Publication Number B06-172R05

COMMON MAGNETIC TAPE
TEST PROGRAM

Consists of:

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June 1978

R04 PATCH INFORMATION (Issue 2)

1. There is an instruction missing from the DU interrupt check routine (ERROR 0335).

   Patch as follows:

ADDRESS	OLD HEX	NEW HEX
2244	C350	4300
2246	0001	3FF2
3FF2		C350
3FF4		0001
3FF6		4330
3FF8		1E90
3FFA		4300
3FFC		2248

2. Status from skip file interrupt is time dependent. This shows up on 75IPS, 800 BPI (ERROR 0307).

   Patch as follows:

ADDRESS	OLD HEX	NEW HEX
20C4	C350	4100
20C6	0092	3FE0
334C	C550	4100
334E	004C	3FE0
3FE0	-	260A
3FE2	-	C550
3FE4	-	0046
3FE6	-	0230
3FE8	-	C550
3FEA	-	004C
3FEC	-	0230
3FEE	-	4300
3FF0	-	20CA

Note: This patch is incorporated in object 06-172 R02.1 in Multimedia Packages.

R05 PATCH INFORMATION

A problem exists with EXEC on the Carousel 300 Console. The DC2/DC4 is not processed properly and the DU Test is not functioning. Until the program is formally revised, the program can be patched as follows:

Location	Old Hex	New Hex	
11F2		4200	NOP
12E6	0A11	0A10	
12EA	4800	4880	LH R8,

Note: This patch is incorporated in object 06-172R02.2 in Multimedia Packages.

COMMON MAGNETIC TAPE TEST PROGRAM DESCRIPTION

1. COMMON MAGNETIC TAPE TEST PROGRAM

1.1 Related Documents

Test Program Listing	06-172M96R02
Test Program Paper Tape	06-172M17R02
Magnetic Tape System Instruction Manuals	
9-Track, 800 bpi M46-470	29-503
9-Track, 1600 bpi M46-475	29-503
7-Track, 800 bpi M46-474	29-295
9-Track, 800 bpi M46-490	29-503
9-Track, 800/1600 bpi M46-494	29-503

1.2 Test Programs to be run prior to loading this test:

For 16-Bit Processor

Memory Test	06-003
Processor Test	06-106

For 32-Bit Processor

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

Other Test Programs

Common Teletype Basic Confidence Test	06-004
Common CRT Test	06-146
Common Line Printer Test	06-170
Common Current Loop Interface Test	06-184
Model-1100 CRT Test	06-217
Common Carousel 300 Test	06-183

2. PURPOSE OF TEST

The Magnetic Tape Test Program tests the function of the Magnetic Tape and its associated interface. Special tests and options are provided to enable measurement and isolation of a failure. This program also allows the testing of two devices at once.

2.1 Test 0

This test checks all data lines for correct data transfer with worst case data patterns. This test is mandatory.

2.2 Test 1

This test checks the ability of the device to write and read variable length records. The write-backspace-read feature is used with records varying in length from X'00'-X'01' to X'00'-X'FF'.

2.3 Test 2

This test checks the rewind and skip functions of the device.

2.4 Test 3

This test checks all device functions under device interrupt. Proper interrupt reception, interrupt queuing, and interrupt disarm and disable functions are all tested. Read only, write EOF continuous, and other options are provided. (See Appendix 6.)

2.5 Test 4

This test checks device overflow by write-long/read-short and write-short/read-long.

2.6 Test 5

This test checks the proper generation of Inter-Record Gaps. (Note that Prolonged repetition of this test may wear out the portion of the tape being used.)

2.7 Test 6

This test checks the Cylic Redundancy Check Character (CRC). This test applies to 9-Track 800 bpi magnetic tapes only.

2.8 Test 7

This is a user utility test which provides compatibility read only check, scope loop and data pattern selection. The user can select the number of bytes per record, number of records per file, and number of files. A WEOF option is provided to write EOF marks to the end of tape.

3. MINIMUM HARDWARE REQUIRED

3.1 Processor

Model 7/16 Basic or equivalent
Model 7/32 or equivalent

3.2 Minimum Memory

16K Bytes

3.3 Console Input Device (See Appendix 1)

Teletype or
CRT on PASLA/PALM or
Carousel 15, 35, 300

3.4 List Device (See Appendix 1)

Teletype
CRT on PASLA/PALM or
LINE PRINTER or
CAROUSEL 15, 35, 300

3.5 Paper Tape Reader

Teletype or
High Speed Paper Tape Reader or
CAROUSEL 35

3.6 Device Under Test

The following tape systems can be tested with this program:

9-Track, 800 bpi Magnetic Tape (M46-470) 45 IPS
9-Track, 1600 bpi Magnetic Tape (M46-475) 45 IPS
7-Track, 800 bpi Magnetic Tape (M46-474) 45 IPS
9-Track, 800 bpi Magnetic Tape (M46-490) 75 IPS
9-Track, 800/1600 bpi Magnetic Tape (M46-494) 75 IPS

4. REQUIREMENTS OF MACHINE UNDER TEST

This program assumes that the programs indicated in Section 1.2 have been run without detecting an error.

The magnetic tape must be mounted and the device placed 'ON-LINE'.

75 IPS must be on DMA Bus.
1600 bpi @ 75 IPS cannot be run on Model 7/16 in read-block/write-block mode.

Test 6 requires that the interface board be placed on an extender board. This allows hardware adjustments to be made to allow reading of CRC characters (see Section 6.1).

5. LOADING PROCEDURE

5.1 Test Tape Format

Absolute, non-zoned object tape (M17) with front end boot loader. The test program occupies approximately 16KB of memory.

5.2 Normal Loading Procedure

Manually enter the following X'50' sequence 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'
For TTY or CAROUSEL 35	X'78'	X'0294'
HSPTR	X'78'	X'0399'
HSPTR/P	X'78'	X'1399'

5.3 Multi Media Diagnostic Loading

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

5.4 Program Execution

Place the program tape in the paper tape reader. Execute at X'30'.

When the processor halts, observe the CHKSUM byte displayed on the console display register D1. If it is zero, loading is complete; otherwise, repeat the loading procedure.

Refer to Appendix 1 and set up the addresses for the console input device and the bit device.

Address memory location X'A00' for a 32-Bit Processor.
Address memory location X'A04' for a 16-Bit Processor.

Start program execution. The following title is output to the list device:

COMMON MAGNETIC TAPE TEST PROGRAM 06-172R02

6. OPERATING PROCEDURES

6.1 Normal Testing

To execute default tests, enter the following via the console device:

```
TEST (CR)
RUN (CR)
```

Tests 0,1,2,3,4,5 are executed.

If no failure is detected, the list device output will be as shown in Appendix 4, and the program returns to console mode after completion of Test 5. In the event of failures, refer to Section 6.3.

To interrupt and terminate a test, the user can either depress the BREAK key on the console device or take the device under test OFF-LINE. When either condition is detected, the test terminates and returns to console input mode. When the device under test is put off-line (DU), the message:

```
DEVICE OFF-LINE
DEV DDD STA SS
```

is printed. It is recommended that the tape be terminated properly; therefore, the DU type of test termination should not be used. During scope loop with Write (SCOPE=1,2 or 3), the DU termination method is not available.

If a failure abnormally terminates the program, the program can be restarted at location X'A04' for 16-Bit Processors or X'A00' for 32-Bit Processors.

6.2 Optional Testing

Normally, the tests write a data file of 256 records and each record contains 256 bytes (except for Test 2). The number of records per file can be altered with option RECFIL. In tests 2 and 7, more than one file can be generated by option FILE and option BYTES can be used to vary the number of bytes per record in Tests 3 and 7 (see Appendix 3). Inter-record gaps separate records and EOF marks separate files.

To select the mode of data transfer, option MODE must be specified. If MODE 0 is entered, both modes 1 and 2 (see Appendix 3) are run in Tests 0,1,3,4,and 7 with SCOPE 0. In all other tests, MODE 2 is used.

To test two devices at the same time, the user can enter the second device address by option DV2ADR. For single device testing, set DV2ADR to zero; otherwise, each selected test is executed twice, once on each device.

Each I/O device is assigned an interrupt level on the Model 8/32. This level must be entered via option INTLEV. The same level is used for the selector channel and both devices.

Test 6 checks CRC generation. It can be executed only if the magnetic tape system is an 800 bpi 9-track system. The device interface board should be placed on an extender board to enable hardware adjustment. To execute Test 6, set option CRC and options DEVICE and TRACK to the appropriate value. When a file is generated on the tape, the message:

```
ADD CRC CAPACITOR AND EXECUTE
```

is printed on the list device and the processor is halted. Add a 0.022 µf capacitor between test points 39 and 40 and a jumper between test points 35 and 38 so the CRC character can be read (Refer to 02-277D08 and 02-277E03). To continue the test, depress the RUN button (or EXE). The capacitor and jumper must be removed upon termination of the test; therefore, this test must be selected alone.

Besides setting option CONTIN (see Appendix 3), the selected tests can be continuously looped by turning the console device OFF-LINE. Since Tests 6 and 7 require console I/O, they must not be selected. Test 3 is executed under interrupts, and the user can specify individual operations to be tested through options WRITE, READ, BKSPAC, WEOF, and SKIP (see Appendix 3). The test processes only one file, but the user can specify record length and file length through options BYTES and RECFIL (See Appendix 3). If read only (See Appendix 6) is specified, the user must make sure that the file begins and ends with a file mark. If DU option is set, the message:

TURN DEVICE OFF-LINE MOMENTARILY

is printed. The device under test must be turned OFF-LINE within 60 seconds after the message, but must not remain OFF-LINE for over 30 seconds.

Test 7 provides user utility through options READ, WRITE, BKSPAC, and WEOF. The user can test individual operations (see Appendix 6). If the option DATA is set and the selected operation includes the write function, the message:

ENTER DATA:

is printed on the list device. The user can enter a string of up to 64 hexadecimal characters on the console input device. Use CR to terminate the string and continue execution. If the buffer is full or 64 hexadecimal characters have been accepted, the test automatically continues. If only CR is entered after the message, the test generated buffer (256 bytes of data incremental from X'00' to X'FF') is used. No more data is requested after the first pass if the test is looped.

The user can also specify the number of files to be processed, the file length and record length through options FILES, RECFIL, and BYTES (see Appendix 3). For the read only (see Appendix 6) operation the user must make sure that there is a leading file mark on the tape and each file is terminated by a file mark. Attempts must not be made to read more files than exist on the tape.

Test 7 also provides scope loop option through option SCOPE (see Appendix 3). Scope loops run continuously with no error check until EOT or termination by BREAK or DU.

SCOPE 1,2, and 3 involve write operations (see Appendix 3). In order to properly terminate the tape, the DU method of termination is not available. To terminate the tape before EOT is detected, BREAK must be depressed on the console device. In this case, the test terminates the tape with a file mark. (SCOPE 3 writes and backspaces over the same portion of the tape continuously).

SCOPE 4 performs "read only" continuously until EOT. If EOF is detected, the test pauses with the message:

EOF

If CR is depressed on the console device, the test terminates. If LF is depressed, the test continues reading until EOR or the next EOF. This procedure prevents reading beyond the last EOF on the tape. Reading a blank tape beyond the last EOF mark may cause the entire tape to run off the feeding reel.

SCOPE 5 performs skip EOF operation forward until EOT, and then skips reverse until BOT. It continues back and forth until terminated by BREAK or DU. It is recommended to fill the tape with EOF marks with the WEOF option, before performing this option.

6.3 Error Procedure

Error Recovery

If an error is encountered which is considered recoverable, the program logs an error message and retries 5 times. If it fails after 5 times, the message:

```
RECOVERY UNSUCCESSFUL
```

is printed and the test proceeds.

Error Messages

The three types of error messages logged are:

Status Error: The following message is printed:

```
ERROR XXYY
DEV DDD STA SS
```

where:
- XX = Test number
- YY = Error number
- DDD = Device number
- SS = Device status

Data Error: The following message is printed:

```
ERROR XXYY
DEV DDD
```

Spurious interrupt error :

```
ERROR XXFN
DEV DDD STA SS
PSW PPPP LOC LLLL
```

where
- XX = Test number
- N = 1 for arithmetic (32-bit) or fixed point arithmetic (16-bit) fault interrupt
  - 2 for illegal instruction interrupt
  - 3 for machine malfunction interrupt
  - 4 for spurious interrupt from external device
  - 5 for relocation/protection (32-bit) or floating point divide fault (16-bit) interrupt
  - 6 for device interrupt into wrong interrupt level

DDD & SS = interrupting device address and status received in case of 4 above
PPPP = current PSW when interrupt is sensed (least significant 16 bits for 32-bit M/C)
LLLL = current location when interrupt is sensed (least significant 16 bits for 32-bit M/C)

7. OTHER MESSAGES

MODE N
This message follows the error message for an error occurring during a data transfer.
N = mode number (see Appendix 3)

DATA WRITTEN AA DATA READ BB
This message is logged after data error #46. AA and BB are printed for each pair of unmatching data bytes.

CRC CHAR = AA
This message is printed in Test 6 after the first two CRC characters are read.

CRC CHAR EXPT'D = AA,READ = BB
This message is printed in Test 6 after error #48 is logged. AA and BB are the unmatching CRC characters.

DEVICE OFF-LINE
DEV DDD STA SS
This message is printed whenever DU status is detected on the device under test. (see Section 6.1)

EOT
This message is printed whenever the test is terminated upon detection of EOT.

EOF
This message is printed upon detection of an EOF mark during read only scope loop. (see Section 6.2)

TURN DEVICE OFF-LINE MOMENTARILY
(See Section 6.2)

ADD CRC CAPACITOR AND EXECUTE
(See Section 6.2)

ENTER DATA
(See Section 6.2)

8. Fault Isolation

For error 00, make sure that the device address is correct and the device interface is properly seated.

For NMTN errors (01 and 02), the device may be running away or stuck in an illegal mode. Initialize the device and restart the program.

Make certain that the tape used is good. If errors 10, 11, or 18 occur, change the tape and run test 0 with DUMP = 1.

If a data error occurs, observe the erroneous data bytes printed to establish a pattern of failure. Test 0 detects such data line failures.

If error 16 occurs, repeat Test 4 with DUMP = 1 and observe the data read. Failure can be in the read delay timing circuit.

For interrupt failures in Test 3, repeat Tests 0, 1, and 2. If no error occurs in Tests 0, 1, and 2, the failure is only in the interrupt generation circuit.

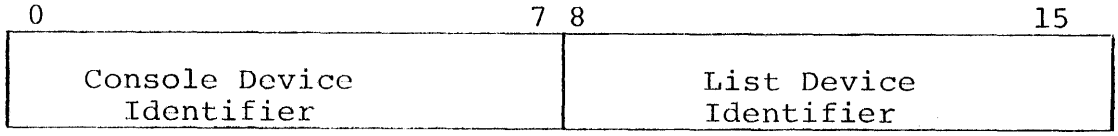
For other status errors, repeat the failing test with long files and records so each operation can be visually distinguished. Follow the program listing to determine exactly where the failure occurs.

The program puts a delimiter at the end of the read buffer before each read operation. Error 47 indicates the delimiter was destroyed by the read.

Scope loops can also be used to further isolate failures.

APPENDIX 1
USER DEVICE DEFINITION

The halfword labeled 'IO' (see the 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 setup is different 'IO' must be changed as follows:



Console Device Identifier	Meaning
X'01'	GDT/CRT on PASLA/PALM interface, strapped for FDX operation and highest baud rate.
X'02'	TTY/GDT/CRT/Carousel 15/30 on Current Loop Interface
X'03'	Reserved. Interpreted as X'02'.
X'04'	Carousel 300 on PASLA/PALM Interface, strapped for FDX operation and highest baud rate.
X'05'	Micro I/O Bus
X'00', 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 and highest baud rate.
X'02'	TTY/GDT/CRT/Carousel 15/30 on Current Loop Interface.
X'03'	Line Printer (Data Printer or Centronics) on Line Printer Interface.
X'04'	Carousel 300 on PASLA/PALM Interface, strapped for FDX operation and highest baud rate.
X'05'	Micro I/O Bus
X'00', X'06' -X'FF'	Reserved. Interpreted as X'02'.

1. 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 snd Transmit sides, respectively. If the addresses are different, then the halfword labeled 'PASLADR' (see the Program Listing) must be changed accordingly.

2. The Teletype or Current Loop Interface, if used, should be strapped for device address X'02'. If the address is different, the halfword labels 'CLIFADR' (see the Program Listing) must be changed accordingly.

3. 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 accordingly.

4. The Carousel 300, if used, should be strapped for device addresses X'10' and X'11', for Receive and Transmit sides respectively. If the addresses are different, the halfword labeled 'C300ADR' (see the Program Listing) must be changed accordingly.

5. The Micro I/O Bus, if used, should be strapped for device address X'C0'. If the address is different, the halfword labeled MICROBUS (see the Program Listing) must be changed accordingly.

APPENDIX 2
COMMAND/OPTION INPUT METHOD

An asterisk (*) is output to the console device to indicate that the program is waiting for user input. All option names must be typed in from the console followed by a space and the desired argument or arguments separated by commas. A carriage return (CR) must be typed to end every command/option input. An invalid command/option name or option value causes a question mark (?) followed by a carriage return (CR), line feed (LF), and an asterisk (*) to be output. If, during command/option entry, an error is made, it can be handled in two ways. The hash mark (#) can be typed to delete the entire line. This causes a carriage return (CR), line feed (LF), and an asterisk (*) to be output. 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.

APPENDIX 3
OPTIONS TABLE

OPTION	DEFAULT	TESTS	DESCRIPTION
BKSPAC	1	3,7	Selects backspace operation (See Note 3) 0 = no backspace 1 = perform backspace
BYTES	X'FF'	3,7	Number of bytes per record Minimum = 2 Maximum = X'400' (See Note 1)
COMPAR	1	3,7	Specifies data comparison 0 = no compare 1 = compare data
CONTIN	0	All	Enables the selected tests to be executed continuously until interrupted. 0 = normal execution 1 = continuous execution
CRC	0	6	Selects CRC check 0 = no CRC check 1 = perform CRC check
DATA	1	7	Specifies if external data pattern is to be requested. 0 = use program generated data pattern 1 = request for external data pattern
DEVADR	X'0085'	All	Specifies the physical device address of the device under test (must not be zero)
DEVICE	0	6	Selects 800 or 1600 bpi magnetic tape. 0 = 800 bpi drive 1 = 1600 bpi drive
DU	0	3	Tests DU interrupt 0 = no DU interrupt 1 = test DU interrupt
DUMP	0	0,1,3,4,7	Specifies read buffer dump 0 = no dump 1 = dump data buffer

OPTION	DEFAULT	TESTS	DESCRIPTION
DV2ADR	X'0000'	All	Specifies the physical and device address for the 2nd device to be tested. (Must be zero if only one device is under test).
FILES	1	1,7	Number of files to Write of Read Maximum = X'400' (See Note 1)
INTLEV	0	3	Specifies interrupt level of device (2) under test. The same level is assigned to both devices and SELCH.
IRG	X'10'	5	Number of times of read and back-space to be performed in gap-data check Maximum = X'FF' (See Note 1)
LOOP	0	All	Number of times the selected tests are to be repeated. Maximum = X'FFFF'.
MODE	2	All	Selects mode of operation 0 = selects both modes 1 = Read Block-Write Block 2 = SELCH mode Note: Mode 1 can not be used on the following tape drives: 1600 bpi, 45 IPS; 1600 bpi, 75 IPS; 800 bpi, 75 IPS.
NOMSG	0	All	Suppresses all messages except error messages. 0 = all messages 1 = only error messages
OPTION		All	Lists all option values selected. (See Note 2)
RDCRC	0	6	Specifies read CRC only 0 = Write and Read CRC 1 = Read CRC only
READ	1	3,7	Selects read operation 0 = no read 1 = perform read
RECFIL	X'100'	All	Number of records per file. Maximum = X'400' (See Note 1)

OPTION	DEFAULT	TESTS	DESCRIPTION
REPEAT	X'0003'	2	Number of skips to be performed. Maximum = X'FF' (See Note 1)
RSTART	0	All	Relocates the starting address of Read Buffer (See Note 4)
RUN		All	Starts Test.
SCOPE	0	7	Specifies scope loop 0 = no scope loop 1 = Write-Backspace-Read 2 = Write only 3 = Write-Backspace (avoid) 4 = Read only 5 = Skip
SELCH	X'00F0'	All	Specifies device address of selector channel.
SKIP	1	3	Selects skip operation (See Note 3) 0 = no skip 1 = perform skip
TEST	0,1,2,3,4,5	All	Selects test or tests to be executed (see Appendix 2)
TIMVAL	X'140'	All	Defines a 1 ms time for different models. Subroutine Init multiplies TIMVAL by 10 to obtain a basic delay time unit of 10 ms. X'D2' for 7/16 Basic, Model 74, or equivalent X'14D' for 7/16 HSALU (750 ns memory) X'134' for 7/16 HSALU (1000 ns memory) X'14A' for 6/16 MOS X'14D' for 8/16 (750 ns Memory) and equivalent X'134' for 6/16 (1000 ns Memory) and equivalent X'EB' for 7/32 (750 ns Memory) X'D2' for 7/32 (1000 ns Memory) X'DA' for 8/32 X'133' for Models 80, 85, and 60 X'C8' for Models 70, 50, and 55

OPTION	DEFAULT	TESTS	DESCRIPTION
TRACK	9	All	Defines number of tracks for the device. 7 = seven track drive 9 = nine track drive
WEOF	0	3,7	Write EOF mark continuously until EOT (See Note 3) 0 = Write/Read records 1 = Write EOF only
WRITE	1	3,7	Selects write operation (See Note 3) 0 = no write 1 = perform write
WSTART	0	All	Relocates the starting address of Write Buffer (See Note 4)

NOTES

1. Minimum is 1. If 0 is entered, it is defaulted to 1.

2. When the list device is the CRT, a page of 20 options is listed at a time. At the end of each full page, the LF key must be depressed to continue listing the next page. If CR is depressed, the listing is terminated. The BREAK key is used to stop listing on any device.

3. Also see Appendix 6.

4. If not entered, the Read buffer and Write buffer are defaulted to values within test program memory.

   If RSTART or WSTART is entered, the relocated buffer is guarded against being located in the test program. If the user attempts to relocate the Read or Write buffers in the test program, one of the following error messages is printed:

   ERROR: READ BUFFER IN TEST MEMORY
   or

   ERROR: WRITE BUFFER IN TEST MEMORY

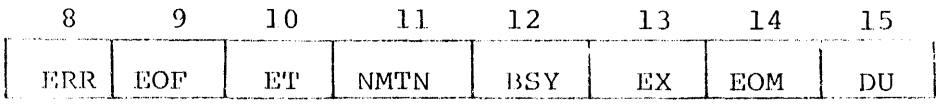
   If the Read or Write buffers are relocated so that they overlap, an error message is printed as follows:

   ERROR: READ BUFFER IN WRITE BUFFER

APPENDIX 4
Expected Result Table

	Approx. Time to run on a 7/16 BASIC with Default Options using a 45 IPS/800BPI MAG TAPE UNIT.
*TEST	
*RUN	
TEST 00	
NO ERROR	4.5 min.
TEST 01	
NO ERROR	0.75 min.
TEST 02	
NO ERROR	1.25 min.
TEST 03	
NO ERROR	1.75 min.
TEST 04	
NO ERROR	1.75 min.
TEST 05	
NO ERROR	0.25 min.
END OF TEST	

APPENDIX 5



STATUS BYTE OF MAGNETIC TAPE CONTROLLER

ERROR TABLE

ERROR NUMBER	TEST APPLICABLE	DESCRIPTION
00	All	SELCH (ESELCH) or Magnetic Tape Drive device address does not return SYNC.
01	All	NMTN bit does not set within given time limit.
02	All	NMTN bit does not set after a REWIND operation.
04	All	EOM bit does not set within given time limit.
05	All	EOF bit does not set or EX and ERR bits set after a WRITE-END-OF-FILE-MARK operation.
06	0,2,6	EOF bit does not set or EX and ERR bits set after a READ operation.
07	0,2,3,5	EOF bit does not set or EX and ERR bits set after a skip and backspace operation.
08	0,1,2,3,4,5,7	EX bit sets after a BACKSPACE-RECORD operation.
09	2,3	ET bit does not set after completing REWIND operation.
10	All	EX bit sets after a WRITE-RECORD operation.
11	All	EX bit sets after a READ-RECORD operation.
12	0,1,2,4,5,6,7	DU, EX, BSY, EOM bit(s) set after a READ-BLOCK COMMAND (WB or WBR).
13	0,1,2,4,5,6,7	DU, EX, BSY, EOM bit(s) set after a READ-BLOCK COMMAND (RB or RBR).
14	0,1,2,4,5,6,7	Terminating address of data transfer through SELCH (ESELCH) is not equal to the expected value (WRITE Mode).

ERROR NUMBER	TEST APPLICABLE	DESCRIPTION
15	0,1,2,4,5,6,7	Terminating address of data transfer through SELCH (ESELCH) is not equal to the expected value (READ Mode).
16	4	No error is detected when reading a written record with inaccurate record size.
17	4	ERR bit does not set after read of only part of a written record.
18	4	ERR bit does not set after reading a written record of over-size record length.
19	5	Tape does not stop at expected position after a BACKSPACE-RECORD operation.
20	3	No interrupt generated after a REWIND operation.
21	3	No interrupt generated after a WRITE-END-OF-FILE-MARK operation.
22	3	No interrupt generated when EOM and NMTN bits set.
23	3	No interrupt generated when NMTN bit sets after a WRITE-END-OF-FILE-MARK operation.
24	3	No interrupt generated after a BACKSPACE-FILE operation.
25	3	No interrupt generated after a BACKSPACE-RECORD operation.
26	3	No interrupt generated after a WRITE-BLOCK operation (WB or WBR).
27	3	No interrupt generated after a READ-BLOCK operation (RB or RBR).
28	3	No interrupt generated after data transfer through SELCH (ESELCH) terminates, in write mode.
29	3	No interrupt generated after data transfer through SELCH (ESELCH) terminates, in read mode.

ERROR NUMBER	TEST APPLICABLE	DESCRIPTION
30	3	No interrupt generated after SKIP-FILE-FORWARD operation.
31	3	No interrupt generated after SKIP-FILE-REVERSE operation.
32	3	No interrupt generated when tape drive is turned OFF-LINE.
33	3	DU bit does not set after tape drive is turned OFF-LINE.
34	3	No interrupt generated when tape drive is turned ON-LINE.
35	3	DU bit does not reset after tape drive is turned ON-LINE.
37	3	Interrupt cannot be queued while NMTN bit changes from 0 to 1 with magnetic tape drive interrupt enable and PSW changes from '70F0' to '30F0'.
38	3	Interrupt generated after issuing DISARM command to magnetic tape drive.
39	3	Interrupt generated after issuing DISABLE command to magnetic tape drive.
46	0,1,2,3,4,5,7	Read buffer does not match with write buffer.
47	0,1,2,3,4,5,7	Delimiter between read and write buffer is not equal to expected value.
48	6	CRC parity check error.
50	All	Write protect sets.
51	6	CRC checkword of zero expected.

APPENDIX 6
Optional Testing Table

TEST 3

FUNCTIONS / OPTIONS	WRITE EOF CONTINUOUS	WRITE ONLY	READ ONLY	WRITE BACKSPACE	WRITE BACKSPACE READ	WRITE REWIND READ	WRITE SKIP	READ SKIP	WRITE BACKSPACE SKIP	WRITE BACKSPACE READ SKIP	WRITE REWIND READ SKIP
WRITE	X	X	0	X	1	1	X	0	X	1	1
READ	X	0	1	0	1	1	0	1	0	1	1
WEOF	1	0	X	0	0	0	0	X	0	0	0
BKSPAC	X	0	X	1	1	0	0	X	1	1	0
SKIP	X	0	0	0	0	0	1	1	1	1	1

TEST 7

FUNCTIONS / OPTIONS	WRITE EOF * CONTINUOUS	WRITE ONLY	READ ONLY	WRITE BACKSPACE	WRITE BACKSPACE READ	WRITE SKIP REVERSE READ
WRITE	X	X	0	X	1	1
READ	X	0	1	0	1	1
WEOF	1	0	X	0	0	0
BKSPAC	X	0	X	1	1	0

* No error check for write EOF continuous in Test 7 (Scope check)

To obtain the desired function, each option specified on the left must be set to the value shown in the function column (note that an 'X' indicates that the option may be either '0' or '1').

