   R0,NOMOTN   WAIT                        MDG09550
0008F0I   DEA0 8FB3 =0018A7I       OC    RA,BKFM                                 MDG09560
0008F4I   4100 9088 =001980I       BAL   R0,NOMOTN                               MDG09570
0008F8I   4130 90BC =0019B8I       BAL   R3,LOKIN    LOCK THE INPUT DEVICE       MDG09580
0008FCI   4130 90D0 =0019D0I       BAL   R3,ZSEQ                                 MDG09590
000900I   4300 FB98 =00049CI       B     PEOV        PRINT EOV - EOJ             MDG09600
          0000 0904I      MIDO     EQU   *                                       MDG09610
000904I   2441                     LIS   R4,1                                    MDG09620
000906I   4040 9900 =00220AI       STH   R4,EOJFLG                               MDG09630
00090AI   4130 8EEC =0017FAI       BAL   R3,LIDAD    LOAD THE INPUT DEVICE ADDRESSES   MDG09640
00090EI   E650 9656 =001F68I       LDAI  R5,PDB                                  MDG09650
000912I   E660 9685 =001F9BI       LDAI  R6,PDB+51   *                      R04  MDG09660
000916I   E610 FF60 =00087AI       LDAI  R1,MIDOFM   SET THE FILE MARK RETURN    MDG09670
00091AI   4130 8C28 =001546I       BAL   R3,READPB   GO READ                     MDG09680
00091EI   4130 8094 =0009B6I       BAL   R3,MISTRT                               MDG09690
000922I   E630 8008 =00092EI       LDAI  R3,MIDO11   SET THE COPY FLAG           MDG09700
000926I   5030 98AA =0021D4I       STA   R3,CPYFLG                               MDG09710
00092AI   4300 870E =00103CI       B     CREDIS      GO TO THE CREATE ROUTINE TO WRITE   MDG09720
          0000 092EI      MIDO11   EQU   *                                       MDG09730
00092EI   4080 98E2 =002214I       STH   R8,COPSEC   SAVE THE SECTOR NUMBER      MDG09740
000932I   4130 8EC4 =0017FAI       BAL   R3,LIDAD    LOAD THE INPUT DEVICE ADDRESSES   MDG09750
000936I   E650 9662 =001F9CI       LDAI  R5,WRTBUF                               MDG09760
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00093AI  0865                        LDAR  R6,R5        SET UP THE BUFFER                      MDG09770
00093CI  4830 98D8 =002218I          LH    R3,NUMBLK    ADDRESSES                              MDG09780
000940I  4330 801E =000962I          BZ    MIDOLB                                              MDG09790
*000944I CA60 00FF                   AAI   R6,X'FF'                                            MDG09800
000948I  2731                        SIS   R3,1         DECREMENT THE BLOCK COUNT              MDG09810
00094AI  4030 98CA =002218I          STH   R3,NUMBLK                                           MDG09820
00094EI  C830 00FF                   LHI   R3,X'FF'                                            MDG09830
000952I  4030 98C4 =00221AI  MIDO2X  STH   R3,CURBLK                                           MDG09840
000956I  E610 8028 =000982I          LDAI  R1,MIDOER    SET THE FM RETURN                      MDG09850
00095AI  4130 8BE8 =001546I          BAL   R3,READPB    GO READ                                MDG09860
00095EI  4300 8028 =00098AI          B     MIDO1                                               MDG09870
         0000 0962I          MIDOLB  EQU   *            LAST BLOCK                             MDG09880
000962I  4830 98B0 =002216I          LH    R3,LSTBLK    GET THE SIZE                           MDG09890
000966I  2336                        BZS   MIDONL       = ZERO - NO BLOCK                      MDG09900
000968I  0A63                        AAR   R6,R3        SET THE LAST SIZE                      MDG09910
00096AI  0711                        XAR   R1,R1                                               MDG09920
00096CI  4010 98A6 =002216I          STH   R1,LSTBLK                                           MDG09930
000970I  220F                        BS    MIDO2X                                              MDG09940
         0000 0972I          MIDONL  EQU   *                                                   MDG09950
000972I  E650 9626 =001F9CI          LDAI  R5,WRTBUF    SET UP TO READ                         MDG09960
000976I  0865                        LDAR  R6,R5        BUT MUST GET FILE MARK AS THE COUNT    MDG09970
000978I  2664                        AIS   R6,4         IS EXHAUSTED                           MDG09980
00097AI  E610 8028 =0009A6I          LDAI  R1,MIDOEN    SET FM RETURN - ERROR IF NO FM         MDG09990
00097EI  4130 8BC4 =001546I          BAL   R3,READPB                                           MDG10000
000982I  C810 00D0           MIDOER  LHI   R1,X'D0'     FILE MARK BEFORE TRANSFER COMPLETE     MDG10010
000986I  4300 934A =001C04I          B     ERRA         OR NO FM WHEN COUNT EXHAUSTED          MDG10020
                             *                                                                 MDG10030
         0000 098AI          MIDO1   EQU   *                                                   MDG10040
00098AI  4130 8DF4 =001782I          BAL   R3,LODAD     LOAD THE OUTPUT DEVICE ADDRESSES       MDG10050
00098EI  E650 960A =001F9CI          LDAI  R5,WRTBUF    SET UP THE WRITE BUFFER                MDG10060
000992I  0865                        LDAR  R6,R5        VALUES                                 MDG10070
000994I  4830 9882 =00221AI          LH    R3,CURBLK                                           MDG10080
000998I  0A63                        AAR   R6,R3                                               MDG10090
00099AI  4880 9876 =002214I          LH    R8,COPSFC    RETRIEVE THE SECTOR                    MDG10100
00099EI  4130 8BD4 =001276I          BAL   R3,AVAILO    GO WRITE TO DISC                       MDG10110
0009A2I  4300 FF88 =00092EI          B     MIDO11       GO READ ANOTHER RECORD                 MDG10120
         0000 087AI          MIDOFM  EQU   MIMOFM       READ A FILE MARK WHEN EXPECTING PDB    MDG10130
         0000 09A6I          MIDOEN  EQU   *                                                   MDG10140
0009A6I  4130 8DD8 =001782I          BAL   R3,LODAD     LOAD THE OUTDEV ADDRESSES              MDG10150
0009AAI  4880 9866 =002214I          LH    R8,COPSFC    GET THE SECTOR NUMBER                  MDG10160
0009AEI  4130 87A6 =001158I          BAL   R3,DTRDON    WRITE EOV ON DISC                      MDG10170
0009B2I  4300 FEE8 =00089EI          B     COPMTI                                              MDG10180
                             *********************************************************************** MDG10190
                             *                                                                   * MDG10200
                             *   M I S T R T                                                     * MDG10210
                             *                                                                   * MDG10220
                             *                                                                   * MDG10230
                             *     THIS ROUTINE WILL CALCULATE THE NUMBER OF FULL BLOCKS, AND THE * MDG10240
                             *   LENGTH OF THE LAST BLOCK TO BE TRANSFERRED. IT IS CALCULATED FROM * MDG10250
                             *   THE "LOW" AND "HIGH" ADDRESSES CONTAINED IN THE PDB.            * MDG10260
                             *                                                                   * MDG10270
                             *        INPUT:  R3 = RETURN ADDRESS                                * MDG10280
                             *                                                                   * MDG10290
                             *        OUTPUT: THE LOCATION "NUMBLK" = THE NUMBER OF BLOCKS TO COPIED* MDG10300
                             *                THE LOCATION "LSTBLK" = THE LENGTH OF THE LAST BLOCK. * MDG10310
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                              *                                                           *
                              *                                                           *
                              ***********************************************************************
          0000 09B6I          MISTRT   EQU   *
0009B6I   5030 9812 =0021CCI           STA   R3,MISTRN            SAVE RETURN
0009BAI   D350 95BE =001F7CI           LB    R5,PDB+20            GET THE LOW ORDER TWO DIGITS OF
0009BEI   D360 95BD =001F7FI           LB    R6,PDB+23            GET THE LOW ORDER TWO DIGITS OF
0009C2I   0556                         CLAR  R5,R6                COMPARE LOW AND HIGH
0009C4I   4280 803C =000A04I           BL    LOFRHI               IS LOW < HIGH ? - YES
0009C8I   4330 8038 =000A04I           BE    LOFRHI
0009CCI   0B56                         SAR   R5,R6
0009CEI   C830 0100                    LHI   R3,X'100'            NO - THE SUB LOW FROM X'100'
0009D2I   0B35                         SAR   R3,R5                SUB LOW (R5) FROM HIGH (R3)
0009D4I   C530 0000                    CLHI  R3,X'00'             DIFF. = 0 ?
0009D8I   2132                         BNES  LOHIK1               NO
0009DAI   2431                         LIS   R3,1                 YES - THEN SET 1
0009DCI   4030 9836 =002216I  LOHIK1   STH   R3,LSTBLK            SAVE BLOCK LENGTH
0009E0I   D350 9596 =001F7AI           LB    R5,PDB+18            GET THE HIGH ORDER THREE DIGITS OF
0009E4I   1158                         SLLS  R5,8                 THE LOW ADDRESS
0009E6I   D330 9591 =001F7BI           LB    R3,PDB+19
0009EAI   0653                         OAR   R5,R3                R5 = HIGH ORDER LOW ADDRESS
0009ECI   D360 958D =001F7DI           LB    R6,PDB+21            GET THE HIGH ORDER THREE DIGITS OF
0009F0I   1168                         SLLS  R6,8                 THE HIGH ADDRESS
0009F2I   D330 9588 =001F7EI           LB    R3,PDB+22
0009F6I   0663                         OAR   R6,R3
0009F8I   2761                         SIS   R6,1                 SUBTRACT 1 FOR THE BORROW USED ABOVE
0009FAI   0B65                         SAR   R6,R5                SUBTRACT LOW (R5) FROM HIGH (R6)
0009FCI   4060 9818 =002218I           STH   R6,NUMBLK            STOR THE # OF FULL BLOCKS TO BE TRANS
000A00I   4300 802C =000A30I           B     UPDSPY
          0000 0A04I          LOFRHI   EQU   *
000A04I   0B65                         SAR   R6,R5                SUBTRACT LOW (R5) FROM HIGH (R6)
000A06I   C560 0000                    CLHI  R6,X'00'             DIFFERENCE = 0 ?
000A0AI   2132                         BNES  LOHIK2               NO
000A0CI   2461                         LIS   R6,1                 YES - THEN SET 1
000A0EI   4060 9804 =002216I  LOHIK2   STH   R6,LSTBLK            SAVE THE LENGTH
000A12I   D350 9564 =001F7AI           LB    R5,PDB+18            GET THE HIGH ORDER THREE DIGITS OF
000A16I   1158                         SLLS  R5,8                 THE LOW ADDRESS
000A18I   D330 955F =001F7BI           LB    R3,PDB+19
000A1CI   0653                         OAR   R5,R3                R5 = HIGH ORDER OF LOW ADDRESS
000A1EI   D360 955B =001F7DI           LB    R6,PDB+21            GET THE HIGH ORDER THREE DIGITS OF
000A22I   1168                         SLLS  R6,8                 THE HIGH ADDRESS
000A24I   D330 9556 =001F7EI           LB    R3,PDB+22
000A28I   0663                         OAR   R6,R3
000A2AI   0B65                         SAR   R6,R5
000A2CI   4060 97E8 =002218I           STH   R6,NUMBLK            STORE THE NUMBER OF FULL
          0000 0A30I          UPDSPY   EQU   *                    LOAD DISPLAY
000A30I   2451                         LIS   R5,1                 ADDRESS
000A32I   0766                         XAR   R6,R6
000A34I   DE50 8033 =000A68I           OC    R5,DSPCMD+1          INC MODE
000A38I   D300 952D =001F69I           LB    R0,PDB+1
000A3CI   4130 924C =001C8CI           BAL   R3,ISHXCO
000A40I   0860                         LDAR  R6,R0
000A42I   1164                         SLLS  R6,4
000A44I   D300 9522 =001F6AI           LB    R0,PDB+2
000A48I   4130 9240 =001C8CI           BAL   R3,ISHXCO
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                                428  *        FILE NUMBER IS FOUND OR UNTIL EOV.                                  *   MDG04280
                                429  *                                                                            *   MDG04290
                                430  *        INPUT: R1 = THE CURRENT INCREMENT INTO THE INPUT BUFFER.           *   MDG04300
                                431  *                    IT POINTS TO THE FIRST CHARACTER TO BE USED            *   MDG04310
                                432  *                    FOR THE DEVICE IDENTIFIER (0 OR 1) .                  *   MDG04320
                                433  *                                                                          *   MDG04330
                                434  *       OUTPUT: THE MEDIA WILL BE HANDLED AS FOLLOWS                       *   MDG04340
                                435  *               MAG TAPE: FORWARD TO THE DESIRED FILE OR EOV.              *   MDG04350
                                436  *               DISC:     THE DIRECTORY IS SEARCHED TO SEE IF             *   MDG04360
                                437  *                         THE NUMBER EXISTS ON THE DISC.                  *   MDG04370
                                438  *             IF THE NUMBER IS FOUND "EOJ" IS PRINTED ON THE              *   MDG04380
                                439  *             CONSOLE. IF THE NUMBER IS NOT FOUND "EOV" - "EOJ"           *   MDG04390
                                440  *             IS PRINTED ON THE CONSOLE.                                  *   MDG04400
                                441  *             THE LOCK WORD FOR THE APPROPIATE DEVICE IS UPDATED          *   MDG04410
                                442  *             WITH THE NUMBER IF THE NUMBER WAS FOUND, OR LOCKED          *   MDG04420
                                443  *             IF EOV IS DETECTED.                                         *   MDG04430
                                444  *                                                                         *   MDG04440
                                445  * ********************************************************************** *   MDG04450
     0000 034EI                 446  FF       EQU   *                                                             MDG04460
00034EI 2430                    447           LIS   R3,0              SET THE FORWARD FILE MARK FLAG              MDG04470
000350I 4030 9EA2 =0021F6I      448  BBFB     STH   R3,FFBFFL         SAVE THE FLAG                               MDG04480
000354I 2441                    449           LIS   R4,1              SET THE EOJ                                 MDG04490
000356I 4040 9EB0 =0022D0AI     450           STH   R4,EOJFLG         FLAG                                        MDG04500
00035AI 4130 9608 =001966I      451           BAL   R3,GETCHR         GET A CHARACTER                             MDG04510
00035EI 24AF                    452           LIS   RA,15             SET THE I INDICATOR                         MDG04520
000360I C500 0049               453           CLHI  R0,C'I'           I ?                                         MDG04530
000364I 4330 807E =0003E6I      454           BE    FFCOMI            YES                                         MDG04540
000368I 24A0                    455           LIS   RA,0              NO - SET THE O INDICATOR                    MDG04550
00036AI C500 004F               456           CLHI  R0,C'O'           O ?                                         MDG04560
00036EI 4230 96D2 =001974I      457           BNE   QUEST                                                         MDG04570
000372I 24F0                    458           LIS   RF,0              CLEAR FLAG                                  MDG04580
000374I 4130 95EE =001966I      459  FFCOM    BAL   R3,GETCHR         GET NEXT CHARACTER                          MDG04590
000378I C500 002C               460           CLHI  R0,C','           COMMA ?                                     MDG04600
00037CI 4230 95F4 =001974I      461           BNE   QUEST             NO                                          MDG04610
000380I 2450                    462           LIS   R5,0              YES                                         MDG04620
000382I 4130 95E0 =001966I      463  FFMORE   BAL   R3,GETCHR         GET THE NUMBER                              MDG04630
000386I C500 000D               464           CLHI  R0,X'0D'          CR                                          MDG04640
00038AI 4330 805E =0003ECI      465           BE    FFIT              YES                                         MDG04650
00038EI C550 0003               466           CLHI  R5,3              NO - TOO MANY CHAR ?                        MDG04660
000392I 4330 95DE =001974I      467           BE    QUEST             YES                                         MDG04670
000396I 0870                    468           LDAR  R7,R0             NO - HEX CHAR ?                             MDG04680
000398I C570 004F               469           CLHI  R7,C'O'           IS IT O ?                                   MDG04690
00039CI 2338                    470           BES   TSTEOV                                                       MDG04700
00039EI 4130 98EA =001C8CI      471           BAL   R3,ISHXCO                                                    MDG04710
0003A2I D275 9E1A =0021C0I      472           STB   R7,PGMNUM(R5)      YES                                         MDG04720
0003A6I 2651                    473           AIS   R5,1                                                         MDG04730
0003A8I 4300 FFD6 =000382I      474           B     FFMORE                                                      MDG04740
0003ACI C550 0001               475  TSTEOV   CLHI  R5,1                                                       MDG04750
0003B0I 4230 95C0 =001974I      476           BNE   QUEST                                                       MDG04760
0003B4I 4830 9E3E =0021F6I      477           LH    R3,FFBFFL                                                   MDG04770
0003B8I 4230 9588 =001974I      478           BNZ   QUEST                                                       MDG04780
0003BCI D330 9E00 =0021C0I      479           LB    R3,PGMNUM                                                   MDG04790
0003C0I C530 0045               480           CLHI  R3,C'E'                                                     MDG04800
0003C4I 4230 95AC =001974I      481           BNE   QUEST                                                       MDG04810
0003C8I 4130 959A =001966I      482           BAL   R3,GETCHR                                                   MDG04820
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0003CCI  C500 0056                   CLHI  R0,C'V'          IS IT V ?                        MDG04830
0003D0I  4230 95A0 =001974I          BNE   QUEST            NO                               MDG04840
0003D4I  C800 3030                   LHI   R0,X'3030'                                        MDG04850
0003D8I  4000 9DE4 =0021C0I          STH   R0,PGMNUM                                         MDG04860
0003DCI  D200 9DE2 =0021C2I          STB   R0,PGMNUM+2                                       MDG04870
0003E0I  2453                        LIS   R5,3                                              MDG04880
0003E2I  4300 FF9C =000382I          B     FFMORE                                            MDG04890
0003E6I  24F2                FFCOMI  LIS   RF,2             SET FLAG                         MDG04900
0003E8I  4300 FF88 =000374I          B     FFCOM                                             MDG04910
0003ECI  C550 0003           FFIT    CLHI  R5,3             COUNT = 3                        MDG04920
0003F0I  4230 9580 =001974I          BNE   QUEST            NO                               MDG04930
0003F4I  40A0 9E06 =0021FEI          STH   RA,IOFLAG                                         MDG04940
0003F8I  08AA                        LDAR  RA,RA            YES - SET CONDITION              MDG04950
0003FAI  2136                        BNZS  FFIT1                                             MDG04960
0003FCI  4130 95C4 =0019C4I          BAL   R3,LOKOUT                                         MDG04970
000400I  4130 937E =001782I          BAL   R3,LODAD         ZERO THE FF THE OUTDEV           MDG04980
000404I  2305                        BS    FFIT2                                             MDG04990
000406I  4130 95AE =0019B8I  FFIT1   BAL   R3,LOKIN         LOCK THE INPUT DEVICE            MDG05000
00040AI  4130 93EC =0017FAI          BAL   R3,LIDAD         LOAD THE INPUT ADDRESSES         MDG05010
00040EI  DEA0 9498 =0018AAI  FFIT2   OC    RA,DISABL        IDSABLE INT                      MDG05020
000412I  C510 0003                   CLHI  R1,X'3'          TAPE ?                           MDG05030
000416I  4380 8098 =0004B2I          BNL   FFDISC           NO - DISC                        MDG05040
00041AI  DEA0 9496 =0018B4I          OC    RA,CLEAR         YES -CLEAR                       MDG05050
00041EI  4830 9DD4 =0021F6I  FFBF1   LH    R3,FFBFFL        GET THE FLAG                     MDG05060
000422I  4230 803E =000464I          BNZ   BFIT                                              MDG05070
         0000 0426I          FFIT3   EQU   *                                                 MDG05080
000426I  DEA0 947C =0018A6I          OC    RA,FWFM          FORWARD FM                       MDG05090
00042AI  4100 9552 =001980I          BAL   R0,NOMOTN        WAIT                             MDG05100
00042EI  E650 9AFE =001F30I          LDAI  R5,FFBUF         SET UP TO READ                   MDG05110
000432I  E660 9B2C =001F62I          LDAI  R6,FFBUF+50                                       MDG05120
000436I  E610 804E =000488I          LDAI  R1,FFEOV                                          MDG05130
00043AI  4130 9108 =001546I          BAL   R3,READPB        READ THE PDB                     MDG05140
00043EI  4830 9D7E =0021C0I          LH    R3,PGMNUM        GET THE NUMBER ENTERED           MDG05150
000442I  4530 9AEA =001F30I          CLH   R3,FFBUF                                          MDG05160
000446I  4230 FFD4 =00041EI          BNE   FFBF1            NO                               MDG05170
00044AI  D330 9D74 =0021C2I          LB    R3,PGMNUM+2      YES - GET THE THIRD DIGIT        MDG05180
00044EI  D340 9AE0 =001F32I          LB    R4,FFBUF+2                                        MDG05190
000452I  0534                        CLAR  R3,R4                                             MDG05200
000454I  4230 FFC6 =00041EI          BNE   FFBF1            NO                               MDG05210
000458I  DEA0 9451 =0018ADI          OC    RA,BKSP          YES - REPOSITION THE TAPE AT     MDG05220
00045CI  4100 9520 =001980I          BAL   R0,NOMOTN                                         MDG05230
000460I  4300 809E =000502I          B     FFDSC5                                            MDG05240
         0000 0464I          BFIT    EQU   *                                                 MDG05250
000464I  4100 9526 =00198EI          BAL   R0,BKFMNM        WAIT FOR NO MOTION OF BOT        MDG05260
000468I  4800 9D8E =0021FAI  BFIT1   LH    R0,BKSPFL        BACKSPACE FLAG SET ?             MDG05270
00046CI  2335                        BZS   BFIT4            NO - DO 1 BACKSPACE              MDG05280
00046EI  DEA0 9435 =0018A7I          OC    RA,BKFM          YES - DO 2 BACKSPACES            MDG05290
000472I  4100 9518 =00198EI          BAL   R0,BKFMNM        WAIT FOR NO MOTION OF BOT        MDG05300
000476I  240F                BFIT4   LIS   R0,15                                             MDG05310
000478I  4000 9D7E =0021FAI          STH   R0,BKSPFL        SET THE DOUBLE BACKSPACE FLAG    MDG05320
00047CI  DEA0 9427 =0018A7I          OC    RA,BKFM                                           MDG05330
000480I  4100 950A =00198EI          BAL   R0,BKFMNM        WAIT FOR NO MOTION OF BOT        MDG05340
000484I  4300 FF9E =000426I          B     FFIT3                                             MDG05350
         0000 0488I          FFEOV   EQU   *                                                 MDG05360
000488I  4100 94F4 =001980I          BAL   R0,NOMOTN                                         MDG05370
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000A4CI  0660                    1087              OAR    R6,R0                                                    MDG10870
000A4EI  9A56                    1088              WDR    R5,R6                                                    MDG10880
000A50I  D300 9514 =001F68I      1089              LB     R0,PDB                                                   MDG10890
000A54I  4130 9234 =001C8CI      1090              BAL    R3,ISHXCO                                                MDG10900
000A58I  9A50                    1091              WDR    R5,R0                                                    MDG10910
000A5AI  0700                    1092              XAR    R0,R0                                                    MDG10920
000A5CI  9A50                    1093              WDR    R5,R0                                                    MDG10930
000A5EI  9A50                    1094              WDR    R5,R0                                                    MDG10940
000A60I  DE50 8006 =000A6AI      1095              OC     R5,DSPCMD                                                MDG10950
000A64I  5830 9764 =0021CCI      1096              LDA    R3,MISTRN                                                MDG10960
000A68I  0303                    1097              BR     R3                                                       MDG10970
000A6AI  8040                    1098     DSPCMD   DC     X'8040'              NORM / INC                          MDG10980
         0000 0A6CI              1099     DIMO     EQU    *                                                        MDG10990
                                 1100     *  DISC INPUT - MAG TAPE OUTPUT                                              MDG11000
000A6CI  2441                    1101              LIS    R4,1                                                     MDG11010
000A6EI  4040 9798 =00220AI      1102              STH    R4,EOJFLG                                                MDG11020
000A72I  4130 88D6 =00134CI      1103              BAL    R3,UPDTPT            FIND THE STARTING POSITION          MDG11030
000A76I  4130 8D80 =0017FAI      1104              BAL    R3,LIDAD                                                 MDG11040
000A7AI  4130 8A54 =0014D2I      1105              BAL    R3,DIRPGM            CONVERT THE POINTER TO LOC.         MDG11050
000A7EI  E650 94E6 =001F68I      1106              LDAI   R5,PDB                                                   MDG11060
000A82I  E660 9515 =001F9BI      1107              LDAI   R6,PDB+51            *                         R04       MDG11070
000A86I  4130 87E4 =00126EI      1108              BAL    R3,AVAILR            READ THE PDB FROM DISC              MDG11080
000A8AI  4130 FF28 =0009B6I      1109              BAL    R3,MISTRT            SET THE NUM. OF BLKS. TO BE COPIED  MDG11090
000A8EI  4130 8CF0 =001782I      1110              BAL    R3,LODAD             LOAD THE OUTPUT DEV. ADD.           MDG11100
000A92I  9DA1                    1111              SSR    RA,R1                                                    MDG11110
000A94I  C310 0020               1112              THI    R1,X'20'             BOT ?                               MDG11120
000A98I  2335                    1113              BZS    DIMO1                NO                                  MDG11130
000A9AI  C810 00E0               1114              LHI    R1,X'E0'             YES - ERROR                         MDG11140
000A9EI  4300 9232 =001CD4I      1115              B      ERRA                                                     MDG11150
000AA2I  E650 94C2 =001F68I      1116     DIMO1    LDAI   R5,PDB                                                   MDG11160
000AA6I  E660 94F1 =001F9BI      1117              LDAI   R6,PDB+51            WRITE PDB ON              R04       MDG11170
000AAAI  4130 8A8E =00153CI      1118              BAL    R3,WRTPR             TAPE                                MDG11180
000AAEI  4130 8D48 =0017FAI      1119     DIMONX   BAL    R3,LIDAD             LOAD IN ADD.                        MDG11190
000AB2I  E650 94E6 =001F9CI      1120              LDAI   R5,WRTBUF            GET THE ADDRESS                     MDG11200
000AB6I  0865                    1121              LDAR   R6,R5                                                    MDG11210
000AB8I  4830 975C =002218I      1122              LH     R3,NUMBLK            GET # OF BLOCKS                     MDG11220
*000ABCI 233E                    1123              BZ     DIMOLB                                                   MDG11230
*000ABEI CA60 00FF               1124              AAI    R6,X'FF'                                                 MDG11240
000AC2I  2731                    1125              SIS    R3,1                                                     MDG11250
000AC4I  4030 9750 =002218I      1126              STH    R3,NUMBLK                                                MDG11260
000AC8I  C830 00FF               1127              LHI    R3,X'FF'                                                 MDG11270
000ACCI  4030 974A =00221AI      1128     DIMO2X   STH    R3,CURBLK                                                MDG11280
000AD0I  4130 879A =00126EI      1129              BAL    R3,AVAILR                                                MDG11290
000AD4I  4300 815A =000C32I      1130              B      DIMO1X                                                   MDG11300
         0000 0AD8I              1131     DIMOLB   EQU    *                                                        MDG11310
000AD8I  4830 973A =002216I      1132              LH     R3,LSTBLK                                                MDG11320
000ADCI  2336                    1133              BZS    DIMONL                                                   MDG11330
000ADEI  0A63                    1134              AAR    R6,R3                                                    MDG11340
000AE0I  0711                    1135              XAR    R1,R1                                                    MDG11350
000AE2I  4010 9730 =002216I      1136              STH    R1,LSTBLK                                                MDG11360
000AE6I  220D                    1137              BS     DIMO2X                                                   MDG11370
000AE8I  4130 8004 =000AF0I      1138     DIMONL   BAL    R3,COPDVE                                                MDG11380
000AECI  4300 80C2 =000BB2I      1139              B      DIMOEE                                                   MDG11390
000AF0I  5030 96F8 =0021ECI      1140     COPDVE   STA    R3,DIRTN             NO DATA SHOULD BE LEFT FOR THIS     MDG11400
000AF4I  4080 972C =002224I      1141              STH    R8,DIMOST            PROGRAM - SAVE CYL - HEAD - SECTOR  MDG11410
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000AF8I  4880 9706 =002202I  1142          LH    R8,HEAD                                  MDG11420
000AFCI  4080 9726 =002226I  1143          STH   R8,DIMOST+2          STORE HEAD            MDG11430
000B00I  4880 96FC =002200I  1144          LH    R8,CYL                                   MDG11440
000B04I  4080 9720 =002228I  1145          STH   R8,DIMOST+4          STORE CYL             MDG11450
000B08I  4880 96A0 =0021ACI  1146          LH    R8,DCOPY             GET DIRECTORY INFO    MDG11460
000B0CI  4830 969E =0021AEI  1147          LH    R3,DCOPY+2           SECTOR                MDG11470
000B10I  4030 96EE =002202I  1148          STH   R3,HEAD              HEAD                  MDG11480
000B14I  4830 9698 =0021B0I  1149          LH    R3,DCOPY+4                               MDG11490
000B18I  4030 96E4 =002200I  1150          STH   R3,CYL                                   MDG11500
000B1CI  4820 9692 =0021B2I  1151          LH    R2,DCOPY+6           INCREMENT             MDG11510
000B20I  2628                1152          AIS   R2,8                                     MDG11520
000B22I  C520 0100           1153          CLHI  R2,X'100'            = X'100' ?            MDG11530
000B26I  4330 8054 =000B7EI  1154          BE    DIMOPP                                   MDG11540
000B2AI  4020 9684 =0021B2I  1155  DIMOP5  STH   R2,DCOPY+6                                MDG11550
000B2EI  4130 8EDE =001A10I  1156          BAL   R3,FRSRW                                 MDG11560
000B32I  4130 8EA8 =0019DEI  1157          BAL   R3,WDFT                                  MDG11570
000B36I  DEA0 8D75 =0018AFI  1158          OC    RA,SEEK                                  MDG11580
000B3AI  4130 8ED2 =001A10I  1159          BAL   R3,FRSRW                                 MDG11590
000B3EI  E650 956A =002000I  1160          LDAI  R5,DIRECT            SET UP FOR READ       MDG11600
000B42I  E660 9665 =0021ABI  1161          LDAI  R6,DIRECT+255                            MDG11610
000B46I  4130 8E94 =0019DEI  1162          BAL   R3,WDFT                                  MDG11620
000B4AI  4130 89CC =00151AI  1163          BAL   R3,RDISC             READ THE DIRECTORY    MDG11630
000B4EI  4820 9660 =0021B2I  1164          LH    R2,DCOPY+6                               MDG11640
000B52I  4832 955A =0020B0I  1165          LH    R3,DIRECT+4(R2)      GET THE CYL FROM DIRECT MDG11650
000B56I  4530 96CE =002228I  1166          CLH   R3,DIMOST+4                              MDG11660
*000B5AI 213E                1167          BNE   DIMOSH                                   MDG11670
000B5CI  4830 96C6 =002226I  1168          LH    R3,DIMOST+2          HEAD                  MDG11680
000B60I  D342 954F =0020B3I  1169          LB    R4,DIRECT+7(R2)      SET HEAD              MDG11690
000B64I  0534                1170          CLAR  R3,R4                                    MDG11700
000B66I  2138                1171          BNES  DIMOSH                                   MDG11710
000B68I  4830 96B8 =002224I  1172          LH    R3,DIMOST                                MDG11720
000B6CI  D342 9542 =0020B2I  1173          LB    R4,DIRECT+6(R2)                          MDG11730
000B70I  0534                1174          CLAR  R3,R4                                    MDG11740
000B72I  4330 8036 =000BACI  1175          BE    DIMOSP                                   MDG11750
000B76I  C810 0000           1176  DIMOSH  LHI   R1,X'00'                                 MDG11760
000B7AI  4300 9156 =001CD4I  1177          B     ERRA                                     MDG11770
000B7EI  2681                1178  DIMOPP  AIS   R8,1                 INC. SECTOR           MDG11780
000B80I  4840 968A =002200I  1179          LH    R4,CUTRKOEN                              MDG11790
000B84I  4584 F9DC =000564I  1180          CLH   R8,SECTAB(R4)                            MDG11800
000B88I  2334                1181          BES   DIMOP4               NO                    MDG11810
000B8AI  0722                1182          XAR   R2,R2                YES                   MDG11820
000B8CI  4300 FF9A =000B2AI  1183          B     DIMOP5                                   MDG11830
000B90I  4830 966E =002202I  1184  DIMOP4  LH    R3,HEAD              GET HEAD              MDG11840
000B94I  4534 F9DA =000572I  1185          CLH   R3,HDTAB(R4)                             MDG11850
*000B98I 2338                1186          BE    DIMOSA                                   MDG11860
000B9AI  2631                1187          AIS   R3,1                                     MDG11870
000B9CI  4030 9662 =002202I  1188          STH   R3,HEAD                                  MDG11880
000BA0I  0722                1189          XAR   R2,R2                                    MDG11890
000BA2I  0788                1190          XAR   R8,R8                                    MDG11900
000BA4I  4300 FF82 =000B2AI  1191          B     DIMOP5                                   MDG11910
000BA8I  4020 9606 =0021B2I  1192  DIMOSA  STH   R2,DCOPY+6                               MDG11920
000BACI  5830 963C =0021ECI  1193  DIMOSP  LDA   R3,DIRTN                                 MDG11930
000BB0I  0303                1194          BR    R3                                       MDG11940
000BB2I  4130 8BCC =001782I  1195  DIMOEE  BAL   R3,LODAD             GET INPUT DEV.        MDG11950
000BB6I  DEA0 8CF1 =0018ABI  1196          OC    RA,WFM                                   MDG11960
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000B8AI 4100 8DC2 =00198UI 1197          BAL   R0,NOMOTN                                    MDG11970
000B8EI DEA0 8CE9 =0018ABI 1198          OC    RA,WFM            WRITE EOV ON TAPE           MDG11980
000B92I 4100 8DBA =00198UI 1199          BAL   R0,NOMOTN                                    MDG11990
