COMMON FLOPPY DISC

TEST PROGRAM

Consists of:

Object Tape	06-198M17
Program Description	06-198M95R01A15
Program Listing	06-198M96
R01 Patch Information	Sheet i/ii
R02 Patch Information	Sheet iii/iv

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R01 Patch Information

To prevent spurious timeout errors when executing 06-198R00 on a Model 8/32 Processor, perform the following steps prior to running the test:

1. Modify memory contents as follows:

Location	Label	Old Contents	New Contents
X'A1E'	Time	XXXX	X'01D0'

2. Start the program. When the title has been printed, enter the following option:

    TIMVAL 1D0 (CR)

R02 Patch Information

This patch is identical to the R01 patch, with the exception of the new information note added at the end.

To prevent spurious timeout errors when executing 06-198R00 on a Model 8/32 Processor, perform the following steps prior to running the test:

1. Modify memory contents as follows:

Location	Label	Old Contents	New Contents
x'A1E'	Time	XXXX	x'01D0'

2. Start the program. When the title has been printed, enter the following option:

    TIMVAL 1D0 (CR)

NOTE:

This patch is incorporated in object 06-198R00.1 on multi-media packages.

COMMON FLOPPY DISC TEST

1. RELATED DOCUMENTS

Test Program Listing	06-198M96R00A13
Test Program Paper Tape	06-198M17R00
Floppy Disc Programming Manual	29-506

2. RELATED TEST PROGRAMS

For 16-bit Processors, the following test programs are to be run prior to loading this test:

Series 16 Processor Test	06-106
Memory Test	06-003
5/16 Processor Test Part 1	06-215
5/16 Processor Test Part 2	06-216
5/16 Processor Test Part 1	06-209
8/16 Processor Test Part 2	06-210
8/16 Processor Test Part 1	06-211
8/16 Processor Test Part 2	06-212

For 32-bit Processors, the following test programs are to be run prior to loading this test:

Series 32 Processor Test, Part 1	06-154
Series 32 Processor Test, Part 2	06-155
Series 32 Processor Test, Part 3	06-178
Series 32 Memory Test	06-156

3. OTHER TEST PROGRAMS

The following test programs are also applicable:

Common Teletype Basic Confidence Test	06-004
Common Current Loop Interface Test	06-184
Common Carousel 300 Test	06-183
Common CRT Test	06-146
Common Line Printer Test	06-170
SELCH Test	06-129
ESELCH Test	06-161
Series 32 Processor Test, Part 4	06-195

4. PURPOSE OF TEST

The purpose of the Common Floppy Disc Test is to provide a comprehensive test of the features of all components of the INTERDATA Floppy Disc System.

5. TEST SEQUENCE

     Test 0 - Tests the Reset Command
     Test 1 - Tests the Read I.D. Command
     Test 2 - Tests the Read Auxiliary Status Command
     Test 3 - Tests the Disarm, Disable and Enable Functions
            of Controller
     Test 4 - Tests the Read/Write under Sense Status/Interrupts
     Test 5 - Tests Reading and Writing (short sector, long sectors
            and Tracks at a time)
     Test 6 - Tests the Boot Load Command
     Test 7 - Tests the Delete Command
     Test 8 - Tests the Format
     Test 9 - MultiDrive Test
     Test A - Special Function Test (Manual Intervention required,
            special diskette required)
     Test B - Scope Loop

See Appendix 7 for further details on each test.

6. MINIMUM HARDWARE REQUIRED

The following is a list of the minimum hardware required to run
the test:

    - Processor: Series 16 or 32
    - Minimum Memory: 16K Bytes
    - Floppy Disc Controller, Drive and Diskette
    - Console Input Device (Refer to Appendix 1): Teletype, CRT,
      or Carousel 15, 30, 300.
    - List Device (Refer to Appendix 1): Teletype, CRT,
      Carousel 15, 30, 300 or Line Printer
    - Test Diskette part number 28-021 (Optional to test Special
      Functions and error status Test A)

7. REQUIREMENTS OF MACHINE UNDER TEST

This program assumes that the tests listed under RELATED TEST
PROGRAMS gave been run without the detection of any errors.

7.1 Device Addresses

The Floppy Disc Controller should be strapped for device address
X'Cl'. If the address is different, the FLPADR option must be
entered and changed accordingly. The SELCH/ESELCH should be
strapped for address X'F0', if used. If the address is different,
the SELCH option must be entered and changed accordingly.

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8. LOADING PROCEDURES

8.1 Test Tape Format

The 06-198M17 Tape is an absolute, non-zoned memory image tape with a Front End Boot Loader. The test occupies approximately 16KB of memory.

8.2 Normal Loading Procedure

1. Manually enter X'50' sequence shown below into memory:

Location	Contents
X'30'	X'0000'
X'32'	X'0000'
X'34'	X'0000'
X'36'	X'0050'
X'50'	X'D500'
X'52'	X'00CF'
X'54'	X'4300'
X'56'	X'0080'
X'78'	X'0294' for TTY, Carousel 35
X'78'	X'0399' for HSPTR
X'78'	X'1399' for HSPTR/P
X'78'	X'C082' for MICROBUS

2. Place the test program tape in the paper tape reader.
3. Execute at address X'30'.
4. When the processor halts, observe the checksum byte displayed on the processor display panel indicator D1. If it is zero, loading is complete; else, repeat the loading procedure.

8.3 Multi-Media Diagnostic Loading Procedure

To load this program from the INTERDATA Multi-Media Diagnostic System, refer to Publication Number 06-176A15.

8.4 Program Execution

1. Refer to Appendix 1 and set up the addresses for the Console Input Device and List Device.
2. For a 16-bit Processor, address location X'A04' and execute. For a 32-bit Processor, address location X'A00' and execute. The following title is output to the Console Device.

    COMMON FLOPPY DISC TEST 06-198R00

9. OPERATING PROCEDURES

9.1 Normal Testing

After the test program is loaded, the appropriate values for the options must be entered. If the default value for any other option is not the desired value, the correct values must be entered (see Appendices 2 and 3).

When the RUN command is entered, the selected tests are run and control is returned to the Command Processor.

The default testing sequence includes TEST 0, 1, 2, 3, 4, 5, 6, and 7. When these tests have been executed successfully, refer to additional testing below.

9.2 Additional Testing

The tests listed in this section do not lend themselves to the default mode of testing, but must be run successfully before testing is complete.

9.2.1 Test 8 Format Utility/Test

This test allows the user to both check the Format function and also Format the diskette. The options DATA and FMPARM are used in this test-format sequence, e.g.,

```
*DATA F0F0      In this example, the test program passes
*FMPARM 25      the DATA F0F0 and Format Parameters, 2 errors
*TEST 8         for 5 tries, to the Floppy to Format the
*RUN            diskette, (see Appendix 3 for further details)
```

9.2.2 TEST 9 Multi-Drive Test

If the system contains more than one drive, modify the DRIVE option to contain the appropriate value, e.g.,

```
*DRIVE BC       The DRIVE option tells the test program to
*TEST 9         have Drive 1 interact with Drive 2 (see
*RUN            Appendix 3 for further details).
```

When TEST 9 is selected, other tests do not switch drive according to DRIVE option.
During TEST 9 the display panel indicates TRACK, SECTOR and Auxiliary Status as shown below:

[9] [SECTOR   TRACK]   [AUXILIARY STATUS]

9.2.3 TEST A Write Protect/Power Off Test

This test requires manual intervention and must be run for a complete test of the system. (See Appendix 8 for further details.)

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9.2.4 TEST B Scope Loop Test

This test is for use only when there is some error and further analysis of the system is required. The test through the use of the SCOPE option allows the user to string 15 functions, each with parameters for sequence, command, number of times, start logical record and end logical record number. The options BUFADR, DATA, and DELAY are used during this test. After all desired options are input, the RUN command is input and the test loops on the selected SCOPEs until the Break key is pressed, e.g.,

```
BUFADR 0              - Default address of Data Buffer
DATA A5A5             - Data A5A5 to be written
DELAY 0               - No delay within function
SCOPE 1,2,4,40,40     - Write 4 times, logical record 40
SCOPE 2,1,10,40,40    - Read 10 times logical record 40
SCOPE 3,2,4,40,40     - Write 4 times, logical record 40
TEST B
RUN                              (See Appendix 3 for further details)
(Loops until break)
*
```

There are a set of special command options to be used as needed with the Scope Loop test.

1. SCPRT - This option displays the presently active scope sequences. No operand is required.

2. SCOPE 0,0 - This variation of the input sequence of the scope option renumbers all presently active scope sequences.

3. SCOPE N,0 - where N is a sequence number. This variation of the input sequence of the scope option deletes the sequence specified by N and removes it from the table of sequences.

10. ERROR PROCEDURES

10.1 Recoverable Errors

If an error is detected which is considered to be recoverable, an error message is displayed to the List Device. For Example:

        ERROR   TTXX

where TT is the test number and XX is the error number (see Appendix 5 for further explanation of Error numbers).

10.2 Irrecoverable Errors

If any type of illegal interrupt is taken, the Processor is halted.
When the RUN(EXECUTE) switch is depressed, the following message
is displayed:

        ERROR   TTFN

        PSW   PPPP   LOC   LLLL

where

        TT = the test number
        FN = type of illegal interrupt
      PPPP = PSW when error was detected
      LLLL = LOC when error was detected

The control is then returned to the Command Processor and the
program waits for console input.

11.   OVERNIGHT TESTING

To run the selected tests for an extended period of time, enter
'RUN' and take the console device OFF-LINE. Testing continues
until the console device is put back ON-LINE, at which time the
number of times the test sequence was executed, and the number of
errors detected are printed:

        TOTAL   TOTERR
        XXXX   YYYY

                        NOTE

        Test B should not be run in the overnight mode
        of testing. This is the scope-loop test and
        hangs up the system until exited by the BREAK key.
        There is no error accounting system with Test B.

APPENDIX 1
USER DEVICE DEFINITION

1. The halfword labeled 'IO' (see Program Listing) has the default
    value for teletype, CRT, or Carousel 15/30 (all on Current Loop
    Interface) as the input/output console device. If the set-up is
    different, 'IO' must be changed as follows:
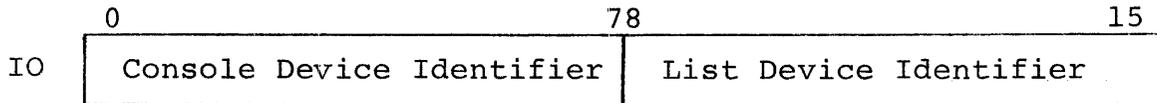
```
          0                              78                        15
          +-------------------------------+--------------------------+
    IO    |  Console Device Identifier    |  List Device Identifier  |
          +-------------------------------+--------------------------+
```

Console Device Identifier	Meaning
X'01'	GDT/CRT on PASLA/PALM interface, strapped for FDX operation at the highest baud rate
X'02'	TTY/GDT/CRT/Carousel 15/30 on TTY/Current Loop Interface
X'03'	Reserved. Interpreted as X'02'
X'04'	Carousel 300 on PASLA/PALM Interface, FDX, highest baud rate
X'05'	Console on a Micro Bus Interface
X'06-X'FF'	Reserved. Interpreted as X'02'

List Device Identifier	Meaning
X'01'	GDT/CRT on PASLA/PALM interface, strapped for FDX operation at the highest baud rate
X'02'	TTY/GDT/CRT/Carousel 15/30 on TTY/Current Loop Interface
X'03'	Line Printer (Data Printer or Centronics or Line Printer Interface)
X'04'	Carousel 300 on PASLA/PALM Interface, FDX, highest baud rate
X'05'	List device on a Micro Bus Interface
X'06-X'FF'	Reserved. Interpreted as X'02'

2. The GDT (Graphic Display Terminal) or CRT, if used on PASLA/PALM
    interface, should be strapped for device addresses X'10' and X'11'
    for Receive and Transmit sides, respectively. If the addresses
    are different, then the halfword labeled 'PASADR' (see the pro-
    gram listing) must be changed accordingly.

3.   The teletype or current loop interface, if used, should be strapped for device address X'02'. If the address is different, the half-word labeled 'CLIFADR' (see the Program Listing) must be changed.

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

5.   The Carousel 300, if used on PASLA/PALM interface, should be strapped for device address X'10' and X'11' for Receive and Transmit sides, respectively. If the addresses are different, the half-word labeled 'C300ADR' (see the Program Listing) must be changed accordingly.

6.   The Micro Bus if used should be strapped for device address X'C0'. If the address is different the halfword labelled MICROBUS (see the Program Listing) must be changed accordingly.

APPENDIX 2
OPTION/COMMAND INPUT STRUCTURE

An asterisk (*) is output to the list device to indicate that the program is awaiting an option input. Any option may be typed in from the Console Input Device, followed by a space and the desired hexadecimal value; an exception is the TEST option which accepts arguments separated by commas. A carriage return (CR) is required to terminate every option/ command input. An invalid option/command or value causes a (?) followed by a carriage return (CR), line feed (LF), and an asterisk (*) to occur.

The left arrow (◄───) can be typed to delete the previous character; or a string of characters can be deleted by typing a left arrow (◄───) for each character to be deleted.
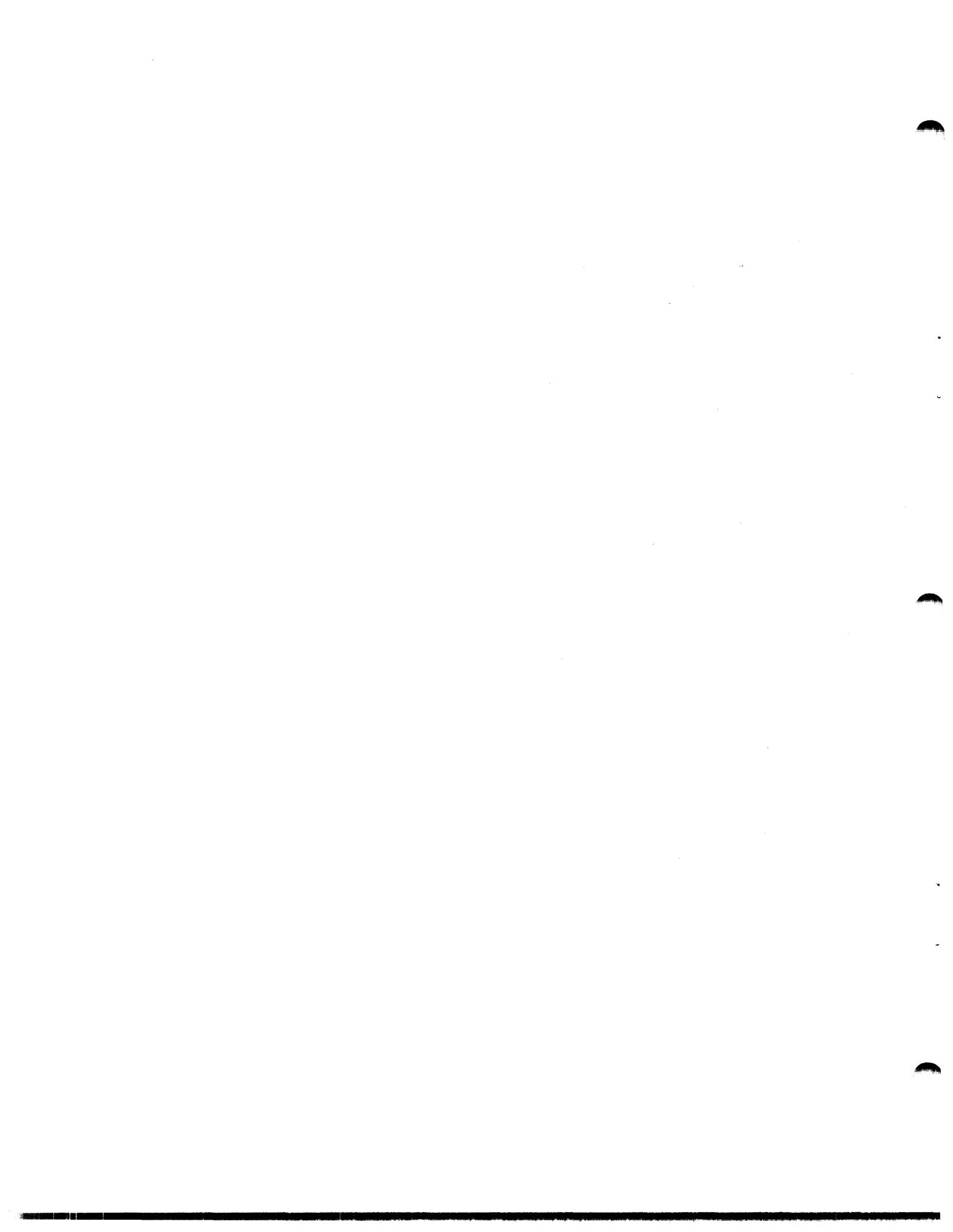
Examine each option in the following list, and read each description. If a default value is specified, and is the value desired, no action is necessary. If a default value is not specified, or is not the desired value, then the option must be entered. See Appendix 2 for Command Input Structure.

OPTION	DEFAULT	TEST	DESCRIPTION
OPTION	N/A	-	Causes all options and their present values to be printed. (except SCOPE option)
SCPRT	N/A	-	Causes the SCOPE table to be printed
TEST	0,1,2,3,4,5,6,7	-	Selects the Test(s) to be executed when the RUN command is entered
FLPADR	X'C1'	All	Defines the Floppy Disc Controller address
DRIVE	X'A'	All	Selects the drive(s) to be tested. In Test 9, (Multi-Drive Test) this option indicates which drives are to interact. A = Drive select 0 B = Drive select 1 C = Drive select 2 D = Drive select 3 Maximum entry X'ABCD' If more then one DRIVE is selected, then the test is repeated for each drive selected. (Except Test 9)
STLRN	X'1'	1,4,5, 7,9	Defines lower limit of the Logical Record Number. Entries valid X'1'-X'7D2'
ENDLRN	X'7D2'	1,4,5, 7,9	Defines high limit of the logical Record Number. Entries valid X'1'-X'7D2'
DATA	X'0'	4,5,6, 8,9,B	If = 0, then random number is used for all data patterns. If ≠ 0, then the number entered is used for all data patterns.
BUFADR	X'0'	4,5,6, 7,8,9, B	if = 0, the Data Buffer in the program is used. if = some address, then that address

OPTION	DEFAULT	TEST	DESCRIPTION
			is used for the data buffer. Any address between X'0' and top of the program is rejected. A 20-bit address is accepted on a 32-bit Processor.
SHIFT	X'0'	4,5,6, 9,B	If DATA = 0, this option is ignored. If DATA ≠ 0 and SHIFT = 0, the data constitutes a nonshifting pattern. If DATA = 0 and SHIFT = 1, the data constitutes a shifting pattern.
FMPARM	X'0F'	8	Specifies the FORMAT Parameters. First digit = number of errors allowed Second digit = number of tries
SELCH	X'0'	All	Define SELCH/ESELCH address. If = 0, no SELCH in the system.
LOOP	X'0'	All	Determines the number of times a test is executed before advancing to the next test.
CONTIN	X'0'	All	Enables the user to run all selected tests automatically until BREAK key is pressed. 0 = normal execution 1 = continuous execution
NOMSG	X'0'	All	Determines which messages are to be printed. 0 = all messages 1 = error messages only
INTLEV	X'0'	All	Defines the interrupt level of the controller and diskette. 8/32 only.
INTST4	X'0'	4	If 0, Test 4 is run under sense status and interrupt control If 1, then Test 4 is run under interrupt only If 2, then Test 4 is run under sense status only.
DELAY	X'0'	B	If = 0, no latency between transfers If = 1, latency occurs within function on scope loop

OPTION	DEFAULT	TEST	DESCRIPTION
TIMVAL	X'140'	All	Establishes a count value for a 1 millisec software timeout
			6/16,5/16 MOS 14A
			6/16,8/16,8/16-E 750 nsec 14D
			6/16,8/16,8/16-E 1000 nsec 134
			7/16 BASIC D2
			7/16 HASLU 750 nsec 14D
			7/16 HASLU 1000 nsec 134
			7/32 750 nsec EB
			7/32 1000 nsec D2
			8/32 DA
RUN	N/A	-	Runs selected tests with options
SCOPE	N/A	B	Determines the sequence of events for the Scope Loop Test. This option needs multiple parameters. (Shown below.)

SCOPE   A,B,CCCC,DDDD,EEEE

        Where A = Sequence 1-F (if 0 see NOTE)
              B = Command 1-8 (if 0 see NOTE)
              C = Count 1-7FFF number of times to execute
              D = STLRN 1-7D2 Starting logical Record number
              E = ENDLRN 1-7D2 Ending logical Record number

The scope option is used to quickly execute a sequence of events for
further analysis with an oscilloscope. Each sequence is executed
according to its parameters in ascending order until the BREAK key
is depressed. Each sequence executes the Command for sectors between
STLRN and ENDLRN and is repeated the number of times in count. Any
sequence can be deleted (see NOTE), the sequence number can also be
reassigned (see NOTE). After the last sequence executed the option
loops and starts again with the first sequence until BREAK is depressed.

                          NOTE
        SCPRT   - prints all current SCOPE entries
        SCOPE 0,0 - renumbers all sequences
        SCOPE N,0 - deletes sequence N

The Scope Loop Test (Test B) indicates the drive status at any
particular instant on the display panel as shown below

[A][B   C   D   E][F   G   H   I]

where:

For RID

[Sequence][TRACK   O   O][Sector   Error Status]

For Read AUX Status

[Sequence] [Byte 1   Byte 2] [Byte 3   Byte 4]
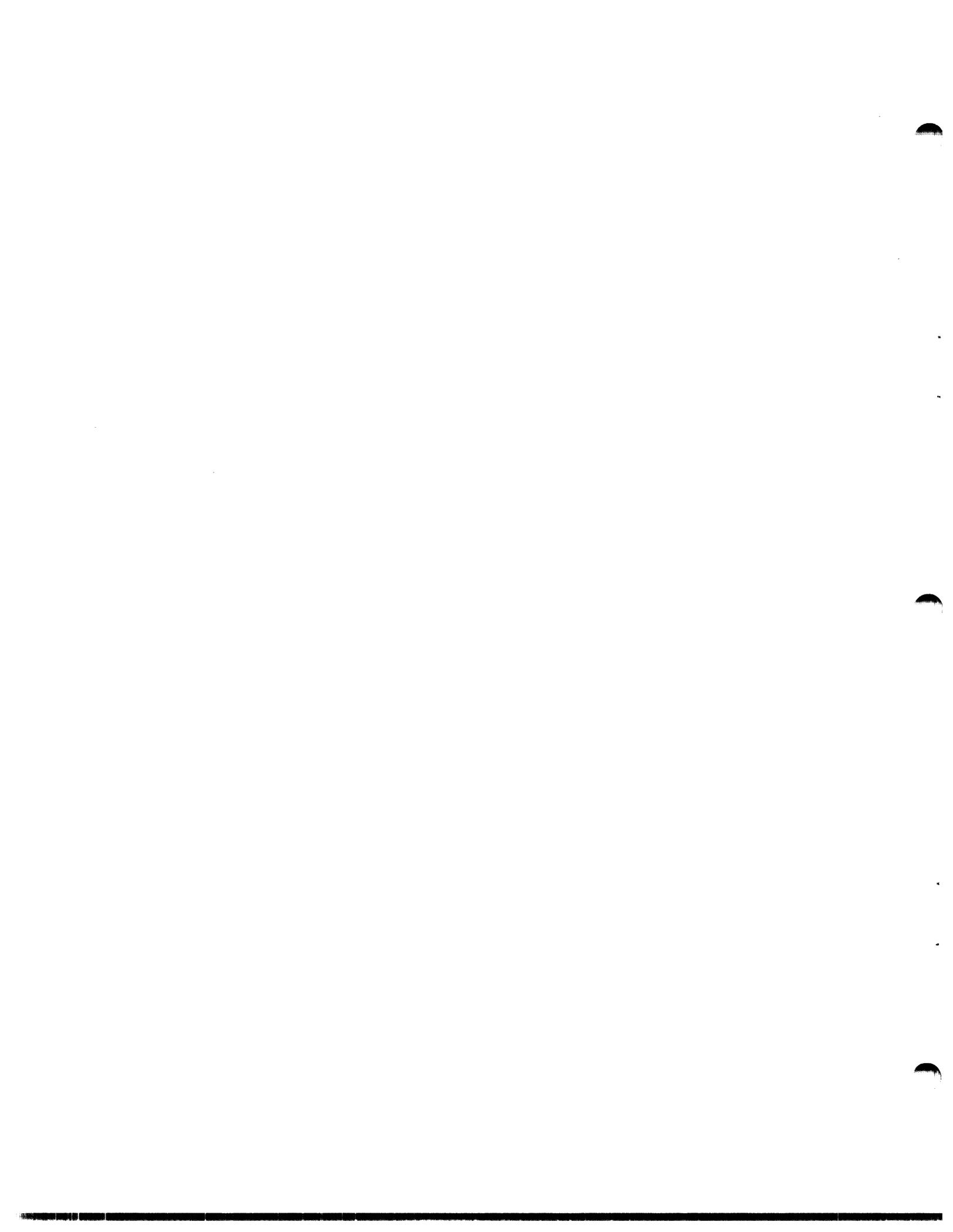
COMMON FLOPPY DISC TEST 06-198R00
UNPROTECT DISKETTE


```
*OPTION
TEST  0,1,2,3,4,5
BUFADR 0000
FLPADR 00C1
DRIVE  000A
STLRN  0001
ENDLRN 0702
DATA   0000
DELAY  0000
SHIFT  0000
INTST4 0000
FMPARM 0005
SELCH  0000
LOOP   0000
CONTIN 0000
NOMSG  0000
INTLEV 0000
TIMVAL 014D
*RUN
MAX LRN 7B8                    (if this message is printed, LRN is
*ENDLRN 7B8                    too large for given Diskette,
*RUN                          i.e., Diskette contains one or two
DRIVE A UNDER TEST            Def. TRACK)
TEST 00
NO ERROR
TEST 01
NO ERROR
TEST 02
NO ERROR
TEST 03
NO ERROR
TEST 04
NO ERROR
TEST 05
NO ERROR
END OF TEST
```
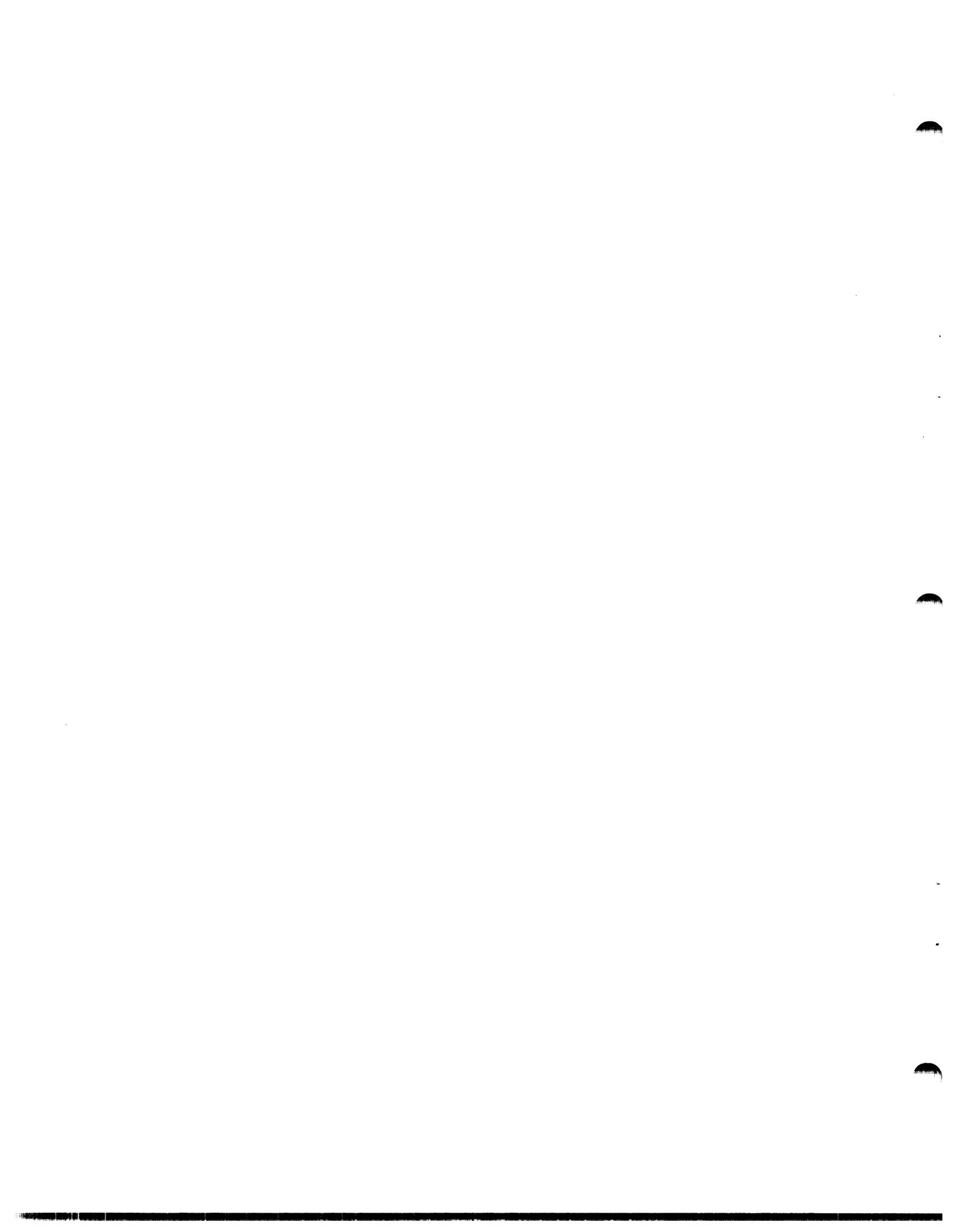
APPENDIX 5
ERROR DEFINITIONS

TTNN	ERROR DESCRIPTION	PRT KEY
01	Reset did not generate Controller Idle.	1
02	Bad Status after Idle set.	1
03	Reset did not place head at Track 0.	2
04	Track 0 bit in Auxiliary Status Byte not set.	2
05	Actual Track # did not match Expected Track #.	4
06	Actual Sector # did not match Expected Sector #.	4
07	CRC in I.D. is not correct.	3
08	Idle did not set after Read/Write.	1
09	Zero not in 2nd or 4th byte of I.D. Field.	3
0A	Idle set erroneously.	1
0B	Delete Record bit did not set after Delete operation.	2
0C	Error Status in Auxiliary Status not correct.	2
0D	LRN error bit did not set.	2
0E	Illegal Command bit did not set.	2
0F	Write Protect after legal Read/Write.	2
10	Defective Track error bit.	2
11	Deleted Record bit set.	2
12	Error bit set erroneously.	2
13	Busy did not reset.	1
14	Examine bit set erroneously.	2
15	Fault bit set erroneously.	2
16	Examine going to one did not generate an interrupt.	0
17	Fault bit did not set.	0
18	Busy interrupt did not occur.	0
19	Idle interrupt did not occur.	0
1A	SELCH interrupt did not occur.	0
1B	Data compare when Writing short sectors (less than 128 bytes).	5
1C	Busy is low after last data transfer interrupt.	1
1D	Controller did not interrupt when enabled.	0
1E	No seek error for bad LRN.	2
1F	Bad I.D. in defective track.	3
20	Busy is high when Floppy interrupted.	2
21	Bad status after interrupt.	1
22	Idle is not set after interrupt.	0
23	Termination address for SELCH incorrect.	0
24	Idle did not set after SELCH termination.	0
25	Write Data did not generate interrupt.	0
26	Read Halfword did not generate interrupt.	0
27	Data compare when Writing one sector.	5
28	Data compare when Writing one track in one revolution.	5
29	Boot load operation not correct.	0
2A	Interrupt occurred when controller disarmed.	0
2B	Interrupt occurred when controller disabled.	0
2C	Interrupt not queued when controller disabled.	0

TTNN	ERROR DESCRIPTION	PRT KEY
2D	Write Protect Switch not operational.	0
2E	Power ON/OFF failed to restore correctly.	0
2F	Defective track not recognized.	0
30	I.D. CRC error.	2
31	Data CRC error.	2
32	Actual Sector # is larger than 1A or less then 1.	3
33	Bad status after command format.	1
34	Last byte of Auxiliary Status is wrong.	2
35	Extra defective track detected.	6
36	Examine bit is reset when WP or ERR bit is set.	2
37	ERR bit in ERRSTA is wrong.	2
38	LRN error bit in ERRSTA is set.	2
39	No Address Mark Found error.	2
3A	Command Error detected.	2
3B	Seek Error.	2
3C	File unsafe error fault.	2
3D	Deleted Record bit ERRSTA is wrong.	2
3E	Defective track bit in ERRSTA is wrong.	2
3F	Bad I.D. in Track 0.	3
40	Data compare after transfer 2 sectors in 2 revolutions.	5
41	Auxiliary Status error.	2
42	Bad Status after special error generation (Test A)	2
F1	16 bit Fixed Point Arithmetic Fault, 32-bit Arithmetic Fault.	8
F2	Illegal Instruction Interrupt.	8
F3	Machine Malfunction Interrupt.	8
F4	Unexpected Device Spurious Interrupt.	7
F5	16-bit Floating Point Divide Int, 32-bit Relocation/Protect INT.	8
F6	An external interrupt into wrong int. level has occurred.	7

AANN - Initial Read ID for defective tracks on drive A generated error NN.

BBNN - Initial Read ID for defective tracks on drive B generated error NN.

CCNN - Initial Read ID for defective tracks on drive C generated error NN.

DDNN - Initial Read ID for defective tracks on drive D generated error NN.

PRT KEY	PRINTED
0	ERROR TTNN
1	ERROR TTNN STATUS AA
2	ERROR TTNN STATUS AA AUX STATUS BB CC DD EE FF GG
3	ERROR TTNN STATUS AA ACT ID HH II JJ KK LL MM
4	ERROR TTNN ACT ID HH II JJ KK LL MM EXP ID HH II JJ KK LL MM
5	ERROR TTNN DATA ACT DATA EXP
6	ERROR TTNN ACT ID HH II JJ KK LL MM STATUS AA AUX STATUS BB CC DD EE FF GG
7	ERROR TTFN DEV PPP STA QQQ PSW RRR LOC SSS
8	ERROR TTFN PSW RRR LOC SSS

continued

where

AA	= STATUS
BB	= 1st byte of Auxiliary Status
CC	= 2nd byte of Auxiliary Status
DD	= Last Sector Read/Write
EE	= Last Track Read/Write
FF	= 1st Defective Track
GG	= 2nd Defective Track
HH	= I.D. Physical Track
II	= 2nd Byte in I.D. should be 0
JJ	= I.D. Physical Sector
KK	= 4th Byte in I.D. should be 0
LL	= Most significant byte of I.D. CRC
MM	= Least significant byte of I.D. CRC
NN	= Test number
OOOO	= Data expected
PPP	= Device
QQQ	= STATUS
RRR	= PSW
SSS	= LOC
TT	= Test number
WWWW	= Data actual

Other possible error/warning messages:

STLRN > ENDLRN	- Do not Run Test 9 with STLRN > ENDLRN
TRACK 0 IS DEFECTIVE	- Track 0 defective, do not use diskette
DEFECTIVE TRACKS ** ** **	- Defective tracks found
NO FLOPPY AT SELECTED ADDRESS	- False sync has occurred
IDLE NOT SET. INITIALIZE	- Idle never set, Initialize and restart
UNPROTECT DISKETTE	- Start test with Diskette unprotected

MAX LRN 79E

    - Printed at beginning of Test
      indicating there is one or two
      defective tracks
      79E for 2 defective tracks
      7B8 for 1 defective track
      if this message is not printed,
      then there are no defective tracks
      on drive 0 or the largest LRN is
      allowable for given diskette.

MORE THAN 2 DEF.TRACKS.RUN FORMAT TEST

    - Printed at beginning of Test
      indicating there are more than
      two defective tracks. Run Test 8
      and if Test 8 indicates more than
      two defective tracks, the diskette
      is bad on Drive 0.

NO DEFECTIVE TRACKS

    - Printed in Test 8 if no defective
      tracks are found on diskette.

APPENDIX 6

STATUS AND COMMAND

BIT	8	9	10	11	12	13	14	15
STATUS	Write Protect	Defective Track	Deleted Record	Error	Busy	Examine	Idle	Fault
COMMAND	Interrupt		Drive Select		Command			

INTERRUPT

01 - Disable
10 - Enable
11 - Disarm

DRIVE SELECT
00 - Drive 0
01 - Drive 1
10 - Drive 2
11 - Drive 3

COMMAND

X'1' - Read
X'2' - Write
X'3' - Read I.D.
X'4' - Read Aux Status
X'5' - Delete
X'6' - Boot Load
X'7' - Stop
X'8' - Reset
X'9' - Format
X'0', X'A':X'F' - Invalid Command

AUXILIARY STATUS

Byte 1	ID CRC Error	Data CRC Error	LRN Error	WRITE PRO-TECT	ERR	DEF Track	Del Rec	Fault	Error Flags
Byte 2	Track 0	~~Ready~~	No AM	CMD Error	Seek Error	File Unsafe	Drive Address		Device Status
Byte 3	Last Sector	Read/Write							
Byte 4	Last Track	Read/Write							
Byte 5	1st Defective TRACK (see NOTE)								
Byte 6	2nd Defective TRACK (see NOTE)								

NOTE

These bytes are valid only after the Format function.

BYTE

5	6	
FF	FF	No defective Track
OO	FF	TRACK 0 defective
2A	FF	TRACK 2A defective
21	23	TRACKS 21 and 23 defective
OO	OO	More than 2 defective TRACKS

I.D.

Byte 1	TRACK #X'00' - X'4C'
Byte 2	X'00'
Byte 3	SECTOR # X'01' - X'1A'
Byte 4	X'00'
Byte 5	Most significant Byte of CRC
Byte 6	Least Significant Byte of CRC

CONTROLLER STATUS

STATUS	Write Protect	Defective Track	Deleted Record	Error	Busy	Examine	Idle	Fault

ERROR FLAGS

AUX STATUS 1st BYTE	I.D. CRC Error	Data CRC Error	LRN Error	WRITE PRO-TECT	Error	Defective Track	Deleted Reocrd	Ready File Unsafe

DRIVE STATUS

AUX STATUS 2nd BYTE	Track 0	Ready	No Address Mark	CMD ERR	Seek Error	File Unsafe	Drive Address
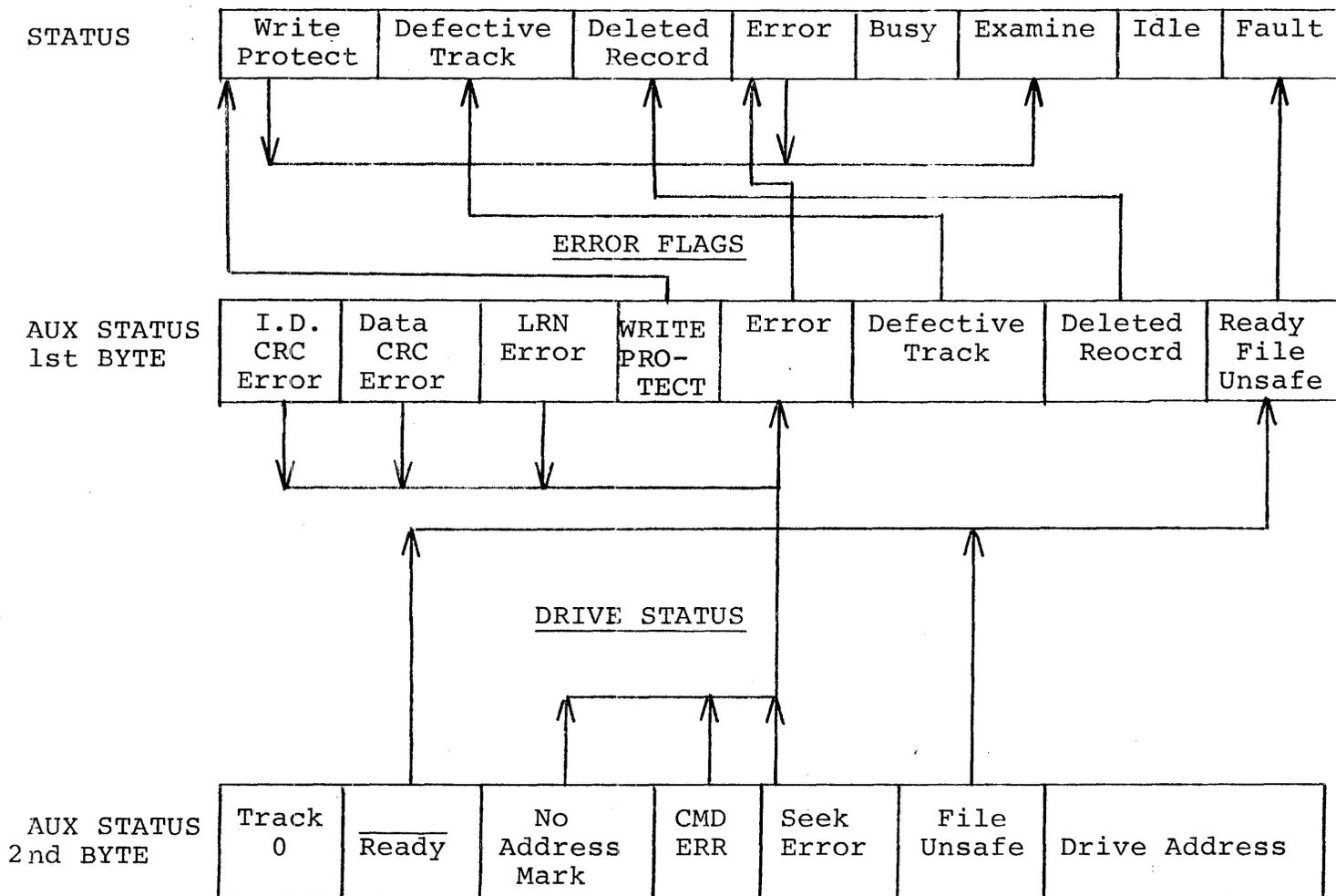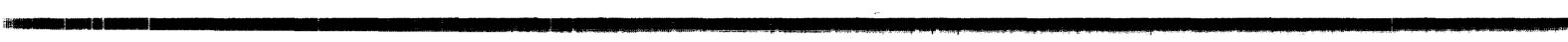
TEST	OPTIONS	TIME	INC DISPLAY	CAN RUN W SELCH	STLRN ENDLRN	RANGE TESTED
0	SELCH COMMON	3 sec	NO	YES	-	-
1	STLRN ENDLRN SELCH COMMON	25 sec	YES	YES	NO	ALL SPECIFIED
2	BUFADR SELCH COMMON	3 sec	NO	YES	-	-
3	COMMON	4 sec	NO	YES	-	-
4	STLRN INTST4 BUFADR DATA SHIFT COMMON	15 min	YES	YES	NO	ALL SPECIFIED
5	STLRN BUFADR DATA SHIFT SELCH COMMON	1 min	YES	NO	YES	STLRN+40 OR ENDLRN If STLRN $>$ ENDLRN Entire range tested.
6	BUFADR DATA SHIFT SELCH COMMON	2 sec	NO	YES	-	-
7	STLRN BUFADR SELCH COMMON	1 min	YES	YES	YES	STLRN+40 OR ENDLRN If STLRN $>$ ENDLRN Entire range tested
8	DATA FMPARM BUFADR SELCH COMMON	4 min	YES After format is complete	YES	-	ALL

COMMON - FLPADR, DRIVE, LOOP, CONTIN, NOMSG, INTLEV and TIMVAL

TEST	OPTION	TIME	INC DISPLAY	CAN RUN W SELCH	STLRN ENDLRN	RANGE TESTED
9	STLRN ENDLRN BUFADR DATA SHIFT COMMON	35m-1 DRV 45m-2 DRV 60m-3 DRV 75m-4 DRV	YES as each LRN is selected	NO	NO	ALL SPECIFIED
A	COMMON	4 min	YES-during special diskette testing	YES	-	-
B	BUFADR DATA SHIFT DELAY SCOPE SCPRT	UNTIL BREAK	YES Drive Status	YES	-	ALL SPECIFIED IN SCOPE OPTION

COMMON - FLPADR, DRIVE, LOOP, CONTIN, NOMSG, INTLEV and TIMVAL

MANUAL INTERVENTION

Test Response	Test Performed
*RUN	
DRIVE A UNDER TEST	
REMOVE DISKETTE	Fault Bit
PRESS BRK	
WRITE PROTECT DISKETTE	Write Protect Bit
PRESS BRK	
IS SPECIAL DISKETTE AVAILABLE?	
Y	
INSERT SPECIAL DISKETTE	No Write Protect
UNPROTECT DISKETTE	Defective Tracks
PRESS BRK	No Address Mark bit
	ID CRC error bit
	DATA CRC error bit
	Error bit
	Seek error
INSERT TEST DISKETTE	No Status
UNPROTECT DISKETTE	
POWER OFF DRIVE	
PRESS BRK	
POWER ON DRIVE	Idle Sets
PRESS BRK	
NO ERROR	
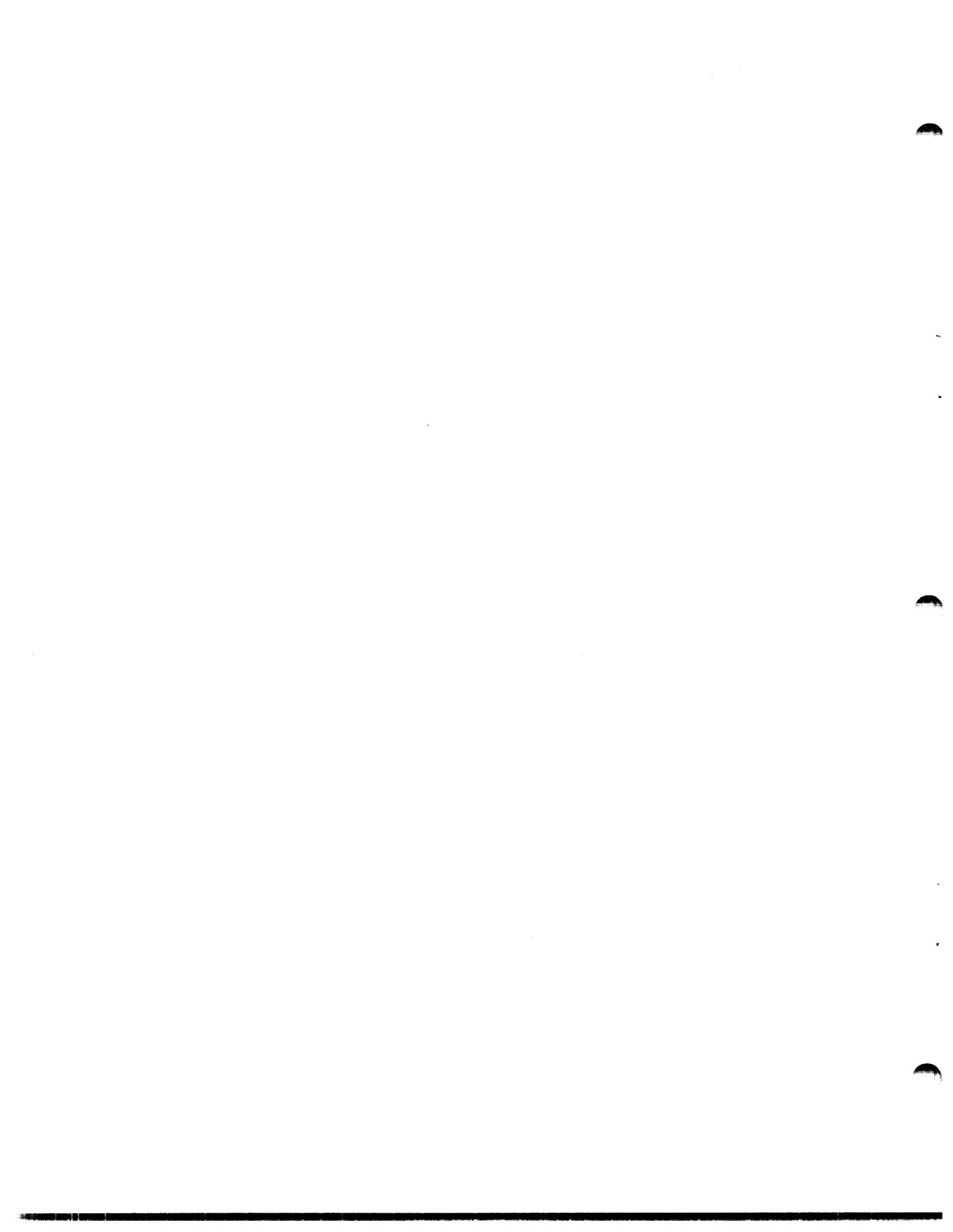
TRACK SECTOR

TRACK	**1	**2	**3	**4	**5	**6	**7	**8	**9	**A	**B	**C	**D	**E	**F	*10	*11	*12	*13	*14	*15	*16	*17	*18	*19	*1A
00	001	002	003	004	005	006	007	008	009	00A	00B	00C	00D	00E	00F	010	011	012	013	014	015	016	017	018	019	01A
01	01B	01C	01D	01E	01F	020	021	022	023	024	025	026	027	028	029	02A	02B	02C	02D	02E	02F	030	031	032	033	034
02	035	036	037	038	039	03A	03B	03C	03D	03E	03F	040	041	042	043	044	045	046	047	048	049	04A	04B	04C	04D	04E
03	04F	050	051	052	053	054	055	056	057	058	059	05A	05B	05C	05D	05E	05F	060	061	062	063	064	065	066	067	068
04	069	06A	06B	06C	06D	06E	06F	070	071	072	073	074	075	076	077	078	079	07A	07B	07C	07D	07E	07F	080	081	082
05	083	084	085	086	087	088	089	08A	08B	08C	08D	08E	08F	090	091	092	093	094	095	096	097	098	099	09A	09B	09C
06	09D	09E	09F	0A0	0A1	0A2	0A3	0A4	0A5	0A6	0A7	0A8	0A9	0AA	0AB	0AC	0AD	0AE	0AF	0B0	0B1	0B2	0B3	0B4	0B5	0B6
07	0B7	0B8	0B9	0BA	0BB	0BC	0BD	0BE	0BF	0C0	0C1	0C2	0C3	0C4	0C5	0C6	0C7	0C8	0C9	0CA	0CB	0CC	0CD	0CE	0CF	0D0
08	0D1	0D2	0D3	0D4	0D5	0D6	0D7	0D8	0D9	0DA	0DB	0DC	0DD	0DE	0DF	0E0	0E1	0E2	0E3	0E4	0E5	0E6	0E7	0E8	0E9	0EA
09	0EB	0EC	0ED	0EE	0EF	0F0	0F1	0F2	0F3	0F4	0F5	0F6	0F7	0F8	0F9	0FA	0FB	0FC	0FD	0FE	0FF	100	101	102	103	104
0A	105	106	107	108	109	10A	10B	10C	10D	10E	10F	110	111	112	113	114	115	116	117	118	119	11A	11B	11C	11D	11E
0B	11F	120	121	122	123	124	125	126	127	128	129	12A	12B	12C	12D	12E	12F	130	131	132	133	134	135	136	137	138
0C	139	13A	13B	13C	13D	13E	13F	140	141	142	143	144	145	146	147	148	149	14A	14B	14C	14D	14E	14F	150	151	152
0D	153	154	155	156	157	158	159	15A	15B	15C	15D	15E	15F	160	161	162	163	164	165	166	167	168	169	16A	16B	16C
0E	16D	16E	16F	170	171	172	173	174	175	176	177	178	179	17A	17B	17C	17D	17E	17F	180	181	182	183	184	185	186
0F	187	188	189	18A	18B	18C	18D	18E	18F	190	191	192	193	194	195	196	197	198	199	19A	19B	19C	19D	19E	19F	1A0
10	1A1	1A2	1A3	1A4	1A5	1A6	1A7	1A8	1A9	1AA	1AB	1AC	1AD	1AE	1AF	1B0	1B1	1B2	1B3	1B4	1B5	1B6	1B7	1B8	1B9	1BA
11	1BB	1BC	1BD	1BE	1BF	1C0	1C1	1C2	1C3	1C4	1C5	1C6	1C7	1C8	1C9	1CA	1CB	1CC	1CD	1CE	1CF	1D0	1D1	1D2	1D3	1D4
12	1D5	1D6	1D7	1D8	1D9	1DA	1DB	1DC	1DD	1DE	1DF	1E0	1E1	1E2	1E3	1E4	1E5	1E6	1E7	1E8	1E9	1EA	1EB	1EC	1ED	1EE
13	1EF	1F0	1F1	1F2	1F3	1F4	1F5	1F6	1F7	1F8	1F9	1FA	1FB	1FC	1FD	1FE	1FF	200	201	202	203	204	205	206	207	208
14	209	20A	20B	20C	20D	20E	20F	210	211	212	213	214	215	216	217	218	219	21A	21B	21C	21D	21E	21F	220	221	222
15	223	224	225	226	227	228	229	22A	22B	22C	22D	22E	22F	230	231	232	233	234	235	236	237	238	239	23A	23B	23C
16	23D	23E	23F	240	241	242	243	244	245	246	247	248	249	24A	24B	24C	24D	24E	24F	250	251	252	253	254	255	256
17	257	258	259	25A	25B	25C	25D	25E	25F	260	261	262	263	264	265	266	267	268	269	26A	26B	26C	26D	26E	26F	270
18	271	272	273	274	275	276	277	278	279	27A	27B	27C	27D	27E	27F	280	281	282	283	284	285	286	287	288	289	28A
19	28B	28C	28D	28E	28F	290	291	292	293	294	295	296	297	298	299	29A	29B	29C	29D	29E	29F	2A0	2A1	2A2	2A3	2A4
1A	2A5	2A6	2A7	2A8	2A9	2AA	2AB	2AC	2AD	2AE	2AF	2B0	2B1	2B2	2B3	2B4	2B5	2B6	2B7	2B8	2B9	2BA	2BB	2BC	2BD	2BE
1B	2BF	2C0	2C1	2C2	2C3	2C4	2C5	2C6	2C7	2C8	2C9	2CA	2CB	2CC	2CD	2CE	2CF	2D0	2D1	2D2	2D3	2D4	2D5	2D6	2D7	2D8
1C	2D9	2DA	2DB	2DC	2DD	2DE	2DF	2E0	2E1	2E2	2E3	2E4	2E5	2E6	2E7	2E8	2E9	2EA	2EB	2EC	2ED	2EE	2EF	2F0	2F1	2F2
1D	2F3	2F4	2F5	2F6	2F7	2F8	2F9	2FA	2FB	2FC	2FD	2FE	2FF	300	301	302	303	304	305	306	307	308	309	30A	30B	30C
1E	30D	30E	30F	310	311	312	313	314	315	316	317	318	319	31A	31B	31C	31D	31E	31F	320	321	322	323	324	325	326
1F	327	328	329	32A	32B	32C	32D	32E	32F	330	331	332	333	334	335	336	337	338	339	33A	33B	33C	33D	33E	33F	340
20	341	342	343	344	345	346	347	348	349	34A	34B	34C	34D	34E	34F	350	351	352	353	354	355	356	357	358	359	35A
21	35B	35C	35D	35E	35F	360	361	362	363	364	365	366	367	368	369	36A	36B	36C	36D	36E	36F	370	371	372	373	374
22	375	376	377	378	379	37A	37B	37C	37D	37E	37F	380	381	382	383	384	385	386	387	388	389	38A	38B	38C	38D	38E
23	38F	390	391	392	393	394	395	396	397	398	399	39A	39B	39C	39D	39E	39F	3A0	3A1	3A2	3A3	3A4	3A5	3A6	3A7	3A8
24	3A9	3AA	3AB	3AC	3AD	3AE	3AF	3B0	3B1	3B2	3B3	3B4	3B5	3B6	3B7	3B8	3B9	3BA	3BB	3BC	3BD	3BE	3BF	3C0	3C1	3C2

TRACK SECTOR

	**1	**2	**3	**4	**5	**6	**7	**8	**9	**A	**B	**C	**D	**E	**F	*10	*11	*12	*13	*14	*15	*16	*17	*18	*19	*1A
25	3C3	3C4	3C5	3C6	3C7	3C8	3C9	3CA	3CB	3CC	3CD	3CE	3CF	3D0	3D1	3D2	3D3	3D4	3D5	3D6	3D7	3D8	3D9	3DA	3DB	3DC
26	3DD	3DE	3DF	3E0	3E1	3E2	3E3	3E4	3E5	3E6	3E7	3E8	3E9	3EA	3EB	3EC	3ED	3EE	3EF	3F0	3F1	3F2	3F3	3F4	3F5	3F6
27	3F7	3F8	3F9	3FA	3FB	3FC	3FD	3FE	3FF	400	401	402	403	404	405	406	407	408	409	40A	40B	40C	40D	40E	40F	410
28	411	412	413	414	415	416	417	418	419	41A	41B	41C	41D	41E	41F	420	421	422	423	424	425	426	427	428	429	42A
29	42B	42C	42D	42E	42F	430	431	432	433	434	435	436	437	438	439	43A	43B	43C	43D	43E	43F	440	441	442	443	444
2A	445	446	447	448	449	44A	44B	44C	44D	44E	44F	450	451	452	453	454	455	456	457	458	459	45A	45B	45C	45D	45E
2B	45F	460	461	462	463	464	465	466	467	468	469	46A	46B	46C	46D	46E	46F	470	471	472	473	474	475	476	477	478
2C	479	47A	47B	47C	47D	47E	47F	480	481	482	483	484	485	486	487	488	489	48A	48B	48C	48D	48E	48F	490	491	492
2D	493	494	495	496	497	498	499	49A	49B	49C	49D	49E	49F	4A0	4A1	4A2	4A3	4A4	4A5	4A6	4A7	4A8	4A9	4AA	4AB	4AC
2E	4AD	4AE	4AF	4B0	4B1	4B2	4B3	4B4	4B5	4B6	4B7	4B8	4B9	4BA	4BB	4BC	4BD	4BE	4BF	4C0	4C1	4C2	4C3	4C4	4C5	4C6
2F	4C7	4C8	4C9	4CA	4CB	4CC	4CD	4CE	4CF	4D0	4D1	4D2	4D3	4D4	4D5	4D6	4D7	4D8	4D9	4DA	4DB	4DC	4DD	4DE	4DF	4E0
30	4E1	4E2	4E3	4E4	4E5	4E6	4E7	4E8	4E9	4EA	4EB	4EC	4ED	4EE	4EF	4F0	4F1	4F2	4F3	4F4	4F5	4F6	4F7	4F8	4F9	4FA
31	4FB	4FC	4FD	4FE	4FF	500	501	502	503	504	505	506	507	508	509	50A	50B	50C	50D	50E	50F	510	511	512	513	514
32	515	516	517	518	519	51A	51B	51C	51D	51E	51F	520	521	522	523	524	525	526	527	528	529	52A	52B	52C	52D	52E
33	52F	530	531	532	533	534	535	536	537	538	539	53A	53B	53C	53D	53E	53F	540	541	542	543	544	545	546	547	548
34	549	54A	54B	54C	54D	54E	54F	550	551	552	553	554	555	556	557	558	559	55A	55B	55C	55D	55E	55F	560	561	562
35	563	564	565	566	567	568	569	56A	56B	56C	56D	56E	56F	570	571	572	573	574	575	576	577	578	579	57A	57B	57C
36	57D	57E	57F	580	581	582	583	584	585	586	587	588	589	58A	58B	58C	58D	58E	58F	590	591	592	593	594	595	596
37	597	598	599	59A	59B	59C	59D	59E	59F	5A0	5A1	5A2	5A3	5A4	5A5	5A6	5A7	5A8	5A9	5AA	5AB	5AC	5AD	5AE	5AF	5B0
38	5B1	5B2	5B3	5B4	5B5	5B6	5B7	5B8	5B9	5BA	5BB	5BC	5BD	5BE	5BF	5C0	5C1	5C2	5C3	5C4	5C5	5C6	5C7	5C8	5C9	5CA
39	5CB	5CC	5CD	5CE	5CF	5D0	5D1	5D2	5D3	5D4	5D5	5D6	5D7	5D8	5D9	5DA	5DB	5DC	5DD	5DE	5DF	5E0	5E1	5E2	5E3	5E4
3A	5E5	5E6	5E7	5E8	5E9	5EA	5EB	5EC	5ED	5EE	5EF	5F0	5F1	5F2	5F3	5F4	5F5	5F6	5F7	5F8	5F9	5FA	5FB	5FC	5FD	5FE
3B	5FF	600	601	602	603	604	605	606	607	608	609	60A	60B	60C	60D	60E	60F	610	611	612	613	614	615	616	617	618
3C	619	61A	61B	61C	61D	61E	61F	620	621	622	623	624	625	626	627	628	629	62A	62B	62C	62D	62E	62F	630	631	632
3D	633	634	635	636	637	638	639	63A	63B	63C	63D	63E	63F	640	641	642	643	644	645	646	647	648	649	64A	64B	64C
3E	64D	64E	64F	650	651	652	653	654	655	656	657	658	659	65A	65B	65C	65D	65E	65F	660	661	662	663	664	665	666
3F	667	668	669	66A	66B	66C	66D	66E	66F	670	671	672	673	674	675	676	677	678	679	67A	67B	67C	67D	67E	67F	680
40	681	682	683	684	685	686	687	688	689	68A	68B	68C	68D	68E	68F	690	691	692	693	694	695	696	697	698	699	69A
41	69B	69C	69D	69E	69F	6A0	6A1	6A2	6A3	6A4	6A5	6A6	6A7	6A8	6A9	6AA	6AB	6AC	6AD	6AE	6AF	6B0	6B1	6B2	6B3	6B4
42	6B5	6B6	6B7	6B8	6B9	6BA	6BB	6BC	6BD	6BE	6BF	6C0	6C1	6C2	6C3	6C4	6C5	6C6	6C7	6C8	6C9	6CA	6CB	6CC	6CD	6CE
43	6CF	6D0	6D1	6D2	6D3	6D4	6D5	6D6	6D7	6D8	6D9	6DA	6DB	6DC	6DD	6DE	6DF	6E0	6E1	6E2	6E3	6E4	6E5	6E6	6E7	6E8
44	6E9	6EA	6EB	6EC	6ED	6EE	6EF	6F0	6F1	6F2	6F3	6F4	6F5	6F6	6F7	6F8	6F9	6FA	6FB	6FC	6FD	6FE	6FF	700	701	702
45	703	704	705	706	707	708	709	70A	70B	70C	70D	70E	70F	710	711	712	713	714	715	716	717	718	719	71A	71B	71C
46	71D	71E	71F	720	721	722	723	724	725	726	727	728	729	72A	72B	72C	72D	72E	72F	730	731	732	733	734	735	736
47	737	738	739	73A	73B	73C	73D	73E	73F	740	741	742	743	744	745	746	747	748	749	74A	74B	74C	74D	74E	74F	750
48	751	752	753	754	755	756	757	758	759	75A	75B	75C	75D	75E	75F	760	761	762	763	764	765	766	767	768	769	76A
49	76B	76C	76D	76E	76F	770	771	772	773	774	775	776	777	778	779	77A	77B	77C	77D	77E	77F	780	781	782	783	784
4A	785	786	787	788	789	78A	78B	78C	78D	78E	78F	790	791	792	793	794	795	796	797	798	799	79A	79B	79C	79D	79E
4B	79F	7A0	7A1	7A2	7A3	7A4	7A5	7A6	7A7	7A8	7A9	7AA	7AB	7AC	7AD	7AE	7AF	7B0	7B1	7B2	7B3	7B4	7B5	7B6	7B7	7B8
4C	7B9	7BA	7BB	7BC	7BD	7BE	7BF	7C0	7C1	7C2	7C3	7C4	7C5	7C6	7C7	7C8	7C9	7CA	7CB	7CC	7CD	7CE	7CF	7D0	7D1	7D2

PROG= FLOPPY   ASSEMBLED BY CAL 03-066R05-00   (32-BIT)

```
 1               CROSS                                              FLP00010
 2               TARGT 16                                           FLP00020
 3     *         EDITED 2/22/77
 4  FLOPPY   PROG  COMMON FLOPPY DISC TEST  06-198M96R00A13         FLP00040
 5     *                                                           FLP00050
 6     * COPYRIGHT INTERDATA, INC. JANUARY 1977                   FLP00060
 7     *                                                           FLP00070
 8     * PURPOSE OF TEST                                           FLP00080
 9     *                                                           FLP00090
10     * THIS PROGRAM TESTS THE FLOPPY DISC SYSTEM                FLP00100
11     *                                                           FLP00110
12     * ASSUMPTIONS                                               FLP00120
13     *         IT IS ASSUMED THAT THE FOLLOWING TESTS HAVE BEEN RUN    FLP00130
14     *         WITHOUT DETECTION OF AN ERROR PRIOR TO LOADING   06-198    FLP00140
15     *                                                           FLP00150
16     *         FOR 16 BIT PROCESSORS                             FLP00160
17     *             SERIES 16 PROCESSOR TEST            06-106    FLP00170
18     *             MEMORY TEST                          06-003    FLP00180
19     *                                                           FLP00190
20     *         FOR 32 BIT PROCESSORS                             FLP00200
21     *             SERIES 32 PROCESSOR TEST PART 1       06-154    FLP00210
22     *             SERIES 32 PROCESSOR TEST PART 2       06-155    FLP00220
23     *             SERIES 32 PROCESSOR TEST PART 3       06-178    FLP00230
24     *             SERIES 32 MEMORY TEST                 06-156    FLP00240
25     *                                                           FLP00250
26     *         THE FOLLOWING TESTS ARE ALSO APPLICABLE          FLP00260
27     *                                                           FLP00270
28     *             COMMON TELETYPE BASIC CONFIDENCE TEST   06-004    FLP00280
29     *             COMMON CURRENT LOOP INTERFACE  TEST     06-184    FLP00290
30     *             COMMON CAROUSEL 300 TEST                06-183    FLP00300
31     *             COMMON CRT TEST                         06-146    FLP00310
32     *             COMMON LINE PRINTER TEST                06-170    FLP00320
33     *             SELCH TEST                              06-129    FLP00330
34     *             ESELCH TEST                             06-161    FLP00340
35     *             SERIES 32 PROCESSOR TEST PART 4         06-195    FLP00350
36     *                                                           FLP00360
37     *  TEST DESCRIPTIONS                                        FLP00370
38     *                                                           FLP00380
39     *         TEST  0 -  TESTS THE RESET COMMAND              FLP00390
40     *         TEST  1 -  TESTS THE READ I.D. COMMAND          FLP00400
41     *         TEST  2 -  TESTS THE READ AUXILARY STATUS       FLP00410
42     *         TEST  3 -  TESTS DISABLE/DISARM/ENABLE FUNCTIONS OF CONTROLLER  FLP00420
43     *         TEST  4 -  TESTS READ/WRITE SENSE STATUS/INTERRUPTS  FLP00430
44     *         TEST  5 -  TESTS READING AND WRITING TO DESIGNATED AREAS  FLP00440
45     *         TEST  6 -  TESTS THE BOOT LOAD COMMAND          FLP00450
46     *         TEST  7 -  TESTS THE DELETE COMMAND             FLP00460
47     *         TEST  8 -  TESTS THE FORMAT FUNCTION AND FORMATS THE DISKETTE  FLP00470
48     *         TEST  9 -  TEST MULTI DRIVE OPERATION           FLP00480
49     *         TEST  A -  MANUAL INTERVENTION TEST             FLP00490
       *         TEST  B -  SCOPE LOOP TEST                      FLP00500
51     ****************************************************************************  FLP00510
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BOOT LOADER AND REGISTER ASSIGNMENTS

```
                          53  ******** REGISTER ASSIGNMENTS                                    FLP00530
          0000 0000       54  R0        EQU    0                                               FLP00540
          0000 0001       55  R1        EQU    1                                               FLP00550
          0000 0002       56  R2        EQU    2                                               FLP00560
          0000 0003       57  R3        EQU    3                                               FLP00570
          0000 0004       58  R4        EQU    4                                               FLP00580
          0000 0005       59  R5        EQU    5                                               FLP00590
          0000 0006       60  R6        EQU    6                                               FLP00600
          0000 0006       61  DEV       EQU    6                                               FLP00610
          0000 0007       62  R7        EQU    7                                               FLP00620
          0000 0007       63  STAT      EQU    7                                               FLP00630
          0000 0008       64  R8        EQU    8                                               FLP00640
          0000 0009       65  R9        EQU    9                                               FLP00650
          0000 000A       66  R10       EQU    10                                              FLP00660
          0000 000B       67  R11       EQU    11                                              FLP00670
          0000 000C       68  R12       EQU    12                                              FLP00680
          0000 000D       69  R13       EQU    13                                              FLP00690
          0000 000E       70  R14       EQU    14                                              FLP00700
          0000 000E       71  RET       EQU    14                                              FLP00710
          0000 000F       72  R15       EQU    15                                              FLP00720
          0000 000F       73  LINK      EQU    15                                              FLP00730
                          74  ***********************************************************************  FLP00740
                          75  *  BOOTLOADER WITH CHKSUM                                        FLP00750
 0000R                    76            ORG    X'80'                                           FLP00760
 0080     2421            77            LIS    R2,1                                            FLP00770
 0082     2303            78            BS     BOOT                                            FLP00780
 0084     3D50            79            DC     Z(PSWSAVE)         CURRENT PSW SAVE POINTER(32-BIT M/C)  FLP00790
 0086     3EF8            80            DC     Z(RSAVE)           REGISTER SAVE POINTER(32-BIT M/C)     FLP00800
 0088     4020 0022       81  BOOT      STH    R2,X'22'           REGISTER SAVE POINTER(16-BIT M/C)     FLP00810
 008C     C810 0A00       82            LHI    R1,X'A00'          R1 = ADR( FIRST BYTE OF TEST PROG )   FLP00820
 0090     C830 3D49       83            LHI    R3,LNZB            R3 = ADR( LAST NON-ZERO BYTE )        FLP00830
 0094     C860 0000       84  MN        LHI    R6,0               R6 = CHKSUM BYTE = X'MN'              FLP00840
 0098     D340 0078       85            LB     R4,X'78'           INPUT DEV ADR                         FLP00850
 009C     DE40 0079       86            OC     R4,X'79'                                         FLP00860
 00A0     9D45            87  LEADER    SSR    R4,R5                                            FLP00870
 00A2     2091            88            BTBS   9,1                DU,BSY                        FLP00880
 00A4     9B45            89            RDR    R4,R5                                            FLP00890
 00A6     0855            90            LDAR   R5,R5                                            FLP00900
 00A8     2234            91            BZS    LEADER             IGNORE LEADER                 FLP00910
 00AA     D251 0000       92  LOAD      STB    R5,0(R1)           STORE 1ST NON-ZERO & SUBSEQUENT BYTE  FLP00920
 00AE     D351 0000       93            LB     R5,0(R1)           RELOAD DATA BYTE TO           FLP00930
 00B2     0765            94            XAR    R6,R5              GENERATE CHKSUM               FLP00940
 00B4     9481            95            EXBR   R8,R1                                            FLP00950
 00B6     982B            96            WHR    R2,R8              DISPLAY MEMORY ADDRESS        FLP00960
 00B8     9D45            97            SSR    R4,R5                                            FLP00970
 00BA     2091            98            BTBS   9,1                DU,BSY                        FLP00980
 00BC     9B45            99            RDR    R4,R5                                            FLP00990
 00BE     C110 00AA       100           BXLE   R1,LOAD            LOAD TILL LAST BYTE           FLP01000
 00C2     9486            101           EXBR   R8,R6                                            FLP01010
 00C4     982B            102           WHR    R2,R8              FINAL CHKSUM                  FLP01020
 00C6     2478            103  LDWT     LIS    R7,8                                             FLP01030
 00C8     91FC            104           SLLS   R7,12              R7 = X'8000'                  FLP01040
 00CA     9557            105           EPSR   R5,R7              HALT PROCESSOR.               FLP01050
```

BOOT LOADER AND REGISTER ASSIGNMENTS

00CC   2203   106   BS   LOWT   FLPU1060

