PROGRAM NUMBER B06-171R02

COMMON CASSETTE TEST PROGRAM

CONSISTS OF:

TEST PROGRAM DESCRIPTION	B06-171R01A15
TEST PROGRAM LISTING	06-171M96R01A13
TEST TAPE	06-171R01M17

PERKIN-ELMER

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COMMON CASSETTE TEST RPOGRAM DESCRIPTION

COMMON CASSETTE TEST PROGRAM 06-171

Related Documents

The following documents are related to the Common Cassette Test Program:

Test Program Listing	06-171A13
Test Program Paper Tape	06-171M17
Test Program Deck	06-171M03
Intertape Cassette System Instruction Manual	29-284

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 Processors

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

Other Test Program

Teletype Basic Confidence Test	06-004
CRT Test	06-146

PURPOSE OF TEST

The Common Cassette Test Program tests the functions of the Intertape Cassette System (M46-400) and its associated interface. Special tests and options are provided to enable measurement and isolation of failure. It also allows the testing of two devices at once.

Test 0

Tests all data lines for correct data transfer with worst case data patterns. This test is mandatory and is executed at least once.

Test 1

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

Test 2

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

Test 3

This test checks all device functions under device interrupt. Proper interrupt reception, interrupt queueing and interrupt disarm and disable functions are all tested. Read only, write EOF continuous and other options are provided.

Test 4

This test checks the read and backspace functions in continuous mode.

Test 5

This test is designed to test device overflow by Write-long Read-short and Write-short Read-long.

Test 6

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

Test 7

Read/Write Test with software generated and detected EOF.

Test 8

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 items 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.

MINIMUM HARDWARE REQUIRED

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

Processor

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

Minimum Memory

16K Bytes

Console input device (see Appendix 1)

Teletype or
Carousel 15,30 or
CRT on PASLA

List device (see Appendix 1)

Teletype
CRT on PASLA or
Line Printer or
Carousel 15,30

Paper Tape Reader

Teletype
High Speed Paper Tape Reader

Intertape Cassette System (M46-400) and
Intertape Cassette Interface with cable

REQUIREMENTS OF MACHINE UNDER TEST

The following is required of the machine under test.

This program assumes that the programs indicated have been run prior to loading this test without detecting an error.

The Cassette must be loaded and the device placed 'ON LINE'.

LOADING PROCEDURE

Test Tape Format

Absolute, non-zoned object tape (M17) with front end boot loader. The test program occupies memory from X'A00' through X'3BEB'

Normal Loading Procedure

Manually enter the X'50' sequence shown below into memory:

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

	LOCATION	CONTENTS
for TTY	X'78'	X'0294'
HSPTR	X'78'	X'0399'
HSPTR/P	X'78'	X'1399'

Place the program tape in the paper tape reader.

Execute at address 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.

MULTI MEDIA DIAGNOSTIC LOADING PROCEDURE

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

PROGRAM EXECUTION

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

Address memory location X'A00' in the case of a 32-Bit Processor.
Address memory location X'A04' in the case of a 16-Bit Processor.

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

```
COMMON CASSETTE TEST PROGRAM 06-171
```

OPERATING PROCEDURES

Normal Testing

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

```
TEST CR
RUN CR
```

Tests 0,1,2,3,4,5,6 are executed.

If no failure is detected, the list device output will be as shown in Appendix 5, and the test returns to console input mode after completion of Test 6. In case of failures, refer to the Section on Error Procedures.

To interrupt and terminate a test, 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. On the case of putting the device DU, the message:

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

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

In the case of a failure that may terminate the program abnormally, the program can be restarted at location X'A04' for 16-Bit Processor or X'A00' for 32-Bit Processor. If the program does not restart, it must be reloaded as explained in the Section on Loading Procedures.

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). Records are separated by inter-record gaps and files are separated by EOF marks.

To select the mode of data transfer, option MODE must be specified. If MODE 0 is entered, both modes 1, 2 and 3 (See Appendix 3) are run in Tests 0,1,3,5,7 and 8 with SCOPE 0. In all other tests, Mode 3 is used.

Setting option TRANSP=1, all Write, Read and Backspace functions are performed in the tarnsparent mode. Since skip functions cannot be performed in the Transparent mode (refer to Publication 29-284), test 2 is always execution in the Normal mode despite option TRANSP. In test 3, the skip functions are by-passed if TRANSP=1 and in test 8, skip file reverse is replaced by backspace file (see options in Appendix 6). All write, read and backspace on EOF's are performed in the Normal mode regardless of option TRANSP. Caution must be taken to prevent reading a tape, generated in Transparent mode, in Normal mode or vice versa.

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

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

Besides setting option CONTIN (see Appendix 3), the selected tests can be continuously looped by turning the console device Off-Line. Since test 8 requires console I/O, it must not be selected to loop.

Test 3 is executed under interrupts and the user can specify individual operations to be tested 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.

User utility is provided in Test 8 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 a write function, the message:

ENTER DATA

is printed on the list device. The user can enter a string of up to 64 valid hex characters on the console input device. A CR should be used to terminate the string and continue execution. If the buffer is full or 64 hex characters have been accepted, the test continues automatically. 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 Read only 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 there are files on the tape.

Scope loop option is also provided in Test 8. Through option SCOPE (see Appendix 3) Scope loops run continuously with no error check until EOT or terminated by BREAK on 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 and the BREAK key, though available, must be avoided. To terminate the tape before EOT is detected. X-OFF (control - S) 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 is terminated. If LF is depressed, the test continues reading until EOT or next EOF. This procedure is designed to prevent reading beyond the last EOF on the tape. Reading a blank tape beyond the last EOF mark may cause the entire tape to be removed from 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.

ERROR PROCEDURE

Error Recovery

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

```
RECOVER UNSUCCESSFUL
```

if printed and the test proceeds.

Error Messages

Three types of error messages are logged:

1. 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

2. Data Error

   The following message is printed:

   ```
   ERROR XXYY
   DEV DDD
   ```

3. Spurious interrupt error:

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

Where: XX = test number
N = 1. For arithmetic (32-Bits) 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).

Other Messages

The following is a list of other messages:

1. MODE N

This message follows the error message for an error which occurred during a data transfer. N = mode number.

2. DATA WRITTEN DATA READ
AA BB
AA BB

This message is logged after data error #46. AA and BB are the unmatching data bytes.

3. CRC CHAR = AA

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

4. CRC CHAR EXOT'D = AA,READ = BB

   This message is printed in Test 6 after error #48 CRC error is logged. AA and BB are the unmatching CRC characters.

5. DEVICE OFF-LINE
   DEV DDD STA SS

   This message is printed whenever DU status is detected on the device under test. (See the Section on Normal Testing).

6. EOT

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

7. EOF

   This message is printed upon detection of an EOF mark during read only scope loop. (See the Section on Optional Testing).

8. TURN DEVICE OFF-LINE MOMENTARILY

   (See the Section on Optional Testing.)

Fault Isolation

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

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

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

4. If data error occurs, observe the erroneous data bytes printed and try to establish a pattern of failure. Test 0 is designed to detect such data line failures.

5. If error 16 occurs, repeat test 5 with DUMP = 1 and observe the data read. Failure can be in the read delay timing circuit.

6. 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.

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

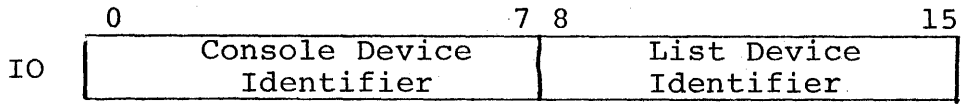
8. The program puts a delimiter at the end of the read buffer before each read operation. Error 47 indicated the delimiter was destroyed after the read.

9. Scope loops can also be used to further isolate failures.

APPENDIX 1

USER DEVICE DEFINITION

The halfword labeled IO (see the listing) has the default value for Teletype as an input-output console device. If the setup is different, it must be changed as follows:



CONSOLE DEVICE IDENTIFIER	EXPLANATION
X'01'	GDT/CRT on PASLA/PALM Interface, strapped for FDX and the highest baud rate.
X'02'	TTY on TTY Interface GDT/CRT on Current Loop interface Carousel 15,30 on Current Loop interface
0,X'03'-X'FF'	Reserved. The program defaults it to 2.
LIST DEVICE IDENTIFIER	EXPLANATION
X'01'	GDT/CRT as stated previously.
X'02'	TTY as stated previously.
X'03'	Line Printer (Data Printer or Centronics) on LP interface.
0,X'04'-X'FF'	Reserved. The program defautls it to 2.

The GDT (Graphic Display Terminal) or CRT; if used on PASLA/PALM Interface, should be strapped for the device address of X'10' and X'11' for receiving and transmitting side respectively. If it is different, the halfword labeled CRTADR (see the listing) must be changed accordingly.

The Teletype or Current Loop Interface, if used, should be strapped for the device address of X'02'. If it is different, the halfword labeled TTYADR (see the listing) must be changed accordingly.

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

APPENDIX 2

OPTION/COMMAND INPUT STRUCTURE

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

APPENDIX 3

OPTIONS TABLE

OPTION	DEFAULT	TEST	DESCRIPTION
TEST	0,2,3,4, 5,6	All	Selects test or tests to be executed (see Appendix 2).
**OPTION		All	List all optoin values selected.
RUN		All	Start test.
LOOP	0	All	Number of times the selected tests are to be repeated. Maximum = X'FFFF'.
CONTIN	0	All	Enables the selected tests to be executed continuously until interrupted. 0=normal execution 1=continuous execution
NOMSG	0	All	Suppresses all messages except error messages. 0=all messages 1=only error messages
DEVADR	X'0045'	All	Specifies the physical device address of the device under test. (Must be specified).
DV2ADR	X'0000'	All	Specifies the physical device address for the second device to be tested (must be zero if only one device is under test).
SELCH	X'00F0'	All	Specifies the selector channel device address.
INTLEV	0	3	Specifies interrupt level of device under test. The same level is assigned to both device and the SELCH.
TRANSP	0	0,1,3, 4,5,6, 7,8	Selects transparent mode. 0=normal mode 1=transparent mode

OPTION	DEFAULT	TEST	DESCRIPTION
MODE	3	All	Selects more of operation. 0=selects all modes 1=WB/RB mode 2=SELCH mode 3=WD/RD mode
*REPEAT	X'0003'	2	Number of skips to be performed. Maximum=X'FF'.
*IRG	X'10'	2	Number of times of Read and backspace to be performed in gap-data check. Maximum=X'FF'.
*RECFIL	X'40'	All	Number of records per file. Maximum=X'400'.
BYTES	X'FF'	3,8	Number of bytes per record. Minimum=2. Maximum=X'400'.
*FILES	1	1,7,8	Number of files to Write or Read. Maximum=X'400'.
***READ	1	3,8	Selects Read operation. 1=no Read 1=perform Read
***WRITE	1	3,8	Selects Write operation 0=no Write 1=perform Write
***WEOF	0	3,8	Write EOF mark continuously until EOT 0=Write/Read records 1=Write EOF only
***BKSPAC	1	3,8	Select backspace operation 0=no backspace 1=perform backspace
***SKIP	1	3	Select skip opeartion 0=no skip 1=perform skip

OPTION	DEFAULT	TESTS	DESCRIPTION
DU	0	3	Test DU interrupt. 0=no DU interrupt. 1=test DU interrupt.
COMPAR	1	3,8	Specifies data comparison 0=no compare. 1=compare data.
DUMP	0	0,1,3, 4,5,7, 8	Specifies read buffer dump 0=no dump. 1=dump data buffer.
DATA	1	8	Specifies if external data pattern is to be requested. 0=use internally generated data pattern. 1=request for external data pattern.
SCOPE	0	8	Specifies scope loop. 0=no scope loop 1=Write-Backspace-Read 2=Write only 3=Write-Backspace (avoid) 4=Read only 5=skip
TIME	X'800'	All	Defines a 10 ms timer for each different model. X'800' for Model 7/16 X'C00' for Model 80

* Minimum is 1. If 0 is entered, it is defaults to 1.

** When the list device is the CRT, a page of 24 options will be 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 can be used to stop liting on any device.

*** Also see Appendix 6.

APPENDIX 4

ERROR TABLE

ERROR NUMBER	TESTS APPLICABLE	DESCRIPTION
00	All	Device False SYNC
01	All	Timeout on NMTN
02	All	Timeout on NMTN (Rewind)
03	0,1,2,4,5,6,7,8	Timeout on BSY (1-0)
04	All	Timeout on EOM
05	All	Write EOF Error
06	0,2	Read EOF Error
07	0,3,4,6,7	Skip/Backspace EOF Error
08	0,1,3,4,5,6,7,8	Backspace Record Error
09	2	BOT Error on Rewind
10	All	Write Record Error
11	All	Read Record Error
12	All	Non-Zero condition code after Write
13	All	Non-zero condition code after Read
14	0,1,2,4,5,6,7,8	SELCH Write End Address Mismatch
15	0,1,2,5,5,6,7,8	SELCH Read End Address Mismatch
16	5	Error Condition Not Detected
17	5	ERR Bit not Set on Overflow
18	5	ERR Bit Set (Read long)
19	2	Tape Motion Error
20	3	No Interrupt After Rewind
21	3	No Interrupt After Write EOF
22	3	No EOM & NMTN Interrupt (WEOF)
23	3	No NMTN Interrupt (WEOF)
24	3	No Interrupt After Backspace EOF
25	3	No Interrupt After Backspace Record
26	3	No EOM Int. After Write
27	3	No EOM Int. After Read
28	3	No SELCH Interrupt After Write
29	3	No SELCH Interrupt After Read
30	3	No Interrupt on Skip Forward
31	3	No Interrupt on Skip Reverse
32	3	No Interrupt on DU from 0 to 1
33	3	DU not set after DU Interrupt
34	3	No Interrupt on DU from 1 to 0

ERROR NUMBER	TESTS APPLICABLE	DESCRIPTION
35	3	DU Set After DU Interrupt
36	3	No BSY Interrupt
37	3	Interrupt Not Queued
38	3	Disarm Function Failure
40	3	Disable Function Failure
41	4	NMTN Error Backspace Continue
42	4	NMTN Error Read Continue
43	4	ERR, EOF, or ET Backspace Continue
44	4	ERR, EOF, or ET Read Continue
45	4	Append on Read Continuous Mode
46	4	Data Error on Read Continuous Mode
47	All	Data Error
48	All	Delimeter Error
49	7	EOF Error
50	All	Write Protect Error

APPENDIX 5

EXPECTED RESULT TABLE

	Approx. Time (Mod. 70 with Default Options)
*TEST	
*RUN	
TEST 00	
NO ERROR	3.25 min.
TEST 01	
NO ERROR	0.75 min.
TEST 02	
NO ERROR	2 min.
TEST 03	
NO ERROR	1.75 min.
TEST 04	
NO ERROR	1 min.
TEST 05	
NO ERROR	1.25 min.
TEST 06	
NO ERROR	1 min.
END OF TEST	

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	1	X	0	X	1	1	X	0	X	1	1
READ	0	1	0	1	0	1	1	0	1	0	1	1
WEOF	1	1	0	X	0	0	0	0	X	0	0	0
BKSPAC	X	X	0	X	1	1	0	0	X	1	1	0
SKIP	X	X	0	0	0	0	0	1	1	1	1	1

TEST 8

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

* No error check during Write EOF continuous in Test 8. (Scope check)