PROG= CMT172 ASSEMBLED BY CAL 03-066R05-00 (32-BIT)

```
 1  CMT172   PROG  COMMON MAGNETIC TAPE TEST PROGRAM  06-172R02          CMT00010
 2           SCRAT                                                       CMT00020
 3           WIDTH 120                                                   CMT00030
 4           CROSS                                                       CMT00040
 5           NLSTC                                                       CMT00050
 6           ERLST                                                       CMT00060
 7  *                                                                    CMT00070
 8  *                                                                    CMT00080
 9  * ************************************************************       CMT00090
10  *        COPYRIGHT INTERDATA, INC. AUGUST 1977                *      CMT00100
11  *                                                             *      CMT00110
12  *        COMMON MAGNETIC TEST PROGRAM 06-172R02               *      CMT00120
13  *                                                             *      CMT00130
14  *        PROGRAM USES THE COMMON INSTRUCTION SET              *      CMT00140
15  *                                                             *      CMT00150
16  *        THIS PROGRAM TESTS THE MAGNETIC TAPE SYSTEM, AND THE *      CMT00160
17  *        ASSOCIATED INTERFACES                                *      CMT00170
18  *        THE PROGRAM CONSISTS OF 8 TESTS, WITH TEST 7 BEING   *      CMT00180
19  *        THE UTILITY TEST PROVIDING SCOPE LOOP.               *      CMT00190
20  *        THERE ARE 29 OPTIONS AVAILABLE TO THE USER AND 51    *      CMT00200
21  *        ERROR MESSAGES TO ENABLE ISOLATION OF A MALFUNCTION  *      CMT00210
22  *        TO THE HARDWARE LEVEL. ERROR RECOVERY IS PROVIDED    *      CMT00220
23  *        FOR CERTAIN DATA TRANSFER ERRORS.                    *      CMT00230
24  *                                                             *      CMT00240
25  *        THE PROGRAM REQUIRES EITHER 7/16 BASIC OR EQUIVALENT *      CMT00250
26  *        PROCESSOR, OR 7/32 OR EQUIVALENT PROCESSOP WITH 16K  *      CMT00260
27  *        BYTES OF MEMORY. OPTIONS AND RUN COMMAND ARE TO BE   *      CMT00270
28  *        ENTERED VIA A CONSOLE DEVICE. EITHER ONE OR TWO      *      CMT00280
29  *        DEVICES CAN BE TESTED AT THE SAME TIME.              *      CMT00290
30  *                                                             *      CMT00300
31  *        THE 06-172M17 TAPE IS AN ABSOLUTE TAPE WITH A FRONT- *      CMT00310
32  *        END BOOT LOADER                                      *      CMT00320
33  *                                                             *      CMT00330
34  *        TEST 0                                               *      CMT00340
35  *        TESTS ALL DATA LINES FOR CORRECT DATA TRANSFER WITH  *      CMT00350
36  *        WORST CASE DATA PATTERNS. THIS TEST IS MANDATORY,    *      CMT00360
37  *        AND IS EXECUTED AT LEAST ONCE.                       *      CMT00370
38  *                                                             *      CMT00380
39  *        TEST 1                                               *      CMT00390
40  *        TESTS THE ABILITY OF THE DEVICE TO WRITE AND READ    *      CMT00400
41  *        VARIABLE LENGTH RECORDS.                             *      CMT00410
42  *                                                             *      CMT00420
43  *        TEST 2                                               *      CMT00430
44  *        TESTS THE REWIND AND SKIP FUNCTION OF THE DEVICE     *      CMT00440
45  *                                                             *      CMT00450
46  *        TEST 3                                               *      CMT00460
47  *        TESTS ALL DEVICE FUNCTIONS UNDER DEVICE INTERRUPT.   *      CMT00470
48  *        PROPER INTERRUPT RECEPTION, INTERRUPT QUEUING AND    *      CMT00480
49  *        INTERRUPT DISARM & DISABLE FUNCTIONS ARE ALL CHECKED.*      CMT00490
50  *                                                             *      CMT00500
51  *        TEST 4                                               *      CMT00510
52  *        THIS TEST IS DESIGNED TO TEST DEVICE OVERFLOW BY     *      CMT00520
53  *        WRITE-LONG READ-SHORT AND WRITE SHORT READ LONG      *      CMT00530
```

```
                                54  *                                                                     *        CMT00540
                                55  *       TEST 5                                                        *        CMT00550
                                56  *       THIS TEST CHECKS THE PROPER GENERATION OF INTER-RECORD         *        CMT00560
                                57  *       GAPS. (NOTE: PROLONGED REPETITION OF THIS TEST MAY            *        CMT00570
                                58  *       WEAR THE FRONT PORTION OF THE TAPE.)                          *        CMT00580
                                59  *                                                                     *        CMT00590
                                60  *       TEST 6                                                        *        CMT00600
                                61  *       THIS TEST CHECKS THE CYCLIC REDUNDUNCY CHECK (CRC)            *        CMT00610
                                62  *       CHARACTER.                                                    *        CMT00620
                                63  *                                                                     *        CMT00630
                                64  *       TEST 7                                                        *        CMT00640
                                65  *       THIS IS A USER UTILITY TEST, PROVIDING COMPATIBILITY          *        CMT00650
                                66  *       READ ONLY CHECK, SCOPE LOOP AND DATA PATTERN                  *        CMT00660
                                67  *       SELECTION. THE USER CAN SELECT NUMBER OF BYTES PER            *        CMT00670
                                68  *       RECORD, NUMBER OF RECORDS PER FILE AND NUMBER OF              *        CMT00680
                                69  *       FILES A WEOF OPTION IS PROVIDED TO WRITE EOF MARKS            *        CMT00690
                                70  *       TO THE END OF TAPE.                                           *        CMT00700
                                71  *                                                                     *        CMT00710
                                72  *       ANY COMBINATION OF THIS TESTS CAN BE SELECTED AS A            *        CMT00720
                                73  *       STRING AND CAN BE LOOPED OR RUN CONTINUOUSLY.                 *        CMT00730
                                74  * ********************************************************************        CMT00740
                                75  *                                                                     *        CMT00750
                                76  *                                                                              CMT00760
0000 0000                       77  R0      EQU   0                                                              CMT00770
0000 0001                       78  R1      EQU   1                                                              CMT00780
0000 0002                       79  R2      EQU   2                                                              CMT00790
0000 0003                       80  R3      EQU   3                                                              CMT00800
0000 0004                       81  R4      EQU   4                                                              CMT00810
0000 0005                       82  R5      EQU   5                                                              CMT00820
0000 0006                       83  R6      EQU   6                                                              CMT00830
0000 0007                       84  R7      EQU   7                                                              CMT00840
0000 0008                       85  R8      EQU   8                                                              CMT00850
0000 0009                       86  R9      EQU   9                                                              CMT00860
0000 000A                       87  R10     EQU   10                                                             CMT00870
0000 000B                       88  R11     EQU   11                                                             CMT00880
0000 000C                       89  R12     EQU   12                                                             CMT00890
0000 000D                       90  R13     EQU   13                                                             CMT00900
0000 000E                       91  R14     EQU   14                                                             CMT00910
0000 000E                       92  RET     EQU   14                                                             CMT00920
0000 000F                       93  R15     EQU   15                                                             CMT00930
0000 000F                       94  LINK    EQU   15                                                             CMT00940
0000 0004                       95  CHAR    EQU   4                 .                             **     CMT00950
0000 0005                       96  STAT    EQU   5                 .                             **     CMT00960
0000 0006                       97  DEV     EQU   6                 .                             **     CMT00970
0000 0007                       98  SELCH   EQU   7                 .                             **     CMT00980
                                99  *                                                                    CMT00990
                               100  *  BOOTLOADER WITH CHKSUM                                            CMT01000
                               101  *                                                                    CMT01010
0000R                          102          ORG   X'80'                                                   CMT01020
0080   2421                    103          LIS   R2,1                                                    CMT01030
0082   2303                    104          BS    BOOT                                                    CMT01040
0084   35A0                    105          DC    Z(PSWSAVE)        CURRENT PSW SAVE POINTER(32-BIT M/C)  CMT01050
0086   3E60                    106          DC    Z(RSAVE)          REGISTER SAVE POINTER(32-BIT M/C)     CMT01060
0088   C810 0A00               107  BOOT    LHI   R1,ORIGIN1        R1 = ADR( FIRST BYTE OF TEST PROG )   CMT01070
008C   C830 35CA               108          LHI   R3,LNZB+1         R3 = ADR( LAST NON-ZERO BYTE + 1 )    CMT01080
```

```
0090  403C 0022          109          STH   R3,X'22'      REGISTER SAVE POINTER (16-BIT M/C)      CMT01090
0094  2731               110          SIS   R3,1          R3 = ADR( LAST NON-ZERO BYTE )          CMT01100
0096  C860 0037          111  MN      LHI   R6,X'37'      R6 = CHKSUM BYTE = X'MN'                CMT01110
009A  0340 0078          112          LB    R4,X'78'      INPUT DEV ADR                           CMT01120
009E  0E40 0079          113          OC    R4,X'79'                                              CMT01130
00A2  9D45               114  LEADER  SSR   R4,R5                                                 CMT01140
00A4  2091               115          BTBS  9,1           DU,BSY                                  CMT01150
00A6  9B45               116          RDR   R4,R5                                                 CMT01160
00A8  0855               117          LDAR  R5,R5                                                 CMT01170
00AA  2234               118          BZS   LEADER        IGNORE LEADER                           CMT01180
00AC  D251 0000          119  LOAD    STB   R5,0(R1)      STORE 1ST NON-ZERO & SUBSEQUENT BYTE    CMT01190
00B0  D351 0000          120          LB    R5,0(R1)      RELOAD DATA BYTE TO                     CMT01200
00B4  0765               121          XAR   R6,R5         GENERATE CHKSUM                         CMT01210
00B6  9481               122          EXBR  R8,R1                                                 CMT01220
00B8  9828               123          WHR   R2,R8         DISPLAY MEMORY ADDRESS                  CMT01230
00BA  9D45               124          SSR   R4,R5                                                 CMT01240
00BC  2091               125          BTBS  9,1           DU,BSY                                  CMT01250
00BE  9B45               126          RDR   R4,R5                                                 CMT01260
00C0  C110 00AC          127          BXLE  R1,LOAD       LOAD TILL LAST BYTE                     CMT01270
00C4  9486               128          EXBR  R8,R6                                                 CMT01280
00C6  9828               129          WHR   R2,R8         FINAL CHKSUM                            CMT01290
00C8  2478               130  LOWT    LIS   R7,8                                                  CMT01300
00CA  917C               131          SLLS  R7,12         R7 = X'8000'                            CMT01310
00CC  9557               132          EPSR  R5,R7         HALT PROCESSOR.                         CMT01320
00CE  2203               133          BS    LOWT                                                  CMT01330
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```
0000                    135           ORG   X'A00'                                        CMT01350
0A00  4300 0A30         136  ORIGIN1  B     START1          START HERE FOR 32-BIT PROCESSOR CMT01360
      0000 0A04         137  ORIGIN2  EQU   *                                             CMT01370
0A04                    138           IFZ   ADC-2                                         CMT01380
0A04  4300 0A46         139           B     START2          START HERE FOR 16-BIT PROCESSOR CMT01390
0A08  4300 0A5E         140  ORIGIN3  B     START3          SPECIAL 32-BIT PROCESSOR START  CMT01400
0A0C  4300 0A62         141  ORIGIN4  B     START4                                        CMT01410
                        142           ELSE                                                CMT01420
                        146           ENDC                                                CMT01460
                        147  *                                                            CMT01470
                        148  *-----------------------------                              CMT01480
                        149  *   TEST CONSTANTS                          *               CMT01490
                        150  *                                                            CMT01500
0A10  0202              151  IO       DC    X'0202'         I/O DEVICE(S) IDENTIFIER      CMT01510
0A12  1011              152  PASLADR  DC    X'1011'         PASLA/PALM READ/WRITE ADDRESSES CMT01520
0A14  0202              153  CLIFADR  DC    X'0202'         CURRENT LOOP INTERFACE R/W ADDRESSES CMT01530
0A16  6262              154  LPADR    DC    X'6262'         LINE PRINTER ADDRESS          CMT01540
0A18  1011              155  C300ADR  DC    X'1011'         CAROUSEL 300/PASLA ADDRESSES  CMT01550
0A1A  C0C0              156  MICROBUS DC    X'C0C0'         MICROBUS ADDRESS              CMT01560
0A1C  0000              157           DCX   0               PROVISION FOR SPECIAL DEVICE  CMT01570
                        158  *                                                            CMT01580
                        159  * IO =   0101  FOR CRT ON PASLA                             CMT01590
                        160  *        0202  FOR TELETYPE, CAROUSEL 15/30                  CMT01600
                        161  *        XX03  FOR LINE PRINTER                              CMT01610
                        162  *        0404  FOR CAROUSEL 300                              CMT01620
                        163  *        0505  FOR MICROBUS                                  CMT01630
                        164  *                                                            CMT01640
0A1E  0140              165  TIME     DC    X'140'          CONSTANT FOR 1 MS DELAY(X'C8'-MOD70) CMT01650
0A20  0000              166           DCX   0               RESERVED                      CMT01660
0A22  70F0              167  PSW      DCX   70F0            PSW USED IN PROGRAM           CMT01670
0A24  30F0              168  PSW2     DCX   30F0            PSW USED IN EXEC              CMT01680
0A26  0000              169           DCX   0               RESERVED                      CMT01690
0A28  0000              170           DCX   0               RESERVED                      CMT01700
0A2A  0000              171           DCX   0               RESERVED                      CMT01710
0A2C  0000              172           DCX   0               RESERVED                      CMT01720
0A2E  0000              173           DCX   0               RESERVED                      CMT01730
                        174  *-----------------------------                              CMT01740
                        175  *                                                            CMT01750
0A30  0711              176  START1   XAR   R1,R1                                        CMT01760
0A32  4010 0030         177           STH   R1,X'30'        DISABLE INT AT PROCESSOR LEVEL CMT01770
0A36  4820 0A24         178           LH    R2,PSW2                                       CMT01780
0A3A  4020 0032         179           STH   R2,X'32'        SELECT REG SET 15             CMT01790
0A3E                    180           IFZ   ADC-2                                         CMT01800
0A3E  2521              181           LCS   R2,1                                          CMT01810
0A40  4020 166C         182           STH   R2,MOD32        SET MODEL 32 PROCESSOR FLAG   CMT01820
0A44  2306              183           RS    ST                                            CMT01830
0A46  0711              184  START2   XAR   R1,R1                                        CMT01840
0A48  4010 166C         185           STH   R1,MOD32        RESET MOD 32 PROCESSOR FLAG   CMT01850
0A4C  4810 0A24         186           LH    R1,PSW2                                       CMT01860
                        187           ENDC                                                CMT01870
0A50  C820 0A66         188  ST       LHI   R2,START                                      CMT01880
0A54  4010 0034         189           STH   R1,X'34'                                      CMT01890
0A58  4020 0036         190           STH   R2,X'36'        II INT NEW PSW LOC            CMT01900
```

```
0A5C  0000            191           DCX   0              TAKE AN ILLEGAL INSTRUCTION INT     CMT01910
                      192  *                                                                   CMT01920
0A5E  4300 0A30       193  START3   B     START1         INSERT SPECIAL ROUTINE HERE         CMT01930
0A62                  194           IFZ   ADC-2                                               CMT01940
0A62  4300 0A46       195  START4   B     START2         INSERT SPECIAL ROUTINE HERE         CMT01950
                      196           ENDC                                                      CMT01960
                      197  *                                                                   CMT01970
0A66  0310 0A10       198  START    LB    R1,IO          GET I/O IDENTIFIERS                 CMT01980
0A6A  0320 0A11       199           LB    R2,IO+1                                            CMT01990
0A6E  2436            200           LIS   R3,6           IDENTIFIER CAN BE 1,2,3,4,5         CMT02000
0A70  0513            201           CLHR  R1,R3                                              CMT02010
0A72  2182            202           BLS   IO.OK1         BRANCH IF KB IDENTIFIER OK          CMT02020
0A74  2412            203           LIS   R1,2           OTHERWISE FORCE IT TO BE TTY        CMT02030
0A76  0523            204  IO.OK1   CLHR  R2,R3                                             CMT02040
0A78  2182            205           BLS   IO.OK2         SAME TEST FOR LIST DEVICE           CMT02050
0A7A  2422            206           LIS   R2,2                                             CMT02060
0A7C  D210 0A10       207  IO.OK2   STB   R1,IO          REESTABLISH VALUES                  CMT02070
0A80  D220 0A11       208           STB   R2,IO+1                                          CMT02080
0A84  D362 169C       209           LB    R6,CONRQ2S(R2)                                   CMT02090
0A88  4060 1680       210           STH   R6,PASFLG2     SET PASLA FLAG (LIST DEVICE)        CMT02100
0A8C  0866            211           LDAR  R6,R6                                            CMT02110
0A8E  2336            212           BZS   IO.OK3         SKIP IF NOT PASLA                   CMT02120
0A90  9121            213           SLHLS R2,1                                             CMT02130
0A92  D302 0A11       214           LB    R0,IO+1(R2)                                      CMT02140
0A96  DE02 1690       215           OC    R0,CON2ND(R2)  ISSUE 2ND COMMAND (LIST DEVICE)     CMT02150
                      216  *                                                                 CMT02160
0A9A  41F0 1304       217  IO.OK3   BAL   LINK,SETKB     ESTABLISH KEYBOARD DEVICE           CMT02170
0A9E  9310            218           LBR   R1,R0          (R1) = 1,2,4,5                      CMT02180
0AA0  9111            219           SLHLS R1,1           (R1) = 2,4,6,A                      CMT02190
0AA2  4831 0A10       220           LH    R3,IO(R1)                                          CMT02200
0AA6  4030 1682       221           STH   R3,CONADR      SET UP CONSOLE DEVICE ADDRESS       CMT02210
0AAA  4821 1684       222           LH    R2,CONRD(R1)                                       CMT02220
0AAE  4020 1684       223           STH   R2,CONRD       SET UP R/W COMMANDS                 CMT02230
0AB2  4821 1690       224           LH    R2,CON2ND(R1)                                      CMT02240
0AB6  4020 1690       225           STH   R2,CON2ND      2ND CMD: ENABLE READ CMD            CMT02250
0ABA  9011            226           SRHLS R1,1                                             CMT02260
0ABC  D341 169C       227           LB    R4,CONRQ2S(R1)                                   CMT02270
0AC0  D240 169C       228           STB   R4,CONRQ2S     CONSOLE REQUEST TO SEND             CMT02280
0AC4  4040 167E       229           STH   R4,PASFLG      SET PASLA FLAG (CONSOLE)            CMT02290
0AC8  0844            230           LDAR  R4,R4                                            CMT02300
0ACA  2333            231           BFFS  3,3            SKIP IF NOT PASLA                   CMT02310
0ACC  9422            232           EXBR  R2,R2                                            CMT02320
0ACE  9E32            233           OCR   R3,R2          ISSUE 2ND COMMAND (CONSOLE)         CMT02330
                      234  *                                                                 CMT02340
0AD0  41F0 1360       235           BAL   LINK,LCORE     SET UP LOW CORE                     CMT02350
0AD4  2400            236           LIS   R0,0                                             CMT02360
0AD6  4000 16AC       237           STH   R0,WASDU       RESET 'DEVICE UNAVAILABLE' FLAG     CMT02370
0ADA  41F0 11AC       238           BAL   LINK,CRLF                                        CMT02380
0ADE  C850 1914       239           LHI   R5,TITLE                                         CMT02390
0AE2  41F0 1128       240           BAL   R15,PRINT      PRINT TEST PROGRAM TITLE            CMT02400
                      241  *-----------------------------                                   CMT02410
                      242  *  KEYBOARD INPUT ROUTINE                                        CMT02420
                      243  *                                                                 CMT02430
```

```
                0000 0AE6          244  OPTIN    EQU   *                                                    CMT02440
0AE6            41F0 11AC          245           BAL   LINK,CRLF          CR,LF TO LIST DEVICE              CMT02450
                0000 0AEA          246  OPTIN1   EQU   *                                                    CMT02460
0AEA            4820 0A24          247           LH    R2,PSW2                                              CMT02470
0AEE            9512               248           EPSR  R1,R2              NO INT. REG SET 15                CMT02480
0AF0            41F0 1304          249           BAL   LINK,SETKB         ESTABLISH CONSOLE                 CMT02490
0AF4            0340 175C          250           LB    R4,AMSG            OUTPUT AN * TO INDICATE           CMT02500
0AF8            41F0 11BA          251           BAL   LINK,OUTCHR        COMMAND MODE ESTABLISHED          CMT02510
0AFC            2541               252           LCS   R4,1               X'FF'                             CMT02520
0AFE            41F0 11BA          253           BAL   LINK,OUTCHR                                          CMT02530
0B02            C8C0 125A          254           LHI   R12,QUESTN         SET UP R12 FOR ERR ROUTINE        CMT02540
0B06            C800 2020          255           LHI   R0,X'2020'         BLANK OUT COMMAND BUFFER          CMT02550
0B0A            4000 3DD0          256           STH   R0,OPTBUF          WHICH WILL CONTAIN OPTION         CMT02560
0B0E            4000 3DD2          257           STH   R0,OPTBUF+2        NAME                              CMT02570
0B12            4000 3DD4          258           STH   R0,OPTBUF+4                                          CMT02580
0B16            0711               259           XAR   R1,R1              CLEAR OPTBUF INDEX                CMT02590
0B18            41F0 1226          260  RDCHR    BAL   R15,GETCHR         GET A CHAR IN R4                  CMT02600
0B1C            C540 0060          261           CLHI  R4,X'60'           UPPER CASE ALPHA ?                CMT02610
0B20            2183               262           BLS   RDCHAR0            BRANCH IF NO.                     CMT02620
0B22            CB40 0020          263           SHI   R4,X'20'           CONVERT TO LOWER CASE             CMT02630
0B26            C540 0023          264  RDCHAR0  CLHI  R4,X'23'           IS IT # ?                         CMT02640
0B2A            4330 0AE6          265           BE    OPTIN                                                CMT02650
0B2E            C540 005F          266           CLHI  R4,X'5F'           LEFT ARROW, UNDERLINE OR DELETE ? CMT02660
0B32            2139               267           BNES  RDCHR1                                               CMT02670
0B34            2711               268           SIS   R1,1               YES, DECREMENT INDEX              CMT02680
0B36            021C               269           BMR   R12                BUFFER UNDERFLOW; PRINT '?'       CMT02690
0B38            C800 0020          270           LHI   R0,X'20'                                             CMT02700
0B3C            D201 3DD0          271           STB   R0,OPTBUF(R1)                                        CMT02710
0B40            4300 0B18          272           B     RDCHR                                                CMT02720
0B44            C540 000D          273  RDCHR1   CLHI  R4,X'0D'           IS IT CR ?                        CMT02730
0B48            233C               274           BES   LOOKUP             YES, TRY MATCH                    CMT02740
0B4A            C540 0020          275           CLHI  R4,X'20'           IS IT A BLANK?                    CMT02750
0B4E            2339               276           BES   LOOKUP             YES, TRY MATCH                    CMT02760
0B50            C510 0006          277           CLHI  R1,6               7 CHARACTERS INPUT ?              CMT02770
0B54            038C               278           BNLR  R12                IF YES, ERROR                     CMT02780
0B56            D241 3DD0          279           STB   R4,OPTBUF(R1)      STORE CURRENT BYTE                CMT02790
0B5A            2611               280           AIS   R1,1               BUMP BUFFER INDEX                 CMT02800
0B5C            4300 0B18          281           B     RDCHR              READ NEXT CHARACTER               CMT02810
                                   282  *---------------------------------                                  CMT02820
                                   283  *  OPTION MATCH ROUTINE                                            CMT02830
                                   284  *                                                                   CMT02840
0B60            C810 175E          285  LOOKUP   LHI   R1,OPT             LOAD ADDRESS OF OPTION TABLE      CMT02850
0B64            0733               286  LOOK1    XAR   R3,R3              CLEAR BUFFER INDEX                CMT02860
0B66            0861               287           LOAR  R6,R1              SET OPTION WORD INDEX             CMT02870
0B68            4856 0000          288  LOOK2    LH    R5,0(R6)                                             CMT02880
0B6C            021C               289           BMR   R12                IF MINUS, THEN NO MATCH = ERROR   CMT02890
0B6E            4553 3DD0          290           CLH   R5,OPTBUF(R3)      COMPARE TO OPTBUF HW              CMT02900
0B72            2333               291           BES   LOOK3                                                CMT02910
0B74            261C               292           AIS   R1,12                                                CMT02920
0B76            2209               293           BS    LOOK1                                                CMT02930
0B78            2632               294  LOOK3    AIS   R3,2               TRY NEXT HW                       CMT02940
0B7A            2662               295           AIS   R6,2                                                 CMT02950
0B7C            C530 0006          296           CLHI  R3,6               3 MATCHING HW FOUND ?             CMT02960
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0B80   208C             297          BLS   LOOK2                                    CMT02970
                        298  *                                                        CMT02980
0B82   C510 18DE        299          CLHI  R1,RUN            RUN COMMAND ?            CMT02990
0B86   4330 0D84        300          BE    RUNIT                                      CMT03000
0B8A   C510 18D2        301          CLHI  R1,OPTION         OPTION CMD ?             CMT03010
0B8E   4230 0D06        302          BNE   LOOK4             NO, LOOK FURTHER          CMT03020
                        303  *--------------------------                              CMT03030
                        304  *  TO PROCESS INPUT COMMAND 'OPTION'                     CMT03040
0B92   4820 18DA        305          LH    R2,OPTION+8       CHECK FOR SPECIAL ROUTINE CMT03050
0B96   0232             306          BNZR  R2                LINK TO ROUTINE           CMT03060
0B98   C830 175E        307  OPTRTN  LHI   R3,TEST           RETURN HERE               CMT03070
0B9C   C8E0 0C22        308          LHI   R14,OPTCMD8                                 CMT03080
0BA0   41F0 11AC        309          BAL   LINK,CRLF                                   CMT03090
0BA4   0722             310  OPTCMD  XAR   R2,R2             RESET COUNTER             CMT03100
0BA6   D342 175E        311  OPTCMD1 LB    R4,OPT(R2)        TO PRINT TEST             CMT03110
0BAA   41F0 11BA        312          BAL   LINK,OUTCHR                                 CMT03120
0BAE   2621             313          AIS   R2,1                                        CMT03130
0BB0   C520 0006        314          CLHI  R2,6                                        CMT03140
0BB4   2087             315          BLS   OPTCMD1                                     CMT03150
0BB6   C840 0020        316          LHI   R4,C' '                                     CMT03160
0BBA   41F0 11BA        317          BAL   LINK,OUTCHR       OUTPUT 1 SPACE            CMT03170
0BBE   0755             318          XAR   R5,R5             TO PRINT SELECTED TEST NUMBERS CMT03180
0BC0   4050 166A        319          STH   R5,FIRST                                    CMT03190
0BC4   4823 0006        320          LH    R2,6(R3)          FIRST TEST WORD           CMT03200
0BC8   2440             321  OPTCMD2 LIS   R4,0               START WITH TEST 0         CMT03210
0BCA   4040 3DCC        322          STH   R4,TEMP                                     CMT03220
0BCE   9121             323  OPTCMD3 SLHLS R2,1                                        CMT03230
0BD0   4380 0C02        324          BNC   OPTCMD7                                     CMT03240
0BD4   4040 3DCC        325  OPTCMD4 STH   R4,TEMP           OPTION VALUE FOUND,       CMT03250
0BD8   4800 166A        326          LH    R0,FIRST          IS IT FIRST ?             CMT03260
0BDC   2335             327          BZS   OPTCMD5                                     CMT03270
0BDE   C840 002C        328          LHI   R4,C','           NO, OUTPUT COMMA          CMT03280
0BE2   41F0 11BA        329          BAL   LINK,OUTCHR                                 CMT03290
0BE6   40F0 166A        330  OPTCMD5 STH   LINK,FIRST                                  CMT03300
0BEA   0855             331          LDAR  R5,R5             TEST VALUE FROM SECOND HW CMT03310
0BEC   2335             332          BZS   OPTCMD6           NO                        CMT03320
0BEE   C840 0031        333          LHI   R4,C'1'           YES,OUTPUT '1'            CMT03330
0BF2   41F0 11BA        334          BAL   LINK,OUTCHR                                 CMT03340
0BF6   4840 3DCC        335  OPTCMD6 LH    R4,TEMP           RESTORE R4                CMT03350
0BFA   D344 16C4        336          LB    R4,HEXTAB(R4)     CONVERT                   CMT03360
0BFE   41F0 11BA        337          BAL   LINK,OUTCHR       OUTPUT 0-F                CMT03370
0C02   4840 3DCC        338  OPTCMD7 LH    R4,TEMP           RESTORE                   CMT03380
0C06   2641             339          AIS   R4,1             INCREMENT TEST #          CMT03390
0C08   4040 3DCC        340          STH   R4,TEMP                                     CMT03400
0C0C   C540 0010        341          CLHI  R4,16                                       CMT03410
0C10   4280 0BCE        342          BL    OPTCMD3                                     CMT03420
0C14   0855             343  OPTCMD71 LDAR  R5,R5             DONE ?                    CMT03430
0C16   023E             344          BNZR  R14                                         CMT03440
0C18   4823 0008        345          LH    R2,8(R3)          SECOND TEST WORD          CMT03450
0C1C   2451             346          LIS   R5,1              R5 = 1 FOR SECOND TEST HW CMT03460
0C1E   4300 0BC8        347          B     OPTCMD2                                     CMT03470
                        348  *---------------------------------                       CMT03480
                        349  *  TO OUTPUT OTHER OPTION NAMES & VALUES                 CMT03490
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                        350  *                                                                    CMT03500
0C22  41F0 11AC         351  OPTCMD8  BAL   LINK,CRLF                                            CMT03510
0C26  C820 176A         352           LHI   R2,OPT+12          R2 POINTS TO THE NAME             CMT03520
                        353  *                                                                    CMT03530
                        354  **** PRWRITE AND PRREAD ROUTINES PRINT 20 BIT ADDRESSES FOR         **  CMT03540
                        355  **** 32 BIT MACHINES                                                **  CMT03550
                        356  *                                                                    **  CMT03560
0C2A  4850 166C         357  CHECNUM  LH    R5,MOD32           IF NOT 32 BIT MACHINE THEN BRANCH**  CMT03570
0C2E  4330 0C9E         358           BZ    OPT555             AND ALLOW REGULAR ETPE TO PRINT  **  CMT03580
0C32  0755              359  PRWRITE  XHR   R5,R5              .                                **  CMT03590
0C34  D345 1776         360           LB    R4,MWRITE(R5)      .                                **  CMT03600
0C38  41F0 11BA         361           BAL   LINK,OUTCHR        .                                **  CMT03610
0C3C  2651              362           AIS   R5,1               .                                **  CMT03620
0C3E  C550 0006         363           CLHI  R5,6               .                                **  CMT03630
0C42  2037              364           BNES  PRWRITE+2          .                                **  CMT03640
0C44  C840 0020         365           LHI   R4,C' '            .                                **  CMT03650
0C48  41F0 11BA         366           BAL   LINK,OUTCHR        .                                **  CMT03660
0C4C  2401              367           LIS   R0,1               .                                **  CMT03670
0C4E  D350 1781         368           LB    R5,MWRITE+11       .                                **  CMT03680
0C52  41F0 10D8         369           BAL   LINK,R5HEX         .                                **  CMT03690
0C56  2404              370           LIS   R0,4               .                                **  CMT03700
0C58  4850 177C         371           LH    R5,MWRITE+6        .                                **  CMT03710
0C5C  41F0 10D8         372           BAL   LINK,R5HEX         .                                **  CMT03720
0C60  41F0 11AC         373           BAL   LINK,CRLF          .                                **  CMT03730
0C64  0755              374  PRREAD   XHR   R5,R5              .                                **  CMT03740
0C66  D345 176A         375           LB    R4,MREAD(R5)       .                                **  CMT03750
0C6A  41F0 11BA         376           BAL   LINK,OUTCHR        .                                **  CMT03760
0C6E  2651              377           AIS   R5,1               .                                **  CMT03770
0C70  C550 0006         378           CLHI  R5,6               .                                **  CMT03780
0C74  2037              379           BNES  PRREAD+2           .                                **  CMT03790
0C76  C840 0020         380           LHI   R4,C' '            .                                **  CMT03800
0C7A  41F0 11BA         381           BAL   LINK,OUTCHR        .                                **  CMT03810
0C7E  2401              382           LIS   R0,1               .                                **  CMT03820
0C80  D350 1775         383           LB    R5,MREAD+11        .                                **  CMT03830
0C84  41F0 10D8         384           BAL   LINK,R5HEX         .                                **  CMT03840
0C88  2404              385           LIS   R0,4               .                                **  CMT03850
0C8A  D350 1770         386           LB    R5,MREAD+6         .                                **  CMT03860
0C8E  41F0 10D8         387           BAL   LINK,R5HEX         .                                **  CMT03870
0C92  41F0 11AC         388           BAL   LINK,CRLF          .                                **  CMT03880
0C96  2461              389           LIS   R6,1               .                                **  CMT03890
0C98  C820 1782         390           LHI   R2,OPT+36          .                                **  CMT03900
0C9C  2302              391           BS    OPTCMD9            .                                **  CMT03910
0C9E  2461              392  OPT555   LIS   R6,1               .                                **  CMT03920
0CA0  2436              393  OPTCMD9  LIS   R3,6                                                   CMT03930
0CA2  D342 0000         394  OPTCMD10 LB    R4,0(R2)                                              CMT03940
0CA6  41F0 11BA         395           BAL   LINK,OUTCHR        OUTPUT OPTION NAME CHAR           CMT03950
0CAA  2621              396           AIS   R2,1                                                  CMT03960
0CAC  2731              397           SIS   R3,1               6 CHARACTERS OUTPUT ?             CMT03970
0CAE  2026              398           BPS   OPTCMD10           NO,LOOP                           CMT03980
0CB0  C840 0020         399           LHI   R4,C' '                                              CMT03990
0CB4  41F0 11BA         400           BAL   LINK,OUTCHR        OUTPUT ONE SPACE                  CMT04000
0CB8  4852 0000         401           LH    R5,0(R2)           R5 = OPTION VALUE                 CMT04010
0CBC  2404              402           LIS   R0,4                                                 CMT04020
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0CBE  41F0 1008          403           BAL   LINK,R5HEX        WRITE OPTION VALUE IN HEX (4 DIGITS)   CMT04030
0CC2  D300 0A10          404           LB    R0,IO                                                    CMT04040
0CC6  2701               405           SIS   R0,1              CONSOLE = CRT ?                        CMT04050
0CC8  4230 0CEA          406           BNZ   OPTCMD12          BRANCH: NO.                            CMT04060
0CCC  2661               407           AIS   R6,1              INCREMENT LINE COUNTER.                CMT04070
0CCE  C560 0014          408           CLHI  R6,20             PAGE FULL ?                            CMT04080
0CD2  218C               409           BLS   OPTCMD12          NO                                     CMT04090
0CD4  0766               410           XAR   R6,R6             INITIALIZE LINE COUNT                  CMT04100
0CD6  2440               411           LIS   R4,X'0'           OUTPUT NULL                            CMT04110
0CD8  41F0 11BA          412           BAL   LINK,OUTCHR       TO CONSOLE                             CMT04120
0CDC  41F0 1226          413  OPTCMD11 BAL   LINK,GETCHR                                               CMT04130
0CE0  274D               414           SIS   R4,13             CR ?                                   CMT04140
0CE2  4330 0AE6          415           BZ    OPTIN             TO ACCEPT NEXT COMMAND                 CMT04150
0CE6  2643               416           AIS   R4,3              LF ?                                   CMT04160
0CE8  2036               417           BNZS  OPTCMD11          IF YES, PRINT NEXT PAGE                CMT04170
0CEA  41F0 11AC          418  OPTCMD12 BAL   LINK,CRLF                                                 CMT04180
0CEE  41F0 1274          419           BAL   LINK,TSTBRK       EXIT IF 'BREAK' PRESSED.               CMT04190
0CF2  2626               420           AIS   R2,6                                                       CMT04200
0CF4  C520 18D2          421           CLHI  R2,OPTEND2        ALL PRINTING OPTIONS DONE ?            CMT04210
0CF8  4280 0CA0          422           BL    OPTCMD9           NO,LOOP FOR NEXT ONE                   CMT04220
0CFC  2440               423           LIS   R4,X'0'           OUTPUT NULL                            CMT04230
0CFE  41F0 11BA          424           BAL   LINK,OUTCHR       TO CONSOLE                             CMT04240
0D02  4300 0AEA          425           B     OPTIN1            TO ACCEPT NEXT COMMAND                 CMT04250
                         426  *--------------------------                                             CMT04260
                         427  *  TO PROCESS COMMANDS OTHER THAN 'TEST', 'OPTION'.                      CMT04270
                         428  *                                                                        CMT04280
0D06  C510 175E          429  LOOK4    CLHI  R1,TEST            'TEST' OPTION ?                        CMT04290
0D0A  4330 0D32          430           BE    TESTOP                                                     CMT04300
0D0E  274D               431           SIS   R4,13             OPT FOLLOWED BY CR ?                   CMT04310
0D10  033C               432           BZR   R12               YES, ERROR                             CMT04320
0D12  41E0 1066          433           BAL   R14,OPTVAL        GET OPTION VALUE IN R6                 CMT04330
0D16  274D               434           SIS   R4,13             TERMINATED BY CR ?                     CMT04340
0D18  023C               435           BNZR  R12               IF NO, BRANCH                          CMT04350
0D1A  48E1 0008          436           LH    R14,8(R1)         GET OPTION CHECK ROUTINE ADDRESS       CMT04360
0D1E  2332               437           BZS   LOOK5                                                      CMT04370
0D20  01FE               438           BALR  R15,R14           LINK OPTION CHECK ROUTINE              CMT04380
      0000 0D22          439  LOOK5    EQU   *                 RETURN HERE                            CMT04390
0D22  4061 0006          440           STH   R6,6(R1)          STORE OPTION VALUE                     CMT04400
0D26  4300 0AE6          441           B     OPTIN             TO ACCEPT NEXT COMMAND                 CMT04410
                         442  *                                                                        CMT04420
0D2A  C560 0400          443  ADR      CLHI  R6,X'400'         (R6) = 10 BIT DEVICE ADDRESS           CMT04430
0D2E  028F               444           BLR   R15               RETURN TO LOOK5                        CMT04440
0D30  030C               445           BR    R12                                                        CMT04450
                         446  *--------------------------                                             CMT04460
                         447  *  TEST OPTION PROCESS ROUTINE                                           CMT04470
                         448  *                                                                        CMT04480
0D32  274C               449  TESTOP   SIS   R4,13             'TEST' FOLLOWED BY (CR) ?              CMT04490
0D34  2138               450           BNZS  TSTOP1                                                     CMT04500
0D36  4800 18EE          451           LH    R0,DEFTESTS       YES, SET TEST OPTION TO                CMT04510
0D3A  4000 1764          452           STH   R0,TEST+6         FIRST TEST WORD                        CMT04520
0D3E  4800 18F0          453           LH    R0,DEFTESTS+2     ALL DEFAULT TESTS IN PROGRAM           CMT04530
0D42  4000 1766          454           STH   R0,TEST+8         SECOND TEST WORD                       CMT04540
0D46  4300 0AE6          455           B     OPTIN             TO ACCEPT NEXT COMMAND                 CMT04550
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                     *                                                                CMT04560
0D4A  4650 18EC      TSTOP1   LH    R5,MAXTST                                         CMT04570
0D4E  2470                    LIS   R7,0            TEST BIT ACCUMULATORS             CMT04580
0D50  2480                    LIS   R8,0                                              CMT04590
0D52  41E0 1066      TSTOP2   BAL   R14,OPTVAL      GET OPTION VALUE IN R6            CMT04600
0D56  0556                    CLAR  R5,R6                                             CMT04610
0D58  028C                    BLR   R12             ERROR: INVALID TEST NUMBER        CMT04620
0D5A  C560 0010               CLHI  R6,16           R6 < 16 ?                         CMT04630
0D5E  2385                    BNLS  TSTOP3          NO                                CMT04640
0D60  41E0 10B0               BAL   R14,UNARY       GET UNARY OPERAND IN R3           CMT04650
0D64  0673                    OAR   R7,R3           SET CURRENT BIT                   CMT04660
0D66  2306                    BS    TSTOP4                                            CMT04670
0D68  CB60 0010      TSTOP3   SHI   R6,16           R6 = 0-F                          CMT04680
0D6C  41E0 10B0               BAL   R14,UNARY                                         CMT04690
0D70  0683                    OAR   R8,R3           SET CURRENT BIT                   CMT04700
0D72  274D           TSTOP4   SIS   R4,13           TERMINATED BY CR ?                CMT04710
0D74  4230 0D52               BNZ   TSTOP2                                            CMT04720
0D78  4070 1764               STH   R7,TEST+6       STORE VALID SELECTED TESTS        CMT04730
0D7C  4080 1766               STH   R8,TEST+8                                         CMT04740
0D80  4300 0AE6               B     OPTIN           TO ACCEPT NEXT COMMAND            CMT04750
                     *----------------------------                                    CMT04760
                     *                                                                CMT04770
      0000 0D84      RUNIT    EQU   *                                                 CMT04780
0D84  41F0 11AC               BAL   LINK,CRLF                                         CMT04790
0D88  4800 0A10               LH    R0,IO                                             CMT04800
0D8C  4000 3DD6               STH   R0,IOSAVE       RESTORE USER'S I/O CHOICE         CMT04810
0D90  41F0 11AC               BAL   LINK,CRLF                                         CMT04820
0D94  41F0 1942               BAL   LINK,INIT       LINK USER INITIALIZATION ROUTINE  CMT04830
      0000 0D98      INITRET  EQU   *               RETURN HERE                       CMT04840
0D98  07FF                    XAR   R15,R15                                           CMT04850
0D9A  40F0 16AE               STH   R15,WASDU1                                        CMT04860
0D9E  240F                    LIS   R0,15           TO FIND HIGHEST SELECTED TEST  NO. CMT04870
0DA0  4810 1766               LH    R1,TEST+8       CHECK SECOND TEST HW              CMT04880
0DA4  9011           KEEP1    SRLS  R1,1                                              CMT04890
0DA6  218B                    BCS   FOUND1          R0 = F-0                          CMT04900
0DA8  2701                    SIS   R0,1                                              CMT04910
0DAA  2213                    BNMS  KEEP1           TRY NEXT DIGIT                    CMT04920
0DAC  240F                    LIS   R0,15           INITIALIZE AGAIN                  CMT04930
0DAE  4810 1764               LH    R1,TEST+6       CHECK FIRST TEST HW               CMT04940
0DB2  9011           KEEP2    SRLS  R1,1                                              CMT04950
0DB4  2186                    BCS   FOUND1+4        R0 = F-0 = TEST #                 CMT04960
0DB6  2701                    SIS   R0,1                                              CMT04970
0DB8  2213                    BNMS  KEEP2           LOOP                              CMT04980
0DBA  030C                    BR    R12             TEST NOT SELECTED                 CMT04990
0DBC  CA00 0010      FOUND1   AHI   R0,16           ADJUST TEST # FOR SECOND HW       CMT05000
0DC0  4000 16AA               STH   R0,SELTST       HIGHEST SELECTED TEST NUMBER      CMT05010
                     *                                                                CMT05020
                     *  RESET TEST PARAMETERS                                         CMT05030
                     *                                                                CMT05040
0DC4  0700                    XAR   R0,R0                                             CMT05050
0DC6  4000 16A6               STH   R0,ISITERR      RESET ERROR FLAG                  CMT05060
0DCA  4000 16B0               STH   R0,TOTAL        RESET TOTAL                       CMT05070
0DCE  4000 16B2               STH   R0,TOTERR       RESET TOTERR                      CMT05080
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0DD2  4000 16AC          509          STH   R0,WASDU          RESET WASDU                          CMT05090
0DD6  C810 3030          510          LHI   R1,C'00'                                             CMT05100
0DDA  4010 160A          511          STH   R1,MTESTNO        RESET THESE FLAGS TO C'00'           CMT05110
0DDE  4010 16E4          512          STH   R1,ETESTNO                                           CMT05120
0DE2  4010 16E6          513          STH   R1,ERRNO                                             CMT05130
0DE6  41F0 1360          514          BAL   LINK,LCORE        SET UP LOW CORE                      CMT05140
                         515  *                                                                   CMT05150
                         516  *  START SELECTION FROM TEST 0                                      CMT05160
                         517  *                                                                   CMT05170
0DEA  0700               518  KEEP3   XAR   R0,R0                                                CMT05180
0DEC  4000 1684          519          STH   R0,BTESTNO        RESET BINARY TEST NUMBER             CMT05190
0DF0  4000 16B8          520          STH   R0,NEXTST         RESET NEXT TEST #                    CMT05200
                         521  *                                                                   CMT05210
                         522  *  TO FIND THE NEXT SELECTED TEST.                                  CMT05220
                         523  *                                                                   CMT05230
0DF4  482C 16B8          524  KEEP4   LH    R2,NEXTST         GET NEXT TEST #                      CMT05240
0DF8  2408               525  KEEP41  LIS   R0,8                                                 CMT05250
0DFA  910C               526          SLHLS R0,12             R0 = X'8000'                         CMT05260
0DFC  CC02 0000          527          SRHL  R0,0(R2)          R0 = NEXT TEST BIT                   CMT05270
0E00  C520 0010          528          CLHI  R2,X'10'          NEXT TEST < 16                       CMT05280
0E04  2185               529          BLS   KEEP42                                               CMT05290
0E06  4400 1766          530          NH    R0,TEST+8         LOOK AT TEST HW 2                    CMT05300
0E0A  2137               531          BNZS  KEEP5                                                CMT05310
0E0C  2304               532          BS    KEEP43                                               CMT05320
0E0E  4400 1764          533  KEEP42  NH    R0,TEST+6         LOOK AT TEST HW 1                    CMT05330
0E12  2133               534          BNZS  KEEP5                                                CMT05340
0E14  2621               535  KEEP43  AIS   R2,1                                                 CMT05350
0E16  220F               536          BS    KEEP41            LOOP FOR NEXT TEST #                 CMT05360
0E18  4020 1634          537  KEEP5   STH   R2,BTESTNO        CURRENT TEST #                       CMT05370
0E1C  0812               538          LOAR  R1,R2             R1 = TEST # IN BINARY                CMT05380
0E1E  2621               539          AIS   R2,1                                                 CMT05390
0E20  4020 16B8          540          STH   R2,NEXTST                                            CMT05400
0E24  2402               541          LIS   R0,2              SET DIGITS TO PRINT = 2              CMT05410
0E26  C820 160A          542          LHI   R2,A(MTESTNO)     R2 = A(MTESTNO)                      CMT05420
0E2A  41F0 1100          543          BAL   LINK,HEXASC       STORE TEST # IN ASCII @ MTESTNO      CMT05430
0E2E  4820 16DA          544          LH    R2,MTESTNO                                           CMT05440
0E32  4020 16E4          545          STH   R2,ETESTNO        STORE TEST # IN ASCII @ ETESTNO      CMT05450
0E36  41F0 1274          546          BAL   LINK,TSTBRK       TEST BREAK                           CMT05460
0E3A  C850 16D4          547          LHI   R5,TSTMSG                                            CMT05470
0E3E  41F0 1128          548          BAL   LINK,PRINT        PRINT 'TEST NN'                      CMT05480
0E42  0700               549          XAR   R0,R0                                                CMT05490
0E44  4000 16A8          550          STH   R0,NOERR          RESET ERROR FLAG                     CMT05500
0E48  4000 16B6          551          STH   R0,COUNT          RESET COUNT                          CMT05510
0E4C  4810 0A24          552  KEEP6   LH    R1,PSW2           DISABLE INTERRUPTS             **    CMT05520
0E50  9501               553          EPSR  R0,R1                                                CMT05530
0E52  4820 1684          554          LH    R2,BTESTNO        R2 = TEST #                          CMT05540
0E56  9121               555          SLLS  R2,LADC                                              CMT05550
0E58  4812 18F2          556          LDA   R1,TESTS(R2)                                         CMT05560
0E5C  0301               557          BR    R1                GO TO TEST MODULE                  CMT05570
                         558  *---------------------------                                       CMT05580
                         559  *                                                                   CMT05590
                         560  *  TEST MODULE END ROUTINE                                          CMT05600
                         561  *                                                                   CMT05610
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      0000 0E5E     TSTEND   EQU    *                                                CMT05620
0E5E  4810 0A24              LH     R1,PSW2                                          CMT05630
0E62  9501                   EPSR   R0,R1            DISABLE INT @ PROCESSOR LEVEL   CMT05640
0E64  4800 1686              LH     R0,COUNT                                         CMT05650
0E68  2601                   AIS    R0,1             INCREMENT COUNT                 CMT05660
0E6A  4000 1686              STH    R0,COUNT                                         CMT05670
0E6E  4500 1788              CLH    R0,LOOP+6        IF COUNT > LOOP,                CMT05680
0E72  2385                   BNLS   KEEP7            GO TO NEXT TEST MODULE          CMT05690
0E74  41F0 1274              BAL    LINK,TSTBRK      IF BREAK GO TO OPTIN            CMT05700
0E78  4300 0E4C              B      KEEP6            OTHERWISE, REPEAT SAME TEST     CMT05710
0E7C  4800 16A8     KEEP7    LH     R0,NOERR         LOOK @ ERROR FLAG               CMT05720
0E80  2135                   BNZS   KEEP71                                           CMT05730
0E82  C850 16FA              LHI    R5,NOERMSG                                       CMT05740
0E86  41F0 1128              BAL    LINK,PRINT       PRINT "NO ERROR"                CMT05750
0E8A  4810 16B4     KEEP71   LH     R1,BTESTNO       GET TEST #                      CMT05760
0E8E  4510 16AA              CLH    R1,SELTST        IS THE LAST SELECTED TEST DONE ? CMT05770
0E92  4280 0DF4              BL     KEEP4            NO, GO SELECT NEXT TEST         CMT05780
                    *                                                                CMT05790
                    *  ALL THE SELECTED TESTS ARE NOW RUN                            CMT05800
                    *                                                                CMT05810
      0000 0E96     ABORT    EQU    *                COME HERE TO ABORT TEST SEQUENCE. CMT05820
0E96  4200 0000              NOP                                                     CMT05830
0E9A  41F0 120F              BAL    LINK,TSTDU       RETURN WITH R1 = DU BIT         CMT05840
0E9E  4230 0EC6              BNZ    KEEP9            IF DU, DISPLAY TOTAL            CMT05850
0EA2  4810 16AE              LH     R1,WASDU1        WAS IT EVER ?                   CMT05860
0EA6  4230 0F0E              BNZ    KEEP10           YES, PRINT TOTAL, TOTERR        CMT05870
0EAA  41F0 1274              BAL    LINK,TSTBRK                                      CMT05880
0EAE  4810 1794              LH     R1,CONTIN+6      IF CONTIN = 1,                  CMT05890
0EB2  4230 0DEA              BNZ    KEEP3            GO TO TEST 0                    CMT05900
0EB6  41F0 1304              BAL    LINK,SETKB       KB DEVICE = LIST DEVICE         CMT05910
0EBA  C850 174C              LHI    R5,EOTMSG                                        CMT05920
0EBE  41F0 1128              BAL    LINK,PRINT       'END OF TEST'                   CMT05930
0EC2  4300 0AE6              B      OPTIN                                            CMT05940
                    *---------------------------------                               CMT05950
                    *  ROUTINE INCREMENTS,DISPLAYS & CHECKS 'TOTAL'                  CMT05960
                    *                                                                CMT05970
0EC6  4010 16AC     KEEP9    STH    R1,WASDU         SET 'WASDU' FLAG                CMT05980
0ECA  4810 1680              LH     R1,TOTAL         INCREMENT TOTAL                 CMT05990
0ECE  2611                   AIS    R1,1                                             CMT06000
0ED0  4010 1680              STH    R1,TOTAL                                         CMT06010
0ED4  2421          KEEP91   LIS    R2,1                                             CMT06020
0ED6  DE20 167D              OC     R2,INCR          DISPLAY: INCREMENTAL MODE       CMT06030
0EDA  4800 1682              LH     R0,TOTERR                                        CMT06040
0EDE  9400                   EXBR   R0,R0                                            CMT06050
0EE0  9820                   WHR    R2,R0            DISPLAY TOTERR                  CMT06060
0EE2  9401                   EXBR   R0,R1            FORMAT FOR DISPLAY              CMT06070
0EE4  9820                   WHR    R2,R0            DISPLAY TOTAL                   CMT06080
0EE6  DE20 167C              OC     R2,NORM          DISPLAY: NORMAL MODE            CMT06090
0EEA  C510 7FFF              CLHI   R1,X'7FFF'       TOTAL < MAX RETAINABLE ?        CMT06100
0EEE  2389                   BNLS   HALT9                                            CMT06110
0EF0  4800 16B4              LH     R0,BTESTNO       R0 = CURRENT TEST #             CMT06120
0EF4  4500 16AA              CLH    R0,SELTST        IS IT LAST TEST ?               CMT06130
0EF8  4280 0DF4              BL     KEEP4            NO, GO TO NEXT TEST             CMT06140
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0EFC  4300 0DEA          615          B     KEEP3              GO TO TEST 0                                  CMT06150
                         616  *                                                                               CMT06160
0F00  C810 080F          617  HALT9   LHI   R1,X'80F'                                                       CMT06170
0F04  9114               618          SLHLS R1,4               (R1) = X'80F0'                                CMT06180
0F06  9541               619          EPSR  R2,R1              HALT PROCESSOR                                CMT06190
                         620  *                                                                               CMT06200
                         621  *  WHEN EXE/RUN IS PRESSED, PRINT TOTAL & TOTERR                                CMT06210
                         622  *                                                                               CMT06220
0F08  41F0 12DE          623          BAL   LINK,TSTDU         SEE IF LIST DEV IS ON                         CMT06230
0F0C  2036               624          BNZS  HALT9              NO, HALT                                      CMT06240
0F0E  0700               625  KEEP10  XAR   R0,R0                                                            CMT06250
0F10  4000 16AC          626          STH   R0,WASDU           RESET FLAG                                    CMT06260
0F14  41F0 11AC          627          BAL   LINK,CRLF                                                        CMT06270
0F18  C850 16EA          628          LHI   R5,TOTMSG                                                        CMT06280
0F1C  4050 16A6          629          STH   R5,ISITERR                                                       CMT06290
0F20  41F0 1128          630          BAL   LINK,PRINT         PRINT 'TOTAL   TOTERR'                        CMT06300
0F24  2404               631          LIS   R0,4               TO PRINT 4 HEX DIGITS                         CMT06310
0F26  4850 16B0          632          LH    R5,TOTAL                                                         CMT06320
0F2A  41F0 1008          633          BAL   LINK,R5HEX         PRINT TOTAL IN HEX                            CMT06330
0F2E  2404               634          LIS   R3,4                                                             CMT06340
0F30  C840 0020          635          LHI   R4,C' '            SPACE                                         CMT06350
0F34  41F0 119A          636  KEEP101 BAL   LINK,OUTCHR        OUTPUT IT                                     CMT06360
0F38  2731               637          SIS   R3,1                                                             CMT06370
0F3A  2023               638          BPS   KEEP101            4 TIMES                                       CMT06380
0F3C  2404               639          LIS   R0,4               TO PRINT 4 HEX DIGITS                         CMT06390
0F3E  4850 16B2          640          LH    R5,TOTERR                                                        CMT06400
0F42  41F0 1008          641          BAL   LINK,R5HEX         PRINT TOTERR IN HEX                           CMT06410
0F46  4300 0AE6          642          B     OPTIN              GO TO BEGINNING                               CMT06420
                         643  * ********************************                                            CMT06430
                         644  *  ERROR ROUTINES                (OVERRIDE NOMSG OPTION)                       CMT06440
                         645  *                                                                               CMT06450
0F4A  0000 3EE0          646  ERR     STM   R0,ERRSAVE         STORE REGISTERS                               CMT06460
0F4E  4120 0F80          647          BAL   R2,ERRCOM          RETURN IF LIST DEVICE IS ON                   CMT06470
0F52  41E0 0FE2          648          BAL   RET,ERR1           PRINT 'ERROR TTNN'                            CMT06480
0F56  0700               649  ERRCOM2 XAR   R0,R0                                                            CMT06490
0F58  4000 16A6          650          STH   R0,ISITERR         RESET ERROR FLAG                              CMT06500
0F5C  4820 0A24          651          LH    R2,PSW2            ***                                           CMT06510
0F60  9502               652          EPSR  R0,R2                                                            CMT06520
0F62  D100 3EE0          653          LM    R0,ERRSAVE         RESTORE REGISTERS                             CMT06530
0F66  030F               654          BR    LINK               RETURN TO TEST                                CMT06540
0F68  4000 16E6          655  ERR0    STH   R0,ERRNO           SAVE ERROR NUMBER                  **         CMT06550
0F6C  D000 3EE0          656          STM   R0,ERRSAVE         STORE REGISTERS                               CMT06560
0F70  4120 0F80          657          BAL   R2,ERRCOM          RETURN IF LIST DEVICE IS ON                   CMT06570
0F74  41E0 0FE2          658          BAL   RET,ERR1           PRINT 'ERROR TTNN'                            CMT06580
0F78  41E0 0FEC          659          BAL   RET,ERR01          PRINT 'DEV DDD'                               CMT06590
0F7C  4300 0F56          660          B     ERRCOM2                                                          CMT06600
0F80  D000 3EE0          661  ERR0S   STM   R0,ERRSAVE         STORE REGISTERS                               CMT06610
0F84  41E0 337A          662          BAL   RET,ERR0SA         SET UP ERROR NUM AND STATUS BYTE **           CMT06620
0F88  4120 0F80          663          BAL   R2,ERRCOM          RETURN IF LIST DEVICE IS ON                   CMT06630
0F8C  41E0 0FE2          664          BAL   RET,ERR1           PRINT 'ERROR TTNN'                            CMT06640
0F90  41E0 101C          665          BAL   RET,ERR0S1         PRINT 'DEV DDD STA SS'                        CMT06650
0F94  4300 0F56          666          B     ERRCOM2                                                          CMT06660
0F98  D000 3EE0          667  ERRALL  STM   R0,ERRSAVE         STORE REGISTERS                               CMT06670
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0F9C  4120 0FB0   668          BAL   R2,ERRCOM        RETURN IF LIST DEVICE IS ON          CMT06680
0FA0  41E0 0FE2   669          BAL   RET,ERR1         PRINT 'ERROR TTNN'                   CMT06690
0FA4  41E0 101C   670          BAL   RET,ERRDS1       PRINT 'DEV DDD STA SS'               CMT06700
0FA8  41E0 1042   671          BAL   RET,ERRPL1       PRINT 'PSW PPPP  LOC LLLL'           CMT06710
0FAC  4300 0F56   672          B     ERRCOM2                                               CMT06720
                  673  *                                                                   CMT06730
                  674  *  COMMON ERROR ROUTINE                                            CMT06740
                  675  *                                                                   CMT06750
0FB0  4020 0FCA   676  ERRCOM  STH   R2,COMRET                                            CMT06760
0FB4  4810 0A24   677          LH    R1,PSW2                                               CMT06770
0FB8  9501        678          EPSR  R0,R1            DISABLE INT. @ PROCESSOR LEVEL       CMT06780
0FBA  41F0 12DE   679          BAL   LINK,TSTDU       GET LIST DEVICE DU BIT IN R1         CMT06790
0FBE  2137        680          BNZS  ERRCOM1          BRANCH IF OFF-LINE                   CMT06800
0FC0  4020 16A6   681          STH   R2,ISITERR       SET ERROR FLAG                       CMT06810
0FC4  4020 16A8   682          STH   R2,NOERR                                              CMT06820
0FC8  4300 0FC8   683          B     *                Go, PRINT ERROR MESSAGE              CMT06830
      0000 0FCA   684  COMRET  EQU   *-2                                                  CMT06840
                  685  *                                                                   CMT06850
0FCC  4810 16B2   686  ERRCOM1 LH    R1,TOTERR        LIST DEVICE IS OFF                   CMT06860
0FD0  2611        687          AIS   R1,1                                                 CMT06870
0FD2  4010 16B2   688          STH   R1,TOTERR        INCREMENT TOTERR                     CMT06880
0FD6  C510 7FFF   689          CLHI  R1,X'7FFF'       TOTERR < MAX RETAINABLE ?            CMT06890
0FDA  4280 0ED4   690          BL    KEEP91           NO, ABORT CURRENT TEST & GOTO NEXT   CMT06900
0FDE  4300 0F00   691          B     HALT9            YES, HALT PROCESSOR                  CMT06910
                  692  *-----------------------------                                     CMT06920
                  693  * MESSAGE PRINT ROUTINES       (DO NOT OVERRIDE NOMSG OPTION)       CMT06930
                  694  *                                                                   CMT06940
                  695  *  TO PRINT 'ERROR TTNN'                                           CMT06950
                  696  *                                                                   CMT06960
0FE2  C850 16DE   697  ERR1    LHI   R5,ERRMSG                                            CMT06970
0FE6  41F0 1128   698          BAL   LINK,PRINT       PRINT 'ERROR TTNN'                   CMT06980
                  699  *                             TT = TEST #, NN = ERROR #            CMT06990
0FEA  030E        700          BR    RET              RETURN                               CMT07000
                  701  *                                                                   CMT07010
                  702  *  TO PRINT 'DEV DDD'                                              CMT07020
                  703  *                                                                   CMT07030
0FEC  2403        704  ERRD1   LIS   R0,3             SET UP DIGITS = 3                    CMT07040
0FEE  4810 1678   705          LH    R1,ERRDEV        R1 = ERROR DEV # IN BINARY           CMT07050
0FF2  C820 1718   706          LHI   R2,ASCIDEV2                                          CMT07060
0FF6  41F0 1100   707          BAL   LINK,HEXASC      CONVERT IT TO ASCII                  CMT07070
0FFA  C850 1714   708          LHI   R5,DEVMSG2                                           CMT07080
0FFE  41F0 1128   709          BAL   LINK,PRINT       PRINT 'DEV DD'                       CMT07090
1002  030E        710          BR    RET              RETURN                               CMT07100
                  711  *                                                                   CMT07110
                  712  *  TO PRINT 'STA SS'                                               CMT07120
                  713  *                                                                   CMT07130
1004  2402        714  ERRS1   LIS   R0,2             SET UP DIGITS = 2                    CMT07140
1006  D310 167A   715          LB    R1,ERRSTA        R1 = ERROR STATUS                    CMT07150
100A  C820 1710   716          LHI   R2,ASCISTA                                           CMT07160
100E  41F0 1100   717          BAL   LINK,HEXASC      CONVERT IT TO ASCII                  CMT07170
1012  C850 170C   718          LHI   R5,STAMSG                                            CMT07180
1016  41F0 1128   719          BAL   LINK,PRINT       PRINT 'STA SS'                       CMT07190
101A  030E        720          BR    RET              RETURN                               CMT07200
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                        721  *                                                                    CMT07210
                        722  *  TO PRINT 'DEV ODD STA SS'                                         CMT07220
                        723  *                                                                    CMT07230
101C  2403              724  ERRDS1   LIS   R0,3              SET UP DIGITS = 3                  CMT07240
101E  4810 1678         725           LH    R1,ERRDEV         R1 = ERROR DEV #                   CMT07250
1022  C620 1708         726           LHI   R2,ASCIDEV                                           CMT07260
1026  41F0 1100         727           BAL   LINK,HEXASC       CONVERT IT TO ASCII                CMT07270
102A  2402              728           LIS   R0,2              SET UP DIGITS = 2                  CMT07280
102C  D310 167A         729           LB    R1,ERRSTA         R1 = ERROR STATUS                  CMT07290
1030  C820 1710         730           LHI   R2,ASCISTA                                           CMT07300
1034  41F0 1100         731           BAL   LINK,HEXASC       CONVERT IT TO ASCII                CMT07310
1038  C850 1704         732           LHI   R5,DEVMSG                                            CMT07320
103C  41F0 1128         733           BAL   LINK,PRINT        PRINT 'DEV OD STA SS'              CMT07330
1040  030E              734           BR    RET               RETURN                             CMT07340
                        735  *                                                                    CMT07350
                        736  *  TO PRINT 'PSW PPPP  LOC LLLL'                                     CMT07360
                        737  *                                                                    CMT07370
1042  2404              738  ERRPL1   LIS   R0,4              SET UP DIGITS = 4                  CMT07380
1044  4810 1672         739           LH    R1,OPSW           R1 = OLD PSW                       CMT07390
1048  C820 1722         740           LHI   R2,ASCIPSW                                           CMT07400
104C  41F0 1100         741           BAL   LINK,HEXASC       CONVERT IT TO ASCII                CMT07410
1050  4810 1676         742           LH    R1,OLOC           R1= OLD LOC                        CMT07420
1054  C820 172C         743           LHI   R2,ASCILOC                                           CMT07430
1058  41F0 1100         744           BAL   LINK,HEXASC       CONVERT IT TO ASCII                CMT07440
105C  C850 171E         745           LHI   R5,PSWMSG                                            CMT07450
1060  41F0 1128         746           BAL   LINK,PRINT        PRINT 'PSW PPPP  LOC LLLL'         CMT07460
1064  030E              747           BR    RET               RETURN                             CMT07470
                        748  * ********************************                                   CMT07480
                        749  *  TO OBTAIN OPTION VALUE IN R6    (16 BITS, TARGT 16)               CMT07490
                        750  *                                                                    CMT07500
1066  0766              751  OPTVAL   XAR   R6,R6             INITIALIZE ACCUMULATOR             CMT07510
1068  41F0 1226         752           BAL   R15,GETCHR        GET A CHAR IN R4                   CMT07520
106C  24FF              753  OPTVAL0  LIS   R15,15                                              CMT07530
106E  D44F 16C4         754  OPTVAL1  CLB   R4,HEXTAB(R15)    SCAN TABLE                         CMT07540
1072  2304              755           BES   OPTVAL2           MATCH                              CMT07550
1074  27F1              756           SIS   R15,1                                               CMT07560
1076  2214              757           BNMS  OPTVAL1                                              CMT07570
1078  030C              758           BR    R12               ERROR: VALUE NOT IN TABLE.         CMT07580
107A  4890 166C         759  OPTVAL2  LH    R9,MOD32          .                          **      CMT07590
107E  2133              760           BNZS  OPTVAL5           .                          **      CMT07600
1080  9164              761           SLLS  R6,4              .                          **      CMT07610
1082  2302              762           BS    OPTVAL6           .                          **      CMT07620
1084  1164              763  OPTVAL5  DC    X'1164'           .                          **      CMT07630
1086  066F              764  OPTVAL6  OAR   R6,R15            .                          **      CMT07640
1088  41F0 1226         765  OPTVAL3  BAL   R15,GETCHR        GET NEXT CHAR                      CMT07650
108C  C540 005F         766           CLHI  R4,X'5F'          IS IT LEFT ARROW ?                 CMT07660
1090  2138              767           BNES  OPTVAL4                                              CMT07670
1092  489C 166C         768           LH    R9,MOD32          .                          **      CMT07680
1096  2133              769           BNZS  OPTVAL7           .                          **      CMT07690
1098  9064              770           SRLS  R6,4              .                          **      CMT07700
109A  2302              771           BS    OPTVAL8           .                          **      CMT07710
109C  1064              772  OPTVAL7  DC    X'1064'           .                          **      CMT07720
109E  220B              773  OPTVAL8  BS    OPTVAL3           .                          **      CMT07730
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10A0  C540 000D      774  OPTVAL4  CLHI  R4,13              EXIT IF CR                          CMT07740
10A4  033E           775           BER   R14                                                   CMT07750
10A6  C540 002C      776           CLHI  R4,X'2C'           OR COMMA                            CMT07760
10AA  4230 106C      777           BNE   OPTVAL0            LOOP TO PROCESS                     CMT07770
10AE  030E           778           BR    R14                RETURN                              CMT07780
                     779  *-------------------------------                                      CMT07790
                     780  * TO CONVERT (R6) FROM BINARY TO UNARY PATTERN, IN R3                  CMT07800
                     781  *                                                                      CMT07810
10B0  2431           782  UNARY    LIS   R3,1               INITIALIZE                          CMT07820
10B2  C560 000F      783  UNARY1   CLHI  R6,15              DONE ?                              CMT07830
10B6  033E           784           BER   R14                RETURN                              CMT07840
10B8  0A33           785           AAR   R3,R3              NO, SHIFT R3,                       CMT07850
10BA  2661           786           AIS   R6,1               INCREMENT COUNTER                   CMT07860
10BC  2205           787           BS    UNARY1                                                CMT07870
                     788  *-----------------------------                                       CMT07880
                     789  *  TO PROVIDE # OF MILLISECONDS DELAY SPECIFIED BY R0                 CMT07890
                     790  *                                                                      CMT07900
10BE  D000 3E60      791  TIMER    STM   R0,RSAVE           SAVE REGISTERS                      CMT07910
10C2  2410           792           LIS   R1,0                                                   CMT07920
10C4  2421           793           LIS   R2,1                                                   CMT07930
10C6  4830 0A1E      794           LH    R3,TIME            R3 = TIME CONSTANT FOR 1 MS DELAY   CMT07940
10CA  C110 10CA      795           BXLE  R1,*                                                   CMT07950
10CE  2701           796           SIS   R0,1                                                   CMT07960
10D0  2037           797           BNZS  TIMER+4            LOOP TILL SPECIFIED DELAY           CMT07970
10D2  D100 3E60      798           LM    R0,RSAVE           RESTORE REGISTERS                   CMT07980
10D6  030F           799  TIMXT    BR    LINK               RETURN                              CMT07990
                     800  *-----------------------------                                       CMT08000
                     801  *  R5HEX PRINTS CONTENTS OF R5 IN HEX                                CMT08010
                     802  *        PRINTS UPTO 4 DIGITS      (8 DIGITS, TARGT 32)                CMT08020
                     803  *                                                                      CMT08030
10D8  D000 3E60      804  R5HEX    STM   R0,RSAVE           STORE REGISTERS                     CMT08040
10DC  0820           805           LDAR  R2,R0              R2 = # OF DIGITS TO BE PRINTED      CMT08050
10DE  2721           806           SIS   R2,1                                                   CMT08060
10E0  211D           807           BMS   R5X8                                                   CMT08070
10E2  9122           808           SLLS  R2,2               R2 = 4(DIGITS-1)                    CMT08080
10E4  0845           809  R5X      LDAR  R4,R5                                                  CMT08090
10E6  CC42 0000      810           SRAL  R4,0(R2)                                               CMT08100
10EA  C440 000F      811           NHI   R4,15              R4 = HEX DIGIT                      CMT08110
10EE  D344 16C4      812           LB    R4,HEXTAB(R4)                                          CMT08120
10F2  41F0 118A      813  R5XA     BAL   R15,OUTCHR                                             CMT08130
10F6  2724           814           SIS   R2,4                                                   CMT08140
10F8  221A           815           BNMS  R5X                LOOP TILL ALL DIGITS                CMT08150
10FA  D100 3E60      816  R5X8     LM    R0,RSAVE           RESTORE REGISTERS                   CMT08160
10FE  030F           817           BR    LINK               RETURN                              CMT08170
                     818  *-----------------------------                                       CMT08180
                     819  *  TO CONVERT HEXADECIMAL DATA IN R1 TO ASCII CHAR & STORE @ 0(R2)    CMT08190
                     820  *                                                                      CMT08200
1100  D000 3E60      821  HEXASC   STM   R0,RSAVE           STORE REGISTERS                     CMT08210
1104  0830           822           LDAR  R3,R0              R3 = DIGITS                         CMT08220
1106  9132           823           SLLS  R3,2                                                   CMT08230
1108  2734           824           SIS   R3,4               R3 = 4(DIGITS)-4                    CMT08240
110A  0841           825  HEXASC1  LDAR  R4,R1              R4 = HEX DATA                       CMT08250
110C  CC43 0000      826           SRAL  R4,0(R3)                                               CMT08260
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1110  C440 000F          827          NHI   R4,15            R4 = HEX DIGIT TO BE CONVERTED      CMT08270
1114  D344 16C4          828          LB    R4,HEXTAB(R4)                                        CMT08280
1118  D242 0000          829          STB   R4,0(R2)         STORE ASCII CHAR                    CMT08290
111C  2621               830          AIS   R2,1                                                 CMT08300
111E  2734               831          SIS   R3,4                                                 CMT08310
1120  221B               832          BNMS  HEXASC1          LOOP TILL ALL DIGITS                CMT08320
1122  D100 3E60          833          LM    R0,RSAVE         RESTORE REGISTERS                   CMT08330
1126  030F               834          BR    LINK             RETURN                              CMT08340
                         835  *-----------------------------                                     CMT08350
                         836  *  TO PRINT THE ASCII MESSAGE                                      CMT08360
                         837  *                                                                  CMT08370
1128  D000 3E60          838  PRINT   STM   R0,RSAVE         STORE REGISTERS                     CMT08380
112C  41F0 12DE          839          BAL   LINK,TSTDU                                           CMT08390
1130  2335               840          BZS   P1                                                   CMT08400
1132  4010 16AC          841          STH   R1,WASDU         SET FLAG                            CMT08410
1136  4300 11A2          842          B     PRINT5           EXIT                                CMT08420
113A  4820 16AC          843  P1      LH    R2,WASDU                                           CMT08430
113E  4330 116C          844          BZ    P3                                                 CMT08440
1142  C810 0140          845          LHI   R1,X'140'        DELAY CONSTANT                      CMT08450
1146  C800 1000          846          LHI   R0,X'1000'                                           CMT08460
114A  2701               847          SIS   R0,1                                                 CMT08470
114C  2031               848          BTBS  3,1                                                  CMT08480
114E  2711               849          SIS   R1,1                                                 CMT08490
1150  2035               850          BTBS  3,5              LOOP TILL TIMEOUT                   CMT08500
1152  0744               851          XAR   R4,R4                                                CMT08510
1154  4040 16AC          852          STH   R4,WASDU                                             CMT08520
1158  2541               853          LCS   R4,1             CHARACTER = X'FF'                   CMT08530
115A  4040 16AE          854          STH   R4,WASDU1                                            CMT08540
115E  2434               855          LIS   R3,4                                                 CMT08550
1160  41F0 11BA          856  P2      BAL   LINK,OUTCHR                                          CMT08560
1164  2731               857          SIS   R3,1                                                 CMT08570
1166  2023               858          BPS   P2                                                   CMT08580
1168  4300 0F0E          859          B     KEEP10           PRINT TOTAL, TOTERR                 CMT08590
116C  4800 17A0          860  P3      LH    R0,NOMSG+6                                         CMT08600
1170  2335               861          BZS   PRINT2           NO, PRINT ALL MESSAGES              CMT08610
1172  4800 16A6          862          LH    R0,ISITERR                                           CMT08620
1176  4330 11A2          863          BZ    PRINT5           NOT AN ERROR MSG. EXIT              CMT08630
                         864  *                                                                  CMT08640
117A  D345 0000          865  PRINT2  LB    R4,0(R5)         GET A MESSAGE BYTE                  CMT08650
117E  41F0 11BA          866          BAL   LINK,OUTCHR      OUTPUT IT                           CMT08660
1182  2740               867          SIS   R4,13            CR ?                                CMT08670
1184  2333               868          BZS   PRINT3           MSG OVER                            CMT08680
1186  2651               869          AIS   R5,1                                                 CMT08690
1188  2207               870          BS    PRINT2           LOOP FOR NEXT CHAR                  CMT08700
118A  244A               871  PRINT3  LIS   R4,10            LF                                  CMT08710
118C  D310 3DD7          872          LB    R1,IOSAVE+1      GET LIST DEV IDENTIFIER             CMT08720
1190  2713               873          SIS   R1,3             LINE PRINTER ?                      CMT08730
1192  2335               874          BZS   PRINT3A          BRANCH IF YES.                      CMT08740
1194  41F0 11BA          875          BAL   LINK,OUTCHR      LF                                  CMT08750
1198  2541               876          LCS   R4,1             DEL                                 CMT08760
119A  2302               877          BS    PRINT3B                                              CMT08770
119C  2441               878  PRINT3A LIS   R4,1             YES, OUTPUT X'01'                   CMT08780
119E  41F0 11BA          879  PRINT3B BAL   LINK,OUTCHR      TERMINAL CHARACTER                  CMT08790
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11A2  41F0 1274          880  PRINTS   BAL   LINK,TSTBRK                          CMT08800
11A6  D100 3E60          881           LM    R0,RSAVE          RESTORE REGISTERS  CMT08810
11AA  030F               882           BR    LINK              RETURN             CMT08820
                         883  *--------------------------------                    CMT08830
                         884  *  SMALL SUPPORT ROUTINES                            CMT08840
                         885  *                                                    CMT08850
                         886  *  TO OUTPUT CR,LF TO LIST DEVICE                    CMT08860
                         887  *                                                    CMT08870
11AC  D000 3E60          888  CRLF     STM   R0,RSAVE          STORE REGISTERS    CMT08880
11B0  244D               889           LIS   R4,13                                CMT08890
11B2  41F0 11BA          890           BAL   LINK,OUTCHR       OUTPUT CR          CMT08900
11B6  4300 118A          891           B     PRINT3            LINE FEED, RESTORE, RETURN  CMT08910
                         892  *----------------------------                      CMT08920
                         893  *  TO OUTPUT A CHARACTER TO THE LIST DEVICE         CMT08930
11BA  40F0 1222          894  OUTCHR   STH   R15,OUT1+2        SAVE RETURN ADDRESS CMT08940
11BE  D300 3DD7          895           LB    R0,IOSAVE+1                          CMT08950
11C2  2704               896           SIS   R0,4                                 CMT08960
11C4  4230 11F6          897           BNZ   OUTCHR2           BRANCH IF NOT CAROUSEL  CMT08970
11C8  4000 1224          898  OTC.     STH   R0,PAUSE                            CMT08980
11CC  41F0 120E          899  OTC.0    BAL   LINK,TSTDU        ON LINE ?          CMT08990
11D0  4230 121C          900           BNZ   OUT0              NO, BRANCH         CMT09000
11D4  9D01               901           SSR   R0,R1             GET CAROUSEL STATUS CMT09010
11D6  2365               902           BFFS  8,OTC.1           BRANCH IF CHAR. IS TO BE READ  CMT09020
11D8  4810 1224          903           LH    R1,PAUSE          PAUSED NOW ?       CMT09030
11DC  2038               904           BNZS  OTC.0             YES, LOOP          CMT09040
11DE  230C               905           BS    OUTCHR2           NO, GO OUTPUT CHARACTER  CMT09050
      0000 11E0          906  OTC.1    EQU   *                                    CMT09060
11E0  9B01               907           RDR   R0,R1             GET CAROUSEL CHARACTER  CMT09070
11E2  C410 007F          908           NHI   R1,X'7F'                             CMT09080
11E6  CB10 0012          909           SHI   R1,X'12'          DC2 ?              CMT09090
11EA  2336               910           BZS   OUTCHR2           YES, BRANCH        CMT09100
11EC  2712               911           SIS   R1,2              DC4 ?              CMT09110
11EE  4330 11C8          912           BZ    OTC.              YES, GO SET PAUSE FLAG  CMT09120
11F2  4300 11CC          913           B     OTC.0             NO, GO WAIT FOR DC2  CMT09130
      0000 11F6          914  OUTCHR2  EQU   *                                    CMT09140
11F6  4010 1224          915           STH   R1,PAUSE          RESET FLAG         CMT09150
11FA  41F0 120E          916           BAL   LINK,TSTDU        OFF-LINE ?         CMT09160
11FE  213F               917           BNZS  OUT0              BRANCH IF OFF-LINE CMT09170
1200  4110 134A          918           BAL   R1,SETUP           SET UP FOR OUTPUT  CMT09180
1204  9D01               919  OTC.4    SSR   R0,R1             WAIT FOR NOT BUSY  CMT09190
1206  213B               920           BTFS  3,OUT0            BRANCH IF OFF-LINE CMT09200
1208  C510 000C          921           CLHI  R1,12             PASLA OFFLINE ?    CMT09210
120C  2338               922           BES   OUT0              BRANCH: YES.       CMT09220
120E  C310 0008          923           THI   R1,8              BUSY ?             CMT09230
1212  2037               924           BNZS  OTC.4             WAIT FOR NOT BUSY. CMT09240
1214  9A04               925           WDR   R0,R4             OUTPUT DATA BYTE   CMT09250
1216  9D01               926           SSR   R0,R1                                CMT09260
1218  2081               927           BTBS  8,1               WAIT FOR NOT BUSY. CMT09270
121A  2303               928           BS    OUT1                                 CMT09280
121C  4010 16AC          929  OUT0     STH   R1,WASDU          SET FLAG           CMT09290
1220  4300 1220          930  OUT1     B     *                 RETURN AS SET UP ABOVE  CMT09300
1224  0000               931  PAUSE    DCX   0                 SET DURING TRANSMISSION PAUSE  CMT09310
                         932  *----------------------------                      CMT09320
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                        933  *  TO GET A CHAR FROM KEYBOARD (IN REG R4)                          CMT09330
                        934  *                                                                   CMT09340
1226  4140 1312         935  GETCHR   BAL   R4,KBREAD          PUT KB DEVICE IN READ MODE       CMT09350
122A  9004              936           SSR   R0,R4                                               CMT09360
122C  021F              937           BTCR  1,LINK              IF DU, RETURN                    CMT09370
122E  2002              938           BTBS  8,2                 IF BUSY, LOOP                    CMT09380
1230  D400 0A1A         939           CLB   R0,MICROBUS         IS IT MICROBUS ?                 CMT09390
1234  2333              940           BES   ECHO1               YES, BRANCH                      CMT09400
1236  9B04              941           RDR   R0,R4               READ A CHAR IN R4                CMT09410
1238  2303              942           BS    ECHO                                                 CMT09420
123A  9B04              943  ECHO1    RDR   R0,R4                                               CMT09430
123C  9A04              944           WDR   R0,R4                                               CMT09440
                        945  * TO ECHO RECEIVED CHARACTERS TO CONSOLE DEVICE IN FOX MODE         CMT09450
123E  0390 1684         946  ECHO     LB    R9,CONRD                                           CMT09460
1242  C590 00A9         947           CLHI  R9,X'A9'            CAROUSEL ?                       CMT09470
1246  2137              948           BNES  ECHRTN              DO NOT ECHO                      CMT09480
1248  0390 1683         949           LB    R9,CONADR+1                                        CMT09490
124C  0D90 167B         950           SS    R9,SINK                                            CMT09500
1250  2082              951           BTBS  8,2                                                CMT09510
1252  9A94              952           WDR   R9,R4               ECHO RECEIVED BYTE               CMT09520
1254  C440 007F         953  ECHRTN   NHI   R4,X'7F'            REMOVE PARITY BIT                CMT09530
1258  030F              954           BR    LINK                RETURN                           CMT09540
                        955  *-------------------------                                         CMT09550
                        956  *  TO OUTPUT '?' TO CONSOLE                                        CMT09560
                        957  *                                                                   CMT09570
125A  41F0 11AC         958  QUESTN   BAL   LINK,CRLF                                          CMT09580
125E  40F0 16A6         959           STH   LINK,ISITERR        SET FLAG                         CMT09590
1262  C850 175A         960           LHI   R5,QMSG                                            CMT09600
1266  41F0 1128         961           BAL   LINK,PRINT          PRINT '?'                        CMT09610
126A  0700              962           XAR   R0,R0                                              CMT09620
126C  4000 16A6         963           STH   R0,ISITERR                                         CMT09630
1270  4300 0AEA         964           B     OPTIN1              TO ACCEPT COMMAND INPUT          CMT09640
                        965  *-------------------------                                         CMT09650
                        966  * IF BREAK KEY DEPRESSED, GO TO 'OPTIN' OR (BRKVECT); ELSE RETURN. CMT09660
                        967  *                                                                   CMT09670
1274  0000 3EA0         968  TSTBRK   STM   R0,RSAVE+64        STORE REGISTERS                  CMT09680
1278  40F0 12DC         969           STH   LINK,BRKRTN                                        CMT09690
127C  0390 1682         970           LB    R0,CONADR           GET KEYBOARD DEVICE ADR          CMT09700
1280  9D01              971           SSR   R0,R1                                              CMT09710
1282  C310 0020         972           THI   R1,X'20'            'BREAK' KEY PRESSED ?            CMT09720
1286  4330 12D0         973           BZ    TSTBRK3             NO, EXIT                         CMT09730
128A  0320 0A10         974           LB    R2,10                                              CMT09740
128E  C520 0005         975           CLHI  R2,5                IS IT MICROBUS ?                 CMT09750
1292  2138              976           BNES  TSTBRK4             NO, BRANCH                       CMT09760
      0000 1294         977  TSTBRK5  EQU   *                                                   CMT09770
1294  9B02              978           RDR   R0,R2                                              CMT09780
1296  9D01              979           SSR   R0,R1                                              CMT09790
1298  C310 0020         980           THI   R1,X'20'                                           CMT09800
129C  2034              981           BNZS  TSTBRK5                                            CMT09810
129E  4300 12C4         982           B     TSTBRK2                                            CMT09820
      0000 12A2         983  TSTBRK4  EQU   *                                                   CMT09830
12A2  4820 167E         984           LH    R2,PASFLG           PASLA ?                          CMT09840
12A6  233B              985           BZS   TSTBRK1             BRANCH IF NO,                    CMT09850
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12A8  C310 0008          966           THI   R1,8              ALREADY ACKNOWLEDGED ?              CMT09860
12AC  4230 12D0          967           BNZ   TSTBRK3           BRANCH IF YES                       CMT09870
12B0  9B02               968           RDR   R0,R2                                                 CMT09880
12B2  9D01               969           SSR   R0,R1                                                 CMT09890
12B4  2261               970           BFBS  8,1                                                   CMT09900
12B6  0822               971           LDAR  R2,R2             ZERO CHARACTER ?                    CMT09910
12B8  213C               972           BNZS  TSTBRK3           BRANCH: JUST FRAMING ERROR          CMT09920
12BA  2305               973           BS    TSTBRK2                                               CMT09930
12BC  9D01               974  TSTBRK1  SSR   R0,R1                                                 CMT09940
12BE  C310 0020          975           THI   R1,X'20'                                              CMT09950
12C2  2033               976           BTBS  3,3               WAIT FOR BREAK KEY RELEASE          CMT09960
12C4  48F0 16A4          977  TSTBRK2  LH    R15,BRKVECT       CHECK FOR SPECIAL ROUTINE           CMT09970
12C8  4330 0AE6          978           BZ    OPTIN             BRK W/NO VECTOR: TO EXEC.           CMT09980
12CC  40F0 12DC          979           STH   R15,BRKRTN        SET UP FOR EXIT                     CMT09990
12D0  2400               980  TSTBRK3  LIS   R0,0                                                  CMT10000
12D2  4000 16A4          981           STH   R0,BRKVECT        DELETE VECTOR AFTER ONE SHOT.       CMT10010
12D6  D100 3EA0          982           LM    R0,RSAVE+64       RESTORE REGISTERS                   CMT10020
12DA  4300 12DA          983           B     *                 RETURN TO PROGRAM                   CMT10030
      0000 12DC          984  BRKRTN   EQU   *-2                                                   CMT10040
                         985  *-------------------------                                          CMT10050
                         986  * SEE IF LIST DEVICE OFF-LINE (R1. CC NON-ZERO IF OFF)               CMT10060
                         987  *                                                                    CMT10070
12DE  D310 3DD7          988  TSTDU    LB    R1,IOSAVE+1       GET LIST DEVICE IDENTIFIER          CMT10080
12E2  9111               989           SLHLS R1,1              (R1) = 2,4,6,8,A                    CMT10090
12E4  D301 0A11          990           LB    R0,IO+1(R1)       GET LIST DEVICE ADDRESS             CMT10100
12E8  9D01               991           SSR   R0,R1                                                 CMT10110
12EA  4800 1680          992           LH    R0,PASFLG2                                            CMT10120
12EE  2338               993           BZS   TSTDU1            BRANCH IF LIST DEVICE NOT PASLA     CMT10130
12F0  C410 00FC          994           NHI   R1,X'FC'                                              CMT10140
12F4  C510 000C          995           CLHI  R1,X'0C'          BSY & EX SET ?                      CMT10150
12F8  2133               996           BNES  TSTDU1            BRANCH IF PASLA ON-LINE             CMT10160
12FA  0811               997           LDAR  R1,R1                                                 CMT10170
12FC  030F               998           BR    LINK              PASLA OFF-LINE                      CMT10180
12FE  C410 0001          999  TSTDU1   NHI   R1,1               (R1) = DU BIT                       CMT10190
1302  030F              1000           BR    LINK              RETURN                              CMT10200
                        1001  * -------------------------------                                   CMT10210
                        1002  * TO DIRECT INPUT AND OUTPUT TO CONSOLE DEVICE                       CMT10220
                        1003  *                                                                    CMT10230
1304  D300 0A10         1004  SETKB    LB    R0,IO             GET KEYBOARD DEVICE                 CMT10240
1308  9410              1005           EXBR  R1,R0                                                 CMT10250
130A  0610              1006           OAR   R1,R0                                                 CMT10260
130C  4010 3DD6         1007           STH   R1,IOSAVE         KB DEVICE = LIST DEVICE             CMT10270
1310  030F              1008           BR    LINK              RETURN                              CMT10280
                        1009  *-------------------------                                          CMT10290
                        1010  *  TO PUT KEYBOARD DEVICE IN READ MODE                              CMT10300
                        1011  *                                                                    CMT10310
1312  D300 1682         1012  KBREAD   LB    R0,CONADR                                             CMT10320
1316  DE00 1684         1013           OC    R0,CONRD                                              CMT10330
131A  DB00 167B         1014           RD    R0,SINK                                               CMT10340
131E  4890 167E         1015           LH    R9,PASFLG         PASLA ?                             CMT10350
1322  4200 1322         1016           NOP   *                 FOR SPECIAL KB DEVICE               CMT10360
1326  0334              1017  TTYGET   BZR   R4                RETURN                              CMT10370
1328  DE00 169C         1018           OC    R0,CONRQ2S                                            CMT10380
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132C  0304           1039          BR    R4                  RETURN                                  CMT10390
                     1040  *-----------------------------                                            CMT10400
                     1041  *  TO SET UP KEYBOARD DEV TO READ WITH INT ENABLED                         CMT10410
                     1042  *                                                                          CMT10420
132E  0000 3E60      1043  KBRD    STM   R0,RSAVE            SAVE REGISTERS                          CMT10430
1332  0300 1682      1044          LB    R0,CONADR           GET KB DEV ADR                          CMT10440
1336  4810 167E      1045          LH    R1,PASFLG           PASLA ?                                 CMT10450
133A  2333           1046          BZS   KBRD1                                                       CMT10460
133C  DE00 169C      1047          OC    R0,CONRQ2S                                                  CMT10470
1340  DE00 1691      1048  KBRD1   OC    R0,CONENRD          CONSOLE : ENABLE, READ                  CMT10480
1344  0100 3E60      1049          LM    R0,RSAVE            RESTORE REGISTERS                       CMT10490
1348  030F           1050          BR    LINK                RETURN                                  CMT10500
                     1051  *-----------------------------                                            CMT10510
                     1052  *  LIST DEVICE SET UP ROUTINE                                             CMT10520
                     1053  *                                                                          CMT10530
134A  4010 135E      1054  SETUP   STH   R1,SET.RTN                                                  CMT10540
134E  0310 3007      1055          LB    R1,IOSAVE+1         GET LIST DEVICE IDENTIFIER              CMT10550
1352  9111           1056          SLHLS R1,1                HW INDEX                                CMT10560
1354  0301 0A11      1057          LB    R0,IO+1(R1)         GET LIST DEVICE ADDRESS                 CMT10570
1358  DE01 1685      1058          OC    R0,CONWRT(R1)                                               CMT10580
135C  4300 135C      1059          B     *                   RETURN                                  CMT10590
      0000 135E      1060  SET.RTN EQU   *-2                                                         CMT10600
                     1061  * ****************************                                           CMT10610
                     1062  *  LOW CORE SET UP ROUTINE                                                CMT10620
                     1063  *                                                                          CMT10630
1360  0711           1064  LCORE   XAR   R1,R1                                                       CMT10640
1362  2422           1065          LIS   R2,2                                                        CMT10650
1364  C830 004E      1066          LHI   R3,X'4E'                                                    CMT10660
1368  0700           1067          XAR   R0,R0                                                       CMT10670
136A  4001 0000      1068  ZERO1   STH   R0,0(R1)                                                    CMT10680
136E  C110 136A      1069          BXLE  R1,ZERO1            ZERO CORE FROM 0 THRU X'4F'             CMT10690
1372  C810 0080      1070          LHI   R1,X'80'                                                    CMT10700
1376  C830 00CE      1071          LHI   R3,X'CE'                                                    CMT10710
137A  4001 0000      1072  ZERO2   STH   R0,0(R1)                                                    CMT10720
137E  C140 137A      1073          BXLE  R1,ZERO2            ZERO CORE FROM X'80' THRU X'CF'         CMT10730
1382  C800 1480      1074          LHI   R0,XI32             INTERRUPT HANDLER ROUTINE               CMT10740
1386  C830 08CE      1075          LHI   R3,X'8CE'                                                   CMT10750
138A  4001 0000      1076  ZERO3   STH   R0,0(R1)                                                    CMT10760
138E  C110 138A      1077          BXLE  R1,ZERO3            SET UP INT SERVICE POINTER TABLE        CMT10770
1392  C830 1586      1078          LHI   R3,II                                                       CMT10780
1396  4030 0036      1079          STH   R3,X'36'            ILL INST INT NEW PSW LOC                CMT10790
139A  C840 1500      1080          LHI   R4,MM                                                       CMT10800
139E  4040 003E      1081          STH   R4,X'3E'            M. M. INT NEW PSW LOC                   CMT10810
13A2  C830 1582      1082          LHI   R3,AF                                                       CMT10820
13A6  4030 004C      1083          STH   R3,X'4E'            ARITHMETIC FAULT NEW PSW LOC(32-BIT)    CMT10830
                     1084  *                               FIXED PT DIVIDE FAULT NEW PSW LOC       CMT10840
13AA  C840 3E60      1085          LHI   R4,RSAVE                                                    CMT10850
13AE                 1086          IFZ   ADC-2                                                       CMT10860
13AE  4810 166C      1087          LH    R1,M0032                                                    CMT10870
13B2  4230 1304      1088          BNZ   LCORE32                                                     CMT10880
                     1089  *                                                                          CMT10890
                     1090  *  SET UP LOW CORE FOR 16 BIT MACHINE                                     CMT10900
                     1091  *                                                                          CMT10910
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13B6  4040 0022          1092           STH   R4,X'22'          REG SAVE POINTER                        CMT10920
13BA  C830 1570          1093           LHI   R3,FP                                                       CMT10930
13BE  4030 002E          1094           STH   R3,X'2E'          FLOATING PT FAULT INT NEW PSW LOC       CMT10940
13C2  4850 0A24          1095           LH    R5,PSW2                                                     CMT10950
13C6  4050 0044          1096           STH   R5,X'44'          HW EXT INT NEW PSW STATUS               CMT10960
13CA  C850 14A2          1097           LHI   R5,XI16                                                     CMT10970
13CE  4050 0046          1098           STH   R5,X'46'          EXT INT NEW PSW LOC                     CMT10980
13D2  030F               1099           BR    LINK                                                        CMT10990
                         1100           ENDC                                                              CMT11000
                         1101  *                                                                          CMT11010
                         1102  *  SET UP LOW CORE FOR 32 BIT MACHINE                                      CMT11020
                         1103  *                                                                          CMT11030
13D4  4040 0086          1104  LCORE32  STH   R4,X'86'          REG SAVE POINTER                        CMT11040
13D8  C840 35A0          1105           LHI   R4,PSWSAVE        PPE PSW SAVE AREA                       CMT11050
13DC  4040 0084          1106           STH   R4,X'84'          .   POINTER                             CMT11060
13E0  C830 1578          1107           LHI   R3,RP                                                       CMT11070
13E4  4030 0096          1108           STH   R3,X'96'          RELOC/PROTECT INT NEW PSW LOC           CMT11080
13E8  D31C 1682          1109           LB    R1,CONADR         LOAD CONSOLE I/O ADDRESS                CMT11090
13EC  0A11               1110           AAR   R1,R1                                                       CMT11100
13EE  C800 140C          1111           LHI   R0,KBINT0         R0 = A(KEYBOARD INT HANDLER)            CMT11110
13F2  4001 0000          1112           STH   R0,X'00'(R1)      STORE @  X'00'+2(KB DEV ADR)            CMT11120
13F6  0711               1113           XAR   R1,R1             TO SET UP SERVICE POINTER TABLE         CMT11130
13F8  C830 14B0          1114           LHI   R3,XI32                                                     CMT11140
13FC  4821 19DC          1115  LCORE32A LH    R2,DEVSADR(R1)    GET DEV ADR FROM TABLE                  CMT11150
1400  021F               1116           BMR   LINK              DONE, RETURN                            CMT11160
1402  0A22               1117           AAR   R2,R2                                                       CMT11170
1404  4032 00D0          1118           STH   R3,X'D0'(R2)      STORE @  X'D0'+2(DEV ADR)               CMT11180
1408  2612               1119           AIS   R1,2                                                        CMT11190
140A  2207               1120           BS    LCORE32A                                                    CMT11200
                         1121  *---------------------------------                                        CMT11210
                         1122  *  KEYBOARD INTERRUPT HANDLER                                             CMT11220
                         1123  *                                                                          CMT11230
140C  C330 0020          1124  KBINT0   THI   R3,X'20'          IS BREAK KEY DEPRESSED ?                CMT11240
1410  4330 1454          1125           BZ    KBINT1            NO                                      CMT11250
1414  D300 0A10          1126           LB    R0,IO                                                       CMT11260
1418  C500 0005          1127           CLHI  R0,5              IS IT MICROBUS ?                        CMT11270
141C  213C               1128           BNES  KBINT0B           NO, BRANCH                              CMT11280
141E  0E20 168E          1129           OC    R2,MREADC         YES, ISSUE READ                         CMT11290
1422  9023               1130           SSR   R2,R3                                                       CMT11300
1424  2081               1131           BTBS  8,1                                                         CMT11310
1426  9824               1132  KBINT0C  RDR   R2,R4             KNOCK DOWN BREAK                        CMT11320
1428  9023               1133           SSR   R2,R3                                                       CMT11330
142A  C330 0020          1134           THI   R3,X'20'          BREAK STILL THERE ?                     CMT11340
142E  2034               1135           BNZS  KBINT0C           YES, KNOCK IT DOWN AGAIN                CMT11350
1430  4300 1490          1136           B     RETOPSW           NO, RETURN ON OLD PSW                   CMT11360
      0000 1434          1137  KBINT0B  EQU   *                                                         CMT11370
1434  4850 167E          1138           LH    R5,PASFLG         CONSOLE ON PASLA ?                      CMT11380
1438  2339               1139           BZS   KBINT0A           BRANCH IF NO.                           CMT11390
143A  9824               1140           RDR   R2,R4                                                       CMT11400
143C  9023               1141           SSR   R2,R3                                                       CMT11410
143E  2281               1142           BFBS  8,1                                                         CMT11420
1440  0844               1143           LDAR  R4,R4                                                       CMT11430
1442  4230 1490          1144           BNZ   RETOPSW           IGNORE FRERR ONLY                       CMT11440
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1446  4300 1468          1145  KBINT00  B      KBINT3              ***                                  CMT11450
144A  9023               1146  KBINTOA  SSR    R2,R3                                                    CMT11460
144C  C330 0020          1147           THI    R3,X'20'                                                 CMT11470
1450  2033               1148           BTBS   3,3                 WAIT FOR BREAK RELEASE               CMT11480
1452  2206               1149           BS     KBINT00             GO TO COMMAND MODE                   CMT11490
      0000 1454          1150  KBINT1   EQU    *                                                        CMT11500
1454  C540 0005          1151           CLHI   R0,5                IS IT MICROBUS ?                     CMT11510
1458  2138               1152           BNES   KBINT3              NO, BRANCH                           CMT11520
145A  DE20 168E          1153           OC     R2,=READC           READ COMMAND TO MICROBUS              CMT11530
145E  9023               1154           SSR    R2,R3                                                    CMT11540
1460  2081               1155           BTBS   8,1                                                      CMT11550
1462  9824               1156           RDR    R2,R4               KNOCK DOWN INTERRUPT                 CMT11560
1464  4300 1490          1157           B      RETOPSW             RETURN                               CMT11570
      0000 1468          1158  KBINT3   EQU    *                                                        CMT11580
1468  4020 1678          1159           STH    R2,INTDEV                                                CMT11590
146C  D230 167A          1160           STB    R3,INTSTA                                                CMT11600
1470                     1161           IFZ    ADC-2                                                    CMT11610
1470  4840 166C          1162           LH     R4,=D32                                                  CMT11620
1474  2305               1163           BZS    KBINT2                                                   CMT11630
                         1164           ENDC                                                            CMT11640
1476  4000 1672          1165           STH    R0,OPSW             STORE OLD PSW OF 32-BIT PROCESSOR    CMT11650
147A  4010 1676          1166           STH    R1,OLOC             IN ORDER TO RETURN BACK TO TEST      CMT11660
147E  9824               1167  KBINT2   RDR    R2,R4                                                    CMT11670
1480  41F0 123E          1168           BAL    LINK,ECHO           ECHO RECEIVED BYTE                   CMT11680
1484  489C 16A2          1169           LH     R9,KBINT            IF ZERO,IGNORE: ELSE                 CMT11690
1488  0239               1170           BNZR   R9                  GO,PROCESS KB INT FURTHER            CMT11700
148A  D320 0A10          1171  NOBRK    LB     R2,IO               .                              **    CMT11710
148E  9824               1172           RDR    R2,R4               .                              **    CMT11720
                         1173  * ------------------------------                                         CMT11730
                         1174  *  TO RETURN ON OLD PSW                                                 CMT11740
                         1175  *                                                                       CMT11750
      0000 1490          1176  RETOPSW  EQU    *                                                        CMT11760
1490                     1177           IFZ    ADC-2                                                    CMT11770
1490  4890 166C          1178           LH     R9,=D32                                                  CMT11780
1494  2135               1179           BNZS   RETOPSW1                                                 CMT11790
1496  D100 3008          1180           LM     R0,INTSAV           RESTORE REGISTERS                    CMT11800
149A  C200 0040          1181           LPSW   X'40'               RETURN ON OLD PSW AFTER KB INT       CMT11810
                         1182           ENDC                                                            CMT11820
149E  C200 1670          1183  RETOPSW1 LPSW   OPSW32                                                  CMT11830
                         1184  * ********************************************                           CMT11840
                         1185  *  EXTERNAL INTERRUPT HANDLER                                           CMT11850
14A2                     1186           IFZ    ADC-2                                                    CMT11860
14A2  0000 3008          1187  XI16     STM    R0,INTSAV           FOR 16-BIT PROCESSOR                 CMT11870
14A6  9F23               1188           ACKR   R2,R3               ACKNOWLEDGE THE INTERRUPT            CMT11880
14A8  D420 16B2          1189           CLR    R2,CONADR           FROM KEYBOARD DEVICE ?               CMT11890
14AC  4330 14C0          1190           BE     KBINT0                                                   CMT11900
                         1191           ENDC                                                            CMT11910
                         1192  *                                                                       CMT11920
      0000 14B0          1193  XI32     EQU    *                   FOR 32-BIT PROCESSOR                 CMT11930
14B0  95AA               1194           EPSR   R10,R10             CAPTURE CURRENT PSW                  CMT11940
14B2  40A0 166E          1195           STH    R10,INTPSW                                               CMT11950
14B6  4020 1678          1196           STH    R2,INTDEV           STORE INTERRUPTING DEVICE ADDRESS    CMT11960
14BA  D230 167A          1197           STB    R3,INTSTA           STORE INTERRUPTING DEVICE STATUS     CMT11970
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14BE                    1195          IFZ   ADC-2                                          CMT11980
14BE  485C 166C         1199          LH    R5,MOD32                                       CMT11990
14C2  2135              1200          BNZS  XI32A                                          CMT12000
14C4  4800 0040         1201          LH    R0,X'40'          16-BIT OLD PSW               CMT12010
14C8  4810 0042         1202          LH    R1,X'42'                                       CMT12020
                        1203          ENDC                                                 CMT12030
14CC  4000 1672         1204  XI32A   STH   R0,OPSW           STORE OLD PSW STATUS         CMT12040
14D0  4010 1676         1205          STH   R1,OLOC           STORE OLD PSW LOC            CMT12050
14D4                    1206          IFZ   ADC-2                                          CMT12060
14D4  0855              1207          LOAR  R5,R5             MOD32 = 0 ?                  CMT12070
14D6  233A              1208          BZS   XI16A             BRANCH IF YES.               CMT12080
                        1209          ENDC                                                 CMT12090
14D8  4820 0A24         1210          LH    R2,PSW2                                        CMT12100
14DC  9512              1211          EPSR  R1,R2             SELECT USER REGISTER SET     CMT12110
14DE  D000 3DD8         1212          STM   R0,INTSAV         SAVE USER REGISTERS          CMT12120
14E2  4820 1678         1213          LH    R2,INTDEV                                      CMT12130
14E6  48A0 166E         1214          LH    R10,INTPSW                                     CMT12140
                        1215  *                                                            CMT12150
14EA  0755              1216  XI16A   XAR   R5,R5                                          CMT12160
14EC  4865 190C         1217  XI1     LH    R6,DEVSADR(R5)    GET DEV ADRS FROM TABLE      CMT12170
14F0  4210 153C         1218          BM    XIERR             TABLE OVERFLOW.            CMT12180
14F4  0562              1219          CLAR  R6,R2             COMPARE INTERRUPTING DEVICE ADDRESS  CMT12190
14F6  2333              1220          BES   XI2                                            CMT12200
14F8  2652              1221          AIS   R5,2                                          CMT12210
14FA  2207              1222          BS    XI1                                            CMT12220
14FC  4865 1906         1223  XI2     LH    R6,DEVINT(R5)     GET INTERRUPT HANDLER ADDRESS  CMT12230
1500  4330 153C         1224          BZ    XIERR             INTERRUPT NOT EXPECTED       CMT12240
1504  4060 153A         1225          STH   R6,XIEXIT                                      CMT12250
                        1226  *                                                            CMT12260
1508                    1227          IFZ   ADC-2                                          CMT12270
1508  486C 166C         1228          LH    R6,MOD32          32-BIT MACHINE ?             CMT12280
150C  2339              1229          BZS   XI3               BRANCH IF NO.                CMT12290
                        1230          ENDC                                                 CMT12300
150E  9051              1231          SRLS  R5,1                                           CMT12310
1510  90A4              1232          SRLS  R10,4                                          CMT12320
1512  C4A0 000F         1233          NHI   R10,15                                         CMT12330
1516  D4A5 1902         1234          CLB   R10,INTLVL(R5)    CHECK PROPER INTERRUPT LEVEL CMT12340
151A  4230 154C         1235          BNE   LVLERR                                         CMT12350
                        1236  *                                                            CMT12360
151E  4860 1676         1237  XI3     LH    R6,OLOC           GET PSW AT TIME OF INTERRUPT CMT12370
1522  C560 10C2         1238          CLHI  R6,TIMER+4                                     CMT12380
1526  2187              1239          BLS   XI4               WAS INTERRUPT IN TIMER ROUTINE ?  CMT12390
1528  C560 10D6         1240          CLHI  R6,TIMXT                                       CMT12400
152C  2384              1241          BNLS  XI4               BRANCH IF NO.                CMT12410
152E  D100 3E60         1242          LM    R0,RSAVE          RESTORE FROM 'TIMER' ENTRY   CMT12420
1532  2303              1243          BS    XI5                                            CMT12430
1534  D100 3DD8         1244  XI4     LM    R0,INTSAV         RESTORE FROM XI16/XI32 ENTRY CMT12440
1538  4300 1538         1245  XI5     B     *                 AND GO TO INTERRUPT HANDLER  CMT12450
      0000 153A         1246  XIEXIT  EQU   *-2                                           CMT12460
                        1247  *---------------------------------                         CMT12470
                        1248  *  EXTERNAL INTERRUPT ERROR ROUTINE                        CMT12480
                        1249  *                                                            CMT12490
153C  C860 4634         1250  XIERR   LHI   R6,C'F4'          ERROR # F4                   CMT12500
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1540  4060 16E6          1251          STH   R6,ERRNO                                    CMT12510
1544  41F0 0F98          1252          BAL   LINK,ERRALL          'ERROR XXF4', 'DEV DDD STA SS'   CMT12520
                         1253  *                                  'PSW PPPP  LOC LLLL'     CMT12530
1548  4300 0AEA          1254          B     OPTIN1               TO ENTER COMMAND MODE    CMT12540
                         1255  *--------------------------------                           CMT12550
                         1256  * DEVICE INTERRUPTED IN WRONG INTERRUPT LEVEL               CMT12560
                         1257  *                                                           CMT12570
154C  C860 4636          1258  LVLERR LHI  R6,C'F6'               ERROR # F6               CMT12580
1550  4060 16E6          1259         STH   R6,ERRNO                                      CMT12590
1554  D3AA 16C4          1260         LB    R10,HEXTAB(R10)      CONVERT TO ASCII         CMT12600
1558  D2A0 1748          1261         STB   R10,ERRLVL           AND STORE ERROR LEVEL IN MESSAGE CMT12610
155C  41F0 0F98          1262         BAL   LINK,ERRALL          'ERROR XXF6', 'DEV DDD STA SS'   CMT12620
                         1263  *                                  'PSW PPPP  LOC LLLL'     CMT12630
1560  C850 1732          1264         LHI   R5,INTLVLM                                    CMT12640
1564  4050 16A6          1265         STH   R5,ISITERR           SET FLAG TO OVERRIDE NOMSG OPTION CMT12650
1568  41F0 1128          1266         BAL   LINK,PRINT           'INTERRUPTED IN LEVEL  N'    CMT12660
156C  4300 0AEA          1267         B     OPTIN1               ENTER COMMAND MODE.      CMT12670
                         1268  *----------------------------                              CMT12680
                         1269  *  SPURIOUS INTERRUPT HANDLERS                              CMT12690
                         1270  *                                                           CMT12700
                         1271  *                                                           CMT12710
1570                     1272         IFZ   ADC-2                                         CMT12720
                         1273  *  FLOATING-PT ARITH FAULT INT TRAP  (16 BIT PROCESSOR)     CMT12730
                         1274  *                                                           CMT12740
1570  48E0 0028          1275  FP     LH    R14,X'28'            OLD PSW (16-BIT PROCESSOR)   CMT12750
1574  48F0 002A          1276         LH    R15,X'2A'            OLD LOC                  CMT12760
                         1277         ENDC                                                CMT12770
                         1278  *                                                           CMT12780
                         1279  *  RELOCATION/PROTECTION INT TRAP                           CMT12790
                         1280  *                                                           CMT12800
1578  C820 4635          1281  RP     LHI   R2,C'F5'                                      CMT12810
157C  4020 16E6          1282         STH   R2,ERRNO             SET ERROR # F5           CMT12820
1580  230C               1283         BS    COMM                                          CMT12830
                         1284  *                                                           CMT12840
                         1285  *  ARITHMETIC FAULT INT (32-BIT PROCESSOR) TRAP             CMT12850
1582                     1286         IFZ   ADC-2                                         CMT12860
                         1287  *  FIXED-PT DIVIDE FAULT INT (16-BIT PROCESSOR) TRAP        CMT12870
                         1288         ENDC                                                CMT12880
                         1289  *                                                           CMT12890
1582  C820 4631          1290  AF     LHI   R2,C'F1'                                      CMT12900
1586  4020 16E6          1291         STH   R2,ERRNO             SET ERROR # F1           CMT12910
158A                     1292         IFZ   ADC-2                                         CMT12920
158A  4820 166C          1293         LH    R2,M0032                                      CMT12930
158E  2135               1294         BNZS  COMM                                          CMT12940
1590  48E0 0048          1295         LH    R14,X'48'            OLD PSW (16-BIT PROCESSOR)   CMT12950
1594  48F0 004A          1296         LH    R15,X'4A'            OLD LOC (16-BIT PROCESSOR)   CMT12960
                         1297         ENDC                                                CMT12970
1598  40E0 1672          1298  COMM   STH   R14,OPSW                                      CMT12980
159C  40F0 1676          1299         STH   R15,OLOC                                      CMT12990
15A0  4800 0A24          1300  COMM1  LH    R0,PSW2                                       CMT13000
15A4  9520               1301         EPSR  R2,R0                NO INT. , REG SET 15     CMT13010
15A6  41F0 0F4A          1302         BAL   LINK,ERR             PRINT 'ERROR XXFN'       CMT13020
15AA  40F0 16A6          1303         STH   LINK,ISITERR         FORCE PRINT              CMT13030
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15AE  41E0 1042          1304          BAL   RET,ERRPL1        PRINT 'PSW PPPP  LOC LLLL'          CMT13040
15B2  4300 0AEA          1305          B     OPTIN1            ENTER COMMAND MODE                 CMT13050
                         1306  *                                                                  CMT13060
                         1307  *  ILLEGAL INSTRUCTION INTERRUPT TRAP                              CMT13070
                         1308  *                                                                  CMT13080
15B6  C820 4632          1309  II      LHI   R2,C'F2'                                            CMT13090
15BA  4020 16E6          1310          STH   R2,ERRNO          SET ERROR # F2                     CMT13100
15BE                     1311          IFZ   ADC-2                                                CMT13110
15BE  4820 166C          1312          LH    R2,MOD32                                             CMT13120
15C2  2135               1313          BNZS  II32                                                 CMT13130
15C4  48E0 0030          1314          LH    R14,X'30'         OLD PSW                            CMT13140
15C8  48F0 0032          1315          LH    R15,X'32'         OLD LOC                            CMT13150
                         1316          ENDC                                                       CMT13160
15CC  4300 1598          1317  II32    B     COMM                                                 CMT13170
                         1318  *                                                                  CMT13180
                         1319  *  MACHINE MALFUNCTION INTERRUPT TRAP                              CMT13190
                         1320  *                                                                  CMT13200
15D0  95AA               1321  MM      EPSR  R10,R10           CAPTURE MMINT PSW                  CMT13210
15D2  C820 4633          1322          LHI   R2,C'F3'                                             CMT13220
15D6  4020 16E6          1323          STH   R2,ERRNO          SET ERROR # F3                     CMT13230
15DA  48E0 0022          1324          LH    R14,X'22'         OLD PSW ( 32-BIT PROCESSOR)        CMT13240
15DE  48F0 0026          1325          LH    R15,X'26'         OLD LOC                            CMT13250
15E2                     1326          IFZ   ADC-2                                                CMT13260
15E2  4820 166C          1327          LH    R2,MOD32                                             CMT13270
15E6  2135               1328          BNZS  MM32                                                 CMT13280
15E8  48E0 0038          1329          LH    R14,X'38'         OLD PSW (16 BIT PROCESSOR)         CMT13290
15EC  48F0 003A          1330          LH    R15,X'3A'         OLD LOC                            CMT13300
                         1331          ENDC                                                       CMT13310
15F0  C4E0 FFF0          1332  MM32    NHI   R14,X'FFF0'                                          CMT13320
15F4  C4A0 000F          1333          NHI   R10,X'000F'                                          CMT13330
15F8  06EA               1334          OAR   R14,R10                                              CMT13340
15FA  40E0 1672          1335          STH   R14,OPSW                                             CMT13350
15FE  40F0 1676          1336          STH   R15,OLOC                                             CMT13360
1602                     1337          IFZ   ADC-2                                                CMT13370
1602  C810 7FFF          1338          LHI   R1,X'7FFF'                                           CMT13380
1606  2711               1339  MM16    SIS   R1,1                                                 CMT13390
1608  2021               1340          BPS   MM16                                                 CMT13400
                         1341          ENDC                                                       CMT13410
160A  C800 080F          1342          LHI   R0,X'080F'                                           CMT13420
160E  9104               1343          SLHLS R0,4              R0 = X'80F0'                       CMT13430
1610  9520               1344          EPSR  R2,R0             HALT PROCESSOR                     CMT13440
                         1345  *                                                                  CMT13450
                         1346  *   WHEN EXE/RUN IS DEPRESSED, ERROR MSG IS PRINTED.               CMT13460
                         1347  *                                                                  CMT13470
1612  4300 15A0          1348          B     COMM1                                                CMT13480
                         1349  *                                                                  CMT13490
                         1350  *-------------------------                                         CMT13500
1616  48F0 166C          1351  MACHNUM LH    R15,MOD32         .                          **      CMT13510
161A  4230 163C          1352          BNZ   BUFCHA32          .                          **      CMT13520
161E  0777               1353  BUFCHA16 XHR  R7,R7             STORE ADDRESS OF WBUFF OR RBUFF **     CMT13530
1620  D271 0008          1354          STB   R7,11(R1)         IN OPTION/COMMAND TABLE    **      CMT13540
1624  4061 0006          1355          STH   R6,6(R1)          .                          **      CMT13550
1628  C510 1776          1356          CLHI  R1,MWRITE         TEST IF WSTART OR RSTART   **      CMT13560
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162C  2334              BES   WSTORE          .                                   **  CMT13570
162E  4060 35C0  RSTORE   STH   R6,RADDRS      .                                   **  CMT13580
1632  2303              BS    ROPTIN2         .                                   **  CMT13590
1634  4060 35BC  WSTORE   STH   R6,WADDRS      .                                   **  CMT13600
1638  4300 0AE6  ROPTIN2  B     OPTIN           .                                   **  CMT13610
163C  0876       BUFCHA32 LHR   R7,R6           STORES NEW ADRS FOR 32 BIT MACHIN**  CMT13620
163E  4071 0006           STH   R7,6(R1)        STORE 1ST 16 BITS OF NEW ADDRESS **  CMT13630
1642  1066              DC    X'1068'         NOTE: THESE ARE SRLS INSTRUCTIONS**  CMT13640
1644  1068              DC    X'1068'         THEY PERFORM FULLWORD SHIFTS     **  CMT13650
1646  C460 000F           NHI   R6,X'F'         .                                   **  CMT13660
164A  D261 000B           STB   R6,11(R1)       STORE 1ST 4 BITS OF NEW ADDRESS  **  CMT13670
164E  C510 1776           CLHI  R1,MWRITE       .                                   **  CMT13680
1652  2336              BES   WSTORE1         .                                   **  CMT13690
1654  4070 35C2  RSTORE1  STH   R7,RADDRS+2     STORE RBUFF ADDRESS IN RADDRS    **  CMT13700
1658  D260 35C1           STB   R6,RADDRS+1     .                                   **  CMT13710
165C  2305              BS    ROPTIN1         .                                   **  CMT13720
165E  4070 35BE  WSTORE1  STH   R7,WADDRS+2     STORE WBUFF ADDRESS IN WADDRS    **  CMT13730
1662  D260 35BD           STB   R6,WADDRS+1     .                                   **  CMT13740
1666  4300 0AE6  ROPTIN1  B     OPTIN           .                                   **  CMT13750
                 * ****************************                                        CMT13760
                 *  ETPE CONSTANTS & TABLES                                            CMT13770
                 *                                                                     CMT13780
166A  0000       FIRST    DCX   0                                                      CMT13790
166C  0000       MOD32    DCX   0               FLAG FOR 32-BIT M/C(NON-ZERO)          CMT13800
166E  0000       INTPSW   DCX   0               (FOR 32-BIT M/C ONLY)                  CMT13810
1670                      ALIGN 8                                                      CMT13820
                 *------------------------                                             CMT13830
1670  0000       OPSW32   DCX   0               OLD PSW STORAGE AREA                   CMT13840
1672  0000       OPSW     DCX   0                                                      CMT13850
1674  0000                DCX   0                                                      CMT13860
1676  0000       OLOC     DCX   0                                                      CMT13870
                 *------------------------                                             CMT13880
1678  0000       INTDEV   DCX   0               INTERRUPTING DEV ADR                   CMT13890
      0000 1678  ERRDEV   EQU   INTDEV          ERROR DEVICE #                         CMT13900
167A  00         INTSTA   DB    0               INTERRUPTING DEV STATUS                CMT13910
      0000 167A  ERRSTA   EQU   INTSTA          ERRONEOUS STATUS                       CMT13920
167B  00         SINK     DB    0               BIT BUCKET                             CMT13930
167C  80         NORM     DB    X'80'                                                  CMT13940
167D  40         INCR     DB    X'40'                                                  CMT13950
167E                      DB    *                                                      CMT13960
167E  0000       PASFLG   DCX   0               SET WHEN CONSOLE ON PASLA/PALM         CMT13970
1680  0000       PASFLG2  DCX   0               SET WHEN LIST DEVICE ON PASLA          CMT13980
                 * --------------------                                                CMT13990
                 *  ETPE IO COMMANDS                                                   CMT14000
                 *                                                                     CMT14010
1682  0000       CONADR   DCX   0               CONSOLE DEVICE ADDRESS                 CMT14020
                 *                                                                     CMT14030
1684  0000       CONRD    DCX   0               CONSOLE READ/WRITE COMMANDS            CMT14040
      0000 1685  CONWRT   EQU   CONRD+1                                                CMT14050
1686  B9AB       CRTRD    DCX   B9AB            FOR CRT                                CMT14060
1688  A4D8       CLIFRD   DCX   A4D8            *   CURRENT LOOP INTERFACE             CMT14070
168A  0080       LPWRT    DCX   0080            *   LINE PRINTER                       CMT14080
168C  A9AB       CARRD    DCX   A9AB            *   CAROUSEL 300                       CMT14090
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168E 8202                1410  MREADC  DCX   8202              *   MICROBUS                    CMT14100
                         1411  *                                                                 CMT14110
1690 0000                1412  CON2ND  DCX   0                 2ND COMMAND: ENABLE READ COMMAND  CMT14120
     0000 1691           1413  CONENRD EQU   CON2ND+1                                            CMT14130
1692 F879                1414  CRT2ND  DCX   F879              FOR CRT                           CMT14140
1694 0064                1415  CLIF2ND DCX   0064              *   CURRENT LOOP INTERFACE        CMT14150
1696 0000                1416          DCX   0                 *   DUMMY HW FOR LP               CMT14160
1698 F069                1417  CAR2ND  DCX   F069              *   CAROUSEL 300                  CMT14170
169A 0000                1418          DCX   0                 *   DUMMY HW FOR MICROBUS         CMT14180
                         1419  *                                                                 CMT14190
169C 00                  1420  CONRQ2S DB    0                 CONSOLE REQUEST TO SEND CMD       CMT14200
169D 3B                  1421  CRTRQ2S DB    X'3B'             FOR CRT                           CMT14210
169E 00                  1422          DB    0                 *   DUMMY BYTE FOR CLI            CMT14220
169F 00                  1423          DB    0                 *   DUMMY BYTE FOR LP             CMT14230
16A0 23                  1424  CARRQ2S DB    X'23'             *   CAROUSEL 300                  CMT14240
16A1 00                  1425          DB    0                 *   DUMMY BYTE FOR MICROBUS       CMT14250
16A2                     1426          DB    *                                                   CMT14260
                         1427  * --------------------                                           CMT14270
16A2 1490                1428  KBINT   DC    Z(RETOPSW)        KEYBOARD INT RETURN ADR           CMT14280
16A4 0000                1429  BRKVECT DC    Z(0)              BREAK KEY VECTOR                  CMT14290
16A6 0000                1430  ISITERR DCX   0                                                   CMT14300
16A8 0000                1431  NOERR   DCX   0                                                   CMT14310
16AA 0000                1432  SELTST  DCX   0                 HIGHEST SELECTED TEST #           CMT14320
16AC 0000                1433  WASDU   DCX   0                 1 IF KEYBOARD DEVICE WAS OFF      CMT14330
16AE 0000                1434  WASDU1  DCX   0                 NON-ZERO IF TOTAL,TOTERR TO PRINT CMT14340
16B0 0000                1435  TOTAL   DCX   0                 # OF TIMES THE SELECTED TESTS RUN CMT14350
16B2 0000                1436  TOTERR  DCX   0                 TOTAL ERRORS DETECTED WHILE DU    CMT14360
16B4 0000                1437  BTESTNO DCX   0                 CURRENT TEST # IN BINARY          CMT14370
16B6 0000                1438  COUNT   DCX   0                                                   CMT14380
16B8 0000                1439  NEXTST  DCX   0                 NEXT TEST #                       CMT14390
                         1440  *                                                                 CMT14400
16BA 0001                1441  DECTAB  DC    1,10,100,1000,10000                                 CMT14410
16BC 000A
16BE 0064
16C0 03E8
16C2 2710
16C4 3031 3233 3435 3637 1442  HEXTAB  DB    C'0123456789ABCDEF'                                 CMT14420
16CC 3839 4142 4344 4546
                         1443  *--------------------------------                                 CMT14430
                         1444  *  ETPE MESSAGES                                                  CMT14440
                         1445  *                                                                 CMT14450
16D4 5445 5354 2020 2A2A 1446  TSTMSG  DC    C'TEST  **',X'0D00'                                 CMT14460
16DC 0D00
     0000 16DA           1447  MTESTNO EQU   *-4                                                 CMT14470
16DE 4552 524F 5220 2A2A 1448  ERRMSG  DC    C'ERROR ****',X'0D00'                               CMT14480
16E6 2A2A
16E8 0D00
     0000 16E4           1449  ETESTNO EQU   *-6                 STORED BY ETPE                  CMT14490
     0000 16E6           1450  ERRNO   EQU   *-4                 STORE ERRNO AS CHAR CONSTANT    CMT14500
16EA 544F 5441 4C20 2020 1451  TOTMSG  DC    C'TOTAL   TOTERR',X'0D00'                           CMT14510
16F2 544F 5445 5252
16F8 0D00
16FA 4E4F 2045 5252 4F52 1452  NOERMSG DC    C'NO ERROR',X'0D00'                                 CMT14520
```

```
1702   0D00
1704   4445 5620 2A2A 2A20  1453  DEVMSG   DC    C'DEV *** STA **',X'0D00'                CMT14530
170C   5354 4120 2A2A
1712   0D00
       0000 1708            1454  ASCIDEV  EQU   *-12                                    CMT14540
       0000 170C            1455  STAMSG   EQU   *-8                                     CMT14550
       0000 1710            1456  ASCISTA  EQU   *-4                                     CMT14560
1714   4445 5620 2A2A 2A20  1457  DEVMSG2  DC    C'DEV ***',X'0D00'                       CMT14570
171C   0D00
       0000 1716            1458  ASCIDEV2 EQU   *-6                                     CMT14580
171E   5053 5720 2A2A 2A2A  1459  PSWMSG   DC    C'PSW ****  LOC ****',X'0D00'          CMT14590
1726   2020 4C4F 4320 2A2A
172E   2A2A
1730   0D00
       0000 1722            1460  ASCIPSW  EQU   *-16                                    CMT14600
       0000 1728            1461  LOCMSG   EQU   *-10                                    CMT14610
       0000 172C            1462  ASCILOC  EQU   *-6                                     CMT14620
1732   494E 5445 5252 5550  1463  INTLVLM  DC    C'INTERRUPTED IN LEVEL  *',X'0D00'       CMT14630
173A   5445 4420 494E 204C
1742   4556 454C 2020 2A20
174A   0D00
       0000 1748            1464  ERRLVL   EQU   *-4                                     CMT14640
174C   454E 4420 4F46 2054  1465  EOTMSG   DC    C'END OF TEST',X'0D00'                  CMT14650
1754   4553 5420
1758   0D00
175A   3F0D                 1466  QMSG     DC    X'3F0D'                                 CMT14660
175C   2A0D                 1467  AMSG     DC    X'2A0D'                                 CMT14670
```

```
                                1469  *------------------------------
                                1470  *  OPTION/COMMAND TABLE                                    CMT14690
                                1471  *                                                          CMT14700
                    0000 175E   1472  OPT       EQU   *                                         CMT14710
175E  5445 5354 2020            1473  TEST      DC    C'TEST  ',X'FC00',X'0000',X'0000'         CMT14720
1764  FC00                                                                                      CMT14730
1766  0000
1768  0000
176A  5253 5441 5254            1474  MREAD     DC    C'RSTART',0,MACHNUM,0                     CMT14740
1770  0000
1772  1616
1774  0000
1776  5753 5441 5254            1475  MWRITE    DC    C'WSTART',0,MACHNUM,0                     CMT14750
177C  0000
177E  1616
1780  0000
1782  4C4F 4F50 2020            1476  LOOP      DC    C'LOOP  ',X'0000',X'0000',X'0000'         CMT14760
1788  0000
178A  0000
178C  0000
178E  434F 4E54 494E            1477  CONTIN    DC    C'CONTIN',X'0000',Z(ZERONE),X'0000'       CMT14770
1794  0000
1796  3392
1798  0000
179A  4E4F 4D53 4720            1478  NOMSG     DC    C'NOMSG ',X'0000',Z(ZERONE),X'0000'       CMT14780
17A0  0000
17A2  3392
17A4  0000
17A6  4445 5641 4452            1479  DEVADR    DC    C'DEVADR',X'0085',DEVCHN,0                CMT14790
17AC  0085
17AE  33C8
17B0  0000
17B2  4456 3241 4452            1480  DV2ADR    DC    C'DV2ADR',0,DEVCHN,0                      CMT14800
17B8  0000
17BA  33C8
17BC  0000
17BE  5345 4C43 4820            1481  SELADR    DC    C'SELCH ',X'00F0',0,0                     CMT14810
17C4  00F0
17C6  0000
17C8  0000
17CA  494E 544C 4556            1482  INTLEV    DC    C'INTLEV',X'0000',Z(LEVEL),X'0000'        CMT14820
17D0  0000
17D2  33D8
17D4  0000
17D6  4445 5649 4345            1483  DEVICE    DC    C'DEVICE',0,Z(ZERONE),0                   CMT14830
17DC  0000
17DE  3392
17E0  0000
17E2  4D4F 4445 2020            1484  MODE      DC    C'MODE  ',2,MODES,0                       CMT14840
17E8  0002
17EA  33A8
17EC  0000
17EE  5452 4143 4820            1485  TRACK     DC    C'TRACK ',X'0009',TRACKS,0                CMT14850
```

```
17F4  0009
17F6  339A
17F8  0000
17FA  5245 4346 494C      1486  RECFIL   DC    C'RECFIL',X'0100',X3FF,0                CMT14860
1800  0100
1802  33C0
1804  0000
1806  4259 5445 5320      1487  NOBYTE   DC    C'BYTES ',X'FF',HIN2,0                  CMT14870
180C  00FF
180E  3388
1810  0000
1812  4649 4C45 5320      1488  FILES    DC    C'FILES ',1,X3FF,0                      CMT14880
1818  0001
181A  33C0
181C  0000
181E  5245 5045 4154      1489  REPEAT   DC    C'REPEAT',X'0003',X256,0                CMT14890
1824  0003
1826  3380
1828  0000
182A  4952 4720 2020      1490  IRGDAT   DC    C'IRG   ',X'0010',X256,0                CMT14900
1830  0010
1832  33B0
1834  0000
1836  4455 2020 2020      1491  DUINT    DC    C'DU    ',0,Z(ZERONE),0                 CMT14910
183C  0000
183E  3392
1840  0000
1842  5245 4144 2020      1492  OPRD     DC    C'READ  ',1,Z(ZERONE),0                 CMT14920
1848  0001
184A  3392
184C  0000
184E  5752 4954 4520      1493  OPWRT    DC    C'WRITE ',1,Z(ZERONE),0                 CMT14930
1854  0001
1856  3392
1858  0000
185A  4242 5350 4143      1494  OPBSP    DC    C'BKSPAC',1,Z(ZERONE),0                 CMT14940
1860  0001
1862  3392
1864  0000
1866  5348 4950 2020      1495  OPSKIP   DC    C'SKIP  ',1,Z(ZERONE),0                 CMT14950
186C  0001
186E  3392
1870  0000
1872  5745 4F46 2020      1496  OPWEOF   DC    C'WEOF  ',0,Z(ZERONE),0                 CMT14960
1878  0000
187A  3392
187C  0000
187E  434F 4D50 4152      1497  COMPRE   DC    C'COMPAR',1,Z(ZERONE),0                 CMT14970
1884  0001
1886  3392
1888  0000
188A  4352 4320 2020      1498  SCRC     DC    C'CRC   ',0,Z(ZERONE),0                 CMT14980
1890  0000
```

```
1892  3392
1894  0000
1896  5244 4352 4320      1499  RDCRC    DC    C'RDCRC ',0,Z(ZERONE),0                  CMT14990
189C  0000
189E  3392
18A0  0000
18A2  4455 4D50 2020      1500  SDUMP    DC    C'DUMP  ',0,Z(ZERONE),0                  CMT15000
18A8  0000
18AA  3392
18AC  0000
18AE  4441 5441 2020      1501  DATA     DC    C'DATA  ',1,Z(ZERONE),0                  CMT15010
18B4  0001
18B6  3392
18B8  0000
18BA  5343 4F50 4520      1502  SCOPE    DC    C'SCOPE ',0,SCOP,0                       CMT15020
18C0  0000
18C2  3300
18C4  0000
18C6  5449 4D56 414C      1503  TIMVAL   DC    C'TIMVAL',X'140',0,0                     CMT15030
18CC  0140
18CE  0000
18D0  0000
      0000 18D2           1504  OPTEND2  EQU   *                                        CMT15040
      0000 18D2           1505  OPTEND   EQU   *                                        CMT15050
18D2  4F50 5449 4F4E      1506  OPTION   DC    C'OPTION',0,0,0                          CMT15060
18D8  0000
18DA  0000
18DC  0000
18DE  5255 4E20 2020      1507  RUN      DC    C'RUN   ',0,0,0                          CMT15070
18E4  0000
18E6  0000
18E8  0000
18EA  FFFF                1508           DC    -1                                       CMT15080
18EC  0007                1509  MAXTST   DC    7                                        CMT15090
18EE  FC00                1510  DEFTESTS DC    X'FC00',0                                CMT15100
18F0  0000
18F2  1810                1511  TESTS    DC    TEST0,TEST1,TEST2,TEST3                  CMT15110
18F4  1C68
18F6  1D3E
18F8  1E52
18FA  22D4                1512           DC    TEST4,TEST5,TEST6,TEST7                  CMT15120
18FC  23E0
18FE  24EC
1900  273C
1902  0000                1513  INTLVL   DC    0,0                                      CMT15130
1904  0000
1906  0000                1514  DEVINT   DC    0,0,0                                    CMT15140
1908  0000
190A  0000
190C  00F0                1515  DEVSADR  DC    X'F0',X'85',0,-1                         CMT15150
190E  0085
1910  0000
1912  FFFF
```

```
1914   434F 4D4D 4F4E 204D  1516  TITLE    DC    C'COMMON MAGNETIC TAPE TEST PROGRAM 06-172R02',X'000'      CMT15160
191C   4147 4E45 5449 4320
1924   5441 5045 2054 4553
192C   5420 5052 4F47 5241
1934   4D20 3036 2D31 3732
193C   5230 3220
1940   0000
```