```
00CE                      108              ORG    X'900'                                                       FLP01080
          0000 0900       109    BUFFER    EQU    *                                                            FLP01090
0900                      110    LRDATA    DS     128             BUFFER FOR LOGICAL RECORD DATA               FLP01100
          0000 097F       111    LRDATAE   EQU    *-1             END OF THAT BUFFER                           FLP01110
          0000 0900       112    DATA26    EQU    LRDATA          26 DATA HW FOR 26 SECTORS ON TRACK           FLP01120
          0000 0932       113    DATA26E   EQU    DATA26+50                                                    FLP01130
0980                      114              ORG    X'A00'                                                       FLP01140
0A00      4300 0A30       115    ORIGIN1   B      START1          START HERE FOR 32-BIT PROCESSOR              FLP01150
          0000 0A04       116    ORIGIN2   EQU    *                                                            FLP01160
0A04                      117              IFZ    ADC-2                                                        FLP01170
0A04      4300 0A46       118              B      START2          START HERE FOR 16-BIT PROCESSOR              FLP01180
0A08      4300 0A5E       119    ORIGIN3   B      START3          SPECIAL 32-BIT PROCESSOR START               FLP01190
0A0C      4300 0A62       120    ORIGIN4   B      START4                                                       FLP01200
                         121              ELSE                                                                FLP01210
                         122              B      START3          SPECIAL START FOR 32 BIT PROCESSOR           FLP01220
                         123              B      START3                                                       FLP01230
                         124              B      START3                                                       FLP01240
                         125              ENDC                                                                FLP01250
                         126    *                                                                             FLP01260
                         127    *-----------------------------                                                FLP01270
                         128    *    TEST CONSTANTS                                *                           FLP01280
                         129    *                                                                             FLP01290
0A10      0202           130    IO        DC     X'0202'         I/O DEVICE(S) IDENTIFIER                     FLP01300
0A12      1011           131    PASLADR   DC     X'1011'         PASLA/PALM READ/WRITE ADDRESSES              FLP01310
0A14      0202           132    CLIFADR   DC     X'0202'         CURRENT LOOP INTERFACE R/W ADDRESSES         FLP01320
0A16      6262           133    LPADR     DC     X'6262'         LINE PRINTER ADDRESS                         FLP01330
0A18      1011           134    C300ADR   DC     X'1011'         CAROUSEL 300/PASLA ADDRESSES                 FLP01340
0A1A      C0C0           135    MICROBUS  DC     X'C0C0'         MICROBUS ADDRESS                             FLP01350
0A1C      0000           136              DCX    0               PROVISION FOR SPECIAL DEVICE                 FLP01360
                         137    *                                                                             FLP01370
                         138    * IO=    0101    FOR CRT ON PASLA                                             FLP01380
                         139    *        0202    FOR   TELETYPE                                               FLP01390
                         140    *        03      FOR LINEPRINTER                                              FLP01400
                         141    *        0404    FOR   CAROUSEL 300                                           FLP01410
                         142    *        0505    FOR   MICROBUS                                               FLP01420
                         143    *                                                                             FLP01430
0A1E      0140           144    TIME      DC     X'140'          CONSTANT FOR 1 MS DELAY(X'C8'-MOD70)         FLP01440
0A20      0000           145              DCX    0               RESERVED                                     FLP01450
0A22      70F0           146    PSW       DCX    70F0            PSW USED IN PROGRAM                          FLP01460
0A24      30F0           147    PSW2      DCX    30F0            PSW USED IN EXEC                             FLP01470
0A26      0000           148              DCX    0               RESERVED                                     FLP01480
0A28      0000           149              DCX    0               RESERVED                                     FLP01490
0A2A      0000           150              DCX    0               RESERVED                                     FLP01500
0A2C      0000           151              DCX    0               RESERVED                                     FLP01510
0A2E      0000           152              DCX    0               RESERVED                                     FLP01520
                         153    *-----------------------------                                                FLP01530
                         154    *                                                                             FLP01540
0A30      0711           155    START1    XAR    R1,R1                                                        FLP01550
0A32      4010 0030      156              STH    R1,X'30'        DISABLE INT AT PROCESSOR LEVEL               FLP01560
0A36      4820 0A24      157              LH     R2,PSW2                                                      FLP01570
0A3A      4020 0032      158              STH    R2,X'32'        SELECT REG SET 15                            FLP01580
0A3E                     159              IFZ    ADC-2                                                        FLP01590
0A3E      2521           160              LCS    R2,1                                                         FLP01600
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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0A40  4020 16D8   161            STH    R2,MOD32      SET MODEL 32 PROCESSOR FLAG         FLP01610
0A44  2306        162            BS     ST                                               FLP01620
0A46  0711        163   START2   XAR    R1,R1                                            FLP01630
0A48  4010 16D8   164            STH    R1,MOD32      RESET MOD 32 PROCESSOR FLAG         FLP01640
0A4C  4810 0A24   165            LH     R1,PSW2                                           FLP01650
                  166            ENDC                                                     FLP01660
0A50  C820 0A66   167   ST       LHI    R2,START                                          FLP01670
0A54  4010 0034   168            STH    R1,X'34'                                          FLP01680
0A58  4020 0036   169            STH    R2,X'36'      II INT NEW PSW LOC                  FLP01690
0A5C  0000        170            DCX    0             TAKE AN ILLEGAL INSTRUCTION INT     FLP01700
                  171   *                                                                 FLP01710
0A5E  4300 0A30   172   START3   B      START1        INSERT SPECIAL ROUTINE HERE         FLP01720
0A62              173            IFZ    ADC-2                                             FLP01730
0A62  4300 0A46   174   START4   B      START2        INSERT SPECIAL ROUTINE HERE         FLP01740
                  175            ENDC                                                      FLP01750
                  176   *                                                                  FLP01760
0A66  41F0 1398   177   START    BAL    LINK,SETKB    ESTABLISH KEYBOARD DEVICE           FLP01770
0A6A  9300        178            LBR    R0,R0         TO TEST 'IO' BYTE                   FLP01780
0A6C  C500 0005   179            CLHI   R0,5          IS IT THE MICROBUS                  FLP01790
0A70  4330 0AD0   180            BE     MICROB                                            FLP01800
0A74  2701        181            SIS    R0,1          CRT ON PASLA ?                      FLP01810
0A76  4330 0A9A   182            BZ     CRT           BRANCH IF YES.                      FLP01820
0A7A  2703        183            SIS    R0,3          CAROUSEL ON PASLA ?                 FLP01830
0A7C  4200 0A7C   184            NOP    *             PROVISION FOR SPECIAL KBD DEVICE    FLP01840
0A80  4230 0ABC   185            BNZ    TTY           BRANCH IF NO.                       FLP01850
0A84  4000 1278   186   C300     STH    R0,PAUSE      RESET TRANS PAUSE FLAG              FLP01860
0A88  4800 0A18   187            LH     R0,C300ADR    LOAD CAROUSEL/PASLA ADRESSES        FLP01870
0A8C  4810 16F8   188            LH     R1,CARRD      CAROUSEL COMMANDS                   FLP01880
0A90  4820 1700   189            LH     R2,CAR2ND     PASLA/PALM FORMAT COMMAND           FLP01890
0A94  D340 16FB   190            LB     R4,CARRQ2S                                        FLP01900
0A98  2309        191            BS     CRT2                                              FLP01910
0A9A  4810 16F6   192   CRT      LH     R1,CRTRD      CRT/PASLA COMMANDS                  FLP01920
0A9E  4800 0A12   193            LH     R0,PASLADR    LOAD PASLA ADDRESSES                FLP01930
0AA2  4820 16FE   194            LH     R2,CRT2ND     AND FORMAT COMMAND                  FLP01940
0AA6  D340 16FA   195            LB     R4,CRTRQ2S                                        FLP01950
0AAA  4000 16EE   196   CRT2     STH    R0,PASFLG     SET 'CONSOLE ON PASLA' FLAG         FLP01960
0AAE  9330        197            LBR    R3,R0                                             FLP01970
0AB0  9452        198            EXBR   R5,R2         POSITION 2ND CMD                    FLP01980
0AB2  9E35        199            OCR    R3,R5         SET PASLA/PALM FORMAT               FLP01990
0AB4  D240 16FC   200            STB    R4,CONRQ2S                                        FLP02000
0AB8  4340 0AE0   201            B      GOTIT         SKIP                                FLP02010
0ABC  2400        202   TTY      LIS    R0,0                                              FLP02020
0ABE  4000 16EE   203            STH    R0,PASFLG     RESET 'CONSOLE ON PASLA' FLAG       FLP02030
0AC2  4800 0A14   204            LH     R0,CLIFADR    LOAD CURRENT LOOP INTERFACE ADDRESS FLP02040
0AC6  4810 1704   205            LH     R1,CLIFRD     AND COMMANDS                        FLP02050
0ACA  4020 1706   206            LH     R2,CLIF2ND                                        FLP02060
0ACE  2309        207            BS     GOTIT         SKIP                                FLP02070
      0000 0AD0   208   MICROB   EQU    *                                                FLP02080
0AD0  2400        209            LIS    R0,0          ZERO OUT                            FLP02090
0AD2  4000 16EE   210            STH    R0,PASFLG     PASLA FLAG                          FLP02100
0AD6  4800 0A1A   211            LH     R0,MICROBUS   LOAD MICROBUS ADDRESS               FLP02110
0ADA  4810 1730   212            LH     R1,MREADC     READ COMMAND                        FLP02120
0ADE  2420        213            LIS    R2,0          ZERO OUT 2ND                        FLP02130
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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                        214  *                                                                  FLP02140
0AE0   4000 16F0        215  GOTIT     STH   R0,CONADR         CONSOLE DEVICE ADDRESSES         FLP02150
0AE4   4010 16F2        216            STH   R1,CONRD          CONSOLE READ/WRITE COMMANDS      FLP02160
0AE8   4020 16F4        217            STH   R2,CON2ND         AND FORMAT COMMAND (PASLA/PALM)  FLP02170
0AEC   41F0 1414        218            BAL   LINK,LCORE        SET UP LOW CORE                  FLP02180
0AF0   2400             219            LIS   R0,0                                               FLP02190
0AF2   4000 1712        220            STH   R0,WASDU          RESET 'DEVICE UNAVAILABLE' FLAG  FLP02200
0AF6   41F0 11F8        221            BAL   LINK,CRLF                                          FLP02210
0AFA   C850 3910        222            LHI   R5,TITLE                                           FLP02220
0AFE   41F0 114A        223            BAL   R15,PRINT         PRINT TEST PROGRAM TITLE         FLP02230
0B02   C850 398C        224            LHI   R5,UPROTMSG       UNPROTECT THE DISKETTE           FLP02240
0B06   41F0 114A        225            BAL   R15,PRINT                                          FLP02250
                        226  *----------------------------                                     FLP02260
                        227  *  KEYBOARD INPUT ROUTINE                                         FLP02270
                        228  *                                                                 FLP02280
       0000 080A        229  OPTIN     EQU   *                                                 FLP02290
0B0C   41F0 11F8        230            BAL   LINK,CRLF         CR,LF TO LIST DEVICE             FLP02300
       0000 080E        231  OPTIN1    EQU   *                                                 FLP02310
0B0E   4820 0A24        232            LH    R2,PSW2                                            FLP02320
0B12   9512             233            EPSR  R1,R2             NO INT. REG SET 15               FLP02330
0B14   41F0 1398        234            BAL   LINK,SETKB        ESTABLISH CONSOLE                FLP02340
0B18   D340 3A52        235            LB    R4,AMSG           OUTPUT AN * TO INDICATE          FLP02350
0B1C   41F0 1206        236            BAL   LINK,OUTCHR       COMMAND MODE ESTABLISHED         FLP02360
0B20   2541             237            LCS   R4,1              X'FF'                            FLP02370
0B22   41F0 1206        238            BAL   LINK,OUTCHR                                        FLP02380
0B26   C8C0 1280        239            LHI   R12,QUESTN        SET UP R12 FOR ERR ROUTINE       FLP02390
0B2A   C800 2020        240            LHI   R0,X'2020'        BLANK OUT COMMAND BUFFER         FLP02400
0B2E   4000 3EEA        241            STH   R0,OPTBUF         WHICH WILL CONTAIN OPTION        FLP02410
0B32   4000 3EEC        242            STH   R0,OPTBUF+2       NAME                             FLP02420
0B36   4000 3EEE        243            STH   R0,OPTBUF+4                                        FLP02430
0B3A   0711             244            XAR   R1,R1             CLEAR OPTBUF INDEX               FLP02440
0B3C   41F0 127A        245  RDCHR     BAL   R15,GETCHR        GET A CHAR IN R4                 FLP02450
0B40   C540 0060        246            CLHI  R4,X'60'          UPPER CASE ALPHA ?               FLP02460
0B44   21B3             247            BLS   RDCHAR0           BRANCH IF NO.                    FLP02470
0B46   CB40 0020        248            SHI   R4,X'20'          CONVERT TO LOWER CASE            FLP02480
0B4A   C540 0023        249  RDCHAR0   CLHI  R4,X'23'          IS IT # ?                        FLP02490
0B4E   4330 0B0A        250            BE    OPTIN                                              FLP02500
0B52   C540 005F        251            CLHI  R4,X'5F'          LEFT ARROW, UNDERLINE OR DELETE ? FLP02510
0B56   2139             252            BNES  RDCHR1                                             FLP02520
0B58   2711             253            SIS   R1,1              YES, DECREMENT INDEX             FLP02530
0B5A   021C             254            BMR   R12               BUFFER UNDERFLOW; PRINT '?'      FLP02540
0B5C   C800 0020        255            LHI   R0,X'20'                                           FLP02550
0B60   D201 3EEA        256            STB   R0,OPTBUF(R1)                                      FLP02560
0B64   4300 0B3C        257            B     RDCHR                                             FLP02570
0B68   C540 000D        258  RDCHR1    CLHI  R4,X'0D'          IS IT CR ?                       FLP02580
0B6C   233C             259            BES   LOOKUP            YES, TRY MATCH                   FLP02590
0B6E   C540 0020        260            CLHI  R4,X'20'          IS IT A BLANK?                   FLP02600
0B72   2339             261            BES   LOOKUP            YES, TRY MATCH                   FLP02610
0B74   C510 0006        262            CLHI  R1,6              7 CHARACTERS INPUT ?             FLP02620
0B78   038C             263            BNLR  R12               IF YES, ERROR                    FLP02630
0B7A   D241 3EEA        264            STB   R4,OPTBUF(R1)     STORE CURRENT BYTE               FLP02640
0B7E   2611             265            AIS   R1,1              BUMP BUFFER INDEX                FLP02650
0B80   4300 0B3C        266            B     RDCHR             READ NEXT CHARACTER              FLP02660
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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                            267  *----------------------------------------       FLP02670
                            268  *  OPTION MATCH ROUTINE                          FLP02680
                            269  *                                                FLP02690
0B84   C810 1738            270  LOOKUP  LHI   R1,OPT         LOAD ADDRESS OF OPTION TABLE   FLP02700
0B88   0733                 271  LOOK1   XAR   R3,R3          CLEAR BUFFER INDEX             FLP02710
0B8A   0861                 272          LDAR  R6,R1          SET OPTION WORD INDEX          FLP02720
0B8C   4856 0000            273  LOOK2   LH    R5,0(R6)                                      FLP02730
0B90   021C                 274          BMR   R12            IF MINUS, THEN NO MATCH = ERROR FLP02740
0B92   4553 3EEA            275          CLH   R5,OPTBUF(R3)  COMPARE TO OPTBUF HW          FLP02750
0B96   2333                 276          BES   LOOK3                                         FLP02760
0B98   261C                 277          AIS   R1,12                                         FLP02770
0B9A   22U9                 278          BS    LOOK1                                         FLP02780
0B9C   2632                 279  LOOK3   AIS   R3,2           TRY NEXT HW                    FLP02790
0B9E   2662                 280          AIS   R6,2                                          FLP02800
0BA0   C530 0006            281          CLHI  R3,6           3 MATCHING HW FOUND ?          FLP02810
0BA4   208C                 282          BLS   LOOK2                                         FLP02820
                            283  *                                                          FLP02830
0BA6   C510 1810            284          CLHI  R1,RUN         RUN COMMAND ?                  FLP02840
0BAA   4330 0D80            285          BE    RUNIT                                         FLP02850
0BAE   C510 1804            286          CLHI  R1,OPTION      OPTION CMD ?                   FLP02860
0BB2   4230 0CEA            287          BNE   LOOK4          NO, LOOK FURTHER               FLP02870
                            288  *---------------------------                                FLP02880
                            289  *  TO PROCESS INPUT COMMAND 'OPTION'                        FLP02890
0BB6   4820 180C            290          LH    R2,OPTION+8    CHECK FOR SPECIAL ROUTINE      FLP02900
0BBA   0292                 291          BNZR  R2             LINK TO ROUTINE                FLP02910
0BBC   C830 1738            292  OPTRTN  LHI   R3,TEST        RETURN HERE                    FLP02920
0BC0   C8E0 0C46            293          LHI   R14,OPTCMD8                                   FLP02930
0BC4   41F0 11F8            294          BAL   LINK,CRLF                                     FLP02940
0BC8   0722                 295  OPTCMD  XAR   R2,R2          RESET COUNTER                  FLP02950
0BCA   D322 1738            296  OPTCMD1 LB    R4,OPT(R2)     TO PRINT TEST                  FLP02960
0BCE   41F0 1206            297          BAL   LINK,OUTCHR                                   FLP02970
0BD2   2621                 298          AIS   R2,1                                          FLP02980
0BD4   C520 0006            299          CLHI  R2,6                                          FLP02990
0BD8   2087                 300          BLS   OPTCMD1                                       FLP03000
0BDA   C840 0020            301          LHI   R4,C' '                                       FLP03010
0BDE   41F0 1206            302          BAL   LINK,OUTCHR    OUTPUT 1 SPACE                 FLP03020
0BE2   0755                 303          XAR   R5,R5          TO PRINT SELECTED TEST NUMBERS FLP03030
0BE4   4050 1606            304          STH   R5,FIRST                                      FLP03040
0BE8   4823 0006            305          LH    R2,6(R3)       FIRST TEST WORD                FLP03050
0BEC   2440                 306  OPTCMD2 LIS   R4,0           START WITH TEST 0              FLP03060
0BEE   4040 3CC8            307          STH   R4,TEMP                                       FLP03070
0BF2   9121                 308  OPTCMD3 SLHLS R2,1                                          FLP03080
0BF4   4380 0C26            309          BNC   OPTCMD7                                       FLP03090
0BF8   4040 3CC8            310  OPTCMD4 STH   R4,TEMP        OPTION VALUE FOUND.            FLP03100
0BFC   4800 1606            311          LH    R0,FIRST       IS IT FIRST ?                  FLP03110
0C00   2335                 312          BZS   OPTCMD5                                       FLP03120
0C02   C840 002C            313          LHI   R4,C','        NO, OUTPUT COMMA              FLP03130
0C06   41F0 1206            314          BAL   LINK,OUTCHR                                   FLP03140
0C0A   40F0 1606            315  OPTCMD5 STH   LINK,FIRST                                    FLP03150
0C0E   0855                 316          LDAR  R5,R5          TEST VALUE FROM SECOND HW      FLP03160
0C10   2335                 317          BZS   OPTCMD6        NO                             FLP03170
0C12   C840 0031            318          LHI   R4,C'1'        YES,OUTPUT '1'                 FLP03180
0C16   41F0 1206            319          BAL   LINK,OUTCHR                                   FLP03190
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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0C1A   4840 3CC8      520   OPTCMD6   LH    R4,TEMP              RESTORE R4                        FLP03200
0C1E   D344 1720      521             LB    R4,HEXTAB(R4)        CONVERT                           FLP03210
0C22   41F0 1206      522             BAL   LINK,OUTCHR          OUTPUT 0-F                        FLP03220
0C26   4840 3CC8      523   OPTCMD7   LH    R4,TEMP              RESTORE                           FLP03230
0C2A   2641           524             AIS   R4,1                 INCREMENT TEST #                  FLP03240
0C2C   4040 3CC8      525             STH   R4,TEMP                                                FLP03250
0C30   C540 0010      526             CLHI  R4,16                                                  FLP03260
0C34   4280 0BF2      527             BL    OPTCMD3                                                FLP03270
0C38   0855           528   OPTCMD71  LDAR  R5,R5                DONE ?                            FLP03280
0C3A   023E           529             BNZR  R14                                                    FLP03290
0C3C   4823 0008      530             LH    R2,8(R3)             SECOND TEST WORD                  FLP03300
0C40   2451           531             LIS   R5,1                 R5 = 1 FOR SECOND TEST HW         FLP03310
0C42   4300 0BFC      532             B     OPTCMD2                                                FLP03320
                      533   *------------------------------------                                  FLP03330
                      534   *  TO OUTPUT OTHER OPTION NAMES & VALUES                               FLP03340
                      535   *                                                                      FLP03350
0C46   41F0 11F8      536   OPTCMD8   BAL   LINK,CRLF                                              FLP03360
0C4A   4860 16D8      537             LH    R6,MOD32             IS IT 32-BIT PROCESSOR            FLP03370
0C4E   4330 0C8C      538             BZ    OPT555               NO NORMAL ETPE PRINT              FLP03380
0C52   0755           539             XHR   R5,R5                ZERO OUT R5                       FLP03390
       0000 0C54      540   BUFADPRT  EQU   *                                                      FLP03400
0C54   D345 1744      541             LB    R4,BUFADR(R5)        LOAD NAME BUFADR                  FLP03410
0C58   41F0 1206      542             BAL   LINK,OUTCHR          OUTPUT BYTE                       FLP03420
0C5C   2651           543             AIS   R5,1                 INCREMENT                         FLP03430
0C5E   C550 0006      544             CLHI  R5,6                 LIMIT                             FLP03440
0C62   2037           545             BNES  BUFADPRT             NO GO AGAIN                       FLP03450
0C64   C840 0020      546             LHI   R4,C' '             LOAD SPACE                         FLP03460
0C68   41F0 1206      547             BAL   LINK,OUTCHR          OUTPUT SPACE                      FLP03470
0C6C   2401           548             LIS   R0,1                 LOAD # OF DIGITS TO PRINT         FLP03480
0C6E   D350 174F      549             LB    R5,BUFADR+11         LOAD START OF WHAT TO PRINT       FLP03490
0C72   41F0 10F8      550             BAL   LINK,R5HEX           PRINT                             FLP03500
0C76   2404           551             LIS   R0,4                 LOAD # OF DIGITS TO PRINT         FLP03510
0C78   4850 174A      552             LH    R5,BUFADR+6          LOAD START OF WHAT TO PRINT       FLP03520
0C7C   41F0 10F8      553             BAL   LINK,R5HEX           PRINT                             FLP03530
0C80   41F0 11F8      554             BAL   LINK,CRLF            CARRIAGE RETURN/LINE FEED         FLP03540
0C84   2461           555             LIS   R6,1                                                  FLP03550
0C86   C820 1750      556             LHI   R2,OPT+24                                              FLP03560
0C8A   2304           557             BS    OPTCMD9                                                FLP03570
       0000 0C8C      558   OPT555    EQU   *                                                      FLP03580
0C8C   2461           559             LIS   R6,1                 SET LINE COUNTER                  FLP03590
0C8E   C820 1744      560             LHI   R2,OPT+12            R2 POINTS TO THE NAME             FLP03600
0C92   2436           561   OPTCMD9   LIS   R3,6                                                   FLP03610
0C94   D342 0000      562   OPTCMD10  LB    R4,0(R2)                                               FLP03620
0C98   41F0 1206      563             BAL   LINK,OUTCHR          OUTPUT OPTION NAME CHAR           FLP03630
0C9C   2621           564             AIS   R2,1                                                   FLP03640
0C9E   2731           565             SIS   R3,1                 6 CHARACTERS OUTPUT ?             FLP03650
0CA0   2026           566             BPS   OPTCMD10             NO,LOOP                           FLP03660
0CA2   C840 0020      567             LHI   R4,C' '             OUTPUT ONE SPACE                   FLP03670
0CA6   41F0 1206      568             BAL   LINK,OUTCHR          OUTPUT ONE SPACE                  FLP03680
0CAA   4852 0000      569             LH    R5,0(R2)             R5 = OPTION VALUE                 FLP03690
0CAE   2404           570             LIS   R0,4                                                   FLP03700
0CB0   41F0 10F8      571             BAL   LINK,R5HEX           WRITE OPTION VALUE IN HEX (4 DIGITS) FLP03710
0CB4   D300 0A10      572             LB    R0,IO                LOAD IO                           FLP03720
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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OCB8   2701          373            SIS   R0,1              IS IT THE CRT                  FLP03730
OCBA   219D          374            BNZS  OPTCMD12          NO OUT                         FLP03740
OCBC   2661          375            AIS   R6,1              INCREMENT LINE COUNTER.        FLP03750
OCBE   C560 0018     376            CLHI  R6,24             PAGE FULL ?                    FLP03760
UCC2   2189          377            BLS   OPTCMD12          NO                             FLP03770
UCC4   0766          378            XAR   R6,R6             INITIALIZE LINE COUNT          FLP03780
OCC6   41F0 127A     379  OPTCMD11  BAL   LINK,GETCHR                                      FLP03790
UCCA   274D          380            SIS   R4,13             CR ?                           FLP03800
UCCC   4330 080A     381            BZ    OPTIN             TO ACCEPT NEXT COMMAND         FLP03810
OCD0   2643          382            AIS   R4,3              LF ?                           FLP03820
OCD2   2036          383            BNZS  OPTCMD11          IF YES, PRINT NEXT PAGE        FLP03830
UCD4   41F0 11F8     384  OPTCMD12  BAL   LINK,CRLF                                        FLP03840
UCD8   41F0 12CA     385            BAL   LINK,TSTBRK       EXIT IF 'BREAK' PRESSED.       FLP03850
OCDC   2626          386            AIS   R2,6                                             FLP03860
UCDE   C520 1804     387            CLHI  R2,OPTEND2        ALL PRINTING OPTIONS DONE ?    FLP03870
UCE2   4280 0C92     388            BL    OPTCMD9           NO,LOOP FOR NEXT ONE           FLP03880
UCE6   4300 080E     389            B     OPTIN1            TO ACCEPT NEXT COMMAND         FLP03890
                     390  *-----------------------------                                  FLP03900
OCEA   C510 1738     391  LOOK4     CLHI  R1,TEST           'TEST' OPTION ?                FLP03910
OCEE   4330 0D2E     392            BE    TESTOP                                           FLP03920
UCF2   48E0 3CF0     393            LH    R14,SPOPT         LOAD OP SPECIAL OPTION VALUE   FLP03930
OCF6   2332          394            BZS   LOOK41            IS IT ZERO                     FLP03940
UCF8   01FE          395            BALR  R15,R14           GO TO SPECIAL OPTION ROUTINE   FLP03950
       0000 UCFA     396  LOOK41    EQU   *                                               FLP03960
                     397  *  TO PROCESS COMMANDS OTHER THAN 'TEST', 'OPTION'.             FLP03970
                     398  *                                                               FLP03980
OCFA   274D          399            SIS   R4,13             OPT FOLLOWED BY CR ?           FLP03990
OCFC   033C          400            BZR   R12               YES, ERROR                     FLP04000
OCFE   41E0 1086     401            BAL   R14,OPTVAL        GET OPTION VALUE IN R6         FLP04010
UD02   274D          402            SIS   R4,13             TERMINATED BY CR ?             FLP04020
UD04   023C          403            BNZR  R12               IF NO, BRANCH                  FLP04030
UD06   48E1 0008     404            LH    R14,8(R1)         GET OPTION CHECK ROUTINE ADDRESS FLP04040
UD0A   2332          405            BZS   LOOK5                                            FLP04050
OD0C   01FE          406            BALR  R15,R14           LINK OPTION CHECK ROUTINE      FLP04060
       0000 0D0E     407  LOOK5     EQU   *                 RETURN HERE                    FLP04070
OD0E   4061 0006     408            STH   R6,6(R1)          STORE OPTION VALUE             FLP04080
OD12   4300 080A     409            B     OPTIN             TO ACCEPT NEXT COMMAND         FLP04090
                     410  *                                                               FLP04100
OD16   C360 FFFE     411  ZERONE    THI   R6,X'FFFE'        IGNORE LSB                     FLP04110
OD1A   033F          412            BZR   R15               OKAY                           FLP04120
UD1C   030C          413            BR    R12               ERROR RETURN                   FLP04130
                     414  *                                                               FLP04140
OD1E   C560 0400     415  ADR       CLHI  R6,X'400'         (R6) = 10 BIT DEVICE ADDRESS   FLP04150
OD22   028F          416            BLR   R15               RETURN TO LOOK5                FLP04160
UD24   030C          417            BR    R12                                              FLP04170
                     418  *                                                               FLP04180
OD26   C560 000F     419  LEVEL     CLHI  R6,15             (R6) = INTERRUPT LEVEL HEX DIGIT FLP04190
UD2A   028F          420            BLR   R15               RETURN TO LOOK5                FLP04200
OD2C   030C          421            BR    R12                                              FLP04210
                     422  *-----------------------------                                  FLP04220
                     423  *  TEST OPTION PROCESS ROUTINE                                  FLP04230
                     424  *                                                               FLP04240
OD2E   274D          425  TESTOP    SIS   R4,13             'TEST' FOLLOWED BY (CR) ?      FLP04250
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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0D30   213B              426          BNZS   TSTOP1                                                FLP04260
0D32   4800 3C12         427          LH     R0,DEFTESTS         YES, SET TEST OPTION TO           FLP04270
0D36   4000 173E         428          STH    R0,TEST+6           FIRST TEST WORD                   FLP04280
0D3A   4800 3C14         429          LH     R0,DEFTESTS+2       ALL DEFAULT TESTS IN PROGRAM      FLP04290
0D3E   4000 1740         430          STH    R0,TEST+8           SECOND TEST WORD                  FLP04300
0D42   4300 0B0A         431          B      OPTIN               TO ACCEPT NEXT COMMAND           FLP04310
                         432   *                                                                   FLP04320
0D46   4850 3C16         433  TSTOP1  LH     R5,MAXTST                                             FLP04330
0D4A   2470              434          LIS    R7,0                TEST BIT ACCUMULATORS            FLP04340
0D4C   2480              435          LIS    R8,0                                                  FLP04350
0D4E   41E0 1086         436  TSTOP2  BAL    R14,OPTVAL          GET OPTION VALUE IN R6           FLP04360
0D52   0556              437          CLAR   R5,R6                                                 FLP04370
0D54   028C              438          BLR    R12                 ERROR: INVALID TEST NUMBER       FLP04380
0D56   C560 0010         439          CLHI   R6,16               R6 < 16 ?                        FLP04390
0D5A   2385              440          BNLS   TSTOP3              NO                                FLP04400
0D5C   41E0 10D0         441          BAL    R14,UNARY           GET UNARY OPERAND IN R3          FLP04410
0D60   0673              442          OAR    R7,R3               SET CURRENT BIT                  FLP04420
0D62   2306              443          BS     TSTOP4                                                FLP04430
0D64   CB60 0010         444  TSTOP3  SHI    R6,16               R6 = 0-F                         FLP04440
0D68   41E0 10D0         445          BAL    R14,UNARY                                             FLP04450
0D6C   0683              446          OAR    R8,R3               SET CURRENT BIT                  FLP04460
0D6E   274D              447  TSTOP4  SIS    R4,13               TERMINATED BY CR ?               FLP04470
0D70   4230 0D4E         448          BNZ    TSTOP2                                                FLP04480
0D74   4070 173E         449          STH    R7,TEST+6           STORE VALID SELECTED TESTS       FLP04490
0D78   4080 1740         450          STH    R8,TEST+8                                             FLP04500
0D7C   4300 0B0A         451          B      OPTIN               TO ACCEPT NEXT COMMAND           FLP04510
                         452   *---------------------------                                        FLP04520
                         453   *                                                                   FLP04530
       0000 0D80         454  RUNIT   EQU    *                                                     FLP04540
0D80   41F0 11F8         455          BAL    LINK,CRLF                                             FLP04550
0D84   4800 0A10         456          LH     R0,IO                                                 FLP04560
0D88   4000 3EF0         457          STH    R0,IOSAVE           RESTORE USER'S I/O CHOICE        FLP04570
0D8C   41F0 11F8         458          BAL    LINK,CRLF                                             FLP04580
       0000 0D90         459  INITSRT EQU    *                                                     FLP04590
0D90   41F0 1836         460          BAL    LINK,INIT           LINK USER INITIALIZATION ROUTINE FLP04600
       0000 0D94         461  INITRET EQU    *                   RETURN HERE                       FLP04610
0D94   07FF              462          XAR    R15,R15                                               FLP04620
0D96   40F0 1714         463          STH    R15,WASDU1                                            FLP04630
0D9A   240F              464          LIS    R0,15               TO FIND HIGHEST SELECTED TEST  NO. FLP04640
0D9C   4810 1740         465          LH     R1,TEST+8           CHECK SECOND TEST HW             FLP04650
0DA0   9011              466  KEEP1   SRLS   R1,1                                                  FLP04660
0DA2   218B              467          BCS    FOUND1              R0 = F-0                         FLP04670
0DA4   2701              468          SIS    R0,1                                                  FLP04680
0DA6   22E3              469          BNMS   KEEP1               TRY NEXT DIGIT                   FLP04690
0DA8   240F              470          LIS    R0,15               INITIALIZE AGAIN                 FLP04700
0DAA   4810 173E         471          LH     R1,TEST+6           CHECK FIRST TEST HW              FLP04710
0DAE   9011              472  KEEP2   SRLS   R1,1                                                  FLP04720
0DB0   2186              473          BCS    FOUND1+4            R0 = F-0 = TEST #                FLP04730
0DB2   2701              474          SIS    R0,1                                                  FLP04740
0DB4   22E3              475          BNMS   KEEP2               LOOP                             FLP04750
0DB6   030C              476          BR     R12                 TEST NOT SELECTED                FLP04760
0DB8   CA00 0010         477  FOUND1  AHI    R0,16               ADJUST TEST # FOR SECOND HW      FLP04770
0DBC   4000 1710         478          STH    R0,SELTST           HIGHEST SELECTED TEST NUMBER     FLP04780
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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                               479  *                                                              FLP04790
                               480  *   RESET TEST PARAMETERS                                      FLP04800
                               481  *                                                              FLP04810
      0DC0   0700              482         XAR     R0,R0                                           FLP04820
      0DC2   4000 170C         483         STH     R0,ISITERR       RESET ERROR FLAG               FLP04830
      0DC6   4000 1716         484         STH     R0,TOTAL         RESET TOTAL                    FLP04840
      0DCA   4000 1718         485         STH     R0,TOTERR        RESET TOTERR                   FLP04850
      0DCE   4000 1712         486         STH     R0,WASDU         RESET WASDU                    FLP04860
      0DD2   C810 3030         487         LHI     R1,C'00'                                        FLP04870
      0DD6   4010 393A         488         STH     R1,MTESTNO       RESET THESE FLAGS TO C'00'     FLP04880
      0DDA   4010 3944         489         STH     R1,ETESTNO                                      FLP04890
      0DDE   4010 3946         490         STH     R1,ERRNO                                        FLP04900
      0DE2   41F0 1414         491         BAL     LINK,LCORE       SET UP LOW CORE                FLP04910
                               492  *                                                              FLP04920
                               493  *   START SELECTION FROM TEST 0                                FLP04930
                               494  *                                                              FLP04940
      0DE6   0700              495  KEEP3   XAR     R0,R0                                           FLP04950
      0DE8   4000 171A         496         STH     R0,BTESTNO       RESET BINARY TEST NUMBER       FLP04960
      0DEC   4000 171E         497         STH     R0,NEXTST        RESET NEXT TEST #              FLP04970
                               498  *                                                              FLP04980
                               499  *   TO FIND THE NEXT SELECTED TEST.                            FLP04990
                               500  *                                                              FLP05000
      0DF0   4820 171E         501  KEEP4   LH      R2,NEXTST        GET NEXT TEST #               FLP05010
      0DF4   24U8              502  KEEP41  LIS     R0,8                                           FLP05020
      0DF6   910C              503         SLHLS   R0,12            R0 = X'8000'                   FLP05030
      0DF8   CC02 0000         504         SRHL    R0,0(R2)         R0 = NEXT TEST BIT             FLP05040
      0DFC   C520 0010         505         CLHI    R2,X'10'         NEXT TEST < 16                 FLP05050
      0E00   2105              506         BLS     KEEP42                                          FLP05060
      0E02   4400 1740         507         NH      R0,TEST+8        LOOK AT TEST HW 2              FLP05070
      0E06   2107              508         BNZS    KEEP5                                           FLP05080
      0E08   2304              509         BS      KEEP43                                          FLP05090
      0E0A   4400 173E         510  KEEP42  NH      R0,TEST+6        LOOK AT TEST HW 1             FLP05100
      0E0E   2103              511         BNZS    KEEP5                                           FLP05110
      0E10   26E1              512  KEEP43  AIS     R2,1                                           FLP05120
      0E12   220F              513         BS      KEEP41           LOOP FOR NEXT TEST #           FLP05130
      0E14   4020 171A         514  KEEP5   STH     R2,BTESTNO       CURRENT TEST #                FLP05140
      0E18   0812              515         LHAR    R1,R2            R1 = TEST # IN BINARY          FLP05150
      0E1A   26E1              516         AIS     R2,1                                            FLP05160
      0E1C   4020 171E         517         STH     R2,NEXTST                                       FLP05170
      0E20   2402              518         LIS     R0,2             SET DIGITS TO PRINT = 2        FLP05180
      0E22   C820 393A         519         LHI     R2,MTESTNO       R2 = A(MTESTNO)                FLP05190
      0E26   41F0 1122         520         BAL     LINK,HEXASC      STORE TEST # IN ASCII @ MTESTNO FLP05200
      0E2A   4820 393A         521         LH      R2,MTESTNO                                      FLP05210
      0E2E   4020 3944         522         STH     R2,ETESTNO       STORE TEST # IN ASCII @ ETESTNO FLP05220
      0E32   41F0 12CA         523         BAL     LINK,TSTBRK      TEST BREAK                     FLP05230
      0E36   C850 3934         524         LHI     R5,TSTMSG                                       FLP05240
      0E3A   41F0 114A         525         BAL     LINK,PRINT       PRINT 'TEST NN'                FLP05250
      0E3E   0700              526         XAR     R0,R0                                           FLP05260
      0E40   4000 3CFA         527         STH     R0,INT                                          FLP05270
      0E44   4000 170E         528         STH     R0,NOERR         RESET ERROR FLAG               FLP05280
      0E48   4000 171C         529         STH     R0,COUNT         RESET COUNT                    FLP05290
      0E4C   4810 0022         530  KEEP6   LH      R1,PSW           ENABLE INTERRUPTS             FLP05300
      0E50   9501              531         EPSR    R0,R1                                           FLP05310
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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     0E52  4820 171A    532         LH    R2,BTESTNO      R2 = TEST #                      FLP05320
     0E56  2400         533         LIS   R0,0                                             
     0E58  2421         534         LIS   R3,1                                             
     0E5A  DE30 5D3A    535         OC    R3,INC                                           
     0E5E  9830         536         WHR   R3,R0                                            
     0E60  9830         537         WHR   R3,R0                                            
     0E62  9A32         538         WDR   R3,R2                                            
     0E64  91E1         539         SLLS  R2,LADC                                          FLP05330
     0E66  4812 3C18    540         LDA   R1,TESTS(R2)                                     FLP05340
     0E6A  0301         541         BR    R1              GO TO TEST MODULE                FLP05350
                        542   *---------------------------                                FLP05360
                        543   *                                                           FLP05370
                        544   *   TEST MODULE END ROUTINE                                 FLP05380
                        545   *                                                           FLP05390
           0000 0E6C    546   TSTEND  EQU   *                                             FLP05400
     0E6C  4810 0A24    547         LH    R1,PSW2                                          FLP05410
     0E70  9501         548         EPSR  R0,R1           DISABLE INT @ PROCESSOR LEVEL    FLP05420
     0E72  4800 171C    549         LH    R0,COUNT                                         FLP05450
     0E76  2601         550         AIS   R0,1            INCREMENT COUNT                  FLP05460
     0E78  4000 171C    551         STH   R0,COUNT                                         FLP05470
     0E7C  4500 17CE    552         CLH   R0,LOOP+6       IF COUNT > LOOP,                 FLP05480
     0E80  2385         553         BNLS  KEEP7           GO TO NEXT TEST MODULE           FLP05490
     0E82  41F0 12CA    554         BAL   LINK,TSTBRK     IF BREAK GO TO OPTIN             FLP05500
     0E86  4300 0E4C    555         B     KEEP6           OTHERWISE, REPEAT SAME TEST      FLP05510
     0E8A  4800 170E    556   KEEP7   LH    R0,NOERR        LOOK @ ERROR FLAG              FLP05520
     0E8E  2135         557         BNZS  KEEP71                                           FLP05530
     0E90  C850 395A    558         LHI   R5,NOERMSG                                       FLP05540
     0E94  41F0 114A    559         BAL   LINK,PRINT      PRINT "NO ERROR"                 FLP05550
     0E98  4810 171A    560   KEEP71  LH    R1,BTESTNO      GET TEST #                     FLP05560
     0E9C  4510 1710    561         CLH   R1,SELTST       IS THE LAST SELECTED TEST DONE ? FLP05570
     0EA0  4200 0DF0    562         BL    KEEP4           NO, GO SELECT NEXT TEST          FLP05580
                        563   *                                                           FLP05590
                        564   *   ALL THE SELECTED TESTS ARE NOW RUN                      FLP05600
                        565   *                                                           FLP05610
           0000 0EA4    566   ABORT   EQU   *               COME HERE TO ABORT TEST SEQUENCE. FLP05620
     0EA4  4200 0000    567         NOP                                                   FLP05630
     0EA8  4800 3002    568         LH    R0,DRV1         (R0)=# OF DRIVES                 FLP05640
     0EAC  2701         569         SIS   R0,1                                            FLP05650
     0EAE  4330 0EBE    570         BZ    ABORT1                                           FLP05660
     0EB2  4000 3002    571         STH   R0,DRV1                                          FLP05670
     0EB6  41E0 294C    572         BAL   R14,NEXTDR                                       FLP05680
     0EBA  4300 1856    573         B     INIT3                                           FLP05690
           0000 0EBE    574   ABORT1  EQU   *                                             FLP05700
     0EBE  41F0 1344    575         BAL   LINK,TSTDU      RETURN WITH R1 = DU BIT          FLP05710
     0EC2  4230 0EF6    576         BNZ   KEEP9           IF DU, DISPLAY TOTAL             FLP05720
     0EC6  4810 1714    577         LH    R1,WASDU1       WAS IT EVER ?                    FLP05730
     0ECA  4230 0F3E    578         BNZ   KEEP10          YES, PRINT TOTAL, TOTERR         FLP05740
     0ECE  41F0 12CA    579         BAL   LINK,TSTBRK                                      FLP05750
     0ED2  4810 17DA    580         LH    R1,CONTIN+6     IF CONTIN = 1,                   FLP05760
     0ED6  4230 0EEA    581         BNZ   ABORT2                                           FLP05770
     0EDA  41F0 1398    582         BAL   LINK,SETKB      KB DEVICE = LIST DEVICE          FLP05780
     0EDE  C850 3A42    583         LHI   R5,EOTMSG                                        FLP05790
     0EE2  41F0 114A    584         BAL   LINK,PRINT      'END OF TEST'                    FLP05800
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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OEE6    4300 080A     585            B       OPTIN                                          FLP05810
OEEA    4840 3CEC     586    ABORT2  LH      R1,DRV                                         FLP05820
OEEE    4010 3002     587            STH     R1,DRV1                                        FLP05830
OEF2    4300 0D90     588            B       INITSRT                                        FLP05840
                      589    *-------------------------------                               FLP05850
                      590    *  ROUTINE INCREMENTS,DISPLAYS & CHECKS 'TOTAL'                FLP05860
                      591    *                                                              FLP05870
OEF6    4010 1712     592    KEEP9   STH     R1,WASDU           SET 'WASDU' FLAG            FLP05880
OEFA    4840 1716     593            LH      R1,TOTAL           INCREMENT TOTAL            FLP05890
OEFE    2611          594            AIS     R1,1                                           FLP05900
OF00    4010 1716     595            STH     R1,TOTAL                                       FLP05910
OF04    2421          596    KEEP91  LIS     R2,1                                           FLP05920
OF06    0E20 16ED     597            OC      R2,INCR            DISPLAY: INCREMENTAL MODE  FLP05930
OF0A    9401          598            EXBR    R0,R1              FORMAT FOR DISPLAY         FLP05940
OF0C    9820          599            WHR     R2,R0              DISPLAY TOTAL              FLP05950
OF0E    4800 1718     600            LH      R0,TOTERR                                      FLP05960
OF12    9400          601            EXBR    R0,R0                                          FLP05970
OF14    9820          602            WHR     R2,R0              DISPLAY TOTERR             FLP05980
OF16    0E20 16EC     603            OC      R2,NORM            DISPLAY: NORMAL MODE       FLP05990
OF1A    C510 7FFF     604            CLHI    R1,X'7FFF'         TOTAL < MAX RETAINABLE ?   FLP06000
OF1E    2389          605            BNLS    HALT9                                          FLP06010
OF20    4800 171A     606            LH      R0,BTESTNO         R0 = CURRENT TEST #        FLP06020
OF24    4500 1710     607            CLH     R0,SELTST          IS IT LAST TEST ?          FLP06030
OF28    4200 0DF0     608            BL      KEEP4              NO, GO TO NEXT TEST        FLP06040
OF2C    4300 0DE6     609            B       KEEP3              GO TO TEST 0               FLP06050
                      610    *                                                              FLP06060
OF30    C810 080F     611    HALT9   LHI     R1,X'80F'                                      FLP06070
OF34    9114          612            SLHLS   R1,4               (R1) = X'80F0'             FLP06080
OF36    9521          613            EPSR    R2,R1              HALT PROCESSOR             FLP06090
                      614    *                                                              FLP06100
                      615    *  WHEN EXE/RUN IS PRESSED, PRINT TOTAL & TOTERR              FLP06110
                      616    *                                                              FLP06120
OF38    41F0 1344     617            BAL     LINK,TSTDU         SEE IF LIST DEV IS ON      FLP06130
OF3C    2006          618            BNZS    HALT9              NO, HALT                   FLP06140
OF3E    0700          619    KEEP10  XAR     R0,R0                                          FLP06150
OF40    4000 1712     620            STH     R0,WASDU           RESET FLAG                 FLP06160
OF44    41F0 11F8     621            BAL     LINK,CRLF                                      FLP06170
OF48    C850 394A     622            LHI     R5,TOTMSG                                      FLP06180
OF4C    41F0 114A     623            BAL     LINK,PRINT         PRINT 'TOTAL   TOTERR'     FLP06190
OF50    2404          624            LIS     R0,4               TO PRINT 4 HEX DIGITS      FLP06200
OF52    4850 1716     625            LH      R5,TOTAL                                       FLP06210
OF56    41F0 10F8     626            BAL     LINK,R5HEX         PRINT TOTAL IN HEX         FLP06220
OF5A    2434          627            LIS     R3,4                                           FLP06230
OF5C    C840 0020     628            LHI     R4,C' '            SPACE                      FLP06240
OF60    41F0 1206     629    KEEP101 BAL     LINK,OUTCHR        OUTPUT IT                  FLP06250
OF64    2731          630            SIS     R3,1                                           FLP06260
OF66    2023          631            BPS     KEEP101            4 TIMES                    FLP06270
OF68    2404          632            LIS     R0,4               TO PRINT 4 HEX DIGITS      FLP06280
OF6A    4850 1718     633            LH      R5,TOTERR                                      FLP06290
OF6E    41F0 10F8     634            BAL     LINK,R5HEX         PRINT TOTERR IN HEX        FLP06300
OF72    4300 080A     635            B       OPTIN              GO TO BEGINNING            FLP06310
                      636    * **********************************                          FLP06320
                      637    *  ERROR ROUTINES                  (OVERRIDE NOMSG OPTION)    FLP06330
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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                              638  *                                                                      FLP06340
0F76   0000 3D98              639  ERR      STM    R0,ERRSAVE        STORE REGISTERS                       FLP06350
0F7A   4120 0FB8              640           BAL    R2,ERRCOM         RETURN IF LIST DEVICE IS ON           FLP06360
0F7E   41E0 0FEA              641           BAL    RET,ERR1          PRINT 'ERROR TTNN'                    FLP06370
0F82   0700                   642  ERRCOM2  XAR    R0,R0                                                   FLP06380
0F84   4000 170C              643           STH    R0,ISITERR        RESET ERROR FLAG                      FLP06390
0F88   4800 0A22              644           LH     R2,PSW                                                  FLP06400
0F8C   9502                   645           EPSR   R0,R2                                                   FLP06410
0F8E   0100 3D98              646           LM     R0,ERRSAVE        RESTORE REGISTERS                     FLP06420
0F92   030F                   647           BR     LINK              RETURN TO TEST                        FLP06430
0F94   0000 3D98              648  ERRALL   STM    R0,ERRSAVE        STORE REGISTERS                       FLP06440
0F98   4120 0FB8              649           BAL    R2,ERRCOM         RETURN IF LIST DEVICE IS ON           FLP06450
0F9C   41E0 0FEA              650           BAL    RET,ERR1          PRINT 'ERROR TTNN'                    FLP06460
0FA0   41E0 1024              651           BAL    RET,ERRDS1        PRINT 'DEV DDD STA SS,                FLP06470
0FA4   41E0 1062              652           BAL    RET,ERRPL1        PRINT 'PSW PPPP  LOC LLLL'            FLP06480
0FA8   4800 1756              653           LH     DEV,FLPADR+6                                            FLP06490
0FAC   DE60 3D47              654           OC     DEV,UIS,STOP                                            FLP06500
0FB0   9D67                   655           SSR    DEV,STAT                                                FLP06510
0FB2   2221                   656           BFBS   2,1                                                     FLP06520
0FB4   4300 0F82              657           B      ERRCOM2                                                 FLP06530
                              658  *                                                                      FLP06540
                              659  *   COMMON ERROR ROUTINE                                               FLP06550
                              660  *                                                                      FLP06560
0FB8   4020 0FD2              661  ERRCOM   STH    R2,COMRET                                               FLP06570
0FBC   4810 0A24              662           LH     R1,PSW2                                                 FLP06580
0FC0   9501                   663           EPSR   R0,R1             DISABLE INT. @ PROCESSOR LEVEL        FLP06590
0FC2   41F0 1344              664           BAL    LINK,TSTDU        GET LIST DEVICE DU BIT IN R1          FLP06600
0FC6   2137                   665           BNZS   ERRCOM1           BRANCH IF OFF-LINE                    FLP06610
0FC8   4020 170C              666           STH    R2,ISITERR        SET ERROR FLAG                        FLP06620
0FCC   4020 170E              667           STH    R2,NOERR                                                FLP06630
0FD0   4300 0FD0              668           B      *                 GO, PRINT ERROR MESSAGE               FLP06640
       0000 0FD2              669  COMRET   EQU    *-2                                                     FLP06650
                              670  *                                                                      FLP06660
0FD4   4810 1718              671  ERRCOM1  LH     R1,TOTERR         LIST DEVICE IS OFF                    FLP06670
0FD8   2611                   672           AIS    R1,1                                                    FLP06680
0FDA   4010 1718              673           STH    R1,TOTERR         INCREMENT TOTERR                      FLP06690
0FDE   C510 7FFF              674           CLHI   R1,X'7FFF'        TOTERR < MAX RETAINABLE ?             FLP06700
0FE2   4280 0F04              675           BL     KEEP91            NO, ABORT CURRENT TEST & GOTO NEXT    FLP06710
0FE6   4300 0F30              676           B      HALT9             YES, HALT PROCESSOR                   FLP06720
                              677  *-----------------------------                                         FLP06730
                              678  * MESSAGE PRINT ROUTINES           (DO NOT OVERRIDE NOMSG OPTION)       FLP06740
                              679  *                                                                      FLP06750
                              680  *   TO PRINT 'ERROR TTNN'                                              FLP06760
                              681  *                                                                      FLP06770
0FEA   C850 393E              682  ERR1     LHI    R5,ERRMSG                                               FLP06780
0FEE   41F0 114A              683           BAL    LINK,PRINT        PRINT 'ERROR TTNN'                    FLP06790
                              684  *                                  TT = TEST #, NN = ERROR #           FLP06800
0FF2   030E                   685           BR     RET               RETURN                               FLP06810
                              686  *                                                                      FLP06820
                              687  *   TO PRINT 'DEV DDD'                                                 FLP06830
                              688  *                                                                      FLP06840
0FF4   2403                   689  ERRD1    LIS    R0,3              SET UP DIGITS = 3                     FLP06850
0FF6   4810 16E8              690           LH     R1,ERRDEV         R1 = ERROR DEV # IN BINARY            FLP06860
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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OFFA    C820 3A0E        691          LHI    R2,ASCIDEV2                                      FLP06870
OFFE    41F0 1122        692          BAL    LINK,HEXASC    CONVERT IT TO ASCII               FLP06880
1002    C850 3A0A        693          LHI    R5,DEVMSG2                                       FLP06890
1006    41F0 114A        694          BAL    LINK,PRINT     PRINT 'DEV DD'                    FLP06900
100A    030E             695          BR     RET            RETURN                            FLP06910
                         696    *                                                            FLP06920
                         697    *    TO PRINT 'STA SS'                                        FLP06930
                         698    *                                                            FLP06940
100C    2402             699   ERRS1   LIS    R0,2           SET UP DIGITS = 2                FLP06950
100E    0310 16EA        700          LB     R1,ERRSTA      R1 = ERROR STATUS                 FLP06960
1012    C820 3A06        701          LHI    R2,ASCISTA                                       FLP06970
1016    41F0 1122        702          BAL    LINK,HEXASC    CONVERT IT TO ASCII               FLP06980
101A    C850 3A02        703          LHI    R5,STAMSG                                        FLP06990
101E    41F0 114A        704          BAL    LINK,PRINT     PRINT 'STA SS'                    FLP07000
1022    030E             705          BR     RET            RETURN                            FLP07010
                         706    *                                                            FLP07020
                         707    *    TO PRINT 'DEV DDD STA SS'          ~                     FLP07030
                         708    *                                                            FLP07040
1024    2403             709   ERRDS1  LIS    R0,3           SET UP DIGITS = 3                FLP07050
1026    4810 16E8        710          LH     R1,ERRDEV      R1 = ERROR DEV #                  FLP07060
102A    C820 39FE        711          LHI    R2,ASCIDEV                                       FLP07070
102E    41F0 1122        712          BAL    LINK,HEXASC    CONVERT IT TO ASCII               FLP07080
1032    2402             713          LIS    R0,2           SET UP DIGITS = 2                 FLP07090
1034    0310 16EA        714          LB     R1,ERRSTA      R1 = ERROR STATUS                 FLP07100
1038    C820 3A06        715          LHI    R2,ASCISTA                                       FLP07110
103C    41F0 1122        716          BAL    LINK,HEXASC    CONVERT IT TO ASCII               FLP07120
1040    C850 39FA        717          LHI    R5,DEVMSG                                        FLP07130
1044    41F0 114A        718          BAL    LINK,PRINT     PRINT 'DEV DD STA SS'             FLP07140
1048    030E             719          BR     RET            RETURN                            FLP07150
                         720    *                                                            FLP07160
                         721    *    TO PRINT 'LOC LLLL'                                      FLP07170
                         722    *                                                            FLP07180
104A    2404             723   ERRL1   LIS    R0,4           SET UP DIGITS = 4                FLP07190
104C    4810 16E6        724          LH     R1,OLOC        R1= OLD LOC                       FLP07200
1050    C820 3A22        725          LHI    R2,ASCILOC                                       FLP07210
1054    41F0 1122        726          BAL    LINK,HEXASC    CONVERT IT TO ASCII               FLP07220
1058    C850 3A1E        727          LHI    R5,LOCMSG                                        FLP07230
105C    41F0 114A        728          BAL    LINK,PRINT     PRINT 'LOC LLLL'                  FLP07240
1060    030E             729          BR     RET            RETURN                            FLP07250
                         730    *                                                            FLP07260
                         731    *    TO PRINT 'PSW PPPP  LOC LLLL'                            FLP07270
                         732    *                                                            FLP07280
1062    2404             733   ERRPL1  LIS    R0,4           SET UP DIGITS = 4                FLP07290
1064    4810 16E2        734          LH     R1,OPSW        R1 = OLD PSW                      FLP07300
1068    C820 3A1A        735          LHI    R2,ASCIPSW                                       FLP07310
106C    41F0 1122        736          BAL    LINK,HEXASC    CONVERT IT TO ASCII               FLP07320
1070    4810 16E6        737          LH     R1,OLOC        R1= OLD LOC                       FLP07330
1074    C820 3A22        738          LHI    R2,ASCILOC                                       FLP07340
1078    41F0 1122        739          BAL    LINK,HEXASC    CONVERT IT TO ASCII               FLP07350
107C    C850 3A14        740          LHI    R5,PSWMSG                                        FLP07360
1080    41F0 114A        741          BAL    LINK,PRINT     PRINT 'PSW PPPP  LOC LLLL'        FLP07370
1084    030E             742          BR     RET            RETURN                            FLP07380
                         743    * *.*************************************                     FLP07390
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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                                 744  *   TO OBTAIN OPTION VALUE IN R6     (16 BITS, TARGT 16)        FLP07400
                                 745  *                                                               FLP07410
     1086   0766                 746  OPTVAL   XAR   R6,R6                  INITIALIZE ACCUMULATOR     FLP07420
     1088   41F0 127A            747           BAL   R15,GETCHR             GET A CHAR IN R4           FLP07430
     108C   24FF                 748  OPTVAL0  LIS   R15,15                                           FLP07440
     108E   D44F 1720            749  OPTVAL1  CLB   R4,HEXTAB(R15)         SCAN TABLE                 FLP07450
     1092   2334                 750           BES   OPTVAL2                MATCH                      FLP07460
     1094   27F1                 751           SIS   R15,1                                            FLP07470
     1096   2214                 752           BNMS  OPTVAL1                                          FLP07480
     1098   030C                 753           BR    R12                    ERROR: VALUE NOT IN TABLE. FLP07490
            0000 109A            754  OPTVAL2  EQU   *                                                FLP07500
     109A   4890 16D8            755           LH    R9,MOD32               ARE WE ON A 32 BIT PROCESSOR FLP07510
     109E   2133                 756           BNZS  OPTVAL5                YES SKIP DOWN              FLP07520
     10A0   9164                 757           SLLS  R6,4                   NO SHIFT OVER             FLP07530
     10A2   2302                 758           BS    OPTVAL6                GO TO COMMON               FLP07540
     10A4   1164                 759  OPTVAL5  DC    X'1164'                32 BIT SHIFT               FLP07550
     10A6   000F                 760  OPTVAL6  OAR   R6,R15                 OR TOGETHER                FLP07560
     10A8   41F0 127A            761  OPTVAL3  BAL   R15,GETCHR             GET NEXT CHAR              FLP07570
     10AC   C540 005F            762           CLHI  R4,X'5F'               IS IT LEFT ARROW ?         FLP07580
     10B0   2138                 763           BNES  OPTVAL4                                          FLP07590
     10B2   4890 16D8            764           LH    R9,MOD32               ARE WE ON A 32 BIT PROCESSOR FLP07600
     10B6   2133                 765           BNZS  OPTVAL7                YES SKIP DOWN              FLP07610
     10B8   9064                 766           SRLS  R6,4                   NO SHIFT OVER             FLP07620
     10BA   2302                 767           BS    OPTVAL8                GO TO COMMON               FLP07630
     10BC   1064                 768  OPTVAL7  DC    X'1064'                32 BIT SHIFT OVER          FLP07640
     10BE   22DB                 769  OPTVAL8  BS    OPTVAL3                GO AGAIN                   FLP07650
     10C0   C540 000D            770  OPTVAL4  CLHI  R4,13                  EXIT IF CR                 FLP07660
     10C4   033E                 771           BER   R14                                              FLP07670
     10C6   C540 002C            772           CLHI  R4,X'2C'               OR COMMA                   FLP07680
     10CA   4250 108C            773           BNE   OPTVAL0                LOOP TO PROCESS            FLP07690
     10CE   030E                 774           BR    R14                    RETURN                     FLP07700
                                 775  *------------------------------                                FLP07710
                                 776  *  TO CONVERT (R6) FROM BINARY TO UNARY PATTERN, IN R3         FLP07720
                                 777  *                                                               FLP07730
     10D0   2431                 778  UNARY    LIS   R3,1                   INITIALIZE                 FLP07740
     10D2   C360 000F            779  UNARY1   CLHI  R6,15                  DONE ?                     FLP07750
     10D6   033E                 780           BER   R14                    RETURN                     FLP07760
     10D8   0A33                 781           AAR   R3,R3                  NO, SHIFT R3.              FLP07770
     10DA   26D1                 782           AIS   R6,1                   INCREMENT COUNTER          FLP07780
     10DC   22D5                 783           BS    UNARY1                                           FLP07790
                                 784  *------------------------------                                FLP07800
                                 785  *  TO PROVIDE # OF MILLISECONDS DELAY SPECIFIED BY R0          FLP07810
                                 786  *                                                               FLP07820
     10DE   D000 3EF8            787  TIMER    STM   R0,RSAVE               SAVE REGISTERS             FLP07830
     10E2   2410                 788           LIS   R1,0                                             FLP07840
     10E4   2421                 789           LIS   R2,1                                             FLP07850
     10E6   4830 0A1E            790           LH    R3,TIME                R3 = TIME CONSTANT FOR 1 MS DELAY FLP07860
     10EA   C110 10EA            791           BXLE  R1,*                                             FLP07870
     10EE   2701                 792           SIS   R0,1                                             FLP07880
     10F0   2037                 793           BNZS  TIMER+4                LOOP TILL SPECIFIED DELAY  FLP07890
     10F2   D100 3EF8            794           LM    R0,RSAVE               RESTORE REGISTERS          FLP07900
     10F6   030F                 795  TIMXT    BR    LINK                   RETURN                     FLP07910
                                 796  *------------------------------                                FLP07920
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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                              797  *   R5HEX PRINTS CONTENTS OF R5 IN HEX                              FLP07930
                              798  *          PRINTS UPTO 4 DIGITS        (8 DIGITS, TARGT 32)         FLP07940
                              799  *                                                                  FLP07950
    10F8   D000 3EF8          800  R5HEX   STM   R0,RSAVE          STORE REGISTERS                     FLP07960
    10FC   0820               801          LDAR  R2,R0             R2 = # OF DIGITS TO BE PRINTED      FLP07970
    10FE   2721               802          SIS   R2,1                                                  FLP07980
    1100   4240 111C          803          BM    R5XB                                                  FLP07990
    1104   9122               804          SLLS  R2,2              R2 = 4(DIGITS-1)                    FLP08000
    1106   0845               805  R5X     LDAR  R4,R5                                                 FLP08010
    1108   CC42 0000          806          SRAL  R4,0(R2)                                              FLP08020
    110C   C440 000F          807          NHI   R4,15             R4 = HEX DIGIT                      FLP08030
    1110   D344 1720          808          LB    R4,HEXTAB(R4)                                         FLP08040
    1114   41F0 1206          809  R5XA    BAL   R15,OUTCHR                                            FLP08050
    1118   2724               810          SIS   R2,4                                                  FLP08060
    111A   221A               811          BNMS  R5X               LOOP TILL ALL DIGITS               FLP08070
    111C   D100 3EF8          812  R5XB    LM    R0,RSAVE          RESTORE REGISTERS                   FLP08080
    1120   030F               813          BR    LINK              RETURN                             FLP08090
                              814  *--------------------------                                         FLP08100
                              815  *  TO CONVERT BINARY DATA IN R1 INTO ASCII CHAR & STORE @ 0(R2)    FLP08110
                              816  *                                                                  FLP08120
    1122   D000 3EF8          817  HEXASC  STM   R0,RSAVE          STORE REGISTERS                     FLP08130
    1126   0830               818          LDAR  R3,R0             R3 = DIGITS                         FLP08140
    1128   9132               819          SLLS  R3,2                                                  FLP08150
    112A   2734               820          SIS   R3,4              R3 = 4(DIGITS)-4                    FLP08160
    112C   0841               821  HEXASC1 LDAR  R4,R1             R4 = HEX DATA                       FLP08170
    112E   CC43 0000          822          SRAL  R4,0(R3)                                              FLP08180
    1132   C440 000F          823          NHI   R4,15             R4 = HEX DIGIT TO BE CONVERTED      FLP08190
    1136   D344 1720          824          LB    R4,HEXTAB(R4)                                         FLP08200
    113A   D242 0000          825          STB   R4,0(R2)          STORE ASCII CHAR                    FLP08210
    113E   2621               826          AIS   R2,1                                                  FLP08220
    1140   2734               827          SIS   R3,4                                                  FLP08230
    1142   221B               828          BNMS  HEXASC1           LOOP TILL ALL DIGITS               FLP08240
    1144   D100 3EF8          829          LM    R0,RSAVE          RESTORE REGISTERS                   FLP08250
    1148   030F               830          BR    LINK              RETURN                             FLP08260
                              831  *--------------------------                                         FLP08270
                              832  *  TO PRINT THE ASCII MESSAGE                                       FLP08280
                              833  *                                                                  FLP08290
    114A   D000 3EF8          834  PRINT   STM   R0,RSAVE          STORE REGISTERS                     FLP08300
    114E   D310 3EF1          835          LB    R1,IOSAVE+1       LOAD LIST IDENTIFIER               FLP08310
    1152   2711               836          SIS   R1,1              CRT ?                               FLP08320
    1154   4330 1170          837          BZ    P4                                                   FLP08330
    1158   2711               838          SIS   R1,1                                                  FLP08340
    115A   4330 1178          839          BZ    P5                                                   FLP08350
    115E   2713               840          SIS   R1,3                                                  FLP08360
    1160   4230 1166          841          BNZ   P6                                                   FLP08370
    1164   230A               842          BS    P5                                                   FLP08400
    1166                      843  P6      EQU   *                                                    FLP08410
    1166   D300 0A19          844          LB    R0,C300ADR+1                                          FLP08420
    116A   DE00 1700          845          OC    R0,CAR2ND                                             FLP08430
    116E   2305               846          BS    P5                                                   FLP08440
    1170   D300 0A13          847  P4      LB    R0,PASLADR+1                                          FLP08450
    1174   DE00 16FE          848          OC    R0,CRT2ND                                             FLP08460
    1178   41F0 1344          849  P5      BAL   LINK,TSTDU                                            FLP08470
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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117C   2335            850           BZS    P1                                           FLP08480
117E   4010 1712       851           STH    R1,WASDU       SET FLAG                      FLP08490
1182   4300 11EE       852           B      PRINT5         EXIT                          FLP08500
1186   4820 1712       853    P1     LH     R2,WASDU                                     FLP08510
118A   4330 11B8       854           BZ     P3                                           FLP08520
118E   C810 0140       855           LHI    R1,X'140'      DELAY CONSTANT                FLP08530
1192   C800 1000       856           LHI    R0,X'1000'                                   FLP08540
1196   2701            857           SIS    R0,1                                         FLP08550
1198   2051            858           BTBS   3,1                                          FLP08560
119A   2711            859           SIS    R1,1                                         FLP08570
119C   2035            860           BTBS   3,5            LOOP TILL TIMEOUT             FLP08580
119E   0744            861           XAR    R4,R4                                        FLP08590
11A0   4040 1712       862           STH    R4,WASDU                                     FLP08600
11A4   2541            863           LCS    R4,1           CHARACTER = X'FF'             FLP08610
11A6   4040 1714       864           STH    R4,WASDU1                                     FLP08620
11AA   2434            865           LIS    R3,4                                         FLP08630
11AC   41F0 1206       866    P2     BAL    LINK,OUTCHR                                  FLP08640
11B0   2731            867           SIS    R3,1                                         FLP08650
11B2   2023            868           BPS    P2                                           FLP08660
11B4   4300 0F3E       869           B      KEEP10         PRINT TOTAL, TOTERR           FLP08670
11B8   4800 17E6       870    P3     LH     R0,NOMSG+6                                   FLP08680
11BC   2335            871           BZS    PRINT2         NO, PRINT ALL MESSAGES        FLP08690
11BE   4800 17UC       872           LH     R0,ISITERR                                   FLP08700
11C2   4330 11EE       873           BZ     PRINT5         NOT AN ERROR MSG. EXIT        FLP08710
                       874    *                                                         FLP08720
11C6   D345 0000       875    PRINT2 LB     R4,0(R5)       GET A MESSAGE BYTE            FLP08730
11CA   41F0 1206       876           BAL    LINK,OUTCHR    OUTPUT IT                     FLP08740
11CE   274D            877           SIS    R4,13          CR ?                          FLP08750
11D0   2353            878           BZS    PRINT3         MSG OVER                      FLP08760
11D2   2651            879           AIS    R5,1                                         FLP08770
11D4   2207            880           BS     PRINT2         LOOP FOR NEXT CHAR            FLP08780
11D6   244A            881    PRINT3 LIS    R4,10          LF                            FLP08790
11D8   D310 3EF1       882           LB     R1,IOSAVE+1    GET LIST DEV IDENTIFIER       FLP08800
11DC   2713            883           SIS    R1,3           LINE PRINTER ?                FLP08810
11DE   2355            884           BZS    PRINT3A        BRANCH IF YES.                FLP08820
11E0   41F0 1206       885           BAL    LINK,OUTCHR    LF                            FLP08830
11E4   2541            886           LCS    R4,1           DEL                           FLP08840
11E6   2302            887           BS     PRINT3B                                      FLP08850
11E8   2441            888    PRINT3A LIS   R4,1           YES, OUTPUT X'01'             FLP08860
11EA   41F0 1206       889    PRINT3B BAL   LINK,OUTCHR    TERMINAL CHARACTER            FLP08870
11EE   41F0 12CA       890    PRINT5 BAL    LINK,TSTBRK                                  FLP08880
11F2   D100 3EF8       891           LM     R0,RSAVE       RESTORE REGISTERS             FLP08890
11F6   030F            892           BR     LINK           RETURN                        FLP08900
                       893    *-------------------------------                          FLP08910
                       894    *  SMALL SUPPORT ROUTINES                                  FLP08920
                       895    *                                                         FLP08930
                       896    *   TO OUTPUT CR,LF TO LIST DEVICE                         FLP08940
                       897    *                                                         FLP08950
11F8   D000 3EF8       898    CRLF   STM    R0,RSAVE       STORE REGISTERS               FLP08960
11FC   244D            899           LIS    R4,13                                        FLP08970
11FE   41F0 1206       900           BAL    LINK,OUTCHR    OUTPUT CR                     FLP08980
1202   4300 11D6       901           B      PRINT3         LINE FEED, RESTORE, RETURN    FLP08990
                       902    *-------------------------                                FLP09000
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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                              903  *  TO OUTPUT A CHARACTER TO THE LIST DEVICE             FLP09010
 1206   40F0 1276             904  OUTCHR  STH   R15,OUT1+2         SAVE RETURN ADDRESS     FLP09020
 120A   D500 3EF1             905          LB    R0,IOSAVE+1                                FLP09030
 120E   2704                  906          SIS   R0,4                                       FLP09040
 1210   4230 124E             907          BNZ   OUTCHR2            BRANCH IF NO TRANS PAUSE FLP09050
 1214   4000 1278             908          STH   R0,PAUSE           RESET FLAG              FLP09060
 1218   41F0 1344             909  OTC.0   BAL   LINK,TSTDU         ON-LINE ?               FLP09070
 121C   4230 1270             910          BNZ   OUT0               BRANCH IF NO.           FLP09080
 1220   9001                  911          SSR   R0,R1              CHARACTER TO READ ?     FLP09090
 1222   2306                  912          BFFS  8,OTC.2            BRANCH IF YES           FLP09100
 1224   4810 1278             913  OTC.1   LH    R1,PAUSE           PAUSED NOW ?            FLP09110
 1228   2038                  914          BNZS  OTC.0              BRANCH: YES, WAIT FOR DC2 FLP09120
 122A   4300 124E             915          B     OUTCHR2            PRESS ON                FLP09130
 122E   9801                  916  OTC.2   RDR   R0,R1              DC2, DC4 (FOX ONLY) ?   FLP09140
 1230   C410 007F             917          NHI   R1,X'7F'                                   FLP09150
 1234   CB10 0012             918          SHI   R1,X'12'           DC2 ?                   FLP09160
 1238   2104                  919          BNZS  OTC.3                                      FLP09170
 123A   4010 1278             920          STH   R1,PAUSE           RESET FLAG             FLP09180
 123E   2308                  921          BS    OUTCHR2            PRESS ON                FLP09190
 1240   2712                  922  OTC.3   SIS   R1,2               DC4 ?                   FLP09200
 1242   4230 1218             923          BNZ   OTC.0              NO.                     FLP09210
 1246   40F0 1278             924          STH   LINK,PAUSE         SET FLAG               FLP09220
 124A   4300 1218             925          B     OTC.0              AND WAIT FOR DC2        FLP09230
 124E   41F0 1344             926  OUTCHR2 BAL   LINK,TSTDU         OFF-LINE ?              FLP09240
 1252   213F                  927          BNZS  OUT0               IF YES.                 FLP09250
 1254   4110 13C2             928          BAL   R1,SETUP           SET UP FOR OUTPUT       FLP09260
 1258   9001                  929  OTC.4   SSR   R0,R1              WAIT FOR NOT BUSY       FLP09270
 125A   213B                  930          BTFS  3,OUT0             BRANCH IF OFF-LINE      FLP09280
 125C   C510 000C             931          CLHI  R1,12              PASLA OFFLINE ?         FLP09290
 1260   2538                  932          BES   OUT0               BRANCH: YES.            FLP09300
 1262   C310 0008             933          THI   R1,8               BUSY ?                  FLP09310
 1266   2037                  934          BNZS  OTC.4              WAIT FOR NOT BUSY.      FLP09320
 1268   9A04                  935          WDR   R0,R4              OUTPUT DATA BYTE        FLP09330
 126A   9001                  936          SSR   R0,R1                                      FLP09340
 126C   2001                  937          BTBS  8,1                WAIT FOR NOT BUSY.      FLP09350
 126E   2303                  938          BS    OUT1                                       FLP09360
 1270   4010 1712             939  OUT0    STH   R1,WASDU           SET FLAG                FLP09370
 1274   4300 1274             940  OUT1    B     *                  RETURN AS SET UP ABOVE  FLP09380
 1278   0000                  941  PAUSE   DCX   0                  SET DURING TRANSMISSION PAUSE FLP09390
                              942  *----------------------------                            FLP09400
                              943  *  TO GET A CHAR FROM KEYBOARD (IN REG R4)               FLP09410
                              944  *                                                        FLP09420
 127A   4140 13A6             945  GETCHR  BAL   R4,KBREAD          PUT KB DEVICE IN READ MODE FLP09430
 127E   9D04                  946          SSR   R0,R4                                      FLP09440
 1280   021F                  947          BTCR  1,LINK             IF DU, RETURN           FLP09450
 1282   2002                  948          BTBS  8,2                IF BUSY, LOOP           FLP09460
 1284   D400 0A1A             949          CLB   R0,MICROBUS        IS IT A MICROBUS
 1288   4330 1290             950          BE    ECHO1              YES
 128C   9B04                  951          RDR   R0,R4
 128E   2303                  952          BS    ECHO
 1290   9B04                  953  ECHO1   RDR   R0,R4
 1292   9A04                  954          WDR   R0,R4
                              955  *  TO ECHO RECEIVED CHARACTERS TO CONSOLE DEVICE IN FOX MODE FLP09530
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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1294   D390 16F2      956  ECHO     LB    R9,CONRD                                         FLP09540
1298   C590 00A9      957           CLHI  R9,X'A9'         CAROUSEL ?                       FLP09550
129C   2137           958           BNES  ECHRTN           DO NOT ECHO                      FLP09560
129E   D390 16F1      959           LB    R9,CONADR+1                                       FLP09570
12A2   DD90 16EB      960           SS    R9,SINK                                           FLP09580
12A6   2082           961           BTBS  8,2                                              FLP09590
12A8   9A74           962           WDR   R9,R4            ECHO RECEIVED BYTE               FLP09600
12AA   C440 007F      963  ECHRTN   NHI   R4,X'7F'         REMOVE PARITY BIT                FLP09610
12AE   030F           964           BR    LINK             RETURN                           FLP09620
               965  *---------------------------                                            FLP09630
               966  *   TO OUTPUT '?' TO CONSOLE                                            FLP09640
               967  *                                                                       FLP09650
12B0   41F0 11F8      968  QUESTN   BAL   LINK,CRLF                                          FLP09660
12B4   40F0 170C      969           STH   LINK,ISITERR     SET FLAG                         FLP09670
12B8   C850 3A50      970           LHI   R5,QMSG                                           FLP09680
12BC   41F0 114A      971           BAL   LINK,PRINT       PRINT '?'                        FLP09690
12C0   0700           972           XAR   R0,R0                                             FLP09700
12C2   40C0 170C      973           STH   R0,ISITERR                                        FLP09710
12C6   4300 0B0E      974           B     OPTIN1           TO ACCEPT COMMAND INPUT          FLP09720
               975  *---------------------------                                            FLP09730
               976  * IF BREAK KEY DEPRESSED, GO TO 'OPTIN' OR (BRKVECT); ELSE RETURN.      FLP09740
               977  *                                                                       FLP09750
12CA   D000 3F38      978  TSTBRK   STM   R0,RSAVE+64      STORE REGISTERS                  FLP09760
12CE   40F0 1342      979           STH   LINK,BRKRTN                                       FLP09770
12D2   D300 16F0      980           LB    R0,CONADR        GET KEYBOARD DEVICE ADR          FLP09780
12D6   D320 0A10      981           LB    R2,IO
12DA   C520 0005      982           CLHI  R2,5
12DE   2133           983           BNES  TSTBRK6
12E0   4140 13A6      984           BAL   R4,KBREAD
       0000 12E4      985  TSTBRK6  EQU   *
12E4   9001           986           SSR   R0,R1                                            FLP09790
12E6   C310 0020      987           THI   R1,X'20'         'BREAK' KEY PRESSED ?            FLP09800
12EA   4330 1336      988           BZ    TSTBRK3          NO. EXIT                         FLP09810
12EE   D320 0A10      989           LB    R2,IO                                            FLP09820
12F2   C520 0005      990           CLHI  R2,5             IS IT MICROBUS                   FLP09830
12F6   2139           991           BNES  TSTBRK4
       0000 12F8      992  TSTBRK5  EQU   *
12F8   9B02           993           ROR   R0,R2
12FA   9001           994           SSR   R0,R1
12FC   C310 0020      995           THI   R1,X'20'
1300   4230 12F8      996           BNZ   TSTBRK5
1304   4300 132A      997           B     TSTBRK2
       0000 1308      998  TSTBRK4  EQU   *
1308   48E0 16EE      999           LH    R2,PASFLG        PASLA ?                          FLP09850
130C   2338           1000          BZS   TSTBRK1          BRANCH IF NO.                    FLP09860
       0000 130E      1001 TSTBRK11 EQU   *                                                FLP09870
130E   C310 0008      1002          THI   R1,8             ALREADY ACKNOWLEDGED ?           FLP09880
1312   4230 1336      1003          BNZ   TSTBRK3          BRANCH IF YES                    FLP09890
1316   9B02           1004          ROR   R0,R2                                            FLP09900
1318   9001           1005          SSR   R0,R1                                            FLP09910
131A   2281           1006          BFBS  8,1                                              FLP09920
131C   0822           1007          LDAR  R2,R2            ZERO CHARACTER ?                 FLP09930
131E   213C           1008          BNZS  TSTBRK3          BRANCH: JUST FRAMING ERROR       FLP09940
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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1320   2505              1009          BS     TSTBRK2                                              FLP09950
1322   9001              1010  TSTBRK1 SSR    R0,R1                                                FLP09960
1324   C310 0020         1011          THI    R1,X'20'                                             FLP09970
1328   2033              1012          BTBS   3,3                  WAIT FOR BREAK KEY RELEASE       FLP09980
132A   48F0 170A         1013  TSTBRK2 LH     R15,BRKVECT          CHECK FOR SPECIAL ROUTINE        FLP09990
132E   4330 030A         1014          BZ     OPTIN                BRK W/NO VECTOR: TO EXEC.        FLP10000
1332   40F0 1342         1015          STH    R15,BRKRTN           SET UP FOR EXIT                  FLP10010
1336   2400              1016  TSTBRK3 LIS    R0,0                                                  FLP10020
1338   4000 170A         1017          STH    R0,BRKVECT           DELETE VECTOR AFTER ONE SHOT.    FLP10030
133C   D100 3F38         1018          LM     R0,RSAVE+64          RESTORE REGISTERS                FLP10040
1340   4300 1340         1019          B      *                    RETURN TO PROGRAM                FLP10050
       0000 1342         1020  BRKRTN  EQU    *-2                                                   FLP10060
                         1021  *-----------------------------                                       FLP10070
                         1022  * SEE IF LIST DEVICE OFF-LINE (R1, CC NON-ZERO IF OFF)               FLP10080
                         1023  *                                                                    FLP10090
1344   D310 3EF1         1024  TSTDU   LB     R1,IOSAVE+1          GET LIST DEV IDENTIFIER          FLP10100
1348   C510 0005         1025          CLHI   R1,5                 IS IT MICROBUS                   FLP10110
134C   4330 1392         1026          BE     TSTDU3                                                FLP10120
1350   2711              1027          SIS    R1,1                 CRT/PASLA ?                      FLP10130
1352   215D              1028          BNZS   TSTDU1               BRANCH IF NO.                    FLP10140
1354   D300 0A12         1029          LB     R0,PASLADR                                            FLP10150
1358   9001              1030  TSTDU0  SSR    R0,R1                                                 FLP10160
135A   C410 00FC         1031          NHI    R1,X'FC'                                              FLP10170
135E   C510 000C         1032          CLHI   R1,12                BSY & EX SET ?                   FLP10180
1362   2133              1033          BTFS   3,3                  BRANCH IF NOT OFF-LINE           FLP10190
1364   0841              1034          LDAR   R1,R1                SET CONDITION CODE               FLP10200
1366   030F              1035          BR     LINK                 DEVICE OFF-LINE                  FLP10210
1368   0741              1036          XAR    R1,R1                                                 FLP10220
136A   030F              1037          BR     LINK                 RETURN                           FLP10230
136C   D300 0A14         1038  TSTDU1  LB     R0,CLIFADR                                            FLP10240
1370   2711              1039          SIS    R1,1                 CURRENT LOOP ?                   FLP10250
1372   235C              1040          BZS    TSTDU2               BRANCH IF YES.                   FLP10260
1374   D300 0A16         1041          LB     R0,LPADR                                              FLP10270
1378   2711              1042          SIS    R1,1                 LP ?                             FLP10280
137A   2358              1043          BZS    TSTDU2               BRANCH IF YES.                   FLP10290
137C   D300 0A18         1044          LB     R0,C300ADR                                            FLP10300
1380   2711              1045          SIS    R1,1                 CAROUSEL 300 ?                   FLP10310
1382   4330 1358         1046          BZ     TSTDU0               BRANCH IF YES.                   FLP10320
1386   4200 1386         1047          NOP    *                    PROVISION FOR SPECIAL DEVICE     FLP10330
138A   9001              1048  TSTDU2  SSR    R0,R1                GET STATUS IN R1                 FLP10340
138C   C410 0001         1049          NHI    R1,1                 R1 = DU BIT                      FLP10350
1390   030F              1050          BR     LINK                 RETURN                           FLP10360
       0000 1392         1051  TSTDU3  EQU    *                                                     FLP10370
1392   D300 0A1A         1052          LB     R0,MICROBUS
1396   2206              1053          BS     TSTDU2
                         1054  * --------------------------------                                   FLP10450
                         1055  * TO DIRECT INPUT AND OUTPUT TO CONSOLE DEVICE                       FLP10460
                         1056  *                                                                    FLP10470
1398   D300 0A10         1057  SETKB   LB     R0,IO                GET KEYBOARD DEVICE              FLP10480
139C   9410              1058          EXBR   R1,R0                                                 FLP10490
139E   0610              1059          OAR    R1,R0                                                 FLP10500
13A0   4010 3EF0         1060          STH    R1,IOSAVE            KB DEVICE = LIST DEVICE          FLP10510
13A4   030F              1061          BR     LINK                 RETURN                           FLP10520
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                         1062  *----------------------------                              FLP10530
                         1063  *   TO PUT KEYBOARD DEVICE IN READ MODE                    FLP10540
                         1064  *                                                          FLP10550
13A6   0300 16F0         1065  KBREAD   LB    RC,CONADR                                   FLP10560
13AA   DEE0 16F2         1066           OC    R0,CONRD                                    FLP10570
13AE   0B00 16EB         1067           RD    R0,SINK
13B2   4890 16EE         1068           LH    R9,PASFLG            PASLA ?                 FLP10580
13B6   4200 13B6         1069           NOP   *                   FOR SPECIAL KB DEVICE   FLP10590
13BA   0334             1070  TTYGET    BZR   R4                  RETURN                  FLP10600
13BC   DEE0 16FC         1071           OC    R0,CONRQ2S                                  FLP10620
13C0   0304             1072           BR    R4                  RETURN                  FLP10630
                         1073  *----------------------------                              FLP10790
                         1074  *  LIST DEVICE SET UP ROUTINE                              FLP10800
                         1075  *                                                          FLP10810
13C2   0300 3EF1         1076  SETUP    LB    R0,IOSAVE+1          GET LIST DEV IDENTIFIER FLP10820
13C6   2701             1077           SIS   R0,1                PASLA ?                 FLP10830
13C8   4330 13F0         1078           BZ    CRTDRV                                      FLP10840
13CC   2701             1079           SIS   R0,1                CURRENT LOOP ?          FLP10850
13CE   233C             1080           BZS   TTYDRV              YES, GO TO TTY DRIVER   FLP10860
13D0   2701             1081           SIS   R0,1                LINE PRINTER ?          FLP10870
13D2   4330 13F6         1082           BZ    LPDRV                                       FLP10880
13D6   2701             1083           SIS   R0,1                CAROUSEL 300 ?          FLP10890
13D8   4330 1400         1084           BZ    CARDRV                                      FLP10900
13DC   2701             1085           SIS   R0,1                                        FLP10910
13DE   4330 140A         1086           BZ    MICRODRV                                    FLP10920
13E2   4200 13E2         1087           NOP   *                   PROVISION TO ADD SPECIAL DEV  FLP10930
13E6   0300 0A15         1088  TTYDRV   LB    R0,CLIFADR+1                                 FLP10940
13EA   DEE0 1705         1089           OC    R0,CLIFWRT           WRITE COMMAND TO CURR. LP. INTERF.  FLP10950
13EE   0301             1090           BR    R1                  RETURN                  FLP10960
13F0   0300 0A13         1091  CRTDRV   LB    R0,PASLADR+1                                 FLP10970
13F4   2308             1092           BS    CONDRV                                      FLP10980
13F6   0300 0A16         1093  LPDRV    LB    R0,LPADR                                    FLP10990
13FA   DEE0 1702         1094           OC    R0,LPWRT             COMMAND TO LINE PRINTER  FLP11000
13FE   0301             1095           BR    R1                  RETURN                  FLP11010
1400   0300 0A19         1096  CARDRV   LB    R0,C300ADR+1                                 FLP11020
1404   DEE0 16F9         1097  CONDRV   OC    R0,CARWRT                                   FLP11030
1408   0301             1098           BR    R1                  RETURN                  FLP11040
       0000 140A         1099  MICRODRV EQU   *                                          FLP11050
140A   0300 0A1B         1100           LB    R0,MICROBUS+1                               FLP11060
140E   DEE0 1731         1101           OC    R0,MWRITEC           WRITE COMMAND           FLP11070
1412   0301             1102           BR    R1                  RETURN                  FLP11080
                         1103  * ***************************                              FLP11090
                         1104  *  LOW CORE SET UP ROUTINE                                 FLP11100
                         1105  *                                                          FLP11110
1414   0711             1106  LCORE     XAR   R1,R1                                       FLP11120
1416   2422             1107           LIS   R2,2                                        FLP11130
1418   C830 004E         1108           LHI   R3,X'4E'                                    FLP11140
141C   0700             1109           XAR   R0,R0                                       FLP11150
141E   4001 0000         1110  ZERO1    STH   R0,0(R1)                                    FLP11160
1422   C110 141E         1111           BXLE  R1,ZERO1             ZERO CORE FROM 0 THRU X'4F'  FLP11170
1426   C810 0080         1112           LHI   R1,X'80'                                    FLP11180
142A   C830 00CE         1113           LHI   R3,X'CE'                                    FLP11190
142E   4001 0000         1114  ZERO2    STH   R0,0(R1)                                    FLP11200
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1432   C110 142E   1115              BXLE   R1,ZERO2        ZERO CORE FROM X'80' THRU X'CF'           FLP11210
1436   C800 1564   1116              LHI    R0,XI32         INTERRUPT HANDLER ROUTINE                FLP11220
143A   C830 08CE   1117              LHI    R3,X'8CE'                                                FLP11230
143E   4001 0000   1118  ZERO3       STH    R0,0(R1)                                                 FLP11240
1442   C110 143E   1119              BXLE   R1,ZERO3        SET UP INT SERVICE POINTER TABLE         FLP11250
1446   C830 1676   1120              LHI    R3,1I                                                    FLP11260
144A   4030 0036   1121              STH    R3,X'36'        ILL INST INT NEW PSW LOC                 FLP11270
144E   C840 1690   1122              LHI    R4,MM                                                    FLP11280
1452   4040 003E   1123              STH    R4,X'3E'        M. M. INT NEW PSW LOC                     FLP11290
1456   C830 1636   1124              LHI    R3,AF                                                    FLP11300
145A   4030 004E   1125              STH    R3,X'4E'        ARITHMETIC FAULT NEW PSW LOC(32-BIT)     FLP11310
                   1126  *                                  FIXED PT DIVIDE FAULT NEW PSW LOC        FLP11320
145E   C840 3EF8   1127              LHI    R4,RSAVE                                                 FLP11330
1462               1128              IFZ    ADC-2                                                    FLP11340
1462   4810 16D8   1129              LH     R1,MOD32                                                 FLP11350
1466   4220 1488   1130              BNZ    LCORE32                                                  FLP11360
                   1131  *                                                                           FLP11370
                   1132  *  SET UP LOW CORE FOR 16 BIT MACHINE                                       FLP11380
                   1133  *                                                                           FLP11390
146A   4040 0022   1134              STH    R4,X'22'        REG SAVE POINTER                         FLP11400
146E   C830 1624   1135              LHI    R3,FP                                                    FLP11410
1472   4030 002E   1136              STH    R3,X'2E'        FLOATING PT FAULT INT NEW PSW LOC        FLP11420
1476   4850 0A24   1137              LH     R5,PSW2                                                  FLP11430
147A   4050 0044   1138              STH    R5,X'44'        HW EXT INT NEW PSW STATUS                FLP11440
147E   C850 1556   1139              LHI    R5,XI16                                                  FLP11450
1482   4050 0046   1140              STH    R5,X'46'        EXT INT NEW PSW LOC                       FLP11460
1486   030F        1141              BR     LINK                                                     FLP11470
                   1142              ENDC                                                            FLP11480
                   1143  *                                                                           FLP11490
                   1144  *  SET UP LOW CORE FOR 32 BIT MACHINE                                       FLP11500
                   1145  *                                                                           FLP11510
1488   4040 0086   1146  LCORE32     STH    R4,X'86'        REG SAVE POINTER                         FLP11520
148C   C840 3D50   1147              LHI    R4,PSWSAVE      PPF PSW SAVE AREA                        FLP11530
1490   4040 0084   1148              STH    R4,X'84'        .  POINTER                               FLP11540
1494   C830 162C   1149              LHI    R3,RP                                                    FLP11550
1498   4030 0096   1150              STH    R3,X'96'        RELOC/PROTECT INT NEW PSW LOC            FLP11560
149C   D310 16F0   1151              LB     R1,CONADR       LOAD CONSOLE I/O ADDRESS                 FLP11570
14A0   0A11        1152              AAR    R1,R1                                                    FLP11580
14A2   C800 14C0   1153              LHI    R0,KBINT0       R0 = A(KEYBOARD INT HANDLER)             FLP11590
14A6   4001 00D0   1154              STH    R0,X'D0'(R1)    STORE @ X'D0'+2(KB DEV ADR)              FLP11600
14AA   0711        1155              XAR    R1,R1           TO SET UP SERVICE POINTER TABLE          FLP11610
14AC   C830 1564   1156              LHI    R3,XI32                                                  FLP11620
14B0   4821 3D28   1157  LCORE32A    LH     R2,DEVSADR(R1)  GET DEV ADR FROM TABLE                   FLP11630
14B4   021F        1158              BMR    LINK            DONE, RETURN                             FLP11640
14B6   0A22        1159              AAR    R2,R2                                                    FLP11650
14B8   4032 0000   1160              STH    R3,X'D0'(R2)    STORE @ X'D0'+2(DEV ADR)                 FLP11660
14BC   2612        1161              AIS    R1,2                                                     FLP11670
14BE   2207        1162              BS     LCORE32A                                                 FLP11680
                   1163  *----------------------------------                                        FLP11690
                   1164  *  KEYBOARD INTERRUPT HANDLER                                               FLP11700
                   1165  *                                                                           FLP11710
14C0   C330 0020   1166  KBINT0      THI    R3,X'20'        IS BREAK KEY DEPRESSED ?                 FLP11720
14C4   4330 150C   1167              BZ     KBINT1          NO                                       FLP11730
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14C8   0300 0A10          1168              LB    R0,10                                                      FLP11740
14CC   C500 0005          1169              CLHI  R0,5           IS IT MICROBUS                              FLP11750
14D0   4230 14EC    ___   1170              BNE   KBINTOB        NOT MICROBUS SKIP
14D4   DE20 1730          1171              OC    R2,MREADC      PUT MICROBUS IN READ MODE
14D8   9D23              1172              SSR   R2,R3          SENSE STATUS
14DA   2081              1173              BTBS  8,1            WAIT FOR BUSY TO DROP
14DC   9B24              1174   KBINTOC    RDR   R2,R4          KNOCK DOWN BREAK
14DE   9D23              1175              SSR   R2,R3
14E0   C330 0020          1176              THI   R3,X'20'       IS BREAK STILL THERE
14E4   4230 14DC          1177              BNZ   KBINTOC        YES TRY TO KNOCK IT DOWN
14E8   4300 1544          1178              B     RETOPSW        NNO BREAK RETURNN
       0000 14EC          1179   KBINTOB    EQU   *
14EC   4850 16EE          1180              LH    R5,PASFLG      CONSOLE ON PASLA ?                          FLP11770
14F0   2339              1181              BZS   KBINTOA        BRANCH IF NO.                               FLP11780
       0000 14F2          1182   KBINT01    EQU   *                                                         FLP11790
14F2   9B24              1183              RDR   R2,R4                                                      FLP11800
14F4   9D23              1184              SSR   R2,R3                                                      FLP11810
14F6   2201              1185              BFBS  8,1                                                        FLP11820
14F8   0844              1186              LDAR  R4,R4                                                      FLP11830
14FA   4230 1544          1187              BNZ   RETOPSW        IGNORE FRERR ONLY                          FLP11840
14FE   4300 080A          1188   KBINT00    B     OPTIN                                                     FLP11850
1502   9D23              1189   KBINTOA    SSR   R2,R3                                                      FLP11860
1504   C330 0020          1190              THI   R3,X'20'                                                  FLP11870
1508   2093              1191              BTBS  3,3            WAIT FOR BREAK KEY RLS                       FLP11880
150A   2206              1192              BS    KBINT00        0 TO COMMAND MODE                           FLP11890
       0000 150C          1193   KBINT1     EQU   *
150C   C500 0005          1194              CLHI  R0,5           IS IT A MICROBUS
1510   4230 1522          1195              BNE   KBINT3
1514   DE20 1730          1196              OC    R2,MREADC
1518   9D23              1197              SSR   R2,R3
151A   2081              1198              BTBS  8,1            WAIT FOR BUSY TO DROP
151C   9B24              1199              RDR   R2,R4          KNOCK DOWNN INTERRUPT
151E   4300 1544          1200              B     RETOPSW        RETURN
       0000 1522          1201   KBINT3     EQU   *
1522   4020 16E8          1202              STH   R2,INTDEV
1526   D230 16EA          1203              STB   R3,INTSTA                                                  FLP11910
152A                     1204              IFZ   ADC-2                                                      FLP11920
152A   4840 16D8          1205              LH    R4,MOD32                                                  FLP11930
152E   2335              1206              BZS   KBINT2                                                     FLP11940
                         1207              ENDC                                                             FLP11950
1530   4000 16E2          1208              STH   R0,OPSW        STORE OLD PSW OF 32-BIT PROCESSOR          FLP11960
1534   4010 16E6          1209              STH   R1,OLOC        IN ORDER TO RETURN BACK TO TEST            FLP11970
1538   9B24              1210   KBINT2     RDR   R2,R4                                                      FLP11980
153A   41F0 1294          1211              BAL   LINK,ECHO      ECHO RECEIVED BYTE                         FLP11990
153E   4890 1708          1212              LH    R9,KBINT       IF ZERO,IGNORE: ELSE                       FLP12000
1542   0239              1213              BNZR  R9             GO,PROCESS KB INT FURTHER                   FLP12010
                         1214    * -------------------------------                                          FLP12020
                         1215    *  TO RETURN ON OLD PSW                                                    FLP12030
                         1216    *                                                                          FLP12040
       0000 1544          1217   RETOPSW    EQU   *                                                         FLP12050
1544                     1218              IFZ   ADC-2                                                      FLP12060
1544   4890 16D8          1219              LH    R9,MOD32                                                  FLP12070
1548   2135              1220              BNZS  RETOPSW1                                                   FLP12080
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

```
154A   0100 3058      1221           LM      R0,INTSAV         RESTORE REGISTERS                           FLP12090
154E   C200 0040      1222           LPSW    X'40'             RETURN ON OLD PSW AFTER KB INT              FLP12100
                      1223           ENDC                                                                 FLP12110
1552   C240 16E0      1224   RETOPSW1 LPSW   OPSW32                                                        FLP12120
                      1225   * ********************************************************                   FLP12130
                      1226   *  EXTERNAL INTERRUPT HANDLER                                                FLP12140
1556                  1227           IFZ     ADC-2                                                        FLP12150
1556   0000 3058      1228   XI16    STM     R0,INTSAV         FOR 16-BIT PROCESSOR                        FLP12160
155A   9F23           1229           ACKR    R2,R3             ACKNOWLEDGE THE INTERRUPT                   FLP12170
155C   D420 16F0      1230           CLB     R2,CONADR         FROM KEYBOARD DEVICE ?                      FLP12180
1560   4330 14C0      1231           BE      KBINTO                                                        FLP12190
                      1232           ENDC                                                                 FLP12200
                      1233   *                                                                            FLP12210
       0000 1564      1234   XI32    EQU     *                 FOR 32-BIT PROCESSOR                        FLP12220
1564   95AA           1235           EPSR    R10,R10           CAPTURE CURRENT PSW                         FLP12230
1566   40A0 160A      1236           STH     R10,INTPSW                                                   FLP12240
156A   4020 16E8      1237           STH     R2,INTDEV         STORE INTERRUPTING DEVICE ADDRESS           FLP12250
156E   D230 16EA      1238           STB     R3,INTSTA         STORE INTERRUPTING DEVICE STATUS            FLP12260
1572                  1239           IFZ     ADC-2                                                        FLP12270
1572   4850 1608      1240           LH      R5,MOD32                                                      FLP12280
1576   2135           1241           BNZS    XI32A                                                         FLP12290
1578   4800 0040      1242           LH      R0,X'40'          16-BIT OLD PSW                              FLP12300
157C   4810 0042      1243           LH      R1,X'42'                                                      FLP12310
                      1244           ENDC                                                                 FLP12320
1580   4000 16E2      1245   XI32A   STH     R0,OPSW           STORE OLD PSW STATUS                        FLP12330
1584   4010 16E6      1246           STH     R1,OLOC           STORE OLD PSW LOC                           FLP12340
1588                  1247           IFZ     ADC-2                                                        FLP12350
1588   0855           1248           LOAR    R5,R5             MOD32 = 0 ?                                 FLP12360
158A   233A           1249           BZS     XI16A             BRANCH IF YES.                              FLP12370
                      1250           ENDC                                                                 FLP12380
158C   4820 0A24      1251           LH      R2,PSW2                                                       FLP12390
1590   9512           1252           EPSR    R1,R2             SELECT USER REGISTER SET                    FLP12400
1592   0000 3058      1253           STM     R0,INTSAV         SAVE USER REGISTERS                         FLP12410
1596   4820 16E8      1254           LH      R2,INTDEV                                                     FLP12420
159A   48A0 160A      1255           LH      R10,INTPSW                                                    FLP12430
                      1256   *                                                                            FLP12440
159E   0755           1257   XI16A   XAR     R5,R5                                                         FLP12450
15A0   4865 3028      1258   XI1     LH      R6,DEVSADR(R5)    GET DEV ADRS FROM TABLE                     FLP12460
15A4   4210 15F0      1259           BM      XIERR             TABLE OVERFLOW.                             FLP12470
15A8   0562           1260           CLAR    R6,R2             COMPARE INTERRUPTING DEVICE ADDRESS         FLP12480
15AA   2333           1261           BES     XI2                                                           FLP12490
15AC   2652           1262           AIS     R5,2                                                          FLP12500
15AE   2207           1263           BS      XI1                                                           FLP12510
15B0   4865 302E      1264   XI2     LH      R6,DEVINT(R5)     GET INTERRUPT HANDLER ADDRESS               FLP12520
15B4   4330 15F0      1265           BZ      XIERR             INTERRUPT NOT EXPECTED                      FLP12530
15B8   4060 15EE      1266           STH     R6,XIEXIT                                                     FLP12540
                      1267   *                                                                            FLP12550
15BC                  1268           IFZ     ADC-2                                                        FLP12560
15BC   4860 1608      1269           LH      R6,MOD32          32-BIT MACHINE ?                            FLP12570
15C0   2339           1270           BZS     XI3               BRANCH IF NO.                               FLP12580
                      1271           ENDC                                                                 FLP12590
15C2   9051           1272           SRLS    R5,1                                                          FLP12600
15C4   90A4           1273           SRLS    R10,4                                                         FLP12610
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