PROG= *NONE* 03-066R03M91

```
                 SCRAT                                                       CCT10020
                 CROSS                                                       CCT10030
                 WIDTH  120                                                  CCT10040
0000R            SQCHK                                                       CMT10045
       * ************************************************************       CCT10050
       *         COPYRIGHT INTERDATA, INC. OCT.  1975                    *   CCT10060
       *                                                                 *   CCT10070
       *         COMMON CASSETTE TEST PROGRAM 06-171R01                  *   CCT10080
       *                                                                 *   CCT10090
       *         PROGRAM USES THE COMMON INSTRUCTION SET                 *   CCT10100
       *                                                                 *   CCT10110
       *         THIS PROGRAM TESTS THE CASSETTE SYSTEM, AND THE             CCT10120
       *         ASSOCIATED INTERFACES                                   *   CCT10130
       *         THE PROGRAM CONSISTS OF 9 TESTS, WITH TEST 8 BEING      *   CCT10140
       *         THE UTILITY TEST PROVIDING SCOPE LOOP.                  *   CCT10150
       *         THERE ARE 26 OPTIONS AVAILABLE TO THE USER AND 51       *   CCT10160
       *         ERROR MESSAGES TO ENABLE ISOLATION OF A MALFUNCTION     *   CCT10170
       *         TO THE HARDWARE LEVEL. ERROR RECOVERY IS PROVIDED       *   CCT10180
       *         FOR CERTAIN DATA TRANSFER ERRORS.                       *   CCT10190
       *                                                                 *   CCT10200
       *         THE PROGRAM REQUIRES EITHER 7/16 BASIC OR EQUIVALENT    *   CCT10210
       *         PROCESSOR, OR 7/32 OR EQUIVALENT PROCESSOR WITH 16K     *   CCT10220
       *         BYTES OF MEMORY. OPTIONS AND RUN COMMAND ARE TO BE      *   CCT10230
       *         ENTERED VIA A CONSOLE DEVICE. EITHER ONE OR TWO         *   CCT10240
       *         DEVICES CAN BE TESTED AT THE SAME TIME.                 *   CCT10250
       *                                                                 *   CCT10260
       *         THE 06-171M17 TAPE IS AN ABSOLUTE TAPE WITH A FRONT-    *   CCT10270
       *         END BOOT LOADER                                         *   CCT10280
       *         TEST 0                                                  *   CCT10290
       *         TESTS ALL DATA LINES FOR CORRECT DATA TRANSFER WITH     *   CCT10300
       *         WORST CASE DATA PATTERNS. THIS TEST IS MANDATORY,       *   CCT10310
       *         AND IS EXECUTED AT LEAST ONCE.                          *   CCT10320
       *                                                                 *   CCT10330
       *         TEST 1                                                  *   CCT10340
       *         TESTS THE ABILITY OF THE DEVICE TO WRITE AND READ       *   CCT10350
       *         VARIABLE LENGTH RECORDS.                                *   CCT10360
       *                                                                 *   CCT10370
       *         TEST 2                                                  *   CCT10380
       *         TESTS THE REWIND AND SKIP FUNCTION OF THE DEVICE        *   CCT10390
       *                                                                 *   CCT10400
       *         TEST 3                                                  *   CCT10410
       *         TESTS ALL DEVICE FUNCTIONS UNDER DEVICE INTERRUPT.      *   CCT10420
       *         PROPER INTERRUPT RECEPTION, INTERRUPT QUEUING AND       *   CCT10430
       *         INTERRUPT DISARM & DISABLE FUNCTIONS ARE ALL CHECKED.   *   CCT10440
       *                                                                 *   CCT10450
       *         TEST 4                                                  *   CCT10460
       *         THIS TEST TESTS THE READ AND BACKSPACE FUNCTIONS        *   CCT10470
       *         IN CONTINUOUS MODE                                      *   CCT10480
       *                                                                 *   CCT10490
       *         TEST 5                                                  *   CCT10500
       *         THIS TEST IS DESIGNED TO TEST DEVICE OVERFLOW BY        *   CCT10510
       *         WRITE-LONG READ-SHORT AND WRITE SHORT READ LONG         *   CCT10520
       *                                                                 *   CCT10530
       *         TEST 6                                                  *   CCT10540
```

```
                                    55  *       THIS TEST CHECKS THE PROPER GENERATION OF INTER-RECORD  *        CCT10550
                                    56  *       GAPS. (NOTE: PROLONGED REPETITION OF THIS TEST MAY      *        CCT10560
                                    57  *       WEAR THE FRONT PORTION OF THE TAPE.)                    *        CCT10570
                                    58  *                                                              *        CCT10580
                                    59  *       TEST 7                                                 *        CCT10590
                                    60  *       READ/WRITE DATA TEST WITH SOFTWARE GENERATED AND        *        CCT10600
                                    61  *       DETECTED FILE MARKS.                                   *        CCT10610
                                    62  *                                                              *        CCT10620
                                    63  *       TEST 8                                                 *        CCT10630
                                    64  *       THIS IS A USER UTILITY TEST, PROVIDING COMPATIBILITY    *        CCT10640
                                    65  *       READ ONLY CHECK, SCOPE LOOP AND DATA PATTERN            *        CCT10650
                                    66  *       SELECTION. THE USER CAN SELECT NUMBER OF BYTES PER      *        CCT10660
                                    67  *       RECORD, NUMBER OF RECORDS PER FILE AND NUMBER OF        *        CCT10670
                                    68  *       FILES A WEOF OPTION IS PROVIDED TO WRITE EOF MARKS      *        CCT10680
                                    69  *       TO THE END OF TAPE.                                    *        CCT10690
                                    70  *                                                              *        CCT10700
                                    71  *       ANY COMBINATION OF THIS TESTS CAN BE SELECTED AS A      *        CCT10710
                                    72  *       STRING AND CAN BE LOOPED OR RUN CONTINUOUSLY.          *        CCT10720
                                    73  *                                                              *        CCT10730
                                    74  * ************************************************************** *        CCT10740
                                    75  *                                                                       CCT10750
                                    76  *       ETPE                                                            CCT10760
                                    77  *                                                                       CCT10770
        0000 0000                   78  R0      EQU   0                                                         CCT10780
        0000 0001                   79  R1      EQU   1                                                         CCT10790
        0000 0002                   80  R2      EQU   2                                                         CCT10800
        0000 0003                   81  R3      EQU   3                                                         CCT10810
        0000 0004                   82  R4      EQU   4                                                         CCT10820
        0000 0005                   83  R5      EQU   5                                                         CCT10830
        0000 0006                   84  R6      EQU   6                                                         CCT10840
        0000 0007                   85  R7      EQU   7                                                         CCT10850
        0000 0008                   86  R8      EQU   8                                                         CCT10860
        0000 0009                   87  R9      EQU   9                                                         CCT10870
        0000 000A                   88  R10     EQU   10                                                        CCT10880
        0000 000B                   89  R11     EQU   11                                                        CCT10890
        0000 000C                   90  R12     EQU   12                                                        CCT10900
        0000 000D                   91  R13     EQU   13                                                        CCT10910
        0000 000E                   92  R14     EQU   14                                                        CCT10920
        0000 000E                   93  RET     EQU   14                                                        CCT10930
        0000 000F                   94  R15     EQU   15                                                        CCT10940
        0000 000F                   95  LINK    EQU   15                                                        CCT10950
                                    96  *                                                                       CCT10960
                                    97  *  BOOTLOADER WITH CHKSUM                                               CCT10970
                                    98  *                                                                       CCT10980
0000R                               99          ORG   X'80'                                                     CCT10990
0080  2421                        100          LIS   R2,1                                                      CCT11000
0082  2303                        101          BS    BOOT                                                      CCT11010
0084  0100                        102          DC    X'100'          CURRENT PSW SAVE POINTER(32-BIT M/C)      CCT11020
0086  0108                        103          DC    X'108'          REGISTER SAVE POINTER(32-BIT M/C)         CCT11030
0088  4020 0022                   104  BOOT    STH   R2,X'22'        REGISTER SAVE POINTER(16-BIT M/C)         CCT11040
008C  C810 0A00                   105          LHI   R1,X'A00'       R1 = ADR( FIRST BYTE OF TEST PROG )       CCT11050
0090  C830 32DF                   106          LHI   R3,LNZB         R3 = ADR( LAST NON-ZERO BYTE )            CCT11060
0094  C860 0000                   107  MN      LHI   R6,0            R6 = CHKSUM BYTE = X'MN'                  CCT11070
0098  D340 0078                   108          LB    R4,X'78'        INPUT DEV ADR                             CCT11080
009C  DE40 0079                   109          OC    R4,X'79'                                                  CCT11090
00A0  C870 0080                   110          LHI   R7,X'80'                                                  CCT11100
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00A4   9E27              111          OCR    R2,R7         DISPLAY  : NORMAL MODE               CCT11110
00A6   9D45              112  LEADER  SSR    R4,R5                                              CCT11120
00A8   2091              113          BTBS   9,1           DU,BSY                               CCT11130
00AA   9B45              114          RDR    R4,R5                                              CCT11140
00AC   0855              115          LHR    R5,R5                                              CCT11150
00AE   2234              116          BZS    LEADER        IGNORE LEADER                        CCT11160
00B0   D251 0000         117  LOAD    STB    R5,0(R1)      STORE 1ST NON-ZERO & SUBSEQUENT BYTE CCT11170
00B4   0765              118          XHR    R6,R5         GENERATE CHKSUM                      CCT11180
00B6   9A26              119          WDR    R2,R6         DISPLAY PARTIAL / FINAL CHKSUM       CCT11190
00B8   9D45              120          SSR    R4,R5                                              CCT11200
00BA   2091              121          BTBS   9,1           DU,BSY                               CCT11210
00BC   9B45              122          RDR    R4,R5                                              CCT11220
00BE   C110 00B0         123          BXLE   R1,LOAD       LOAD TILL LAST BYTE                  CCT11230
00C2   9477              124          EXBR   R7,R7         R7 = X'8000'                         CCT11240
00C4   9527              125          EPSR   R2,R7         HALT PROCESSOR                       CCT11250
00C6   4300 0A04         126          B      X'A04'        BRANCH TO TEST ( 16-BIT PROCESSOR )  CCT11260
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00CA                   128          ORG    X'A00'                                          CCT11280
0A00   4300 0A30       129 ORIGIN1  B      START1       START HERE FOR 32-BIT PROCESSOR    CCT11290
0A04   4300 0A44       130 ORIGIN2  B      START2       START HERE FOR 16-BIT PROCESSOR    CCT11300
0A08   4300 0A58       131 ORIGIN3  B      START3       SPECIAL 32-BIT PROCESSOR START     CCT11310
0A0C   4300 0A5C       132 ORIGIN4  B      START4       SPECIAL 16-BIT PROCESSOR START     CCT11320
                       133 *                                                               CCT11330
                       134 *-----------------------------                                  CCT11340
                       135 *   TEST CONSTANTS                       *                      CCT11350
                       136 *                                                               CCT11360
0A10   0202            137 IO       DC     X'0202'      I/O DEVICE(S) IDENTIFIER           CCT11370
0A12   1011            138 CRTADR   DC     X'1011'                                         CCT11380
0A14   0202            139 TTYADR   DC     X'0202'                                         CCT11390
0A16   6262            140 LPADR    DC     X'6262'                                         CCT11400
0A18   0000            141          DC     0            SECOND DEVICE ADR IF NECESSARY     CCT11410
0A1A   0000            142          DC     0            RESERVED                           CCT11420
0A1C   0800            143 TIME     DC     X'800'       CONSTANT FOR 10 MS DELAY           CCT11430
                       144 *                            (X'C00' FOR MOD 80)                CCT11440
0A1E   0000            145          DC     0            RESERVED                           CCT11450
0A20   70F0            146 PSW      DC     X'70F0'      PSW USED IN PROGRAM                CCT11460
0A22   0000            147          DC     0            RESERVED                           CCT11470
0A24   0000            148          DC     0            RESERVED                           CCT11480
0A26   0000            149          DC     0            RESERVED                           CCT11490
0A28   0000            150          DC     0            RESERVED                           CCT11500
0A2A   0000            151          DC     0            RESERVED                           CCT11510
0A2C   0000            152          DC     0            RESERVED                           CCT11520
0A2E   0000            153          DC     0            RESERVED                           CCT11530
                       154 *-----------------------------                                  CCT11540
                       155 *                                                               CCT11550
0A30   0711            156 START1   XHR    R1,R1                                           CCT11560
0A32   C820 00F0       157          LHI    R2,X'F0'                                        CCT11570
0A36   4010 0030       158          STH    R1,X'30'     DISABLE INT AT PROCESSOR LEVEL     CCT11580
0A3A   4020 0032       159          STH    R2,X'32'     SELECT REG SET 15                  CCT11590
0A3E   4020 1492       160          STH    R2,MOD32     SET MODEL 32 PROCESSOR FLAG        CCT11600
0A42   2304            161          BS     ST                                              CCT11610
0A44   0711            162 START2   XHR    R1,R1                                           CCT11620
0A46   4010 1492       163          STH    R1,MOD32     RESET MOD 32 PROCESSOR FLAG        CCT11630
0A4A   C820 0A60       164 ST       LHI    R2,START                                        CCT11640
0A4E   4010 0034       165          STH    R1,X'34'                                        CCT11650
0A52   4020 0036       166          STH    R2,X'36'     II INT NEW PSW LOC                 CCT11660
0A56   0000            167          DC     0            TAKE AN ILLEGAL INSTRUCTION INT    CCT11670
                       168 *                                                               CCT11680
0A58   4300 0A30       169 START3   B      START1       INSERT SPECIAL ROUTINE HERE        CCT11690
0A5C   4300 0A44       170 START4   B      START2       INSERT SPECIAL ROUTINE HERE        CCT11700
                       171 *                                                               CCT11710
                       172 *                                                               CCT11720
0A60   4800 0A10       173 START    LH     R0,IO                                           CCT11730
0A64   4000 3326       174          STH    R0,IOSAVE    SAVE USER'S I/O CHOICE             CCT11740
0A68   D300 0A10       175          LB     R0,IO        GET KEYBOARD DEVICE                CCT11750
0A6C   9410            176          EXBR   R1,R0                                           CCT11760
0A6E   0601            177          OHR    R0,R1                                           CCT11770
0A70   4000 0A10       178          STH    R0,IO        KB DEVICE = LIST DEVICE            CCT11780
0A74   D310 0A14       179          LB     R1,TTYADR                                       CCT11790
0A78   D300 0A10       180          LB     R0,IO        GET I/O IDENTIFIER                 CCT11800
0A7C   C500 0001       181          CLHI   R0,1         CRT ?                              CCT11810
0A80   2135            182          BNES   GOTIT                                           CCT11820
0A82   D310 0A12       183          LB     R1,CRTADR                                       CCT11830
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0A86  DE10 14A0               OC    R1,SECOND         SET UP PALSA / PALM          CCT11840
0A8A  D210 149A        GOTIT  STB   R1,KBADR          STORE AS KEYBOARD DEV ADR    CCT11850
0A8E  41F0 1244               BAL   LINK,LCORE        SET UP LOW CORE              CCT11860
0A92  41F0 10FA               BAL   LINK,CRLF                                      CCT11870
0A96  C850 16B8               LHI   R5,TITLE                                       CCT11880
0A9A  41F0 101E               BAL   R15,PRINT         PRINT TEST PROGRAM TITLE     CCT11890
                       *-----------------------------                              CCT11900
                       *  KEYBOARD INPUT ROUTINE                                   CCT11910
                       *                                                           CCT11920
      0000 0A9E        OPTIN  EQU   *                                              CCT11930
0A9E  C820 00F0               LHI   R2,X'F0'                                       CCT11940
0AA2  9512                    EPSR  R1,R2             NO INT. REG SET 15           CCT11950
0AA4  41F0 10FA               BAL   LINK,CRLF         CR,LF TO LIST DEVICE         CCT11960
      0000 0AA8        OPTIN1 EQU   *                                              CCT11970
0AA8  D300 0A10               LB    R0,IO             GET KEYBOARD DEVICE          CCT11980
0AAC  9410                    EXBR  R1,R0                                          CCT11990
0AAE  0601                    OHR   R0,R1                                          CCT12000
0AB0  4000 0A10               STH   R0,IO             KB DEVICE = LIST DEVICE      CCT12010
0AB4  C840 002A               LHI   R4,X'2A'          OUTPUT AN * TO INDICATE      CCT12020
0AB8  41F0 10B6               BAL   R15,OUTCHR        WE ARE READY FOR INPUT       CCT12030
0ABC  C8C0 111C               LHI   R12,QUESTN        SET UP R12 FOR ERR ROUTINE   CCT12040
0AC0  C800 2020               LHI   R0,X'2020'        BLANK OUT TTY BUFFER         CCT12050
0AC4  4000 3320               STH   R0,OPTBUF         WHICH WILL CONTAIN OPTION    CCT12060
0AC8  4000 3322               STH   R0,OPTBUF+2       NAME                         CCT12070
0ACC  4000 3324               STH   R0,OPTBUF+4                                    CCT12080
0AD0  0711                    XHR   R1,R1             CLEAR TTYBUF INDEX           CCT12090
0AD2  41F0 10E8        RDCHR  BAL   R15,GETCHR        GET A CHAR IN R4             CCT12100
0AD6  C540 000D               CLHI  R4,X'0D'          IS IT CR?                    CCT12110
0ADA  233A                    BES   LOOKUP            YES, TRY MATCH               CCT12120
0ADC  C540 0020               CLHI  R4,X'20'          IS IT A BLANK?               CCT12130
0AE0  2337                    BES   LOOKUP            YES, TRY MATCH               CCT12140
0AE2  D241 3320               STB   R4,OPTBUF(R1)     STORE THE CHAR               CCT12150
0AE6  2611                    AIS   R1,1              BUMP BUFFER INDEX            CCT12160
0AE8  C510 0007               CLHI  R1,7              HAVE WE REACHED 6 CHARS?     CCT12170
0AEC  203D                    BNES  RDCHR             NO,READ ANOTHER CHARACTER    CCT12180
                       *  OPTION MATCH ROUTINE                                     CCT12190
                       *                                                           CCT12200
0AEE  C810 153C        LOOKUP LHI   R1,OPT            SET R1 = A(OPT)              CCT12210
0AF2  0733             LOOK1  XHR   R3,R3             CLEAR IN BUFF INDEX          CCT12220
0AF4  0861                    LHR   R6,R1             SET OPTION WORD INDEX        CCT12230
0AF6  4856 0000        LOOK2  LH    R5,0(R6)                                       CCT12240
0AFA  021C                    BMR   R12               IF MINUS, THEN NO MATCH = ERROR CCT12250
0AFC  4553 3320               CLH   R5,OPTBUF(R3)     COMPARE TO OPTBUF HW         CCT12260
0B00  2333                    BES   LOOK3                                          CCT12270
0B02  261C                    AIS   R1,12                                          CCT12280
0B04  2209                    BS    LOOK1                                          CCT12290
0B06  2632             LOOK3  AIS   R3,2              TRY NEXT HW                  CCT12300
0B08  2662                    AIS   R6,2                                           CCT12310
0B0A  C530 0006               CLHI  R3,6              3 MATCHING HW FOUND ?        CCT12320
0B0E  203C                    BNES  LOOK2             NO, LOOP                     CCT12330
                       *-----------------------------                              CCT12340
                       *  TO PROCESS INPUT COMMANDS : RUN , OPTION                 CCT12350
                       *                                                           CCT12360
0B10  C510 1680               CLHI  R1,RUN            RUN COMMAND ?                CCT12370
0B14  4330 0CA6               BE    RUNIT                                          CCT12380
0B18  C510 1674               CLHI  R1,OPTION         OPTION CMD ?                 CCT12390
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0B1C   4230 0C1A                 BNE     LOOK4               NO, LOOK FURTHER            CCT12400
0B20   4820 167C                 LH      R2,OPTION+8                                     CCT12410
0B24   0232                      BNZR    R2                                              CCT12420
0B26   C830 153C       OPTRTN    LHI     R3,TEST                                         CCT12430
0B2A   C8E0 0BAE                 LHI     R14,OPTCMD8                                     CCT12440
0B2E   41F0 10FA                 BAL     LINK,CRLF                                       CCT12450
0B32   0722            OPTCMD    XHR     R2,R2                                           CCT12460
0B34   D342 153C       OPTCMD1   LB      R4,OPT(R2)          TO PRINT TEST               CCT12470
0B38   41F0 10B6                 BAL     LINK,OUTCHR                                     CCT12480
0B3C   2621                      AIS     R2,1                                            CCT12490
0B3E   C520 0006                 CLHI    R2,6                                            CCT12500
0B42   2087                      BLS     OPTCMD1                                         CCT12510
0B44   0755                      XHR     R5,R5               TO PRINT TEST OPTION VALUES CCT12520
0B46   4050 14AC                 STH     R5,FIRST                                        CCT12530
0B4A   4823 0008                 LH      R2,8(R3)                                        CCT12540
0B4E   C840 0030       OPTCMD2   LHI     R4,C'0'             START WITH TEST 0           CCT12550
0B52   9121            OPTCMD3   SLHLS   R2,1                                            CCT12560
0B54   4380 0B82                 BNC     OPTCMD7                                         CCT12570
0B58   4040 14AE       OPTCMD4   STH     R4,TEMP             OPTION VALUE FOUND.         CCT12580
0B5C   4800 14AC                 LH      R0,FIRST            IS IT FIRST ?               CCT12590
0B60   2335                      BZS     OPTCMD5                                         CCT12600
0B62   C840 002C                 LHI     R4,C','             NO, OUTPUT COMMA            CCT12610
0B66   41F0 10B6                 BAL     LINK,OUTCHR                                     CCT12620
0B6A   4040 14AC       OPTCMD5   STH     R4,FIRST                                        CCT12630
0B6E   0855                      LHR     R5,R5               TEST VALUE FROM SECOND HW   CCT12640
0B70   2335                      BZS     OPTCMD6             NO                          CCT12650
0B72   C840 0031                 LHI     R4,C'1'             YES,OUTPUT '1'              CCT12660
0B76   41F0 10B6                 BAL     LINK,OUTCHR                                     CCT12670
0B7A   4840 14AE       OPTCMD6   LH      R4,TEMP             RESTORE R4                  CCT12680
0B7E   41F0 10B6                 BAL     LINK,OUTCHR         OUTPUT 0-F                  CCT12690
0B82   2641            OPTCMD7   AIS     R4,1                INCREMENT TEST #            CCT12700
0B84   C540 0047                 CLHI    R4,C'G'                                         CCT12710
0B88   238C                      BNLS    OPTCMD71                                        CCT12720
0B8A   C540 0041                 CLHI    R4,C'A'                                         CCT12730
0B8E   4380 0B52                 BNL     OPTCMD3             R4 = B-F                    CCT12740
0B92   C540 003A                 CLHI    R4,X'3A'                                        CCT12750
0B96   4280 0B52                 BL      OPTCMD3             R4 = 0-9                    CCT12760
0B9A   2647                      AIS     R4,7                                            CCT12770
0B9C   4300 0B52                 B       OPTCMD3             R4 = A                      CCT12780
0BA0   0855            OPTCMD71  LHR     R5,R5               DONE ?                      CCT12790
0BA2   023E                      BNZR    R14                                             CCT12800
0BA4   4823 0006                 LH      R2,6(R3)                                        CCT12810
0BA8   2451                      LIS     R5,1                R5 = 1 FOR SECOND TEST HW   CCT12820
0BAA   4300 0B4E                 B       OPTCMD2                                         CCT12830
                       *  TO OUTPUT OTHER OPTION NAMES & VALUES                          CCT12840
0BAE   41F0 10FA       OPTCMD8   BAL     LINK,CRLF                                       CCT12850
0BB2   2461                      LIS     R6,1                SET LINE COUNTER            CCT12860
0BB4   C820 1548                 LHI     R2,OPT+12           R2 POINTS TO THE NAME       CCT12870
0BB8   0733            OPTCMD9   XHR     R3,R3                                           CCT12880
0BBA   4852 0006                 LH      R5,6(R2)            R5 = OPTION VALUE           CCT12890
0BBE   D342 0000       OPTCMD10  LB      R4,0(R2)                                        CCT12900
0BC2   41F0 10B6                 BAL     LINK,OUTCHR         OUTPUT OPTION NAME CHAR     CCT12910
0BC6   2621                      AIS     R2,1                                            CCT12920
0BC8   2631                      AIS     R3,1                                            CCT12930
0BCA   C530 0006                 CLHI    R3,6                6 CHAR OUTPUTED ?           CCT12940
0BCE   2088                      BLS     OPTCMD10            NO,LOOP                     CCT12950
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0BD0  C840 0020                  LHI   R4,C' '                                              CCT12960
0BD4  41F0 10B6                  BAL   LINK,OUTCHR        OUTPUT ONE SPACE                  CCT12970
0BD8  2404                       LIS   R0,4                                                 CCT12980
0BDA  41F0 0FB0                  BAL   LINK,R5HEX         WRITE OPTION VALUE IN HEX (4 DIGITS) CCT12990
0BDE  2401                       LIS   R0,1                                                 CCT13000
0BE0  D400 0A11                  CLB   R0,IO+1            CRT ?                             CCT13010
0BE4  4230 0C04                  BNE   OPTCMD12           NO                                CCT13020
0BE8  2661                       AIS   R6,1                                                 CCT13030
0BEA  C560 0018                  CLHI  R6,24              PAGE FULL ?                       CCT13040
0BEE  218B                       BLS   OPTCMD12           NO                                CCT13050
0BF0  0766                       XHR   R6,R6              INITIALIZE LINE COUNT             CCT13060
0BF2  41F0 10E8        OPTCMD11  BAL   LINK,GETCHR                                          CCT13070
0BF6  C540 000D                  CLHI  R4,13              CR ?                              CCT13080
0BFA  4330 0A9E                  BE    OPTIN              GO TO BEGINING                    CCT13090
0BFE  C540 000A                  CLHI  R4,10              LF ?                              CCT13100
0C02  2038                       BNES  OPTCMD11                                             CCT13110
0C04  41F0 10FA        OPTCMD12  BAL   LINK,CRLF                                            CCT13120
0C08  41F0 1136                  BAL   LINK,TSTBRK        EXIT IF 'BREAK' PRESSED.          CCT13130
0C0C  2626                       AIS   R2,6                                                 CCT13140
0C0E  C520 1674                  CLHI  R2,OPTEND          ALL OPTIONS DONE ?                CCT13150
0C12  4280 0BB8                  BL    OPTCMD9            NO,LOOP FOR NEXT ONE              CCT13160
0C16  4300 0AA8                  B     OPTIN1             GO TO BEGINING                    CCT13170
0C1A  C510 153C        LOOK4     CLHI  R1,TEST            TEST OPTION ?                     CCT13180
0C1E  4330 0C42                  BE    TESTOP                                               CCT13190
                       *------------------------------                                      CCT13200
                       *  TO PROCESS OPTIONS OTHER THAN TEST                                CCT13210
                       *                                                                    CCT13220
0C22  C540 000D                  CLHI  R4,13              OPT FOLLOWED BY CR ?              CCT13230
0C26  033C                       BER   R12                YES, ERROR                        CCT13240
0C28  41E0 0F4C                  BAL   R14,OPTVAL         GET OPTION VALUE IN R6            CCT13250
0C2C  C540 000D                  CLHI  R4,13              TERMINATED BY CR ?                CCT13260
0C30  023C                       BNER  R12                                                  CCT13270
0C32  48E1 0008                  LH    R14,8(R1)          GET THE DISPLACEMENT              CCT13280
0C36  2332                       BZS   LOOK5                                                CCT13290
0C38  01FE                       BALR  R15,R14                                              CCT13300
      0000 0C3A        LOOK5     EQU   *                                                    CCT13310
0C3A  4061 0006                  STH   R6,6(R1)           STORE OPTION VALUE                CCT13320
0C3E  4300 0A9E                  B     OPTIN              GO TO BEGINING                    CCT13330
                       *------------------------------                                      CCT13340
                       *  TEST OPTION PROCESS ROUTINE                                       CCT13350
                       *                                                                    CCT13360
0C42  C540 000D        TESTOP    CLHI  R4,13              TEST OPT FOLLOWED BY CR ?         CCT13370
0C46  213B                       BNES  TESTOP1                                              CCT13380
0C48  4800 1690                  LH    R0,DEFTESTS        YES, SET TEST OPTION TO           CCT13390
0C4C  4000 1544                  STH   R0,TEST+8                                            CCT13400
0C50  4800 1692                  LH    R0,DEFTESTS+2      ALL DEFAULT TESTS IN PROGRAM      CCT13410
0C54  4000 1542                  STH   R0,TEST+6                                            CCT13420
0C58  4300 0A9E                  B     OPTIN                                                CCT13430
0C5C  C810 153C        TESTOP1   LHI   R1,TEST                                              CCT13440
0C60  4850 168E                  LH    R5,MAXTST                                            CCT13450
0C64  0700             TSTOP1A   XHR   R0,R0                                                CCT13460
0C66  4001 0006                  STH   R0,6(R1)                                             CCT13470
0C6A  4001 0008                  STH   R0,8(R1)                                             CCT13480
0C6E  41E0 0F4C        TSTOP2    BAL   R14,OPTVAL         GET OPTION VALUE IN R6            CCT13490
0C72  0565                       CLHR  R6,R5                                                CCT13500
0C74  022C                       BPR   R12                                                  CCT13510
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0C76   C560 0010          CLHI   R6,16           R6 < 16 ?                          CCT13520
0C7A   2388               BNLS   TSTOP3          NO                                 CCT13530
0C7C   41E0 0F88          BAL    R14,UNARY       GET UNARY OPERAND IN R3            CCT13540
0C80   4631 0008          OH     R3,8(R1)                                           CCT13550
0C84   4031 0008          STH    R3,8(R1)                                           CCT13560
0C88   2309               BS     TSTOP4                                             CCT13570
0C8A   CB60 0010 TSTOP3   SHI    R6,16           R6 = 0-F                           CCT13580
0C8E   41E0 0F88          BAL    R14,UNARY                                          CCT13590
0C92   4631 0006          OH     R3,6(R1)                                           CCT13600
0C96   4031 0006          STH    R3,6(R1)                                           CCT13610
0C9A   C540 000D TSTOP4   CLHI   R4,13           TERMINATED BY CR ?                 CCT13620
0C9E   4230 0C6E          BNE    TSTOP2                                             CCT13630
0CA2   4300 0A9E          B      OPTIN           GO TO BEGINING                     CCT13640
                 *----------------------------                                      CCT13650
                 *                                                                  CCT13660
       0000 0CA6 RUNIT    EQU    *                                                  CCT13670
0CA6   41F0 10FA          BAL    LINK,CRLF                                          CCT13680
0CAA   4800 3326          LH     R0,IOSAVE                                          CCT13690
0CAE   4000 0A10          STH    R0,IO           RESTORE USER'S I/O CHOICE          CCT13700
0CB2   41F0 10FA          BAL    LINK,CRLF                                          CCT13710
0CB6   41F0 30FC          BAL    LINK,INIT       LINK USER INITIALIZATION ROUTINE   CCT13720
0CBA   41F0 1244          BAL    LINK,LCORE      SET UP LOW CORE                    CCT13730
       0000 0CBE INITRET  EQU    *                                                  CCT13740
0CBE   240F               LIS    R0,15           TO FIND HIGHEST SELECTED THST #    CCT13750
0CC0   4810 1542          LH     R1,TEST+6       CHECK SECOND TEST HW               CCT13760
0CC4   9011      KEEP1    SRLS   R1,1                                               CCT13770
0CC6   218B               BCS    FOUND1          R0 = F-0                           CCT13780
0CC8   2701               SIS    R0,1                                               CCT13790
0CCA   2213               BNMS   KEEP1           TRY NEXT DIGIT                     CCT13800
0CCC   240F               LIS    R0,15           INITIALIZE AGAIN                   CCT13810
0CCE   4810 1544          LH     R1,TEST+8       CHECK FIRST TEST HW                CCT13820
0CD2   9011      KEEP2    SRLS   R1,1                                               CCT13830
0CD4   2186               BCS    FOUND1+4        R0 = F-0 = TEST #                  CCT13840
0CD6   2701               SIS    R0,1                                               CCT13850
0CD8   2213               BNMS   KEEP2           LOOP                               CCT13860
0CDA   030C               BR     R12             TEST NOT SELECTED                  CCT13870
0CDC   CA00 0010 FOUND1   AHI    R0,16           ADJUST TEST # FOR SECOND HW        CCT13880
0CE0   4000 14B0          STH    R0,SELTST                                          CCT13890
                 *  RESET TEST PARAMETERS                                           CCT13900
0CE4   0700               XHR    R0,R0                                              CCT13910
0CE6   4000 14B8          STH    R0,BTESTNO      RESET THESE FLAGS TO 0             CCT13920
0CEA   4000 14B6          STH    R0,TOTAL                                           CCT13930
0CEE   4000 14B4          STH    R0,TOTERR                                          CCT13940
0CF2   4000 14B2          STH    R0,WASDU                                           CCT13950
0CF6   C810 3030          LHI    R1,C'00'                                           CCT13960
0CFA   4010 14D4          STH    R1,MTESTNO      RESET THESE FLAGS TO C'00'         CCT13970
0CFE   4010 14DE          STH    R1,ETESTNO                                         CCT13980
0D02   4010 14E0          STH    R1,ERRNO                                           CCT13990
                 *  START SELECTION FROM TEST 0                                     CCT14000
0D06   0700      KEEP3    XHR    R0,R0                                              CCT14010
0D08   4000 14B8          STH    R0,BTESTNO                                         CCT14020
0D0C   4000 14BC          STH    R0,NEXTST       RESET NEXT TEST #                  CCT14030
                 *  TO FIND THE NEXT SLEECTED TEST                                  CCT14040
0D10   4820 14BC KEEP4    LH     R2,NEXTST       GET NEXT TEST #                    CCT14050
0D14   2401      KEEP41   LIS    R0,1                                               CCT14060
0D16   910F               SLHLS  R0,15           R0 = X'8000'                       CCT14070
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0D18  CC02 0000      408          SRHL   R0,0(R2)          R0 = NEXT TEST BIT                    CCT14080
0D1C  C520 0010      409          CLHI   R2,X'10'          NEXT TEST < 16                        CCT14090
0D20  2185           410          BLS    KEEP42                                                 CCT14100
0D22  4400 1542      411          NH     R0,TEST+6         LOOK AT TEST HW 2                     CCT14110
0D26  2137           412          BNZS   KEEP5                                                  CCT14120
0D28  2304           413          BS     KEEP43                                                 CCT14130
0D2A  4400 1544      414  KEEP42  NH     R0,TEST+8         LOOK AT 'TEST' HW                     CCT14140
0D2E  2133           415          BNZS   KEEP5                                                  CCT14150
0D30  2621           416  KEEP43  AIS    R2,1                                                   CCT14160
0D32  220F           417          BS     KEEP41            LOOP FOR NEXT TEST #                  CCT14170
0D34  4020 1488      418  KEEP5   STH    R2,BTESTNO        CURRENT TEST #                        CCT14180
0D38  0812           419          LHR    R1,R2             R1 = TEST # IN BINARY                 CCT14190
0D3A  2621           420          AIS    R2,1                                                   CCT14200
0D3C  4020 14BC      421          STH    R2,NEXTST                                              CCT14210
0D40  2402           422          LIS    R0,2              SET DIGITS TO PRINT = 2               CCT14220
0D42  C820 14D4      423          LHI    R2,MTESTNO        R2 = A(MTESTNO)                       CCT14230
0D46  41F0 0FEC      424          BAL    LINK,HEXASC       STORE TEST # IN ASCII @ MTESTNO       CCT14240
0D4A  4820 14D4      425          LH     R2,MTESTNO                                             CCT14250
0D4E  4020 14DE      426          STH    R2,ETESTNO        STORE TEST # IN ASCII @ ETESTNO       CCT14260
0D52  41F0 1136      427          BAL    LINK,TSTBRK       TEST BREAK                            CCT14270
0D56  C850 14CE      428          LHI    R5,TSTMSG                                              CCT14280
0D5A  41F0 101E      429          BAL    LINK,PRINT        PRINT 'TEST NN'                       CCT14290
0D5E  0700           430          XHR    R0,R0                                                  CCT14300
0D60  4000 14AA      431          STH    R0,NOERR          RESET ERROR FLAG                      CCT14310
0D64  4000 14BA      432          STH    R0,COUNT          RESET COUNT                           CCT14320
0D68  4820 14B8      433  KEEP6   LH     R2,BTESTNO        R2 = TEST #                           CCT14330
0D6C  0A22           434          AHR    R2,R2                                                  CCT14340
0D6E  4812 1694      435          LH     R1,TESTS(R2)                                           CCT14350
0D72  0301           436          BR     R1                GO TO TEST MODULE                     CCT14360
                     437  *-----------------------------                                         CCT14370
                     438  *                                                                      CCT14380
                     439  *  TEST MODULE END ROUTINE                                             CCT14390
                     440  *                                                                      CCT14400
      0000 0D74      441  TSTEND  EQU    *                                                      CCT14410
0D74  C810 00F0      442          LHI    R1,X'F0'                                               CCT14420
0D78  9501           443          EPSR   R0,R1             DISABLE INT @ PROCESSOR LEVEL         CCT14430
0D7A  4800 14BA      444          LH     R0,COUNT                                               CCT14440
0D7E  2601           445          AIS    R0,1              INCREMENT COUNT                       CCT14450
0D80  4000 14BA      446          STH    R0,COUNT                                               CCT14460
0D84  4500 154E      447          CLH    R0,LOOP+6         IF COUNT > LOOP,                      CCT14470
0D88  2385           448          BNLS   KEEP7             GO TO NEXT TEST MODULE                CCT14480
0D8A  41F0 1136      449          BAL    LINK,TSTBRK       IF BREAK GO TO OPTIN                  CCT14490
0D8E  4300 0D68      450          B      KEEP6             OTHERWISE, REPEAT SAME TEST           CCT14500
0D92  4800 14AA      451  KEEP7   LH     R0,NOERR          LOOK @ ERROR FLAG                     CCT14510
0D96  2135           452          BNZS   KEEP71                                                 CCT14520
0D98  C850 14F4      453          LHI    R5,NOERMSG                                             CCT14530
0D9C  41F0 101E      454          BAL    LINK,PRINT        PRINT "NO ERROR"                      CCT14540
0DA0  4810 14B8      455  KEEP71  LH     R1,BTESTNO        GET TEST #                            CCT14550
0DA4  4510 14B0      456          CLH    R1,SELTST         IS THE LAST SELECTED TEST DONE ?      CCT14560
0DA8  4230 0D10      457          BNE    KEEP4             NO, GO SELECT NEXT TEST               CCT14570
                     458  *  ALL THE SELECTED TESTS ARE NOW RUN                                  CCT14580
0DAC  4200 0000      459          NOP                                                            CCT14590
0DB0  41F0 1174      460          BAL    LINK,TSTDU        RETURN WITH R1 = DU BIT               CCT14600
0DB4  0811           461          LHR    R1,R1             DU = 1 NOW ?                          CCT14610
0DB6  4230 0DE6      462          BNZ    KEEP9             YES, DISPLAY TOTAL                    CCT14620
0DBA  4810 14B2      463          LH     R1,WASDU          DU WAS = 1 ?                          CCT14630
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0DBE   4230 0E24         464            BNZ    KEEP10               YES, PRINT TOTAL, TOTERR          CCT14640
0DC2   41F0 1136         465            BAL    LINK,TSTBRK                                            CCT14650
0DC6   4810 155A         466            LH     R1,CONTIN+6          IF CONTIN = 1,                    CCT14660
0DCA   4230 0D06         467            BNZ    KEEP3                GO TO TEST 0                      CCT14670
0DCE   D300 0A10         468            LB     R0,IO                GET KEYBOARD IDENTIFIER           CCT14680
0DD2   9410              469            EXBR   R1,R0                                                  CCT14690
0DD4   0601              470            OHR    R0,R1                                                  CCT14700
0DD6   4000 0A10         471            STH    R0,IO                KB DEVICE = LIST DEVICE           CCT14710
0DDA   C850 152C         472            LHI    R5,EOTMSG                                              CCT14720
0DDE   41F0 101E         473            BAL    LINK,PRINT           'END OF TEST'                     CCT14730
0DE2   4300 0A9E         474            B      OPTIN                OTHERWISE, END TESTING.           CCT14740
                         475  *  ROUTINE INCREMENTS,DISPLAYS & CHECKS 'TOTAL'                        CCT14750
                         476  *                                                                      CCT14760
0DE6   4010 14B2         477  KEEP9     STH    R1,WASDU             SET 'WASDU' FLAG                  CCT14770
0DEA   4810 14B6         478            LH     R1,TOTAL             INCREMENT TOTAL                   CCT14780
0DEE   2611              479            AIS    R1,1                                                   CCT14790
0DF0   4010 14B6         480            STH    R1,TOTAL                                               CCT14800
0DF4   2421              481  KEEP91    LIS    R2,1                                                   CCT14810
0DF6   DE20 149B         482            OC     R2,NORM                                                CCT14820
0DFA   9411              483            EXBR   R1,R1                                                  CCT14830
0DFC   9821              484            WHR    R2,R1                DISPLAY IT                        CCT14840
0DFE   9411              485            EXBR   R1,R1                                                  CCT14850
0E00   C510 7FFF         486            CLHI   R1,X'7FFF'                                             CCT14860
0E04   2389              487            BNLS   HALT9                                                  CCT14870
0E06   4800 14B8         488            LH     R0,BTESTNO           R0 = CURRENT TEST #               CCT14880
0E0A   4500 14B0         489            CLH    R0,SELTST            IS IT LAST TEST ?                 CCT14890
0E0E   4280 0D10         490            BL     KEEP4                NO, GO TO NEXT TEST               CCT14900
0E12   4300 0D06         491            B      KEEP3                GO TO TEST 0                      CCT14910
                         492  *                                                                      CCT14920
0E16   2411              493  HALT9     LIS    R1,1                                                   CCT14930
0E18   911F              494            SLHLS  R1,15                R1 = X'8000'                      CCT14940
0E1A   9521              495            EPSR   R2,R1                HALT PROCESSOR                    CCT14950
                         496  *  WHEN EXE/RUN IS PRESSED, RPINT TOTAL & LTOTERR                       CCT14960
0E1C   41F0 1174         497            BAL    LINK,TSTDU           SEE IF LIST DEV IS ON             CCT14970
0E20   0811              498            LHR    R1,R1                                                  CCT14980
0E22   2036              499            BNZS   HALT9                NO, HALT                          CCT14990
0E24   0700              500  KEEP10    XHR    R0,R0                                                  CCT15000
0E26   4000 14B2         501            STH    R0,WASDU             RESET FLAG                        CCT15010
0E2A   41F0 10FA         502            BAL    LINK,CRLF                                              CCT15020
0E2E   C850 14E4         503            LHI    R5,TOTMSG                                              CCT15030
0E32   41F0 101E         504            BAL    LINK,PRINT           PRINT 'TOTAL   TOTERR'            CCT15040
0E36   2404              505            LIS    R0,4                 TO PRINT 4 HEX DIGITS             CCT15050
0E38   4850 14B6         506            LH     R5,TOTAL                                               CCT15060
0E3C   41F0 0FB0         507            BAL    LINK,R5HEX           PRINT TOTAL IN HEX                CCT15070
0E40   2434              508            LIS    R3,4                                                   CCT15080
0E42   C840 0020         509            LHI    R4,C' '              SPACE                             CCT15090
0E46   41F0 10B6         510  KEEP101   BAL    LINK,OUTCHR          OUTPUT IT                         CCT15100
0E4A   2731              511            SIS    R3,1                                                   CCT15110
0E4C   2033              512            BNZS   KEEP101              4 TIMES                           CCT15120
0E4E   2404              513            LIS    R0,4                 TO PRINT 4 HEX DIGITS             CCT15130
0E50   4850 14B4         514            LH     R5,TOTERR                                              CCT15140
0E54   41F0 0FB0         515            BAL    LINK,R5HEX           PRINT TOTERR IN HEX               CCT15150
0E58   4300 0A9E         516            B      OPTIN                GO TO BEGINNING                   CCT15160
                         517  * *********************************                                    CCT15170
                         518  *  ERROR ROUTINES                                                      CCT15180
                         519  *                                                                      CCT15190
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0E5C   D000 32E0      ERR      STM    R0,ERRSAVE         STORE REGISTERS                         CCT15200
0E60   4120 0EB2               BAL    R2,ERRCOM          RETURN IF LIST DEVICE IS ON             CCT15210
0E64   41E0 0EE0               BAL    RET,ERR1           PRINT 'ERROR TTNN'                      CCT15220
0E68   0700           ERRCOM2  XHR    R0,R0                                                      CCT15230
0E6A   4000 14A8               STH    R0,ISITERR         RESET ERROR FLAG                        CCT15240
0E6E   D100 32E0               LM     R0,ERRSAVE         RESTORE REGISTERS                       CCT15250
0E72   030F                    BR     LINK               RETURN TO TEST                          CCT15260
0E74   D000 32E0      ERRD     STM    R0,ERRSAVE         STORE REGISTERS                         CCT15270
0E78   4120 0EB2               BAL    R2,ERRCOM          RETURN IF LIST DEVICE IS ON             CCT15280
0E7C   41E0 0EE0               BAL    RET,ERR1           PRINT 'ERROR TTNN'                      CCT15290
0E80   41E0 0EEA               BAL    RET,ERRD1          PRINT 'DEV DDD'                         CCT15300
0E84   220E                    BS     ERRCOM2                                                    CCT15310
0E86   D000 32E0      ERRDS    STM    R0,ERRSAVE         STORE REGISTERS                         CCT15320
0E8A   4120 0EB2               BAL    R2,ERRCOM          RETURN IF LIST DEVICE IS ON             CCT15330
0E8E   41E0 0EE0               BAL    RET,ERR1           PRINT 'ERROR TTNN'                      CCT15340
0E92   41E0 0F02               BAL    RET,ERRDS1         PRINT 'DEV DDD STA SS'                  CCT15350
0E96   4300 0E68               B      ERRCOM2                                                    CCT15360
0E9A   D000 32E0      ERRALL   STM    R0,ERRSAVE         STORE REGISTERS                         CCT15370
0E9E   4120 0EB2               BAL    R2,ERRCOM          RETURN IF LIST DEVICE IS ON             CCT15380
0EA2   41E0 0EE0               BAL    RET,ERR1           PRINT 'ERROR TTNN'                      CCT15390
0EA6   41E0 0F02               BAL    RET,ERRDS1         PRINT 'DEV DDD STA SS'                  CCT15400
0EAA   41E0 0F28               BAL    RET,ERRPL1         PRINT 'PSW PPPP  LOC LLLL'              CCT15410
0EAE   4300 0E68               B      ERRCOM2                                                    CCT15420
                      *  COMMON ERROR ROUTINE                                                    CCT15430
0EB2   C810 00F0      ERRCOM   LHI    R1,X'F0'                                                   CCT15440
0EB6   9501                    EPSR   R0,R1              DISABLE INT. @ PROCESSOR LEVEL          CCT15450
0EB8   41F0 1174               BAL    LINK,TSTDU         GET LIST DEVICE DU BIT IN R1            CCT15460
0EBC   0A11                    AHR    R1,R1                                                      CCT15470
0EBE   2136                    BNZS   ERRCOM1                                                    CCT15480
0EC0   4020 14A8               STH    R2,ISITERR         SET ERROR FLAG                          CCT15490
0EC4   4020 14AA               STH    R2,NOERR                                                   CCT15500
0EC8   0302                    BR     R2                 GO, PRINT ERROR MESSAGE                 CCT15510
                      *                                                                          CCT15520
0ECA   4810 14B4      ERRCOM1  LH     R1,TOTERR          LIST DEVICE IS OFF                      CCT15530
0ECE   2611                    AIS    R1,1                                                       CCT15540
0ED0   4010 14B4               STH    R1,TOTERR          INCREMENT TOTERR                        CCT15550
0ED4   C510 7FFF               CLHI   R1,X'7FFF'         BEYOND LIMIT ?                          CCT15560
0ED8   4280 0DF4               BL     KEEP91             NO, ABORT CURRENT TEST & GOTO NEXT      CCT15570
0EDC   4300 0E16               B      HALT9              YES, HALT PROCESSOR                     CCT15580
                      *-----------------------------                                             CCT15590
                      *  ERROR SUPPORT (MESSAGE PRINT) ROUTINES                                  CCT15600
                      *                                                                          CCT15610
                      *  TO PRINT 'ERROR TTNN'                                                   CCT15620
0EE0   C850 1408      ERR1     LHI    R5,ERRMSG                                                  CCT15630
0EE4   41F0 101E               BAL    LINK,PRINT         PRINT 'ERROR TTNN'                      CCT15640
                      *                                  TT = TEST #, NN = ERROR #               CCT15650
0EE8   030E                    BR     R14                RETURN                                  CCT15660
                      *  TO PRINT 'DEV DDD'                                                      CCT15670
0EEA   2403           ERRD1    LIS    R0,3               SET UP DIGITS = 3                       CCT15680
0EEC   4810 1496               LH     R1,ERRDEV          R1 = ERROR DEV # IN BINARY              CCT15690
0EF0   C820 1512               LHI    R2,ASCIDEV2                                                CCT15700
0EF4   41F0 0FEC               BAL    LINK,HEXASC        CONVERT IT TO ASCII                     CCT15710
0EF8   C850 150E               LHI    R5,DEVMSG2                                                 CCT15720
0EFC   41F0 101E               BAL    LINK,PRINT         PRINT 'DEV DD'                          CCT15730
0F00   030E                    BR     RET                RETURN                                  CCT15740
                      *  TO PRINT 'DEV DDD STA SS'                                               CCT15750
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0F02  2403          576  ERRDS1   LIS    R0,3              SET UP DIGITS = 3                CCT15760
0F04  4810 1496     577           LH     R1,ERRDEV         R1 = ERROR DEV #                 CCT15770
0F08  C820 1502     578           LHI    R2,ASCIDEV                                         CCT15780
0F0C  41F0 0FEC     579           BAL    LINK,HEXASC       CONVERT IT TO ASCII              CCT15790
0F10  2402          580           LIS    R0,2              SET UP DIGITS = 2                CCT15800
0F12  0310 1499     581           LB     R1,ERRSTA         R1 = ERROR STATUS                CCT15810
0F16  C820 150A     582           LHI    R2,ASCISTA                                         CCT15820
0F1A  41F0 0FEC     583           BAL    LINK,HEXASC       CONVERT IT TO ASCII              CCT15830
0F1E  C850 14FE     584           LHI    R5,DEVMSG                                          CCT15840
0F22  41F0 101E     585           BAL    LINK,PRINT        PRINT 'DEV OD STA SS'            CCT15850
0F26  030E          586           BR     RET               RETURN                           CCT15860
                    587  *  TO PRINT 'PSW PPPP  LOC LLLL'                                   CCT15870
0F28  2404          588  ERRPL1   LIS    R0,4              SET UP DIGITS = 4                CCT15880
0F2A  4810 148A     589           LH     R1,OPSW           R1 = OLD PSW                     CCT15890
0F2E  C820 151C     590           LHI    R2,ASCIPSW                                         CCT15900
0F32  41F0 0FEC     591           BAL    LINK,HEXASC       CONVERT IT TO ASCII              CCT15910
0F36  4810 148E     592           LH     R1,OLOC           R1= OLD LOC                      CCT15920
0F3A  C820 1526     593           LHI    R2,ASCILOC                                         CCT15930
0F3E  41F0 0FEC     594           BAL    LINK,HEXASC       CONVERT IT TO ASCII              CCT15940
0F42  C850 1518     595           LHI    R5,PSWMSG                                          CCT15950
0F46  41F0 101E     596           BAL    LINK,PRINT        PRINT 'PSW PPPP  LOC LLLL'       CCT15960
0F4A  030E          597           BR     RET               RETURN                           CCT15970
                    598  * ********************************                                 CCT15980
                    599  *  TO OBTAIN OPTION VALUE IN R6                                    CCT15990
                    600  *                                                                  CCT16000
0F4C  0766          601  OPTVAL   XHR    R6,R6             INITIALIZE R6                    CCT16010
0F4E  41F0 10E8     602           BAL    R15,GETCHR        GET A CHAR IN R4                 CCT16020
0F52  C540 0030     603  OPTVAL1  CLHI   R4,C'0'           CHECK IF VALID HEX CHAR          CCT16030
0F56  028C          604           BLR    R12               NO                               CCT16040
0F58  C540 003A     605           CLHI   R4,X'3A'                                           CCT16050
0F5C  2188          606           BLS    OPTVAL2           YES                              CCT16060
0F5E  C540 0041     607           CLHI   R4,C'A'                                            CCT16070
0F62  028C          608           BLR    R12                                               CCT16080
0F64  C540 0047     609           CLHI   R4,C'G'                                            CCT16090
0F68  038C          610           BNLR   R12               NO                               CCT16100
0F6A  2649          611           AIS    R4,9                                              CCT16110
0F6C  C440 000F     612  OPTVAL2  NHI    R4,15             ISOLATE 4 BITS                   CCT16120
0F70  9164          613           SLHLS  R6,4              SHIFT LEFT 4                     CCT16130
0F72  0664          614           OHR    R6,R4             OR IN NEW CHARACTER              CCT16140
0F74  41F0 10E8     615           BAL    R15,GETCHR        GET NEXT CHAR                    CCT16150
0F78  C540 000D     616           CLHI   R4,13             EXIT IF CR                       CCT16160
0F7C  033E          617           BER    R14                                               CCT16170
0F7E  C540 002C     618           CLHI   R4,X'2C'          OR COMMA                         CCT16180
0F82  4230 0F52     619           BNE    OPTVAL1           LOOP TO PROCESS                  CCT16190
0F86  030E          620           BR     R14               RETURN                           CCT16200
                    621  *  TO CONVERT FROM BINARY TO UNARY PATTERN                         CCT16210
                    622  *                                                                  CCT16220
0F88  2431          623  UNARY    LIS    R3,1              INITIALIZE                       CCT16230
0F8A  C560 000F     624  UNARY1   CLHI   R6,15             DONE ?                           CCT16240
0F8E  033E          625           BER    R14               RETURN                           CCT16250
0F90  0A33          626           AHR    R3,R3                                              CCT16260
0F92  2661          627           AIS    R6,1                                               CCT16270
0F94  2205          628           BS     UNARY1                                             CCT16280
                    629  *---------------------------                                      CCT16290
                    630  *  TO PROVIDE # OF MILLISECONDS DELAY SPECIFIED BY R0              CCT16300
                    631  *                                                                  CCT16310
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0F96  D000 3368   TIMER    STM   R0,RSAVE         SAVE REGISTERS                       CCT16320
0F9A  2410                 LIS   R1,0                                                  CCT16330
0F9C  2421                 LIS   R2,1                                                  CCT16340
0F9E  4830 0A1C            LH    R3,TIME          R3 = TIME CONSTANT FOR 1 MS DELAY    CCT16350
0FA2  C110 0FA2            BXLE  R1,*                                                  CCT16360
0FA6  2701                 SIS   R0,1                                                  CCT16370
0FA8  2037                 BNZS  TIMER+4          LOOP TILL SPECIFIED DELAY            CCT16380
0FAA  D100 3368            LM    R0,RSAVE         RESTORE REGISTERS                    CCT16390
0FAE  030F                 BR    LINK             RETURN                               CCT16400
                  *------------------------------                                      CCT16410
                  *  R5HEX PRINTS CONTENTS OF R5 IN HEX                                CCT16420
                  *        PRINTS UPTO 4 DIGITS                                        CCT16430
0FB0  D000 3368   R5HEX    STM   R0,RSAVE         STORE REGISTERS                      CCT16440
0FB4  C500 0005            CLHI  R0,5             MORE THAN 4 DIGITS ?                 CCT16450
0FB8  4380 0FE6            BNL   R5XB             YES, EXIT                            CCT16460
0FBC  0820                 LHR   R2,R0            R2 = # OF DIGITS TO BE PRINTED       CCT16470
0FBE  2721                 SIS   R2,1                                                  CCT16480
0FC0  4210 0FE6            BM    R5XB                                                  CCT16490
0FC4  0A22                 AHR   R2,R2                                                 CCT16500
0FC6  0A22                 AHR   R2,R2            R2 = 4(DIGITS-1)                     CCT16510
0FC8  0845        R5X      LHR   R4,R5                                                 CCT16520
0FCA  CC42 0000            SRHL  R4,0(R2)                                              CCT16530
0FCE  C440 000F            NHI   R4,15            R4 = HEX DIGIT                       CCT16540
0FD2  CA40 0030            AHI   R4,X'30'                                              CCT16550
0FD6  C540 003A            CLHI  R4,X'3A'                                              CCT16560
0FDA  2182                 BLS   R5XA                                                  CCT16570
0FDC  2647                 AIS   R4,7             ALIGN ASCII CHAR                     CCT16580
0FDE  41F0 10B6   R5XA     BAL   R15,OUTCHR                                            CCT16590
0FE2  2724                 SIS   R2,4                                                  CCT16600
0FE4  221E                 BNMS  R5X              LOOP TILL ALL DIGITS                 CCT16610
0FE6  D100 3368   R5XB     LM    R0,RSAVE         RESTORE REGISTERS                    CCT16620
0FEA  030F                 BR    LINK             RETURN                               CCT16630
                  *------------------------------                                      CCT16640
                  *  TO CONVERT BINARY DATA IN R1 INTO ASCII CHAR & STORE @ 0(R2)      CCT16650
                  *                                                                    CCT16660
0FEC  D000 3368   HEXASC   STM   R0,RSAVE         STORE REGISTERS                      CCT16670
0FF0  0830                 LHR   R3,R0            R3 = DIGITS                          CCT16680
0FF2  0A33                 AHR   R3,R3                                                 CCT16690
0FF4  0A33                 AHR   R3,R3                                                 CCT16700
0FF6  2734                 SIS   R3,4             R3 = 4(DIGITS)-4                     CCT16710
0FF8  0841        HEXASC1  LHR   R4,R1            R4 = HEX DATA                        CCT16720
0FFA  CC43 0000            SRHL  R4,0(R3)                                              CCT16730
0FFE  C440 000F            NHI   R4,15            R4 = HEX DIGIT TO BE CONVERTED       CCT16740
1002  CA40 0030            AHI   R4,X'30'                                              CCT16750
1006  C540 003A            CLHI  R4,X'3A'                                              CCT16760
100A  2182                 BLS   HEXASC2                                               CCT16770
100C  2647                 AIS   R4,7             ADJUST TO A-F                        CCT16780
100E  D242 0000   HEXASC2  STB   R4,0(R2)         STORE ASCII CHAR                     CCT16790
1012  2621                 AIS   R2,1                                                  CCT16800
1014  2734                 SIS   R3,4                                                  CCT16810
1016  221F                 BNMS  HEXASC1          LOOP TILL ALL DIGITS                 CCT16820
1018  D100 3368            LM    R0,RSAVE         RESTORE REGISTERS                    CCT16830
101C  030F                 BR    LINK             RETURN                               CCT16840
                  *------------------------------                                      CCT16850
                  *  TO PRINT THE ASCII MESSAGE                                        CCT16860
                  *                                                                    CCT16870
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101E   D000 3368          688  PRINT    STM    R0,RSAVE          STORE REGISTERS                       CCT16880
1022   41F0 1174          689           BAL    LINK,TSTDU                                              CCT16890
1026   0811               690           LHR    R1,R1                                                   CCT16900
1028   2335               691           BZS    P1                                                      CCT16910
102A   4010 14B2          692           STH    R1,WASDU          SET FLAG                              CCT16920
102E   4300 10B0          693           B      PRINT5            EXIT                                  CCT16930
1032   4820 14B2          694  P1       LH     R2,WASDU                                                CCT16940
1036   4330 105C          695           BZ     P3                                                      CCT16950
103A   4010 14B2          696           STH    R1,WASDU          RESET FLAG                            CCT16960
103E   4810 0A1C          697           LH     R1,TIME           GET CONSTANT FOR APPROX 1 SEC DELAY   CCT16970
1042   C800 1000          698           LHI    R0,X'1000'                                              CCT16980
1046   2701               699           SIS    R0,1                                                    CCT16990
1048   2031               700           BTBS   3,1                                                     CCT17000
104A   2711               701           SIS    R1,1                                                    CCT17010
104C   2035               702           BTBS   3,5               LOOP TILL TIMEOUT                     CCT17020
104E   2434               703           LIS    R3,4                                                    CCT17030
1050   C840 00FF          704           LHI    R4,X'FF'                                                CCT17040
1054   41F0 10B6          705  P2       BAL    LINK,OUTCHR                                             CCT17050
1058   2731               706           SIS    R3,1                                                    CCT17060
105A   2033               707           BNZS   P2                                                      CCT17070
105C   4800 1566          708  P3       LH     R0,NOMSG+6                                              CCT17080
1060   2335               709           BZS    PRINT1            NO: PRINT ALL MESSAGES                CCT17090
1062   4800 14A8          710           LH     R0,ISITERR                                              CCT17100
1066   4330 10B0          711           BZ     PRINT5            NOT AN ERROR MSG, EXIT                CCT17110
106A   4110 120A          712  PRINT1   BAL    R1,SETUP          SET UP LIST DEV FOR PRINTING          CCT17120
106E   D315 0000          713  PRINT2   LB     R1,0(R5)          GET A MESSAGE BYTE                    CCT17130
1072   9D02               714           SSR    R0,R2                                                   CCT17140
1074   4210 10B0          715           BTC    1,PRINT5          IF DU, EXIT                           CCT17150
1078   2083               716           BTBS   8,3               IF BUSY, LOOP                         CCT17160
107A   9A01               717           WDR    R0,R1             WRITE A CHARACTER                     CCT17170
107C   C510 000D          718           CLHI   R1,13             CR ?                                  CCT17180
1080   2333               719           BES    PRINT3            MSG OVER                              CCT17190
1082   2651               720           AIS    R5,1                                                    CCT17200
1084   220B               721           BS     PRINT2            LOOP FOR NEXT CHAR                    CCT17210
1086   242A               722  PRINT3   LIS    R2,10             LF                                    CCT17220
1088   D310 0A11          723           LB     R1,IO+1           GET LIST DEV IDENTIFIER               CCT17230
108C   C510 0003          724           CLHI   R1,3              LINE PRINTER ?                        CCT17240
1090   2132               725           BNES   PRINT3A           NO, OUTPUT LF                         CCT17250
1092   2421               726           LIS    R2,1              YES, OUTPUT X'01'                     CCT17260
1094   9D01               727  PRINT3A  SSR    R0,R1                                                   CCT17270
1096   2081               728           BTBS   8,1                                                     CCT17280
1098   9A02               729           WDR    R0,R2                                                   CCT17290
109A   9D01               730           SSR    R0,R1                                                   CCT17300
109C   2081               731           BTBS   8,1               WAIT TILL LF COMPLETE                 CCT17310
109E   D320 0A11          732  PRINT4   LB     R2,IO+1                                                 CCT17320
10A2   C520 0001          733           CLHI   R2,1              CRT ?                                 CCT17330
10A6   2135               734           BNES   PRINT5                                                  CCT17340
10A8   DA00 1686          735           WD     R0,RUN+6          OUTPUT 1 NULL CHARACTER               CCT17350
10AC   9D01               736           SSR    R0,R1                                                   CCT17360
10AE   2081               737           BTBS   8,1                                                     CCT17370
10B0   D100 3368          738  PRINT5   LM     R0,RSAVE          RESTORE REGISTERS                     CCT17380
10B4   030F               739           BR     LINK              RETURN                                CCT17390
                          740  *--------------------------                                             CCT17400
                          741  *  SMALL SUPPORT ROUTINES                                               CCT17410
                          742  *                                                                       CCT17420
10B6   40F0 10E6          743  OUTCHR   STH    R15,OUT1+2        SET UP RETURN ADDRESS                 CCT17430
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10BA  41F0 1174              BAL   LINK,TSTDU                                        CCT17440
10BE  0811                   LHR   R1,R1                                             CCT17450
10C0  4230 10E4              BNZ   OUT1                 DEVICE UNAVAILABLE, EXIT     CCT17460
10C4  4110 120A              BAL   R1,SETUP             SET UP LIST DEVICE           CCT17470
10C8  9D01                   SSR   R0,R1                                             CCT17480
10CA  2081                   BTBS  8,1                  WAIT TILL BSY DROPS          CCT17490
10CC  9A04                   WDR   R0,R4                                             CCT17500
10CE  9D01                   SSR   R0,R1                                             CCT17510
10D0  2081                   BTBS  8,1                                               CCT17520
10D2  D310 0A11              LB    R1,IO+1                                           CCT17530
10D6  C510 0001              CLHI  R1,1                                              CCT17540
10DA  023F                   BNER  LINK                 RETURN                       CCT17550
10DC  DA00 1686              WD    R0,RUN+6             OUTPUT 1 NULL CHARACTER      CCT17560
10E0  9D01                   SSR   R0,R1                                             CCT17570
10E2  2081                   BTBS  8,1                                               CCT17580
10E4  4300 0000        OUT1  B     0                    RETURN AS SET UP ABOVE       CCT17590
                       *------------------------------                               CCT17600
                       *  TO GET A CHAR FROM KEYBOARD (IN REG R4)                    CCT17610
                       *                                                             CCT17620
10E8  4140 11B4        GETCHR BAL  R4,KBREAD            PUT KB DEVICE IN READ MODE   CCT17630
10EC  9D04                   SSR   R0,R4                                             CCT17640
10EE  021F                   BTCR  1,LINK               IF DU, RETURN                CCT17650
10F0  2082                   BTBS  8,2                  IF BUSY, LOOP                CCT17660
10F2  9B04                   RDR   R0,R4                READ A CHAR IN R4            CCT17670
10F4  C440 007F              NHI   R4,X'7F'             REMOVE PARITY BIT            CCT17680
10F8  030F                   BR    LINK                 RETURN                       CCT17690
                       *------------------------------                               CCT17700
                       *  TO OUTPUT CR,LF TO LIST DEVICE                             CCT17710
                       *                                                             CCT17720
10FA  D000 3368        CRLF  STM   R0,RSAVE             STORE REGISTERS              CCT17730
10FE  244D                   LIS   R4,13                                             CCT17740
1100  41F0 10B6              BAL   LINK,OUTCHR          OUTPUT CR                    CCT17750
1104  244A                   LIS   R4,10                LF                           CCT17760
1106  D310 0A11              LB    R1,IO+1              GET LIST DEV IDENTIFIER      CCT17770
110A  C510 0003              CLHI  R1,3                 LP ?                         CCT17780
110E  2132                   BNES  CRLF1                NO, OUTPUT LF                CCT17790
1110  2441                   LIS   R4,1                 YES, OUTPUT X'01'            CCT17800
1112  41F0 10B6        CRLF1 BAL   LINK,OUTCHR                                       CCT17810
1116  D100 3368              LM    R0,RSAVE             RESTORE REGISTERS            CCT17820
111A  030F                   BR    LINK                 RETURN                       CCT17830
                       *------------------------------                               CCT17840
                       *  TO OUTPUT '?' TO CONSOLE                                   CCT17850
                       *                                                             CCT17860
111C  41F0 10FA        QUESTN BAL  LINK,CRLF                                         CCT17870
1120  40F0 14A8              STH   R15,ISITERR                                       CCT17880
1124  C850 153A              LHI   R5,QMSG                                           CCT17890
1128  41F0 101E              BAL   LINK,PRINT           PRINT '?'                    CCT17900
112C  0700                   XHR   R0,R0                                             CCT17910
112E  4000 14A8              STH   R0,ISITERR                                        CCT17920
1132  4300 0AA8              B     OPTIN1               GO TO BEGINING               CCT17930
                       *------------------------------                               CCT17940
                       *  IF 'BREAK' PRESSED,GOTO 'OPTIN', OTHERWISE RETURN          CCT17950
                       *                                                             CCT17960
1136  D000 3368        TSTBRK STM  R0,RSAVE             STORE REGISTERS              CCT17970
113A  D300 149A              LB    R0,KBADR             GET KEYBOARD DEVICE ADR      CCT17980
113E  9D01                   SSR   R0,R1                                             CCT17990
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1140  C310 0020                THI   R1,X'20'        'BREAK' KEY PRESSED ?          CCT18000
1144  4330 116E                BZ    TSTBRK3         NO. EXIT                       CCT18010
1148  D320 0A10                LB    R2,IO                                          CCT18020
114C  C520 0001                CLHI  R2,1            CRT ?                          CCT18030
1150  2137                     BNES  TSTBRK1                                        CCT18040
1152  9D01                     SSR   R0,R1                                          CCT18050
1154  2081                     BTBS  8,1                                            CCT18060
1156  9B02                     RDR   R0,R2                                          CCT18070
1158  9D01                     SSR   R0,R1                                          CCT18080
115A  2281                     BFBS  8,1                                            CCT18090
115C  2305                     BS    TSTBRK2                                        CCT18100
115E  9D01           TSTBRK1   SSR   R0,R1                                          CCT18110
1160  C310 0020                THI   R1,X'20'                                       CCT18120
1164  2033                     BTBS  3,3             WAIT TILL BREAK KEY IS DEPRESSED CCT18130
1166  D100 3368      TSTBRK2   LM    R0,RSAVE        RESTORE REGISTERS              CCT18140
116A  4300 0A9E                B     OPTIN                                          CCT18150
116E  D100 3368      TSTBRK3   LM    R0,RSAVE        RESTORE REGISTERS              CCT18160
1172  030F                     BR    LINK            RETURN TO PROGRAM              CCT18170
                     *----------------------------                                  CCT18180
                     *  TO SEE IF LIST DEVICE IS OFF (R1 IS NON-ZERO IF OFF)        CCT18190
                     *                                                              CCT18200
1174  D310 0A11      TSTDU     LB    R1,IO+1         GET LIST DEV IDENTIFIER        CCT18210
1178  C510 0001                CLHI  R1,1            CRT ?                          CCT18220
117C  213B                     BNES  TSTDU1                                         CCT18230
117E  D300 0A12                LB    R0,CRTADR                                      CCT18240
1182  9D01                     SSR   R0,R1                                          CCT18250
1184  C410 000C                NHI   R1,12                                          CCT18260
1188  C510 000C                CLHI  R1,12           BSY & EX SET ?                 CCT18270
118C  033F                     BER   LINK                                           CCT18280
118E  0711                     XHR   R1,R1                                          CCT18290
1190  030F                     BR    LINK            RETURN                         CCT18300
1192  C510 0002      TSTDU1    CLHI  R1,2            TTY ?                          CCT18310
1196  2336                     BES   TSTDU2                                         CCT18320
1198  C510 0003                CLHI  R1,3            LP ?                           CCT18330
119C  2336                     BES   TSTDU3                                         CCT18340
119E  4200 0000                NOP   PROVISION       TO ADD SPECIAL DEV             CCT18350
11A2  D300 0A14      TSTDU2    LB    R0,TTYADR                                      CCT18360
11A6  2303                     BS    TSTDU4                                         CCT18370
11A8  D300 0A16      TSTDU3    LB    R0,LPADR                                       CCT18380
11AC  9D01           TSTDU4    SSR   R0,R1           GET STATUS IN R1               CCT18390
11AE  C410 0001                NHI   R1,1            R1 = DU BIT                    CCT18400
11B2  030F                     BR    LINK            RETURN                         CCT18410
                     *----------------------------                                  CCT18420
                     *  TO PUT KEYBOARD DEVICE IN READ MODE                         CCT18430
                     *                                                              CCT18440
11B4  D300 0A10      KBREAD    LB    R0,IO           GET KB DEV IDENTIFIER          CCT18450
11B8  C500 0001                CLHI  R0,1            CRT ?                          CCT18460
11BC  2338                     BES   CRTGET                                         CCT18470
11BE  C500 0002                CLHI  R0,2            TTY ?                          CCT18480
11C2  2333                     BES   TTYGET                                         CCT18490
11C4  4200 0000                NOP   FOR             SPECIAL KB DEVICE              CCT18500
11C8  D300 0A14      TTYGET    LB    R0,TTYADR                                      CCT18510
11CC  DE00 14A3                OC    R0,TTYRD                                       CCT18520
11D0  0304                     BR    R4              RETURN                         CCT18530
11D2  D300 0A12      CRTGET    LB    R0,CRTADR                                      CCT18540
11D6  DE00 149D                OC    R0,CRTRD                                       CCT18550
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11DA  DB00 14AE            RD    R0,TEMP         DUMMY READ                         CCT18560
11DE  DE00 149F            OC    R0,RQ2S                                            CCT18570
11E2  0304                 BR    R4              RETURN                             CCT18580
                     *-----------------------------                                 CCT18590
                     *  TO SET UP KEYBOARD DEV TO READ WITH INT ENABLED             CCT18600
                     *                                                              CCT18610
11E4  D000 3368      KBRD  STM   R0,RSAVE        SAVE REGISTERS                     CCT18620
11E8  D300 149A            LB    R0,KBADR        GET KB DEV ADR                     CCT18630
11EC  D310 0A10            LB    R1,IO           GET KB IDENTIFIER                  CCT18640
11F0  C510 0001            CLHI  R1,1            CRT ?                              CCT18650
11F4  2334                 BES   KBRD1                                              CCT18660
11F6  DE00 14A4            OC    R0,TTYENRD      TTY : ENABLE,READ                  CCT18670
11FA  2305                 BS    KBRD1+8                                            CCT18680
11FC  DE00 149E      KBRD1 OC    R0,CRTENRD      CRT : ENABLE,READ                  CCT18690
1200  DE00 149F            OC    R0,RQ2S                                            CCT18700
1204  D100 3368            LM    R0,RSAVE        RESTORE REGISTERS                  CCT18710
1208  030F                 BR    LINK            RETURN                             CCT18720
                     *-----------------------------                                 CCT18730
                     *  LIST DEVICE SET UP ROUTINE                                  CCT18740
                     *                                                              CCT18750
120A  D300 0A11      SETUP LB    R0,IO+1         GET LIST DEV IDENTIFIER            CCT18760
120E  C500 0001            CLHI  R0,1            CRT ?                              CCT18770
1212  4330 123A            BE    CRTDRV          YES, GO TO CRT DRIVER              CCT18780
1216  C500 0002            CLHI  R0,2            TTY ?                              CCT18790
121A  2336                 BES   TTYDRV          YES, GO TO TTY DRIVER              CCT18800
121C  C500 0003            CLHI  R0,3            LINE PRINTER ?                     CCT18810
1220  2338                 BES   LPDRV                                              CCT18820
1222  4200 0000            NOP   PROVISION       TO ADD SPECIAL DEV                 CCT18830
1226  D300 0A14      TTYDRV LB   R0,TTYADR                                          CCT18840
122A  DE00 14A2            OC    R0,TTYWRT       WRITE COMMAND TO TTY               CCT18850
122E  0301                 BR    R1              RETURN                             CCT18860
1230  D300 0A16      LPDRV LB    R0,LPADR                                           CCT18870
1234  DE00 14A1            OC    R0,LPWRT        COMMAND TO LINE PRINTER            CCT18880
1238  0301                 BR    R1                                                 CCT18890
123A  D300 0A13      CRTDRV LB   R0,CRTADR+1                                        CCT18900
123E  DE00 149C            OC    R0,CRTWRT       TURN LINE TO WRITE                 CCT18910
1242  0301                 BR    R1              RETURN                             CCT18920
                     * ****************************                                 CCT18930
                     *  LOW CORE SET UP ROUTINE                                     CCT18940
                     *                                                              CCT18950
1244  0711           LCORE XHR   R1,R1                                              CCT18960
1246  2422                 LIS   R2,2                                               CCT18970
1248  C830 004E            LHI   R3,X'4E'                                           CCT18980
124C  0700                 XHR   R0,R0                                              CCT18990
124E  4001 0000      ZERO1 STH   R0,0(R1)                                           CCT19000
1252  C110 124E            BXLE  R1,ZERO1        ZERO CORE FROM 0 THRU X'4F'        CCT19010
1256  C810 0080            LHI   R1,X'80'                                           CCT19020
125A  C830 00CE            LHI   R3,X'CE'                                           CCT19030
125E  4001 0000      ZERO2 STH   R0,0(R1)                                           CCT19040
1262  C110 125E            BXLE  R1,ZERO2        ZERO CORE FROM X'80' THRU X'CF'    CCT19050
1266  C800 13C0            LHI   R0,XIERR        EXTERNAL INT ERROR ROUTINE START ADR CCT19060
126A  C830 08CE            LHI   R3,X'8CE'                                          CCT19070
126E  4001 0000      ZERO3 STH   R0,0(R1)                                           CCT19080
1272  C110 126E            BXLE  R1,ZERO3        SET UP INT SERVICE POINTER TABLE   CCT19090
1276  C830 141E            LHI   R3,II                                              CCT19100
127A  4030 0036            STH   R3,X'36'        ILL INST INT NEW PSW LOC           CCT19110
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127E  C840 1438                 LHI   R4,MM                                                CCT19120
1282  4040 003E                 STH   R4,X'3E'          M. M. INT NEW PSW LOC              CCT19130
1286  C830 13E2                 LHI   R3,AF                                                CCT19140
128A  4030 004E                 STH   R3,X'4E'          ARITHMATIC FAULT NEW PSW LOC(32-BIT) CCT19150
                      *                                FIXED PT DIVIDE FAULT NEW PSW LOC   CCT19160
128E  C840 3368                 LHI   R4,RSAVE                                             CCT19170
1292  4810 1492                 LH    R1,MOD32                                             CCT19180
1296  213C                      BNZS  LCORE32                                              CCT19190
                      *  SET UP LOW CORE FOR 16 BIT MACHINE                                CCT19200
1298  4040 0022                 STH   R4,X'22'          REG SAVE POINTER                   CCT19210
129C  C830 1472                 LHI   R3,FP                                                CCT19220
12A0  4030 002E                 STH   R3,X'2E'          FLOATING PT FAULT INT NEW PSW LOC  CCT19230
12A4  C850 1348                 LHI   R5,XI16                                              CCT19240
12A8  4050 0046                 STH   R5,X'46'          EXT INT NEW PSW LOC                CCT19250
12AC  030F                      BR    LINK                                                 CCT19260
                      *  SET UP LOW CORE FOR 32 BIT MACHINE                                CCT19270
12AE  4040 0086       LCORE32   STH   R4,X'86'          REG SAVE POINTER                   CCT19280
12B2  0744                      XHR   R4,R4                                                CCT19290
12B4  4040 0084                 STH   R4,X'84'          PSW SAVE AREA                      CCT19300
12B8  C830 147A                 LHI   R3,RP                                                CCT19310
12BC  4030 0096                 STH   R3,X'96'          RELOC/PROTECT INT NEW PSW LOC      CCT19320
12C0  D310 149A                 LB    R1,KBADR          GET KEYBOARD DEV ADR               CCT19330
12C4  0A11                      AHR   R1,R1                                                CCT19340
12C6  C800 12E4                 LHI   R0,KBINT0         R0 = A(KEYBOARD INT HANDLER)       CCT19350
12CA  4001 00D0                 STH   R0,X'D0'(R1)      STORE @  X'D0'+2(KB DEV ADR)       CCT19360
12CE  0711                      XHR   R1,R1             TO SET UP SERVICE POINTER TABLE    CCT19370
12D0  C830 1356                 LHI   R3,XI32                                              CCT19380
12D4  4821 16B0       LCORE32A  LH    R2,DEVSADR(R1)    GET DEV ADR FROM TABLE             CCT19390
12D8  021F                      BMR   LINK              DONE, RETURN                       CCT19400
12DA  0A22                      AHR   R2,R2                                                CCT19410
12DC  4032 00D0                 STH   R3,X'D0'(R2)      STORE @  X'D0'+2(DEV ADR)          CCT19420
12E0  2612                      AIS   R1,2                                                 CCT19430
12E2  2207                      BS    LCORE32A                                             CCT19440
                      *-----------------------------------                                 CCT19450
                      *  KEYBOARD INTERRUPT HANDLER                                        CCT19460
                      *                                                                    CCT19470
12E4  C330 0020       KBINT0    THI   R3,X'20'          IS BREAK KEY DEPRESSED ?           CCT19480
12E8  4330 1310                 BZ    KBINT1            NO                                 CCT19490
12EC  D350 0A10                 LB    R5,IO                                                CCT19500
12F0  C550 0001                 CLHI  R5,1              CRT ?                              CCT19510
12F4  2138                      BNES  KBINT0A                                              CCT19520
12F6  9D23                      SSR   R2,R3                                                CCT19530
12F8  2081                      BTBS  8,1                                                  CCT19540
12FA  9B24                      RDR   R2,R4                                                CCT19550
12FC  9D23                      SSR   R2,R3                                                CCT19560
12FE  2281                      BFBS  8,1                                                  CCT19570
1300  4300 0A9E                 B     OPTIN                                                CCT19580
1304  9D23            KBINT0A   SSR   R2,R3                                                CCT19590
1306  C330 0020                 THI   R3,X'20'                                             CCT19600
130A  2033                      BTBS  3,3               WAIT TILL BREAK KEY IS DEPRESSED   CCT19610
130C  4300 0A9E                 B     OPTIN             GO TO COMMAND MODE                 CCT19620
1310  D220 1494       KBINT1    STB   R2,INTDEV                                            CCT19630
1314  D230 1498                 STB   R3,INTSTA                                            CCT19640
1318  4840 1492                 LH    R4,MOD32                                             CCT19650
131C  2335                      BZS   KBINT2                                               CCT19660
131E  4000 148A                 STH   R0,OPSW           STORE OLD PSW OF 32-BIT PROCESSOR  CCT19670
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1322  4010 148E        968           STH   R1,OLOC          IN ORDER TO RETURN BACK TO TEST      CCT19680
1326  4890 14A6        969  KBINT2   LH    R9,KBINT                                             CCT19690
132A  0239             970           BNZR  R9               GO,PROCESS KB INT FURTHER            CCT19700
132C  4300 13C0        971           B     XIERR                                                CCT19710
1330  D320 149A        972  NOBRK    LB    R2,KBADR         KB INT FROM KEY OTHER THAN BREAK     CCT19720
1334  9B24             973           RDR   R2,R4                                                CCT19730
                       974  *  TO RETURN ON OLD PSW                                            CCT19740
1336  4890 1492        975  RETOPSW  LH    R9,MOD32                                             CCT19750
133A  2135             976           BNZS  RETOPSW1                                             CCT19760
133C  D100 3368        977           LM    R0,RSAVE         RESTORE REGISTERS                   CCT19770
1340  C200 0040        978           LPSW  X'40'            RETURN ON OLD PSW AFTER KB INT      CCT19780
1344  C200 1488        979  RETOPSW1 LPSW  OPSW32                                               CCT19790
                       980  * ************************************************                  CCT19800
                       981  *  EXTERNAL INTERRUPT HANDLER                                      CCT19810
                       982  *                                                                   CCT19820
      0000 1348        983  XI16     EQU   *                FOR 16-BIT PROCESSOR                CCT19830
1348  D000 3368        984           STM   R0,RSAVE         SAVE 16 REGISTERS                   CCT19840
134C  9F23             985           AIR   R2,R3            ACKNOLEDGE INTERRUPT                CCT19850
134E  D420 149A        986           CLB   R2,KBADR         INT FROM KB DEV ?                   CCT19860
1352  4330 12E4        987           BE    KBINT0           SGO TO PROCESS KEYBOARD INT         CCT19870
      0000 1356        988  XI32     EQU   *                32-BIT PROCESSOR INTERUPT HANDLER   CCT19880
1356  95AA             989           EPSR  R10,R10                                              CCT19890
1358  40A0 1490        990           STH   R10,INTPSW                                           CCT19900
135C  4020 1494        991           STH   R2,INTDEV        STORE INTERRUPTING DEV ADR          CCT19910
1360  D230 1498        992           STB   R3,INTSTA                                            CCT19920
1364  4840 1492        993           LH    R4,MOD32                                             CCT19930
1368  2135             994           BNZS  XI32A                                                CCT19940
136A  4800 0040        995           LH    R0,X'40'         R0 = OLD PSW ( 16 BIT M/C )         CCT19950
136E  4810 0042        996           LH    R1,X'42'         R1 = OLD PSW LOC ( 16 BIT M/C )     CCT19960
1372  4000 148A        997  XI32A    STH   R0,OPSW                                              CCT19970
1376  4010 148E        998           STH   R1,OLOC                                              CCT19980
137A  0755             999           XHR   R5,R5                                                CCT19990
137C  4865 16B0       1000  XI1      LH    R6,DEVSADR(R5)   GET DEV ADR FROM TABLE              CCT20000
1380  4210 13C0       1001           BM    XIERR                                                CCT20010
1384  0562            1002           CLHR  R6,R2            COMPARE IT WITH INTERRUPTING DEV ADR CCT20020
1386  2333            1003           BES   XI2                                                  CCT20030
1388  2652            1004           AIS   R5,2                                                CCT20040
138A  2207            1005           BS    XI1                                                  CCT20050
138C  4865 16AA       1006  XI2      LH    R6,DEVINT(R5)    GET DEV INTERRUPT HANDLER ADDRESS   CCT20060
1390  4330 13C0       1007           BZ    XIERR                                                CCT20070
1394  4060 13BE       1008           STH   R6,XIEXIT                                            CCT20080
1398  4860 1492       1009           LH    R6,MOD32                                             CCT20090
139C  233E            1010           BZS   XI3                                                  CCT20100
139E  9051            1011           SRLS  R5,1             TO CHECK INTERRUPT LEVEL            CCT20110
13A0  90A4            1012           SRLS  R10,4                                                CCT20120
13A2  C860 4636       1013           LHI   R6,C'F6'                                             CCT20130
13A6  C4A0 000F       1014           NHI   R10,15           R10 = INTERRUPT LEVEL               CCT20140
13AA  D4A5 16A6       1015           CLB   R10,INTLVL(R5)   COMPARE IT WITH THE ASSIGNED ONE    CCT20150
13AE  213B            1016           BNES  XIERR+4                                              CCT20160
                      1017  *                                                                   CCT20170
13B0  C810 00F0       1018           LHI   R1,X'F0'                                             CCT20180
13B4  9501            1019           EPSR  R0,R1            DIS INT , REG SET 15                CCT20190
13B6  2303            1020           BS    XI3+4                                                CCT20200
13B8  D100 3368       1021  XI3      LM    R0,RSAVE         RESTORE REG (16-BIT PROCESSOR)      CCT20210
13BC  4300 0000       1022           B     0                RETURN TO TEST                      CCT20220
      0000 13BE       1023  XIEXIT   EQU   *-2                                                  CCT20230
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                                1024  *---------------------------------                                    CCT20240
                                1025  *     EXTERNAL INTERRUPT ERROR ROUTINE                               CCT20250
                                1026  *                                                                    CCT20260
13C0   C860 4634                1027  XIERR     LHI     R6,C'F4'                                           CCT20270
13C4   4060 14E0                1028            STH     R6,ERRNO                                           CCT20280
13C8   4020 1496                1029            STH     R2,ERRDEV                                          CCT20290
13CC   D230 1499                1030            STB     R3,ERRSTA                                          CCT20300
13D0   D100 3368                1031            LM      R0,RSAVE          RESTORE REGISTERS                CCT20310
13D4   C830 00F0                1032            LHI     R3,X'F0'                                           CCT20320
13D8   9523                     1033            EPSR    R2,R3             REG SET 15                       CCT20330
13DA   41F0 0E9A                1034            BAL     LINK,ERRALL       'ERROR XXFN', 'DEV DDD STA SS'   CCT20340
                                1035  *                                   'PSW PPPP  LOC LLLL'             CCT20350
13DE   4300 0AA8                1036            B       OPTIN1            GO TO BEGINNING                  CCT20360
                                1037  *----------------------------                                       CCT20370
                                1038  *  SPURIOUS INTERRUPT HANDLERS                                       CCT20380
                                1039  *                                                                    CCT20390
                                1040  *                                                                    CCT20400
                                1041  *  ARITHMATIC FAULT INT (32-BIT PROCESSOR) TRAP                      CCT20410
                                1042  *  FIXED-PT DIVIDE FAULT INT (16-BIT PROCESSOR) TRAP                 CCT20420
                                1043  *                                                                    CCT20430
0000 13E2                       1044  AF        EQU     *                                                  CCT20440
13E2   C820 4631                1045            LHI     R2,C'F1'                                           CCT20450
13E6   4020 14E0                1046            STH     R2,ERRNO          SET ERROR # F1                   CCT20460
13EA   4820 1492                1047            LH      R2,MOD32                                           CCT20470
13EE   2135                     1048            BNZS    COMM                                               CCT20480
13F0   48E0 0048                1049            LH      R14,X'48'         OLD PSW (16-BIT PROCESSOR)       CCT20490
13F4   48F0 004A                1050            LH      R15,X'4A'         OLD LOC                          CCT20500
13F8   40E0 148A                1051  COMM      STH     R14,OPSW                                           CCT20510
13FC   40F0 148E                1052            STH     R15,OLOC                                           CCT20520
1400   C800 00F0                1053  COMM1     LHI     R0,X'F0'                                           CCT20530
1404   9520                     1054            EPSR    R2,R0             NO INT. , REG SET 15             CCT20540
1406   41F0 0E5C                1055            BAL     LINK,ERR          PRINT 'ERROR XXFN'               CCT20550
140A   2401                     1056            LIS     R0,1                                               CCT20560
140C   4000 14A8                1057            STH     R0,ISITERR                                         CCT20570
1410   41E0 0F28                1058            BAL     RET,ERRPL1        PRINT 'PSW PPPP  LOC LLLL'       CCT20580
1414   0700                     1059            XHR     R0,R0                                              CCT20590
1416   4000 14A8                1060            STH     R0,ISITERR        RESET ERROR FLAG                 CCT20600
141A   4300 0AA8                1061            B       OPTIN1            GO TO BEGINING                   CCT20610
                                1062  *  ILLEGAL INSTRUCTION INTERRUPT TRAP                              CCT20620
0000 141E                       1063  II        EQU     *                                                  CCT20630
141E   C820 4632                1064            LHI     R2,C'F2'                                           CCT20640
1422   4020 14E0                1065            STH     R2,ERRNO          SET ERROR # F2                   CCT20650
1426   4820 1492                1066            LH      R2,MOD32                                           CCT20660
142A   2135                     1067            BNZS    II32                                               CCT20670
142C   48E0 0030                1068            LH      R14,X'30'         OLD PSW                          CCT20680
1430   48F0 0032                1069            LH      R15,X'32'         OLD LOC                          CCT20690
1434   4300 13F8                1070  II32      B       COMM                                               CCT20700
                                1071  *  MACHINE MALFUNCTION INTERRUPT TRAP                              CCT20710
0000 1438                       1072  MM        EQU     *                                                  CCT20720
1438   C820 4633                1073            LHI     R2,C'F3'                                           CCT20730
143C   4020 14E0                1074            STH     R2,ERRNO          SET ERROR # F3                   CCT20740
1440   48E0 0022                1075            LH      R14,X'22'         OLD PSW ( 32-BIT PROCESSOR)      CCT20750
1444   48F0 0026                1076            LH      R15,X'26'         OLD LOC                          CCT20760
1448   4820 1492                1077            LH      R2,MOD32                                           CCT20770
144C   2135                     1078            BNZS    MM32                                               CCT20780
144E   48E0 0038                1079            LH      R14,X'38'         OLD PSW (16-BIT M/C )            CCT20790
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1452  48F0 003A                   LH    R15,X'3A'           OLD LOC                      CCT20800
1456  40E0 148A       MM32        STH   R14,OPSW                                         CCT20810
145A  40F0 148E                   STH   R15,OLOC                                         CCT20820
145E  C850 7FFF                   LHI   R5,X'7FFF'                                       CCT20830
1462  2751            ABOVE       SIS   R5,1                                             CCT20840
1464  2031                        BNZS  ABOVE                                            CCT20850
1466  C800 080F                   LHI   R0,X'080F'                                       CCT20860
146A  9104                        SLHLS R0,4                RO = X'80F0'                 CCT20870
146C  9520                        EPSR  R2,R0               HALT PROCESSOR               CCT20880
                      *  WHEN EXE/RUN IS DEPRESSED, ERROR MSG IS PRINTED.                CCT20890
146E  4300 1400                   B     COMM1                                            CCT20900
                      *  FLOATING-PT ARITH FAULT INT TRAP                                CCT20910
                      *                                                                  CCT20920
      0000 1472       FP          EQU   *                                                CCT20930
1472  48E0 0028                   LH    R14,X'28'           OLD PSW (16-BIT PROCESSOR)   CCT20940
1476  48F0 002A                   LH    R15,X'2A'           OLD LOC                      CCT20950
                      *  RELOCATION/PROTECTION INT TRAP                                  CCT20960
                      *                                                                  CCT20970
      0000 147A       RP          EQU   *                                                CCT20980
147A  C820 4635                   LHI   R2,C'F5'                                         CCT20990
147E  4020 14E0                   STH   R2,ERRNO            SET ERROR # F5               CCT21000
1482  4300 13F8                   B     COMM                                             CCT21010
                      * ****************************                                     CCT21020
                      *  ETPE CONSTANTS & STORAGE AREAS                                  CCT21030
                      *                                                                  CCT21040
                      *-------------------------                                         CCT21050
1488                              ALIGN 8                                                CCT21060
1488  0000            OPSW32      DC    0                   OLD PSW STORAGE AREA         CCT21070
148A  0000            OPSW        DC    0                                                CCT21080
148C  0000                        DC    0                                                CCT21090
148E  0000            OLOC        DC    0                                                CCT21100
                      *-------------------------                                         CCT21110
1490  0000            INTPSW      DC    0                   (FOR 32-BIT M/C ONLY)        CCT21120
1492  0000            MOD32       DC    0                   FLAG FOR 32-BIT M/C(NON-ZERO) CCT21130
1494  0000            INTDEV      DC    0                   INTERRUPTING DEV ADR         CCT21140
1496  0000            ERRDEV      DC    0                   ERROR DEVICE #               CCT21150
1498  00              INTSTA      DB    0                   INTERRUPTING DEV STATUS      CCT21160
1499  00              ERRSTA      DB    0                   ERRONEOUS STATUS             CCT21170
149A  02              KBADR       DB    2                   KEYBOARD DEV ADR             CCT21180
149B  80              NORM        DB    X'80'                                            CCT21190
149C  AB              CRTWRT      DB    X'AB'                                            CCT21200
149D  B9              CRTRD       DB    X'B9'                                            CCT21210
149E  79              CRTENRD     DB    X'79'                                            CCT21220
149F  3B              RQ2S        DB    X'3B'                                            CCT21230
14A0  78              SECOND      DB    X'78'                                            CCT21240
14A1  80              LPWRT       DB    X'80'                                            CCT21250
14A2  D8              TTYWRT      DB    X'D8'                                            CCT21260
14A3  A4              TTYRD       DB    X'A4'                                            CCT21270
14A4  64              TTYENRD     DB    X'64'                                            CCT21280
                      *                                                                  CCT21290
14A6  1330            KBINT       DC    NOBRK               KEYBOARD INT RETURN ADR      CCT21300
14A8  0000            ISITERR     DC    0                                                CCT21310
14AA  0000            NOERR       DC    0                                                CCT21320
14AC  0000            FIRST       DC    0                                                CCT21330
14AE  0000            TEMP        DC    0                   TEMPORARY STORAGE LOC        CCT21340
14B0  0000            SELTST      DC    0                   HIGHEST SELECTED TEST #      CCT21350
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14B2   0000           1136  WASDU    DC     0                      1 IF KEYBOARD DEVICE WAS OFF          CCT21360
14B4   0000           1137  TOTERR   DC     0                      TOTAL ERRORS DETECTED WHILE DU        CCT21370
14B6   0000           1138  TOTAL    DC     0                      # OF TIMES THE SELECTED TESTS RUN     CCT21380
14B8   0000           1139  BTESTNO  DC     0                      CURRENT TEST # IN BINARY              CCT21390
14BA   0000           1140  COUNT    DC     0                                                            CCT21400
14BC   0000           1141  NEXTST   DC     0                      NEXT TEST #                           CCT21410
14BE   3030           1142  DECI     DC     C'00',C'00',C'00'                                            CCT21420
14C0   3030
14C2   3030

14C4   2710           1143  DECITAB  DC     10000,1000,100,10,1                                          CCT21430
14C6   03E8
14C8   0064
14CA   000A
14CC   0001
                      1144  *-----------------------------                                               CCT21440
                      1145  *  ETPE MESSAGES                                                            CCT21450
                      1146  *                                                                            CCT21460
14CE   54455354       1147  TSTMSG   DC     C'TEST  00',X'0D00'                                          CCT21470
       20203030
14D6   0D00
       0000 14D4      1148  MTESTNO  EQU    *-4                                                          CCT21480
14D8   4552524F       1149  ERRMSG   DC     C'ERROR 0000',X'0D00'                                        CCT21490
       52203030
       3030
14E2   0D00
       0000 14DE      1150  ETESTNO  EQU    *-6                    STORED BY ETPE                        CCT21500
       0000 14E0      1151  ERRNO    EQU    *-4                    STORE ERRNO AS CHAR CONSTANT          CCT21510
14E4   544F5441       1152  TOTMSG   DC     C'TOTAL   TOTERR',X'0D00'                                    CCT21520
       4C202020
       544F5445
       5252
14F2   0D00
14F4   4E4F2045       1153  NOERMSG  DC     C'NO ERROR',X'0D00'                                          CCT21530
       52524F52
14FC   0D00
14FE   44455620       1154  DEVMSG   DC     C'DEV 000 STA 00',X'0D00'                                    CCT21540
       30303020
       53544120
       3030
150C   0D00
       0000 1502      1155  ASCIDEV  EQU    *-12                                                         CCT21550
       0000 1506      1156  STAMSG   EQU    *-8                                                          CCT21560
       0000 150A      1157  ASCISTA  EQU    *-4                                                          CCT21570
150E   44455620       1158  DEVMSG2  DC     C'DEV 000',X'0D00'                                           CCT21580
       30303020
1516   0D00
       0000 1512      1159  ASCIDEV2 EQU    *-6                                                          CCT21590
1518   50535720       1160  PSWMSG   DC     C'PSW 0000  LOC 0000',X'0D00'                                CCT21600
       30303030
       20204C4F
       43203030
       3030
152A   0D00
       0000 151C      1161  ASCIPSW  EQU    *-16                                                         CCT21610
       0000 1522      1162  LOCMSG   EQU    *-10                                                         CCT21620
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        0000 1526          1163  ASCILOC  EQU    *-6                                CCT21630
152C    454E4420           1164  EOTMSG   DC     C'END OF TEST',X'0D00'             CCT21640
        4F462054
        45535420
1538    0D00
153A    3F0D               1165  QMSG     DC     X'3F0D'                            CCT21650
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                              1167 *----------------------------                    CCT21670
                              1168 *  OPTION/COMMAND TABLE                          CCT21680
                              1169 *                                                CCT21690
          0000 153C           1170 OPT      EQU   *                                 CCT21700
    153C  54455354            1171 TEST     DC    C'TEST  ',0,X'FE00',0             CCT21710
          2020
    1542  0000
    1544  FE00
    1546  0000
    1548  4C4F4F50            1172 LOOP     DC    C'LOOP  ',0,0,0                   CCT21720
          2020
    154E  0000
    1550  0000
    1552  0000
    1554  434F4E54            1173 CONTIN   DC    C'CONTIN',0,0,0                   CCT21730
          494E
    155A  0000
    155C  0000
    155E  0000
    1560  4E4F4D53            1174 NOMSG    DC    C'NOMSG ',0,0,0                   CCT21740
          4720
    1566  0000
    1568  0000
    156A  0000
    156C  44455641            1175 DEVADR   DC    C'DEVADR',X'0045',DEVCHN,0        CCT21750
          4452
    1572  0045
    1574  30C8
    1576  0000
    1578  44563241            1176 DV2ADR   DC    C'DV2ADR',0,DEVCHN,0              CCT21760
          4452
    157E  0000
    1580  30C8
    1582  0000
    1584  53454C43            1177 SELADR   DC    C'SELCH ',X'00F0',XF0,0           CCT21770
          4620
    158A  00F0
    158C  30C0
    158E  0000
    1590  494E544C            1178 INLEVEL  DC    C'INTLEV',0,LEVEL,0               CCT21780
          4556
    1596  0000
    1598  30DC
    159A  0000
    159C  4D4F4445            1179 MODE     DC    C'MODE  ',3,MODES,0               CCT21790
          2020
    15A2  0003
    15A4  30A8
    15A6  0000
    15A8  52454346            1180 RECFIL   DC    C'RECFIL',X'0040',X3FF,0          CCT21800
          494C
    15AE  0040
    15B0  30C0
    15B2  0000
    15B4  42595445            1181 NOBYTE   DC    C'BYTES ',X'FF',MIN2,0            CCT21810
          5320
```

```
15BA   00FF
15BC   30B8
15BE   0000
15C0   46494C45          1182  FILES    DC     C'FILES ',1,X3FF,0                    CCT21820
       5320
15C6   0001
15C8   30C0
15CA   0000
15CC   52455045          1183  REPEAT   DC     C'REPEAT',X'0003',X256,0              CCT21830
       4154
15D2   0003
15D4   3080
15D6   0000
15D8   49524720          1184  IRGDAT   DC     C'IRG   ',X'0010',X256,0              CCT21840
       2020
15DE   0010
15E0   3080
15E2   0000
15E4   5452414E          1185  TRANSP   DC     C'TRANSP',0,ZERONE,0                  CCT21850
       5350
15EA   0000
15EC   309C
15EE   0000
15F0   44552020          1186  DUINT    DC     C'DU    ',0,ZERONE,0                  CCT21860
       2020
15F6   0000
15F8   309C
15FA   0000
15FC   52454144          1187  OPRD     DC     C'READ  ',1,ZERONE,0                  CCT21870
       2020
1602   0001
1604   309C
1606   0000
1608   57524954          1188  OPWRT    DC     C'WRITE ',1,ZERONE,0                  CCT21880
       4520
160E   0001
1610   309C
1612   0000
1614   424B5350          1189  OPBSP    DC     C'BKSPAC',1,ZERONE,0                  CCT21890
       4143
161A   0001
161C   309C
161E   0000
1620   534B4950          1190  OPSKIP   DC     C'SKIP  ',1,ZERONE,0                  CCT21900
       2020
1626   0001
1628   309C
162A   0000
162C   57454F46          1191  OPWEOF   DC     C'WEOF  ',0,ZERONE,0                  CCT21910
       2020
1632   0000
1634   309C
1636   0000
1638   434F4D50          1192  CMPRE    DC     C'COMPAR',1,ZERONE,0                  CCT21920
       4152
163E   0001
```