000B96I DEA0 8CE3 =0018ADI 1200          OC    RA,BKSP                                      MDG12000
000B9AI 4100 8DB2 =00198UI 1201          BAL   R0,NOMOTN                                    MDG12010
000B9EI 4130 8DF2 =0019C4I 1202          BAL   R3,LOKOUT         LOCK THE OUTPUT DEVICE     MDG12020
        0000 0BD2I         1203  DICOMN  EQU   *                 DISC INPUT COMMON          MDG12030
000BD2I 4130 8C24 =0017FAI 1204          BAL   R3,LIDAD          LOAD INPUT DEVICE          MDG12040
000BD6I 4820 95D8 =0021B2I 1205          LH    R2,DCOPY+6                                   MDG12050
000BDAI C520 0100          1206          CLHI  R2,X'100'         = TO X'100' ?              MDG12060
000BDEI 4330 8044 =000C26I 1207          BE    DIMOEV                                       MDG12070
000BE2I 4832 94C6 =0020ACI 1208          LH    R3,DIRECT(R2)     NO - EOV?                  MDG12080
000BE6I 4330 803C =000C26I 1209          BZ    DIMOEV            YES                        MDG12090
000BEAI 4530 95D2 =0021C0I 1210          CLH   R3,PGMNUM         NO - FIRST TWO DIGITS = ?  MDG12100
000BEEI 4230 8020 =000C12I 1211          BNE   DIMONM            COPY ANOTHER               MDG12110
000BF2I D332 9488 =0020AEI 1212          LB    R3,DIRECT+2(R2)   GET THIRD DIGIT            MDG12120
000BF6I D340 95C8 =0021C2I 1213          LB    R4,PGMNUM+2                                  MDG12130
000BFAI 0534               1214          CLAR  R3,R4             = ?                        MDG12140
000BFCI 213B               1215          BNES  DIMONM            NO - COPY ANOTHER          MDG12150
000BFEI 4830 95BE =0021C0I 1216          LH    R3,PGMNUM         YES - COPY NO MORE         MDG12160
000C02I 4030 92E6 =001EECI 1217          STH   R3,PGMIPN         UPDATE LOCK WORD           MDG12170
000C06I D240 92E4 =001EEEI 1218          STB   R4,PGMIPN+2                                  MDG12180
000C0AI 4130 8DC2 =0019D0I 1219          BAL   R3,ZSEQ                                      MDG12190
000C0EI 4300 8AAE =0016C0I 1220          B     PEOJ                                         MDG12200
        0000 0C12I         1221  DIMONM  EQU   *                 UPDATE THE LOCK WORD       MDG12210
000C12I 4832 9496 =0020ACI 1222          LH    R3,DIRECT(R2)     SO THAT IT WILL BE FOUND   MDG12220
000C16I 4030 92D2 =001EECI 1223          STH   R3,PGMIPN         ON THE NEXT SEARCH         MDG12230
000C1AI D332 9490 =0020AEI 1224          LB    R3,DIRECT+2(R2)                              MDG12240
000C1EI D230 92CC =001EEEI 1225          STB   R3,PGMIPN+2                                  MDG12250
000C22I 4300 FB6C =000792I 1226          B     COPY1                                        MDG12260
000C26I 4130 8D8E =0019B8I 1227  DIMOEV  BAL   R3,LOKIN         LOCK INDEV                 MDG12270
000C2AI 4130 8DA2 =0019D0I 1228          BAL   R3,ZSEQ                                      MDG12280
000C2EI 4300 F86A =00049CI 1229          B     PEOV                                         MDG12290
        0000 0C32I         1230  DIMO1X  EQU   *                                            MDG12300
000C32I 4130 8B4C =001782I 1231          BAL   R3,LODAD          LOAD THE OUTPUT DEVICE ADDRESSES MDG12310
000C36I E650 9362 =001F9CI 1232          LDAI  R5,WRTBUF                                    MDG12320
000C3AI 0865               1233          LDAR  R6,R5                                        MDG12330
000C3CI 4830 95DA =00221AI 1234          LH    R3,CURBLK         GET THE SIZE               MDG12340
000C40I 0A63               1235          AAR   R6,R3                                        MDG12350
000C42I 4130 88F6 =00153CI 1236          BAL   R3,WRTPR                                     MDG12360
000C46I 4300 FE64 =000AAEI 1237          B     DIMONX                                       MDG12370
                           1238  *  DISC INPUT - DISC OUTPUT                               MDG12380
        0000 0C4AI         1239  DIDO    EQU   *                                            MDG12390
000C4AI 2441               1240          LIS   R4,1                                         MDG12400
000C4CI 4040 95BA =00220AI 1241          STH   R4,EOJFLG                                    MDG12410
000C50I 4130 86F8 =00134CI 1242          BAL   R3,UPDTPT         FIND THE STARTING POSITION MDG12420
000C54I 4130 8BA2 =0017FAI 1243          BAL   R3,LIDAD                                     MDG12430
000C58I 4130 8876 =0014D2I 1244          BAL   R3,DIRPGM         CONVERT TO ACTUAL LOCATION MDG12440
000C5CI E650 9308 =001F68I 1245          LDAI  R5,PDB                                       MDG12450
000C60I E660 9337 =001F9BI 1246          LDAI  R6,PDB+51         *                    R04   MDG12460
000C64I 4130 8606 =00126EI 1247          BAL   R3,AVAILR         READ THE PDB FROM DISC     MDG12470
000C68I 4130 FD4A =0009B6I 1248          BAL   R3,MISTRT         SET THE NUM. OF BLKS. TO BE COPIED MDG12480
000C6CI 4080 95BA =00222AI 1249          STH   R8,DIDOIN         SAVE INPUT POINTERS        MDG12490
000C70I 4880 958E =0022U2I 1250          LH    R8,HEAD                                      MDG12500
000C74I 4080 95B4 =00222CI 1251          STH   R8,DIDOIN+2                                  MDG12510
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000C78I  4880 9584 =002200I  1252          LH    R8,CYL                                    MDG12520
000C7CI  4080 95AE =00222EI  1253          STH   R8,DIDOIN+4                               MDG12530
000C80I  4130 8AFE =001782I  1254          BAL   R3,LODAD          LOAD OUTPUT             MDG12540
000C84I  E630 8008 =000C90I  1255          LDAI  R3,DID011         SET THE COPY FLAG       MDG12550
000C88I  5030 9548 =0021D4I  1256          STA   R3,CPYFLG                                 MDG12560
000C8CI  4300 83AC =00103CI  1257          B     CREDIS            WRITE POB ON SECOND DISC  MDG12570
000C90I  4080 959C =002230I  1258  DID011  STH   R8,DIDOOU                                 MDG12580
000C94I  4880 956A =002202I  1259          LH    R8,HEAD           SAVE OUTPUT POINTERS    MDG12590
000C98I  4080 9596 =002232I  1260          STH   R8,DIDOOU+2                               MDG12600
000C9CI  4880 9560 =002200I  1261          LH    R8,CYL                                    MDG12610
000CA0I  4080 9590 =002234I  1262          STH   R8,DIDOOU+4                               MDG12620
000CA4I  4130 8B52 =0017FAI  1263          BAL   R3,LIDAD          LOAD INPUT DEVICE ADD'.   MDG12630
000CA8I  4880 9582 =00222EI  1264          LH    R8,DIDOIN+4                               MDG12640
000CACI  4080 9550 =002200I  1265          STH   R8,CYL            GET INPUT DISC PARAMETERS MDG12650
000CB0I  4880 9578 =00222CI  1266          LH    R8,DIDOIN+2       CYL                     MDG12660
000CB4I  4080 954A =002202I  1267          STH   R8,HEAD           HEAD                    MDG12670
000CB8I  4880 956E =00222AI  1268          LH    R8,DIDOIN         SECTOR                  MDG12680
000CBCI  E650 92DC =001F9CI  1269          LDAI  R5,WRTBUF                                 MDG12690
000CC0I  0865                1270          LDAR  R6,R5             SET UP TO READ          MDG12700
000CC2I  4830 9552 =002218I  1271          LH    R3,NUMBLK         ANOTHER BLOCK           MDG12710
*000CC6I 233D                1272          BZ    DIDOLB                                    MDG12720
*000CC8I CA60 00FF           1273          AAI   R6,X'FF'                                  MDG12730
000CCCI  2731                1274          SIS   R3,1                                      MDG12740
000CCEI  4030 9546 =002218I  1275          STH   R3,NUMBLK                                 MDG12750
000CD2I  C830 00FF           1276          LHI   R3,X'FF'                                  MDG12760
000CD6I  4030 9540 =00221AI  1277  DID02X  STH   R3,CURBLK                                 MDG12770
000CDAI  4130 8590 =00126EI  1278          BAL   R3,AVAILR         READ FROM INPUT DISC    MDG12780
000CDEI  230D                1279          BS    DID01X                                    MDG12790
         0000 0CE0I          1280  DIDOLB  EQU   *                                         MDG12800
000CE0I  4830 9532 =002216I  1281          LH    R3,LSTBLK         LAST BLOCK ?            MDG12810
000CE4I  2336                1282          BZS   DIDONL            NO - NONE LEFT          MDG12820
000CE6I  0A63                1283          AAR   R6,R3             YES                     MDG12830
000CE8I  0711                1284          XAR   R1,R1                                     MDG12840
000CEAI  4010 9528 =002216I  1285          STH   R1,LSTBLK                                 MDG12850
000CEEI  220C                1286          BS    DID02X                                    MDG12860
000CF0I  4130 FDFC =000AF0I  1287  DIDONL  BAL   R3,COPDVE          IS THIS TRUELY THE END ?? MDG12870
000CF4I  4300 8040 =000D38I  1288          B     DIDOEE            YES                     MDG12880
000CF8I  4080 952E =00222AI  1289  DID01X  STH   R8,DIDOIN         MDG12890
000CFCI  4880 9502 =002202I  1290          LH    R8,HEAD           SAVE THE INPUT PARMS.   MDG12900
000D00I  4080 9528 =00222CI  1291          STH   R8,DIDOIN+2                               MDG12910
000D04I  4880 94F8 =002200I  1292          LH    R8,CYL                                    MDG12920
000D08I  4080 9522 =00222EI  1293          STH   R8,DIDOIN+4                               MDG12930
000D0CI  4880 9524 =002234I  1294          LH    R8,DIDOOU+4       LOAD THE OUTPUT PARMS   MDG12940
000D10I  4080 94EC =002200I  1295          STH   R8,CYL            CYL                     MDG12950
000D14I  4880 951A =002232I  1296          LH    R8,DIDOOU+2       HEAD                    MDG12960
000D18I  4080 94E6 =002202I  1297          STH   R8,HEAD                                   MDG12970
000D1CI  4880 9510 =002230I  1298          LH    R8,DIDOOU         LOAD THE SECTOR         MDG12980
000D20I  4130 8A5E =001782I  1299          BAL   R3,LODAD          LOAD OUTPUT ADDRESSES   MDG12990
000D24I  E650 9274 =001F9CI  1300          LDAI  R5,WRTBUF                                 MDG13000
000D28I  0865                1301          LDAR  R6,R5                                     MDG13010
000D2AI  4830 94EC =00221AI  1302          LH    R3,CURBLK                                 MDG13020
000D2EI  0A63                1303          AAR   R6,R3                                     MDG13030
000D30I  4130 8542 =001276I  1304          BAL   R3,AVAILO         WRITE TO THE DISC       MDG13040
000D34I  4300 FF58 =000C90I  1305          B     DID011                                    MDG13050
         0000 0D38I          1306  DIDOEE  EQU   *                 SAVE THE DIRECTORY PARMS MDG13060
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000D38I  4080 94EE =00222AI  1307          STH   R8,DIDOIN                                                    MDG13070
000D3CI  4880 94C2 =002202I  1308          LH    R8,HEAD                                                      MDG13080
000D40I  4080 94E8 =00222CI  1309          STH   R8,DIDOIN+2                                                  MDG13090
000D44I  4880 94B8 =002200I  1310          LH    R8,CYL                                                       MDG13100
000D48I  4080 94E2 =00222EI  1311          STH   R8,DIDOIN+4                                                  MDG13110
000D4CI  4130 8A32 =001782I  1312          BAL   R3,LODAD                                                     MDG13120
000D50I  4830 9348 =00209CI  1313          LH    R3,DIRPRM           LOAD THE OUTPUT DIRECTORY IN BUFFER      MDG13130
000D54I  4030 94AA =002202I  1314          STH   R3,HEAD                                                      MDG13140
000D58I  4880 9342 =00209EI  1315          LH    R8,DIRPRM+2                                                  MDG13150
000D5CI  D320 F2EA =00004AI  1316          LB    R2,SOD              GET START                                MDG13160
000D60I  4020 949C =002200I  1317          STH   R2,CYL                                                       MDG13170
000D64I  4130 8CA8 =001A10I  1318          BAL   R3,FRSRW                                                     MDG13180
000D68I  4130 8C72 =0019DEI  1319          BAL   R3,WDFT                                                      MDG13190
000D6CI  DEA0 8B3F =0018AFI  1320          OC    RA,SEEK                                                      MDG13200
000D70I  4130 8C9C =001A10I  1321          BAL   R3,FRSRW                                                     MDG13210
000D74I  E650 9334 =0020ACI  1322          LDAI  R5,DIRECT                                                    MDG13220
000D78I  E660 942F =0021ABI  1323          LDAI  R6,DIRECT+255                                                MDG13230
000D7CI  4130 8C5E =0019DEI  1324          BAL   R3,WDFT                                                      MDG13240
000D80I  4130 8796 =00151AI  1325          BAL   R3,RDISC                                                     MDG13250
000D84I  4880 94AC =002234I  1326          LH    R8,DIDOOU+4           LOAD THE OUTPUT PARMS                MDG13260
000D88I  4080 9474 =002200I  1327          STH   R8,CYL                CYL                                      MDG13270
000D8CI  4880 94A2 =002232I  1328          LH    R8,DIDOOU+2           HEAD                                     MDG13280
000D90I  4080 946E =002202I  1329          STH   R8,HEAD                                                      MDG13290
000D94I  4880 9498 =002230I  1330          LH    R8,DIDOOU             SECTOR                                   MDG13300
000D98I  4130 83BC =001158I  1331          BAL   R3,DTRDON             WRITE EOV ON THE DISC                    MDG13310
000D9CI  4880 948E =00222EI  1332          LH    R8,DIDOIN+4           LOAD THE INPUT PARMS                     MDG13320
000DA0I  4080 945C =002200I  1333          STH   R8,CYL                CYL                                      MDG13330
000DA4I  4880 9484 =00222CI  1334          LH    R8,DIDOIN+2           HEAD                                     MDG13340
000DA8I  4080 9456 =002202I  1335          STH   R8,HEAD                                                      MDG13350
000DACI  4880 947A =00222AI  1336          LH    R8,DIDOIN             SECTOR                                   MDG13360
000DB0I  4130 8A46 =0017FAI  1337          BAL   R3,LIDAD              LOAD INPUT ADDRESSES                     MDG13370
000DB4I  4130 8C58 =001A10I  1338          BAL   R3,FRSRW                                                     MDG13380
000DB8I  4130 8C22 =0019DEI  1339          BAL   R3,WDFT               SET UP FILR                              MDG13390
000DBCI  DEA0 8AEF =0018AFI  1340          OC    RA,SEEK                                                      MDG13400
000DC0I  4130 8C4C =001A10I  1341          BAL   R3,FRSRW              SEEK                                     MDG13410
000DC4I  E650 92E4 =0020ACI  1342          LDAI  R5,DIRECT             SET UP FOR READ                          MDG13420
000DC8I  E660 93DF =0021ABI  1343          LDAI  R6,DIRECT+255                                                MDG13430
000DCCI  4130 8C0E =0019DEI  1344          BAL   R3,WDFT                                                      MDG13440
000DD0I  4130 8746 =00151AI  1345          BAL   R3,RDISC              READ INPUT DIRECTORY                     MDG13450
000DD4I  4300 FDFA =000BD2I  1346          B     DICOMN                                                       MDG13460
                             1347  ********************************************************************      MDG13470
                             1348  *                                                                  *      MDG13480
                             1349  *  I N I T                                                         *      MDG13490
                             1350  *                                                                  *      MDG13500
                             1351  ********************************************************************      MDG13510
                             1352  *                                                                  *      MDG13520
                             1353  *    THIS ROUTINE IS USED TO INITIALIZE A MAG TAPE - CASSETTE -     *      MDG13530
                             1354  *    OR DISC.                                                      *      MDG13540
                             1355  *          DEVICE            OPERATION PERFORMED                   *      MDG13550
                             1356  *                                                                  *      MDG13560
                             1357  *          MAG TAPE                                                *      MDG13570
                             1358  *          CASSETTE          THE TAPE IS CHECKED TO BE SURE        *      MDG13580
                             1359  *                            THE TAPE IS AT LOAD POINT.            *      MDG13590
                             1360  *                            1. A FILE MARK IS WRITTEN             *      MDG13600
                             1361  *                            2. BACKSPACE OVER THE FILE MARK       *      MDG13610
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                              *                              3. WRITE THE BOOT LOADER                *   MDG13620
                              *                              4. WRITE A FILE MARK                    *   MDG13630
                              *                                                                      *   MDG13640
                              *           DISC               1. VERIFY THAT START CYLINDER IS        *   MDG13650
                              *                                 ERROR FREE. (NO DEFECTIVE SECTOR     *   MDG13660
                              *                                 BITS SET)                            *   MDG13670
                              *                              2. ZERO OUT START CYLINDER.             *   MDG13680
                              *                              3. VERIFY THAT NEXT CYLINDER IS ERROR   *   MDG13690
                              *                                 FREE (NO DEFECTIVE SECTOR BITS SET)  *   MDG13700
                              *                                                                      *   MDG13710
                              *                              4. SECTOR ZERO, START CYLINDER IS INIT- *   MDG13720
                              *                                 IALIZED TO INDICATE THAT KNOWN DATA  *   MDG13730
                              *                                 IS ON THE DISC                       *   MDG13740
                              *                                                                      *   MDG13750
                              *                                                                      *   MDG13760
                              ************************************************************************   MDG13770
 000DD8I  4130 89A6 =001782I  INIT     BAL   R3,LODAD         LOAD DEVICE ADDRESSES                      MDG13780
 000DDCI  C510 0003                    CLHI  R1,3                                                        MDG13790
 000DE0I  4280 8104 =000EE8I           BL    INTAPE           INITIALIZE THE TAPE.                       MDG13800
 000DE4I  2441                         LIS   R4,1             SET THE EOJ                                MDG13810
 000DE6I  4040 9420 =00220AI           STH   R4,EOJFLG        FLAG                                       MDG13820
 000DEAI  DEB0 8ABE =0018ACI           OC    RB,STOP          STOP THE SELCH                             MDG13830
 000DEEI  DEC0 8ABE =0018B0I           OC    RC,RESET         NO - RESET THE CONTROLLER                  MDG13840
 000DF2I  0733                         XAR   R3,R3            NO                                         MDG13850
 000DF4I  9DA1                IDWT     SSR   RA,R1            WAIT FOR DISC ADD. INTER. = 0              MDG13860
 000DF6I  C310 0010                    THI   R1,X'10'                                                    MDG13870
 000DFAI  2033                         BNZS  IDWT                                                        MDG13880
 000DFCI  D310 F24A =00004AI           LB    R1,SOD           GET START                                  MDG13890
 000E00I  4010 93FC =002200I           STH   R1,CYL                                                      MDG13900
 000E04I  4130 8BD6 =0019DEI           BAL   R3,WDFT                                                     MDG13910
 000E08I  DEA0 8AA5 =0018B1I           OC    RA,RESTOR        RESTORE THE FILE                           MDG13920
 000E0CI  4130 8C00 =001A10I           BAL   R3,FRSRW                                                    MDG13930
 000E10I  0700                         XAR   R0,R0                                                       MDG13940
 000E12I  2410                         LIS   R1,0                                                        MDG13950
 000E14I  2422                         LIS   R2,2                                                        MDG13960
 000E16I  C830 00FE                    LHI   R3,X'FE'                                                    MDG13970
 000E1AI  4001 917E =001F9CI  INITZF   STH   R0,WRTBUF(R1)                                               MDG13980
 000E1EI  C110 FFF8 =000E1AI           BXLE  R1,INITZF                                                   MDG13990
 000E22I  4130 8BB8 =0019DEI  INITSK   BAL   R3,WDFT                                                     MDG14000
 000E26I  DEA0 8A85 =0018AFI           OC    RA,SEEK          SEEK                                       MDG14010
 000E2AI  4130 8BE2 =001A10I           BAL   R3,FRSRW                                                    MDG14020
 000E2EI  2430                         LIS   R3,0             SET HEAD TO                                MDG14030
 000E30I  4030 93CE =002202I           STH   R3,HEAD          ZERO                                       MDG14040
 000E34I  0788                SRCK1X   XAR   R8,R8            SET THE SECTOR TO ZERO                     MDG14050
 000E36I  4130 8BA4 =0019DEI  SRCK1    BAL   R3,WDFT                                                     MDG14060
 000E3AI  4130 8BF8 =001A36I           BAL   R3,RCHK          READ CHECK THE SECTOR                      MDG14070
 000E3EI  4830 93B2 =0021F4I           LH    R3,CONSTA        GET THE STATUS                             MDG14080
 000E42I  C330 0020                    THI   R3,X'20'                                                    MDG14090
 000E46I  4230 8096 =000EE0I           BNZ   PNGS             DEFECTIVE TRACK BRANCH                     MDG14100
 000E4AI  E650 914E =001F9CI           LDAI  R5,WRTBUF                                                   MDG14110
 000E4EI  0865                         LDAR  R6,R5                                                       MDG14120
*000E50I  CA60 00FF                    AAI   R6,X'FF'                                                    MDG14130
 000E54I  4130 8B86 =0019DEI           BAL   R3,WDFT                                                     MDG14140
 000E58I  4130 86C4 =001520I           BAL   R3,WDISC                                                    MDG14150
          0000 0E5CI          SRCK2    EQU   *                                                           MDG14160
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000E5CI  4830 9364 =0021C4I   1417          LH    R3,TRKDFN          LOAD TRKDEN                              MDG14170
000E60I  2681                 1418          AIS   R8,1              INCRIMENT SECTOR                         MDG14180
000E62I  4583 F6FE =000564I   1419          CLH   R8,SECTAB(R3)      MORE SECTORS ?                           MDG14190
000E66I  2333                 1420          BES   SRCK4              NO                                       MDG14200
000E68I  4300 FFCA =000E36I   1421          B     SRCK1                                                       MDG14210
000E6CI  4820 9392 =002202I   1422  SRCK4   LH    R2,HEAD                                                    MDG14220
000E70I  4523 F6FE =000572I   1423          CLH   R2,HDTAB(R3)       MAXIMUM?                                 MDG14230
*000F74I 2338                 1424          BE    SRCEND             YES - FINISHED                           MDG14240
000E76I  4800 9388 =002202I   1425          LH    R0,HEAD            LOAD HEAD                                MDG14250
000E7AI  2601                 1426          AIS   R0,1               INCRIMENT                                MDG14260
000E7CI  4000 9382 =002202I   1427          STH   R0,HEAD            SAVE                                     MDG14270
000E80I  4300 FFB0 =000E34I   1428          B     SRCK1X                                                      MDG14280
000E84I  4810 9378 =002200I   1429  SRCEND  LH    R1,CYL             GET CURRENT                              MDG14290
000E88I  D410 F1BF =00004BI   1430          CLB   R1,SOP             FIRST PROGRAM CYLINDER CHECKED??         MDG14300
*000E8CI 2337                 1431          BE    WINIFO             YES                                      MDG14310
000E8EI  D310 F1B9 =00004BI   1432          LB    R1,SOP             GET FIRST PROGRAM CYLINDER               MDG14320
000E92I  4010 936A =002200I   1433          STH   R1,CYL             MAKE CURRENT                             MDG14330
000E96I  4300 FF88 =000E22I   1434          B     INITSK             CHECK IT                                 MDG14340
000E9AI  D310 F1AC =00004AI   1435  WINIFO  LB    R1,SOD             GET START                                MDG14350
000E9EI  4010 935E =002200I   1436          STH   R1,CYL             MAKE CURRENT                             MDG14360
000EA2I  0788                 1437          XAR   R8,R8              SET SECTOR TO ZERO                       MDG14370
000EA4I  4080 935A =002202I   1438          STH   R8,HEAD            SET HEAD TO ZERO                         MDG14380
000EA8I  4130 8B32 =0019DEI   1439          BAL   R3,WDFT                                                     MDG14390
000EACI  DEA0 89FF =0018AFI   1440          OC    RA,SEEK            SEEK                                     MDG14400
000EB0I  4130 8B5C =001A10I   1441          BAL   R3,FRSRW           WAIT                                     MDG14410
000EB4I  C810 EEEE            1442          LHI   R1,X'EEEE'                                                  MDG14420
000EB8I  4010 90E0 =001F9CI   1443          STH   R1,WRTBUF          INIT. THE FIRST SECTOR                   MDG14430
000EBCI  4010 90DE =001F9EI   1444          STH   R1,WRTBUF+2                                                 MDG14440
000EC0I  4010 90DC =001FA0I   1445          STH   R1,WRTBUF+4                                                 MDG14450
000EC4I  4010 90DA =001FA2I   1446          STH   R1,WRTBUF+6                                                 MDG14460
000EC8I  D330 F17F =00004BI   1447          LB    R3,SOP             GET START                                MDG14470
000ECCI  D230 90D9 =001FA9I   1448          STB   R3,WRTBUF+13                                                MDG14480
000ED0I  4130 8B0A =0019DEI   1449          BAL   R3,WDFT                                                     MDG14490
000ED4I  4130 8648 =00152CI   1450          BAL   R3,WDISC           WRITE TO THE DISC                        MDG14500
000ED8I  4130 8AE8 =0019C4I   1451          BAL   R3,LOKOUT          LOCK THE OUTPUT DEVICE                   MDG14510
000EDCI  4300 87E0 =0016C0I   1452          B     PEOJ                                                        MDG14520
000EE0I  C810 00E2            1453  PNGS    LHI   R1,X'E2'           PRINT DISC PACK UNUSABLE                 MDG14530
000EE4I  4300 8DEC =001CD4I   1454          B     ERRA                                                        MDG14540
         0000 0EE8I           1455  INTAPE  EQU   *                                                           MDG14550
000EE8I  9DA1                 1456          SSR   RA,R1                                                       MDG14560
000EEAI  C310 0020            1457          THI   R1,X'20'                                                    MDG14570
000EEEI  2135                 1458          BNZS  INTP1                                                       MDG14580
000EF0I  C810 00E1            1459          LHI   R1,X'E1'                                                    MDG14590
000EF4I  4300 8DDC =001CD4I   1460          B     ERRA                                                        MDG14600
         0000 0EF8I           1461  INTP1   EQU   *                                                           MDG14610
000EF8I  2441                 1462          LIS   R4,1                                                        MDG14620
000EFAI  4040 930C =00220AI   1463          STH   R4,EOJFLG                                                   MDG14630
000EFEI  DEA0 89A8 =0018AAI   1464          OC    RA,DISARL                                                   MDG14640
000F02I  DEA0 89A5 =0018ABI   1465          OC    RA,WFM             WRITE A FILE MARK                        MDG14650
000F06I  9DA1                 1466          SSR   RA,R1                                                       MDG14660
000F08I  C310 0010            1467          THI   R1,X'10'                                                    MDG14670
000F0CI  4230 871C =00162CI   1468          BNZ   NORUN                                                       MDG14680
000F10I  4100 8A6C =00198CI   1469          BAL   R0,NOMOTN          WAIT FOR NO MOTION                       MDG14690
000F14I  DEA0 8995 =0018ADI   1470          OC    RA,BKSP            BACKSPACE OVER THE                       MDG14700
000F18I  4100 8A64 =00198CI   1471          BAL   R0,NOMOTN          WAIT FOR NO MOTION                       MDG14710
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000F1CI  E650 8DE6 =001D06I  1472          LDAI  R5,MTBOOT                                          MDG14720
000F20I  E660 8E31 =001D55I  1473          LDAI  R6,MTBOOT+79                                       MDG14730
000F24I  4130 8614 =00153CI  1474          BAL   R3,WRTPB                                           MDG14740
000F28I  E650 8E2E =001D5AI  1475          LDAI  R5,MTLOADS          SET THE START ADDRESS           MDG1475
000F2CI  E660 8F99 =001EC9I  1476          LDAI  R6,MTLOADE          SET THE END ADDRESS             MDG1476
000F30I  4130 8608 =00153CI  1477          BAL   R3,WRTPR                                           MDG14770
000F34I  4130 8A8C =0019C4I  1478          BAL   R3,LOKOUT           LOCK THE OUTPUT DEVICE          MDG14780
000F38I  4300 876C =0016A8I  1479          B     EOV                                                MDG14790
                             1480  ********************************************************************MDG14800
                             1481  *                                                                  *MDG14810
                             1482  *  C R E A T E                                                     *MDG14820
                             1483  *                                                                  *MDG14830
                             1484  ********************************************************************MDG14840
                             1485  *                                                                  *MDG14850
                             1486  *   THIS ROUTINE WILL COPY A PROGRAM FROM MEMORY TO THE SPECIFIED   *MDG14860
                             1487  *   OUTPUT DEVICE. THE OPTION "LIMITS" IS USED TO SET THE BOUNDRIES *MDG14870
                             1488  *   FOR THE PROGRAM TO BE COPIED. THE PDB IS FORMATTED WITH THE     *MDG14880
                             1489  *   OPTIONS "SEQNAM" - "LIMITS" - "LOW" - "HIGH" - AND THE CHKSUM  *MDG14890
                             1490  *   IS CALCULATED AND PLACED IN THE BLOCK. THE PDB FOLLOWED BY THE  *MDG14900
                             1491  *   PROGRAM IS COPIED TO THE OUTDEV MEDIA.                          *MDG14910
000F40I                      1492          ALIGN 8                                                    MDG14920
         0000 0F40I          1493  CREA    EQU   *                                                    MDG14930
000F40I  2430                1494          LIS   R3,0                SET THE CREATE INDICATOR        MDG14940
000F42I  5030 928E =0021D4I  1495          STA   R3,CPYFLG           SAVE RETURN                     MDG14950
000F46I  4800 901E =001F68I  1496          LH    R0,SEQNAM                                            MDG14960
000F4AI  C500 2020           1497          CLHI  R0,X'2020'                                         MDG14970
000F4EI  4330 81FE =001150I  1498          BE    CREAER                                             MDG14980
000F52I  C500 3030           1499          CLHI  R0,X'3030'          SEQNAM = 0                     MDG14990
000F56I  2137                1500          BNES  CREA1               NO                             MDG15000
000F58I  D300 900E =001F6AI  1501          LB    R0,SEQNAM+2         SECOND HW = 0                  MDG15010
000F5CI  C500 0030           1502          CLHI  R0,X'30'                                           MDG15020
000F60I  4330 81EC =001150I  1503          BE    CREAER                                             MDG15030
000F64I  C830 0012           1504  CREA1   LHI   R3,18                                              MDG15040
000F68I  2450                1505          LIS   R5,0                SET FLAG                       MDG15050
000F6AI  5800 8F5E =001ECCI  1506          LDA   R0,LOW                                             MDG15060
000F6EI  C840 00F0           1507  CREA3   LHI   R4,X'F0'                                           MDG15070
000F72I  114C                1508          SLLS  R4,12                                              MDG15080
000F74I  0440                1509          NAR   R4,R0                                              MDG15090
000F76I  1048                1510          SRLS  R4,8                                               MDG15100
000F78I  1048                1511          SRLS  R4,8                                               MDG15110
000F7AI  D243 8FEA =001F68I  1512          STB   R4,PDB(R3)                                         MDG15120
000F7EI  2631                1513          AIS   R3,1                                               MDG15130
000F80I  C840 FF00           1514          LHI   R4,X'FF00'                                         MDG15140
000F84I  0440                1515          NAR   R4,R0                                              MDG15150
000F86I  1048                1516          SRLS  R4,8                                               MDG15160
000F88I  D243 8FDC =001F68I  1517          STB   R4,PDB(R3)                                         MDG15170
000F8CI  2631                1518          AIS   R3,1                                               MDG15180
000F8EI  C840 00FF           1519          LHI   R4,X'00FF'                                         MDG15190
000F92I  0440                1520          NAR   R4,R0                                              MDG15200
000F94I  D243 8FD0 =001F68I  1521          STB   R4,PDB(R3)                                         MDG15210
000F98I  2631                1522          AIS   R3,1                                               MDG15220
000F9AI  C550 0000           1523          CLHI  R5,0                                               MDG15230
000F9EI  2136                1524          BNES  CRECHK                                             MDG15240
000FA0I  245F                1525          LIS   R5,15                                              MDG15250
000FA2I  5800 8F2A =001ED0I  1526          LDA   R0,HIGH                                            MDG15260
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 000FA6I  4300 FFC4 =000F6EI             B     CREA3
 000FAAI  2450                 CRECHK    LIS   R5,0           CALCULATE THE
 000FACI  5840 8F1C =001ECCI             LDA   R4,LOW         CHKSUM BYTE
 000FB0I  D324 0000            CHK1      LB    R2,0(R4)
 000FB4I  0752                           XAR   R5,R2
 000FB6I  2641                           AIS   R4,1
 000FB8I  5540 8F14 =001ED0I             CLA   R4,HIGH
 000FBCI  2086                           BLS   CHK1
 000FBEI  D324 0000                      LB    R2,0(R4)
 000FC2I  0752                           XAR   R5,R2
 000FC4I  D253 8FA0 =001F68I             STB   R5,PDB(R3)
 000FC8I  2631                           AIS   R3,1
 000FCAI  2455                           LIS   R5,5
 000FCCI  D343 8F98 =001F68I             LB    R4,PDB(R3)     LOAD EXTENSION DELIMITER
 000FD0I  C540 002E                      CLHI  R4,C'.'        EXISTS?