```
15C6    C4A0 000F    1274              NHI    R10,15                                                      FLP12620
15CA    D4A5 3034    1275              CLB    R10,INTLVL(R5)      CHECK PROPER INTERRUPT LEVEL            FLP12630
15CE    4230 1600    1276              BNE    LVLERR                                                      FLP12640
                     1277    *                                                                            FLP12650
15D2    4860 16E6    1278    XI3       LH     R6,OLOC            GET PSW AT TIME OF INTERRUPT            FLP12660
15D6    C560 10E2    1279              CLHI   R6,TIMER+4                                                  FLP12670
15DA    2187         1280              BLS    XI4                WAS INTERRUPT IN TIMER ROUTINE ?        FLP12680
15DC    C560 10F6    1281              CLHI   R6,TIMXT                                                    FLP12690
15E0    2384         1282              BNLS   XI4                BRANCH IF NO.                           FLP12700
15E2    D100 3EF8    1283              LM     R0,RSAVE           RESTORE FROM 'TIMER' ENTRY              FLP12710
15E6    2303         1284              BS     XI5                                                        FLP12720
15E8    D100 3D58    1285    XI4       LM     R0,INTSAV          RESTORE FROM XI16/XI32 ENTRY            FLP12730
15EC    4300 15EC    1286    XI5       B      *                  AND GO TO INTERRUPT HANDLER             FLP12740
        0000 15EE    1287    XIEXIT    EQU    *-2                                                        FLP12750
                     1288    *-------------------------------                                            FLP12760
                     1289    *   EXTERNAL INTERRUPT ERROR ROUTINE                                        FLP12770
                     1290    *                                                                           FLP12780
15F0    C860 4634    1291    XIERR     LHI    R6,C'F4'           ERROR # F4                              FLP12790
15F4    4060 3946    1292              STH    R6,ERRNO                                                    FLP12800
15F8    41F0 0F94    1293              BAL    LINK,ERRALL        'ERROR XXF4', 'DEV DDD STA SS'          FLP12810
                     1294    *                                  'PSW PPPP  LOC LLLL'                     FLP12820
15FC    4300 0B0E    1295              B      OPTIN1             TO ENTER COMMAND MODE                   FLP12830
                     1296    *-------------------------------                                            FLP12840
                     1297    * DEVICE INTERRUPTED IN WRONG INTERRUPT LEVEL                               FLP12850
                     1298    *                                                                           FLP12860
1600    C860 4636    1299    LVLERR    LHI    R6,C'F6'           ERROR # F6                              FLP12870
1604    4060 3946    1300              STH    R6,ERRNO                                                    FLP12880
1608    D3AA 1720    1301              LB     R10,HEXTAB(R10)    CONVERT TO ASCII                        FLP12890
160C    D2A0 3A3E    1302              STB    R10,ERRLVL         AND STORE ERROR LEVEL IN MESSAGE        FLP12900
1610    41F0 0F94    1303              BAL    LINK,ERRALL        'ERROR XXF6', 'DEV DDD STA SS'          FLP12910
                     1304    *                                  'PSW PPPP  LOC LLLL'                     FLP12920
1614    C850 3A28    1305              LHI    R5,INTLVLM                                                 FLP12930
1618    4050 170C    1306              STH    R5,ISITERR         SET FLAG TO OVERRIDE NOMSG OPTION       FLP12940
161C    41F0 114A    1307              BAL    LINK,PRINT         'INTERRUPTED IN LEVEL  N'               FLP12950
1620    4300 0B0E    1308              B      OPTIN1             ENTER COMMAND MODE.                     FLP12960
                     1309    *-------------------------                                                  FLP12970
                     1310    *   SPURIOUS INTERRUPT HANDLERS                                             FLP12980
                     1311    *                                                                           FLP12990
                     1312    *                                                                           FLP13000
1624                 1313              IFZ    ADC-2                                                       FLP13010
                     1314    * FLOATING-PT ARITH FAULT INT TRAP   (16 BIT PROCESSOR)                     FLP13020
                     1315    *                                                                           FLP13030
1624    48E0 0028    1316    FP        LH     R14,X'28'          OLD PSW (16-BIT PROCESSOR)              FLP13040
1628    48F0 002A    1317              LH     R15,X'2A'          OLD LOC                                 FLP13050
                     1318              ENDC                                                              FLP13060
                     1319    *                                                                           FLP13070
                     1320    *   RELOCATION/PROTECTION INT TRAP                                          FLP13080
                     1321    *                                                                           FLP13090
162C    C820 4635    1322    RP        LHI    R2,C'F5'                                                   FLP13100
1630    4020 3946    1323              STH    R2,ERRNO           SET ERROR # F5                          FLP13110
1634    230C         1324              BS     COMM                                                       FLP13120
                     1325    *                                                                           FLP13130
                     1326    * ARITHMETIC FAULT INT (32-BIT PROCESSOR) TRAP                              FLP13140
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

```
1636                        1527         IFZ     ADC-2                                          FLP13150
                            1528  *  FIXED-PT DIVIDE FAULT INT (16-BIT PROCESSOR) TRAP          FLP13160
                            1529         ENDC                                                   FLP13170
                            1530  *                                                             FLP13180
1636   C820 4631            1531  AF     LHI     R2,C'F1'                                        FLP13190
163A   4020 3946            1532         STH     R2,ERRNO            SET ERROR # F1              FLP13200
163E                        1533         IFZ     ADC-2                                           FLP13210
163E   4820 16D8            1534         LH      R2,MOD32                                        FLP13220
1642   2135                 1535         BNZS    COMM                                            FLP13230
1644   48E0 0048            1536         LH      R14,X'48'           OLD PSW (16-BIT PROCESSOR)  FLP13240
1648   48F0 004A            1537         LH      R15,X'4A'           OLD LOC (16-BIT PROCESSOR)  FLP13250
                            1538         ENDC                                                   FLP13260
164C   40E0 16E2            1539  COMM   STH     R14,OPSW                                        FLP13270
1650   40F0 16E6            1540         STH     R15,OLOC                                        FLP13280
1654   4800 0A24            1541  COMM1  LH      R0,PSW2                                         FLP13290
1658   9520                 1542         EPSR    R2,R0               NO INT. , REG SET 15        FLP13300
165A   41F0 0F76            1543         BAL     LINK,ERR            PRINT 'ERROR XXFN'          FLP13310
165E   40F0 170C            1544         STH     LINK,ISITERR        FORCE PRINT                 FLP13320
1662   41E0 1062            1545         BAL     RET,ERRPL1          PRINT 'PSW PPPP  LOC LLLL'  FLP13330
1666   4860 1756            1546         LH      DEV,FLPADR+6                                    FLP13340
166A   DE60 3047            1547         OC      DEV,DIS,STOP                                    FLP13350
166E   9D67                 1548         SSR     DEV,STAT                                        FLP13360
1670   2221                 1549         BFBS    2,1                                             FLP13370
1672   4300 080E            1550         B       OPTIN1              ENTER COMMAND MODE          FLP13380
                            1551  *                                                             FLP13390
                            1552  *   ILLEGAL INSTRUCTION INTERRUPT TRAP                        FLP13400
                            1553  *                                                             FLP13410
1676   C820 4632            1554  II     LHI     R2,C'F2'                                        FLP13420
167A   4020 3946            1555         STH     R2,ERRNO            SET ERROR # F2              FLP13430
167E                        1556         IFZ     ADC-2                                           FLP13440
167E   4820 16D8            1557         LH      R2,MOD32                                        FLP13450
1682   2135                 1558         BNZS    II32                                            FLP13460
1684   48E0 0030            1559         LH      R14,X'30'           OLD PSW                     FLP13470
1688   48F0 0032            1560         LH      R15,X'32'           OLD LOC                     FLP13480
                            1561         ENDC                                                   FLP13490
168C   4300 164C            1562  II32   B       COMM                                           FLP13500
                            1563  *                                                             FLP13510
                            1564  *   MACHINE MALFUNCTION INTERRUPT TRAP                        FLP13520
                            1565  *                                                             FLP13530
1690   95AA                 1566  MM     EPSR    R10,R10             CAPTURE MMINT PSW           FLP13540
1692   C820 4633            1567         LHI     R2,C'F3'                                        FLP13550
1696   4020 3946            1568         STH     R2,ERRNO            SET ERROR # F3              FLP13560
169A   48E0 0022            1569         LH      R14,X'22'           OLD PSW ( 32-BIT PROCESSOR) FLP13570
169E   48F0 0026            1570         LH      R15,X'26'           OLD LOC                     FLP13580
16A2                        1571         IFZ     ADC-2                                           FLP13590
16A2   4820 16D8            1572         LH      R2,MOD32                                        FLP13600
16A6   2135                 1573         BNZS    MM32                                            FLP13610
16A8   48E0 0038            1574         LH      R14,X'38'           OLD PSW (16 BIT PROCESSOR)  FLP13620
16AC   48F0 003A            1575         LH      R15,X'3A'           OLD LOC                     FLP13630
                            1576         ENDC                                                   FLP13640
16B0   C4E0 FFF0            1577  MM32   NHI     R14,X'FFF0'                                     FLP13650
16B4   C4A0 000F            1578         NHI     R10,X'000F'                                     FLP13660
16B8   06EA                 1579         OAR     R14,R10                                         FLP13670
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

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16BA    40E0 16E2        1380            STH     R14,OPSW                                                            FLP13680
16BE    40F0 16E6        1381            STH     R15,OLOC                                                            FLP13690
16C2                     1382            IFZ     ADC-2                                                               FLP13700
16C2    C810 7FFF        1383            LHI     R1,X'7FFF'                                                          FLP13710
16C6    2711             1384   MM16     SIS     R1,1                                                                FLP13720
16C8    20C1             1385            BPS     MM16                                                                FLP13730
                         1386            ENDC                                                                        FLP13740
16CA    C800 080F        1387            LHI     R0,X'080F'                                                          FLP13750
16CE    9104             1388            SLHLS   R0,4                             R0 = X'80F0'                        FLP13760
16D0    9520             1389            EPSR    R2,R0                            HALT PROCESSOR                      FLP13770
                         1390   *                                                                                    FLP13780
                         1391   *    WHEN EXE/RUN IS DEPRESSED, ERROR MSG IS PRINTED.                                FLP13790
                         1392   *                                                                                    FLP13800
16D2    4300 1654        1393            B       COMM1                                                               FLP13810
16D6    0000             1394   FIRST    DCX     0                                                                   FLP13820
16D8    0000             1395   MOD32    DCX     0                               FLAG FOR 32-BIT M/C(NON-ZERO)       FLP13830
16DA    0000             1396   INIPSW   DCX     0                               (FOR 32-BIT M/C ONLY)               FLP13840
16E0                     1397            ALIGN   8                                                                   FLP13850
                         1398   *--------------------------                                                          FLP13860
16E0    0000             1399   OPSW32   DCX     0                               OLD PSW STORAGE AREA                FLP13870
16E2    0000             1400   OPSW     DCX     0                                                                   FLP13880
16E4    0000             1401            DCX     0                                                                   FLP13890
16E6    0000             1402   OLOC     DCX     0                                                                   FLP13900
                         1403   *--------------------------                                                          FLP13910
16E8    0000             1404   INTDEV   DCX     0                               INTERRUPTING DEV ADR                FLP13920
        0000 16E8        1405   ERRDEV   EQU     INTDEV                          ERROR DEVICE #                      FLP13930
16EA    00               1406   INTSTA   DB      0                               INTERRUPTING DEV STATUS             FLP13940
        0000 16EA        1407   ERRSTA   EQU     INTSTA                          ERRONEOUS STATUS                    FLP13950
16EB    00               1408   SINK     DB      0                               BIT BUCKET                          FLP13960
16EC    80               1409   NORM     DB      X'80'                                                               FLP13970
16ED    40               1410   INLR     DB      X'40'                                                               FLP13980
16EE    0000             1411   PASFLG   DCX     0                               SET WHEN CONSOLE ON PASLA/PALM      FLP13990
16F0    0000             1412   CONADR   DCX     0                               CONSOLE/KEYBOARD DEVICE ADDRESS     FLP14000
16F2    0000             1413   CONRD    DCX     0                                                                   FLP14010
        0000 16F3        1414   CONWRT   EQU     CONRD+1                                                             FLP14020
16F4    0000             1415   CON2ND   DCX     0                               2ND CMD, ENABLE RD CMD              FLP14030
        0000 16F5        1416   CONENRD  EQU     CON2ND+1                                                            FLP14040
16F6    B9AB             1417   CRTRD    DCX     B9AB                            CRT READ/WRITE COMMANDS             FLP14050
        0000 16F7        1418   CRTWRT   EQU     CRTRD+1                                                             FLP14060
16F8    A9AB             1419   CARRD    DCX     A9AB                            CAROUSEL 300 READ/WRITE COMMANDS    FLP14070
        0000 16F9        1420   CARWRT   EQU     CARRD+1                                                             FLP14080
16FA    3B               1421   CRTRQ2S  DB      X'3B'                                                               FLP14090
16FB    23               1422   CARRQ2S  DB      X'23'                                                               FLP14100
16FC    00               1423   CONRQ2S  DB      0                                                                   FLP14110
16FE    F879             1424   CRT2ND   DCX     F879                            CRT FORMAT COMMAND                  FLP14120
        0000 16FF        1425   CRTENRD  EQU     CRT2ND+1                        ENABLE RD CMD                       FLP14130
1700    F069             1426   CAR2ND   DCX     F069                            CAROUSEL FORMAT COMMAND             FLP14140
        0000 1701        1427   CARENRD  EQU     CAR2ND+1                        ENABLE RD CMD                       FLP14150
1702    80               1428   LPWRT    DB      X'80'                                                               FLP14160
1704    A4D8             1429   CLIFRD   DCX     A4D8                                                                FLP14170
        0000 1705        1430   CLIFWRT  EQU     CLIFRD+1                                                            FLP14180
1706    0064             1431   CLIF2ND  DCX     0064                            CURRENT LOOP INTERFACE              FLP14190
        0000 1707        1432   CLIFNRD  EQU     CLIF2ND+1                       ENABLE RD CMD                       FLP14200
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COMMON FLOPPY TEST PROGRAM EXECUTIVE

```
1708   1544                        1433   KBINT    DC    Z(RETOPSW)              KEYBOARD INT RETURN ADR                     FLP14210
170A   0000                        1434   BRKVECT  DC    Z(0)                    BREAK KEY VECTOR                            FLP14220
170C   0000                        1435   IS1TERR  DCX   0                                                                  FLP14230
170E   0000                        1436   NOERR    DCX   0                                                                  FLP14240
1710   0000                        1437   SELTST   DCX   0                       HIGHEST SELECTED TEST #                     FLP14250
1712   0000                        1438   WASOU    DCX   0                       1 IF KEYBOARD DEVICE WAS OFF                FLP14260
1714   0000                        1439   WASOU1   DCX   0                       NON-ZERO IF TOTAL,TOTERR TO PRINT           FLP14270
1716   0000                        1440   TOTAL    DCX   0                       # OF TIMES THE SELECTED TESTS RUN           FLP14280
1718   0000                        1441   TOTERR   DCX   0                       TOTAL ERRORS DETECTED WHILE DU              FLP14290
171A   0000                        1442   BTESTNO  DCX   0                       CURRENT TEST # IN BINARY                    FLP14300
171C   0000                        1443   COUNT    DCX   0                                                                  FLP14310
171E   0000                        1444   NEXTST   DCX   0                       NEXT TEST #                                 FLP14320
1720   3031 3233 3435 3637         1445   HEXTAB   DB    C'0123456789ABCDEF'                                                FLP14330
1728   3839 4142 4344 4546
1730   82                          1446   MREADC   DB    X'82'                   MICROBUS READ                              FLP14340
1731   02                          1447   MWRITEC  DB    X'02'                   MICROBUS WRITE INTERRUPTS DISABLED
1738                               1448            ALIGN 8                                                                  FLP14370
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COMMON FLOPPY TEST PROGRAM OPTION TABLE

```
          0000 1738          1450  OPT    EQU   *                                                    FLP14390
1738  5455 5354 2020         1451  TEST   DC    C'TEST  ',X'FF00',X'0000',0                          FLP14400
173E  FF00
1740  0000
1742  0000
1744  4255 4641 4452         1452  BUFADR DC    C'BUFADR',X'0000',Z(BUFADCHK),0                      FLP14410
174A  0000
174C  1B9A
174E  0000
1750  464C 5041 4452         1453  FLPADR DC    C'FLPADR',X'00C1',Z(ADR),0                           FLP14420
1756  00C1
1758  0D1E
175A  0000
175C  4452 4956 4520         1454  DRIVE  DC    C'DRIVE ',X'A',Z(DRVCHK),0                           FLP14430
1762  000A
1764  1ABC
1766  0000
1768  5354 4C52 4E20         1455  STLRN  DC    C'STLRN ',X'0001',Z(CKLRN),0                         FLP14440
176E  0001
1770  1ADA
1772  0000
1774  454E 444C 524E         1456  ENDLRN DC    C'ENDLRN',X'702',Z(CKLRN),0                          FLP14450
177A  0702
177C  1ADA
177E  0000
1780  4441 5441 2020         1457  DATA   DC    C'DATA  ',X'0000',X'0000',0                          FLP14460
1786  0000
1788  0000
178A  0000
178C  4445 4C41 5920         1458  DELAY  DC    C'DELAY ',X'0000',Z(ZERONE),0                        FLP14470
1792  0000
1794  0D16
1796  0000
1798  5348 4946 5420         1459  SHIFT  DC    C'SHIFT ',X'0000',Z(ZERONE),0                        FLP14480
179E  0000
17A0  0D16
17A2  0000
17A4  494E 5453 5434         1460  INTST4 DC    C'INTST4',X'0',Z(INTCHK),0                           FLP14490
17AA  0000
17AC  1AAE
17AE  0000
17B0  464D 5041 5240         1461  FMPARM DC    C'FMPARM',X'0005',Z(FPMCHK),0                        FLP14500
17B6  0005
17B8  1AF4
17BA  0000
17BC  5345 4C43 4820         1462  SELCH  DC    C'SELCH',X'0000',0,0                                 FLP14510
17C2  0000
17C4  0000
17C6  0000
17C8  4C4F 4F50 2020         1463  LOOP   DC    C'LOOP  ',X'0000',X'0000',X'0000'                    FLP14520
17CE  0000
17D0  0000
17D2  0000
```

COMMON FLOPPY TEST PROGRAM OPTION TABLE

```
17D4    434F 4E54 494E     1464  CONTIN   DC    C'CONTIN',X'0000',Z(ZERONE),X'0000'                      FLP14530
17DA    0000
17DC    0D16
17DE    0000
17E0    4E4F 4D53 4720     1465  NOMSG    DC    C'NOMSG ',X'0000',Z(ZERONE),X'0000'                      FLP14540
17E6    0000
17E8    0D16
17EA    0000
17EC    494E 544C 4556     1466  INTLEV   DC    C'INTLEV',X'0000',Z(LEVEL),X'0000'                       FLP14550
17F2    0000
17F4    0D46
17F6    0000
17F8    5449 4D56 414C     1467  TIMVAL   DC    C'TIMVAL',X'14D',0,0                                     FLP14560
17FE    014D
1800    0000
1802    0000
        0000 1804          1468  OPTEND2  EQU   *                     END OF PRINTING OPTIONS           FLP14570
1804    4F50 5449 4F4E     1469  OPTION   DC    C'OPTION',0,0,0                                          FLP14580
180A    0000
180C    0000
180E    0000
1810    5255 4E20 2020     1470  RUN      DC    C'RUN   ',X'0000',X'0000',X'0000'                        FLP14590
1816    0000
1818    0000
181A    0000
181C    5343 5052 5420     1471  SCPRT    DC    C'SCPRT ',X'0000',X'0000',0                              FLP14600
1822    0000
1824    0000
1826    0000
1828    5343 4F50 4520     1472  SCOPE    DC    C'SCOPE ',X'0000',X'0000',0                              FLP14610
182E    0000
1830    0000
1832    0000
1834    FFFF               1473           DC    -1                    END OF OPTION TABLE              FLP14620
```