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1640  309C
1642  0000
1644  44554D50        1193  SDUMP   DC    C'DUMP  ',0,ZERONE,0                    CCT21930
      2020
164A  0000
164C  309C
164E  0000
1650  44415441        1194  DATA    DC    C'DATA  ',1,ZERONE,0                    CCT21940
      2020
1656  0001
1658  309C
165A  0000
165C  53434F50        1195  SCOPE   DC    C'SCOPE ',0,SCOP,0                      CCT21950
      4520
1662  0000
1664  30D4
1666  0000
1668  54494D45        1196  TIMEPR  DC    C'TIME  ',X'800',TIMCHK,0               CCT21960
      2020
166E  0800
1670  30F0
1672  0000
      0000 1674       1197  OPTEND  EQU   *                                       CCT21970
1674  4F505449        1198  OPTION  DC    C'OPTION',0,0,0                         CCT21980
      4F4E
167A  0000
167C  0000
167E  0000
1680  52554E20        1199  RUN     DC    C'RUN   ',0,0,0                        CCT21990
      2020
1686  0000
1688  0000
168A  0000
168C  FFFF            1200          DC    -1                                      CCT22000
168E  0008            1201  MAXTST  DC    8                                       CCT22010
1690  FE00            1202  DEFTESTS DC   X'FE00',0                               CCT22020
1692  0000
1694  16E0            1203  TESTS   DC    TEST0,TEST1,TEST2,TEST3                 CCT22030
1696  1810
1698  18F6
169A  1A34
169C  2046            1204          DC    TEST4,TEST5,TEST6,TEST7                 CCT22040
169E  21A4
16A0  22C0
16A2  23D4
16A4  24AC            1205          DC    TEST8                                   CCT22050
16A6  0000            1206  INTLVL  DC    0,0                                     CCT22060
16A8  0000
16AA  0000            1207  DEVINT  DC    0,0,0                                   CCT22070
16AC  0000
16AE  0000
16B0  00F0            1208  DEVSADR DC    X'F0',X'85',0,-1                        CCT22080
16B2  0085
16B4  0000
16B6  FFFF
16B8  434F4D4D        1209  TITLE   DC    C'COMMON CASSETTE TEST PROGRAM 06-171R00',X'D00'  CCT22090
```