*000FD4I  2133                           BNE   CHK2           NO
 000FD6I  2752                           SIS   R5,2           SET CLEAR COUNT
 000FD8I  2632                           AIS   R3,2           SET POINTER
 000FDAI  2440                 CHK2      LIS   R4,0
 000FDCI  D243 8F88 =001F68I             STB   R4,PDB(R3)
 000FE0I  2631                           AIS   R3,1
 000FE2I  2751                           SIS   R5,1
 000FE4I  2035                           BNZS  CHK2
 000FE6I  4130 8798 =001782I             BAL   R3,LODAD       PERFORM TESTS IN THE ROUTINE
 000FEAI  48D0 8EEA =001ED8I             LH    RD,OUTDEV      GET DEVICE INDICATOR
 000FEEI  C5D0 0003                      CLHI  RD,X'03'       DISC ?
 000FF2I  4380 8046 =00103CI             BNL   CREDIS         YES
 000FF6I  4130 8788 =001782I             BAL   R3,LODAD
 000FFAI  9DA1                           SSR   RA,R1
 000FFCI  C310 0020                      THI   R1,X'20'
 001000I  2335                           BZS   WRTPDB
 001002I  C810 00E0                      LHI   R1,X'E0'       ERROR ILLEGAL BOT OR EOT
 001006I  4300 8CCA =001CD4I             B     ERRA           AT THE START OF AN OPERATION
          0000 100AI           WRTPDB    EQU   *
 00100AI  2441                           LIS   R4,1           SET THE EOJ
 00100CI  4040 91FA =00220AI             STH   R4,EOJFLG      FLAG
 001010I  E650 8F54 =001F68I             LDAI  R5,PDB
 001014I  E660 8F83 =001F9BI             LDAI  R6,PDB+51      *                   R04
 001018I  4130 8520 =00153CI             BAL   R3,WRTPR
 00101CI  58D0 8EAC =001ECCI             LDA   RD,LOW
 001020I  58E0 8EAC =001ED0I             LDA   RE,HIGH
 001024I  4130 884A =001872I   WRT1Y     BAL   R3,STBKAD
 001028I  4130 8510 =00153CI             BAL   R3,WRTPR
 00102CI  0844                           LDAR  R4,R4
 00102EI  2235                           BZS   WRT1Y
 001030I  4130 8990 =0019C4I             BAL   R3,LOKOUT      LOCK THE OUTPUT DEVICE
 001034I  4130 8998 =0019D0I             BAL   R3,ZSEQ
 001038I  4300 866C =0016A8I             B     EOV
          0000 103CI           CREDIS    EQU   *
 00103CI  2441                           LIS   R4,1
 00103EI  4040 91C8 =00220AI             STH   R4,EOJFLG
 001042I  4130 833E =001384I             BAL   R3,UPDTXX
 001046I  4130 8738 =001782I             BAL   R3,LODAD
 00104AI  D330 EFFC =00004AI             LB    R3,SOD         GET START
 00104EI  4030 91AE =002200I             STH   R3,CYL
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 001052I  0788                          XAR   R8,R8            SET SECTOR TO ZERO                  MDG15820
 001054I  4130 8986 =0019DEI            BAL   R3,WDFT          SET UP FILE                         MDG15830
 001058I  DEA0 8853 =0018AFI            OC    RA,SEEK          SEEK                                MDG15840
 00105CI  4130 89B0 =001A10I            BAL   R3,FRSRW         WAIT                                MDG15850
 001060I  2430                          LIS   R3,0             ZERO                                MDG15860
 001062I  4030 919C =002202I            STH   R3,HEAD          OUT HEAD                            MDG15870
 001066I  E650 9042 =0020ACI            LDAI  R5,DIRECT        SET UP ADDRESSES                    MDG15880
 00106AI  0865                          LDAR  R6,R5            FOR THE SELCH                       MDG15890
*00106CI  CA60 00FF                     AAI   R6,X'FF'                                             MDG15900
 001070I  4130 896A =0019DEI            BAL   R3,WDFT                                              MDG15910
 001074I  4130 84A2 =00151AI            BAL   R3,RDISC         GO READ THE DISC                    MDG15920
 001078I  C830 EEEE                     LHI   R3,X'EEEE'       SEE IF THE DISC WAS INITIALIZED ?   MDG15930
 00107CI  4530 902C =0020ACI            CLH   R3,DIRECT                                            MDG15940
 001080I  2335                          BES   CREA4                                                MDG15950
 001082I  C810 00E0                     LHI   R1,X'E0'                                             MDG15960
 001086I  4300 8C4A =001CD4I            B     ERRA                                                 MDG15970
 00108AI  0722                  CREA4   XAR   R2,R2                                                MDG15980
 00108CI  D332 901E =0020AEI    CREA6   LB    R3,DIRECT+2(R2)                                      MDG15990
 001090I  C530 0000                     CLHI  R3,X'00'         DIRECTORY                           MDG16000
 001094I  4330 805C =0010F4I            BE    AVAIL            FOR AN                              MDG16010
 001098I  D350 8ECE =001F6AI            LB    R5,SEQNAM+2      GET THE THIRD DIGIT                 MDG16020
 00109CI  0553                          CLAR  R5,R3            EQUAL ?                             MDG16030
 00109EI  2138                          BNES  CREAXY           NO                                  MDG16040
 0010A0I  4832 9008 =0020ACI            LH    R3,DIRECT(R2)    GET THE FIRST TWO DIGITS            MDG16050
 0010A4I  4850 8EC0 =001F68I            LH    R5,SEQNAM                                            MDG16060
 0010A8I  0553                          CLAR  R5,R3            EQUAL ?                             MDG16070
 0010AAI  4330 81B8 =001266I            BE    NUMTHERE                                             MDG16080
          0000 10AEI            CREAXY  EQU   *                                                    MDG16090
 0010AEI  2628                          AIS   R2,8             EMPTY BLOCK                         MDG16100
 0010B0I  C520 0100                     CLHI  R2,X'100'        REACH THE END ?                     MDG16110
 0010B4I  4230 FFD4 =00108CI            BNE   CREA6            NO                                  MDG16120
 0010B8I  2681                  NXTDIR  AIS   R8,1             INCREMENT SECTOR                    MDG16130
 0010BAI  4830 9150 =00220EI            LH    R3,CUTRKDEN      LOAD                                MDG16140
 0010BEI  4583 F4A2 =000564I            CLH   R8,SECTAB(R3)    MORE SECTORS THIS TRACK ?           MDG16150
*0010C2I  233D                          BE    NXDRHD           NO                                  MDG16160
 0010C4I  E650 8FE4 =0020ACI    NXREA1  LDAI  R5,DIRECT        YES                                 MDG16170
 0010C8I  0865                          LDAR  R6,R5            SET UP FOR READ                     MDG16180
*0010CAI  CA60 00FF                     AAI   R6,X'FF'                                             MDG16190
 0010CEI  4130 890C =0019DEI            BAL   R3,WDFT                                              MDG16200
 0010D2I  4130 8444 =00151AI            BAL   R3,RDISC         GO READ THE DISC                    MDG16210
 0010D6I  2420                  NXDR1   LIS   R2,0                                                 MDG16220
 0010D8I  4300 FFB0 =00108CI            B     CREA6            SEARCH                              MDG16230
                                *                                                                  MDG16240
 0010DCI  4820 9122 =002202I    NXDRHD  LH    R2,HEAD          HEAD                                MDG16250
 0010E0I  4523 F48E =000572I            CLH   R2,HDTAB(R3)     MAXIMUM?                            MDG16260
 0010E4I  4330 8B9C =001C84I            BE    DIRFUL           YES - DIRECTORY FULL                MDG16270
 0010E8I  2621                          AIS   R2,1             NO SET HEAD =+1                     MDG16280
 0010EAI  4020 9114 =002202I            STH   R2,HEAD          STORE                               MDG16290
 0010EEI  0788                          XAR   R8,R8            SET SECTOR TO ZERO                  MDG16300
 0010F0I  4300 FFD0 =0010C4I            B     NXREA1           GO READ                             MDG16310
 0010F4I  4830 910A =002202I    AVAIL   LH    R3,HEAD                                              MDG16320
 0010F8I  4030 8FA0 =00209CI            STH   R3,DIRPRM        SAVE DIRECTORY INFO.                MDG16330
 0010FCI  4080 8F9E =00209EI            STH   R8,DIRPRM+2                                          MDG16340
 001100I  4882 8FAC =0020B0I            LH    R8,DIRECT+4(R2)  GET THE CYL # FROM THE DIRECTORY    MDG16350
 001104I  4080 90F8 =002200I            STH   R8,CYL                                               MDG16360
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001108I  0382 8FA7 =0020B3I  1637            LB    R8,DIRECT+7(R2)     GET THE HEAD # FROM THE DIRECTORY      MDG16370
00110CI  4080 90F2 =002202I  1638            STH   R8,HEAD                                                  MDG16380
001110I  0382 8F9E =0020B2I  1639            LB    R8,DIRECT+6(R2)     GET THE SECTOR # FROM THE DIRECTORY    MDG16390
001114I  4020 8F88 =0020A0I  1640            STH   R2,DIRPRM+4                                              MDG16400
001118I  E650 8E4C =001F68I  1641            LDAI  R5,PDB              SET UP TO WRITE THE PDB              MDG16410
00111CI  E660 8E7B =001F9BI  1642            LDAI  R6,PDB+51           TO THE DISK                  R04     MDG16420
001120I  4130 8152 =001276I  1643            BAL   R3,AVAIL0                                                MDG16430
001124I  5830 90AC =0021D4I  1644            LDA   R3,CPYFLG           GET THE COPY FLAG - SET ?            MDG16440
001128I  0233                1645            BNZR  R3                  YES - COPY RETURN                    MDG16450
00112AI  58D0 8D9E =001ECCI  1646            LDA   RD,LOW              LOAD START ADDRESS                   MDG16460
00112EI  58E0 8D9E =001ED0I  1647            LDA   RE,HIGH             LOAD END ADDRESS                     MDG16470
001132I  4130 873C =001872I  1648  DTRIP     BAL   R3,STBKAD           GET BLOCK ADDRESSES                  MDG16480
001136I  4040 90D6 =002210I  1649            STH   R4,CUMAXCYL                                              MDG16490
00113AI  4130 8138 =001276I  1650            BAL   R3,AVAIL0           WRITE                                MDG16500
00113EI  4840 90CE =002210I  1651            LH    R4,CUMAXCYL                                              MDG16510
001142I  2238                1652            BZS   DTRIP                                                    MDG16520
001144I  4130 8010 =001158I  1653            BAL   R3,DTRDON                                                MDG16530
001148I  4130 8884 =0019D0I  1654            BAL   R3,ZSEQ                                                  MDG16540
00114CI  4300 8570 =0016C0I  1655            B     PEOJ                                                     MDG16550
001150I  C800 4432           1656  CREAER    LHI   R0,C'D2'                                                 MDG16560
001154I  4300 8AB8 =001C10I  1657            B     ERROR                                                    MDG16570
                             1658  *   AT THIS TIME THE DIRECTORY MUST BE UPDATED                          MDG16580
                             1659  *       1. THE SEQUENCE NUMBER MUST BE STORED IN THE DIRECTORY          MDG16590
                             1660  *                                                                      MDG16600
                             1661  *       2. THE CURRENT SECTOR, HEAD AND CYLINDER MUST BE STORED IN      MDG16610
                             1662  *          THE NEXT BLOCK.                                             MDG16620
     0000 1158I              1663  DTRDON    EQU   *                                                      MDG16630
001158I  5030 907C =0021D8I  1664            STA   R3,DTDONE           SAVE THE ADDRESS                     MDG16640
00115CI  4130 8864 =0019C4I  1665            BAL   R3,LOKOUT           LOCK THE OUTPUT DEVICE               MDG16650
001160I  4830 909C =002200I  1666            LH    R3,CYL              SAVE THE CURRENT                     MDG16660
001164I  4030 8F3C =0020A4I  1667            STH   R3,NXTPRM           CYLINDER                             MDG16670
001168I  4830 9096 =002202I  1668            LH    R3,HEAD             HEAD                                 MDG16680
00116CI  4030 8F36 =0020A6I  1669            STH   R3,NXTPRM+2                                              MDG16690
001170I  4080 8F34 =0020A8I  1670            STH   R8,NXTPRM+4         SECTOR                               MDG16700
001174I  4830 8F24 =00209CI  1671            LH    R3,DIRPRM           RETRIEVE THE DIRECTROY PARAMETERS    MDG16710
001178I  4030 9086 =002202I  1672            STH   R3,HEAD             HEAD                                 MDG16720
00117CI  4880 8F1E =00209EI  1673            LH    R8,DIRPRM+2         SECTOR                               MDG16730
001180I  D320 EEC6 =00004AI  1674            LB    R2,SOD              GET START                            MDG16740
001184I  4020 9078 =002200I  1675            STH   R2,CYL              CYLINDER                             MDG16750
001188I  4820 8F14 =0020A0I  1676            LH    R2,DIRPRM+4         DIRECTORY INCREMENT                  MDG16760
00118CI  0842                1677            LDAR  R4,R2               COPY INCREMENT                       MDG16770
00118EI  D330 8DD6 =001F68I  1678            LB    R3,SEQNAM                                                MDG16780
001192I  D234 8F16 =0020ACI  1679            STB   R3,DIRECT(R4)       STORE THE                            MDG16790
001196I  2641                1680            AIS   R4,1                SEQUENCE                             MDG16800
001198I  D330 8DCD =001F69I  1681            LB    R3,SEQNAM+1         NUMBER                               MDG16810
00119CI  D234 8F0C =0020ACI  1682            STB   R3,DIRECT(R4)       IN THE DIRECTORY                     MDG16820
0011A0I  2641                1683            AIS   R4,1                                                     MDG16830
0011A2I  D330 8DC4 =001F6AI  1684            LB    R3,SEQNAM+2                                              MDG16840
0011A6I  D234 8F02 =0020ACI  1685            STB   R3,DIRECT(R4)                                            MDG16850
0011AAI  2628                1686  UPDTDR    AIS   R2,8                NO - BUMP POINTER TO NEXT BLOCK      MDG16860
0011ACI  C520 0100           1687            CLHI  R2,X'100'           > 100                                MDG16870
0011B0I  4330 8040 =0011F4I  1688            BE    NEEDNW              YES - NEED ANOTHER SECTOR            MDG16880
0011B4I  4840 8EEC =0020A4I  1689            LH    R4,NXTPRM           NO                                   MDG16890
0011B8I  4042 8EF4 =0020B0I  1690            STH   R4,DIRECT+4(R2)     STORE NEXT AVAIL. SECTOR             MDG16900
0011BCI  4840 8EE8 =0020A8I  1691            LH    R4,NXTPRM+4                                              MDG16910
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0011C0I  D242 8EEE =0020B2I  1692           STB   R4,DIRECT+6(R2)                                  MDG16920
0011C4I  4840 8EDE =0020A6I  1693           LH    R4,NXTPRM+2                                      MDG16930
0011C8I  D242 8EE7 =0020B3I  1694           STB   R4,DIRECT+7(R2)                                  MDG16940
         0000 11CCI          1695  STORDR   EQU   *                                                MDG16950
0011CCI  4130 8840 =001A10I  1696           BAL   R3,FRSRW                                         MDG16960
0011D0I  4130 880A =0019DEI  1697           BAL   R3,WDFT                                          MDG16970
0011D4I  DEA0 86D7 =0018AFI  1698           OC    RA,SEEK                                          MDG16980
0011D8I  4130 8834 =001A10I  1699           BAL   R3,FRSRW                                         MDG16990
0011DCI  E650 8ECC =0020ACI  1700           LDAI  R5,DIRECT                                        MDG17000
0011E0I  0865                1701           LDAR  R6,R5                                            MDG17010
*0011E2I  CA60 00FF          1702           AAI   R6,X'FF'                                         MDG17020
0011E6I  4130 87F4 =0019DEI  1703           BAL   R3,WDFT                                          MDG17030
0011EAI  4130 8332 =001520I  1704           BAL   R3,WDISC                                         MDG17040
0011EEI  5830 8FE6 =0021D8I  1705           LDA   R3,DTDONE          GET ADDRESS                   MDG17050
0011F2I  0303                1706           BR    R3                 RETURN                        MDG17060
         0000 11F4I          1707  NEEDNW   EQU   *                                                MDG17070
0011F4I  4130 8818 =001A10I  1708           BAL   R3,FRSRW                                         MDG17080
0011F8I  4130 87E2 =0019DEI  1709           BAL   R3,WDFT                                          MDG17090
0011FCI  DEA0 86AF =0018AFI  1710           OC    RA,SEEK                                          MDG17100
0012001  4130 880C =001A10I  1711           BAL   R3,FRSRW                                         MDG17110
0012041  E650 8EA4 =0020ACI  1712           LDAI  R5,DIRECT          WRITE                         MDG17120
0012081  0865                1713           LDAR  R6,R5              DIRECTORY                     MDG17130
*00120AI  CA60 00FF          1714           AAI   R6,X'FF'           TO THE DISC                   MDG17140
00120EI  4130 87CC =0019DEI  1715           BAL   R3,WDFT                                          MDG17150
0012121  4130 830A =001520I  1716           BAL   R3,WDISC                                         MDG17160
                             1717  *  GET NEXT SECTOR OF DIRECTORY AND LINK IT                     MDG17170
0012161  2681                1718           AIS   R8,1               INCREMENT SECTOR              MDG17180
0012181  4830 8FF2 =00220EI  1719           LH    R3,CUTRKDEN        LOAD                          MDG17190
00121CI  4583 F344 =000564I  1720           CLH   R8,SECTAB(R3)      ANY SECTORS LEFT              MDG17200
*0012201  233D                1721           BE    NEDNW1             NO                            MDG17210
0012221  E650 8E86 =0020ACI  1722           LDAI  R5,DIRECT                                        MDG17220
0012261  0865                1723           LDAR  R6,R5                                            MDG17230
*0012281  CA60 00FF          1724           AAI   R6,X'FF'                                         MDG17240
00122CI  4130 87AE =0019DEI  1725           BAL   R3,WDFT                                          MDG17250
0012301  4130 82E6 =00151AI  1726           BAL   R3,RDISC           READ DISC                     MDG17260
0012341  2528                1727           LCS   R2,8                                             MDG17270
0012361  4300 FF70 =0011AAI  1728           B     UPDTDR                                           MDG17280
00123AI  4820 8FC4 =002202I  1729  NEDNW1   LH    R2,HEAD                                          MDG17290
00123EI  4523 F330 =000572I  1730           CLH   R2,HDTAB(R3)       MAXIMUM?                      MDG17300
0012421  4330 847A =0016C0I  1731           BE    PEOJ                                             MDG17310
0012461  2621                1732           AIS   R2,1                                             MDG17320
0012481  4020 8FB6 =002202I  1733           STH   R2,HEAD                                          MDG17330
00124CI  0788                1734           XAR   R8,R8                                            MDG17340
00124EI  E650 8E5A =0020ACI  1735           LDAI  R5,DIRECT                                        MDG17350
0012521  0865                1736           LDAR  R6,R5                                            MDG17360
*0012541  CA60 00FF          1737           AAI   R6,X'FF'                                         MDG17370
0012581  4130 8782 =0019DEI  1738           BAL   R3,WDFT                                          MDG17380
00125CI  4130 82BA =00151AI  1739           BAL   R3,RDISC           READ DISC                     MDG17390
0012601  2528                1740           LCS   R2,8                                             MDG17400
0012621  4300 FF44 =0011AAI  1741           B     UPDTDR                                           MDG17410
0012661  C800 4434           1742  NUMTHERE LHI   R0,C'D4'                                         MDG17420
00126AI  4300 89A2 =001C10I  1743           B     ERROR                                            MDG17430
                             1744  **********************************************************       MDG17440
                             1745  *                                                        *       MDG17450
                             1746  *                                                        *       MDG17460
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                                1747  *  A V A I L R                                                    *   MDG17470
                                1748  *                                                                 *   MDG17480
                                1749  *  A V A I L W   - - (AVAIL0)                                     *   MDG17490
                                1750  *                                                                 *   MDG17500
                                1751  *   THIS ROUTINE WILL READ OR WRITE A PROGRAM BLOCK FROM THE       *   MDG17510
                                1752  *   DISC AND WILL RETURN WITH SECTOR-HEAD-CYLINDER UPDATED TO THE  *   MDG17520
                                1753  *   NEXT SECTOR.                                                  *   MDG17530
                                1754  *                                                                 *   MDG17540
                                1755  *       INPUT - R3 = RETURN ADDRESS                               *   MDG17550
                                1756  *               R8 = SECTOR TO BE READ                            *   MDG17560
                                1757  *              CYL = CYLINDER TO BE READ                          *   MDG17570
                                1758  *             HEAD = HEAD TO BE READ                              *   MDG17580
                                1759  *               R5 = START ADDRESS OF THE BUFFER                  *   MDG17590
                                1760  *               R6 = END ADDRESS OF THE BUFFER                    *   MDG17600
                                1761  *                                                                 *   MDG17610
                                1762  *       OUTPUT: R5 = SAME                                         *   MDG17620
                                1763  *               R6 = SAME                                         *   MDG17630
                                1764  *               R8 = NEXT SECTOR                                  *   MDG17640
                                1765  *              CYL = NEXT CYL (IF NEEDED)                         *   MDG17650
                                1766  *             HEAD = NEXT HEAD (IF NEEDED)                        *   MDG17660
                                1767  *        IF A READ:= BUFFER AREA SPECIFIED BY R5 & R6 = DATA READ  *   MDG17670
                                1768  *                                                                 *   MDG17680
                                1769  ***********************************************************************   MDG17690
      0000 126EI                1770  AVAILR   EQU   *                                                      MDG17700
00126EI 242F                    1771           LIS   R2,15              INDICATE READ                      MDG17710
001270I 4020 8FAC =002220I      1772           STH   R2,AVAFLG                                             MDG17720
001274I 2304                    1773           BS    AVALL1                                                MDG17730
      0000 1276I                1774  AVAIL0   EQU   *                                                      MDG17740
      0000 1276I                1775  AVAILW   EQU   *                                                      MDG17750
001276I 2420                    1776           LIS   R2,0               INDICATE WRITE                     MDG17760
001278I 4020 8FA4 =002220I      1777           STH   R2,AVAFLG                                             MDG17770
      0000 127CI                1778  AVALL1   EQU   *                                                      MDG17780
00127CI 5030 8F64 =0021E4I      1779           STA   R3,AVARTN                                             MDG17790
001280I 4130 875A =0019DEI      1780  AVAIL5   BAL   R3,WDFT                                               MDG17800
001284I DEA0 8627 =0018AFI      1781           OC    RA,SEEK                                               MDG17810
001288I 4130 8784 =001A10I      1782           BAL   R3,FRSRW                                              MDG17820
00128CI 4840 8F7E =00220EI      1783           LH    R4,CUTRKDEN                                           MDG17830
001290I 4584 F2D0 =000564I      1784           CLH   R8,SECTAB(R4)      MAXIMUM ?                          MDG17840
*001294I 233F                   1785           BE    AVAIL4A            NO                                 MDG17850
001296I 4130 8744 =0019DEI      1786  AVAIL4   BAL   R3,WDFT                                               MDG17860
00129AI 4130 8798 =001A36I      1787           BAL   R3,RCHK            READ CHECK THE SECTOR              MDG17870
00129EI 4830 8F52 =0021F4I      1788           LH    R3,CONSTA          IS THIS SECTOR                     MDG17880
0012A2I C330 0020               1789           THI   R3,X'20'           DEFECTIVE                          MDG17890
0012A6I 4330 8042 =0012ECI      1790           BZ    AVAIL1             NO                                 MDG17900
0012AAI 2681                    1791           AIS   R8,1               NO - GET ANOTHER SECTOR            MDG17910
0012ACI 4584 F2B4 =000564I      1792           CLH   R8,SECTAB(R4)      ANY ON TH S TRACK ?                MDG17920
0012B0I 203D                    1793           BNES  AVAIL4                                                MDG17930
0012B2I 4830 8F4C =002202I      1794  AVAIL4A  LH    R3,HEAD            LOAD HEAD                          MDG17940
0012B6I 4534 F2B8 =000572I      1795           CLH   R3,HDTAB(R4)       MAXIMUM                            MDG17950
*0012BAI 2337                   1796           BE    AVAI00             NO                                 MDG17960
0012BCI 2631                    1797           AIS   R3,1               YES                                MDG17970
0012BEI 4030 8F40 =002202I      1798           STH   R3,HEAD            INCREMENT HEAD                     MDG17980
0012C2I 0788                    1799           XAR   R8,R8              ZERO SECTOR                        MDG17990
0012C4I 4300 FFCE =001296I      1800           B     AVAIL4                                                MDG18000
0012C8I 4830 8F34 =002200I      1801  AVAI00   LH    R3,CYL             GET NEXT CYL #                     MDG18010
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0012CCI  2631                1802          AIS   R3,1                                                    MDG18020
0012CEI  4534 F05C =00032EI  1803          CLH   R3,CYLTAB(R4)       VALID ?                       MDG18030
0012D2I  2186                1804          BLS   AVACON              YES                           MDG18040
0012D4I  2335                1805          BES   AVACON              YES                           MDG18050
0012D6I  C810 00EC           1806          LHI   R1,X'EC'            NO - ERROR                    MDG18060
0012DAI  4300 89F6 =001CD4I  1807          B     ERRA                PACK FULL                     MDG18070
0012DEI  4030 8F1E =002200I  1808  AVACON  STH   R3,CYL              SAVE NEW CYL VALUE            MDG18080
0012E2I  0788                1809          XAR   R8,R8               ZERO SECTOR                   MDG18090
0012E4I  4080 8F1A =0022U2I  1810          STH   R8,HEAD             ZERO OUT HEAD                 MDG18100
0012E8I  4300 FF94 =001280I  1811          B     AVAIL5              GO SEEK                       MDG18110
         0000 12ECI          1812  AVAIL1  EQU   *                                                     MDG18120
0012ECI  4830 8F30 =002220I  1813          LH    R3,AVAFLG           READ OR WRITE ?               MDG18130
0012F0I  2336                1814          BZS   AVAWRT              WRITE                         MDG18140
0012F2I  4130 86E8 =0019DEI  1815          BAL   R3,WDFT                                             MDG18150
0012F6I  4130 8220 =00151AI  1816          BAL   R3,RDISC            READ                          MDG18160
0012FAI  2305                1817          BS    AVACTN              CONTINUE                      MDG18170
0012FCI  4130 86DE =0019DEI  1818  AVAWRT  BAL   R3,WDFT                                             MDG18180
001300I  4130 821C =001520I  1819          BAL   R3,WDISC                                            MDG18190
001304I  2681                1820  AVACTN  AIS   R8,1                                                MDG18200
001306I  4584 F25A =000564I  1821          CLH   R8,SECTAB(R4)       > MAX ?                       MDG18210
00130AI  2333                1822          BES   AVAIL6              YES                           MDG18220
00130CI  4300 8036 =001346I  1823          B     AVAEND              NO - RETURN                   MDG18230
001310I  4830 8EEE =0022U2I  1824  AVAIL6  LH    R3,HEAD             INC. THE HEAD IF POSSIBLE     MDG18240
001314I  4534 F25A =000572I  1825          CLH   R3,HDTAB(R4)        MAXIMUM?                      MDG18250
*001318I 2337                1826          BE    AVANCY              NOT POSSIBLE                  MDG18260
00131AI  2631                1827          AIS   R3,1                SET THE HEAD                  MDG18270
00131CI  4030 8EE2 =0022U2I  1828          STH   R3,HEAD             TO 1                          MDG18280
001320I  0788                1829          XAR   R8,R8               SET SECTOR TO ZERO            MDG18290
001322I  4300 8020 =001346I  1830          B     AVAEND                                            MDG18300
001326I  4830 8ED6 =0022U0I  1831  AVANCY  LH    R3,CYL              GET THE CYLINDER VALUE        MDG18310
00132AI  2631                1832          AIS   R3,1                                              MDG18320
00132CI  4534 FFFE =00032EI  1833          CLH   R3,CYLTAB(R4)       VALID ?                       MDG18330
001330I  2186                1834          BLS   AVACY1                                            MDG18340
001332I  2335                1835          BES   AVACY1                                            MDG18350
001334I  C810 00EC           1836          LHI   R1,X'EC'            PACK FULL                     MDG18360
001338I  4300 8998 =001CD4I  1837          B     ERRA                                              MDG18370
00133CI  4030 8EC0 =002200I  1838  AVACY1  STH   R3,CYL              SAVE THE NEW CYLINDER         MDG18380
001340I  0788                1839          XAR   R8,R8               ZERO OUT THE SECTOR           MDG18390
001342I  4080 8EBC =0022U2I  1840          STH   R8,HEAD             ZERO OUT THE HEAD             MDG18400
001346I  5830 8E9A =0021E4I  1841  AVAEND  LDA   R3,AVARTN           GET THE RETURN ADDRESS        MDG18410
00134AI  0303                1842          BR    R3                                                MDG18420
                             1843  ***********************************************************************  MDG18430
                             1844  *                                                                     *  MDG18440
                             1845  *  U P D T P T                                                        *  MDG18450
                             1846  *                                                                     *  MDG18460
                             1847  *                                                                     *  MDG18470
                             1848  *    THIS ROUTINE WILL RETURN THE DISC PARAMETERS(CYL- HEAD -SECTOR)   *  MDG18480
                             1849  *    FOR THE PROGRAM NUMBER IN THE INDEV LOCK WORD.                    *  MDG18490
                             1850  *                                                                     *  MDG18500
                             1851  *       INPUT: R3=RETURN ADDRESS                                      *  MDG18510
                             1852  *                                                                     *  MDG18520
                             1853  *       OUTPUT: LOCATION "DCOPY" = SECTOR                             *  MDG18530
                             1854  *                        "DCOPY+2" = HEAD                             *  MDG18540
                             1855  *                        "DCOPY+4" = CYL                              *  MDG18550
                             1856  *                                                                     *  MDG18560
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                               ********************************************************************* MDG18570
         0000 134CI            UPDTPT   EQU   *                                                      MDG18580
00134CI  5030 8E80 =0021D0I             STA   R3,UPDTRN           SAVE RETURN                        MDG18590
001350I  4130 84A6 =0017FAI             BAL   R3,LIDAD            LOAD INPUT ADDRESSES               MDG18600
001354I  4820 8B94 =001EECI             LH    R2,PGMIPN                                              MDG18610
001358I  C520 FFFF                      CLHI  R2,X'FFFF'          IS IT LOCKED ?                     MDG18620
00135CI  2135                           BNES  UPPT1               NO                                 MDG18630
00135EI  C810 00EB                      LHI   R1,X'EB'            YES - ERROR                        MDG18640
001362I  4300 896E =001CD4I             B     ERRA                                                   MDG18650
         0000 1366I            UPPT1    EQU   *                                                      MDG18660
001366I  243F                           LIS   R3,15               SET THE UPDATE FLAG                MDG18670
001368I  4030 8EB2 =00221EI             STH   R3,UPDFLG                                              MDG18680
00136CI  4830 8B7C =001EECI             LH    R3,PGMIPN                                              MDG18690
001370I  4030 8E7C =0021F0I             STH   R3,PGMUPN                                              MDG18700
001374I  D330 8B76 =001EEEI             LB    R3,PGMIPN+2                                            MDG18710
001378I  D230 8E76 =0021F2I             STB   R3,PGMUPN+2                                            MDG18720
00137CI  4840 8E46 =0021C6I             LH    R4,TRKOFN+2                                            MDG18730
001380I  4300 802C =0013B0I             B     UPDCOM              BRANCH TO COMMON                   MDG18740
                               ********************************************************************* MDG18750
                               *                                                                   * MDG18760
                               *  U P D T X X                                                      * MDG18770
                               *                                                                   * MDG18780
                               *     THIS ROUTINE WILL UPDATE THE DISC DIRECTORY AS FOLLOWS:       * MDG18790
                               *     THE ENTIRE DIRECTORY FROM THE OUTDEV LOCK WORD VALUE          * MDG18800
                               *     IS ZEROED OUT. USED FOR WRITE EOV AND WHEN COPY OR CREATE     * MDG18810
                               *     IS PERFORMED FROM OTHER THAN EOV.                             * MDG18820
                               *                                                                   * MDG18830
                               *       INPUT: R3 = RETURN ADDRESS                                  * MDG18840
                               *                                                                   * MDG18850
                               *       OUTPUT: NONE OTHER THAN THE UPDATED DIRECTORY.              * MDG18860
                               *                                                                   * MDG18870
                               ********************************************************************* MDG18880
         0000 1384I            UPDTXX   EQU   *                                                      MDG18890
001384I  5030 8E48 =0021D0I             STA   R3,UPDTRN           SAVE RETURN                        MDG18900
001388I  4820 8B5C =001EE8I             LH    R2,PGMOPN           GET THE LOCK WORD                  MDG18910
00138CI  C520 FFFF                      CLHI  R2,X'FFFF'          IS IT LOCKED ?                     MDG18920
001390I  0333                           BER   R3                  YES - RETURN                       MDG18930
001392I  4130 83EC =001782I             BAL   R3,LODAD            DIRECTORY                          MDG18940
001396I  2430                           LIS   R3,0                SET THE FF- BF FLAG                MDG18950
001398I  4030 8E82 =00221EI             STH   R3,UPDFLG                                              MDG18960
00139CI  4830 8B48 =001EE8I             LH    R3,PGMOPN                                              MDG18970
0013A0I  4030 8E4C =0021F0I             STH   R3,PGMUPN                                              MDG18980
0013A4I  D330 8B42 =001EEAI             LB    R3,PGMOPN+2                                            MDG18990
0013A8I  D230 8E46 =0021F2I             STB   R3,PGMUPN+2                                            MDG19000
0013ACI  4840 8E14 =0021C4I             LH    R4,TRKOFN                                              MDG19010
0013B0I  D330 EC96 =00004AI    UPDCOM   LB    R3,SOD              GET START                          MDG19020
0013B4I  4030 8E48 =002200I             STH   R3,CYL              SET CYL TO START                   MDG19030
0013B8I  2430                           LIS   R3,0                CLEAR                              MDG19040
0013BAI  4030 8E44 =002202I             STH   R3,HEAD             SET HEAD TO ZERO                   MDG19050
0013BEI  0768                           XAR   R6,R8               SET SECTOR TO ZERO                 MDG19060
0013C0I  4130 861A =0019DEI             BAL   R3,WOFT             SET UP FILE                        MDG19070
0013C4I  DEA0 84E7 =0018AFI             OC    RA,SEEK             SEEK                               MDG19080
0013C8I  4130 8644 =001A10I             BAL   R3,FRSRW            WAIT                               MDG19090