COMMON FLOPPY INITIALIZATION ROUTINE

```
             0000 1836         1475  INIT   EQU    *                                                         FLP14640
     1836    2444              1476         LIS    R4,4                                                      FLP14650
     1838    4810 1762         1477         LH     R1,DRIVE+6       GET DRIVES SELECTED                      FLP14660
     183C    2114              1478  INIT1  BMS    INIT2                                                     FLP14670
     183E    2741              1479         SIS    R4,1                                                      FLP14680
     1840    9114              1480         SLHLS  R1,4                                                      FLP14690
     1842    2203              1481         BS     INIT1                                                     FLP14700
     1844    9411              1482  INIT2  EXBR   R1,R1                                                     FLP14710
     1846    4010 3CEE         1483         STH    R1,DRIVES                                                 FLP14720
     184A    4040 3CEC         1484         STH    R4,DRV           (DRV) = #OF DRIVES                       FLP14730
     184E    4040 3D02         1485         STH    R4,DRV1                                                   FLP14740
     1852    41E0 294C         1486         BAL    R14,NEXTDR       SET UP COMMANDS FOR NEXT DRIVE           FLP14750
             0000 1856         1487  INIT3  EQU    *                                                         FLP14760
     1856    4800 1756         1488         LH     R0,FLPADR+6      LOAD CONTROLLER ADDRESS                  FLP14770
     185A    4000 302A         1489         STH    R0,DEVSADR+2     FILL IN TABLE                            FLP14780
     185E    4800 17C2         1490         LH     R0,SELCH+6       LOAD SELCH ADDRESS                       FLP14790
     1862    4000 3D28         1491         STH    R0,DEVSADR       FILL IN TABLE                            FLP14800
     1866    4800 1786         1492         LH     R0,DATA+6                                                 FLP14810
     186A    4000 3CFE         1493         STH    R0,RAND                                                   FLP14820
     186E    D300 17F3         1494         LB     R0,INTLEV+7      LOAD INTERRUPT LEVEL OPTION ENTRY        FLP14830
     1872    D200 3D34         1495         STB    R0,INTLVL                                                 FLP14840
     1876    D200 3D35         1496         STB    R0,INTLVL+1                                               FLP14850
     187A    C800 3668         1497         LHI    R0,ERFL2A        LOAD UP ERROR            ****2A          FLP14860
     187E    4000 3D30         1498         STH    R0,DEVINT+2      FILL IN FOR CONTROLLER                   FLP14870
     1882    4800 17FE         1499         LH     R0,TIMVAL+6      LOAD TIMVAL OPTION INPUT                 FLP14880
     1886    4000 0A1E         1500         STH    R0,TIME          STORE INTO TIME                          FLP14890
     188A    2460              1501         LIS    R6,0                                                      FLP14900
     188C    4060 3D2E         1502         STH    R6,DEVINT                                                 FLP14910
     1890    4060 3D0E         1503         STH    R6,ERRCOUNT                                               FLP14920
     1894    4060 3CF4         1504         STH    R6,RAUXFLG                                                FLP14930
     1898    4060 3CFA         1505         STH    R6,INT           ZERO OUT INTERRUPT FLAG                  FLP14940
     189C    4060 3D32         1506         STH    R6,NDEF                                                   FLP14950
     18A0    4860 1756         1507         LH     R6,FLPADR+6                                               FLP14960
     18A4    DE60 3D47         1508         OC     DEV,DIS.STOP                                              FLP14970
     18A8    4240 385C         1509         BTC    4,ER7PATH        FALSE SYC ERROR PATH                     FLP14980
     18AC    4800 173E         1510         LH     R0,TEST+6        TEST HW 1                                FLP14990
     18B0    C400 0040         1511         NHI    R0,X'40'         MASK OFF TEST 9                          FLP15000
     18B4    4330 18C2         1512         BZ     INIT4            NO PRINT DRIVE MESS                       FLP15010
     18B8    2401              1513         LIS    R0,1             LOAD FINAL VALUE FOR DRIVE               FLP15020
     18BA    4000 3D02         1514         STH    R0,DRV1          UPDATE                                   FLP15030
     18BE    4300 18D6         1515         B      INIT5            SKIP IT                                  FLP15040
             0000 18C2         1516  INIT4  EQU    *                                                         FLP15050
     18C2    4800 3CF2         1517         LH     R0,CDRIVE        GET CURRENT DRIVE #                       FLP15060
     18C6    CA00 0041         1518         AHI    R0,X'41'                                                  FLP15070
     18CA    4000 3AF8         1519         STH    R0,DRVMSG1                                                FLP15080
     18CE    C850 3AF2         1520         LHI    R5,DRVMSG                                                 FLP15090
     18D2    41F0 114A         1521         BAL    LINK,PRINT       "DRIVE * UNDER TEST"                     FLP15100
             0000 18D6         1522  INIT5  EQU    *                                                         FLP15110
     18D6    4800 173E         1523         LH     R0,TEST+6                                                 FLP15120
     18DA    C300 0080         1524         THI    R0,X'80'                                                  FLP15130
     18DE    4230 1954         1525         BNZ    SETBCNT                                                   FLP15140
     18E2    4850 3CF2         1526         LH     R5,CDRIVE        LOAD CURRENT DRIVE                        FLP15150
     18E6    CA50 0041         1527         AHI    R5,X'41'         CONVERT TO ASCII                         FLP15160
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18EA	D250 3944	1528		STB	R5,ETESTNO	STORE IN ERROR MSG	FLP15170
18EE	D250 3945	1529		STB	R5,ETESTNO+1		FLP15180
18F2	C850 07D2	1530		LHI	R5,X'7D2'		FLP15190
18F6	41E0 312E	1531		BAL	R14,R.ID0		FLP15200
18FA	D300 3ED8	1532		LB	R0,RID		FLP15210
18FE	C500 004C	1533		CLHI	R0,X'4C'		FLP15220
1902	4390 1954	1534		BE	SETBCNT		FLP15230
1906	C500 004B	1535		CLHI	R0,X'4B'		FLP15240
190A	4390 1920	1536		BE	MAX1		FLP15250
190E	C500 004A	1537		CLHI	R0,X'4A'		FLP15260
1912	4230 1948	1538		BNE	FMDISC		FLP15270
1916	C800 3945	1539		LHI	R0,C'9E'		FLP15280
191A	C810 079E	1540		LHI	R1,X'79E'	TWO DEFECTIVE TRACK LRN LIMIT	FLP15290
191E	2305	1541		BS	MAX2		FLP15300
1920	C800 4238	1542	MAX1	LHI	R0,C'B8'		FLP15310
1924	C810 07B8	1543		LHI	R1,X'7B8'	ONE DEFECTIVE TRACK LRN LIMIT	FLP15320
1928	4000 39CC	1544	MAX2	STH	R0,MAXA+2		FLP15330
192C	4510 176E	1545		CLH	R1,STLRN+6	COMPARE TO ONE LIMIT	FLP15340
1930	4280 193C	1546		BL	MAX3	PRINT WARNING MESSAGE	FLP15350
1934	4510 177A	1547		CLH	R1,ENDLRN+6	COMPARE TO OTHER LIMIT	FLP15360
1938	4380 1954	1548		BNL	SETBCNT	LIMIT ALL RIGHT	FLP15370
0000 193C		1549	MAX3	EQU	*		FLP15380
193C	C850 39C2	1550		LHI	R5,MAX		FLP15390
1940	41F0 114A	1551		BAL	R15,PRINT		FLP15400
1944	4300 0B0A	1552		B	OPTIN		FLP15410
1948	C850 39D0	1553	FMDISC	LHI	R5,FMDISC1		FLP15420
194C	41F0 114A	1554		BAL	R15,PRINT		FLP15430
1950	4300 0B0A	1555		B	OPTIN		FLP15440
0000 1954		1556	SETBCNT	EQU	*		FLP15450
1954	4810 176E	1557		LH	R1,STLRN+6	LOAD START LOGICAL RECORD NUMBER	FLP15460
1958	4510 177A	1558		CLH	R1,ENDLRN+6	COMPARE TO END LOGICAL RECORD NUMBER	FLP15470
195C	2304	1559		BES	BCNT0	BCOUNT=0 IF START = END	FLP15480
195E	2185	1560		BLS	BCNT1	BCOUNT=1 IF START IS LESS THAN END	FLP15490
1960	2511	1561		LCS	R1,1	BCOUNT=FFFF IF START > END	FLP15500
1962	2304	1562		BS	SETBCNT1	GO TO COMMON STORE	FLP15510
1964	2410	1563	BCNT0	LIS	R1,0	0	FLP15520
1966	2302	1564		BS	SETBCNT1	GO TO COMMON STORE	FLP15530
1968	2411	1565	BCNT1	LIS	R1,1	1	FLP15540
196A	4010 3CF6	1566	SETBCNT1	STH	R1,BCOUNT	FINAL STORE	FLP15550
196E	4300 0094	1567		B	INITRET	RETURN TO ETPE	FLP15560
		1568	*--------------------------------				FLP15570
		1569	* TO PROCESS SPECIAL OPTION				FLP15580
1972	C510 1828	1570	SPOPT1	CLHI	R1,SCOPE	SEE IF C'SCOPE' IS ENTERED	FLP15590
1976	4330 1984	1571		BE	SCOPE1	YES SPECIAL ROUTINE	FLP15600
197A	C510 181C	1572		CLHI	R1,SCPRT	SEE IF C'SCPRT' IS ENTERED	FLP15610
197E	4330 1A42	1573		BE	SC.PRT		FLP15620
1982	030F	1574		BR	R15	NO RETURN	FLP15630
		1575	* TO PROCESS 'SCOPE' OPTION				FLP15640
1984	C540 0020	1576	SCOPE1	CLHI	R4,X'20'	IS IT A SPACE	FLP15650
1988	023C	1577		BNER	R12		FLP15660
198A	C8B0 1086	1578		LHI	R11,OPTVAL		FLP15670
198E	01EB	1579		BALR	R14,R11	GET SEQUENCE # IN R6	FLP15680
1990	274D	1580		SIS	R4,13		FLP15690

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1992	033C		1581		BZR	R12		FLP15700
1994	2761		1582		SIS	R6,1		FLP15710
1996	4210 19F6		1583		BN	SCOPE3	GO REORDER SCOPE OPTIONS TABLE	FLP15720
199A	C560 000E		1584		CLHI	R6,X'E'	SEQUENCE # MUST BE 1:F	FLP15730
199E	022C		1585		BPR	R12		FLP15740
19A0	0816		1586		LHR	R1,R6		FLP15750
19A2	CD10 0003		1587		SLHL	R1,3	(R1)=0,8,10,18,20,28,30,38,40,48,	FLP15760
			1588	*			=50,58,60,68,70 = TABLE INDEX	FLP15770
19A6	01EB		1589		BALR	R14,R11	GET (R6) = COMMAND	FLP15780
19A8	0866		1590		LHR	R6,R6		FLP15790
19AA	4330 19EC		1591		BZ	SCOPE2	(R6) = 0 = DELETE SEQUENCE #	FLP15800
19AE	C560 000A		1592		CLHI	R6,X'A'		FLP15810
19B2	038C		1593		BNLR	R12		FLP15820
19B4	4061 3C4A		1594		STH	R6,SC.CMD(R1)	SET UP COMMAND	FLP15830
19B8	274D		1595		SIS	R4,13		FLP15840
19BA	4330 080A		1596		BZ	OPTIN	RETURN IF CR IS ENTERED	FLP15850
19BE	01EB		1597		BALR	R14,R11		FLP15860
19C0	4061 3C4C		1598		STH	R6,SC.NUM(R1)	SET UP ' # OF TIMES ' VALUE	FLP15870
19C4	274D		1599		SIS	R4,13		FLP15880
19C6	4330 080A		1600		BZ	OPTIN	IF CR IS ENTERED, RETURN	FLP15890
19CA	01EB		1601		BALR	R14,R11	(R6) = START LRN VALUE	FLP15900
19CC	41F0 1ADA		1602		BAL	R15,CKLRN	CHECK LRN VALUE FOR LEGAL LIMITS	FLP15910
19D0	4061 3C4E		1603		STH	R6,SC.SLRN(R1)	SET UP ' SC.SLRN ' VALUE	FLP15920
19D4	274D		1604		SIS	R4,13		FLP15930
19D6	4330 080A		1605		BZ	OPTIN	RETURN IF CR IS ENTERED	FLP15940
19DA	01EB		1606		BALR	R14,R11	(R6) = END LRN VALUE	FLP15950
19DC	41F0 1ADA		1607		BAL	R15,CKLRN	CHECK LRN VALUE	FLP15960
19E0	4061 3C50		1608		STH	R6,SC.ELRN(R1)	SET UP ' SC.ELRN ' VALUE	FLP15970
19E4	274D		1609		SIS	R4,13		FLP15980
19E6	023C		1610		BNZR	R12	MUST END WITH CR	FLP15990
19E8	4300 080A		1611		B	OPTIN	GO TO BEGINING	FLP16000
			1612	* TO DELETE AN EVENT FROM SCOPE LOOP SEQUENCE				FLP16010
19EC	2561		1613	SCOPE2	LCS	R6,1		FLP16020
19EE	4061 3C4A		1614		STH	R6,SC.CMD(R1)	DELETE SPECIFIED EVENT	FLP16030
19F2	4300 080A		1615		B	OPTIN		FLP16040
			1616	* TO REORDER SCOPE OPTIONS TABLE BY REMOVING DELETED EVENTS				FLP16050
19F6	01EB		1617	SCOPE3	BALR	R14,R11	GET (R6) = NEXT VALUE ENTERED	FLP16060
19F8	0866		1618		LHR	R6,R6		FLP16070
19FA	023C		1619		BNZR	R12	MUST BE 0	FLP16080
19FC	274D		1620		SIS	R4,13		FLP16090
19FE	023C		1621		BNZR	R12	MUST END WITH CR	FLP16100
1A00	48B6 3C4A		1622	SC.31	LH	R11,SC.CMD(R6)	SEE IF EVENT IS DELETED	FLP16110
1A04	4210 1A26		1623		BM	SC.32	YES, BRANCH	FLP16120
1A08	48D6 3C4C		1624		LH	R13,SC.NUM(R6)	NO, MOVE IT TO REORDER	FLP16130
1A0C	48E6 3C4E		1625		LH	R14,SC.SLRN(R6)		FLP16140
1A10	48F6 3C50		1626		LH	R15,SC.ELRN(R6)		FLP16150
1A14	40B4 3C4A		1627		STH	R11,SC.CMD(R4)		FLP16160
1A18	40D4 3C4C		1628		STH	R13,SC.NUM(R4)		FLP16170
1A1C	40E4 3C4E		1629		STH	R14,SC.SLRN(R4)		FLP16180
1A20	40F4 3C50		1630		STH	R15,SC.ELRN(R4)		FLP16190
1A24	2648		1631		AIS	R4,8	BUMP POINTERS	FLP16200
1A26	2668		1632	SC.32	AIS	R6,8		FLP16210
1A28	C560 0070		1633		CLHI	R6,112		FLP16220

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1A2C	4320 1A00	1634		BNP	SC.31		FLP16230
1A30	2561	1635		LCS	R6,1		FLP16240
1A32	C540 0070	1636	SC.33	CLHI	R4,112		FLP16250
1A36	4220 080A	1637		BP	OPTIN	EXIT IF LAST EVENT REORDERED	FLP16260
1A3A	4064 3C4A	1638		STH	R6,SC.CMD(R4)	OTHERWISE, DELETE.	FLP16270
1A3E	2648	1639		AIS	R4,8		FLP16280
1A40	2207	1640		BS	SC.33		FLP16290
		1641	*				FLP16300
		1642	* TO PRINT 'SCOPE' OPTIONS AS ENTERED BY USER				FLP16310
		1643	*				FLP16320
1A42	41F0 11F8	1644	SC.PRT	BAL	R15,CRLF		FLP16330
1A46	C850 302C	1645		LHI	R3,C'0,'		FLP16340
1A4A	4030 3C36	1646		STH	R3,SC.LINE+6	INITIALIZE LINE # (SEQUENCE #)	FLP16350
1A4E	2430	1647		LIS	R3,0		FLP16360
0000 1A50		1648	SC.PRT1	EQU	*		FLP16370
1A50	41F0 12CA	1649		BAL	R15,TSTBRK		FLP16380
1A54	C840 0100	1650		LHI	R0,X'0100'		FLP16390
1A58	6100 3C36	1651		AHM	R0,SC.LINE+6	BUMP LINE #	FLP16400
1A5C	C530 0048	1652		CLHI	R3,72		FLP16410
1A60	2135	1653		BNES	SC.PRT10		FLP16420
1A62	C800 0700	1654		LHI	R0,X'0700'		FLP16430
1A66	6100 3C36	1655		AHM	R0,SC.LINE+6	MAKE SEQUENCE # 'A'	FLP16440
1A6A	4813 3C4A	1656	SC.PRT10	LH	R1,SC.CMD(R3)		FLP16450
1A6E	4210 1AA0	1657		BM	SC.PRT2	(R1) = FFFF = DELETED EVENT	FLP16460
1A72	C820 3C38	1658		LHI	R2,SC.LINE+8		FLP16470
1A76	2401	1659		LIS	R0,1		FLP16480
1A78	C8E0 1122	1660		LHI	R14,HEXASC	LOAD CONVERSION TABLE	FLP16490
1A7C	01FE	1661		BALR	R15,R14	SET UP COMMAND DIGIT	FLP16500
1A7E	2404	1662		LIS	R0,4	(R0) = # OF HEX DIGITS	FLP16510
1A80	4813 3C4C	1663		LH	R1,SC.NUM(R3)	(R1) = HEX VALUE	FLP16520
1A84	2622	1664		AIS	R2,2	(R2) = ADDRESS OF ASCII STORAGE	FLP16530
1A86	01FE	1665		BALR	R15,R14	SET UP ' # OF TIMES ' VALUE	FLP16540
1A88	4813 3C4E	1666		LH	R1,SC.SLRN(R3)		FLP16550
1A8C	2625	1667		AIS	R2,5		FLP16560
1A8E	01FE	1668		BALR	R15,R14	SET UP ' START LRN ' VALUE	FLP16570
1A90	4813 3C50	1669		LH	R1,SC.ELRN(R3)		FLP16580
1A94	2625	1670		AIS	R2,5		FLP16590
1A96	01FE	1671		BALR	R15,R14	SET UP ' END LRN ' VALUE	FLP16600
1A98	C850 3C30	1672		LHI	R5,SC.LINE		FLP16610
1A9C	41F0 114A	1673		BAL	R15,PRINT	PRINT 'SCOPE' OPTION LINE	FLP16620
1AA0	2638	1674	SC.PRT2	AIS	R3,8	BUMP INDEX	FLP16630
1AA2	C530 0070	1675		CLHI	R3,112		FLP16640
1AA6	4320 1A50	1676		BNP	SC.PRT1	SCAN TILL LAST POSSIBLE EVENT	FLP16650
1AAA	4300 080E	1677		B	OPTIN1		FLP16660
0000 1AAE		1678	INTCHK	EQU	*		FLP16670
1AAE	0876	1679		LHR	R7,R6	TEST INTERRUPT FLAG	FLP16680
1AB0	033F	1680		BZR	R15	ZERO GOOD	FLP16690
1AB2	2771	1681		SIS	R7,1	NO CHECK FOR MORE	FLP16700
1AB4	033F	1682		BZR	R15	ONE GOOD	FLP16710
1AB6	2771	1683		SIS	R7,1	DECREMENT AGAIN	FLP16720
1AB8	033F	1684		BZR	R15	-1 GOOD	FLP16730
1ABA	030C	1685		BR	R12	NO VALID INPUT GO TO ?	FLP16740
0000 1ABC		1686	DRVCHK	EQU	*		FLP16750

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1ABC	0886		1687		LHR	R8,R6	LOAD OPTION VALUE ENTERED	FLP16760
1ABE	039C		1688		BZR	R12	IF ZER GO TO QUESTION	FLP16770
1AC0	0876		1689		LHR	R7,R6	LOAD INTO WORK	FLP16780
	0000	1AC2	1690	DRVCHK1	EQU	*		FLP16790
1AC2	90B4		1691		SRLS	R6,4	ISOLATE	FLP16800
1AC4	C470	000F	1692		NHI	R7,15	MASK OFF LOWER DIGIT	FLP16810
1AC6	271A		1693		SIS	R7,10	SUBTRACT OFF ASCII	FLP16820
1ACA	028C		1694		BLR	R12	LOW ERROR QUESTION MARK	FLP16830
1ACC	2774		1695		SIS	R7,4		FLP16840
1ACE	038C		1696		BNLR	R12	HIGH ERROR QUESTION MARK	FLP16850
1AD0	0876		1697		LHR	R7,R6	FINISHED YTE	FLP16860
1AD2	4230	1AC2	1698		BNZ	DRVCHK1	GO AGAIN	FLP16870
1AD6	0868		1699		LHR	R6,R8	RESTORE OPTION VALUE	FLP16880
1AD8	030F		1700		BR	R15	RETURN	FLP16890
	0000	1ADA	1701	CKLRN	EQU	*		FLP16900
1ADA	0866		1702		LHR	R6,R6	TEST R6	FLP16910
1ADC	033C		1703		BZR	R12	FOR 0	FLP16920
1ADE	C560	07D3	1704		CLHI	R6,2003	HIGH LIMIT	FLP16930
1AE2	028F		1705		BLR	R15	RETURN	FLP16940
1AE4	030C		1706		BR	R12	BAD	FLP16950
	0000	1AE6	1707	BUFCHK	EQU	*		FLP16960
1AE6	C560	0000	1708		CLHI	R6,0	IS IT NEGATIVE OR ZERO	FLP16970
1AEA	028C		1709		BLR	R12	YES OUT	FLP16980
1AEC	C560	0081	1710		CLHI	R6,129	MORE THAN 128	FLP16990
1AF0	028F		1711		BLR	R15	NO RETURN	FLP17000
1AF2	030C		1712		BR	R12	YES OUT	FLP17010
	0000	1AF4	1713	FPMCHK	EQU	*		FLP17020
1AF4	0876		1714		LHR	R7,R6	SAVE	FLP17030
1AF6	9078		1715		SRHLS	R7,8		FLP17040
1AF8	023C		1716		BNZR	R12	2 DIGIT INPUT	FLP17050
1AFA	0876		1717		LHR	R7,R6	SAVE	FLP17060
1AFC	0886		1718		LHR	R8,R6	SAVE	FLP17070
1AFE	C470	000F	1719		NHI	R7,15	2ND DIGIT = # OF TRIES	FLP17080
1B02	9084		1720		SRHLS	R8,4	1ST DIGIT = # OF ERRORS	FLP17090
1B04	0587		1721		CLHR	R8,R7	IS TRYS LARGER THAN ERRORS	FLP17100
1B06	022C		1722		BPR	R12		FLP17110
1B08	030F		1723		BR	R15	RETURN	FLP17120
	0000	1B0A	1724	BUFADCHK	EQU	*		FLP17130
1B0A	0876		1725		LHR	R7,R6	LOAD INTO WORK REGISTER	FLP17140
1B0C	4230	1B20	1726		BNZ	BUFCHK0	IF ZERO THAN DEFAULTVALUE	FLP17150
1B10	2490		1727		LIS	R9,0	ZERO OUT BUFFER PRINT	FLP17160
1B12	4090	174A	1728		STH	R9,BUFADR+6	STORE IN TABLE	FLP17170
1B16	2490		1729	BUFCHK.	LIS	R9,0		FLP17180
1B18	4090	174E	1730		STH	R9,BUFADR+10		FLP17190
1B1C	4300	0B0A	1731		B	OPTIN		FLP17200
	0000	1B20	1732	BUFCHK0	EQU	*		FLP17210
1B20	C570	3F78	1733		CLHI	R7,LNZB1		FLP17220
1B24	029C		1734		BLR	R12		FLP17230
1B26	4070	174A	1735		STH	R7,BUFADR+6	STORE INTO OPTION TABLE	FLP17240
1B2A	4890	16D8	1736		LH	R9,MOD32	IS IT 32 BIT PROCESSOR	FLP17250
1B2E	223C		1737		BZS	BUFCHK.		FLP17260
1B30	107C		1738		DC	X'107C'	SRLS R7,12	FLP17270
1B32	1074		1739		DC	X'1074'	SRLS R7,4	FLP17280

COMMON FLOPPY INITIALIZATION ROUTINE

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1B34   C370 FFF0              1740        THI   R7,X'FFF0'                                    FLP17290
1B38   023C                   1741        BNZR  R12                                           FLP17300
1B3A   4070 174E              1742        STH   R7,BUFADR+10      TOP BITS OF BUFFER ADDRESS  FLP17310
1B3E   4300 080A              1743        B     OPTIN                                         FLP17320
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TEST 0   RESET

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                                1745   ***************************************************************************   FLP17340
                                1746   *                                                                           FLP17350
                                1747   *    TEST0 RESET                                                             FLP17360
                                1748   *                                                                           FLP17370
                                1749   *    PURPOSE                                                                 FLP17380
                                1750   *         TO TEST THE RESET FUNCTION OF CONTROLLER                          FLP17390
                                1751   *                                                                           FLP17400
                                1752   *    DESIGN SPECIFICATION                                                   FLP17410
                                1753   *         1.SET UP DEVICE ADDRESS                                           FLP17420
                                1754   *         2.ISSUE RESET COMMAND                                             FLP17430
                                1755   *         3.TEST FOR TRACK 0                                                FLP17440
                                1756   *         4.TIME OUT FOR IDLE                                               FLP17450
                                1757   *         5.CHECK STATUS BITS                                               FLP17460
                                1758   *                                                                           FLP17470
                                1759   ***************************************************************************   FLP17480
            0000 1B42            1760   TEST0    EQU   *                                                            FLP17490
1B42  4800 1756                  1761            LH    DEV,FLPADR+6      LOAD FLOPPY DEVICE ADDRESS                 FLP17500
1B46  DE60 3D43                  1762            OC    DEV,RESET         GIVE FLOPPY RESET COMMAND                  FLP17510
1B4A  C800 0258                  1763            LHI   R0,600            SET UP FOR 600 MILLISECOND                 FLP17520
1B4E  41F0 10DE                  1764            BAL   LINK,TIMER        TIME OUT FOR IDLE TO SET                   FLP17530
1B52  9D67                       1765            SSR   DEV,STAT          SENSE STATUS FOR IDLE                      FLP17540
1B54  4340 369A                  1766            BFC   2,ERFL01          IDLE NOT SET GO TO ERROR          ****01   FLP17550
1B58  4200 36A0                  1767            BTC   13,ERFL02         BAD STATUS AFTER IDLE TEST        ****02   FLP17560
            0000 1B5C            1768   TEST01   EQU   *                                                            FLP17570
1B5C  41E0 312C                  1769            BAL   R14,R.ID                                                     FLP17580
1B60  41E0 31A8                  1770            BAL   R14,R.AUX                                                    FLP17590
1B64  D300 3ED8                  1771            LB    R13,RID           LOOK AT FIRST BYTE                         FLP17600
1B68  08DD                       1772            LHR   R13,R13           SET IT UP                                 FLP17610
1B6A  4230 368E                  1773            BNZ   ERFL03            NOT TRACK 0 GO TO ERROR           ****03   FLP17620
            0000 1B6E            1774   TEST02   EQU   *                                                            FLP17630
1B6E  C800 0080                  1775            LHI   R13,X'0080'       TRACK 0 BIT                               FLP17640
1B72  4600 3CF2                  1776            OH    R13,CDRIVE        OR IN CURRENT DRIVE                        FLP17650
1B76  45D0 3EDE                  1777            CLH   R13,RAUX          COMPARE TO ACTUAL 1ST HALFWORD OF AUX      FLP17660
1B7A  4230 36C4                  1778            BNE   ERFL04            GOTO ERROR                        ****04   FLP17670
1B7E  4300 1B82                  1779            B     TEST0END          DUMMY BRANCH TO TEST END                  FLP17680
1B82  4300 0E6C                  1780   TEST0END B     TSTEND                                                       FLP17690
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                            1782   ****************************************************************   FLP17710
                            1783   *   TEST1 READ I.D.                                              FLP17720
                            1784   *                                                               FLP17730
                            1785   *   PURPOSE                                                      FLP17740
                            1786   *        TO TEST THE READ I.D. FUNCTION                          FLP17750
                            1787   *                                                               FLP17760
                            1788   *   DESIGN SPECIFICATION                                         FLP17770
                            1789   *        1. RESET CONTROLLER                                     FLP17780
                            1790   *        2. READ I.D.                                            FLP17790
                            1791   *        3. READ 6 BYTES AND CHECK                               FLP17800
                            1792   *        4. TIME OUT FOR IDLE                                    FLP17810
                            1793   *        5. READ I.D ON ALL TRACKS                               FLP17820
                            1794   *                                                               FLP17840
                            1795   ****************************************************************   FLP17850
            0000 1886       1796   TEST1    EQU    *                                                FLP17860
  1886   4860 1756          1797            LH     DEV,FLPADR+6                                      FLP17870
  188A   4800 176E          1798            LH     R0,STLRN+6         LOAD INITIAL VALUE             FLP17880
  188E   4000 3024          1799            STH    R0,LRN             STORE INTO CURRENT LRN         FLP17890
            0000 1892       1800   TEST1A   EQU    *                                                FLP17900
  1892   DE60 3D43          1801            OC     DEV,RESET          RESET FLOPPY                   FLP17910
  1896   C800 0258          1802            LHI    R0,600             TIME OUT  600 MILLISECONDS     FLP17920
  189A   41F0 100E          1803            BAL    R15,TIMER          FOR IDLE TO SET                FLP17930
  189E   9D67               1804            SSR    DEV,STAT           SENSE STATUS ON FLOPPY         FLP17940
  18A0   4320 369A          1805            BFC    2,ERFL01           ERROR IF NOT SET      ****01   FLP17950
  18A4   42D0 36A0          1806            BTC    13,ERFL02          ERROR IF OTHERS SET   ****02   FLP17960
            0000 18A8       1807   TEST11   EQU    *                                                FLP17970
  18A8   41E0 312C          1808            BAL    R14,R.ID                                          FLP17980
  18AC   41E0 31A8          1809            BAL    R14,R.AUX                                         FLP17990
  18B0   D3D0 3ED8          1810            LB     R13,RID            CHECK 1ST BYTE                 FLP18000
  18B4   08DD               1811            LHR    R13,R13            FOR TRACK 0                    FLP18010
  18B6   4230 36BE          1812            BNZ    ERFL03                                            FLP18020
  18BA   D3D0 3EDA          1813            LB     R13,RID+2          CHECK 3RD BYTE                 FLP18030
  18BE   08DD               1814            LHR    R13,R13            IF SECTOR =0                   FLP18040
  18C0   4330 3796          1815            BZ     ERFL06             GO TO ERROR           ****06   FLP18050
  18C4   C5D0 001B          1816            CLHI   R13,X'1B'          IF GREATER THAN                FLP18060
  18C8   4380 3796          1817            BNL    ERFL06             1A  GO TO ERROR       ****06   FLP18070
  18CC   48D0 3EDC          1818            LH     R13,RID+4          LOAD CRC  BYTE OF READ ID      FLP18080
  18D0   41E0 310C          1819            BAL    R14,DOCRC                                         FLP18090
  18D4   C8D0 0080          1820            LHI    R13,X'0080'        TRACK 0 BIT                    FLP18100
  18D8   46D0 3CF2          1821            OH     R13,CDRIVE         OR IN CURRENT DRIVE            FLP18110
  18DC   45D0 3EDE          1822            CLH    R13,RAUX           COMPARE TO ACTUAL              FLP18120
  18E0   4230 36C4          1823            BNE    ERFL04             NOT EQUAL GO TO ERROR ****04   FLP18130
            0000 18E4       1824   TEST13   EQU    *                                                FLP18140
  18E4   4810 3024          1825            LH     R1,LRN                                            FLP18150
  18E8   41E0 28AA          1826            BAL    R14,CONVT                                         FLP18160
  18EC   D200 3CCC          1827            STB    R0,TEMP1           SAVE                           FLP18170
  18F0   D200 3EE4          1828            STB    R0,EXPID                                          FLP18180
  18F4   D210 3EE6          1829            STB    R1,EXPID+2                                        FLP18190
  18F8   2400               1830            LIS    R0,0                                              FLP18200
  18FA   D200 3EE5          1831            STB    R0,EXPID+1                                        FLP18210
  18FE   D200 3EE7          1832            STB    R0,EXPID+3                                        FLP18220
  1C02   4850 3024          1833            LH     R5,LRN                                            FLP18230
  1C06   41E0 312E          1834            BAL    R14,R.IDD                                         FLP18240
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TEST 1 READ I.D.

1C0A	2501		1835		LCS	R0,1		FLP18250
1C0C	4500 3E08		1836		CLH	R0,RID		FLP18260
1C10	4330 1C58		1837		BE	TEST15		FLP18270
1C14	D300 3CCC		1838		LB	R0,TEMP1	RESTORE	FLP18280
1C18	0400 3E08		1839		CLB	R0,RID		FLP18290
1C1C	4230 1C86		1840		BNE	TST1DEF		FLP18300
	0000 1C20		1841	TEST16	EQU	*		FLP18310
1C20	D320 3EDA		1842		LB	R2,RID+2		FLP18320
1C24	C520 0001		1843		CLHI	R2,1		FLP18330
1C28	4280 3796		1844		BL	ERFL06	LESS THAN LIMIT SECTOR ****06	FLP18340
1C2C	C520 001B		1845		CLHI	R2,27		FLP18350
1C30	4380 3796		1846		BNL	ERFL06	HIGH LIMIT SECTOR ****06	FLP18360
1C34	41E0 31DC		1847		BAL	R14,DOCRC		FLP18370
1C38	41E0 31A8		1848		BAL	R14,R.AUX		FLP18380
1C3C	24D0		1849		LIS	R13,0	0 STATUS	FLP18390
1C3E	46D0 3CF2		1850		OH	R13,CDRIVE	PLUS CURRENT DRIVE	FLP18400
1C42	48C0 3024		1851		LH	R12,LRN		FLP18410
1C46	C5C0 001B		1852		CLHI	R12,27		FLP18420
1C4A	2383		1853		BNLS	TEST14		FLP18430
1C4C	C6D0 0080		1854		OHI	R13,X'80'		FLP18440
	0000 1C50		1855	TEST14	EQU	*		FLP18450
1C50	45D0 3EDE		1856		CLH	R13,RAUX	CHECK	FLP18460
1C54	4230 36C4		1857		BNE	ERFL04	NO GOOD ****04	FLP18470
	0000 1C58		1858	TEST15	EQU	*		FLP18480
1C58	41F0 35FC		1859		BAL	R15,DISP.LRN	DISPLAY LOGICAL RECORD NUMBER	FLP18490
1C5C	41F0 12CA		1860		BAL	R15,TSTBRK		FLP18500
1C60	41F0 3164		1861		BAL	R15,AJUSTLRN	CHECK AND ADJUST LRN	FLP18510
1C64	4300 1BE4		1862		B	TEST13		FLP18520
1C68	C830 3E08		1863		LHI	R3,RID+3	LOAD END OF SHORT ID BUFFER	FLP18530
1C6C	245A		1864		LIS	R5,10	LOAD LOGICAL RECORD NUMBER	FLP18540
1C6E	41E0 3132		1865		BAL	R14,R.ID1	READ 4BYTES OF ID	FLP18550
1C72	0E60 3D43		1866		OC	DEV,RESET		FLP18560
1C76	C800 0258		1867		LHI	R0,600		FLP18570
1C7A	41F0 10DE		1868		BAL	LINK,TIMER	DELAY	FLP18580
1C7E	41F0 353C		1869		BAL	R15,IDLE		FLP18590
1C82	4300 1CA4		1870		B	TEST1END	DUMMY BRANCH TO TEST END	FLP18600
	0000 1C86		1871	TST1DEF	EQU	*		FLP18610
1C86	D330 3E08		1872		LB	R3,RID		FLP18620
1C8A	0B30		1873		SHR	R3,0		FLP18630
1C8C	2631		1874		AIS	R3,1		FLP18640
1C8E	4530 3032		1875		CLH	R3,NDEF		FLP18650
1C92	4330 1C20		1876		BE	TEST16		FLP18660
1C96	2631		1877		AIS	R3,1		FLP18670
1C98	4530 3032		1878		CLH	R3,NDEF		FLP18680
1C9C	4330 1C20		1879		BE	TEST16		FLP18690
1CA0	4300 3790		1880		B	ERFL05	**05 ***05	FLP18700
1CA4	4300 0E6C		1881	TEST1END	B	TSTEND	TEST 1 FINISHED	FLP18710

TEST 2   READ AUXILARY STATUS

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                              1883   ****************************************************************  FLP18730
                              1884   *   TEST2 READ AUX STATUS                                         FLP18740
                              1885   *                                                                FLP18750
                              1886   *   PURPOSE                                                      FLP18760
                              1887   *       TO TEST THE READ AUX STATUS COMMAND                      FLP18770
                              1888   *                                                                FLP18780
                              1889   *   DESIGN SPECIFICATION                                         FLP18790
                              1890   *       1.RESET                                                  FLP18800
                              1891   *       2.DELETE LRN AND TRY TO READ IT                          FLP18810
                              1892   *       3.CHECK ALL STATUS BITS                                  FLP18820
                              1893   *       4.TRY TO READ/WRITE TO A BAD LRN 0,7D3 AND UP            FLP18830
                              1894   *       5.CHECK ALL STATUS BITS                                  FLP18840
                              1895   *       6.OUTPUT BAD COMMAND  0,8-F                              FLP18850
                              1896   *       7.CHECK ALL STATUS BITS                                  FLP18860
                              1897   *                                                                FLP18870
                              1898   ****************************************************************  FLP18880
           0000 1CA8          1899   TEST2   EQU    *                                                 FLP18890
 1CA8   4860 1756             1900           LH     DEV,FLPADR+6                                       FLP18900
 1CAC   DE60 3D43             1901           OC     DEV,RESET         RESET CONTROLLER                FLP18910
 1CB0   41F0 353C             1902           BAL    R15,IDLE          WAIT FOR IDLE                   FLP18920
 1CB4   41F0 356C             1903           BAL    R15,GETBUFAD                                      FLP18930
 1CB8   0832                  1904           LHR    R3,R2                                             FLP18940
 1CBA   2445                  1905           LIS    R4,5              DELETE COMMAND OFFSET           FLP18950
 1CBC   C850 0052             1906           LHI    R5,X'52'                                          FLP18960
 1CC0   41F0 3228             1907           BAL    R15,RW                                            FLP18970
 1CC4   C850 0052             1908           LHI    R5,X'52'          READ SECTOR # 52                FLP18980
 1CC8   2441                  1909           LIS    R4,1                                              FLP18990
 1CCA   41F0 3228             1910           BAL    R15,RW                                            FLP19000
 1CCE   41E0 31A8             1911           BAL    R14,R.AUX                                         FLP19010
 1CD2   9D67                  1912           SSR    DEV,STAT                                          FLP19020
 1CD4   C570 0022             1913           CLHI   STAT,X'22'        IS DELETED RECORD BIT SET ?     FLP19030
 1CD8   4230 36CA             1914           BNE    ERFLOB            NO ERROR            ****0B       FLP19040
 1CDC   D310 3EDE             1915           LB     R1,RAUX           LOAD 1ST BYTE                   FLP19050
 1CE0   C510 0002             1916           CLHI   R1,2                                              FLP19060
 1CE4   4230 36D0             1917           BNE    ERFLOC            NO ERROR            ****0C       FLP19070
 1CE8   DE60 3D43             1918           OC     DEV,RESET         RESET CONTROLLER                FLP19080
 1CEC   41F0 353C             1919           BAL    R15,IDLE          WAIT FOR IDLE                   FLP19090
           0000 1CF0          1920   TEST21  EQU    *                                                 FLP19100
 1CF0   2480                  1921           LIS    R8,0                                              FLP19110
           0000 1CF2          1922   TEST22  EQU    *                                                 FLP19120
 1CF2   2442                  1923           LIS    R4,2                                              FLP19130
 1CF4   9868                  1924           WHR    DEV,R8            WRITE ILLEGAL LRN               FLP19140
 1CF6   DE60 3D40             1925           OC     DEV,DELETE                                        FLP19150
 1CFA   DE60 3D42             1926           OC     DEV,STOP                                          FLP19160
 1CFE   41F0 353C             1927           BAL    R15,IDLE          WAIT FOR IDLE                   FLP19170
 1D02   41E0 31A8             1928           BAL    R14,R.AUX                                         FLP19180
 1D06   9D67                  1929           SSR    DEV,STAT          SENSE STATUS                    FLP19190
 1D08   C570 0016             1930           CLHI   STAT,X'16'                                        FLP19200
 1D0C   4230 36D6             1931           BNE    ERFLOD            NO GOOD GO TO ERROR   ****0D     FLP19210
 1D10   D330 3EDE             1932           LB     R3,RAUX           LOAD 1ST BYTE                   FLP19220
 1D14   C530 0028             1933           CLHI   R3,X'28'          IS LRN ERROR AND THE ERROR BIT SET  FLP19230
 1D18   4230 36D6             1934           BNE    ERFLOD            NO GO TO ERROR        ****0D     FLP19240
 1D1C   0888                  1935           LHR    R8,R8                                             FLP19250
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TEST 2   READ AUXILARY STATUS

101E	2135		1936		BNZS	TEST23	YES ONCE MORE	FLP19260
1020	C880 07D3		1937		LHI	R8,2003		FLP19270
1024	4300 1CF2		1938		B	TEST22	GO AGAIN	FLP19280
	0000 1D28		1939	TEST23	EQU	*		FLP19290
1D28	2480		1940		LIS	R8,0		FLP19300
	0000 1D2A		1941	TEST24	EQU	*		FLP19310
102A	DE60 3043		1942		OC	DEV,RESET		FLP19320
102E	41F0 353C		1943		BAL	R15,IDLE	WAIT FOR IDLE	FLP19330
1D32	4830 3CF2		1944		LH	R3,CDRIVE	LOAD CURRENT DRIVE	FLP19340
1D36	9134		1945		SLHLS	R3,4	SHIFT ONE	FLP19350
1D38	0638		1946		OHR	R3,R8		FLP19360
1D3A	9E63		1947		OCR	DEV,R3	OUTPUT ILLEGAL COMMAND	FLP19370
1D3C	DE60 3D42		1948		OC	DEV,STOP		FLP19380
1040	41F0 353C		1949		BAL	R15,IDLE		FLP19390
1044	41E0 31A8		1950		BAL	R14,R.AUX		FLP19400
1048	9D67		1951		SSR	DEV,STAT		FLP19410
104A	C570 0016		1952		CLHI	STAT,X'16'		FLP19420
1D4E	4230 360C		1953		BNE	ERFL0E	NO GO TO ERROR	****0F	FLP19430
1052	4830 3EDE		1954		LH	R3,RAUX	READ 1ST AND 2ND BYTES	FLP19440
1056	C840 0890		1955		LHI	R4,X'890'		FLP19450
1U5A	4640 3CF2		1956		OH	R4,CDRIVE	OR IN CURRENT DRIVE ADDRESS	FLP19460
105E	0543		1957		CLHR	R4,R3	COMPARE WITH ACTUAL	FLP19470
1060	4230 360C		1958		BNE	ERFL0E	NOT EQUAL GO TO ERROR	****0E	FLP19480
1064	0888		1959		LHR	R8,R8		FLP19490
1C66	4230 1070		1960		BNZ	TEST26	FIRST TIME THEN	FLP19500
106A	248A		1961		LIS	R8,10		FLP19510
106C	4300 1D2A		1962		B	TEST24	GO AGAIN	FLP19520
	0000 1070		1963	TEST26	EQU	*		FLP19530
1070	C560 000F		1964		CLHI	R8,15		FLP19540
1074	4330 107E		1965		BE	TEST25	IF FINISHED EXIT	FLP19550
1078	2681		1966		AIS	R8,1		FLP19560
107A	4300 1D2A		1967		B	TEST24	LOOP	FLP19570
	0000 1D7E		1968	TEST25	EQU	*		FLP19580
1D7E	C800 1094		1969		LHI	R0,TEST27	LOAD	FLP19590
1082	4000 3D30		1970		STH	R0,DEVINT+2	STORE ETPE HANDLER	FLP19600
1086	2450		1971		LIS	R5,0		FLP19610
1D88	9865		1972		WHR	DEV,R5	WRITE THE LRN	FLP19620
108A	DE60 3D48		1973		OC	DEV,ENA,WRIT	ENABLE INTERRUPTS	FLP19630
108E	41F0 350E		1974		BAL	R15,WAIT.INT	WAIT FOR INTERRUPTS	FLP19640
1092	3136		1975		DC	C'16'	ERROR 16 EX SET FOR INT	***16	FLP19650
	0000 1D94		1976	TEST27	EQU	*		FLP19660
1094	DE60 3D47		1977		OC	DEV,DIS,STOP	DISARM ALL INTERRUPTS	FLP19670
1098	C800 366B		1978		LHI	R0,ERFL2A	ERROR	**2A	FLP19680
109C	4000 3D30		1979		STH	R0,DEVINT+2	STORE IN ETPE HANDLER	FLP19690
1DA0	D370 16EA		1980		LB	STAT,INTSTA	LOAD INTERRUPT STATUS	FLP19700
1DA4	C370 0004		1981		THI	STAT,4	WAS IT EXAMINE	FLP19710
1DA8	4330 363C		1982		BZ	ERFL16	NO ERROR	***16	FLP19720
1DAC	4300 1D80		1983		B	TEST2END	DUMMY END	FLP19730
1D80	4300 0E6C		1984	TEST2END	B	TSTEND	TEST 2 FINISHED	FLP19740

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                              1986    ************************************************************************  FLP19760
                              1987    *   TEST3 DISARM/DISABLE/ENABLE TEST                                     FLP19770
                              1988    *                                                                        FLP19780
                              1989    *   PURPOSE                                                              FLP19790
                              1990    *        TO TEST THE DISARM/DISABLE/ENABLE FUNCTION OF THE CONTROLLER   FLP19800
                              1991    *                                                                        FLP19810
                              1992    *   DESIGN SPECIFICATION                                                 FLP19820
                              1993    *        1.TEST THE ENABLE FUNCTION                                      FLP19830
                              1994    *        2.SET UP INTERRUPT VECTOR                                       FLP19840
                              1995    *        3.ENABLE CONTROLLER/GENERATE INTERRUPT                          FLP19850
                              1996    *        4.WAIT FOR INTERRUPT                                            FLP19860
                              1997    *        5.TEST THE DISABLE FUNCTION                                     FLP19870
                              1998    *        6.SETUP FOR INTERRUPT                                           FLP19880
                              1999    *        7.DISABLE CONTROLLER                                            FLP19890
                              2000    *        8.GENERATE INTERRUPT                                            FLP19900
                              2001    *        9.WAIT FOR 800MILLISWCONDS                                      FLP19910
                              2002    *        10.SET UP FOR INTERRUPT                                         FLP19920
                              2003    *        11.ENABLE CONTROLLER                                            FLP19930
                              2004    *        12.WAIT FOR INTERRUPT                                           FLP19940
                              2005    *        13.SET UP FOR INTERRUPT                                         FLP19950
                              2006    *        14.DISARM CONTROLLER/ GENERATE INTERRUPT                        FLP19960
                              2007    *        15.WAIT FOR INTERRUPT                                           FLP19970
                              2008    *        16.GO TO TEST END                                               FLP19980
                              2009    *                                                                        FLP19990
                              2010    ************************************************************************  FLP20000
             0000 10B4        2011    TEST3    EQU   *                                                         FLP20010
1094    4860 1756             2012             LH    DEV+FLPADR+6       LOAD CONTROLLER ADDRESS                FLP20020
1088    DE60 3043             2013             OC    DEV+RESET                                                 FLP20030
10BC    41F0 353C             2014             BAL   R15,IDLE                                                  FLP20040
10C0    C800 1DD2             2015             LHI   R0,TEST31          LOAD INTERRUPT HANDLER                 FLP20050
10C4    4000 3030             2016             STH   R0,DEVINT+2        STORE IN ETPE TABLE                    FLP20060
10C8    DE60 3045             2017             OC    DEV+ENA.STOP                                              FLP20070
10CC    41F0 350E             2018             BAL   R15,WAIT.INT       WAIT FOR INTERRUPT                     FLP20080
10D0    3144                  2019             DC    C'1D'              *                        **1D          FLP20090
             0000 1DD2        2020    TEST31   EQU   *                                                         FLP20100
10D2    C800 366E             2021             LHI   R0,ERFL2B          LOAD UP ERROR            ***2B         FLP20110
10D6    4000 3030             2022             STH   R0,DEVINT+2        STORE IN ETPE TABLE                    FLP20120
10DA    4800 0A22             2023             LH    R0,PSW                                                    FLP20130
10DE    9510                  2024             EPSR  R1,R0                                                     FLP20140
10E0    C800 0080             2025             LHI   R0,X'80'                                                  FLP20150
10E4    41E0 1E46             2026             BAL   R14,T3.READ                                               FLP20160
10E8    C800 1DFA             2027             LHI   R0,TEST33                                                 FLP20170
10EC    4000 3030             2028             STH   R0,DEVINT+2        STORE IN ETPE TABLE                    FLP20180
10F0    DE60 3046             2029             OC    DEV+ENA.REST                                              FLP20190
             0000 1DF4        2030    TEST35   EQU   *                                                         FLP20200
10F4    41F0 350E             2031             BAL   R15,WAIT.INT       WAIT FOR INTERRUPT                     FLP20210
10F8    3243                  2032             DC    C'2C'              2C                       ***2C         FLP20220
             0000 1DFA        2033    TEST33   EQU   *                                                         FLP20230
10FA    C800 1E06             2034             LHI   R0,TEST32                                                 FLP20240
10FE    4000 3030             2035             STH   R0,DEVINT+2                                               FLP20250
1E02    4300 1DF4             2036             B     TEST35                                                    FLP20260
             0000 1E06        2037    TEST32   EQU   *                                                         FLP20270
1E06    C800 3668             2038             LHI   R0,ERFL2A          LOAD UP FOR ERROR        ***2A         FLP20280
```

TEST 3   WRITE/STOP

```
1E0A   4000 3D30    2039            STH    R0,DEVINT+2     STORE IN ETPE TABLE              FLP20290
1E0E   4800 0A22    2040            LH     R0,PSW                                           FLP20300
1E12   9510         2041            EPSR   R1,R0                                            FLP20310
1E14   C800 00C0    2042            LHI    R0,X'C0'                                         FLP20320
1E18   41E0 1E46    2043            BAL    R14,T3.READ                                      FLP20330
1E1C   C800 1E32    2044            LHI    R0,TEST34                                        FLP20340
1E20   4000 3D30    2045            STH    R0,DEVINT+2                                      FLP20350
1E24   4800 0A22    2046            LH     R0,PSW                                           FLP20360
1E28   9510         2047            EPSR   R1,R0                                            FLP20370
1E2A   DE00 3D46    2048            OC     DEV,ENA,REST                                     FLP20380
1E2E   4300 1DF4    2049            B      TEST35                                           FLP20390
       0000 1E32    2050   TEST34   EQU    *                                               FLP20400
1E32   C800 3668    2051            LHI    R0,ERFL2A       LOAD UP FOR ERROR       ***2A    FLP20410
1E36   C800 3D30    2052            LHI    R0,DEVINT+2                                      FLP20420
1E3A   DE60 3D47    2053            OC     DEV,DIS,STOP    DISABLE STOP                     FLP20430
1E3E   41F0 353C    2054            BAL    R15,IDLE        WAIT FOR IDLE                    FLP20440
1E42   4300 1E5E    2055            B      TEST3END                                         FLP20450
       0000 1E46    2056   T3.READ  EQU    *                                               FLP20460
1E46   D320 3D3C    2057            LB     R2,READ                                          FLP20470
1E4A   0620         2058            OHR    R2,R0                                            FLP20480
1E4C   C850 0750    2059            LHI    R5,X'750'                                        FLP20490
1E50   9865         2060            WHR    DEV,R5                                           FLP20500
1E52   9E62         2061            OCR    DEV,R2                                           FLP20510
1E54   DE60 3D42    2062            OC     DEV,STOP                                         FLP20520
1E58   41F0 353C    2063            BAL    R15,IDLE                                         FLP20530
1E5C   030E         2064            BR     R14                                              FLP20540
1E5E   4300 0E6C    2065   TEST3END B      TSTEND          TEST 3 FINISHED                  FLP20550
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                               2067   *******************************************************************-*   FLP20570
                               2068   *   TEST4 WRITE/READ ONE SECTOR                                         FLP20580
                               2069   *                                                                       FLP20590
                               2070   *   PURPOSE                                                             FLP20600
                               2071   *        TO TEST THE READ FUNCTION                                      FLP20610
                               2072   *                                                                       FLP20620
                               2073   *   DESIGN SPECIFICATION                                                FLP20630
                               2074   *        1.RESET                                                        FLP20640
                               2075   *        2.WRITE ONE SECTOR UNDE SENSE STATUS                           FLP20650
                               2076   *        3.CHECK STATUS                                                 FLP20660
                               2077   *        4. READ ONE SECTOR UNDE SENSE STATUS                           FLP20670
                               2078   *        5.CHECK STATUS                                                 FLP20680
                               2079   *        6.CHECK BUFFER                                                 FLP20690
                               2080   *        7.WRITE ONE SECTOR UNDER INTERRUPTS                            FLP20700
                               2081   *        8.CHECK STATUS                                                 FLP20710
                               2082   *        9.READ ONE SECTOR UNDER INTERRUPTS                             FLP20720
                               2083   *        10.CHECK STATUS                                                FLP20730
                               2084   *        11.CHECK BUFFER                                                FLP20740
                               2085   *                                                                       FLP20750
                               2086   *********************************************************************** FLP20760
           0000 1E62           2087   TEST4    EQU    *                                                       FLP20770
1E62   4860 1756               2088            LH     DEV,FLPADR+6       LOAD DEVICE ADDRESS                  FLP20780
1E66   4800 176E               2089            LH     R0,STLRN+6         LOAD STARTING LOGICAL RECORD NUMBER  FLP20790
1E6A   4000 3024               2090            STH    R0,LRN             SAVE                                 FLP20800
1E6E   DE60 3043               2091            OC     DEV,RESET          RESET CONTROLLER                     FLP20810
1E72   41F0 353C               2092            BAL    R15,IDLE           WAIT FOR IDLE                        FLP20820
1E76   48FC 17AA               2093            LH     R15,INTST4+6       LOAD UP INTERRUPT IN TEST 4          FLP20830
1E7A   4310 1E84               2094            BNM    TEST4A             INT ONLY OR INT AND STATUS ONLY      FLP20840
1E7E   24F0                    2095            LIS    R15,0              INIT                                 FLP20850
1E80   4300 1E86               2096            B      TEST4B             SKIP                                 FLP20860
           0000 1E84           2097   TEST4A   EQU    *                                                       FLP20870
1E84   24F1                    2098            LIS    R15,1              STATUS ONLY                           FLP20880
           0000 1E86           2099   TEST4B   EQU    *                                                       FLP20890
1E86   40F0 3CFA               2100            STH    R15,INT            STORE IT                             FLP20900
1E8A   4800 3CFE               2101   TEST45   LH     R0,RAND            LOAD RANDOM NUMBER                   FLP20910
1E8E   4000 3CCC               2102            STH    R0,TEMP1           SAVE FOR  LATER INITIALIZE           FLP20920
1E92   41F0 356C               2103            BAL    R15,GETBUFAD       GET BUFFER START ADDRESS             FLP20930
1E96   2480                    2104            LIS    R8,0               ZERO OUT COUNTER                     FLP20940
1E98   41F0 317A               2105   TEST42   BAL    R15,GETPATRN       GET RANDOM PATTERN                   FLP20950
1E9C   4002 0000               2106            STH    R0,0(R2)           STORE INTO  128 BUFFER               FLP20960
1EA0   2682                    2107            AIS    R8,2               INCREMENT                            FLP20970
1EA2   2622                    2108            AIS    R2,2               INCREMENT  INDEX                     FLP20980
1EA4   C580 0080               2109            CLHI   R8,128             LIMIT YET                            FLP20990
1EA8   4230 1E98               2110            BNE    TEST42             NO GO AGAIN                          FLP21000
1EAC   41F0 356C               2111            BAL    R15,GETBUFAD       GET BUFFER ADDRESS                   FLP21010
1EB0   C832 007F               2112            LHI    R3,127(R2)         (R3) = END ADDRESS                   FLP21020
1EB4   2442                    2113            LIS    R4,2               WRITE COMMAND OFFSET                 FLP21030
1EB6   4850 3024               2114            LH     R5,LRN             LOAD CURRENT LOGICAL RECORD NUMBER   FLP21040
1EBA   41F0 3228               2115            BAL    R15,RW             WRITE A BUFFER                       FLP21050
1EBE   41F0 356C               2116            BAL    R15,GETBUFAD       GET BUFFER ADDRESS                   FLP21060
1EC2   C810 0080               2117            LHI    R1,128             LOAD LIMIT                           FLP21070
           0000 1EC6           2118   TEST43   EQU    *                                                       FLP21080
1EC6   4012 0000               2119            STH    R1,0(R2)           STH BAD DATA INTO BUFFER             FLP21090
```

TEST 4   READ/STOP

1ECA	2622		2120		AIS	R2,2		FLP21100
1ECC	2712		2121		SIS	R1,2	DECREMENT COUNT	FLP21110
1ECE	2244		2122		BNMS	TES143	FINISHED?	FLP21120
1ED0	41F0 356C		2123		BAL	R15,GETBUFAD	GET BUFFER	FLP21130
1ED4	C832 007F		2124		LHI	R3,127(R2)	(R3) = END ADDRESS	FLP21140
1ED8	2441		2125		LIS	R4,1	READ COMMAND OFFSET	FLP21150
1EDA	4850 3D24		2126		LH	R5,LRN	LOAD CURRENT LOGICAL RECORD NUMBER	FLP21160
1EDE	41F0 3228		2127		BAL	R15,RW	READ A BUFFER	FLP21170
1EE2	2480		2128		LIS	R8,0	ZERO OUT COUNTER	FLP21180
1EE4	4800 3CCC		2129		LH	R0,TEMP1	LOAD OLD RANDOM NUMBER SEED	FLP21190
1EE8	4000 3CFE		2130		STH	R0,RAND		FLP21200
1EEC	41F0 356C		2131		BAL	R15,GETBUFAD	GET BUFFER ADDRESS	FLP21210
1EF0	0842		2132		LHR	R4,R2		FLP21220
	0000 1EF2		2133	TEST44	EQU	*		FLP21230
1EF2	41F0 317A		2134		BAL	R15,GETPATRN	GET RANDOM NUMBER	FLP21240
1EF6	4824 0000		2135		LH	R2,0(R4)		FLP21250
1EFA	0502		2136		CLHR	R0,R2		FLP21260
1EFC	4220 37A2		2137		BNE	ERFL27	**27 **27	
1F00	2682		2138		AIS	R8,2	INCREMENT	FLP21280
1F02	2642		2139		AIS	R4,2		FLP21290
1F04	C580 0080		2140		CLHI	R8,128	LIMIT YET	FLP21300
1F08	4230 1EF2		2141		BNE	TEST44	NO GO AGAIN	FLP21310
1F0C	4800 17AA		2142		LH	R0,INTST4+6		FLP21320
1F10	4230 1F1E		2143		BNZ	TEST46		FLP21330
1F14	2401		2144		LIS	R0,1		FLP21340
1F16	4700 3CFA		2145		XH	R0,INT		FLP21350
1F1A	4000 3CFA		2146		STH	R0,INT		FLP21360
	0000 1F1E		2147	TEST46	EQU	*		FLP21370
1F1E	41F0 35FC		2148		BAL	R15,DISP.LRN	DISPLAY LOGICAL RECORD NUMBER	FLP21380
1F22	41F0 12CA		2149		BAL	R15,TSTBRK		FLP21390
1F26	41F0 3164		2150		BAL	R15,AJUSTLRN	ADJUST LOGICAL RECORD NUMBER	FLP21400
1F2A	4300 1E8A		2151		B	TEST45	GO AGAIN.	FLP21410
1F2E	DE60 3D47		2152		OC	DEV,DIS.STOP		FLP21420
1F32	41F0 353C		2153		BAL	R15,IDLE		FLP21430
1F36	2301		2154		BS	TEST4END	FINISH TEST	FLP21440
1F38	4300 0E6C		2155	TEST4END	B	TSTEND	TEST 4 FINISHED	FLP21450

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                         2157  ******************************************************************************   FLP21470
                         2158  *   TEST5 WRITE/READ DESIGNATED AREA                                            FLP21480
                         2159  *                                                                               FLP21490
                         2160  *   PURPOSE                                                                     FLP21500
                         2161  *         TO TEST  READING/WRITING TO DESIGNATED AREA                           FLP21510
                         2162  *                                                                               FLP21520
                         2163  *   DESIGN SPECIFICATION                                                        FLP21530
                         2164  *                                                                               FLP21540
                         2165  *         1.WRITE 126 BYTES IN EACH SECTOR(1 PER REVOLUTION                     FLP21550
                         2166  *         2.READ                                                                FLP21560
                         2167  *         3.WRITE 128 BYTES IN EACH SECTOR (26 PER REVOLUTION                   FLP21570
                         2168  *         4.READ
                         2169  *         5.WRITE A TRACK
                         2170  *         6.READ
                         2171  *         7.WRITE 130 BYTES IN 2 BACK TO BACK SECTORS
                         2172  *         8.READ
                         2173  *         9.WRITE 130 BYTES IN 2 BACK TO BACK SECTORS WITH LATENCY
                         2174  *         10.READ
                         2175  *                                                                               FLP21610
                         2176  ******************************************************************************   FLP21620
         0000 1F3C       2177  TEST5   EQU    *                                                                FLP21630
1F3C     48D0 1756       2178          LH     DEV,FLPADR+6        GET FLOPPY CONTROLLER ADDRESS                FLP21640
1F40     41F0 2304       2179          BAL    R15,LRN.RAND        SET UP 'LRN'                                 FLP21650
1F44     24F0            2180          LIS    R15,0                                                            FLP21660
1F46     40F0 3D16       2181          STH    R15,FLAG                                                         FLP21670
                         2182  *                                                                               FLP21680
                         2183  * TO WRITE 126 BYTE (SHORT) SECTORS                                             FLP21690
                         2184  *                                                                               FLP21700
         0000 1F4A       2185  T5.W126 EQU    *                                                                FLP21710
1F4A     41F0 12CA       2186          BAL    R15,TSTBRK
1F4E     C830 007D       2187          LHI    R3,125                                                           FLP21720
1F52     41E0 21A6       2188          BAL    R14,WRT.SECT        WRITE A SECTOR                               FLP21730
1F56     41F0 35FC       2189          BAL    R15,DISP.LRN        DISPLAY LRN                                  FLP21740
1F5A     41F0 3164       2190          BAL    R15,AJUSTLRN        BUMP LRN                                     FLP21750
1F5E     4300 1F66       2191          B      T5.W126A           GO CHECK FOR 40 LRN                           FLP21760
1F62     4300 1F76       2192          B      T5.R126A                                                        FLP21770
         0000 1F66       2193  T5.W126A EQU   *                                                               FLP21780
1F66     48F0 176E       2194          LH     R15,STLRN+6        LOAD START LRN                                FLP21790
1F6A     CAF0 0040       2195          AHI    R15,X'40'          ADD 2 AND 1/2 TRACKS AS LIMIT                FLP21800
1F6E     45F0 3D24       2196          CLH    R15,LRN            LIMIT YET                                     FLP21810
1F72     4380 1F4A       2197          BNL    T5.W126                                                         FLP21820
         0000 1F76       2198  T5.R126A EQU   *                                                               FLP21830
                         2199  *                                                                               FLP21840
                         2200  * TO READ/COMPARE 126 BYTE (SHORT) SECTORS                                     FLP21850
                         2201  *                                                                               FLP21860
1F76     41F0 2316       2202          BAL    R15,RESTORND        RESTORE 'LRN' & 'RAND'                      FLP21870
         0000 1F7A       2203  T5.R126 EQU    *                                                               FLP21880
1F7A     41F0 12CA       2204          BAL    R15,TSTBRK
1F7E     C830 007D       2205          LHI    R3,125                                                           FLP21890
1F82     41E0 21DA       2206          BAL    R14,RD.SECT         READ A SECTOR                                FLP21900
1F86     41F0 317A       2207          BAL    R15,GETPATRN                                                     FLP21910
1F8A     41F0 317A       2208          BAL    R15,GETPATRN                                                     FLP21920
1F8E     41F0 35FC       2209          BAL    R15,DISP.LRN        DISPLAY LRN                                  FLP21930
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TEST 5   WRITE/READ

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1F92   41F0 3164      2210            BAL    R15,AJUSTLRN      BUMP LRN                         FLP21940
1F96   4300 1F9E      2211            B      T5.R126B                                           FLP21950
1F9A   4300 1FAE      2212     *      B      T5.R126C          EXIT                             FLP21960
                      2213     *                                                                FLP21970
       0000 1F9E      2214   T5.R126B EQU    *                                                  FLP21980
1F9E   48F0 176E      2215            LH     R15,STLRN+6       LOAD START LRN                   FLP21990
1FA2   CAF0 0040      2216            AHI    R15,X'40'         ADD 2 AND 1/2 TRACKS AS LIMITS   FLP22000
1FA6   45F0 3024      2217            CLH    R15,LRN           LIMIT YET                        FLP22010
1FAA   4380 1F7A      2218            BNL    T5.R126                                            FLP22020
       0000 1FAE      2219   T5.R126C EQU    *                                                  FLP22030
                      2220     *                                                                FLP22040
                      2221     * WRITE A TRACK IN ONE REVOLUTION                                FLP22050
                      2222     *                                                                FLP22060
1FAE   41F0 2304      2223            BAL    R15,LRN.RAND      SET UP 'LRN'                     FLP22070
1FB2   4850 3024      2224            LH     R5,LRN                                             FLP22080
1FB6   C550 07B8      2225            CLHI   R5,X'7D2'-26                                       FLP22090
1FBA   4380 1FF8      2226            BNL    T5.2              EXIT IF ON LAST TRACK            FLP22100
1FBE   9865           2227            WHR    DEV,R5                                             FLP22110
1FC0   DE60 303D      2228            OC     DEV,WRITE                                          FLP22120
       0000 1FC4      2229   T5.1     EQU    *                                                  FLP22130
1FC4   41E0 347C      2230            BAL    R14,WRT.TRK       WRITE A TRACK                    FLP22140
1FC8   4810 3024      2231            LH     R1,LRN                                             FLP22150
1FCC   41E0 28AA      2232            BAL    R14,CONVT         GET TRACK # IN R0                FLP22160
1FD0   41F0 3600      2233            BAL    R15,DISPLAY       DISPLAY IT                       FLP22170
1FD4   4850 3024      2234            LH     R5,LRN                                             FLP22180
1FD8   CA50 001A      2235            AHI    R5,26             BUMP LRN TO POINT TO NEXT TRACK  FLP22190
1FDC   4050 3024      2236            STH    R5,LRN                                             FLP22200
1FE0   C550 07B8      2237            CLHI   R5,X'7D2'-26                                       FLP22210
1FE4   4380 1FF8      2238            BNL    T5.2                                               FLP22220
1FE8   48F0 176E      2239            LH     R15,STLRN+6       LOAD START LRN                   FLP22230
1FEC   CAF0 004E      2240            AHI    R15,78            ADD 3 TRACKS AS LIMIT            FLP22240
1FF0   45F0 3024      2241            CLH    R15,LRN           LIMIT YET                        FLP22250
1FF4   4230 1FC4      2242            BNE    T5.1              NO WRITE ANOTHER TRACK           FLP22260
                      2243     *                                                                FLP22270
                      2244     * READ/COMPARE A TRACK IN ONE REVOLUTION                         FLP22280
                      2245     *                                                                FLP22290
       0000 1FF8      2246   T5.2     EQU    *                                                  FLP22300
1FF8   DE60 3042      2247            OC     DEV,STOP                                           FLP22310
1FFC   41F0 353C      2248            BAL    R15,IDLE                                           FLP22320
2000   41F0 2316      2249            BAL    R15,RESTORND                                       FLP22330
2004   4850 3024      2250            LH     R5,LRN                                             FLP22340
2008   C550 07B8      2251            CLHI   R5,X'7D2'-26                                       FLP22350
200C   4380 204A      2252            BNL    T5.4              EXIT IF ON LAST TRACK           FLP22360
2010   9865           2253            WHR    DEV,R5                                             FLP22370
2012   DE60 303C      2254            OC     DEV,READ                                           FLP22380
       0000 2016      2255   T5.3     EQU    *                                                  FLP22390
2016   41E0 348C      2256            BAL    R14,RD.TRK                                         FLP22400
201A   4810 3024      2257            LH     R1,LRN                                             FLP22410
201E   41E0 28AA      2258            BAL    R14,CONVT         GET TRACK # IN R0                FLP22420
2022   41F0 3600      2259            BAL    R15,DISPLAY                                        FLP22430
2026   4850 3024      2260            LH     R5,LRN                                             FLP22440
202A   CA50 001A      2261            AHI    R5,26                                              FLP22450
202E   4050 3024      2262            STH    R5,LRN                                             FLP22460
```

TEST 5   WRITE/READ

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2032   C550 07B8    2263            CLHI   R5,X'7D2'-26                                    FLP22470
2036   4380 204A    2264            BNL    T5.4                                            FLP22480
203A   48F0 176E    2265            LH     R15,STLRN+6      LOAD START LRN                 FLP22490
203E   CAF0 004E    2266            AHI    R15,78           ADD 3 TRACKS AS LIMITS         FLP22500
2042   45F0 3D24    2267            CLH    R15,LRN          LIMIT YET?                     FLP22510
2046   4230 2016    2268            BNE    T5.3             GO READ ANOTHER TRACK          FLP22520
       0000 204A    2269   T5.4     EQU    *                                               FLP22530
               2270   *                                                                   FLP22540
               2271   * WRITE 130 BYTE BUFFER   (LESS THAN 2 SECTORS IN A REVOLUTION)     FLP22550
204A   DE60 3D42    2272            OC     DEV,STOP                                        FLP22560
204E   41F0 353C    2273            BAL    R15,IDLE                                        FLP22570
2052   41F0 2304    2274            BAL    R15,LRN.RAND                                    FLP22580
       0000 2056    2275   T5.W130  EQU    *                                               FLP22590
2056   41F0 12CA    2276            BAL    R15,TSTBRK                                       
205A   C830 0081    2277            LHI    R3,129                                          FLP22600
205E   C550 07D2    2278            CLHI   R5,X'7D2'        IS IT TOO BIG                  FLP22610
2062   4330 20A4    2279            BE     T5.5             YES SKIP                       FLP22620
2066   41E0 21A6    2280            BAL    R14,WRT.SECT                                    FLP22630
206A   41F0 35FC    2281            BAL    R15,DISP.LRN     DISPLAY LRN                    FLP22640
206E   41F0 3164    2282            BAL    R15,AJUSTLRN                                    FLP22650
2072   4300 207A    2283            B      T5.W1301                                        FLP22660
2076   4300 20A4    2284            B      T5.5                                            FLP22670
       0000 207A    2285   T5.W1301 EQU    *                                               FLP22680
207A   4850 177A    2286            LH     R5,ENDLRN+6                                     FLP22690
207E   2751         2287            SIS    R5,1                                            FLP22700
2080   4550 3D24    2288            CLH    R5,LRN                                          FLP22710
2084   4330 20A4    2289            BE     T5.5                                            FLP22720
2088   41F0 3164    2290            BAL    R15,AJUSTLRN                                    FLP22730
208C   4300 2094    2291            B      T5.W130B                                        FLP22740
2090   4300 20A4    2292            B      T5.5                                            FLP22750
       0000 2094    2293   T5.W130B EQU    *                                               FLP22760
2094   48F0 176E    2294            LH     R15,STLRN+6      LOAD START LRN                 FLP22770
2098   CAF0 0040    2295            AHI    R15,X'40'        ADD 2 AND 1/2 TRACKS AS LIMITS FLP22780
209C   45F0 3D24    2296            CLH    R15,LRN          LIMIT YET                      FLP22790
20A0   4380 2056    2297            BNL    T5.W130                                         FLP22800
               2298   * READ/COMPARE 130 BYTE BUFFER (LESS THAN 2 SECTORS PER REVOLUTION) FLP22810
               2299   *                                                                   FLP22820
20A4   41F0 2316    2300   T5.5     BAL    R15,RESTORND                                    FLP22830
       0000 20A8    2301   T5.R130  EQU    *                                               FLP22840
20A8   41F0 12CA    2302            BAL    R15,TSTBRK                                       
20AC   C830 0081    2303            LHI    R3,129                                          FLP22850
20B0   C550 07D2    2304            CLHI   R5,X'7D2'        IS IT TOO BIG                  FLP22860
20B4   4330 20F6    2305            BE     T5.W2RV1         YES SKIP                       FLP22870
20B8   41E0 210A    2306            BAL    R14,RD.SECT                                     FLP22880
20BC   41F0 35FC    2307            BAL    R15,DISP.LRN     DISPLAY LRN                    FLP22890
20C0   41F0 3164    2308            BAL    R15,AJUSTLRN                                    FLP22900
20C4   4300 20CC    2309            B      T5.R1301                                        FLP22910
20C8   4300 20F6    2310            B      T5.W2RV1                                        FLP22920
       0000 20CC    2311   T5.R1301 EQU    *                                               FLP22930
20CC   4850 177A    2312            LH     R5,ENDLRN+6                                     FLP22940
20D0   2751         2313            SIS    R5,1                                            FLP22950
20D2   4550 3D24    2314            CLH    R5,LRN                                          FLP22960
20D6   4330 20F6    2315            BE     T5.W2RV1                                        FLP22970
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TEST 5   WRITE/READ

```
200A   41F0 3164      2316            BAL   R15,AJUSTLRN                                    FLP22980
20DE   4300 20E6      2317            B     T5.R130A                                        FLP22990
20E2   4300 20F6      2318            B     T5.W2RV1                                        FLP23000
       0000 20E6      2319   T5.R130A EQU   *                                               FLP23010
20E6   48F0 176E      2320            LH    R15,STLRN+6        LOAD START LRN               FLP23020
20EA   CAF0 0040      2321            AHI   R15,X'40'          ADD 2 AND 1/2 TRACKS AS LIMIT FLP23030
20EE   45F0 3024      2322            CLH   R15,LRN                                         FLP23040
20F2   4380 20A8      2323            BNL   T5.R130                                         FLP23050
                      2324   *  WRITE 130 BYTES IN 2 REVOLUTIONS                            FLP23060
                      2325   *                                                              FLP23070
       0000 20F6      2326   T5.W2RV1 EQU   *                                               FLP23080
20F6   DEB0 3D42      2327            OC    DEV,STOP           STOP CONTROLLER              FLP23090
20FA   41F0 353C      2328            BAL   R15,IDLE           WAIT FOR IDLE                FLP23100
20FE   41F0 2304      2329            BAL   R15,LRN,RAND       GET LRN                      FLP23110
       0000 2102      2330   T5.W2RV2 EQU   *                                               FLP23120
2102   41F0 12CA      2331            BAL   R15,TSTBRK                                      FLP23130
2106   C830 0081      2332            LHI   R3,129             BUFFER SIZE 130 BYTES        FLP23130
210A   C550 07D2      2333            CLHI  R5,X'7D2'          IS IT TOO BIG                FLP23140
210E   4330 2150      2334            BE    T5.W2RV5           YES SKIP                     FLP23150
2112   41E0 222C      2335            BAL   R14,WRTSECT2       WRITE IN 2 REVOLUTION        FLP23160
2116   41F0 35FC      2336            BAL   R15,DISP,LRN       DISPLAY LRN                  FLP23170
211A   41F0 3164      2337            BAL   R15,AJUSTLRN       INCREMENT                    FLP23180
211E   4300 2126      2338            B     T5.W2RV3           CONTINUE                     FLP23190
2122   4300 2150      2339            B     T5.W2RV5           EXIT BRANCH                  FLP23200
       0000 2126      2340   T5.W2RV3 EQU   *                                               FLP23210
2126   4850 177A      2341            LH    R5,ENDLRN+6                                     FLP23220
212A   2791           2342            SIS   R5,1               DECREMENT                    FLP23230
212C   4550 3024      2343            CLH   R5,LRN             ARE WE 1 AWAY FROM LAST      FLP23240
2130   4330 2150      2344            BE    T5.W2RV5           EXIT BRANCH                  FLP23250
2134   41F0 3164      2345            BAL   R15,AJUSTLRN       INCREMENT LRN                FLP23260
2138   4300 2140      2346            B     T5.W2RV4           CHECK MORE                   FLP23270
213C   4300 2150      2347            B     T5.W2RV5           EXIT BRANCH                  FLP23280
       0000 2140      2348   T5.W2RV4 EQU   *                                               FLP23290
2140   48F0 176E      2349            LH    R15,STLRN+6        LOAD START LRN               FLP23300
2144   CAF0 0040      2350            AHI   R15,X'40'          ADD 2 AND 1/2 TRACKS AS LIMITS FLP23310
2148   45F0 3024      2351            CLH   R15,LRN            LIMIT YET                    FLP23320
214C   4380 2102      2352            BNL   T5.W2RV2                                        FLP23330
       0000 2150      2353   T5.W2RV5 EQU   *                                               FLP23340
                      2354   *                                                              FLP23350
                      2355   *  READ 130 BYTE IN 2 REVOLUTIONS AND COMPARE                  FLP23360
                      2356   *                                                              FLP23370
2150   41F0 2316      2357            BAL   R15,RESTORND       RESTORE OLD LRN              FLP23380
       0000 2154      2358   T5.R2RV1 EQU   *                                               FLP23390
2154   41F0 12CA      2359            BAL   R15,TSTBRK                                      FLP23400
2158   C830 0081      2360            LHI   R3,129             LOAD BUFFER SIZE 130 BYTES   FLP23400
215C   C550 07D2      2361            CLHI  R5,X'7D2'          IS IT TOO BIG                FLP23410
2160   4330 21A2      2362            BE    T5.R2RV5           YES SKIP                     FLP23420
2164   41E0 2288      2363            BAL   R14,RDSECT2        READ 130 BYTES IN 2REV.      FLP23430
2168   41F0 35FC      2364            BAL   R15,DISP,LRN       DISPLAY LRN                  FLP23440
216C   41F0 3164      2365            BAL   R15,AJUSTLRN       INCREMENT LRN                FLP23450
2170   4300 2178      2366            B     T5.R2RV2           CONTINUE                     FLP23460
2174   4300 21A2      2367            B     T5.R2RV5           EXIT BRANCH                  FLP23470
       0000 2178      2368   T5.R2RV2 EQU   *                                               FLP23480
```

TEST 5   WRITE/READ

```
2178   4850 177A     2369           LH      R5,ENDLRN+6         LOAD END LRN            FLP23490
217C   2751          2370           SIS     R5,1                DECREMENT               FLP23500
217E   4550 3024     2371           CLH     R5,LRN              ARE WE ONE AWAY FROM LAST   FLP23510
2182   4330 21A2     2372           BE      T5.R2RV5            EXIT BRANCH             FLP23520
2186   41F0 3164     2373           BAL     R15,AJUSTLRN        INCREMENT LRN           FLP23530
218A   4300 2192     2374           B       T5.R2RV3                                    FLP23540
218E   4300 21A2     2375           B       T5.R2RV5            EXIT BRANCH             FLP23550
       0000 2192     2376  T5.R2RV3 EQU     *                                           FLP23560
2192   48F0 176E     2377           LH      R15,STLRN+6         LOAD START LRN          FLP23570
2196   CAF0 0040     2378           AHI     R15,X'40'           ADD 2 AND 1/2 TRACKS AS LIMITS  FLP23580
219A   45F0 3024     2379           CLH     R15,LRN             LIMIT YET ?             FLP23590
219E   4380 2154     2380           BNL     T5.R2RV1                                    FLP23600
       0000 21A2     2381  T5.R2RV5 EQU     *                                           FLP23610
21A2   4300 0E6C     2382  TESTSEND B       TSTEND              TEST 5 FINISHED         FLP23620
                     2383  *                                                            FLP23640
                     2384  * SUBROUTINE TO WRITE A SECTOR INDICATED BY (LRN)            FLP23650
                     2385  *                                                            FLP23660
                     2386  * PARAMETERS : (R3) = # OF BYTES PER TRANSFER                FLP23670
       0000 21A6     2387  WRT.SECT EQU     *                                           FLP23680
21A6   2442          2388           LIS     R4,2                                        FLP23690
       0000 21A8     2389  WR.SECT  EQU     *                                           FLP23700
21A8   4030 301C     2390           STH     R3,R3SAV                                    FLP23710
21AC   41F0 356C     2391           BAL     R15,GETBUFAD                                FLP23720
21B0   2480          2392           LIS     R8,0                                        FLP23730
21B2   41F0 317A     2393  W.S1     BAL     R15,GETPATRN                                FLP23740
21B6   4002 0000     2394           STH     R0,0(R2)                                    FLP23750
21BA   2622          2395           AIS     R2,2                                        FLP23760
21BC   2682          2396           AIS     R8,2                                        FLP23770
21BE   C580 0082     2397           CLHI    R8,130                                      FLP23780
21C2   4280 21B2     2398           BL      W.S1                                        FLP23790
       0000 21C6     2399  W.S2     EQU     *                                           FLP23810
21C6   41F0 356C     2400           BAL     R15,GETBUFAD                                FLP23820
21CA   4830 301C     2401           LH      R3,R3SAV                                    FLP23830
21CE   0A32          2402           AHR     R3,R2                                       FLP23840
21D0   4850 3024     2403           LH      R5,LRN                                      FLP23850
21D4   41F0 3228     2404           BAL     R15,RW                                      FLP23860
21D8   030E          2405           BR      R14                                         FLP23870
                     2406  *                                                            FLP23880
                     2407  * SUBROUTINE TO READ A SECTOR INDICATED BY (LRN)             FLP23890
                     2408  *                                                            FLP23900
       0000 21DA     2409  RD.SECT  EQU     *                                           FLP23910
21DA   2441          2410           LIS     R4,1                                        FLP23920
21DC   4030 301C     2411           STH     R3,R3SAV                                    FLP23930
21E0   41F0 356C     2412           BAL     R15,GETBUFAD                                FLP23940
21E4   C810 0082     2413           LHI     R1,130                                      FLP23950
21E8   4012 0000     2414           STH     R1,0(R2)                                    FLP23960
21EC   2622          2415           AIS     R2,2                                        FLP23970
21EE   2712          2416           SIS     R1,2                                        FLP23980
21F0   2214          2417           BFBS    1,4                                         FLP23990
       0000 21F2     2418  R.S1     EQU     *                                           FLP24000
21F2   41F0 356C     2419           BAL     R15,GETBUFAD                                FLP24010
21F6   4830 301C     2420           LH      R3,R3SAV                                    FLP24020
21FA   0A32          2421           AHR     R3,R2                                       FLP24030
```

TEST 5   WRITE/READ

```
21FC  4850 3024      2422           LH    R5,LRN                                                FLP24040
2200  41F0 3228      2423           BAL   R15,RW                                                FLP24050
                     2424    ≠ NOW CHECK DATA                                                   FLP24060
      0000 2204      2425    R.S3    EQU   *                                                    FLP24070
2204  41F0 356C      2426           BAL   R15,GETBUFAD                                          FLP24080
2208  4880 3D1C      2427           LH    R8,R3SAV                                              FLP24090
      0000 220C      2428    RD.SECT1 EQU   *                                                   FLP24100
220C  41F0 317A      2429           BAL   R15,GETPATRN                                          FLP24110
2210  4832 0000      2430           LH    R3,0(R2)                                              FLP24120
2214  0503           2431           CLHR  R0,R3                                                 FLP24130
2216  4230 2224      2432           BNE   RD.SECT2                                              FLP24140
221A  2622           2433           AIS   R2,2                                                  FLP24150
221C  2782           2434           SIS   R8,2                                                  FLP24160
221E  4310 220C      2435           BNM   RD.SECT1                                              FLP24170
2222  030E           2436           BR    R14                                                   FLP24180
2224  4842 0000      2437    RD.SECT2 LH    R2,0(R2)                                            FLP24190
2228  4300 37AE      2438           B     ERFL1B          **              ***1B                FLP24200
      0000 222C      2439    WRISECT2 EQU   *                                                   FLP24210
222C  4030 3D1C      2440           STH   R3,R3SAV        SAVE R3                               FLP24220
2230  41F0 356C      2441           BAL   R15,GETBUFAD    GET BUFFER ADDRESS                    FLP24230
2234  2480           2442           LIS   R8,0            ZERO R8                               FLP24240
      0000 2236      2443    WRTSCT1  EQU   *                                                   FLP24250
2236  41F0 317A      2444           BAL   R15,GETPATRN    GET PATTERN                           FLP24260
223A  4002 0000      2445           STH   R0,0(R2)        STORE PATTERN INTO BUFFER             FLP24270
223E  2622           2446           AIS   R2,2            INCREMENT                             FLP24280
2240  2682           2447           AIS   R8,2            INCREMENT                             FLP24290
2242  C580 0082      2448           CLHI  R8,130          LIMIT YET ?                           FLP24300
2246  4280 2236      2449           BL    WRTSCT1         LOOP AND STORE AGAIN                  FLP24310
                     2450    * WRITE  WITH  DELAY                                               FLP24320
224A  41F0 356C      2451           BAL   R15,GETBUFAD                                          FLP24330
224E  2430           2452           LIS   R3,0                                                  FLP24340
2250  0860 3024      2453           WH    DEV,LRN                                               FLP24350
2254  DE60 3D3D      2454           OC    DEV,WRITE                                             FLP24360
2258  41F0 35A0      2455           BAL   R15,BUSY                                              FLP24370
225C  4300 3688      2456           B     ERFL13          **13            ****13               FLP24380
2260  DA62 0000      2457    W.S3     WD    DEV,0(R2)                                           FLP24390
2264  41F0 35A0      2458           BAL   R15,BUSY                                              FLP24400
2268  4300 3688      2459           B     ERFL13          **13            ****13               FLP24410
226C  2631           2460           AIS   R3,1                                                  FLP24420
226E  2621           2461           AIS   R2,1                                                  FLP24430
2270  C530 0082      2462           CLHI  R3,130                                                FLP24440
2274  4280 2260      2463           BL    W.S3                                                  FLP24450
2278  2405           2464           LIS   R0,5                                                  FLP24460
227A  41F0 10DE      2465           BAL   R15,TIMER                                             FLP24470
227E  DE60 3D42      2466           OC    DEV,STOP                                              FLP24480
2282  41F0 353C      2467           BAL   R15,IDLE                                              FLP24490
2286  030E           2468           BR    R14                                                   FLP24500
      0000 2288      2469    RDSECT2  EQU   *                                                   FLP24510
2288  4030 3D1C      2470           STH   R3,R3SAV        SAVE R3                               FLP24520
228C  41F0 356C      2471           BAL   R15,GETBUFAD    GET BUFFER ADDRESS                    FLP24530
2290  C810 0082      2472           LHI   R1,130          130 BYTES TO DESTROY                  FLP24540
2294  4012 0000      2473           STH   R1,0(R2)        DESTROY THEM                          FLP24550
2298  2622           2474           AIS   R2,2            INCREMENT                             FLP24560
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TEST 5   WRITE/READ

```
229A    2712              2475              SIS    R1,2              DECREMENT                                  FLP24570
229C    2214              2476              BFBS   1,4              FINISHED YET STORE AGAIN                   FLP24580
                          2477   *                                                                            FLP24590
                          2478   *  READ   2 SECTORS  WITH  DELAY                                             FLP24600
                          2479   *                                                                            FLP24610
229E    41F0 356C         2480              BAL    R15,GETBUFAD                                               FLP24620
22A2    2430              2481              LIS    R3,0                                                       FLP24630
22A4    0860 3D24         2482              WH     DEV,LRN                                                    FLP24640
22A8    DE60 3D3C         2483              OC     DEV,READ                                                   FLP24650
22AC    41F0 35A0         2484              BAL    R15,BUSY                                                   FLP24660
22B0    4300 3688         2485              B      ERFL13            **13                    ****13           FLP24670
        0000 22B4         2486   R.S2       EQU    *                                                         FLP24680
22B4    DB62 0000         2487              RD     DEV,0(R2)                                                  FLP24690
22B8    41F0 35A0         2488              BAL    R15,BUSY                                                   FLP24700
22BC    4300 3688         2489              B      ERFL13            **13                    ****13           FLP24710
22C0    2631              2490              AIS    R3,1                                                       FLP24720
22C2    2621              2491              AIS    R2,1                                                       FLP24730
22C4    C530 0082         2492              CLHI   R3,130                                                     FLP24740
22C8    4280 22B4         2493              BL     R.S2                                                       FLP24750
22CC    2403              2494              LIS    R0,3                                                       FLP24760
22CE    41F0 10DE         2495              BAL    R15,TIMER                                                  FLP24770
22D2    DE60 3D42         2496              OC     DEV,STOP                                                   FLP24780
22D6    41F0 353C         2497              BAL    R15,IDLE                                                   FLP24790
22DA    4300 22DE         2498              B      RDSECT3           GO CHECK DATA                            FLP24800
                          2499   *                                                                            FLP24810
                          2500   *  CHECK DATA  WRITTEN  AND READ                                             FLP24820
                          2501   *                                                                            FLP24830
        0000 22DE         2502   RDSECT3    EQU    *                                                          FLP24840
22DE    41F0 356C         2503              BAL    R15,GETBUFAD      GET BUFFER ADDRESS (START)               FLP24850
22E2    4880 3D1C         2504              LH     R8,R3SAV          LOAD END ADDRESS OF BUFFER               FLP24860
        0000 22E6         2505   RDSECT4    EQU    *                                                          FLP24870
22E6    41F0 317A         2506              BAL    R15,GETPATRN      GET DATA                                 FLP24880
22EA    4502 0000         2507              CLH    R0,0(R2)          COMPARE                                  FLP24890
22EE    4230 22FC         2508              BNE    RDSECT5           ERROR BRANCH                             FLP24900
22F2    2622              2509              AIS    R2,2              INCREMENT                                FLP24910
22F4    2782              2510              SIS    R8,2              DECREMENT                                FLP24920
22F6    4310 22E6         2511              BNM    RDSECT4           LOOP AND CHECK MORE DATA                 FLP24930
22FA    030E              2512              BR     R14               RETURN                                   FLP24940
        0000 22FC         2513   RDSECT5    EQU    *                                                          FLP24950
22FC    4822 0000         2514              LH     R2,0(R2)          LOAD FOR ERROR PRINT                     FLP24960
2300    4300 37B4         2515              B      ERFL40            **40                    ****40           FLP24970
                          2516   *                                                                            FLP24980
                          2517   * TO INITIALIZE 'LRN' & SAVE 'RAND'                                          FLP24990
                          2518   *                                                                            FLP25000
        0000 2304         2519   LRN.RAND   EQU    *                                                          FLP25010
2304    4800 176E         2520              LH     R0,STLRN+6                                                 FLP25020
2308    4000 3D24         2521              STH    R0,LRN                                                     FLP25030
230C    4800 3CFE         2522              LH     R0,RAND                                                    FLP25040
2310    4000 3EF4         2523              STH    R0,RANDSAV                                                 FLP25050
2314    030F              2524              BR     R15                                                        FLP25060
                          2525   *                                                                            FLP25080
                          2526   * TO INITIALIZE 'LRN' & RESTORE 'RAND'                                       FLP25090
                          2527   *                                                                            FLP25100
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TEST 5   WRITE/READ