```
        4F4E2043
        41535345
        54544520
        54455354
        2050524F
        4752414D
        2030362D
        31373152
        3030
16DE    0D00
        0000 0004         1210  CHAR    EQU    4                                  CCT22100
        0000 0005         1211  STAT    EQU    5                                  CCT22110
        0000 0006         1212  DEV     EQU    6                                  CCT22120
        0000 0007         1213  SELCH   EQU    7                                  CCT22130
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```
                  * ****************************************************************   CCT22150
                  *                          T E S T 0                             *   CCT22160
                  *                                                                *   CCT22170
                  *   PURPOSE:                                                     *   CCT22180
                  *       TO TEST THE WRITE-BACKSPACE-READ ABILITY OF THE DEVICE   *   CCT22190
                  *       AND DETECT ERRORS ON DATA TRANSFER                       *   CCT22200
                  *                                                                *   CCT22210
                  *   ASSUMPTIONS:                                                 *   CCT22220
                  *       THIS TEST ASSUMES THAT THE MEMORY TEST, THE PROCESSOR    *   CCT22230
                  *       TEST AND THE TTY BASIC CONFIDENCE TEST HAD BEEN RUN      *   CCT22240
                  *       WITHOUT DETECTING ANY FAILURE                            *   CCT22250
                  *                                                                *   CCT22260
                  *   DESIGN SPECIFICATIONS:                                       *   CCT22270
                  *       THIS TEST USES THE WRITE-BACKSPACE-READ FEATURE TO       *   CCT22280
                  *       GENERATE FILES OF VARIOUS TEST PATTERNS. THE TEST        *   CCT22290
                  *       PATTERNS ARE STORED IN BLOCKS OF 8 BYTES EACH. EACH      *   CCT22300
                  *       BLOCK IS A SERIES OF DATA WHICH WILL SWITCH THE DATA     *   CCT22310
                  *       LINES IN WORST CASE CONDITION. AT THE BEGINNING OF       *   CCT22320
                  *       THE GENERATION OF A FILE, A BLOCK OF TEST PATTERN IS     *   CCT22330
                  *       REPEATLY COPIED INTO THE WRITE BUFFER UNTIL THE          *   CCT22340
                  *       BUFFER IS FULL. THE DATA IN THE BUFFER IS THEN           *   CCT22350
                  *       WRITTEN ONTO THE TAPE AS A RECORD.                       *   CCT22360
                  *       BACKSPACED AND READ INTO THE READ BUFFER. THE TWO        *   CCT22370
                  *       BUFFERS ARE COMPARED FOR PROPER DATA TRANSFER.           *   CCT22380
                  *                                                                *   CCT22390
                  *   HOW TO RUN THE TEST:                                         *   CCT22400
                  *       MOUNT THE TAPE ON THE DRIVE AND TURN DEVICE ON LINE.     *   CCT22410
                  *       ENTER OPTIONS VIA CONSOLE DEVICE AND SELECT TEST 0.      *   CCT22420
                  *       (REFER TO PUBLICATION 06-171A15 FOR CONSOLE INPUTS.)     *   CCT22430
                  *       THE TEST IS EXECUTED UPON ENTERING RUN, AND CAN BE       *   CCT22440
                  *       TERMINATED BY THE USER AT ANY TIME BY DEPRESSING         *   CCT22450
                  *       BREAK OR TAKING DEVICE OFF LINE.                         *   CCT22460
                  *                                                                *   CCT22470
                  *   NOTE:                                                        *   CCT22480
                  *       THIS TEST IS FORCED TO BE EXECUTED AT LEAST ONCE         *   CCT22490
                  *       EACH TIME WHEN A NON-ZERO VALUE IS ENTERED AS EITHER     *   CCT22500
                  *       DEVICE ADDRESSES.                                        *   CCT22510
                  *                                                                *   CCT22520
                  *   OPTIONS:                                                     *   CCT22530
                  *       TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,        *   CCT22540
                  *       INTLEV, MODE, TRACK, RECFIL, DUMP                            CCT22550
                  *                                                                *   CCT22560
                  *   ERRORS:                                                      *   CCT22570
                  *       00, 01, 02, 03, 04, 05, 06, 07, 08, 10, 11, 12, 13,      *   CCT22580
                  *       14, 15, 46, 47, 50                                       *   CCT22590
                  *                                                                *   CCT22600
                  * ****************************************************************   CCT22610
                  *                                                                    CCT22620
16E0  C840 16E8   TEST0    LHI   R4,TEST01        STARTING ADDRESS SET UP FOR          CCT22630
16E4  41E0 285C            BAL   R14,TSTSUP       SECOND DEVICE TEST                   CCT22640
16E8  41E0 283C   TEST01   BAL   R14,TSTINIT      TEST INITIALIZE                      CCT22650
16EC  41D0 2F0C            BAL   R13,WAIT1        WAIT FOR NMTN=1                      CCT22660
16F0  41E0 28B2            BAL   R14,FSTEOF       WRITE & SENSE EOF                    CCT22670
16F4  41D0 2E6E            BAL   R13,WAIT2                                             CCT22680
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16F8 DE60 31E6  1269          OC    DEV,BSEOF       CHECK BACKSPACE FUNCTION      CCT22690
16FC 41E0 2C6C  1270          BAL   R14,SENS03      CHECK FOR EOF                 CCT22700
1700 4300 288C  1271          B     CHKEND1                                     CCT22710
1704 41D0 2E6E  1272 REOF01   BAL   R13,WAIT2                                    CCT22720
1708 DE60 31E7  1273          OC    DEV,RDEOF       READ PASS EOF                 CCT22730
170C 41E0 2C94  1274          BAL   R14,SENS02      EOF SENSED?                   CCT22740
1710 4300 17BE  1275          B     EOFER01         NO - READ EOF RETRY           CCT22750
1714 0755       1276          XHR   R5,R5                                         CCT22760
1716 4050 31CE  1277          STH   R5,RTYCNT                                     CCT22770
171A 2422       1278 PROC00   LIS   R2,2                                        CCT22780
171C 2436       1279          LIS   R3,6                                        CCT22790
171E 2491       1280          LIS   R9,1                                        CCT22800
1720 48A0 15AE  1281          LH    R10,RECFIL+6                                CCT22810
1724 41E0 28C0  1282          BAL   R14,RESET       SET BUFFER LIMITS             CCT22820
1728 07BB       1283          XHR   R11,R11                                       CCT22830
172A 0788       1284          XHR   R8,R8                                       CCT22840
172C 081B       1285 MOVDT1   LHR   R1,R11          GENERATE 256 BYTE RECORD      CCT22850
172E 4841 31E8  1286 MOVDT2   LH    CHAR,WDATA(R1)  FROM 8 BYTE DATA BLOCKS       CCT22860
1732 4048 33EA  1287 MOVDT3   STH   CHAR,WBUFF(R8)  BY COPYING THE BLOCK INTO     CCT22870
1736 0A82       1288          AHR   R8,R2           WRITE BUFFER 32 TIMES         CCT22880
1738 C110 172E  1289          BXLE  R1,MOVDT2                                     CCT22890
173C 4580 31C4  1290          CLH   R8,NBYTE                                      CCT22900
1740 208A       1291          BLS   MOVDT1                                        CCT22910
1742 C840 C3C3  1292          LHI   CHAR,X'C3C3'    DELIMITER CHARACTER           CCT22920
1746 D248 37EB  1293          STB   CHAR,RBUFF+1(R8)                              CCT22930
174A 2481       1294          LIS   R8,1            COUNTER FOR NUMBER OF RECORDS CCT22940
174C 41E0 2980  1295 GENFIL   BAL   R14,WRTREC      WRITE A RECORD                CCT22950
1750 4300 17CA  1296          B     WRTER0          ERROR RETURN                  CCT22960
1754 0755       1297          XHR   R5,R5                                         CCT22970
1756 4050 31CE  1298          STH   R5,RTYCNT       RESET RETRY COUNTER           CCT22980
175A 41E0 293A  1299 PROC01   BAL   R14,BSPACE      BACKSPACE & STATUS CHECK      CCT22990
175E 41E0 2A58  1300 RERDR    BAL   R14,RDREC       READ A RECORD                 CCT23000
1762 4300 17F4  1301          B     RDER0           ERROR RETURN                  CCT23010
1766 0755       1302          XHR   R5,R5                                         CCT23020
1768 4050 31CE  1303          STH   R5,RTYCNT       RESET RETRY COUNTER           CCT23030
176C 41E0 2B08  1304 PROC03   BAL   R14,COMPAR      COMPARE DATA                  CCT23040
1770 4850 164A  1305          LH    R5,SDUMP+6      BUFFER DUMP?                  CCT23050
1774 2333       1306          BZS   NODUMP          NO - NO DUMP                  CCT23060
1776 41E0 2C22  1307          BAL   R14,DUMP        DUMP READ BUFFER              CCT23070
177A C180 174C  1308 NODUMP   BXLE  R8,GENFIL                                    CCT23080
177E 41D0 2E6E  1309 WEOF02   BAL   R13,WAIT2       WAIT FOR NMTN = 1             CCT23090
1782 9D65       1310          SSR   DEV,STAT                                     CCT23100
1784 C350 0020  1311          THI   STAT,X'20'      EOT?                          CCT23110
1788 2337       1312          BZS   EOFMRK                                        CCT23120
178A 41D0 2E6E  1313          BAL   R13,WAIT2       WAIT FOR NMTN=1               CCT23130
178E DE60 31DC  1314          OC    DEV,REWD        REWIND                        CCT23140
1792 41D0 2F0C  1315          BAL   R13,WAIT1       WAIT FOR NMTN=1               CCT23150
1796 DE60 31E5  1316 EOFMRK   OC    DEV,WEOF                                      CCT23160
179A 41E0 2C66  1317          BAL   R14,SENS01                                    CCT23170
179E 4300 1804  1318          B     EOFER02                                       CCT23180
17A2 0755       1319          XHR   R5,R5                                         CCT23190
17A4 4050 31CE  1320          STH   R5,RTYCNT                                     CCT23200
17A8 0788       1321 PROC02   XHR   R8,R8            CHECK NEXT DATA BLOCK         CCT23210
17AA 08B1       1322          LHR   R11,R1                                        CCT23220
```

TEST 0   BASIC CONFIDENCE TEST