0013CCI  E650 8CDC =0020ACI             LDAI  R5,DIRECT                                              MDG19100
0013D0I  0865                           LDAR  R6,R5                                                  MDG19110
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*0013D2I  CA60 00FF            1912          AAI   R6,X'FF'                                          MDG19120
 0013D6I  4130 8604 =0019DEI   1913          BAL   R3,WDFT                                           MDG19130
 0013DAI  4130 813C =00151AI   1914          BAL   R3,RDISC        GO READ                           MDG19140
 0013DEI  C830 EEEE            1915          LHI   R3,X'EEEE'      IS THE FIRST BYTE                 MDG19150
 0013E2I  4530 8CC6 =0020ACI   1916          CLH   R3,DIRECT       X'EEEE' ?                         MDG19160
 0013E6I  2335                 1917          BES   UPDTX1          YES OK                            MDG19170
 0013E8I  C810 00E0            1918          LHI   R1,X'E0'        NO                                MDG19180
 0013ECI  4300 88E4 =001CD4I   1919          B     ERRA                                              MDG19190
 0013F0I  0722                 1920  UPDTX1  XAR   R2,R2                                             MDG19200
 0013F2I  4832 8C86 =0020ACI   1921  UPDTX3  LH    R3,DIRECT(R2)   GET THE NUMBER FROM THE DIRECTORY  MDG19210
 0013F6I  4530 8DF6 =0021F0I   1922          CLH   R3,PGMUPN                                         MDG19220
 0013FAI  2138                 1923          BNES  UPDTX2          NO                                MDG19230
 0013FCI  D332 8CAE =0020AEI   1924          LB    R3,DIRECT+2(R2) YES - ARE THE THIRD DIGITS = ?    MDG19240
 001400I  D310 8DEE =0021F2I   1925          LB    R1,PGMUPN+2                                       MDG19250
 001404I  0531                 1926          CLAR  R3,R1                                             MDG19260
 001406I  4330 8044 =00144EI   1927          BE    UPFIND          YES  MATCH                        MDG19270
 00140AI  2628                 1928  UPDTX2  AIS   R2,8            BUMP POINTER                      MDG19280
 00140CI  C520 0100            1929          CLHI  R2,X'100'       MAX ?                             MDG19290
 001410I  203F                 1930          BNES  UPDTX3          NO                                MDG19300
 001412I  2681                 1931          AIS   R8,1            YES - BUMP SECTOR                 MDG19310
 001414I  4584 F14C =000564I   1932          CLH   R8,SECTAB(R4)   MAXIMUM?                          MDG19320
*001418I  233C                 1933          BE    UPDTX4          NO                                MDG19330
 00141AI  E650 8C8E =0020ACI   1934  UPDTX5  LDAI  R5,DIRECT       YES                               MDG19340
 00141EI  0865                 1935          LDAR  R6,R5                                             MDG19350
*001420I  CA60 00FF            1936          AAI   R6,X'FF'                                          MDG19360
 001424I  4130 85B6 =0019DEI   1937          BAL   R3,WDFT                                           MDG19370
 001428I  4130 80EE =00151AI   1938          BAL   R3,RDISC        READ NEXT DIRECTORY               MDG19380
 00142CI  4300 FFC0 =0013F0I   1939          B     UPDTX1                                            MDG19390
 001430I  4820 8DCE =002202I   1940  UPDTX4  LH    R2,HEAD                                           MDG19400
 001434I  4524 F13A =000572I   1941          CLH   R2,HDTAB(R4)    MAXIMUM?                          MDG19410
*001438I  2337                 1942          BE    UPDTXM          NO - MATCH                        MDG19420
 00143AI  2621                 1943          AIS   R2,1                                              MDG19430
 00143CI  4020 8DC2 =002202I   1944          STH   R2,HEAD         SET HEAD TO +1                    MDG19440
 001440I  0788                 1945          XAR   R8,R8           ZERO SECTOR                       MDG19450
 001442I  4300 FFD4 =00141AI   1946          B     UPDTX5                                            MDG19460
          0000 1446I           1947  UPDTXM  EQU   *               NO MATCH                          MDG19470
 001446I  C810 00E8            1948          LHI   R1,X'E8'                                          MDG19480
 00144AI  4300 8886 =001CD4I   1949          B     ERRA                                              MDG19490
          0000 144EI           1950  UPFIND  EQU   *                                                 MDG19500
 00144EI  4810 8DCC =00221EI   1951          LH    R1,UPDFLG       GET FF/BF - UPDATE FLAG           MDG19510
 001452I  4230 8062 =0014B8I   1952          BNZ   UPDTP1                                            MDG19520
 001456I  2410                 1953          LIS   R1,0                                              MDG19530
 001458I  4012 8C50 =0020ACI   1954          STH   R1,DIRECT(R2)   ZERO OUT NUMBER BUT LEAVE         MDG19540
 00145CI  D212 8C4E =0020AEI   1955          STB   R1,DIRECT+2(R2) SECTOR POINTER                    MDG19550
 001460I  2628                 1956          AIS   R2,8                                              MDG19560
 001462I  C520 0100            1957  UPFIN1  CLHI  R2,X'100'                                         MDG19570
 001466I  2335                 1958          BES   UPXWB1                                            MDG19580
 001468I  D212 8C40 =0020ACI   1959          STB   R1,DIRECT(R2)   ZERO ALL REMAINING DIRECTORYS     MDG19590
 00146CI  2621                 1960          AIS   R2,1                                              MDG19600
 00146EI  2206                 1961          BS    UPFIN1                                            MDG19610
 001470I  E650 8C38 =0020ACI   1962  UPXWB1  LDAI  R5,DIRECT                                         MDG19620
 001474I  0865                 1963          LDAR  R6,R5           STORE THE DIRECTORY BACK ON       MDG19630
*001476I  CA60 00FF            1964          AAI   R6,X'FF'        THE PACK.                         MDG19640
 00147AI  4130 8560 =0019DEI   1965          BAL   R3,WDFT                                           MDG19650
 00147EI  4130 809E =001520I   1966          BAL   R3,WDISC                                          MDG19660
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0014821  2420                1967          LIS   R2,0              ARE THERE MORE SECTORS TO              MDG19670
0014841  2410                1968          LIS   R1,0              ZERO OUT.                              MDG19680
0014861  D212 8C22 =0020AC1  1969  UPFIZF  STB   R1,DIRECT(R2)                                             MDG19690
0014881  2621                1970          AIS   R2,1                                                     MDG19700
0014801  C520 0100           1971          CLHI  R2,X'100'                                                MDG19710
0014901  2035                1972          BNES  UPFIZF                                                   MDG19720
0014921  2681                1973          AIS   R8,1              DIRECTORY IS FULL OF ZEROES            MDG19730
0014941  4584 F0CC =000564I  1974          CLH   R8,SECTAB(R4)     MAXIMUM?                               MDG19740
0014961  4230 FFD4 =001470I  1975          BNE   UPXWB1            NO                                     MDG19750
0014981  4830 8D62 =002202I  1976          LH    R3,HEAD           ALL SECTORS ARE ZERO                   MDG19760
0014A01  4534 F0CE =000572I  1977          CLH   R3,HDTAB(R4)      MAXIMUM?                               MDG19770
*0014A41 2337                1978          BE    UPFIEN            YES                                    MDG19780
0014A61  2631                1979          AIS   R3,1              NO                                     MDG19790
0014A81  4030 8D56 =002202I  1980          STH   R3,HEAD           DO NEXT HEAD                           MDG19800
0014AC1  0788                1981          XAR   R8,R8                                                    MDG19810
0014AE1  4300 FFBE =001470I  1982          B     UPXWB1                                                   MDG19820
0014B21  5830 8D1A =0021D0I  1983  UPFIEN  LDA   R3,UPDTRN                                               MDG19830
0014B61  0303                1984          BR    R3                                                       MDG19840
         0000 14B8I          1985  UPDTP1  EQU   *                                                        MDG19850
0014B81  4080 8CF0 =0021AC1  1986          STH   R8,DCOPY          STORE SECTOR                           MDG19860
0014BC1  4880 8D42 =002202I  1987          LH    R8,HEAD                                                  MDG19870
0014C01  4080 8CEA =0021AEI  1988          STH   R8,DCOPY+2        STORE HEAD                             MDG19880
0014C41  4880 8D38 =002200I  1989          LH    R8,CYL                                                   MDG19890
0014C81  4080 8CE4 =0021B0I  1990          STH   R8,DCOPY+4        STORE CYL                              MDG19900
0014CC1  4020 8CE2 =0021B2I  1991          STH   R2,DCOPY+6        STORE POINTER                          MDG19910
0014D01  220F                1992          BS    UPFIEN            RETURN                                 MDG19920
                             1993  *  THIS ROUTINE WILL COVERT THE ADDRESS IN DCOPY TO THE                MDG19930
                             1994  *   ACTUAL LOCATION ON THE DISC OF THE PROGRAM                         MDG19940
         0000 14D2I          1995  DIRPGM  EQU   *                                                        MDG19950
0014D21  5030 8D12 =0021E8I  1996          STA   R3,DIRPRN         SAVE RETURN                            MDG19960
0014D61  4880 8CD2 =0021AC1  1997          LH    R8,DCOPY          GET SECTOR                             MDG19970
0014DA1  4820 8CD0 =0021AEI  1998          LH    R2,DCOPY+2                                               MDG19980
0014DE1  4020 8D20 =002202I  1999          STH   R2,HEAD           GET HEAD                               MDG19990
0014E21  4820 8CCA =0021B0I  2000          LH    R2,DCOPY+4                                               MDG20000
0014E61  4020 8D16 =002200I  2001          STH   R2,CYL            GET CYL                                MDG20010
0014EA1  E650 8BBE =0020AC1  2002          LDAI  R5,DIRECT                                                MDG20020
0014EE1  0865                2003          LDAR  R6,R5                                                    MDG20030
*0014F01 CA60 00FF           2004          AAI   R6,X'FF'                                                 MDG20040
0014F41  4130 84E6 =0019DEI  2005          BAL   R3,WDFT                                                  MDG20050
0014F81  4130 801E =00151A1  2006          BAL   R3,RDISC          READ DIRECTORY                         MDG20060
0014FC1  4820 8CB2 =0021B2I  2007          LH    R2,DCOPY+6        GET POINTER                            MDG20070
0015001  4882 8BAC =0020B0I  2008          LH    R8,DIRECT+4(R2)   GET CYL                                MDG20080
0015041  4080 8CF8 =002200I  2009          STH   R8,CYL                                                   MDG20090
0015081  D382 8BA7 =0020B3I  2010          LB    R8,DIRECT+7(R2)   GET HEAD                             MDG20100
00150C1  4080 8CF2 =002202I  2011          STH   R8,HEAD                                                  MDG20110
0015101  D382 8B9E =0020B2I  2012          LB    R8,DIRECT+6(R2)   GET SECTOR                           MDG20120
0015141  5830 8CD0 =0021E8I  2013          LDA   R3,DIRPRN                                                MDG20130
0015181  0303                2014          BR    R3                RETURN                                 MDG20140
                             2015  ********************************************************************** MDG20150
                             2016  *                                                                    *  MDG20160
                             2017  *  R E A D / W R I T E                                               *  MDG20170
                             2018  *   THIS IS THE COMMON READ / WRITE ROUTINE FOR ALL MAGNETIC MEDIA    *  MDG20180
                             2019  *   READ/WRITE OPERATIONS. THE ROUTINE HAS 4 ENTRY POINTS. THE        *  MDG20190
                             2020  *   ENTRY POINTS ARE AS FOLLOWS:                                      *  MDG20200
                             2021  *                                                                    *  MDG20210
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*        ENTRY POINT         OPERATION                                *
*                                                                     *
*        RDISC               THIS ENTRY  WILL READ DATA FROM THE      *
*                            DISC.  THE INPUT PARAMETERS ARE:         *
*                                                                     *
*                               R3 = RETURN ADDRESS                   *
*                               R5 = LOW ADDRESS OF READ BUFFER       *
*                               R6 = HIGH ADDRESS OF READ BUFFER      *
*                               RA = DISC ADDRESS                     *
*                               RB = SELCH ADDRESS                    *
*                               RC = CONTROLLER ADDRESS               *
*                               R8 = SECTOR TO BE READ                *
*                           "HEAD" = HEAD WHERE "R8" RESIDES          *
*                           "CYL"  = CYLINDER WHERE "R8" RESIDES      *
*                                                                     *
*        WDISC               THIS ENTRY WILL WRITE DATA TO THE        *
*                            DISC. THE INPUT PARAMETERS ARE:          *
*                                                                     *
*                               R3 = RETURN ADDRESS                   *
*                               R5 = LOW ADDRESS OF WRITE BUFFER      *
*                               R6 = HIGH ADDRESS OF WRITE BUFFER     *
*                               RA = DISC ADDRESS                     *
*                               RB = SELCH ADDRESS                    *
*                               RC = CONTROLLER ADDRESS               *
*                               R8 = SECTOR TO BE WRITTEN             *
*                           "HEAD" = HEAD WHERE "R8" RESIDES          *
*                           "CYL"  = CYLINDER WHERE "R8" RESIDES      *
*                                                                     *
*                               R0 = WORK REGISTER                    *
*                               R2 = WORK REGISTER                    *
*                                                                     *
*                               R0 = WORK REGISTER                    *
*                               R2 = WORK REGISTER                    *
*                                                                     *
*        WRTPB               THIS ENTRY WILL WRITE A BLOCK OF DATA    *
*                            TO MAG TAPE OR CASSETTE.  THE INPUT      *
*                            PARAMETERS ARE:                          *
*                                                                     *
*                               R3 = RETURN ADDRESS                   *
*                               R5 = LOW ADDRESS OF WRITE BUFFER      *
*                               R6 = HIGH ADDRESS OF WRITE BUFFER     *
*                               RA = DEVICE ADDRESS                   *
*                               RB = SELCH ADDRESS (IF = 0 "WB" USED)*
*                               R0 = WORK REGISTER                    *
*                               R1 = WORK REGISTER                    *
*                               R2 = WORK REGISTER                    *
*                                                                     *
*        READPB              THIS ENTRY WILL READ A BLOCK OF DATA     *
*                            FROM MAG TAPE OR CASSETTE.  THE INPUT    *
*                            PARAMETERS ARE:                          *
*                                                                     *
*                               R3 = RETURN ADDRESS                   *
*                               R5 = LOW ADDRESS OF READ BUFFER       *
*                               R6 = HIGH ADDRESS OF READ BUFFER      *
*                               RA = DEVICE ADDRESS                   *
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                            *                          RB = SELCH ADDRESS (IF = 0 "RB" USED)*  MDG20770
                            *                          R1 = RETURN ADDRESS IF A "FM" IS READ*  MDG20780
                            *                          R0 = WORK REGISTER                    *  MDG20790
                            *                          R2 = WORK REGISTER                    *  MDG20800
                            *                                                                *  MDG20810
                            *                                                                *  MDG20820
                            *                      OUTPUT  -  ALL THE ABOVE ROUTINE WILL     *  MDG20830
                            *                                 RETRY ON A RECOVERABLE ERROR   *  MDG20840
                            *                                 AND ABORT ON A NON-RECOVER-    *  MDG20850
                            *                                ABLE ERROR. ALL REGISTER        *  MDG20860
                            *                                 VALUES ARE RETURNED AS THEY    *  MDG20870
                            *                                ENTERED EXCEPT FOR REGISTERS    *  MDG20880
                            *                                 R0, R1, AND R2.  ON A          *  MDG20890
                            *                                 RETURN THE DESIGNATED AREA     *  MDG20900
                            *                                 SPECIFIED BY R5 AND R6 IS      *  MDG20910
                            *                                 GUARANTEED WRITTEN OR READ.    *  MDG20920
                            *                                                                *  MDG20930
                            ******************************************************************  MDG20940
                            *                                                                   MDG20950
                            *                                                                   MDG20960
00151AI D320 8398 =0018B6I  RDISC    LB    R2,DREAD          GET THE READ COMMAND               MDG20970
00151EI 2303                         BS    WRDSC1                                               MDG20980
001520I D320 838F =0018B3I  WDISC    LB    R2,DWRIT          LOAD THE WRITE COMMAND             MDG20990
001524I D220 8CDC =002204I  WRDSC1   STB   R2,DISCMD                                            MDG21000
001528I 5030 8C90 =0021BCI           STA   R3,WRTEND                                            MDG21010
00152CI 2435                         LIS   R3,5              SET THE RETRY COUNT                MDG21020
00152EI 4030 8CDA =00220CI           STH   R3,RETRY                                             MDG21030
001532I 243F                         LIS   R3,15             SET THE DISC INDICATOR             MDG21040
001534I 4030 8CE4 =00221CI           STH   R3,RWDEV                                             MDG21050
001538I 4300 8090 =0015CCI           B     DISC                                                 MDG21060
        0000 153CI          WRTPB    EQU   *                                                    MDG21070
00153CI E610 811C =00165CI           LDAI  R1,MTERR          SET THE EOV BRANCH                 MDG21080
001540I D320 8364 =0018A8I           LB    R2,MTWRT          GET THE WRITE COMMAMD              MDG21090
001544I 2303                         BS    MTCOM                                                MDG21100
001546I D320 836D =0018B7I  READPB   LB    R2,MTREAD         GET THE READ COMMAND               MDG21110
00154AI D220 8CAA =0021F8I  MTCOM    STB   R2,MTCMD          STORE THE COMMAND                  MDG21120
00154EI 5030 8C6A =0021BCI           STA   R3,WRTEND                                            MDG21130
001552I 5010 8C8A =0021E0I           STA   R1,EOVRTN         SAVE THE EOV BRANCH ADD.           MDG21140
001556I 2415                         LIS   R1,5              SET THE WRITE RETRY COUNTER        MDG21150
001558I 4010 8CB0 =00220CI           STH   R1,RETRY          TO FIVE                            MDG21160
00155CI 2430                         LIS   R3,0              SET THE MAG TAPE INDICATOR         MDG21170
00155EI 4030 8CBA =00221CI           STH   R3,RWDEV                                             MDG21180
                            *                                                                   MDG21190
001562I DEA0 8344 =0018AAI           OC    RA,DISABL                                            MDG21200
                            *                                                                   MDG21210
001566I 08BB                MTRY     LDAR  RB,RB             SELCH ?                            MDG21220
001568I 4230 8060 =0015CCI           BNZ   SELWRT            YES - BRANCH                       MDG21230
00156CI 2430                         LIS   R3,0              NO - USE WB                        MDG21240
00156EI 4030 8C96 =002208I           STH   R3,SELERR         ZERO OUT THE SELCH ERROR FLAG      MDG21250
001572I D330 8C82 =0021F8I           LB    R3,MTCMD          GET THE COMMAND                    MDG21260
001576I D320 833D =0018B7I           LB    R2,MTREAD         GET THE READ COMMAND               MDG21270
00157AI 0523                         CLAR  R2,R3             IS THIS A READ ?                   MDG21280
00157CI 4330 8022 =0015A2I           BE    WBLKRD            YES                                MDG21290
                            *                                                                   MDG21300
001580I 9EA3                         OCR   RA,R3             OUTPUT THE WRITE COMMAND           MDG21310
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001582I  0815                           LDAR  R1,R5          SAVE R5                                MDG21320
001584I  0826                           LDAR  R2,R6          SAVE R6                                MDG21330
001586I  9DA0                   MTWB    SSR   RA,R0          SENSE STATUS                           MDG21340
001588I  2081                           BTBS  8,1            WAIT FOR BUSY NOT                      MDG21350
00158AI  DAA5 0000                      WD    RA,0(R5)       WRITE DATA                             MDG21360
00158EI  2651                           AIS   R5,1           BUMP                                   MDG21370
001590I  0565                           CLAR  R6,R5          DONE??                                 MDG21380
001592I  2286                           BNCS  MTWB           NO, LOOP                               MDG21390
001594I  0851                           LDAR  R5,R1          RESTORE R5                             MDG21400
001596I  0862                           LDAR  R6,R2          RESTORE R6                             MDG21410
001598I  9DA0                           SSR   RA,R0          SENSE STATUS                           MDG21420
00159AI  4270 8024 =0015C2I             BTC   7,MTERRB       GO TO RETRY                            MDG21430
00159EI  4300 8076 =001618I             B     CONT5B                                                MDG21440
0015A2I  9EA3                   WRLKRD  OCR   RA,R3          OUTPUT THE READ COMMAND                MDG21450
0015A4I  0815                           LDAR  R1,R5          SAVE R5                                MDG21460
0015A6I  0826                           LDAR  R2,R6          SAVE R6                                MDG21470
0015A8I  9DA0                   MTRB    SSR   RA,R0          SENSE STATUS                           MDG21480
0015AAI  2081                           BTBS  8,1            WAIT FOR BUSY NOT                      MDG21490
0015ACI  DBA5 0000                      RD    RA,0(R5)       READ DATA                              MDG21500
0015B0I  2651                           AIS   R5,1           BUMP                                   MDG21510
0015B2I  0565                           CLAR  R6,R5          DONE??                                 MDG21520
0015B4I  2286                           BNCS  MTRB           NO, LOOP                               MDG21530
0015B6I  0851                           LDAR  R5,R1          RESTORE R5                             MDG21540
0015B8I  0862                           LDAR  R6,R2          RESTORE R6                             MDG21550
0015BAI  9DA0                           SSR   RA,R0          SENSE STATUS                           MDG21560
0015BCI  2173                           BTFS  7,MTERRB       GO TO RETRY                            MDG21570
0015BEI  4300 8056 =001618I             B     CONT5B                                                MDG21580
                                *                                                                   MDG21590
0015C2I  241F                   MTERRB  LIS   R1,15                                                 MDG21600
0015C4I  4010 8C40 =002208I             STH   R1,SELERR                                             MDG21610
0015C8I  4300 804C =001618I             B     CONT5B                                                MDG21620
                                *                                                                   MDG21630
         0000 15CCI             DISC    EQU   *                                                     MDG21640
0015CCI  DEB0 82DC =0018ACI     SELWRT  OC    RB,STOP        STOP THE SELCH                         MDG21650
0015D0I                                 IFZ   ADC-4          *                                R04
0015D0I  3425                           EXHR  R2,R5          MS START ADDRESS DOWN            R04
0015D2I  3436                           EXHR  R3,R6          MS END ADDRESS DOWN              R04
0015D4I  9AB2                           WDR   RB,R2          WRITE THE FIRST BYTE                   MDL05910
                                        ENDC                 *                                R04
0015D6I  98B5                   CONT4B  WHR   RB,R5          WRITE THE 2ND + 3RD BYTES              MDG21790
0015D8I                                 IFZ   ADC-4          *                                R04
0015D8I  9AB3                           WDR   RB,R3          WRITE THE 4TH BYTE               R04   MDL05950
                                        ENDC                 *                                R04
0015DAI  98B6                   CONT4C  WHR   RB,R6          WRITE THE 5TH & 6TH BYTES              MDG21830
0015DCI  5050 8BFC =0021DCI             STA   R5,STADD       SAVE THE START ADDRESS.                MDG21840
0015E0I  5060 8BD4 =0021B8I             STA   R6,FADD                                               MDG21850
                                *                                                                   MDG21870
0015E4I  4820 8C34 =00221CI             LH    R2,RWDEV                                              MDG21880
0015E8I  4230 80E4 =0016D0I             BNZ   SELDIS                                                MDG21890
                                *                                                                   MDG21900
0015ECI  D320 8C08 =0021F8I             LB    R2,MTCMD       GET THE MAG TAPE COMMAND               MDG21910
0015F0I  D310 82C3 =0018B7I             LB    R1,MTREAD      GET MAG TAPE READ COMMAND              MDG21950
0015F4I  0512                           CLAR  R1,R2          IS THIS A MAG TAPE READ ?              MDG21960
0015F6I  2335                           BES   EMTRD          YES - GIVE ESELCH READ COMMAND         MDG21970
0015F8I  9EA2                           OCR   RA,R2          NO - GIVE MAGTPE WRITE COMMAND         MDG21980
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 0015FAI                               IFZ    ADC-4                *                              R04
 0015FAI  DEB0 82AB =0018A9I           OC     RB,ESWRT             ESELCH WRITE COMMAND       R04      MDL06060
                                       ELSE                        *                              R04
                                       OC     RB,SWRT              GIVE SELCH WRITE COMMAND   R04      MDL06100
                                       ENDC                        *                              R04
*0015FEI  2304                         B      SEL1                                                     MDG22000
 001600I  9EA2                 EMTRD   OCR    RA,R2                GIVE THE MAGTPE READ COMMAND        MDG22010
 001602I                               IFZ    ADC-4                *                              R04
 001602I  DEB0 82B3 =0018B9I           OC     RB,ESREAD            GIVE THE ESELCH READ COMMAND        MDL06060
                                       ELSE                        *                              R04
                                       OC     RB,SREAD             GIVE SELCH READ COMMAND             MDL06100
                                       ENDC                        *                              R04
                               *                                                                       MDG22130
 001606I  4120 847E =001A88I   SEL1    BAL    R2,SETSEL            SET UP FOR A SELCH INTERRUPT        MDG22140
 00160AI  C200 8002 =001610I           LPSW   CONT5A                                                   MDG22150
                               *                                                                       MDG22160
 001610I                               ALIGN  8                                                        MDG22170
          0000 1610I           CONT5A  EQU    *                                                        MDG22180
 001610I                               IFNZ   ADC-2                                                    MDG22190
 001610I  0000                         DC     X'0000',X'F0F0'                                          MDG22200
 001612I  F0F0
 001614I  0000 1618I                   DC     A(CONT5B)                                                MDG22210
                                       ELSE                                                            MDG22220
                                       DC     X'F000',Z(CONT5B)                                        MDG22230
                                       ENDC                                                            MDG22240
                               *                                                                       MDG22250
                               *                                                                       MDG22260
          0000 1618I           CONT5B  EQU    *                                                        MDG22270
 001618I  D320 8BDC =0021F8I           LB     R2,MTCMD             GET THE MT COMMAND                  MDG22280
 00161CI  D310 8297 =0018B7I           LB     R1,MTREAD            IS THIS A MT READ                   MDG22290
 001620I  0512                         CLAR   R1,R2                                                    MDG22300
*001622I  2339                         BE     CONMTX               YES - DONT CHECK FOR WRITE PROTECT  MDG22310
                               *                              NO - THE MT WRITE - CHECK TO SEE IF      MDG22320
 001624I  90A1                         SSR    RA,R1                TAPE RESPONDED TO THE WRITE COMMAND MDG22330
 001626I  C310 0010                    THI    R1,X'10'             NO MOTION SET ?                     MDG22340
 00162AI  2335                         BZS    CONMTX               NO - TAPE IS MOVING                 MDG22350
 00162CI  C810 00E9            NORUN   LHI    R1,X'E9'             YES - THEN TAPE DIDNT MOVE          MDG22360
 001630I  4300 86A0 =001CD4I           B      ERRA                 PRINT ERROR                         MDG22370
                               *                                                                       MDG22380
          0000 1634I           CONMTX  EQU    *                                                        MDG22390
 001634I  90A1                 CONMT1  SSR    RA,R1                NO - THE MAGTAPE                    MDG22400
 001636I  4210 8634 =001C6EI           BTC    1,DEVDU              DEVICE IS DU                        MDG22410
 00163AI  C310 0010                    THI    R1,X'10'             WAIT FOR NO MOTION                  MDG22420
 00163EI  2235                         BZS    CONMT1                                                   MDG22430
 001640I  C310 0020                    THI    R1,X'20'                                                 MDG22440
 001644I  2335                         BZS    CONMT9                                                   MDG22450
 001646I  C810 00D3                    LHI    R1,X'D3'             END OF TAPE                         MDG22460
 00164AI  4300 8686 =001CD4I           B      ERRA                                                     MDG22470
          0000 164EI           CONMT9  EQU    *                                                        MDG22480
 00164EI  C310 00C0                    THI    R1,X'C0'             ANY ERROR ?                         MDG22490
 001652I  2135                         BNZS   MTERR                YES - TRY TO RECOVER                MDG22500
 001654I  4830 8BB0 =002208I           LH     R3,SELERR            NO - SELCH ERROR ?                  MDG22510
 001658I  4330 8046 =0016A2I           BZ     MTEND                                                    MDG22520
                               *                                                                       MDG22530
          0000 165CI           MTERR   EQU    *                                                        MDG22540
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 00165CI  9DA1                        SSR   RA,R1                                   MDG22550
 00165EI  C310 0010                   THI   R1,X'10'                                MDG22560
 001662I  2233                        BZS   MTERR                                   MDG22570
 001664I  D320 8B90 =0021F8I          LB    R2,MTCMD     GET THE MAG TAPE COMMAND   MDG22580
 001668I  D330 824B =0018B7I          LB    R3,MTREAD    GET THE READ CMD           MDG22590
 00166CI  0532                        CLAR  R3,R2        MT   READ ?                MDG22600
*00166EI  2138                        BNE   MTERRW       NO - ERROR                 MDG22610
 001670I  9DA1                        SSR   RA,R1        YES - CHECK FOR EOF.       MDG22620
 001672I  C310 0040                   THI   R1,X'40'     EOF ?                      MDG22630
 001676I  2334                        BZS   MTERRW       NO                         MDG22640
 001678I  5830 8B64 =0021E0I          LDA   R3,EOVRTN    YES - TAKE THE EOF RETURN  MDG22650
 00167CI  0303                        BR    R3                                      MDG22660
 00167EI  4830 8B8A =00220CI   MTERRW LH    R3,RETRY     TRY TO RECOVER             MDG22670
 001682I  2135                        BNZS  MTERR1                                  MDG22680
 001684I  C810 00E3                   LHI   R1,X'E3'     RECOVERY UNSUCCESSFUL      MDG22690
 001688I  4300 8648 =001CD4I          B     ERRA                                    MDG22700
 00168CI  2731                 MTERR1 SIS   R3,1                                    MDG22710
 00168EI  4030 8B7A =00220CI          STH   R3,RETRY                                MDG22720
 001692I  4100 82EA =001980I          BAL   R0,NOMOTN    WAIT FOR NO MOTION         MDG22730
 001696I  DEA0 8213 =0018ADI          OC    RA,BKSP      BACKSPACE THE FILE         MDG22740
 00169AI  4100 82E2 =001980I          BAL   R0,NOMOTN    WAIT FOR NO MOTION         MDG22750
 00169EI  4300 FEC4 =001566I          B     MTRY                                    MDG22760
                               *                                                    MDG22770
          0000 16A2I           MTEND  EQU   *                                       MDG22780
 0016A2I  5830 8B16 =0021BCI          LDA   R3,WRTEND                               MDG22790
 0016A6I  0303                        BR    R3                                      MDG22800
                               *                                                    MDG22810
          0000 16A8I           EOV    EQU   *                                       MDG22820
 0016A8I  DEA0 81FF =0018ABI          OC    RA,WFM       WRITE A FILE M&RK          MDG22830
 0016ACI  4100 82D0 =001980I          BAL   R0,NOMOTN    WAIT FOR NO MOTION         MDG22840
 0016B0I  DEA0 81F7 =0018ABI          OC    RA,WFM                                  MDG22850
 0016B4I  4100 82C8 =001980I          BAL   R0,NOMOTN    WAIT FOR NO MOTION         MDG22860
 0016B8I  DEA0 81F1 =0018ADI          OC    RA,BKSP                                 MDG22870
 0016BCI  4100 82C0 =001980I          BAL   R0,NOMOTN    WAIT FOR NO MOTION         MDG22880
                               *                                                    MDG22890
 0016C0I  41E0 81F8 =0018BCI   PEOJ   BAL   RE,CRLF      DO CR/LF                   MDG22900
 0016C4I  E620 80B4 =00177CI          LDAI  R2,EOJ                                  MDG22910
 0016C8I  4130 81FA =0018C6I          BAL   R3,PRINT                                MDG22920
 0016CCI  4300 E9CC =00009CI          B     REDTTY                                  MDG22930
                               *                                                    MDG22940
 0016D0I  9DC1                 SELDIS SSR   RC,R1        WAIT                       MDG22950
 0016D2I  2221                        BFBS  2,SELDIS     CONTROLLER IDLE            MDG22960
 0016D4I  4130 8306 =0019DEI          BAL   R3,WDFT                                 MDG22970
 0016D8I  4830 8B32 =00220EI          LH    R3,CUTRKDEN                             MDG22980
 0016DCI  C530 0008                   CLHI  R3,8                                    MDG22990
*0016E0I  233C                        BE    SELDIS2                                 MDG23000
 0016E2I  9AC8                        WDR   RC,R8        WRITE SECTOR               MDG23010
 0016E4I  4810 8B1A =002202I          LH    R1,HEAD                                 MDG23020
 0016E8I  111A                        SLLS  R1,10        SCALE                      MDG23030
 0016EAI  4870 8B12 =002200I          LH    R7,CYL                                  MDG23040
 0016EEI  0617                        OAR   R1,R7        MERGE CYL                  MDG23050
 0016F0I  98C1                        WHR   RC,R1        WRITE HEAD/CYL             MDG23060
 0016F2I  9DC7                        SSR   RC,R7                                   MDG23070