```
         0000 2316          2528  RESTORNO EQU   *                            FLP25110
2316     4800 176E          2529        LH    R0,STLRN+6                      FLP25120
231A     4000 3D24          2530        STH   R0,LRN                          FLP25130
231E     4800 3EF4          2531        LH    R0,RANDSAV                      FLP25140
2322     4000 3CFE          2532        STH   R0,RAND                         FLP25150
2326     030F               2533        BR    R15                             FLP25160
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                              2535  *************************************************************************  FLP25180
                              2536  *   TEST6 BOOT LOAD                                                        FLP25190
                              2537  *                                                                          FLP25200
                              2538  *   PURPOSE                                                                FLP25210
                              2539  *         TO TEST THE BOOT LOAD FUNCTION                                   FLP25220
                              2540  *                                                                          FLP25230
                              2541  *   DESIGN SPECIFICATION                                                   FLP25240
                              2542  *         1.WRITE TO TRACK 0 SECTOR 5 A KNOWN PATTERN
                              2543  *         2.SET UP PSUEDO 50 SEQUENCE                                       FLP25260
                              2544  *         3.DO BOOTLOAD                                                    FLP25270
                              2545  *         4.CHECK BUFFER                                                   FLP25280
                              2546  *************************************************************************  FLP25290
2328    4860 1756             2547  TEST6    LH    DEV,FLPADR+6         LOAD FLOPPY ADDRESS                     FLP25300
232C    2410                  2548           LIS   R1,0                 INITIALIZE COUNTER                      FLP25310
232E    41F0 356C             2549           BAL   R15,GETBUFAD                                                FLP25320
2332    41F0 317A             2550  TEST61   BAL   R15,GETPATRN         GET NEW RANDOM NUMBER                   FLP25330
2336    4002 0000             2551           STH   R0,0(R2)                                                    FLP25340
233A    2622                  2552           AIS   R2,2                                                        FLP25350
233C    2612                  2553           AIS   R1,2                 INCREMENT                              FLP25360
233E    C510 0080             2554           CLHI  R1,128               LIMIT YET                              FLP25370
2342    4230 2332             2555           BNE   TEST61               GO AGAIN                               FLP25380
2346    C850 0005             2556           LHI   R5,5                 LOAD BOOT LOAD TRACK AND SECTOR
234A    41F0 356C             2557           BAL   R15,GETBUFAD                                                FLP25400
234E    C832 007F             2558           LHI   R3,127(R2)                                                  FLP25410
2352    2442                  2559           LIS   R4,2                 WRITE COMMAND                           FLP25420
2354    41F0 3228             2560           BAL   R15,RW                                                      FLP25430
2358    4800 0078             2561           LH    R0,X'78'                                                    FLP25440
235C    4000 3CC8             2562           STH   R0,TEMP                                                     FLP25450
2360    4860 1756             2563           LH    DEV,FLPADR+6                                                FLP25460
2364    D260 0078             2564           STB   DEV,X'78'                                                   FLP25470
2368    D300 3D41             2565           LB    R0,BOOTLOAD                                                 FLP25480
236C    D200 0079             2566           STB   R0,X'79'                                                    FLP25490
2370    D500 0100             2567           AL    X'80'+128            DO BOOTLOAD                             FLP25500
2374    DE60 3D47             2568           OC    DEV,DIS,STOP                                                FLP25510
2378    4800 3CC8             2569           LH    R0,TEMP                                                     FLP25520
237C    4000 0078             2570           STH   R0,X'78'                                                    FLP25530
2380    41F0 353C             2571           BAL   R15,IDLE             WAIT FOR IDLE                           FLP25540
2384    41F0 356C             2572           BAL   R15,GETBUFAD                                                FLP25550
2388    C850 0080             2573           LHI   R3,128                                                      FLP25560
238C    2410                  2574           LIS   R1,0                                                        FLP25570
238E    D302 0000             2575           LB    R0,0(R2)                                                    FLP25580
2392    0800                  2576           LHR   R0,R0                                                       FLP25590
2394    4230 239E             2577           BNZ   TEST63                                                      FLP25600
2398    2621                  2578           AIS   R2,1                                                        FLP25610
239A    C850 007F             2579           LHI   R3,127                                                      FLP25620
239E    D302 0000             2580  TEST63   LB    R0,0(R2)                                                    FLP25630
23A2    D401 0080             2581           CLB   R0,X'80'(R1)                                                FLP25640
23A6    4230 3662             2582           BNE   ERFL29               NO COMPARE                    ***29     FLP25650
23AA    2611                  2583           AIS   R1,1                                                        FLP25660
23AC    2621                  2584           AIS   R2,1                                                        FLP25670
23AE    0513                  2585           CLHR  R1,R3                                                       FLP25680
23B0    4230 239E             2586           BNE   TEST63                                                      FLP25690
23B4    41F0 1414             2587           BAL   LINK,LCORE           RESTORE LOW CORE                        FLP25700
```

TEST 6   BOOT LOAD

2388   4300 0E6C   2588   TEST6END B   TSTEND   TEST 6 FINISHED   FLP25710

TEST 7   DELETE

```
                              2590  ************************************************************************  FLP25730
                              2591  *   TEST7 DELETE                                                          FLP25740
                              2592  *                                                                         FLP25750
                              2593  *   PURPOSE                                                               FLP25760
                              2594  *        TO TEST THE DELETE FUNCTION                                      FLP25770
                              2595  *                                                                         FLP25780
                              2596  *   DESIGN SPECIFICATION                                                  FLP25790
                              2597  *        1.RESET                                                          FLP25800
                              2598  *        2.DELETE                                                         FLP25810
                              2599  *        3.CHECK THEY ARE DELETED                                         FLP25820
                              2600  *        4.REWRITE TO ONE OF THE DELETED SECTORS                         FLP25830
                              2601  *        5.CHECK                                                          FLP25840
                              2602  *                                                                         FLP25850
                              2603  ************************************************************************  FLP25860
          0000 238C           2604  TEST7   EQU   *                                                          FLP25870
23BC      4860 1756           2605          LH    DEV,FLPADR+6    LOAD DEVICE ADDRESS                        FLP25880
23C0      4800 176E           2606          LH    R0,STLRN+6      LOAD INITIAL VALUE                         FLP25890
23C4      4000 3D24           2607          STH   R0,LRN          STORE INTO CURRENT LRN                     FLP25900
23C8      DE60 3D43           2608          OC    DEV,RESET       RESET CONTROLLER                           FLP25910
23CC      41F0 353C           2609          BAL   R15,IDLE        WAIT FOR IDLE                              FLP25920
23D0      C840 007F           2610          LHI   R0,127                                                     FLP25930
23D4      4000 3D12           2611          STH   R0,SECT12                                                  FLP25940
          0000 23D8           2612  TEST7A  EQU   *                                                          FLP25950
23D8      4800 3D24           2613          LH    R0,LRN                                                     FLP25960
23DC      4500 177A           2614          CLH   R0,ENDLRN+6                                                FLP25970
23E0      4230 23EC           2615          BNE   TEST7B                                                     FLP25980
23E4      C800 007F           2616          LHI   R0,127                                                     FLP25990
23E8      4000 3D12           2617          STH   R0,SECT12                                                  FLP26000
          0000 23EC           2618  TEST7B  EQU   *                                                          FLP26010
23EC      41F0 356C           2619          BAL   R15,GETBUFAD    LOAD START AND END OF BUFFER               FLP26020
23F0      4830 3D12           2620          LH    R3,SECT12                                                  FLP26030
23F4      0A32               2621          AHR   R3,R2                                                      FLP26040
23F6      2445               2622          LIS   R4,5            DELETE COMMAND OFFSET                       FLP26050
23F8      4850 3D24           2623          LH    R5,LRN          LOGICAL RECORD NUMBER TO BE DELETED        FLP26060
23FC      41F0 3228           2624          BAL   R15,RW          DO OPERATION                               FLP26070
2400      41F0 356C           2625          BAL   R15,GETBUFAD    LOAD START AND END OF BUFFER               FLP26080
2404      4830 3D12           2626          LH    R3,SECT12                                                  FLP26090
2408      0A32               2627          AHR   R3,R2                                                      FLP26100
240A      2441               2628          LIS   R4,1            READ COMMAND OFFSET                         FLP26110
240C      4850 3D24           2629          LH    R5,LRN          LOAD LOGICAL RECORD NUMBER                 FLP26120
2410      41F0 3228           2630          BAL   R15,RW          DO OPERATION                               FLP26130
2414      41E0 31A8           2631          BAL   R14,R.AUX       READ AUX STATUS                            FLP26140
2418      9D67               2632          SSR   DEV,STAT        SENSE CONTROLLER STATUS                    FLP26150
241A      C470 00BF           2633          NHI   STAT,X'BF'                                                 FLP26160
241E      C570 0022           2634          CLHI  STAT,X'22'      DELETE BIT SET                             FLP26170
2422      4230 36CA           2635          BNE   ERFLOB          NO ERROR                        ****0B     FLP26180
2426      D330 3EDE           2636          LB    R3,RAUX         LOAD UP 1ST BYTE                           FLP26190
242A      C430 00FB           2637          NHI   R3,X'FB'                                                   FLP26200
242E      C530 0002           2638          CLHI  R3,X'02'        DELETE BIT SET                             FLP26210
2432      4230 36CA           2639          BNE   ERFLOB          NO ERROR                        ****0B     FLP26220
2436      41F0 356C           2640          BAL   R15,GETBUFAD    START AND END OF BUFFER                    FLP26230
243A      4830 3D12           2641          LH    R3,SECT12                                                  FLP26240
243E      0A32               2642          AHR   R3,R2                                                      FLP26250
```

TEST 7   DELETE

2440	2442		2643		LIS	R4,2	WRITE OFFSET	FLP26260
2442	48D0 3D24		2644		LH	R5,LRN		FLP26270
2446	41F0 3228		2645		BAL	R15,RW	DO OPERATION	FLP26280
244A	41F0 356C		2646		BAL	R15,GETBUFAD	LOAD START AND END OF BUFFER	FLP26290
244E	4830 3012		2647		LH	R3,SECT12		FLP26300
2452	0A32		2648		AHR	R3,R2		FLP26310
2454	2441		2649		LIS	R4,1	READ	FLP26320
2456	48D0 3D24		2650		LH	R5,LRN		FLP26330
245A	41F0 3228		2651		BAL	R15,RW	DO OPERATION	FLP26340
245E	41E0 31A8		2652		BAL	R14,R.AUX	READ AUXILARY STATUS	FLP26350
2462	9D57		2653		SSR	DEV,STAT	SENSE CONTROLLER STATUS	FLP26360
2464	C470 00BF		2654		NHI	STAT,X'BF'		FLP26370
2468	C570 0002		2655		CLHI	STAT,X'02'	CHECK ONLY IDLE	FLP26380
246C	4230 36CA		2656		BNE	ERFLUB	NO ERROR ****0B	FLP26390
2470	D330 3EDE		2657		LB	R3,RAUX	LOAD 1ST BYTE	FLP26400
2474	C430 00FB		2658		NHI	R3,X'FB'		FLP26410
2478	C530 0000		2659		CLHI	R3,0	CLEAR STATUS	FLP26420
247C	4230 36CA		2660		BNE	ERFLUB	****0B	FLP26430
2480	41F0 35FC		2661		BAL	R15,DISP.LRN	DISPLAY LOGICAL RECORD NUMBER	FLP26440
2484	41F0 12CA		2662		BAL	R15,TSTBRK		FLP26450
2488	4800 3012		2663		LH	R0,SECT12		FLP26460
248C	C500 007F		2664		CLHI	R0,127		FLP26470
2490	4330 24A4		2665		BE	TEST72		FLP26480
2494	C810 007F		2666		LHI	R1,127		FLP26490
2498	41F0 3164		2667		BAL	R15,AJUSTLRN		FLP26500
249C	4300 2488		2668		B	TEST73		FLP26510
24A0	4300 24E0		2669		B	TEST7END		FLP26520
	0000 24A4		2670	TEST72	EQU	*		FLP26530
24A4	4800 17C2		2671		LH	R0,SELCH+6		FLP26540
24A8	4330 24B4		2672		BZ	TEST74		FLP26550
24AC	C810 007F		2673		LHI	R1,127		FLP26560
24B0	4300 2488		2674		B	TEST73		FLP26570
	0000 24B4		2675	TEST74	EQU	*		FLP26580
24B4	C810 00FF		2676		LHI	R1,255		FLP26590
	0000 24B8		2677	TEST73	EQU	*		FLP26600
24B8	4010 3012		2678		STH	R1,SECT12		FLP26610
24BC	41F0 35FC		2679		BAL	R15,DISP.LRN	DISPLAY LOGICAL RECORD NUMBER	FLP26620
24C0	41F0 3164		2680		BAL	R15,AJUSTLRN	CHECK AND ADJUST LRN	FLP26630
24C4	4300 24CC		2681		B	TEST75		FLP26640
24C8	4300 24E0		2682		B	TEST7END		FLP26650
	0000 24CC		2683	TEST75	EQU	*		FLP26660
24CC	48F0 176E		2684		LH	R15,STLRN+6	LOAD START LRN	FLP26670
24D0	CAF0 0040		2685		AHI	R15,X'40'	ADD 2 AND 1/2 TRACK AS LIMITS	FLP26680
24D4	45F0 3D24		2686		CLH	R15,LRN	LIMIT YET ?	FLP26690
24D8	4380 23D8		2687		BNL	TEST7A		FLP26700
24DC	4300 24E0		2688		B	TEST7END	EXIT	FLP26710
24E0	4300 0E6C		2689	TEST7END	B	TSTEND	TEST 7 FINSIHED	FLP26720

TEST 8   FORMAT

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                               2691  ******************************************************************************  FLP26740
                               2692  *   TEST8 FORMAT                                                               FLP26750
                               2693  *                                                                              FLP26760
                               2694  *   PURPOSE                                                                    FLP26770
                               2695  *        TO TEST THE FORMAT COMMAND                                            FLP26780
                               2696  *                                                                              FLP26790
                               2697  *   DESIGN SPECIFICATION                                                       FLP26800
                               2698  *        1.RESET                                                               FLP26810
                               2699  *        2.FORMAT                                                              FLP26820
                               2700  *        3.READ I.D.                                                           FLP26830
                               2701  *        4.NOMORE THAN 2 DEFECTIVE TRACKS                                      FLP26840
                               2702  *                                                                              FLP26850
           0000 24E4           2703  TEST8    EQU    *                                                             FLP26860
24E4   4860 1756               2704           LH     DEV+FLPADR+6     GET FLOPPY CONTROLLER AUDRESS                FLP26870
24E8   41F0 353C               2705           BAL    R15,IDLE         ENSURE THAT CONTROLLER IS IDLE              FLP26880
24EC   DE60 3D43               2706           OC     DEV+RESET        RESET THE DRIVE                             FLP26890
24F0   41F0 353C               2707           BAL    R15,IDLE                                                     FLP26900
24F4   C570 0002               2708           CLHI   STAT,2                                                       FLP26910
24F8   4230 36A0               2709           BNE    ERFL02           ONLY IDLE SHOULD BE SET  **** 02            FLP26920
24FC   DE60 3D44               2710           OC     DEV+FORMAT       FORMAT COMMAND                              FLP26950
2500   41F0 35A0               2711           BAL    R15,BUSY                                                     FLP26960
2504   4300 3694               2712           B      ERFL33           BAD STATUS AFTER FORMAT         ***33        FLP26970
2508   0860 1786               2713           WH     DEV+DATA+6       THIS HW IS WRITTEN IN ALL SECTORS          FLP26980
                               2714  *                                ALL OVER THE DISC DURING FORMAT            FLP26990
250C   DA60 17B7               2715           WD     DEV+FMPARM+7     FIRST DIGIT : # OF ERRORS ALLOWED          FLP27000
                               2716  *                                SECOND DIGIT: # OF READS                   FLP27010
2510   DE60 3D42               2717           OC     DEV+STOP                                                    FLP27020
2514   D380 17B7               2718           LB     R8,FMPARM+7                                                 FLP27030
2518   C480 000F               2719           NHI    R8,15                                                       FLP27040
251C   2132                    2720           BNZS   T8F                                                         FLP27050
251E   2482                    2721           LIS    R8,2                                                        FLP27060
2520   9187                    2722  T8F      SLHLS  R8,7
2522   C8U0 1000               2723  T8FORMAT LHI    R0,X'1000'
           0000 2526           2724  T8F2     EQU    *                                                           FLP27090
2526   41F0 10DE               2725           BAL    R15,TIMER        TIME OUT                                    FLP27100
252A   0808                    2726           LHR    R0,R8                                                       FLP27110
252C   41F0 3600               2727           BAL    R15,DISPLAY                                                 FLP27120
2530   9067                    2728           SSR    DEV+STAT                                                    FLP27130
2532   4220 2544               2729           BP     T8F1             IDLE SET, FORMAT COMPLETE.                 FLP27140
2536   2781                    2730           SIS    R8,1                                                        FLP27150
2538   4230 2522               2731           BNZ    T8FORMAT                                                    FLP27160
253C   4300 3694               2732           B      ERFL33                                                      
2540   41F0 353C               2733           BAL    R15,IDLE                                                    FLP27180
           0000 2544           2734  T8F1     EQU    *                                                           FLP27190
2544   C570 0002               2735           CLHI   STAT,2                                                      FLP27200
2548   4220 3694               2736           BNE    ERFL33           BAD STATUS AFTER FORMAT         ***33        FLP27210
                               2737  * THE FLOPPY DISC IS FORMATTED                                               FLP27220
                               2738  *                                                                            FLP27230
                               2739  * INITIALIZE CONSTANTS FOR FORMAT CHECK UP                                   FLP27240
                               2740  *                                                                            FLP27250
254C   2400                    2741           LIS    R0,0                                                        FLP27260
254E   4000 3D08               2742           STH    R0,DEFTRK        LIST OF DEFECTIVE TRACKS                    FLP27270
2552   4000 3DUA               2743           STH    R0,DEFTRK+2                                                  FLP27280
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TEST 8   FORMAT

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2556   4000 3D0C      2744          STH    R0,DEFTRK+4                                                  FLP27290
255A   4000 3D10      2745          STH    R0,LASTDEF          FLAG                                     FLP27300
255E   4000 3D18      2746          STH    R0,LGTRK            LAST GOOD TRACK #                         FLP27310
2562   4000 3D22      2747          STH    R0,MOREDEF          RESET ' MORE THAN 6 DEF TRACKS' FLAG     FLP27320
2566   4000 3D14      2748          STH    R0,NOFDEF           # OF DEFECTIVE TRACKS                     FLP27330
256A   2591            2749          LCS    R9,1                INITIALZIE CRC HW                        FLP27340
256C   C8C0 FE00      2750          LHI    R12,X'FE00'                                                  FLP27350
2570   24D8            2751          LIS    R13,8                                                        FLP27360
2572   41F0 320E      2752          BAL    R15,DOCRC2          INCLUDE ADDRESS MARK IN CRC              FLP27370
2576   25C1            2753          LCS    R12,1                                                        FLP27380
2578   41F0 320A      2754          BAL    R15,DOCRC1          INCLUDE FIRST HW IN CRC = FFFF           FLP27390
257C   25C1            2755          LCS    R12,1                                                        FLP27400
257E   41F0 320A      2756          BAL    R15,DOCRC1          2ND HW = FFFF                            FLP27410
2582   4090 3D1A      2757          STH    R9,FFFFCRC          CRC HW FOR DEFECTIVE TRACK               FLP27420

                       2759   * GET AUXILIARY STATUS AFTER FORMAT                                        FLP27440
2586   41E0 31A8      2760          BAL    R14,R.AUX           READ AUXILIARY STATUS                    FLP27450
258A   4800 3EE2      2761          LH     R0,RAUX+4                                                    FLP27460
258E   4000 3D1E      2762          STH    R0,HOW.MANY                                                  FLP27470
2592   9410            2763          EXBR   R1,R0                                                        FLP27480
2594   9300            2764          LBR    R0,R0               (R0) = 2ND DEFECTIVE TRACK               FLP27490
2596   9311            2765          LBR    R1,R1               (R1) = 1ST DEFECTIVE TRACK               FLP27500
2598   C510 00FF      2766          CLHI   R1,X'00FF'                                                   FLP27510
259C   2136            2767          BNES   T8.1                                                         FLP27520
259E   0501            2768          CLHR   R0,R1                                                        FLP27530
25A0   4230 371E      2769          BNE    ERFL34              LAST BYTE OF AUX STATUS BAD      ***34    FLP27540
25A4   4300 25C8      2770          B      T8CKID                                                       FLP27550
                       2771   *                                                                          FLP27560
25A8   0811            2772   T8.1   LHR    R1,R1                                                        FLP27570
25AA   2133            2773          BNZS   T8.11               BRANCH IF OTHER TRACK IS DEFECTIVE       FLP27580
25AC   40E0 3D20      2774          STH    R14,ZDEF            TRACK 0 IS DEFECTIVE                      FLP27590
25B0   D210 3D08      2775   T8.11  STB    R1,DEFTRK                                                    FLP27600
25B4   C500 00FF      2776          CLHI   R0,X'00FF'                                                   FLP27610
25B8   4330 25C8      2777          BE     T8CKID              GO CHECK ALL ID                          FLP27620
25BC   0800            2778          LHR    R0,R0                                                        FLP27630
25BE   2133            2779          BNZS   T8.12                                                        FLP27640
25C0   4000 3D20      2780          STH    R0,ZDEF             RESET FLAG : TRACK 0 IS GOOD             FLP27650
25C4   D200 3D09      2781   T8.12  STB    R0,DEFTRK+1                                                  FLP27660
                       2782   *                                                                          FLP27670
                       2783   * TO CHECK ID'S & MAKE SURE THAT THE DISC IS FORMATTED CORRECTLY           FLP27680
                       2784   *                                                                          FLP27690
       0000 25C8      2785   T8CKID EQU    *                                                            FLP27700
25C8   2411            2786          LIS    R1,1                                                         FLP27710
25CA   4010 3D24      2787          STH    R1,LRN              INITIALIZE LOGICAL RECORD NUMBER         FLP27720
25CE   4810 3D24      2788   T8CKID0 LH    R1,LRN                                                       FLP27730
25D2   41E0 28AA      2789          BAL    R14,CONVT                                                    FLP27740
25D6   4B00 3D14      2790          SH     R0,NOFDEF                                                    FLP27750
25DA   D200 3CD0      2791          STB    R0,TRACKNO          SET UP EXPECTED TRACK # ,                FLP27760
25DE   D210 3CD1      2792          STB    R1,SECTNO           SECTOR a                                 FLP27770
25E2   4850 3D24      2793          LH     R5,LRN                                                       FLP27780
25E6   C820 3ED8      2794          LHI    R2,RID                                                       FLP27790
25EA   C830 3EDD      2795          LHI    R3,RIDND                                                     FLP27800
25EE   2443            2796          LIS    R4,3                                                         FLP27810
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TEST 8   FORMAT

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25F0   41F0 3228   2797          BAL    R15,RW                                                   FLP27820
25F4   41E0 31A8   2798          BAL    R14,R.AUX       READ AUXILIARY STATUS                    FLP27830
               2799  *                                                                           FLP27840
               2800  * NOW CHECK STATUS                                                          FLP27850
25F8   4800 3EDE   2801          LH     R0,RAUX         (R0) = ERROR STATUS,DRIVE STATUS         FLP27860
25FC   C370 0010   2802          THI    STAT,X'10'                                               FLP27870
2600   4230 27E0   2803          BNZ    CKSTA           ERR BIT IS SET, GO DETERMINE EXACT       FLP27880
               2804  *                                  NATURE OF FAILURE                        FLP27890
2604   C370 0020   2805          THI    STAT,X'20'                                               FLP27900
2608   2337        2806          BZS    T8CKID1         BRANCH IF DEL RECORD BIT RESET           FLP27910
260A   C300 0200   2807          THI    R0,X'0200'                                               FLP27920
260E   4290 36E8   2808          BNZ    ERFL11          DELETED RECORD BIT SET     **** 11       FLP27930
2612   4300 374E   2809          B      ERFL3D          DEL REC BIT IN ERRSTA         ***3D      FLP27940
2616   C370 0040   2810  T8CKID1 THI    STAT,X'40'                                               FLP27950
261A   2337        2811          BZS    T8CKID2         BRANCH IF DEF TRACK BIT RESET            FLP27960
261C   C300 0400   2812          THI    R0,X'0400'                                               FLP27970
2620   4290 3718   2813          BNZ    ERFL10          DEF TRACK BIT SET          **** 10       FLP27980
2624   4300 3754   2814          B      ERFL3E          DEF BIT SET IN ERRSTA         ***3E      FLP27990
               2815  *                                                                           FLP28000
               2816  * STATUS OK. NOW CHECK TRACK #                                              FLP28010
               2817  *                                                                           FLP28020
2628   D510 3ED8   2818  T8CKID2 LB     R1,RID          (R1) = TRACK # IN ID                     FLP28030
262C   D300 3C00   2819          LB     R0,TRACKNO      (R0) = EXPECTED TRACK #                  FLP28040
2630   C510 00FF   2820          CLHI   R1,X'FF'                                                 FLP28050
2634   4290 268A   2821          BNE    T8GT            BRANCH IF NOT A DEFECTIVE TRACK          FLP28060

               2823  * A DEFECTIVE TRACK IS DETECTED                                             FLP28080

2638   0800        2825          LHR    R0,R0                                                    FLP28100
263A   4290 2652   2826          BNZ    T8.2            BRANCH IF EXPECTED TRACK ISN'T 0         FLP28110
263E   4820 3020   2827          LH     R2,ZDEF                                                  FLP28120
2642   4330 377E   2828          BZ     ERFL3F          BAD ID IN TRACK 0             ***3F      FLP28130
2646   C890 3808   2829          LHI    R5,T0DEFMSG                                              FLP28140
264A   41F0 114A   2830          BAL    R15,PRINT       "TRACK 0 IS DEFECTIVE" MESSAGE           FLP28150
264E   4300 281C   2831          B      TEST8END                                                 FLP28160
               2832  * DEFECTIVE TRACK # IS OTHER THAN 0                                         FLP28170
2652   2425        2833  T8.2    LIS    R2,5                                                     FLP28180
2654   0402 3D08   2834          CLB    R0,DEFTRK(R2)                                            FLP28190
2658   4330 268E   2835          BE     T8.3            YES                                      FLP28200
265C   2721        2836          SIS    R2,1                                                     FLP28210
265E   2215        2837          BNMS   T8.2+2          NO,SCAN 6 TIMES                          FLP28220
2660   4820 3D1E   2838          LH     R2,HOW.MANY     MORE THAN 2 DEFECTIVE TRACKS EXPECTED    FLP28230
2664   4230 37C0   2839          BNZ    ERFL35          NO                            ***35      FLP28240
2668   D312 3D08   2840  T8.21   LB     R1,DEFTRK(R2)                                            FLP28250
266C   0811        2841          LHR    R1,R1                                                    FLP28260
266E   2339        2842          BZS    T8.22                                                    FLP28270
2670   2621        2843          AIS    R2,1                                                     FLP28280
2672   C520 0006   2844          CLHI   R2,6            FIND SLOT FOR IT.                        FLP28290
2676   2087        2845          BLS    T8.21                                                    FLP28300
2678   4040 3022   2846          STH    R4,MOREDEF                                               FLP28310
267C   4300 277E   2847          B      T8.MSG                                                   FLP28320
               2848  *                                  ARE DETECTED.                            FLP28330
       0000 2680   2849  T8.22   EQU    *                                                        FLP28340
```

TEST 8   FORMAT

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2680   4A00 3D14        2850          AH     R0,NOFDEF                                                    FLP28350
2684   D202 3D08        2851          STB    R0,DEFTRK(R2)      ADD IT TO LIST                            FLP28360
2688   2411            2852          LIS    R1,1                                                         FLP28370
268A   6110 3D14        2853          AHM    R1,NOFDEF          INCREAMENT # OF DEF TRACKS               FLP28380

                        2855   * CHECK 6 BYTES OF ID OF DEFECTIVE TRACK                                   FLP28400

268E   4810 3ED8        2857 T8.3     LH     R1,RID             FIRST 4 BYTES MUST BE FF FF FF FF         FLP28420
2692   2611            2858          AIS    R1,1                                                         FLP28430
2694   4230 3784        2859          BNZ    ERFL1F             *                           ***1F        FLP28440
2698   4810 3EDA        2860          LH     R1,RID+2                                                     FLP28450
269C   2611            2861          AIS    R1,1                                                         FLP28460
269E   4230 3784        2862          BNZ    ERFL1F             *                           ***1F        FLP28470
26A2   4810 3EDC        2863          LH     R1,RID+4                                                     FLP28480
26A6   4710 3D1A        2864          XH     R1,FFFFCRC                                                   FLP28490
26AA   4230 3784        2865          BNZ    ERFL1F             *                           ***1F        FLP28500
26AE   4810 3D24        2866          LH     R1,LRN                                                       FLP28510
26B2   CA10 001A        2867          AHI    R1,26              POINT TO NEXT TRACK                       FLP28520
26B6   4300 26E4        2868          B      T8NXT1                                                       FLP28530

                        2870   * A GOOD TRACK IS DETECTED                                                 FLP28550

26BA   0501            2872 T8GT     CLHR   R0,R1              COMPARE WITH EXPECTED TRACK # IN(R0)      FLP28570
26BC   4230 3790        2873          BNE    ERFL05                                                       FLP28580
26C0   D320 3EDA        2874          LB     R2,RID+2           LOOK @ SECTOR #                           FLP28590
26C4   0822            2875          LHR    R2,R2                                                         FLP28600
26C6   4330 3778        2876          BZ     ERFL32             *                           ***32        FLP28610
26CA   C520 001B        2877          CLHI   R2,27                                                        FLP28620
26CE   4330 3778        2878          BZ     ERFL32             *                           ***32        FLP28630
26D2   4010 3D18        2879          STH    R1,LGTRK           'LGTRK' = LAST GOOD TRACK #               FLP28640
26D6   41E0 31DC        2880          BAL    R14,DOCRC          RETURN IF NO CRC ERROR                    FLP28650

                        2882   * NOW PROCEED TO NEXT LRN                                                  FLP28670

       0000 26DA        2884 T8NXTLRN EQU    *                                                            FLP28690
26DA   41F0 35FC        2885          BAL    R15,DISP.LRN                                                  FLP28700
26DE   4810 3D24        2886          LH     R1,LRN                                                        FLP28710
26E2   2611            2887          AIS    R1,1               INCREAMENT LRN BY 1                       FLP28720
       0000 26E4        2888 T8NXT1   EQU    *                                                            FLP28730
26E4   4010 3D24        2889          STH    R1,LRN                                                        FLP28740
26E8   C510 07D2        2890          CLHI   R1,X'7D2'          LAST LRN CHECKED ?                        FLP28750
26EC   4320 25CE        2891          BNP    T8CKID0            NO, LOOP                                  FLP28760

                        2893   * ALL THE ID'S ARE CHECKED. NOW CHECK DATA                                 FLP28780

26F0   C810 0032        2895          LHI    R1,50                                                        FLP28800
26F4   4800 1786        2896          LH     R0,DATA+6                                                    FLP28810
26F8   4001 0900        2897          STH    R0,DATA26(R1)      SET UP BUFFER TO READ/COMPARE TRACK       FLP28820
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26FC  2712              2898          SIS    R1,2              AT A TIME                              FLP28830
26FE  2213              2899          BFBS   1,3                                                      FLP28840
                        2900  *                                                                       FLP28850
2700  2400              2901          LIS    R0,0                                                     FLP28860
2702  2411              2902          LIS    R1,1                                                     FLP28870
2704  D200 3CD0         2903          STB    R0,TRACKNO        INITIALIZE TRACK #                     FLP28880
2708  4010 3D24         2904          STH    R1,LRN            & LRN                                  FLP28890
270C  D860 3D24         2905          WH     DEV,LRN           START READING FROM LRN = 1             FLP28900
2710  DE60 3D3C         2906          OC     DEV,READ                                                 FLP28910
                        2907  *                                                                       FLP28920
      0000 2714         2908  T8.4    EQU    *                                                        FLP28930
2714  41E0 34CE         2909          BAL    R14,RD.TRK1       READ THE TRACK                         FLP28940
2718  D300 3CD0         2910          LB     R0,TRACKNO                                               FLP28950
271C  41F0 3600         2911          BAL    R15,DISPLAY                                              FLP28960
2720  D300 3CD0         2912          LB     R0,TRACKNO                                               FLP28970
2724  2601              2913          AIS    R0,1              BUMP TRACK NUMBER                      FLP28980
2726  D200 3CD0         2914          STB    R0,TRACKNO                                               FLP28990
272A  4500 3018         2915          CLH    R0,LGTRK          LAST GOOD TRACK READ ?                 FLP29000
272E  4320 2714         2916          BNP    T8.4              NO, LOOP.                              FLP29010
2732  DE60 3D42         2917          OC     DEV,STOP                                                 FLP29020
2736  41F0 353C         2918          BAL    R15,IDLE                                                 FLP29030
273A  D300 3CD0         2919          LB     R0,TRACKNO        LOAD TRACK NUMBER                      FLP29040
273E  C500 004C         2920          CLHI   R0,76                                                    FLP29050
2742  4220 277E         2921          BP     T8.MSG                                                   FLP29060

                        2923  * NOW TRY TO READ PAST LAST GOOD LRN & MAKE SURE SEEK ERROR OCCURS.     FLP29080

2746  2701              2925          SIS    R0,1              (R0) = LAST GOOD TRACK #               FLP29100
2748  0820              2926          LHR    R2,R0                                                    FLP29110
274A  9103              2927          SLHLS  R0,3              X8                                     FLP29120
274C  0810              2928          LHR    R1,R0                                                    FLP29130
274E  9101              2929          SLHLS  R0,1              X16                                    FLP29140
2750  0A01              2930          AHR    R0,R1             X24                                    FLP29150
2752  0A02              2931          AHR    R0,R2                                                    FLP29160
2754  0A02              2932          AHR    R0,R2             X26                                    FLP29170
2756  2601              2933          AIS    R0,1              (R0) = LAST GOOD LRN + 1               FLP29180
2758  9860              2934          WHR    DEV,R0            WRITE BAD LRN                          FLP29190
275A  DE60 3D3C         2935          OC     DEV,READ                                                 FLP29200
275E  C8F0 276E         2936          LHI    R15,T8.5                                                 FLP29210
2762  41A0 2FD4         2937          BAL    R10,CKBSY1        IF BUSY DROPS, SEEK ERROR              FLP29220
2766  41E0 31A8         2938          BAL    R14,R.AUX                                                FLP29230
276A  4300 375A         2939          B      ERFL1E            *                             ***1E    FLP29240
                        2940  *                                                                       FLP29250
      0000 276E         2941  T8.5    EQU    *                                                        FLP29260
276E  41E0 31A8         2942          BAL    R14,R.AUX                                                FLP29270
2772  4800 3E0E         2943          LH     R0,RAUX                                                  FLP29280
2776  C300 0008         2944          THI    R0,X'0008'        SEEK ERROR ?                           FLP29290
277A  4330 375A         2945          BZ     ERFL1E            *                             ***1E    FLP29300

                        2947  * TO PRINT MESSAGE ABOUT DEFECTIVE TRACKS                               FLP29320
      0000 277E         2948  T8.MSG  EQU    *                                                        FLP29330
277E  C820 0014         2949          LHI    R2,20                                                    FLP29340
2782  C810 2020         2950          LHI    R1,C' '                                                  FLP29350
```

TEST 8   FORMAT

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2786    4012 3846    2951            STH     R1,DEFMSG1(R2)                                                     FLP29360
278A    27C4         2952            SIS     R2,4                                                               FLP29370
278C    2243         2953            BFBS    1,3                                                                FLP29380
278E    0300 3008    2954            LB      R0,DEFTRK         LOOK @ LIST OF DEFECTIVE TRACKS                  FLP29390
2792    0800         2955            LHR     R0,R0                                                              FLP29400
2794    2197         2956            BNZS    T8.6                                                               FLP29410
2796    C850 3B1E    2957            LHI     R5,NODEFMSG                                                        FLP29420
279A    41F0 114A    2958            BAL     R15,PRINT         "NO DEFECTIVE TRACKS"                            FLP29430
279E    4300 281C    2959            B       TEST8END                                                           FLP29440
27A2    2402         2960    T8.6    LIS     R0,2              # OF HEX DIGITS TO ASCII                         FLP29450
27A4    C820 3846    2961            LHI     R2,DEFMSG1        (R2) = ADDRESS OF ASCII MESSAGE                  FLP29460
27A8    C830 3008    2962            LHI     R3,DEFTRK         (R3) = ADDRESS OF HEX DATA                       FLP29470
27AC    2446         2963            LIS     R4,6                                                               FLP29480
27AE    0313 0000    2964    T8.61   LB      R1,0(R3)                                                           FLP29490
27B2    0811         2965            LHR     R1,R1                                                              FLP29500
27B4    4330 27C4    2966            BZ      T8.62             BRANCH IF LIST IS EXHAUSTED                      FLP29510
27B8    41F0 1122    2967            BAL     R15,HEXASC                                                         FLP29520
27BC    2631         2968            AIS     R3,1                                                               FLP29530
27BE    2624         2969            AIS     R2,4                                                               FLP29540
27C0    2741         2970            SIS     R4,1                                                               FLP29550
27C2    203A         2971            BNZS    T8.61             LOOP FOR 6 DEFECTIVE TRACKS                      FLP29560
                     2972    *                                                                                  FLP29570
27C4    C850 3B34    2973    T8.62   LHI     R5,DEFMSG                                                          FLP29580
27C8    41F0 114A    2974            BAL     R15,PRINT         "DEFECTIVE TRACKS : XX   XX ---                  FLP29590
27CC    4800 3022    2975            LH      R0,MOREDEF                                                         FLP29600
27D0    4330 281C    2976            BZ      TEST8END          END IF NO MORE DEFECTIVE TRACKS                  FLP29610
27D4    C850 3B5E    2977            LHI     R5,MOREMSG                                                         FLP29620
27D8    41F0 114A    2978            BAL     R15,PRINT         PRINT IT                                         FLP29630
27DC    4300 281C    2979            B       TEST8END                                                           FLP29640
                     2980    * TEST 8 SUBROUTINES                                                               FLP29650
                     2981    * COME HERE WHEN 'ERR' BIT IS SET & AUX STATUS IS READ                             FLP29660

        0000 27E0    2983    CKSTA   EQU     *                                                                  FLP29680
27E0    C370 0004    2984            THI     STAT,4                                                             FLP29690
27E4    4330 3724    2985            BZ      ERFL36            EX BIT RESET                         ***36        FLP29700
27E8    4800 3EDE    2986            LH      R0,RAUX                                                            FLP29710
27EC    C300 0800    2987            THI     R0,X'0800'                                                         FLP29720
27F0    4330 372A    2988            BZ      ERFL37            *                                    ***37        FLP29730
27F4    9101         2989            SLHLS   R0,1                                                               FLP29740
27F6    4280 370C    2990            BC      ERFL30            ID CRC ERROR                         ***30        FLP29750
27FA    4210 3712    2991            BM      ERFL31            DATA CRC ERROR                       ***31        FLP29760
27FE    9102         2992            SLHLS   R0,2                                                               FLP29770
2800    4280 3730    2993            BC      ERFL38            LRN ERROR                            ***38        FLP29780
2804    9108         2994            SLHLS   R0,8                                                               FLP29790
2806    4280 3736    2995            BC      ERFL39            NO ADDRESS MARK                      ***39        FLP29800
280A    4210 373C    2996            BM      ERFL3A            COMMAND ERROR                        ***3A        FLP29810
280E    9102         2997            SLHLS   R0,2                                                               FLP29820
2810    4280 3742    2998            BC      ERFL3B            SEEK ERROR                           ***3B        FLP29830
2814    4210 3748    2999            BM      ERFL3C            FILE UNSAFE                          ***3C        FLP29840
2818    4300 372A    3000            B       ERFL37            ERR BIT IS WRONG                     ***37        FLP29850
281C    4300 0E6C    3001    TEST8END B      TSTEND            TEST 8 FINISHED                                  FLP29860
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TEST 9   MULTI DRIVE

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                          3003  ******************************************************************  FLP29880
                          3004  *  TEST9 MULTI-DRIVE                                                FLP29890
                          3005  *                                                                   FLP29900
                          3006  *  PURPOSE                                                          FLP29910
                          3007  *       TO EXERCISE MULTI DRIVE INTERACTION                         FLP29920
                          3008  *                                                                   FLP29930
                          3009  *  DESIGN SPECIFICATION                                             FLP29940
                          3010  *                                                                   FLP29950
                          3011  *       THE COMMAND SEQUENCE FOR MULTI-DRIVE INTERACTION            FLP29960
                          3012  *       IS AS FOLLOWS :                                             FLP29970
                          3013  *                                                                   FLP29980
                          3014  *                                                                   FLP29990
                          3015  *       STOP          A D C B        A B C       A B                FLP30000
                          3016  *       WRITE         B A D C        B C A       B A                FLP30010
                          3017  *       READ AUX      C B A D        C A B       A B                FLP30020
                          3018  *       READ ID       D C B A        A B C       B A                FLP30030
                          3019  *       READ          A D C B        B C A       A B                FLP30040
                          3020  *       READ ID       B A D C        C A B       B A                FLP30050
                          3021  *       READ AUX      C B A D        A B C       A B                FLP30060
                          3022  *                                                                   FLP30070
                          3023  *                                                                   FLP30080
                          3024  *                                                                   FLP30090
                          3025  ******************************************************************  FLP30100
         0000 000A        3026  DRIVENO  EQU    10                                                  FLP30110
                          3027  *                                                                   FLP30120
         0000 2820        3028  TEST9    EQU    *                                                   FLP30130
2820     4860 1756        3029           LH     DEV,FLPADR+6         GET FLPPY ADDRESS              FLP30140
2824     4800 177A        3030           LH     R0,ENDLRN+6          MUST HAVE (ENDLRN) > (STLRN)   FLP30150
2828     4B00 176E        3031           SH     R0,STLRN+6                                          FLP30160
282C     4320 2A34        3032           BNP    LRNMSG               IF NOT "STLRN > ENDLRN" MESSAGE FLP30170
2830     9101             3033           SLHLS  R0,1                                                FLP30180
2832     4000 3CFC        3034           STH    R0,T9CNT             SET UP COUNT FOR TEST9         FLP30190
2836     4840 176E        3035           LH     R4,STLRN+6                                          FLP30200
283A     4840 3CF6        3036           SH     R4,BCOUNT                                           FLP30210
283E     4850 3CEC        3037           LH     R5,DRV                                              FLP30220
2842     4050 3CC8        3038           STH    R5,TEMP                                             FLP30230
2846     41E0 294C        3039  RESET9   BAL    R14,NEXTDR           SELECT NEXT FLOPPY DRIVE       FLP30240
284A     2451             3040           LIS    R5,1                                                FLP30250
284C     40DA 3CE0        3041           STH    R5,PR(DRIVENO)                                      FLP30260
2850     405A 3CD0        3042           STH    R5,TRACKNO(DRIVENO)  INITIALIZE                     FLP30270
2854     41F0 353C        3043           BAL    R15,IDLE             ENSURE 'IDLE' STATE            FLP30280
2858     DE60 3043        3044           OC     DEV,RESET                                           FLP30290
285C     41B0 2982        3045           BAL    R11,CKID1            CHECK ID OF CURRENT DRIVE      FLP30300
2860     4850 3CC8        3046           LH     R5,TEMP                                             FLP30310
2864     2751             3047           SIS    R5,1                                                FLP30320
2866     4050 3CC8        3048           STH    R5,TEMP                                             FLP30330
286A     4230 2846        3049           BNZ    RESET9               RESET ALL DRIVES               FLP30340
286E     2440             3050           LIS    R4,0                                                FLP30350
2870     4040 3CE8        3051           STH    R4,PASS9                                            FLP30360
         0000 2874        3052  T9LOOP   EQU    *                                                   FLP30370
2874     41F0 12CA        3053           BAL    LINK,TSTBRK          EXIT IF 'BREAK' DEPRESSED      FLP30380
2878     2501             3054           LCS    R0,1                 DECREAMENT COUNT               FLP30390
287A     6100 3CFC        3055           AHM    R0,T9CNT                                            FLP30400
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TEST 9   MULTI DRIVE

```
287E    4210 2ABA      3056              BM    TEST9END        EXIT                              FLP30410
2882    41B0 2A0C      3057              BAL   R11,STOP9       STOP NEXT DRIVE                    FLP30420
2886    41E0 294C      3058    T9LOOP1   BAL   R14,NEXTDR                                        FLP30430
288A    48E0 3CCE      3059              LH    R14,TEMP2       LOAD UP OLD RANDOM NUMBER          FLP30440
288E    40E0 3CFE      3060              STH   R14,RAND        STORE IN RANDOM                    FLP30450
2892    41E0 2A1A      3061              BAL   R14,RANDLRN     SET UP RANDOM LRN FOR A DRIVE      FLP30460
2896    48E0 3CFE      3062              LH    R14,RAND        LOAD UP NEW RANDOM NUMBER          FLP30470
289A    40E0 3CCE      3063              STH   R14,TEMP2       STORE IN RANDOM                    FLP30480
                       3064    *                                                                 FLP30490
                       3065    * CONVERT LOGICAL RECORD NUMBER INTO TRACK # & SECTOR #           FLP30500
                       3066    *                                                                 FLP30510
289E    481A 3CE0      3067              LH    R1,PR(DRIVENO)                                     FLP30520
28A2    41E0 28AA      3068              BAL   R14,CONVT                                          FLP30530
.28A6   4300 28BA      3069              B     CONV1                                             FLP30540
        0000 28AA      3070    CONVT     EQU   *                                                 FLP30550
28AA    2400           3071              LIS   R0,0            (R0) = TRACK #                     FLP30560
        0000 28AC      3072    CONV      EQU   *                                                 FLP30570
28AC    C510 001A      3073              CLHI  R1,26                                             FLP30580
28B0    033E           3074              BNPR  R14                                               FLP30590
28B2    2601           3075              AIS   R0,1            BUMP TRACK #                       FLP30600
28B4    CB10 001A      3076              SHI   R1,26                                             FLP30610
28B8    2206           3077              BS    CONV                                              FLP30620
28BA    D20A 3CD0      3078    CONV1     STB   R0,TRACKNO(DRIVENO)                               FLP30630
28BE    D21A 3CD1      3079              STB   R1,SECTNO(DRIVENO)                                FLP30640
                       3080    *                                                                 FLP30650
                       3081    * WRITE ONE SECTOR                                                FLP30660
                       3082    *                                                                 FLP30670
28C2    41F0 317A      3083              BAL   R15,GETPATRN    (R0) = DATA HW FOR A SECTOR        FLP30680
28C6    400A 3CD8      3084              STH   R0,DATA9(DRIVENO)                                 FLP30690
28CA    41F0 356C      3085              BAL   R15,GETBUFAD    (R2) = BUFFER ADDRESS              FLP30700
28CE    41F0 293A      3086              BAL   R15,SETBUF      SET UP 128 BYTE BUFFER            FLP30710
28D2    0832           3087              LHR   R3,R2                                             FLP30720
28D4    CA30 007F      3088              AHI   R3,127          (R3) = BUFFER END ADDRESS          FLP30730
28D8    2442           3089              LIS   R4,2            (R4) = 2 = WRITE                   FLP30740
28DA    485A 3CE0      3090              LH    R5,PR(DRIVENO)  (R5) = LRN FOR THE DRIVE           FLP30750
28DE    41F0 3228      3091              BAL   R15,RW          WRITE ONE SECTOR DATA              FLP30760
28E2    2401           3092              LIS   R0,1                                              FLP30770
28E4    6100 3CE8      3093              AHM   R0,PASS9        BUMP PASS #                        FLP30780
28E8    4800 3CE8      3094              LH    R0,PASS9                                          FLP30790
28EC    4500 3CEC      3095              CLH   R0,DRV                                            FLP30800
28F0    4280 2886      3096              BL    T9LOOP1         SKIP READING IF (PASS9) < (DRV)    FLP30810
28F4    41B0 29C4      3097              BAL   R11,CKAUX       CHECK AUX STATUS OF NEXT DRIVE     FLP30820
28F8    41B0 297E      3098              BAL   R11,CKID        CHECK ID OF NEXT DRIVE             FLP30830
28FC    41E0 294C      3099              BAL   R14,NEXTDR      BUMP DRIVE #                       FLP30840
                       3100    * TO READ ONE SECTOR DATA FROM CURRENT DRIVE                      FLP30850
2900    41F0 356C      3101              BAL   R15,GETBUFAD    (R2) = BUFFER ADDRESS              FLP30860
2904    0832           3102              LHR   R3,R2                                             FLP30870
2906    CA30 007F      3103              AHI   R3,127          (R3) = BUFFER END ADDRESS          FLP30880
290A    2441           3104              LIS   R4,1            (R4) = 1 = READ                    FLP30890
290C    485A 3CE0      3105              LH    R5,PR(DRIVENO)  (R5) = LRN FOR THE DRIVE           FLP30900
2910    41F0 3228      3106              BAL   R15,RW          READ ONE SECTOR DATA INTO BUFFER   FLP30910
                       3107    * NOW COMPARE DATA                                                FLP30920
2914    480A 3CD8      3108              LH    R0,DATA9(DRIVENO)  (R0) = DATA HW WRITTEN TO THE SECTOR   FLP30930
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TEST 9   MULTI DRIVE

2918	41F0 356C	3109		BAL	R15,GETBUFAD	(R2) = BUFFER ADDRESS	FLP30940
291C	C810 003F	3110		LHI	R1,63		FLP30950
2920	4502 0000	3111	T9C	CLH	R0,0(R2)	COMPARE DATA	FLP30960
2924	4230 2A7C	3112		BNE	DATAERR9	BRANCH IF WRONG DATA	FLP30970
2928	2622	3113		AIS	R2,2	BUMP ADDRESS	FLP30980
292A	2711	3114		SIS	R1,1		FLP30990
292C	2216	3115		BNMS	T9C	LOOP FOR 64 HW	FLP31000
		3116	*				FLP31010
	0000 292E	3117	T9D	EQU	*		FLP31020
292E	41B0 297E	3118		BAL	R11,CKID	CHECK ID OF NEXT DRIVE	FLP31030
2932	41B0 29C4	3119		BAL	R11,CKAUX	CHECK AUXILIARY STATUS OF NEXT DRIVE	FLP31040
2936	4300 2874	3120		B	T9LOOP		FLP31050
		3121	*				FLP31060
		3122	* TO SET UP SECTOR DATA BUFFER				FLP31070
		3123	*				FLP31080
	0000 293A	3124	SETBUF	EQU	*		FLP31090
293A	0812	3125		LHR	R1,R2		FLP31100
293C	CA10 007E	3126		AHI	R1,126		FLP31110
2940	4001 0000	3127	SB1	STH	R0,0(R1)	STORE HW IN R0 INTO BUFFER	FLP31120
2944	2712	3128		SIS	R1,2	DECREAMENT ADDRESS	FLP31130
2946	0512	3129		CLHR	R1,R2		FLP31140
2948	2284	3130		BNLS	SB1	LOOP FOR 128 BYTES	FLP31150
294A	030F	3131		BR	R15		FLP31160
	0000 294C	3132	NEXTDR	EQU	*		FLP31170
294C	4850 3CEE	3133		LH	R5,DRIVES	GET LIST OF DRIVES	FLP31180
2950	08A5	3134		LHR	R10,R5		FLP31190
2952	C450 00F0	3135		NHI	R5,X'00F0'		FLP31200
2956	CB50 00A0	3136		SHI	R5,X'00A0'		FLP31210
295A	9054	3137		SRHLS	R5,4		FLP31220
295C	4050 3CF2	3138		STH	R5,CDRIVE	(CDRIVE) = 000X ; X = 0,1,2,3	FLP31230
2960	41F0 351C	3139		BAL	R15,SETDRIVE	SET UP COMMANDS	FLP31240
2964	085A	3140	NEXTDR1	LHR	R5,R10		FLP31250
2966	91A4	3141		SLHLS	R10,4		FLP31260
2968	905C	3142		SRHLS	R5,12		FLP31270
296A	06A5	3143		OHR	R10,R5	ROTATE LIST OF DRIVES	FLP31280
296C	C3A0 00F0	3144		THI	R10,X'00F0'		FLP31290
2970	2236	3145		BZS	NEXTDR1		FLP31300
2972	40A0 3CEE	3146		STH	R10,DRIVES	UPDATE LIST OF DRIVES	FLP31310
2976	48A0 3CF2	3147		LH	DRIVENO,CDRIVE		FLP31320
297A	91A1	3148		SLHLS	DRIVENO,1	HW INDEX	FLP31330
297C	030E	3149		BR	R14	RETURN	FLP31340
		3150	*				FLP31350
		3151	* TO CHECK ID OF NEXT DRIVE				FLP31360
		3152	*				FLP31370
	0000 297E	3153	CKID	EQU	*		FLP31380
297E	41E0 294C	3154		BAL	R14,NEXTDR		FLP31390
	0000 2982	3155	CKID1	EQU	*		FLP31400
2982	41E0 312C	3156		BAL	R14,R.ID		FLP31410
2986	D300 3ED8	3157		LB	R0,RID	CHECK TRACK # , SECTOR #	FLP31420
298A	D40A 3CD0	3158		CLB	R0,TRACKNO(DRIVENO)		FLP31430
298E	233F	3159		BES	CKID2		FLP31440
2990	D3EA 3CD1	3160		LB	R14,SECTNO(DRIVENO)		FLP31450
2994	C5E0 001A	3161		CLHI	R14,X'1A'		FLP31460

TEST 9   MULTI DRIVE

2998	4230 29A4	3162		BNE	CKID11	NO GO TO CKID11	FLP31470
299C	2701	3163		SIS	R0,1	DECREMENT	FLP31480
299E	D40A 3CD0	3164		CLB	R0,TRACKNO(DRIVENO)		FLP31490
29A2	2335	3165		BES	CKID2		FLP31500
	0000 29A4	3166	CKID11	EQU	*		FLP31510
29A4	41E0 2A40	3167		BAL	R14,SEID	SET UP EXPECTED ID BUFFER	FLP31520
29A8	4300 3790	3168		B	ERFL05	WRONG TRACK # **** 05	FLP31530
29AC	D300 3EDA	3169	CKID2	LB	R0,RID+2	GET SECTOR #	FLP31540
29B0	C500 001B	3170		CLHI	R0,27		FLP31550
29B4	4380 3778	3171		BNL	ERFL32	**32	FLP31560
29B8	0800	3172		LHR	R0,R0		FLP31570
29BA	4320 3778	3173		BNP	ERFL32	**32	FLP31580
29BE	41E0 31DC	3174		BAL	R14,DOCRC	RETURN IF CRC IS OK	FLP31590
29C2	030B	3175		BR	R11		FLP31600
		3176	*				FLP31610
		3177	* TO CHECK & DISPLAY AUXILIARY STATUS				FLP31620
		3178	*				FLP31630
	0000 29C4	3179	CKAUX	EQU	*		FLP31640
29C4	41E0 294C	3180		BAL	R14,NEXTDR	SET UP FOR NEXT DRIVE	FLP31650
29C8	41E0 31A8	3181		BAL	R14,R.AUX	GET IT'S AUX STATUS	FLP31660
29CC	2401	3182		LIS	R0,1		FLP31670
29CE	DE00 3D3A	3183		OC	R0,INC	DISPLAY	FLP31680
29D2	4820 3EDE	3184		LH	R2,RAUX	(R2) = ERRSTA,DRIVE STATUS	FLP31690
29D6	4810 3EE0	3185		LH	R1,RAUX+2	(R1) = SECTOR # , TRACK #	FLP31700
29DA	9422	3186		EXBR	R2,R2		FLP31710
29DC	9411	3187		EXBR	R1,R1		FLP31720
29DE	9802	3188		WHR	R0,R2		FLP31730
29E0	9801	3189		WHR	R0,R1		FLP31740
29E2	9411	3190		EXBR	R1,R1		FLP31750
29E4	9422	3191		EXBR	R2,R2		FLP31760
29E6	C420 FB7C	3192		NHI	R2,X'FB7C'		FLP31770
29EA	4230 3760	3193		BNZ	ERFL41	**41	FLP31780
29EE	D41A 3CD0	3194		CLB	R1,TRACKNO(DRIVENO)		FLP31790
29F2	2335	3195		BES	CKAUX1		FLP31800
29F4	41E0 2A40	3196		BAL	R14,SEID	SET EXPECTED ID BUFFER	FLP31810
29F8	4300 3790	3197		B	ERFL05	WRONG TRACK # **** 05	FLP31820
29FC	9411	3198	CKAUX1	EXBR	R1,R1		FLP31830
29FE	D41A 3CD1	3199		CLB	R1,TRACKNO+1(DRIVENO)		FLP31840
2A02	033B	3200		BER	R11	RETURN	FLP31850
2A04	41E0 2A40	3201		BAL	R14,SEID		FLP31860
2A08	4300 3796	3202		B	ERFL06	WRONG TRACK # **** 06	FLP31870
		3203	*				FLP31880
		3204	* TO ISSUE 'STOP' COMMAND TO NEXT DRIVE				FLP31890
		3205	* *				FLP31900
	0000 2A0C	3206	STOP9	EQU	*		FLP31910
2A0C	41E0 294C	3207		BAL	R14,NEXTDR	SET UP COMMANDS FOR NEXT DRIVE	FLP31920
2A10	41F0 353C	3208		BAL	R15,IDLE	MAKE SURE 'IDLE' IS SET	FLP31930
2A14	DE60 3D42	3209		OC	DEV,STOP		FLP31940
2A18	030B	3210		BR	R11	RETURN	FLP31950
		3211	*				FLP31960
		3212	* TO GET RANDOM LRN WITHIN THE BOUNDS OF STLRN & ENDLRN				FLP31970
		3213	*				FLP31980
	0000 2A1A	3214	RANDLRN	EQU	*		FLP31990

TEST 9   MULTI DRIVE

2A1A	41F0 3118	3215	RLRN1	BAL	R15,RANDOM	(R0) = RANDOM LRN	FLP32000
2A1E	C4U0 07FF	3216		NHI	R0,X'07FF'		FLP32010
2A22	4500 176E	3217		CLH	R0,STLRN+6		FLP32020
2A26	2086	3218		BLS	RLRN1		FLP32030
2A28	4500 177A	3219		CLH	R0,ENDLRN+6	CHECK BOUNDS	FLP32040
2A2C	2029	3220		BPS	RLRN1		FLP32050
2A2E	400A 3CE0	3221		STH	R0,PR(DRIVENO)		FLP32060
2A32	030E	3222		BR	R14	RETURN	FLP32070
2A34	C850 3964	3223	LRNMSG	LHI	R5,LRNMSG1		FLP32080
2A38	41F0 114A	3224		BAL	R15,PRINT	MESSAGE "STLRN > ENDLRN"	FLP32090
2A3C	4300 0B0E	3225		B	OPTIN1		FLP32100
		3226	*				FLP32110
		3227	* TO SET UP EXPECTED ID IN 'EXPID' BUFFER				FLP32120
		3228	*				FLP32130
	0000 2A40	3229	SEID	EQU	*		FLP32140
2A40	D3CA 3CD1	3230		LB	R12,SECTNO(DRIVENO)		FLP32150
2A44	D3DA 3CD0	3231		LB	R13,TRACKNO(DRIVENO)		FLP32160
	0000 2A48	3232	SEID1	EQU	*		FLP32170
2A48	2490	3233		LIS	R9,0		FLP32180
2A4A	D2C0 3EE6	3234		STB	R12,EXPID+2	LOAD UP EXPECTED ID	FLP32190
2A4E	D270 3EE5	3235		STB	R9,EXPID+1		FLP32200
2A52	D2D0 3EE4	3236		STB	R13,EXPID	LOAD UP EXPECTED ID +2	FLP32210
2A56	D270 3EE7	3237		STB	R9,EXPID+3		FLP32220
2A5A	2591	3238		LCS	R9,1	NOW FIND CRC HW	FLP32230
2A5C	24D8	3239		LIS	R13,8		FLP32240
2A5E	C8C0 FE00	3240		LHI	R12,X'FE00'		FLP32250
2A62	41F0 320E	3241		BAL	R15,DOCRC2	INCLUDE ADDRESS MARK IN CRC	FLP32260
2A66	48C0 3EE4	3242		LH	R12,EXPID		FLP32270
2A6A	41F0 320A	3243		BAL	R15,DOCRC1	INCLUDE 1ST HW IN CRC	FLP32280
2A6E	48C0 3EE6	3244		LH	R12,EXPID+2		FLP32290
2A72	41F0 320E	3245		BAL	R15,DOCRC2	INCLUDE 2ND HW IN CRC	FLP32300
2A76	4090 3EE8	3246		STH	R9,EXPID+4	EXPECTED CRC HW	FLP32310
2A7A	030E	3247		BR	R14	RETURN	FLP32320
		3248	*				FLP32330
		3249	* COME HERE TO PRINT DATA ERROR MESSAGE				FLP32340
		3250	* THE TEST 9 IS CONTINUED THEREAFTER				FLP32350
		3251	*				FLP32360
	0000 2A7C	3252	DATAERR9	EQU	*		FLP32370
2A7C	4000 3006	3253		STH	R0,DATAEXP		FLP32380
2A80	4020 3004	3254		STH	R2,DATAACT		FLP32390
2A84	C8F0 3237	3255		LHI	R15,C'27'		FLP32400
2A88	40F0 3946	3256		STH	R15,ERRNO	**** 27	FLP32410
2A8C	C8F0 0041	3257		LHI	R15,C'A'		FLP32420
2A90	0AFA	3258		AHR	R15,DRIVENO		FLP32430
2A92	40F0 3AAC	3259		STH	R15,DRNOMSG1	SET UP ERRORNEOUS DRIVE #	FLP32440
2A96	41E0 38C2	3260		BAL	RET,AIDSET	SET UP ACTUAL ID	FLP32450
2A9A	41E0 38F2	3261		BAL	RET,DATSET	SET UP ACTUAL DATA HW	FLP32460
2A9E	41E0 3900	3262		BAL	RET,DETSET	SET UP EXPECTED DATA HW	FLP32470
		3263	* NOW PRINT ERROR MESSAGE				FLP32480
2AA2	41F0 0F76	3264		BAL	LINK,ERR	'ERROR 0927'	FLP32490
2AA6	C850 3AA6	3265		LHI	R5,DRNOMSG		FLP32500
2AAA	41F0 114A	3266		BAL	LINK,PRINT	'DRIVE X ACT ID XX XX XX XX XX XX'	FLP32510
		3267	*			X = A,B,C,D	FLP32520

TEST 9   MULTI DRIVE

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2AAE   41E0 38A2        3268              BAL   RET,ERADTPRT    'DATA ACT ****'          FLP32530
2AB2   41E0 38A8        3269              BAL   RET,EREDTPRT    'DATA EXP ****'          FLP32540
2AB6   4300 292E        3270              B     T9D             CONTINUE TEST 9          FLP32550
2ABA   4300 0E6C        3271  TEST9END B  TSTEND               TEST 9 FINISHED          FLP32560
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TEST A   WRITE PROTECT /POWER OFF -ON

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                                3273  **********************************************************************  FLP32580
                                3274  *   TESTA WRITE PROTECT/POWER OFF   TEST                               FLP32590
                                3275  *                                                                      FLP32600
                                3276  *   PURPOSE                                                             FLP32610
                                3277  *        TO TEST THE WRITE PROTECT FUNCTION AND   POWER OFF   SEQUENCE  FLP32620
                                3278  *        FAULT AND OTHER SPECIAL BIT FUNCTIONS NOT TESTED IN ANY OTHER
                                3279  *                                                                      FLP32630
                                3280  *   DESIGN SPECIFICATION                                               FLP32640
                                3281  *        1.TEST WRITE PROTECT FEATURE                                  FLP32650
                                3282  *        2.TEST POWER DOWN/UP SEQUENCE                                  FLP32660
                                3283  *        3.USING SPECIAL DISKETTE TEST DEFECTIVE TRACK DETECTION        FLP32670
                                3284  *        4.USING THE SPECIAL DISKETTE ALL SPECIAL STATUS BITS ARE TESTED
                                3285  *                                                                      FLP32680
                                3286  **********************************************************************  FLP32690
              0000 2ABE         3287  TESTA     EQU   *                                                       FLP32700
2ABE  4860 1756                 3288            LH    DEV,FLPADR+6        LOAD DEVICE ADDRESS                FLP32710
2AC2  DE60 3043                 3289            OC    DEV,RESET                                              FLP32720
2AC6  41F0 353C                 3290            BAL   R15,IDLE                                               FLP32730
2ACA  C850 3BD8                 3291            LHI   R5,REMDISC          REMOVE DISKETTE                    FLP32740
2ACE  41F0 114A                 3292            BAL   R15,PRINT           PRINT IT                           FLP32750
2AD2  C850 3BEA                 3293            LHI   R5,PRSBRK           PRESS BRK KEY                      FLP32760
2AD6  41F0 114A                 3294            BAL   R15,PRINT           PRINT IT                           FLP32770
2ADA  C8F0 2AEA                 3295  TESTA11   LHI   R15,TESTA5          LOAD NEXT ADDRESS                  FLP32780
2ADE  40F0 170A                 3296            STH   R15,BRKVECT         INTO BRK VECTOR                    FLP32790
2AE2  41F0 12CA                 3297            BAL   R15,TSTBRK          IS BRK PRESSED                     FLP32800
2AE6  4300 2ADA                 3298            B     TESTA11             LOOP                               FLP32810
              0000 2AEA         3299  TESTA5    EQU   *                                                       FLP32820
2AEA  DE60 3047                 3300            OC    DEV,DIS,STOP        STOP                               FLP32830
2AEE  41F0 353C                 3301            BAL   R15,IDLE            WAIT FOR IDLE                      FLP32840
2AF2  C570 0003                 3302            CLHI  STAT,3              IS FAULT BIT SET                   FLP32850
2AF6  4290 3642                 3303            BNE   ERFL17              NO GO TO ERROR            ***17    FLP32860
2AFA  C850 3974                 3304            LHI   R5,WPROTMSG         LOAD MSG                           FLP32870
2AFE  41F0 114A                 3305            BAL   R15,PRINT           PRINT    WRITE PROTECT DISKETTE    FLP32880
2B02  C850 3BEA                 3306            LHI   R5,PRSBRK           PRESS BRK KEY                      FLP32890
2B06  41F0 114A                 3307            BAL   R15,PRINT           PRINT    HIT  RUN                  FLP32900
2B0A  C8F0 2B1A                 3308  TESTA51   LHI   R15,TESTA1          LOAD NEXT ADDRESS                  FLP32910
2B0E  40F0 170A                 3309            STH   R15,BRKVECT         INTO BRK VECTOR                    FLP32920
2B12  41F0 12CA                 3310            BAL   R15,TSTBRK          IS BRK PRESSED                     FLP32930
2B16  4300 2B0A                 3311            B     TESTA51             LOOP                               FLP32940
              0000 2B1A         3312  TESTA1    EQU   *                                                       FLP32950
2B1A  41E0 31A8                 3313            BAL   R14,R,AUX                                              FLP32960
2B1E  9D67                      3314            SSR   DEV,STAT            SENSE STATUS                       FLP32970
2B20  C570 0082                 3315            CLHI  STAT,X'82'                                             FLP32980
2B24  4230 3674                 3316            BNE   ERFL2D              *                        ***2D     FLP32990
2B28  D330 3EDE                 3317            LB    R3,RAUX             LOAD 1ST BYTE                      FLP33000
2B2C  C530 0010                 3318            CLHI  R3,X'10'            IS  WRITE PROTECT BIT SET          FLP33010
2B30  4230 3674                 3319            BNE   ERFL2D              *                        ***2D     FLP33020
2B34  C850 3B88                 3320  TA1       LHI   R5,SPDKAV                                              FLP33030
2B38  41F0 114A                 3321            BAL   R15,PRINT                                              FLP33040
2B3C  C840 002A                 3322            LHI   R4,X'2A'                                               FLP33050
2B40  41F0 1206                 3323            BAL   R15,OUTCHR                                             FLP33060
2B44  41F0 127A                 3324            BAL   R15,GETCHR                                             FLP33070
2B48  41F0 11F8                 3325            BAL   R15,CRLF                                               FLP33080
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TEST A   WRITE PROTECT /POWER OFF -ON