```
17AC   2638             1323            AIS    R3,8                                         CCT23230
17AE   4841 31E8        1324            LH     CHAR,WDATA(R1)                               CCT23240
17B2   4230 1732        1325            BNZ    MOVDT3             ZERO?                     CCT23250
17B6   41D0 2D12        1326            BAL    R13,TSTMOD         YES - CHECK NEXT MODE     CCT23260
17BA   4300 171A        1327            B      PROC00                                       CCT23270
                        1328  *                                                       *     CCT23280
                        1329  *         ERROR RECOVERY PROCEDURES                           CCT23290
                        1330  *                                                             CCT23300
17BE   41E0 2D36        1331  EOFER01   BAL    R14,RETRY          RETRY READ EOF            CCT23310
17C2   4300 1704        1332            B      REOF01                                       CCT23320
17C6   4300 171A        1333            B      PROC00                                       CCT23330
17CA   4850 31C8        1334  WRTER0    LH     R5,EOTFLG          WRITE ERROR RETRY         CCT23340
17CE   233B             1335            BZS    RCOVR              EOT? - NO - RETRY         CCT23350
17D0   41D0 2E6E        1336            BAL    R13,WAIT2          WAIT FOR NMTN=1           CCT23360
17D4   DE60 31DC        1337            OC     DEV,REWD           REWIND                    CCT23370
17D8   41D0 2F0C        1338            BAL    R13,WAIT1          WAIT FOR NMTN=1           CCT23380
17DC   41E0 28B2        1339            BAL    R14,FSTEOF         WRITE & SENSE EOF         CCT23390
17E0   4300 174C        1340            B      GENFIL                                       CCT23400
17E4   41E0 2CFA        1341  RCOVR     BAL    R14,ERRMSG2                                  CCT23410
17E8   41E0 2D36        1342            BAL    R14,RETRY          RETRY 5 TIMES             CCT23420
17EC   4300 174C        1343            B      GENFIL                                       CCT23430
17F0   4300 175A        1344            B      PROC01                                       CCT23440
17F4   41E0 2CFA        1345  RDER0     BAL    R14,ERRMSG2                                  CCT23450
17F8   41E0 2D36        1346            BAL    R14,RETRY          READ ERROR - RETRY 5 TIMES CCT23460
17FC   4300 175E        1347            B      RERDR                                        CCT23470
1800   4300 176C        1348            B      PROC03                                       CCT23480
1804   41E0 2D36        1349  EOFER02   BAL    R14,RETRY          RETRY WEOF                CCT23490
1808   4300 177E        1350            B      WEOF02                                       CCT23500
180C   4300 17A8        1351            B      PROC02                                       CCT23510
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                     * ***************************************************************    CCT23530
                     *                         T E S T 1                             *    CCT23540
                     *                                                               *    CCT23550
                     *    PURPOSE:                                                   *    CCT23560
                     *        TO TEST THE ABILITY OF THE DEVICE TO WRITE AND READ    *    CCT23570
                     *        VARIABLE LENGTH RECORDS.                               *    CCT23580
                     *                                                               *    CCT23590
                     *    ASSUMPTIONS:                                               *    CCT23600
                     *        THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT     *    CCT23610
                     *        DETECTING ANY FAILURE.                                 *    CCT23620
                     *                                                               *    CCT23630
                     *    DESIGN SPECIFICATIONS:                                     *    CCT23640
                     *        THIS TEST USES THE WRITE-BACKSPACE-READ FEATURE TO     *    CCT23650
                     *        GENERATE FILES WITH VARIABLE LENGTH RECORDS. THE       *    CCT23660
                     *        RECORDS ARE GENERATED IN THE WRITE BUFFER WITH A       *    CCT23670
                     *        MINIMUM OF 2 BYTES. THE RECORDS WRITTEN VARIES FROM    *    CCT23680
                     *        00-01 TO 00-3F.                                        *    CCT23690
                     *        THE TOTAL NUMBER OF FILES GENERATED IS DETERMINED      *    CCT23700
                     *        BY THE OPTION FILES.                                   *    CCT23710
                     *                                                               *    CCT23720
                     *    HOW TO RUN THE TEST:                                       *    CCT23730
                     *        REFER TO TEST 0. SELECT TEST 1 AND ITS APPROPRIATE     *    CCT23740
                     *        OPTIONS.                                               *    CCT23750
                     *                                                               *    CCT23760
                     *    OPTIONS:                                                   *    CCT23770
                     *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,      *    CCT23780
                     *        INTLEV, MODE, TRACK, RECFIL, FILES, DUMP               *    CCT23790
                     *                                                               *    CCT23800
                     *    ERRORS:                                                    *    CCT23810
                     *        00, 01, 02, 03, 04, 05, 08, 10, 11, 12, 13, 14, 15,    *    CCT23820
                     *        46, 47, 50.                                            *    CCT23830
                     * ***************************************************************    CCT23840
                     *                                                                    CCT23850
1810  C840 1818      TEST1    LHI   R4,TEST11      STARTING ADDRESS SET UP FOR            CCT23860
1814  41E0 285C               BAL   R14,TSTSUP     SECOND DEVICE TEST                     CCT23870
1818  41E0 283C      TEST11   BAL   R14,TSTINIT    TEST INITIALIZE                        CCT23880
181C  41D0 2F0C               BAL   R13,WAIT1      WAIT FOR NMTN=1                        CCT23890
1820  41E0 28B2               BAL   R14,FSTEOF     WRITE & SENSE EOF                      CCT23900
1824  41E0 2BDA               BAL   R14,BSET                                              CCT23910
1828  2491                    LIS   R9,1                                                  CCT23920
182A  48A0 15AE               LH    R10,RECFIL+6   RECORD PER FILE DESIRED                CCT23930
182E  2421                    LIS   R2,1                                                  CCT23940
1830  4830 15C6               LH    R3,FILES+6     NUMBER OF FILES                        CCT23950
1834  2411           NXTMOD1  LIS   R1,1                                                  CCT23960
1836  2481           VARFIL   LIS   R8,1                                                  CCT23970
1838  0858           VARREC   LHR   R5,R8                                                 CCT23980
183A  C450 00FF               NHI   R5,X'FF'       GET LEAST SIGNIFICANT 8 BITS           CCT23990
183E  2132                    BNZS  *+4                                                   CCT24000
1840  2451                    LIS   R5,1                                                  CCT24010
1842  4050 31C4               STH   R5,NBYTE                                              CCT24020
1846  41E0 2BC0               BAL   R14,RESET      RESET BUFFER LIMITS                    CCT24030
184A  41E0 2980      GENFIL1  BAL   R14,WRTREC     WRITE A RECORD                         CCT24040
184E  4300 18B0               B     WRTER1                                                CCT24050
1852  0755                    XHR   R5,R5                                                 CCT24060
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1854 4050 31CE 1407          STH   R5,RTYCNT                                  CCT24070
1858 41E0 293A 1408 PROC11   BAL   R14,BSPACE     BACKSPACE & STATUS CHECK    CCT24080
185C 41E0 2A58 1409 RERDR1   BAL   R14,RDREC      READ A RECORD               CCT24090
1860 4300 18DA 1410          B     RDER1                                       CCT24100
1864 0755      1411          XHR   R5,R5                                      CCT24110
1866 4050 31CE 1412          STH   R5,RTYCNT                                  CCT24120
186A 41E0 2B08 1413 PROC12   BAL   R14,COMPAR     COMPARE DATA                CCT24130
186E 4850 164A 1414          LH    R5,SDUMP+6    DUMP?                       CCT24140
1872 2333      1415          BZS   NODMP1                                      CCT24150
1874 41E0 2C22 1416          BAL   R14,DUMP       DUMP READ BUFFER            CCT24160
1878 C180 1838 1417 NODMP1   BXLE  R8,VARREC                                  CCT24170
187C 41D0 2E6E 1418 WEOF12   BAL   R13,WAIT2                                   CCT24180
1880 C350 0020 1419          THI   STAT,X'20'                                 CCT24190
1884 2337      1420          BZS   EOFMRK1                                    CCT24200
1886 41D0 2E6E 1421          BAL   R13,WAIT2     WAIT FOR NMTN=1             CCT24210
188A DE60 31DC 1422          OC    DEV,REWD      REWIND                      CCT24220
188E 41D0 2F0C 1423          BAL   R13,WAIT1     WAIT FOR NMTN=1             CCT24230
1892 DE60 31E5 1424 EOFMRK1  OC    DEV,WEOF      WRITE EOF                   CCT24240
1896 41E0 2C66 1425          BAL   R14,SENS01    CHECK FOR EOF WRITTEN       CCT24250
189A 4300 18EA 1426          B     EOFER12                                    CCT24260
189E 0755      1427          XHR   R5,R5                                      CCT24270
18A0 4050 31CE 1428          STH   R5,RTYCNT                                  CCT24280
18A4 C110 1836 1429 PROC13   BXLE  R1,VARFIL                                  CCT24290
18A8 41D0 2D12 1430          BAL   R13,TSTMOD    NEXT MODE?                  CCT24300
18AC 4300 1834 1431          B     NXTMOD1                                    CCT24310
               1432 *                                                        * CCT24320
               1433 *        ERROR RECOVERY PROCEDURE                        CCT24330
               1434 *                                                        CCT24340
18B0 4850 31C8 1435 WRTER1   LH    R5,EOTFLG     WRITE ERROR RECOVERY        CCT24350
18B4 233B      1436          BZS   RCOVR1        EOT? - NO - RETRY           CCT24360
18B6 41D0 2E6E 1437          BAL   R13,WAIT2     WAIT FOR NMTN=1             CCT24370
18BA DE60 31DC 1438          OC    DEV,REWD      REWIND                      CCT24380
18BE 41D0 2F0C 1439          BAL   R13,WAIT1     WAIT FOR NMTN=1             CCT24390
18C2 41E0 28B2 1440          BAL   R14,FSTEOF    WRITE & SENSE EOF           CCT24400
18C6 4300 184A 1441          B     GENFIL1       REPEAT WRITE PROCESS        CCT24410
18CA 41E0 2CFA 1442 RCOVR1   BAL   R14,ERRMSG2                                CCT24420
18CE 41E0 2D36 1443          BAL   R14,RETRY     RETRY 5 TIMES               CCT24430
18D2 4300 184A 1444          B     GENFIL1                                    CCT24440
18D6 4300 1858 1445          B     PROC11                                     CCT24450
18DA 41E0 2CFA 1446 RDER1    BAL   R14,ERRMSG2                                CCT24460
18DE 41E0 2D36 1447          BAL   R14,RETRY     RETRY 5 TIMES               CCT24470
18E2 4300 185C 1448          B     RERDR1                                     CCT24480
18E6 4300 186A 1449          B     PROC12                                     CCT24490
18EA 41E0 2D36 1450 EOFER12  BAL   R14,RETRY     RETRY 5 TIMES               CCT24500
18EE 4300 187C 1451          B     WEOF12                                     CCT24510
18F2 4300 18A4 1452          B     PROC13                                     CCT24520
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                  * ***************************************************************  CCT24540
                  *                                                               *  CCT24550
                  *                           T E S T 2                           *  CCT24560
                  *   PURPOSE:                                                    *  CCT24570
                  *       TO TEST REWIND AND SKIP FUNCTIONS.                      *  CCT24580
                  *                                                               *  CCT24590
                  *   ASSUMPTIONS:                                                *  CCT24600
                  *       THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT      *  CCT24610
                  *       DETECTING ANY FAILURE.                                  *  CCT24620
                  *                                                               *  CCT24630
                  * DESIGN SPECIFICATIONS:                                        *  CCT24640
                  *       THIS TEST GENERATES A FILE WITH EOF MARKS AT BOTH       *  CCT24650
                  *       ENDS OF THE FILE. IT THEN REWINDS AND CHECK FOR         *  CCT24660
                  *       NMTN=1 AND BOT. IT SKIPS EOF'S OVER THE FILE FOR AS     *  CCT24670
                  *       MANY TIMES AS IS SPECIFIED BY OPTION REPEAT.            *  CCT24680
                  *       THE FILE IS THEN READ AND THE WRITE & READ BUFFERS      *  CCT24690
                  *       ARE COMPARED TO MAKE SURE THAT THE SKIP OPERATIONS      *  CCT24700
                  *       DID NOT MISPOSITION THE READER HEAD.                    *  CCT24710
                  *                                                               *  CCT24720
                  *   HOW TO RUN THE TEST:                                        *  CCT24730
                  *       REFER TO TEST 0. SELECT TEST 2 AND ITS APPROPRIATE      *  CCT24740
                  *       OPTIONS.                                                *  CCT24750
                  *                                                               *  CCT24760
                  *   OPTIONS:                                                    *  CCT24770
                  *       TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,       *  CCT24780
                  *       INTLEV, MODE, TRACK, RECFIL, REPEAT                     *  CCT24790
                  *                                                               *  CCT24800
                  *   ERRORS:                                                     *  CCT24810
                  *       00, 01, 02, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13,     *  CCT24820
                  *       14, 15.                                                 *  CCT24830
                  *                                                               *  CCT24840
                  * ***************************************************************  CCT24850
                  *                                                                  CCT24860
18F6  C840 190E   TEST2    LHI   R4,TEST21        STARTING ADDRESS SET UP FOR        CCT24870
18FA  41E0 285C            BAL   R14,TSTSUP       SECOND DEVICE TEST                 CCT24880
18FE  C850 2122            LHI   R5,X'2122'       NORMAL READ & WRITE                CCT24890
1902  4050 31DE            STH   R5,READ                                             CCT24900
1906  C850 3811            LHI   R5,X'3811'       NORMAL BACKSPACE                   CCT24910
190A  4050 31DC            STH   R5,REWD                                             CCT24920
190E  41E0 283C   TEST21   BAL   R14,TSTINIT      TEST INITIALIZE                    CCT24930
1912  41D0 2F0C            BAL   R13,WAIT1        WAIT FOR NMTN=1                    CCT24940
1916  DE60 31DC            OC    DEV,REWD         REWIND                             CCT24950
191A  41D0 2F0C            BAL   R13,WAIT1        WAIT FOR NMTN=1                    CCT24960
191E  41E0 28B2            BAL   R14,FSTEOF       WRITE & SENSE EOF                  CCT24970
1922  41E0 28C0            BAL   R14,RESET        SET BUFFER LIMITS                  CCT24980
1926  41E0 28DA            BAL   R14,BSET         SET WRITE BUFFER                   CCT24990
192A  2421                 LIS   R2,1                                                CCT25000
192C  4830 15AE            LH    R3,RECFIL+6      RECORD PER FILE                    CCT25010
1930  2411                 LIS   R1,1                                                CCT25020
1932  41E0 2980   GENFIL2  BAL   R14,WRTREC       WRITE A RECORD                     CCT25030
1936  4300 19EC            B     WRTER2                                              CCT25040
193A  0755                 XHR   R5,R5                                               CCT25050
193C  4050 31CE            STH   R5,RTYCNT                                           CCT25060
1940  C110 1932   PROC21   BXLE  R1,GENFIL2                                          CCT25070
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TEST 2 REWIND AND SKIP

```
1944  41D0 2E6E  1508  TAPEND  BAL   R13,WAIT2                                  CCT25080
1948  41E0 28B2  1509         BAL   R14,FSTEOF        WRITE & SENSE EOF        CCT25090
194C  2491       1510         LIS   R9,1                                       CCT25100
194E  24A1       1511         LIS   R10,1                                      CCT25110
1950  4830 15D2  1512         LH    R3,REPEAT+6       NUMBER OF SKIP FUNCTIONS CCT25120
1954  0711       1513         XHR   R1,R1                                      CCT25130
1956  41D0 2E6E  1514         BAL   R13,WAIT2         WAIT FOR NMTN=1          CCT25140
195A  DE60 31DC  1515         OC    DEV,REWD          REWIND                   CCT25150
195E  41D0 2F0C  1516         BAL   R13,WAIT1         WAIT FOR NMTN=1          CCT25160
1962  9D65       1517         SSR   DEV,STAT                                   CCT25170
1964  C350 0020  1518         THI   STAT,X'20'        EOT?                     CCT25180
1968  213D       1519         BNZS  SKPFWD                                     CCT25190
196A  D250 1499  1520         STB   STAT,ERRSTA       NO -                     CCT25200
196E  C800 3039  1521         LHI   R0,C'09'          ERROR 09                 CCT25210
1972  4000 14E0  1522         STH   R0,ERRNO                                   CCT25220
1976  41F0 0E86  1523         BAL   R15,ERRDS                                  CCT25230
197A  41E0 2874  1524         BAL   R14,TRANST        CHECK FOR TRANSPARENT MODE CCT25240
197E  4300 2894  1525         B     CHKEND                                     CCT25250
1982  0788       1526  SKPFWD XHR   R8,R8                                      CCT25260
1984  41D0 2E6E  1527  SKPFOR BAL   R13,WAIT2         WAIT FOR NMTN=1          CCT25270
1988  DE60 31E0  1528         OC    DEV,SKIPF         SKIP FILE FORWARD        CCT25280
198C  41E0 2CAA  1529         BAL   R14,SENS05        CHECK FOR EOF            CCT25290
1990  4300 19E4  1530         B     RERD2             NO EOF - ABORT TEST      CCT25300
1994  C180 1984  1531         BXLE  R8,SKPFOR                                  CCT25310
1998  0788       1532         XHR   R8,R8                                      CCT25320
199A  41D0 2E6E  1533  SKPRVS BAL   R13,WAIT2         WAIT FOR NMTN=1          CCT25330
199E  DE60 31E1  1534         OC    DEV,SKIPR         SKIP FILE REVERSE        CCT25340
19A2  41E0 2CAA  1535         BAL   R14,SENS05        CHECK FOR EOF            CCT25350
19A6  4300 19E4  1536         B     RERD2             NO EOF - ABORT TEST      CCT25360
19AA  C180 199A  1537         BXLE  R8,SKPRVS                                  CCT25370
19AE  C110 1982  1538         BXLE  R1,SKPFWD                                  CCT25380
19B2  4830 15AE  1539         LH    R3,RECFIL+6       NUMBER OF RECORDS IN FILE CCT25390
19B6  41D0 2E6E  1540  REOF21 BAL   R13,WAIT2         WAIT FOR NMTN =1         CCT25400
19BA  DE60 31E7  1541         OC    DEV,RDEOF         READ PASS EOF            CCT25410
19BE  41E0 2C94  1542         BAL   R14,SENS02        CHECK FOR EOF            CCT25420
19C2  4300 1A0E  1543         B     EOFER21                                    CCT25430
19C6  0755       1544         XHR   R5,R5                                      CCT25440
19C8  4050 31CE  1545         STH   R5,RTYCNT                                  CCT25450
19CC  2411       1546  PROC24 LIS   R1,1                                       CCT25460
19CE  41E0 2A58  1547  RERDR21 BAL   R14,RDREC         READ A RECORD            CCT25470
19D2  4300 1A1A  1548         B     RDER21                                     CCT25480
19D6  0755       1549         XHR   R5,R5                                      CCT25490
19D8  4050 31CE  1550         STH   R5,RTYCNT                                  CCT25500
19DC  41E0 2B08  1551  PROC22 BAL   R14,COMPAR         COMPARE DATA             CCT25510
19E0  C110 19CE  1552         BXLE  R1,RERDR21                                 CCT25520
19E4  41E0 2874  1553  RERD2  BAL   R14,TRANST        CHECK FOR TRANSPARENT MODE CCT25530
19E8  4300 288C  1554         B     CHKEND1                                    CCT25540
                 1555  *                                                  *     CCT25550
                 1556  *       ERROR RECOVERY PROCEDURE                         CCT25560
                 1557  *                                                  *     CCT25570
19EC  4850 31C8  1558  WRTER2 LH    R5,EOTFLG         EOT?                     CCT25580
19F0  2337       1559         BZS   RCOVR2                                     CCT25590
19F2  41D0 2E6E  1560         BAL   R13,WAIT2         YES -                    CCT25600
19F6  DE60 31DD  1561         OC    DEV,BKSPAC        BACKSPACE - END FILE     CCT25610
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TEST 2 REWIND AND SKIP