SUBROUTINE INIT

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                                1518  *---------------------------------                                  CMT15180
                                1519  *                                                                   CMT15190
                                1520  * SUBROUTINE INIT                                                  *CMT15200
                                1521  *       THIS ROUTINE INITIALIZES THE TEST. IT IS CALLED BY         *CMT15210
                                1522  *       ETPE  IT CHECKS FOR FALSE SYNC FROM DEVICES REQUESTED.     *CMT15220
                                1523  *       AND DO THE NORMAL HOUSE CLEANING.                          *CMT15230
                                1524  *       IF THE TEST IS EXECUTED THE FIRST TIME AFTER LOADING,      *CMT15240
                                1525  *       IT ALSO FORCES THE EXECUTION OF TEST 0 AND SET UP THE      *CMT15250
                                1526  *       10MS TIMER CONSTANT                                        *CMT15260
                                1527  *                                                                  *CMT15270
                                1528  *       CALLING SEQUENCE:                                          *CMT15280
                                1529  *       BAL   R15,INIT                                             *CMT15290
                                1530  * ***************************************************************  CMT15300
                                1531  *                                                                 *CMT15310
1942  4800 18CC                 1532  INIT    LH    R0,TIMVAL+6       GET TIMVAL OPTION FOR 1MS DELAY    CMT15320
1946  2410                      1533          LIS   R1,0                                                 CMT15330
1948  2440                      1534          LIS   R4,0                                                 CMT15340
194A  2421                      1535          LIS   R2,1                                                 CMT15350
194C  2439                      1536          LIS   R3,9                                                 CMT15360
194E  0A40                      1537  INIT.1  AHR   R4,R0             LOOP TO GET VALUE FOR 10MS         CMT15370
1950  C11E 194E                 1538          BXLE  R1,INIT.1         DELAY IN R4                        CMT15380
1954  4040 0A1E                 1539          STH   R4,TIME           STORE 10MS DELAY TIME              CMT15390
1958  48F0 166C                 1540          LH    R15,M0032                                            CMT15400
195C  4330 1980                 1541          BZ    TESTAB                                               CMT15410
1960  D360 1775                 1542  TESTAA2 LB    R6,MREAD+11                                          CMT15420
1964  0866                      1543          LHR   R6,R6                                                CMT15430
1966  4230 19AC                 1544          BNZ   TESTAA1                                              CMT15440
196A  4860 35C2                 1545  TESTAA0 LH    R6,RADDRS+2                                          CMT15450
196E  0866                      1546          LHR   R6,R6                                                CMT15460
1970  4230 1998                 1547          BNZ   TELAST                                               CMT15470
1974  C860 39CA                 1548          LHI   R6,RBUFF                                             CMT15480
1978  4060 35C2                 1549          STH   R6,RADDRS+2                                          CMT15490
197C  4300 19AC                 1550          B     TESTAA1                                              CMT15500
1980  4860 35C0                 1551  TESTAB  LH    R6,RADDRS                                            CMT15510
1984  4890 35BC                 1552          LH    R9,WADDRS                                            CMT15520
1988  0866                      1553          LHR   R6,R6                                                CMT15530
198A  2137                      1554          BNZS  TELAST                                               CMT15540
198C  C860 39CA                 1555          LHI   R6,RBUFF                                             CMT15550
1990  4060 35C0                 1556          STH   R6,RADDRS                                            CMT15560
1994  4300 19CA                 1557          B     TELAST0                                              CMT15570
1998  C560 39CA                 1558  TELAST  CLHI  R6,RBUFF                                             CMT15580
199C  2335                      1559          BES   CHEKI2                                               CMT15590
199E  4560 35C8                 1560          CLH   R6,LAST                                              CMT15600
19A2  4280 1A4E                 1561          BTC   8,MESSAG                                             CMT15610
19A6  08FF                      1562  CHEKI2  LHR   R15,R15                                              CMT15620
19A8  4330 19CA                 1563          BZ    TELAST0                                              CMT15630
19AC  D390 1781                 1564  TESTAA1 LB    R9,MWRITE+11                                         CMT15640
19B0  0899                      1565          LHR   R9,R9                                                CMT15650
19B2  4230 1A0A                 1566          BNZ   TESTAA                                               CMT15660
19B6  4890 35BE                 1567          LH    R9,WADDRS+2                                          CMT15670
19BA  0899                      1568          LHR   R9,R9                                                CMT15680
19BC  4230 19F6                 1569          BNZ   TELAST1                                              CMT15690
19C0  C890 35CA                 1570          LHI   R9,WBUFF                                             CMT15700
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SUBROUTINE INIT

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19C4  4090 35BE      1571           STH   R9,WADDRS+2                          CMT15710
19C8  230A           1572           BS    RINI                                 CMT15720
19CA  C590 35CA      1573  TELAST0  CLHI  R9,WBUFF                            CMT15730
19CE  2337           1574           BES   RINI                                 CMT15740
19D0  0899           1575           LHR   R9,R9                                CMT15750
19D2  2137           1576           BNZS  TESTAB1                              CMT15760
19D4  C690 35CA      1577           LHI   R9,WBUFF                             CMT15770
19D8  4090 35BC      1578           STH   R9,WADDRS                            CMT15780
19DC  4300 1A64      1579  RINI     B     INI                                  CMT15790
19E0  0569           1580  TESTAB1  CLHR  R6,R9                                CMT15800
19E2  2384           1581           BNLS  CONT1                                CMT15810
19E4  0879           1582           LHR   R7,R9                                CMT15820
19E6  0876           1583           SHR   R7,R6                                CMT15830
19E8  2303           1584           BS    COMP1                                CMT15840
19EA  0876           1585  CONT1    LHR   R7,R6                                CMT15850
19EC  0879           1586           SHR   R7,R9                                CMT15860
19EE  C570 0402      1587  COMP1    CLHI  R7,X'402'                            CMT15870
19F2  42B0 1A44      1588           BTC   8,MESAGE                             CMT15880
19F6  C590 35CA      1589  TELAST1  CLHI  R9,WBUFF                            CMT15890
19FA  223F           1590           BES   RINI                                 CMT15900
19FC  4590 35C8      1591           CLH   R9,LAST                              CMT15910
1A00  4280 1A58      1592           BTC   8,MESSAGE                            CMT15920
1A04  08FF           1593  CHEKI1   LHR   R15,R15                              CMT15930
1A06  4330 1A64      1594           BZ    INI                                  CMT15940
1A0A  D360 1775      1595  TESTAA   LB    R6,MREAD+11                         CMT15950
1A0E  4870 1770      1596           LH    R7,MREAD+6                           CMT15960
1A12  D380 1781      1597           LB    R8,MWRITE+11                         CMT15970
1A16  4890 177C      1598           LH    R9,MWRITE+6                          CMT15980
1A1A  ED60 0010      1599           SLL   R6,16                                CMT15990
1A1E  0667           1600           DC    X'0667'                              CMT16000
1A20  ED80 0010      1601           SLL   R8,16                                CMT16010
1A24  0689           1602           DC    X'0689'                              CMT16020
1A26  0568           1603           DC    X'0568'                              CMT16030
1A28  2187           1604           BLS   CONEIT                               CMT16040
1A2A  C870 0402      1605  CONSIX   LHI   R7,X'402'                           CMT16050
1A2E  0A87           1606           DC    X'0A87'                              CMT16060
1A30  0568           1607           DC    X'0568'          CLR R6,R8           CMT16070
1A32  2189           1608           BLS   MESAGE                               CMT16080
1A34  2346           1609           BS    RINI2                                CMT16090
1A36  C870 0402      1610  CONEIT   LHI   R7,X'402'                           CMT16100
1A3A  0A67           1611           DC    X'0A67'          AR R6,R7            CMT16110
1A3C  0586           1612           DC    X'0586'          CLR R8,R6           CMT16120
1A3E  2183           1613           BLS   MESAGE                               CMT16130
1A40  4300 1A64      1614  RINI2    B     INI                                  CMT16140
1A44  C850 3576      1615  MESAGE   LHI   R5,LAABEL                            CMT16150
1A48  41F0 1128      1616           BAL   LINK,PRINT                           CMT16160
1A4C  230A           1617           BS    ROPTIN                               CMT16170
1A4E  C850 352C      1618  MESSAG   LHI   R5,LABBEL                           CMT16180
1A52  41F0 1128      1619           BAL   LINK,PRINT                           CMT16190
1A56  23D5           1620           BS    ROPTIN                               CMT16200
1A58  C850 3550      1621  MESSAGE  LHI   R5,LABELL                           CMT16210
1A5C  41F0 112A      1622           BAL   LINK,PRINT                           CMT16220
1A60  4300 0AE6      1623  ROPTIN   B     OPTIN                                CMT16230
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SUBROUTINE INIT

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1A64  4850 17E8          1624  INI      LH    R5,MODE+6                                  CMT16240
1A68  2334               1625           BZS   SELCHK                                     CMT16250
1A6A  C550 0002          1626           CLHI  R5,2                 SELCH MODE?             CMT16260
1A6E  213B               1627           BNES  SETDEV                                     CMT16270
                         1628  *                                                          CMT16280
                         1629  *        CHECK FOR SELCH FALSE SYNC                        CMT16290
                         1630  *                                                          CMT16300
1A70  4870 17C4          1631  SELCHK   LH    SELCH,SELADR+6      LOAD SELCH ADDRESS     CMT16310
1A74  4070 190C          1632           STH   SELCH,DEVSADR                              CMT16320
1A78  4070 1678          1633           STH   SELCH,ERRDEV                               CMT16330
1A7C  DE70 3406          1634           OC    SELCH,STOP           STOP SELCH             CMT16340
1A80  4240 1802          1635           BTC   4,FALSYN             INSTRUCTION TIMED OUT  CMT16350
                         1636  *                                                          CMT16360
                         1637  *        CHECK FOR DEVICE FALSE SYNC.                      CMT16370
                         1638  *                                                          CMT16380
1A84  4860 17AC          1639  SETDEV   LH    DEV,DEVADR+6        LOAD DEVICE ADDRESS    CMT16390
1A88  4060 190E          1640           STH   DEV,DEVSADR+2                              CMT16400
1A8C  4060 1678          1641           STH   DEV,ERRDEV                                 CMT16410
1A90  DE60 3412          1642           OC    DEV,DISARM           DISARM DEVICE          CMT16420
1A94  4240 1802          1643           BTC   4,FALSYN             INSTRUCTION TIMED OUT  CMT16430
1A98  DE60 3407          1644           OC    DEV,CLEAR            CLEAR DEVICE           CMT16440
1A9C  41E0 3384          1645           BAL   RET,REWIND           REWIND TAPE            CMT16450
1AA0  4860 1788          1646           LH    DEV,DV2ADR+6         GET SECOND DEVICE ADDRESS CMT16460
1AA4  4060 1910          1647           STH   DEV,DEVSADR+4                              CMT16470
1AA8  233B               1648           BZS   SETTRK                                     CMT16480
1AAA  4060 1678          1649           STH   DEV,ERRDEV                                 CMT16490
1AAE  DE60 3412          1650           OC    DEV,DISARM           DISARM DEVICE          CMT16500
1AB2  4240 1802          1651           BTC   4,FALSYN             INSTRUCTION TIMED OUT  CMT16510
1AB6  DE60 3407          1652           OC    DEV,CLEAR            CLEAR DEVICE           CMT16520
1ABA  41E0 3384          1653           BAL   RET,REWIND           REWIND TAPE            CMT16530
                         1654  *                                                          CMT16540
                         1655  *        SET UP TRACK MASK                                 CMT16550
                         1656  *                                                          CMT16560
1ABE  48C0 17F4          1657  SETTRK   LH    R12,TRACK+6         LOAD TRACK NUMBER      CMT16570
1AC2  C5C0 0007          1658           CLHI  R12,7                SEVEN?                  CMT16580
1AC6  2134               1659           BNES  NINE                 NO - NINE              CMT16590
1AC8  C8C0 3F3F          1660           LHI   R12,X'3F3F'          7-TRACK MASK           CMT16600
1ACC  2302               1661           BS    SETMSK                                     CMT16610
1ACE  25C1               1662  NINE     LCS   R12,1                9-TRACK MASK           CMT16620
1AD0  40C0 33EC          1663  SETMSK   STH   R12,MASK                                   CMT16630
                         1664  *                                                          CMT16640
                         1665  *        RESET FLAGS                                       CMT16650
                         1666  *                                                          CMT16660
1AD4  48C0 17D0          1667           LH    R12,INTLEV+6         C                      CMT16670
1AD8  D2C0 1902          1668           STB   R12,INTLVL                                 CMT16680
1ADC  D2C0 1903          1669           STB   R12,INTLVL+1                               CMT16690
1AE0  07CC               1670           XHR   R12,R12                                    CMT16700
1AE2  40C0 33F2          1671           STH   R12,EOTFLG                                 CMT16710
1AE6  40C0 33F8          1672           STH   R12,RTYCNT                                 CMT16720
1AEA  40C0 33F4          1673           STH   R12,ERRFLG                                 CMT16730
1AEE  40C0 33F6          1674           STH   R12,MODFLG                                 CMT16740
1AF2  40C0 33FE          1675           STH   R12,WLRS                                   CMT16750
1AF6  40C0 33FC          1676           STH   R12,DEV2                                   CMT16760
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SUBROUTINE INIT

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1AFA  40C0 33F0          1677           STH   R12,DE                          CMT16770
1AFE  4300 0D98          1678           B     INITRET                       CMT16780
                         1679  *                                              CMT16790
                         1680  *                                              CMT16800
                         1681  *        ERROR 00  -  DEVICE FALSE SYNC.       CMT16810
                         1682  *                                              CMT16820
1B02  9D65               1683  FALSYN   SSR   DEV,STAT            SYNC ERROR  CMT16830
1B04  C600 3030          1684           LHI   R0,C'00'            ERROR 00    CMT16840
1B08  41F0 0F80          1685           BAL   R15,ERRDS                       CMT16850
1B0C  4300 0AE6          1686           B     OPTIN                           CMT16860
                         1687  *--------------------------------              CMT16870
```

```
                                1689  * ************************************************************      CMT16890
                                1690  *                                                            *      CMT16900
                                1691  *                          T E S T 0                         *      CMT16910
                                1692  *                                                            *      CMT16920
                                1693  *    PURPOSE:                                                *      CMT16930
                                1694  *        TO TEST THE WRITE-BACKSPACE-READ ABILITY OF THE DEVICE *   CMT16940
                                1695  *        AND DETECT ERRORS ON DATA TRANSFER                  *      CMT16950
                                1696  *                                                            *      CMT16960
                                1697  *    ASSUMPTIONS:                                            *      CMT16970
                                1698  *        THIS TEST ASSUMES THAT THE MEMORY TEST, THE PROCESSOR *    CMT16980
                                1699  *        TEST AND THE TTY BASIC CONFIDENCE TEST HAD BEEN RUN *      CMT16990
                                1700  *        WITHOUT DETECTING ANY FAILURE                       *      CMT17000
                                1701  *                                                            *      CMT17010
                                1702  *    DESIGN SPECIFICATIONS:                                  *      CMT17020
                                1703  *        THIS TEST USES THE WRITE-BACKSPACE-READ FEATURE TO   *      CMT17030
                                1704  *        GENERATE FILES OF VARIOUS TEST PATTERNS. THE TEST    *      CMT17040
                                1705  *        PATTERNS ARE STORED IN BLOCKS OF 8 BYTES EACH. EACH  *      CMT17050
                                1706  *        BLOCK IS A SERIES OF DATA WHICH WILL SWITCH THE DATA *      CMT17060
                                1707  *        LINES IN WORST CASE CONDITION. AT THE BEGINNING OF   *      CMT17070
                                1708  *        THE GENERATION OF A FILE, A BLOCK OF TEST PATTERN IS *      CMT17080
                                1709  *        REPEATLY COPIED INTO THE WRITE BUFFER UNTIL THE      *      CMT17090
                                1710  *        BUFFER IS FULL. THE DATA IN THE BUFFER IS THEN       *      CMT17100
                                1711  *        WRITTEN ONTO THE TAPE AS A RECORD. THE RECORD IS     *      CMT17110
                                1712  *        BACKSPACED AND READ INTO THE READ BUFFER. THE TWO    *      CMT17120
                                1713  *        BUFFERS ARE COMPARED FOR PROPER DATA TRANSFER.       *      CMT17130
                                1714  *                                                            *      CMT17140
                                1715  *    HOW TO RUN THE TEST:                                    *      CMT17150
                                1716  *        MOUNT THE TAPE ON THE DRIVE AND TURN DEVICE ON LINE. *     CMT17160
                                1717  *        ENTER OPTIONS VIA CONSOLE DEVICE AND SELECT TEST 0.  *      CMT17170
                                1718  *        (REFER TO PUBLICATION 06-172A15 FOR CONSOLE INPUTS.) *     CMT17180
                                1719  *        THE TEST IS EXECUTED UPON ENTERING RUN, AND CAN BE   *      CMT17190
                                1720  *        TERMINATED BY THE USER AT ANY TIME BY DEPRESSING     *      CMT17200
                                1721  *        BREAK OR TAKING DEVICE OFF LINE.                    *      CMT17210
                                1722  *                                                            *      CMT17220
                                1723  *    NOTE:                                                   *      CMT17230
                                1724  *        THIS TEST IS FORCED TO BE EXECUTED AT LEAST ONCE    *      CMT17240
                                1725  *        EACH TIME WHEN A NON-ZERO VALUE IS ENTERED UNDER     *      CMT17250
                                1726  *        OPTION DEVADR OR DV2ADR.                            *      CMT17260
                                1727  *                                                            *      CMT17270
                                1728  *    OPTIONS:                                                *      CMT17280
                                1729  *        TEST, LOOP, CONTIN, NOMSG, DEVADR, SELCH, MODE, TRACK, *   CMT17290
                                1730  *        INTLEV, MODE, TRACK, RECFIL                         *      CMT17300
                                1731  *        WSTART,RSTART                                       *      CMT17310
                                1732  *                                                            *      CMT17320
                                1733  *    ERRORS:                                                 *      CMT17330
                                1734  *        00, 01, 02, 04, 05, 06, 07, 08, 10, 11, 12, 13, 14, *      CMT17340
                                1735  *        15, 46, 47, 50                                      *      CMT17350
                                1736  *                                                            *      CMT17360
                                1737  * ************************************************************      CMT17370
                                1738  *                                                                  CMT17380
1810   C840 1816                1739  TEST0    LHI   R4,TEST01          STARTING ADDRESS SET UP FOR      CMT17390
1814   41E0 2810                1740           BAL   R14,TSTSUP         SECOND DEVICE TEST               CMT17400
1818   41E0 2AC8                1741  TEST01   BAL   R14,TSTINIT        TEST INITIALIZE                  CMT17410
```

TEST 0 BASIC CONFIDENCE TEST