 0016F4I  2221                        BFBS  2,1                                     MDG23080
*0016F6I  2306                        B     SELDIS1                                 MDG23090
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0016F8I 4810 8B06 =0022D2I 2296 SELDIS2 LH    R1,HEAD                                          MDG23100
0016FCI 1115               2297         SLLS  R1,5              POSITION THE HEAD BIT       MDG23110
0016FEI 0618               2298         OAR   R1,R8                                          MDG23120
001700I 9AC1               2299         WDR   RC,R1             SET UP THE HEADER           MDG23130
        0000 1702I         2300 SELDIS1 EQU   *                  *                  R04
001702I D320 8AFE =0022D4I 2301         LB    R2,DISCMD         GET THE DISC COMMAND        MDG23150
001706I D310 81AC =0018B6I 2302         LB    R1,DREAD          EXTENDED SELCH COMMANDS     MDG23180
00170AI 0512               2303         CLAR  R1,R2             IS THIS A DISC READ ?       MDG23190
00170CI 233A               2304         BES   ESRD              YES - GIVE ESELCH READ CMD  MDG23200
                           2305 *                                NO - GIVE ESELCH WRITE CMD. MDG23210
00170EI 9DA1               2306         SSR   RA,R1                                          MDG23220
001710I C310 0080          2307         THI   R1,X'80'          WRITE PROTECT SET ?         MDG23230
001714I 4230 805C =001774I 2308         BNZ   WRTPRT            YES                         MDG23240
001718I 9EC2               2309         OCR   RC,R2             START THE DISC              MDG23250
00171AI                    2310         IFZ   ADC-4             IF 32 BIT
00171AI DEB0 8188 =0018A9I 2311         OC    RB,ESWRT          START THE SELCH             R04
                           2312         ELSE
                           2313         OC    RB,SWRT           START THE SELCH             R04
                           2314         ENDC
*00171EI 2304              2315         B     SELD1                                         MDG23270
001720I 9EC2               2316 ESRD    OCR   RC,R2             START THE DISC READ         MDG23280
001722I                    2317         IFZ   ADC-4             IF 32 BIT                   R04
001722I DEB0 8193 =0018B9I 2318         OC    RB,ESREAD         START THE ESELCH READ       MDG23290
                           2319         ELSE
                           2320         OC    RB,SREAD          START THE SELCH             R04
                           2321         ENDC
001726I 4120 835E =001A88I 2322 SELD1   BAL   R2,SETSEL         SET UP FOR SELCH INTERRUPT  MDG23440
00172AI C200 8002 =001730I 2323         LPSW  CONTDS                                        MDG23450
001730I                    2324         ALIGN 8                                             MDG23460
        0000 1730I         2325 CONTDS  EQU   *                                             MDG23470
001730I                    2326         IFNZ  ADC-2                                         MDG23480
001730I 0000               2327         DC    X'0000',X'F0F0'                               MDG23490
001732I F0F0
001734I 0000 1738I         2328         DC    A(CONDS1)                                     MDG23500
                           2329         ELSE                                                MDG23510
                           2330         DC    X'F000',Z(CONDS1)                             MDG23520
                           2331         ENDC                                                MDG23530
                           2332 *                                                           MDG23540
001738I 4130 833E =001A7AI 2333 CONDS1  BAL   R3,SETCON                                     MDG23550
                           2334 *                                                           MDG23560
00173CI 9DA1               2335 CONDS3  SSR   RA,R1                                        MDG23570
00173EI 4210 852C =001C6EI 2336         BTC   1,DEVDU                                       MDG23580
001742I 4810 8AAE =0021F4I 2337         LH    R1,CONSTA                                     MDG23590
001746I C310 0005          2338         THI   R1,X'05'          CONTROLLER ERROR ?          MDG23600
00174AI 2134               2339         BNZS  DSCERR                                        MDG23610
00174CI 4810 8AB8 =0022D8I 2340         LH    R1,SELERR                                     MDG23620
*001750I 233D              2341         BZ    DSCEND                                        MDG23630
001752I 4830 8AB6 =0022DCI 2342 DSCERR  LH    R3,RETRY          TRY TO RECOVER              MDG23640
001756I 2135               2343         BNZS  DSERR1                                        MDG23650
001758I C810 00E3          2344         LHI   R1,X'E3'          RECOVERY UNSUCCESSFUL       MDG23660
00175CI 4300 8574 =001CD4I 2345         B     ERRA                                          MDG23670
001760I 2731               2346 DSERR1  SIS   R3,1                                         MDG23680
001762I 4030 8AA6 =0022DCI 2347         STH   R3,RETRY                                      MDG23690
001766I 4340 FE62 =0015CCI 2348         B     SELWRT                                        MDG23700
00176AI 4130 82A2 =001A10I 2349 DSCEND  BAL   R3,FRSRW          WAIT FOR DISC ADD. INTERLOCK MDG23710
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00176EI  5830 8A4A =0021BCI   2350          LDA   R3,WRTEND                                          MDG23720
001772I  0303                 2351          BR    R3                                                 MDG23730
                              2352  *                                                                MDG23740
         0000 1774I           2353  WRTPRT  EQU   *                                                  MDG23750
001774I  C810 00E9            2354          LHI   R1,X'E9'          WRITE PROTECT ERROR              MDG23760
001778I  4300 8558 =001CD4I   2355          B     ERRA                                               MDG23770
                              2356  *                                                                MDG23780
                              2357  *                                                                MDG23790
00177CI  454F 4A20            2358  EOJ     DC    C'EOJ',X'0D0A'                                     MDG23800
001780I  0D0A
                              2359  *                                                                MDG23810
                              2360  *                                                                MDG23820
                              2361  *                                                                MDG23830
                              2362  *                                                                MDG23840
                              2363  ********************************************************************MDG23850
                              2364  *                                                              *   MDG23860
                              2365  *  L O D A D                                                   *   MDG23870
                              2366  *                                                              *   MDG23880
                              2367  *   THIS ROUTINE WILL LOAD THE OUTDEV DEVICE ADDRESSES IN THE   *   MDG23890
                              2368  *   REGISTERS. THE ROUTINE WILL ABORT IF A DEVICE RESPONDS WITH *   MDG23900
                              2369  *   "FALSE SYNC." OR A DEVICE IS "DU".  IT ALSO LOAD THE DEVICE *   MDG23910
                              2370  *   INDICATOR. IF A DISC TRACK DENSITY AND MAXCYL ARE SET.      *   MDG23920
                              2371  *                                                              *   MDG23930
                              2372  *        INPUT: R3 = RETURN ADDRESS                            *   MDG23940
                              2373  *                                                              *   MDG23950
                              2374  *       OUTPUT: RA = DEVICE ADDRESS                            *   MDG23960
                              2375  *               RB = SELCH ADDRESS                             *   MDG23970
                              2376  *               RC = CONTROLLER ADDRESS                        *   MDG23980
                              2377  *               R1 = DEVICE INDICATOR                          *   MDG23990
                              2378  *                                                              *   MDG24000
                              2379  *                                                              *   MDG24010
                              2380  ********************************************************************MDG24020
001782I  48A0 8754 =001EDAI   2381  LODAD   LH    RA,OUTDEV+2       GET THE DEVICE ADDRESS           MDG24030
001786I  2135                 2382          BNZS  LOD1              ZERO ?                           MDG24040
001788I  C800 4534            2383          LHI   R0,C'E4'          YES                              MDG24050
00178CI  4300 8480 =001C1UI   2384          B     ERROR                                              MDG24060
001790I  9DA1                 2385  LOD1    SSR   RA,R1             NO                               MDG24070
001792I  C510 0004            2386          CLHI  R1,X'04'          FALSE SYNC ?                     MDG24080
001796I  2135                 2387          BNES  LOD1A                                              MDG24090
001798I  C810 00E6            2388          LHI   R1,X'E6'          YES                              MDG24100
00179CI  4300 8534 =001CD4I   2389          B     ERRA                                               MDG24110
0017A0I  C310 0001            2390  LOD1A   THI   R1,1              DU ?                             MDG24120
0017A4I  2335                 2391          BZS   LOD2              NO                               MDG24130
0017A6I  C810 00EE            2392          LHI   R1,X'EE'          YES                              MDG24140
0017AAI  4300 8526 =001CD4I   2393          B     ERRA                                               MDG24150
0017AEI  48B0 872A =001EDCI   2394  LOD2    LH    RB,OUTDEV+4       GET THE SELCH ADDRESS            MDG24160
0017B2I  233B                 2395          BZS   LOD3                                               MDG24170
0017B4I  DEB0 80F4 =0018ACI   2396          OC    RB,STOP           STOP THE SELCH                   MDG24180
0017B8I  9DB1                 2397          SSR   RB,R1                                             MDG24190
0017BAI  C510 0004            2398          CLHI  R1,X'04'          FALSE SYNC ?                     MDG24200
0017BEI  2135                 2399          BNES  LOD3              NO                               MDG24210
0017C0I  C810 00E6            2400          LHI   R1,X'E6'          YES                              MDG24220
0017C4I  4300 8510 =001CD8I   2401          B     ERRB                                               MDG24230
0017C8I  48C0 8712 =001EDEI   2402  LOD3    LH    RC,OUTDEV+6       GET THE CONTROLLER ADDRESS       MDG24240
0017CCI  2339                 2403          BZS   LOD4                                               MDG24250
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0017CEI  9DC1                    2404           SSR    RC,R1                                                    MDG24260
0017D0I  C510 0004               2405           CLHI   R1,X'04'           FALSE SYNC ?                          MDG24270
0017D4I  2135                    2406           BNES   LOD4               NO                                    MDG24280
0017D6I  C810 00E6               2407           LHI    R1,X'E6'           YES                                   MDG24290
0017DAI  4300 84FE =001CDCI      2408           B      ERRC                                                     MDG24300
0017DEI  4810 86F6 =001ED8I      2409  LOD4     LH     R1,OUTDEV          GET THE DEVICE INDICATOR              MDG24310
0017E2I  2135                    2410           BNZS   LOD5                                                     MDG24320
0017E4I  C800 4534               2411           LHI    R0,C'E4'           YES                                   MDG24330
0017E8I  4300 8424 =001C10I      2412           B      ERROR              ERROR                                 MDG24340
0017ECI  4810 89D4 =0021C4I      2413  LOD5     LH     R1,TRKDEN          GET OUTPUT TRKDEN                     MDG24350
0017F0I  4010 8A1A =0022UEI      2414           STH    R1,CUTRKDEN        STORE IT                              MDG24360
0017F4I  4810 86E0 =001ED8I      2415           LH     R1,OUTDEV                                                MDG24370
0017F8I  0303                    2416           BR     R3                 RETURN                                MDG24380
                                 2417  *                                                                        MDG24390
                                 2418  ***********************************************************************  MDG24400
                                 2419  *                                                                   *    MDG24410
                                 2420  *  L I D A D                                                        *    MDG24420
                                 2421  *                                                                   *    MDG24430
                                 2422  *   THIS ROUTINE WILL LOAD THE INDEV DEVICE ADDRESSES IN THE        *    MDG24440
                                 2423  *   REGISTERS. THE ROUTINE WILL ABORT IF A DEVICE RESPONDS WITH     *    MDG24450
                                 2424  *   "FALSE SYNC" OR A DEVICE IS "DU". IT ALSO LOADS THE DEVICE      *    MDG24460
                                 2425  *   INDICATOR. IF A DISC TRACK DENSITY AND MAXCYL ARE SET.          *    MDG24470
                                 2426  *                                                                   *    MDG24480
                                 2427  *        INPUT: R3 = RETURN ADDRESS                                 *    MDG24490
                                 2428  *                                                                   *    MDG24500
                                 2429  *       OUTPUT: RA = DEVICE ADDRESS                                 *    MDG24510
                                 2430  *               RB = SELCH ADDRESS                                  *    MDG24520
                                 2431  *               RC = CONTROLLER ADDRESS                             *    MDG24530
                                 2432  *               R1 = DEVICE INDICATOR                               *    MDG24540
                                 2433  *                                                                   *    MDG24550
                                 2434  ***********************************************************************  MDG24560
                                 2435  *                                                                        MDG24570
0017FAI  48A0 86E4 =001EE2I      2436  LIDAD    LH     RA,INDEV+2         GET THE DEVICE ADDRESS                MDG24580
0017FEI  2135                    2437           BNZS   LID1               ZERO ?                                MDG24590
001800I  C800 4535               2438           LHI    R0,C'E5'           YES                                   MDG24600
001804I  4300 8408 =001C10I      2439           B      ERROR                                                    MDG24610
001808I  9DA1                    2440  LID1     SSR    RA,R1              NO                                    MDG24620
00180AI  C510 0004               2441           CLHI   R1,X'04'           FALSE SYNC ?                          MDG24630
00180EI  2135                    2442           BNES   LID1A                                                    MDG24640
001810I  C810 00E7               2443           LHI    R1,X'E7'           YES                                   MDG24650
001814I  4300 84BC =001CD4I      2444           B      ERRA                                                     MDG24660
001818I  C310 0001               2445  LID1A    THI    R1,1               DU ?                                  MDG24670
00181CI  2335                    2446           BZS    LID2               NO                                    MDG24680
00181EI  C810 00EF               2447           LHI    R1,X'EF'           YES                                   MDG24690
001822I  4300 84AE =001CD4I      2448           B      ERRA                                                     MDG24700
001826I  48B0 86BA =001EE4I      2449  LID2     LH     RB,INDEV+4         GET THE SELCH ADDRESS                 MDG24710
00182AI  233B                    2450           BZS    LID3                                                     MDG24720
00182CI  DEB0 807C =0018ACI      2451           OC     RB,STOP            STOP THE SELCH                        MDG24730
001830I  9DB1                    2452           SSR    RB,R1                                                    MDG24740
001832I  C510 0004               2453           CLHI   R1,X'04'           FALSE SYNC ?                          MDG24750
001836I  2135                    2454           BNES   LID3               NO                                    MDG24760
001838I  C810 00E7               2455           LHI    R1,X'E7'           YES                                   MDG24770
00183CI  4300 8498 =001CD8I      2456           B      ERRB                                                     MDG24780
001840I  48C0 86A2 =001EE6I      2457  LID3     LH     RC,INDEV+6         GET THE CONTROLLER ADDRESS            MDG24790
001844I  2339                    2458           BZS    LID4                                                     MDG24800
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 001846I  9DC1                  2459          SSR   RC,R1                                           MDG24810
 001848I  C510 0004             2460          CLHI  R1,X'04'              FALSE SYNC ?              MDG24820
 00184CI  2135                  2461          BNES  LID4                  NO                        MDG24830
 00184EI  C810 00E7             2462          LHI   R1,X'E7'              YES                       MDG24840
 001852I  4300 8486 =001CDCI    2463          B     ERRC                                            MDG24850
 001856I  4810 8686 =001EE0I    2464 LID4     LH    R1,INDEV              GET THE DEVICE INDICATOR  MDG24860
 00185AI  2135                  2465          BNZS  LID5                                            MDG24870
 00185CI  C800 4535             2466          LHI   R0,C'E5'              YES                       MDG24880
 001860I  4300 83AC =001C10I    2467          B     ERROR                                           MDG24890
 001864I  4810 895E =0021C6I    2468 LID5     LH    R1,TRKDEN+2           GET INPUT TRKDEN          MDG24900
 001868I  4010 89A2 =00220EI    2469          STH   R1,CUTRKDEN           STORE IT                  MDG24910
 00186CI  4810 8670 =001EE0I    2470          LH    R1,INDEV                                        MDG24920
 001870I  0303                  2471          BR    R3                    RETURN                    MDG24930
                                2472 *                                                              MDG24940
                                2473 *                                                              MDG24950
                                2474 *                                                              MDG24960
                                2475 *                                                              MDG24970
                                2476 *                                                              MDG24980
                                2477 *  S T B K A D                                                 MDG24990
                                2478 *                                                              MDG25000
                                2479 *     THIS ROUTINE WILL RETURN THE PROPER VALUES TO SET UP THE MDG25010
                                2480 *     SELCH OR TO SET UP THE WRITE BLOCK.                      MDG25020
                                2481 *                                                              MDG25030
                                2482 *        INPUT = RD = LOW ADDRESS TO BE COPIED                 MDG25040
                                2483 *                RE = HIGH ADDRESS TO BE COPIED                MDG25050
                                2484 *                R3 = RETURN ADDRESS                           MDG25060
                                2485 *        OUTPUT = R4 = 0 MORE DATA BLOCKS REQUIRED TO FINISH   MDG25070
                                2486 *                        THE ENTIRE TRANSFER                   MDG25080
                                2487 *                   = F INDICATES THAT THIS IS THE LAST        MDG25090
                                2488 *                     BLOCK OF THE TRANSFER                    MDG25100
                                2489 *                 R5 = LOW ADDRESS FOR THIS BLOCK              MDG25110
                                2490 *                 R6 = HIGH ADDRESS FOR THIS BLOCK             MDG25120
                                2491 *                 RD = ENTRY VALUE + X'100'                    MDG25130
                                2492 *                 RE = ENTRY VALUE (NEVER ALTERED)             MDG25140
                                2493 *                                                              MDG25150
 001872I  085D                  2494 STBKAD   LDAR  R5,RD                 COPY THE LOW POINTER      MDG25160
 001874I  086E                  2495          LDAR  R6,RE                 COPY THE HIGH POINTER     MDG25170
 001876I  0B65                  2496          SAR   R6,R5                 SUBTRACT (HIGH - LOW)     MDG25180
 001878I  C560 00FF             2497          CLHI  R6,X'FF'                                        MDG25190
*00187CI  218A                  2498          BL    NOMORE                                          MDG25200
*00187EI  2339                  2499          BE    NOMORE                                          MDG25210
 001880I  085D                  2500          LDAR  R5,RD                                           MDG25220
*001882I  CAD0 0100             2501          AAI   RD,X'100'                                       MDG25230
 001886I  0865                  2502          LDAR  R6,R5                                           MDG25240
*001888I  CA60 00FF             2503          AAI   R6,X'FF'                                        MDG25250
 00188CI  2440                  2504          LIS   R4,0                                            MDG25260
 00188EI  0303                  2505          BR    R3                                              MDG25270
                                2506 *                                                              MDG25280
 001890I  244F                  2507 NOMORE   LIS   R4,15                                           MDG25290
 001892I  C560 0000             2508          CLHI  R6,X'00'              DIFFERENCE = 0 ?          MDG25300
*001896I  2334                  2509          BE    NOM01                                           MDG25310
 001898I  085D                  2510          LDAR  R5,RD                                           MDG25320
 00189AI  086E                  2511          LDAR  R6,RE                                           MDG25330
 00189CI  0303                  2512          BR    R3                                              MDG25340
                                2513 *                                                              MDG25350
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                                *                                                           MDG25360
00189EI  085D                   NOMO1    LDAR  R5,RD                                        MDG25370
0018A0I  0865                            LDAR  R6,R5                                        MDG25380
0018A2I  2661                            AIS   R6,1           ADD 1 SO THAT A MIN. OF 2 BYTES   MDG25390
                                *                         WILL BE TRANSFERED                MDG25400
0018A4I  0303                            BR    R3                                           MDG25410
                                *                                                           MDG25420
                                *                                                           MDG25430
                                *                                                           MDG25440
                                *                                                           MDG25450
0018A6I  2313                   FWFM     DC    X'2313'        FORWARD FM / BACKSPACE FM     MDG25460
         0000 18A7I             BKFM     EQU   FWFM+1                                       MDG25470
                                *                                                           MDG25480
0018A8I  2250                   MTWRT    DC    X'2250'                                      MDG25490
         0000 18A9I             ESWRT    EQU   MTWRT+1                                      MDG25500
                                *                                                           MDG25510
0018AAI  C030                   DISABL   DC    X'C030'        DISABLE / WFM                 MDG25520
         0000 18ABI             WFM      EQU   DISABL+1                                     MDG25530
                                *                                                           MDG25540
0018ACI  0811                   STOP     DC    X'0811'        STOP/BKSP                     MDG25550
         0000 18ADI             BKSP     EQU   STOP+1                                       MDG25560
                                *                                                           MDG25570
0018AEI  10C2                   SWRT     DC    X'10C2'        SELCH GO / SEEK               MDG25580
         0000 18AFI             SEEK     EQU   SWRT+1                                       MDG25590
                                *                                                           MDG25600
0018B0I  C8C1                   RESET    DC    X'C8C1'                                      MDG25610
         0000 18B1I             RESTOR   EQU   RESET+1                                      MDG25620
                                *                                                           MDG25630
0018B2I  0302                   RCHECK   DC    X'0302'        READ CHECK / DISC WRITE       MDG25640
         0000 18B3I             DWRIT    EQU   RCHECK+1                                     MDG25650
                                *                                                           MDG25660
0018B4I  2038                   CLEAR    DC    X'2038'        CLEAR / REWIND                MDG25670
         0000 18B5I             REWIND   EQU   CLEAR+1                                      MDG25680
                                *                                                           MDG25690
0018B6I  0121                   DREAD    DC    X'0121'        DISC READ / MT READ           MDG25700
         0000 18B7I             MTREAD   EQU   DREAD+1                                      MDG25710
                                *                                                           MDG25720
0018B8I  3070                   SREAD    DC    X'3070'                                      MDG25730
         0000 18B9I             ESREAD   EQU   SREAD+1                                      MDG25740
                                *                                                           MDG25750
0018BAI  4800                   ESTOP    DC    X'4800'        ESELCH STOP                   MDG25760
                                *                                                           MDG25770
                                *                                                           MDG25780
         0000 18BCI             CRLF     EQU   *                                            MDG25790
0018BCI  E620 809E =00195EI              LDAI  R2,AST+2       LOAD ADDRESS                  MDG25800
0018C0I  4130 8002 =0018C6I              BAL   R3,PRINT       DO CR/LF                      MDG25810
0018C4I  030E                            BR    RE             RETURN                        MDG25820
                                *                                                           MDG25830
                                *                                                           MDG25840
                                *                                                           MDG25850
                                *                                                           MDG25860
                                *       P R I N T                                           MDG25870
                                *                                                           MDG25880
                                *THIS SUBROUTINE WILL PRINT TO THE TTY, CRT, OR CAROUSEL ON PASLA   MDG25890
                                *                                                           MDG25900
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                                2569  *  INPUT TO THE ROUTINE                                                    MDG25910
                                2570  *                                                                         MDG25920
                                2571  *        R1 = NUMBER OF CHARACTERS TO BE OUTPUT                           MDG25930
                                2572  *        R2 = THE ADDRESS OF THE OUTPUT BUFFER                           MDG25940
                                2573  *        R3 = THE RETURN ADDRESS                                         MDG25950
                                2574  *                                                                        MDG25960
                                2575  *                                                                        MDG25970
        0000 18C6I              2576  PRINT    EQU   *                                                         MDG25980
 0018C6I D342 0000              2577  PRINT2   LB    R4,0(R2)          GET A MESSAGE BYTE                    MDG25990
 0018CAI 41F0 8916 =0018E4I     2578           BAL   LINK,OUTCHR       OUTPUT IT                             MDG26000
 0018CEI 274D                   2579           SIS   R4,13             CR ?                                  MDG26010
*0018D0I 2333                   2580           BZ    PRINT3            MSG OVER                              MDG26020
 0018D2I 2621                   2581           AIS   R2,1                                                      MDG26030
 0018D4I 2207                   2582           BS    PRINT2            LOOP FOR NEXT CHAR                    MDG26040
 0018D6I 244A                   2583  PRINT3   LIS   R4,10             LF                                    MDG26050
 0018D8I 41F0 8008 =0018E4I     2584           BAL   LINK,OUTCHR       LF                                    MDG26060
 0018DCI 2541                   2585           LCS   R4,1              DEL                                   MDG26070
 0018DEI 41F0 8002 =0018E4I     2586  PRINT3B  BAL   LINK,OUTCHR       TERMINAL CHARACTER                    MDG26080
 0018E2I 0303                   2587  PRNTEX   BR    R3                RETURN                                MDG26090
                                2588  *  TO OUTPUT A CHARACTER TO THE LIST DEVICE                              MDG26100
                                2589  *                                                                        MDG26110
        0000 18E4I              2590  OUTCHR   EQU   *                                                         MDG26120
 0018E4I 2400                   2591           LIS   R0,0              CLEAR                                 MDG26130
 0018E6I 4000 807A =001964I     2592           STH   R0,PAUSE                                                MDG26140
 0018EAI 4800 E738 =000026I     2593           LH    R0,CONRADR        GET READ ADDRESS                      MDG26150
 0018EEI 4810 E73A =00002CI     2594           LH    R1,CON2ND         GET 2ND CMD                           MDG26160
 0018F2I 2332                   2595           BZS   OTC.0             SKIP IF ZERO                          MDG26170
 0018F4I 9E01                   2596           OCR   R0,R1             ISSUE 2ND CMD                         MDG26180
        0000 18F6I              2597  OTC.0    EQU   *                                                         MDG26190
 0018F6I 4800 E72C =000026I     2598           LH    R0,CONRADR        GET READ ADDRESS                      MDG26200
 0018FAI D310 E72C =00002AI     2599           LB    R1,CONRD          GET READ COMMAND                      MDG26210
 0018FEI 9E01                   2600           OCR   R0,R1             ISSUE READ CMD                        MDG26220
 001900I 9D01                   2601           SSR   R0,R1             SENSE STATUS                          MDG26230
*001902I 2386                   2602           BFC   8,OTC.2           BRANCH IF CHAR. IS TO BE READ         MDG26240
 001904I 4810 805C =001964I     2603  OTC.1    LH    R1,PAUSE          PAUSED NOW ?                          MDG26250
 001908I 2039                   2604           BNZS  OTC.0             YES, LOOP                             MDG26260
 00190AI 4300 8020 =00192EI     2605           B     OUTCHR2           NO, GO OUTPUT CHARACTER               MDG26270
 00190EI 9B01                   2606  OTC.2    RDR   R0,R1             GET CHARACTER                         MDG26280
 001910I C410 007F              2607           NHI   R1,X'7F'                                                 MDG26290
 001914I C810 0012              2608           SHI   R1,X'12'          DC2 ?                                 MDG26300
*001918I 2134                   2609           BNZ   OTC.3                                                   MDG26310
 00191AI 4010 8046 =001964I     2610           STH   R1,PAUSE                                                MDG26320
 00191EI 2308                   2611           BS    OUTCHR2                                                 MDG26330
 001920I 2712                   2612  OTC.3    SIS   R1,2              DC4 ?                                 MDG26340
 001922I 4230 FFD0 =0018F6I     2613           BNZ   OTC.0             NO, GO WAIT FOR DC2                   MDG26350
 001926I 40F0 803A =001964I     2614           STH   LINK,PAUSE                                               MDG26360
 00192AI 4300 FFC8 =0018F6I     2615           B     OTC.0                                                   MDG26370
                                2616  *                                                                        MDG26380
 00192EI 4010 8032 =001964I     2617  OUTCHR2  STH   R1,PAUSE          RESET FLAG                            MDG26390
 001932I 4800 E6F2 =000028I     2618           LH    R0,CONWADR        GET WRITE ADDRESS                     MDG26400
 001936I D310 E6F1 =000028I     2619           LB    R1,CONWRT         GET WRITE COMMAND                     MDG26410
 00193AI 9E01                   2620           OCR   R0,R1             ISSUE WRITE CMD                       MDG26420
 00193CI 9D01                   2621  OTC.4    SSR   R0,R1             WAIT FOR NOT BUSY                     MDG26430
*00193EI 211A                   2622           BTC   1,OUT0            BRANCH IF OFF-LINE                    MDG26440
 001940I C510 000C              2623           CLHI  R1,12             PASLA OFFLINE ?                       MDG26450
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*001944I 2337                             BE    OUT0              BRANCH: YES.           MDG26460
 001946I C310 0008                        THI   R1,8              BUSY ?                 MDG26470
*00194AI 2037                             BNZ   OTC.4             WAIT FOR NOT BUSY.     MDG26480
 00194CI 9A04                             WDR   R0,R4             OUTPUT DATA BYTE       MDG26490
         0000 194EI               OTC.5   EQU   *                                        MDG26500
 00194EI 9001                             SSR   R0,R1                                    MDG26510
*001950I 2081                             BTC   8,OTC.5           WAIT FOR BUSY TO DROP  MDG26520
         0000 1952I               OUT0    EQU   *                                        MDG26530
         0000 1952I               OUT1    EQU   *                                        MDG26540
 001952I 030F                             BR    LINK              RETURN                 MDG26550
                                  *-*-------------------------                           MDG26560
                                  *                                                      MDG26570
                                  *                                                      MDG26580
 001954I 4D44 4752 3034           TITLE   DC    C'MDGR04',X'0D0A'                        MDG26590
 00195AI 0D0A
 00195CI 2A20                     AST     DC    C'*',X'D0A'                              MDG26600
 00195EI 0D0A
 001960I 3F20                     QUST    DC    C'?',X'D0A'                              MDG26610
 001962I 0D0A
 001964I 0000                     PAUSE   DC    X'0'                                     MDG26620
                                  ********************************************************************* MDG26630
                                  *                                                      MDG26640
                                  *   G E T C H R                                        MDG26650
                                  *                                                      MDG26660
                                  *     GETS A CHARACTER FROM INBUF AND RETURNS IT IN R0 MDG26670
                                  *                                                      MDG26680
                                  *                                                   *  MDG26690
                                  *                                                   *  MDG26700
                                  *        INPUT: R3 = RETURN ADDRESS                 *  MDG26710
                                  *               R1 = POINTER TO THE DESIRED CHARACTER * MDG26720
                                  *                                                   *  MDG26730
                                  *       OUTPUT: R0 = CHARACTER DESIRED              *  MDG26740
                                  *                                                   *  MDG26750