```
19FA   4300 1944        1562          B      TAPEND                                       CCT25620
19FE   41E0 2CFA        1563  RCOVR2  BAL    R14,ERRMSG2                                  CCT25630
1A02   41E0 2D36        1564          BAL    R14,RETRY          RETRY 5 TIMES             CCT25640
1A06   4300 1932        1565          B      GENFIL2                                      CCT25650
1A0A   4300 1940        1566          B      PROC21                                       CCT25660
1A0E   41E0 2D36        1567  EOFER21 BAL    R14,RETRY          RETRY 5 TIMES             CCT25670
1A12   4300 19B6        1568          B      REOF21                                       CCT25680
1A16   4300 19CC        1569          B      PROC24                                       CCT25690
1A1A   9D65             1570  RDER21  SSR    DEV,STAT                                     CCT25700
1A1C   C350 0060        1571          THI    STAT,X'60'         EOT OR EOF?               CCT25710
1A20   4230 19E4        1572          BNZ    RERD2              YES - END OF FILE         CCT25720
1A24   41E0 2CFA        1573          BAL    R14,ERRMSG2                                  CCT25730
1A28   41E0 2D36        1574          BAL    R14,RETRY          RETRY 5 TIMES             CCT25740
1A2C   4300 19CE        1575          B      RERDR21                                      CCT25750
1A30   4300 19DC        1576          B      PROC22                                       CCT25760
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* ******************************************************************          CCT25780
*                               T E S T 3                              *          CCT25790
*                                                                      *          CCT25800
*   PURPOSE:                                                           *          CCT25810
*       THIS TEST CHECKS ALL DEVICE FUNCTIONS UNDER DEVICE             *          CCT25820
*       INTERRUPT. IT CHECKS FOR PROPER INTERRUPT RECEPTION,           *          CCT25830
*       INTERRUPT QUEUING AND INTERRUPT DISARM & DISABLE.              *          CCT25840
*       OPTIONS EXECUTED ARE WRITE, BACKSPACE, READ AND SKIP.          *          CCT25850
*                                                                      *          CCT25860
*       THE TEST FIRST WILL CHECK IF INTERRUPT CAN BE DISARMED,        *          CCT25870
*       DISABLED AND QUEUED. IT THEN GENERATES A FILE, ENDS            *          CCT25880
*       IT WITH AN EOF. BACKSPACE OVER IT AND READ IT. IT              *          CCT25890
*       REWINDS THE TAPE AND SKIPS FORWARD AND REVERSE OVER            *          CCT25900
*       THE FILE. ALL FUNCTIONS ARE PERFORMED UNDER INTERRUPTS,        *          CCT25910
*       IF ONLY WRITE & READ ARE SPECIFIED. THE TEST REWINDS           *          CCT25920
*       THE TAPE BEFORE PROCEEDING TO READ THE FILE. SETTING           *          CCT25930
*       WEOF OPTION WILL WRITE EOF'S TO THE END OF TAPE.               *          CCT25940
*       (SEE APPENDIX 6 OF PUBLICATION 06-172R00A15)                   *          CCT25950
*                                                                      *          CCT25960
*   ASSUMPTIONS:                                                       *          CCT25970
*       THIS TEST ASSUMES THAT TESTS 0, 1 & 2 HAD BEEN RUN             *          CCT25980
*       WITHOUT DETECTING ANY FAILURE.                                 *          CCT25990
*                                                                      *          CCT26000
*   DESIGN SPECIFICATIONS:                                             *          CCT26010
*       THE USER CAN SPECIFY THE PARTICULAR FUNCTIONS HE               *          CCT26020
*       WISHES TO TEST BY SELECTING THE PROPER OPTIONS (SEE            *          CCT26030
*       PROGRAM DESCRIPTION 06-171A15, SECTION 6.4). DEFAULT           *          CCT26040
*       OPTIONS WILL EXECUTE WRITE, BACKSPACE, READ AND SKIP.          *          CCT26050
*       THE TEST FIRST WILL CHECK IF INTERRUPTS ARE QUEUED.            *          CCT26060
*       IT THEN GENERATES A FILE, BACKSPACES OVER IT, AND              *          CCT26070
*       READ IT. IT REWINDS THE TAPE AND SKIP FORWARD AND              *          CCT26080
*       REVERSE OVER THE FILE. ALL FUNCTIONS ARE PERFORMED             *          CCT26090
*       UNDER INTERRUPTS.                                              *          CCT26100
*                                                                      *          CCT26110
*   HOW TO RUN TEST:                                                   *          CCT26120
*       REFER TO TEST 0. SELECT THE DESIRED OPTIONS AND                *          CCT26130
*       TEST 3. IF DU IS SET, THE TEST WILL PRINT THE                  *          CCT26140
*       MESSAGE: "TURN DEVICE OFF-LINE MOMENTARILY."                   *          CCT26150
*       THE DEVICE MUST BE TURN OFF LINE WITHIN 60 SECONDS             *          CCT26160
*       AFTER THE MESSAGE, BUT MUST NOT STAY OFF-LINE FOR              *          CCT26170
*       MORE THAN 30 SECONDS.                                          *          CCT26180
*                                                                      *          CCT26190
*       THE RECORD SIZE IN THIS TEST CAN BE VARIED BY THE              *          CCT26200
*       OPTION BYTES. THE LIMITS ARE FROM 2 TO X'400'. IF              *          CCT26210
*       THE USER WISHES TO INCREASE THE UPPER LIMIT, HE MAY            *          CCT26220
*       DO SO BY INCREASING THE CONTENT OF LOCATION LABELLED           *          CCT26230
*       "X400". IT MUST BE NOTED THAT THE LOWER LIMIT                  *          CCT26240
*       CANNOT BE LESS THAN 2 AND THE HIGHER LIMIT MUST                *          CCT26250
*       NOT BE CHANGED TO A VALUE HIGHER THAN X'7FFF'.                 *          CCT26260
*                                                                      *          CCT26270
*   OPTIONS:                                                           *          CCT26280
*       TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,              *          CCT26290
*       INTLEV, MODE, TRACK, RECFIL, WRITE, READ, BKSPAC,              *          CCT26300
*       SKIP, DU                                                       *          CCT26310
```

TEST 3   INTERRUPT TEST