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2B4C   C540 0059     3326          CLHI    R4,C'Y'                                                   FLP33090
2B50   4330 2B60     3327          BE      TA2                                                       FLP33100
2B54   C540 004E     3328          CLHI    R4,C'N'                                                   FLP33110
2B58   4330 2D80     3329          BE      TA3                                                       FLP33120
2B5C   4300 2B34     3330          B       TA1                                                       FLP33130
       0000 2B60     3331   TA2    EQU     *                                                         FLP33140
2B60   C850 3B88     3332          LHI     R5,INSPDK       SET UP                                    FLP33150
2B64   41F0 114A     3333          BAL     R15,PRINT       INSERT SPECIAL DISKETTE                   FLP33160
2B68   C850 398C     3334          LHI     R5,UPROTMSG     LOAD MSG                                  FLP33170
2B6C   41F0 114A     3335          BAL     R15,PRINT       PRINT    UNPROTECT DISKETTE               FLP33180
2B70   C850 3BEA     3336          LHI     R5,PRSBRK       PRESS BRK KEY                             FLP33190
2B74   41F0 114A     3337          BAL     R15,PRINT       PRINT    HIT  RUN                         FLP33200
2B78   C8F0 2B88     3338   TESTA31 LHI    R15,TESTA3      LOAD NEXT ADDRESS                         FLP33210
2B7C   40F0 170A     3339          STH     R15,BRKVECT     INTO BRK VECTOR                           FLP33220
2B80   41F0 12CA     3340          BAL     R15,TSTBRK      IS BRK PRESSED                            FLP33230
2B84   4300 2B78     3341          B       TESTA31         LOOP                                      FLP33240
       0000 2B88     3342   TESTA3 EQU     *                                                         FLP33250
2B88   41E0 31A8     3343          BAL     R14,K,AUX                                                 FLP33260
2B8C   9067          3344          SSR     DEV,STAT        SENSE STATUS                              FLP33270
2B8E   C570 0002     3345          CLHI    STAT,2                                                    FLP33280
2B92   4230 36E2     3346          BNE     ERFLOF          *                            ***0F        FLP33290
       0000 2B96     3347   TA.1   EQU     *                                                         FLP33300
2B96   C850 0010     3348          LHI     R5,X'10'        LOAD LRN                                  FLP33310
2B9A   41D0 2DE8     3349          BAL     R13,SEEKROUT    SEEK TO SPECIFIED LRN                     FLP33320
2B9E   9067          3350          SSR     DEV,STAT        SENSE                                     FLP33330
2BA0   C370 0040     3351          THI     STAT,X'40'      IS DEFECTIVE TRACK BIT SET                FLP33340
2BA4   4330 3718     3352          BZ      ERFL10          NO ERROR                     ****10       FLP33350
2BA8   C370 00A0     3353          THI     STAT,X'A0'                                                FLP33360
2BAC   4230 3700     3354          BNZ     ERFL42          YES   ERROR                  ****42       FLP33370
       3355   * AUX STATUS CHECK                                                                     FLP33380
2BB0   C300 0800     3356          THI     R0,X'0800'      IS  ERROR  BIT SET                        FLP33390
2BB4   4330 3600     3357          BZ      ERFLOC          NO GO TO ERROR               ****0C       FLP33400
2BB8   C300 0400     3358          THI     R0,X'0400'      IS DEF TRACK BIT SET                      FLP33410
2BBC   4330 3754     3359          BZ      ERFL3E          NO GO TO ERROR               ****3E       FLP33420
2BC0   C300 0080     3360          THI     R0,X'0080'      IS TRACK 0 BIT SET                        FLP33430
2BC4   4330 36C4     3361          BZ      ERFL04          NO GO TO ERROR               ****04       FLP33440
2BC8   C300 0008     3362          THI     R0,X'0008'      IS SEEK ERROR BIT SET                     FLP33450
2BCC   4330 3742     3363          BZ      ERFL3B          NO ERROR                     ****3B       FLP33460
2BD0   C300 F274     3364          THI     R0,X'F274'      ARE ANY OTHER BITS SET                    FLP33470
2BD4   4230 3700     3365          BNZ     ERFL42          YES GO TO ERROR              ****42       FLP33480
2BD8   D300 3EE2     3366          LB      R0,RAUX+4                                                 FLP33490
2BDC   C500 0000     3367          CLHI    R0,0                                                      FLP33500
2BE0   4230 3760     3368          BNE     ERFL41          **                           ***41        FLP33510
2BE4   D300 3EE3     3369          LB      R0,RAUX+5                                                 FLP33520
2BE8   C500 00FF     3370          CLHI    R0,X'FF'                                                  FLP33530
2BEC   4230 3760     3371          BNE     ERFL41          **                           ***41        FLP33540
       0000 2BF0     3372   TA.2   EQU     *                                                         FLP33550
2BF0   C850 01A1     3373          LHI     R5,X'1A1'                                                 FLP33560
2BF4   41D0 2DE8     3374          BAL     R13,SEEKROUT    SEEK ROUTINE                              FLP33570
2BF8   C370 00E0     3375          THI     STAT,X'E0'      ANY BIT SET                               FLP33580
2BFC   4230 3700     3376          BNZ     ERFL42          YES GO TO ERROR              ****42       FLP33590
2C00   41F0 2E80     3377          BAL     R15,TSTERR                                                FLP33600
2C04   C300 0020     3378          THI     R0,X'0020'                                                FLP33610
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TEST A   WRITE PROTECT /POWER OFF -ON

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2C08   4330 3736     3379          BZ    ERFL39        NO GO TO ERROR            ****39    FLP33620
2C0C   C340 F7DC     3380          THI   R0,X'F7DC'    ANY OTHER BITS SET                  FLP33630
2C10   4230 3700     3381          BNZ   ERFL42        YES  GO TO ERROR          ****42    FLP33640
2C14   41F0 2E66     3382          BAL   R15,FFERR                                         FLP33650
       0000 2C18     3383  TA.3    EQU   *                                                 FLP33660
2C18   C850 0341     3384          LHI   R5,X'341'                                         FLP33670
2C1C   41D0 2DE8     3385          BAL   R13,SEEKROUT   SEEK ROUTINE                       FLP33680
2C20   C370 00E0     3386          THI   STAT,X'E0'     ANY OTHER BIT SET                  FLP33690
2C24   4230 3700     3387          BNZ   ERFL42         YES GO TO ERROR           ****42   FLP33700
2C28   C300 8000     3388          THI   R0,X'8000'     ID CRC ERROR SET                   FLP33710
2C2C   4330 370C     3389          BZ    ERFL30         NO GO TO ERROR            ****30   FLP33720
2C30   41F0 2E80     3390          BAL   R15,TSTERR     TEST ERR BIT                       FLP33730
2C34   C300 77FC     3391          THI   R0,X'77FC'     ANY OTHER BITS SET                 FLP33740
2C38   4230 3700     3392          BNZ   ERFL42         YES GO TO ERROR           ****42   FLP33750
       0000 2C3C     3393  TA.4    EQU   *                                                 FLP33760
2C3C   C850 04E1     3394          LHI   R5,X'4E1'      LOAD LRN                           FLP33770
2C40   41D0 2DE8     3395          BAL   R13,SEEKROUT   SEEK ROUTINE                       FLP33780
2C44   C370 00E0     3396          THI   STAT,X'E0'     ANY OTHER BITS SET                 FLP33790
2C48   4230 3700     3397          BNZ   ERFL42         YES GO TO ERROR           ****42   FLP33800
2C4C   41F0 2E80     3398          BAL   R15,TSTERR     TEST ERROR BIT                     FLP33810
2C50   C300 0020     3399          THI   R0,X'0020'     ANY BIT SET                        FLP33820
2C54   4330 3736     3400          BZ    ERFL39         NO GO TO ERROR            ****39   FLP33830
2C58   C300 F7DC     3401          THI   R0,X'F7DC'     ANY OTHER BITS SET                 FLP33840
2C5C   4230 3700     3402          BNZ   ERFL42         YES GO TO ERROR           ****42   FLP33850
2C60   41F0 2E66     3403          BAL   R15,FFERR                                         FLP33860
       0000 2C64     3404  TA.5    EQU   *                                                 FLP33870
2C64   C850 0563     3405          LHI   R5,X'563'      LOAD LRN                           FLP33880
2C68   41D0 2DE8     3406          BAL   R13,SEEKROUT   SEEK ROUTINE                       FLP33890
2C6C   C370 00E0     3407          THI   STAT,X'E0'     ANY OTHER BITS SET                 FLP33900
2C70   4230 3700     3408          BNZ   ERFL42         YES GO TO ERROR           ****42   FLP33910
2C74   41F0 2E80     3409          BAL   R15,TSTERR     TEST ERROR BIT                     FLP33920
2C78   C300 0020     3410          THI   R0,X'0020'     ADDRESS MARK BIT SET               FLP33930
2C7C   4330 3736     3411          BZ    ERFL39         NO GO TO ERROR            ****39   FLP33940
2C80   C300 F7DC     3412          THI   R0,X'F7DC'     ANY OTHER BITS SET                 FLP33950
2C84   4230 3700     3413          BNZ   ERFL42         YES GO TO ERROR           ****42   FLP33960
2C88   41F0 2E66     3414          BAL   R15,FFERR                                         FLP33970
       0000 2C8C     3415  TA.6    EQU   *                                                 FLP33980
2C8C   C850 0685     3416          LHI   R5,X'685'      LOAD LRN                           FLP33990
2C90   41D0 2E28     3417          BAL   R13,SEKROUT1                                      FLP34000
2C94   C370 0040     3418          THI   STAT,X'40'     IS DEF TRACK BIT SET               FLP34010
2C98   4330 3718     3419          BZ    ERFL10         NO GO TO ERROR            ****10   FLP34020
2C9C   C370 00A0     3420          THI   STAT,X'A0'     ANY OTHER BITS SET                 FLP34030
2CA0   4230 3700     3421          BNZ   ERFL42         YES  GO TO ERROR          ****42   FLP34040
2CA4   C300 0400     3422          THI   R0,X'400'                                         FLP34050
2CA8   4330 3754     3423          BZ    ERFL3E         NO GO TO ERROR            ****3E   FLP34060
2CAC   C300 FBFC     3424          THI   R0,X'FBFC'     ANY OTHER BITS SET                 FLP34070
2CB0   4230 3700     3425          BNZ   ERFL42         YES GO TO ERROR           ****42   FLP34080
2CB4   4800 3EE0     3426          LH    R0,RAUX+2                                         FLP34090
2CB8   C500 0142     3427          CLHI  R0,X'142'                                         FLP34100
2CBC   4230 3760     3428          BNE   ERFL41         **                        ***41    FLP34110
2CC0   41F0 2E66     3429          BAL   R15,FFERR                                         FLP34120
       0000 2CC4     3430  TA.7    EQU   *                                                 FLP34130
2CC4   C850 071D     3431          LHI   R5,X'71D'      LOAD LRN                           FLP34140
```

TEST A   WRITE PROTECT /POWER OFF -ON

2CC8	41D0 2E28	3432		BAL	R13,SEKROUT1		FLP34150
2CCC	C370 0040	3433		THI	STAT,X'40'	IS DEF TRACK BIT SET	FLP34160
2CD0	4330 3718	3434		BZ	ERFL10	NO GO TO ERROR ****10	FLP34170
2CD4	C370 00A0	3435		THI	STAT,X'A0'	ANY OTHER BITS SET	FLP34180
2CD8	4230 3700	3436		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34190
2CDC	C300 0400	3437		THI	R0,X'0400'	IS DEF TRACK SET	FLP34200
2CE0	4330 3754	3438		BZ	ERFL3E	NO GO TO ERROR ****3E	FLP34210
2CE4	C300 FBFC	3439		THI	R0,X'FBFC'	ANY OTHER BITS SET	FLP34220
2CE8	4230 3700	3440		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34230
2CEC	4800 3EE0	3441		LH	R0,RAUX+2		FLP34240
2CF0	C500 0146	3442		CLHI	R0,X'146'		FLP34250
2CF4	4230 3760	3443		BNE	ERFL41	** ***41	FLP34260
2CF8	41F0 2E66	3444		BAL	R15,FFERR		FLP34270
0000 2CFC		3445	TA.8	EQU	*		FLP34280
2CFC	C850 07B9	3446		LHI	R5,X'7B9'	LOAD LRN	FLP34290
2D00	41D0 2DE8	3447		BAL	R13,SEEKROUT	SEEK	FLP34300
2D04	C370 00E0	3448		THI	STAT,X'E0'	ANY OTHER BITS SET	FLP34310
2D08	4230 3700	3449		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34320
2D0C	41F0 2E80	3450		BAL	R15,TSTERR	TEST ERROR BIT	FLP34330
2D10	C300 0008	3451		THI	R0,X'0008'	IS SEEK ERROR SET	FLP34340
2D14	4330 3742	3452		BZ	ERFL38	NO GO TO ERROR ****38	FLP34350
2D18	C300 F7F4	3453		THI	R0,X'F7F4'	ANY OTHER BITS SET	FLP34360
2D1C	4230 3700	3454		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34370
2D20	41F0 2E66	3455		BAL	R15,FFERR		FLP34380
0000 2D24		3456	TA.9	EQU	*		FLP34390
2D24	C850 0237	3457		LHI	R5,X'237'	LOAD LRN	FLP34400
2D28	41D0 2DE8	3458		BAL	R13,SEEKROUT	SEEK	FLP34410
2D2C	C370 00E0	3459		THI	STAT,X'E0'	ANY OTHER BITS SET	FLP34420
2D30	4230 3700	3460		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34430
2D34	41F0 2E80	3461		BAL	R15,TSTERR	TEST ERR BIT	FLP34440
2D38	C300 4000	3462		THI	R0,X'4000'	DATA CRC ERROR	FLP34450
2D3C	4330 3712	3463		BZ	ERFL31	NO GO TO ERROR ****31	FLP34460
2D40	C300 B7FC	3464		THI	R0,X'B7FC'	ANY OTHER BITS SET	FLP34470
2D44	4230 3700	3465		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34480
2D48	41F0 2E66	3466		BAL	R15,FFERR		FLP34490
0000 2D4C		3467	TA.10	EQU	*		FLP34500
2D4C	C850 0784	3468		LHI	R5,X'784'		FLP34510
2D50	41D0 2E28	3469		BAL	R13,SEKROUT1		FLP34540
2D54	C370 00F0	3470		THI	STAT,X'F0'	ANY BIT SET	FLP34550
2D58	4230 3700	3471		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34560
2D5C	4800 3EDE	3472		LH	R0,RAUX	LOAD 2 BYTES AUXILARY STATUS	FLP34570
2D60	C300 FFFC	3473		THI	R0,X'FFFC'	ANY OTHER BIT SET	FLP34580
2D64	4230 3700	3474		BNZ	ERFL42	YES GO TO ERROR ****42	FLP34590
2D68	4800 3EE0	3475		LH	R0,RAUX+2		FLP34600
2D6C	C500 1A49	3476		CLHI	R0,X'1A49'		FLP34610
2D70	4230 3760	3477		BNE	ERFL41	** ***41	FLP34620
2D74	41F0 2E66	3478		BAL	R15,FFERR		FLP34630
0000 2D78		3479	TESTA4	EQU	*		FLP34640
2D78	C850 3BA2	3480		LHI	R5,INTSTOK	SET UP	FLP34650
2D7C	41F0 114A	3481		BAL	R15,PRINT	INSERT TEST DISKETTE	FLP34660
0000 2D80		3482	TA3	EQU	*		FLP34670
2D80	C850 398C	3483		LHI	R5,UPROTMSG	SET UP	FLP34680
2D84	41F0 114A	3484		BAL	R15,PRINT	UNPROTECT DISKETTE	FLP34690

TEST A   WRITE PROTECT /POWER OFF -ON

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     2D88   C850 39A0      3485            LHI   R5,POWEROFF      LOAD MSG                              FLP34700
     2D8C   41F0 114A      3486            BAL   R15,PRINT        PRINT          POWER OFF DISKETTE     FLP34710
     2D90   C850 3BEA      3487            LHI   R5,PRSBRK        PRESS BRK KEY                         FLP34720
     2D94   41F0 114A      3488            BAL   R15,PRINT        PRINT          HIT RUN                FLP34730
     2D98   C8F0 2DA8      3489   TESTA41  LHI   R15,TESTA6                                             FLP34740
     2D9C   40F0 170A      3490            STH   R15,BRKVECT      INTO BRK VECTOR                       FLP34750
     2DA0   41F0 12CA      3491            BAL   R15,TSTBRK       IS BRK PRESSED                        FLP34760
     2DA4   4300 2D98      3492            B     TESTA41          LOOP                                  FLP34770
            0000 2DA8      3493   TESTA6   EQU   *                                                      FLP34780
     2DA8   DE60 3D42      3494            OC    DEV,STOP                                               FLP34790
     2DAC   9D67           3495            SSR   DEV,STAT                                               FLP34820
     2DAE   C370 00FF      3496            THI   STAT,X'FF'                                             FLP34830
     2DB2   4230 367A      3497            BNZ   ERFL2E           *                          ***2E      FLP34840
     2DB6   C850 3982      3498            LHI   R5,POWERON       LOAD MSG                              FLP34850
     2DBA   41F0 114A      3499            BAL   R15,PRINT        PRINT          POWER ON DISKETTE      FLP34860
     2DBE   C850 3BEA      3500            LHI   R5,PRSBRK        PRESS BRK KEY                         FLP34870
     2DC2   41F0 114A      3501            BAL   R15,PRINT        PRINT     HIT RUN                     FLP34880
     2DC6   C8F0 2DD6      3502   TESTA81  LHI   R15,TESTA8       LOAD NEXT ADDRESS                     FLP34890
     2DCA   40F0 170A      3503            STH   R15,BRKVECT      IN TSTBRK VECTOR                      FLP34900
     2DCE   41F0 12CA      3504            BAL   R15,TSTBRK       IS BRK PRESSED                        FLP34910
     2DD2   4300 2DC6      3505            B     TESTA81                                                FLP34920
            0000 2DD6      3506   TESTA8   EQU   *                                                      FLP34930
     2DD6   41E0 31A8      3507            BAL   R14,R.AUX                                              FLP34940
     2DDA   9D67           3508            SSR   DEV,STAT         SENSE STATUS                          FLP34950
     2DDC   C570 0002      3509            CLHI  STAT,2                                                 FLP34960
     2DE0   4230 367A      3510            BNE   ERFL2E           *                          ***2E      FLP34970
     2DE4   4300 0E6C      3511   TESTAEND B     TSTEND           TEST A FINISHED                       FLP35000


            0000 2DE8      3513   SEEKROUT EQU   *                                                      FLP35020
     2DE8   9865           3514            WHR   DEV,R5           WRITE LRN                             FLP35030
     2DEA   4000 3CCE      3515            STH   R13,TEMP2                                              FLP35040
     2DEE   0805           3516            LHR   R0,R5                                                  FLP35050
     2DF0   41F0 3600      3517            BAL   R15,DISPLAY                                            FLP35060
     2DF4   DE60 3D3C      3518            OC    DEV,READ         READ                                  FLP35070
     2DF8   41F0 35A6      3519            BAL   R15,BUSY3                                              FLP35080
     2DFC   4300 3688      3520            B     ERFL13           **                         ***13      FLP35090
     2E00   DE60 3D42      3521            OC    DEV,STOP         STOP CONTROLLER                       FLP35100
     2E04   C800 0500      3522            LHI   R0,X'500'                                              FLP35110
     2E08   41F0 10DE      3523            BAL   R15,TIMER                                              FLP35120
     2E0C   41F0 353C      3524            BAL   R15,IDLE         WAIT FOR IDLE                         FLP35130
     2E10   41E0 31A8      3525            BAL   R14,R.AUX        READ AUXILARY STATUS                  FLP35140
     2E14   9D67           3526            SSR   DEV,STAT         SENSE STATUS                          FLP35150
     2E16   C370 0010      3527            THI   STAT,X'10'       IS ERROR IN STATUS SET                FLP35160
     2E1A   4330 36EE      3528            BZ    ERFL12           NO GO TO ERROR             ****12     FLP35170
     2E1E   4800 3EDE      3529            LH    R0,RAUX          LEAD AUXILARY STATUS                  FLP35180
     2E22   48D0 3CCE      3530            LH    R13,TEMP2                                              FLP35190
     2E26   03D0           3531            BR    R13              RETURN                                FLP35200
            0000 2E28      3532   SEKROUT1 EQU   *                                                      FLP35210
     2E28   9865           3533            WHR   DEV,R5           WRITE LRN                             FLP35220
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TEST A   WRITE PROTECT /POWER OFF -ON

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2E2A    40D0 3CCE          3534            STH     R13,TEMP2
2E2E    0805              3535            LHR     R0,R5
2E30    41F0 3600          3536            BAL     R15,DISPLAY
2E34    DE60 303C          3537            OC      DEV,READ          READ                              FLP35230
2E38    41F0 35A6          3538            BAL     R15,BUSY3
2E3C    4300 3688          3539            B       ERFL13
2E40    2401              3540            LIS     R0,1
2E42    41F0 10DE          3541            BAL     R15,TIMER
2E46    DE60 3D42          3542            OC      DEV,STOP          STOP CONTROLLER                   FLP35240
2E4A    C800 0500          3543            LHI     R0,X'500'
2E4E    41F0 10DE          3544            BAL     R15,TIMER
2E52    41F0 353C          3545            BAL     R15,IDLE          WAIT FOR IDLE                     FLP35250
2E56    41E0 31A8          3546            BAL     R14,R.AUX         READ AUX STATUS                   FLP35260
2E5A    9D97              3547            SSR     DEV,STAT          SENSE STATUS                      FLP35270
2E5C    4800 3EDE          3548            LH      R0,RAUX
2E60    4800 3CCE          3549            LH      R13,TEMP2
2E64    030D              3550            BR      R13                                                 FLP35280
        0000 2E66          3551    FFERR   EQU     *                                                   FLP35290
2E66    D300 3EE2          3552            LB      R0,RAUX+4                                            FLP35300
2E6A    C500 00FF          3553            CLHI    R0,X'FF'                                             FLP35310
2E6E    4230 3760          3554            BNE     ERFL41            **                        ***41   FLP35320
2E72    D300 3EE3          3555            LB      R0,RAUX+5                                            FLP35330
2E76    C500 00FF          3556            CLHI    R0,X'FF'                                             FLP35340
2E7A    4230 3760          3557            BNE     ERFL41            **                        ***41   FLP35350
2E7E    030F              3558            BR      R15                                                 FLP35360
        0000 2E80          3559    TSTERR  EQU     *                                                   FLP35370
2E80    C300 0800          3560            THI     R0,X'0800'        TEST ERROR IN AUX STATUS           FLP35380
2E84    4330 36D0          3561            BZ      ERFLOC            NOT  SET GO TO ERROR      ****0C   FLP35390
2E88    030F              3562            BR      R15               RETURN                             FLP35400
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TEST B   SCOPE LOOP TEST

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                              3564  *************************************************************************  FLP35420
                              3565  *   TESTB SCOPE LOOP                                                      FLP35430
                              3566  *                                                                         FLP35440
                              3567  *   PURPOSE                                                               FLP35450
                              3568  *       TO TEST THE DIFFERENT FUNCTIONS WITHOUT CHECKING                  FLP35460
                              3569  *       TO ENABLE CLOSE INSPECTION WITH A SCOPE                           FLP35470
                              3570  *                                                                         FLP35480
                              3571  *   DESIGN SPECIFICATION                                                  FLP35490
                              3572  *                                                                         FLP35500
                              3573  *       A SET OF SUBROUTINE ARE LINKED
                              3574  *       TOGETHER AS PER THE SCOPE OPTION
                              3575  *                                                                         FLP35500
          0000 2E8A           3576  *************************************************************************  FLP35510
2E8A   48U0 1756              3577  TESTB    EQU    *                                                          FLP35520
2E8E   2410                   3578           LH     DEV,FLPADR+6         GET FLOPPY CONTROLLER ADDRESS         FLP35530
2E90   41F0 12CA              3579  SC.LOOP  LIS    R1,0                 (R1) = EVENT INDEX                   FLP35540
2E94   4821 3C4A              3580  SC.LOOP1 BAL    R15,TSTBRK           EXIT IF BREAK DEPRESSED              FLP35550
2E98   4210 2EEC              3581           LH     R2,SC.CMD(R1)                                             FLP35560
2E9C   48U0 3CF2              3582           BM     SC.LOOP4             EVENT DELETED/NOT SPECIFIED          FLP35570
2EA0   9134                   3583           LH     R3,CDRIVE                                                 FLP35580
2EA2   0623                   3584           SLHLS  R3,4                                                      FLP35590
2EA4   2430                   3585           OHR    R2,R3                                                     FLP35600
2EA6   2441                   3586           LIS    R3,0                                                      FLP35610
2EA8   0E40 303A              3587           LIS    R4,1                                                      FLP35620
2EAC   9843                   3588           OC     R4,INC               DISPLAY EVENT NUMBER                 FLP35630
2EAE   9843                   3589           WHR    R4,R3                                                     FLP35640
2EB0   9013                   3590           WHR    R4,R3                                                     FLP35650
2EB2   2611                   3591           SRHLS  R1,3                                                      FLP35660
2EB4   9A41                   3592           AIS    R1,1                                                      FLP35670
2EB6   2711                   3593           WOR    R4,R1                                                     FLP35680
2EB8   9113                   3594           SIS    R1,1                                                      FLP35690
2EBA   4831 3C4C              3595           SLHLS  R1,3                 READJUST EVENT INDEX                 FLP35700
2EBE   4841 3C4E              3596           LH     R3,SC.NUM(R1)        GET EVENT PARAMETERS                 FLP35710
2EC2   4851 3C50              3597           LH     R4,SC.SLRN(R1)                                            FLP35720
2EC6   2480                   3598           LH     R5,SC.ELRN(R1)                                            FLP35730
2EC8   0854                   3599           LIS    R8,0                                                      FLP35740
2ECA   2335                   3600           SHR    R5,R4                END LRN - START LRN = (R5)           FLP35750
2ECC   2113                   3601           BZS    SC.LOOP3                                                  FLP35760
2ECE   2401                   3602           BMS    SC.LOOP2                                                  FLP35770
2ED0   2302                   3603           LIS    R8,1                                                      FLP35780
2ED2   2581                   3604           BS     SC.LOOP3                                                  FLP35790
2ED4   0A58                   3605  SC.LOOP2 LCS    R8,1                                                      FLP35800
2ED6   4U80 3CF6              3606  SC.LOOP3 AHR    R5,R8                                                      FLP35810
2EDA   4891 3C4A              3607           STH    R8,BCOUNT            (R8) = -1,0,+1 FOR (R5) = -/0/+      FLP35820
2EDE   2791                   3608  SC.LP31  LH     R9,SC.CMD(R1)                                             FLP35830
2EE0   9191                   3609           SIS    R9,1                                                      FLP35840
2EE2   48E9 2F06              3610           SLHLS  R9,1                 (R9) = INDEX TO CHOOSE A ROUTINE     FLP35850
2EE6   01FE                   3611           LH     R14,SC.ROUT(R9)                                           FLP35860
2EE8   2791                   3612           BALR   R15,R14              GO PERFORM A SCOPE ROUTINE           FLP35870
2EEA   2038                   3613  SC.RTN   SIS    R3,1                                                      FLP35880
2EEC   2618                   3614           BNZS   SC.LP31                                                   FLP35890
2EEE   C510 0070              3615  SC.LOOP4 AIS    R1,8                 BUMP EVENT INDEX                     FLP35900
                              3616           CLHI   R1,112                                                    FLP35910
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TEST B   SCOPE LOOP TEST

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2EF2   4320 2E90      3617            BNP    SC.LOOP1       GO PROCESS NEXT EVENT         FLP35920
2EF6   4200 0000      3618            NOP                                                 FLP35930
2EFA   41E0 294C      3619            BAL    R14,NEXTDR                                    FLP35940
2EFE   4200 0000      3620            NOP                                                 FLP35950
2F02   4300 2E8E      3621            B      SC.LOOP        REPEAT                         FLP35960
2F06   2F18           3622   SC.ROUT  DC     SC.RW          COMMAND = 1    READ           FLP35970
2F08   2F18           3623            DC     SC.RW          *         2    WRITE          FLP35980
2F0A   3038           3624            DC     SC.RID         *         3    READ ID        FLP35990
2F0C   3064           3625            DC     SC.RAUX        *         4    READ AUX STATUS FLP36000
2F0E   30A8           3626            DC     SC.DEL         *         5    DELETE         FLP36010
2F10   30AE           3627            DC     SC.BOOT        *         6    BOOT LOAD      FLP36020
2F12   30F0           3628            DC     SC.STOP        *         7    STOP           FLP36030
2F14   30F0           3629            DC     SC.RSET        *         8    RESET          FLP36040
2F16   30E8           3630            DC     SC.FMT         *         9    FORMAT         FLP36050
                      3631   * SCOPE LOOP TEST ROUTINES                                   FLP36060
2F18   9067           3632   SC.RW    SSR    DEV,STAT                                     FLP36070
2F1A   2221           3633            BFBS   2,1            WAIT FOR IDLE                  FLP36080
2F1C   4050 2F78      3634            STH    R5,R5SAV                                      FLP36090
2F20   9864           3635            WHR    DEV,R4         SEND STLRN TO CONTROLLER       FLP36100
2F22   9E62           3636            OCR    DEV,R2         READ/WRITE COMMAND             FLP36110
2F24   0888           3637            LHR    R8,R8                                        FLP36120
2F26   4210 2FFA      3638            BM     SC.RWB         GO READ / WRITE BACKWARDS      FLP36130
2F2A   C8A0 2F4A      3639            LHI    R10,SC.RW2                                    FLP36140
2F2E   4800 1792      3640            LH     R0,DELAY+6                                    FLP36150
2F32   2333           3641            BZS    SC.RW.GO       DELAY IS NOT SPECIFIED. R/W MULT-SEC FLP36160
2F34   C8A0 2F46      3642            LHI    R10,SC.RW1                                    FLP36170
2F38   0AA9           3643   SC.RW.GO AHR    R10,R9                                       FLP36180
2F3A   48EA 0000      3644            LH     R14,0(R10)     GET APPROPRIATE ROUTINE        FLP36190
2F3E   01DE           3645            BALR   R13,R14                                       FLP36200
2F40   4850 2F78      3646            LH     R5,R5SAV                                      FLP36210
2F44   030F           3647            BR     R15            RETURN                         FLP36220
2F46   2FA0           3648   SC.RW1   DC     SC.READ1       ROUTINES TO R/W ONE SECTOR @ A TIME FLP36230
2F48   2FDA           3649            DC     SC.WRT1                                       FLP36240
2F4A   2F52           3650   SC.RW2   DC     SC.READ2       ROUTINES TO R/W CONSECUTIVE SECTORS FLP36250
2F4C   2F7A           3651            DC     SC.WRT2                                       FLP36260
2F4E   3024           3652   SC.RW3   DC     SC.READ3                                      FLP36270
2F50   302E           3653            DC     SC.WRT3                                       FLP36280
                      3654   * TO READ CONSECUTIVE SECTORS                                FLP36290
                      3655   *                                                            FLP36300
2F52   C890 FF80      3656   SC.READ2 LHI    R9,-128                                      FLP36310
2F56   41A0 2FDA      3657            BAL    R10,CKBSY                                      FLP36320
2F5A   D969 097F      3658   SC.RD22  RH     DEV,LRDATAE(R9) READ A SECTOR IN ABOUT 1 MILLISECOND FLP36330
2F5E   D969 0981      3659            RH     DEV,LRDATAE+2(R9) *          (LOOP TIME - WORST ) FLP36340
2F62   D969 0983      3660            RH     DEV,LRDATAE+4(R9)                             FLP36350
2F66   D969 0985      3661            RH     DEV,LRDATAE+6(R9)                             FLP36360
2F6A   2698           3662            AIS    R9,8                                         FLP36370
2F6C   2039           3663            BNZS   SC.RD22        LOOP FOR 128 BYTES             FLP36380
2F6E   0B58           3664            SHR    R5,R8                                         FLP36390
2F70   203F           3665            BNZS   SC.READ2       LOOP FOR # OF SECTORS          FLP36400
2F72   DE60 3D42      3666            OC     DEV,STOP                                      FLP36410
2F76   030D           3667            BR     R13            RETURN                         FLP36420
2F78   0000           3668   R5SAV    DCX    0                                            FLP36430
                      3669   * TO WRITE CONSECUTIVE SECTORS                               FLP36440
```

TEST 8   SCOPE LOOP TEST

2F7A	C890 FF80	3670	SC.WRT2	LHI	R9,-128	FLP36460
2F7E	41A0 2FDA	3671		BAL	R10,CKBSY	FLP36470
2F82	D869 097F	3672	SC.WRT22	WH	DEV,LRDATAE(R9) WRITE 8 BYTES	FLP36480
2F86	D869 0981	3673		WH	DEV,LRDATAE+2(R9)	FLP36490
2F8A	D869 0983	3674		WH	DEV,LRDATAE+4(R9)	FLP36500
2F8E	D869 0985	3675		WH	DEV,LRDATAE+6(R9)	FLP36510
2F92	2698	3676		AIS	R9,8	FLP36520
2F94	2039	3677		BNZS	SC.WRT22 LOOP TO WRITE 128 BYTES	FLP36530
2F96	0B58	3678		SHR	R5,R8	FLP36540
2F98	203F	3679		BNZS	SC.WRT2 LOOP FOR # OF SECTORS	FLP36550
2F9A	DE60 3D42	3680		OC	DEV,STOP	FLP36560
2F9E	030D	3681		BR	R13 RETURN	FLP36570
		3682	* TO READ ONE SECTOR PER REVOLUTION			FLP36580
2FA0	C890 FF80	3683	SC.READ1	LHI	R9,-128	FLP36590
2FA4	41A0 2FDA	3684		BAL	R10,CKBSY	FLP36600
2FA8	DB69 097F	3685	SC.RD11	RD	DEV,LRDATAE(R9) READ A BYTE a A TIME	FLP36610
2FAC	2671	3686		AIS	R9,1	FLP36620
2FAE	2033	3687		BNZS	SC.RD11	FLP36630
2FB0	0B58	3688		SHR	R5,R8	FLP36640
2FB2	2039	3689		BNZS	SC.READ1 GO READ NEXT/PREVIOUS SECTOR	FLP36650
2FB4	DE60 3D42	3690		OC	DEV,STOP	FLP36660
2FB8	030D	3691		BR	R13 RETURN	FLP36670
		3692	* TO WRITE ONE SECTOR PER REVOLUTION			FLP36680
2FBA	C890 FF80	3693	SC.WRT1	LHI	R9,-128	FLP36690
2FBE	41A0 2FDA	3694		BAL	R10,CKBSY	FLP36700
2FC2	DA69 097F	3695	SC.WRT11	WD	DEV,LRDATAE(R9) WRITE A BYTE	FLP36710
2FC6	2691	3696		AIS	R9,1	FLP36720
2FC8	2033	3697		BNZS	SC.WRT11 LOOP FOR 128 BYTES	FLP36730
2FCA	0B58	3698		SHR	R5,R8	FLP36740
2FCC	2039	3699		BNZS	SC.WRT1 GO WRITE NEXT/PREVIOUS SECTOR	FLP36750
2FCE	DE60 3D42	3700		OC	DEV,STOP	FLP36760
2FD2	030D	3701		BR	R13 RETURN	FLP36770
		3702	* SUBROUTINE TO CHECK BUSY BIT			FLP36780
		3703	* WHEN BSY DROPS, RETURN ON (R10)			FLP36790
		3704	* WHEN ERR,IDLE,FAULT SETS, RETURN ON (R15)			FLP36800
2FD4	40F0 2FF8	3705	CKBSY1	STH	R15,CKBSYR+2	FLP36820
2FD8	2303	3706		BS	CKBSY+4	FLP36830
	0000 2FDA	3707	CKBSY	EQU	*	FLP36840
2FDA	40D0 2FF8	3708		STH	R13,CKBSYR+2	FLP36850
2FDE	9D67	3709		SSR	DEV,STAT	FLP36860
2FE0	2173	3710		BTFS	7,3	FLP36870
2FE2	2082	3711		BTBS	8,2	FLP36880
2FE4	030A	3712		BR	R10 RETURN	FLP36890
2FE6	2401	3713		LIS	R0,1	FLP36900
2FE8	6100 3D0E	3714		AHM	R0,ERRCOUNT	FLP36910
2FEC	DE00 3D3A	3715		OC	R0,INC	FLP36920
2FF0	9A07	3716		WDR	R0,STAT WRITE STATUS TO DISPLAY	FLP36930
2FF2	DE60 3D42	3717		OC	DEV,STOP	FLP36940
2FF6	4300 0000	3718	CKBSYR	B	0 RETURN BYPASSING SCOPE ROUTINE	FLP36950
		3719	* TO READ/WRITE SECTORS BACKWARDS			FLP36960
	0000 2FFA	3720	SC.RWB	EQU	*	FLP36980
2FFA	C8B0 FF80	3721		LHI	R11,-128	FLP36990
2FFE	41A0 2FD4	3722		BAL	R10,CKBSY1 RETURN WHEN BSY DROPS	FLP37000

TEST B   SCOPE LOOP TEST

```
3002   48E9 2F4E    3723           LH      R14,SC.RW3(R9)                                          FLP37010
3006   01DE         3724           BALR    R13,R14        READ / WRITE ONE SECTOR                  FLP37020
3008   DE60 3D42    3725           OC      DEV,STOP                                                FLP37030
300C   9D67         3726           SSR     DEV,STAT                                                FLP37040
300E   22C1         3727           BFBS    2,1                                                     FLP37050
3010   0A48         3728           AHR     R4,R8          DECREAMENT SECTOR #                      FLP37060
3012   0B58         3729           SHR     R5,R8                                                   FLP37070
3014   2335         3730           BZS     SC.RD31                                                 FLP37080
3016   9864         3731           WHR     DEV,R4         GO TO PREVIOUS SECTOR                    FLP37090
3018   9E62         3732           OCR     DEV,R2                                                  FLP37100
301A   4300 2FFA    3733           B       SC.RWB                                                  FLP37110
301E   4850 2F78    3734   SC.RD31 LH      R5,R5SAV                                                FLP37120
3022   030F         3735           BR      R15            RETURN                                   FLP37130
                    3736   * TO READ 1 SECTOR                                                      FLP37140
3024   DB6B 097F    3737   SC.READ3 RD     DEV,LRDATAE(R11)                                        FLP37150
3028   26B1         3738           AIS     R11,1                                                   FLP37160
302A   2033         3739           BNZS    SC.READ3                                                FLP37170
302C   030D         3740           BR      R13            RETURN                                   FLP37180
                    3741   * TO WRITE DATA FOR 1 SECTOR                                            FLP37190
302E   DA6B 097F    3742   SC.WRT3 WD      DEV,LRDATAE(R11)                                        FLP37200
3032   26B1         3743           AIS     R11,1                                                   FLP37210
3034   2033         3744           BNZS    SC.WRT3                                                 FLP37220
3036   030D         3745           BR      R13            RETURN                                   FLP37230
                    3746   * 'READ ID' SCOPE LOOP                                                  FLP37240
       0000 3038    3747   SC.RID  EQU     *                                                       FLP37250
3038   4841 3C4E    3748           LH      R4,SC.SLRN(R1)                                          FLP37260
303C   9D67         3749   SC.RID0 SSR     DEV,STAT                                                FLP37270
303E   22C1         3750           BFBS    2,1            WAIT FOR IDLE                            FLP37280
3040   C540 0001    3751           CLHI    R4,1                                                    FLP37290
3044   2332         3752           BZS     SC.RID1        NO                                       FLP37300
3046   9864         3753           WHR     DEV,R4         YES, MOVE HEAD TO START LRN              FLP37310
3048   9E62         3754   SC.RID1 OCR     DEV,R2                                                  FLP37320
304A   41A0 2FD4    3755           BAL     R10,CKBSY1                                              FLP37330
304E   C850 3ED8    3756           LHI     R5,RID         (R5) = A(READ ID BUFFER)                 FLP37340
3052   41E0 3072    3757           BAL     R14,BYTE6      READ & DISPLAY                           FLP37350
3056   CA40 001A    3758           AHI     R4,X'1A'       BUMP TO NEXT TRACK                       FLP37360
305A   4541 3C50    3759           CLH     R4,SC.ELRN(R1) END ?                                    FLP37370
305E   4320 303C    3760           BNP     SC.RID0        NO, LOOP                                 FLP37380
3062   030F         3761           BR      R15            RETURN                                   FLP37390
                    3762   * 'READ AUX STATUS' SCOPE LOOP                                          FLP37400
3064   9D67         3763   SC.RAUX SSR     DEV,STAT                                                FLP37410
3066   22C1         3764           BFBS    2,1            WAIT FOR IDLE                            FLP37420
3068   9E62         3765           OCR     DEV,R2                                                  FLP37430
306A   41A0 2FD4    3766           BAL     R10,CKBSY1                                              FLP37440
306E   C850 3EDE    3767           LHI     R5,RAUX        (R5) = A(READ AUX STATUS)                FLP37450
3072   9967         3768   BYTE6   RHR     DEV,R7         READ 6 BYTES                             FLP37460
3074   9968         3769           RHR     DEV,R8                                                  FLP37470
3076   D965 0004    3770           RH      DEV,4(R5)                                               FLP37480
307A   DE60 3D42    3771           OC      DEV,STOP                                                FLP37490
307E   4075 0000    3772           STH     R7,0(R5)                                                FLP37500
3082   4085 0002    3773           STH     R8,2(R5)                                                FLP37510
                    3774   *                              NOW DISPLAY FIRST 4 BYTES                FLP37520
3086   2401         3775           LIS     R0,1                                                    FLP37530
```

TEST 8   SCOPE LOOP TEST

```
3088    DEU0 3D3A       3776              OC     R0,INC                                              FLP37540
308C    9488            3777              EXBR   R8,R8                                               FLP37550
308E    9808            3778              WHR    R0,R8            BYTE 3 & 4                          FLP37560
3090    9477            3779              EXBR   R7,R7                                               FLP37570
3092    9807            3780              WHR    R0,R7            BYTE 1 & 2                          FLP37580
3094    0802            3781              LHR    R0,R2                                               FLP37590
3096    C400 000F       3782              NHI    R0,15                                               FLP37600
309A    2703            3783              SIS    R0,3                                                FLP37610
309C    033E            3784              BZR    R14              READ ID RETURN                      FLP37620
309E    C800 8000       3785              LHI    R0,X'8000'                                          FLP37630
30A2    2601            3786              AIS    R0,1                                                FLP37640
30A4    2031            3787              BTBS   3,1              DELAY                               FLP37650
30A6    030F            3788              BR     R15              READ AUX STATUS RETURN              FLP37660
                        3789    * 'DELETE' SCOPE LOOP                                                FLP37670
30A8    2492            3790    SC.DEL    LIS    R9,2            SAME AS WRITE                        FLP37680
30AA    4300 2F18       3791              B      SC.RW                                               FLP37690
                        3792    * 'BOOT LOAD' SCOPE LOOP                                             FLP37700
30AE    9067            3793    SC.BOOT   SSR    DEV,STAT                                            FLP37710
30B0    2221            3794              BFBS   2,1              WAIT FOR IDLE                       FLP37720
30B2    C800 0035       3795              LHI    R0,53            BOOT LOAD PROGRAM RESIDES           FLP37730
30B6    9860            3796              WHR    DEV,R0           AT TRACK 2, SECTOR 1                FLP37740
30B8    DE60 3D3D       3797              OC     DEV,WRITE                                           FLP37750
30BC    41A0 2FD4       3798              BAL    R10,CKBSY1                                          FLP37760
30C0    C800 4300       3799              LHI    R0,X'4300'       BOOT LOAD PROGRAM IS JUST ONE      FLP37770
30C4    9860            3800              WHR    DEV,R0           INSTRUCTION :  B  SC.BOOT1          FLP37780
30C6    C800 30E6       3801              LHI    R0,SC.BOOT1                                         FLP37790
30CA    9860            3802              WHR    DEV,R0                                              FLP37800
30CC    DE60 3D42       3803              OC     DEV,STOP                                            FLP37810
30D0    48A0 0078       3804              LH     R10,X'78'                                           FLP37820
30D4    9386            3805              LBR    R8,DEV                                              FLP37830
30D6    9488            3806              EXBR   R8,R8                                               FLP37840
30D8    0682            3807              OHR    R8,R2                                               FLP37850
30DA    4080 0078       3808              STH    R8,X'78'        ('78') = FLOPPY ADR,BOOT COMMAND    FLP37860
30DE    9067            3809              SSR    DEV,STAT                                            FLP37870
30E0    2221            3810              BFBS   2,1              WAIT FOR IDLE                       FLP37880
30E2    4300 0050       3811              B      X'50'            BOOT LOAD                           FLP37890
30E6    DE60 3D42       3812    SC.BOOT1  OC     DEV,STOP         STOP BOOT-LOADING                   FLP37900
30EA    40A0 0078       3813              STH    R10,X'78'        RESTORE X'78'                       FLP37910
30EE    030F            3814              BR     R15                                                 FLP37920
                        3815    * 'STOP' SCOPE LOOP                                                  FLP37930
        0000 30F0       3816    SC.STOP   EQU    *                                                   FLP37940
                        3817    * 'RESET' SCOPE LOOP                                                 FLP37950
30F0    9067            3818    SC.RSET   SSR    DEV,STAT                                            FLP37960
30F2    2221            3819              BFBS   2,1              WAIT FOR IDLE                       FLP37970
30F4    9E62            3820              OCR    DEV,R2                                              FLP37980
30F6    030F            3821              BR     R15                                                 FLP37990
                        3822    * 'FORMAT' SCOPE LOOP                                                FLP38000
30F8    9067            3823    SC.FMT    SSR    DEV,STAT                                            FLP38010
30FA    2221            3824              BFBS   2,1              WAIT FOR IDLE                       FLP38020
30FC    9E62            3825              OCR    DEV,R2                                              FLP38030
30FE    41A0 2FD4       3826              BAL    R10,CKBSY1                                          FLP38040
3102    D860 1786       3827              WH     DEV,DATA+6       FORMAT DATA                         FLP38050
3106    DA60 17B7       3828              WD     DEV,FMPARM+7     ERROR ALLOWED, # OF READS           FLP38060
```