                                  ********************************************************************* MDG26760
                                  *                                                   *  MDG26770
 001966I C510 0032                GETCHR  CLHI  R1,50             MAX ?                  MDG26780
*00196AI 2385                             BNL   QUEST             YES                    MDG26790
 00196CI D301 8580 =001EF0I               LB    R0,INBUF(R1)      GET THE CHAR.          MDG26800
 001970I 2611                             AIS   R1,1              BUMP POINTER           MDG26810
 001972I 0303                             BR    R3                RETURN                 MDG26820
         0000 1974I               QUEST   EQU   *                                        MDG26830
 001974I 41E0 FF44 =0018BCI               BAL   RE,CRLF           DO CR/LF               MDG26840
 001978I E620 FFE4 =001960I               LDAI  R2,QUST                                  MDG26850
 00197CI 4300 E718 =000098I               B     REDPTX                                   MDG26860
                                  *                                                      MDG26870
                                  ********************************************************************* MDG26880
                                  *                                                      MDG26890
                                  *  N O M O T N                                         MDG26900
                                  *                                                      MDG26910
                                  ********************************************************************* MDG26920
                                  *                                                      MDG26930
                                  *    WAIT FOR NO MOTION                                MDG26940
                                  *                                                      MDG26950
                                  *          R0 = RETURN ADDRESS                         MDG26960
                                  *          R1 = SCRATCH REGISTER                       MDG26970
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                                2676  *          RA = THE DEVICE ADDRESS                                          MDG26980
                                2677  *                                                                           MDG26990
                                2678  * ***************************************************************          MDG27000
                                2679  *                                                                           MDG27010
001980I  9DA1                   2680  NoMOTN   SSR   RA,R1              SENSE THE STATUS                        MDG27020
001982I  4210 82E8 =001C6EI     2681           BTC   1,DEVDU                                                     MDG27030
001986I  C310 0010              2682           THI   R1,X'10'            NOMOTION SET ?                          MDG27040
00198AI  2235                   2683           BZS   NOMOTN              NO - WAIT                               MDG27050
00198CI  0300                   2684           BR    R0                  YES - RETURN                            MDG27060
                                2685  *                                                                           MDG27070
         0000 198EI             2686  BKFMNM   EQU   *                                                         MDG27080
00198EI  9DA1                   2687           SSR   RA,R1                                                       MDG27090
001990I  4210 82DA =001C6EI     2688           BTC   1,DEVDU                                                     MDG27100
001994I  C310 0020              2689           THI   R1,X'20'            ET BIT SET ?                            MDG27110
001998I  2135                   2690           BNZS  PBOV                                                        MDG27120
00199AI  C310 0010              2691           THI   R1,X'10'            NO MOTION ?                             MDG27130
00199EI  2238                   2692           BZS   BKFMNM              NO                                      MDG27140
0019A0I  0300                   2693           BR    R0                                                          MDG27150
                                2694  *                                                                           MDG27160
0019A2I  41E0 FF16 =0018BCI     2695  PBOV     BAL   RE,CRLF             DO CRLF                                 MDG27170
0019A6I  E620 8008 =0019B2I     2696           LDAI  R2,BOV              PRINT "BOV"                             MDG27180
0019AAI  4130 FF18 =0018C6I     2697           BAL   R3,PRINT                                                    MDG27190
0019AEI  4300 FD9E =0016C0I     2698           B     PEOJ                                                        MDG27200
                                2699  *                                                                           MDG27210
                                2700  *                                                                           MDG27220
0019B2I  424F 5620              2701  BOV      DC    C'BOV',X'0D0A'                                              MDG27230
0019B6I  0D0A
                                2702  *                                                                           MDG27240
                                2703  *                                                                           MDG27250
                                2704  *                                                                           MDG27260
                                2705  ***************************************************************************MDG27270
                                2706  *                                                                         *MDG27280
                                2707  *                                                                         *MDG27290
                                2708  *  L O K I N                                                              *MDG27300
                                2709  *                                                                         *MDG27310
                                2710  *   THIS ROUTINE WILL LOCK THE INPUT DEVICE INDICATING AN ERROR,          *MDG27320
                                2711  *   OR EOV.  WHEN A DEVICE IS LOCKED COPY CANNOT BE USED WITH            *MDG27330
                                2712  *   THAT DEVICE                                                          *MDG27340
                                2713  *                                                                         *MDG27350
                                2714  *        INPUT : R3 = RETURN ADDRESS                                      *MDG27360
                                2715  *                                                                         *MDG27370
                                2716  *       OUTPUT: THE LOCK WORD IS SET (DEVICE LOCKED)                      *MDG27380
                                2717  *                                                                         *MDG27390
                                2718  *                                                                         *MDG27400
                                2719  ***************************************************************************MDG27410
         0000 19B8I             2720  LOKIN    EQU   *                                                         MDG27420
*0019B8I  2511                  2721           LHI   R1,X'FFFF'                                                  MDG27430
 0019BAI  4010 852E =001EECI    2722           STH   R1,PGMIPN                                                   MDG27440
 0019BEI  4010 852C =001EEEI    2723           STH   R1,PGMIPN+2                                                 MDG27450
 0019C2I  0303                  2724           BR    R3                                                          MDG27460
                                2725  *                                                                           MDG27470
                                2726  ***************************************************************************MDG27480
                                2727  *                                                                         *MDG27490
                                2728  *  L O K O U T                                                            *MDG27500
                                2729  *                                                                         *MDG27510
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                                2730  *   THIS ROUTINE WILL LOCK THE OUTPUT DEVICE - INDICATING AN ERROR,   *   MDG27520
                                2731  *   OR EOV.  WHEN A DEVICE IS LOCKED COPY CANNOT BE USED WITH THAT    *   MDG27530
                                2732  *    DEVICE.                                                         *   MDG27540
                                2733  *                                                                    *   MDG27550
                                2734  *        INPUT: R3 = RETURN ADDRESS                                  *   MDG27560
                                2735  *                                                                    *   MDG27570
                                2736  *       OUTPUT: THE LOCK IS SET (DEVICE LOCKED)                      *   MDG27580
                                2737  *                                                                    *   MDG27590
                                2738  *                                                                    *   MDG27600
                                2739  ********************************************************************   MDG27610
      0000 19C4I                2740  LOKOUT   EQU   *                                                       MDG27620
*0019C4I 2511                   2741           LHI   R1,X'FFFF'          SET THE LOCKOUT INDICATOR          MDG27630
 0019C6I 4010 851E =001EE8I     2742           STH   R1,PGMOPN                                              MDG27640
 0019CAI 4010 851C =001EEAI     2743           STH   R1,PGMOPN+2                                            MDG27650
 0019CEI 0303                   2744           BR    R3                                                     MDG27660
                                2745  *                                                                    *   MDG27670
                                2746  ********************************************************************   MDG27680
                                2747  *                                                                    *   MDG27690
                                2748  *  Z S E Q                                                           *   MDG27700
                                2749  *                                                                    *   MDG27710
                                2750  *   THIS ROUTINE WILL ZERO (ASCII) THE SEQUENCE NUMBER FIELD.        *   MDG27720
                                2751  *   THIS INDICATES AN ILLEGAL NUMBER.                                *   MDG27730
                                2752  *                                                                    *   MDG27740
                                2753  *        INPUT: R3 = RETURN ADDRESS                                  *   MDG27750
                                2754  *                                                                    *   MDG27760
                                2755  *       OUTPUT: SEQUENCE NUMBER = 0                                  *   MDG27770
                                2756  *                                                                    *   MDG27780
                                2757  *                                                                    *   MDG27790
                                2758  ********************************************************************   MDG27800
                                2759  *                                                                    *   MDG27810
 0019D0I C810 3030              2760  ZSEQ     LHI   R1,X'3030'          ZERO THE SEQUENCE                  MDG27820
 0019D4I 4010 8590 =001F68I     2761           STH   R1,SEQNAM           NUMBER SO A CREATE                 MDG27830
 0019D8I D210 858E =001F6AI     2762           STB   R1,SEQNAM+2         CANNOT BE DONE                     MDG27840
 0019DCI 0303                   2763           BR    R3                                                     MDG27850
                                2764  ********************************************************************   MDG27860
                                2765  *                                                                      MDG27870
                                2766  *  W D F T                                                             MDG27880
                                2767  *                                                                      MDG27890
                                2768  ************************************************************************MDG27900
                                2769  ************************************************************************MDG27910
                                2770  *    WRITE THE DATA TO THE FILE                                        MDG27920
                                2771  *                                                                      MDG27930
                                2772  *         RA =  FILE ADDRESS                                           MDG27940
                                2773  *         R3 =  RETURN ADDRESS                                         MDG27950
                                2774  *         R1 =  USED AS SCRATCH                                        MDG27970
                                2775  *                                                                      MDG27980
                                2776  ********************************************************************   MDG27990
 0019DEI 4810 882C =0022CEI     2777  WDFT     LH    R1,CUTRKDEN                                            MDG28000
 0019E2I 2718                   2778           SIS   R1,8                SEE IF 10 MB                 R04
*0019E4I 233E                   2779           BZ    WDFT3               SKIP IF YES                  R04
 0019E6I D8A0 8818 =002202I     2780           WH    RA,HEAD             HEAD NUMBER TO DRIVE         R04
 0019EAI DEA0 8020 =001A0EI     2781           OC    RA,SETHEAD          SET HEAD REGISTER            R04
 0019EEI 9DC1                   2782  WDFT1    SSR   RC,R1               WAIT FOR CONTROLLER IDLE     R04
*0019F0I 2221                   2783           BFC   2,WDFT1             *                            R04
 0019F2I D8A0 880A =002200I     2784           WH    RA,CYL              SEND CYLINDER NUMBER TO DRIVE R04
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 0019F6I  DEA0 8015 =001A0FI   2785           OC    RA,SETCYL          SET CYLINDER REGISTER          R04
 0019FAI  9DC1                 2786  WDFT2    SSR   RC,R1              *                              R04
*0019FCI  2221                 2787           BFC   2,WDFT2            WAIT FOR CONTROLLER IDLE       R04
 0019FEI  0303                 2788           BR    R3                 RETURN TO CALL                 R04
 001A00I  DAA0 87FC =002200I   2789  WDFT3    WD    RA,CYL             SEND CYLINDER NUMBER TO DRIVE  R04
 001A04I  DAA0 87F9 =002201I   2790           WD    RA,CYL+1           LS BYTE OF CYLINDER            R04
 001A08I  9DC1                 2791  WDFT4    SSR   RC,R1              WAIT FOR CONTROLLER IDLE       R04
*001A0AI  2221                 2792           BFC   2,WDFT4            *                              R04
 001A0CI  0303                 2793           BR    R3                 RETURN TO CALL                 R04
 001A0EI  20                   2794  SETHEAD  DB    X'20'              *                              R04
 001A0FI  10                   2795  SETCYL   DB    X'10'              *                              R04
                               2796  *                                                                MDG28260
                               2797  ***************************************************************** MDG28270
                               2798  *                                                                MDG28280
                               2799  *  F R S R W                                                     MDG28290
                               2800  *                                                                MDG28300
                               2801  ***************************************************************** MDG28310
                               2802  *                                                                MDG28320
                               2803  *    FILE READY TO SEEK READ OR WRITE ?                          MDG28330
                               2804  *                                                                MDG28340
                               2805  *         R3  =  RETURN ADDRESS                                  MDG28350
                               2806  *                                                                MDG28360
                               2807  ***************************************************************** MDG28370
                               2808  *                                                                MDG28380
 001A10I  9DC1                 2809  FRSRW    SSR   RC,R1                                            MDG28390
 001A12I  2221                 2810           BFBS  2,1                WAIT FOR CONTROLLER IDLE       MDG28400
 001A14I  9DA1                 2811           SSR   RA,R1                                            MDG28410
 001A16I  4210 8254 =001C6EI   2812           BTC   1,DEVDU                                          MDG28420
*001A1AI  2173                 2813           BTC   7,FRSERR                                         MDG28430
*001A1CI  2086                 2814           BTC   8,FRSRW                                          MDG28440
 001A1EI  0303                 2815           BR    R3                                               MDG28450
 001A20I  C310 0030            2816  FRSERR   THI   R1,X'30'                                        MDG28460
*001A24I  2135                 2817           BNZ   ILLADD                                           MDG28470
 001A26I  C810 00E8            2818           LHI   R1,X'E8'                                         MDG28480
 001A2AI  4300 82A6 =001CD4I   2819           B     ERRA                                             MDG28490
                               2820  *                                                                MDG28500
                               2821  *                                                                MDG28510
 001A2EI  C810 00EA            2822  ILLADD   LHI   R1,X'EA'                                        MDG28520
 001A32I  4300 829E =001CD4I   2823           B     ERRA                                             MDG28530
                               2824  *                                                                MDG28540
                               2825  *                                                                MDG28550
                               2826  *                                                                MDG28560
                               2827  ***************************************************************** MDG28570
                               2828  *                                                                MDG28580
                               2829  *  R C H K                                                       MDG28590
                               2830  *                                                                MDG28600
                               2831  ***************************************************************** MDG28610
                               2832  *                                                                MDG28620
                               2833  *    READ CHECK SUBROUTINE                                       MDG28630
                               2834  *                                                                MDG28640
                               2835  *          R3 = RETURN ADDRESS                                   MDG28650
                               2836  *          R8 = SECTOR NUMBER                                    MDG28660
                               2837  *                                                                MDG28670
 001A36I  5030 877A =0021B4I   2838  RCHK     STA   R3,ADDRES          SAVE RETURN ADDRESS            MDG28680
 001A3AI  4870 8786 =0021C4I   2839           LH    R7,TRKDEN                                        MDG28690
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001A3EI  C570 0008            2840          CLHI  R7,8              SEE IF 10 MB DRIVE                R04   MDG28700
*001A42I 233C                 2841          BE    RCHK1             BRANCH IF YES                     R04   MDG28710
 001A44I 4130 FF96 =0019DEI   2842          BAL   R3,WDFT           ELSE SEND HEAD & CYLINDER INFO          MDG28720
 001A48I 9AC8                 2843          WDR   RC,R8             SEND SECTOR TO CONTROLLER               
 001A4AI 4830 87B4 =0022U2I   2844          LH    R3,HEAD                                                   MDG28740
 001A4EI 113A                 2845          SLLS  R3,10                                                     MDG28750
 001A50I 4870 87AC =0022U0I   2846          LH    R7,CYL                                                    MDG28760
 001A54I 0637                 2847          OAR   R3,R7             MERGE CYLINDER AND HEAD                 MDG28770
 001A56I 98C3                 2848          WHR   RC,R3             SEND TO CONTROLLER                      MDG28780
*001A58I 230A                 2849          B     RCHK3                                                     MDG28790
 001A5AI 4130 FFB2 =001A1UI   2850  RCHK1   BAL   R3,FRSRW          WAIT FOR DISK READY                     MDG28800
 001A5EI 4130 FF7C =0019DEI   2851          BAL   R3,WDFT           SET UP DRIVE                            MDG28810
 001A62I 4830 879C =0022U2I   2852          LH    R3,HEAD                                                   MDG28820
 001A66I 1135                 2853          SLLS  R3,5                                                      MDG28830
 001A68I 0638                 2854          OAR   R3,R8             MERGE CYLINDER AND HEAD INFO            MDG28840
 001A6AI 9AC3                 2855          WDR   RC,R3             SEND TO CONTROLLER                      MDG28850
 001A6CI DEC0 FE42 =0018B2I   2856  RCHK3   OC    RC,RCHECK         ISSUE READ CHECK COMMAND                MDG28860
 001A70I 4130 8006 =001A7AI   2857          BAL   R3,SETCON         WAIT FOR IDLE, THEN RESET CONTROLLER    MDG28870
                              2858  *                                                                       MDG28880
 001A74I 5830 873C =0021B4I   2859  RCHK2   LDA   R3,ADDRES         GET ADDRESS                             MDG28890
 001A78I 0303                 2860          BR    R3                RETURN                                  MDG28900
                              2861  *                                                                       MDG28910
                              2862  ************************************************************************ MDG28920
                              2863  *                                                                       MDG28930
                              2864  *  S E T C O N                                                          MDG28940
                              2865  *                                                                       MDG28950
                              2866  ************************************************************************ MDG28960
                              2867  *                                                                       MDG28970
         0000 1A7AI           2868  SETCON  EQU   *                                                         MDG28980
 001A7AI 9DC1                 2869          SSR   RC,R1                                                     MDG28990
 001A7CI 2221                 2870          BFBS  2,SETCON          WAIT FOR IDLE                           MDG29000
 001A7EI 4U10 8772 =0021F4I   2871          STH   R1,CONSTA         SAVE STATUS                             MDG29010
 001A82I DEC0 FE2A =0018BUI   2872          OC    RC,RESET          RESET PENDING INT.                      MDG29020
 001A86I 0303                 2873          BR    R3                                                        MDG29030
                              2874  *                                                                       MDG29040
                              2875  *                                                                       MDG29050
                              2876  ************************************************************************ MDG29060
                              2877  *                                                                       MDG29070
                              2878  *  S E T S E L                                                          MDG29080
                              2879  *                                                                       MDG29090
                              2880  ************************************************************************ MDG29100
                              2881  *                                                                       MDG29110
         0000 1A88I           2882  SETSEL  EQU   *                                                         MDG29120
 001A88I 2400                 2883          LIS   R0,0                                                      MDG29130
 001A8AI 4000 877A =0022U8I   2884          STH   R0,SELERR                                                 MDG29140
 001A8EI                      2885          IFNZ  ADC-2                                                     MDG29150
 001A8EI E600 8012 =001AA4I   2886          LA    R0,SELINT         GET THE INTERRUPT ADDRESS               MDG29160
 001A92I 081B                 2887          LDAR  R1,RB             GET THE SELCH ADDRESS                   MDG29170
 001A94I 4U10 877A =002212I   2888  SETCOM  STH   R1,INTADD         SAVE INTERRUPT ADDRESS                  MDG29180
 001A98I 1111                 2889          SLLS  R1,1              MULTIPLY BY 2                           MDG29190
*001A9AI CA10 00D0            2890          AAI   R1,X'D0'          ADD X'D0'                               MDG29200
 001A9EI 4001 0000            2891          STH   R0,0(R1)                                                  MDG29210
 001AA2I 0302                 2892          BR    R2                                                        MDG29220
                              2893  *                                                                       MDG29230
                              2894          ELSE                                                            MDG29240
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                                2895  *                                                                    MDG29250
                                2896        LHI   R0,SELINT                                              MDG29260
                                2897        LDAR  R1,RB                                                  MDG29270
                                2898  SETCOM STH  R1,INTADD          SAVE INT ADDRESS                    MDG29280
                                2899        LIS   R1,0                                                   MDG29290
                                2900        STH   R1,X'44'                                               MDG29300
                                2901        STH   R0,X'46'                                               MDG29310
                                2902        BR    R2                                                     MDG29320
                                2903  *                                                                    MDG29330
                                2904        ENDC                                                         MDG29340
                                2905  *                                                                    MDG29350
                                2906  *                                                                    MDG29360
          0000 1AA4I            2907  SELINT EQU  *                                                        MDG29370
                                2908  *                                                                    MDG29380
001AA4I                         2909        IFNZ  ADC-2                                                  MDG29390
                                2910  *                                                                    MDG29400
001AA4I 4840 876A =002212I      2911        LH    R4,INTADD                                              MDG29410
001AA8I 0542                    2912        CLAR  R4,R2                                                  MDG29420
001AAAI 4230 8022 =001AD0I      2913        BNE   SELIN1                                                 MDG29430
001AAEI DEB0 FE08 =0018BAI      2914        OC    RB,ESTOP         GIVE THE ESELCH STOP COMMAND        MDG29460
          0000 1AB2I            2915  SELST1 EQU  *                                                        MDG29490
001AB2I 2460                    2916        LIS   R6,0                                                   MDG29500
001AB4I 9B46                    2917        RDR   R4,R6            3 - READ THE MOST SIG. BYTE           MDG29530
001AB6I 3466                    2918        EXHR  R6,R6            LEFT 16                     R04
001AB8I 2470                    2919  SELIN2 LIS  R7,0                                                   MDG29560
001ABAI 9947                    2920        RHR   R4,R7            READ A HALFWORD                       MDG29570
001ABCI 0667                    2921        OAR   R6,R7            R6 = FINAL ADDRESS                    MDG29580
001ABEI 5870 86F6 =0021B8I      2922        LDA   R7,FADD          GET THE FINAL ADDRESS                 MDG29590
001AC2I 0576                    2923        CLAR  R7,R6            COMPARE THE ADDRESSES                 MDG29600
*001AC4I 2137                   2924        BNE   SELIN9                                                 MDG29610
001AC6I 2400                    2925        LIS   R0,0             REMOVE THE WAIT BIT                   MDG29620
001AC8I 4000 873C =002208I      2926        STH   R0,SELERR        SET NO SELCH ERROR                    MDG29630
*001ACCI C800 30F0              2927        LI    R0,Y'000030F0'                                         MDG29640
001AD0I 1800                    2928  SELIN1 LPSWR R0              RETURN TO WHERE INTERRUPTED           MDG29650
                                2929  *                                                                    MDG29660
001AD2I 240F                    2930  SELIN9 LIS  R0,15            SET SELCH                             MDG29670
001AD4I 4000 8730 =002208I      2931        STH   R0,SELERR        ERROR                                 MDG29680
*001AD8I C800 30F0              2932        LI    R0,Y'000030F0'                                         MDG29690
001ADCI 1800                    2933        LPSWR R0              RETURN TO WHERE INTERRUPTED           MDG29700
                                2934  *                                                                    MDG29710
                                2935        ELSE                                                         MDG29720
                                2936  *                                                                    MDG29730
                                2937        AIR   RF,R1                                                  MDG29740
                                2938        CLHR  RF,RB                                                  MDG29750
                                2939        BNES  SELIN3           NO                                    MDG29760
                                2940        OC    RB,STOP          YES                                   MDG29770
                                2941        RHR   RB,R9            READ END ADDRESS                      MDG29780
                                2942        CLHR  R6,R9            COMPARE ADDRESSES ?                   MDG29790
                                2943        BNE   SELIN4           NO                                    MDG29800
                                2944        LIS   R9,0             SET NO                                MDG29810
                                2945        STH   R9,SELERR        SELCH ERROR                           MDG29820
                                2946        LHI   R9,X'3000'       SET NEW PSW                           MDG29830
                                2947        STH   R9,X'40'                                               MDG29840
                                2948  SELIN3 LPSW  X'40'            RETURN TO WHERE INTERRUPTED           MDG29850
                                2949  *                                                                    MDG29860
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                                  SELIN4   LIS   R9,15            SET SELCH                  MDG29870
                                           STH   R9,SELERR        ERROR                      MDG29880
                                           LIS   R9,0                                        MDG29890
                                           STH   R9,X'40'         ZERO THE PSW               MDG29900
                                           LPSW  X'40'            RETURN TO WHERE INTERRUPTED MDG29910
                                  *                                                          MDG29920
                                           ENDC                                              MDG29930
          0000 1ADEI              LCORE    EQU   *                INITIALIZE                 MDG29940
 001ADEI                                   IFNZ  ADC-2                                       MDG29950
                                  *                                                          MDG29960
                                  *     INITIALIZE FOR THE 32 SERIES PROCESSOR               MDG29970
                                  *                                                          MDG29980
 001ADEI  C200 8086 =001B68I               LPSW  INIT32                                      MDG29990
*001AE2I  C800 00F0               GO32     LI    R0,Y'000000F0'                              MDG30000
 001AE6I  5000 0020                        ST    R0,X'20'                                    MDG30010
 001AEAI  5000 0024                        ST    R0,X'24'                                    MDG30020
 001AEEI  5000 0028                        ST    R0,X'28'                                    MDG30030
 001AF2I  5000 002C                        ST    R0,X'2C'                                    MDG30040
 001AF6I  5000 0030                        ST    R0,X'30'                                    MDG30050
 001AFAI  E610 80B0 =001BAEI               LA    R1,ILLIST                                   MDG30060
 001AFEI  5010 0034                        ST    R1,X'34'                                    MDG30070
 001B02I  5000 0038                        ST    R0,X'38'                                    MDG30080
 001B06I  E610 80AC =001BB6I               LA    R1,MCHMAL                                   MDG30090
 001B0AI  5010 003C                        ST    R1,X'3C'                                    MDG30100
 001B0EI  5000 0040                        ST    R0,X'40'                                    MDG30110
 001B12I  5000 0044                        ST    R0,X'44'                                    MDG30120
 001B16I  5000 0048                        ST    R0,X'48'                                    MDG30130
 001B1AI  E610 8088 =001BA6I               LA    R1,ARFLT                                    MDG30140
 001B1EI  5010 004C                        ST    R1,X'4C'                                    MDG30150
 001B22I  5000 0080                        ST    R0,X'80'                                    MDG30160
 001B26I  E610 870E =002238I               LA    R1,OLDPSW                                   MDG30170
 001B2AI  C410 FF00                        NHI   R1,X'FF00'       MAKE 256 BYTE BOUNDARY     MDG30180
 001B2EI  CA10 0100                        AHI   R1,X'100'        BUMP TO NEXT BOUNDARY      MDG30190
 001B32I  4010 0084                        STH   R1,X'84'                                    MDG30200
 001B36I  2618                             AIS   R1,8             BUMP                       MDG30210
 001B38I  4010 0086                        STH   R1,X'86'                                    MDG30220
 001B3CI  4000 0088                        STH   R0,X'88'                                    MDG30230
 001B40I  E610 80B8 =001BFCI               LA    R1,IOVQU                                    MDG30240
 001B44I  5010 008C                        ST    R1,X'8C'                                    MDG30250
 001B48I  5000 0090                        ST    R0,X'90'                                    MDG30260
 001B4CI  E610 80B2 =001C02I               LA    R1,MACINT                                   MDG30270
 001B50I  5010 0094                        ST    R1,X'94'                                    MDG30280
 001B54I  5000 0098                        ST    R0,X'98'                                    MDG30290
 001B58I  4000 00CC                        STH   R0,X'CC'                                    MDG30300
 001B5CI  E610 8090 =001BF0I               LA    R1,BNDYERR                                  MDG30310
 001B60I  4010 00CE                        STH   R1,X'CE'                                    MDG30320
*001B64I  2306                             B     INTCOM                                      MDG30330
                                  *                                                          MDG30340
 001B68I                                   ALIGN 8                                           MDG30350
 001B68I  0000                    INIT32   DC    X'0000',X'30F0'                             MDG30360
 001B6AI  30F0
 001B6CI  0000 1AE2I                       DC    A(GO32)                                     MDG30370