```
                         *    ERRORS:                                                    *   CCT26320
                         *        00, 01, 02, 04, 05, 07, 08, 10, 11, 12, 13, 20, 21,    *   CCT26330
                         *        22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34,    *   CCT26340
                         *        35, 36, 37, 38, 39, 46, 47, 50.                        *   CCT26350
                         *                                                               *   CCT26360
                         * **************************************************************    CCT26370
                         *                                                                   CCT26380
1A34   C840 1A3C         TEST3    LHI    R4,TEST31         STARTING ADDRESS SET UP FOR       CCT26390
1A38   41E0 285C                  BAL    R14,TSTSUP        SECOND DEVICE TEST                CCT26400
1A3C   41E0 283C         TEST31   BAL    R14,TSTINIT       TEST INITIALIZE                   CCT26410
1A40   4060 16B2                  STH    DEV,DEVSADR+2                                       CCT26420
1A44   41D0 2F0C                  BAL    R13,WAIT1         WAIT FOR NMTN=1                   CCT26430
1A48   4850 15F6                  LH     R5,DUINT+6        DU OPTION?                        CCT26440
1A4C   4330 1A70                  BZ     NORINT                                              CCT26450
1A50   C850 1E70                  LHI    R5,RTNDU1                                           CCT26460
                         *                                                               *   CCT26470
                         *        TEST DU INTERRUPT (0-1)                                    CCT26480
                         *                                                                   CCT26490
1A54   4050 16AC                  STH    R5,DEVINT+2                                         CCT26500
1A58   DE60 31E3                  OC     DEV,ENABL         ENABLE DEVICE                     CCT26510
1A5C   C850 32A6                  LHI    R5,MSG10                                            CCT26520
1A60   41F0 101E                  BAL    R15,PRINT                                           CCT26530
1A64   41F0 1136                  BAL    R15,TSTBRK        CHECK BREAK KEY                   CCT26540
1A68   41E0 2E40                  BAL    R14,TIMEOUT                                         CCT26550
1A6C   1770                       DC     H'6000'                                             CCT26560
1A6E   3332                       DC     C'32'             ERROR 32                          CCT26570

                         *                                                               *   CCT26580
                         *        TEST INTERRUPT DISARM                                      CCT26590
                         *                                                                   CCT26600
1A70   C850 1E5E         NORINT   LHI    R5,RTNDSM         SET UP RETURN ADDRESS FOR         CCT26610
1A74   4050 16AC                  STH    R5,DEVINT+2       DISARM ERROR                      CCT26620
1A78   DE60 31E4                  OC     DEV,DISARM        DISARM DEVICE                     CCT26630
1A7C   DE60 31DC                  OC     DEV,REWD          REWIND TAPE                       CCT26640
1A80   41D0 2F0C                  BAL    R13,WAIT1         WAIT FOR NMTN=1                   CCT26650
1A84   4840 0A20                  LH     R4,PSW                                              CCT26660
1A88   9554                       EPSR   R5,R4             ENABLE PSW INTERRUPT              CCT26670
1A8A   4200 0000                  NOP    WAIT              FOR ERRONOUS INTERRUPT            CCT26680
1A8E   C840 30F0                  LHI    R4,X'30F0'        DISABLE PSW INTERRUPT             CCT26690
1A92   9554                       EPSR   R5,R4                                               CCT26700
1A94   4850 15BA                  LH     R5,NOBYTE+6       SET UP RECORD LENGTH              CCT26710
1A98   2751                       SIS    R5,1                                                CCT26720
1A9A   4050 31C4                  STH    R5,NBYTE                                            CCT26730
1A9E   41E0 28C0                  BAL    R14,RESET                                           CCT26740
1AA2   41E0 28DA                  BAL    R14,BSET          SET UP WRITE BUFFER               CCT26750
1AA6   2491                       LIS    R9,1                                                CCT26760
1AA8   48A0 15AE                  LH     R10,RECFIL+6                                        CCT26770
1AAC   41D0 2F0C         NXTMOD3  BAL    R13,WAIT1                                           CCT26780
1AB0   4850 160E                  LH     R5,OPWRT+6        WRITE OPTION SET?                 CCT26790
1AB4   2135                       BNZS   EOFLOP                                              CCT26800
1AB6   4850 1602                  LH     R5,OPRD+6         READ OPTION ?                     CCT26810
1ABA   4230 1D1A                  BNZ    RDONLY                                              CCT26820
                         *                                                               *   CCT26830
                         *        TEST INTERRUPT DISABLE                                     CCT26840
```

TEST 3   INTERRUPT TEST

```
                        1685  *                                                                  CCT26850
1ABE   C850 1E64        1686  EOFLOP    LHI    R5,RTNDSB          SET UP RETURN ADDRESS FOR      CCT26860
1AC2   4050 16AC        1687            STH    R5,DEVINT+2        DISABLE ERROR                  CCT26870
1AC6   DE60 31E4        1688            OC     DEV,DISARM         DISARM DEVICE INTERRUPTS       CCT26880
1ACA   DE60 31E2        1689            OC     DEV,DSABL          DISABLE DEVICE                 CCT26890
1ACE   41E0 2882        1690            BAL    R14,FSTEOF         WRITE & SENSE EOF              CCT26900
1AD2   41D0 2E6E        1691            BAL    R13,WAIT2          WAIT FOR NMTN=1                CCT26910
1AD6   4840 0A20        1692            LH     R4,PSW                                            CCT26920
1ADA   9554             1693            EPSR   R5,R4              ENABLE PSW INTERRUPT           CCT26930
1ADC   4200 0000        1694            NOP    WAIT               FOR ERRONOUS INTERRUPT         CCT26940
1AE0   C840 30F0        1695            LHI    R4,X'30F0'         DISABLE PSW INTERRUPT          CCT26950
1AE4   9554             1696            EPSR   R5,R4                                             CCT26960
                        1697  *                                                          *       CCT26970
                        1698  *         TEST INTERRUPT QUEUING                                   CCT26980
                        1699  *                                                                  CCT26990
1AE6   C850 1AFA        1700            LHI    R5,RTN01           SET UP RETURN ADDRESS 01       CCT27000
1AEA   4050 16AC        1701            STH    R5,DEVINT+2                                       CCT27010
1AEE   DE60 31E3        1702            OC     DEV,ENABL          ENABL DEVICE                   CCT27020
1AF2   41E0 2E40        1703            BAL    R14,TIMEOUT        WAIT FOR INTERRUPT             CCT27030
1AF6   0002             1704            DC     H'2'                                              CCT27040
1AF8   3337             1705            DC     C'37'              ERROR 37                       CCT27050

                        1706  *                                                          *       CCT27060
                        1707  *         TEST INTERRUPT AFTER REWIND                              CCT27070
1AFA   C850 1B1E        1708  RTN01     LHI    R5,RTN02           SET UP RETURN ADDRESS 02       CCT27080
1AFE   4050 16AC        1709            STH    R5,DEVINT+2                                       CCT27090
1B02   DE60 31E4        1710            OC     DEV,DISARM         DISARM INTERRUPTS              CCT27100
1B06   DE60 31E3        1711            OC     DEV,ENABL          ENABLE DEVICE INTERRUPT        CCT27110
1B0A   DE60 31DC        1712            OC     DEV,REWD           REWIND                         CCT27120
1B0E   41E0 2E40        1713            BAL    R14,TIMEOUT        WAIT FOR INTERRUPT             CCT27130
1B12   03E8             1714            DC     H'1000'                                           CCT27140
1B14   3230             1715            DC     C'20'              ERROR 20                       CCT27150

1B16   41D0 2F0C        1716            BAL    R13,WAIT1          WAIT FOR NMTN=1                CCT27160
1B1A   4300 1B4A        1717            B      LPEOF                                             CCT27170
1B1E   D350 1498        1718  RTN02     LB     STAT,INTSTA        GET INTERRUPT STATUS           CCT27180
1B22   C550 0034        1719            CLHI   STAT,X'34'         X'34'                          CCT27190
1B26   4330 1B4A        1720            BE     LPEOF              YES - GO ON                    CCT27200
1B2A   C800 3039        1721  STER02    LHI    R0,C'09'           NO - ERROR 09                  CCT27210
1B2E   C350 0001        1722  STAERR    THI    STAT,1             DU?                            CCT27220
1B32   4230 2FC6        1723            BNZ    MTDU                                              CCT27230
1B36   4000 14E0        1724  STERR2    STH    R0,ERRNO                                          CCT27240
1B3A   D250 1499        1725            STB    STAT,ERRSTA                                       CCT27250
1B3E   41F0 0E86        1726            BAL    R15,ERRDS                                         CCT27260
1B42   DE60 31E4        1727            OC     DEV,DISARM                                        CCT27270
1B46   4300 288C        1728            B      CHKEND1                                           CCT27280
                        1729  *                                                                  CCT27290
                        1730  *         TEST INTERRUPTS AFTER WRITE EOF                          CCT27300
1B4A   C850 1B6A        1731  LPEOF     LHI    R5,RTN03           SET RETURN ADDRESS 03          CCT27310
1B4E   4050 16AC        1732            STH    R5,DEVINT+2                                       CCT27320
1B52   DE60 31E4        1733            OC     DEV,DISARM         DISARM INTERRUPTS              CCT27330
1B56   DE60 31E3        1734            OC     DEV,ENABL          ENABLE DEVICE INTERRUPT        CCT27340
1B5A   DE60 31E5        1735            OC     DEV,WEOF           WRITE EOF                      CCT27350
1B5E   41E0 2E40        1736            BAL    R14,TIMEOUT        WAIT FOR INTERRUPT             CCT27360
```

TEST 3 INTERRUPT TEST

```
1B62  0190           1737          DC    H'400'
1B64  3231           1738          DC    C'21'          ERROR 21                          CCT27380

1B66  4300 1BDA      1739          B     STA05A                                           CCT27390
1B6A  D350 1498      1740  RTN03   LB    STAT,INTSTA    CHECK STATUS FOR                  CCT27400
1B6E  C550 004C      1741          CLHI  STAT,X'4C'     EX INTERRUPT                      CCT27410
1B72  4230 1BB6      1742          BNE   STAERR1                                          CCT27420
1B76  C850 1B8A      1743  STA03   LHI   R5,RTN04      SET UP RETURN ADDRESS 04          CCT27430
1B7A  4050 16AC      1744          STH   R5,DEVINT+2                                      CCT27440
1B7E  41E0 2E40      1745          BAL   R14,TIMEOUT    WAIT FOR NEXT INTERRUPT           CCT27450
1B82  000A           1746          DC    H'10'                                            CCT27460
1B84  3232           1747          DC    C'22'          ERROR 22                          CCT27470

1B86  4300 1BDA      1748          B     STA05A                                           CCT27480
1B8A  D350 1498      1749  RTN04   LB    STAT,INTSTA    CHECK STATUS FOR                  CCT27490
1B8E  C550 004E      1750          CLHI  STAT,X'4E'     EOM INTERRUPT                     CCT27500
1B92  4230 1BB6      1751          BNE   STAERR1                                          CCT27510
1B96  C850 1BAA      1752  STA04   LHI   R5,RTN05      SET UP RETURN ADDRESS 05          CCT27520
1B9A  4050 16AC      1753          STH   R5,DEVINT+2                                      CCT27530
1B9E  41E0 2E40      1754          BAL   R14,TIMEOUT    WAIT FOR THIRD INTERRUPT          CCT27540
1BA2  000A           1755          DC    H'10'                                            CCT27550
1BA4  3233           1756          DC    C'23'          ERROR 23                          CCT27560

1BA6  4300 1BDA      1757          B     STA05A                                           CCT27570
1BAA  D350 1498      1758  RTN05   LB    STAT,INTSTA    GET INTERRUPT STATUS              CCT27580
1BAE  C550 0056      1759          CLHI  STAT,X'56'     CHECK STATUS FOR NMTN INTERRUPT   CCT27590
1BB2  4330 1BDE      1760          BE    STA05          YES - GO ON                       CCT27600
1BB6  C350 0001      1761  STAERR1 THI   STAT,1         DU?                               CCT27610
1BBA  4230 2FC6      1762          BNZ   MTDU                                             CCT27620
1BBE  C800 3035      1763          LHI   R0,C'05'       ERROR 05                          CCT27630
1BC2  C350 0020      1764          THI   STAT,X'20'     EOT?                              CCT27640
1BC6  4330 1B2E      1765          BZ    STAERR                                           CCT27650
1BCA  C850 3266      1766          LHI   R5,MS604       YES -                             CCT27660
1BCE  41F0 101E      1767          BAL   R15,PRINT                                        CCT27670
1BD2  DE60 31E4      1768          OC    DEV,DISARM                                       CCT27680
1BD6  4300 288C      1769          B     CHKEND1                                          CCT27690
1BDA  41D0 2E6E      1770  STA05A  BAL   R13,WAIT2       WAIT FOR NMTN=1                   CCT27700
1BDE  4850 1632      1771  STA05   LH    R5,OPWEOF+6    WEOF OPTION SET?                  CCT27710
1BE2  4230 1B4A      1772          BNZ   LPEOF                                            CCT27720
                     1773  *                                                              CCT27730
                     1774  *       TEST WRITE INTERRUPTS                                  CCT27740
                     1775  *                                                              CCT27750
1BE6  2481           1776          LIS   R8,1                                             CCT27760
1BE8  DE60 31E4      1777  WREC3   OC    DEV,DISARM     DISARM QUEUED INTERRUPTS          CCT27770
1BEC  4850 31CC      1778          LH    R5,MODFLG                                        CCT27780
1BF0  C550 0002      1779          CLHI  R5,2           SELCH MODE?                       CCT27790
1BF4  4330 1EEE      1780          BE    SELINW                                           CCT27800
1BF8  C580 0003      1781          CLHI  R5,3           MODE 3?                           CCT27810
1BFC  4330 1F76      1782          BE    WDINT                                            CCT27820
1C00  C850 1C32      1783          LHI   R5,RTN06A      NO - SET UP RETURN ADDRESS 06A    CCT27830
1C04  4050 16AC      1784          STH   R5,DEVINT+2                                      CCT27840
1C08  48B0 32D8      1785          LH    R11,WLIM       SET UP WRITE LIMITS               CCT27850
1C0C  48C0 32DA      1786          LH    R12,WLIM+2                                       CCT27860
1C10  41D0 2E6E      1787          BAL   R13,WAIT2                                        CCT27870
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TEST 3 INTERRUPT TEST

```
1C14  DE60 31DF  1788          OC    DEV,WRITE          DEVICE WRITE                    CCT27880
1C18  966B       1789          WBR   DEV,R11           WRITE BLOCK                     CCT27890
1C1A  9D65       1790  STA06   SSR   DEV,STAT                                           CCT27900
1C1C  2081       1791          BTBS  8,1                                                CCT27910
1C1E  DE60 31E3  1792          OC    DEV,ENABL          ENABLE DEVICE INTERRUPT         CCT27920
1C22  41E0 2E40  1793          BAL   R14,TIMEOUT        WAIT FOR INTERRUPT              CCT27930
1C26  000A       1794          DC    H'10'                                              CCT27940
1C28  3236       1795          DC    C'26'              ERROR 26                        CCT27950

1C2A  9D65       1796          SSR   DEV,STAT                                           CCT27960
1C2C  41D0 2EC4  1797          BAL   R13,WAIT3          WAIT FOR EOM=1                  CCT27970
1C30  2303       1798          BS    RTN06A+4                                           CCT27980
1C32  D350 1498  1799  RTN06A  LB    STAT,INTSTA        GET INTERRUPT STATUS            CCT27990
1C36  C350 0001  1800          THI   STAT,1             DU?                             CCT28000
1C3A  4230 2FC6  1801          BNZ   MTDU                                               CCT28010
1C3E  C350 0020  1802          THI   STAT,X'20'         EOT                             CCT28020
1C42  2336       1803          BZS   WRTON3                                             CCT28030
1C44  41E0 293A  1804          BAL   R14,BSPACE                                         CCT28040
1C48  DE60 31D9  1805          OC    DEV,CLEAR                                          CCT28050
1C4C  230D       1806          BS    WRTEND                                             CCT28060
1C4E  C350 0004  1807  WRTON3  THI   STAT,X'04'         EX?                             CCT28070
1C52  2134       1808          BNZS  STER06A            YES - STATUS ERROR              CCT28080
1C54  C350 0002  1809          THI   STAT,X'02'         EOM INTERRUPT?                  CCT28090
1C58  2135       1810          BNZS  STA06A             YES - GO ON                     CCT28100
1C5A  C800 3130  1811  STER06A LHI   R0,C'10'          NO - ERROR 10                   CCT28110
1C5E  41E0 2CF2  1812          BAL   R14,ERRMSG1                                        CCT28120
1C62  C180 1BE8  1813  STA06A  BXLE  R8,WREC3                                          CCT28130
1C66  41D0 2E6E  1814  WRTEND  BAL   R13,WAIT2           WAIT FOR NMTN=1                 CCT28140
1C6A  DE60 31E5  1815          OC    DEV,WEOF           WRITE EOF                       CCT28150
1C6E  4850 161A  1816          LH    R5,OPBSP+6         BACKSPACE OPTION SET ?          CCT28160
1C72  4330 1EB6  1817          BZ    NOBSP                                              CCT28170
                 1818  *                                                               CCT28180
                 1819  *       TEST BACKSPACE EOF INTERRUPT                            CCT28190
1C76  C850 1C9A  1820          LHI   R5,RTN07           SET UP RETURN ADDRESS 07        CCT28200
1C7A  4050 16AC  1821          STH   R5,DEVINT+2                                        CCT28210
1C7E  41D0 2E6E  1822          BAL   R13,WAIT2          WAIT FOR NMTN=1                 CCT28220
1C82  DE60 31E4  1823          OC    DEV,DISARM         DISARM QUEUED INTERRUPTS        CCT28230
1C86  DE60 31E3  1824          OC    DEV,ENABL          ENABLE DEVICE INTERRUPT         CCT28240
1C8A  DE60 31E6  1825          OC    DEV,BSEOF          BACKSPACE OVER EOF              CCT28250
1C8E  41E0 2E40  1826          BAL   R14,TIMEOUT        WAIT FOR INTERRUPT              CCT28260
1C92  0032       1827          DC    H'50'                                              CCT28270
1C94  3234       1828          DC    C'24'              ERROR 24                        CCT28280

1C96  4300 26BE  1829          B     BSFIL                                              CCT28290
1C9A  D350 1498  1830  RTN07   LB    STAT,INTSTA        GET INTERRUPT STATUS            CCT28300
1C9E  C350 0092  1831          THI   STAT,X'92'         ERR, NMTN, OR EOM?              CCT28310
1CA2  2335       1832          BZS   STA07              NO - GO ON                      CCT28320
1CA4  C800 3037  1833          LHI   R0,C'07'          YES - ERROR 07                  CCT28330
1CA8  4300 1B2E  1834          B     STAERR                                             CCT28340
                 1835  *                                                               CCT28350
                 1836  *       TEST BACKSPACE RECORD INTERRUPT                         CCT28360
1CAC  C850 1CD6  1837  STA07   LHI   R5,RTN08           SET UP RETURN ADDRESS 08        CCT28370
1CB0  4050 16AC  1838          STH   R5,DEVINT+2                                        CCT28380
1CB4  2481       1839          LIS   R8,1                                             CCT28390
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TEST 3 INTERRUPT TEST