```
181C  41D0 3104          1742           BAL   R13,WAIT1          WAIT FOR NMTN=1                CMT17420
1820  41E0 2B4A          1743           BAL   R14,FSTEOF         WRITE & SENSE EOF              CMT17430
1824  41D0 3146          1744           BAL   R13,WAIT2                                       CMT17440
1828  0E60 3408          1745           OC    DEV,BKSPAC         CHECK BACKSPACE FUNCTION       CMT17450
182C  41E0 2F76          1746           BAL   R14,SENS03         CHECK FOR EOF                  CMT17460
1830  4300 2328          1747           B     CHKEND1                                         CMT17470
1834  41D0 3146          1748  REOF01   BAL   R13,WAIT2                                       CMT17480
1838  0E60 340C          1749           OC    DEV,READ           READ OVER EOF                  CMT17490
183C  41E0 2F70          1750           BAL   R14,SENS02         EOF SENSED?                    CMT17500
1840  4300 1C1E          1751           B     EOFER01            NO - READ EOF RETRY            CMT17510
1844  0755               1752           XHR   R5,R5                                           CMT17520
1846  4050 33F8          1753           STH   R5,RTYCNT                                       CMT17530
184A  2422               1754  PROC00   LIS   R2,2                                          CMT17540
184C  2436               1755           LIS   R3,6                                          CMT17550
184E  2491               1756           LIS   R9,1                                          CMT17560
1850  48A0 1800          1757           LH    R10,RECFIL+6                                  CMT17570
1854  41E0 2E96          1758           BAL   R14,RESET          SET BUFFER LIMITS              CMT17580
1858  078B               1759           XHR   R11,R11                                         CMT17590
185A  0788               1760           XHR   R8,R8                                           CMT17600
185C  081B               1761  MOVDT1   LHR   R1,R11            GENERATE 256 BYTE RECORD       CMT17610
185E  4841 3414          1762  MOVDT2   LH    CHAR,WDATA(R1)     FROM 8 BYTE DATA BLOCKS        CMT17620
1862  4440 33EC          1763  MOVDT3   NH    CHAR,MASK          BY COPYING THE BLOCK INTO      CMT17630
1866  D080 3E20          1764           STM   R8,RSAVE1                                       CMT17640
186A  D1F0 35A8          1765  HA1      LM    R15,WLIM                                        CMT17650
186E  0A8F               1766           AHR   R8,R15                                          CMT17660
1870  4048 0000          1767           STH   CHAR,0(R8)                                      CMT17670
1874  D180 3E2C          1768           LM    R8,RSAVE1                                       CMT17680
1878  2305               1769           BS    HY1                                             CMT17690
187A  D180 3E20          1770  HX1      LM    R8,RSAVE1                                       CMT17700
187E  4048 35CA          1771           STH   CHAR,WBUFF(R8)                                  CMT17710
1882  0A82               1772  HY1      AHR   R8,R2                                           CMT17720
1884  C110 185E          1773           BXLE  R1,MOVDT2                                       CMT17730
1888  4580 33EE          1774           CLH   R8,NBYTE                                        CMT17740
188C  4280 185C          1775           BL    MOVDT1                                          CMT17750
1890  C840 C3C3          1776           LHI   CHAR,X'C3C3'       DELIMITER CHARACTER            CMT17760
1894  D080 3E20          1777           STM   R8,RSAVE1                                       CMT17770
1898  D1F0 35B0          1778  HA2      LM    R15,RLIM                                        CMT17780
189C  0A8F               1779           AHR   R8,R15                                          CMT17790
189E  2681               1780           AIS   R8,1                                            CMT17800
18A0  D248 0000          1781           STB   CHAR,0(R8)                                      CMT17810
18A4  D180 3E20          1782           LM    R8,RSAVE1                                       CMT17820
18A8  2305               1783           BS    HY2                                             CMT17830
18AA  D180 3E20          1784  HX2      LM    R8,RSAVE1                                       CMT17840
18AE  D248 39CB          1785           STB   CHAR,RBUFF+1(R8)                                CMT17850
18B2  2481               1786  HY2      LIS   R8,1               COUNTER FOR NUMBER OF RECORDS  CMT17860
18B4  41C0 2BCC          1787  GENFIL   BAL   R12,WRTREC         WRITE A RECORD                 CMT17870
18B8  4300 1C2A          1788           B     WRTER0             ERROR RETURN                   CMT17880
18BC  0755               1789           XHR   R5,R5                                           CMT17890
18BE  4050 33F8          1790           STH   R5,RTYCNT          RESET RETRY COUNTER            CMT17900
18C2  41E0 2B7E          1791  PROC01   BAL   R14,BSPACE         BACKSPACE & STATUS CHECK       CMT17910
18C6  41C0 2C84          1792  RERDR    BAL   R12,RDREC         READ A RECORD                  CMT17920
18CA  4300 1C4C          1793           B     RDER0              ERROR RETURN                   CMT17930
18CE  0755               1794           XHR   R5,R5                                           CMT17940
```

TEST 1 VARIABLE RECORD LENGTH

```
1C9E  41E0 2E96  1894          BAL   R14,RESET          RESET BUFFER LIMITS                CMT18940
1CA2  41C0 28CC  1895  GENFIL1  BAL   R12,WRTREC         WRITE A RECORD                     CMT18950
1CA6  4300 1D00  1896          B     WRTER1                                                CMT18960
1CAA  0755       1897          XHR   R5,R5                                                CMT18970
1CAC  4050 33F8  1898          STH   R5,RTYCNT                                            CMT18980
1CB0  41E0 287E  1899  PROC11   BAL   R14,BSPACE         BACKSPACE & STATUS CHECK           CMT18990
1CB4  41C0 2C84  1900  RERDR1   BAL   R12,RDREC          READ A RECORD                      CMT19000
1CB8  4300 1D22  1901          B     RDER1                                                 CMT19010
1CBC  0755       1902          XHR   R5,R5                                                CMT19020
1CBE  4050 33F8  1903          STH   R5,RTYCNT                                            CMT19030
1CC2  41E0 2DC4  1904  PROC12   BAL   R14,COMPAR         COMPARE DATA                       CMT19040
1CC6  4850 18A8  1905          LH    R5,SDUMP+6         DUMP?                              CMT19050
1CCA  2333       1906          BZS   NODMP1                                                CMT19060
1CCC  41E0 2F18  1907          BAL   R14,DUMP            YES - DUMP READ BUFFER             CMT19070
1CD0  C180 1C90  1908  NODMP1  BXLE  R8,VARREC                                             CMT19080
1CD4  41D0 3146  1909  WEOF12  BAL   R13,WAIT2                                             CMT19090
1CD8  C350 0020  1910          THI   STAT,X'20'                                           CMT19100
1CDC  2333       1911          BZS   EOFMRK1                                              CMT19110
1CDE  41E0 3364  1912          BAL   RET,REWIND         REWIND TAPE                        CMT19120
1CE2  DE60 3413  1913  EOFMRK1  OC    DEV,WEOF           WRITE EOF                          CMT19130
1CE6  41E0 2F6A  1914          BAL   R14,SENS01         CHECK FOR EOF WRITTEN              CMT19140
1CEA  4300 1D32  1915          B     EOFER12                                              CMT19150
1CEE  0755       1916          XHR   R5,R5                                                CMT19160
1CF0  4050 33F8  1917          STH   R5,RTYCNT                                            CMT19170
1CF4  C110 1C8E  1918  PROC13   BXLE  R1,VARFIL                                           CMT19180
1CF8  41D0 2FAE  1919          BAL   R13,TSTMOD         NEXT MODE?                         CMT19190
1CFC  4300 1C8C  1920          B     NXTMOD1                                              CMT19200
                 1921  *                                                                 *CMT19210
                 1922  *       ERROR RECOVERY PROCEDURE                                  CMT19220
                 1923  *                                                                 *CMT19230
1D00  4850 33F2  1924  WRTER1   LH    R5,EOTFLG          WRITE ERROR RECOVERY               CMT19240
1D04  2337       1925          BZS   RCOVR1             EOT? - NO - RETRY                  CMT19250
1D06  41E0 3384  1926          BAL   RET,REWIND         REWIND TAPE                        CMT19260
1D0A  41E0 284A  1927          BAL   R14,FSTEOF         WRITE & SENSE EOF                  CMT19270
1D0E  4300 1CA2  1928          B     GENFIL1            REPEAT WRITE PROCESS               CMT19280
1D12  41E0 2F96  1929  RCOVR1   BAL   R14,ERRMSG2                                          CMT19290
1D16  41E0 2FD2  1930          BAL   R14,RETRY          RETRY 5 TIMES                      CMT19300
1D1A  4300 1CA2  1931          B     GENFIL1                                              CMT19310
1D1E  4300 1C80  1932          B     PROC11                                               CMT19320
1D22  41E0 2F96  1933  RDER1    BAL   R14,ERRMSG2                                         CMT19330
1D26  41E0 2FD2  1934          BAL   R14,RETRY          RETRY 5 TIMES                      CMT19340
1D2A  4300 1C84  1935          B     RERDR1                                               CMT19350
1D2E  4300 1CC2  1936          B     PROC12                                               CMT19360
1D32  41E0 2FD2  1937  EOFER12  BAL   R14,RETRY          RETRY 5 TIMES                      CMT19370
1D36  4300 1CD4  1938          B     WEOF12                                               CMT19380
1D3A  4300 1CF4  1939          B     PROC13                                               CMT19390
```

```
                      * ***************************************************************  CMT19410
                      *                                                               *  CMT19420
                      *                            T E S T 2                          *  CMT19430
                      *                                                               *  CMT19440
                      *   PURPOSE:                                                    *  CMT19450
                      *       TO TEST REWIND AND SKIP FUNCTIONS.                      *  CMT19460
                      *                                                               *  CMT19470
                      *   ASSUMPTIONS:                                                *  CMT19480
                      *       THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT      *  CMT19490
                      *       DETECTING ANY FAILURE.                                  *  CMT19500
                      *                                                               *  CMT19510
                      * DESIGN SPECIFICATIONS:                                        *  CMT19520
                      *       THIS TEST GENERATES A FILE WITH EOF MARKS AT BOTH       *  CMT19530
                      *       ENDS OF THE FILE. IT THEN REWINDS AND CHECK FOR         *  CMT19540
                      *       NMTN=1 AND BOT. IT SKIPS EOF'S OVER THE FILE FOR AS     *  CMT19550
                      *       MANY TIMES AS IS SPECIFIED BY OPTION REPEAT.            *  CMT19560
                      *       THE FILE IS THEN READ AND THE WRITE & READ BUFFERS      *  CMT19570
                      *       ARE COMPARED TO MAKE SURE THAT THE SKIP OPERATIONS      *  CMT19580
                      *       DID NOT MISPOSITION THE READER HEAD.                    *  CMT19590
                      *                                                               *  CMT19600
                      *   HOW TO RUN THE TEST:                                        *  CMT19610
                      *       REFER TO TEST 0. SELECT TEST 2 AND ITS APPROPRIATE      *  CMT19620
                      *       OPTIONS.                                                *  CMT19630
                      *                                                               *  CMT19640
                      *   OPTIONS:                                                    *  CMT19650
                      *       TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,       *  CMT19660
                      *       INTLEV, MODE, TRACK, RECFIL, REPEAT                     *  CMT19670
                      *       WSTART,RSTART                                           *  CMT19680
                      *                                                               *  CMT19690
                      *   ERRORS:                                                     *  CMT19700
                      *       00, 01, 02, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14,     *  CMT19710
                      *       15, 46, 47, 50                                          *  CMT19720
                      *                                                               *  CMT19730
                      * ***************************************************************  CMT19740
                      *                                                                  CMT19750
103E  C840 1046       TEST2    LHI   R4,TEST21        STARTING ADDRESS SET UP FOR        CMT19760
1042  41E0 2810                BAL   R14,TSTSUP       SECOND DEVICE TEST                 CMT19770
1046  41E0 2AC8       TEST21   BAL   R14,TSTINIT      TEST INITIALIZE                    CMT19780
104A  41E0 3384                BAL   RET,REWIND       REWIND TAPE                        CMT19790
104E  41E0 2B4A                BAL   R14,FSTEOF       WRITE & SENSE EOF                  CMT19800
1052  41E0 2E96                BAL   R14,RESET        SET BUFFER LIMITS                  CMT19810
1056  41E0 2EC0                BAL   R14,BSET         SET WRITE BUFFER                   CMT19820
105A  2421                     LIS   R2,1                                                CMT19830
105C  4830 1800                LH    R3,RECFIL+6      RECORD PER FILE                    CMT19840
1060  2411                     LIS   R1,1                                                CMT19850
1062  41C0 2BCC       GENFIL2  BAL   R12,WRTREC       WRITE A RECORD                     CMT19860
1066  4300 1E0A                B     WRTER2                                              CMT19870
106A  0755                     XHR   R5,R5                                               CMT19880
106C  4050 33F8                STH   R5,RTYCNT                                           CMT19890
1070  C110 1062       PROC21   BXLE  R1,GENFIL2                                          CMT19900
1074  41D0 3146       TAPEND   BAL   R13,WAIT2                                           CMT19910
1078  41E0 2B4A                BAL   R14,FSTEOF       WRITE & SENSE EOF                  CMT19920
107C  2491                     LIS   R9,1                                                CMT19930
```

TEST 2   REWIND AND SKIP

```
107E   24A1                1994           LIS   R10,1                                                CMT19940
1080   4830 1824           1995           LH    R3,REPEAT+6        NUMBER OF SKIP FUNCTIONS          CMT19950
1084   0711                1996           XHR   R1,R1                                                CMT19960
1086   0531                1997           CLHR  R3,R1                                                CMT19970
1088   2332                1998           BES   REPEATC                                              CMT19980
108A   2731                1999           SIS   R3,1                                                 CMT19990
108C   41E0 3384           2000  REPEATU  BAL   RET,REWIND         REWIND TAPE                       CMT20000
1090   9065                2001           SSR   DEV,STAT                                             CMT20010
1092   C350 0020           2002           THI   STAT,X'20'         EOT?                              CMT20020
1096   2137                2003           BNZS  SKPFWD                                               CMT20030
1098   C800 3039           2004           LHI   R0,C'09'           NO - ERROR 09                     CMT20040
109C   41F0 0F80           2005           BAL   R15,ERRDS                                            CMT20050
10A0   4300 282C           2006           B     CHKEND                                               CMT20060
10A4   0788                2007  SKPFWD   XHR   R8,R8                                                CMT20070
10A6   41D0 3146           2008  SKPFOR   BAL   R13,WAIT2          WAIT FOR NMTN=1                   CMT20080
10AA   DE60 340E           2009           OC    DEV,SKIPF          SKIP FILE FORWARD                 CMT20090
10AE   41E0 2F76           2010           BAL   R14,SENS03         CHECK FOR EOF                     CMT20100
10B2   4300 1E06           2011           B     RERD2              NO EOF - ABORT TEST               CMT20110
10B6   C180 10A6           2012           BXLE  R8,SKPFOR                                            CMT20120
10BA   0788                2013           XHR   R8,R8                                                CMT20130
10BC   41D0 3146           2014  SKPRVS   BAL   R13,WAIT2          WAIT FOR NMTN=1                   CMT20140
10C0   DE60 340F           2015           OC    DEV,SKIPR          SKIP FILE REVERSE                 CMT20150
10C4   41E0 2F76           2016           BAL   R14,SENS03         CHECK FOR EOF                     CMT20160
10C8   4300 1E06           2017           B     RERD2              NO EOF - ABORT TEST               CMT20170
10CC   C180 10BC           2018           BXLE  R8,SKPRVS                                            CMT20180
10D0   C110 10A4           2019           BXLE  R1,SKPFWD                                            CMT20190
10D4   4830 1800           2020           LH    R3,RECFIL+6        NUMBER OF RECORDS IN FILE         CMT20200
10D8   41D0 3146           2021  REOF21   BAL   R13,WAIT2          WAIT FOR NMTM =1                  CMT20210
10DC   DE60 340C           2022           OC    DEV,READ           READ PASS EOF                     CMT20220
10E0   41E0 2F70           2023           BAL   R14,SENS02         CHECK FOR EOF                     CMT20230
10E4   4300 1E2C           2024           B     EOFER21                                              CMT20240
10E8   0755                2025           XHR   R5,R5                                                CMT20250
10EA   4050 33F8           2026           STH   R5,RTYCNT                                            CMT20260
10EE   2411                2027  PROC24   LIS   R1,1                                                 CMT20270
10F0   41C0 2C84           2028  RERDR21  BAL   R12,RDREC          READ A RECORD                     CMT20280
10F4   4300 1E38           2029           B     RDER21                                               CMT20290
10F8   0755                2030           XHR   R5,R5                                                CMT20300
10FA   4050 33F8           2031           STH   R5,RTYCNT                                            CMT20310
10FE   41E0 2DC4           2032  PROC22   BAL   R14,COMPAR         COMPARE DATA                      CMT20320
1E02   C110 10F0           2033           BXLE  R1,RERDR21                                           CMT20330
1E06   4300 2828           2034  RERD2    B     CHKEND1                                              CMT20340
                           2035  *                                                                 * CMT20350
                           2036  *              ERROR RECOVERY PROCEDURE                             CMT20360
                           2037  *                                                                 * CMT20370
1E0A   4850 33F2           2038  WRTER2   LH    R5,EOTFLG          EOT?                              CMT20380
1E0E   2337                2039           BZS   RCOVR2                                               CMT20390
1E10   41D0 3146           2040           BAL   R13,WAIT2          YES -                             CMT20400
1E14   DE60 340B           2041           OC    DEV,BKSPAC         BACKSPACE - END FILE              CMT20410
1E18   4300 1074           2042           B     TAPEND                                               CMT20420
1E1C   41E0 2F96           2043  RCOVR2   BAL   R14,ERRMSG2                                          CMT20430
1E20   41E0 2F02           2044           BAL   R14,RETRY          RETRY 5 TIMES                     CMT20440
1E24   4300 1062           2045           B     GENFIL2                                              CMT20450
1E28   4300 1070           2046           B     PROC21                                               CMT20460
```

TEST 2 REWIND AND SKIP

```
1E2C  41E0 2FD2          2047  EOFER21  BAL   R14,RETRY          RETRY 5 TIMES                 CMT20470
1E30  4300 1DD8          2048           B     REOF21                                           CMT20480
1E34  4300 1DEE          2049           B     PROC24                                           CMT20490
1E38  9065               2050  RDER21   SSR   DEV,STAT                                        CMT20500
1E3A  C350 0060          2051           TMI   STAT,X'60'         EOT OR EOF?                   CMT20510
1E3E  4230 1E06          2052           BNZ   RERD2              YES - END OF FILE             CMT20520
1E42  41E0 2F96          2053           BAL   R14,ERRMSG2                                       CMT20530
1E46  41E0 2FD2          2054           BAL   R14,RETRY          RETRY 5 TIMES                 CMT20540
1E4A  4300 1DF0          2055           B     RERDR21                                          CMT20550
1E4E  4300 1DFE          2056           B     PROC22                                           CMT20560
```

TEST 3 INTERRUPT TEST

```
2058  * ************************************************************      CMT20580
2059  *                                                                   CMT20590
2060  *                          T E S T 3                                CMT20600
2061  *                                                                   CMT20610
2062  *    PURPOSE:                                                       CMT20620
2063  *        THIS TEST CHECKS ALL DEVICE FUNCTIONS UNDER DEVICE         CMT20630
2064  *        INTERRUPT. IT CHECKS FOR PROPER INTERRUPT RECEPTION.       CMT20640
2065  *        INTERRUPT QUEUING AND INTERRUPT DISARM & DISABLE.          CMT20650
2066  *                                                                   CMT20660
2067  *    ASSUMPTIONS:                                                   CMT20670
2068  *        THIS TEST ASSUMES THAT TESTS 0, 1 & 2 HAD BEEN RUN         CMT20680
2069  *        WITHOUT DETECTING ANY FAILURE.                             CMT20690
2070  *                                                                   CMT20700
2071  *    DESIGN SPECIFICATIONS:                                         CMT20710
2072  *        THE USER CAN SPECIFY THE PARTICULAR FUNCTIONS HE           CMT20720
2073  *        WISHES TO TEST BY SELECTING THE PROPER OPTIONS (SEE        CMT20730
2074  *        PROGRAM DESCRIPTION 06-172A15, SECTION 6.4). DEFAULT       CMT20740
2075  *        OPTIONS EXECUTED ARE WRITE, BACKSPACE, READ AND SKIP.      CMT20750
2076  *        THE TEST FIRST WILL CHECK IF INTERRUPT CAN BE DISARMED,    CMT20760
2077  *        DISABLED AND QUEUED. IT THEN GENERATES A FILE, ENDS        CMT20770
2078  *        IT WITH AN EOF, BACKSPACE OVER IT AND READ IT. IT          CMT20780
2079  *        REWINDS THE TAPE AND SKIPS FORWARD AND REVERSE OVER        CMT20790
2080  *        THE FILE. ALL FUNCTIONS ARE PERFORMED UNDER INTERRUPTS.    CMT20800
2081  *        IF ONLY WRITE & READ ARE SPECIFIED, THE TEST REWINDS       CMT20810
2082  *        THE TAPE BEFORE PROCEEDING TO READ THE FILE, SETTING       CMT20820
2083  *        WEOF OPTION WILL WRITE EOF'S TO THE END OF TAPE.           CMT20830
2084  *        (SEE APPENDIX 6 OF PUBLICATION 06-172R00A15)               CMT20840
2085  *                                                                   CMT20850
2086  *        THE RECORD SIZE IN THIS TEST CAN BE VARIED BY THE          CMT20860
2087  *        OPTION BYTES. THE LIMITS ARE FROM 2 TO X'400'. IF          CMT20870
2088  *        THE USER WISHES TO INCREASE THE UPPER LIMIT, HE MAY        CMT20880
2089  *        DO SO BY INCREASING THE CONTENT OF LOCATION LABELLED       CMT20890
2090  *        "X400". IT MUST BE NOTED THAT THE LOWER LIMIT              CMT20900
2091  *        CANNOT BE LESS THAN 2 AND THE HIGHER LIMIT MUST            CMT20910
2092  *        NOT BE CHANGED TO A VALUE HIGHER THAN X'7FFF'.             CMT20920
2093  *                                                                   CMT20930
2094  *    HOW TO RUN TEST:                                               CMT20940
2095  *        REFER TO TEST 0, SELECT THE DESIRED OPTIONS AND            CMT20950
2096  *        TEST 3. IF DU IS SET, THE TEST WILL PRINT THE              CMT20960
2097  *        MESSAGE: "TURN DEVICE OFF-LINE MOMENTARILY."               CMT20970
2098  *        THE DEVICE MUST BE TURN OFF LINE WITHIN 60 SECONDS         CMT20980
2099  *        AFTER THE MESSAGE, BUT MUST NOT STAY OFF-LINE FOR          CMT20990
2100  *        MORE THAN 30 SECONDS.                                      CMT21000
2101  *                                                                   CMT21010
2102  *    OPTIONS:                                                       CMT21020
2103  *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,          CMT21030
2104  *        INTLEV, MODE, TRACK, RECFIL, WRITE, READ, BKSPAC,          CMT21040
2105  *        SKIP, DU                                                   CMT21050
2106  *        WSTART,RSTART                                              CMT21060
2107  *                                                                   CMT21070
2108  *    ERRORS:                                                        CMT21080
2109  *        00, 01, 02, 04, 05, 07, 08, 10, 11, 20, 21, 22, 23,        CMT21090
2110  *        24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 37,        CMT21100
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                                2111  *        38, 39, 46, 47, 50.                                    *        CMT21110
                                2112  *                                                               *        CMT21120
                                2113  * ************************************************************** CMT21130
                                2114  *                                                                        CMT21140
1E52  C840 1E54                 2115  TEST3    LHI   R4,TEST31          STARTING ADDRESS SET UP FOR          CMT21150
1E56  41E0 2B10                 2116           BAL   R14,TSTSUP         SECOND DEVICE TEST                   CMT21160
1E5A  41E0 2AC6                 2117  TEST31   BAL   R14,TSTINIT        TEST INITIALIZE                      CMT21170
1E5E  4060 190E                 2118           STH   DEV,DEVSADR+2                                           CMT21180
1E62  41D0 3104                 2119           BAL   R13,WAIT1          WAIT FOR NMTN=1                      CMT21190
1E66  4850 183C                 2120           LH    R5,DUINT+6         DU OPTION?                           CMT21200
1E6A  4330 1E90                 2121           BZ    NORINT                                                  CMT21210
                                2122  *                                                                       CMT21220
                                2123  *        TEST DU INTERRUPT (0-1)                                        CMT21230
                                2124  *                                                                       CMT21240
1E6E  C850 221A                 2125           LHI   R5,RTNDU1                                               CMT21250
1E72  4050 1908                 2126           STH   R5,DEVINT+2                                             CMT21260
1E76  DE60 3411                 2127           OC    DEV,ENABL          ENABLE DEVICE                        CMT21270
1E7A  C850 3508                 2128           LHI   R5,MSG10                                                CMT21280
1E7E  41F0 1128                 2129           BAL   R15,PRINT                                               CMT21290
1E82  41F0 1274                 2130           BAL   R15,TSTBRK         CHECK BREAK KEY                      CMT21300
1E86  C8B0 3332                 2131           LHI   R11,C'32'          ERROR 32                             CMT21310
1E8A  41E0 3122                 2132           BAL   R14,TIMEOUT                                             CMT21320
1E8E  1770                      2133           DC    H'6000'                                                 CMT21330
                                2134  *                                                                       CMT21340
                                2135  *        TEST INTERRUPT DISARM                                          CMT21350
                                2136  *                                                                       CMT21360
1E90  C850 2208                 2137  NORINT   LHI   R5,RTNDSM          SET UP RETURN ADDRESS FOR            CMT21370
1E94  4050 1908                 2138           STH   R5,DEVINT+2        DISARM ERROR                         CMT21380
1E98  DE60 3412                 2139           OC    DEV,DISARM         DISARM DEVICE                        CMT21390
1E9C  41E0 3364                 2140           BAL   RET,REWIND         REWIND TAPE                          CMT21400
1EA0  4840 0A22                 2141           LH    R4,PSW                                                  CMT21410
1EA4  9554                      2142           EPSR  R5,R4              ENABLE PSW INTERRUPT                 CMT21420
1EA6  4200 0000                 2143           NOP                      WAIT FOR ERRONOUS INTERRUPT          CMT21430
1EAA  C840 30F0                 2144           LHI   R4,X'30F0'         DISABLE PSW INTERRUPT                CMT21440
1EAE  9554                      2145           EPSR  R5,R4                                                   CMT21450
1EB0  4850 180C                 2146           LH    R5,NOBYTE+6        SET UP RECORD LENGTH                 CMT21460
1EB4  2751                      2147           SIS   R5,1                                                    CMT21470
1EB6  4050 33EE                 2148           STH   R5,NBYTE                                                CMT21480
1EBA  41E0 2E96                 2149           BAL   R14,RESET                                               CMT21490
1EBE  41E0 2EC0                 2150           BAL   R14,BSET           SET UP WRITE BUFFER                  CMT21500
1EC2  2491                      2151           LIS   R9,1               RECORD COUNT                         CMT21510
1EC4  48A0 1800                 2152           LH    R10,RECFIL+6       NUMBER OF RECORDS PER FILE           CMT21520
1EC8  41D0 3104                 2153  NXTMOD3  BAL   R13,WAIT1                                               CMT21530
1ECC  4850 1854                 2154           LH    R5,OPWRT+6         WRITE OPTION SET?                    CMT21540
1ED0  2135                      2155           BNZS  EOFLOP                                                  CMT21550
1ED2  4850 1848                 2156           LH    R5,OPRD+6          READ OPTION ?                        CMT21560
1ED6  4230 213A                 2157           BNZ   RDONLY                                                  CMT21570
                                2158  *                                                                       CMT21580
                                2159  *        TEST INTERRUPT DISABLE                                         CMT21590
                                2160  *                                                                       CMT21600
1EDA  C850 220E                 2161  EOFLOP   LHI   R5,RTNDSR          SET UP RETURN ADDRESS FOR            CMT21610
1EDE  4050 1908                 2162           STH   R5,DEVINT+2        DISABLE ERROR                        CMT21620
1EE2  DE60 3412                 2163           OC    DEV,DISARM         DISARM DEVICE INTERRUPTS             CMT21630
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TEST 3 INTERRUPT TEST

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1EE6  0E60 3410          2164          OC    DEV,DSABL          DISABLE DEVICE                    CMT21640
1EEA  41E0 2B4A          2165          BAL   R14,FSTEOF         WRITE & SENSE EOF                 CMT21650
1EEE  41D0 3146          2166          BAL   R13,WAIT2           WAIT FOR NMTN=1                   CMT21660
1EF2  4840 1A22          2167          LH    R4,PSW                                               CMT21670
1EF6  9554               2168          EPSR  R5,R4              ENABLE PSW INTERRUPT              CMT21680
1EF8  4200 0000          2169          NOP                      WAIT FOR ERRONOUS INTERRUPT       CMT21690
1EFC  C840 30F0          2170          LHI   R4,X'30F0'         DISABLE PSW INTERRUPT             CMT21700
1F00  9554               2171          EPSR  R5,R4                                               CMT21710
                         2172  *                                                                  CMT21720
                         2173  *       TEST INTERRUPT QUEUING                                     CMT21730
                         2174  *                                                                  CMT21740
1F02  C850 1F18          2175          LHI   R5,RTN01           SET UP RETURN ADDRESS 01          CMT21750
1F06  4050 1908          2176          STH   R5,DEVINT+2                                         CMT21760
1F0A  0E60 3411          2177          OC    DEV,ENABL          ENABL DEVICE                      CMT21770
1F0E  C8B0 3337          2178          LHI   R11,C'37'          ERROR 37                          CMT21780
1F12  41E0 3122          2179          BAL   R14,TIMEOUT        WAIT FOR INTERRUPT                CMT21790
1F16  0002               2180          DC    H'2'                                                CMT21800
                         2181  *                                                                  CMT21810
                         2182  *       TEST INTERRUPT AFTER REWIND                                CMT21820
                         2183  *                                                                  CMT21830
1F18  C850 1F3E          2184  RTN01   LHI   R5,RTN02           SET UP RETURN ADDRESS 02          CMT21840
1F1C  4050 1908          2185          STH   R5,DEVINT+2                                         CMT21850
1F20  0E60 3412          2186          OC    DEV,DISARM         DISARM INTERRUPTS                 CMT21860
1F24  0E60 3411          2187          OC    DEV,ENABL          ENABLE DEVICE INTERRUPT           CMT21870
1F28  0E60 340A          2188          OC    DEV,REWD           REWIND                            CMT21880
1F2C  C8B0 3230          2189          LHI   R11,C'20'          ERROR 20                          CMT21890
1F30  41E0 3122          2190          BAL   R14,TIMEOUT        WAIT FOR INTERRUPT                CMT21900
1F34  03E8               2191          DC    H'1000'                                             CMT21910
1F36  41D0 3104          2192          BAL   R13,WAIT1          WAIT FOR NMTN=1                   CMT21920
1F3A  4300 1F62          2193          B     LPEOF                                               CMT21930
1F3E  0350 167A          2194  RTN02   LB    STAT,INTSTA        GET INTERRUPT STATUS              CMT21940
1F42  C550 0034          2195          CLHI  STAT,X'34'         X'34'                             CMT21950
1F46  4330 1F62          2196          BE    LPEOF              YES - GO ON                       CMT21960
1F4A  C80C 3039          2197  STER02  LHI   R0,C'09'           NO - ERROR 09                     CMT21970
1F4E  C350 0001          2198  STAERR  THI   STAT,1             DU?                               CMT21980
1F52  4230 3228          2199          BNZ   MTDU                                                CMT21990
1F56  41F0 0F80          2200  STERR2  BAL   R15,ERR05                                           CMT22000
1F5A  0E60 3412          2201          OC    DEV,DISARM                                          CMT22010
1F5E  4300 4828          2202          B     CHKEND1                                             CMT22020
                         2203  *                                                                  CMT22030
                         2204  *       TEST INTERRUPTS AFTER WRITE EOF                            CMT22040
                         2205  *                                                                  CMT22050
1F62  C850 1F84          2206  LPEOF   LHI   R5,RTN03           SET RETURN ADDRESS 03             CMT22060
1F66  4050 1908          2207          STH   R5,DEVINT+2                                         CMT22070
1F6A  0E60 3412          2208          OC    DEV,DISARM         DISARM INTERRUPTS                 CMT22080
1F6E  0E60 3411          2209          OC    DEV,ENABL          ENABLE DEVICE INTERRUPT           CMT22090
1F72  0E60 3413          2210          OC    DEV,WEOF           WRITE EOF                         CMT22100
1F76  C8B0 3231          2211          LHI   R11,C'21'          ERROR 21                          CMT22110
1F7A  41E0 3122          2212          BAL   R14,TIMEOUT        WAIT FOR INTERRUPT                CMT22120
1F7E  0064               2213          DC    H'100'                                              CMT22130
1F80  4300 1FF8          2214          B     STA05A                                              CMT22140
1F84  0350 167A          2215  RTN03   LB    STAT,INTSTA        CHECK STATUS FOR                  CMT22150
1F88  C550 004C          2216          CLHI  STAT,X'4C'         EX INTERRUPT                      CMT22160
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TEST 3 INTERRUPT TEST

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1F8C  4230 1FD4          2217            BNE   STAERR1                                          CMT22170
1F90  C850 1FA6          2218  STA03     LHI   R5,RTN04          SET UP RETURN ADDRESS 04      CMT22180
1F94  4050 190A          2219            STH   R5,DEVINT+2                                      CMT22190
1F98  C8B0 3232          2220            LHI   R11,C'22'          ERROR 22                      CMT22200
1F9C  41E0 3122          2221            BAL   R14,TIMEOUT        WAIT FOR NEXT INTERRUPT       CMT22210
1FA0  000A               2222            DC    H'10'                                            CMT22220
1FA2  4300 1FF8          2223            B     STA05A                                           CMT22230
1FA6  D350 167A          2224  RTN04     LB    STAT,INTSTA        CHECK STATUS FOR              CMT22240
1FAA  C550 0046          2225            CLHI  STAT,X'46'         EOM INTERRUPT                 CMT22250
1FAE  4230 1FD4          2226            BNE   STAERR1                                          CMT22260
1FB2  C850 1FC8          2227  STA04     LHI   R5,RTN05          SET UP RETURN ADDRESS 05      CMT22270
1FB6  4050 1908          2228            STH   R5,DEVINT+2                                      CMT22280
1FBA  C8B0 3233          2229            LHI   R11,C'23'          ERROR 23                      CMT22290
1FBE  41E0 3122          2230            BAL   R14,TIMEOUT        WAIT FOR THIRD INTERRUPT      CMT22300
1FC2  000A               2231            DC    H'10'                                            CMT22310
1FC4  4300 1FF8          2232            B     STA05A                                           CMT22320
1FC8  D350 167A          2233  RTN05     LB    STAT,INTSTA        GET INTERRUPT STATUS          CMT22330
1FCC  C550 0056          2234            CLHI  STAT,X'56'         CHECK STATUS FOR NMTN INTERRUPT CMT22340
1FD0  4330 1FFC          2235            BE    STA05              YES - GO ON                   CMT22350
1FD4  C350 0001          2236  STAERR1   THI   STAT,1             DU?                           CMT22360
1FD8  4230 5228          2237            BNZ   MTDU                                             CMT22370
1FDC  C800 3035          2238            LHI   R0,C'05'           ERROR 05                      CMT22380
1FE0  C350 0020          2239            THI   STAT,X'20'         EOT?                          CMT22390
1FE4  4330 1F4E          2240            BZ    STAERR                                           CMT22400
1FE8  C850 348E          2241            LHI   R5,MSG04           YES -                         CMT22410
1FEC  41F0 1128          2242            BAL   R15,PRINT                                        CMT22420
1FF0  DE60 3412          2243            OC    DEV,DISARM                                       CMT22430
1FF4  4300 2B28          2244            B     CHKEND1                                          CMT22440
1FF8  41D0 3146          2245  STA05A    BAL   R13,WAIT2          WAIT FOR NMTN=1               CMT22450
1FFC  4850 1678          2246  STA05     LH    R5,OPWEOF+6        WEOF OPTION SET?              CMT22460
2000  4230 1F62          2247            BNZ   LPEOF                                            CMT22470
                         2248  *                                                                CMT22480
                         2249  *         TEST WRITE INTERRUPTS                                  CMT22490
                         2250  *                                                                CMT22500
2004  2481               2251            LIS   R8,1                                             CMT22510
2006  DE60 3412          2252  WREC3     OC    DEV,DISARM         DISARM QUEUED INTERRUPTS      CMT22520
200A  4850 33F6          2253            LH    R5,MODFLG                                        CMT22530
200E  C550 0002          2254            CLHI  R5,2               SELCH MODE?                   CMT22540
2012  4330 2294          2255            BE    SELINW                                           CMT22550
2016  C850 2056          2256            LHI   R5,RTN06A          NO - SET UP RETURN ADDRESS 06A CMT22560
201A  4050 1908          2257            STH   R5,DEVINT+2                                      CMT22570
201E  D0F0 35B8          2258            STM   R15,RSAV32                                       CMT22580
2022  D1F0 35A8          2259            LM    R15,WLIM                                         CMT22590
2026  68BF               2260            LHR   R11,R15                                          CMT22600
2028  D1F0 35AC          2261            LM    R15,WLIM+4                                       CMT22610
202C  68CF               2262            LHR   R12,R15                                          CMT22620
202E  D1F0 35B8          2263            LM    R15,RSAV32                                       CMT22630
2032  41D0 3146          2264            BAL   R13,WAIT2          WAIT FOR NMTN=1               CMT22640
2036  DE60 3400          2265            OC    DEV,WRITE          DEVICE WRITE                  CMT22650
203A  966B               2266            WBR   DEV,R11            WRITE BLOCK                   CMT22660
203C  9D65               2267            SSR   DEV,STAT                                         CMT22670
203E  2081               2268            BTBS  8,1                                              CMT22680
2040  DE60 3411          2269  STA06     OC    DEV,ENABL          ENABLE DEVICE INTERRUPT       CMT22690
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TEST 3 INTERRUPT TEST

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2044  C8B0 3236          2270          LHI   R11,C'26'          ERROR 26                        CMT22700
2048  41E0 3122          2271          BAL   R14,TIMEOUT        WAIT FOR INTERRUPT              CMT22710
204C  000A               2272          DC    H'10'                                             CMT22720
204E  4100 3194          2273          BAL   R13,WAIT3          WAIT FOR EOM=1                  CMT22730
2052  9065               2274          SSR   DEV,STAT                                          CMT22740
2054  2303               2275          BS    RTN06A+4                                          CMT22750
2056  D350 167A          2276  RTN06A  LB    STAT,INTSTA        GET INTERRUPT STATUS            CMT22760
205A  C350 0001          2277          THI   STAT,1             DU?                             CMT22770
205E  4230 3228          2278          BNZ   MTDU                                              CMT22780
2062  C350 0020          2279          THI   STAT,X'20'         EOT?                            CMT22790
2066  2336               2280          BZS   WRTON3             NO - BRANCH                     CMT22800
2068  41E0 2B7E          2281          BAL   R14,BSPACE                                         CMT22810
206C  DE60 3407          2282          OC    DEV,CLEAR                                         CMT22820
2070  2300               2283          BS    WRTEND                                            CMT22830
2072  C350 0004          2284  WRTON3  THI   STAT,X'04'         EX?                             CMT22840
2076  2134               2285          BNZS  STER06A            YES - STATUS ERROR              CMT22850
2078  C350 0002          2286          THI   STAT,X'02'         EOM INTERRUPT?                  CMT22860
207C  2135               2287          BNZS  STA06A             YES - GO ON                     CMT22870
207E  C800 3130          2288  STER06A LHI   R0,C'10'           NO - ERROR 10                   CMT22880
2082  41E0 2F96          2289          BAL   R14,ERRMSG2                                       CMT22890
2086  C180 2006          2290  STA06A  BXLE  R8,WREC3                                          CMT22900
208A  4100 3146          2291  WRTEND  BAL   R13,WAIT2          WAIT FOR NMTN=1                 CMT22910
208E  DE60 3413          2292          OC    DEV,WEOF           WRITE EOF                       CMT22920
2092  4850 1860          2293          LH    R5,OPBSP+6         BACKSPACE OPTION SET ?          CMT22930
2096  4330 225A          2294          BZ    NOBSP                                             CMT22940
                         2295  *                                                               CMT22950
                         2296  *       TEST BACKSPACE EOF INTERRUPT                            CMT22960
                         2297  *                                                               CMT22970
209A  C850 20C0          2298          LHI   R5,RTN07           SET UP RETURN ADDRESS 07        CMT22980
209E  4050 1908          2299          STH   R5,DEVINT+2                                       CMT22990
20A2  4100 3146          2300          BAL   R13,WAIT2          WAIT FOR NMTN=1                 CMT23000
20A6  DE60 3412          2301          OC    DEV,DISARM         DISARM QUEUED INTERRUPTS        CMT23010
20AA  DE60 3411          2302          OC    DEV,ENABL          ENABLE DEVICE INTERRUPT         CMT23020
20AE  DE60 340B          2303          OC    DEV,BKSPAC         BACKSPACE OVER EOF              CMT23030
20B2  C8B0 3234          2304          LHI   R11,C'24'          ERROR 24                        CMT23040
20B6  41E0 3122          2305          BAL   R14,TIMEOUT        WAIT FOR INTERRUPT              CMT23050
20BA  0032               2306          DC    H'50'                                             CMT23060
20BC  4300 293E          2307          B     BSFIL                                             CMT23070
20C0  D350 167A          2308  RTN07   LB    STAT,INTSTA        GET INTERRUPT STATUS            CMT23080
20C4  C350 0092          2309          THI   STAT,X'92'         ERR, NMTN, OR EOM?              CMT23090
20C8  2335               2310          BZS   STA07              NO - GO ON                      CMT23100
20CA  C800 3037          2311          LHI   R0,C'07'           YES - ERROR 07                  CMT23110
20CE  4300 1F4E          2312          B     STAERR                                            CMT23120
                         2313  *                                                               CMT23130
                         2314  *       TEST BACKSPACE RECORD INTERRUPT                         CMT23140
                         2315  *                                                               CMT23150
20D2  C850 20FE          2316  STA07   LHI   R5,RTN08           SET UP RETURN ADDRESS 08        CMT23160
20D6  4050 1908          2317          STH   R5,DEVINT+2                                       CMT23170
20DA  2481               2318          LIS   R8,1                                              CMT23180
20DC  4100 3146          2319  BSPFIL  BAL   13,WAIT2           WAIT FOR NMTN=1                 CMT23190
20E0  DE60 3412          2320          OC    DEV,DISARM         DISARM QUEUED INTERRUPTS        CMT23200
20E4  DE60 3411          2321          OC    DEV,ENABL          ENABLE DEVICE INTERRUPT         CMT23210
20E8  DE60 340B          2322          OC    DEV,BKSPAC         BACKSPACE OVER A RECORD         CMT23220
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TEST 3 INTERRUPT TEST

```
20EC  C8B0 3235          2323          LHI   R11,C'25'       ERROR 25                        CMT23230
20F0  41E0 3122          2324          BAL   R14,TIMEOUT     WAIT FOR INTERRUPT              CMT23240
20F4  0032               2325          DC    H'50'                                         CMT23250
20F6  41D0 3194          2326          BAL   R13,WAIT3       WAIT FOR EOM=1                  CMT23260
20FA  4300 2126          2327          B     STA08                                         CMT23270
20FE  D350 167A          2328  RTN08   LB    STAT,INTSTA     GET INTERRUPT STATUS            CMT23280
2102  C350 0001          2329          THI   STAT,1          DU?                             CMT23290
2106  4230 3228          2330          BNZ   MTDU                                          CMT23300
210A  C350 0040          2331          THI   STAT,X'40'      EOF?                            CMT23310
210E  4230 2132          2332          BNZ   TRYRD                                         CMT23320
2112  C350 0004          2333          THI   STAT,X'04'      EX?                             CMT23330
2116  2134               2334          BNZS  STER08          YES - STATUS ERROR              CMT23340
2118  C350 0002          2335          THI   STAT,X'02'      EOM?                            CMT23350
211C  2135               2336          BNZS  STA08           YES - GO ON                     CMT23360
211E  C800 3038          2337  STER08  LHI   R0,C'08'        NO - ERROR 08                   CMT23370
2122  41F0 0F80          2338          BAL   R15,ERRDS                                     CMT23380
2126  C180 20DC          2339  STA08   BXLE  R8,BSPFIL                                     CMT23390
212A  41D0 3146          2340          BAL   R13,WAIT2                                     CMT23400
212E  0E90 3408          2341          DC    DEV,BKSPAC                                    CMT23410
2132  4850 1848          2342  TRYRD   LH    R5,OPRD+6       READ OPTION SET?                CMT23420
2136  4330 21D4          2343          BZ    NOREAD                                        CMT23430
                         2344  *                                                           CMT23440
                         2345  *       TEST READ INTERRUPTS                                CMT23450
                         2346  *                                                           CMT23460
213A  41D0 3146          2347  ROONLY  BAL   R13,WAIT2       WAIT FOR NMTN=1                 CMT23470
213E  0E60 340C          2348          DC    DEV,READ        READ PASS EOF                   CMT23480
2142  2481               2349          LIS   R8,1                                          CMT23490
2144  0E60 3412          2350  RREC3   DC    DEV,DISARM      DISARM QUEUED INTERRUPTS        CMT23500
2148  41D0 2EEA          2351          BAL   R13,CRBUF       CLEAR READ BUFFER               CMT23510
214C  4850 33F6          2352          LH    R5,MODFLG                                     CMT23520
2150  C550 0002          2353          CLHI  R5,2            SELCH MODE?                     CMT23530
2154  4330 2284          2354          BE    SELINR                                        CMT23540
2158  C850 2194          2355          LHI   R5,RTN09A       SET UP RETURN ADDRESS 09A       CMT23550
215C  4050 1908          2356          STH   R5,DEVINT+2                                   CMT23560
2160  D0F0 3588          2357          STM   R15,RSAV32      SAVE R15                        CMT23570
2164  D1F0 3580          2358          LM    R15,RLIM        READ BUFFER ADDRESS             CMT23580
2168  08BF               2359          LHR   R11,R15                                       CMT23590
216A  D1F0 3584          2360          LM    R15,RLIM+4      END ADDRESS                     CMT23600
216E  08CF               2361          LHR   R12,R15                                       CMT23610
2170  D1F0 3588          2362          LM    R15,RSAV32                                    CMT23620
2174  41D0 3146          2363          BAL   R13,WAIT2       WAIT FOR NMTN=1                 CMT23630
2178  0E60 340C          2364          DC    DEV,READ        DEVICE READ                     CMT23640
217C  976B               2365          RBR   DEV,R11         READ BLOCK                      CMT23650
217E  0E60 3411          2366  STA09   DC    DEV,ENABL       ENABLE DEVICE INTERRUPT         CMT23660
2182  C8B0 3237          2367          LHI   R11,C'27'       ERROR 27                        CMT23670
2186  41E0 3122          2368          BAL   R14,TIMEOUT     WAIT FOR INTERRUPT              CMT23680
218A  0032               2369          DC    H'50'                                         CMT23690
218C  41D0 3194          2370          BAL   R13,WAIT3       WAIT FOR EOM=1                  CMT23700
2190  9065               2371          SSR   DEV,STAT                                      CMT23710
2192  2303               2372          BS    RTN09A+4                                      CMT23720
2194  D350 167A          2373  RTN09A  LB    STAT,INTSTA     GET INTERRUPT STATUS            CMT23730
2198  C350 0001          2374          THI   STAT,1          DU?                             CMT23740
219C  4230 3228          2375          BNZ   MTDU                                          CMT23750
```

TEST 3 INTERRUPT TEST

```
21A0  C350 0060          2376            THI   STAT,X'60'                                  CMT23760
21A4  4230 21D4          2377            BNZ   NOREAD                                     CMT23770
21A8  C350 0004          2378            THI   STAT,X'04'          EX?                   CMT23780
21AC  2134               2379            BNZS  STER09A                                     CMT23790
21AE  C350 0002          2380            THI   STAT,X'02'          EOM?                  CMT23800
21B2  2135               2381            BNZS  RDEND                                       CMT23810
21B4  C800 3131          2382  STER09A   LHI   R0,C'11'           ERROR 11              CMT23820
21B8  41E0 2F96          2383            BAL   R14,ERRMSG2                               CMT23830
21BC  4850 1884          2384  RDEND     LH    R5,CMPRF+6          COMPARE OPTION SET ?  CMT23840
21C0  2333               2385            BZS   TRYDUM                                    CMT23850
21C2  41E0 2DC4          2386            BAL   R14,COMPAR                                CMT23860
21C6  4850 1888          2387  TRYDUM    LH    R5,SDUMP+6          DUMP OPTION SET       CMT23870
21CA  2333               2388            BZS   CONT3                                     CMT23880
21CC  41E0 2F1E          2389            BAL   R14,DUMP            DUMP READ BUFFER      CMT23890
21D0  C160 2144          2390  CONT3     BXLE  R8,RREC3                                  CMT23900
21D4  41E0 3384          2391  NOREAD    BAL   RET,REWIND         REWIND TAPE           CMT23910
21D8  4850 186C          2392            LH    R5,OPSKIP+6         SKIP OPTION?          CMT23920
21DC  4330 21F8          2393            BZ    ENDTST3                                   CMT23930
                         2394  *                                                         CMT23940
                         2395  *         TEST SKIP INTERRUPTS                            CMT23950
                         2396  *                                                         CMT23960
21E0  D310 340E          2397            LB    R1,SKIPF            LOAD SKIP FORWARD COMMAND CMT23970
21E4  C8B0 3330          2398            LHI   R11,C'30'           ERROR 30              CMT23980
21E8  41C0 3328          2399            BAL   R12,SKIPINT                               CMT23990
21EC  D310 340F          2400            LB    R1,SKIPR            LOAD SKIP REVERSE COMMAND CMT24000
21F0  C8B0 3331          2401            LHI   R11,C'31'           ERROR 31              CMT24010
21F4  41C0 3328          2402            BAL   R12,SKIPINT                               CMT24020
21F8  DE60 3412          2403  ENDTST3   OC    DEV,DISARM                              CMT24030
21FC  41E0 3384          2404            BAL   RET,REWIND          REWIND TAPE           CMT24040
2200  41D0 2FAE          2405            BAL   R13,TSTMOD                                CMT24050
2204  4300 1EC8          2406            B     NXTMOD3             NEXT MODE             CMT24060
                         2407  *                                                         CMT24070
                         2408  *         DISARM FAILURE                                  CMT24080
                         2409  *                                                         CMT24090
2208  C800 3338          2410  RTNDSM    LHI   R0,C'38'           ERROR 38              CMT24100
220C  2303               2411            BS    INTER31                                   CMT24110
                         2412  *                                                         CMT24120
                         2413  *         DISABLE FAILURE                                 CMT24130
                         2414  *                                                         CMT24140
220E  C800 3339          2415  RTNDSB    LHI   R0,C'39'           ERROR 39              CMT24150
2212  0350 167A          2416  INTER31   LB    STAT,INTSTA         GET INTERRUPT STATUS  CMT24160
2216  4300 1F56          2417            B     STERR2                                    CMT24170
                         2418  *                                                       * CMT24180
                         2419  *         DU INTERRUPT                                    CMT24190
                         2420  *                                                         CMT24200
221A  0350 167A          2421  RTNDU1    LB    STAT,INTSTA                             CMT24210
221E  C350 0001          2422            THI   STAT,X'01'          DU BIT SET?           CMT24220
2222  4330 224E          2423            BZ    DUSTER                                    CMT24230
                         2424  *                                                         CMT24240
                         2425  *         TEST DU INTERRUPT (1-0)                         CMT24250
                         2426  *                                                         CMT24260
2226  C850 223C          2427            LHI   R5,RTNDU2                               CMT24270
222A  4050 1908          2428            STH   R5,DEVINT+2                             CMT24280
```

TEST 3 INTERRUPT TEST

```
222E C8B0 3334          2429          LHI   R11,C'34'       ERROR 34                                  CMT24290
2232 41E0 3122          2430          BAL   R14,TIMEOUT                                               CMT24300
2236 0BB8               2431          DC    H'3000'                                                   CMT24310
2238 4300 3228          2432          B     *TDU                                                      CMT24320
223C D350 167A          2433 RTNDU2   LB    STAT,INTSTA                                               CMT24330
2240 4330 1E9U          2434          BZ    NORINT                                                    CMT24340
2244 C350 0001          2435          THI   STAT,X'01'      DU BIT SET ?                              CMT24350
2248 C8U0 3335          2436          LHI   R0,C'35'        ERROR 35                                  CMT24360
224C 2303               2437          BS    DUSTER+4                                                  CMT24370
224E C8U0 3333          2438 DUSTER   LHI   R0,C'33'        ERROR 33                                  CMT24380
2252 41F0 0F80          2439          BAL   R15,ERR0S                                                 CMT24390
2256 4300 1E90          2440          B     NORINT                                                    CMT24400
225A C85C 2284          2441 NOBSP    LHI   R5,RTN10        NO BACKSPACE OPTION:                      CMT24410
225E 4050 1908          2442          STH   R5,DEVINT+2     SET UP INTERRUPT RETURN ADRS 10           CMT24420
2262 41D0 3146          2443          BAL   R13,WAIT2       WAIT FOR NMTN=1                           CMT24430
2266 0E60 5412          2444          OC    DEV,DISARM      DISARM QUEUED INTERRUPTS                  CMT24440
226A 0E60 3411          2445          OC    DEV,ENABL       ENABLE DEVICE INTERRUPT                   CMT24450
226E 0E60 340A          2446          OC    DEV,REWD        REWIND                                    CMT24460
2272 C8B0 3230          2447          LHI   R11,C'20'       ERROR 20                                  CMT24470
2276 41E0 3122          2448          BAL   R14,TIMEOUT     WAIT FOR INTERRUPT                        CMT24480
227A 03E8               2449          DC    H'1000'                                                   CMT24490
227C 41D0 3104          2450          BAL   R13,WAIT1       WAIT FOR NMTN=1                           CMT24500
2280 4340 2132          2451          B     TRYRD                                                     CMT24510
2284 D350 167A          2452 RTN10    LB    STAT,INTSTA     GET INTERRUPT STATUS                      CMT24520
2288 C550 0034          2453          CLHI  STAT,X'34'      ET, NMTN AND EX=1?                        CMT24530
228C 4230 1F4A          2454          BNE   STER02          NO - STATUS ERROR                         CMT24540
2290 4300 2132          2455          B     TRYRD                                                     CMT24550
                        2456 *                                                                        CMT24560
                        2457 *        TEST SELCH INTERRUPTS:                                          CMT24570
                        2458 *                                                                        CMT24580
2294 D310 3400          2459 SELINW   LB    R1,WRITE        DEVICE COMMAND                            CMT24590
2298 D320 3408          2460          LB    R2,GOWRT        SELCH GO & COMMAND                        CMT24600
229C C830 35A8          2461          LHI   R3,WLIM         SELCH WRITE LIMITS                        CMT24610
22A0 C840 2056          2462          LHI   R4,RTN06A       DEVICE INTERRUPT RETURN ADDRESS           CMT24620
22A4 C850 3318          2463          LHI   R5,SELINT1      SELCH INTERRUPT RETURN ADDRESS            CMT24630
22A8 C8B0 3238          2464          LHI   R11,C'28'       ERROR 28                                  CMT24640
22AC 41C0 32D8          2465          BAL   R12,SELINT                                                CMT24650
22B0 4340 2040          2466          B     STA06                                                     CMT24660
22B4 D310 340C          2467 SELINR   LB    R1,READ         DEVICE COMMAND                            CMT24670
22B8 D320 3409          2468          LB    R2,GORD         SELCH GO & COMMAND                        CMT24680
22BC C830 35B0          2469          LHI   R3,RLIM         SELCH READ LIMITS                         CMT24690
22C0 C840 2194          2470          LHI   R4,RTN09A       DEVICE INTERRUPT RETURN ADDRESS           CMT24700
22C4 C850 3318          2471          LHI   R5,SELINT1      SELCH INTERRUPT RETURN ADDRESS            CMT24710
22C8 C8B0 3239          2472          LHI   R11,C'29'       ERROR 29                                  CMT24720
22CC 41C0 32D8          2473          BAL   R12,SELINT                                                CMT24730
22D0 4300 217E          2474          B     STA09                                                     CMT24740
```

TEST 4 WRITE LONG/READ SHORT

```
                                2476  * ********************************************************************      CMT24760
                                2477  *                                                                   *      CMT24770
                                2478  *                              T E S T 4                            *      CMT24780
                                2479  *                                                                   *      CMT24790
                                2480  *    PURPOSE:                                                              CMT24800
                                2481  *        TO TEST THE PROPER FUNCTIONING OF THE OVERFLOW              *      CMT24810
                                2482  *        CIRCUITRY, AND THE DETECTION OF ABNORMAL I/O                *      CMT24820
                                2483  *        CONDITIONS.                                                *      CMT24830
                                2484  *                                                                   *      CMT24840
                                2485  *    ASSUMPTIONS:                                                          CMT24850
                                2486  *        THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT         *      CMT24860
                                2487  *        DETECTING ANY FAILURE.                                     *      CMT24870
                                2488  *                                                                   *      CMT24880
                                2489  *    DESIGN SPECIFICATION:                                          *      CMT24890
                                2490  *        A RECORD IS GENERATED AND THE SAME RECORD IS READ           *      CMT24900
                                2491  *        PLUS 32 BYTES. THE PROGRAM TESTS FOR DETECTION OF          *      CMT24910
                                2492  *        ABNORMAL TERMINATION OF THE READ OPERATION.                 *      CMT24920
                                2493  *        CONVERSELY, OVERFLOW IS CHECKED BY READING A RECORD         *      CMT24930
                                2494  *        SHORTER THAN THE ONE WRITTEN.                              *      CMT24940
                                2495  *                                                                   *      CMT24950
                                2496  *    HOW TO RUN THE TEST:                                           *      CMT24960
                                2497  *        SELECT TEST 4 AND APPROPRIATE OPTIONS, AND ENTER RUN.      *      CMT24970
                                2498  *        REFER TO TEST 0.                                           *      CMT24980
                                2499  *                                                                   *      CMT24990
                                2500  *    OPTIONS:                                                       *      CMT25000
                                2501  *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,          *      CMT25010
                                2502  *        INTLEN, MODE, TRACK, RECFIL, DUMP                          *      CMT25020
                                2503  *        WSTART,RSTART                                              *      CMT25030
                                2504  *                                                                   *      CMT25040
                                2505  *    ERRORS:                                                        *      CMT25050
                                2506  *        00, 01, 02, 04, 05, 08, 10, 11, 12, 13, 14, 15, 16,        *      CMT25060
                                2507  *        17, 18, 46, 47, 50.                                        *      CMT25070
                                2508  *                                                                   *      CMT25080
                                2509  * ********************************************************************      CMT25090
                                2510  *                                                                         CMT25100
22D4  C840 22DC                 2511  TEST4     LHI   R4,TEST41          STARTING ADDRESS SET UP FOR          CMT25110
22D8  41E0 2B10                 2512            BAL   R14,TSTSUP        SECOND DEVICE TEST                   CMT25120
22DC  41E0 2AC8                 2513  TEST41    BAL   R14,TSTINIT       TEST INITIALIZE                      CMT25130
22E0  41E0 3384                 2514  NXTMOD4   BAL   RET,REWIND        REWIND TAPE                          CMT25140
22E4  41E0 2B4A                 2515            BAL   R14,FSTEOF        WRITE & SENSE EOF                    CMT25150
22E8  0755                      2516            XHR   R5,R5             CLEAR WRITE-LONG/READ-SHORT FLAG     CMT25160
22EA  4050 33FE                 2517            STH   R5,WLRS                                                CMT25170
22EE  41E0 2E96                 2518            BAL   R14,RESET         SET BUFFER LIMITS                    CMT25180
22F2  41E0 2EC0                 2519            BAL   R14,BSET          SET WRITE BUFFER                     CMT25190
22F6  D0F0 3588                 2520            STM   R15,RSAV32                                             CMT25200
22FA  D1F0 35AC                 2521            LM    R15,WLIM+4                                             CMT25210
22FE  C8F0 0020                 2522            SHI   R15,32                                                 CMT25220
2302  D0F0 35AC                 2523            STM   R15,WLIM+4                                             CMT25230
2306  D1F0 3588                 2524            LM    R15,RSAV32                                             CMT25240
230A  48A0 1800                 2525            LH    R10,RECFIL+6      NUMBER OF RECORDS                    CMT25250
230E  2491                      2526            LIS   R9,1                                                   CMT25260
2310  2481                      2527  GENFIL4   LIS   R8,1                                                   CMT25270
2312  41C0 28CC                 2528  GFIL41    BAL   R12,WRTREC         WRITE A RECORD                       CMT25280
```