TEST B   SCOPE LOOP TEST

```
310A    0E60 3042        3829              OC    DEV+STOP                                            FLP38070
310E    9D67             3830              SSR   DEV+STAT         WAIT HERE TILL CONTROLLER          FLP38080
3110    2221             3831              BFBS  2,1              FORMATS THE DISKETTE               FLP38090
3112    030F             3832              BR    R15                                                 FLP38100
3114    4300 0E6C        3833   TESTBEND   B     TSTEND           TEST B FINISHED                    FLP38110
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SUBROUTINES

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                              3835  *                                                                          FLP38130
                              3836  *              TO GENERATE A NEW RANDOM NUMBER IN R0                       FLP38140
                              3837  *                                                                          FLP38150
           0000 3118          3838  RANDOM    EQU    *                                                        FLP38160
      3118  4800 3CFE         3839            LH     R0,RAND                                                   FLP38170
      311C  9104              3840            SLHLS  R0,4                                                      FLP38180
      311E  4A00 3CFE         3841            AH     R0,RAND                                                   FLP38190
      3122  CA00 0019         3842            AHI    R0,X'19'                                                  FLP38200
      3126  4000 3CFE         3843            STH    R0,RAND                                                   FLP38210
      312A  030F              3844            BR     R15                                                       FLP38220
                              3845  * SUBROUTINES USED   RW                                                   FLP38230
                              3846  * POSSIBLE ERROR # 09 + THOSE IN RW                                        FLP38240
                              3847  *                                                                          FLP38250
           0000 312C          3848  R.ID      EQU    *              READ I.D. ROUTINE                          FLP38260
      312C  2450              3849            LIS    R5,0                                                      FLP38270
           0000 312E          3850  R.ID0     EQU    *                                                        FLP38280
      312E  C830 3EDD         3851            LHI    R3,RIDND       LOAD END OF BUFFER ADDRESS                 FLP38290
           0000 3132          3852  R.ID1     EQU    *                                                        FLP38300
      3132  40E0 3EF2         3853            STH    R14,R14SAV                                                FLP38310
      3136  C820 3ED8         3854            LHI    R2,RID         LOAD START OF BUFFER ADDRESS               FLP38320
      313A  2443              3855            LIS    R4,3           LOAD READ I.D. COMMAND                     FLP38330
      313C  41F0 3228         3856            BAL    R15,RW         READ 6 BYTES ID                            FLP38340
      3140  4830 3ED8         3857            LH     R3,RID                                                    FLP38350
      3144  C530 FFFF         3858            CLHI   R3,X'FFFF'                                                FLP38360
      3148  033E              3859            BER    R14                                                       FLP38370
      314A  03F0 3ED9         3860            LB     R15,RID+1      LOAD 2ND BYTE                              FLP38380
      314E  08FF              3861            LHR    R15,R15        IS IT ZERO                                 FLP38390
      3150  4230 3772         3862            BNZ    ERFL09         NO ERROR             ****09                FLP38400
      3154  03F0 3EDB         3863            LB     R15,RID+3      LOAD 4TH BYTE                              FLP38410
      3158  08FF              3864            LHR    R15,R15        IS IT ZERO                                 FLP38420
      315A  4230 3772         3865            BNZ    ERFL09         NO ERROR             ****09                FLP38430
      315E  48E0 3EF2         3866            LH     R14,R14SAV     RESTORE RETURN ADDRESS                     FLP38440
      3162  030E              3867            BR     R14            RETURN                                     FLP38450


                              3869  * TO GET NEXT HW DATA PATTERN IN R0                                        FLP38470
                              3870  * OPTION USED   DATA SHIFT                                                 FLP38480
                              3871  *  ADJUST  THE LOGICAL  RECORD NUMBER                                      FLP38490
                              3872  *                                                                          FLP38500
           0000 3164          3873  AJUSTLRN  EQU    *                                                         FLP38510
      3164  4800 3D24         3874            LH     R0,LRN                                                    FLP38520
      3168  4500 177A         3875            CLH    R0,ENDLRN+6                                               FLP38530
      316C  433F 0004         3876            BE     4(R15)         YES OUT OF LOOP                            FLP38540
      3170  4A00 3CF6         3877            AH     R0,BCOUNT      NO ADJUST COUNTER                          FLP38550
      3174  4000 3D24         3878            STH    R0,LRN         UPDATE LRN                                 FLP38560
      3178  030F              3879            BR     R15            RETURN                                     FLP38570
           0000 317A          3880  GETPATRN  EQU    *                                                         FLP38580
      317A  40F0 3CC8         3881            STH    R15,TEMP       SAVE RETURN REGISTER                       FLP38590
      317E  4800 1786         3882            LH     R0,DATA+6      LOAD DATA OPTION                           FLP38600
      3182  2134              3883            BNZS   GTPT1          IF NOT ZERO TEST SHIFT OPTION              FLP38610
      3184  41F0 3118         3884            BAL    R15,RANDOM     GET RANDOM NUMBER                          FLP38620
      3188  2309              3885            BS     GTPT2          SKIP TO STORE AWAY PATTERN                 FLP38630
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SUBROUTINES

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318A    48J0  179E      3886  GTPT1    LH    R3,SHIFT+6                                              FLP38640
318E    2336            3887           BZS   GTPT2          IF SHIFT =0   USE SAME PATTER           FLP38650
3190    48U0  3CFE      3888           LH    R0,RAND                                                FLP38660
3194    9101            3889           SLHLS R0,1           SHIFT DATA                              FLP38670
3196    2382            3890           BNCS  GTPT2          IF A CARRY                              FLP38680
3198    2601            3891           AIS   R0,1           ADD ONE TO WRAP AROUND                  FLP38690
319A    4UU0  3CFE      3892  GTPT2    STH   R0,RAND                                                FLP38700
319E    48U0  3CFE      3893           LH    R0,RAND                                                FLP38710
31A2    48F0  3CC8      3894           LH    R15,TEMP       LOAD BACK RETURN REGISTER               FLP38720
31A6    030F            3895           BR    R15            RETURN                                  FLP38730


                        3897  * TO READ 6 BYTES OF AUXILARY STATUS                                  FLP38750
                        3898  * POSSIBLE ERROR # 08,13                                              FLP38760
                        3899  *                                                                     FLP38770
        0UU0  31A8      3900  R.AUX    EQU   *              READ AUX STATUS ROUTINE                 FLP38780
31A8    C830  3EE3      3901           LHI   R3,RAUXND                                              FLP38790
31AC    4030  3CF4      3902           STH   R3,RAUXFLG                                             FLP38800
31B0    41F0  353C      3903           BAL   R15,IDLE                                               FLP38810
31B4    DE60  3D3F      3904           OC    DEV,READAUX                                            FLP38820
31B8    41F0  35A0      3905           BAL   R15,BUSY                                               FLP38830
31BC    4300  3688      3906           B     ERFL13         *                              ***13    FLP38840
31C0    D960  3EDE      3907           RH    DEV,RAUX                                                FLP38850
31C4    D960  3EE0      3908           RH    DEV,RAUX+2                                              FLP38860
31C8    D960  3EE2      3909           RH    DEV,RAUX+4                                              FLP38870
31CC    2430            3910           LIS   R3,0                                                   FLP38880
31CE    4030  3CF4      3911           STH   R3,RAUXFLG                                             FLP38890
31D2    DE60  3D47      3912           OC    DEV,DIS.STOP                                           FLP38900
31D6    41F0  353C      3913           BAL   R15,IDLE       WAIT FOR IDLE                           FLP38910
31DA    030E            3914           BR    R14            RETURN                                  FLP38920
                        3915  * TO GENERATA + CHECK CRC IN ID                                       FLP38930
                        3916  * POSSIBLE ERROR # U7                                                 FLP38940
                        3917  *                                                                     FLP38950
        0UU0  31DC      3918  DOCRC    EQU   *              CALCULATE CRC ON ID ROUTINE             FLP38960
31DC    2591            3919           LCS   R9,1           START WITH CRC (R9) = FFFF              FLP38970
31DE    24D8            3920           LIS   R13,8          COUNT FOR ADDRESS MARK BITS             FLP38980
31E0    C8C0  FEU0      3921           LHI   R12,X'FE00'    LOAD ADDRESS MARK                       FLP38990
31E4    41F0  32UE      3922           BAL   R15,DOCRC2                                             FLP39000
31E8    48C0  3ED8      3923           LH    R12,RID        LOAD FIRST HALFWORD                     FLP39010
31EC    41F0  320A      3924           BAL   R15,DOCRC1     INCLUDE NEXT HW IN CRC                  FLP39020
31F0    48C0  3EDA      3925           LH    R12,RID+2      LOAD   SECOND HALFWORD                  FLP39030
31F4    41F0  320A      3926           BAL   R15,DOCRC1     INCLUDE NEXT HW IN CRC                  FLP39040
31F8    40J0  3EE8      3927           STH   R9,EXPID+4                                             FLP39050
31FC    48J0  3EE8      3928           LH    R9,EXPID+4                                             FLP39060
3200    4590  3EDC      3929           CLH   R9,RID+4       COMPARE TO ACTUAL CRC                   FLP39070
3204    4230  376C      3930           BNE   ERFLU7         NO MATCH                       ****07   FLP39080
3208    030E            3931           BR    R14            RETURN                                  FLP39090
320A    C8U0  0010      3932  DOCRC1   LHI   R13,16         INDEX VALUE FOR HW                      FLP39100
320E    0889            3933  DOCRC2   LHR   R8,R9          LOAD INTO WORK REGISTER                 FLP39110
3210    9191            3934           SLHLS R9,1           SHIFT OVER                              FLP39120
3212    078C            3935           XHR   R8,R12         XOR  IN                                 FLP39130
3214    9180            3936           SLHLS R8,0                                                   FLP39140
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SUBROUTINES

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3216    2314           3937              BNMS   DOCRC3                                              FLP39150
3218    C790 1020      3938              XHI    R9,X'1020'           DIVIDE BY POLYNOMIAL            FLP39160
321C    2691           3939              AIS    R9,1                                                FLP39170
321E    91C1           3940   DOCRC3     SLHLS  R12,1                                               FLP39180
3220    27D1           3941              SIS    R13,1                DECREAMENT COUNT                FLP39190
3222    4230 320E      3942              BNZ    DOCRC2               LOOP                            FLP39200
3226    030F           3943              BR     R15                  RETURN                          FLP39210
                       3944   *                                                                      FLP39220
                       3945   * SUBROUTINE TO WRITE/READ THRU SELCH/MULTIPLEXOR BUS                  FLP39230
                       3946   *                                                                      FLP39240
                       3947   * PARAMETERS :                                                         FLP39250
                       3948   *                                                                      FLP39260
                       3949   *         (R2) = DATA BUFFER START ADDRESS                             FLP39270
                       3950   *         (R3) =              END ADDRESS                              FLP39280
                       3951   *         (R4) = FLOPPY COMMAND OFFSET = 1,2,3,4,5                     FLP39290
                       3952   *         (R5) = LOGICAL RECORD # TO BE WRITTEN / ZERO                 FLP39300
                       3953   *                                                                      FLP39310
                       3954   * IF SELCH+6 IS NON-ZERO TRANSFR DATA THRU SELCH/ESELCH               FLP39320
                       3955   * IF INT       IS NON-ZERO TRANSFER DATA UNDER INTERRUPTS             FLP39330
                       3956   * IF INT       IS ZERO              TRANSFER USING BLOCK I/O          FLP39340
                       3957   *                                                                      FLP39350
                       3958   *                                                                      FLP39360
                       3959   * POSSIBLE ERROR # 08,13,1A         BLOCK I/O                          FLP39370
                       3960   *                08,18,19,20,21,22,25,26,2A UNDER INTERRUPTS          FLP39380
                       3961   *                08,18,1A,20,21,23,24,2A, TRU SELCH/ESELCH            FLP39390
                       3962   *                                                                      FLP39400
                       3963   * SUBROUTINES USED IDLE,BUSY WAIT,INT                                 FLP39410
                       3964   *                                                                      FLP39420
        0000 3228      3965   RW         EQU    *                                                    FLP39430
3228    40F0 3CF8      3966              STH    R15,RWRTN                                            FLP39440
322C    41F0 353C      3967              BAL    R15,IDLE             SEE IF CONTROLLER IS IDLE       FLP39450
3230    4050 3D26      3968              STH    R5,WLRN.                                             FLP39460
3234    D354 303B      3969              LB     R5,CMDTAB1-1(R4)     GET FLOPPY COMMAND              FLP39470
3238    C540 0005      3970              CLHI   R4,5                                                 FLP39480
323C    2335           3971              BES    R4,0                                                 FLP39490
323E    C540 0002      3972              CLHI   R4,2                                                 FLP39500
3242    2332           3973              BES    R4,0                                                 FLP39510
3244    23D2           3974              BS     RW1                                                  FLP39520
3246    2440           3975   R4.0       LIS    R4,0                                                 FLP39530
3248    4800 17C2      3976   RW1        LH     R0,SELCH+6                                           FLP39540
324C    4290 336C      3977              BNZ    RW3                  BRANCH IF SELCH IS SPECIFIED    FLP39550
3250    4800 3D26      3978              LH     R0,WLRN.             LR # TO BE WRITTEN ?            FLP39560
3254    2332           3979              BZS    RW11                 NO                              FLP39570
3256    9860           3980              WHR    DEV,R0               YES, WRITE IT                   FLP39580
3258    4800 3CFA      3981   RW11       LH     R0,INT                                               FLP39590
325C    4230 3286      3982              BNZ    RW2                  BRANCH IF DATA XFER U/INTERRUPTS FLP39600
                       3983   *                                                                      FLP39610
                       3984   * DATA TRANSFER USING SENSE STATUS LOOPS                              FLP39620
                       3985   *                                                                      FLP39630
3260    9E65           3986              OCR    DEV,R5               FLOPPY COMMAND                  FLP39640
3262    41F0 35A0      3987              BAL    R15,BUSY                                             FLP39650
3266    4300 3688      3988              B      ERFL13               BUSY DID NOT DROP      ***13     FLP39660
326A    0844           3989              LHR    R4,R4                READ OR WRITE                   FLP39670
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SUBROUTINES

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326C   233B        3990          BZS   W1                                        FLP39680
326E   9762        3991          RBR   DEV,R2        READ INTO BUFFER            FLP39690
3270   4270 360C   3992   RW12   BTC   7,EEF                                     FLP39700
3274   DE60 3D47   3993          OC    DEV,DIS,STOP                              FLP39710
3278   41F0 353C   3994          BAL   R15,IDLE      WAIT FOR IDLE               FLP39720
327C   48F0 3CF8   3995          LH    R15,RWRTN                                 FLP39730
3280   030F        3996          BR    R15           RETURN                      FLP39740
3282   9662        3997   W1     WBR   DEV,R2        WRITE FROM BUFFER           FLP39750
3284   220A        3998          BS    RW12                                      FLP39760
                   3999   *                                                      FLP39770
                   4000   * DATA TRANSFER UNDER INTERRUPTS                        FLP39780
                   4001   *                                                      FLP39790
       0000 3286   4002   RW2    EQU   *                                         FLP39800
3286   0700        4003          XHR   R0,R0                                     FLP39810
3288   4000 3D2E   4004          STH   R0,DEVINT     SET UP INTERRUPT TABLE      FLP39820
328C   C800 32A0   4005          LHI   R0,FLPINT                                 FLP39830
3290   4000 3D30   4006          STH   R0,DEVINT+2                               FLP39840
3294   C650 0040   4007          OHI   R5,X'0040'    OR IN ENABLE INTERRUPT BIT  FLP39850
3298   9E65        4008          OCR   DEV,R5                                    FLP39860
329A   41F0 35DE   4009   RW21   BAL   R15,WAIT.INT  WAIT FOR INTERRUPT          FLP39870
329E   3138        4010          DC    C'18'         *                  ***18    FLP39880
       0000 32A0   4011   FLPINT EQU   *                                         FLP39890
32A0   D370 16EA   4012          LB    STAT,INTSTA   LOAD UP STATUS              FLP39900
32A4   C370 0008   4013          THI   STAT,8                                    FLP39910
32A8   4230 3706   4014          BNZ   ERFL20        *                  ***20    FLP39920
32AC   C370 0007   4015          THI   STAT,7                                    FLP39930
32B0   4230 360C   4016          BNZ   EEF                                       FLP39940
32B4   0844        4017          LHR   R4,R4         READ OR WRITE ?             FLP39950
32B6   233A        4018          BZS   W11                                       FLP39960
32B8   D962 0000   4019          RH    DEV,0(R2)     READ 1 HW @ A TIME          FLP39970
32BC   2622        4020   RW22.1 AIS   R2,2                                      FLP39980
32BE   0523        4021          CLHR  R2,R3                                     FLP39990
32C0   4220 32DC   4022          BP    RW23                                      FLP40000
32C4   41F0 35DE   4023          BAL   R15,WAIT.INT  WAIT FOR INTERRUPTS         FLP40010
32C8   3236        4024          DC    C'26'         *                  ***26    FLP40020
32CA   DA62 0000   4025   W11    WD    DEV,0(R2)     WRITE                       FLP40030
32CE   2621        4026          AIS   R2,1          INCREMENT                   FLP40040
32D0   0523        4027          CLHR  R2,R3         FINISHED                    FLP40050
32D2   4220 32DC   4028          BP    RW23                                      FLP40060
32D6   41F0 35DE   4029          BAL   R15,WAIT.INT  WAIT FOR INTERRUPTS         FLP40070
32DA   3235        4030          DC    C'25'         *                  ***25    FLP40080
                   4031   *                                                      FLP40090
                   4032   * COME HERE WHEN DATA TRANSFER UNDER INTERRUPTS IS COMPLETE   FLP40100
                   4033   *                                                      FLP40110
       0000 32DC   4034   RW23   EQU   *                                         FLP40120
32DC   C800 32E8   4035          LHI   R0,FLPINT2                                FLP40130
32E0   4000 3D30   4036          STH   R0,DEVINT+2                               FLP40140
32E4   4300 329A   4037          B     RW21          GO WAIT FOR LAST INTERRUPT  FLP40150
                   4038   *                                                      FLP40160
       0000 32E8   4039   FLPINT2 EQU  *                                         FLP40170
32E8   C800 3668   4040          LHI   R0,ERFL2A     LOAD UP FOR ERROR   ***2A   FLP40180
32EC   4000 3D30   4041          STH   R0,DEVINT+2                               FLP40190
32F0   D370 16EA   4042          LB    STAT,INTSTA   GET INTERRUPT STATUS        FLP40200
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32F4	C470 001F	4043		NHI	STAT,X'001F'	MASK OFF WP,DEF TRK,DEL REC BITS		FLP40210
32F8	C370 0008	4044		THI	STAT,8			FLP40220
32FC	4390 36B2	4045		BZ	ERFL1C	*	***1C	FLP40230
3300	C370 0007	4046		THI	STAT,7			FLP40240
3304	4230 360C	4047		BNZ	EEF			FLP40250
3308	C800 3318	4048		LHI	R0,FLPINT3	STATUS OK.		FLP40260
330C	4000 3030	4049		STH	R0,DEVINT+2			FLP40270
3310	DE00 3D42	4050		OC	DEV,STOP	ISSUE STOP COMMAND.		FLP40280
3314	4300 329A	4051		B	RW21	GO WAIT FOR INTERRUPT DUE TO		FLP40290
		4052	*			RESETTING OF BUSY		FLP40300
	0000 3318	4053	FLPINT3	EQU	*			FLP40310
3318	C800 3668	4054		LHI	R0,ERFL2A	LOAD UP FOR ERROR	***2A	FLP40320
331C	4000 3030	4055		STH	R0,DEVINT+2			FLP40330
3320	D370 16EA	4056		LB	STAT,INTSTA	GET INTERRUPT STATUS		FLP40340
3324	C370 0008	4057		THI	STAT,8	TEST FOR BUSY		FLP40350
3328	4230 3706	4058		BNZ	ERFL20	GO TO ERROR	***20	FLP40360
332C	C370 0017	4059		THI	STAT,X'0017'	TEST THE REST	**	FLP40370
3330	4230 368E	4060		BNZ	ERFL21	GO TO ERROR	***21	FLP40380
3334	C800 3342	4061		LHI	R0,FLPINT4	LOAD NEW INTERRUPT VECTOR		FLP40390
3338	4000 3030	4062		STH	R0,DEVINT+2	STORE INTO SERVICE TABLE		FLP40400
	0000 333C	4063	RW24	EQU	*			FLP40410
333C	41F0 35DE	4064		BAL	R15,WAIT.INT	WAIT FOR INTERRUPTS		FLP40420
3340	3139	4065		DC	C'19'	*	***19	FLP40430
		4066	*			SETTING OF IDLE		FLP40440
	0000 3342	4067	FLPINT4	EQU	*			FLP40450
3342	C800 3668	4068		LHI	R0,ERFL2A	LOAD UP FO R ERROR	***2A	FLP40460
3346	4000 3030	4069		STH	R0,DEVINT+2			FLP40470
334A	D370 16EA	4070		LB	STAT,INTSTA	LOAD INTERRUPT STATUS		FLP40480
334E	C370 0002	4071		THI	STAT,2	TEST FOR IDLE		FLP40490
3352	4390 364A	4072		BZ	ERFL22	*	***22	FLP40500
3356	C370 0010	4073		THI	STAT,X'0010'	TEST THE REST		FLP40510
335A	4230 368E	4074		BNZ	ERFL21	NO GO TO ERROR	***21	FLP40520
	0000 335E	4075	FLPINT4.	EQU	*			FLP40530
335E	DE60 3D47	4076		OC	DEV,DIS.STOP	STOP CONTROLLER		FLP40540
3362	41F0 353C	4077		BAL	R15,IDLE	WAIT FOR IDLE		FLP40550
3366	48F0 3CF8	4078		LH	R15,RWRTN	STATUS OK		FLP40560
336A	030F	4079		BR	R15	RETURN		FLP40570
		4080	*					FLP40580
		4081	* DATA TRANSFER THRU SELCH					FLP40590
		4082	*					FLP40600
336C	DE00 3036	4083	RW3	OC	R0,SELSTOP	STOP SELCH		FLP40610
3370	0711	4084		XHR	R1,R1			FLP40620
3372	4010 3030	4085		STH	R1,DEVINT+2			FLP40630
3376	4810 3D26	4086		LH	R1,WLRN.	LR # TO BE WRITTEN ?		FLP40640
337A	4330 3380	4087		BZ	RW33	NO		FLP40650
337E	9861	4088		WHR	DEV,R1	LOGICAL RECORD TO FLOPPY		FLP40660
	0000 3380	4089	RW33	EQU	*			FLP40670
3380	C810 33B2	4090		LHI	R1,FLPINT1			FLP40680
3384	4010 3030	4091		STH	R1,DEVINT+2			FLP40690
3388	08E2	4092		LHR	R14,R2			FLP40700
338A	ECE0 0010	4093		SRL	R14,16			FLP40710
338E	08EE	4094		LHR	R14,R14			
3390	4330 33A2	4095		BZ	RW35			FLP40720

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3394	DAU0 174F	4096		WD	R0,BUFADR+11		FLP40730
3398	9802	4097		WHR	R0,R2		FLP40740
339A	DAU0 174F	4098		WD	R0,BUFADR+11		FLP40750
339E	9803	4099		WHR	R0,R3		FLP40760
33A0	2303	4100		BS	RW36		FLP40770
	0000 33A2	4101	RW35	EQU	*		FLP40780
33A2	9802	4102		WHR	R0,R2	SET UP SELCH REGISTERS WITH	FLP40790
33A4	9803	4103		WHR	R0,R3	START & END MEMORY ADDRESSES	FLP40800
	0000 33A6	4104	RW36	EQU	*		FLP40810
33A6	C650 0040	4105		OHI	R5,X'0040'	OR IN INTERRUPT ENABLE BIT	FLP40820
33AA	9E65	4106		OCR	DEV,R5	FLOPPY COMMAND	FLP40830
33AC	41F0 35DE	4107	RW34	BAL	R15,WAIT.INT	WAIT FOR INTERRUPT	FLP40840
33B0	3138	4108		DC	C'18'	***18	FLP40850
	0000 33B2	4109	FLPINT1	EQU	*		FLP40860
33B2	C800 3668	4110		LHI	R0,ERFL2A	LOAD UP FOR ERROR ***2A	FLP40870
33B6	4000 3D30	4111		STH	R0,DEVINT+2		FLP40880
33BA	D370 16EA	4112		LB	STAT,INTSTA	GET INTERRUPTING STATUS	FLP40890
33BE	C370 0008	4113		THI	STAT,8		FLP40900
33C2	4230 3706	4114		BNZ	ERFL20	GO TO ERROR ***20	FLP40910
33C6	C370 0017	4115		THI	STAT,X'0017'	TEST HE REST ***	FLP40920
33CA	4230 368E	4116		BNZ	ERFL21	GOTO ERROR ***21	FLP40930
33CE	C800 33EE	4117		LHI	R0,SELINT		FLP40940
33D2	4000 3D2E	4118		STH	R0,DEVINT	EXPECT SELCH INTERRUPT	FLP40950
33D6	C540 0001	4119		CLHI	R4,1		FLP40960
33DA	4330 33E0	4120		BE	FLPINT1A		FLP40970
33DE	9041	4121		SRHLS	R4,1		FLP40980
	0000 33E0	4122	FLPINT1A	EQU	*		FLP40990
33E0	4800 17C2	4123		LH	R0,SELCH+6		FLP41000
33E4	DE04 3D37	4124		OC	R0,SELWRT(R4)	SELCH GO	FLP41010
33E8	41F0 35DE	4125		BAL	R15,WAIT.INT	WAIT FOR SELCH INTERRUPT	FLP41020
33EC	3141	4126		DC	C'1A'	***1A	FLP41030
	0000 33EE	4127	SELINT	EQU	*		FLP41040
33EE	4800 17C2	4128		LH	R0,SELCH+6		FLP41050
33F2	DE00 3D36	4129		OC	R0,SELSTOP		FLP41060
33F6	0711	4130		XHR	R1,R1		FLP41070
33F8	4010 3D2E	4131		STH	R1,DEVINT		FLP41080
33FC	08E3	4132		LHR	R14,R3		FLP41090
33FE	ECE0 0010	4133		SRL	R14,16		FLP41100
3402	08EE	4134		LHR	R14,R14		
3404	4330 3420	4135		BZ	SEL1		FLP41110
3408	DE00 3D3B	4136		OC	R0,SELSTOP1		FLP41120
340C	2410	4137		LIS	R1,0	ZERO OUT.	FLP41130
340E	4010 3CC8	4138		STH	R1,TEMP	1ST PORTION OF TEMP	FLP41140
3412	DB00 3CC9	4139		RD	R0,TEMP+1		FLP41150
3416	D900 3CCA	4140		RH	R0,TEMP+2		FLP41160
341A	5810	4141		DC	X'5810',A(TEMP)		FLP41170
341C	3CC8						
341E	2302	4142		BS	SEL2		FLP41180
	0000 3420	4143	SEL1	EQU	*		FLP41190
3420	9901	4144		RHR	R0,R1		FLP41200
	0000 3422	4145	SEL2	EQU	*		FLP41210
3422	0513	4146		CLHR	R1,R3	COMPARE TERMINATION ADDRESS	FLP41220
3424	4230 3650	4147		BNE	ERFL23	GOTO ERROR ***23	FLP41230

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3428	2403		4148		LIS	R0,3		FLP41240
342A	4000 3D00		4149		STH	R0,FLP.INTS	EXPECT UPTO 3 FLOPPY INTERRUPTS	FLP41250
342E	C800 343E		4150		LHI	R0,FLPINT5		FLP41260
3432	4000 3D30		4151		STH	R0,DEVINT+2		FLP41270
3436	DE60 3D42		4152		OC	DEV,STOP		FLP41280
343A	4300 333C		4153		B	RW24		FLP41290
	0000 343E		4154	FLPINT5	EQU	*		FLP41300
343E	D370 16EA		4155		LB	STAT,INTSTA	GET STATUS	FLP41310
3442	C370 0005		4156		THI	STAT,5	EX,FAULT SET ?	FLP41320
3446	4230 368E		4157		BNZ	ERFL21	GOTO ERROR ***21	FLP41330
344A	C370 0002		4158		THI	STAT,2	IDLE SET ?	FLP41340
344E	4230 335E		4159		BNZ	FLPINT4.		FLP41350
3452	4810 3D00		4160		LH	R1,FLP.INTS		FLP41360
3456	2711		4161		SIS	R1,1	ALL 3 INTERRUPTS OCCURED ?	FLP41370
3458	4330 3656		4162		BZ	ERFL24	GOTO ERROR ***24	FLP41380
345C	4010 3D00		4163		STH	R1,FLP.INTS		FLP41390
3460	4300 333C		4164		B	RW24		FLP41400
			4165	*				FLP41410
			4166	* SUBROUTINE TO BUMP LRN BY 1 OR 2				FLP41420
			4167	*	USED WHILE EXECUTING TEST 5			FLP41430
	0000 3464		4168	BUMP.LRN	EQU	*		FLP41440
3464	2421		4169		LIS	R2,1		FLP41450
3466	4800 3EF6		4170		LH	R0,BYTES	LOOK @ 'BYTES'	FLP41460
346A	C500 0080		4171		CLHI	R0,128		FLP41470
346E	033F		4172		BER	R15	RETURN	FLP41480
3470	2182		4173		BLS	B.LRN1		FLP41490
3472	2621		4174		AIS	R2,1		FLP41500
3474	6120 3D24		4175	B.LRN1	AHM	R2,LRN	INCREAMENT LRN	FLP41510
3478	4300 35FC		4176		B	DISP.LRN	DISPLAY LRN	FLP41520
			4177	*				FLP41530
			4178	* SUBROUTINE TO WRITE ONE TRACK IN ONE REVOLUTION				FLP41540
			4179	*				FLP41550
			4180	*	EACH SECTOR IS WRITTEN WITH SAME HW			FLP41560
			4181	*	DATA FOR NEXT SECTOR IS RANDOM/SHIFTED/NON-SHIFTED DATA HW			FLP41570
			4182	*	DEPENDING ON OPTION SPECIFICATION			FLP41580
			4183	*				FLP41590
			4184	* POSSIBLE ERROR # 13				FLP41600
			4185	*				FLP41610
	0000 347C		4186	WRT.TRK	EQU	*		FLP41620
347C	2410		4187		LIS	R1,0		FLP41630
347E	41F0 317A		4188	WT1	BAL	R15,GETPATRN	(R0) = NEXT DATA PATTERN	FLP41640
3482	4001 0900		4189		STH	R0,DATA26(R1)		FLP41650
3486	2612		4190		AIS	R1,2		FLP41660
3488	C510 0034		4191		CLHI	R1,52		FLP41670
348C	2087		4192		BLS	WT1		FLP41680
348E	C810 FFCE		4193		LHI	R1,-50		FLP41690
	0000 3492		4194	WT2	EQU	*		FLP41700
3492	2428		4195		LIS	R2,8		FLP41710
3494	4831 0932		4196		LH	R3,DATA26E(R1)	GET HW FOR A SECTOR	FLP41720
3498	41F0 35A0		4197		BAL	R15,BUSY		FLP41730
349C	4300 3688		4198		B	ERFL13	GO TO ERROR ***13	FLP41740
34A0			4199	WT3	DO	8		FLP41750
34A0	9863		4200		WHR	DEV,R3		FLP41760

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34A2	9863		4200		WHR	DEV,R3	
34A4	9863		4200		WHR	DEV,R3	
34A6	9863		4200		WHR	DEV,R3	
34A8	9863		4200		WHR	DEV,R3	
34AA	9863		4200		WHR	DEV,R3	
34AC	9863		4200		WHR	DEV,R3	
34AE	9863		4200		WHR	DEV,R3	
34B0	2721		4201		SIS	R2,1	FLP41770
34B2	2059		4202		BNZS	WT3	LOOP TO WRITE 128 BYTES	FLP41780
34B4	2612		4203		AIS	R1,2	FLP41790
34B6	4340 3492		4204		BNP	WT2	LOOP FOR 26 SECTORS	FLP41800
34BA	030E		4205		BR	R14	RETURN	FLP41810
			4206	*			FLP41830
			4207	* SUBROUTINE TO READ & COMPARE ONE TRACK PER REVOLUTION			FLP41840
			4208	*			FLP41850
			4209	*	FIRST, A TABLE OF 28 EXPECTED HW IS GENERATED		FLP41860
			4210	*	THEN, EACH SECTOR DATA IS COMPARED WITH EXPECTED HW		FLP41870
			4211	* POSSIBLE ERROR # 13,28			FLP41880
			4212	*			FLP41890
	0000 34BC		4213	RD.TRK	EQU	*	FLP41900
34BC	2410		4214		LIS	R1,0	FLP41910
34BE	41F0 317A		4215	RT1	BAL	R15,GETPATRN	FLP41920
34C2	4001 0900		4216		STH	R0,DATA26(R1)	FILL TABLE WITH EXPECTED HW	FLP41930
34C6	2612		4217		AIS	R1,2	FLP41940
34C8	C510 0034		4218		CLHI	R1,52	FLP41950
34CC	2087		4219		BLS	RT1	FLP41960
	0000 34CE		4220	RD.TRK1	EQU	*	FLP41970
34CE	C810 FFCE		4221		LHI	R1,-50	FLP41980
	0000 34D2		4222	RT2	EQU	*	FLP41990
34D2	C820 0010		4223		LHI	R2,16	FLP42000
34D6	4831 0932		4224		LH	R3,DATA26E(R1)	(R3) = EXPECTED HW	FLP42010
34DA	48F0 16D8		4225		LH	R15,MOD32	FLP42020
34DE	2334		4226		BZS	RT21	FLP42030
34E0	F430		4227		DCX	F430,0000,FFFF	FLP42040
34E2	0000						
34E4	FFFF						
	0000 34E6		4228	RT21	EQU	*	FLP42050
34E6	41F0 35A0		4229		BAL	R15,BUSY	FLP42060
34EA	4300 3688		4230		B	ERFL13	* GO TO ERROR	***13	FLP42070
34EE	9960		4231	RT3	RHR	DEV,R0	GET 2 BYTES	FLP42080
34F0	0503		4232		CLHR	R0,R3	FLP42090
34F2	2159		4233		BNES	RT31	FLP42100
34F4	9960		4234		RHR	DEV,R0	GET NEXT 2 BYTES	FLP42110
34F6	0503		4235		CLHR	R0,R3	FLP42120
34F8	2156		4236		BNES	RT31	ERROR IF COMPARISION FAILS	FLP42130
34FA	9960		4237		RHR	DEV,R0	READ NEXT 2 BYTES	FLP42140
34FC	0503		4238		CLHR	R0,R3	FLP42150
34FE	2133		4239		BNES	RT31	FLP42160
3500	9960		4240		RHR	DEV,R0	READ NEXT 2 BYTES	FLP42170
3502	0503		4241		CLHR	R0,R3	FLP42180
3504	4230 3514		4242	RT31	BNE	RT5	FLP42190
3508	2721		4243		SIS	R2,1	FLP42200
350A	203E		4244		BNZS	RT3	FLP42210

SUBROUTINES

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350C    2612              4245              AIS    R1,2                                                        FLP42220
350E    4320 34D2         4246              BNP    RT2              LOOP FOR 26 SECTORS                         FLP42230
3512    030E              4247              BR     R14              RETURN                                      FLP42240
3514    0820              4248   RT5        LHR    R2,R0                                                        FLP42250
3516    0803              4249              LHR    R0,R3                                                        FLP42250
3518    4300 37A8         4250              B      ERFL28           *                           ***28          FLP42260


                          4252   * TO SET UP COMMANDS FOR THE NEXT SELECTED DRIVE                              FLP42280
                          4253   *         WHEN IDLE SETS, RETURN TO R15                                       FLP42290
                          4254   *         NOT SET AFTER THAT,RETURN TO ERROR                                  FLP42300
                          4255   *                                                                             FLP42310
        0000 351C         4256   SETDRIVE  EQU    *                                                            FLP42320
351C    4810 3CF2         4257              LH     R1,CDRIVE        (CDRIVE) = 00X0; X = 0,1,2,3               FLP42330
3520    9114              4258              SLHLS  R1,4                                                         FLP42340
3522    9421              4259              EXBR   R2,R1                                                        FLP42350
3524    0612              4260              OHR    R1,R2                                                        FLP42360
3526    242E              4261              LIS    R2,14                                                       FLP42370
3528    4892 303C         4262   SETDR1     LH     R3,CMDTAB1(R2)   GET 2 COMMAND BYTES                        FLP42380
352C    C430 CFCF         4263              NHI    R3,X'CFCF'       CLEAR PREVIOUS DRIVE #                     FLP42390
3530    0631              4264              OHR    R3,R1            OR IN NEW DRIVE #                           FLP42400
3532    4032 303C         4265              STH    R3,CMDTAB1(R2)   SET UP                                     FLP42410
3536    2722              4266              SIS    R2,2                                                        FLP42420
3538    2218              4267              BNMS   SETDR1           LOOP TILL ALL COMMANDS MODIFIED            FLP42430
353A    030F              4268              BR     R15              RETURN                                     FLP42440
                          4269   *                                                                             FLP42450
                          4270   * SUBROUTINE  "IDLE"                                                          FLP42460
                          4271   *                                                                             FLP42470
                          4272   *         WHEN IDLE SETS, RETURN TO (R15)+4                                   FLP42480
                          4273   *                                                                             FLP42490
                          4274   *         IF IDLE DOES NOT SET IN ABOUT 1 SECOND,                             FLP42500
                          4275   *         THEN ISSUE 'STOP' COMMAND. IF IDLE DOES                             FLP42510
                          4276   *         NOT SET AFTER THAT, RETURN ON (R15).                                FLP42520
                          4277   * POSSIBLE ERROR # 08                                                         FLP42530
                          4278   *                                                                             FLP42540
        0000 353C         4279   IDLE      EQU    *                                                            FLP42550
353C    2402              4280              LIS    R0,2                                                        FLP42560
353E    4000 3CEA         4281   IDLE1      STH    R0,IDLE.F                                                   FLP42570
3542    4800 17FE         4282              LH     R0,TIMVAL+6      GET TIME CONSTANT                          FLP42580
3546    9106              4283              SLHLS  R0,6             X 64                                       FLP42590
3548    DD60 16EA         4284   IDLE2      SS     DEV,ERRSTA       GET STATUS                                 FLP42600
354C    D370 16EA         4285              LB     STAT,ERRSTA                                                 FLP42610
3550    022F              4286              BPR    R15                                                         FLP42620
3552    CA00 FFFF         4287              AHI    R0,X'FFFF'       DECREMENT COUNT                            FLP42630
3556    4230 3548         4288              BTC    3,IDLE2                                                     FLP42640
355A    4800 3CEA         4289              LH     R0,IDLE.F                                                   FLP42650
355E    2701              4290              SIS    R0,1                                                        FLP42660
3560    4240 36A6         4291              BM     ERFL08           * GO TO ERROR                ***08         FLP42670
3564    DE60 3D42         4292              OC     DEV,STOP                                                    FLP42680
3568    4300 353E         4293              B      IDLE1                                                       FLP42690
                          4294   *                                                                             FLP42700
                          4295   * TO GET BUFFER ADDRESS IN R2                                                 FLP42710
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SUBROUTINES

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                              4296  *                                                                      FLP42720
             0000 356C        4297  GETBUFAD EQU   *                                                       FLP42730
356C   C8E0 0900              4298           LHI   R2,BUFFER           (R2) = A(BUFFER)                     FLP42740
3570   4830 174A              4299           LH    R3,BUFADR+6                                              FLP42750
3574   2134                   4300           BNZS  GETBUF1                                                  FLP42760
3576   4830 174E              4301           LH    R3,BUFADR+10                                             FLP42770
357A   030F                   4302           BZR   R15                 RETURN                               FLP42780
357C   2430                   4303  GETBUF1  LIS   R3,0                (R3) = 0                             FLP42790
357E   4820 174E              4304           LH    R2,BUFADR+10                                             FLP42800
3582   ED20 000F              4305           SLL   R2,15                                                    FLP42810
3586   ED20 0001              4306           SLL   R2,1                                                     FLP42820
358A   4830 1608              4307           LH    R3,MOD32                                                 FLP42830
358E   4330 359A              4308           BZ    GETBUF2                                                  FLP42840
3592   7330                   4309           DC    X'7330',A(BUFADR+6)                                      FLP42850
3594   174A
3596   0623                   4310           DC    X'0623'                                                  FLP42860
3598   030F                   4311           BR    R15                                                      FLP42870
             0000 359A        4312  GETBUF2  EQU   *                                                        FLP42880
359A   4620 174A              4313           OH    R2,BUFADR+6         (R2) = 'BUFFER' OPTION ENTERED       FLP42890
359E   030F                   4314           BR    R15                 RETURN                               FLP42900
                              4315  *                                                                       FLP42910
                              4316  * SUBROUTINE "BUSY"                                                     FLP42920
                              4317  *                                                                       FLP42930
                              4318  *         WHEN BUSY DROPS, RETURN TO (R15)+4                            FLP42940
                              4319  *         IF ERR,IDLE OR FAULT BIT IS SET, RETURN TO (R15)             FLP42950
                              4320  *         IF BUSY DOES NOT DROP IN ABOUT 1 SECOND, RETURN TO (R15)     FLP42960
                              4321  *                                                                       FLP42970
             0000 35A0        4322  BUSY     EQU   *                                                        FLP42980
35A0   4800 3CF4              4323           LH    R0,RAUXFLG                                               FLP42990
35A4   2335                   4324           BZS   BUSY11                                                   FLP43000
35A6   9067                   4325  BUSY3    SSR   DEV,STAT                                                 FLP43010
35A8   2081                   4326           BTBS  8,1                                                      FLP43030
35AA   434F 0004              4327           B     4(R15)                                                   FLP43040
             0000 35AE        4328  BUSY11   EQU   *                                                        FLP43050
35AE   2402                   4329           LIS   R0,2                                                     FLP43060
35B0   4000 3CEA              4330  BUSY1    STH   R0,IDLE.F                                                FLP43070
35B4   4840 17FE              4331           LH    R0,TIMVAL+6         GET TIME CONSTANT                    FLP43080
35B8   9106                   4332           SLHLS R0,6               X 64                                  FLP43090
35BA   DD60 16EA              4333  BUSY2    SS    DEV,ERRSTA          OBTAIN FLOPPY STATUS                 FLP43100
35BE   D370 16EA              4334           LB    STAT,ERRSTA                                              FLP43110
35C2   427F 0000              4335           BTC   7,0(R15)            ERROR RETURN                         FLP43120
35C6   438F 0004              4336           BNC   4(R15)              RETURN, BUSY DROPPED                 FLP43130
35CA   CA00 FFFF              4337           AHI   R0,X'FFFF'          DECREAMENT                           FLP43140
35CE   4230 35BA              4338           BTC   3,BUSY2                                                  FLP43150
35D2   4800 3CEA              4339           LH    R0,IDLE.F                                                FLP43160
35D6   2701                   4340           SIS   R0,1                                                     FLP43170
35D8   4230 35B0              4341           BNZ   BUSY1                                                    FLP43180
35DC   030F                   4342           BR    R15                 ERROR RETURN, BUSY DID NOT RESET     FLP43190
                              4343  *                                                                       FLP43200
                              4344  * SUBROUTINE 'WAIT.INT'                                                 FLP43210
                              4345  *                                                                       FLP43220
                              4346  *         TO WAIT FOR ABOUT 1 SECOND FOR INTERRUPT                      FLP43230
                              4347  *         IF TIMED OUT, GO TO ERROR SPECIFIED BY (R15)                  FLP43240
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SUBROUTINES

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                            4348  *                                                                FLP43250
          0000 35DE         4349  WAIT.INT EQU    *                                                FLP43260
35DE      48FF 0000         4350           LH     R15,0(R15)                                       FLP43270
35E2      40F0 3CC8         4351           STH    R15,TEMP                                         FLP43270
35E6      48C0 0A22         4352           LH     R12,PSW         ENABLE INTERRUPTS AT             FLP43280
35EA      950C              4353           EPSR   R13,R12         PROCESSOR LEVEL                  FLP43290
35EC      C800 1000         4354           LHI    R0,X'1000'                                       FLP43300
35F0      41F0 10DE         4355           BAL    R15,TIMER                                        FLP43310
35F4      48F0 3CC8         4356           LH     R15,TEMP                                         FLP43320
35F8      4300 3680         4357           B      ERONCOM5                                         FLP43330
          0000 35FC         4358  DISP.LRN EQU    *                                                FLP43340
35FC      4800 3D24         4359           LH     R0,LRN                                           FLP43350


                            4361  * SUBROUTINE TO DISPLAY LRN                                      FLP43370
          0000 3600         4362  DISPLAY  EQU    *                                                FLP43380
3600      24D1              4363           LIS    R13,1                                            FLP43390
3602      DED0 3D3A         4364           OC     R13,INC                                          FLP43400
3606      9400              4365           EXBR   R0,R0                                            FLP43410
3608      98D0              4366           WHR    R13,0                                            FLP43420
360A      030F              4367           BR     R15                                              FLP43430


                            4369  * SUBROUTINE TO SINGLE OUT ERR,EX,FAULT BIT                      FLP43450
          0000 360C         4370  EEF      EQU    *                                                FLP43460
360C      DD60 3CC8         4371           SS     DEV,TEMP                                         FLP43470
3610      41E0 31A8         4372           BAL    R14,R.AUX                                        FLP43480
3614      D370 3CC8         4373           LB     STAT,TEMP                                        FLP43490
3618      C370 0010         4374           THI    STAT,X'10'      TEST ERR BIT                     FLP43500
361C      4230 36EE         4375           BNZ    ERFL12          ERRBIT OSET          ***12       FLP43510
3620      C370 0080         4376           THI    STAT,X'80'      TEST WRITE PROTECT               FLP43520
3624      4230 36E2         4377           BNZ    ERFL0F          WRITE PROTECT BIT SET  ***0F     FLP43530
3628      C370 0004         4378           THI    STAT,X'4'       TEST EXAMINE                     FLP43540
362C      4230 36F4         4379           BNZ    ERFL14          EX BIT SET           ***14       FLP43550
3630      C370 0001         4380           THI    STAT,1          TEST FAULT                       FLP43560
3634      4230 36FA         4381           BNZ    ERFL15          FAULT BIT SET        ***15       FLP43570
3638      4300 36AC         4382           B      ERFL0A          IDLE SET ERRONEOUSLY ***0A       FLP43580
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ERROR HANDLER

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                         4384    ************************************************************    FLP43600
563C    C8F0 3136        4385    ERFL16    LHI    R15,C'16'          **16          FLP43610
3640    2304             4386              BS     ERONCOM1           COMMON        FLP43620
3642    C8F0 3137        4387    ERFL17    LHI    R15,C'17'          **17          FLP43630
3646    2301             4388              BS     ERONCOM1           COMMON        FLP43640
3648    2309             4389    ERONCOM1  BS     ERONCOM2           COMMON        FLP43650
364A    C8F0 3232        4390    ERFL22    LHI    R15,C'22'          **22          FLP43680
364E    2306             4391              BS     ERONCOM2           COMMON        FLP43690
3650    C8F0 3233        4392    ERFL23    LHI    R15,C'23'          **23          FLP43700
3654    2303             4393              BS     ERONCOM2           COMMON        FLP43710
3656    C8F0 3234        4394    ERFL24    LHI    R15,C'24'          **24          FLP43720
365A    2309             4395    ERONCOM2  BS     ERONCOM3           COMMON        FLP43730
365C    C8F0 3236        4396    ERFL26    LHI    R15,C'26'          **26          FLP43740
3660    2306             4397              BS     ERONCOM3           COMMON        FLP43750
3662    C8F0 3239        4398    ERFL29    LHI    R15,C'29'          **29          FLP43760
3666    2303             4399              BS     ERONCOM3           COMMON        FLP43770
3668    C8F0 3241        4400    ERFL2A    LHI    R15,C'2A'          **2A          FLP43780
366C    2306             4401    ERONCOM3  BS     ERONCOM4           COMMON        FLP43790
366E    C8F0 3242        4402    ERFL2B    LHI    R15,C'2B'          **2B          FLP43800
3672    2303             4403              BS     ERONCOM4           COMMON        FLP43810
3674    C8F0 3244        4404    ERFL2D    LHI    R15,C'2D'          **2D          FLP43820
3678    2304             4405    ERONCOM4  BS     ERONCOM5           COMMON        FLP43830
367A    C8F0 3245        4406    ERFL2E    LHI    R15,C'2E'          **2E          FLP43840
367E    2301             4407              BS     ERONCOM5                         FLP43850
3680    40F0 3946        4408    ERONCOM5  STH    R15,ERRNO
3684    4300 37CC        4409              B      EROPATH                          FLP43900
                         4410    ************************************************************    FLP43910
3688    C8F0 3133        4411    ERFL13    LHI    R15,C'13'          **13
368C    2309             4412              BS     ER1NCOM1
368E    C8F0 3231        4413    ERFL21    LHI    R15,C'21'          **21
3692    2306             4414              BS     ER1NCOM1
3694    C8F0 3333        4415    ERFL33    LHI    R15,C'33'          **33
3698    2303             4416              BS     ER1NCOM1
369A    C8F0 3031        4417    ERFL01    LHI    R15,C'01'          **01
369E    230C             4418    ER1NCOM1  BS     ER1NCOM
36A0    C8F0 3032        4419    ERFL02    LHI    R15,C'02'          **02          FLP43940
36A4    2309             4420              BS     ER1NCOM            COMMON        FLP43950
36A6    C8F0 3038        4421    ERFL08    LHI    R15,C'08'          **08          FLP43960
36AA    2306             4422              BS     ER1NCOM            COMMON        FLP43970
36AC    C8F0 3041        4423    ERFL0A    LHI    R15,C'0A'          **0A          FLP43980
36B0    2303             4424              BS     ER1NCOM                          FLP43990
36B2    C8F0 3143        4425    ERFL1C    LHI    R15,C'1C'          **1C          FLP44000
36B6    40F0 3946        4426    ER1NCOM   STH    R15,ERRNO          STORE AWAY    FLP44010
36BA    4300 37D4        4427              B      ER1PATH            PRINT         FLP44020
                         4428    ************************************************************    FLP44030
36BE    C8F0 3033        4429    ERFL03    LHI    R15,C'03'          **03          FLP44040
36C2    2309             4430              BS     ER2NCOM1           COMMON        FLP44050
36C4    C8F0 3034        4431    ERFL04    LHI    R15,C'04'          **04          FLP44060
36C8    2306             4432              BS     ER2NCOM1           COMMON        FLP44070
36CA    C8F0 3042        4433    ERFL0B    LHI    R15,C'0B'          **0B          FLP44080
36CE    2303             4434              BS     ER2NCOM1           COMMON        FLP44090
36D0    C8F0 3043        4435    ERFL0C    LHI    R15,C'0C'          **0C          FLP44100
36D4    230C             4436    ER2NCOM1  BS     ER2NCOM2           COMMON        FLP44110
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ERROR HANDLER

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36D6   C8F0 3044     4437  ERFL0D    LHI    R15,C'0D'          **0D            FLP44120
36DA   2309          4438            BS     ER2NCOM2           COMMON          FLP44130
36DC   C8F0 3045     4439  ERFL0E    LHI    R15,C'0E'          **0E            FLP44140
36E0   2306          4440            BS     ER2NCOM2           COMMON          FLP44150
36E2   C8F0 3046     4441  ERFL0F    LHI    R15,C'0F'          **0F            FLP44160
36E6   2303          4442            BS     ER2NCOM2           COMMON          FLP44170
36E8   C8F0 3131     4443  ERFL11    LHI    R15,C'11'          **11            FLP44180
36EC   2309          4444  ER2NCOM2  BS     ER2NCOM3           COMMON          FLP44190
36EE   C8F0 3132     4445  ERFL12    LHI    R15,C'12'          **12            FLP44200
36F2   2306          4446            BS     ER2NCOM3           COMMON          FLP44210
36F4   C8F0 3134     4447  ERFL14    LHI    R15,C'14'          **14            FLP44220
36F8   2303          4448            BS     ER2NCOM3           COMMON          FLP44230
36FA   C8F0 3135     4449  ERFL15    LHI    R15,C'15'          **15            FLP44240
36FE   2306          4450  ER2NCOM3  BS     ER2NCOM5                           FLP44250
3700   C8F0 3432     4451  ERFL42    LHI    R15,C'42'          **42            FLP44260
3704   2303          4452            BS     ER2NCOM5           COMMON          FLP44270
3706   C8F0 3230     4453  ERFL20    LHI    R15,C'20'          **20            FLP44280
370A   2309          4454  ER2NCOM5  BS     ER2NCOM6           COMMON          FLP44290
370C   C8F0 3330     4455  ERFL30    LHI    R15,C'30'          **30            FLP44300
3710   2306          4456            BS     ER2NCOM6           COMMON          FLP44310
3712   C8F0 3331     4457  ERFL31    LHI    R15,C'31'          **31            FLP44320
3716   2303          4458            BS     ER2NCOM6                           FLP44330
3718   C8F0 3130     4459  ERFL10    LHI    R15,C'10'          **10            FLP44340
371C   230C          4460  ER2NCOM6  BS     ER2NCOM7                           FLP44350
371E   C8F0 3334     4461  ERFL34    LHI    R15,C'34'          **34            FLP44360
3722   2309          4462            BS     ER2NCOM7                           FLP44370
3724   C8F0 3336     4463  ERFL36    LHI    R15,C'36'          **36            FLP44380
3728   2306          4464            BS     ER2NCOM7                           FLP44390
372A   C8F0 3337     4465  ERFL37    LHI    R15,C'37'          **37            FLP44400
372E   2303          4466            BS     ER2NCOM7                           FLP44410
3730   C8F0 3338     4467  ERFL38    LHI    R15,C'38'          **38            FLP44420
3734   230C          4468  ER2NCOM7  BS     ER2NCOM8                           FLP44430
3736   C8F0 3339     4469  ERFL39    LHI    R15,C'39'          **39            FLP44440
373A   2309          4470            BS     ER2NCOM8                           FLP44450
373C   C8F0 3341     4471  ERFL3A    LHI    R15,C'3A'          **3A            FLP44460
3740   2306          4472            BS     ER2NCOM8                           FLP44470
3742   C8F0 3342     4473  ERFL3B    LHI    R15,C'3B'          **3B            FLP44480
3746   2303          4474            BS     ER2NCOM8                           FLP44490
3748   C8F0 3343     4475  ERFL3C    LHI    R15,C'3C'          **3C            FLP44500
374C   230C          4476  ER2NCOM8  BS     ER2NCOM9                           FLP44510
374E   C8F0 3344     4477  ERFL3D    LHI    R15,C'3D'          **3D            FLP44520
3752   2309          4478            BS     ER2NCOM9                           FLP44530
3754   C8F0 3345     4479  ERFL3E    LHI    R15,C'3E'          **3E            FLP44540
3758   2306          4480            BS     ER2NCOM9                           FLP44550
375A   C8F0 3145     4481  ERFL1E    LHI    R15,C'1E'          **1E            FLP44560
375E   2303          4482            BS     ER2NCOM9                           FLP44570
3760   C8F0 3431     4483  ERFL41    LHI    R15,C'41'          **41            FLP44580
       0000 3764     4484  ER2NCOM9  EQU    *                                  FLP44590
3764   40F0 3946     4485            STH    R15,ERRNO                          FLP44600
3768   4300 37E4     4486            B      ER2PATH            PRINT           FLP44610
                     4487  ****************************************************************  FLP44620
376C   C8F0 3037     4488  ERFL07    LHI    R15,C'07'          **07            FLP44630
3770   230C          4489            BS     ER3NCOM            COMMON          FLP44640
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ERROR HANDLER

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3772  C8F0 3039      4490  ERFL09   LHI    R15,C'09'           **09              FLP44650
3776  2309           4491           BS     ER3NCOM             COMMON            FLP44660
3778  C8F0 3332      4492  ERFL32   LHI    R15,C'32'           **32              FLP44670
377C  2306           4493           BS     ER3NCOM                               FLP44680
377E  C8F0 3346      4494  ERFL3F   LHI    R15,C'3F'           **3F              FLP44690
3782  2303           4495           BS     ER3NCOM                               FLP44700
3784  C8F0 3146      4496  ERFL1F   LHI    R15,C'1F'           **1F              FLP44710
3788  40F0 3946      4497  ER3NCOM  STH    R15,ERRNO           STORE AWAY        FLP44720
378C  4300 37FC      4498           B      ER3PATH             PRINT             FLP44730
                     4499  ***************************************************************  FLP44740
3790  C8F0 3035      4500  ERFL05   LHI    R15,C'05'           **05              FLP44750
3794  2303           4501           BS     ER4NCOM             COMMON            FLP44760
3796  C8F0 3036      4502  ERFL06   LHI    R15,C'06'           **06              FLP44770
379A  40F0 3946      4503  ER4NCOM  STH    R15,ERRNO                             FLP44780
379E  4300 3814      4504           B      ER4PATH             PRINT             FLP44790
                     4505  ***************************************************************  FLP44800
37A2  C8F0 3237      4506  ERFL27   LHI    R15,C'27'           **27              FLP44810
37A6  2309           4507           BS     ER5NCOM             COMMON            FLP44820
37A8  C8F0 3238      4508  ERFL28   LHI    R15,C'28'           **28              FLP44830
37AC  2306           4509           BS     ER5NCOM             COMMON            FLP44840
37AE  C8F0 3142      4510  ERFL1B   LHI    R15,C'1B'           **1B              FLP44850
37B2  2303           4511           BS     ER5NCOM                               FLP44860
37B4  C8F0 3430      4512  ERFL40   LHI    R15,C'40'           **40              FLP44870
37B8  40F0 3946      4513  ER5NCOM  STH    R15,ERRNO           STORE AWAY        FLP44880
37BC  4300 382C      4514           B      ER5PATH             PRINT             FLP44890
                     4515  ***************************************************************  FLP44900
37C0  C8F0 3335      4516  ERFL35   LHI    R15,C'35'           **35              FLP44910
37C4  40F0 3946      4517           STH    R15,ERRNO           STORE ERROR NUMBER  FLP44920
37C8  4300 384C      4518           B      ER6PATH                               FLP44930
                     4519  ***************************************************************  FLP44940
      0000 37CC      4520  ER0PATH  EQU    *                                     FLP44950
37CC  41F0 0F76      4521           BAL    LINK,ERR                              FLP44960
37D0  4300 3868      4522           B      ERFINAL                               FLP44970
      0000 37D4      4523  ER1PATH  EQU    *                                     FLP44980
37D4  41E0 38E6      4524           BAL    RET,STASET          SET UP STATUS     FLP44990
37D8  41F0 0F76      4525           BAL    LINK,ERR                              FLP45000
37DC  41E0 3886      4526           BAL    RET,ERSTPRT         STATUS **         FLP45010
37E0  4300 3868      4527           B      ERFINAL                              FLP45020
      0000 37E4      4528  ER2PATH  EQU    *                                     FLP45030
37E4  41F0 0F76      4529           BAL    LINK,ERR                              FLP45040
37E8  41E0 38E6      4530           BAL    RET,STASET          SET UP STATUS     FLP45050
37EC  41E0 38AE      4531           BAL    RET,AUXSET          SET UP AUX STAT   FLP45060
37F0  41E0 3886      4532           BAL    RET,ERSTPRT         STATUS **         FLP45070
37F4  41E0 388C      4533           BAL    RET,ERAUXPRT        AUX STATUS  ** ** ** ** ** **  FLP45080
37F8  4300 3868      4534           B      ERFINAL                              FLP45090
      0000 37FC      4535  ER3PATH  EQU    *                                     FLP45100
37FC  41E0 38E6      4536           BAL    RET,STASET          SET UP STATUS     FLP45110
3800  41E0 38C2      4537           BAL    RET,AIDSET          SET UP ACTUAL ID  FLP45120
3804  41F0 0F76      4538           BAL    LINK,ERR                              FLP45130
3808  41E0 3886      4539           BAL    RET,ERSTPRT         STATUS  **        FLP45140
380C  41E0 3892      4540           BAL    RET,ERAIDPRT        ACT ID  ** ** ** ** **  FLP45150
3810  4300 3868      4541           B      ERFINAL                              FLP45160
      0000 3814      4542  ER4PATH  EQU    *                                     FLP45170
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ERROR HANDLER

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3814   41E0 38C2     4543              BAL   RET,AIDSET        SET UP ACTUAL  ID           FLP45180
3818   41E0 38B8     4544              BAL   RET,EIDSET        SET UP EXPECTED ID          FLP45190
381C   41F0 0F76     4545              BAL   LINK,ERR                                      FLP45200
3820   41E0 3892     4546              BAL   RET,ERAIOPRT      ACT ID  ** ** ** ** **      FLP45210
3824   41E0 389C     4547              BAL   RET,EREIOPRT      EXP ID  ** ** ** ** **      FLP45220
3828   4300 3868     4548              B     ERFINAL                                       FLP45230
       0000 382C     4549   ER5PATH    EQU   *                                             FLP45240
382C   4000 3D06     4550              STH   R0,DATAEXP                                    FLP45250
3830   4020 3D04     4551              STH   R2,DATAACT                                    FLP45260
3834   41E0 38F2     4552              BAL   RET,DATSET        SET UP ACTUAL   DATA        FLP45270
3838   41E0 3900     4553              BAL   RET,DETSET        SET UP EXPECTED DATA        FLP45280
383C   41F0 0F76     4554              BAL   LINK,ERR                                      FLP45290
3840   41E0 38A2     4555              BAL   RET,ERADTPRT      DATA ACT  ****              FLP45300
3844   41E0 38A8     4556              BAL   RET,EREDTPRT      DATA EXP  ****              FLP45310
3848   4300 3868     4557              B     ERFINAL                                       FLP45320
       0000 384C     4558   ER6PATH    EQU   *                                             FLP45330
384C   41E0 38C2     4559              BAL   RET,AIDSET        SET  UP                     FLP45340
3850   41F0 0F76     4560              BAL   LINK,ERR                                      FLP45350
3854   41E0 3892     4561              BAL   RET,ERAIOPRT      ACT ID ** ** ** ** ** **    FLP45360
3858   4300 37E8     4562              B     ER2PATH+4                                     FLP45370
       0000 385C     4563   ER7PATH    EQU   *                                             FLP45380
385C   C850 3868     4564              LHI   R5,FALSYC         FALSE SYNC                  FLP45390
3860   41F0 114A     4565              BAL   R15,PRINT         PRINT IT                    FLP45400
3864   4300 0B0A     4566              B     OPTIN                                         FLP45410
                     4567   ********************************************************************   FLP45420
       0000 3868     4568   ERFINAL    EQU   *                                             FLP45430
3868   DE60 3D47     4569              OC    DEV,LIS,STOP                                  FLP45440
386C   C840 03E8     4570              LHI   R0,1000           1000 MILS                   FLP45450
3870   41F0 10DE     4571              BAL   R15,TIMER                                     FLP45460
3874   90D7          4572              SSR   DEV,STAT                                      FLP45470
3876   4220 0E6C     4573              BTC   2,TSTEND                                      FLP45480
387A   C850 3BF6     4574              LHI   R5,IDLEMSG        PRINT IDLE MESSAGE          FLP45490
387E   41F0 114A     4575              BAL   R15,PRINT                                     FLP45500
3882   4300 0B0A     4576              B     OPTIN                                         FLP45510
                     4577   ********************************************************************   FLP45520


                     4579   ********************************************************************   FLP45540
       0000 3886     4580   ERSTPRT    EQU   *                                             FLP45550
3886   C850 3A54     4581              LHI   R5,STATUS         PRINT   STATUS             FLP45560
388A   2306          4582              BS    ERPRTCOM          GO TO COMMON                FLP45570
       0000 388C     4583   ERAUXPRT   EQU   *                                             FLP45580
388C   C850 3A62     4584              LHI   R5,AUXST          PRINT   AUX STATUS          FLP45590
3890   2303          4585              BS    ERPRTCOM          GO TO COMMON                FLP45600
       0000 3892     4586   ERAIOPRT   EQU   *                                             FLP45610
3892   C850 3AB0     4587              LHI   R5,ACTID          PRINT   ACTUAL  ID          FLP45620
3896   41F0 114A     4588   ERPRTCOM   BAL   R15,PRINT         TO PRINT                    FLP45630
389A   030E          4589              BR    RET               RETURN                      FLP45640
       0000 389C     4590   EREIOPRT   EQU   *                                             FLP45650
389C   C850 3A84     4591              LHI   R5,EXPID1                                     FLP45660
38A0   2205          4592              BS    ERPRTCOM          GO  TO  COMMON              FLP45670
       0000 38A2     4593   ERADTPRT   EQU   *                                             FLP45680
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ERROR HANDLER

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38A2   C850 3AD2        4594            LHI    R5,DATAACT2      LOAD UP ACTUAL DATA         FLP45690
38A6   2208             4595            BS     ERPRTCOM         GO TO COMMON                FLP45700
       0000 38A8        4596   EREDTPRT EQU    *                                            FLP45710
38A8   C850 3AE2        4597            LHI    R5,DATAEXP2      LOAD EXPECTED DATA          FLP45720
38AC   220B             4598            BS     ERPRTCOM         GO TO COMMON                FLP45730
                        4599   *********************************************************    FLP45740
       0000 38AE        4600   AUXSET   EQU    *                                            FLP45750
38AE   C820 3A6A        4601            LHI    R2,AUXERR        LOAD INITIAL VALUE DESTINATION  FLP45760
38B2   C830 3EDE        4602            LHI    R3,RAUX          LOAD INITIAL VALUE DATA     FLP45770
38B6   230A             4603            BS     COMSET           COMMON                      FLP45780
       0000 38B8        4604   EIDSET   EQU    *                                            FLP45790
38B8   C820 3A8C        4605            LHI    R2,EIDTRK        LOAD INIT VALUE DESTINATION FLP45800
38BC   C830 3EE4        4606            LHI    R3,EXPID         LOAD INIT VALUE  DATA       FLP45810
38C0   2305             4607            BS     COMSET           COMMON                      FLP45820
       0000 38C2        4608   AIDSET   EQU    *                                            FLP45830
38C2   C820 3AB8        4609            LHI    R2,AIDTRK        LOAD INIT VALUE DESTINATION FLP45840
38C6   C830 3ED8        4610            LHI    R3,RID           LOAD INIT VALUE DATA        FLP45850
38CA   2402             4611   COMSET   LIS    R0,2             NUMBER OF VALUES            FLP45860
38CC   2440             4612            LIS    R4,0                                         FLP45870
38CE   D313 0000        4613   COMSET2  LB     R1,0(R3)         LOAD DATA                   FLP45880
38D2   41F0 1122        4614            BAL    R15,HEXASC       CONVERT                     FLP45890
38D6   2631             4615            AIS    R3,1             INCREMENT DATA FIELD        FLP45900
38D8   2624             4616            AIS    R2,4                                         FLP45910
38DA   2641             4617            AIS    R4,1                                         FLP45920
38DC   C540 0006        4618            CLHI   R4,6                                         FLP45930
38E0   4230 38CE        4619            BNE    COMSET2          GO AGAIN                    FLP45940
38E4   030E             4620            BR     R14                                          FLP45950
                        4621   *********************************************************    FLP45960
       0000 38E6        4622   STASET   EQU    *                                            FLP45970
38E6   2402             4623            LIS    R0,2             NUMBER OF DIGITS TO CONVERT FLP45980
38E8   C820 3A5C        4624            LHI    R2,STAACT        WHERE TO CONVERT            FLP45990
38EC   0817             4625            LHR    R1,STAT          WHAT TO CONVERT             FLP46000
38EE   4300 390A        4626            B      SETCOM           COMMON                      FLP46010
       0000 38F2        4627   DATSET   EQU    *                                            FLP46020
38F2   2404             4628            LIS    R0,4             NUMBER OF DIGITS TO CONVERT FLP46030
38F4   4810 3D04        4629            LH     R1,DATAACT                                   FLP46040
38F8   C820 3ADC        4630            LHI    R2,DATAACT1                                  FLP46050
38FC   4300 390A        4631            B      SETCOM           COMMON                      FLP46060
       0000 3900        4632   DETSET   EQU    *                                            FLP46070
3900   4810 3D06        4633            LH     R1,DATAEXP                                   FLP46080
3904   2404             4634            LIS    R0,4             NUMBER OF DIGITS TO CONVERT FLP46090
3906   C820 3AEC        4635            LHI    R2,DATAEXP1                                  FLP46100
       0000 390A        4636   SETCOM   EQU    *                                            FLP46110
390A   41F0 1122        4637            BAL    R15,HEXASC       CONVERT                     FLP46120
390E   030E             4638            BR     R14                                          FLP46130
                        4639   *********************************************************    FLP46140
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MESSAGES

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3910   434F 4040 4F4E 2046   4641   TITLE      DC     C'COMMON FLOPPY DISC TEST   06-198R00'
3918   4C4F 5050 5920 4449
3920   5343 2054 4553 5420
3928   2030 362D 3139 3852
3930   3030
3932   0D00                   4642              DC     X'0D00'                                          FLP46170
3934   5445 5354 2020 2A2A   4643   TSTMSG     DC     C'TEST  **',X'0D00'                               FLP46180
393C   0D00
       0000 393A              4644   MTESTNO    EQU    *-4                                              FLP46190
393E   4552 524F 5220 2A2A   4645   ERRMSG     DC     C'ERROR ****',X'0D00'                             FLP46200
3946   2A2A
3948   0D00
       0000 3944              4646   ETESTNO    EQU    *-6                STORED BY ETPE                 FLP46210
       0000 3946              4647   ERRNO      EQU    *-4                STORE ERRNO AS CHAR CONSTANT   FLP46220
394A   544F 5441 4C20 2020   4648   TOTMSG     DC     C'TOTAL   TOTERR',X'0D00'                         FLP46230
3952   544F 5445 5252
3958   0D00
395A   4E4F 2045 5252 4F52   4649   NOERMSG    DC     C'NO ERROR',X'0D00'                               FLP46240
3962   0D00
3964   5354 4C52 4E20 3E20   4650   LRNMSG1    DC     C'STLRN > ENDLRN',X'0D00'                         FLP46250
396C   454E 444C 524E
3972   0D00
3974   5752 4954 4520 5052   4651   WPROTMSG DC       C'WRITE PROTECT DISKETTE'                         FLP46260
397C   4F54 4543 5420 4449
3984   534B 4554 5445
398A   0D00                   4652              DCX    0D00                                             FLP46270
398C   554E 5052 4F54 4543   4653   UPROTMSG DC       C'UNPROTECT DISKETTE'                             FLP46280
3994   5420 4449 5348 4554
399C   5445
399E   0D00                   4654              DCX    0D00                                             FLP46290
39A0   504F 5745 5220 4F46   4655   POWEROFF DC       C'POWER OFF DRIVE'
39A8   4620 4452 4956 4520
39B0   0D00                   4656              DCX    0D00
39B2   504F 5745 5220 4F4E   4657   POWERON  DC       C'POWER ON DRIVE'
39BA   2044 5249 5645
39C0   0D00                   4658              DCX    0D00                                             FLP46350
39C2   4D41 5820 4C52 4E20   4659   MAX        DC     C'MAX LRN'                                        FLP46360
39CA   2037 2A2A             4660   MAXA       DC     C' 7**',X'0D00'                                   FLP46370
39CE   0D00
39D0   404F 5245 2054 4841   4661   FMDISC1    DC     C'MORE THAN 2 DEF. TRACKS. RUN FORMAT TEST'       FLP46380
39D8   4E20 3220 4445 462E
39E0   2054 5241 4348 532E
39E8   2052 554E 2046 4F52
39F0   4D41 5420 5445 5354
39F8   0D00                   4662              DCX    0D00                                             FLP46390
39FA   4445 5620 2A2A 2A20   4663   DEVMSG     DC     C'DEV *** STA **',X'0D00'                         FLP46400
3A02   5354 4120 2A2A
3A08   0D00
       0000 39FE              4664   ASCIDEV    EQU    *-12                                             FLP46410
       0000 3A02              4665   STAMSG     EQU    *-8                                              FLP46420
       0000 3A06              4666   ASCISTA    EQU    *-4                                              FLP46430
3A0A   4445 5620 2A2A 2A20   4667   DEVMSG2    DC     C'DEV ***',X'0D00'                                FLP46440
3A12   0D00
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MESSAGES

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          0000 3A0E                    4668  ASCIDEV2 EQU   *-6                                                        FLP46450
3A14      5053 5720 2A2A 2A2A          4669  PSWMSG   DC    C'PSW **** LOC ****',X'0D00'                              FLP46460
3A1C      2020 4C4F 4320 2A2A          
3A24      2A2A                         
3A26      0D00                         
          0000 3A18                    4670  ASCIPSW  EQU   *-16                                                       FLP46470
          0000 3A1E                    4671  LOCMSG   EQU   *-10                                                       FLP46480
          0000 3A22                    4672  ASCILOC  EQU   *-6                                                        FLP46490
3A28      494E 5445 5252 5550          4673  INTLVLM  DC    C'INTERRUPTED IN LEVEL *',X'0D00'                         FLP46500
3A30      5445 4420 494E 204C          
3A38      4556 454C 2020 2A20          
3A40      0D00                         
          0000 3A3E                    4674  ERRLVL   EQU   *-4                                                        FLP46510
3A42      454E 4420 4F46 2054          4675  EOTMSG   DC    C'END OF TEST',X'0D00'                                    FLP46520
3A4A      4553 5420                    
3A4E      0D00                         
3A50      3F0D                         4676  QMSG     DC    X'3F0D'                                                    FLP46530
3A52      2A0D                         4677  AMSG     DC    X'2A0D'                                                    FLP46540
3A54      5354 4154 5553 2020          4678  STATUS   DC    C'STATUS '          STATUS                                FLP46550
3A5C      4141 2020                    4679  STAACT   DC    C'AA '              CONTROLLER STATUS                     FLP46560
3A60      0D0A                         4680           DCX   0D0A               CR LF                                  FLP46570
3A62      4155 5820 5354 2020          4681  AUXST    DC    C'AUX ST '          AUX ST                                FLP46580
3A6A      2A2A 2020                    4682  AUXERR   DC    C'** '              AUX STATUS      ERROR STATUS          FLP46590
3A6E      2A2A 2020                    4683  AUXDRV   DC    C'** '              AUX STATUS      DRIVE STATUS          FLP46600
3A72      2A2A 2020                    4684  AUXSEC   DC    C'** '              AUX STATUS      SECTOR                FLP46610
3A76      2A2A 2020                    4685  AUXTRK   DC    C'** '              AUX STATUS      TRACK                 FLP46620
3A7A      2A2A 2020                    4686  AUX1DT   DC    C'** '              AUX STATUS      1ST DEFECTIVE TRACK   FLP46630
3A7E      2A2A 2020                    4687  AUX2DT   DC    C'** '              AUX STATUS      2ND DEFECTIVE TRACK   FLP46640
3A82      0D0A                         4688           DCX   0D0A               CR LF                                  FLP46650
3A84      4558 5020 4944 2020          4689  EXPID1   DC    C'EXP ID '                                                FLP46660
3A8C      2A2A 2020                    4690  EIDTRK   DC    C'** '              EXPECTED ID  TRACK                     FLP46670
3A90      2A2A 2020                    4691  EID100   DC    C'** '              EXPECTED ID  00                        FLP46680
3A94      2A2A 2020                    4692  EIDSEC   DC    C'** '              EXPECTED ID  SECTOR                    FLP46690
3A98      2A2A 2020                    4693  EID200   DC    C'** '              EXPECTED ID  00                        FLP46700
3A9C      2A2A 2020                    4694  EIDCRCM  DC    C'** '              EXPECTED ID  MOST CRC                  FLP46710
3AA0      2A2A 2020                    4695  EIDCRCL  DC    C'** '              EXPECTED ID  LEAST CRC                 FLP46720
3AA4      0D0A                         4696           DCX   0D0A               CR LF                                  FLP46730
3AA6      4442 4956 4520 2041          4697  DRNOMSG  DC    C'DRIVE  A '                                              FLP46740
3AAE      2020                         
          0000 3AAC                    4698  DRNOMSG1 EQU   *-4                 DRIVE # IN TEST 9                      FLP46750
3AB0      4143 5420 4944 2020          4699  ACTID    DC    C'ACT ID '          ACT ID                                FLP46760
3AB8      2A2A 2020                    4700  AIDTRK   DC    C'** '              ACTUAL ID  TRACK                       FLP46770
3ABC      2A2A 2020                    4701  AID100   DC    C'** '              ACTUAL ID  00                          FLP46780
3AC0      2A2A 2020                    4702  AIDSEC   DC    C'** '              ACTUAL ID  SECTOR                      FLP46790
3AC4      2A2A 2020                    4703  AID200   DC    C'** '              ACTUAL ID  00                          FLP46800
3AC8      2A2A 2020                    4704  AIDCRCM  DC    C'** '              ACTUAL ID  MOST  CRC                   FLP46810
3ACC      2A2A 2020                    4705  AIDCRCL  DC    C'** '              ACTUAL ID  LEAST CRC                   FLP46820
3AD0      0D0A                         4706           DCX   0D0A               CR LF                                  FLP46830
3AD2      4441 5441 2041 4354          4707  DATAACT2 DC    C'DATA ACT '                                              FLP46840
3ADA      2020                         
3ADC      2A2A 2020                    4708  DATAAC1  DC    C'** '              DATA ACTUAL                            FLP46850
3AE0      0D0A                         4709           DCX   0D0A               CR LF                                  FLP46860
3AE2      4441 5441 2045 5850          4710  DATAEXP2 DC    C'DATA EXP '                                              FLP46870
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MESSAGES

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3AEA   2020
3AEC   2A2A 2020              4711  DATAEXP1 DC    C'** '            DATA EXPECTED          FLP46880
3AF0   0D0A                   4712           DCX   0D0A             CR LF                   FLP46890
3AF2   4452 4956 4520         4713  DRVMSG   DC    C'DRIVE'                                 FLP46900
3AF8   2A20                   4714  DRVMSG1  DC    C'*'                                     FLP46910
3AFA   0020                   4715           DC    X'20'                                    FLP46920
3AFC   554E 4445 5220 5445    4716           DC    C'UNDER TEST'                            FLP46930
3B04   5354
3B06   0D00                   4717           DCX   0D00                                     FLP46940
3B08   5452 4143 4B20 3020    4718  TODEFMSG DC    C'TRACK 0 IS DEFECTIVE',X'0D00'          FLP46950
3B10   4953 2044 4546 4543
3B18   5449 5645
3B1C   0D00
3B1E   4E4F 2044 4546 4543    4719  NODEFMSG DC    C'NO DEFECTIVE TRACKS',X'0D00'           FLP46960
3B26   5449 5645 2054 5241
3B2E   434B 5320
3B32   0D00
3B34   4445 4645 4354 4956    4720  DEFMSG   DC    C'DEFECTIVE TRACKS :'                    FLP46970
3B3C   4520 5452 4143 4B53
3B44   203A
3B46   2A2A 2020 2A2A 2020    4721  DEFMSG1  DC    C'** ** ** ** ** **',X'0D00'             FLP46980
3B4E   2A2A 2020 2A2A 2020
3B56   2A2A 2020 2A2A
3B5C   0D00
3B5E   414E 4420 4D4F 5245    4722  MOREMSG  DC    C'AND MORE',X'0D00'                      FLP46990
3B66   0D00
3B68   4E4F 2046 4C4F 5050    4723  FALSYC   DC    C'NO FLOPPY AT SELECTED ADDRESS',X'0D00' FLP47000
3B70   5920 4154 2053 454C
3B78   4553 5445 4420 4144
3B80   4452 4553 5320
3B86   0D00
3B88   494E 5345 5254 2053    4724  INSPDK   DC    C'INSERT SPECIAL DISKETTE'               FLP47010
3B90   5045 4349 414C 2044
3B98   4953 4B45 5454 4520
3BA0   0D00                   4725           DCX   0D00                                     FLP47020
3BA2   494E 5345 5254 2054    4726  INTSTDK  DC    C'INSERT TEST DISKETTE'                  FLP47030
3BAA   4553 5420 4449 534B
3BB2   4554 5445
3BB6   0D00                   4727           DCX   0D00                                     FLP47040
3BB8   4953 2053 5045 4349    4728  SPDKAV   DC    C'IS SPECIAL DISKETTE AVAILABLE'         FLP47050
3BC0   414C 2044 4953 4B45
3BC8   5454 4520 4156 4149
3BD0   4C41 424C 4520
3BD6   0D00                   4729           DCX   0D00                                     FLP47060
3BD8   5245 4D4F 5645 2044    4730  REMDISC  DC    C'REMOVE DISKETTE ',X'0D00'              FLP47070
3BE0   4953 4B45 5454 4520
3BE8   0D00
3BEA   5052 4553 5320 4252    4731  PRSBRK   DC    C'PRESS BRK'                             FLP47080
3BF2   4B20
3BF4   0D00                   4732           DCX   0D00                                     FLP47090
3BF6   4944 4C45 204E 4F54    4733  IDLEMSG  DC    C'IDLE NOT SET . INITIALIZE',X'0D00'     FLP47100
3BFE   2053 4554 202E 2049
3C06   4E49 5449 414C 495A
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COMMON FLOPPY DISC TEST   06-198M96R00A13

MESSAGES

3C0E   4520
3C10   0D00

TEST CONSTANTS AND TABLES

		4735	*	-----------------------------------		FLP47120
		4736	*	TEST CONSTANTS & TABLES		FLP47130
3C12	FF00	4737	DEFTESTS DC	X'FF00',X'0000'	DEFAULT TESTS ARE 0-7	FLP47140
3C14	0000					
3C16	000C	4738	MAXTST DC	12	LAST TEST IS TESTB	FLP47150
3C18		4739	ALIGN ADC		MANDATORY FOR TARGT 32 !	FLP47160
3C18	1B42	4740	TESTS DC	TEST0,TEST1,TEST2,TEST3		FLP47170
3C1A	1B86					
3C1C	1CA8					
3C1E	1DB4					
3C20	1E62	4741	DC	TEST4,TEST5,TEST6,TEST7		FLP47180
3C22	1F3C					
3C24	2328					
3C26	23BC					
3C28	24E4	4742	DC	TEST8,TEST9,TESTA,TESTB		FLP47190
3C2A	2820					
3C2C	2ABE					
3C2E	2E9A					
3C30	5343 4F50 4520 312C	4743	SC.LINE DC	C'SCOPE 1,0,0000,0000,0000',X'0D00'		FLP47200
3C38	302C 3030 3030 2C30					
3C40	3030 302C 3030 3030					
3C48	0D00					
	0000 3C4A	4744	SC.CMD EQU	*	SCOPE LOOP OPTIONS TABLE	FLP47210
3C4A		4745	DO	15		FLP47220
3C4A	FFFF	4746	DCX	FFFF,1,1,7D2		FLP47230
3C4C	0001					
3C4E	0001					
3C50	07D2					
3C52	FFFF	4746	DCX	FFFF,1,1,7D2		
3C54	0001					
3C56	0001					
3C58	07D2					
3C5A	FFFF	4746	DCX	FFFF,1,1,7D2		
3C5C	0001					
3C5E	0001					
3C60	07D2					
3C62	FFFF	4746	DCX	FFFF,1,1,7D2		
3C64	0001					
3C66	0001					
3C68	07D2					
3C6A	FFFF	4746	DCX	FFFF,1,1,7D2		
3C6C	0001					
3C6E	0001					
3C70	07D2					
3C72	FFFF	4746	DCX	FFFF,1,1,7D2		
3C74	0001					
3C76	0001					
3C78	07D2					
3C7A	FFFF	4746	DCX	FFFF,1,1,7D2		
3C7C	0001					
3C7E	0001					
3C80	07D2					
3C82	FFFF	4746	DCX	FFFF,1,1,7D2		

TEST CONSTANTS AND TABLES

```
3C84    0001
3C86    0001
3C88    07D2
3C8A    FFFF          4746        DCX     FFFF,1,1,7D2
3C8C    0001
3C8E    0001
3C90    07D2
3C92    FFFF          4746        DCX     FFFF,1,1,7D2
3C94    0001
3C96    0001
3C98    07D2
3C9A    FFFF          4746        DCX     FFFF,1,1,7D2
3C9C    0001
3C9E    0001
3CA0    07D2
3CA2    FFFF          4746        DCX     FFFF,1,1,7D2
3CA4    0001
3CA6    0001
3CA8    07D2
3CAA    FFFF          4746        DCX     FFFF,1,1,7D2
3CAC    0001
3CAE    0001
3CB0    07D2
3CB2    FFFF          4746        DCX     FFFF,1,1,7D2
3CB4    0001
3CB6    0001
3CB8    07D2
3CBA    FFFF          4746        DCX     FFFF,1,1,7D2
3CBC    0001
3CBE    0001
3CC0    07D2
        0000 3C4C     4747  SC.NUM    EQU   SC.CMD+2                                                  FLP47240
        0000 3C4E     4748  SC.SLRN   EQU   SC.CMD+4                                                  FLP47250
        0000 3C50     4749  SC.ELRN   EQU   SC.CMD+6                                                  FLP47260
                      4750  *                                                                         FLP47270
3CC8                  4751        ALIGN 8                                                             FLP47280
3CC8    0000          4752  TEMP      DCX   0,0                                                       FLP47290
3CCA    0000
3CCC    0000          4753  TEMP1     DCX   0                                                         FLP47300
3CCE    0000          4754  TEMP2     DCX   0                                                         FLP47310
3CD0    0000          4755  TRACKNO   DCX   0,0,0,0           TRACK #                                 FLP47320
3CD2    0000
3CD4    0000
3CD6    0000
        0000 3CD1     4756  SECTNO    EQU   TRACKNO+1         SECTOR #                                FLP47330
3CD8    0000          4757  DATA9     DCX   0,0,0,0           DATA HW FOR EACH DRIVE                  FLP47340
3CDA    0000
3CDC    0000
3CDE    0000
3CE0    0001          4758  PR        DCX   1,1,1,1           RECORD #                                FLP47350
3CE2    0001
3CE4    0001
3CE6    0001
```

TEST CONSTANTS AND TABLES

3CE8	0000	4759	PASS9	DCX	0	# OF PASSES THRU TEST 9 LOOP	FLP47360
3CEA	0000	4760	IDLE.F	DCX	0		FLP47370
3CEC	0000	4761	DRV	DCX	0	# OF DRIVES	FLP47380
3CEE	0000	4762	DRIVES	DCX	0	SPECIFIED DRIVES	FLP47390
3CF0	1972	4763	SPOPT	DC	SPOPT1		FLP47400
3CF2	0000	4764	CDRIVE	DC	0	CURRENT DRIVE USED	FLP47410
3CF4	0000	4765	RAUXFLG	DCX	0		FLP47420
3CF6	0000	4766	BCOUNT	DC	0	DIRECTIONAL COUNT FOR LRN	FLP47430
3CF8	0000	4767	RWRTN	DCX	0		FLP47440
3CFA	0000	4768	INT	DCX	0		FLP47450
3CFC	0000	4769	T9CNT	DCX	0		FLP47460
3CFE	3ED3	4770	RAND	DCX	3ED3		FLP47470
3D00	0000	4771	FLP.INIS	DCX	0		FLP47480
3D02	0000	4772	DRV1	DCX	0		FLP47490
3D04	0000	4773	DATAACT	DCX	0		FLP47500
3D06	0000	4774	DATAEXP	DCX	0		FLP47510
3D08	0000	4775	DEFTRK	DCX	0,0,0	LIST OF DEFECTIVE TRACKS	FLP47520
3D0A	0000						
3D0C	0000						
3D0E	0000	4776	ERRCOUNT	DCX	0		FLP47530
3D10	0000	4777	LASTDEF	DCX	0	FLAG	FLP47540
3D12	0000	4778	SECT12	DCX	0		FLP47550
3D14	0000	4779	NOFDEF	DCX	0		FLP47560
3D16	0000	4780	FLAG	DCX	0		FLP47570
3D18	0000	4781	LGTRK	DCX	0	CONTAINS LAST GOOD TRACK #	FLP47580
3D1A	0000	4782	FFFFCRC	DCX	0	CRC HW FOR DEF TRACK ID	FLP47590
3D1C	0000	4783	R3SAV	DCX	0		FLP47600
3D1E	0000	4784	HOW.MANY	DCX	0	EQUALS LAST 2 BYTES OF AUX STATUS	FLP47610
3D20	0000	4785	ZDEF	DCX	0	NON-ZERO IF TRACK 0 IS DEFECTIVE	FLP47620
3D22	0000	4786	MOREDEF	DCX	0	NON-ZERO IF MORE THAN 6 DEF TRACKS	FLP47630
3D24	0000	4787	LRN	DCX	0		FLP47640
3D26	0000	4788	WLRN.	DCX	0		FLP47650
3D28	00F0	4789	DEVSADR	DCX	F0,C1,FFFF	DEVICE ADDRESSES	FLP47660
3D2A	00C1						
3D2C	FFFF						
3D2E	0000	4790	DEVINT	DCX	0,0		FLP47670
3D30	0000						
3D32	0000	4791	NOEF	DCX	0		FLP47680
3D34	0001	4792	INTLVL	DB	0,1	SELCH INTERRUPT LEVEL =0	FLP47690
3D36	08	4793	SELSTOP	DB	X'08'	STOP	FLP47700
3D37	1030	4794	SELWRT	DB	X'10',X'30'	WRITE,GO ; READ,GO	FLP47710
3D39	47	4795	ENABLE	DB	X'47'		FLP47720
3D3A	40	4796	INC	DB	X'40'		FLP47730
3D3B	48	4797	SELSTOP1	DB	X'48'		FLP47740
	0000 3D3C	4799	CMDTAB1	EQU	*	START OF COMMAND TABLE	FLP47760
3D3C	01	4800	READ	DB	1	READ COMMAND	FLP47770
3D3D	02	4801	WRITE	DB	2	WRITE COMMAND	FLP47780
3D3E	03	4802	READID	DB	3	READ ID COMMAND	FLP47790
3D3F	04	4803	READAUX	DB	4	READ AUX STATUS COMMAND	FLP47800
3D40	05	4804	DELETE	DB	5	DELETE COMMAND	FLP47810
3D41	06	4805	BOOTLOAD	DB	6	BOOTLOAD COMMAND	FLP47820

TEST CONSTANTS AND TABLES

```
3D42    07                  4806  STOP      DB    7              STOP   COMMAND                          FLP47830
3D43    08                  4807  RESET     DB    8              RESET  COMMAND                          FLP47840
3D44    09                  4808  FORMAT    DB    9              FORMAT COMMAND                           FLP47850
3D45    47                  4809  ENA.STOP  DB    X'47'                                                   FLP47860
3D46    48                  4810  ENA.REST  DB    X'48'                                                   FLP47870
3D47    C7                  4811  DIS.STOP  DB    X'C7'                                                   FLP47880
3D48    42                  4812  ENA.WRIT  DB    X'42'                                                   FLP47890
3D49    00                  4813            DB    *                                                       FLP47900
        0000 3D4A           4814  CMDTAB2   EQU   *              END OF COMMAND TABLE                     FLP47910
        0000 3D49           4815  LNZB      EQU   *-1                                                     FLP47920
                            4816  *--------------------------------                                       FLP47930
                            4817  *   ALL TEST PROGRAM STORAGE AREA                                       FLP47940
3D50                        4818            ALIGN 8                                                       FLP47950
3D50    0000 0000           4819  PSWSAVE   DCY   0,0            PPF PSW SAVE AREA                        FLP47960
3D54    0000 0000
3D58                        4820  INTSAV    DS    64             REGISTERS ON EXT/IMM INTERRUPT           FLP47970
3D98                        4821  ERRSAVE   DS    64             REG STORAGE FOR ERROR ROUTINES           FLP47980
3DD8                        4822            DS    256            REG SETS 4-F, 8/32 WITH 8 SETS           FLP47990
3ED8                        4823  RID       DS    6              READ ID BUFFER                           FLP48000
        0000 3EDD           4824  RIDND     EQU   *-1            END OF READ ID                           FLP48010
3EDE                        4825  RAUX      DS    6              READ AUX STATUS BUFFER                   FLP48020
        0000 3EE3           4826  RAUXND    EQU   *-1            END OF READ AUX                           FLP48030
3EE4                        4827  EXPID     DS    6              EXPECTED ID                              FLP48040
3EEA                        4828  OPTBUF    DS    6              OPTION INPUT BUFFER                      FLP48050
3EF0                        4829  IOSAVE    DS    2                                                       FLP48060
3EF2                        4830  R14SAV    DS    2                                                       FLP48070
3EF4                        4831  RANDSAV   DS    2              SAVE STARTING RANDOM NUMBER HERE         FLP48080
3EF6                        4832  BYTES     DS    2              = 64,128,192                             FLP48090
3EF8                        4833            ALIGN 8                                                       FLP48100
3EF8                        4834  RSAVE     DS    128            REGISTER SAVE AREA                       FLP48110
        0000 3F78           4835  LNZB1     EQU   *              LAST LOCATION USED BY PROGRAM            FLP48120
```

CHKSUM/M17 PUNCHER

```
3F78   2400           4837   $CHKSUM  LIS   R0,0           PUNCH M17 TAPE WITH CHECKSUM        FLP48140
3F7A   9510           4838            EPSR  R1,R0          SELECT REG. SET 0                   FLP48150
                      4839   *                                                                FLP48160
3F7C   C810 0A00      4840            LDAI  R1,ORIGIN1     START                               FLP48170
3F80   2421           4841            LIS   R2,1           INCREMENT                           FLP48180
3F82   C830 3D49      4842            LDAI  R3,LNZB        FINAL                               FLP48190
3F86   2440           4843            LIS   R4,0           CHECKSUM BYTE                       FLP48200
3F88   D351 0000      4844   $GEN     LB    R5,0(R1)                                           FLP48210
3F8C   0745           4845            XAR   R4,R5                                              FLP48220
3F8E   C110 3F88      4846            BXLE  R1,$GEN                                            FLP48230
3F92   D240 0097      4847            STB   R4,MN+3        CHECKSUM BYTE TO BOOT LOADER        FLP48240
                      4848   *                                                                FLP48250
3F96   C810 0080      4849   $TAPE    LHI   R1,X'0080'                                         FLP48260
3F9A   9E21           4850            OCR   R2,R1          DISPLAY : NORMAL MODE               FLP48270
3F9C   9444           4851            EXBR  R4,R4                                              FLP48280
3F9E   9824           4852            WHR   R2,R4          CHECKSUM BYTE TO D1                 FLP48290
3FA0   9411           4853            EXBR  R1,R1                                              FLP48300
3FA2   9501           4854            EPSR  R0,R1          HALT PROCESSOR.                     FLP48310


3FA4   D360 007A      4856   $PUNCH   LB    R6,X'7A'       GET BOUTDV (PUNCH) ADDRESS.         FLP48330
3FA8   DE60 007B      4857            OC    R6,X'7B'       START TAPE PUNCH                    FLP48340
3FAC   9D60           4858            SSR   R6,R0                                              FLP48350
3FAE   2081           4859            BTBS  8,1                                                FLP48360
3FB0   41F0 3FF2      4860            BAL   R15,$TAPL      PUNCH LEADER                        FLP48370
3FB4   9411           4861            EXBR  R1,R1          (R1) = X'0080'                      FLP48380
3FB6   C830 00CF      4862            LHI   R3,X'CF'                                           FLP48390
3FBA   DA61 0000      4863   $PNCH1   WD    R6,0(R1)       PUNCH BOOT LOADER                   FLP48400
3FBE   9D60           4864            SSR   R6,R0                                              FLP48410
3FC0   2081           4865            BTBS  8,1                                                FLP48420
3FC2   C110 3FBA      4866            BXLE  R1,$PNCH1                                          FLP48430
3FC6   41F0 3FF8      4867            BAL   R15,$TAPL1     PUNCH ONE-FOLD GAP.                 FLP48440
                      4868   *                                                                FLP48450
3FCA   D340 0097      4869            LB    R4,MN+3        GET CHECKSUM BYTE                   FLP48460
3FCE   C810 0A00      4870            LDAI  R1,ORIGIN1     (NORMALLY X'A00')                   FLP48470
3FD2   C830 3D49      4871            LDAI  R3,LNZB                                            FLP48480
3FD6   D351 0000      4872   $PNCH2   LB    R5,0(R1)       PUNCH PROGRAM                       FLP48490
3FDA   0745           4873            XAR   R4,R5                                              FLP48500
3FDC   9A65           4874            WDR   R6,R5                                              FLP48510
3FDE   9401           4875            EXBR  R0,R1                                              FLP48520
3FE0   9820           4876            WHR   R2,R0          DATA ADDRESS TO DISPLAY.            FLP48530
3FE2   9D60           4877            SSR   R6,R0                                              FLP48540
3FE4   2081           4878            BTBS  8,1                                                FLP48550
3FE6   C110 3FD6      4879            BXLE  R1,$PNCH2                                          FLP48560
3FEA   41F0 3FF2      4880            BAL   R15,$TAPL      PUNCH TRAILER.                      FLP48570
3FEE   4300 3F96      4881            B     $TAPE          DISPLAY CHECKSUM, HALT PROCESSOR.   FLP48580


3FF2   C800 0100      4883   $TAPL    LHI   R0,256         TO PUNCH BLANK LEADER               FLP48600
3FF6   2303           4884            BS    $TAPLP                                             FLP48610
3FF8   C800 0055      4885   $TAPL1   LHI   R0,85          TO PUNCH 1-FOLD GAP                 FLP48620
3FFC   2701           4886   $TAPLP   SIS   R0,1                                               FLP48630
3FFE   032F           4887            BNPR  R15            RETURN                              FLP48640
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CHKSUM/M17 PUNCHER

4000	2430	4888	LIS	R3,0		FLP48650
4002	9A63	4889	WDR	R6,R3	PUNCH BLANK FRAME	FLP48660
4004	90B8	4890	SSH	R6,R8		FLP48670
4006	2081	4891	BTBS	8,1		FLP48680
4008	2206	4892	BS	$TAPLP	CONTINUE.	FLP48690
400A		4893	END			FLP48700

CHKSUM/M17 PUNCHER   .