                                           ELSE                                              MDG30380
                                           LPSW  INIT16                                      MDG30390
                                  GO16     XHR   R0,R0                                       MDG30400
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                                   3004              STH     R0,X'2C'                                                MDG30410
                                   3005              STH     R0,X'34'                                                MDG30420
                                   3006              STH     R0,X'3C'                                                MDG30430
                                   3007              STH     R0,X'44'                                                MDG30440
                                   3008              STH     R0,X'4C'                                                MDG30450
                                   3009              LHI     R0,REGSAV                                               MDG30460
                                   3010              STH     R0,X'22'                                                MDG30470
                                   3011     *                                                                        MDG30480
                                   3012              LHI     R0,ARFLT                                                MDG30490
                                   3013              STH     R0,X'2E'                                                MDG30500
                                   3014              LHI     R0,ILLIST                                               MDG30510
                                   3015              STH     R0,X'36'                                                MDG30520
                                   3016              LHI     R0,MCHMAL                                               MDG30530
                                   3017              STH     R0,X'3E'                                                MDG30540
                                   3018              LHI     R0,INTER                                                MDG30550
                                   3019              STH     R0,X'46'                                                MDG30560
                                   3020              LHI     R0,DIVFLT                                               MDG30570
                                   3021              STH     R0,X'4E'                                                MDG30580
                                   3022              B       BEGIN                                                   MDG30590
                                   3023     INIT16   DC      X'3000',Z(G016)                                         MDG30600
                                   3024              ENDC                                                            MDG30610
 001B70I  4830 8094 =001C08I       3025     INTCOM   LH      R3,SVCERR                                               MDG30620
 001B74I  C810 009C                3026              LHI     R1,X'9C'                                                MDG30630
 001B78I  4031 0000                3027     X9C      STH     R3,0(R1)                                                MDG30640
 001B7CI  2612                     3028              AIS     R1,2                                                    MDG30650
 001B7EI  C510 00BC                3029              CLHI    R1,X'BC'                                                MDG30660
 001B82I  2035                     3030              BNES    X9C                                                     MDG30670
 001B84I  0700                     3031              XAR     R0,R0                                                   MDG30680
 001B86I  4001 0000                3032     XBC      STH     R0,0(R1)                                                MDG30690
 001B8AI  2612                     3033              AIS     R1,2                                                    MDG30700
 001B8CI  C510 00D0                3034              CLHI    R1,X'D0'                                                MDG30710
 001B90I  2035                     3035              BNES    XBC                                                     MDG30720
 001B92I  C800 1C0EI               3036              LHI     R0,INTER             SET THE ADDRESS                    MDG30730
 001B96I  4001 0000                3037     XCC      STH     R0,0(R1)                                                MDG30740
 001B9AI  2612                     3038              AIS     R1,2                                                    MDG30750
 001B9CI  C510 02D0                3039              CLHI    R1,X'2D0'                                               MDG30760
 001BA0I  2035                     3040              BNES    XCC                                                     MDG30770
 001BA2I  4300 E4A6 =00004CI       3041              B       BEGIN                                                   MDG30780
                                   3042     *                                                                        MDG30790
                                   3043     *                                                                        MDG30800
 001BA6I  C800 4630                3044     ARFLT    LHI     R0,C'F0'             FLPT ARIT FAULT                    MDG30810
 001BAAI  4300 8062 =001C10I       3045              B       PSWE                                                    MDG30820
 001BAEI  C800 4631                3046     ILLIST   LHI     R0,C'F1'             ILLEGAL INST.                      MDG30830
 001BB2I  4300 805A =001C10I       3047              B       PSWE                                                    MDG30840
 001BB6I                           3048              IFNZ    ADC-2                                                   MDG30850
 001BB6I  95AA                     3049     MCHMAL   EPSR    RA,RA                CAPTURE PSW                        MDG30860
 001BB8I  5800 0040                3050              L       R0,X'40'             SEE IF S3200                       MDG30870
 001BBCI  2336                     3051              BZS     NOT3200              NO                                 MDG30880
 001BBEI  2113                     3052              BMS     PWRDN                POWER DOWN                         MDG30890
 001BC0I  C200 800C =001BD0I       3053     PWRUP    LPSW    MCHPSW                                                  MDG30900
 001BC4I  C200 8020 =001BE8I       3054     PWRDN    LPSW    PFL                                                     MDG30910
 001BC8I  08AA                     3055     NOT3200  LDAR    RA,RA                SET CC                             MDG30920
*001BCAI  211B                     3056              BTC     1,PFAIL              POWER DOWN                         MDG30930
*001BCCI  2206                     3057              B       PWRUP                POWER RESTORE                      MDG30940
                                   3058              ELSE                                                            MDG30950
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                                3059 MCHMAL   BTC   1,PFAIL                                               MDG30960
                                3060          LPSW  MCHPSW                                                MDG30970
                                3061          ENDC                                                        MDG30980
 001BD0I                        3062          ALIGN 8                                                     MDG30990
         0000 1BD0I             3063 MCHPSW   EQU   *                                                     MDG31000
 001BD0I                        3064          IFNZ  ADC-2                                                 MDG31010
 001BD0I 0000                   3065          DC    X'0000',X'30F0'                                       MDG31020
 001BD2I 30F0
 001BD4I 0000 1BD8I             3066          DC    A(MCH1)                                               MDG31030
                                3067          ELSE                                                        MDG31040
                                3068          DC    X'3000',Z(MCH1)                                       MDG31050
                                3069          ENDC                                                        MDG31060
 001BD8I C800 4632              3070 MCH1     LHI   R0,C'F2'                                              MDG31070
 001BDCI 4300 8030 =001C10I     3071          B     PSWE                                                  MDG31080
 001BE0I C200 8004 =001BE8I     3072 PFAIL    LPSW  PFL                                                   MDG31090
 001BE8I                        3073          ALIGN 8                                                     MDG31100
         0000 1BE8I             3074 PFL      EQU   *                                                     MDG31110
 001BE8I                        3075          IFNZ  ADC-2                                                 MDG31120
 001BE8I 0000                   3076          DC    X'0000',X'B0F0'                                       MDG31130
 001BEAI B0F0
 001BECI 0000 1BE0I             3077          DC    A(PFAIL)                                              MDG31140
                                3078          ELSE                                                        MDG31150
                                3079          DC    X'B000',Z(PFAIL)                                      MDG31160
                                3080          ENDC                                                        MDG31170
 001BF0I C800 4638              3081 BNDYERR  LHI   R0,C'F8'                BOUNDARY VIOLATION            MDG31180
*001BF4I 230E                   3082          B     PSWE                                                  MDG31190
 001BF6I C800 4633              3083 DIVFLT   LHI   R0,C'F3'                DIVIDE FAULT                  MDG31200
*001BFAI 230B                   3084          B     PSWE                                                  MDG31210
 001BFCI C800 4635              3085 IOVQU    LHI   R0,C'F5'                I/O QUEUE OVERFLOW            MDG31220
*001C00I 2308                   3086          B     PSWE                                                  MDG31230
 001C02I C800 4636              3087 MACINT   LHI   R0,C'F6'                MAC INTERRUPT                 MDG31240
*001C06I 2305                   3088          B     PSWE                                                  MDG31250
 001C08I C800 4637              3089 SVCERR   LHI   R0,C'F7'                SVC INTERRUPT                 MDG31260
 001C0CI 2302                   3090          BS    PSWE                                                  MDG31270
         0000 1C0EI             3091 INTER    EQU   *                                                     MDG31280
 001C0EI                        3092          IFNZ  ADC-2                                                 MDG31290
 001C0EI 1800                   3093          LPSWR R0                      RETURN TO WHERE INTERRUPTED   MDG31300
                                3094          ELSE                                                        MDG31310
                                3095          AAI   RF,SCRAP                                              MDG31320
                                3096          LPSW  X'40'                   RETURN TO WHERE INTERRUPTED   MDG31330
                                3097          ENDC                                                        MDG31340
         0000 1C10I             3098 PSWE     EQU   *                                                     MDG31350
 001C10I 4000 80AC =001CC0I     3099 ERROR    STH   R0,ERPTSS                                             MDG31360
 001C14I C800 3030              3100          LHI   R0,X'3030'                                            MDG31370
 001C18I 4000 80A2 =001CBEI     3101          STH   R0,ERPTDD                                             MDG31380
 001C1CI 41E0 FC9C =0018BCI     3102          BAL   RE,CRLF                 DO CR/LF                      MDG31390
 001C20I E620 8092 =001CB6I     3103          LDAI  R2,ERPT                                               MDG31400
 001C24I 4130 FC9E =0018C6I     3104          BAL   R3,PRINT                                              MDG31410
 001C28I 4840 85DE =00220AI     3105 SSS      LH    R4,EOJFLG               SHOULD EOJ BE PRINTED ?       MDG31420
*001C2CI 213A                   3106          BNZ   YESEOJ                  YES                           MDG31430
 001C2EI C200 8006 =001C38I     3107          LPSW  NOEOJ                   NO                            MDG31440
 001C38I                        3108          ALIGN 8                                                     MDG31450
         0000 1C38I             3109 NOEOJ    EQU   *                                                     MDG31460
 001C38I                        3110          IFNZ  ADC-2                                                 MDG31470
 001C38I 0000                   3111          DC    X'0000',X'30F0'                                       MDG31480
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001C3AI  30F0
001C3CI  0000 009CI          3112          DC    A(REDTTY)                                    MDG31490
                             3113          ELSE                                               MDG31500
                             3114          DC    X'3000',Z(REDTTY)                            MDG31510
                             3115          ENDC                                               MDG31520
         0000 1C40I          3116  YESEOJ  EQU   *                                            MDG31530
001C40I  C200 8004 =001C48I  3117          LPSW  ERRPSW                                       MDG31540
001C48I                      3118          ALIGN 8                                            MDG31550
         0000 1C48I          3119  ERRPSW  EQU   *                                            MDG31560
001C48I                      3120          IFNZ  ADC-2                                        MDG31570
001C48I  0000                3121          DC    X'0000',X'30F0'                              MDG31580
001C4AI  30F0
001C4CI  0000 1C50I          3122          DC    A(PJABT)                                     MDG31590
                             3123          ELSE                                               MDG31600
                             3124          DC    X'3000',Z(PJABT)                             MDG31610
                             3125          ENDC                                               MDG31620
                             3126  *                                                          MDG31630
001C50I  41E0 FC68 =0018BCI  3127  PJABT   BAL   RE,CRLF              DO CR/LF               MDG31640
001C54I  E620 8008 =001C60I  3128          LDAI  R2,JABT                                      MDG31650
001C58I  4130 FC6A =0018C6I  3129          BAL   R3,PRINT                                     MDG31660
001C5CI  4300 E43C =00009CI  3130          B     REDTTY                                       MDG31670
                             3131  *                                                          MDG31680
001C60I  4A4F 4220 4142 4F52 3132  JABT    DC    C'JOB ABORTED',X'000A'                       MDG31690
001C68I  5445 4420
001C6CI  000A
                             3133  *                                                          MDG31700
         0000 1C6EI          3134  DEVDU   EQU   *                                            MDG31710
001C6EI  45A0 8268 =001EDAI  3135          CLH   RA,OUTDEV+2          IS IT OUTDEV ADDRESS DU ?  MDG31720
001C72I  2135                3136          BNES  IDEVDU               NO                      MDG31730
001C74I  C810 00EE           3137          LHI   R1,X'EE'            YES                     MDG31740
001C78I  4300 8058 =001CD4I  3138          B     ERRA                                         MDG31750
001C7CI  C810 00EF           3139  IDEVDU  LHI   R1,X'EF'            INDEV ADDRESS           MDG31760
001C80I  4300 8050 =001CD4I  3140          B     ERRA                                         MDG31770
                             3141  *                                                          MDG31780
001C84I  C810 00ED           3142  DIRFUL  LHI   R1,X'ED'            DIRECTORY FULL          MDG31790
001C88I  4300 8048 =001CD4I  3143          B     ERRA                                         MDG31800
                             3144  *                                                          MDG31810
                             3145  *   I S H X C O                                            MDG31820
                             3146  *                                                          MDG31830
                             3147  *  THIS ROUTINE WILL CHECK THE VALUE IN R0 TO BE SURE IT IS A  MDG31840
                             3148  *   VALID HEX CHARACTER. IF IT IS IT WILL BE CONVERTED TO HEX.  MDG31850
                             3149  *                                                          MDG31860
                             3150  *                                                          MDG31870
001C8CI  C500 0030           3151  ISHXCO  CLHI  R0,X'30'            NUMBER ?                MDG31880
001C90I  4280 FCEU =001974I  3152          BL    QUEST                NO                      MDG31890
001C94I  C500 003A           3153          CLHI  R0,X'3A'            MAYBE - NUMBER ?        MDG31900
001C98I  218A                3154          BLS   ISNUM                YES                     MDG31910
001C9AI  C500 0041           3155          CLHI  R0,X'41'                                     MDG31920
001C9EI  4280 FCD2 =001974I  3156          BL    QUEST                                        MDG31930
001CA2I  C500 0047           3157          CLHI  R0,X'47'            A - F ?                 MDG31940
001CA6I  2186                3158          BLS   ISAF                                         MDG31950
001CA8I  4300 FCC8 =001974I  3159          B     QUEST                                        MDG31960
001CACI  C400 000F           3160  ISNUM   NHI   R0,X'0F'            MAKE A HEX NUMBER       MDG31970
001CB0I  0303                3161          BR    R3                                           MDG31980
001CB2I  2609                3162  ISAF    AIS   R0,9                                        MDG31990
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001CB4I  2204                 3163          BS    ISNUM                                    MDG32000
                              3164  *                                                      MDG32010
                              3165  *                                                      MDG32020
                              3166  *                                                      MDG32030
                              3167  *                                                      MDG32040
                              3168  *                                                      MDG32050
                              3169  *                                                      MDG32060
                              3170  *                                                      MDG32070
001CB6I  4552 524F 5220 2020  3171  ERPT    DC    C'ERROR  '                               MDG32080
001CBEI  4444                 3172  ERPTDD  DC    C'DD'                                    MDG32090
001CC0I  5353                 3173  ERPTSS  DC    C'SS'                                    MDG32100
001CC2I  0D0A                 3174          DC    X'D0A'                                   MDG32110
001CC4I  3031 3233 3435 3637  3175  ASCI    DC    C'0123456789ABCDEF'                      MDG32120
001CCCI  3839 4142 4344 4546
001CD4I  080A                 3176  ERRA    LDAR  R0,RA                                    MDG32130
001CD6I  2304                 3177          BS    ERR                                      MDG32140
001CD8I  080B                 3178  ERRB    LDAR  R0,RB                                    MDG32150
001CDAI  2302                 3179          BS    ERR                                      MDG32160
001CDCI  080C                 3180  ERRC    LDAR  R0,RC                                    MDG32170
001CDEI  1108                 3181  ERR     SLLS  R0,8                                     MDG32180
001CE0I  0601                 3182          OAR   R0,R1                                    MDG32190
001CE2I  2413                 3183          LIS   R1,3                                     MDG32200
001CE4I  242F                 3184  ERR1    LIS   R2,X'F'                                  MDG32210
                              3185  *                                                      MDG32220
001CE6I  0420                 3186          NAR   R2,R0                                    MDG32230
001CE8I  D332 FFD8 =001CC4I   3187          LB    R3,ASCI(R2)                              MDG32240
001CECI  D231 FFCE =001CBEI   3188          STB   R3,ERPTDD(R1)                            MDG32250
001CF0I  1004                 3189          SRLS  R0,4                                     MDG32260
001CF2I  2711                 3190          SIS   R1,1                                     MDG32270
001CF4I  2218                 3191          BNMS  ERR1                                     MDG32280
001CF6I  41E0 FBC2 =0018BCI   3192          BAL   RE,CRLF             DO CR/LF             MDG32290
001CFAI  E620 FFB8 =001CB6I   3193          LDAI  R2,ERPT                                  MDG32300
001CFEI  4130 FBC4 =0018C6I   3194          BAL   R3,PRINT                                 MDG32310
001D02I  4300 FF22 =001C28I   3195          B     SSS                                      MDG32320
                              3196  *                                                      MDG32330
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MAG TAPE BOOT LOADER

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                0000 000A          3198  R10      EQU   10
                0000 000B          3199  R11      EQU   11
                0000 000E          3200  R14      EQU   14
                0000 000F          3201  R15      EQU   15
                                   3202           NOSQZ

001D06I  D310 0078                 3204  MTBOOT   LB    R1,X'78'          GET TAPE DEVICE ADDRESS          R04
001D0AI  2420                      3205           LIS   R2,0              *                                R04
001D0CI  D330 007D                 3206           LB    R3,X'7D'          PICK UP SELCH ADDRESS            R04
001D10I  9423                      3207           EXBR  R2,R3             (R2)='SS00' OR '0000SS00'        R04
001D12I  EC20 0008                 3208           SRL   R2,8              IF 16 BIT, (R2,R3)='00SS,0000'   R04
                                   3209  *                                IF 32 BIT, (R2)=(R3)='000000SS'  R04
001D16I  9D19                      3210  MTBOOT1  SSR   R1,R9             STATUS CHECK                     R04
001D18I  919C                      3211           SLHLS R9,12             NO MOTION BIT TO CARRY           R04
                                   3212  *                                LS BYTE OF R9 = 00               R04
001D1AI  2282                      3213           BNCS  MTBOOT1           WAIT FOR NO-MOTION               R04
001D1CI  C850 0100                 3214           LHI   R5,X'100'         LOAD START ADDRESS               R04
001D20I  2461                      3215           LIS   R6,1              BXLE INCREMENT                   R04
001D22I  C870 026F                 3216           LHI   R7,MTLOADE-MTLOADS+X'100' LOAD END ADDRESS         R04
001D26I  C800 0030                 3217           LHI   R0,X'30'          SELCH READ COMMAND               R04
001D2AI  2448                      3218           LIS   R4,8              SELCH STOP COMMAND               R04
001D2CI  9E24                      3219           OCR   R2,R4             SELCH STOP                       R04
001D2EI  9A39                      3220           WDR   R3,R9             MS BYTE OF 3 BYTE ADDRESS        R04
                                   3221  *                                R3=SELCH ADDRESS IF 32 BIT HOST  R04
001D30I  9825                      3222           WHR   R2,R5             LS 2 BYTES OF START ADDRESS      R04
001D32I  9A39                      3223           WDR   R3,R9             MS BYTE OF 3 BYTE END ADDRESS    R04
001D34I  9827                      3224           WHR   R2,R7             LS 2 BYTES OF END ADDRESS        R04
001D36I  DE10 0079                 3225           OC    R1,X'79'          MAG TAPE WRITE                   R04
001D3AI  9E20                      3226           OCR   R2,R0             SELCH GO                         R04
001D3CI  2145                      3227           BOS   MTBOOT2           FALSE SYNC = NO SELCH            R04
001D3EI  9D29                      3228           SSR   R2,R9             ELSE, WAIT FOR SELCH NOT BUSY    R04
001D40I  2081                      3229           BTBS  8,1               LOOP ON BUSY                     R04
001D42I  9E24                      3230           OCR   R2,R4             SELCH STOP                       R04
001D44I  0305                      3231           BR    R5                BRANCH, START CODE JUST LOADED   R04
001D46I  9D19                      3232  MTBOOT2  SSR   R1,R9             MAG TAPE STATUS                  R04
001D48I  2081                      3233           BTBS  8,1               LOOP ON BUSY                     R04
001D4AI  DB15 0000                 3234           RD    R1,0(R5)          READ A BYTE                      R04
001D4EI  C150 00C0                 3235           BXLE  R5,MTBOOT2-MTBOOT+X'80' DECREMENT INDEX, LOOP    R04
001D52I  4300 0100                 3236           B     X'100'            GO TO LOAD START ADRS            R04
001D56I  0000                      3237           DCX   0000              FILLER                           R04
001D58I  0000                      3238           DCX   0000              FILLER
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MAG TAPE BOOT LOADER

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                        3240  * THE FIRST PART OF THE BOOT LOADER RESIDES IN MEMORY                R04
                        3241  * FROM LOCATION X'80' TO X'CF'.  IT IS LOADED BY THE                 R04
                        3242  * X'50' SEQUENCE.  WHEN CONTROL IS TRANSFERRED TO IT,                R04
                        3243  * THAT CODE READS IN THIS NEXT SECTION WHICH STARTS                  R04
                        3244  * AT ADDRESS X'100'.                                                 R04

                        3246  * ON INPUT, (R0)=SELCH READ COMMAND, X'30'                           R04
                        3247  *           (R1)=MAG TAPE DEVICE ADDRESS                            R04
                        3248  *           (R2)=SELCH ADDRESS                                      R04
                        3249  *           (R3)=0 IF 16 BIT HOST                                   R04
                        3250  *           (R3)=SELCH ADDRESS IF 32 BIT HOST                       R04
                        3251  *           (R4)=SELCH STOP COMMAND, X'08'                          R04
                        3252  *           (R6)=1                                                  R04
                        3253  *                                                                   R04
                        3254  *                                                                   R04
001D5AI C810 8000       3255  MTLOADS  LHI   R1,X'8000'          FOR TARGET CHECK               R04
001D5EI 0A11            3256          AAR   R1,R1               =0000 OR FFFF0000              R04
001D60I 0631            3257          OAR   R3,R1               =0000 OR FFFF00SS              R04
001D62I D310 0078       3258          LB    R1,X'78'            GET TAPE DEVICE ADDRESS        R04
001D66I 9D19            3259  MTLOADS0 SSR  R1,R9               MAG TAPE STATUS                R04
001D68I C390 0010       3260          THI   R9,X'10'            TEST FOR NO MOTION             R04
001D6CI 2233            3261          BZS   MTLOADS0            WAIT FOR IT                    R04
001D6EI C8F0 A023       3262          LHI   R15,X'A023'         FF COMMANDS                    R04
001D72I C8E0 C9C0       3263          LHI   R14,X'C9C0'         DISARM COMMANDS                R04
001D76I D390 0079       3264          LB    R9,X'79'            GET READ COMMAND               R04
001D7AI C590 00A1       3265          CLHI  R9,X'A1'            800/1600 BPI?                  R04
001D7EI 2333            3266          BES   MTLOADS1            SKIP IF YES                    R04
001D80I 90F8            3267          SRHLS R15,8               FF COMMAND FOR 6250            R04
001D82I 90E8            3268          SRHLS R14,8               DISARM COMMAND FOR 6250        R04
001D84I 9E1E            3269  MTLOADS1 OCR  R1,R14              DISARM                         R04
001D86I 9E1F            3270          OCR   R1,R15              FORWARD FILE MARK              R04
001D88I 9D19            3271  MTLOAD2  SSR  R1,R9               *                              R04
001D8AI C390 0010       3272          THI   R9,X'10'            NO MOTION?                     R04
001D8EI 2233            3273          BZS   MTLOAD2             NO, WAIT                       R04
001D90I 0833            3274          LDAR  R3,R3               CHECK HOST                     R04
001D92I 2336            3275          BZS   MTLOAD4             SKIP IF 16 BIT HOST            R04
001D94I 9E1F            3276          OCR   R1,R15              ELSE, ANOTHER FORWARD FILE     R04
001D96I 9D19            3277  MTLOAD3  SSR  R1,R9               *                              R04
001D98I C390 0010       3278          THI   R9,X'10'            NO MOTION CHECK                R04
001D9CI 2233            3279          BZS   MTLOAD3             *                              R04
                        3280  *                                 TAPE IS NOW IN POSITION AT THE R04
                        3281  *                                 BEGINNING OF THE 1ST OR 2ND    R04
                        3282  *                                 PROGRAM, DEPENDING ON THE HOST. R04
                        3283  *                                 NEXT, READ IN THAT PROGRAM'S   R04S
                        3284  *                                 PROGRAM DEFINITION BLOCK (PDB) R04
                        3285  *                                                                R04
001D9EI C850 0270       3286  MTLOAD4  LHI   R5,BOOTEN-MTLOADS+X'100' START ADDRESS            R04
001DA2I C860 02A3       3287          LHI   R6,BOOTEN-MTLOADS+X'133' END ADDRESS              R04
001DA6I 9E24            3288          OCR   R2,R4               SELCH STOP                     R04
001DA8I 2490            3289          LIS   R9,0                *                              R04
001DAAI 9A39            3290          WDR   R3,R9               MS BYTE OF 3 BYTE START ADRS   R04
001DACI 9825            3291          WHR   R2,R5               LS 2 BYTES OF START ADRS       R04
001DAEI 9A39            3292          WDR   R3,R9               MS BYTE OF 3 BYTE END ADRS     R04
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MAG TAPE BOOT LOADER

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001DB0I  9826           3293          WHR   R2,R6              LS 2 BYTES OF END ADDRESS       R04
001DB2I  DE10 0079      3294          OC    R1,X'79'           START TAPE                      R04
001DB6I  9E20           3295          OCR   R2,R0              SELCH GO                        R04
001DB8I  2145           3296          BOS   MTLOAD5            SKIP IF FALSE SYNC              R04
001DBAI  9D29           3297          SSR   R2,R9              ELSE WAIT FOR SELCH             R04
001DBCI  2081           3298          BTBS  8,1                TO GO NON-BUSY                  R04
001DBEI  9E24           3299          OCR   R2,R4              THEN STOP THE SELCH             R04
001DC0I  230A           3300          BS    MTLOAD6            *                               R04
001DC2I  9D19           3301  MTLOAD5 SSR   R1,R9              MAG TAPE STATUS                 R04
001DC4I  2081           3302          BTBS  8,1                WAIT FOR NON-BUST               R04
001DC6I  DB15 0000      3303          RD    R1,0(R5)           READ                            R04
001DCAI  2651           3304          AIS   R5,1               BUMP INDEX                      R04
001DCCI  0565           3305          CLAR  R6,R5              DONE?                           R04
001DCEI  2286           3306          BNLS  MTLOAD5            NO, LOOP                        R04
001DD0I  9D19           3307          SSR   R1,R9              FINAL STATUS                    R04
001DD2I  2170           3308          BTFS  7,0                HANG ON ERROR                   R04
001DD4I  9D19           3309  MTLOAD6 SSR   R1,R9              TRANSFER COMPLETE               R04
001DD6I  C390 0010      3310          THI   R9,X'10'           WAIT FOR NO MOTION              R04
001DDAI  2233           3311          BZS   MTLOAD6            WAIT FOR NO MOTION              R04
001DDCI  D390 0282      3312          LB    R9,BOOTEN-MTLOADS+X'100'+18 *                      R04
001DE0I  D350 0283      3313          LB    R5,BOOTEN-MTLOADS+X'100'+19 *                      R04
001DE4I  9158           3314          SLHLS R5,8               POSITION BITS 16-23             R04
001DE6I  D360 0284      3315          LB    R6,BOOTEN-MTLOADS+X'100'+20 *                      R04
001DEAI  0656           3316          OAR   R5,R6              (R9,R5)=PROGRAM START ADDRESS   R04
001DECI  0833           3317          LDAR  R3,R3              TEST HOST                       R04
001DEEI  2334           3318          BZS   MTLOAD6A           SKIP IF 16 BIT                  R04
                        3319  *       EXHR  R7,R9              (R7)='00XX0000'                 R04
001DF0I  3479           3320          DCX   3479               *                               R04
001DF2I  0675           3321          OAR   R7,R5              (R7)='00XXYYZZ'                 R04
001DF4I  2302           3322          BS    MTLOAD6B           *                               R04
001DF6I  0875           3323  MTLOAD6A LDAR R7,R5              SAVE START ADDRESS              R04
001DF8I  0857           3324  MTLOAD6B LDAR R5,R7              (R5)=START ADDRESS              R04
001DFAI  D3A0 0285      3325          LB    R10,BOOTEN-MTLOADS+X'100'+21 *                     R04
001DFEI  D360 0286      3326          LB    R6,BOOTEN-MTLOADS+X'100'+22 *                      R04
001E02I  9466           3327          EXBR  R6,R6              *                               R04
001E04I  D380 0287      3328          LB    R8,BOOTEN-MTLOADS+X'100'+23 *                      R04
001E08I  0668           3329          OAR   R6,R8              (R10,R6)=LOAD END ADDRESS       R04
001E0AI  0833           3330          LDAR  R3,R3              TEST HOST                       R04
001E0CI  2333           3331          BZS   MTLOAD7            SKIP IF 16 BIT                  R04
                        3332  *       EXHR  R11,R10            (R11)='00XX0000'                R04
001E0EI  34BA           3333          DCX   34BA               *                               R04
001E10I  066B           3334          OAR   R6,R11             (R6)='00XXYYZZ'                 R04
001E12I  0885           3335  MTLOAD7 LDAR  R8,R5              START ADRS                      R04
001E14I  EC80 0010      3336          SRL   R8,16              (R8)=0000 OR 000000XX           R04
001E18I  C8B5 00FF      3337          LHI   R11,255(R5)        START ADDRESS + 255 EQUALS      R04
                        3338  *                                END ADDRESS FOR THIS RECORD     R04
001E1CI  056B           3339          CLAR  R6,R11             COMPARE TO END ADDRESS          R04
001E1EI  2382           3340          BNLS  MTLOAD7A           SKIP IF NOT LESS                R04
001E20I  08B6           3341          LDAR  R11,R6             IF YES, USE REAL END ADDRESS    R04
001E22I  9E24           3342  MTLOAD7A OCR  R2,R4              SELCH STOP                      R04
001E24I  9A38           3343          WDR   R3,R8              MS BYTE OF ADDRESS              R04
001E26I  9825           3344          WHR   R2,R5              OUTPUT START ADRS               R04
001E28I  9A3A           3345          WDR   R3,R10             *                               R04
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MAG TAPE BOOT LOADER

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001E2AI  982B           3346           WHR   R2,R11              OUTPUT END ADRS              R04
001E2CI  DE10 0079      3347           OC    R1,X'79'            MAG TAPE START               R04
001E30I  9E20           3348           OCR   R2,R0               SELCH START                  R04
001E32I  2145           3349           BOS   MTLOAD8             SKIP IF FALSE SYNC           R04
001E34I  9D29           3350           SSR   R2,R9               *                            R04
001E36I  2081           3351           BTBS  8,1                 WAIT ON SELCH BUSY           R04
001E38I  9E24           3352           OCR   R2,R4               SELCH STOP                   R04
001E3AI  2308           3353           BS    MTLOAD9             *                            R04
001E3CI  9D19           3354  MTLOAD8  SSR   R1,R9               MAG TAPE STATUS              R04
001E3EI  2081           3355           BTBS  8,1                 LOOP ON BUSY                 R04
001E40I  DB15 0000      3356           RD    R1,0(R5)            READ BYTES                   R04
001E44I  2651           3357           AIS   R5,1                BUMP ADDRESS                 R04
001E46I  0585           3358           CLAR  R11,R5              DONE CHECK                   R04
001E48I  2286           3359           BNLS  MTLOAD8             LOOP ON RECORD               R04
001E4AI  D390 0079      3360  MTLOAD9  LB    R9,X'79'            GET READ COMMAND             R04
001E4EI  C590 00A1      3361           CLHI  R9,X'A1'            800/1600 BPI?                R04
001E52I  2334           3362           BES   MTLOAD9B            SKIP IF YES                  R04
001E54I  9D19           3363  MTLOAD9A SSR   R1,R9               6250 STATUS                  R04
001E56I  212D           3364           BTCS  2,MTLOAD10          DONE IF EOF                  R04
001E58I  2305           3365           BS    MTLOAD9C            ELSE KEEP READING            R04
001E5AI  9D19           3366  MTLOAD9B SSR   R1,R9               *                            R04