TEST 4 WRITE LONG/READ SHORT

```
2316  4300 238C          2529            B     WRTER4                                                  CMT25290
231A  0755               2530            XHR   R5,R5                                                   CMT25300
231C  4050 33F8          2531            STH   R5,RTYCNT                                               CMT25310
2320  41E0 287E          2532  PROC41    BAL   R14,BSPACE      BACKSPACE A RECORD                       CMT25320
2324  41CC 2C84          2533  RERDR4    BAL   R12,RDREC       READ A RECORD                            CMT25330
2328  4300 23A4          2534            B     RDER4           ERROR RETURN - CHECK STATUS              CMT25340
232C  C800 3136          2535            LHI   R0,C'16'        NORMAL RETURN - ERROR 16                 CMT25350
2330  41E0 2F96          2536            BAL   R14,ERRMSG2                                              CMT25360
2334  41E0 2FD2          2537            BAL   R14,RETRY       RETRY 5 TIMES                            CMT25370
2338  220A               2538            BS    RERDR4                                                   CMT25380
233A  4850 13A8          2539  PROC42    LH    R5,SDUMP+6      DUMP OPTION?                             CMT25390
233E  2333               2540            BZS   PROC43                                                   CMT25400
2340  41E0 2F18          2541            BAL   R14,DUMP        YES - DUMP READ BUFFER                   CMT25410
2344  C180 2312          2542  PROC43    BXLE  R8,GFIL41       CONTINUE                                 CMT25420
2348  41D0 3146          2543            BAL   R13,WAIT2       WAIT FOR NMTN=1                          CMT25430
234C  DE60 3413          2544            OC    DEV,WEOF                                                 CMT25440
2350  4850 33FE          2545  TAPEND4   LH    R5,WLRS         WRITE-LONG/READ-SHORT?                   CMT25450
2354  2337               2546            BZS   CONT4                                                    CMT25460
2356  41E0 3384          2547            BAL   RET,REWIND      REWIND TAPE                              CMT25470
235A  41D0 2FAE          2548            BAL   R13,TSTMOD      YES - CHECK MORE MODE                    CMT25480
235E  4300 22E0          2549            B     NXTMOD4                                                  CMT25490
2362  245F               2550  CONT4     LIS   R5,15           NO - SET WRITE-LONG/READ-SHORT FLAG      CMT25500
2364  4050 33FE          2551            STH   R5,WLRS                                                  CMT25510
2368  41E0 3384          2552            BAL   RET,REWIND      REWIND TAPE                              CMT25520
236C  41E0 2B4A          2553            BAL   R14,FSTEOF      WRITE & SENSE EOF                        CMT25530
2370  41E0 2E96          2554            BAL   R14,RESET       SET BUFFER LIMITS                        CMT25540
2374  00F0 3588          2555            STM   R15,RSAV32                                               CMT25550
2378  01F0 3584          2556            LM    R15,RLIM+4                                               CMT25560
237C  C8F0 0020          2557            SHI   R15,32                                                   CMT25570
2380  00F0 3584          2558            STM   R15,RLIM+4                                               CMT25580
2384  01F0 3588          2559            LM    R15,RSAV32                                               CMT25590
2388  4300 2310          2560            B     GENFIL4         GO TO NEXT STEP                          CMT25600
                         2561  *                                                                        CMT25610
                         2562  *         ERROR PROCEDURE                                                CMT25620
                         2563  *                                                                        CMT25630
238C  4850 33F2          2564  WRTER4    LH    R5,EOTFLG       EOT?                                     CMT25640
2390  4230 2350          2565            BNZ   TAPEND4         YES - END OF STEP                        CMT25650
2394  41E0 2F96          2566            BAL   R14,ERRMSG2                                              CMT25660
2398  41E0 2FD2          2567            BAL   R14,RETRY       RETRY 5 TIMES                            CMT25670
239C  4300 2312          2568            B     GFIL41                                                   CMT25680
23A0  4300 2320          2569            B     PROC41                                                   CMT25690
23A4  9D65               2570  RDER4     SSR   DEV,STAT                                                 CMT25700
23A6  4800 33FE          2571            LH    R0,WLRS         WRITE-LONG/READ-SHORT?                   CMT25710
23AA  4330 23CA          2572            BZ    WSRL                                                     CMT25720
23AE  C350 0080          2573            THI   STAT,X'80'       YES - ERR SET?                           CMT25730
23B2  4230 2306          2574            BNZ   NORMAL          YES - CONTINUE                           CMT25740
23B6  C800 3137          2575            LHI   R0,C'17'        NO - ERROR 17                            CMT25750
23BA  41E0 2F96          2576  WERLS     BAL   R14,ERRMSG2                                              CMT25760
23BE  41E0 2FD2          2577            BAL   R14,RETRY       RETRY 5 TIMES                            CMT25770
23C2  4300 2324          2578            B     RERDR4                                                   CMT25780
23C6  4300 233A          2579            B     PROC42                                                   CMT25790
23CA  C350 0080          2580  WSRL      THI   STAT,X'80'       ERR SET?                                 CMT25800
23CE  2334               2581            BZS   NORMAL          NO - CONTINUE                            CMT25810
```

TEST 4 WRITE LONG/READ SHORT

```
23D0  C800 3138          2582            LHI   R0,C'18'          YES - ERROR 18   CMT25820
23D4  220D               2583            BS    WERLS                              CMT25830
23D6  0755               2584  NORMAL    XHR   R5,R5                             CMT25840
23D8  4050 33F8          2585            STH   R5,RTYCNT                          CMT25850
23DC  4300 233A          2586            B     PROC42                             CMT25860
```

```
                                2568  * ************************************************************          CMT25880
                                2589  *                                                            *          CMT25890
                                2590  *                          T E S T 5                         *          CMT25900
                                2591  *                                                            *          CMT25910
                                2592  *    PURPOSE:                                                          CMT25920
                                2593  *        TO TEST THE PROPER GENERATION OF INTER-RECORD-GAPS.  *          CMT25930
                                2594  *        AND DETECTION OF GAP DATA.                          *          CMT25940
                                2595  *        NOTE: PROLONGED REPETITION OF THIS TEST MAY WEAR THE *          CMT25950
                                2596  *        FRONT PORTION OF THE TAPE.                          *          CMT25960
                                2597  *                                                            *          CMT25970
                                2598  *    ASSUMPTIONS:                                            *          CMT25980
                                2599  *        THIS TEST ASSUMES THAT TESTS 0 AND 4 HAD BEEN RUN   *          CMT25990
                                2600  *        WITHOUT DETECTING ANY FAILURE.                      *          CMT26000
                                2601  *                                                            *          CMT26010
                                2602  *    DESIGN SPECIFICATIONS:                                            CMT26020
                                2603  *        THIS TEST GENERATES LONG (512 BYTES) RECORDS OF     *          CMT26030
                                2604  *        ALL ONES (FF) ON THE TAPE. IT THEN REWINDS AND      *          CMT26040
                                2605  *        WRITE A SHORT RECORD OF VARIOUS DATA (00-FF) OVER   *          CMT26050
                                2606  *        THE SAME PORTION OF THE TAPE FOR 100 TIMES. SINCE   *          CMT26060
                                2607  *        BACKSPACE DOES NOT ALWAYS STOP AT THE SAME SPOT.    *          CMT26070
                                2608  *        ALL THE RECORDS ARE NOT WRITTEN DIRECTLY OVER EACH  *          CMT26080
                                2609  *        OTHER. THE LAST RECORD IS WRITTEN REVERSED. THE     *          CMT26090
                                2610  *        TAPE IS REWOUND AND THE RECORD READ. THE READ IS    *          CMT26100
                                2611  *        REPEATED FOR THE NUMBER OF TIMES AS SPECIFIED BY    *          CMT26110
                                2612  *        OPTION IRG. THIS ENSURES THE PICKING UP OF ANY      *          CMT26120
                                2613  *        DATA LEFT BY THE PREVIOUS RECORDS WRITTEN.          *          CMT26130
                                2614  *                                                            *          CMT26140
                                2615  *    OPTIONS:                                                *          CMT26150
                                2616  *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,   *          CMT26160
                                2617  *        INTLEV, MODE, TRACK, IRG                            *          CMT26170
                                2618  *        WSTART,RSTART                                       *          CMT26180
                                2619  *                                                            *          CMT26190
                                2620  *    ERRORS:                                                 *          CMT26200
                                2621  *        00, 01, 02, 04, 05, 07, 08, 10, 11, 12, 13, 14, 15, *          CMT26210
                                2622  *        19, 46, 47, 50                                      *          CMT26220
                                2623  *                                                            *          CMT26230
                                2624  * ************************************************************          CMT26240
                                2625  *                                                                       CMT26250
23E0  C840 23E8                 2626  TEST5    LHI   R4,TEST51          STARTING ADDRESS SET UP FOR         CMT26260
23E4  41EC 2B10                 2627           BAL   R14,TSTSUP         SECOND DEVICE TEST                  CMT26270
23E8  41E0 2AC8                 2628  TEST51   BAL   R14,TSTINIT        TEST INITIALIZE                     CMT26280
23EC  41E0 3384                 2629           BAL   RET,REWIND         REWIND TAPE                         CMT26290
23F0  41E0 2B4A                 2630           BAL   R14,FSTEOF         WRITE & SENSE EOF                   CMT26300
23F4  2492                      2631           LIS   R9,2                                                   CMT26310
23F6  C8A0 01FF                 2632           LHI   R10,511            SET UP FOR 512 BYTE RECORD          CMT26320
23FA  40A0 33EE                 2633           STH   R10,NBYTE                                              CMT26330
23FE  41E0 2E96                 2634           BAL   R14,RESET          SET BUFFER LIMITS                   CMT26340
2402  0788                      2635           XHR   R8,R8                                                  CMT26350
2404  4840 33EC                 2636           LH    CHAR,MASK          DATA OF RECORD IS                   CMT26360
2408  0080 3E20                 2637  JUNK1    STM   R8,RSAVE1                                             CMT26370
240C  01F0 35A8                 2638  HR2      LM    R15,WLIM                                               CMT26380
2410  0AF8                      2639           AHR   R15,R8                                                 CMT26390
2412  404F 0000                 2640           STH   CHAR,0(R15)                                            CMT26400
```

TEST 5 INTER-RECORD GAP TEST

```
2416 0180 3E20          2641          LM    R8,RSAVE1                                  CMT26410
241A 2305               2642          BS    HY3                                        CMT26420
241C 0180 3E20          2643  HX3     LM    R8,RSAVE1                                  CMT26430
2420 4048 35CA          2644          STH   CHAR,WBUFF(R8)                             CMT26440
2424 C180 2408          2645  HY3     BXLE  R8,JUNK1                                   CMT26450
2428 0350 33ED          2646          LB    R5,MASK+1                                  CMT26460
242C 4050 33EE          2647          STH   R5,NBYTE                                   CMT26470
2430 2491               2648          LIS   R9,1                                       CMT26480
2432 24A4               2649          LIS   R10,4               SET UP FOR 4 RECORDS   CMT26490
2434 0788               2650          XHR   R8,R8                                      CMT26500
2436 41C0 2BCC          2651  JUNK2   BAL   R12,WRTREC          WRITE 4 LONG RECORDS   CMT26510
243A 41F0 0F80          2652          BAL   R15,ERRDS                                  CMT26520
243E C180 2436          2653          BXLE  R8,JUNK2                                   CMT26530
2442 41D0 3146          2654          BAL   R13,WAIT2                                  CMT26540
2446 DE60 3413          2655          OC    DEV,WEOF            WRITE EOF MARK         CMT26550
244A 41E0 3384          2656          BAL   RET,REWIND          REWIND TAPE            CMT26560
244E 41E0 2E96          2657          BAL   R14,RESET           SET BUFFER LIMITS      CMT26570
2452 41E0 2EC0          2658          BAL   R14,BSET            GENERATE WRITE BUFFER  CMT26580
2456 41E0 2B4A          2659          BAL   R14,FSTEOF          WRITE & SENSE EOF      CMT26590
245A 41D0 3146          2660          BAL   R13,WAIT2           WAIT FOR NMTN=1        CMT26600
245E DE60 3408          2661          OC    DEV,BKSPAC                                 CMT26610
2462 41E0 2F76          2662          BAL   R14,SENS03          CHECK FOR EOF          CMT26620
2466 4300 2B28          2663          B     CHKEND1             NO EOF - ABORT T5ST    CMT26630
246A C8A0 0064          2664          LHI   R10,100             SET 100 TIMES          CMT26640
246E 0788               2665          XHR   R8,R8                                      CMT26650
2470 41C0 2BCC          2666  CIGCHK  BAL   R12,WRTREC          WRITE A RECORD         CMT26660
2474 4300 24C2          2667          B     WRTER51                                    CMT26670
2478 41E0 2B7E          2668  PROC51  BAL   R14,BSPACE          BACKSPACE A RECORD     CMT26680
247C C180 2470          2669          BXLE  R8,CIGCHK                                  CMT26690
2480 41E0 2B9C          2670          BAL   R14,SWAP            REVERSE WRITE BUFFER   CMT26700
2484 41C0 2BCC          2671          BAL   R12,WRTREC          WRITE A RECORD         CMT26710
2488 4300 24DC          2672          B     WRTER52                                    CMT26720
248C 41D0 3146          2673  PROC52  BAL   R13,WAIT2           WAIT FOR NMTN=1        CMT26730
2490 DE60 3413          2674          OC    DEV,WEOF            WRITE EOF              CMT26740
2494 41E0 3384          2675          BAL   RET,REWIND          REWIND TAPE            CMT26750
2498 41C0 2C84          2676          BAL   R12,RDREC           READ A RECORD          CMT26760
249C 41F0 0F80          2677          BAL   R15,ERRDS                                  CMT26770
24A0 41E0 2DC4          2678          BAL   R14,COMPAR          COMPARE DATA OF LAST RECORD  CMT26780
24A4 48A0 1830          2679          LH    R10,IRGDAT+6                               CMT26790
24A8 0788               2680          XHR   R8,R8                                      CMT26800
24AA 41E0 2B7E          2681  GAPDAT  BAL   R14,BSPACE          BACKSPACE              CMT26810
24AE 41C0 2C84          2682          BAL   R12,RDREC           READ A RECORD          CMT26820
24B2 41F0 0F80          2683          BAL   R15,ERRDS                                  CMT26830
24B6 41E0 2DC4          2684          BAL   R14,COMPAR                                 CMT26840
24BA C180 24AA          2685          BXLE  R8,GAPDAT           REPEAT OVER SAME RECORD  CMT26850
24BE 4300 2B28          2686          B     CHKEND1                                    CMT26860
                        2687  *                                                        CMT26870
                        2688  *       ERROR PROCEDURE                                  CMT26880
                        2689  *                                                        CMT26890
24C2 4850 33F2          2690  WRTER51 LH    STAT,EOTFLG         EOT?                   CMT26900
24C6 2337               2691          BZS   WER51                                      CMT26910
24C8 C800 3139          2692  MTNERR  LHI   R0,C'19'            YES - TAPE MOTION ERROR - 19  CMT26920
24CC 41F0 0F80          2693          BAL   R15,ERRDS                                  CMT26930
```

TEST 5 INTER-RECORD GAP TEST

```
24D0  4300 2B2C          2694              B      CHKEND                          CMT26940
24D4  41F0 0F80          2695  *ER51       BAL    R15,*ERRDS                      CMT26950
24D8  4300 2478          2696              B      PROC51          GO ON           CMT26960
24DC  4850 33F2          2697  *RTER52     LH     STAT,EOTFLG     EOT?            CMT26970
24E0  4230 24C8          2698              BNZ    *TNERR                          CMT26980
24E4  41F0 0F80          2699              BAL    R15,*ERRDS                      CMT26990
24E8  4300 248C          2700              B      PROC52          GO ON           CMT27000
```

```
                        2702  * ****************************************************************      CMT27020
                        2703  *                                                                *      CMT27030
                        2704  *                          T E S T 6                             *      CMT27040
                        2705  *                                                                *      CMT27050
                        2706  *    PURPOSE:                                                    *      CMT27060
                        2707  *        TO CHECK THE CYCLIC REDUNDUNCY CHECK (CRC) CHARACTERS   *      CMT27070
                        2708  *        GENERATED AT THE END OF EACH RECORD WRITTEN.            *      CMT27080
                        2709  *                                                                *      CMT27090
                        2710  *    ASSUMPTIONS:                                                *      CMT27100
                        2711  *        TEST 0 HAD BEEN RUN WITHOUT DETECTING ANY FAILURE       *      CMT27110
                        2712  *                                                                *      CMT27120
                        2713  *    DESIGN SPECIFICATION:                                       *      CMT27130
                        2714  *        IT WAS PRE-CALCULATED THAT THE CRC FOR A RECORD OF      *      CMT27140
                        2715  *        00-FF IS X'2929' AND FOR A RECORD OF FF-00 IS X'6A6A'.   *      CMT27150
                        2716  *        ALTERNATE RECORDS OF THE ABOVE RECORDS ARE WRITTEN.      *      CMT27160
                        2717  *        HARDWARE ADJUSTMENTS SHOULD BE MADE TO ENABLE THE CRC   *      CMT27170
                        2718  *        BEING READ. THE RECORDS ARE READ AND THE CRC CHECKED.   *      CMT27180
                        2719  *                                                                *      CMT27190
                        2720  *    HOW TO RUN THE TEST                                         *      CMT27200
                        2721  *        MAKE SURE THAT THE DEVICE IS A 9 TRACK, 800 BPI         *      CMT27210
                        2722  *        MAGNETIC TAPE SYSTEM, WITH THE INTERFACE BOARD ON       *      CMT27220
                        2723  *        EXTENSION BOARD, SELECT TEST 6 AND SET CRC OPTION.      *      CMT27230
                        2724  *        WHEN THE FILE IS GENERATED, THE MESSAGE:                *      CMT27240
                        2725  *        ADD CRC CAPACITOR AND EXECUTE.                          *      CMT27250
                        2726  *        WILL BE PRINTED, AND THE PROCESSOR HALTED. REFER        *      CMT27260
                        2727  *        TO SECTION 6.2.4 OF PUBLICATION 06-172A15, AND MAKE     *      CMT27270
                        2728  *        THE HARDWARE ADJUSTMENT. THE TEST WILL RESUME BY        *      CMT27280
                        2729  *        DEPRESSING EXE BUTTON. THE ADDED CAPACITOR MUST BE      *      CMT27290
                        2730  *        REMOVED AFTER THE TEST.                                 *      CMT27300
                        2731  *                                                                *      CMT27310
                        2732  *        IF OPTION CRC IS NOT SET OR TRACK IS NOT 9 OR DEVICE    *      CMT27320
                        2733  *        IS NOT 1 THE TEST WILL ONLY PRINT                       *      CMT27330
                        2734  *        TEST 06                                                 *      CMT27340
                        2735  *        AND RETURN TO INPUT COMMAND MODE WITHOUT FURTHER        *      CMT27350
                        2736  *        ACTION                                                  *      CMT27360
                        2737  *                                                                *      CMT27370
                        2738  *    OPTIONS:                                                    *      CMT27380
                        2739  *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,       *      CMT27390
                        2740  *        INTLEV, MODE, TRACK, RECFIL, DEVICE, CRC, RDCRC         *      CMT27400
                        2741  *        WSTART,RSTART                                           *      CMT27410
                        2742  *                                                                *      CMT27420
                        2743  *    ERRORS:                                                     *      CMT27430
                        2744  *        00, 01, 02, 04, 05, 06 ,10, 11, 12, 13, 14, 15, 48,     *      CMT27440
                        2745  *        50.                                                     *      CMT27450
                        2746  *                                                                *      CMT27460
                        2747  * ****************************************************************      CMT27470
                        2748  *                                                                       CMT27480
24EC  4850 170C         2749  TEST6   LH    R5,DEVICE+6       800 BPI MAG. TAPE?                  CMT27490
24F0  2139              2750          BNZS  NOTEST            NO - ABORT TEST                     CMT27500
24F2  4850 17F4         2751          LH    R5,TRACK+6                                            CMT27510
24F6  C550 0009         2752          CLHI  R5,9              9 TRACK TAPE ?                      CMT27520
24FA  2134              2753          BNES  NOTEST            NO - ABORT TEST                     CMT27530
24FC  4850 1690         2754          LH    R5,SCRC+6         CRC OPTION SET ?                    CMT27540
```

TEST 6 CYCLIC REDUNDUNCY CHECK

```
2500 2136           2755          BNZS  CRCTST          NO - ABORT TEST                  CMT27550
2502 245F           2756 NOTEST   LIS   R5,15                                            CMT27560
2504 4050 16A8      2757          STH   R5,NOERR                                         CMT27570
2508 4300 0E5E      2758          B     TSTEND                                           CMT27580
250C C840 25E8      2759 CRCTST   LHI   R4,TEST63         STARTING ADDRESS SET UP FOR      CMT27590
2510 41E0 2B10      2760          BAL   R14,TSTSUP        SECOND DEVICE TEST               CMT27600
2514 C850 0005      2761 TEST61   LHI   R5,X'0005'        CHANGE MASK FOR CRCC=0 TEST      CMT27610
2518 4050 33EC      2762          STH   R5,MASK                                          CMT27620
251C 41E0 2AC8      2763          BAL   R14,TSTINIT       TEST INITIALIZE                  CMT27630
2520 41E0 2E96      2764          BAL   R14,RESET         SET BUFFER LIMITS                CMT27640
2524 D0F0 35B8      2765          STM   R15,RSAV32                                       CMT27650
2528 D1F0 35B4      2766          LM    R15,RLIM+4                                       CMT27660
252C 26F2           2767          AIS   R15,2                                            CMT27670
252E D0F0 35B4      2768          STM   R15,RLIM+4                                       CMT27680
2532 D1F0 35B8      2769          LM    R15,RSAV32                                       CMT27690
2536 41E0 3384      2770          BAL   RET,REWIND        REWIND TAPE                      CMT27700
253A 41E0 284A      2771          BAL   R14,FSTEOF        WRITE & CHECK EOF                CMT27710
253E D010 3E20      2772          STM   R1,RSAVE1                                        CMT27720
2542 2480           2773          LIS   R8,0                                             CMT27730
2544 2491           2774          LIS   R9,1                                             CMT27740
2546 24A4           2775          LIS   R10,4             5 BYTES PER RECORD             CMT27750
2548 C850 0007      2776          LHI   R5,X'0007'        RECORD WITH ODD NUM BYTES OF     CMT27760
254C D1F0 35A8      2777 FILLWBUF LM    R15,WLIM          X'07' HAS A CRCC = 0             CMT27770
2550 0AF8           2778          AHR   R15,R8                                           CMT27780
2552 D25F 0000      2779          STB   R5,0(R15)                                        CMT27790
2556 41F0 1274      2780          BAL   R15,TSTBRK        CHECK BREAK KEY                  CMT27800
255A C180 254C      2781          BXLE  R8,FILLWBUF                                      CMT27810
255E D110 3E20      2782          LM    R1,RSAVE1                                        CMT27820
2562 C8A0 0001      2783          LHI   R10,1             NUM RECORDS = 1                  CMT27830
2566 2491           2784          LIS   R9,1                                             CMT27840
2568 2481           2785          LIS   R8,1                                             CMT27850
256A 41C0 2BCC      2786          BAL   R12,WRTREC        WRITE A RECORD                   CMT27860
256E 4300 2708      2787          B     WRTER6                                           CMT27870
2572 41U0 3146      2788          BAL   R13,WAIT2         WAIT FOR NMTN=1                  CMT27880
2576 DE60 3413      2789          OC    DEV,WEOF          WRITE EOF                        CMT27890
257A 41E0 3384      2790          BAL   RET,REWIND        REWIND TAPE                      CMT27900
257E DE60 340C      2791          OC    DEV,READ          READ PAST EOF                    CMT27910
2582 41E0 2F70      2792          BAL   R14,SENS02        EOF?                             CMT27920
2586 4300 2B28      2793          B     CHKEND1           NO - ABORT TEST                  CMT27930
258A 4830 33EE      2794          LH    R3,NBYTE          YES                              CMT27940
258E 0788           2795          XHR   R8,R8                                            CMT27950
2590 41C0 2C84      2796          BAL   R12,RDREC         READ A RECORD                    CMT27960
2594 4200 0000      2797          NOP                                                    CMT27970
2598 9065           2798          SSR   DEV,STAT                                         CMT27980
259A 4210 3228      2799          BTC   1,MTDU            DU?                              CMT27990
259E C350 0080      2800          THI   STAT,X'80'         ERR BIT SET?                     CMT28000
25A2 4230 25CA      2801          BNZ   CRCZER            YES                              CMT28010
25A6 41E0 3384      2802 SECDEV   BAL   RET,REWIND        REWIND TAPE                      CMT28020
25AA 4850 33FC      2803          LH    R5,DEV2           SECOND DEVICE FLAG SET?          CMT28030
25AE 4230 25D6      2804          BNZ   TEST62            YES - GO TO 2ND PART OF TEST     CMT28040
25B2 4060 3400      2805          STH   DEV,DEVONE        SAVE 1ST DEVICE ADDRESS          CMT28050
25B6 4860 17B8      2806          LH    DEV,DV2ADR+6      GET 2ND DEVICE ADDRESS           CMT28060
25BA 4330 25D6      2807          BZ    TEST62            ZERO - GOTO 2ND PART OF TEST     CMT28070
```

TEST 6 CYCLIC REDUNDUNCY CHECK

```
25BE  4060 33FC          2808           STH   DEV,DEV2          SET 2ND DEVICE FLAG                    CMT28080
25C2  4060 1678          2809           STH   DEV,ERRDEV                                             CMT28090
25C6  4300 2514          2810           B     TEST61            REPEAT CRCC=0 TEST ON 2ND DEV          CMT28100
25CA  C800 3531          2811  CRCZER   LHI   R0,C'51'          ERROR 51                               CMT28110
25CE  41F0 0F80          2812           BAL   R15,ERR0S                                              CMT28120
25D2  4300 25A6          2813           B     SECDEV                                                 CMT28130
25D6  4800 3400          2814  TEST62   LH    R0,DEVONE         ARE 2 DEVICES BEING TESTED?            CMT28140
25DA  4330 25E8          2815           BZ    TEST63            NO                                     CMT28150
25DE  4060 1798          2816           STH   DEV,DV2ADR+6       YES - SAVE 2ND DEV ADDRESS             CMT28160
25E2  0860               2817           LHR   DEV,R0            RESTORE 1ST DEV ADDRESS                CMT28170
25E4  4060 1678          2818           STH   DEV,ERRDEV                                             CMT28180
25E8  C850 FFFF          2819  TEST63   LHI   R5,X'FFFF'         RESTORE MASK FOR REST OF TEST          CMT28190
25EC  4050 33EC          2820           STH   R5,MASK                                                CMT28200
25F0  41E0 2AC8          2821           BAL   R14,TSTINIT        TEST INITIALIZE                        CMT28210
25F4  41E0 2E96          2822           BAL   R14,RESET          SET BUFFER LIMITS                      CMT28220
25F8  D0F0 35B8          2823           STM   R15,RSAV32                                             CMT28230
25FC  D1F0 35B4          2824           LM    R15,RLIM+4                                             CMT28240
2600  26F2               2825           AIS   R15,2                                                  CMT28250
2602  D0F0 3584          2826           STM   R15,RLIM+4                                             CMT28260
2606  D1F0 35B8          2827           LM    R15,RSAV32                                             CMT28270
260A  4850 189C          2828           LH    R5,RDCRC+6         READ CRC ONLY ?                     CMT28280
260E  4230 2654          2829           BNZ   RCONLY                                                 CMT28290
2612  41E0 3384          2830           BAL   RET,REWIND         REWIND TAPE                         CMT28300
2616  41E0 284A          2831           BAL   R14,FSTEOF         WRITE & CHECK EOF                   CMT28310
261A  41E0 2EC0          2832           BAL   R14,BSET           SET WRITE BUFFER                    CMT28320
261E  48A0 1800          2833           LH    R10,RECFIL+6       SET NUMBER OF RECORDS               CMT28330
2622  2491               2834           LIS   R9,1                                                   CMT28340
2624  2481               2835           LIS   R8,1                                                   CMT28350
2626  41C0 2BCC          2836  GENFIL6  BAL   R12,WRTREC         WRITE A RECORD                      CMT28360
262A  4300 2708          2837           B     WRTER6                                                 CMT28370
262E  0755               2838           XHR   R5,R5                                                  CMT28380
2630  4050 33F8          2839           STH   R5,RTYCNT                                              CMT28390
2634  41E0 2B9C          2840  PROC61   BAL   R14,SWAP           REVERSE WRITE BUFFER                CMT28400
2638  C180 2626          2841           BXLE  R8,GENFIL6                                             CMT28410
263C  41D0 3146          2842  ENDFIL   BAL   R13,WAIT2          WAIT FOR NMTN =1                    CMT28420
2640  DE60 3413          2843           OC    DEV,WEOF           WRITE EOF                           CMT28430
2644  C850 349A          2844           LHI   R5,MSG05           PRINT MESSAGE TO ADD                CMT28440
2648  41F0 1128          2845           BAL   R15,PRINT          CAPACITOR ON CONTROLLER             CMT28450
264C  C850 080F          2846           LHI   R5,X'080F'                                             CMT28460
2650  9154               2847           SLHLS R5,4                                                   CMT28470
2652  9505               2848           EPSR  R0,R5              HALT PROCESSOR                      CMT28480
2654  41E0 3384          2849  RCONLY   BAL   RET,REWIND         REWIND TAPE                         CMT28490
2658  DE60 340E          2850           OC    DEV,SKIPF          READ PAST EOF                       CMT28500
265C  41E0 2F70          2851           BAL   R14,SENS02                                             CMT28510
2660  4300 2828          2852           B     CHKEND1            NO EOF - ABORT TEST                 CMT28520
2664  4830 33EE          2853           LH    R3,NBYTE                                               CMT28530
2668  0788               2854           XHR   R8,R8                                                  CMT28540
266A  41C0 2C84          2855  RDFIL6   BAL   R12,RDREC          READ A RECORD                       CMT28550
266E  4300 272A          2856           B     RDER6                                                  CMT28560
2672  D080 3E20          2857  PROC62   STM   R8,RSAVE1                                             CMT28570
2676  D1F0 35B0          2858  HB1      LM    R15,RLIM                                               CMT28580
267A  0AF3               2859           AHR   R15,R3                                                 CMT28590
267C  26F1               2860           AIS   R15,1                                                  CMT28600
```

TEST 6 CYCLIC REDUNDUNCY CHECK

```
267E 484F 0000          2861           LH    CHAR,0(R15)                                  CMT28610
2682 D180 3E20          2862           LM    R8,RSAVE1                                    CMT28620
2686 2305               2863           BS    HY4                                          CMT28630
2688 D180 3E20          2864  HX4      LM    R8,RSAVE1                                    CMT28640
268C 4843 39CB          2865           LH    CHAR,RBUFF+1(R3)                             CMT28650
2690 4850 3402          2866  HY4      LH    R5,CRCC              GET EXPECTED CRC CHAR   CMT28660
2694 0545               2867           CLHR  CHAR,R5              COMPARE                 CMT28670
2696 4230 26DE          2868           BNE   CRCERR                                       CMT28680
269A C580 0002          2869           CLHI  R8,2                 EQUAL -                 CMT28690
269E 238B               2870           BNLS  NOPRINT                                      CMT28700
26A0 C820 34C5          2871           LHI   R2,MSG06+11          PRINT FIRST TWO CRC CHARS. CMT28710
26A4 2404               2872           LIS   R0,4                                         CMT28720
26A6 0814               2873           LHR   R1,CHAR                                      CMT28730
26A8 41F0 1100          2874           BAL   R15,HEXASC           CONVERT TO ASCII CODE   CMT28740
26AC C850 34BA          2875           LHI   R5,MSG06                                     CMT28750
26B0 41F0 1128          2876           BAL   R15,PRINT                                    CMT28760
26B4 4850 3404          2877  NOPRINT  LH    R5,CRCCS             SET OTHER CRC CHAR      CMT28770
26B8 9455               2878           EXBR  R5,R5                REVERSE CRC CHARS       CMT28780
26BA D250 3402          2879           STB   R5,CRCC                                      CMT28790
26BE D250 3403          2880           STB   R5,CRCC+1                                    CMT28800
26C2 4050 3404          2881           STH   R5,CRCCS                                     CMT28810
26C6 C180 266A          2882           BXLE  R8,RDFIL6            GO TO READ NEXT RECORD  CMT28820
26CA C850 2929          2883  ENDTST6  LHI   R5,X'2929'           RESTORE ORIGINAL CRC CHAR CMT28830
26CE 4050 3402          2884           STH   R5,CRCC                                      CMT28840
26D2 C850 6A29          2885           LHI   R5,X'6A29'                                   CMT28850
26D6 4050 3404          2886           STH   R5,CRCCS                                     CMT28860
26DA 4300 2B28          2887           B     CHKEND1                                      CMT28870
                        2888  *                                                           CMT28880
                        2889  *        CRC ERROR                                          CMT28890
                        2890  *                                                           CMT28900
26DE C820 34DE          2891  CRCERR   LHI   R2,MSG07+18          CRC NOT EQUAL           CMT28910
26E2 2404               2892           LIS   R0,4                                         CMT28920
26E4 0815               2893           LHR   R1,R5                                        CMT28930
26E6 41F0 1100          2894           BAL   R15,HEXASC           PRINT BOTH CRC CHARS.   CMT28940
26EA C820 34EB          2895           LHI   R2,MSG07+31                                  CMT28950
26EE 0814               2896           LHR   R1,CHAR                                      CMT28960
26F0 41F0 1100          2897           BAL   R15,HEXASC                                   CMT28970
26F4 C800 3438          2898           LHI   R0,C'48'             ERROR 48                CMT28980
26F8 41F0 0F68          2899           BAL   R15,ERRD                                     CMT28990
26FC C850 34CC          2900           LHI   R5,MSG07                                     CMT29000
2700 41D0 310E          2901           BAL   R13,MSGPRT                                   CMT29010
2704 4300 26B4          2902           B     NOPRINT                                      CMT29020
2708 4850 33F2          2903  WRTER6   LH    R5,EOTFLG            EOT ?                   CMT29030
270C 2337               2904           BZS   RCOVR6                                       CMT29040
270E 41D0 3146          2905           BAL   R13,WAIT2            YES -                   CMT29050
2712 DE60 3408          2906           OC    DEV,BKSPAC           BACKSPACE AND           CMT29060
2716 4300 263C          2907           B     ENDFIL               CLOSE UP FILE           CMT29070
271A 41F0 0F80          2908  RCOVR6   BAL   R15,ERRDS                                    CMT29080
271E 41E0 2FD2          2909           BAL   R14,RETRY            RETRY 5 TIMES           CMT29090
2722 4300 2626          2910           B     GENFIL6                                      CMT29100
2726 4300 2634          2911           B     PROC61                                       CMT29110
272A 9065               2912  RDERR    SSR   DEV,STAT                                    CMT29120
272C C350 0060          2913           THI   STAT,X'60'            EOF OR EOT?             CMT29130
```

TEST 6 CYCLIC REDUNDUNCY CHECK

```
2730  4230 26CA          2914        BNZ   ENDTST6          YES - END OF FILE      CMT29140
2734  41F0 0F80          2915        BAL   R15,ERRDS                               CMT29150
2738  4300 2672          2916        B     PROC62                                  CMT29160
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2918  * ************************************************************ CMT29180
2919  *                                                              * CMT29190
2920  *                          T E S T 7                           * CMT29200
2921  *                                                              * CMT29210
2922  *    PURPOSE:                                                  * CMT29220
2923  *        A UTILITY TEST TO ALLOW USER TO TEST THE DEVICE       * CMT29230
2924  *        IN HIS OWN CHOSEN METHOD. OPTIONS ARE PROVIDED        * CMT29240
2925  *        TO SELECT THE INDIVIDUAL FUNCTIONS AS SPECIFIED       * CMT29250
2926  *        IN APPENDIX 6 OF PUBLICATION 06-172A15. A SCOPE       * CMT29260
2927  *        LOOP OPTION IS ALSO PROVIDED.                         * CMT29270
2928  *                                                              * CMT29280
2929  *        THE RECORD SIZE IN THIS TEST CAN BE VARIED BY THE     * CMT29290
2930  *        OPTION BYTES. THE LIMITS ARE FROM 2 TO X'400'. IF     * CMT29300
2931  *        THE USER WISHES TO INCREASE THE UPPER LIMIT, HE MAY   * CMT29310
2932  *        DO SO BY INCREASING THE CONTENT OF LOCATION LABELLED  * CMT29320
2933  *        "X400". IT MUST BE NOTED THAT THE LOWER LIMIT         * CMT29330
2934  *        CANNOT BE LESS THAN 2 AND THE HIGHER LIMIT MUST       * CMT29340
2935  *        NOT BE CHANGED TO A VALUE HIGHER THAN X'7FFF'.        * CMT29350
2936  *                                                              * CMT29360
2937  *    ASSUMPTIONS:                                              * CMT29370
2938  *        SAME AS IN TEST 0.                                    * CMT29380
2939  *                                                              * CMT29390
2940  *    DESIGN SPECIFICATION:                                     * CMT29400
2941  *        SEVERAL OPTIONS ARE PROVIDED TO THE USER TO SELECT    * CMT29410
2942  *        THE DESIRED FUNCTIONS. THE SCOPE LOOP FUNCTIONS       * CMT29420
2943  *        SUPERCEDE ALL OTHER FUNCTIONS. IF SCOPE=0, THEN       * CMT29430
2944  *        READ ONLY HAS HIGHEST PRIORITY, FOLLOWED BY WRITE     * CMT29440
2945  *        EOF CONTINUOUS. SCOPE LOOP IS EXECUTED CONTINUOUSLY   * CMT29450
2946  *        WITHOUT ANY ERROR CHECKING. SCOPE 1, 2 & 3 INVOLVES   * CMT29460
2947  *        WRITE OPERATION, AND ENSURES PROPER TERMINATION       * CMT29470
2948  *        BY WRITING AN EOF. ALL SCOPES CAN BE STOPPED BY       * CMT29480
2949  *        BREAK OR DU. SCOPE 5 WILL SKIP FORWARD UNTIL EOT      * CMT29490
2950  *        AND THEN SKIP REVERSE TILL BOT. THIS WILL CONTINUE    * CMT29500
2951  *        UNTIL STOPPED BY THE USER.                            * CMT29510
2952  *        WHEN SCOPE=0 THE DEFAULT OPTIONS WILL GENERATE A      * CMT29520
2953  *        FILE, BACKSPACE OVER IT AND READ IT, THE BUFFERS      * CMT29530
2954  *        ARE COMPARED. IF BACKSPACE IS NOT SPECIFIED, A SKIP   * CMT29540
2955  *        FILE REVERSE IS PERFORMED BEFORE READING. MORE THAN   * CMT29550
2956  *        ONE FILES CAN BE SPECIFIED BY OPTION FILES.           * CMT29560
2957  *        THE WEOF CONTINUOUS OPERATION IS PERFORMED IN THIS    * CMT29570
2958  *        TEST WITH NO ERROR CHECKING.                          * CMT29580
2959  *                                                                CMT29590
2960  *        SEVERAL SIMPLE SUBROUTINES ARE IMPLEMENTED TO         * CMT29600
2961  *        PERFORM DIFFERENT TAPE FUNCTIONS. NO ERROR CHECK      * CMT29610
2962  *        IS DONE. THIS ALLOWS THE USER TO WRITE SHORT          * CMT29620
2963  *        UTILITY PROGRAMS:                                     * CMT29630
2964  *        BAL   R14,EOF          WRITE EOF MARK                 * CMT29640
2965  *        BAL   R14,RWND         REWIND TAPE                    * CMT29650
2966  *        BAL   R14,SKFW         SKIP EOF FORWARD               * CMT29660
2967  *        BAL   R14,SKRV         SKIP EOF REVERSE               * CMT29670
2968  *        BAL   R14,BKSP         BACKSPACE RECORD               * CMT29680
2969  *        BAL   R14,WRTBLK       WRITE RECORD BLOCK MODE        * CMT29690
2970  *        BAL   R14,RDBLK        READ RECORD BLOCK MODE         * CMT29700
```

TEST 7 UTILITY TEST

```
                                2971  *        BAL   R14,RWSEL          READ OR WRITE REC SELCH MODE  *        CMT29710
                                2972  *        NOTE: ALL READ/WRITE RECORD ROUTINES ASSUME THAT     *        CMT29720
                                2973  *              R11 CONTAINS THE STARTING ADDRESS, AND R12     *        CMT29730
                                2974  *              CONTAINS THE ENDING ADDRESS OF THE RECORD.     *        CMT29740
                                2975  *              ALSO, RWSEL ASSUMES THAT R2 CONTAINS THE      *        CMT29750
                                2976  *              DEVICE COMMAND AND R3 CONTAINS THE SELCH      *        CMT29760
                                2977  *              GO AND COMMAND.                               *        CMT29770
                                2978  *                                                            *        CMT29780
                                2979  *    HOW TO RUN THE TEST:                                    *        CMT29790
                                2980  *        REFER TO TEST 0. SELECT THE APPROPRIATE OPTION      *        CMT29800
                                2981  *        AND RUN TEST 7.                                     *        CMT29810
                                2982  *                                                            *        CMT29820
                                2983  *    OPTIONS:                                                *        CMT29830
                                2984  *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,   *        CMT29840
                                2985  *        INTLEV, MODE, TRACK, RECFIL, FILES, WRITE, READ,    *        CMT29850
                                2986  *        BKSPAC, WEOF, BYTES, SCOPE.                         *        CMT29860
                                2987  *        WSTART,RSTART                                       *        CMT29870
                                2988  *                                                            *        CMT29880
                                2989  *    ERRORS:                                                 *        CMT29890
                                2990  *        00, 01, 02, 04, 05, 08, 10, 11, 12, 13, 14, 15, 46, *        CMT29900
                                2991  *        47, 50.                                             *        CMT29910
                                2992  *                                                            *        CMT29920
                                2993  * ********************************************************** *        CMT29930
                                2994  *                                                                     CMT29940
273C  C84C 2744                 2995  TEST7    LHI   R4,TEST71          STARTING ADDRESS SET UP FOR          CMT29950
2740  41E0 2B10                 2996           BAL   R14,TSTSUP         SECOND DEVICE TEST                   CMT29960
2744  41E0 2AC8                 2997  TEST71   BAL   R14,TSTINIT        TEST INITIALIZE                      CMT29970
2748  41D0 31D4                 2998           BAL   R13,WAIT1          WAIT FOR NMTN=1                      CMT29980
274C  48A0 180C                 2999           LH    R10,NOBYTE+6       GET NO. BYTES PER RECORD             CMT29990
2750  27A1                      3000           SIS   R10,1              REDUCE BY 1                          CMT30000
2752  40A0 33EE                 3001           STH   R10,NBYTE                                               CMT30010
2756  2421                      3002           LIS   R2,1                                                    CMT30020
2758  4830 1800                 3003           LH    R3,RECFIL+6        GET RECORD PER FILE                  CMT30030
275C  41E0 2E96                 3004           BAL   R14,RESET          RESET BUFFER LIMITS                  CMT30040
2760  48E0 33F0                 3005           LH    R14,DE                                                  CMT30050
2764  C5E0 000F                 3006           CLHI  R14,X'F'                                                CMT30060
2768  2333                      3007           BES   NXTMOD7                                                 CMT30070
276A  41E0 2EC0                 3008           BAL   R14,BSET           SET WRITE BUFFER 00-FF               CMT30080
276E  41E0 3384                 3009  NXTMOD7  BAL   RET,REWIND         REWIND TAPE                          CMT30090
2772  4850 18C0                 3010           LH    R5,SCOPE+6         SCOPE LOOP?                          CMT30100
2776  4230 288C                 3011           BNZ   SCLOOP             YES - GO TO SCOPE LOOP               CMT30110
277A  0788                      3012           XHR   R8,R8              NO - RESET FILE COUNTER              CMT30120
277C  4850 1854                 3013           LH    R5,OPWRT+6         WRITE OPTION?                        CMT30130
2780  2135                      3014           BNZS  CHKEOF             YES - CHECK WEOF OPTION              CMT30140
2782  4850 1848                 3015           LH    R5,OPRD+6          NO - READ OPTION?                    CMT30150
2786  4230 27DE                 3016           BNZ   RONLY7             YES - READ ONLY                      CMT30160
278A  4850 1878                 3017  CHKEOF   LH    R5,OPWEOF+6        WRITE EOF TO SUPERCEDE WRITE?        CMT30170
278E  4230 2A02                 3018           BNZ   CONEOF            YES - WRITE EOF CONTINUOUSLY         CMT30180
2792  41E0 3006                 3019           BAL   R14,INDATA         NO - ACQUIRE DATA STRING             CMT30190
2796  41D0 3146                 3020           BAL   R13,WAIT2          WAIT FOR NMTN=1                      CMT30200
279A  41E0 2B4A                 3021           BAL   R14,FSTEOF         WRITE & CHECK EOF                    CMT30210
279E  2411                      3022  WRTFIL   LIS   R1,1                                                   CMT30220
27A0  41C0 28CC                 3023  GENFIL7  BAL   R12,WRTREC         WRITE A RECORD                       CMT30230
```

TEST 7 UTILITY TEST

```
27A4 4300 284C 3024          B     WRTER71
27A8 C110 27A0 3025 WCON7    BXLE  R1,GENFIL7      CONTINUE FOR A FILE                CMT30240
27AC 41D0 3146 3026          BAL   R13,WAIT2                                          CMT30250
27B0 DE60 3413 3027          OC    DEV,WEOF                                           CMT30260
27B4 4850 1860 3028          LH    R5,OPBSP+6      BACKSPACE OPTION?                  CMT30270
27B8 4330 2830 3029          BZ    NOBSP7          NO - SKIP BACK IF TO READ          CMT30280
27BC 41D0 3146 3030          BAL   R13,WAIT2                                          CMT30290
27C0 DE60 3408 3031          OC    DEV,BKSPAC      BACKSPACE OVER EOF                 CMT30300
27C4 2411      3032          LIS   R1,1                                               CMT30310
27C6 41E0 287E 3033 BSFIL7   BAL   R14,BSPACE       BACKSPACE A RECORD                 CMT30320
27CA C110 27C6 3034          BXLE  R1,BSFIL7       CONTINUE FOR A FILE                CMT30330
27CE 4850 1848 3035          LH    R5,OPRD+6       READ OPTION?                       CMT30340
27D2 4330 2810 3036          BZ    ENDFIL7         NO - CHECK FOR MORE FILES          CMT30350
27D6 41D0 3146 3037          BAL   R13,WAIT2                                          CMT30360
27DA DE60 3408 3038          OC    DEV,BKSPAC      BACKSPACE OVER LEADING EOF         CMT30370
27DE 41D0 3146 3039 RONLY7   BAL   R13,WAIT2       YES -                              CMT30380
27E2 DE60 340C 3040          OC    DEV,READ        READ PASS EOF                      CMT30390
27E6 2411      3041 RDFIL7   LIS   R1,1                                               CMT30400
27E8 41C0 2C84 3042 RERDR7   BAL   R12,RDREC       READ A RECORD                      CMT30410
27EC 4300 286E 3043          B     RDER71                                             CMT30420
27F0 4850 1884 3044          LH    R5,CMPRE+6      COMPARE?                           CMT30430
27F4 2333      3045          BZS   NOCOM                                              CMT30440
27F6 41E0 2DC4 3046          BAL   R14,COMPAR      YES - COMPARE DATA                 CMT30450
27FA 4850 18A8 3047 NOCOM    LH    R5,SDUMP+6      DUMP?                              CMT30460
27FE 2333      3048          BZS   RDON                                               CMT30470
2800 41E0 2F18 3049          BAL   R14,DUMP        YES - DUMP READ BUFFER             CMT30480
2804 C110 27E8 3050 RDON     BXLE  R1,RERDR7       CONTINUE FOR A FILE                CMT30490
2808 41D0 3146 3051          BAL   R13,WAIT2       WAIT FOR NMTN=1                    CMT30500
280C DE60 340C 3052          OC    DEV,READ        READ PASS EOF                      CMT30510
2810 2681      3053 ENDFIL7  AIS   R8,1                                               CMT30520
2812 4580 1818 3054          CLH   R8,FILES+6      ALL FILES WRITTEN/READ?            CMT30530
2816 2387      3055          BNLS  END7                                               CMT30540
2818 4850 1854 3056          LH    R5,OPWRT+6      NO - WRITE?                        CMT30550
281C 4230 279E 3057          BNZ   WRTFIL          YES - WRITE NEXT FILE              CMT30560
2820 4300 27E6 3058          B     RDFIL7                                             CMT30570
2824 41E0 3384 3059 END7     BAL   RET,REWIND      REWIND TAPE                        CMT30580
2828 41D0 2FAE 3060          BAL   R13,TSTMOD                                         CMT30590
282C 4300 276E 3061          B     NXTMOD7                                            CMT30600
2830 4850 1848 3062 NOBSP7   LH    R5,OPRD+6       READ OPTION SET?                   CMT30610
2834 4330 2810 3063          BZ    ENDFIL7         NO - CHECK FOR MORE FILES          CMT30620
2838 41D0 3146 3064          BAL   R13,WAIT2                                          CMT30630
283C DE60 340F 3065          OC    DEV,SKIPR       YES - SKIP BACK OVER EOF           CMT30640
2840 41D0 3146 3066          BAL   R13,WAIT2       WAIT FOR NMTN=1                    CMT30650
2844 DE60 340F 3067          OC    DEV,SKIPR       SKIP REVERSE ONE FILE              CMT30660
2848 4300 27DE 3068          B     RONLY7          GO TO READ                         CMT30670
               3069 *                                                                CMT30680
               3070 *        ERROR PROCEDURE                                         CMT30690
               3071 *                                                                CMT30700
284C 4850 33F2 3072 WRTER71  LH    R5,EOTFLG       EOT?                               CMT30710
2850 2135      3073          BNZS  WEOT7                                              CMT30720
2852 41E0 2F96 3074          BAL   R14,ERRMSG2     NO - PRINT ERROR MESSAGE           CMT30730
2856 4300 27A8 3075          B     WCON7                                              CMT30740
285A 41D0 3146 3076 WEOT7    BAL   R13,WAIT2                                          CMT30750
                                                                                      CMT30760
```

TEST 7 UTILITY TEST

```
285E  DE60 340B  3077          OC    DEV+BKSPAC          BACKSPACE A RECORD          CMT30770
2862  41D0 3146  3078          BAL   R13+WAIT2                                      CMT30780
2866  DE60 3413  3079          OC    DEV+WEOF            WRITE EOF                   CMT30790
286A  4300 2824  3080          B     END7                                            CMT30800
286E  9D65       3081  RDER71  SSR   DEV+STAT                                       CMT30810
2870  C350 0040  3082          THI   STAT+X'40'                                      CMT30820
2874  4230 2810  3083          BNZ   ENDFIL7                                         CMT30830
2878  C350 0020  3084          THI   STAT+X'20'          EOT?                        CMT30840
287C  4230 2824  3085          BNZ   END7                                            CMT30850
2880  41E0 2F96  3086          BAL   R14+ERRMSG2                                     CMT30860
2884  4300 27FA  3087          B     NOCOM                                           CMT30870
2888  4300 1490  3088  SLCHINT  B     RETOPSW                                       CMT30880
                 3089  *                                                           CMT30890
                 3090  *       SCOPE LOOPS: NO ERROR CHECK                         CMT30900
                 3091  *                                                           CMT30910
288C  C550 0005  3092  SCLOOP  CLHI  R5,5                                          CMT30920
2890  4330 2A24  3093          BE    SKPCON                                        CMT30930
2894  C550 0004  3094          CLHI  R5,4                                          CMT30940
2898  438C 297A  3095          BNL   RDCON                                         CMT30950
289C  41E0 3006  3096          BAL   R14+INDATA          YES - GET DATA PATTERN      CMT30960
28A0  4850 18C0  3097          LH    R5,SCOPE+6                                    CMT30965
28A4  2751       3098          SIS   R5,1                                          CMT30970
28A6  0A55       3099          AHR   R5,R5                                         CMT30980
28A8  4800 33F6  3100          LH    R0,MODFLG                                     CMT30990
28AC  C500 0001  3101          CLHI  R0,1                BLOCK MODE?                 CMT31000
28B0  2332       3102          BES   BLKMOD                                        CMT31010
28B2  2651       3103          AIS   R5,1                                          CMT31020
28B4  D3A5 343E  3104  BLKMOD  LB    R10+SQMASK(R5)                                CMT31030
28B8  C840 2A8E  3105          LHI   R4,LOOPBRK                                    CMT31040
28BC  4040 16A2  3106          STH   R4,KBINT                                      CMT31050
28C0  41F0 132E  3107          BAL   R15+KBRD            SET KEYBOARD INTERRUPT      CMT31060
28C4  C850 2888  3108          LHI   R5,SLCHINT                                    CMT31070
28C8  4050 1906  3109          STH   R5,DEVINT                                     CMT31080
28CC  4840 0A22  3110          LH    R4,PSW              ENABLE PSW INTERRUPT        CMT31090
28D0  9554       3111          EPSR  R5,R4                                         CMT31100
28D2  41E0 324A  3112          BAL   R14+EOF                                       CMT31110
28D6  088A       3113  ADVANCE  LHR   R8,R10                                       CMT31120
                 3114  *       THIS ROUTINE WRITES A FILE WITH LEADING EOF. IF EOT  CMT31130
                 3115  *       IS DETECTED, IT REWINDS TAPE AND WRITES WHOLE FILE   CMT31140
                 3116  *       AGAIN. ROUTINE WFILB USES THE WB MODE AND ROUTINE    CMT31150
                 3117  *       WFILS USES SELCH MODE                               CMT31160
28D8  D0F0 35B8  3118          STM   R15+RSAV32                                    CMT31170
28DC  D1F0 35A8  3119          LM    R15+WLIM                                      CMT31180
28E0  088F       3120          LHR   R11,R15                                       CMT31190
28E2  D1F0 35AC  3121          LM    R15+WLIM+4                                    CMT31200
28E6  08CF       3122          LHR   R12,R15                                       CMT31210
28E8  D1F0 3588  3123          LM    R15+RSAV32                                    CMT31220
28EC  9081       3124  WFILB   SRLS  R8,1                SHIFT SEQUENCE MASK         CMT31230
28EE  4380 2918  3125          BNC   WFILS               NO CARRY - BYPASS           CMT31240
28F2  41E0 326C  3126          BAL   R14+WRTBLK         WRITE A RECORD (BLOCK MODE) CMT31250
28F6  9D65       3127          SSR   DEV+STAT                                       CMT31260
28F8  2221       3128          BFBS  2,1                                           CMT31270
28FA  C350 0020  3129          THI   STAT+X'20'          EOT?                        CMT31280
```

TEST 7 UTILITY TEST

```
28FE  2330            3130          BZS   WFILS              NO - GO ON                          CMT31290
2900  41E0 3284       3131  EOT7    BAL   R14,BKSP           YES - BACKSPACE THE LAST RECORD     CMT31300
2904  41E0 324A       3132          BAL   R14,EOF            WRITE EOF                           CMT31310.
2908  41E0 3254       3133  PREOT   BAL   R14,RWND           REWIND                              CMT31320
290C  C650 348E       3134          LHI   R5,MSG04           EXIT TEST                           CMT31330
2910  41F0 1128       3135          BAL   R15,PRINT                                              CMT31340
2914  4300 282C       3136          B     CHKEND                                                 CMT31350
2918  9061            3137  WFILS   SRLS  R6,1               SHIFT SEQUENCE MASK                 CMT31360
291A  4380 293E       3138          BNC   BSFIL              NO CARRY - BYPASS                   CMT31370
291E  0320 340E       3139          LB    R2,WRITE           DEVICE WRITE COMMAND                CMT31380
2922  0330 3408       3140          LB    R3,GOWRT           SELCH WRITE COMMAND                 CMT31390
2926  4810 0A24       3141          LH    R1,PSW2            DISABLE INTERRUPTS AT               CMT31400
292A  9541            3142          EPSR  R4,R1              PROCESSOR LEVEL                     CMT31410
292C  41E0 328E       3143          BAL   R14,RWSEL          WRITE A RECORD (SELCH MODE)         CMT31420
2930  9514            3144          EPSR  R1,R4              RESTORE PSW                         CMT31430
2932  9065            3145          SSR   DEV,STAT                                               CMT31440
2934  2221            3146          BFBS  2,1                                                    CMT31450
2936  C350 0020       3147          THI   STAT,X'20'         EOT?                                CMT31460
293A  4230 2900       3148          BNZ   EOT7                                                   CMT31470
                      3149  *       THIS ROUTINE BACKSPACE A FILE BEYOND ITS LEADING            CMT31480
                      3150  *       EOF MARK                                                    CMT31490
293E  9081            3151  BSFIL   SRLS  R8,1               SHIFT SEQUENCE MASK                 CMT31500
2940  4380 28D6       3152          BNC   ADVANCE            NO CARRY - BYPASS                   CMT31510
2944  41E0 3284       3153          BAL   R14,BKSP           BACKSPACE A RECORD                  CMT31520
                      3154  *       THIS ROUTINE READS A FILE WITH LEADING EOF. IF EOT          CMT31530
                      3155  *       IS DETECTED, IT REWINDS AND READS AGAIN                     CMT31540
                      3156  *       ROUTINE RFILB USES RB MODE AND RFILS USES SELCH MODE        CMT31550
                      3157  *                                                                   CMT31560
2948  B0F0 3588       3158  RFILB   STM   R15,RSAV32                                           CMT31570
294C  B1F0 3580       3159          LM    R15,RLIM                                             CMT31580
2950  08BF            3160          LHR   R11,R15                                              CMT31590
2952  B1F0 3584       3161          LM    R15,RLIM+4                                           CMT31600
2956  08CF            3162          LHR   R12,R15                                              CMT31610
2958  B1F0 3588       3163          LM    R15,RSAV32                                           CMT31620
295C  9081            3164          SRLS  R8,1               SHIFT SEQUENCE MASK                 CMT31630
295E  2383            3165          BNCS  RFILS              NO CARRY - BYPASS                   CMT31640
2960  41E0 3278       3166          BAL   R14,RDBLK          READ A RECORD (BLOCK MODE)          CMT31650
2964  9081            3167  RFILS   SRLS  R8,1               SHIFT SEQUENCE MASK                 CMT31660
2966  4380 28D6       3168          BNC   ADVANCE            NO CARRY - RESTART CYCLE            CMT31670
296A  0320 340C       3169          LB    R2,READ            DEVICE READ COMMAND                 CMT31680
296E  0330 3409       3170          LB    R3,GORD            SELCH READ COMMAND                  CMT31690
2972  41E0 326E       3171          BAL   R14,RWSEL          READ A RECORD (SELCH MODE)          CMT31700
2976  4300 28D6       3172          B     ADVANCE            RESTART CYCLE                       CMT31710
                      3173  *                                                                   CMT31720
                      3174  *       READ ONLY SCOPE LOOP                                        CMT31730
                      3175  *       THIS ROUTINE READS RECORDS ON THE TAPE UNTIL AN             CMT31740
                      3176  *       EOF IS DETECTED. THEN THE TEST WILL PAUSE WITH THE          CMT31750
                      3177  *       MESSAGE "EOF". IF CR IS ENTERED ON KEYBOARD, THE            CMT31760
                      3178  *       TEST IS ABORTED. IF LF IS ENTERED, THE TEST READS           CMT31770
                      3179  *       ON TO THE NEXT EOF. IF EOT IS DETECTED, THE TEST            CMT31780
                      3180  *       IS ABORTED.                                                 CMT31790
                      3181  *                                                                   CMT31800
297A  B0F0 3588       3182  RDCON   STM   R15,RSAV32                                           CMT31810
```

TEST 7 UTILITY TEST

```
297E  D1F0 3590          3183           LM    R15,RLIM                                  CMT31820
2982  98BF              3184           LHR   R11,R15                                    CMT31830
2984  D1F0 3584          3185           LM    R15,RLIM+4                                CMT31840
2988  98CF              3186           LHR   R12,R15                                   CMT31850
298A  D1F0 3593          3187           LM    R15,RSAV32                                CMT31860
298E  41D0 325E          3188           BAL   R13,SENMTN        CHECK FOR MNTN          CMT31870
2992  DE60 340C          3189           OC    DEV,READ                                  CMT31880
2996  4850 33F6          3190           LH    R5,MODFLG                                 CMT31890
299A  C550 0002          3191           CLHI  R5,2              MODE 2?                 CMT31900
299E  4330 29DA          3192           BE    RDCONS            YES - SELCH MODE        CMT31910
29A2  41E0 3276          3193  RDCONB   BAL   R14,RDBLK         READ RECORD BLOCK MODE  CMT31920
29A6  9D65               3194           SSR   DEV,STAT                                  CMT31930
29A8  4210 3228          3195           BTC   1,MTDU                                    CMT31940
29AC  2223               3196           BFBS  2,3                                       CMT31950
29AE  C350 0020          3197           THI   STAT,X'20'        EOT?                    CMT31960
29B2  4230 2908          3198           BNZ   PREOT             YES - END TEST          CMT31970
29B6  C350 0040          3199           THI   STAT,X'40'        EOF?                    CMT31980
29BA  223C               3200           BZS   RDCONB            NO - CONTINUE           CMT31990
29BC  C850 3494          3201  PAUSE0   LHI   R5,MSG04A                                 CMT32000
29C0  41F0 1128          3202           BAL   R15,PRINT                                 CMT32010
29C4  41F0 1226          3203  PAUSE1   BAL   R15,GETCHR        GET A CHARACTER         CMT32020
29C8  C540 000D          3204           CLHI  CHAR,X'0D'        CR?                     CMT32030
29CC  4330 0AE6          3205           BE    OPTIN             YES - EXIT              CMT32040
29D0  C540 000A          3206           CLHI  CHAR,X'0A'        LF?                     CMT32050
29D4  4330 297A          3207           BE    RDCON             YES - CONTINUE READ     CMT32060
29D8  220A               3208           BS    PAUSE1            ELSE GET ANOTHER CHARACTER CMT32070
29DA  D320 340C          3209  RDCONS   LB    R2,READ           DEVICE READ COMMAND     CMT32080
29DE  D330 3409          3210           LB    R3,GORD           SELCH READ COMMAND      CMT32090
29E2  41E0 328E          3211           BAL   R14,RWSEL         READ RECORD SELCH MODE  CMT32100
29E6  9D65               3212           SSR   DEV,STAT                                  CMT32110
29E8  4210 3228          3213           BTC   1,MTDU                                    CMT32120
29EC  2223               3214           BFBS  2,3                                       CMT32130
29EE  C350 0020          3215           THI   STAT,X'20'        EOT?                    CMT32140
29F2  4230 2908          3216           BNZ   PREOT             YES - EXIT              CMT32150
29F6  C350 0040          3217           THI   STAT,X'40'        EOF?                    CMT32160
29FA  4330 29DA          3218           BZ    RDCONS                                    CMT32170
29FE  4300 29BC          3219           B     PAUSE0                                    CMT32180
                         3220  *                                                        CMT32190
                         3221  *        WRTIE EOF SCOPE LOOP                            CMT32200
                         3222  *                                                        CMT32210
2A02  41E0 324A          3223  CONEOF   BAL   R14,EOF           WRITE EOF               CMT32220
2A06  9D65               3224           SSR   DEV,STAT                                  CMT32230
2A08  4210 3228          3225           BTC   1,MTDU                                    CMT32240
2A0C  2223               3226           BFBS  2,3               EOM?                    CMT32250
2A0E  C350 0020          3227           THI   STAT,X'20'        YES - EOT ?             CMT32260
2A12  2238               3228           BZS   CONEOF                                    CMT32270
2A14  41E0 3254          3229           BAL   R14,RWND          EOT - REWIND TAPE       CMT32280
2A18  C850 348E          3230           LHI   R5,MSG04                                  CMT32290
2A1C  41F0 1128          3231           BAL   R15,PRINT                                 CMT32300
2A20  4300 0AE6          3232           B     OPTIN                                     CMT32310
                         3233  *        THIS ROUTINE PERFORM SKIP OPERATIONS CONTINUOUSLY CMT32320
                         3234  *        IT REVERSES DIRECTION UPON DETECTION OF ET       CMT32330
2A24  41D0 325E          3235  SKPCON   BAL   R13,SENMTN                                CMT32340
```