ASSEMBLED BY CAL 03-066R05-00   (32-BIT)

START OPTIONS: SCR.CRO.T=16

         NO CAL ERRORS
         NO CAL WARNINGS
         2 PASSES

```
$CHKSUM    0000 3F78    4837*
$GEN       0000 3F88    4844*  4846
$PNCH1     0000 3FBA    4863*  4866
$PNCH2     0000 3FD6    4872*  4879
$PUNCH     0000 3FA4    4856*
$TAPE      0000 3F96    4849*  4881
$TAPL      0000 3FF2    4860   4880   4883*
$TAPL1     0000 3FF8    4867   4885*
$TAPLP     0000 3FFC    4884   4886*  4892
ABORT      0000 0EA4    566*
ABORT1     0000 0EBE    570    574*
ABORT2     0000 0EEA    581    586*
ABSTOP     0000 400A
ACTIO      0000 3AB0    4587   4699*
ADC        0000 0002    117    159    173   1128   1204   1218   1227   1239   1247   1268   1313   1327   1653
                        1356   1371   1582   4739
ADR        0000 001E    415*   1455
AF         0000 1636    1124   1331*
AID100     0000 3ABC    4701*
AID200     0000 3AC4    4703*
AIDCRCL    0000 3ACC    4705*
AIDCRCM    0000 3AC8    4704*
AIDSEC     0000 3AC0    4702*
AIDSET     0000 38C2    3260   4537   4543   4559   4608*
AIDTRK     0000 3AB8    4609   4700*
AJUSTLRN   0000 3164    1861   2150   2190   2210   2282   2290   2308   2316   2337   2345   2365   2373   2667
                        2680   3875*
AMSG       0000 3A52    235    4677*
ASCIDEV    0000 39FE    711    4664*
ASCIDEV2   0000 3A0E    691    4668*
ASCILOC    0000 3A22    725    738    4672*
ASCIPSW    0000 3A1B    735    4670*
ASCISTA    0000 3A06    701    715    4666*
AUX1DT     0000 3A7A    4686*
AUX2DT     0000 3A7E    4687*
AUXDRV     0000 3A6E    4683*
AUXERR     0000 3A6A    4601   4682*
AUXSEC     0000 3A72    4684*
AUXSET     0000 38AE    4531   4600*
AUXST      0000 3A62    4584   4681*
AUXTRK     0000 3A76    4685*
B.LRN1     0000 3474    4173   4175*
BCNT0      0000 1964    1559   1563*
BCNT1      0000 1968    1560   1565*
BCOUNT     0000 3CF6    1566   3036   3607   3877   4766*
```

CHKSUM/M17 PUNCHER

Symbol	Addr												
BOOT	0000 0088	78	81*										
BOOTLOAD	0000 3041	2565	4805*										
BRKRTN	0000 1342	979	1015	1020*									
BRKVECT	0000 170A	1013	1017	1434*	3296	3309	3339	3490	3503				
BTESTNO	0000 171A	496	514	532	560	606	1442*						
BUFADCHK	0000 180A	1452	1724*										
BUFADPRT	0000 0C54	340*	345										
BUFADR	0000 1744	341	349	352	1452*	1728	1730	1735	1742	4096	4098	4299	4301	4304
		4309	4313										
BUFCHK	0000 1AE6	1707*											
BUFCHK.	0000 1B16	1729*	1737										
BUFCHK0	0000 1B20	1726	1732*										
BUFFER	0000 0900	109*	4298										
BUMP.LRN	0000 3464	4168*											
BUSY	0000 35A0	2455	2458	2484	2488	2711	3905	3987	4197	4229	4322*		
BUSY1	0000 35B0	4330*	4341										
BUSY11	0000 35AE	4324	4328*										
BUSY2	0000 35BA	4333*	4338										
BUSY3	0000 35A6	3519	3538	4325*									
BYTE6	0000 3072	3757	3768*										
BYTES	0000 3EF6	4170	4832*										
C300	0000 0A84	186*											
C300ADR	0000 0A18	154*	187	844	1044	1096							
CAR2ND	0000 1700	189	845	1426*	1427								
CARDRV	0000 1400	1084	1096*										
CARENRD	0000 1701	1427*											
CARRD	0000 16F8	188	1419*	1420									
CARRD2S	0000 16FB	190	1422*										
CARWRT	0000 16F9	1097	1420*										
CDRIVE	0000 3CF2	1517	1526	1776	1821	1850	1944	1956	3138	3147	3585	4257	4764*
CKAUX	0000 29C4	3097	3119	3179*									
CKAUX1	0000 29FC	3195	3198*										
CKBSY	0000 2FDA	3657	3671	3684	3694	3706	3707*						
CKBSY1	0000 2FD4	2937	3705*	3722	3755	3766	3798	3826					
CKBSYR	0000 2FF6	3705	3708	3718*									
CKID	0000 297E	3098	3118	3153*									
CKID1	0000 2982	3045	3155*										
CKID11	0000 29A4	3162	3166*										
CKID2	0000 29AC	3159	3165	3169*									
CKLRN	0000 1ADA	1455	1456	1602	1607	1701*							
CKSTA	0000 27E0	2803	2983*										
CLIF2ND	0000 1706	206	1431*	1432									
CLIFADR	0000 0A14	152*	204	1038	1088								
CLIFNRD	0000 1707	1432*											
CLIFRD	0000 1704	205	1429*	1430									
CLIFWRT	0000 1705	1089	1430*										
CMDTAB1	0000 303C	3969	4262	4265	4799*								
CMDTAB2	0000 304A	4814*											
COMM	0000 164C	1324	1335	1339*	1362								
COMM1	0000 1654	1341*	1395										
COMRET	0000 0FD2	661	669*										
COMSET	0000 38CA	4603	4607	4611*									
COMSET2	0000 38CE	4615*	4619										

CHKSUM/M17 PUNCHER

CON2NU	0000 16F4	217	1415*	1416									
CONADR	0000 16F0	215	959	980	1065	1151	1230	1412*					
CONDRV	0000 1404	1092	1097*										
CONENRD	0000 16F5	1416*											
CONRD	0000 16F2	216	956	1066	1413*	1414							
CONRQ2S	0000 16FC	200	1071	1423*									
CONTIN	0000 1704	580	1464*										
CONV	0000 28AC	3072*	3077										
CONV1	0000 28BA	3069	3078*										
CONVT	0000 28AA	1826	2232	2258	2789	3068	3070*						
CONWRT	0000 16F3	1414*											
COUNT	0000 171C	529	549	551	1443*								
CRLF	0000 11F8	221	230	294	336	354	384	455	458	621	898*	968	1644	3325
CRT	0000 0A9A	182	192*										
CRT2	0000 0AAA	191	196*										
CRT2ND	0000 16FE	194	848	1424*	1425								
CRTDRV	0000 13F0	1078	1091*										
CRTENRD	0000 16FF	1425*											
CRTRD	0000 16F6	192	1417*	1418									
CRTRQ2S	0000 16FA	195	1421*										
CRTWRT	0000 16F7	1418*											
DATA	0000 1780	1457*	1492	2713	2896	3827	3882						
DATA26	0000 0900	112*	113	2897	4189	4216							
DATA26E	0000 0932	113*	4196	4224									
DATA9	0000 3CD8	3084	3108	4757*									
DATAACT	0000 3D04	3254	4551	4629	4773*								
DATAACT1	0000 3ADC	4630	4708*										
DATAACT2	0000 3AD2	4594	4707*										
DATAERR9	0000 2A7C	3112	3252*										
DATAEXP	0000 3D06	3253	4550	4633	4774*								
DATAEXP1	0000 3AEC	4635	4711*										
DATAEXP2	0000 3AE2	4597	4710*										
DATSET	0000 38F2	3261	4552	4627*									
DEFMSG	0000 3B34	2973	4720*										
DEFMSG1	0000 3B46	2951	2961	4721*									
DEFTESTS	0000 3C12	427	429	4737*									
DEFTRK	0000 3D08	2742	2743	2744	2775	2781	2834	2840	2851	2954	2962	4775*		
DELAY	0000 178C	1458*	3640										
DELETE	0000 3D40	1925	4804*										
DETSET	0000 3900	3262	4553	4632*									
DEV	0000 0006	61*	653	654	655	1346	1347	1348	1508	1761	1762	1765	1797	1801
		1804	1866	1900	1901	1912	1918	1924	1925	1926	1929	1942	1947	1948
		1951	1972	1973	1977	2012	2013	2017	2029	2048	2053	2060	2061	2062
		2088	2091	2152	2178	2227	2228	2247	2253	2254	2272	2327	2453	2454
		2457	2466	2482	2483	2487	2496	2547	2563	2564	2568	2605	2608	2632
		2653	2704	2706	2710	2713	2715	2717	2728	2905	2906	2917	2934	2935
		3029	3044	3209	3288	3289	3300	3314	3344	3350	3494	3495	3508	3514
		3518	3521	3526	3533	3537	3542	3547	3578	3632	3635	3636	3658	3659
		3660	3661	3666	3672	3673	3674	3675	3680	3685	3690	3695	3700	3709
		3717	3725	3726	3731	3732	3737	3742	3749	3753	3754	3763	3765	3768
		3769	3770	3771	3793	3796	3797	3800	3802	3803	3805	3809	3812	3818
		3820	3825	3825	3827	3828	3829	3830	3904	3907	3908	3909	3912	3980
		3986	3991	3993	3997	4008	4019	4025	4050	4076	4088	4106	4152	4200

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                            4231    4234    4237    4240    4284    4292    4325    4333    4371    4569    4572
DEVINT      0000 302E       1264    1498    1502    1970    1979    2016    2022    2028    2035    2039    2045    2052    4004
                            4006    4036    4041    4049    4055    4062    4069    4085    4091    4111    4118    4131    4151
                            4790*
DEVMSG      0000 39FA        717    4663*
DEVMSG2     0000 3A0A        693    4667*
DEVSADR     0000 3D28       1157    1258    1489    1491    4789*
DIS.STOP    0000 3D47        654    1347    1508    1977    2053    2152    2568    3300    3912    3995    4076    4569    4811*
DISP.LRN    0000 35FC       1859    2148    2189    2209    2281    2307    2336    2364    2661    2679    2885    4176    4358*
DISPLAY     0000 3600       2233    2259    2727    2911    3517    3536    4362*
DOCRC       0000 31DC       1819    1847    2880    3174    3918*
DOCRC1      0000 320A       2754    2756    3243    3924    3926    3932*
DOCRC2      0000 320E       2752    3241    3245    3922    3933*   3942
DOCRC3      0000 321E       3937    3940*
DRIVE       0000 175C       1454*   1477
DRIVENO     0000 000A       3026*   3041    3042    3067    3078    3079    3084    3090    3105    3108    3147    3148    3158
                            3160    3164    3194    3199    3221    3230    3231    3258
DRIVES      0000 3CEE       1483    3135    3146    4762*
DRNOMSG     0000 3AA6       3265    4697*
DRNOMSG1    0000 3AAC       3259    4698*
DRV         0000 3CEC        586    1484    3037    3095    4761*
DRV1        0000 3D02        568     571     587    1485    1514    4772*
DRVCHK      0000 1ABC       1454    1686*
DRVCHK1     0000 1AC2       1690*   1698
DRVMSG      0000 3AF2       1520    4713*
DRVMSG1     0000 3AF8       1519    4714*
ECHO        0000 1294        952     956*   1211
ECHO1       0000 1290        950     953*
ECHRTN      0000 12AA        958     963*
EEF         0000 360C       3992    4016    4047    4370*
EID100      0000 3A90       4691*
EID200      0000 3A98       4693*
EIDCRCL     0000 3AA0       4695*
EIDCRCM     0000 3A9C       4694*
EIDSEC      0000 3A94       4692*
EIDSET      0000 3B88       4544    4604*
EIDTRK      0000 3A8C       4605    4690*
ENA.REST    0000 3D46       2029    2048    4810*
ENA.STOP    0000 3D45       2017    4809*
ENA.WRIT    0000 3D48       1973    4812*
ENABLE      0000 3D39       4795*
ENDLRN      0000 1774       1456*   1547    1558    2286    2312    2341    2369    2614    3030    3219    3875
EOTMSG      0000 3A42        583    4675*
ERONCOM1    0000 3648       4386    4388    4389*
ERONCOM2    0000 365A       4389    4391    4393    4395*
ERONCOM3    0000 366C       4395    4397    4399    4401*
ERONCOM4    0000 3678       4401    4403    4405*
ERONCOM5    0000 3680       4357    4405    4407    4408*
EROPATH     0000 37CC       4409    4520*
ER1NCOM     0000 36B6       4418    4420    4422    4424    4426*
ER1NCOM1    0000 369E       4412    4414    4416    4418*
ER1PATH     0000 37D4       4427    4523*
ER2NCOM1    0000 36D4       4430    4432    4434    4436*
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ER2NCOM2   0000 36EC      4436   4438   4440   4442   4444*
ER2NCOM3   0000 36FE      4444   4446   4448   4450*
ER2NCOM5   0000 370A      4450   4452   4454*
ER2NCOM6   0000 371C      4454   4456   4458   4460*
ER2NCOM7   0000 3734      4460   4462   4464   4466   4468*
ER2NCOM8   0000 374C      4468   4470   4472   4474   4476*
ER2NCOM9   0000 3764      4476   4478   4480   4482   4484*
ER2PATH    0000 37E4      4486   4528*  4562
ER3NCOM    0000 3788      4489   4491   4493   4495   4497*
ER3PATH    0000 37FC      4498   4535*
ER4NCOM    0000 379A      4501   4503*
ER4PATH    0000 3814      4504   4542*
ER5NCOM    0000 3788      4507   4509   4511   4513*
ER5PATH    0000 382C      4514   4549*
ER6PATH    0000 384C      4518   4558*
ER7PATH    0000 385C      1509   4563*
ERADTPRT   0000 38A2      3268   4555   4593*
ERAIDPRT   0000 3892      4540   4546   4561   4586*
ERAUXPRT   0000 388C      4533   4583*
EREDTPRT   0000 38A8      3269   4556   4596*
EREIDPRT   0000 389C      4547   4590*
ERFINAL    0000 3868      4522   4527   4534   4541   4548   4557   4568*
ERFL01     0000 369A      1766   1805   4417*
ERFL02     0000 36A0      1767   1806   2709   4419*
ERFL03     0000 36BE      1773   1812   4429*
ERFL04     0000 36C4      1778   1823   1857   3361   4431*
ERFL05     0000 3790      1880   2873   3168   3197   4500*
ERFL06     0000 3796      1815   1817   1844   1846   3202   4502*
ERFL07     0000 376C      3930   4488*
ERFL08     0000 35A6      4291   4421*
ERFL09     0000 3772      3862   3865   4490*
ERFL0A     0000 36AC      4382   4423*
ERFL0B     0000 36CA      1914   2635   2639   2656   2660   4433*
ERFL0C     0000 36D0      1917   3357   3561   4435*
ERFL0D     0000 36D6      1931   1934   4437*
ERFL0E     0000 36DC      1953   1958   4439*
ERFL0F     0000 36E2      3346   4377   4441*
ERFL10     0000 3718      2813   3352   3419   3434   4459*
ERFL11     0000 36E8      2808   4443*
ERFL12     0000 36EE      3528   4375   4445*
ERFL13     0000 3688      2456   2459   2485   2489   3520   3539   3906   3988   4198   4230   4411*
ERFL14     0000 36F4      4379   4447*
ERFL15     0000 36FA      4381   4449*
ERFL16     0000 363C      1982   4385*
ERFL17     0000 3642      3303   4387*
ERFL1B     0000 37AE      2438   4510*
ERFL1C     0000 36B2      4045   4425*
ERFL1E     0000 375A      2939   2945   4481*
ERFL1F     0000 3784      2859   2862   2865   4496*
ERFL20     0000 3706      4014   4058   4114   4453*
ERFL21     0000 368E      4060   4074   4116   4157   4413*
ERFL22     0000 364A      4072   4390*
ERFL23     0000 3650      4147   4392*
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ERFL24	0000	3656	4162	4394*									
ERFL26	0000	365C	4396*										
ERFL27	0000	37A2	2137	4506*									
ERFL28	0000	37A8	4250	4508*									
ERFL29	0000	3662	2582	4398*									
ERFL2A	0000	3668	1497	1978	2038	2051	4040	4054	4068	4110	4400*		
ERFL2B	0000	366E	2021	4402*									
ERFL2D	0000	3674	3316	3319	4404*								
ERFL2E	0000	367A	3497	3510	4406*								
ERFL30	0000	370C	2990	3389	4455*								
ERFL31	0000	3712	2991	3463	4457*								
ERFL32	0000	3778	2876	2878	3171	3173	4492*						
ERFL33	0000	3694	2712	2732	2736	4415*							
ERFL34	0000	371E	2769	4461*									
ERFL35	0000	37C0	2839	4516*									
ERFL36	0000	3724	2985	4463*									
ERFL37	0000	372A	2988	3000	4465*								
ERFL38	0000	3730	2993	4467*									
ERFL39	0000	3736	2995	3379	3400	3411	4469*						
ERFL3A	0000	373C	2996	4471*									
ERFL3B	0000	3742	2998	3363	3452	4473*							
ERFL3C	0000	3748	2999	4475*									
ERFL3D	0000	374E	2809	4477*									
ERFL3E	0000	3754	2814	3359	3423	3438	4479*						
ERFL3F	0000	377E	2828	4494*									
ERFL40	0000	3784	2515	4512*									
ERFL41	0000	3760	3193	3368	3371	3428	3443	3477	3554	3557	4483*		
ERFL42	0000	3700	3354	3365	3376	3381	3387	3392	3397	3402	3408	3412	3421	3425	3436
			3440	3449	3454	3460	3465	3471	3474	4451*			
ERPRTCOM	0000	3896	4582	4585	4588*	4592	4595	4598					
ERR	0000	0F76	639*	1343	3264	4521	4525	4529	4538	4545	4554	4560	
ERR1	0000	0FEA	641	650	682*								
ERRALL	0000	0F94	648*	1293	1503								
ERRCOM	0000	0FB8	640	649	661*								
ERRCOM1	0000	0FD4	665	671*									
ERRCOM2	0000	0F82	642*	657									
ERRCOUNT	0000	3D0E	1503	3714	4776*								
ERRD1	0000	0FF4	689*										
ERRDEV	0000	16E8	690	710	1405*								
ERRDS1	0000	1024	651	709*									
ERRL1	0000	104A	723*										
ERRLVL	0000	3A3E	1302	4674*									
ERRMSG	0000	393E	682	4645*									
ERRNO	0000	3946	490	1292	1300	1323	1332	1355	1368	3256	4408	4426	4485	4497	4503
			4513	4517	4647*								
ERRPL1	0000	1062	652	733*	1345								
ERRS1	0000	100C	699*										
ERRSAVE	0000	3098	639	646	648	4821*							
ERRSTA	0000	16EA	700	714	1407*	4284	4285	4333	4334				
ERSTPRT	0000	3886	4526	4532	4539	4580*							
ETESTNO	0000	3944	489	522	1528	1529	4646*						
EXPID	0000	3EE4	1828	1829	1831	1832	3234	3235	3236	3237	3242	3244	3246	3927	3928
			4606	4827*									

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```
EXPID1     0000 3A84     4591    4689*
FALSYC     0000 3B68     4564    4723*
FFERK      0000 2E66     3382    3405    3414    3429    3444    3455    3466    3478    3551*
FFFFCRC    0000 3D1A     2757    2864    4782*
FIRST      0000 3D1A      304     311     315    1394*
FLAG       0000 3D16     2181    4780*
FLP.INTS   0000 3D00     4149    4160    4163    4771*
FLPADR     0000 1750      653    1346    1453*   1488    1507    1761    1797    1900    2012    2088    2178    2547    2563
                         2605    2704    3029    3288    3578
FLPINT     0000 32A0     4005    4011*
FLPINT1    0000 33B2     4090    4109*
FLPINT1A   0000 33E0     4120    4122*
FLPINT2    0000 32E8     4035    4039*
FLPINT3    0000 3318     4048    4053*
FLPINT4    0000 3342     4061    4067*
FLPINT4.   0000 335E     4075*   4159
FLPINT5    0000 343E     4150    4154*
FMDISC     0000 1948     1538    1555*
FMDISC1    0000 39D0     1553    4661*
FMPARM     0000 17B0     1461*   2715    2718    3828
FORMAT     0000 3D44     2710    4808*
FOUND1     0000 0DB8      467     473     477*
FP         0000 1624     1155    1316*
FPMCHK     0000 1AF4     1461    1713*
GETBUF1    0000 357C     4300    4303*
GETBUF2    0000 359A     4308    4312*
GETBUFAD   0000 356C     1903    2103    2111    2116    2123    2131    2391    2400    2412    2419    2426    2441    2451
                         2471    2480    2503    2549    2557    2572    2619    2625    2640    2646    3085    3101    3109
                         4297*
GETCHR     0000 107A      245     379     747     761     945*   3324
GETPATRN   0000 317A     2105    2134    2207    2208    2393    2429    2444    2506    2550    3085    3880*   4188    4215
GOTIT      0000 0AE0      201     207     215*
GTPT1      0000 318A     3885    3886*
GTPT2      0000 319A     3885    3887    3890    3892*
HALTY      0000 0F30      605     611*    618     676
HEXASC     0000 1122      520     692     702     712     716     726     736     739     817*   1560    2967    4614    4637
HEXASC1    0000 112C      821*    828
HEXTAB     0000 1720      321     749     808     824    1301    1445*
HOW.MANY   0000 3D1E     2762    2838    4784*
IDLE       0000 353C     1869    1902    1919    1927    1943    1949    2014    2054    2063    2092    2153    2248    2273
                         2328    2467    2497    2571    2609    2705    2707    2733    2918    3045    3208    3290    3301
                         3524    3545    3903    3913    3967    3994    4077    4279*
IDLE.F     0000 3CEA     4281    4289    4330    4339    4760*
IDLE1      0000 353E     4281*   4293
IDLE2      0000 3548     4284*   4288
IDLEMSG    0000 3BF6     4574    4733*
II         0000 1676     1120    1354*
II32       0000 168C     1358    1362*
IMPTOP     0000 0000R
INC        0000 3D3A      535    3183    3588    3715    3776    4364    4796*
INCR       0000 16ED      597    1410*
INIT       0000 1836      460    1475*
INIT1      0000 183C     1478*   1481
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```
INIT2      0000 1844      1478    1482*
INIT3      0000 1856       573    1487*
INIT4      0000 18C2      1512    1516*
INIT5      0000 18D6      1515    1522*
INITRET    0000 0094       461*   1567
INITSRT    0000 0090       459*    588
INSPUK     0000 3B88      3332    4724*
INT        0000 3CFA       527    1505    2100    2145    2146    3981    4768*
INTCHK     0000 1AAE      1460    1678*
INTDEV     0000 16E8      1202    1237    1254    1404*   1405
INTLEV     0000 17EC      1466*   1494
INTLVL     0000 3D34      1275    1495    1496    4792*
INTLVLM    0000 3A28      1305    4673*
INTPSW     0000 16DA      1236    1255    1396*
INTSAV     0000 3D58      1221    1228    1253    1285    4820*
INTST4     0000 17A4      1460*   2093    2142
INTSTA     0000 16EA      1205    1238    1406*   1407    1980    4012    4042    4056    4070    4112    4155
INTSTOK    0000 3BA2      3480    4726*
IO         0000 0A10       130*    372     456     981     989    1057    1168
IOSAVE     0000 3EF0       457     835     882     905    1024    1060    1076    4829*
ISITERR    0000 170C       483     643     666     872     969     973    1306    1344    1435*
KBINT      0000 1708      1212    1433*
KBINT0     0000 14C0      1153    1166*   1231
KBINT00    0000 14FE      1188*   1192
KBINT01    0000 14F2      1182*
KBINT0A    0000 1502      1181    1189*
KBINT0B    0000 14EC      1170    1179*
KBINT0C    0000 14DC      1174*   1177
KBINT1     0000 150C      1167    1193*
KBINT2     0000 1538      1206    1210*
KBINT3     0000 1522      1195    1201*
KBREAD     0000 13A6       945     984    1065*
KEEP1      0000 0DA0       466*    469
KEEP10     0000 0F3E       578     619*    869
KEEP101    0000 0F60       629*    631
KEEP2      0000 0DAE       472*    475
KEEP3      0000 0DE6       495*    609
KEEP4      0000 0DF0       501*    562     608
KEEP41     0000 0DF4       502*    513
KEEP42     0000 0E0A       506     510*
KEEP43     0000 0E10       509     512*
KEEP5      0000 0E14       508     511     514*
KEEP6      0000 0E4C       530*    555
KEEP7      0000 0E8A       553     556*
KEEP71     0000 0E98       557     560*
KEEP9      0000 0EF6       576     592*
KEEP91     0000 0F04       596*    675
LADC       0000 0001       539
LASTDEF    0000 3D10      2745    4777*
LCORE      0000 1414       218     491    1106*   2587
LCORE32    0000 1488      1130    1146*
LCORE32A   0000 14B0      1157*   1162
LDWT       0000 00C6       103*    106
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LEADER	0000 00A0	87*	91											
LEVEL	0000 0D26	419*	1466											
LGTRK	0000 3D18	2746	2879	2915	4781*									
LINK	0000 004F	73*	177	218	221	230	234	236	238	294	297	302	314	315
		319	322	336	342	347	350	353	354	363	368	371	379	384
		385	455	458	460	491	520	523	525	554	559	575	579	582
		584	617	621	623	626	629	634	647	664	685	692	694	702
		704	712	716	718	726	728	736	739	741	795	813	830	849
		866	876	885	889	890	892	900	909	924	926	947	964	968
		969	971	979	1035	1037	1050	1061	1141	1158	1211	1293	1303	1307
		1343	1344	1521	1764	1868	2587	3053	3264	3266	4521	4525	4529	4538
		4545	4554	4560										
LNZB	0000 3D49	83	4815*	4842	4871									
LNZB1	0000 3F78	1733	4835*											
LOAD	0000 00AA	92*	100											
LOCMSG	0000 3A1E	727	4671*											
LOOK1	0000 0B88	271*	278											
LOOK2	0000 0B8C	273*	282											
LOOK3	0000 0B9C	276	279*											
LOOK4	0000 0CEA	287	391*											
LOOK41	0000 0CFA	394	396*											
LOOK5	0000 0D0E	405	407*											
LOOKUP	0000 0B84	259	261	270*										
LOOP	0000 17C8	552	1463*											
LPADR	0000 0A16	133*	1041	1093										
LPDRV	0000 13F6	1082	1093*											
LPWRT	0000 1702	1094	1428*											
LRDATA	0000 09D0	110*	112											
LRDATAE	0000 097F	111*	3658	3659	3660	3661	3672	3673	3674	3675	3685	3695	3737	3742
LRN	0000 3024	1799	1825	1833	1851	2090	2114	2126	2196	2217	2224	2231	2234	2256
		2241	2250	2257	2260	2262	2267	2288	2296	2314	2326	2343	2351	2371
		2379	2403	2422	2453	2482	2521	2530	2607	2613	2623	2629	2644	2650
		2686	2787	2788	2793	2866	2886	2889	2904	2905	3874	3878	4175	4359
		4787*												
LRN.RAND	0000 2304	2179	2223	2274	2329	2519*								
LRNMSG	0000 2A34	3032	3223*											
LRNMSG1	0000 3964	3223	4650*											
LVLERR	0000 1600	1276	1299*											
MAX	0000 39C2	1550	4659*											
MAX1	0000 1920	1536	1542*											
MAX2	0000 1928	1541	1544*											
MAX3	0000 193C	1546	1549*											
MAXA	0000 39CA	1544	4660*											
MAXTST	0000 3C16	433	4738*											
MICROB	0000 0AD0	180	208*											
MICROBUS	0000 0A1A	135*	211	949	1052	1100								
MICRODRV	0000 140A	1086	1099*											
MM	0000 1690	1122	1366*											
MM16	0000 16C6	1384*	1385											
MM32	0000 16B0	1373	1377*											
MIN	0000 0094	84*	4847	4869										
MOD32	0000 1608	161	164	537	755	764	1129	1205	1219	1240	1269	1334	1357	1372
		1395*	1736	4225	4307									

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MOREDEF	0000 3D22	2747	2846	2975	4786*									
MOREMSG	0000 3B5E	2977	4722*											
MREADC	0000 1730	212	1171	1196	1446*									
MTESTNO	0000 393A	488	519	521	4644*									
MWRITEC	0000 1731	1101	1447*											
NDEF	0000 3D52	1506	1875	1878	4791*									
NEXTDR	0000 294C	572	1486	3039	3058	3099	3132*	3154	3180	3207	3619			
NEXTDR1	0000 2964	3140*	3145											
NEXTST	0000 171E	497	501	517	1444*									
NODEFMSG	0000 3B1E	2957	4719*											
NOERMSG	0000 395A	558	4649*											
NOERR	0000 170E	528	556	667	1436*									
NOFDEF	0000 3D14	2748	2790	2850	2853	4779*								
NOMSG	0000 17E0	870	1465*											
NORM	0000 16EC	605	1409*											
OLOC	0000 16E6	724	737	1209	1246	1278	1340	1381	1402*					
OPSW	0000 16E2	754	1208	1245	1339	1380	1400*							
OPSW32	0000 16E0	1224	1399*											
OPT	0000 1738	270	296	356	360	1450*								
OPT555	0000 0C8C	338	358*											
OPTBUF	0000 3EEA	241	242	243	256	264	275	4828*						
OPTCMD	0000 0BC8	295*												
OPTCMD1	0000 0BCA	296*	300											
OPTCMD10	0000 0C94	362*	366											
OPTCMD11	0000 0CC6	379*	383											
OPTCMD12	0000 0CD4	374	377	384*										
OPTCMD2	0000 0BEC	306*	332											
OPTCMD3	0000 0BF2	308*	327											
OPTCMD4	0000 0BF8	310*												
OPTCMD5	0000 0C0A	312	315*											
OPTCMD6	0000 0C1A	317	320*											
OPTCMD7	0000 0C26	309	323*											
OPTCMD71	0000 0C38	328*												
OPTCMD8	0000 0C46	293	336*											
OPTCMD9	0000 0C92	357	361*	388										
OPTEND2	0000 1804	387	1468*											
OPTIN	0000 0B0A	229*	250	381	409	431	451	585	635	1014	1188	1552	1555	1596
		1600	1605	1611	1615	1637	1731	1743	4566	4576				
OPTIN1	0000 0B0E	231*	389	974	1295	1308	1350	1677	3225					
OPTION	0000 1804	286	290	1469*										
OPTRIN	0000 0BBC	292*												
OPTVAL	0000 1086	401	436	746*	1578									
OPTVAL0	0000 108C	748*	773											
OPTVAL1	0000 108E	749*	752											
OPTVAL2	0000 109A	750	754*											
OPTVAL3	0000 10A8	761*	769											
OPTVAL4	0000 10C0	763	770*											
OPTVAL5	0000 10A4	756	759*											
OPTVAL6	0000 10A6	758	760*											
OPTVAL7	0000 10BC	765	768*											
OPTVAL8	0000 10BE	767	769*											
ORIGIN1	0000 0A00	115*	4840	4870										
ORIGIN2	0000 0A04	116*												

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Symbol															
ORIGIN3	0000	0A08	119*												
ORIGIN4	0000	0A0C	120*												
OTC.0	0000	1218	909*	914	923	925									
OTC.1	CC00	1224	913*												
OTC.2	0000	122E	912	916*											
OTC.3	0000	1240	919	922*											
OTC.4	0000	1258	929*	934											
OUT0	0000	1270	910	927	930	932	939*							
OUT1	0000	1274	904	938	940*									
OUTCHR	0000	1206	236	238	297	302	314	319	322	342	347	363	368	629	809
			866	876	885	889	900	904*	3323						
OUTCHR2	0000	124E	907	915	921	926*								
P1	0000	1186	850	853*										
P2	0000	11AC	866*	868										
P3	0000	11B8	854	870*										
P4	0000	1170	837	847*										
P5	0000	1178	839	842	846	849*								
P6	0000	1166	841	843*										
PASFLG	0000	16EE	196	203	210	999	1068	1180	1411*					
PASLOOP	0000	0A12	131*	193	847	1029	1091							
PASS9	0000	3CE8	3051	3093	3094	4759*								
PAUSE	0000	1278	186	908	913	920	924	941*						
POWEROFF	0000	39A0	3485	4655*										
POWERON	0000	39B2	3498	4657*										
PR	0000	3CE0	3041	3067	3090	3105	3221	4738*						
PRINT	0000	114A	223	225	525	559	584	623	683	694	704	718	728	741	834*
			971	1307	1521	1551	1554	1673	2830	2958	2974	2978	3224	3266	3292
			3294	3305	3307	3321	3333	3335	3337	3481	3484	3486	3488	3499	3501
			4565	4575	4588										
PRINT2	0000	11C6	871	875*	880									
PRINT3	0000	11D6	878	881*	901									
PRINT3A	0000	11E8	884	888*										
PRINT3B	0000	11EA	887	889*										
PRINT5	0000	11EE	852	873	890*									
PRSBRK	0000	3BEA	3293	3306	3336	3487	3500	4731*						
PSW	0000	0A22	146*	530	644	2023	2040	2046	4352					
PSW2	0000	0A24	147*	157	165	232	547	664	1137	1251	1341			
PSWMSG	0000	3A14	740	4669*										
PSWSAVE	0000	3D50	79	1147	4819*									
PURETOP	0000	0000R												
QMSG	0000	3A50	970	4676*										
QUESTN	0000	12B0	259	968*										
R.AUX	0000	31A8	1770	1809	1848	1911	1928	1950	2631	2652	2760	2790	2938	2942	3181
			3313	3343	3507	3525	3546	3900*	4372						
R.IO	0000	312C	1769	1808	3156	3848*								
R.IO0	0000	312E	1531	1834	3850*									
R.IO1	0000	3132	1865	3852*										
R.S1	0000	21F2	2418*											
R.S2	0000	22B4	2486*	2493										
R.S3	0000	22D4	2425*											
R0	0000	0000	54*	178	178	179	181	183	186	187	193	196	197	202	203
			204	209	210	211	215	219	220	240	241	242	243	255	256
			311	348	351	370	372	373	427	428	429	430	456	457	464

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        598   599   600   601   601   602   606   607   619   619   620   624   632
        639   642   642   643   645   646   648   663   689   699   709   713   723
        733   787   792   794   800   801   812   817   818   827   834   844   845
        847   848   856   857   870   872   891   898   905   906   908   911   916
        929   935   936   946   949   951   953   954   972   972   973   978   980
        986   993   994  1004  1005  1010  1016  1017  1018  1029  1030  1038  1041
       1044  1048  1052  1057  1058  1059  1065  1066  1067  1071  1076  1077  1079
       1081  1085  1085  1088  1089  1091  1093  1094  1096  1097  1100  1101  1109
       1109  1110  1114  1116  1118  1153  1154  1168  1169  1194  1208  1221  1228
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       1491  1492  1493  1494  1495  1496  1497  1498  1499  1500  1510  1511  1513
       1514  1517  1518  1519  1523  1524  1532  1533  1535  1537  1539  1542  1544
       1650  1651  1654  1655  1659  1662  1763  1798  1799  1802  1827  1828  1830
       1831  1832  1835  1836  1838  1839  1867  1969  1970  1978  1979  2015  2016
       2021  2022  2023  2024  2025  2027  2028  2034  2035  2038  2039  2040  2041
       2042  2044  2045  2046  2047  2051  2052  2058  2089  2090  2101  2102  2106
       2129  2130  2136  2142  2144  2145  2146  2394  2431  2445  2464  2494  2507
       2520  2521  2522  2523  2529  2530  2531  2532  2551  2561  2562  2565  2566
       2569  2570  2575  2576  2576  2580  2581  2606  2607  2610  2611  2613  2614
       2616  2617  2663  2664  2671  2723  2726  2741  2742  2743  2744  2745  2746
       2747  2748  2761  2762  2763  2764  2764  2768  2776  2778  2778  2780  2781
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       3163  3164  3169  3170  3172  3172  3182  3183  3188  3189  3216  3217  3219
       3221  3255  3356  3358  3360  3362  3364  3366  3367  3369  3370  3378  3380
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       3442  3451  3453  3462  3464  3472  3473  3475  3476  3518  3522  3529  3535
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       3775  3776  3778  3780  3781  3782  3783  3785  3786  3795  3796  3799  3800
       3801  3802  3839  3840  3841  3842  3843  3874  3875  3877  3878  3882  3888
       3889  3891  3892  3893  3976  3978  3980  3981  4003  4003  4004  4005  4006
       4035  4036  4040  4041  4048  4049  4054  4055  4061  4062  4068  4069  4083
       4096  4097  4098  4099  4102  4103  4110  4111  4117  4118  4123  4124  4128
       4129  4136  4139  4140  4144  4148  4149  4150  4151  4170  4171  4189  4216
       4231  4232  4234  4235  4237  4238  4240  4241  4248  4249  4280  4281  4282
       4285  4287  4289  4290  4323  4329  4330  4331  4332  4337  4339  4340  4354
       4359  4365  4365  4570  4611  4623        4628  4634  4637  4838  4854  4858
       4864  4875  4876  4877  4883  4885  4886
R1       0000 0001
         55*   82    92    93    95   100   155   155   156   163   163   164   165
        168   188   192   205   212   216   233   244   244   253   256   262   264
        265   270   272   277   284   286   391   404   408   465   466   471   472
        487   488   489   490   515   530   531   540   541   547   548   560   561
        577   580   586   587   592   593   594   595   598   604   611   612   613
        662   663   671   672   673   674   690   700   710   714   724   734   737
        788   791   821   835   836   838   840   851   855   859   882   883   911
        913   916   917   918   920   922   928   929   931   933   936   939   986
        987   994   995  1002  1005  1010  1011  1024  1025  1027  1030  1031  1032
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	1095	1098	1102	1106	1106	1110	1111	1112	1114	1115	1118	1119	1129
	1151	1152	1152	1154	1155	1155	1157	1161	1209	1243	1246	1252	1383
	1384	1477	1480	1482	1482	1483	1540	1543	1545	1547	1557	1558	1561
	1563	1565	1566	1570	1572	1586	1587	1594	1598	1603	1608	1614	1656
	1665	1666	1669	1825	1829	1915	1916	2024	2041	2047	2117	2119	2121
	2231	2257	2413	2414	2416	2472	2473	2475	2548	2553	2554	2574	2581
	2583	2585	2666	2673	2676	2678	2763	2765	2765	2766	2768	2772	2772
	2775	2786	2787	2788	2792	2818	2820	2840	2841	2841	2852	2853	2857
	2858	2860	2861	2863	2864	2866	2867	2872	2879	2886	2887	2889	2890
	2895	2897	2898	2902	2904	2928	2930	2950	2951	2964	2965	2965	3067
	3073	3076	3079	3110	3114	3125	3126	3127	3128	3129	3185	3187	3187
	3189	3190	3190	3194	3198	3198	3199	3579	3581	3591	3592	3593	3594
	3595	3596	3597	3598	3608	3615	3616	3748	3759	4084	4084	4085	4086
	4088	4090	4091	4130	4130	4131	4137	4138	4144	4146	4160	4161	4163
	4187	4189	4190	4191	4193	4196	4203	4214	4216	4217	4218	4221	4224
	4245	4257	4258	4259	4260	4264	4613	4625	4629	4633	4838	4840	4844
	4846	4849	4850	4853	4853	4854	4861	4861	4863	4866	4870	4872	4875
	4879												
R10 0000 000A	66*	1235	1235	1236	1255	1273	1274	1275	1301	1301	1302	1566	1566
	1578	1379	2937	3134	3140	3141	3143	3144	3146	3639	3642	3643	3644
	3657	3671	3684	3694	3712	3722	3755	3766	3798	3804	3813	3826	
R11 0000 000B	67*	1578	1579	1589	1597	1601	1606	1617	1622	1627	3045	3057	3097
	3098	3118	3119	3175	3200	3210	3721	3737	3738	3742	3743		
R12 0000 000C	68*	239	254	263	274	400	403	413	417	421	438	476	753
	1577	1581	1585	1593	1610	1619	1621	1685	1688	1694	1696	1703	1706
	1709	1712	1716	1722	1734	1741	1851	1852	2750	2753	2755	3230	3234
	3240	3242	3244	3921	3923	3925	3935	3940	4352	4355			
R13 0000 000D	69*	1624	1628	1771	1772	1772	1775	1776	1777	1810	1811	1811	1813
	1814	1814	1816	1818	1820	1821	1822	1849	1850	1854	1856	2751	3231
	3236	3239	3349	3374	3385	3395	3406	3417	3432	3447	3458	3469	3515
	3530	3531	3534	3549	3550	3645	3667	3681	3691	3701	3703	3724	3740
	3745	3920	3932	3941	4353	4363	4364	4366					
R14 0000 000E	70*	293	329	393	395	401	404	406	436	441	445	572	771
	774	780	1316	1336	1339	1359	1369	1374	1377	1379	1380	1486	1531
	1579	1589	1597	1601	1606	1617	1625	1629	1660	1664	1665	1668	1671
	1769	1770	1808	1809	1819	1826	1834	1847	1848	1865	1911	1928	1950
	2026	2043	2064	2188	2206	2230	2232	2256	2258	2280	2306	2335	2363
	2405	2436	2468	2512	2631	2652	2760	2774	2789	2798	2880	2909	2938
	2942	3039	3058	3059	3060	3061	3062	3063	3068	3074	3099	3149	3154
	3156	3160	3161	3167	3174	3180	3181	3196	3201	3207	3222	3247	3313
	3343	3507	3525	3546	3611	3612	3619	3644	3645	3723	3724	3757	3784
	3853	3859	3866	3867	3914	3951	4092	4093	4094	4094	4132	4133	4134
	4134	4205	4247	4372	4620	4638							
R14SAV 0000 3EF2	3853	3866	4830*										
R15 0000 000F	72*	223	225	245	395	406	412	416	420	462	462	463	747
	748	749	751	760	761	809	904	1013	1015	1317	1337	1340	1360
	1370	1375	1581	1551	1554	1574	1602	1607	1626	1630	1644	1649	1661
	1665	1668	1671	1673	1680	1682	1684	1700	1705	1711	1723	1803	1859
	1860	1861	1869	1902	1903	1907	1910	1919	1927	1943	1949	1974	2014
	2018	2031	2054	2063	2092	2093	2095	2098	2100	2103	2105	2111	2115
	2116	2123	2127	2131	2134	2148	2149	2150	2153	2179	2180	2181	2186
	2189	2190	2194	2195	2196	2202	2204	2207	2208	2209	2210	2215	2216

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R2    0000 0002     56*   77    81    96    102   157   158   160   161   167   169   189   194
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                    305   308   330   356   360   362   364   369   386   387   501   504   505
                    512   514   515   516   517   519   521   522   532   538   539   540   596
                    597   599   602   603   613   640   644   645   649   661   666   667   691
                    701   711   715   725   735   738   789   801   802   804   806   810   825
                    826   853   981   982   989   990   993   999   1004  1007  1007  1107  1157
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                    4616  4624  4630  4635  4841  4850  4852  4876
R3    0000 0003     57*   85    197   199   271   271   275   279   281   292   305   330   361
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                    1124  1125  1135  1136  1149  1150  1156  1160  1166  1172  1175  1176  1184
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              1944  1945  1946  1947  1954  1957  2112  2124  2187  2205  2277  2303  2332
              2360  2390  2401  2402  2411  2420  2421  2430  2431  2440  2452  2460  2462
              2470  2481  2490  2492  2558  2573  2579  2585  2620  2621  2626  2627  2636
              2637  2638  2641  2642  2647  2648  2657  2658  2659  2795  2962  2964  2968
              3087  3088  3102  3103  3317  3318  3583  3584  3585  3586  3589  3590  3596
              3615  3851  3857  3858  3886  3901  3902  3910  3911  4021  4027  4099  4103
              4132  4146  4196  4200  4224  4232  4235  4238  4241  4249  4262  4263  4264
              4265  4299  4301  4303  4307  4602  4606  4610  4613  4615  4842  4862  4871
              4888  4889
R3SAV  0000 301C  2390  2401  2411  2420  2427  2440  2470  2504  4783*
R4     0000 0004   58*   85    86    87    89    97    99   190   195   200   235   237   246
                  248   249   251   258   260   264   296   301   306   307   310   313   318
                  320   321   321   323   324   325   326   341   346   362   367   380   382
                  399   402   425   447   628   749   762   770   772   805   806   807   808
                  808   821   822   823   824   824   825   861   861   862   863   864   875
                  877   881   886   888   899   935   945   946   951   953   954   962   963
                  984  1070  1072  1122  1123  1127  1134  1146  1147  1148  1174  1183  1186
                 1186  1199  1205  1210  1476  1479  1484  1485  1576  1580  1595  1599  1604
                 1609  1620  1627  1628  1629  1630  1631  1636  1638  1639  1905  1909  1923
                 1955  1956  1957  2113  2125  2132  2135  2139  2388  2410  2559  2622  2628
                 2643  2649  2796  2846  2963  2970  3035  3036  3050  3051  3089  3104  3322
                 3326  3328  3587  3588  3589  3590  3593  3597  3600  3635  3728  3731  3748
                 3751  3755  3758  3759  3855  3969  3970  3972  3975  3989  3989  4017  4017
                 4119  4121  4124  4612  4617  4618  4843  4845  4847  4851  4851  4852  4869
                 4873
R4.0   0000 3246  3971  3973  3975*
R5     0000 0005   59*   87    89    90    90    92    93    94    97    99   105   198   199
                  222   224   273   275   303   303   304   316   316   328   328   331   339
                  339   341   343   344   349   352   369   433   437   524   558   583   622
                  625   633   682   693   703   717   727   740   805   875   879   970  1137
                 1138  1139  1140  1180  1240  1248  1248  1257  1257  1258  1262  1264  1272
                 1275  1305  1306  1520  1526  1527  1528  1529  1530  1550  1553  1672  1853
                 1864  1906  1908  1971  1972  2059  2060  2114  2126  2224  2225  2227  2234
                 2235  2236  2237  2250  2251  2253  2260  2261  2262  2263  2278  2286  2287
                 2288  2304  2312  2313  2314  2333  2341  2342  2343  2361  2369  2370  2371
                 2403  2422  2556  2623  2629  2644  2650  2793  2829  2957  2973  2977  3037
                 3038  3040  3041  3042  3046  3047  3048  3090  3105  3133  3134  3135  3136
                 3137  3138  3140  3142  3143  3223  3265  3291  3293  3304  3306  3320  3352
                 3334  3336  3348  3373  3384  3394  3405  3416  3431  3446  3457  3468  3480
                 3483  3485  3487  3498  3500  3514  3516  3533  3535  3598  3600  3606  3634
                 3646  3664  3678  3688  3698  3729  3734  3756  3767  3770  3772  3773  3849
                 3968  3969  3986  4007  4008  4105  4106  4564  4574  4581  4584  4587  4591
                 4594  4597  4844  4845  4872  4873  4874
R5HEX  0000 10F8   350   353   371   626   634   800*
R5SAV  0000 2F78  3634  3646  3668*  3734
R5X    0000 1106   805*  811
R5XA   0000 111?   809*
R5XB   0000 111C   803   812*
R6     0000 0006   60*   84    94   101   272   273   280   337   355   359   375   376   378
                  378   408   411   415   419   437   439   444   746   746   757   760   766
                  779   782  1258  1260  1264  1266  1269  1278  1279  1281  1291  1292  1299
                 1300  1501  1502  1503  1504  1505  1506  1507  1582  1584  1586  1590  1590
                 1592  1594  1598  1603  1608  1613  1614  1618  1618  1622  1624  1625  1626
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                            1632  1633  1635  1638  1679  1687  1689  1691  1697  1699  1702  1 2   1704
                            1708  1710  1714  1717  1718  1725  4856  4857  4858  4863  4864  4874  4877
                            4889  4890
R7        0000 0007   62*    103   104   105   434   442   449  1679  1681  1685  1689  1692  1693
                            1695  1697  1714  1715  1717  1719  1721  1725  1733  1735  1740  1742  3768
                            3772  3779  3779  3780
R8        0000 0008   64*     95    96   101   102   435   446   450  1687  1699  1718  1720  1721
                            1921  1924  1935  1935  1937  1940  1946  1959  1959  1961  1964  1966  2104
                            2107  2109  2128  2138  2140  2392  2396  2397  2427  2434  2442  2447  2448
                            2504  2510  2718  2719  2721  2722  2726  2730  3599  3605  3605  3606  3607
                            3637  3637  3664  3678  3688  3698  3728  3729  3769  3775  3777  3777  3778
                            3805  3806  3806  3807  3808  3933  3935  3936  4890
R9        0000 0009   65*    755   764   956   957   959   960   962  1068  1212  1213  1219  1727
                            1728  1729  1730  1736  2749  2757  3233  3235  3237  3238  3246  3608  3609
                            3610  3611  3643  3656  3658  3659  3660  3661  3662  3670  3672  3673  3674
                            3675  3676  3683  3685  3686  3693  3695  3696  3723  3790  3919  3927  3928
                            3929  3933  3934  3938  3939
RAND      0000 3CFE  1493  2101  2130  2522  2532  3060  3062  3839  3841  3845  3888  3892  3893
                            4770*
RANDLRN   0000 2A1A  3061  3214*
RANDOM    0000 3118  3215  3838* 3884
RANDSAV   0000 3EF4  2523  2531  4831*
RAUX      0000 3EDE  1777  1822  1856  1915  1932  1954  2636  2657  2761  2801  2943  2986  3184
                            3185  3317  3566  3569  3426  3441  3472  3475  3529  3548  3552  3555  3767
                            3907  3908  3909  4602  4825*
RAUXFLG   0000 3CF4  1504  3902  3911  4323  4765*
RAUXND    0000 3EE3  3901  4826*
RD.SECT   0000 21DA  2206  2306  2409*
RD.SECT1  0000 220C  2428* 2435
RD.SECT2  0000 2224  2432  2437*
RD.TRK    0000 34BC  2256  4215*
RD.TRK1   0000 34CE  2909  4220*
RDCHARO   0000 0B4A   247   249*
RDCHK     0000 0B3C   245*  257   266
RDCHK1    0000 0B68   252   258*
RDSECT2   0000 2208  2363  2469*
RDSECT3   0000 22DE  2498  2502*
RDSECT4   0000 22E6  2505* 2511
RDSECT5   0000 22FC  2508  2513*
READ      0000 303C  2057  2254  2483  2906  2935  3518  3537  4800*
READAUX   0000 303F  3904  4803*
READ1D    0000 303E  4802*
REMDISC   0000 3BD8  3291  4730*
RESET     0000 3D43  1762  1801  1866  1901  1918  1942  2013  2091  2608  2706  3044  3289  4807*
RESET9    0000 2D46  3039* 3049
RESTORND  0000 2316  2202  2249  2300  2357  2528*
RET       0000 000E   71*   641   650   651   652   685   695   705   719   729   742  1345  3260
                            3261  3262  3268  3269  4524  4526  4530  4531  4532  4535  4536  4537  4539
                            4540  4543  4544  4546  4547  4552  4553  4555  4556  4559  4561  4589
RETOPSW   0000 1544  1178  1187  1200  1217* 1433
RETOPSW1  0000 1552  1220  1224*
RID       0000 3ED8  1532  1771  1810  1813  1818  1836  1839  1842  1863  1872  2794  2818  2857
                            2860  2863  2874  3157  3169  3756  3854  3857  3860  3863  3923  3925  3929
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		4610	4823*											
RIDND	0000 3EDD	2795	3851	4824*										
RLRN1	0000 2A1A	3215*	3218	3220										
RP	0000 162C	1149	1322*											
RSAVE	0000 3EF8	80	787	794	800	812	817	829	834	891	898	978	1018	1127
		1283	4834*											
RT1	0000 34BE	4215*	4219											
RT2	0000 34D2	4222*	4246											
RT21	0000 34E6	4226	4228*											
RT3	0000 34EE	4231*	4244											
RT31	0000 3504	4233	4236	4239	4242*									
RT5	0000 3514	4242	4248*											
RUN	0000 1810	284	1470*											
RUNIT	0000 0D90	285	454*											
RW	0000 3228	1907	1910	2115	2127	2404	2423	2560	2624	2630	2645	2651	2797	3091
		3106	3856	3965*										
RW1	0000 3248	3974	3976*											
RW11	0000 3258	3979	3981*											
RW12	0000 3270	3992*	3998											
RW2	0000 3286	3982	4002*											
RW21	0000 329A	4009*	4037	4051										
RW22.1	0000 32BC	4020*												
RW23	0000 32DC	4022	4028	4034*										
RW24	0000 333C	4063*	4153	4164										
RW3	0000 336C	3977	4083*											
RW33	0000 3380	4087	4089*											
RW34	0000 33AC	4107*												
RW35	0000 33A2	4095	4101*											
RW36	0000 33A6	4100	4104*											
RWRTN	0000 3CF8	3966	3995	4078	4767*									
SB1	0000 2940	3127*	3130											
SC.31	0000 1A00	1622*	1634											
SC.32	0000 1A26	1623	1632*											
SC.33	0000 1A32	1636*	1640											
SC.BOOT	0000 30AE	3627	3793*											
SC.BOOT1	0000 30E6	3801	3812*											
SC.CMD	0000 3C4A	1594	1614	1622	1627	1638	1656	3581	3608	4744*	4747	4748	4749	
SC.DEL	0000 30A8	3626	3790*											
SC.ELRN	0000 3C50	1608	1626	1630	1669	3598	3759	4749*						
SC.FMT	0000 30F8	3630	3823*											
SC.LINE	0000 3C30	1646	1651	1655	1658	1672	4743*							
SC.LOOP	0000 2E8E	3579*	3621											
SC.LOOP1	0000 2E90	3580*	3617											
SC.LOOP2	0000 2ED2	3602	3605*											
SC.LOOP3	0000 2ED4	3601	3604	3606*										
SC.LOOP4	0000 2EEC	3582	3615*											
SC.LP31	0000 2EDA	3608*	3614											
SC.NUM	0000 3C4C	1598	1624	1628	1663	3596	4747*							
SC.PRT	0000 1A42	1573	1644*											
SC.PRT1	0000 1A50	1648*	1676											
SC.PRT10	0000 1A6A	1653	1656*											
SC.PRT2	0000 1AA0	1657	1674*											
SC.RAUX	0000 3064	3625	3763*											

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```
SC.RU11     0000 2FA8      3685*    3687
SC.RD22     0000 2F5A      3658*    3663
SC.RU31     0000 3U1E      3730     3734*
SC.READ1    0000 2FA0      3648     3685*    5689
SC.READ2    0000 2F52      3650     3656*    3665
SC.READ3    0000 3024      3652     3737*    3739
SC.RID      0000 3038      3624     3747*
SC.RID0     0000 303C      3749*    3760
SC.RID1     0000 3048      3752     3754*
SC.ROUT     0000 2F06      3611     3622*
SC.RSET     0000 30F0      3629     3818*
SC.RIN      0000 2EE8      3615*
SC.RW       0000 2F18      3622     3625     3632*    3791
SC.RW.GO    0000 2F38      3641     3643*
SC.RW1      0000 2F46      3642     3648*
SC.RW2      0000 2F4A      3639     3650*
SC.RW3      0000 2F4E      3652*    3723
SC.RWB      0000 2FFA      3638     3720*    3733
SC.SLRN     0000 3C4E      1603     1625     1629     1666    3597    3748    4748*
SC.STOP     0000 30F0      3628     3816*
SC.WRT1     0000 2FBA      3649     3693*    3699
SC.WRT11    0000 2FC2      3695*    3697
SC.WRT2     0000 2F7A      3651     3670*    3679
SC.WRT22    0000 2F82      3672*    3677
SC.WRT3     0000 3U2E      3653     3742*    3744
SCOPE       0000 1828      1472*    1570
SCOPE1      0000 1984      1571     1576*
SCOPE2      0000 19EC      1591     1613*
SCOPE3      0000 19F6      1583     1617*
SCPRT       0000 181C      1471*    1572
SECT12      0000 3D12      2611     2617     2620     2626    2641    2647    2663    2678    4778*
SECTNO      0000 3CD1      2792     3079     3160     3230    4756*
SEEKROUT    0000 2CE8      3349     3374     3385     3395    3406    3447    3458    3513*
SEID        0000 2A40      3167     3196     3201     3229*
SEID1       0000 2A48      3232*
SEKROUT1    0000 2E28      3417     3432     3469     3532*
SEL1        0000 3420      4135     4143*
SEL2        0000 3422      4142     4145*
SELCH       0000 17BC      1462*    1490     2671     3976    4123    4128
SELINT      0000 35EE      4117     4127*
SELSTOP     0000 3D36      4083     4129     4793*
SELSTOP1    0000 3D3B      4136     4797*
SELTST      0000 1740      478      561      607      1437*
SELWRT      0000 3D37      4124     4794*
SETBCNT     0000 1954      1525     1534     1548     1556*
SETBCNT1    0000 196A      1562     1564     1566*
SETBUF      0000 293A      3086     3124*
SETCOM      0000 390A      4626     4631     4636*
SETDR1      0000 3528      4262*    4267
SETDRIVE    0000 351C      3139     4256*
SETKB       0000 1398      177      234      582      1057*
SETUP       0000 13C2      928      1076*
SHIFT       0000 1798      1459*    3886
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```
SINK      0000 16EB      960    1067   1408*
SPDKAV    0000 3BB8     3320    4728*
SPOPT     0000 3CF0      393    4765*
SPOPT1    0000 1972     1570*   4765
ST        0000 0A50      162     167*
STAACT    0000 3A5C     4624    4679*
STAMSG    0000 3A02      703    4665*
START     0000 0A66      167     177*
START1    0000 0A30      115     155*    172
START2    0000 0A46      118     165*    174
START3    0000 0A5E      119     172*
START4    0000 0A62      120     174*
STASET    0000 38E6     4524    4530    4536   4622*
STAT      0000 0007       63*    655    1548   1765   1804   1912   1913   1929   1930   1951   1952   1980   1981
                        2632   2633    2634   2653   2654   2655   2708   2728   2735   2802   2805   2810   2984
                        3302   3314    3315   3344   3345   3350   3351   3353   3375   3386   3396   3407   3418
                        3420   3435    3435   3448   3459   3470   3495   3496   3508   3509   3526   3527   3547
                        3632   3709    3716   3726   3749   3763   3793   3809   3818   3823   3830   4012   4013
                        4015   4042    4043   4044   4046   4056   4057   4059   4070   4071   4073   4112   4113
                        4115   4155    4156   4158   4285   4325   4334   4373   4374   4376   4378   4380   4572
                        4625
STATUS    0000 3A54     4581    4678*
STLRN     0000 1768     1455*   1545    1557   1798   2089   2194   2215   2239   2265   2294   2320   2349   2377
                        2520   2529    2606   2684   3031   3035   3217
STOP      0000 3D42     1926    1948    2062   2247   2272   2327   2466   2496   2717   2917   3209   3494   3521
                        3542   3666    3680   3690   3700   3717   3725   3771   3803   3812   3829   4050   4152
                        4292   4806*
STOP9     0000 2A0C     3057    3206*
TODEFMSG  0000 3B08     2829    4718*
T3.READ   0000 1E46     2026    2045    2056*
T5.1      0000 1FC4     2229*   2242
T5.2      0000 1FF8     2226    2238    2246*
T5.3      0000 2016     2255*   2268
T5.4      0000 204A     2252    2264    2269*
T5.5      0000 20A4     2279    2284    2289   2292   2300*
T5.R126   0000 1F7A     2205*   2218
T5.R126A  0000 1F76     2192    2198*
T5.R126B  0000 1F9E     2211    2214*
T5.R126C  0000 1FAE     2212    2219*
T5.R130   0000 20A8     2301*   2323
T5.R1301  0000 20CC     2309    2311*
T5.R130A  0000 20E6     2317    2319*
T5.R2RV1  0000 2154     2358*   2380
T5.R2RV2  0000 2178     2366    2368*
T5.R2RV3  0000 2192     2374    2376*
T5.R2RV5  0000 21A2     2362    2367    2372   2375   2381*
T5.W126   0000 1F4A     2185*   2197
T5.W126A  0000 1F66     2191    2195*
T5.W130   0000 2056     2275*   2297
T5.W1301  0000 207A     2285    2285*
T5.W130B  0000 2094     2291    2293*
T5.W2RV1  0000 20F6     2305    2310    2315   2318   2326*
T5.W2RV2  0000 2102     2350*   2352
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```
T5.W2RV3    0000 2126       2338    2340*
T5.W2RV4    0000 2140       2346    2348*
T5.W2RV5    0000 2150       2334    2339    2344    2347    2353*
T8.1        0000 25A8       2767    2772*
T8.11       0000 25B0       2773    2775*
T8.12       0000 25C4       2779    2781*
T8.2        0000 2652       2826    2833*   2837
T8.21       0000 2668       2840*   2845
T8.22       0000 2680       2842    2849*
T8.3        0000 268E       2835    2857*
T8.4        0000 2714       2908*   2916
T8.5        0000 276E       2936    2941*
T8.6        0000 27A2       2956    2960*
T8.61       0000 27AE       2964*   2971
T8.62       0000 27C4       2966    2973*
T8.MSG      0000 277E       2847    2921    2948*
T8CK1D      0000 25C8       2770    2777    2785*
T8CK1D0     0000 25CE       2788*   2891
T8CK1D1     0000 2616       2806    2810*
T8CK1D2     0000 2628       2811    2818*
T8F         0000 2520       2720    2722*
T8F1        0000 2544       2729    2734*
T8F2        0000 2526       2724*
T8FORMAT    0000 2522       2723*   2731
T8GT        0000 268A       2821    2872*
T8NX11      0000 26E4       2868    2888*
T8NXTLRN    0000 26DA       2884*
T9C         0000 2920       3111*   3115
T9CN1       0000 3CFC       3034    3055    4769*
T9D         0000 292E       3117*   3270
T9LOOP      0000 2874       3052*   3120
T9LOOP1     0000 2886       3058*   3096
TA.1        0000 2B96       3347*
TA.10       0000 2D4C       3467*
TA.2        0000 2BF0       3372*
TA.3        0000 2C18       3383*
TA.4        0000 2C3C       3393*
TA.5        0000 2C64       3404*
TA.6        0000 2C8C       3415*
TA.7        0000 2CC4       3430*
TA.8        0000 2CFC       3445*
TA.9        0000 2D24       3456*
TA1         0000 2B34       3320*   3330
TA2         0000 2B60       3327    3331*
TA3         0000 2D80       3329    3482*
TEMP        0000 3CC8        307     310     320     323     325    2562    2569    3038    3046    3048    3881    3894    4138
                            4139    4140    4141    4351    4356    4371    4373    4752*
TEMP1       0000 3CCC       1827    1838    2102    2129    4753*
TEMP2       0000 3CCE       3059    3063    3515    3530    3534    3549    4754*
TEST        0000 1738        292     391     428     430     449     450     465     471     507     510    1451*   1510    1523
TEST0       0000 1B42       1760*   4740
TEST01      0000 1B5C       1768*
TEST02      0000 1B6E       1774*
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```
TEST0END   0000 1882      1779   1780*
TEST1      0000 1886      1796*  4740
TEST11     0000 1BA8      1807*
TEST13     0000 1BE4      1824*  1862
TEST14     0000 1C50      1853   1855*
TEST15     0000 1C58      1857   1858*
TEST16     0000 1C20      1841*  1876   1879
TEST1A     0000 1892      1800*
TEST1END   0000 1CA4      1870   1881*
TEST2      0000 1CA8      1899*  4740
TEST21     0000 1CF0      1920*
TEST22     0000 1CF2      1922*  1938
TEST23     0000 1D28      1936   1939*
TEST24     0000 1D2A      1941*  1962   1967
TEST25     0000 1D7E      1965   1968*
TEST26     0000 1D70      1960   1963*
TEST27     0000 1D94      1969   1976*
TEST2END   0000 1D80      1983   1984*
TEST3      0000 1DB4      2011*  4740
TEST31     0000 1DD2      2015   2020*
TEST32     0000 1E06      2034   2037*
TEST33     0000 1DFA      2027   2033*
TEST34     0000 1E32      2044   2050*
TEST35     0000 1DF4      2030*  2036   2049
TEST3END   0000 1E5E      2055   2065*
TEST4      0000 1E62      2087*  4741
TEST42     0000 1E98      2105*  2110
TEST43     0000 1EC6      2118*  2122
TEST44     0000 1EF2      2133*  2141
TEST45     0000 1E8A      2101*  2151
TEST46     0000 1F1E      2145   2147*
TEST4A     0000 1E84      2094   2097*
TEST4B     0000 1E86      2096   2099*
TEST4END   0000 1F38      2154   2155*
TEST5      0000 1F3C      2177*  4741
TEST5END   0000 21A2      2382*
TEST6      0000 2328      2547*  4741
TEST61     0000 2332      2550*  2555
TEST63     0000 239E      2577   2580*  2586
TEST6END   0000 23B8      2588*
TEST7      0000 23BC      2604*  4741
TEST72     0000 24A4      2665   2670*
TEST73     0000 24B8      2668   2674   2677*
TEST74     0000 24B4      2672   2675*
TEST75     0000 24CC      2681   2683*
TEST7A     0000 23D8      2612*  2687
TEST7B     0000 23EC      2615   2618*
TEST7END   0000 24E0      2669   2682   2688   2689*
TEST8      0000 24E4      2703*  4742
TEST8END   0000 281C      2831   2959   2976   2979   3001*
TEST9      0000 2D20      3028*  4742
TEST9END   0000 2ABA      3056   3271*
TESTA      0000 2ABE      3287*  4742
```

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```
TESTA1     0000 2B1A    3308   3312*
TESTA11    0000 2ADA    3295*  3298
TESTA3     0000 2B88    3338   3342*
TESTA31    0000 2B!8    3338*  3341
TESTA4     0000 2D78    3479*
TESTA41    0000 2D98    3489*  3492
TESTA5     0000 2AEA    3295   3299*
TESTA51    0000 2B0A    3308*  3311
TESTA6     0000 2DA8    3489   3493*
TESTA8     0000 2DD6    3502   3506*
TESTA81    0000 2DC6    3502*  3505
TESTAEND   0000 2DE4    3511*
TESTB      0000 2E9A    3577*  4742
TESTBEND   0000 3114    3833*
TESTOP     0000 0D2E    392    425*
TESTS      0000 3C18    540    4740*
TIME       0000 0A1E    144*   790    1500
TIMER      0000 10DE    787*   793    1279   1764   1803   1868   2465   2495   2725   3529   3541   3544   4355
                        4571
TIMVAL     0000 17F8    1467*  1499   4282   4331
TIMXT      0000 10F6    795*   1281
TITLE      0000 3910    222    4641*
TOTAL      0000 1716    484    593    595    625    1440*
TOTERR     0000 1718    485    600    633    671    673    1441*
TOTMSG     0000 394A    622    4648*
TRACKNO    0000 3CD0    2791   2819   2903   2910   2912   2914   2919   3042   3078   3158   3164   3194   3199
                        3231   4755*  4756
TST1DEF    0000 1C86    1840   1871*
TSTBRK     0000 12CA    385    523    554    579    890    978*   1649   1860   2149   2186   2204   2276   2302
                        2331   2359   2662   3053   3297   3310   3340   3491   3504   3580
TSTBRK1    0000 1322    1000   1010*
TSTBRK11   0000 130E    1001*
TSTBRK2    0000 132A    997    1009   1013*
TSTBRK3    0000 1336    988    1005   1008   1016*
TSTBRK4    0000 1308    991    998*
TSTBRK5    0000 12F8    992*   996
TSTBRK6    0000 12E4    983    985*
TSTDU      0000 1344    575    617    664    849    909    926    1024*
TSTDU0     0000 1358    1030*  1046
TSTDU1     0000 136C    1028   1038*
TSTDU2     0000 138A    1040   1043   1048*  1053
TSTDU3     0000 1392    1026   1051*
TSTEND     0000 0E6C    546*   1780   1881   1984   2065   2155   2382   2588   2689   3001   3271   3511   3833
                        4575
TSTERR     0000 2E80    3377   3390   3398   3409   3450   3461   3559*
TSTMSG     0000 3934    524    4643*
TSTOP1     0000 0D46    426    433*
TSTOP2     0000 0D4E    436*   448
TSTOP3     0000 0D64    440    444*
TSTOP4     0000 0D6E    443    447*
TTY        0000 0ABC    185    202*
TTYDRV     0000 13E6    1080   1088*
TTYGET     0000 13BA    1070*
```

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```
UNARY       0000 10D0      441     445     /78*
UNARY1      0000 1002      779*    783
UPROTMSG    0000 398C      224    3334    3483    4653*
W.S1        0000 2182     2393*   2398
W.S2        0000 21C6     2399*
W.S3        0000 2260     2457*   2463
W1          0000 3282     3990    3997*
W11         0000 32CA     4018    4025*
WAIT.INT    0000 35DE     1974    2018    2031    4009    4023    4029    4064    4107    4125    4349*
WASDU       0000 1712      220     486     592     620     851     853     862     939    1438*
WASDU1      0000 1714      463     577     864    1439*
WLRN.       0000 3026     3968    3978    4086    4788*
WPROTMSG    0000 3974     3304    4651*
WR.SECT     0000 21A8     2389*
WRITE       0000 3D3D     2228    2454    3/97    4801*
WRT.SECT    0000 21A6     2188    2280    2387*
WRT.TRK     0000 347C     2233    4186*
WRTSCT1     0000 2236     2443*   2449
WRTSECT2    0000 222C     2335    2439*
WT1         0000 347E     4188*   4192
WT2         0000 3492     4194*   4204
WT3         0000 34A0     4199*   4202
XI1         0000 15A0     1258*   1263
XI16        0000 1556     1139    1228*
XI16A       0000 159E     1249    1257*
XI2         0000 15B0     1261    1264*
XI3         0000 15D2     1270    1278*
XI32        0000 1564     1116    1156    1234*
XI32A       0000 1580     1241    1245*
XI4         0000 15E8     1280    1282    1285*
XI5         0000 15EC     1284    1286*
XIERR       0000 15F0     1259    1265    1291*
XIEXIT      0000 15EE     1266    1287*
ZDEF        0000 3D20     2774    2780    2827    4785*
ZERO1       0000 141E     1110*   1111
ZERO2       0000 142E     1114*   1115
ZERO3       0000 143E     1118*   1119
ZERONE      0000 0016      411*   1458    1459    1464    1465
```