001E5CI  C390 0040      3367           THI   R9,X'40'            EOF?                         R04
001E60I  2138           3368           BNZS  MTLOAD10            DONE IF YES                  R04
001E62I  9095           3369  MTLOAD9C SRHLS R9,5                NO MOTION CHECK              R04
001E64I  228D           3370           BNCS  MTLOAD9             WAIT FOR IT                  R04
001E66I  C858 0001      3371           LHI   R5,1(R11)           NEXT START ADRS              R04
001E6AI  0556           3372           CLAR  R5,R6               COMPARE TO END ADDRESS       R04
001E6CI  4280 01B8      3373           BL    MTLOAD7-MTLOADS+X'100' LOOP                      R04
001E70I  0857           3374  MTLOAD10 LOAR  R5,R7               START ADDRESS                R04
                        3375  *                                  (R6)=END ADDRESS             R04
001E72I  24A0           3376           LIS   R10,0               CHECKSUM ACCUMULATOR         R04
001E74I  D3B7 0000      3377  MTLOAD11 LB    R11,0(R7)           *                            R04
001E78I  07AB           3378           XAR   R10,R11             CALCULATE CHECKSUM           R04
001E7AI  2671           3379           AIS   R7,1                *                            R04
001E7CI  0567           3380           CLAR  R6,R7               *                            R04
001E7EI  2285           3381           BNLS  MTLOAD11            *                            R04
001E80I  9D19           3382  MTLOAD12 SSR   R1,R9               *                            R04
001E82I  C390 0010      3383           THI   R9,X'10'            NO MOTION CHECK              R04
001E86I  2233           3384           BZS   MTLOAD12            *                            R04
001E88I  C870 0038      3385           LHI   R7,X'38'            *                            R04
001E8CI  D390 0079      3386           LB    R9,X'79'            GET READ COMMAND             R04
001E90I  C590 00A1      3387           CLHI  R9,X'A1'            800/1600 BPI?                R04
001E94I  2333           3388           BES   MTLOAD13            SKIP IF YES                  R04
001E96I  C870 00E0      3389           LHI   R7,X'E0'            RW COMMAND FOR 6250          R04
001E9AI  9E17           3390  MTLOAD13 OCR   R1,R7               REWIND THE TAPE              R04
001E9CI  9D19           3391  MTLOAD14 SSR   R1,R9               *                            R04
001E9EI  C390 0010      3392           THI   R9,X'10'            NO MOTION CHECK              R04
001EA2I  2233           3393           BZS   MTLOAD14            *                            R04
001EA4I  D370 0288      3394           LB    R7,BOOTFN-MTLOADS+X'100'+24 *                    R04
001EA8I  057A           3395           CLAR  R7,R10              CHECK CHECKSUM               R04
001EAAI  0335           3396           BER   R5                  GO IF OK                     R04
001EACI  C810 00EE      3397           LHI   R1,X'EE'            *                            R04
001EB0I  24A1           3398           LIS   R10,1               *                            R04
```

MAG TAPE BOOT LOADER

```
001EB2I  C8B0 0040          3399           LHI   R11,X'40'        *                          R04
001EB6I  9EAB               3400           OCR   R10,R11          DISPLAY IN INCREMENTAL MODE R04
001EB8I  9AA1               3401           WDR   R10,R1           *                          R04
001EBAI  24E0               3402           LIS   R14,0            *                          R04
001EBCI  9AAE               3403           WDR   R10,R14          *                          R04
001EBEI  9AAE               3404           WDR   R10,R14          *                          R04
001EC0I  9AAE               3405           WDR   R10,R14          *                          R04
001EC2I  C8B0 0080          3406           LHI   R11,X'80'        *                          R04
001EC6I  9EAB               3407           OCR   R10,R11          NORMAL MODE                R04
001EC8I  2200               3408           BS    *                HANG ON CHECKSUM ERROR     R04
         0000 1EC9I         3409  MTLOADE  EQU   *-1               *                          R04
         0000 1ECAI         3410  BOOTEN   EQU   *
                            3411           SQUEZ                                             MDG33830
```

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                        3413  *                                                      MDG33850
                        3414  *                                                      MDG33860
                        3415  *                                                      MDG33870
001ECCI                 3416        ALIGN 4                                          MDG33880
001ECCI  0000           3417  LOW   DC    X'0000',X'0000'                           MDG33890
001ECEI  0000
                        3418  *                                                      MDG33900
001ED0I                 3419        ALIGN 4                                          MDG33910
001ED0I  0000           3420  HIGH  DC    X'0000',X'0000'                           MDG33920
001ED2I  0000
                        3421  *                                                      MDG33930
001ED8I                 3422        ALIGN 8                                          MDG33940
001ED8I  0000           3423  OUTDEV DC   X'0000',X'0000'                           MDG33950
001EDAI  0000
001EDCI  0000           3424        DC    X'0000',X'0000'                          MDG33960
001EDEI  0000
                        3425  *                                                      MDG33970
001EE0I                 3426        ALIGN 8                                          MDG33980
001EE0I  0000           3427  INDEV DC    X'0000',X'0000'                          MDG33990
001EE2I  0000
001EE4I  0000           3428        DC    X'0000',X'0000'                          MDG34000
001EE6I  0000
                        3429  *                                                      MDG34010
001EE8I                 3430        ALIGN 4                                          MDG34020
001EE8I  FFFF           3431  PGMOPN DC   X'FFFF'                                   MDG34030
001EEAI  FFFF           3432        DC    X'FFFF'                                  MDG34040
001EECI  FFFF           3433  PGMIPN DC   X'FFFF'                                   MDG34050
001EEEI  FFFF           3434        DC    X'FFFF'                                  MDG34060
         0000 1EEFI     3435  LNZB  EQU   *-1                                       MDG34070
                        3436  *                                                      MDG34080
001EF0I                 3437        ALIGN 8                                          MDG34090
001EF0I                 3438  INBUF DS    50                                       MDG34100
                        3439  *                                                      MDG34110
001F28I                 3440        ALIGN 8                                          MDG34120
001F28I                 3441  CMD   DS    8                                        MDG34130
                        3442  *                                                      MDG34140
001F30I                 3443  FFBUF DS    51                                       MDG34150
001F68I                 3444        ALIGN 8                                          MDG34160
001F68I                 3445  PDB   DS    51                                       MDG34170
         0000 1F68I     3446  SEQNAM EQU  PDB                                       MDG34180
001F9CI                 3447        ALIGN 4                                          MDG34190
001F9CI                 3448  WRTBUF DS   256                                      MDG34200
00209CI                 3449  DIRPRM DS   8                                        MDG34210
0020A4I                 3450  NXTPRM DS   8                                        MDG34220
0020ACI                 3451  DIRECT DS   256                                      MDG34230
0021ACI                 3452        ALIGN 4                                          MDG34240
0021ACI                 3453  DCOPY DS    8                                        MDG34250
0021B4I                 3454  ADDRES DS   4                                        MDG34260
0021B8I                 3455  FADD  DS    4                                        MDG34270
0021BCI                 3456  WRTEND DS   4                                        MDG34280
0021C0I                 3457  PGMNUM DS   4                                        MDG34290
0021C4I                 3458  TRKDEN DS   4                                        MDG34300
0021C8I                 3459  MAXCYL DS   4                                        MDG34310
0021CCI                 3460  MISTRN DS   4                                        MDG34320
0021D0I                 3461  UPDTRN DS   4                                        MDG34330
```

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0021D4I     3462  CPYFLG   DS     4                                    MDG34340
0021D8I     3463  DTDONE   DS     4                                    MDG34350
0021DCI     3464  STADD    DS     4                                    MDG34360
0021E0I     3465  EOVRTN   DS     4                                    MDG34370
0021E4I     3466  AVARTN   DS     4                                    MDG34380
0021E8I     3467  DIRPRN   DS     4                                    MDG34390
0021ECI     3468  DIRTN    DS     4                                    MDG34400
0021F0I     3469  PGMUPN   DS     4                                    MDG34410
0021F4I     3470  CONSTA   DS     2                                    MDG34420
0021F6I     3471  FFBFFL   DS     2                                    MDG34430
0021F8I     3472  MTCMD    DS     2                                    MDG34440
0021FAI     3473  BKSPFL   DS     2                                    MDG34450
0021FCI     3474  SCRAP    DS     2                                    MDG34460
0021FEI     3475  IOFLAG   DS     2                                    MDG34470
002200I     3476  CYL      DS     2                                    MDG34480
002202I     3477  HEAD     DS     2                                    MDG34490
002204I     3478  DTSCMD   DS     2                                    MDG34500
002206I     3479  SELIND   DS     2                                    MDG34510
002208I     3480  SELERR   DS     2                                    MDG34520
00220AI     3481  EOJFLG   DS     2                                    MDG34530
00220CI     3482  RETRY    DS     2                                    MDG34540
00220EI     3483  CUTRKDEN DS     2                                    MDG34550
002210I     3484  CUMAXCYL DS     2                                    MDG34560
002212I     3485  INTADD   DS     2                                    MDG34570
002214I     3486  COPSEC   DS     2                                    MDG34580
002216I     3487  LSTBLK   DS     2            LAST COPY BLOCK LENGTH  MDG34590
002218I     3488  NUMBLK   DS     2            NUMBER OF FULL BLOCKS   MDG34600
00221AI     3489  CURBLK   DS     2            CURRENT BLOCK SIZE      MDG34610
00221CI     3490  RWDEV    DS     2                                    MDG34620
00221EI     3491  UPDFLG   DS     2                                    MDG34630
002220I     3492  AVAFLG   DS     2                                    MDG34640
002224I     3493           ALIGN  4                                    MDG34650
002224I     3494  DIMOST   DS     6                                    MDG34660
00222AI     3495  DIDOIN   DS     6                                    MDG34670
002230I     3496  DIDOOU   DS     6                                    MDG34680
002236I     3497           IFNZ   ADC-2                                MDG34690
002238I     3498           ALIGN  8                                    MDG34700
            3499           ENDC                                        MDG34710
002238I     3500  OLDPSW   DS     8                                    MDG34720
002240I     3501  REGSAV   DS     512                                  MDG34730
            3502  *                                                    MDG34740
002440I     3503           END                                         MDG34750
```

ASSEMBLED BY CAL 03-066R08-00 (32-BIT)

START OPTIONS: T=32,ERLST

NO CAL ERRORS
NO CAL WARNINGS
6 PASSES

TABLE SPACE USED : 16K

```
CHKCMD    0000 032AI      354    357*
CHKIO1    0000 0314I      337    351*
CHKIOF    0000 02DCI      306    334*
CLEAR     0000 18R4I      505    677   2545*  2546
CLIF2ND   0000 0036I       62*
CLIFADR   0000 0016I       39*
CLIFRD    0000 0034I       61*
CMD       0000 1F28I      150    151    152    154    160    169    172    175   3441*
CMDAA     0000 0148I      157    159    165*
CMDAA1    0000 014AI      166*   170    173    176
CMDAB     0000 012EI      155*   162
CON2ND    0000 002CI       57*    91   2594
CONCMD    0000 002EI       58*    86     88     90
CONDS1    0000 1738I     2328   2333*
CONDS3    0000 173CI     2335*
CONMT1    0000 1634I     2226*  2229
CONMT9    0000 164EI     2231   2234*
CONMTX    0000 1634I     2217   2221   2225*
CONRADR   0000 0026I       53*    85    118   2593   2598
CONRD     0000 002AI       55*    56     89    119   2599
CONRQ2S   0000 0044I       69*
CONSTA    0000 21F4I     1408   1788   2337   2871   3470*
CONT4B    0000 15D6I     2171=
CONT4C    0000 15DAI     2175*
CONT5A    0000 1610I     2201   2204*
CONT5B    0000 1618I     2144   2158   2162   2207   2213*
CONTDS    0000 1730I     2323   2325*
CONWADR   0000 0028I       54*    83    124   2618
CONWRT    0000 002BI       56*    87     95    125   2619
COPDVE    0000 0AF0I     1138   1140*  1287
COPMTI    0000 089EI      933*  1018
COPSEC    0000 2214I      974   1010   1016   3486*
COPY      0000 0712I      205    809*
COPY1     0000 0792I      827    844*   943    947   1226
COPY2     0000 07A4I      847    850*
COPYA     0000 0740I      813    823*
COPYEV    0000 0760I      818    831*
CPYFLG    0000 21D4I      971   1256   1495   1644   3462*
CPYMOR    0000 0714I      811*   822    843
CREA      0000 0F40I      200   1493*
CREA1     0000 0F64I     1500   1504*
CREA3     0000 0F6EI     1507*  1527
CREA4     0000 108AI     1595   1598*
CREA6     0000 108CI     1599*  1612   1623
CREAER    0000 1150I     1498   1503   1656*
CREAXY    0000 10AEI     1604   1609*
CRECHK    0000 0FAAI     1524   1528*
CREDIS    0000 103CI      972   1257   1553   1575*
CRLF      0000 18RCI      103    542   2276   2557*  2662   2695   3102   3127   3192
CRT2ND    0000 0032I       60*
CRTRD     0000 0030I       59*
CRTRQ2S   0000 0045I       70*
CUMAXCYL  0000 2210I     1649   1651   3484*
CURBLK    0000 221AI      893    918    984   1008   1128   1234   1277   1302   3489*
CUTRKDEN  0000 220EI     1179   1614   1719   1783   2284   2414   2469   2777   3483*
```

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DTRDON    0000 1158I    1017   1331   1653   1663*
DTRIP     0000 1132I    1648*  1652
DWRIT     0000 18B3I    2099   2543*
EMTRD     0000 1600I    2185   2193*
EOJ       0000 177CI    2277   2358*
EOJFLG    0000 220AI     111    450    624    659    865    963   1102   1241   1382   1463   1562   1577   3105
                        3481*
EOV       0000 16A8I     642   1479   1574   2268*
EOVRTN    0000 21E0I    2114   2251   3465*
EOVX      0000 04ACI     543    546*
ERPT      0000 1CB6I    3103   3171*  3193
ERPTDD    0000 1CBEI    3101   3172*  3188
ERPTSS    0000 1CC0I    3099   3173*
ERR       0000 1CDEI    3177   3179   3181*
ERR1      0000 1CE4I    3184*  3191
ERRA      0000 1CD4I     630    830    880    911    924   1002   1115   1177   1454   1460   1559   1597   1807
                        1837   1865   1919   1949   2223   2233   2256   2345   2355   2389   2393   2444   2448
                        2819   2823   3138   3140   3143   3176*
ERRB      0000 1CD8I    2401   2456   3178*
ERRC      0000 1CDCI    2408   2463   3180*
ERROR     0000 1C10I     849   1657   1743   2384   2412   2439   2467   3099*
ERRPSW    0000 1C48I    3117   3119*
ESRD      0000 1720I    2304   2316*
ESREAD    0000 1B89I    2195   2318   2552*
ESTOP     0000 18BAI    2554*  2914
ESWRT     0000 18A9I    2188   2311   2528*
EV        0000 0580I     204    622*
EV1       0000 059AI     628    631*
EVMT      0000 0580I     633    637*
FADD      0000 21B8I    2177   2922   3455*
FF        0000 034EI     202    446*
FFBF1     0000 041EI     506*   517    521    541
FFBFED    0000 051CI     574    578*
FFBFFL    0000 21F6I     448    477    506    540    596   3471*
FFBUF     0000 1F30I     511    512    516    519   3443*
FFCOM     0000 0374I     459*   491
FFCOMI    0000 03E6I     454    490*
FFDISC    0000 04B2I     504    547*
FFDS1     0000 04E2I     562*   584
FFDS1A    0000 04CEI     556*   588
FFDS1B    0000 04CAI     555*   595
FFDSC1    0000 0528I     566    570    581*
FFDSC5    0000 0502I     524    571*
FFEOV     0000 0488I     513    536*
FFIT      0000 03ECI     465    492*
FFIT1     0000 0406I     496    500*
FFIT2     0000 040EI     499    502*
FFIT3     0000 0426I     508*   535
FFMORE    0000 0382I     463*   474    489
FRSERR    0000 1A20I    2813   2816*
FRSRW     0000 1A10I     553   1156   1159   1318   1321   1338   1341   1393   1402   1441   1585   1696   1699
                        1708   1711   1782   1909   2349   2809*  2814   2850
FWFM      0000 18A6I     509   2524*  2525
GETCHR    0000 1966I     155    239    300    325    451    459    463    482    660    712    728    739    745
                         756    811    836   2656*
```

```
3032      0000 1AE2I    2963*  3000
=DTAB     0000 0572I     591    606*  1185  1423  1626  1730  1795  1825  1941  1977
=EAD      0000 2202I     555    589   1142  1148  1184  1188  1250  1259  1267  1290  1297  130A  1314
                        1329   1335  1404  1422  1425  1427  1438  1587  1625  1629  1632  163A  1668
                        1672   1729  1733  1794  1798  1810  1824  1828  1840  1905  1940  1944  1976
                        1980   1987  1999  2011  2288  2296  2780  2844  2852  3477*
=IGH      0000 1E00I     256    265   1526  1533  1547  1647  3420*
=IPRT     0000 0224I     245    253*
IDEVDU    0000 1C7CI    3136   3139*
IDWT      0000 0DF4I    1386*  1388
ILLADD    0000 1A2EI    2817   2822*
ILLIST    0000 1BAEI    2969   3046*
IMPTOP    0000 2440I    3503
IN        0000 033CI     197    387*
INBUF     0000 1EF0I     114    136   185   2658  3438*
INDEV     0000 1EE0I     388    846   2436  2449  2457  2464  2470  3427*
INIT      0000 0DD8I     206   1378*
INIT32    0000 1B68I    2962   2999*
INITSK    0000 0E22I    1400*  1434
INITZF    0000 0E1AI    1398*  1399
INNAME    0000 018CI     167    171   174   178   179   196*  196   197   198   199   200   201   202
                         203    204   205   206
INTADD    0000 2212I    2888   2911  3485*
INTAPE    0000 0EE8I    1380   1455*
INTCOM    0000 1B70I    2996   3025*
INTER     0000 1C0EI    3036   3091*
INTP1     0000 0EF8I    1458   1461*
IO        0000 0010I      36*    80    82    84
IOFLAG    0000 21FEI     494    573  3475*
IOFUN2    0000 028CI     322*
IOVQU     0000 1BFCI    2987   3085*
ISAF      0000 1C82I    3158   3162*
ISHXCO    0000 1C8CI     246    310   326   471   722   743   750   819  1082  1086  1090  3151*
ISNUM     0000 1CACI    3154   3160*  3163
JABT      0000 1C60I    3128   3132*
LADC      0000 0002
LCORE     0000 1ADEI      33   2957*
LID1      0000 1808I    2437   2440*
LID1A     0000 1818I    2442   2445*
LID2      0000 1826I    2446   2449*
LID3      0000 1840I    2450   2454  2457*
LID4      0000 1856I    2458   2461  2464*
LID5      0000 1864I    2465   2468*
LIDAD     0000 17FAI     501    664   828   851   869   884   934   964   975  1104  1119  1204  1243
                        1263   1337  1860  2436*
LIMITS    0000 01E6I     198    229*
LINK      0000 000F       32*  2578  2584  2586  2614  2633
LNZB      0000 1EEFI    3435*
LOD1      0000 1790I    2382   2385*
LOD1A     0000 17A0I    2387   2390*
LOD2      0000 17AEI    2391   2394*
LOD3      0000 17C8I    2395   2399  2402*
LOD4      0000 17DEI    2403   2406  2409*
LOD5      0000 17ECI    2410   2413*
LODAD     0000 1782I     498    625   631   670   845   854   859   875   914   926  1005  1015  1110
```

```
                          1195   1231   1254   1299   1312   1378   1550   1554   1579   1894   2381*
LOFRHI     0000 0A04I     1040   1041   1061*
LOHI       0000 01ECI      232*   257
LOHI1      0000 01F4I      239*   251
LOHIEN     0000 0234I      243    258*
LOHIK1     0000 090CI     1046   1048*
LOHIK2     0000 0A0EI     1064   1066*
LOKIN      0000 1988I       98    500    684    958   1227   2720*
LOKOUT     0000 19C4I       97    497    635    641    686   1202   1451   1478   1572   1665   2740*
LOW        0000 1ECCI      230    260    263    264   1506   1529   1566   1646   3417*
LPADR      0000 001AI       41*
LPWRT      0000 0038I       63*
LSTBLK     0000 2216I      898    902    989    993   1048   1066   1132   1136   1281   1285   3487*
MACINT     0000 1C02I     2990   3087*
MAXCYL     0000 21C8I      349   3459*
MCH1       0000 1BD8I     3066   3070*
MCHMAL     0000 1BB6I     2972   3049*
MCHPSW     0000 1BD0I     3053   3063*
MICROBUS   0000 0022I       45*
MIDO       0000 0904I      862    961*
MIDO1      0000 098AI      987   1004*
MIDO11     0000 092EI      970    973*  1012
MIDO2X     0000 0952I      984*   994
MIDOEN     0000 09A6I      999   1014*
MIDOER     0000 0982I      894    985   1001*
MIDOFM     0000 087AI      967   1013*
MIDOLB     0000 0962I      979    988*
MIDONL     0000 0972I      990    995*
MIMO       0000 07CCI      861    863*
MIMO1      0000 0862I      896    913*
MIMO2X     0000 082AI      893*   903
MIMOEN     0000 0882I      908    925*
MIMOER     0000 085AI      910*
MIMOEV     0000 08ECI      937    954*
MIMOFM     0000 087AI      872    922*  1013
MIMOLB     0000 083AI      888    897*
MIMONL     0000 084AI      899    904*
MIMONX     0000 080AI      884*   921
MISTRN     0000 21CCI     1036   1096   3460*
MISTRT     0000 0986I      874    969   1035*  1109   1248
MREADC     0000 0040I       67*
MTBOOT     0000 1D06I     1472   1473   3204*  3235
MTBOOT1    0000 1D16I     3210*  3213
MTBOOT2    0000 1D46I     3227   3232*  3235
MTCMD      0000 21F8I     2112   2126   2182   2214   2244   3472*
MTCOM      0000 154AI     2110   2112*
MTEND      0000 16A2I     2238   2264*
MTERR      0000 165CI     2108   2236   2240*  2243
MTERR1     0000 168CI     2254   2257*
MTERRB     0000 15C2I     2143   2157   2160*
MTERRW     0000 167EI     2247   2250   2253*
MTIN       0000 07BEI      853    858*
MTLOAD10   0000 1E70I     3364   3368   3374*
MTLOAD11   0000 1E74I     3377*  3381
MTLOAD12   0000 1E80I     3382*  3384
```

```
MTLOAD13  0000 1E9AI    3388   3390*
MTLOAD14  0000 1E9CI    3391*  3393
MTLOAD2   0000 1D88I    3271*  3273
MTLOAD3   0000 1D96I    3277*  3279
MTLOAD4   0000 1D9EI    3275   3286*
MTLOAD5   0000 1DC2I    3296   3301*  3306
MTLOAD6   0000 1DD4I    3300   3309*  3311
MTLOAD6A  0000 1DF6I    3318   3323*
MTLOAD6B  0000 1DF8I    3322   3324*
MTLOAD7   0000 1E12I    3331   3335*  3373
MTLOAD7A  0000 1E22I    3340   3342*
MTLOAD8   0000 1E3CI    3349   3354*  3359
MTLOAD9   0000 1E4AI    3353   3360*  3370
MTLOAD9A  0000 1E54I    3363*
MTLOAD9B  0000 1E5AI    3362   3366*
MTLOAD9C  0000 1E62I    3365   3369*
MTLOADE   0000 1EC9I    1476   3216   3409*
MTLOADS   0000 1D5AI    1475   3216   3255*  3286   3287   3312   3313   3315   3325   3326   3328   3373   3394
MTLOADS0  0000 1D66I    3259*  3261
MTLOADS1  0000 1D84I    3266   3269*
MTRB      0000 15A8I    2148*  2153
MTREAD    0000 18B7I    2111   2127   2183   2215   2245   2549*
MTRY      0000 1566I    2122*  2262
MTWB      0000 1586I    2134*  2139
MTWRT     0000 18A8I    2109   2527*  2528
NEDNW1    0000 123AI    1721   1729*
NEEDNW    0000 11F4I    1688   1707*
NOECHO1   0000 00F4I     132    134*
NOEOJ     0000 1C38I    3107   3109*
NOMO1     0000 189EI    2509   2515*
NOMORE    0000 1890I    2498   2499   2507*
NOMOTN    0000 1980I     510    523    537    539    638    640    678    680    928    930    932    940    955
                         957   1197   1199   1201   1469   1471   2259   2261   2270   2272   2274   2680*  2683
NORUN     0000 162CI    1468   2222*
NOT3200   0000 1BC8I    3051   3055*
NUMBLK    0000 2218I     887    891    978    982   1059   1076   1122   1126   1271   1275   3488*
NUMTHERE  0000 1266I    1608   1742*
NXDR1     0000 10D6I    1622*
NXDRHD    0000 10DCI    1616   1625*
NXREA1    0000 10C4I    1617*  1631
NXTDIR    0000 10B8I    1613*
NXTPRM    0000 20A4I    1667   1669   1670   1689   1691   1693   3450*
OLDPSW    0000 2238I    2980   3500*
OTC.0     0000 18F6I    2595   2597*  2604   2613   2615
OTC.1     0000 1904I    2603*
OTC.2     0000 190EI    2602   2606*
OTC.3     0000 1920I    2609   2612*
OTC.4     0000 193CI    2621*  2626
OTC.5     0000 194EI    2628*  2630
OUIN      0000 026EI     300*   319    333
OUIN1     0000 0294I     308    310*
OUIN2     0000 02A8I     314    316*
OUINA     0000 025AI     292*   389
OUINFL    0000 02B4I     304    320*
OUINL     0000 0262I     296*   299
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			3162	3176	3178	3180	3181	3182	3186	3189	3217	3226	3295	3348	
R1	0000	0001	17*	80	81	82	84	86	88	90	149	150	151	152	153
			153	154	160	161	503	513	573	629	632	671	825	826	829
			852	855	860	872	876	877	879	894	901	901	902	908	910
			923	937	967	985	992	992	993	999	1001	1111	1112	1114	1135
			1135	1136	1176	1284	1284	1285	1379	1386	1387	1389	1390	1395	1398
			1399	1429	1430	1432	1433	1435	1436	1442	1443	1444	1445	1446	1453
			1456	1457	1459	1466	1467	1555	1556	1558	1596	1806	1836	1864	1916
			1925	1926	1948	1951	1953	1954	1955	1959	1968	1969	2108	2114	2115
			2116	2132	2140	2146	2154	2160	2161	2183	2184	2215	2216	2219	2220
			2222	2226	2228	2230	2232	2235	2241	2242	2248	2249	2255	2281	2288
			2289	2291	2292	2296	2297	2298	2299	2302	2303	2306	2307	2335	2337
			2338	2340	2344	2354	2385	2386	2388	2390	2392	2397	2398	2400	2404
			2405	2407	2409	2413	2414	2415	2440	2441	2443	2445	2447	2452	2453
			2455	2459	2460	2462	2464	2468	2469	2470	2594	2596	2599	2600	2601
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			2656	2658	2659	2680	2682	2687	2689	2691	2721	2722	2723	2741	2742
			2743	2760	2761	2762	2777	2778	2782	2786	2791	2809	2811	2816	2818
			2822	2869	2871	2887	2888	2889	2890	2891	2969	2970	2972	2973	2977
			2978	2980	2981	2982	2983	2984	2985	2987	2988	2990	2991	2994	2995
			3026	3027	3028	3029	3032	3033	3034	3037	3038	3039	3137	3139	3142
			3182	3183	3188	3190	3204	3210	3225	3232	3234	3255	3256	3256	3257
			3258	3259	3269	3270	3271	3276	3277	3294	3301	3305	3307	3309	3347
			3354	3356	3363	3366	3382	3390	3391	3397	3401				
R10	0000	000A	3198*	3325	3345	3376	3378	3395	3398	3400	3401	3405	3404	3405	3407
R11	0000	000B	3199*	3334	3337	3339	3341	3346	3358	3371	3377	3378	3399	3400	3406
			3407												
R14	0000	000E	3200*	3263	3268	3269	3402	3403	3404	3405					
R15	0000	000F	3201*	3262	3267	3270	3276								
R2	0000	0002	18*	82	83	84	85	94	96	100	105	106	108	112	112
			114	115	116	118	120	121	123	124	126	127	129	165	166
			167	171	174	178	184	185	232	232	233	247	248	249	323
			323	327	328	329	543	561	561	563	568	582	583	705	705
			707	708	709	769	769	770	771	772	1151	1152	1153	1155	1164
			1165	1169	1173	1182	1182	1189	1189	1192	1205	1206	1208	1212	1222
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			1969	1970	1971	1991	1998	1999	2000	2001	2007	2008	2010	2012	2097
			2099	2100	2109	2111	2112	2127	2128	2133	2141	2147	2155	2167	2169
			2179	2182	2184	2186	2193	2200	2214	2216	2244	2246	2277	2301	2303
			2309	2316	2322	2558	2577	2581	2663	2696	2892	2912	3103	312A	3184
			3186	3187	3193	3205	3207	3208	3219	3222	3224	3226	3228	3230	3288
			3291	3295	3295	3297	3299	3342	3344	3346	3348	3350	3352		
R3	0000	0003	19*	86	87	88	89	90	91	92	92	94	95	96	97
			98	99	101	109	113	114	119	120	121	125	126	127	155
			185	239	246	300	310	325	326	417	447	448	451	459	463
			471	477	479	480	482	497	498	500	501	506	514	515	516
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			569	571	575	578	593	625	626	627	631	634	635	641	660
			664	670	684	686	712	722	728	739	743	745	750	756	811
			819	828	833	834	836	845	851	854	859	869	873	874	875
			883	884	887	890	891	892	893	895	898	900	909	914	918

			919	920	926	934	938	941	942	944	946	948	949	950	951
			952	958	959	964	968	969	970	971	975	978	981	982	983
			984	986	989	991	1000	1005	1008	1009	1011	1015	1017	1036	1043
			1044	1045	1047	1048	1051	1052	1055	1056	1069	1070	1073	1074	1082
			1086	1090	1096	1097	1103	1104	1105	1108	1109	1110	1118	1119	1122
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			1996	2005	2006	2013	2014	2101	2102	2103	2104	2105	2113	2117	2118
			2124	2125	2126	2128	2131	2145	2168	2173	2237	2245	2246	2251	2252
			2253	2257	2258	2265	2266	2278	2283	2284	2285	2333	2342	2346	2347
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			2852	2853	2854	2855	2857	2859	2860	2873	3025	3027	3104	3129	3161
			3187	3188	3194	3206	3207	3220	3223	3257	3274	3274	3290	3292	3317
			3317	3330	3330	3343	3345								
R4		0000 0004	20*	79	79	110	110	111	136	142	143	178	179	181	181
			183	230	233	249	256	291	293	294	298	316	322	329	388
			418	419	449	450	519	520	563	565	568	569	572	576	579
			586	587	590	591	596	623	624	658	659	864	865	945	946
			962	963	1101	1102	1169	1170	1173	1174	1179	1180	1185	1213	1214
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			3288	3299	3342	3352									
R5		0000 0005	21*	123	129	130	131	133	134	136	137	139	235	250	292
			307	317	320	332	334	338	351	355	462	466	472	473	475
			488	492	511	556	557	711	719	723	724	726	737	747	751
			752	754	759	761	763	764	766	810	814	820	821	823	831
			842	879	881	885	886	905	906	915	916	935	965	976	977
			996	997	1006	1007	1037	1039	1042	1044	1049	1050	1052	1058	1062
			1067	1068	1070	1075	1078	1080	1088	1091	1093	1094	1095	1106	1116
			1120	1121	1160	1232	1233	1245	1269	1270	1300	1301	1322	1342	1411
			1412	1472	1475	1505	1523	1525	1528	1531	1536	1537	1539	1543	1548

			1563	1588	1589	1602	1603	1606	1607	1617	1618	1641	1700	1701	1712
			1713	1722	1723	1735	1736	1910	1911	1934	1935	1962	1963	2002	2003
			2132	2136	2137	2138	2140	2146	2150	2151	2152	2154	2167	2171	2176
			2494	2496	2500	2502	2510	2515	2516	3214	3222	3231	3234	3235	3286
			3291	3303	3304	3305	3313	3314	3316	3321	3323	3324	3335	3337	3344
			3356	3357	3358	3371	3372	3374	3396						
06	0000	0006	22*	324	330	512	557	558	871	882	886	889	900	906	907
			916	919	936	966	977	980	991	997	998	1007	1009	1038	1039
			1042	1053	1054	1056	1057	1058	1059	1062	1063	1065	1066	1071	1072
			1074	1075	1076	1079	1079	1083	1084	1087	1088	1107	1117	1121	1124
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			1413	1473	1476	1564	1589	1590	1618	1619	1642	1701	1702	1713	1714
			1723	1724	1736	1737	1911	1912	1935	1936	1963	1964	2003	2004	2133
			2138	2141	2147	2152	2155	2168	2175	2177	2495	2496	2497	2502	2503
			2508	2511	2516	2517	2916	2917	2918	2918	2921	2923	3215	3287	3293
			3305	3315	3316	3326	3327	3327	3329	3334	3339	3341	3372	3380	
07	0000	0007	23*	294	296	297	298	318	336	346	346	347	348	353	468
			469	472	721	723	740	741	742	744	749	751	816	817	820
			2290	2291	2293	2839	2840	2846	2847	2919	2920	2921	2922	2923	3216
			3224	3321	3323	3324	3374	3377	3379	3380	3385	3389	3390	3394	3395
08	0000	0008	24*	295	295	296	548	549	550	550	585	587	589	591	594
			594	974	1010	1016	1141	1142	1143	1144	1145	1146	1178	1180	1190
			1190	1249	1250	1251	1252	1253	1258	1259	1260	1261	1262	1264	1265
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			1615	1630	1630	1634	1635	1636	1637	1638	1639	1670	1673	1718	1720
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			1829	1839	1839	1840	1906	1906	1931	1932	1945	1945	1973	1974	1981
			1981	1986	1987	1988	1989	1990	1997	2008	2009	2010	2011	2012	2287
			2298	2843	2854	3328	3329	3335	3336	3343					
09	0000	0009	25*	347	349	3210	3211	3220	3223	3228	3232	3259	3260	3264	3265
			3271	3272	3277	3278	3289	3290	3292	3297	3301	3307	3309	3310	3312
			3350	3354	3360	3361	3363	3366	3367	3369	3382	3389	3386	3387	3391
			3392												
0A	0000	000A	26*	452	455	494	495	495	502	505	509	522	529	533	538
			552	639	673	677	679	846	876	927	929	931	939	956	1111
			1158	1196	1198	1200	1320	1340	1386	1392	1401	1440	1456	1464	1465
			1466	1470	1555	1584	1698	1710	1781	1908	2120	2131	2134	2136	2142
			2145	2148	2150	2156	2186	2193	2219	2226	2241	2248	2260	2269	2271
			2273	2306	2335	2381	2385	2436	2440	2680	2687	2780	2781	2784	2785
			2789	2790	2811	3049	3049	3055	3055	3135	3176				
0B	0000	000B	27*	674	674	676	1383	2122	2122	2165	2169	2171	2173	2175	2188
			2195	2311	2318	2394	2396	2397	2449	2451	2452	2887	2914	3178	
0C	0000	000C	28*	1384	2281	2287	2292	2293	2299	2309	2316	2402	2404	2457	2459
			2782	2786	2791	2809	2843	2848	2855	2856	2869	2872	3180		
RCHECK	0000	18B2I	2542*	2543	2856										
RCHK	0000	1A36I	1407	1787	2838*										
RCHK1	0000	1A5AI	2841	2850*											
RCHK2	0000	1A74I	2859*												
RCHK3	0000	1A6CI	2849	2856*											
0D	0000	000D	29*	1551	1552	1566	1646	2494	2500	2501	2510	2515			
RDISC	0000	151AI	560	1163	1325	1345	1592	1621	1726	1739	1816	1914	1938	2006	2097*
RE	0000	000E	30*	103	231	253	253	255	258	258	542	1567	1647	2276	2495
			2511	2560	2662	2695	3102	3127	3192						

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READPB    0000 1546I    514   873   895   909   938   968   986  1000  2111*
REDAB     0000 00C6I    118*  144   182   186
REDAC     0000 0118I    140   149*
REDINB    0000 00BAI    114*  117
REDPT     0000 00AAI    109*
REDPTX    0000 0098I    101*  2664
REDTTY    0000 009CI    102*  138   266   350   357   758  2279  3112  3130
REGSAV    0000 2240I   3501*
RESET     0000 18B0I   1384  2539*  2540  2872
RESTOR    0000 18B1I   1392  2540*
RETRY     0000 220CI   2103  2116  2253  2258  2342  2347  3482*
REWIND    0000 18B5I    679  2546*
RF        0000 000F      31*  293   340   342   344   344   348   349   458   490   586   590   661
                         667  682   682
RW        0000 05C4I    201  657*
RWDEV     0000 221CI   2105  2118  2179  3490*
RWDISC    0000 060CI    672  681*
RWO       0000 05EAI    665  671*
RWO1      0000 05FCI    675  677*
RWOPDS    0000 0618I    683  686*
RWX       0000 05DCI    663  666*
SCRAP     0000 21FCI   3474*
SECTAB    0000 0564I    587  599*  1180  1419  1615  1720  1784  1792  1821  1932  1974
SEEK      0000 18AFI    552  1158  1320  1340  1401  1440  1584  1698  1710  1781  1908  2537*
SEL1      0000 1606I   2192  2200*
SELD1     0000 1726I   2315  2322*
SELDIS    0000 16D0I   2180  2281*  2282
SELDIS1   0000 1702I   2295  2300*
SELDIS2   0000 16F8I   2286  2296*
SELERR    0000 2208I   2125  2161  2237  2340  2884  2926  2931  3480*
SELIN1    0000 1AD0I   2913  2928*
SELIN2    0000 1AB8I   2919*
SELIN9    0000 1AD2I   2924  2930*
SELIND    0000 2206I   3479*
SELINT    0000 1AA4I   2886  2907*
SELST1    0000 1AB2I   2915*
SELWRT    0000 15CCI   2123  2165*  2348
SEQ       0000 0620I    199   705*
SEQ1      0000 0634I    712*  725
SEQ2      0000 0666I    718   726*
SEQ2A     0000 06D6I    756*  765
SEQ9      0000 066EI    728*  753
SEQ91     0000 06B6I    736   747*
SEQ99     0000 06CEI    734   746   754*
SEQNAM    0000 1F68I    707   723   741   744   751   763   770  1496  1501  1602  1606  1678  1681
                        1684  2761  2762  3446*
SEQZ      0000 0622I    706*  710
SET1      0000 06EEI    763*  767
SETCOM    0000 1A94I   2888*
SETCON    0000 1A7AI   2333  2857  2868*  2870
SETCYL    0000 1A0FI   2785  2795*
SETGAP    0000 06F6I    760   766*
SETHEAD   0000 1A0EI   2781  2794*
SETSEL    0000 1A88I   2200  2322  2882*
SKP2ND    0000 0082I     93    95*
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SOD         0000 004AI        76*   548  1316  1389  1435  1580  1674  1902
SOP         0000 004BI        77*  1430  1432  1447
SRCEND      0000 0E84I      1424   1429*
SRCK1       0000 0E36I      1406*  1421
SRCK1X      0000 0E34I      1405*  1428
SRCK2       0000 0E5CI      1416*
SRCK4       0000 0E6CI      1420   1422*
SREAD       0000 1B88I      2551*  2552
SSS         0000 1C28I      3105*  3195
STADD       0000 21DCI      2176   3464*
START       0000 0000I        33*
STBKAD      0000 1872I      1568   1648  2494*
STOP        0000 18ACI       676   1383  2165  2396  2451  2533*  2534
STORDR      0000 11CCI      1695*
SVCERR      0000 1C08I      3025   3089*
SWRT        0000 18AEI      2536*  2537
TITLE       0000 1954I       100   2637*
TRKOEN      0000 21C4I       348    586   590  1417  1873  1901  2413  2468  2839  3458*
TSTBOV      0000 0558I       564    596*
TSTEOV      0000 03ACI       470    475*
UPCHKCOM    0000 0302I       343    345*
UPDCOM      0000 13B0I      1874   1902*
UPDFLG      0000 221EI      1868   1896  1951  3491*
UPDSPY      0000 0A30I      1060   1077*
UPDTDR      0000 11AAI      1686*  1728  1741
UPDTP1      0000 14B8I      1952   1985*
UPDTPT      0000 134CI      1103   1242  1858*
UPDTRN      0000 21D0I      1859   1890  1983  3461*
UPDTX1      0000 13F0I      1917   1920*  1939
UPDTX2      0000 140AI      1923   1928*
UPDTX3      0000 13F2I      1921*  1930
UPDTX4      0000 1430I      1933   1940*
UPDTX5      0000 141AI      1934*  1946
UPDTXM      0000 1446I      1942   1947*
UPDTXX      0000 1384I       634   1578  1889*
UPFIEN      0000 14B2I      1978   1983*  1992
UPFIN1      0000 1462I      1957*  1961
UPFIND      0000 144EI      1927   1950*
UPFIZF      0000 1486I      1969*  1972
UPPT1       0000 1366I      1863   1866*
UPXWB1      0000 1470I      1958   1962*  1975  1982
#BLKRD      0000 15A2I      2129   2145*
#DFT        0000 19DEI       551    559  1157  1162  1319  1324  1339  1344  1391  1400  1406  1414  1439
                            1449   1583  1591  1620  1697  1703  1709  1715  1725  1738  1780  1786  1815
                            1818   1907  1913  1937  1965  2005  2283  2777*  2842  2651
#DFT1       0000 19EEI      2782*  2783
#DFT2       0000 19FAI      2786*  2787
#DFT3       0000 1A00I      2779   2789*
#DFT4       0000 1A08I      2791*  2792
#DISC       0000 1520I      1415   1450  1704  1716  1819  1966  2099*
#FM         0000 18ABI       927    929  1196  1198  1465  2269  2271  2531*
#INIFO      0000 0E9AI      1431   1435*
#RDSC1      0000 1524I      2098   2100*
#RT1Y       0000 1024I      1568*  1571
#RTBUF      0000 1F9CI       885    905   915   976   996  1006  1120  1232  1269  1300  1398  1411  1443
```

			1444	1445	1446	1448	3448*						
WRTEND	0000	218CI	2101	2113	2265	2350	3456*						
WRTPB	0000	153CI	883	920	1118	1236	1474	1477	1565	1569	2107*		
WRTPDB	0000	100AI	1557	1560*									
WRTPRT	0000	1774I	2308	2353*									
WTMIMO	0000	07FEI	878	881*									
X9C	0000	1B78I	3027*	3030									
XBC	0000	1B86I	3032*	3035									
XCC	0000	1B96I	3037*	3040									
YESEOJ	0000	1C40I	3106	3116*									
ZSEQ	0000	19D0I	99	952	959	1219	1228	1573	1654	2760*			
ZSQEST	0000	06FCI	714	716	720	727	730	732	738	748	755	762	768*
ZSQZ	0000	0702I	770*	773									