TEST 7 UTILITY TEST

```
2A28  DE60 340C  3236          OC    DEV,READ          READ PASS FIRST EOF          CMT32350
2A2C  41E0 3366  3237  SKPCON1 BAL   R14,SKFW          SKIP FORWARD                 CMT32360
2A30  9D65       3238          SSR   DEV,STAT                                       CMT32370
2A32  4210 3228  3239          BTC   1,MTDU                                         CMT32380
2A36  41F0 1274  3240          BAL   R15,TSTBRK                                     CMT32390
2A3A  C350 0022  3241          THI   STAT,X'22'        EOM OR EOT?                  CMT32400
2A3E  2237       3242          BZS   SKPCON1+4                                      CMT32410
2A40  C350 0020  3243          THI   STAT,X'20'        EOT?                         CMT32420
2A44  223C       3244          BZS   SKPCON1                                        CMT32430
2A46  DE60 3407  3245          OC    DEV,CLEAR         YES - CLEAR DEVICE           CMT32440
2A4A  41E0 3370  3246  REVRS   BAL   R14,SKRV          SKIP REVERSE                 CMT32450
2A4E  41D0 325E  3247          BAL   R13,SENMTN        WAIT FOR NMTN=1              CMT32460
2A52  9D65       3248          SSR   DEV,STAT                                       CMT32470
2A54  4210 3228  3249          BTC   1,MTDU                                         CMT32480
2A58  C350 0020  3250          THI   STAT,X'20'        EOT?                         CMT32490
2A5C  2239       3251          BZS   REVRS             NO - SKIP REVERSE AGAIN      CMT32500
2A5E  DE60 3407  3252          OC    DEV,CLEAR         YES - CLEAR DEVICE           CMT32510
2A62  9D65       3253          SSR   DEV,STAT                                       CMT32520
2A64  C350 0020  3254          THI   STAT,X'20'        BOT?                         CMT32530
2A68  4230 2A24  3255          BNZ   SKPCON            YES - GO SKIP FORWARD        CMT32540
2A6C  41E0 3370  3256  REVRS1  BAL   R14,SKRV          CONTINUE SKIP REVERSE        CMT32550
2A70  9D65       3257          SSR   DEV,STAT                                       CMT32560
2A72  4210 3228  3258          BTC   1,MTDU                                         CMT32570
2A76  41F0 1274  3259          BAL   R15,TSTBRK                                     CMT32580
2A7A  C350 0022  3260          THI   STAT,X'22'        EOM OR BOT?                  CMT32590
2A7E  2237       3261          BZS   REVRS1+4                                       CMT32600
2A80  C350 0020  3262          THI   STAT,X'20'        BOT?                         CMT32610
2A84  223C       3263          BZS   REVRS1                                         CMT32620
2A86  DE60 3407  3264          OC    DEV,CLEAR                                      CMT32630
2A8A  4300 2A24  3265          B     SKPCON            GO SKIP FORWARD              CMT32640
                 3266  *                                                           CMT32650
                 3267  *       THIS SECTION CHECKS IF THE KEYBOARD CHARACTER IS      CMT32660
                 3268  *       BREAK.                                               CMT32670
                 3269  *                                                           CMT32680
2A8E  9824       3270  LOOPBRK RDR   R2,R4             GET THE CHARACTER            CMT32690
2A90  C440 007F  3271          NHI   R4,X'7F'                                       CMT32700
2A94  4230 1490  3272          BNZ   RETOPSW           NO - CONTINUE LOOP           CMT32710
2A98  C840 148A  3273          LHI   R4,NOBRK          YES - RESTORE BRK CHECK ROUTINE CMT32720
2A9C  4040 16A2  3274          STH   R4,KBINT          IN ETPE                      CMT32730
2AA0  C820 00F0  3275          LHI   R2,X'F0'          RESTORE REG. SET             CMT32740
2AA4  9512       3276          EPSR  R1,R2                                          CMT32750
2AA6  4850 33F6  3277          LH    R5,MODFLG                                      CMT32760
2AAA  C550 0002  3278          CLHI  R5,2              MODE 2?                      CMT32770
2AAE  2135       3279          BNES  CLRDEV                                         CMT32780
2AB0  9D75       3280          SSR   SELCH,STAT                                     CMT32790
2AB2  2081       3281          BTBS  8,1                                            CMT32800
2AB4  DE70 3406  3282          OC    SELCH,STOP        STOP SELCH                   CMT32810
2AB8  DE60 3407  3283  CLRDEV  OC    DEV,CLEAR         CLEAR DEVICE                 CMT32820
2ABC  41E0 324A  3284          BAL   R14,EOF           WRITE EOF                    CMT32830
2AC0  41E0 3254  3285          BAL   R14,RWND          REWIND                       CMT32840
2AC4  4300 0AE6  3286          B     OPTIN                                          CMT32850
```

SUBROUTINES

```
                                3288  * ***************************************************************      CMT32870
                                3289  * SUBROUTINE TSTINIT                                            *      CMT32880
                                3290  *       THIS ROUTINE SETS UP THE TEST MODE AND APPROPRIATE       *      CMT32890
                                3291  *       MEMORY LOCATIONS FOR EACH TEST MODULE.                   *      CMT32900
                                3292  *       CALLING SEQUENCE:                                       *      CMT32910
                                3293  *       BAL   R14,TSTINIT                                       *      CMT32920
                                3294  * ***************************************************************      CMT32930
                                3295  *                                                               *      CMT32940
2AC8  0E60 3412                 3296  TSTINIT  OC    DEV,DISARM                                             CMT32950
2ACC  0350 33E0                 3297           LB    R5,MASK+1          SET NUMBER OF BYTES PER RECORD      CMT32960
2AD0  4050 33EE                 3298           STH   R5,NBYTE                                               CMT32970
2AD4  41D0 2FA4                 3299           BAL   R13,SETMOD                                             CMT32980
2AD8  0755                      3300           XHR   R5,R5                                                  CMT32990
2ADA  4050 1906                 3301           STH   R5,DEVINT          CLEAR INTERRUPT TABLE               CMT33000
2ADE  4050 1908                 3302           STH   R5,DEVINT+2                                            CMT33010
2AE2  4050 33F2                 3303           STH   R5,EOTFLG                                              CMT33020
2AE6  D0F0 35B8                 3304           STM   R15,RSAV32                                             CMT33030
2AEA  D1F0 35BC                 3305  TSLONGA  LM    R15,WADDRS                                             CMT33040
2AEE  D0F0 35A8                 3306           STM   R15,WLIM           STORE THE STARTING ADDRESS OF WRITE CMT33050
2AF2  4AF0 33EE                 3307  TSB      AH    R15,NBYTE                                              CMT33060
2AF6  D0F0 35AC                 3308           STM   R15,WLIM+4         ENDING ADDRESS OF WRITE BUFFER      CMT33070
2AFA  D1F0 35C0                 3309  TSLONGB  LM    R15,RADDRS                                             CMT33080
2AFE  D0F0 35B0                 3310           STM   R15,RLIM                                               CMT33090
2B02  4AF0 33EE                 3311  TSA      AH    R15,NBYTE                                              CMT33100
2B06  D0F0 35B4                 3312           STM   R15,RLIM+4                                             CMT33110
2B0A  D1F0 35B8                 3313           LM    R15,RSAV32                                             CMT33120
2B0E  030E                      3314           BR    R14                                                    CMT33130
                                3315  *                                                               *      CMT33140
                                3316  * ***************************************************************      CMT33150
                                3317  * SUBROUTINE TSTSUP                                             *      CMT33160
                                3318  *       THIS ROUTINE SETS UP THE SELCH ADDRESS AND DEVICE        *      CMT33170
                                3319  *       ADDRESS OF THE FIRST DEVICE TO BE TESTED.               *      CMT33180
                                3320  *       THIS ROUTINE SHOULD NOT BE CALLED IF TESTING IS TO       *      CMT33190
                                3321  *       BE DONE ON THE SECOND DEVICE.                           *      CMT33200
                                3322  *       RETURN ON R14.                                          *      CMT33210
                                3323  * ***************************************************************      CMT33220
                                3324  *                                                               *      CMT33230
2B10  4040 33FA                 3325  TSTSUP   STH   R4,NXTDEV                                              CMT33240
2B14  4870 17C4                 3326           LH    SELCH,SELADR+6     GET SELCH ADDRESS                   CMT33250
2B18  4860 17AC                 3327           LH    DEV,DEVADR+6       GET DEVICE ADDRESS                  CMT33260
2B1C  4060 1678                 3328           STH   DEV,ERRDEV                                             CMT33270
2B20  0755                      3329           XHR   R5,R5              RESET SECOND DEVICE FLAG            CMT33280
2B22  4050 33FC                 3330           STH   R5,DEV2                                                CMT33290
2B26  030E                      3331           BR    R14                                                    CMT33300
                                3332  *                                                               *      CMT33310
                                3333  * ***************************************************************      CMT33320
                                3334  * SUBROUTINE CHKEND & CHKEND1                                   *      CMT33330
                                3335  *       THIS ROUTINE CHECKS IF A SECOND DEVICE IS TO BE          *      CMT33340
                                3336  *       TESTED. IF NOT, IT WILL GO TO TSTEND.                   *      CMT33350
                                3337  *       IF A SECOND DEVICE IS TO BE TESTED, IT PICKS UP         *      CMT33360
                                3338  *       ITS ADDRESS, SET THE FLAG AND BRANCH TO A PRESET        *      CMT33370
                                3339  *       ADDRESS AT LOCATION NXTDEV.                             *      CMT33380
                                3340  * ***************************************************************      CMT33390
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                        3341  *                                                               *  CMT33400
2828  41E0 3384         3342  CHKEND1  BAL   RET,REWIND        REWIND TAPE                    CMT33410
282C  4850 33FC         3343  CHKEND   LH    R5,DEV2           SECOND DEVICE FLAG SET?        CMT33420
2830  4230 0E5E         3344           BNZ   TSTEND            YES - END TEST                 CMT33430
2834  4860 1788         3345           LH    DEV,DV2ADR+6      GET 2ND DEVICE ADDRESS         CMT33440
2838  4330 0E5E         3346           BZ    TSTEND            ZERO - END TEST                CMT33450
283C  48F0 33FA         3347           LH    R15,NXTDEV        TEST AGAIN                     CMT33460
2840  4060 33FC         3348           STH   DEV,DEV2          SET 2ND DEVICE FLAG            CMT33470
2844  4060 1678         3349           STH   DEV,ERRDEV                                       CMT33480
2848  030F              3350           BR    R15               CMT33490
                        3351  *                                                               *  CMT33500
                        3352  *****************************************************************  CMT33510
                        3353  *                                                                  CMT33520
                        3354  * SUBROUTINE FSTEOF                                              *  CMT33530
                        3355  *       THIS ROUTINE WRITES AN EOF AND CHECKS IT. IF NMTN        *  CMT33540
                        3356  *       DOES NOT DROP WITHIN ONE INSTRUCTION TIME AFTER THE      *  CMT33550
                        3357  *       OUTPUT COMMAND. ERROR 50 IS LOGGED AND THE TEST          *  CMT33560
                        3358  *       ABORTED ASSUMING THAT THE TAPE DRIVE IS IN THE WRITE     *  CMT33570
                        3359  *       PROTECT MODE.                                            *  CMT33580
                        3360  *       IF NO EOF IS DETECTED AFTER A TIMED WAITING PERIOD,      *  CMT33590
                        3361  *       THIS TEST IS ABORTED.                                    *  CMT33600
                        3362  *       THIS ROUTINE IS USUALLY CALLED AFTER A REWIND, AND       *  CMT33610
                        3363  *       IT RESETS THE EOT FLAG.                                  *  CMT33620
                        3364  *       CALLING SEQUENCE:                                        *  CMT33630
                        3365  *       BAL   R14,FSTEOF                                         *  CMT33640
                        3366  *       ERROR: 50                                                *  CMT33650
                        3367  *****************************************************************  CMT33660
                        3368  *                                                                  CMT33670
284A  40E0 3E18         3369  FSTEOF   STH   R14,SAVERTN        SAVE RETURN ADDRESS            CMT33680
284E  0755              3370           XHR   R5,R5             RESET EOT FLAG                 CMT33690
2850  4050 33F2         3371           STH   R5,EOTFLG                                        CMT33700
2854  0E60 3413         3372           OC    DEV,WEOF          WRITE     EOF                  CMT33710
2858  4200 0000         3373           NOP                     WAIT FOR NMTN=0                CMT33720
285C  9D65              3374           SSR   DEV,STAT                                         CMT33730
285E  C350 0010         3375           THI   STAT,X'10'        NMTN=0?                        CMT33740
2862  2138              3376           BNZS  WRTPT             NO - WRITE PROTECT ERROR       CMT33750
2864  41E0 2F6A         3377           BAL   R14,SENS01        CHECK EOF                      CMT33760
2868  4300 2828         3378           B     CHKEND1           NO EOF - ABORT TEST            CMT33770
286C  48E0 3E18         3379           LH    R14,SAVERTN                                      CMT33780
2870  030E              3380           BR    R14               CMT33790
2872  C800 3530         3381  WRTPT    LHI   R0,C'50'          ERROR 50                       CMT33800
2876  41F0 0F80         3382           BAL   R15,ERRDS                                        CMT33810
287A  4300 0AE6         3383           B     OPTIN                                            CMT33820
                        3384  *                                                                  CMT33830
                        3385  *****************************************************************  CMT33840
                        3386  * SUBROUTINE BSPACE                                              *  CMT33850
                        3387  *       THIS ROUTINE BACKSPACES A RECORD. IF ERROR STATUS         *  CMT33860
                        3388  *       IS SENSED, AN ERROR MESSAGE IS PRINTED.                  *  CMT33870
                        3389  *       RETURNS ON R14                                           *  CMT33880
                        3390  *       ERROR: 08                                                *  CMT33890
                        3391  *****************************************************************  CMT33900
                        3392  *                                                                  CMT33910
287E  41D0 3146         3393  BSPACE   BAL   R13,WAIT2          WAIT FOR NMTN=1                CMT33920
```

SUBROUTINES

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2B82  DE60 3403          3394          OC    DEV,BKSPAC          BACKSPACE                                  CMT33930
2B86  41D0 3194          3395          BAL   R13,WAIT3          WAIT FOR EOM=1                             CMT33940
2B8A  9065               3396          SSR   DEV,STAT                                                     CMT33950
2B8C  C350 00C0          3397          THI   STAT,X'C0'          ERR OR EOF SET?                          CMT33960
2B90  033E               3398          BZR   R14                 NO - RETURN                              CMT33970
2B92  C800 3038          3399          LHI   R0,C'08'            STATUS ERROR - 08                        CMT33980
2B96  41F0 0F80          3400          BAL   R15,ERROS                                                    CMT33990
2B9A  030E               3401          BR    R14                                                          CMT34000
                         3402  * ************************************************************             CMT34010
                         3403  * SUBROUTINE SWAP                                            *            CMT34020
                         3404  *        THIS ROUTINE REVERSES THE WRITE BUFFER               *            CMT34030
                         3405  *        CALLING SEQUENCE:                                   *            CMT34040
                         3406  *        BAL   R14,SWAP                                      *            CMT34050
                         3407  * ************************************************************             CMT34060
                         3408  *                                                             *            CMT34070
2B9C  078B               3409  SWAP    XHR   R11,R11                                                      CMT34080
2B9E  48C0 33EE          3410          LH    R12,NBYTE                                                    CMT34090
2BA2  D0F0 3598          3411          STM   R15,RSAV32                                                   CMT34100
2BA6  D1F0 35A8          3412          LM    R15,WLIM                                                     CMT34110
2BAA  0ABF               3413          AHR   R11,R15                                                      CMT34120
2BAC  0ACF               3414          AHR   R12,R15                                                      CMT34130
2BAE  D1F0 3598          3415          LM    R15,RSAV32                                                   CMT34140
2BB2  D34B 0000          3416  SWP1    LB    CHAR,0(R11)                                                  CMT34150
2BB6  D35C 0000          3417          LB    STAT,0(R12)                                                  CMT34160
2BBA  D24C 0000          3418          STB   CHAR,0(R12)                                                  CMT34170
2BBE  D25B 0000          3419          STB   STAT,0(R11)                                                  CMT34180
2BC2  26B1               3420          AIS   R11,1               INCREASE LOWER END POINTER               CMT34190
2BC4  27C1               3421          SIS   R12,1               DECREASE UPPER END POINTER               CMT34200
2BC6  058C               3422          CLHR  R11,R12             POINTERS MEET OR CROSS?                  CMT34210
2BC8  20BB               3423          BLS   SWP1                NO - CONTINUE                            CMT34220
2BCA  030E               3424          BR    R14                 YES - EXIT                               CMT34230
                         3425  *                                                             *            CMT34240
                         3426  * ************************************************************             CMT34250
                         3427  * SUBROUTINE WRTREC                                          *            CMT34260
                         3428  *        THIS ROUTINE WRITES A RECORD ONTO THE MAG. TAPE      *            CMT34270
                         3429  *        IT OPERATES EITHER ON SELCH MODE OR RB/WB MODE.      *            CMT34280
                         3430  *        THE STARTING ADDRESS OF RECORD TO BE WRITTEN IS      *            CMT34290
                         3431  *        STORED AT LOCATION WLIM, AND THE ENDING ADDRESS      *            CMT34300
                         3432  *        AT LOCATION WLIM+2, IF NO ERROR OCCURS DURING THE    *            CMT34310
                         3433  *        TRANSFER, IT WILL RETURN ON 4(R12), ERROR RETURN     *            CMT34320
                         3434  *        IS AT 0(R12)                                        *            CMT34330
                         3435  *        CALLING SEQUENCE:                                   *            CMT34340
                         3436  *        BAL   R12,WRTREC                                    *            CMT34350
                         3437  *        B     ERROR               RETURN HERE ON ERROR      *            CMT34360
                         3438  *        NEXT INSTRUCTION     RETURN HERE ON NORMAL COMPLETION *            CMT34370
                         3439  * ************************************************************             CMT34380
                         3440  *                                                             *            CMT34390
2BCC  4100 3146          3441  WRTREC  BAL   R13,WAIT2           WAIT FOR NMTN=1                          CMT34400
2BD0  9065               3442          SSR   DEV,STAT                                                     CMT34410
2BD2  C350 0020          3443          THI   STAT,X'20'          EOT?                                     CMT34420
2BD6  4230 2C0A          3444          BNZ   WEOT                YES - SET EOTFLAG                        CMT34430
2BDA  4850 33F6          3445          LH    R5,MODFLG           WHICH MODE?                              CMT34440
2BDE  C550 0001          3446          CLHI  R5,1                                                         CMT34450
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SUBROUTINES

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2BE2  4330 2C22          3447          BE    WRTBMD          BLOCK MODE                    CMT34460
                         3448  *                                                           CMT34470
                         3449  *       SELCH MODE                                        CMT34480
                         3450  *                                                           CMT34490
2BE6  0010 3E60          3451          STM   R1,RSAVE                                      CMT34500
2BEA  C810 35A8          3452          LHI   R1,WLIM         SELCH WRITE LIMITS            CMT34510
2BEE  0320 340D          3453          LB    R2,WRITE        DEVICE WRITE COMMAND          CMT34520
2BF2  0330 3408          3454          LB    R3,GOWRT        SELCH GO & WRITE              CMT34530
2BF6  C800 3134          3455          LHI   R0,C'14'        ERROR 14                      CMT34540
2BFA  C840 3130          3456          LHI   R4,C'10'        ERROR 10                      CMT34550
2BFE  4180 2CF2          3457          BAL   R11,RWREC       WRITE A RECORD                CMT34560
2C02  4300 2C14          3458          B     ERROUT                                        CMT34570
2C06  4300 2C1A          3459          B     NORMRET                                       CMT34580
2C0A  4050 33F2          3460  WEOT    STH   STAT,EOTFLG     SET EOT FLAG                  CMT34590
2C0E  0110 3E60          3461          LM    R1,RSAVE                                      CMT34600
2C12  030C               3462          BR    R12             ERROR RETURN                  CMT34610
2C14  0110 3E60          3463  ERROUT  LM    R1,RSAVE                                      CMT34620
2C18  030C               3464          BR    R12             ERROR RETURN                  CMT34630
2C1A  0110 3E60          3465  NORMRET LM    R1,RSAVE                                      CMT34640
2C1E  430C 0004          3466          B     4(R12)          NORMAL RETURN                 CMT34650
                         3467  *                                                           CMT34660
                         3468  *       BLOCK MODE                                        CMT34670
                         3469  *                                                           CMT34680
2C22  0010 3E60          3470  WRTBMD  STM   R1,RSAVE                                      CMT34685
2C26  00F0 35B8          3471          STM   R15,RSAV32                                    CMT34690
2C2A  01F0 35A8          3472          LM    R15,WLIM                                      CMT34700
2C2E  080F               3473          LHR   R11,R15                                       CMT34710
2C30  C8D0 0028          3474          LHI   R13,40                                        CMT34720
2C34  01F0 35AC          3475  LRFIFTEN LM   R15,WLIM+4                                    CMT34730
2C38  27D1               3476          SIS   R13,1                                         CMT34740
2C3A  2213               3477          BNMS  LRFIFTEN                                      CMT34750
2C3C  080F               3478          LHR   R12,R15                                       CMT34760
2C3E  01F0 35B8          3479          LM    R15,RSAV32                                    CMT34770
2C42  C840 3130          3480          LHI   R4,C'10'        ERROR 10                      CMT34780
2C46  0E60 340D          3481          OC    DEV,WRITE                                     CMT34790
2C4A  966B               3482          WBR   DEV,R11                                       CMT34800
2C4C  43F0 2C6A          3483          BFC   15,RWTRM1       CONDITION ZERO?               CMT34810
2C50  0110 3E60          3484  WABEND  LM    R1,RSAVE                                      CMT34820
2C54  9D65               3485          SSR   DEV,STAT                                      CMT34830
2C56  4210 3228          3486          BTC   1,MTDU          DU?                           CMT34840
2C5A  C350 0020          3487          THI   STAT,X'20'      EOT?                          CMT34850
2C5E  2333               3488          BZS   WRTERR2                                       CMT34860
2C60  4050 33F2          3489          STH   STAT,EOTFLG     YES - SET UP EOT FLAG         CMT34870
2C64  C800 3132          3490  WRTERR2 LHI   R0,C'12'        ERROR 12                      CMT34880
2C68  030C               3491          BR    R12                                           CMT34890
2C6A  41D0 3194          3492  RWTRM1  BAL   R13,WAIT3       WAITFOR EOM=1                 CMT34900
2C6E  0110 3E60          3493          LM    R1,RSAVE                                      CMT34905
2C72  9D65               3494          SSR   DEV,STAT                                      CMT34910
2C74  C350 0080          3495          THI   STAT,X'80'      ERR SET?                      CMT34920
2C78  4230 2C80          3496          BNZ   RWREC3                                        CMT34930
2C7C  430C 0004          3497          B     4(R12)          NORMAL RETURN                 CMT34940
2C80  0804               3498  RWREC3  LHR   R0,R4           PUT ERR NUM IN R0             CMT34950
2C82  030C               3499          BR    R12             ERROR RETURN                  CMT34960
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SUBROUTINES

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                        3500  *                                                               *   CMT34970
                        3501  * ***************************************************************   CMT34980
                        3502  * SUBROUTINE RDREC                                              *   CMT34990
                        3503  *       THIS ROUTINE READS A RECORD FROM THE MAG. TAPE          *   CMT35000
                        3504  *       IT OPERATES EITHER ON SELCH MODE OR RB/WB MODE.         *   CMT35010
                        3505  *       THE STARTING ADDRESS OF THE READ BUFFER IS STORED       *   CMT35020
                        3506  *       AT LOCATION RLIM, AND THE ENDING ADDRESS AT             *   CMT35030
                        3507  *       LOCATION RLIM+2. IF NO ERROR OCCURS DURING THE          *   CMT35040
                        3508  *       TRANSFER, IT WILL RETURN ON 4(R12). ERROR RETURN        *   CMT35050
                        3509  *       IS AT 0(R12)                                           *   CMT35060
                        3510  *       CALLING SEQUENCE:                                      *   CMT35070
                        3511  *       BAL   R12,RDREC                                        *   CMT35080
                        3512  *       B     ERROR                                            *   CMT35090
                        3513  *       NEXT INSTRUCTION                                       *   CMT35100
                        3514  * ***************************************************************   CMT35110
                        3515  *                                                               *   CMT35120
2C84  41D0 2EEA         3516  RDREC   BAL   R13,CRBUF                                           CMT35130
2C88  41D0 3146         3517          BAL   R13,WAIT2          WAIT FOR NMTN=1                 CMT35140
2C8C  4850 33F6         3518          LH    R5,MODFLG                                         CMT35150
2C90  C550 0001         3519          CLHI  R5,1               RB/WB MODE?                     CMT35160
2C94  4330 2C8C         3520          BE    RDBMD                                             CMT35170
                        3521  *                                                                 CMT35180
                        3522  *       SELCH MODE                                              CMT35190
                        3523  *                                                                 CMT35200
2C98  D010 3E60         3524          STM   R1,RSAVE                                          CMT35210
2C9C  C810 3580         3525          LHI   R1,RLIM            SELCH READ LIMITS              CMT35220
2CA0  D320 340C         3526          LB    R2,READ            DEVICE READ COMMAND            CMT35230
2CA4  D330 3409         3527          LB    R3,GORD            SELCH GO & READ                CMT35240
2CA8  C800 3135         3528          LHI   R0,C'15'           ERROR 15                       CMT35250
2CAC  C840 3131         3529          LHI   R4,C'11'           ERROR 11                       CMT35260
2CB0  41B0 2CF2         3530          BAL   R11,RWREC          READ A RECORD                  CMT35270
2CB4  4300 2C14         3531          B     ERROUT                                            CMT35280
2CB8  4300 2C1A         3532          B     NORMRET                                           CMT35290
                        3533  *                                                                 CMT35300
                        3534  *       BLOCK MODE                                              CMT35310
                        3535  *                                                                 CMT35320
2CBC  D010 3E60         3536  RDBMD   STM   R1,RSAVE                                          CMT35325
2CC0  D0F0 35B8         3537          STM   R15,RSAV32                                        CMT35330
2CC4  D1F0 35B0         3538          LM    R15,RLIM                                          CMT35340
2CC8  08BF              3539          LHR   R11,R15                                           CMT35350
2CCA  D1F0 35B4         3540          LM    R15,RLIM+4                                        CMT35360
2CCE  08CF              3541          LHR   R12,R15                                           CMT35370
2CD0  D1F0 35B8         3542          LM    R15,RSAV32                                        CMT35380
2CD4  C840 3131         3543          LHI   R4,C'11'           ERROR 11                       CMT35390
2CD8  DE60 340C         3544          OC    DEV,READ                                          CMT35400
2CDC  9768              3545          RBR   DEV,R11                                           CMT35410
2CDE  43F0 2C6A         3546          BFC   R15,RWTRM1         CONDITION ZERO? - NORMAL RETURN CMT35420
2CE2  D110 3E60         3547  RABEND  LM    R1,RSAVE                                          CMT35430
2CE6  9065              3548          SSR   DEV,STAT                                          CMT35440
2CE8  4210 3228         3549          BTC   1,MTDU             DU?                            CMT35450
2CEC  C800 3133         3550          LHI   R0,C'13'           ERROR 13                       CMT35460
2CF0  030C              3551          BR    R12                ERROR RETURN                   CMT35470
                        3552  * ***************************************************************   CMT35480
```

SUBROUTINES

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                                3553  * SUBROUTINE RWREC                                                    *   CMT35490
                                3554  *        THIS ROUTINE READS OR WRITES A RECORD IN SELCH MODE          *   CMT35500
                                3555  *        AND THEN COMPARES THE FINAL ADDRESS TO THE SPECIFIED         *   CMT35510
                                3556  *        ADDRESS TO DETERMINE IF THE TRANSFER WAS COMPLETED           *   CMT35520
                                3557  *        CORRECTLY.                                                   *   CMT35530
                                3558  *        ASSUMPTIONS:                                                 *   CMT35540
                                3559  *        R1 CONTAINS STARTING ADDRESS OF READ OR WRITE LIMITS         *   CMT35550
                                3560  *        R2 CONTAINS DEVICE COMMAND                                   *   CMT35560
                                3561  *        R3 CONTAINS SELCH COMMAND                                    *   CMT35570
                                3562  *        R0 CONTAINS ADDRESS MISMATCH ERROR NUMBER                    *   CMT35580
                                3563  *        R4 CONTAINS ERROR NUM FOR DEVICE ERR BIT SET CONDITION       *   CMT35590
                                3564  *        IF NO ERROR IS DETECTED, THIS ROUTINE RETURNS TO 4(R11).     *   CMT35600
                                3565  *        IF AN ERROR IS DETECTED, BRANCH TO 0(R11).                   *   CMT35610
                                3566  *        CALLING SEQUENCE:                                            *   CMT35620
                                3567  *        BAL   R11,RWREC                                              *   CMT35630
                                3568  * ************************************************************************   CMT35640
2CF2  4850 166C                 3569  RWREC    LH    R5,MOD32                                                  CMT35650
2CF6  2138                      3570           BNZS  RWMOD32                                                   CMT35660
2CF8  0E70 3406                 3571           OC    SELCH,STOP                                                CMT35670
2CFC  0871 0000                 3572           WH    SELCH,0(R1)         SET UP SELCH TRANSFER LIMIT           CMT35680
2D00  0871 0004                 3573           WH    SELCH,4(R1)         FOR 16 BIT                            CMT35690
2D04  2308                      3574           BS    RWREC1                                                    CMT35700
2D06  0E70 359C                 3575  RWMOD32  OC    SELCH,STOP2         STOP WITH EXTENDED ADDRESS            CMT35710
2D0A  0A71 0001                 3576           WD    SELCH,1(R1)         SET UP SELCH TRANSFER LIMIT           CMT35720
2D0E  0871 0002                 3577           WH    SELCH,2(R1)         FOR 32 BIT                            CMT35730
2D12  0A71 0005                 3578           WD    SELCH,5(R1)                                               CMT35740
2D16  0871 0006                 3579           WH    SELCH,6(R1)                                               CMT35750
2D1A  9E62                      3580  RWREC1   OCR   DEV,R2              OUTPUT DEVICE COMMAND                 CMT35760
2D1C  2343                      3581           BFFS  4,RWREC.A           FALSE SYNC?                           CMT35770
2D1E  41F0 2DA2                 3582           BAL   R15,FSYNC           YES - ABORT TEST                      CMT35780
2D22  9E73                      3583  RWREC.A  OCR   SELCH,R3            OUTPUT SELCH GO & COMMAND             CMT35790
2D24  9D75                      3584           SSR   SELCH,STAT          SELCH BUSY?                           CMT35800
2D26  2081                      3585           BTBS  8,1                 YES - WAIT                            CMT35810
2D28  0E70 3406                 3586           OC    SELCH,STOP          STOP SELCH                            CMT35820
2D2C  9D65                      3587           SSR   DEV,STAT                                                   CMT35830
2D2E  2377                      3588           BFFS  7,RWCOM             NORMAL COMPLETION?                    CMT35840
2D30  C520 0022                 3589           CLHI  R2,X'22'            NO - IS DEVICE COMMAND 'WRITE'        CMT35850
2D34  4230 2CE2                 3590           BNZ   RABEND              NO - BRANCH TO READ ABEND             CMT35860
2D38  4300 2C50                 3591           B     WABEND              YES - BRANCH TO WRITE ABEND           CMT35870
2D3C  0E70 3406                 3592  RWCOM    OC    SELCH,STOP          NORMAL COMPLETION - STOP SELCH        CMT35880
2D40  4850 166C                 3593           LH    R5,MOD32                                                  CMT35890
2D44  2138                      3594           BNZS  RWCOM32                                                   CMT35900
2D46  9975                      3595           RHR   SELCH,R5            IS SELCH FINAL ADDRESS =              CMT35910
2D48  4551 0004                 3596           CLH   R5,4(R1)            ADDRESS SPECIFIED FOR 16 BIT?         CMT35920
2D4C  4230 2D8A                 3597           BNE   MISMATCH            NO - ADDRESS MISMATCH                 CMT35930
2D50  4300 2D74                 3598           B     RWTRM                                                     CMT35940
2D54  0E70 359C                 3599  RWCOM32  OC    SELCH,STOP2         IS SELCH FINAL ADDRESS =              CMT35950
2D58  9B75                      3600           RDR   SELCH,R5            ADDRESS SPECIFIED FOR 32 BIT?         CMT35960
2D5A  0451 0005                 3601           CLB   R5,5(R1)                                                  CMT35970
2D5E  4230 2D8A                 3602           BNE   MISMATCH            NO - MISMATCH                         CMT35980
2D62  9B75                      3603           RDR   SELCH,R5                                                  CMT35990
2D64  0451 0006                 3604           CLB   R5,6(R1)                                                  CMT36000
2D68  4230 2D8A                 3605           BNE   MISMATCH            NO - MISMATCH                         CMT36010
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SUBROUTINES

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2D6C  9875            3606           RDR   SELCH,R5                                          CMT36020
2D6E  0451 0007       3607           CLB   R5,7(R1)                                          CMT36030
2D72  213C            3608           BNES  MISMATCH          NO - MISMATCH                   CMT36040
2D74  4100 319A       3609  RWTR4    BAL   R13,WAIT3         WAIT FOR EOM=1                  CMT36050
2D78  9095            3610           SSR   DEV,STAT                                          CMT36060
2D7A  C390 0080       3611           THI   STAT,X'80'        ERR SET?                        CMT36070
2D7E  4236 2D86       3612           BNZ   RWREC2            YES - BRANCH                    CMT36080
2D82  436E 0004       3613           B     4(R11)            NORMAL RETURN - TO 2ND INSTRUCTION CMT36090
                      3614  *                               AFTER CALL TO RWREC.            CMT36100
2D86  0604            3615  RWREC2   LHR   R0,R4             PUT ERROR NUM IN R0             CMT36110
2D88  036B            3616           BR    R11               ERROR RETURN                    CMT36120
2D8A  9065            3617  MISMATCH SSR   DEV,STAT          END ADDRESS MISMATCH            CMT36130
2D8C  4210 322B       3618           BTC   1,MTDU            DU?                             CMT36140
2D90  C520 0022       3619           CLHI  R2,X'22'          IS DEVICE COMMAND 'WRITE'       CMT36150
2D94  023B            3620           BNZR  R11               NO - ERROR NUM IS ALREADY IN R0 CMT36160
2D96  C350 0020       3621           THI   STAT,X'20'        YES - EOT?                      CMT36170
2D9A  033B            3622           BZR   R11               NO - ERROR NUM IS ALREADY IN R0 CMT36180
2D9C  4050 33F2       3623           STH   STAT,EOTFLG       YES - SET EOT FLAG              CMT36190
2DA0  036B            3624           BR    R11               ERROR RETURN                    CMT36200
                      3625  ********************************************************        CMT36210
                      3626  * SUBROUTINE FSYNC                                       *       CMT36220
                      3627  *       THIS ROUTINE IS CALLED WHEN FALSE SYNC IS DETECTED *      CMT36230
                      3628  *       AFTER AN OUTPUT COMMAND.  IT CALLS ERRALL, AND THEN *     CMT36240
                      3629  *       BRANCHES TO OPTIN TO ABORT THE TEST.               *     CMT36250
                      3630  *       CALLED ON R15                                      *     CMT36260
                      3631  ********************************************************        CMT36270
                      3632  *                                                         *       CMT36280
2DA2  9500            3633  FSYNC    EPSR  R0,R0               GET CURRENT PSW               CMT36290
2DA4  4000 1672       3634           STH   R0,OPSW             SAVE PSW                      CMT36300
2DA8  40F0 1676       3635           STH   R15,OLOC            SAVE LOCATION                 CMT36310
2DAC  4060 1678       3636           STH   DEV,ERRDEV          SAVE DEVICE ADDRESS           CMT36320
2DB0  DD60 167A       3637           SS    DEV,ERRSTA          SAVE STATUS BYTE              CMT36330
2DB4  C800 3030       3638           LHI   R0,C'00'            ERROR 00                      CMT36340
2DB8  4000 16E6       3639           STH   R0,ERRNO            SAVE ERROR NUMBER             CMT36350
2DBC  41F0 0F98       3640           BAL   R15,ERRALL                                        CMT36360
2DC0  4300 0AE6       3641           B     OPTIN               ABORT TEST                    CMT36370
                      3642  *                                                         *       CMT36380
                      3643  ************************************************************    CMT36390
                      3644  * SUBROUTINE COMPAR                                           *   CMT36400
                      3645  *       THIS ROUTINE COMPARES THE DATA IN THE READ BUFFER    *    CMT36410
                      3646  *       WITH THAT IN THE WRITE BUFFER. IF MISMATCH IS       *     CMT36420
                      3647  *       DETECTED, THE BYTE FROM BOTH BUFFERS ARE PRINTED.   *     CMT36430
                      3648  *       CALLING SEQUENCE:                                  *     CMT36440
                      3649  *       BAL   R14,COMPAR                                   *     CMT36450
                      3650  *       POSSIBLE ERROR: 46, 47                             *     CMT36460
                      3651  ************************************************************    CMT36470
                      3652  *                                                         *       CMT36480
2DC4  0010 3E20       3653  COMPAR   STM   R1,RSAVF1                                        CMT36490
2DC8  2491            3654           LIS   R9,1                                             CMT36500
2DCA  48A0 33EE       3655           LH    R10,NBYTE                                        CMT36510
2DCE  0788            3656           XHR   R8,R8                                            CMT36520
2DD0  41F0 1274       3657  COMBYT   BAL   R15,TSTBRK          CHECK BREAK KEY               CMT36530
2DD4  00F0 35B8       3658           STM   R15,RSAV32                                       CMT36540
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SUBROUTINES

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20D8  D1F0 3580          3659           LM    R15,RLIM                                  CMT36550
20DC  0AF8               3660           AHR   R15,R8      BYTE NUMBER                 CMT36560
20DE  D34F 0000          3661           LB    CHAR,0(R15)                               CMT36570
20E2  D1F0 35A8          3662           LM    R15,WLIM    WRITE BUFFER ADDRESS          CMT36580
20E6  0AF8               3663           AHR   R15,R8      BYTE NUMBER                 CMT36590
20E8  D35F 0000          3664           LB    R5,0(R15)   BYTE OF WRITE BUFFER         CMT36600
20EC  D1F0 3588          3665           LM    R15,RSAV32  RESTORE R15                   CMT36610
20F0  0545               3666           CLHR  CHAR,R5     COMPARE                     CMT36620
20F2  4230 2E30          3667           BNE   COMERR                                    CMT36630
20F6  C180 20D0          3668           BXLE  R8,COMBYT   CONTINUE                    CMT36640
20FA  50F0 3588          3669  CHKDEL   ST    R15,RSAV32                              CMT36650
20FE  D1F0 3580          3670           LM    R15,RLIM                                  CMT36660
2E02  0AFA               3671           AHR   R15,R10                                   CMT36670
2E04  26F2               3672           AIS   R15,2                                     CMT36680
2E06  D34F 0000          3673           LB    CHAR,0(R15)                               CMT36690
2E0A  D1F0 3586          3674           LM    R15,RSAV32                                CMT36700
2E0E  C540 00C3          3675           CLHI  CHAR,X'C3'  COMPARE - X'C3'             CMT36710
2E12  2339               3676           BES   ENDCOMP                                   CMT36720
2E14  C800 3437          3677           LHI   R0,C'47'    ERROR 47                    CMT36730
2E18  41F0 0F68          3678           BAL   R15,ERR0                                  CMT36740
2E1C  C850 34F2          3679           LHI   R5,MSG08                                  CMT36750
2E20  4100 310E          3680           BAL   R13,MSGPRT                                CMT36760
2E24  0711               3681  ENDCOMP  XHR   R1,R1                                     CMT36770
2E26  4010 33F4          3682           STH   R1,ERRFLG   RESET ERROR FLAG            CMT36780
2E2A  D110 3E20          3683           LM    R1,RSAVE1                                 CMT36790
2E2E  030E               3684           BR    R14         RETURN                      CMT36800
2E30  4810 33F4          3685  COMERR   LH    R1,ERRFLG   DATA NOT EQUAL - CHECK ERROR FLAG  CMT36810
2E34  4230 2E6A          3686           BNZ   PRIND                                    CMT36820
2E38  C800 3436          3687           LHI   R0,C'46'    ERROR 46                    CMT36830
2E3C  4000 33F4          3688           STH   R0,ERRFLG   SET ERROR FLAG              CMT36840
2E40  41F0 0F68          3689           BAL   R15,ERR0                                  CMT36850
2E44  4050 3DCC          3690           STH   R5,TEMP                                   CMT36860
2E48  C850 34F2          3691           LHI   R5,MSG08                                  CMT36870
2E4C  41D0 310E          3692           BAL   R13,MSGPRT                                CMT36880
2E50  C850 3444          3693           LHI   R5,MSG01A                                 CMT36890
2E54  41D0 310E          3694           BAL   R13,MSGPRT  PRINT MESSAGE               CMT36900
2E58  C850 3454          3695           LHI   R5,MSG01B                                 CMT36910
2E5C  41D0 310E          3696           BAL   R13,MSGPRT  PRINT MESSAGE               CMT36920
2E60  4850 3DCC          3697           LH    R5,TEMP                                   CMT36930
2E64  0711               3698           XHR   R1,R1                                     CMT36940
2E66  4010 16A6          3699           STH   R1,ISITERR                                CMT36950
2E6A  2402               3700  PRIND    LIS   R0,2                                      CMT36960
2E6C  41F0 10D8          3701           BAL   R15,R5HEX   PRINT DATA BYTE             CMT36970
2E70  0854               3702           LHR   R5,CHAR                                   CMT36980
2E72  C840 0020          3703           LHI   R4,X'20'    SPACE                       CMT36990
2E76  0722               3704           XHR   R2,R2                                     CMT37000
2E78  41F0 11BA          3705  SPACE8   BAL   R15,OUTCHR                               CMT37010
2E7C  2621               3706           AIS   R2,1                                      CMT37020
2E7E  C520 0008          3707           CLHI  R2,8                                      CMT37030
2E82  2085               3708           BLS   SPACE8                                    CMT37040
2E84  2402               3709           LIS   R0,2                                      CMT37050
2E86  41F0 10D8          3710           BAL   R15,R5HEX   PRINT DATA BYTE             CMT37060
2E9A  41F0 11AC          3711           BAL   R15,CRLF                                  CMT37070
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SUBROUTINES

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2E8E  C180 2000          3712          BXLE  R8,COMBYT          CONTINUE                    CMT37080
2E92  4300 2DFA          3713          B     CHKDEL                                        CMT37090
                         3714  *                                                           *CMT37100
                         3715  * ********************************************************* CMT37110
                         3716  * SUBROUTINE RESET                                        * CMT37120
                         3717  *        THIS ROUTINE SETS UP THE READ AND WRITE BUFFER    * CMT37130
                         3718  *        LIMITS.                                          * CMT37140
                         3719  *        CALLING SEQUENCE:                                * CMT37150
                         3720  *        BAL   R14,RESET                                  * CMT37160
                         3721  * ********************************************************* CMT37170
                         3722  *                                                           *CMT37180
2E96  4600 33EE          3723  RESET   LH    R0,NBYTE                                      CMT37190
2E9A  D0F0 35B8          3724          STM   R15,RSAV32                                    CMT37200
2E9E  D1F0 35A8          3725          LM    R15,WLIM                                      CMT37210
2EA2  085F               3726          LHR   R5,R15                                        CMT37220
2EA4  0A50               3727          AHR   R5,R0                                         CMT37230
2EA6  08F5               3728          LHR   R15,R5                                        CMT37240
2EA8  D0F0 35AC          3729          STM   R15,WLIM+4                                    CMT37250
2EAC  D1F0 3580          3730          LM    R15,RLIM                                      CMT37260
2EB0  085F               3731          LHR   R5,R15                                        CMT37270
2EB2  0A50               3732          AHR   R5,R0                                         CMT37280
2EB4  08F5               3733          LHR   R15,R5                                        CMT37290
2EB6  D0F0 35B4          3734          STM   R15,RLIM+4                                    CMT37300
2EBA  D1F0 35B8          3735          LM    R15,RSAV32                                    CMT37310
2EBE  030E               3736          BR    R14                                           CMT37320
                         3737  *                                                           *CMT37330
                         3738  * ********************************************************* CMT37340
                         3739  * SUBROUTINE BSET                                         * CMT37350
                         3740  *        THIS ROUTINE SETS UP THE WRITE BUFFER. IT FILLS   * CMT37360
                         3741  *        THE BUFFER WITH DATA OF 00-FF, AND SETS THE DELIMITER * CMT37370
                         3742  *        AT THE END OF THE READ BUFFER.                   * CMT37380
                         3743  *        CALLING SEQUENCE:                                * CMT37390
                         3744  *        BAL   R14,BSET                                   * CMT37400
                         3745  * ********************************************************* CMT37410
                         3746  *                                                           *CMT37420
2EC0  D010 3E20          3747  BSET    STM   R1,RSAVE1                                     CMT37430
2EC4  2491               3748          LIS   R9,1                                          CMT37440
2EC6  48A0 33EE          3749          LH    R10,NBYTE                                     CMT37450
2ECA  0788               3750          XHR   R8,R8                                         CMT37460
2ECC  0858               3751  SETWBUF LHR   R5,R8                                         CMT37470
2ECE  4450 33EC          3752          NH    R5,MASK             MASK FOR 7 TRACK        CMT37480
2ED2  D1F0 35A8          3753          LM    R15,WLIM                                      CMT37490
2ED6  0AF8               3754          AHR   R15,R8                                        CMT37500
2ED8  D25F 0000          3755          STB   R5,0(R15)                                     CMT37510
2EDC  41F0 1274          3756          BAL   R15,TSTBRK          CHECK BREAK KEY           CMT37520
2EE0  C180 2ECC          3757          BXLE  R8,SETWBUF                                    CMT37530
2EE4  D110 3E20          3758          LM    R1,RSAVE1                                     CMT37540
2EE8  030E               3759          BR    R14                                           CMT37550
                         3760  *                                                           *CMT37560
                         3761  * ********************************************************* CMT37570
                         3762  * SUBROUTINE CRBUF                                        * CMT37580
                         3763  *        THIS ROUTING CLEARS THE READ BUFFER AND SETS THE  * CMT37590
                         3764  *        DELIMETER (X'C3C3') AT THE END OF THE BUFFER      * CMT37600
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SUBROUTINES

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                                3765 *        CALLING SEQUENCE:                                                 *        CMT37610
                                3766 *        BAL   R13,CRBUF                                                   *        CMT37620
                                3767 * ***********************************************************************        CMT37630
                                3768 *                                                                          *        CMT37640
2EEA   D010 3E20                3769 CRBUF    STM   R1,RSAVE1                                                           CMT37650
2EEE   01F0 3584                3770          LM    R15,RLIM+4                                                          CMT37660
2EF2   08AF                     3771          LHR   R10,R15                                                             CMT37670
2EF4   2492                     3772          LIS   R9,2                                                                CMT37680
2EF6   0755                     3773          XHR   R5,R5                                                               CMT37690
2EF8   01F0 3580                3774          LM    R15,RLIM                                                            CMT37700
2EFC   086F                     3775          LHR   R8,R15                                                              CMT37710
2EFE   4058 0000                3776 CRBUF1   STH   R5,0(R8)                                                            CMT37720
2F02   41F0 1274                3777          BAL   R15,TSTBRK          CHECK BREAK KEY                                 CMT37730
2F06   C180 2EFE                3778          BXLE  R8,CRBUF1                                                         CMT37740
2F0A   C850 C3C3                3779          LHI   R5,X'C3C3'                                                        CMT37750
2F0E   D25A 0002                3780          STB   R5,2(R10)                                                         CMT37760
2F12   D110 3E20                3781          LM    R1,RSAVE1                                                         CMT37770
2F16   030D                     3782          BR    R13                                                               CMT37780
                                3783 *                                                                          *        CMT37790
                                3784 * ***********************************************************************        CMT37800
                                3785 * SUBROUTINE DUMP                                                       *        CMT37810
                                3786 *        THIS ROUTINE DUMPS THE READ BUFFER ONE BYTE AT A                  *        CMT37820
                                3787 *        TIME AND 16 BYTES IN A LINE.                                      *        CMT37830
                                3788 *        CALLING SEQUENCE:                                                 *        CMT37840
                                3789 *        BAL   R14,DUMP                                                    *        CMT37850
                                3790 * ***********************************************************************        CMT37860
                                3791 *                                                                          *        CMT37870
2F18   D010 3E20                3792 DUMP     STM   R1,RSAVE1                                                           CMT37880
2F1C   2491                     3793          LIS   R9,1                                                                CMT37890
2F1E   24AF                     3794          LIS   R10,15              16 BYTES PER LINE                               CMT37900
2F20   0722                     3795          XHR   R2,R2                                                               CMT37910
2F22   C840 0020                3796          LHI   R4,X'20'            SPACE                                           CMT37920
2F26   0788                     3797 OUTDMP   XHR   R8,R8                                                             CMT37930
2F28   D0F0 3588                3798 DMPLIN   STM   R15,RSAV32           SAVE R15                                        CMT37940
2F2C   01F0 3580                3799          LM    R15,RLIM            READ BUFFER ADDRESS                             CMT37950
2F30   0AF2                     3800          AHR   R15,R2                                                              CMT37960
2F32   D35F 0000                3801          LB    R5,0(R15)           LOAD BYTE FROM READ BUFFER                      CMT37970
2F36   01F0 3588                3802          LM    R15,RSAV32          RESTORE R15                                     CMT37980
2F3A   2402                     3803          LIS   R0,2                                                                CMT37990
2F3C   41F0 10D8                3804          BAL   R15,R5HEX           PRINT BYTE                                      CMT38000
2F40   41F0 11BA                3805          BAL   R15,OUTCHR          PRINT SPACE                                     CMT38010
2F44   41F0 1274                3806          BAL   R15,TSTBRK          BREAK?                                          CMT38020
2F48   4520 33EE                3807          CLH   R2,NBYTE            FULL BUFFER PRINTED?                            CMT38030
2F4C   2388                     3808          BNLS  DUBLIN                                                              CMT38040
2F4E   2621                     3809          AIS   R2,1                NO - CONTINUE                                   CMT38050
2F50   C180 2F28                3810          BXLE  R8,DMPLIN           16 BYTES?                                       CMT38060
2F54   41F0 11AC                3811          BAL   R15,CRLF            YES - CR,LF                                     CMT38070
2F58   4300 2F26                3812          B     OUTDMP                                                              CMT38080
2F5C   41F0 11AC                3813 DUBLIN   BAL   R15,CRLF            DOUBLE LINE FEED                                CMT38090
2F60   41F0 11AC                3814          BAL   R15,CRLF                                                            CMT38100
2F64   D110 3E20                3815          LM    R1,RSAVE1                                                         CMT38110
2F68   030E                     3816          BR    R14                 RETURN                                          CMT38120
                                3817 *                                                                          *        CMT38130
```

SUBROUTINES

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                                3818  * ************************************************************          CMT38140
                                3819  * SUBROUTINE SENS01, SENS02 & SENS03                         *          CMT38150
                                3820  *        THIS ROUTINE DETERMINES WHETHER AN EOF HAS BEEN      *          CMT38160
                                3821  *        DETECTED. IF NOT, AN ERROR MESSAGE WILL BE PRINTED   *          CMT38170
                                3822  *        AND RETURN ON ERROR. IF NO ERROR IS DETECTED, IT     *          CMT38180
                                3823  *        WILL RETURN TO LOCATION 4(R14)                       *          CMT38190
                                3824  *        THREE ENTRY POINTS ARE PROVIDED:                     *          CMT38200
                                3825  *        SENS01     FOR SENSING EOF AFTER WEOF                *          CMT38210
                                3826  *        SENS02     FOR SENSING EOF AFTER READ                *          CMT38220
                                3827  *        SENS03     FOR SENSING EOF AFTER SKIP & BACKSPACE    *          CMT38230
                                3828  *        CALLING SEQUENCE:                                    *          CMT38240
                                3829  *        BAL   R14,SENS01          (EXAMPLE)                  *          CMT38250
                                3830  *        B     ERROR               ERROR RETURN HERE          *          CMT38260
                                3831  *        NEXT INSTRUCTION          NORMAL RETURN HERE         *          CMT38270
                                3832  * ************************************************************          CMT38280
                                3833  *                                                            *          CMT38290
2F6A  C800 3035                 3834  SENS01  LHI   R0,C'05'            ERROR 05 (WEOF)                    CMT38300
2F6E  2306                      3835          BS    SENEOF                                                   CMT38310
2F70  C800 3036                 3836  SENS02  LHI   R0,C'06'            ERROR 06 (READ EOF)                CMT38320
2F74  2303                      3837          BS    SENEOF                                                   CMT38330
2F76  C800 3037                 3838  SENS03  LHI   R0,C'07'            ERROR 07 (SKIP & BACKSPACE EOF)    CMT38340
2F7A  41D0 3194                 3839  SENEOF  BAL   R13,WAIT3           WAIT FOR EOM=1                     CMT38350
2F7E  9D65                      3840          SSR   DEV,STAT                                                 CMT38360
2F80  2348                      3841          BFFS  4,EOFER             EX BIT SET?                        CMT38370
2F82  C350 0080                 3842          THI   STAT,X'80'          ERR BIT SET?                       CMT38380
2F86  2135                      3843          BNZS  EOFER                                                    CMT38390
2F88  C350 0040                 3844          THI   STAT,X'40'          EOF DETECTED?                      CMT38400
2F8C  423E 0004                 3845          BNZ   4(R14)                                                   CMT38410
2F90  41F0 0F80                 3846  EOFER   BAL   R15,ERRDS                                               CMT38420
2F94  030E                      3847          BR    R14                                                      CMT38430
                                3848  *                                                            *          CMT38440
                                3849  * ************************************************************          CMT38450
                                3850  * SUBROUTINE ERRMSG2                                         *          CMT38460
                                3851  *        THIS SUBROUTINE   PRINTS THE ERROR MESSAGES WITH THE *          CMT38470
                                3852  *        MODE MESSAGE                                         *          CMT38480
                                3853  *        THE MESSAGE PRINTED IS:                              *          CMT38490
                                3854  *        ERROR  XXYY               XX=TEST #, YY=ERROR #      *          CMT38500
                                3855  *        DEV  DD  STA SS           DD=DEVICE #, SS=STATUS     *          CMT38510
                                3856  *        MODE  N                   N=MODE NUMBER              *          CMT38520
                                3857  *        RETURN ON R14                                        *          CMT38530
                                3858  * ************************************************************          CMT38540
2F96  41F0 0F80                 3859  ERRMSG2 BAL   R15,ERRDS           PRINT ERROR MESSAGE                CMT38550
2F9A  C850 34F2                 3860          LHI   R5,MSG08                                                 CMT38560
2F9E  41D0 310E                 3861          BAL   R13,MSGPRT                                               CMT38570
2FA2  030E                      3862          BR    R14                                                      CMT38580
                                3863  * ************************************************************          CMT38590
                                3864  * SUBROUTINE SETMOD & TSTMOD                                 *          CMT38600
                                3865  *        THESE ROUTINES SET THE PROPER MODE THE DEVICE IS TO   *          CMT38610
                                3866  *        BE TESTED UNDER.                                     *          CMT38620
                                3867  *        ROUTINE SETMOD SETS THE INITIAL TEST MODE ACCORDING  *          CMT38630
                                3868  *        TO THE OPTION MODE. IF ZERO, IT WILL SET MODE 2      *          CMT38640
                                3869  *        ROUTINE TSTMOD TESTS IF ANY MORE TEST IS TO BE       *          CMT38650
                                3870  *        PERFORMED UNDER A DIFFERENT MODE. IF MODE OPTION      *          CMT38660
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                        3871  *        IS ZERO. IT WILL DECREMENT MODE. IF MODE OPTION IS      *   CMT38670
                        3872  *        NON-ZERO OR DECREMENTED MODE IS ZERO, IT WILL BRANCH    *   CMT38680
                        3873  *        TO TEST END.                                           *   CMT38690
                        3874  *        CALLING SEQUENCE:                                          CMT38700
                        3875  *        BAL   R13,SETMOD     OR                                    CMT38710
                        3876  *        BAL   R13,TSTMOD                                           CMT38720
                        3877  * ********************************************************************CMT38730
                        3878  *                                                                    CMT38740
2FA4  4850 17E8         3879  SETMOD   LH    R5,MODE+6          SET MODE OPTION                  CMT38750
2FA8  213C              3880           BNZS  MSET                                                 CMT38760
2FAA  2452              3881           LIS   R5,2               MODE 0 - START WITH MODE 2       CMT38770
2FAC  230A              3882           BS    MSET                                                 CMT38780
2FAE  4850 17E8         3883  TSTMOD   LH    R5,MODE+6          MODE 0?                          CMT38790
2FB2  4230 282C         3884           BNZ   CHKEND             NO - END TEST                    CMT38800
2FB6  4850 33F6         3885           LH    R5,MODFLG          YES -                            CMT38810
2FBA  2751              3886           SIS   R5,1               DECREMENT MODE FLAG              CMT38820
2FBC  4330 282C         3887           BZ    CHKEND             ZERO? - END TEST                 CMT38830
2FC0  4050 33F6         3888  MSET     STH   R5,MODFLG          STORE                            CMT38840
2FC4  CA50 0030         3889           AHI   R5,X'30'                                             CMT38850
2FC8  0250 34F7         3890           STH   R5,MSG08+5         SET MODE MESSAGE                 CMT38860
2FCC  41F0 1274         3891           BAL   R15,TSTBRK         CHECK BREAK KEY                  CMT38870
2FD0  030D              3892           BR    R13                                                  CMT38880
                        3893  * ********************************************************************CMT38890
                        3894  * SUBROUTINE RETRY                                               *   CMT38900
                        3895  *        THIS ROUTINE KEEPS A RETRY COUNT. IF THE COUNT IS       *   CMT38910
                        3896  *        LESS THAN 5, THE ROUTINE WILL BACKSPACE AND RETURN      *   CMT38920
                        3897  *        AT LOCATION 0(R14). OTHERWISE, IT RETURNS AT 4(R14).    *   CMT38930
                        3898  *        CALLING SEQUENCE:                                      *   CMT38940
                        3899  *        BAL   R14,RETRY                                        *   CMT38950
                        3900  *        B     TRY AGAIN          GO TRY AGAIN                    *   CMT38960
                        3901  *        B     PROCEED            PROCEED                         *   CMT38970
                        3902  * ********************************************************************CMT38980
                        3903  *                                                                *   CMT38990
2FD2  4850 33F8         3904  RETRY    LH    R5,RTYCNT          LOAD RETRY COUNTER               CMT39000
2FD6  C550 0005         3905           CLHI  R5,5               5 TIMES?                         CMT39010
2FDA  2388              3906           BNLS  RTYFAIL                                              CMT39020
2FDC  2651              3907           AIS   R5,1               INCREMENT COUNTER                CMT39030
2FDE  4050 33F8         3908           STH   R5,RTYCNT                                            CMT39040
2FE2  4100 3146         3909           BAL   R13,WAIT2          WAIT FOR NMTN=1                  CMT39050
2FE6  DE60 3408         3910           OC    DEV,BKSPAC         BACKSPACE                        CMT39060
2FEA  41F0 1274         3911           BAL   R15,TSTBRK         CHECK BREAK KEY                  CMT39070
2FEE  030E              3912           BR    R14                                                  CMT39080
2FF0  0755              3913  RTYFAIL  XHR   R5,R5              5 TIMES FAILED                   CMT39090
2FF2  4050 33F8         3914           STH   R5,RTYCNT                                            CMT39100
2FF6  C850 3464         3915           LHI   R5,MSG02                                             CMT39110
2FFA  4100 310E         3916           BAL   R13,MSGPRT         PRINT MESSAGE                    CMT39120
2FFE  41F0 1274         3917           BAL   R15,TSTBRK         CHECK BREAK KEY                  CMT39130
3002  43DF 0004         3918           B     4(R14)                                               CMT39140
                        3919  * ********************************************************************CMT39150
                        3920  *                                                                *   CMT39160
                        3921  * SUBROUTINE INDATA                                              *   CMT39170
                        3922  *        THIS ROUTINE ACCEPTS A DATA STRING OF UP TO 64 BYTES    *   CMT39180
                        3923  *        FROM THE TTY. THE INPUT CHARACTER MUST BE A VALID       *   CMT39190
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SUBROUTINES

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                                3924  *        HEX CHARACTER. AND THE PROGRAM WILL STORE THE          *        CMT39200
                                3925  *        CORRESPONDING HEX VALUE INTO THE WRITE BUFFER. UPON    *        CMT39210
                                3926  *        RECEPTION OF CR, THE ROUTING WILL GENERATE THE WHOLE   *        CMT39220
                                3927  *        WRITE BUFFER BY REPEATING THE INPUTED STRING           *        CMT39230
                                3928  *                                                               *        CMT39240
                                3929  *        IF THE TEST IS REPEATED BY MODE=0, CONTIN=1 OR LOOP,   *        CMT39250
                                3930  *        THIS ROUTINE WILL BE BY-PASSED AFTER THE FIRST PASS.   *        CMT39260
                                3931  *        NO DATA IS REQUESTED ON SUBSEQUENT PASSES. THIS        *        CMT39270
                                3932  *        ROUTINE WILL NEVER BE EXECUTED IF OPTION DATA IS       *        CMT39280
                                3933  *        RESET.                                                 *        CMT39290
                                3934  *        CALLING SEQUENCE                                       *        CMT39300
                                3935  *        BAL   R14,INDATA                                       *        CMT39310
                                3936  *                                                               *        CMT39320
                                3937  * ************************************************************** *        CMT39330
                                3938  *                                                               *        CMT39340
3006  4840 18B4                 3939  INDATA   LH    R4,DATA+6          DATA OPTION SET?                     CMT39350
300A  033E                      3940           BZR   R14                NO - EXIT                            CMT39360
300C  4840 33F0                 3941           LH    R4,DE              DATA FLAG SET?                       CMT39370
3010  023E                      3942           BNZR  R14                YES - EXIT                           CMT39380
3012  244F                      3943           LIS   R4,15              NO - SET DATA FLAG                   CMT39390
3014  4040 33F0                 3944           STH   R4,DE              AND                                  CMT39400
3018  D010 3E20                 3945           STM   R1,RSAVE1          GET DATA PATTERN                     CMT39410
301C  C850 34FA                 3946           LHI   R5,MSG09           PRINT MESSAGE                        CMT39420
3020  41D0 310E                 3947           BAL   R13,MSGPRT                                              CMT39430
3024  41F0 1274                 3948           BAL   R15,TSTBRK         CHECK BREAK KEY                      CMT39440
3028  2491                      3949           LIS   R9,1                                                    CMT39450
302A  0788                      3950           XHR   R8,R8                                                   CMT39460
302C  0722                      3951           XHR   R2,R2                                                   CMT39470
302E  D080 3E60                 3952  GETDATA  STM   R8,RSAVE                                               CMT39480
3032  41F0 1226                 3953           BAL   R15,GETCHR         GET A CHARACTER                      CMT39490
3036  D180 3E60                 3954           LM    R8,RSAVE                                                CMT39500
303A  C540 000D                 3955           CLHI  CHAR,X'0D'         CR?                                  CMT39510
303E  4330 30D4                 3956           BE    INEND              YES - INPUT END                      CMT39520
3042  41D0 30E0                 3957           BAL   R13,HEXCHK         CHECK FOR HEX CHAR                   CMT39530
3046  220C                      3958           BS    GETDATA            INVALID DATA, GET ANOTHER            CMT39540
3048  0854                      3959           LHR   R5,CHAR                                                 CMT39550
304A  9154                      3960           SLLS  R5,4               SHIFT FIRST HEX DIGIT LEFT           CMT39560
304C  D080 3E60                 3961           STM   R8,RSAVE                                                CMT39570
3050  41F0 1226                 3962  GTDAT2   BAL   R15,GETCHR         GET SECOND CHARACTER                 CMT39580
3054  D180 3E60                 3963           LM    R8,RSAVE                                                CMT39590
3058  C540 000D                 3964           CLHI  CHAR,X'0D'         CR?                                  CMT39600
305C  4330 3096                 3965           BE    INEND1             YES - INPUT END                      CMT39610
3060  41D0 30E0                 3966           BAL   R13,HEXCHK         CHECK HEX CHAR                       CMT39620
3064  220A                      3967           BS    GTDAT2             INVALID DATA, GET ANOTHER            CMT39630
3066  0654                      3968           OHR   R5,CHAR            APPEND SECOND HEX DIGIT              CMT39640
3068  4450 33EC                 3969           NH    R5,MASK                                                 CMT39650
306C  D0F0 3588                 3970           STM   R15,RSAV32                                              CMT39660
3070  D1F0 35A8                 3971           LM    R15,WLIM                                                CMT39670
3074  0AF8                      3972           AHR   R15,R8                                                  CMT39680
3076  D25F 0000                 3973           STB   R5,0(R15)                                               CMT39690
307A  D1F0 3586                 3974           LM    R15,RSAV32                                              CMT39700
307E  2622                      3975           AIS   R2,2                                                    CMT39710
3080  C520 0040                 3976           CLHI  R2,64              64 CHARACTERS (32 HEX)?              CMT39720
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SUBROUTINES

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3084   4380 30A8          3977            BNL   INEND2                                          CMT39730
3088   C180 302E          3978            BXLE  R8,GETDATA        BUFFER LENGTH EXCEED?     CMT39740
308C   41FC 11AC          3979  DATFIL    BAL   R15,CRLF                                       CMT39750
3090   0110 3E20          3980            LM    R1,RSAVE1                                       CMT39760
3094   030E               3981            BR    R14                                             CMT39770
3096   00F0 3588          3982  INEND1    STM   R15,RSAV32                                      CMT39780
309A   01FC 35A8          3983            LM    R15,WLIM                                        CMT39790
309E   0AF8               3984            AHR   R15,R8                                          CMT39800
30A0   025F 0000          3985            STB   R5,0(R15)                                       CMT39810
30A4   01F0 3588          3986            LM    R15,RSAV32                                      CMT39820
30A8   0722               3987  INEND2    XHR   R2,R2                                           CMT39830
30AA   C080 308C          3988  MOVDATA   BXH   R8,DATFIL                                       CMT39840
30AE   00F0 3588          3989  MOVDAT1   STM   R15,RSAV32                                      CMT39850
30B2   01FC 35A8          3990            LM    R15,WLIM                                        CMT39860
30B6   0AF2               3991            AHR   R15,R2                                          CMT39870
30B8   034F 0000          3992            LB    CHAR,0(R15)                                     CMT39880
30BC   01FC 35A8          3993            LM    R15,WLIM                                        CMT39890
30C0   0AF8               3994            AHR   R15,R8                                          CMT39900
30C2   025F 0000          3995            STB   R5,0(R15)                                       CMT39910
30C6   01F0 3588          3996            LM    R15,RSAV32                                      CMT39920
30CA   41FC 1274          3997            BAL   R15,TSTBRK        CHECK BREAK KEY           CMT39930
30CE   2621               3998            AIS   R2,1                                            CMT39940
30D0   4300 30AA          3999            B     MOVDATA                                         CMT39950
30D4   0622               4000  INEND     LHR   R2,R2                                           CMT39960
30D6   4330 308C          4001            BZ    DATFIL                                          CMT39970
30DA   0722               4002            XHR   R2,R2                                           CMT39980
30DC   4300 30BE          4003            B     MOVDAT1                                         CMT39990
                          4004  * ************************************************************** CMT40000
                          4005  * SUBROUTINE HEXCHK                                            * CMT40010
                          4006  *       THIS ROUTINE CHECKS IF THE CONTENT OF R4 (CHAR) IS      * CMT40020
                          4007  *       A VALID HEX CHARACTER. IT THEN CONVERTS IT INTO A       * CMT40030
                          4008  *       HEX DIGIT, AND RETURNS AT 4(R13). IF THE CHARACTER      * CMT40040
                          4009  *       IS NOT A VALID HEX CHARACTER, IT OUTPUTS A '?',         * CMT40050
                          4010  *       AND RETURNS AT 0(R13)                                  * CMT40060
                          4011  *       CALLING SEQUENCE:                                      * CMT40070
                          4012  *       BAL   R13,HEXCHK                                       * CMT40080
                          4013  *       B     ERROR             ERROR RETURN                   * CMT40090
                          4014  *       NEXT  INSTRUCTION       NORMAL RETURN                  * CMT40100
                          4015  * ************************************************************** CMT40110
                          4016  *                                                              * CMT40120
                          4017  *                                                              * CMT40130
30E0   C540 0030          4018  HEXCHK    CLHI  CHAR,C'0'         LESS THAN 0?              CMT40140
30E4   4280 3104          4019            BL    NOHEX             YES - INVALID             CMT40150
30E8   C540 003A          4020            CLHI  CHAR,X'3A'        NO - LESS THAN X'3A'?     CMT40160
30EC   2188               4021            BLS   GDHEX             YES - VALID               CMT40170
30EE   C540 0041          4022            CLHI  CHAR,C'A'         NO - LESS THAN A?         CMT40180
30F2   2169               4023            BLS   NOHEX             YES - INVALID             CMT40190
30F4   C540 0047          4024            CLHI  CHAR,C'G'         NO - GREATER THAN F?      CMT40200
30F8   2386               4025            BNLS  NOHEX             YES - INVALID             CMT40210
30FA   2649               4026            AIS   CHAR,9            NO - CONVERT TO HEX DIGIT CMT40220
30FC   C440 000F          4027  GDHEX     NHI   CHAR,X'0F'                                     CMT40230
3100   4300 0004          4028            B     4(R13)                                          CMT40240
3104   C840 003F          4029  NOHEX     LHI   CHAR,C'?'         INVALID CHAR -            CMT40250
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SUBROUTINES

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3108  41F0 11BA  4030          BAL   R15,OUTCHR          PRINT '?'                    CMT40260
310C  030D       4031          BR    R13                                            CMT40270
                 4032  * ************************************************************ CMT40280
                 4033  * SUBROUTINE MSGPRT                                           CMT40290
                 4034  *       THIS ROUTINE SETS UP THE CALLING SEQUENCE TO PRINT    * CMT40300
                 4035  *       A MESSAGE. THE STARTING ADDRESS OF THE MESSAGE       * CMT40310
                 4036  *       SHOULD BE STORED IN R5.                              * CMT40320
                 4037  *       CALLING SEQUENCE:                                    * CMT40330
                 4038  *       BAL   R13,MSGPRT                                     * CMT40340
                 4039  * ************************************************************ CMT40350
                 4040  *                                                            * CMT40360
310E  4050 16A6  4041  MSGPRT  STH   R5,ISITERR                                      CMT40370
3112  41F0 1128  4042          BAL   R15,PRINT                                       CMT40380
3116  0755       4043          XHR   R5,R5                                           CMT40390
3118  4050 16A6  4044          STH   R5,ISITERR                                      CMT40400
311C  41F0 1274  4045          BAL   R15,TSTBRK          CHECK BREAK KEY             CMT40410
3120  030D       4046          BR    R13                                           CMT40420
                 4047  *                                                            * CMT40430
                 4048  * ************************************************************ CMT40440
                 4049  * SUBROUTINE TIMEOUT                                         * CMT40450
                 4050  *       THIS ROUTINE WAITS FOR INTERRUPT WITH INTERRUPT       * CMT40460
                 4051  *       ENABLED AT PROCESSOR LEVEL. A TIMER IS SET UP TO     * CMT40470
                 4052  *       TIME OUT THE INTERRUPT WAITING PERIOD AND THE        * CMT40480
                 4053  *       CALLING PROGRAM CAN SPECIFY THE TIME-OUT IN UNITS    * CMT40490
                 4054  *       OF 10MS EACH BY SPECIFY THE NUMBER OF UNITS DESIRED  * CMT40500
                 4055  *       AT THE HALFWORD FOLLOWING THE CALLING INSTRUCTION.    * CMT40510
                 4056  *       IF INTERRUPT IS RECEIVED, EXIT IS MADE TO AN         * CMT40520
                 4057  *       INTERRUPT HANDLER IN THE PROGRAM EXECUTIVE. WHICH    * CMT40530
                 4058  *       WILL IN TURN BRANCH TO LOCATION SET UP BY THE        * CMT40540
                 4059  *       PROGRAM BEFORE ENTERING TIMEOUT ROUTINE.             * CMT40550
                 4060  *       IF THE ROUTINE TIMES OUT, IT WILL PICK UP THE ERROR  * CMT40560
                 4061  *       NUMBER FROM R11, PRINT THE ERROR MESSAGE, AND EXIT AT * CMT40570
                 4062  *       LOCATION 4(R14).                                     * CMT40580
                 4063  *       CALLING SEQUENCE:                                    * CMT40590
                 4064  *       BAL   R14,TIMEOUT                                    * CMT40600
                 4065  *       DC    N                NUMBER OF 10MS UNITS FOR T.O. * CMT40610
                 4066  * ************************************************************ CMT40620
                 4067  *                                                            * CMT40630
3122  4800 0A22  4068  TIMEOUT  LH    R0,PSW              ENABLE INTERRUPT AT       CMT40640
3126  9550       4069          EPSR  R5,R0               PROCESSOR LEVEL           CMT40650
3128  41F0 1274  4070          BAL   R15,TSTBRK          CHECK BREAK KEY           CMT40660
312C  480E 0000  4071          LH    R0,0(R14)           PICK UP DESIRED TIME PERIOD CMT40670
3130  41F0 10BE  4072          BAL   R15,TIMER           DELAY TIMER (BASIC 10MS)  CMT40680
3134  C800 30F0  4073          LHI   R0,X'30F0'          DISABLE INTERRUPTS AT     CMT40690
3138  9550       4074          EPSR  R5,R0               PROCESSOR LEVEL           CMT40700
313A  080B       4075          LHR   R0,R11              PICK UP ERROR NUMBER      CMT40710
313C  9D65       4076          SSR   DEV,STAT                                      CMT40720
313E  41F0 0F80  4077          BAL   R15,ERRDS                                     CMT40730
3142  430E 0004  4078          B     4(R14)                                        CMT40740
                 4079  * ************************************************************ CMT40750
                 4080  * SUBROUTINE WAIT2                                           * CMT40760
                 4081  *       THIS ROUTINE WAITS FOR NMTN=1 UNDER TIMED CONDITION  * CMT40770
                 4082  *       IF ROUTINE TIMES OUT OR DETECTS END OF TAPE (EOT),   * CMT40780
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SUBROUTINES

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                                4083  *        THE DEVICE IS RESET, ERROR MESSAGE IS PRINTED AND       *   CMT40790
                                4084  *        THE CURRENT TEST IS ABORTED.                            *   CMT40800
                                4085  *        RETURN ON R13                                           *   CMT40810
                                4086  *        ERROR: 01                                               *   CMT40820
                                4087  * ******************************************************************   CMT40830
3146  9D65                      4088  WAIT2    SSR   DEV,STAT                                               CMT40840
3148  4210 3228                 4089           BTC   1,MTDU              DEVICE UNAVAILABLE                CMT40850
314C  C350 0010                 4090           THI   STAT,X'10'          NMTN = 1?                         CMT40860
3150  023D                      4091           BNZR  R13                 YES - EXIT                        CMT40870
3152  D010 3E20                 4092           STM   R1,RSAVE1                                             CMT40880
3156  2421                      4093           LIS   R2,1                                                  CMT40890
3158  4830 0A1E                 4094           LH    R3,TIME             10MS TIMING LOOP                  CMT40900
315C  0892                      4095           LHR   R9,R2                                                 CMT40910
315E  24AA                      4096           LIS   R10,10                                                CMT40920
3160  0788                      4097           XHR   R8,R8                                                 CMT40930
3162  0711                      4098  WX21     XHR   R1,R1               TIME OUT LOOP                     CMT40940
3164  9D65                      4099  WX22     SSR   DEV,STAT                                              CMT40950
3166  4210 3228                 4100           BTC   1,MTDU              DU?                               CMT40960
316A  C350 0010                 4101           THI   STAT,X'10'          NMTN = 1?                         CMT40970
316E  423D 318E                 4102           BNZ   W2EXIT              YES EXIT                          CMT40980
3172  41F0 1274                 4103           BAL   R15,TSTBRK          CHECK BREAK KEY                   CMT40990
3176  C11D 3164                 4104           BXLE  R1,WX22                                               CMT41000
317A  C18D 3162                 4105           BXLE  R8,WX21                                               CMT41010
317E  DE60 3407                 4106           OC    DEV,CLEAR           TIMED OUT ON NMTN                 CMT41020
3182  C800 3031                 4107           LHI   R0,C'01'            ERROR 01                          CMT41030
3186  41F0 0F80                 4108           BAL   R15,ERROS                                             CMT41040
318A  4300 0AE6                 4109           B     OPTIN                                                 CMT41050
318E  D110 3E20                 4110  W2EXIT   LM    R1,RSAVE1                                           CMT41060
3192  030D                      4111           BR    R13                                                   CMT41070
                                4112  * ******************************************************************   CMT41080
                                4113  * SUBROUTINE WAIT3                                                 *   CMT41090
                                4114  *        THIS ROUTINE WAITS FOR EOM UNDER TIMED CONDITION.       *   CMT41100
                                4115  *        IT IS CALLED AFTER EVERY READ, WRITE, BACKSPACE,        *   CMT41110
                                4116  *        WEOF OR SKIP OPERATION. IF EOM IS NOT SET AFTER         *   CMT41120
                                4117  *        TIME OUT, THE ROUTINE RETURNS WITH AN ERROR MESSAGE     *   CMT41130
                                4118  *        CALLING SEQUENCE:                                       *   CMT41140
                                4119  *        BAL   R13,WAIT3                                         *   CMT41150
                                4120  *                                                                *   CMT41160
                                4121  * ******************************************************************   CMT41170
3194  9D65                      4122  WAIT3    SSR   DEV,STAT                                               CMT41180
3196  4210 3228                 4123           BTC   1,MTDU              DU?                               CMT41190
319A  022D                      4124           BTCR  2,R13               EOM - EXIT                        CMT41200
319C  D010 3E20                 4125           STM   R1,RSAVE1                                             CMT41210
31A0  2421                      4126           LIS   R2,1                SET UP TIME OUT COUNTER           CMT41220
31A2  4830 0A1E                 4127           LH    R3,TIME                                               CMT41230
31A6  0892                      4128           LHR   R9,R2                                                 CMT41240
31A8  C8A0 0064                 4129           LHI   R10,100                                               CMT41250
31AC  0788                      4130           XHR   R8,R8                                                 CMT41260
31AE  0711                      4131  WX31     XHR   R1,R1                                                 CMT41270
31B0  9D65                      4132  WX32     SSR   DEV,STAT                                              CMT41280
31B2  4210 3228                 4133           BTC   1,MTDU              DU?                               CMT41290
31B6  4220 31CE                 4134           BTC   2,W3EXIT            EOM - EXIT                        CMT41300
31BA  41F0 1274                 4135           BAL   R15,TSTBRK          CHECK BREAK KEY                   CMT41310
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SUBROUTINES

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318E  C110 3180          4136           BXLE  R1,WX32                                                  CMT41320
31C2  C180 31AE          4137           BXLE  R8,WX31                                                  CMT41330
31C6  C800 3034          4138           LHI   R0,C'04'          TIMED OUT - ERROR 04                   CMT41340
31CA  41F0 0F80          4139           BAL   R15,ERR0S                                                CMT41350
31CE  D110 3E20          4140  W3EXIT   LM    R1,RSAVE1                                                CMT41360
31D2  030D               4141           BR    R13               ERROR RETURN                         CMT41370
                         4142  *                                                                       *CMT41380
                         4143  * ***************************************************************      CMT41390
                         4144  * SUBROUTINE WAIT1                                                      *CMT41400
                         4145  *        THIS ROUTINE WAITS FOR NMTN=1 UNDER TIMED CONDITION.           *CMT41410
                         4146  *        THE TIMEOUT PERIOD IS DESIGNED TO ACCOMODATE THE               *CMT41420
                         4147  *        TIME NECESSARY TO REWIND THE LONGEST TAPE. IF THE              *CMT41430
                         4148  *        ROUTINE TIMED OUT, THE TEST IS ABORTED WITH AN ERROR           *CMT41440
                         4149  *        MESSAGE .                                                      *CMT41450
                         4150  *        RETURN ON R13                                                  *CMT41460
                         4151  *        ERROR: 02.                                                     *CMT41470
                         4152  * ***************************************************************      CMT41480
31D4  D010 3E20          4153  WAIT1    STM   R1,RSAVE1                                                CMT41490
31D8  0755               4154           XHR   R5,R5                                                    CMT41500
31DA  4050 33F2          4155           STH   R5,EOTFLG                                                CMT41510
31DE  2421               4156           LIS   R2,1              SET UP LOOP COUNTER                    CMT41520
31E0  C830 7FF0          4157           LHI   R3,X'7FF0'                                               CMT41530
31E4  0892               4158           LHR   R9,R2                                                    CMT41540
31E6  C8A0 00FF          4159           LHI   R10,X'FF'                                                CMT41550
31EA  0788               4160           XHR   R8,R8                                                    CMT41560
31EC  0711               4161  WX11     XHR   R1,R1             TIME OUT LOOP                          CMT41570
31EE  9D65               4162  WX12     SSR   DEV,STAT                                                 CMT41580
31F0  4210 3228          4163           BTC   1,MTDU            DU?                                    CMT41590
31F4  C350 0010          4164           THI   STAT,X'10'        NMTN = 1 ?                             CMT41600
31F8  4230 3222          4165           BNZ   W1EXIT            YES EXIT                               CMT41610
31FC  C350 0020          4166           THI   STAT,X'20'        EOT?                                   CMT41620
3200  2335               4167           BZS   WX13                                                     CMT41630
3202  DE60 3407          4168           OC    DEV,CLEAR         EOT - CLEAR DEVICE                     CMT41640
3206  41F0 1274          4169           BAL   R15,TSTBRK         CHECK BREAK KEY                        CMT41650
320A  C110 31EE          4170  WX13     BXLE  R1,WX12                                                  CMT41660
320E  C180 31EC          4171           BXLE  R8,WX11                                                  CMT41670
3212  DE60 3407          4172           OC    DEV,CLEAR         TIME OUT ON NMTN                       CMT41680
3216  C800 3032          4173           LHI   R0,C'02'          ERROR 02                               CMT41690
321A  41F0 0F80          4174           BAL   R15,ERR0S                                                CMT41700
321E  4300 0AE6          4175           B     OPTIN                                                    CMT41710
3222  D110 3E20          4176  W1EXIT   LM    R1,RSAVE1                                                CMT41720
3226  030D               4177           BR    R13                                                      CMT41730
                         4178  *                                                                       CMT41740
                         4179  * ***************************************************************      CMT41750
                         4180  *        DEVICE UNAVAILABLE:                                            CMT41760
                         4181  *        RETURN TO INPUT COMMAND MODE                                   CMT41770
                         4182  * ***************************************************************      CMT41780
                         4183  *                                                                       CMT41790
3228  DE70 3406          4184  MTDU     OC    SELCH,STOP                                               CMT41800
322C  D250 167A          4185           STB   STAT,ERRSTA                                              CMT41810
3230  C850 347C          4186           LHI   R5,MSG03          MAGNETIC TAPE DEVICE UNAVAILABLE       CMT41820
3234  4050 16A6          4187           STH   R5,ISITERR                                               CMT41830
3238  41F0 1128          4188           BAL   R15,PRINT         PRINT MESSAGE                          CMT41840
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SUBROUTINES

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323C  41E0 101C          4189           BAL   RET,ERRDS1          PRINT DEVICE # AND STATUS          CMT41850
3240  0755               4190           XHR   R5,R5                                              CMT41860
3242  405C 16A6          4191           STH   R5,ISITERR                                         CMT41870
3246  4300 0AE6          4192           B     OPTIN                                              CMT41880
                         4193  * ********************************************************         CMT41890
                         4194  * SUBROUTINE EOF                                                  CMT41900
                         4195  *        THIS ROUTINE WRITES AN EOF                              *  CMT41910
                         4196  *        CALLING SEQUENCE                                        *  CMT41920
                         4197  *        BAL   R14,EOF                                           *  CMT41930
                         4198  * ********************************************************         CMT41940
                         4199  *                                                                 *  CMT41950
324A  41D0 325E          4200  EOF      BAL   R13,SENMTN          CHECK FOR NMTN=1                   CMT41960
324E  0E60 3413          4201           OC    DEV,=EOF            WRITE AN EOF                       CMT41970
3252  030E               4202           BR    R14                 NO EOT - EXIT                      CMT41980
                         4203  * ********************************************************         CMT41990
                         4204  * SUBROUTINE RWND                                                 *  CMT42000
                         4205  *        THIS ROUTINE REWINDS THE TAPE                           *  CMT42010
                         4206  *        CALLING SEQUENCE:                                       *  CMT42020
                         4207  *        BAL   R14,RWND                                          *  CMT42030
                         4208  * ********************************************************         CMT42040
3254  41D0 325E          4209  RWND     BAL   R13,SENMTN          CHECK FOR NMTN=1                   CMT42050
3258  0E60 340A          4210           OC    DEV,REWD            REWIND                             CMT42060
325C  030E               4211           BR    R14                 RETURN                             CMT42070
                         4212  * ********************************************************         CMT42080
                         4213  * SUBROUTINE SENMTN                                               *  CMT42090
                         4214  *        THIS ROUTINE WAITS FOR NMTN=1.                          *  CMT42100
                         4215  *        RETURNS ON R13                                          *  CMT42110
                         4216  * ********************************************************         CMT42120
325E  9D65               4217  SENMTN   SSR   DEV,STAT                                          CMT42130
3260  C350 0010          4218           TMI   STAT,X'10'          NMTN=1?                            CMT42140
3264  023D               4219           BNZR  R13                 YES - RETURN                       CMT42150
3266  41F0 1274          4220           BAL   R15,TSTBRK          CHECK BREAK KEY                    CMT42160
326A  22D6               4221           BS    SENMTN              LOOP CHECK                         CMT42170
                         4222  * ********************************************************         CMT42180
                         4223  * SUBROUTINE WRTBLK                                               CMT42190
                         4224  *        THIS ROUTINE WAITS FOR NMTN, AND WRITES A RECORD        *  CMT42200
                         4225  *        USING WB MODE                                           *  CMT42210
                         4226  *        THE STARTING & ENDING ADDRESSES OF THE RECORD ARE       *  CMT42220
                         4227  *        STORED IN R11 & R12 RESPECTIVELY                        *  CMT42230
                         4228  * ********************************************************         CMT42240
                         4229  *                                                                 *  CMT42250
326C  41D0 325E          4230  WRTBLK   BAL   R13,SENMTN          CHECK FOR NMTN=1                   CMT42260
3270  0E60 3409          4231           OC    DEV,WRITE           DEVICE WRITE MODE                  CMT42270
3274  966B               4232           WBR   DEV,R11             WRITE RECORD BLOCK MODE            CMT42280
3276  030E               4233           BR    R14                 RETURN                             CMT42290
                         4234  * ********************************************************         CMT42300
                         4235  * SUBROUTINE RDBLK                                                CMT42310
                         4236  *        THIS ROUTINE READS A RECORD IN THE RB MODE. THE STARTING CMT42320
                         4237  *        & ENDING ADDRESSES ARE ASSUMED TO BE IN R11 & R12       *  CMT42330
                         4238  *        RESPECTIVELY.                                           *  CMT42340
                         4239  * ********************************************************         CMT42350
                         4240  *                                                                 *  CMT42360
3278  41D0 325E          4241  RDBLK    BAL   R13,SENMTN          CHECK FOR NMTN=1                   CMT42370
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SUBROUTINES

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327C  DE60 340C          4242           OC    DEV+READ            DEVICE READ MODE                    CMT42380
3280  976E               4243           RBR   DEV+R11             READ RECORD BLOCK MODE              CMT42390
3282  030E               4244           BR    R14                 RETURN                              CMT42400
                         4245  * ********************************************************************  CMT42410
                         4246  * SUBROUTINE BKSP                                                   *  CMT42420
                         4247  *        THIS ROUTINE WAITS FOR NMTN, AND DOES A BACKSPACE           *  CMT42430
                         4248  *        IT MUST BE NOTED THAT THIS ROUTINE CANNOT BE CALLED         *  CMT42440
                         4249  *        AT    BOT                                                   *  CMT42450
                         4250  * ********************************************************************  CMT42460
                         4251  *                                                                    *  CMT42470
3284  41D0 325E          4252  BKSP   BAL   R13,SENMTN           CHECK FOR NMTN=1                    CMT42480
3288  DE60 3406          4253           OC    DEV+BKSPAC          BACK-SPACE                          CMT42490
328C  030E               4254           BR    R14                 RETURN                              CMT42500
                         4255  * ********************************************************************  CMT42510
                         4256  * SUBROUTINE RWSEL                                                  *  CMT42520
                         4257  *        THIS ROUTINE READS OR WRITES A RECORD WITH SELCH MODE.       *  CMT42530
                         4258  *        THE STARTING & ENDING ADDRESSES OF THE RECORD                *  CMT42540
                         4259  *        ARE ASSUMED TO BE IN R11 & R12 RESPECTIVELY.                 *  CMT42550
                         4260  *        DEVICE COMMAND IS ASSUMED TO BE IN R2. AND SELCH             *  CMT42560
                         4261  *        COMMAND IS ASSUMED TO BE IN R3.                              *  CMT42570
                         4262  *        RETURN ON R14                                                *  CMT42580
                         4263  * ********************************************************************  CMT42590
328E  41D0 325E          4264  RWSEL  BAL   R13,SENMTN           CHECK FOR NMTN=1                    CMT42600
3292  D010 3E20          4265           STM   R1,RSAVE1                                               CMT42610
3296  489C 166C          4266           LH    R9,MOD32                                                CMT42620
329A  2139               4267           BNZS  RWSEL32                                                 CMT42630
329C  D110 3E20          4268           LM    R1,RSAVE1                                               CMT42640
32A0  DE70 3406          4269           OC    SELCH+STOP          STOP SELCH                          CMT42650
32A4  987B               4270           WHR   SELCH,R11           STARTING ADDRESS                    CMT42660
32A6  987C               4271           WHR   SELCH,R12           ENDING ADDRESS                      CMT42670
32A8  4300 32C4          4272           B     RWSEL.B                                                 CMT42700
32AC  DE70 359C          4273  RWSEL32  OC    SELCH+STOP2                                             CMT42710
32B0  DA70 3E49          4274           WD    SELCH+RSAVE1+41                                         CMT42720
32B4  D870 3E4A          4275           WH    SELCH+RSAVE1+42                                         CMT42730
32B8  DA70 3E4D          4276           WD    SELCH+RSAVE1+45                                         CMT42740
32BC  D870 3E4E          4277           WH    SELCH+RSAVE1+46                                         CMT42750
32C0  D110 3E20          4278           LM    R1,RSAVE1                                               CMT42760
32C4  9E62               4279  RWSEL.B  OCR   DEV+R2              DEVICE COMMAND                      CMT42770
32C6  2343               4280           BFFS  4,RWSEL.A           FALSE SYNC?                         CMT42780
32C8  41F0 2DA2          4281           BAL   R15,FSYNC           YES - ABORT TEST                    CMT42790
32CC  9E73               4282  RWSEL.A  OCR   SELCH,R3            SELCH GO & COMMAND                  CMT42800
32CE  9D75               4283           SSR   SELCH,STAT                                              CMT42810
32D0  2081               4284           BTBS  8,1                 WAIT FOR SELCH IDLE                 CMT42820
32D2  DE70 3406          4285           OC    SELCH+STOP                                              CMT42830
32D6  030E               4286           BR    R14                                                     CMT42840
                         4287  * ********************************************************************  CMT42850
                         4288  * SUBROUTINE SELINT                                                 *  CMT42860
                         4289  *        THIS ROUTINE TESTS SELCH INTERRUPTS ON READ OR WRITE.       *  CMT42870
                         4290  *        ASSUMPTIONS:                                                 *  CMT42880
                         4291  *        R1 CONTAINS DEVICE COMMAND                                   *  CMT42890
                         4292  *        R2 CONTAINS SELCH COMMAND                                    *  CMT42900
                         4293  *        R3 CONTAINS STARTING ADDRESS OF READ OR WRITE LIMITS         *  CMT42910
                         4294  *        R4 CONTAINS DEVICE INTERRUPT RETURN ADDRESS                  *  CMT42920
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SUBROUTINES

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                                4295  *        R5 CONTAINS SELCH INTERRUPT RETURN ADDRESS                *  CMT42930
                                4296  *        R11 CONTAINS THE TIMEOUT ERROR NUMBER                     *  CMT42940
                                4297  *        RETURN ON R12                                             *  CMT42950
                                4298  * ********************************************************************  CMT42960
32D8  4050 1906                 4299  SELINT   STH   R5,DEVINT          STORE RTN ADRS FOR SELCH INTERRUPT  CMT42970
32DC  0755                      4300           XHR   R5,R5               RESET RETURN ADDRESS                CMT42980
32DE  4050 1908                 4301           STH   R5,DEVINT+2         FOR DEVICE INTERRUPT                CMT42990
32E2  41D0 3146                 4302           BAL   R13,WAIT2           WAIT FOR NMTN=1                     CMT43000
32E6  4850 166C                 4303           LH    R5,MOD32                                              CMT43010
32EA  2138                      4304           BNZS  XMOD32                                                CMT43020
32EC  DE70 3406                 4305           OC    SELCH,STOP          STOP SELCH                          CMT43030
32F0  0873 0000                 4306           WH    SELCH,0(R3)         SET UP SELCH TRANSFER LIMITS        CMT43040
32F4  0873 0004                 4307           WH    SELCH,4(R3)                                             CMT43050
32F8  2308                      4308           BS    XDEV                                                  CMT43060
32FA  DE70 359C                 4309  XMOD32   OC    SELCH,STOP2         STOP WITH EXTENDED ADDRESS          CMT43070
32FE  0A73 0001                 4310           WD    SELCH,1(R3)                                           CMT43080
3302  0873 0002                 4311           WH    SELCH,2(R3)                                           CMT43090
3306  0A73 0005                 4312           WD    SELCH,5(R3)                                           CMT43100
330A  0873 0006                 4313           WH    SELCH,6(R3)                                           CMT43110
330E  9E61                      4314  XDEV     OCR   DEV,R1              OUTPUT DEVICE COMMAND               CMT43120
3310  9E72                      4315           OCR   SELCH,R2            OUTPUT SELCH COMMAND                CMT43130
3312  41E0 3122                 4316           BAL   R14,TIMEOUT        WAIT FOR SELCH INTERRUPT            CMT43140
3316  01F4                      4317           DC    H'500'                                                CMT43150
3318  DE70 3406                 4318  SELINT1  OC    SELCH,STOP                                            CMT43160
331C  0755                      4319           XHR   R5,R5               RESET RETURN ADDRESS                CMT43170
331E  4050 1906                 4320           STH   R5,DEVINT           FOR SELCH INTERRUPT                 CMT43180
3322  4040 1908                 4321           STH   R4,DEVINT+2         STORE DEVICE INTERRUPT RETURN ADRS   CMT43190
3326  030C                      4322           BR    R12                 RETURN                              CMT43200
                                4323  * ********************************************************************  CMT43210
                                4324  * SUBROUTINE SKIPINT                                                *  CMT43220
                                4325  *        THIS ROUTINE TESTS SKIP INTERRUPTS ON FORWARD OR          *  CMT43230
                                4326  *        BACKWARD SKIPS.                                           *  CMT43240
                                4327  *        ASSUMPTIONS:                                              *  CMT43250
                                4328  *        R1 CONTAINS THS SKIP COMMAND                              *  CMT43260
                                4329  *        R11 CONTAINS THE TIMEOUT ERROR NUMBER                     *  CMT43270
                                4330  *        RETURN ON R12                                             *  CMT43280
                                4331  * ********************************************************************  CMT43290
3328  0788                      4332  SKIPINT  XHR   R8,R8                                                 CMT43300
332A  C850 3348                 4333           LHI   R5,RTN11            SET UP RETURN ADDRESS               CMT43310
332E  4050 1908                 4334           STH   R5,DEVINT+2                                             CMT43320
3332  41D0 3146                 4335  SKIPINT1 BAL   R13,WAIT2                                               CMT43330
3336  DE60 3412                 4336           OC    DEV,DISARM          DISARM DEVICE                       CMT43340
333A  DE60 3411                 4337           OC    DEV,ENABL                                             CMT43350
333E  9E61                      4338           OCR   DEV,R1              OUTPUT SKIP COMMAND                 CMT43360
3340  41E0 3122                 4339           BAL   R14,TIMEOUT                                           CMT43370
3344  07D0                      4340           DC    H'2000'                                               CMT43380
3346  230A                      4341           BS    STA11                                                 CMT43390
3348  D35C 167A                 4342  RTN11    LB    STAT,INTSTA         GET INTERRUPT STATUS                CMT43400
334C  C55C 004C                 4343           CLHI  STAT,X'4C'                                            CMT43410
3350  2335                      4344           BES   STA11                                                 CMT43420
3352  C800 3037                 4345           LHI   R0,C'07'            ERROR 07                            CMT43430
3356  4300 1F4E                 4346           B     STAERR                                                CMT43440
335A  2681                      4347  STA11    AIS   R8,1                                                  CMT43450
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SUBROUTINES

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335C  C580 0002          4348          CLHI  R8,2              2 EOF'S?                                CMT43460
3360  4280 3332          4349          BL    SKIPINT1                                                  CMT43470
3364  030C               4350          BR    R12                                                       CMT43480
                         4351  * ***************************************************************       CMT43490
                         4352  *                                                                       CMT43500
                         4353  * SUBROUTINES SKFW & SKRV                                        *      CMT43510
                         4354  *        THIS ROUTINE SKIPS A FILE PASS AN EOF                   *      CMT43520
                         4355  * ***************************************************************       CMT43530
                         4356  *                                                                *      CMT43540
3366  41D0 325E          4357  SKFW    BAL   R13,SENMTN        CHECK FOR NMTN=1                        CMT43550
3369  DE60 340E          4358          OC    DEV,SKIPF         SKIP EOF FORWARD                        CMT43560
336E  030E               4359          BR    R14                                                       CMT43570
3370  41D0 325E          4360  SKRV    BAL   R13,SENMTN        CHECK FOR NMTN=1                        CMT43580
3374  DE60 340F          4361          OC    DEV,SKIPR         SKIP EOF REVERSE                        CMT43590
3378  030E               4362          BR    R14                                                       CMT43600
                         4363  * ***************************************************************       CMT43610
                         4364  * SUBROUTINE ERRDSA SAVES THE ERROR NUM (R0) AND THE STATUS      *      CMT43620
                         4365  * BYTE (STAT) FOR USE BY ERRDS                                   *      CMT43630
                         4366  * ***************************************************************       CMT43640
                         4367  *                                                                *      CMT43650
337A  4000 16E6          4368  ERRDSA  STH   R0,ERRNO          SAVE ERROR NUM                          CMT43660
337E  D250 167A          4369          STB   STAT,ERRSTA       SAVE STATUS BYTE                        CMT43670
3382  030E               4370          BR    RET                                                       CMT43680
                         4371  * ***************************************************************       CMT43690
                         4372  * SUBROUTINE REWIND WAITS FOR NMTN=1, REWINDS THE TAPE, AND       *      CMT43700
                         4373  * WAITS FOR NMTN=1 AGAIN.                                        *      CMT43710
                         4374  * ***************************************************************       CMT43720
                         4375  *                                                                       CMT43730
3384  41D0 31D4          4376  REWIND  BAL   R13,WAIT1         WAIT FOR NMTN=1                         CMT43740
3388  DE60 340A          4377          OC    DEV,REWD          REWIND TAPE                             CMT43750
338C  41D0 31D4          4378          BAL   R13,WAIT1         WAIT FOR NMTN=1                         CMT43760
3390  030E               4379          BR    RET               RETURN                                  CMT43770
                         4380  * ***************************************************************       CMT43780
                         4381  *                                                                *      CMT43790
                         4382  *        ROUTINES TO CHECK VALID OPTION VALUES                   *      CMT43800
                         4383  * ***************************************************************       CMT43810
                         4384  *                                                                *      CMT43820
3392  C360 FFFE          4385  ZERONE  THI   R6,X'FFFE'                                              CMT43830
3396  033F               4386          BZR   R15               REJECT                                  CMT43840
3398  030C               4387          BR    R12               OK                                      CMT43850
339A  C560 0009          4388  TRACKS  CLHI  R6,9              NINE OR                                 CMT43860
339E  033F               4389          BER   R15                                                       CMT43870
33A0  C560 0007          4390          CLHI  R6,7              SEVEN                                   CMT43880
33A4  033F               4391          BER   R15                                                       CMT43890
33A6  030C               4392          BR    R12                                                       CMT43900
33A8  C560 0003          4393  MODES   CLHI  R6,3              NO MORE THAN 2                          CMT43910
33AC  028F               4394          BLR   R15                                                       CMT43920
33AE  030C               4395          BR    R12                                                       CMT43930
33B0  C560 0100          4396  X256    CLHI  R6,X'100'         NO MORE THAN X'FF'                      CMT43940
33B4  028F               4397          BLR   R15                                                       CMT43950
33B6  030C               4398          BR    R12                                                       CMT43960
33B8  C560 0002          4399  MIN2    CLHI  R6,2                                                      CMT43970
33BC  028C               4400          BLR   R12               LESS THAN 2 - REJECT                    CMT43980
```

SUBROUTINES

```
33BE  2301           4401          BS    X3FF                                CMT43990
33C0  4560 359A      4402  X3FF    CLH   R6,X400          NO MORE THAN X'400' CMT44000
33C4  028F           4403          BLR   R15                                 CMT44010
33C6  030C           4404          BR    R12                                 CMT44020
33C8  0866           4405  DEVCHN  LHR   R6,R6                               CMT44030
33CA  2235           4406          BZS   X3FF                                CMT44040
33CC  0755           4407          XHR   R5,R5                               CMT44050
33CE  2207           4408          BS    X3FF                                CMT44060
33D0  C560 0006      4409  SCOP    CLHI  R6,6             NO MORE THAN 5     CMT44070
33D4  028F           4410          BLR   R15                                 CMT44080
33D6  030C           4411          BR    R12                                 CMT44090
33D8  C560 0005      4412  LEVEL   CLHI  R6,5             NO MORE THAN 4     CMT44100
33DC  038C           4413          BNLR  R12                                 CMT44110
33DE  D260 1902      4414          STB   R6,INTLVL                           CMT44120
33E2  D260 1903      4415          STB   R6,INTLVL+1                         CMT44130
33E6  D260 1904      4416          STB   R6,INTLVL+2                         CMT44140
33EA  030F           4417          BR    R15                                 CMT44150
                     4418  * ************************************************************ CMT44160
```

```
                                4420  * ************************************************************          CMT44180
                                4421  *         CONSTANTS                                          *          CMT44190
                                4422  * ************************************************************          CMT44200
                                4423  *                                                            *          CMT44210
33EC  FFFF                      4424  MASK      DC    X'FFFF'                                                CMT44220
33EE  00FF                      4425  NBYTE     DC    X'FF'                                                  CMT44230
33F0  0000                      4426  DE        DC    0                                                      CMT44240
33F2  0000                      4427  EOTFLG    DC    0                                                      CMT44250
33F4  0000                      4428  ERRFLG    DC    0                                                      CMT44260
33F6  0000                      4429  MODFLG    DC    0                                                      CMT44270
33F8  0000                      4430  RTYCNT    DC    0                                                      CMT44280
33FA  0000                      4431  NXTDEV    DC    0                                                      CMT44290
33FC  0000                      4432  DEV2      DC    0                                                      CMT44300
33FE  0000                      4433  WLRS      DC    0                                                      CMT44310
3400  0000                      4434  DEVONE    DC    0                                                      CMT44320
3402  2929                      4435  CRCC      DC    X'2929'                                                CMT44330
3404  6A29                      4436  CRCCS     DC    X'6A29'                                                CMT44340
3406  0820                      4437  STOP      DC    X'0820'                                                CMT44350
      0000 3407                 4438  CLEAR     EQU   STOP+1                                                 CMT44360
3408  5070                      4439  GOWRT     DC    X'5070'                                                CMT44370
      0000 3409                 4440  GORD      EQU   GOWRT+1                                                CMT44380
340A  3811                      4441  REWD      DC    X'3811'                                                CMT44390
      0000 340B                 4442  BKSPAC    EQU   REWD+1                                                 CMT44400
340C  2122                      4443  READ      DC    X'2122'                                                CMT44410
      0000 340D                 4444  WRITE     EQU   READ+1                                                 CMT44420
340E  2313                      4445  SKIPF     DC    X'2313'                                                CMT44430
      0000 340F                 4446  SKIPR     EQU   SKIPF+1                                                CMT44440
3410  8040                      4447  DSABL     DC    X'8040'                                                CMT44450
      0000 3411                 4448  ENABL     EQU   DSABL+1                                                CMT44460
3412  C030                      4449  DISARM    DC    X'C030'                                                CMT44470
      0000 3413                 4450  WEOF      EQU   DISARM+1                                               CMT44480
3414  00FF                      4451  WDATA     DC    X'00FF',X'00FF'                                        CMT44490
3416  00FF
3418  00FF                      4452            DC    X'00FF',X'00FF'                                        CMT44500
341A  00FF
341C  0102                      4453            DC    X'0102',X'0408'                                        CMT44510
341E  0408
3420  1020                      4454            DC    X'1020',X'4080'                                        CMT44520
3422  4080
3424  7FBF                      4455            DC    X'7FBF',X'DFEF'                                        CMT44530
3426  DFEF
3428  F7FB                      4456            DC    X'F7FB',X'FDFE'                                        CMT44540
342A  FDFE
342C  AA55                      4457            DC    X'AA55',X'AA55'                                        CMT44550
342E  AA55
3430  AA55                      4458            DC    X'AA55',X'AA55'                                        CMT44560
3432  AA55
3434  F00F                      4459            DC    X'F00F',X'F00F'                                        CMT44570
3436  F00F
3438  F00F                      4460            DC    X'F00F',X'F00F'                                        CMT44580
343A  F00F
343C  0000                      4461            DC    0                                                      CMT44590
343E  0D16                      4462  SGMASK    DC    X'0D16',X'0102',X'0506'                                CMT44600
3440  0102
3442  0506
```

```
3444  4441 5441 2020 2020  4463  MSG01A   DC    C'DATA      DATA',X'D00'                                  CMT44610
344C  2020 4441 5441
3452  0D00
3454  5752 4954 5445 4E20  4464  MSG01B   DC    C'WRITTEN   READ',X'D00'                                  CMT44620
345C  2020 5245 4144
3462  0D00
3464  5245 434F 5645 5259  4465  MSG02    DC    C'RECOVERY UNSUCCESSFUL',X'0A0D'                          CMT44630
346C  2055 4E53 5543 4345
3474  5353 4655 4C20
347A  0A0D
347C  4445 5649 4345 204F  4466  MSG03    DC    C'DEVICE OFF-LINE',X'D00'                                 CMT44640
3484  4646 2D4C 494E 4520
348C  0D00
348E  454F 542C            4467  MSG04    DC    C'EOT',X'D00'                                             CMT44650
3492  0D00
3494  454F 4620            4469  MSG04A   DC    C'EOF',X'D00'                                             CMT44660
3498  0D00
349A  4144 4420 4352 4320  4469  MSG05    DC    C'ADD CRC CAPACITOR AND EXECUTE',X'D00'                   CMT44670
34A2  4341 5041 4349 544F
34AA  5220 414E 4420 4558
34B2  4543 5554 4520
34B8  0D00
34BA  4352 4320 4348 4152  4470  MSG06    DC    C'CRC CHAR =      ',X'D00'                                CMT44680
34C2  203D 2020 2020 2020
34CA  0D00
34CC  4352 4320 4348 4152  4471  MSG07    DC    C'CRC CHAR EXPT'D =      , READ =      ',X'D00'           CMT44690
34D4  2045 5850 5427 4420
34DC  3D20 2020 2020 2020
34E4  5245 4144 203D 2020
34EC  2020 2020
34F0  0D00
34F2  4D4F 4445 2020       4472  MSG08    DC    C'MODE  ',X'D00'                                          CMT44700
34F8  0D00
34FA  454E 5445 5220 4441  4473  MSG09    DC    C'ENTER DATA:',X'D00'                                     CMT44710
3502  5441 3A20
3506  0D00
3508  5455 524E 2044 4556  4474  MSG10    DC    C'TURN DEVICE OFF-LINE MOMENTARILY.',X'D00'               CMT44720
3510  4943 4520 4F46 4620
3518  4C49 4E45 204D 4F4D
3520  454E 5441 5249 4C59
3528  2E20
352A  0D00
352C  4552 524F 523A 2052  4475  LABBEL   DC    C'ERROR: READ BUFFER IN TEST PROGRAM'                     CMT44730
3534  4541 4420 4255 4646
353C  4552 2049 4E20 5445
3544  5354 2050 524F 4752
354C  414D
354E  0D00                 4476          DC    X'D00'                                                    CMT44740
3550  4552 524F 523A 2057  4477  LABELL   DC    C'ERROR: WRITE BUFFER IN TEST PROGRAM'                    CMT44750
3558  5249 5445 2042 5546
3560  4645 5220 494E 2054
3568  4553 5420 5052 4F47
3570  5241 4D20
3574  0D00                 4478          DC    X'D00'                                                    CMT44760
3576  4552 524F 523A 2052  4479  LABBEL   DC    C'ERROR: READ BUFFER IN WRITE BUFFER'                     CMT44770
```

```
357E   4541 4420 4255 4646
3586   4552 2049 4E20 5752
358E   4954 4520 4255 4646
3596   4552
3598   0000                  4480            DC     X'000'                                        CMT44780
                             4481  *  ALL TEST PROGRAM STORAGE AREA                                 CMT44790
                             4482  *                                                                CMT44800
                             4483  *                                                                CMT44810
359A   0401                  4484  X400     DC     X'401'                                         CMT44820
359C   48                    4485  STOP2    DB     X'48'                                          CMT44830
35A0                         4486           ALIGN 8                                               CMT44840
35A0   0000 0000             4487  PSWSAVE  DCY    0,0           PPF PSW SAVE AREA                CMT44850
35A4   0000 0000
35A8   0000 0000             4488  WLIM     DCY    0                                              CMT44860
35AC   0000 0000             4489           DCY    0                                              CMT44870
35B0   0000 0000             4490  RLIM     DCY    0                                              CMT44880
35B4   0000 0000             4491           DCY    0                                              CMT44890
35B8   0000 0000             4492  RSAV32   DCY    0                                              CMT44900
35BC   0000 0000             4493  WADDRS   DCY    0                                              CMT44910
35C0   0000 0000             4494  RADDRS   DCY    0                                              CMT44920
35C4   0000 0000             4495  MEMTOP   DCY    0                                              CMT44930
35C8   3FFF                  4496  LAST     DC     X'3FFF'                                        CMT44940
       0000 35C9             4497  LNZB     EQU    *-1                                            CMT44950
35CA                         4498  WBUFF    DS     X'400'                                         CMT44960
39CA                         4499  RBUFF    DS     X'402'                                         CMT44970
3DCC                         4500  TEMP     DS     2             TEMPORARY STORAGE LOC            CMT44980
3DD0                         4501           ALIGN 8                                               CMT44990
3DD0                         4502  OPTBUF   DS     6             OPTION INPUT BUFFER              CMT45000
3DD6                         4503  IOSAVE   DS     2                                              CMT45010
3DD8                         4504  INTSAV   DS     64            REGISTERS ON EXT/IMM INTERRUPT   CMT45020
3E18                         4505  SAVERTN  DS     2                                              CMT45030
3E20                         4506           ALIGN 8                                               CMT45040
3E20                         4507  RSAVE1   DS     64                                             CMT45050
3E60                         4508  RSAVE    DS     128           REGISTER SAVE AREA               CMT45060
3EE0                         4509  ERRSAVE  DS     64            REG STORAGE FOR ERROR ROUTINES   CMT45070
                             4510  *                                                                CMT45080
```

CHKSUM/M17 PUNCHER

```
                        4512  **CHKSUM                                                                  CMT45100
                        4513  * START OF CHKSUM FILE                                                    CMT45110
                        4514  *                                                                         CMT45120
                        4515  *                                                                         CMT45130
                        4516  *                                                                         CMT45140
3F20  2400              4517  $CHKSUM  LIS   R0,0          PUNCH M17 TAPE WITH CHECKSUM                 CMT45150
3F22  9510              4518           EPSR  R1,R0         SELECT REG. SET 0                            CMT45160
                        4519  *                                                                         CMT45170
3F24  C810 0A00         4520           LDAI  R1,ORIGIN1    START                                        CMT45180
3F28  2421              4521           LIS   R2,1          INCREMENT                                    CMT45190
3F2A  C830 35C9         4522           LDAI  R3,LNZB       FINAL                                        CMT45200
3F2E  2440              4523           LIS   R4,0          CHECKSUM BYTE                                CMT45210
3F30  0351 0000         4524  $GEN     LB    R5,0(R1)                                                   CMT45220
3F34  0745              4525           XAR   R4,R5                                                      CMT45230
3F36  C110 3F30         4526           BXLE  R1,$GEN                                                    CMT45240
3F3A  0240 0099         4527           STB   R4,MN+3       CHECKSUM BYTE TO BOOT LOADER                 CMT45250
                        4528  *                                                                         CMT45260
3F3E  C810 0080         4529  $TAPE    LHI   R1,X'0080'                                                 CMT45270
3F42  9E21              4530           OCR   R2,R1         DISPLAY : NORMAL MODE                        CMT45280
3F44  9444              4531           EXBR  R4,R4                                                      CMT45290
3F46  9824              4532           WHR   R2,R4         CHECKSUM BYTE TO D1                          CMT45300
3F48  9411              4533           EXBR  R1,R1                                                      CMT45310
3F4A  9501              4534           EPSR  R0,R1         HALT PROCESSOR.                              CMT45320

3F4C  D360 007A         4536  $PUNCH   LB    R6,X'7A'      GET BOUTDV (PUNCH) ADDRESS.                  CMT45340
3F50  0E60 007B         4537           OC    R6,X'7B'      START TAPE PUNCH                             CMT45350
3F54  9060              4538           SSR   R6,R0                                                      CMT45360
3F56  2081              4539           BTBS  8,1                                                        CMT45370
3F58  41F0 3F9A         4540           BAL   R15,$TAPL     PUNCH LEADER                                 CMT45380
3F5C  9411              4541           EXBR  R1,R1         (R1) = X'0080'                               CMT45390
3F5E  C830 00CF         4542           LHI   R3,X'CF'                                                   CMT45400
3F62  DA61 0000         4543  $PNCH1   WD    R6,0(R1)      PUNCH BOOT LOADER                            CMT45410
3F66  9060              4544           SSR   R6,R0                                                      CMT45420
3F68  2081              4545           BTBS  8,1                                                        CMT45430
3F6A  C110 3F62         4546           BXLE  R1,$PNCH1                                                  CMT45440
3F6E  41F0 3FA0         4547           BAL   R15,$TAPL1    PUNCH ONE-FOLD GAP.                          CMT45450
                        4548  *                                                                         CMT45460
3F72  D340 0099         4549           LB    R4,MN+3       GET CHECKSUM BYTE                            CMT45470
3F76  C810 0A00         4550           LDAI  R1,ORIGIN1    (NORMALLY X'A00')                            CMT45480
3F7A  C830 35C9         4551           LDAI  R3,LNZB                                                    CMT45490
3F7E  D351 0000         4552  $PNCH2   LB    R5,0(R1)      PUNCH PROGRAM                                CMT45500
3F82  0745              4553           XAR   R4,R5                                                      CMT45510
3F84  9A65              4554           WDR   R6,R5                                                      CMT45520
3F86  9401              4555           EXBR  R0,R1                                                      CMT45530
3F88  9820              4556           WHR   R2,R0         DATA ADDRESS TO DISPLAY.                     CMT45540
3F8A  9060              4557           SSR   R6,R0                                                      CMT45550
3F8C  2081              4558           BTBS  8,1                                                        CMT45560
3F8E  C110 3F7E         4559           BXLE  R1,$PNCH2                                                  CMT45570
3F92  41F0 3F9A         4560           BAL   R15,$TAPL     PUNCH TRAILER.                               CMT45580
3F96  4300 3F3E         4561           B     $TAPE         DISPLAY CHECKSUM, HALT PROCESSOR.            CMT45590
```

CHKSUM/M17 PUNCHER

```
3F9A  C800 0100          4563 $TAPL   LHI   R0,256      TO PUNCH BLANK LEADER          CMT45610
3F9E  2383               4564         BS    $TAPLP                                    CMT45620
3FA0  C800 0055          4565 $TAPL1  LHI   R0,85       TO PUNCH 1-FOLD GAP            CMT45630
3FA4  2701               4566 $TAPLP  SIS   R0,1                                       CMT45640
3FA6  032F               4567         BNPR  R15          RETURN                         CMT45650
3FA8  2430               4568         LIS   R3,0                                       CMT45660
3FAA  9A63               4569         XOR   R6,R3        PUNCH BLANK FRAME              CMT45670
3FAC  9D68               4570         SSR   R6,R8                                      CMT45680
3FAE  2081               4571         BTBS  8,1                                        CMT45690
3FB0  22U6               4572         BS    $TAPLP       CONTINUE.                      CMT45700
                         4573 *                                                        CMT45710
3FB2                     4574         END                                              CMT45720
```

CHKSUM/P17 PUNCHER

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

START OPTIONS: SCR,CRO,TA=16

NO CAL ERRORS
NO CAL WARNINGS
2 PASSES

CHKSUM/M17 PUNCHER

CHKSUM/M17 PUNCHER

CHKSUM/M17 PUNCHER

CHKSUM/M17 PUNCHER

```
HB2         0000 240C    2638*
HEXASC      0000 1100     543    707    717    727    731    741    744    821*   2874   2894   2897
HEXASC1     0000 110A     825*   832
HEXCHK      0000 30E0    3957   3966   4018*
HEXTAB      0000 16C4     336    754    812    825   1260   1442*
HX1         0000 167A    1770*
HX2         0000 18AA    1784*
HX3         0000 241C    2643*
HX4         0000 2688    2864*
HY1         0000 1882    1769   1772*
HY2         0000 18B2    1783   1786*
HY3         0000 2424    2642   2645*
HY4         0000 2690    2863   2866*
II          0000 1586    1078   1309*
II32        0000 15CC    1313   1317*
IMPTOP      0000 0000R
INCR        0000 167D     603   1395*
INDATA      0000 3006    3019   3096   3939*
INEND       0000 30D4    3956   4000*
INEND1      0000 3096    3965   3982*
INEND2      0000 30A8    3977   3987*
INI         0000 1A64    1579   1594   1614   1624*
INIT        0000 1942     483   1532*
INIT.1      0000 194E    1537*  1538
INITRET     0000 0D98     484*  1678
INTDEV      0000 1678    1159   1196   1213   1389*  1390
INTER31     0000 2212    2411   2416*
INTLEV      0000 17CA    1482*  1667
INTLVL      0000 1902    1234   1513*  1668   1669   4414   4415   4416
INTLVLM     0000 1732    1264   1463*
INTPSW      0000 166E    1195   1214   1381*
INTSAV      0000 30D8    1180   1187   1212   1244   4504*
INTSTA      0000 167A    1160   1197   1391*  1392   2194   2215   2224   2233   2276   2308   2328   2373   2416
                         2421   2433   2452   4342
IO          0000 0A10     151*   198    199    207    208    214    220    404    480    974   1010   1024   1057
                         1126   1171
IO.OK1      0000 0A76     202    204*
IO.OK2      0000 0A7C     205    207*
IO.OK3      0000 0A9A     212    217*
IOSAVE      0000 30D6     481    872    895   1008   1027   1055   4503*
IRGDAT      0000 182A    1490*  2679
ISITERR     0000 16A6     506    629    650    681    862    959    963   1265   1303   1430*  3699   4041   4044
                         4187   4191
JUNK1       0000 2408    2637*  2645
JUNK2       0000 2436    2651*  2653
KBINT       0000 16A2    1169   1428*  3106   3274
KBINT0      0000 140C    1111   1124*  1190
KBINT00     0000 1446    1145*  1149
KBINT0A     0000 144A    1139   1146*
KBINT0B     0000 1434    1126   1137*
KBINT0C     0000 1426    1132*  1135
KBINT1      0000 1454    1125   1150*
KBINT2      0000 147E    1163   1167*
```

CRKSUM/R17 PUNCHER

CHKSUM/M17 PUNCHER

```
LVLERR   0000 154C   1235  1258*
MACHNUM  0000 1616   1351* 1474  1475
MASK     0000 33EC   1663  1763  1890  2636  2646  2762  2820  3297  3752  3969  4424*
MAXTST   0000 16EC    457  1509*
MEATOP   0000 35C4   4495*
MESAGE   0000 1A44   1586  1608  1613  1615*
MESSAG   0000 1A4E   1561  1618*
MESSAGE  0000 1A58   1592  1621*
MICROBUS 0000 041A    156*  939
MIN2     0000 33B8   1487  4399*
MISMATCH 0000 2D8A   3597  3602  3605  3608  3617*
MM       0000 1500   1080  1321*
MM16     0000 1606   1339* 1340
MM32     0000 15F0   1328  1332*
MN       0000 0096    111* 4527  4549
MODD32   0000 166C    182   185   357   759   768  1087  1162  1178  1199  1228  1293  1312  1327
                     1351  1380* 1540  3569  3593  4266  4303
MODE     0000 17E2   1484* 1624  3879  3883
MODES    0000 33A8   1484  4393*
MODFLG   0000 33F6   1674  2253  2352  3100  3190  3277  3445  3518  3885  3888  4429*
MOVDAT1  0000 30AE   3989* 4003
MOVDATA  0000 30AA   3988* 3999
MOVDT1   0000 185C   1761* 1775
MOVDT2   0000 185E   1762* 1773
MOVDT3   0000 1862   1763* 1815
MREAD    0000 176A    375   383   386  1474* 1542  1595  1596
MREADC   0000 168E   1129  1153  1410*
MSET     0000 2FC0   3880  3882  3888*
MSG01A   0000 3444   3693  4463*
MSG01B   0000 3454   3695  4464*
MSG02    0000 3464   3915  4465*
MSG03    0000 347C   4186  4466*
MSG04    0000 348E   2241  3134  3230  4467*
MSG04A   0000 3494   3201  4468*
MSG05    0000 349A   2844  4469*
MSG06    0000 34BA   2871  2875  4470*
MSG07    0000 34CC   2891  2895  2900  4471*
MSG08    0000 34F2   3679  3691  3860  3890  4472*
MSG09    0000 34FA   3946  4473*
MSG10    0000 3508   2128  4474*
MSGPRT   0000 310E   2901  3680  3692  3694  3696  3861  3916  3947  4041*
MTDU     0000 3228   2199  2237  2278  2330  2375  2432  2799  3195  3213  3225  3239  3249  3258
                     3486  3549  3618  4089  4100  4123  4133  4163  4184*
MTESTNO  0000 16DA    511   542   544  1447*
MTNERR   0000 24C8   2692* 2698
MWRITE   0000 1776    360   368   371  1356  1368  1475* 1564  1597  1598
NBYTE    0000 33EE   1774  1893  2148  2633  2647  2794  2853  3001  3298  3307  3311  3410  3655
                     3723  3749  3807  4425*
NEXTST   0000 16B8    520   524   540  1439*
NINE     0000 1ACE   1659  1662*
NOBRK    0000 148A   1171* 3273
NOBSP    0000 225A   2294  2441*
NOBSP7   0000 2830   3029  3062*
```

CHKSUM/M17 PUNCHER

```
NOBYTE   0000 1806   1487*  2146   2999
NOCOM    0000 27FA   3045   3047*  3087
NOD4M1   0000 1CD0   1906   1908*
NOD4P    0000 15E2   1798   1800*
NOERMSG  0000 16FA    574   1452*
NOERR    0000 16A8    550    572    682   1431*  2757
NOHEX    0000 3104   4019   4023   4025   4029*
NOMSG    0000 179A    860   1478*
NOPRINT  0000 2684   2870   2877*  2902
NOREAD   0000 2104   2343   2377   2391*
NORINT   0000 1E90   2121   2137*  2434   2440
NORM     0000 167C    609   1394*
NORMAL   0000 2306   2574   2581   2584*
NORMRET  0000 2C1A   3459   3465*  3532
NOTEST   0000 2502   2750   2753   2756*
NXTDEV   0000 33FA   3325   3347   4431*
NXTMOD1  0000 1C8C   1887*  1920
NXTMOD3  0000 1EC8   2153*  2406
NXTMOD4  0000 22E0   2514*  2549
NXTMOD7  0000 276E   3007   3009*  3061
OLOC     0000 1676    742   1166   1205   1237   1299   1336   1387*  3635
OPBSP    0000 185A   1494*  2293   3028
OPRD     0000 1842   1492*  2156   2342   3015   3035   3062
OPSKIP   0000 1866   1495*  2392
OPSW     0000 1672    739   1165   1204   1298   1335   1385*  3634
OPS432   0000 1670   1183   1384*
OPT      0000 175E    285    311    352    390   1472*
OPT555   0000 0C9E    358    392*
OPTBUF   0000 3300    256    257    258    271    279    290   4502*
OPTCMD   0000 0BA4    310*
OPTCMD1  0000 0BA6    311*   315
OPTCMD10 0000 0CA2    394*   398
OPTCMD11 0000 0CDC    413*   417
OPTCMD12 0000 0CEA    406    409    418*
OPTCMD2  0000 0BC8    321*   347
OPTCMD3  0000 0BCE    323*   342
OPTCMD4  0000 0BD4    325*
OPTCMD5  0000 0BE6    327    330*
OPTCMD6  0000 0BF6    332    335*
OPTCMD7  0000 0C02    324    338*
OPTCMD71 0000 0C14    343*
OPTCMD8  0000 0C22    308    351*
OPTCMD9  0000 0CA0    391    393*   422
OPTEND   0000 18D2   1505*
OPTEND2  0000 18D2    421   1504*
OPTIN    0000 0AE6    244*   265    415    441    455    475    594    642    998   1361   1375   1623   1686
                     3205   3232   3286   3383   3641   4109   4175   4192
OPTIN1   0000 0AEA    246*   425    964   1254   1267   1305
OPTION   0000 18D2    301    305   1506*
OPTRTN   0000 0B98    307*
OPTVAL   0000 1066    433    460    751*
OPTVAL0  0000 106C    753*   777
OPTVAL1  0000 106E    754*   757
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OPTVAL2	0000 107A	755	759*											
OPTVAL3	0000 1088	765*	773											
OPTVAL4	0000 10A0	767	774*											
OPTVAL5	0000 1084	760	763*											
OPTVAL6	0000 1086	762	764*											
OPTVAL7	0000 109C	769	772*											
OPTVAL8	0000 109E	771	773*											
OPSOF	0000 1872	1496*	2246	3017										
OPART	0000 184E	1493*	2154	3013	3056									
ORIGIN1	0000 0A00	107	136*	4520	4550									
ORIGIN2	0000 0A04	137*												
ORIGIN3	0000 0A08	140*												
ORIGIN4	0000 0A0C	141*												
OTC.	0000 11C8	898*	912											
OTC.0	0000 11CC	899*	904	913										
OTC.1	0000 11E0	902	906*											
OTC.4	0000 1204	919*	924											
OUT0	0000 121C	900	917	920	922	929*								
OUT1	0000 1220	894*	928	930*										
OUTCHR	0000 113A	251	253	312	317	329	334	337	361	366	376	381	395	400
		412	424	636	813	856	866	875	879	890	894*	3705	3805	4030
OUTCHR2	0000 11F6	897	905	910	914*									
OUTCRP	0000 2F26	3797*	3812											
P1	0000 113A	840	843*											
P2	0000 1160	856*	858											
P3	0000 116C	844	860*											
PASFLG	0000 167E	229	984	1035	1045	1138	1397*							
PASFLG2	0000 1680	210	1012	1398*										
PASLADR	0000 0A12	152*												
PAUSE	0000 1224	898	903	915	931*									
PAUSE0	0000 298C	3201*	3219											
PAUSE1	0000 29C4	3203*	3208											
PREOT	0000 2908	3133*	3198	3216										
PRIND	0000 2E6A	3686	3700*											
PRINT	0000 1128	240	548	575	593	630	698	709	719	733	746	838*	961	1266
		1616	1619	1622	2129	2242	2845	2876	3135	3202	3231	4042	4188	
PRINT2	0000 117A	861	865*	870										
PRINT3	0000 118A	868	871*	891										
PRINT3A	0000 119C	874	878*											
PRINT3B	0000 119E	877	879*											
PRINT5	0000 11A2	842	863	880*										
PROC00	0000 184A	1754*	1817	1823										
PROC01	0000 1BC2	1791*	1832											
PROC02	0000 1C08	1811*	1839											
PROC03	0000 1BD4	1796*	1836											
PROC11	0000 1CB0	1899*	1932											
PROC12	0000 1CC2	1904*	1936											
PROC13	0000 1CF4	1918*	1939											
PROC21	0000 1D70	1990*	2046											
PROC22	0000 1DFE	2032*	2056											
PROC24	0000 1DEE	2027*	2049											
PROC41	0000 2320	2532*	2569											
PROC42	0000 233A	2539*	2579	2586										

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PROC43    0000 2344    2540   2542*
PROC51    0000 2478    2668*  2696
PROC52    0000 248C    2673*  2700
PROCe1    0000 2634    2890*  2911
PROCe2    0000 2672    2857*  2916
PRREAD    0000 0C64     374*   379
PRWRITE   0000 0C32     359*   364
PSA       0000 0A22     167*  2141   2167   3110   4068
PSA2      0000 0424     166*   178    186    247    552    563    651    677   1095   1210   1300   3141
PSAMSG    0000 171E     745   1459*
PSAVE     0000 35A0     105   1105   4487*
PURETOP   0000 0000R
SMSG      0000 175A     960   1466*
SUEST     0000 125A     254    958*
R0        0000 0000      77*   214    215    218    236    237    255    256    257    258    270    271    326
                        367   370    382    385    402    404    405    451    452    453    454    480    481
                        487   491    493    497    500    501    505    505    506    507    508    509    518
                        518   519    520    525    526    527    530    533    541    549    549    550    551
                        553   564    565    566    567    568    572    604    605    605    606    607    608
                        612   613    625    625    626    631    639    646    649    649    650    652    653
                        655   656    661    667    678    704    714    724    728    738    791    796    798
                        804   805    816    821    822    833    838    846    847    860    862    881    886
                        895   896    898    901    907    919    925    926    936    939    941    943    944
                        962   962    963    968    970    971    978    979    988    989    994   1000   1001
                       1002  1010   1011   1012   1024   1025   1026   1032   1033   1034   1038   1043   1044
                       1047  1048   1049   1057   1058   1067   1067   1068   1072   1074   1076   1111   1112
                       1126  1127   1151   1165   1180   1187   1201   1204   1212   1242   1244   1300   1301
                       1342  1343   1344   1532   1537   1684   2004   2197   2238   2288   2311   2337   2382
                       2410  2415   2436   2438   2535   2571   2575   2582   2692   2811   2814   2817   2848
                       2872  2892   2898   3100   3101   3381   3399   3455   3490   3498   3528   3550   3615
                       3633  3633   3634   3638   3639   3677   3687   3688   3700   3709   3723   3727   3732
                       3803  3834   3836   3838   4068   4069   4071   4073   4074   4075   4107   4138   4173
                       4345  4368   4517   4518   4534   4538   4544   4555   4556   4557   4563   4565   4566
R1        0000 0001      78*   107    119    120    122    127    176    176    177    184    184    185    186
                        189   198    201    203    207    218    219    220    222    224    226    227    248
                        259   259    268    271    277    279    280    285    287    292    299    301    429
                        436   440    488    489    494    495    510    511    512    513    538    552    553
                        556   557    563    564    576    577    586    589    598    599    600    601    607
                        610   617    618    619    677    678    686    687    688    689    705    715    725
                        729   739    742    792    795    825    841    845    849    872    873    901    903
                        907   908    909    911    915    918    919    921    923    926    929    971    972
                        979   980    986    989    994    995   1008   1009   1010   1011   1014   1015   1017
                       1017  1019   1025   1026   1027   1045   1054   1055   1056   1057   1058   1064   1064
                       1068  1069   1070   1072   1073   1076   1077   1087   1109   1110   1110   1112   1113
                       1113  1115   1119   1166   1202   1205   1211   1338   1339   1354   1355   1356   1363
                       1367  1368   1533   1536   1761   1762   1773   1812   1814   1887   1918   1985   1990
                       1996  1996   1997   2019   2027   2033   2397   2400   2459   2467   2772   2782   2873
                       2893  2896   3022   3025   3032   3034   3041   3050   3141   3142   3144   3276   3451
                       3452  3461   3463   3465   3470   3484   3493   3524   3525   3536   3547   3572   3573
                       3576  3577   3578   3579   3596   3601   3604   3607   3653   3681   3681   3682   3683
                       3685  3698   3698   3699   3747   3758   3769   3781   3792   3915   3945   3980   4092
                       4098  4098   4104   4110   4125   4131   4131   4136   4140   4153   4161   4161   4170
                       4176  4265   4268   4278   4314   4338   4518   4520   4524   4526   4529   4530   4533
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			4533	4534	4541	4541	4543	4546	4550	4552	4555	4559			
R10	0000 000A		87*	1194	1194	1195	1214	1232	1233	1234	1260	1260	1261	1321	1321
			1333	1334	1757	1884	1994	2152	2525	2632	2633	2649	2664	2679	2775
			2783	2833	2999	3000	3001	3104	3113	3655	3671	3749	3771	3780	3794
			4096	4129	4159										
R11	0000 000B		88*	1759	1759	1761	1812	2131	2178	2189	2211	2220	2229	2260	2266
			2270	2304	2323	2359	2365	2367	2398	2401	2429	2447	2464	2472	3120
			3160	3184	3409	3409	3413	3416	3419	3420	3422	3457	3473	3482	3530
			3539	3545	3613	3616	3620	3622	3624	4075	4232	4243	4270		
R12	0000 000C		89*	254	269	278	289	432	435	445	462	499	758	1657	1658
			1660	1662	1663	1667	1668	1669	1670	1670	1671	1672	1673	1674	1675
			1676	1677	1787	1792	1895	1900	1986	2028	2262	2361	2399	2402	2465
			2473	2528	2533	2651	2666	2671	2676	2682	2786	2796	2836	2855	3023
			3042	3122	3162	3186	3410	3414	3417	3418	3421	3422	3462	3464	3466
			3478	3491	3497	3499	3541	3551	4271	4322	4350	4387	4392	4395	4398
			4400	4404	4411	4413									
R13	0000 000D		90*	1742	1744	1748	1801	1816	1880	1909	1919	1991	2008	2014	2021
			2040	2119	2153	2166	2192	2245	2264	2273	2291	2300	2326	2340	2347
			2351	2363	2370	2405	2443	2450	2543	2548	2654	2660	2673	2788	2842
			2901	2905	2998	3020	3026	3030	3037	3039	3051	3060	3064	3066	3076
			3078	3188	3235	3247	3299	3393	3395	3441	3474	3476	3492	3516	3517
			3609	3680	3692	3694	3696	3782	3839	3861	3892	3909	3916	3947	3957
			3966	4028	4031	4046	4091	4111	4124	4141	4177	4200	4209	4219	4230
			4241	4252	4264	4302	4335	4357	4360	4376	4378				
R14	0000 000E		91*	308	344	433	436	438	460	465	469	775	778	784	1275
			1295	1298	1314	1324	1329	1332	1334	1335	1740	1741	1743	1746	1750
			1758	1791	1796	1799	1807	1821	1827	1829	1830	1833	1834	1837	1878
			1879	1881	1882	1894	1899	1904	1907	1914	1927	1929	1930	1933	1934
			1937	1977	1978	1980	1981	1982	1992	2010	2016	2023	2032	2043	2044
			2047	2053	2054	2116	2117	2132	2149	2150	2165	2179	2190	2212	2221
			2230	2271	2281	2289	2305	2324	2368	2383	2386	2389	2430	2448	2512
			2513	2515	2518	2519	2532	2536	2537	2541	2553	2554	2566	2567	2576
			2577	2627	2628	2630	2634	2657	2658	2659	2662	2668	2670	2678	2681
			2684	2760	2763	2764	2771	2792	2821	2822	2831	2832	2840	2851	2909
			2996	2997	3004	3005	3006	3008	3019	3021	3033	3046	3049	3074	3086
			3096	3112	3126	3131	3132	3133	3143	3153	3166	3171	3193	3211	3223
			3229	3237	3246	3256	3284	3285	3314	3331	3369	3377	3379	3380	3398
			3401	3424	3684	3736	3759	3816	3845	3847	3862	3912	3918	3940	3942
			3981	4071	4078	4202	4211	4233	4244	4254	4286	4316	4339	4359	4362
R15	0000 000F		93*	240	260	438	444	485	485	486	752	753	754	756	764
			765	813	894	997	999	1276	1296	1299	1315	1325	1330	1336	1351
			1540	1562	1562	1593	1593	1685	1765	1766	1778	1779	2005	2129	2130
			2200	2242	2258	2259	2260	2261	2262	2263	2338	2357	2358	2359	2360
			2361	2362	2439	2520	2521	2522	2523	2524	2555	2556	2557	2558	2559
			2638	2639	2640	2652	2677	2683	2693	2695	2699	2765	2766	2767	2768
			2769	2777	2778	2779	2780	2812	2823	2824	2825	2826	2827	2845	2858
			2859	2860	2861	2874	2876	2894	2897	2899	2908	2915	3107	3118	3119
			3120	3121	3122	3123	3135	3158	3159	3160	3161	3162	3163	3182	3183
			3184	3185	3186	3187	3202	3203	3231	3240	3259	3304	3305	3306	3307
			3308	3309	3310	3311	3312	3313	3347	3350	3382	3400	3411	3412	3413
			3414	3415	3471	3472	3473	3475	3478	3479	3537	3538	3539	3540	3541
			3542	3546	3582	3635	3640	3657	3658	3659	3660	3661	3662	3663	3664
			3665	3669	3670	3671	3672	3673	3674	3678	3689	3701	3705	3710	3711

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			3724	3725	3726	3728	3729	3730	3731	3733	3734	3735	3753	3754	3755
			3756	3770	3771	3774	3775	3777	3798	3799	3800	3801	3802	3804	3805
			3806	3811	3813	3814	3846	3859	3891	3911	3917	3948	3953	3962	3970
			3971	3972	3973	3974	3979	3982	3983	3984	3985	3986	3989	3990	3991
			3992	3993	3994	3995	3996	3997	4030	4042	4045	4070	4072	4077	4103
			4106	4135	4139	4169	4174	4188	4220	4281	4386	4389	4391	4394	4397
			4403	4410	4417	4540	4547	4560	4567						
R2		0000 0002	79*	103	123	129	178	179	181	182	188	190	199	204	206
			208	209	213	214	215	222	223	224	225	232	232	233	247
			248	305	306	310	310	311	313	314	320	323	345	352	390
			394	396	401	420	421	524	527	528	535	537	538	539	540
			542	544	545	554	555	556	602	603	606	608	609	619	647
			651	652	657	663	668	676	681	682	706	716	726	730	740
			743	793	805	806	808	810	814	829	830	843	974	975	978
			984	988	991	991	1065	1115	1117	1117	1118	1129	1130	1132	1133
			1140	1141	1146	1153	1154	1156	1159	1167	1171	1172	1188	1189	1196
			1210	1211	1213	1219	1241	1282	1290	1291	1293	1301	1309	1310	1312
			1322	1323	1327	1344	1535	1754	1772	1885	1983	2460	2468	2871	2891
			2895	3002	3139	3169	3209	3270	3275	3276	3453	3526	3580	3589	3619
			3704	3704	3706	3707	3795	3795	3800	3807	3809	3951	3951	3975	3976
			3987	3987	3991	3998	4000	4000	4002	4002	4093	4095	4126	4128	4156
			4158	4279	4315	4521	4530	4532	4556						
R3		0000 0003	80*	108	109	110	200	201	204	220	221	233	286	286	290
			294	296	307	320	345	393	397	466	470	634	637	782	785
			785	794	822	823	824	826	831	855	857	1066	1071	1075	1078
			1079	1082	1083	1093	1094	1107	1108	1114	1118	1124	1130	1133	1134
			1141	1146	1147	1154	1160	1188	1197	1536	1755	1813	1886	1984	1995
			1997	1999	2020	2461	2469	2794	2853	2859	2865	3003	3140	3170	3210
			3454	3527	3583	4094	4127	4157	4282	4306	4307	4310	4311	4312	4313
			4522	4542	4551	4568	4569								
R4		0000 0004	81*	112	113	114	116	124	126	227	228	229	230	230	250
			252	261	263	264	266	273	275	279	311	316	321	322	325
			328	333	335	336	336	338	339	340	341	360	365	375	380
			394	399	411	414	416	423	431	434	449	471	635	754	766
			774	776	809	810	811	812	812	825	826	827	828	828	829
			851	851	852	853	854	865	867	871	876	878	889	925	935
			936	941	943	944	952	953	1037	1039	1080	1081	1085	1092	1104
			1105	1106	1132	1140	1143	1143	1156	1162	1167	1172	1534	1537	1539
			1739	1877	1976	2115	2141	2142	2144	2145	2167	2168	2170	2171	2462
			2470	2511	2626	2759	2995	3105	3106	3110	3111	3142	3144	3270	3271
			3273	3274	3325	3456	3480	3498	3529	3543	3615	3703	3796	3939	3941
			3943	3944	4321	4523	4525	4527	4531	4531	4532	4549	4553		
R5		0000 0005	82*	114	116	117	117	119	120	121	124	126	132	239	288
			290	318	318	319	331	331	343	343	346	357	359	359	360
			362	363	368	371	374	374	375	377	378	383	386	401	457
			461	547	574	592	628	629	632	640	697	708	718	732	745
			809	865	869	960	1095	1096	1097	1098	1138	1199	1207	1207	1216
			1216	1217	1221	1223	1231	1234	1264	1265	1615	1618	1621	1624	1626
			1752	1752	1753	1789	1789	1790	1794	1794	1795	1797	1809	1809	1810
			1824	1889	1890	1892	1893	1897	1897	1898	1902	1902	1903	1905	1916
			1916	1917	1924	1988	1988	1989	2025	2025	2026	2030	2030	2031	2038
			2120	2125	2126	2128	2137	2138	2142	2145	2146	2147	2148	2154	2156
			2161	2162	2168	2171	2175	2176	2184	2185	2206	2207	2218	2219	2227

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			2228	2241	2246	2253	2254	2256	2257	2293	2298	2299	2316	2317	2342
			2352	2353	2355	2356	2384	2387	2392	2427	2428	2441	2442	2463	2471
			2516	2516	2517	2530	2530	2531	2539	2545	2550	2551	2564	2584	2584
			2585	2646	2647	2749	2751	2752	2754	2756	2757	2761	2762	2776	2779
			2803	2819	2820	2828	2838	2838	2839	2844	2846	2847	2848	2866	2867
			2875	2877	2878	2878	2879	2880	2881	2883	2884	2885	2886	2893	2900
			2903	3010	3013	3015	3017	3028	3035	3044	3047	3056	3062	3072	3092
			3094	3097	3098	3099	3099	3103	3104	3108	3109	3111	3134	3190	3191
			3201	3230	3277	3278	3297	3298	3300	3300	3301	3302	3303	3529	3529
			3330	3345	3370	3370	3371	3445	3446	3518	3519	3569	3593	3595	3596
			3600	3601	3603	3604	3606	3607	3654	3666	3679	3690	3691	3693	3695
			3697	3702	3726	3727	3728	3731	3732	3733	3751	3752	3755	3773	3776
			3776	3779	3780	3801	3860	3879	3881	3883	3885	3886	3888	3889	3890
			3904	3905	3907	3908	3913	3913	3914	3915	3946	3959	3960	3968	3969
			3973	3985	3995	4041	4043	4043	4044	4069	4074	4154	4154	4155	4186
			4187	4190	4190	4191	4299	4300	4300	4301	4303	4319	4319	4320	4333
			4334	4407	4407	4524	4525	4552	4553	4554					
R5=EX	0000	1008	369	372	384	387	403	633	641	804*	3701	3710	3804		
R5X	0000	10E4	809*	815											
R5X1	0000	10F2	813*												
R5X2	0000	10FA	807	816*											
R6	0000	0006	83*	111	121	128	209	210	211	211	287	288	295	389	392
			407	408	410	410	440	443	461	463	468	751	751	761	764
			770	783	786	1217	1219	1223	1225	1228	1237	1238	1240	1250	1251
			1256	1259	1355	1358	1360	1362	1366	1367	1371	1374	1542	1543	1543
			1545	1546	1546	1548	1549	1551	1553	1553	1555	1556	1558	1560	1580
			1583	1585	1595	1599	4395	4388	4390	4393	4396	4399	4402	4405	4405
			4409	4412	4414	4415	4416	4536	4537	4538	4543	4544	4554	4557	4569
			4570												
R7	0000	0007	84*	130	131	132	458	466	473	1353	1353	1354	1362	1363	1370
			1373	1582	1583	1585	1586	1587	1596	1605	1610				
R8	0000	0008	85*	122	123	128	129	459	470	474	1597	1601	1760	1760	1764
			1766	1767	1768	1770	1771	1772	1774	1777	1779	1780	1781	1782	1784
			1785	1796	1800	1811	1811	1886	1889	1908	2007	2007	2012	2013	2013
			2018	2251	2290	2318	2339	2349	2390	2527	2542	2635	2635	2637	2639
			2641	2643	2644	2645	2650	2650	2653	2665	2665	2669	2680	2680	2685
			2773	2778	2781	2785	2795	2795	2835	2841	2854	2854	2857	2862	2864
			2869	2882	3012	3012	3053	3054	3113	3124	3137	3151	3164	3167	3656
			3656	3660	3663	3666	3712	3750	3750	3751	3754	3757	3775	3776	3778
			3797	3797	3810	3950	3950	3952	3954	3961	3963	3972	3978	3984	3988
			3994	4097	4097	4105	4130	4130	4137	4160	4160	4171	4332	4332	4347
			4348	4570											
R9	0000	0009	86*	759	768	946	947	949	950	952	1035	1169	1170	1178	1552
			1564	1565	1565	1567	1568	1568	1570	1571	1573	1575	1575	1577	1578
			1580	1582	1586	1589	1591	1598	1756	1883	1993	2151	2526	2631	2648
			2774	2784	2834	3654	3748	3772	3793	3949	4095	4128	4158	4266	
RABEND	0000	2CE2	3547*	3590											
RADDRS	0000	35C0	1358	1370	1371	1545	1549	1551	1556	3309	4494*				
RBUFF	0000	39CA	1548	1555	1558	1785	2965	4499*							
RCONLY	0000	2654	2829	2849*											
RCOVR	0000	1C3C	1825	1829*											
RCOVR1	0000	1D12	1925	1929*											
RCOVR2	0000	1E1C	2039	2043*											

CHKSUM/M17 PUNCHER

CHKSUM/M17 PUNCHER

STA09A	0000 1FF8	2214	2223	2232	2245*									
STA06	0000 2040	2269*	2466											
STA06A	0000 2086	2287	2290*											
STA07	0000 20D2	2310	2316*											
STA08	0000 2126	2327	2336	2339*										
STA09	0000 217E	2366*	2474											
STA11	0000 335A	4341	4344	4347*										
STAERR	0000 1F4E	2198*	2240	2312	4346									
STAERR1	0000 1FD4	2217	2226	2436*										
STA4SC	0000 170C	718	1455*											
START	0000 0A66	186	198*											
START1	0000 0A30	136	176*	193										
START2	0000 0A46	139	184*	195										
START3	0000 0A5E	140	193*											
START4	0000 0A62	141	195*											
STAT	0000 0005	96*	1683	1802	1803	1910	2001	2002	2050	2051	2194	2195	2198	2215
		2216	2224	2225	2233	2234	2236	2239	2267	2274	2276	2277	2279	2284
		2286	2308	2309	2328	2329	2331	2333	2335	2371	2373	2374	2376	2378
		2380	2416	2421	2422	2433	2435	2452	2453	2570	2573	2580	2690	2697
		2798	2800	2912	2913	3081	3082	3084	3127	3129	3145	3147	3194	3197
		3199	3212	3215	3217	3224	3227	3238	3241	3243	3248	3250	3253	3254
		3257	3260	3262	3280	3374	3375	3396	3397	3417	3419	3442	3443	3460
		3485	3487	3489	3494	3495	3548	3584	3587	3610	3611	3617	3621	3623
		3840	3842	3844	4076	4088	4090	4099	4101	4122	4132	4162	4164	4166
		4185	4217	4218	4283	4342	4343	4369						
STER02	0000 1F4A	2197*	2454											
STER06A	0000 207E	2285	2288*											
STER08	0000 211E	2334	2337*											
STER09A	0000 21B4	2379	2382*											
STERR2	0000 1F56	2200*	2417											
STOP	0000 3406	1634	3282	3571	3586	3592	4184	4269	4285	4305	4318	4437*	4438	
STOP2	0000 359C	3575	3599	4273	4309	4485*								
SWAP	0000 289C	2670	2840	3409*										
SWP1	0000 2BB2	3416*	3423											
TAPEND	0000 1D74	1991*	2042											
TAPEND4	0000 2350	2545*	2565											
TELAST	0000 1998	1547	1554	1558*										
TELAST0	0000 19CA	1557	1563	1573*										
TELAST1	0000 19F6	1569	1589*											
TEMP	0000 3DCC	322	325	335	338	340	3690	3697	4500*					
TEST	0000 175E	307	429	452	454	473	474	488	494	530	533	1473*		
TEST0	0000 1B10	1511	1739*											
TEST01	0000 1B18	1739	1741*											
TEST1	0000 1C68	1511	1877*											
TEST11	0000 1C70	1877	1879*											
TEST2	0000 1D3E	1511	1976*											
TEST21	0000 1D46	1976	1978*											
TEST3	0000 1E52	1511	2115*											
TEST31	0000 1E5A	2115	2117*											
TEST4	0000 22D4	1512	2511*											
TEST41	0000 22DC	2511	2513*											
TEST5	0000 23E0	1512	2626*											
TEST51	0000 23E8	2626	2628*											

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```
TEST6     0000 24EC    1512   2749*
TEST61    0000 2514    2761*  2810
TEST62    0000 25D6    2604   2807   2814*
TEST63    0000 25E8    2759   2815   2819*
TEST7     0000 273C    1512   2995*
TEST71    0000 2744    2995   2997*
TESTAA    0000 1A0A    1566   1595*
TESTAA0   0000 196A    1545*
TESTAA1   0000 19AC    1544   1550   1564*
TESTAA2   0000 1960    1542*
TESTAB    0000 1980    1541   1551*
TESTAB1   0000 19E0    1576   1580*
TESTOP    0000 0032     430    449*
TESTS     0000 19F2     556   1511*
TIME      0000 0A1E     165*   794   1539   4094   4127
TIMEOUT   0000 3122    2132   2179   2190   2212   2221   2230   2271   2305   2324   2368   2430   2448   4068*
                       4316   4339
TIMER     0000 10BE     791*   797   1238   4072
TIMVAL    0000 18C6    1503*  1532
TIMXT     0000 1006     799*  1240
TITLE     0000 1914     239   1516*
TOTAL     0000 1680     597    599    601    632   1435*
TOTERR    0000 16B2     598    604    640    686    688  1436*
TOTMSG    0000 16EA     628   1451*
TRACK     0000 17EE    1485*  1657   2751
TRACKS    0000 339A    1485   4388*
TRYDUM    0000 21C6    2385   2387*
TRYRD     0000 2132    2332   2342*  2451   2455
TSA       0000 2B02    3311*
TSB       0000 2AF2    3307*
TSLONGA   0000 2AEA    3305*
TSLONGB   0000 2AFA    3309*
TSTBRK    0000 1274     419    546    570    588    860    968*  2130   2780   3240   3259   3657   3756   3777
                       3806   3891   3911   3917   3948   3997   4045   4070   4103   4135   4169   4220
TSTBRK1   0000 12BC     985    994*
TSTBRK2   0000 12C4     982    993    997*
TSTBRK3   0000 12D0     973    987    992   1000*
TSTBRK4   0000 12A2     976    983*
TSTBRK5   0000 1294     977*   981
TSTDU     0000 12DE     584    623    679    839    899    916   1008*
TSTDU1    0000 12FE    1013   1016   1019*
TSTEND    0000 0E5E     562*  2758   3344   3346
TSTINIT   0000 2AC8    1741   1879   1978   2117   2513   2628   2763   2821   2997   3296*
TSTMOD    0000 2FAE    1816   1919   2405   2548   3060   3883*
TSTMSG    0000 16D4     547   1446*
TSTOP1    0000 0D4A     450    457*
TSTOP2    0000 0D52     460*   472
TSTOP3    0000 0D68     464    468*
TSTOP4    0000 0D72     467    471*
TSTSUP    0000 2B10    1740   1878   1977   2116   2512   2627   2760   2996   3325*
TTYGET    0000 1326    1037*
UNARY     0000 10B0     465    469    782*
UNARY1    0000 10B2     783*   787
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```
VARFIL   0000 1C8E   1888*  1918
VARREC   0000 1C90   1889*  1908
W1EXIT   0000 3222   4165   4176*
W2EXIT   0000 318E   4102   4110*
W3EXIT   0000 31CE   4134   4140*
WABEND   0000 2C50   3484*  3591
WADDRS   0000 358C   1360   1373   1374   1552   1567   1571   1578   3305   4493*
WAIT1    0000 31D4   1742   1880   2119   2153   2192   2450   2998   4153*  4376   4378
WAIT2    0000 3146   1744   1748   1801   1909   1991   2008   2014   2021   2040   2166   2245   2264   2291
                     2300   2319   2340   2347   2363   2443   2543   2654   2660   2673   2788   2842   2905
                     3020   3026   3030   3037   3039   3051   3064   3066   3076   3078   3393   3441   3517
                     3909   4088*  4302   4335
WAIT3    0000 3194   2273   2326   2370   3395   3492   3609   3839   4122*
WASDU    0000 16AC    237    509    598    626    841    843    852    929   1433*
WASDU1   0000 16AE    486    586    854   1434*
WBUFF    0000 35CA   1570   1573   1577   1589   1771   2644   4498*
WCON7    0000 27A8   3025*  3075
WDATA    0000 3414   1762   1814   4451*
WEOF     0000 3413   1806   1913   2210   2292   2544   2655   2674   2789   2843   3027   3079   3372   4201
                     4450*
WEOF02   0000 1BE6   1801*  1838
WEOF12   0000 1CD4   1909*  1938
WEOT     0000 2C0A   3444   3460*
WEOT7    0000 285A   3073   3076*
WER51    0000 24D4   2691   2695*
WERLS    0000 23BA   2576*  2583
WFILB    0000 28EC   3124*
WFILS    0000 2918   3125   3130   3137*
WLIM     0000 35A8   1765   2259   2261   2461   2521   2523   2638   2777   3119   3121   3306   3308   3412
                     3452   3472   3475   3662   3725   3729   3753   3971   3983   3990   3993   4488*
WLRS     0000 33FE   1675   2517   2545   2551   2571   4433*
WREC3    0000 2006   2252*  2290
WRITE    0000 340D   2265   2459   3139   3453   3481   4231   4444*
WRTBLK   0000 326C   3126   4230*
WRTBRD   0000 2C22   3447   3470*
WRTEND   0000 208A   2283   2291*
WRTER0   0000 1C2A   1788   1824*
WRTER1   0000 1D00   1896   1924*
WRTER2   0000 1E0A   1987   2038*
WRTER4   0000 238C   2529   2564*
WRTER51  0000 24C2   2667   2690*
WRTER52  0000 24DC   2672   2697*
WRTER6   0000 2708   2787   2837   2903*
WRTER71  0000 284C   3024   3072*
WRTERR2  0000 2C64   3488   3490*
WRTFIL   0000 279E   3022*  3057
WRTQ13   0000 2072   2280   2284*
WRTPI    0000 2B72   3376   3381*
WRTREC   0000 2BCC   1787   1895   1986   2528   2651   2666   2671   2786   2836   3023   3441*
WSRL     0000 23CA   2572   2580*
WSTORE   0000 1634   1357   1360*
WSTORE1  0000 165E   1369   1373*
WX11     0000 31EC   4161*  4171
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```
WX12      0000 31EE      4162*  4170
WX13      0000 320A      4167   4170*
WX21      0000 3162      4098*  4105
WX22      0000 3164      4099*  4104
WX31      0000 31AE      4131*  4137
WX32      0000 31B0      4132*  4136
X256      0000 33B0      1489   1490   4396*
X3FF      0000 33C0      1486   1488   4401   4402*  4406   4408
X400      0000 359A      4402   4484*
XDEV      0000 330E      4308   4314*
XI1       0000 14EC      1217*  1222
XI16      0000 14A2      1097   1187*
XI16A     0000 14EA      1208   1216*
XI2       0000 14FC      1220   1223*
XI3       0000 151E      1229   1237*
XI32      0000 14B0      1074   1114   1193*
XI32A     0000 14CC      1200   1204*
XI4       0000 1534      1239   1241   1244*
XI5       0000 1538      1243   1245*
XIERR     0000 153C      1218   1224   1250*
XIEXIT    0000 153A      1225   1246*
XMOD32    0000 32FA      4304   4309*
ZERO1     0000 136A      1068*  1069
ZERO2     0000 137A      1072*  1073
ZERO3     0000 138A      1076*  1077
ZERONE    0000 3392      1477   1478   1483   1491   1492   1493   1494   1495   1496   1497   1498   1499   1500
                         1501   4385*
```

TEST 0 BASIC CONFIDENCE TEST

```
181C  41D0 31D4          1742           BAL   R13,WAIT1          WAIT FOR NMTN=1                CMT17420
1820  41E0 2B4A          1743           BAL   R14,FSTEOF         WRITE & SENSE EOF              CMT17430
1824  41D0 3146          1744           BAL   R13,WAIT2                                       CMT17440
1828  0E60 3403          1745           OC    DEV,BKSPAC         CHECK BACKSPACE FUNCTION       CMT17450
182C  41E0 2F76          1746           BAL   R14,SENS03         CHECK FOR EOF                  CMT17460
1830  4300 2328          1747           B     CHKEND1                                         CMT17470
1834  41D0 3146          1748  REOF01   BAL   R13,WAIT2                                       CMT17480
1838  0E60 3400          1749           OC    DEV,READ           READ OVER EOF                  CMT17490
183C  41E0 2F70          1750           BAL   R14,SENS02         EOF SENSED?                    CMT17500
1840  4300 1C1E          1751           B     EOFER01            NO - READ EOF RETRY            CMT17510
1844  0755               1752           XHR   R5,R5                                           CMT17520
1846  4050 33F8          1753           STH   R5,RTYCNT                                       CMT17530
184A  2422               1754  PROC00   LIS   R2,2                                          CMT17540
184C  2436               1755           LIS   R3,6                                          CMT17550
184E  2491               1756           LIS   R9,1                                          CMT17560
1850  48A0 1800          1757           LH    R10,RECFIL+6                                  CMT17570
1854  41E0 2E96          1758           BAL   R14,RESET          SET BUFFER LIMITS              CMT17580
1858  078B               1759           XHR   R11,R11                                         CMT17590
185A  0788               1760           XHR   R8,R8                                           CMT17600
185C  081B               1761  MOVDT1   LHR   R1,R11            GENERATE 256 BYTE RECORD       CMT17610
185E  4841 3414          1762  MOVDT2   LH    CHAR,WDATA(R1)     FROM 8 BYTE DATA BLOCKS        CMT17620
1862  4440 33EC          1763  MOVDT3   NH    CHAR,MASK          BY COPYING THE BLOCK INTO      CMT17630
1866  D080 3E20          1764           STM   R8,RSAVE1                                       CMT17640
186A  D1F0 35A8          1765  HA1      LM    R15,WLIM                                        CMT17650
186E  0A8F               1766           AHR   R8,R15                                          CMT17660
1870  4048 0000          1767           STH   CHAR,0(R8)                                      CMT17670
1874  D180 3E2C          1768           LM    R8,RSAVE1                                       CMT17680
1878  2305               1769           BS    HY1                                             CMT17690
187A  D180 3E20          1770  HX1      LM    R8,RSAVE1                                       CMT17700
187E  4048 35CA          1771           STH   CHAR,WBUFF(R8)                                  CMT17710
1882  0A82               1772  HY1      AHR   R8,R2                                           CMT17720
1884  C110 185E          1773           BXLE  R1,MOVDT2                                       CMT17730
1888  4580 33EE          1774           CLH   R8,NBYTE                                        CMT17740
188C  4280 185C          1775           BL    MOVDT1                                          CMT17750
1890  C040 C3C3          1776           LHI   CHAR,X'C3C3'       DELIMITER CHARACTER            CMT17760
1894  D080 3E20          1777           STM   R8,RSAVE1                                       CMT17770
1898  D1F0 35B0          1778  HA2      LM    R15,RLIM                                        CMT17780
189C  0A8F               1779           AHR   R8,R15                                          CMT17790
189E  2681               1780           AIS   R6,1                                            CMT17800
18A0  D248 0000          1781           STB   CHAR,0(R3)                                      CMT17810
18A4  D180 3E20          1782           LM    R8,RSAVE1                                       CMT17820
18A8  2305               1783           BS    HY2                                             CMT17830
18AA  D180 3E20          1784  HX2      LM    R8,RSAVE1                                       CMT17840
18AE  D248 39CB          1785           STB   CHAR,RBUFF+1(R8)                                CMT17850
18B2  2481               1786  HY2      LIS   R8,1               COUNTER FOR NUMBER OF RECORDS  CMT17860
18B4  41C0 28CC          1787  GENFIL   BAL   R12,WRTREC         WRITE A RECORD                 CMT17870
18B8  4300 1C2A          1788           B     WRTER0             ERROR RETURN                   CMT17880
18BC  0755               1789           XHR   R5,R5                                           CMT17890
18BE  4050 33F8          1790           STH   R5,RTYCNT          RESET RETRY COUNTER            CMT17900
18C2  41E0 2B7E          1791  PROC01   BAL   R14,BSPACE         BACKSPACE & STATUS CHECK       CMT17910
18C6  41C0 2C84          1792  RERDR    BAL   R12,RDREC          READ A RECORD                  CMT17920
18CA  4300 1C4C          1793           B     RDER0              ERROR RETURN                   CMT17930
18CE  0755               1794           XHR   R5,R5                                           CMT17940
```

TEST 0 BASIC CONFIDENCE TEST

```
1BD0  4050 33F8          1795           STH   R5,RTYCNT          RESET RETRY COUNTER                CMT17950
1BD4  41E0 2DC4          1796  PROC03   BAL   R14,COMPAR          COMPARE DATA                       CMT17960
1BD8  4850 1848          1797           LH    R5,SDUMP+6         BUFFER DUMP?                       CMT17970
1BDC  2333               1798           BZS   NODUMP             NO - NO DUMP                       CMT17980
1BDE  41E0 2F18          1799           BAL   R14,DUMP           DUMP READ BUFFER                   CMT17990
1BE2  C180 1384          1800  NODUMP   BXLE  R8,GENFIL                                             CMT18000
1BE6  41D0 3146          1801  WEOF02   BAL   R13,WAIT2          WAIT FOR NMTN = 1                  CMT18010
1BEA  9D65               1802           SSR   DEV,STAT                                             CMT18020
1BEC  C350 0020          1803           TMI   STAT,X'20'         EOT?                               CMT18030
1BF0  2333               1804           BZS   EOFMRK                                               CMT18040
1BF2  41E0 3384          1805           BAL   RET,REWIND         REWIND TAPE                        CMT18050
1BF6  9E60 3413          1806  EOFMRK   OC    DEV,WEOF                                            CMT18060
1BFA  41E0 2F6A          1807           BAL   R14,SENS01                                           CMT18070
1BFE  4300 1C5C          1808           B     EOFER02                                              CMT18080
1C02  0755               1809           XHR   R5,R5                                                CMT18090
1C04  4050 33F8          1810           STH   R5,RTYCNT                                            CMT18100
1C08  0788               1811  PROC02   XHR   R8,R8              CHECK NEXT DATA BLOCK              CMT18110
1C0A  0861               1812           LHR   R11,R1                                               CMT18120
1C0C  263A               1813           AIS   R3,8                                                 CMT18130
1C0E  4841 3414          1814           LH    CHAR,WDATA(R1)                                       CMT18140
1C12  4230 1862          1815           BNZ   MOVDT3             ZERO?                              CMT18150
1C16  41D0 2FAE          1816           BAL   R13,TSTMOD         YES - CHECK NEXT MODE              CMT18160
1C1A  4300 184A          1817           B     PROC00                                               CMT18170
                         1818  *                                                                    CMT18180
                         1819  *        ERROR RECOVERY PROCEDURES                                   CMT18190
                         1820  *                                                                    CMT18200
1C1E  41E0 2F02          1821  EOFER01  BAL   R14,RETRY          RETRY READ EOF                     CMT18210
1C22  4300 1834          1822           B     REOF01                                               CMT18220
1C26  4300 184A          1823           B     PROC00                                               CMT18230
1C2A  4850 33F2          1824  WRTER0   LH    R5,EOTFLG         WRITE ERROR RETRY                  CMT18240
1C2E  2337               1825           BZS   RCOVR              EOT? - NO - RETRY                  CMT18250
1C30  41E0 3384          1826           BAL   RET,REWIND         REWIND TAPE                        CMT18260
1C34  41E0 284A          1827           BAL   R14,FSTEOF         WRITE & SENSE EOF                  CMT18270
1C38  4300 1884          1828           B     GENFIL                                               CMT18280
1C3C  41E0 2F96          1829  RCOVR    BAL   R14,ERRMSG2                                          CMT18290
1C40  41E0 2F02          1830           BAL   R14,RETRY          RETRY 5 TIMES                      CMT18300
1C44  4300 1884          1831           B     GENFIL                                               CMT18310
1C48  4300 18C2          1832           B     PROC01                                               CMT18320
1C4C  41E0 2F96          1833  RDER0    BAL   R14,ERRMSG2                                          CMT18330
1C50  41E0 2F02          1834           BAL   R14,RETRY          READ ERROR - RETRY 5 TIMES         CMT18340
1C54  4300 18C6          1835           B     RERDR                                                CMT18350
1C58  4300 18D4          1836           B     PROC03                                               CMT18360
1C5C  41E0 2F02          1837  EOFER02  BAL   R14,RETRY          RETRY WEOF                         CMT18370
1C60  4300 18E6          1838           B     WEOF02                                               CMT18380
1C64  4300 1C08          1839           B     PROC02                                               CMT18390
```

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                       * ************************************************************ CMT18410
                       *                                                            * CMT18420
                       *                            T E S T 1                       * CMT18430
                       *                                                            * CMT18440
                       *    PURPOSE:                                                * CMT18450
                       *        TO TEST THE ABILITY OF THE DEVICE TO WRITE AND READ * CMT18460
                       *        VARIABLE LENGTH RECORDS.                            * CMT18470
                       *                                                            * CMT18480
                       *    ASSUMPTIONS:                                            * CMT18490
                       *        THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT  * CMT18500
                       *        DETECTING ANY FAILURE.                              * CMT18510
                       *                                                            * CMT18520
                       *    DESIGN SPECIFICATIONS:                                  * CMT18530
                       *        THIS TEST USES THE WRITE-BACKSPACE-READ FEATURE TO  * CMT18540
                       *        GENERATE FILES WITH VARIABLE LENGTH RECORDS. THE    * CMT18550
                       *        RECORDS ARE GENERATED IN THE WRITE BUFFER WITH A    * CMT18560
                       *        MINIMUM OF 2 BYTES. THE RECORDS WRITTEN VARIES FROM * CMT18570
                       *        00-01 TO 00-FF (OR 00-3F FOR 7 TRACK MAG. TAPE.)    * CMT18580
                       *        THE TOTAL NUMBER OF FILES GENERATED IS DETERMINED   * CMT18590
                       *        BY THE OPTION FILES.                                * CMT18600
                       *                                                            * CMT18610
                       *    HOW TO RUN THE TEST:                                    * CMT18620
                       *        REFER TO TEST 0. SELECT TEST 1 AND ITS APPROPRIATE  * CMT18630
                       *        OPTIONS.                                            * CMT18640
                       *                                                            * CMT18650
                       *    OPTIONS:                                                * CMT18660
                       *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,   * CMT18670
                       *        INTLEV, MODE, TRACK, RECFIL, FILES  DUMP            * CMT18680
                       *        WSTART,RSTART                                       * CMT18690
                       *                                                            * CMT18700
                       *    ERRORS:                                                 * CMT18710
                       *        00, 01, 02, 04, 05, 08, 10, 11, 12, 13, 14, 15, 46, * CMT18720
                       *        47, 50                                              * CMT18730
                       *                                                            * CMT18740
                       * ************************************************************ CMT18750
                       *                                                              CMT18760
1C68   C840 1C70       TEST1    LHI   R4,TEST11        STARTING ADDRESS SET UP FOR   CMT18770
1C6C   41E0 2B10                BAL   R14,TSTSUP       SECOND DEVICE TEST            CMT18780
1C70   41E0 2AC8       TEST11   BAL   R14,TSTINIT      TEST INITIALIZE               CMT18790
1C74   41D0 31D4                BAL   R13,WAIT1        WAIT FOR NMTN=1               CMT18800
1C78   41E0 2B4A                BAL   R14,FSTEOF       WRITE & SENSE EOF             CMT18810
1C7C   41E0 2EC0                BAL   R14,BSET                                       CMT18820
1C80   2491                     LIS   R9,1                                           CMT18830
1C82   48A0 1800                LH    R10,RECFIL+6     RECORD PER FILE DESIRED       CMT18840
1C86   2421                     LIS   R2,1                                           CMT18850
1C88   4830 1818                LH    R3,FILES+6                                     CMT18860
1C8C   2411            NXTMOD1  LIS   R1,1                                           CMT18870
1C8E   2482            VARFIL   LIS   R8,2                                           CMT18880
1C90   9358            VARREC   LBR   R5,R8                                          CMT18890
1C92   4450 33EC                NH    R5,MASK                                        CMT18900
1C96   2132                     BNZS  GENFIL1A                                       CMT18910
1C98   2451                     LIS   R5,1                                           CMT18920
1C9A   4050 33FE       GENFIL1A STH   R5,NBYTE                                       CMT18930
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TEST 1 VARIABLE RECORD LENGTH

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1C9E  41E0 2E96          1894           BAL   R14,RESET          RESET BUFFER LIMITS                CMT18940
1CA2  41C0 2BCC          1895  GENFIL1  BAL   R12,WRTREC         WRITE A RECORD                     CMT18950
1CA6  4300 1D00          1896           B     WRTER1                                                CMT18960
1CAA  0755               1897           XHR   R5,R5                                                CMT18970
1CAC  4050 33F8          1898           STH   R5,RTYCNT                                            CMT18980
1CB0  41E0 2B7E          1899  PROC11   BAL   R14,BSPACE          BACKSPACE & STATUS CHECK           CMT18990
1CB4  41C0 2C84          1900  RERDR1   BAL   R12,RDREC           READ A RECORD                      CMT19000
1CB8  4300 1D22          1901           B     RDER1                                                 CMT19010
1CBC  0755               1902           XHR   R5,R5                                                CMT19020
1CBE  4050 33F8          1903           STH   R5,RTYCNT                                            CMT19030
1CC2  41E0 2DC4          1904  PROC12   BAL   R14,COMPAR          COMPARE DATA                       CMT19040
1CC6  4850 18A8          1905           LH    R5,SDUMP+6          DUMP?                              CMT19050
1CCA  2333               1906           BZS   NODMP1                                                CMT19060
1CCC  41E0 2F18          1907           BAL   R14,DUMP           YES - DUMP READ BUFFER             CMT19070
1CD0  C180 1C90          1908  NODMP1   BXLE  R8,VARREC                                             CMT19080
1CD4  41D0 3146          1909  WEOF12   BAL   R13,WAIT2                                            CMT19090
1CD8  C350 0020          1910           THI   STAT,X'20'                                           CMT19100
1CDC  2333               1911           BZS   EOFMRK1                                              CMT19110
1CDE  41E0 3364          1912           BAL   RET,REWIND           REWIND TAPE                     CMT19120
1CE2  DE60 3413          1913  EOFMRK1  OC    DEV,WEOF            WRITE EOF                       CMT19130
1CE6  41E0 2F6A          1914           BAL   R14,SENS01           CHECK FOR EOF WRITTEN           CMT19140
1CEA  4300 1D32          1915           B     EOFER12                                              CMT19150
1CEE  0755               1916           XHR   R5,R5                                                CMT19160
1CF0  4050 33F8          1917           STH   R5,RTYCNT                                            CMT19170
1CF4  C110 1C8E          1918  PROC13   BXLE  R1,VARFIL                                           CMT19180
1CF8  41D0 2FAE          1919           BAL   R13,TSTMOD           NEXT MODE?                      CMT19190
1CFC  4300 1C8C          1920           B     NXTMOD1                                              CMT19200
                         1921  *                                                                  *  CMT19210
                         1922  *        ERROR RECOVERY PROCEDURE                                  CMT19220
                         1923  *                                                                  *  CMT19230
1D00  4850 33F2          1924  WRTER1   LH    R5,EOTFLG           WRITE ERROR RECOVERY            CMT19240
1D04  2337               1925           BZS   RCOVR1              EOT? - NO - RETRY               CMT19250
1D06  41E0 3384          1926           BAL   RET,REWIND           REWIND TAPE                     CMT19260
1D0A  41E0 2B4A          1927           BAL   R14,FSTEOF           WRITE & SENSE EOF               CMT19270
1D0E  4300 1CA2          1928           B     GENFIL1             REPEAT WRITE PROCESS            CMT19280
1D12  41E0 2F96          1929  RCOVR1   BAL   R14,ERRMSG2                                           CMT19290
1D16  41E0 2FD2          1930           BAL   R14,RETRY           RETRY 5 TIMES                   CMT19300
1D1A  4300 1CA2          1931           B     GENFIL1                                              CMT19310
1D1E  4300 1CB0          1932           B     PROC11                                               CMT19320
1D22  41E0 2F96          1933  RDER1    BAL   R14,ERRMSG2                                          CMT19330
1D26  41E0 2FD2          1934           BAL   R14,RETRY           RETRY 5 TIMES                   CMT19340
1D2A  4300 1CB4          1935           B     RERDR1                                               CMT19350
1D2E  4300 1CC2          1936           B     PROC12                                               CMT19360
1D32  41E0 2FD2          1937  EOFER12  BAL   R14,RETRY           RETRY 5 TIMES                   CMT19370
1D36  4300 1CD4          1938           B     WEOF12                                               CMT19380
1D3A  4300 1CF4          1939           B     PROC13                                               CMT19390
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		2228 2241 2246 2253 2254 2256 2257 2293 2298 2299 2316 2317 2342
		2352 2353 2355 2356 2384 2387 2392 2427 2428 2441 2442 2463 2471
		2516 2516 2517 2530 2530 2531 2539 2545 2550 2551 2564 2584 2584
		2585 2646 2647 2749 2751 2752 2754 2756 2757 2761 2762 2776 2779
		2803 2819 2820 2828 2838 2838 2839 2844 2846 2847 2848 2866 2867
		2875 2877 2878 2878 2879 2880 2881 2883 2884 2885 2886 2893 2900
		2903 3010 3013 3015 3017 3028 3035 3044 3047 3056 3062 3072 3092
		3094 3097 3098 3099 3099 3103 3104 3108 3109 3111 3134 3190 3191
		3201 3230 3277 3278 3297 3298 3300 3300 3301 3302 3303 3329 3329
		3330 3343 3370 3370 3371 3445 3446 3518 3519 3569 3593 3595 3596
		3600 3601 3603 3604 3606 3607 3654 3666 3679 3690 3691 3693 3695
		3697 3702 3726 3727 3728 3731 3732 3733 3751 3752 3755 3773 3776
		3776 3779 3780 3801 3860 3879 3881 3883 3885 3886 3888 3889 3890
		3904 3905 3907 3908 3913 3913 3914 3915 3946 3959 3960 3968 3969
		3973 3985 3995 4041 4043 4043 4044 4069 4074 4154 4154 4155 4186
		4187 4190 4190 4191 4299 4300 4300 4301 4303 4319 4319 4320 4333
		4334 4407 4407 4524 4525 4552 4553 4554
R5+EX	0000 10D8	369 372 384 387 403 633 641 804* 3701 3710 3804
R5X	0000 10E4	809* 815
R5XA	0000 10F2	813*
R5X3	0000 10FA	807 816*
R6	0000 0006	83* 111 121 128 209 210 211 211 287 288 295 389 392
		407 408 410 410 440 443 461 463 468 751 751 761 764
		770 783 786 1217 1219 1223 1225 1228 1237 1238 1240 1250 1251
		1256 1259 1355 1358 1360 1362 1366 1367 1371 1374 1542 1543 1543
		1545 1546 1546 1548 1549 1551 1553 1553 1555 1556 1558 1560 1580
		1583 1585 1595 1599 4385 4388 4390 4393 4396 4399 4402 4405 4405
		4409 4412 4414 4415 4416 4536 4537 4538 4543 4544 4554 4557 4569
		4570
R7	0000 0007	84* 130 131 132 458 466 473 1353 1353 1354 1362 1363 1370
		1373 1582 1583 1585 1585 1587 1596 1605 1610
R8	0000 0008	85* 122 123 128 129 459 470 474 1597 1601 1760 1760 1764
		1766 1767 1768 1770 1771 1772 1774 1777 1779 1780 1781 1782 1784
		1785 1786 1800 1811 1811 1886 1889 1908 2007 2007 2012 2013 2013
		2018 2251 2290 2318 2339 2349 2390 2527 2542 2635 2635 2637 2639
		2641 2643 2644 2645 2650 2650 2653 2665 2665 2669 2680 2680 2685
		2773 2778 2781 2785 2795 2795 2835 2841 2854 2854 2857 2862 2864
		2869 2882 3012 3012 3053 3054 3113 3124 3137 3151 3164 3167 3656
		3656 3660 3663 3666 3712 3750 3750 3751 3754 3757 3775 3776 3778
		3797 3797 3810 3950 3950 3952 3954 3961 3963 3972 3978 3984 3988
		3994 4097 4097 4105 4130 4130 4137 4160 4160 4171 4332 4332 4347
		4348 4570
R9	0000 0009	86* 759 768 946 947 949 950 952 1035 1169 1170 1178 1552
		1564 1565 1565 1567 1568 1568 1570 1571 1573 1575 1575 1577 1578
		1580 1582 1586 1589 1591 1598 1756 1883 1993 2151 2526 2631 2648
		2774 2784 2834 3654 3748 3772 3793 3949 4095 4128 4158 4266
RABEND	0000 2CE2	3547* 3590
RADDRS	0000 35C0	1358 1370 1371 1545 1549 1551 1556 3309 4494*
RBUFF	0000 39CA	1548 1555 1558 1785 2865 4499*
RCONLY	0000 2654	2829 2849*
RCOVR	0000 1C3C	1825 1829*
RCOVR1	0000 1D12	1925 1929*
RCOVR2	0000 1E1C	2039 2043*

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RLIM	0000	35B0	1778	2358	2360	2469	2556	2558	2766	2768	2824	2826	2858	3159	3161
			3183	3185	3310	3312	3525	3538	3540	3659	3670	3730	3734	3770	3774
			3799	4490*											
ROWLY7	0000	27DE	3016	3039*	3068										
ROPTIN	0000	1A60	1617	1620	1623*										
ROPTIN1	0000	1666	1372	1375*											
ROPTIN2	0000	1638	1359	1361*											
RP	0000	1578	1107	1281*											
RREC3	0000	2144	2350*	2390											
RSAV32	0000	35B8	2256	2263	2357	2362	2520	2524	2555	2559	2765	2769	2823	2827	3118
			3123	3158	3163	3182	3187	3304	3313	3411	3415	3471	3479	3537	3542
			3658	3665	3669	3674	3724	3735	3798	3802	3970	3974	3982	3986	3989
			3996	4492*											
RSAVE	0000	3E60	106	791	798	804	816	821	833	838	881	888	968	1002	1043
			1049	1085	1242	3451	3461	3463	3465	3470	3484	3493	3524	3536	3547
			3952	3954	3961	3963	4508*								
RSAVE1	0000	3E20	1764	1768	1770	1777	1782	1784	2637	2641	2643	2772	2782	2857	2862
			2864	3653	3683	3747	3758	3769	3781	3792	3815	3945	3980	4092	4110
			4125	4140	4153	4176	4265	4268	4274	4275	4276	4277	4278	4507*	
RSTORE	0000	162E	1358*												
RSTORE1	0000	1654	1370*												
RTN01	0000	1F18	2175	2184*											
RTN02	0000	1F3E	2184	2194*											
RTN03	0000	1F84	2206	2215*											
RTN04	0000	1FA6	2218	2224*											
RTN05	0000	1FC8	2227	2233*											
RTN06A	0000	2056	2256	2275	2276*	2462									
RTN07	0000	20C0	2298	2308*											
RTN08	0000	20FE	2316	2328*											
RTN09A	0000	2194	2355	2372	2373*	2470									
RTN10	0000	2284	2441	2452*											
RTN11	0000	3348	4333	4342*											
RTNDSB	0000	220E	2161	2415*											
RTNDSM	0000	2208	2137	2410*											
RTNDU1	0000	221A	2125	2421*											
RTNDU2	0000	223C	2427	2433*											
RTYCNT	0000	33F8	1672	1753	1790	1795	1810	1898	1903	1917	1989	2026	2031	2531	2585
			2839	3904	3908	3914	4430*								
RTYFAIL	0000	2FF0	3906	3913*											
RUN	0000	18DE	299	1507*											
RUNIT	0000	0D84	300	478*											
RWCOM	0000	2D3C	3588	3592*											
RWCOM32	0000	2D54	3594	3599*											
RWMOD32	0000	2D06	3570	3575*											
RWND	0000	3254	3133	3229	3285	4209*									
RWREC	0000	2CF2	3457	3530	3569*										
RWREC.A	0000	2D22	3581	3583*											
RWREC1	0000	2D1A	3574	3580*											
RWREC2	0000	2D86	3612	3615*											
RWREC3	0000	2C80	3496	3498*											
RWSEL	0000	328E	3143	3171	3211	4264*									
RWSEL.A	0000	32CC	4260	4262*											
RWSEL.B	0000	32C4	4272	4279*											

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