```
1CB6  41D0 2E6E      1840  BSPFIL  BAL   13,WAIT2          WAIT FOR NMTN=1                CCT28400
1CBA  DE60 31E4      1841        OC    DEV,DISARM        DISARM QUEUED INTERRUPTS       CCT28410
1CBE  DE60 31E3      1842        OC    DEV,ENABL         ENABLE DEVICE INTERRUPT        CCT28420
1CC2  DE60 31DD      1843        OC    DEV,BKSPAC        BACKSPACE OVER A RECORD        CCT28430
1CC6  41E0 2E40      1844        BAL   R14,TIMEOUT        WAIT FOR INTERRUPT             CCT28440
1CCA  0032           1845        DC    H'50'                                            CCT28450
1CCC  3235           1846        DC    C'25'             ERROR 25                       CCT28460

1CCE  41D0 2EC4      1847        BAL   R13,WAIT3         WAIT FOR EOM=1                 CCT28470
1CD2  4300 1D06      1848        B     STA08                                            CCT28480
1CD6  D350 1498      1849  RTN08   LB    STAT,INTSTA       GET INTERRUPT STATUS           CCT28490
1CDA  C350 0001      1850        THI   STAT,1            DU?                            CCT28500
1CDE  4230 2FC6      1851        BNZ   MTOU                                             CCT28510
1CE2  C350 0040      1852        THI   STAT,X'40'         EOF?                           CCT28520
1CE6  4230 1D12      1853        BNZ   TRYRD                                            CCT28530
1CEA  C350 0004      1854        THI   STAT,X'04'         EX?                            CCT28540
1CEE  2134           1855        BNZS  STER08            YES - STATUS ERROR             CCT28550
1CF0  C350 0002      1856        THI   STAT,X'02'         EOM?                           CCT28560
1CF4  2139           1857        BNZS  STA08             YES - GO ON                    CCT28570
1CF6  C800 3038      1858  STER08  LHI   R0,C'08'         NO - ERROR 08                  CCT28580
1CFA  4000 14E0      1859        STH   R0,ERRNO                                         CCT28590
1CFE  D250 1499      1860        STB   STAT,ERRSTA                                      CCT28600
1D02  41F0 0E86      1861        BAL   R15,ERRDS                                        CCT28610
1D06  C180 1CB6      1862  STA08   BXLE  R8,BSPFIL                                     CCT28620
1D0A  41D0 2E6E      1863        BAL   R13,WAIT2                                        CCT28630
1D0E  DE60 31E6      1864        OC    DEV,BSEOF         BACKSPACE OVER EOF             CCT28640
1D12  4850 1602      1865  TRYRD   LH    R5,OPRD+6         READ OPTION SET?               CCT28650
1D16  4330 1DAE      1866        BZ    NOREAD                                           CCT28660
                     1867  *                                                            CCT28670
                     1868  *       TEST READ INTERRUPTS                                 CCT28680
1D1A  41D0 2E6E      1869  RDONLY  BAL   R13,WAIT2         WAIT FOR NMTN=1                CCT28690
1D1E  DE60 31E7      1870        OC    DEV,RDEOF         READ PAST EOF                  CCT28700
1D22  2481           1871        LIS   R8,1                                             CCT28710
1D24  DE60 31E4      1872  RREC3   OC    DEV,DISARM        DISARM QUEUED INTERRUPTS       CCT28720
1D28  41D0 2BF8      1873        BAL   R13,CRBUF         CLEAR READ BUFFER              CCT28730
1D2C  4850 31CC      1874        LH    R5,MODFLG                                        CCT28740
1D30  C550 0002      1875        CLHI  R5,2              SELCH MODE?                    CCT28750
1D34  4330 1F32      1876        BE    SELINR                                           CCT28760
1D38  C550 0003      1877        CLHI  R5,3              MODE 3?                        CCT28770
1D3C  4330 1FCE      1878        BE    RDINT                                            CCT28780
1D40  C850 1D6E      1879        LHI   R5,RTN09A         SET UP RETURN ADDRESS 09A      CCT28790
1D44  4050 16AC      1880        STH   R5,DEVINT+2                                      CCT28800
1D48  48B0 32DC      1881        LH    R11,RLIM                                         CCT28810
1D4C  48C0 32DE      1882        LH    R12,RLIM+2                                       CCT28820
1D50  41D0 2E6E      1883        BAL   R13,WAIT2         WAIT FOR NMTN=1                CCT28830
1D54  DE60 31DE      1884        OC    DEV,READ          DEVICE READ                    CCT28840
1D58  9768           1885        RBR   DEV,R11           READ BLOCK                     CCT28850
1D5A  DE60 31E3      1886  STA09   OC    DEV,ENABL         ENABLE DEVICE INTERRUPT        CCT28860
1D5E  41E0 2E40      1887        BAL   R14,TIMEOUT       WAIT FOR INTERRUPT             CCT28870
1D62  0032           1888        DC    H'50'                                            CCT28880
1D64  3237           1889        DC    C'27'             ERROR 27                       CCT28890

1D66  41D0 2EC4      1890        BAL   R13,WAIT3         WAIT FOR EOM=1                 CCT28900
1D6A  9D65           1891        SSR   DEV,STAT                                        CCT28910
```

TEST 3 INTERRUPT TEST

```
1D6C  2303          1892          BS    RTN09A+4                                  CCT28920
1D6E  D350 1498     1893  RTN09A  LB    STAT,INTSTA     GET INTERRUPT STATUS      CCT28930
1D72  C350 0001     1894          THI   STAT,1          DU?                       CCT28940
1D76  4230 2FC6     1895          BNZ   MTDU                                      CCT28950
1D7A  C350 0060     1896          THI   STAT,X'60'                                CCT28960
1D7E  4230 1DAE     1897          BNZ   NOREAD                                    CCT28970
1D82  C350 0004     1898          THI   STAT,X'04'       EX?                       CCT28980
1D86  2134          1899          BNZS  STER09A         YES - STATUS ERROR        CCT28990
1D88  C350 0002     1900          THI   STAT,X'02'       EOM?                      CCT29000
1D8C  2135          1901          BNZS  RDEND                                     CCT29010
1D8E  C800 3131     1902  STER09A LHI   R0,C'11'        ERROR 11                  CCT29020
1D92  41E0 2CF2     1903          BAL   R14,ERRMSG1                               CCT29030
1D96  4850 163E     1904  RDEND   LH    R5,CMPRE+6      COMPARE OPTION SET ?      CCT29040
1D9A  2333          1905          BZS   TRYDUM                                    CCT29050
1D9C  41E0 2B08     1906          BAL   R14,COMPAR                                 CCT29060
1DA0  4850 164A     1907  TRYDUM  LH    R5,SDUMP+6      DUMP OPTION SET           CCT29070
1DA4  2333          1908          BZS   CONT3                                     CCT29080
1DA6  41E0 2C22     1909          BAL   R14,DUMP        DUMP READ BUFFER          CCT29090
1DAA  C180 1D24     1910  CONT3   BXLE  R8,RREC3                                  CCT29100
1DAE  41D0 2E6E     1911  NOREAD  BAL   R13,WAIT2                                 CCT29110
1DB2  DE60 31DC     1912          OC    DEV,REWD                                  CCT29120
1DB6  41D0 2F0C     1913          BAL   R13,WAIT1                                 CCT29130
1DBA  4850 15EA     1914          LH    R5,TRANSP+6     TRANSPARENT MODE SET?     CCT29140
1DBE  4230 1E4A     1915          BNZ   ENDTST3         YES - BY-PASS SKIP OPERATION CCT29150
1DC2  4850 1626     1916          LH    R5,OPSKIP+6     SKIP OPTION?              CCT29160
1DC6  4330 1E4A     1917          BZ    ENDTST3                                   CCT29170
                    1918  *                                                       CCT29180
                    1919  *       TEST SKIP INTERRUPTS                            CCT29190
1DCA  0788          1920          XHR   R8,R8                                     CCT29200
1DCC  C850 1DEE     1921          LHI   R5,RTN11        SET UP RETURN ADDRESS     CCT29210
1DD0  4050 16AC     1922          STH   R5,DEVINT+2                               CCT29220
1DD4  41D0 2E6E     1923  SKFINT  BAL   R13,WAIT2                                 CCT29230
1DD8  DE60 31E4     1924          OC    DEV,DISARM      DISARM DEVICE             CCT29240
1DDC  DE60 31E3     1925          OC    DEV,ENABL                                 CCT29250
1DE0  DE60 31E0     1926          OC    DEV,SKIPF       SKIP FORWARD              CCT29260
1DE4  41E0 2E40     1927          BAL   R14,TIMEOUT                               CCT29270
1DE8  1388          1928          DC    H'5000'                                   CCT29280
1DEA  3330          1929          DC    C'30'           ERROR 30                  CCT29290

1DEC  230A          1930          BS    STA11                                     CCT29300
1DEE  D350 1498     1931  RTN11   LB    STAT,INTSTA     GET INTERRUPT STATUS      CCT29310
1DF2  C550 004C     1932          CLHI  STAT,X'4C'                                CCT29320
1DF6  2335          1933          BES   STA11                                     CCT29330
1DF8  C800 3037     1934          LHI   R0,C'07'        ERROR 07                  CCT29340
1DFC  4300 1B2E     1935          B     STAERR                                    CCT29350
1E00  2681          1936  STA11   AIS   R8,1                                     CCT29360
1E02  C580 0002     1937          CLHI  R8,2            2 EOF'S?                  CCT29370
1E06  4280 1DD4     1938          BL    SKFINT                                    CCT29380
1E0A  0788          1939          XHR   R8,R8                                     CCT29390
1E0C  C850 1E2E     1940          LHI   R5,RTN12                                  CCT29400
1E10  4050 16AC     1941          STH   R5,DEVINT+2                               CCT29410
1E14  41D0 2E6E     1942  SKRINT  BAL   R13,WAIT2                                 CCT29420
1E18  DE60 31E4     1943          OC    DEV,DISARM      DISARM DEVICE             CCT29430
1E1C  DE60 31E3     1944          OC    DEV,ENABL                                 CCT29440
```

TEST 3 INTERRUPT TEST

```
1E20  DE60 31E1            OC    DEV,SKIPR       SKIP REVERSE            CCT29450
1E24  41E0 2E40            BAL   R14,TIMEOUT                             CCT29460
1E28  1388                 DC    H'5000'                                 CCT29470
1E2A  3331                 DC    C'31'           ERROR 31                CCT29480

1E2C  230A                 BS    STA12                                   CCT29490
1E2E  D350 1498   RTN12    LB    STAT,INTSTA     GET INTERRUPT STATUS    CCT29500
1E32  C550 004C            CLHI  STAT,X'4C'                              CCT29510
1E36  2335                 BZS   STA12                                   CCT29520
1E38  C800 3037            LHI   R0,C'07'        ERROR 07                CCT29530
1E3C  4300 1B2E            B     STAERR                                  CCT29540
1E40  2681        STA12    AIS   R8,1                                    CCT29550
1E42  C580 0002            CLHI  R8,2            2 EOF'S ?               CCT29560
1E46  4280 1E14            BL    SKRINT                                  CCT29570
1E4A  DE60 31E4   ENDTST3  OC    DEV,DISARM                              CCT29580
1E4E  4100 2E6E            BAL   R13,WAIT2                               CCT29590
1E52  DE60 31DC            OC    DEV,REWD        REWIND                  CCT29600
1E56  4100 2012            BAL   R13,TSTMOD                              CCT29610
1E5A  4300 1AAC            B     NXTMOD3         NEXT MODE               CCT29620
                  *                                                      CCT29630
                  *        DISARM FAILURE                                CCT29640
                  *                                                      CCT29650
1E5E  C800 3338   RTNDSM   LHI   R0,C'38'        ERROR 38                CCT29660
1E62  2303                 BS    INTER31                                 CCT29670
                  *                                                      CCT29680
                  *        DISABLE FAILURE                               CCT29690
                  *                                                      CCT29700
1E64  C800 3339   RTNDSB   LHI   R0,C'39'        ERROR 39                CCT29710
1E68  D350 1498   INTER31  LB    STAT,INTSTA     GET INTERRUPT STATUS    CCT29720
1E6C  4300 1836            B     STERR2                                  CCT29730
                  *                                                   *  CCT29740
                  *        DU INTERRUPT                                  CCT29750
                  *                                                      CCT29760
1E70  D350 1498   RTNDU1   LB    STAT,INTSTA                             CCT29770
1E74  C350 0001            THI   STAT,X'01'      DU BIT SET?             CCT29780
1E78  4330 1EA2            BZ    DUSTER                                  CCT29790
                  *        TEST DU INTERRUPT (1-0)                       CCT29800
                  *                                                      CCT29810
1E7C  C850 1E90            LHI   R5,RTNDU2                               CCT29820
1E80  4050 16AC            STH   R5,DEVINT+2                             CCT29830
1E84  41E0 2E40            BAL   R14,TIMEOUT                             CCT29840
1E88  0BB8                 DC    H'3000'                                 CCT29850
1E8A  3334                 DC    C'34'           ERROR 34                CCT29860

1E8C  4300 2FC6            B     MTDU                                    CCT29870
1E90  D350 1498   RTNDU2   LB    STAT,INTSTA                             CCT29880
1E94  C350 0001            THI   STAT,X'01'      DU BIT SET ?            CCT29890
1E98  4330 1A70            BZ    NORINT                                  CCT29900
1E9C  C800 3335            LHI   R0,C'35'        ERROR 35                CCT29910
1EA0  2303                 BS    DUSTER+4                                CCT29920
1EA2  C800 3833   DUSTER   LHI   R0,C'33'        ERROR 33                CCT29930
1EA6  4000 14E0            STH   R0,ERRNO                                CCT29940
1EAA  D250 1499            STB   STAT,ERRSTA                             CCT29950
1EAE  41F0 0E86            BAL   R15,ERRDS                               CCT29960
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1EB2   4300 1A70          1997          B      NORINT                                      CCT29970
1EB6   C850 1EDE          1998  NOBSP   LHI    R5,RTN10        NO BACKSPACE OPTION:        CCT29980
1EBA   4050 16AC          1999          STH    R5,DEVINT+2     SET UP INTERRUPT RETURN ADRS 10  CCT29990
1EBE   41D0 2E6E          2000          BAL    R13,WAIT2       WAIT FOR NMTN=1             CCT30000
1EC2   DE60 31E4          2001          OC     DEV,DISARM      DISARM QUEUED INTERRUPTS    CCT30010
1EC6   DE60 31E3          2002          OC     DEV,ENABL       ENABLE DEVICE INTERRUPT     CCT30020
1ECA   DE60 31DC          2003          OC     DEV,REWD        REWIND                      CCT30030
1ECE   41E0 2E40          2004          BAL    R14,TIMEOUT     WAIT FOR INTERRUPT          CCT30040
1ED2   03E8               2005          DC     H'1000'                                     CCT30050
1ED4   3230               2006          DC     C'20'           ERROR 20                    CCT30060

1ED6   41D0 2F0C          2007          BAL    R13,WAIT1       WAIT FOR NMTN=1             CCT30070
1EDA   4300 1D12          2008          B      TRYRD                                       CCT30080
1EDE   D350 1498          2009  RTN10   LB     STAT,INTSTA     GET INTERRUPT STATUS        CCT30090
1EE2   C550 0034          2010          CLHI   STAT,X'34'      ET, NMTN AND EX=1?          CCT30100
1EE6   4230 1B2A          2011          BNE    STER02          NO - STATUS ERROR           CCT30110
1EEA   4300 1D12          2012          B      TRYRD                                       CCT30120
                          2013  *                                                          CCT30130
                          2014  *       TEST SELCH INTERRUPTS:                             CCT30140
                          2015  *       WRITE                                              CCT30150
                          2016  *                                                          CCT30160
1EEE   C850 1F1C          2017  SELINW  LHI    R5,RTN06B       SET UP RETURN ADDRESS 06B   CCT30170
1EF2   4050 16AA          2018          STH    R5,DEVINT       FOR SELCH INTERRUPT         CCT30180
1EF6   0755               2019          XHR    R5,R5           RESET RETURN ADDRESS        CCT30190
1EF8   4050 16AC          2020          STH    R5,DEVINT+2     FOR DEVICE INTERRUPT        CCT30200
1EFC   41D0 2E6E          2021          BAL    R13,WAIT2       WAIT FOR NMTN=1             CCT30210
1F00   DE70 31D8          2022          OC     SELCH,STOP      STOP SELCH                  CCT30220
1F04   D870 32D8          2023          WH     SELCH,WLIM      SET UP SELCH WRITE LIMITS   CCT30230
1F08   D870 32DA          2024          WH     SELCH,WLIM+2                                CCT30240
1F0C   DE60 31DF          2025          OC     DEV,WRITE       DEVICE WRITE                CCT30250
1F10   DE70 31DA          2026          OC     SELCH,GOWRT     SELCH GO & WRITE            CCT30260
1F14   41E0 2E40          2027          BAL    R14,TIMEOUT     WAIT FOR SELCH INTERRUPT    CCT30270
1F18   01F4               2028          DC     H'500'                                      CCT30280
1F1A   3238               2029          DC     C'28'           ERROR 28                    CCT30290

1F1C   DE70 31D8          2030  RTN06B  OC     SELCH,STOP                                  CCT30300
1F20   0755               2031          XHR    R5,R5           RESET RETURN ADDRESS        CCT30310
1F22   4050 16AA          2032          STH    R5,DEVINT       FOR SELCH INTERRUPT         CCT30320
1F26   C850 1C32          2033          LHI    R5,RTN06A                                   CCT30330
1F2A   4050 16AC          2034          STH    R5,DEVINT+2                                 CCT30340
1F2E   4300 1C1A          2035          B      STA06                                       CCT30350
                          2036  *                                                          CCT30360
                          2037  *       READ                                               CCT30370
                          2038  *                                                          CCT30380
1F32   C850 1F60          2039  SELINR  LHI    R5,RTN09B       SET UP RETURN ADDRESS 09B   CCT30390
1F36   4050 16AA          2040          STH    R5,DEVINT       FOR SELCH INTERRUPT         CCT30400
1F3A   0755               2041          XHR    R5,R5           RESET RETURN ADDRESS        CCT30410
1F3C   4050 16AC          2042          STH    R5,DEVINT+2     FOR DEVICE INTERRUPT        CCT30420
1F40   41D0 2E6E          2043          BAL    R13,WAIT2       WAIT FOR NMTN=1             CCT30430
1F44   DE70 31D8          2044          OC     SELCH,STOP      STOP SELCH                  CCT30440
1F48   D870 32DC          2045          WH     SELCH,RLIM      SET UP SELCH READ LIMITS    CCT30450
1F4C   D870 32DE          2046          WH     SELCH,RLIM+2                                CCT30460
1F50   DE60 31DE          2047          OC     DEV,READ        DEVICE READ                 CCT30470
1F54   DE70 31DB          2048          OC     SELCH,GORD      SELCH GO & READ             CCT30480
```

TEST 3 INTERRUPT TEST

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1F58  41E0 2E40      2049          BAL   R14,TIMEOUT      WAIT FOR INTERRUPT                CCT30490
1F5C  01F4           2050          DC    H'500'                                             CCT30500
1F5E  3239           2051          DC    C'29'            ERROR 29                          CCT30510

1F60  DE70 31D8      2052  RTN09B  OC    SELCH,STOP                                         CCT30520
1F64  0755           2053          XHR   R5,R5             RESET RETURN ADDRESS              CCT30530
1F66  4050 16AA      2054          STH   R5,DEVINT          FOR SELCH INTERRUPT               CCT30540
1F6A  C850 1D6E      2055          LHI   R5,RTN09A                                          CCT30550
1F6E  4050 16AC      2056          STH   R5,DEVINT+2                                        CCT30560
1F72  4300 1D5A      2057          B     STA09                                              CCT30570
1F76  C850 1F9E      2058  WDINT   LHI   R5,RTN06C          SET UP INTERRUPT RETURN ADDRESS   CCT30580
1F7A  4050 16AC      2059          STH   R5,DEVINT+2                                        CCT30590
1F7E  4680 32D8      2060          LH    R11,WLIM           STARTING ADDRESS                  CCT30600
1F82  48C0 32DA      2061          LH    R12,WLIM+2         ENDING ADDRESS                    CCT30610
1F86  26C1           2062          AIS   R12,1                                              CCT30620
1F88  41D0 2E6E      2063          BAL   R13,WAIT2                                          CCT30630
1F8C  DE60 31E3      2064          OC    DEV,ENABL                                          CCT30640
1F90  DE60 31DF      2065          OC    DEV,WRITE          WRITE COMMAND                     CCT30650
1F94  41E0 2E40      2066  BSYWAT  BAL   R14,TIMEOUT                                        CCT30660
1F98  0032           2067          DC    H'50'                                              CCT30670
1F9A  3336           2068          DC    C'36'                                              CCT30680

1F9C  2303           2069          BS    RTN06C+4                                           CCT30690
1F9E  D350 1498      2070  RTN06C  LB    STAT,INTSTA        GET STATUS                      CCT30700
1FA2  C350 0001      2071          THI   STAT,1                                             CCT30710
1FA6  4230 2FC6      2072          BNZ   MTDU                                               CCT30720
1FAA  C350 00DE      2073          THI   STAT,X'DE'         ERROR IF ANY OF THE BITS IS SET   CCT30730
1FAE  4230 202E      2074          BNZ   BSYAB1             EXCEPT ET                         CCT30740
1FB2  DA6B 0000      2075          WD    DEV,0(R11)         WRITE A CHARACTER                 CCT30750
1FB6  26B1           2076          AIS   R11,1                                              CCT30760
1FB8  05BC           2077          CLHR  R11,R12                                            CCT30770
1FBA  4280 1F94      2078          BL    BSYWAT             WROTE A FULL RECORD ?             CCT30780
1FBE  C850 1C32      2079          LHI   R5,RTN06A                                          CCT30790
1FC2  4050 16AC      2080          STH   R5,DEVINT+2                                        CCT30800
1FC6  DE60 31E4      2081          OC    DEV,DISARM         DISARM DEVICE                     CCT30810
1FCA  4300 1C1A      2082          B     STA06                                              CCT30820
1FCE  C850 1FF6      2083  RDINT   LHI   R5,RTN09C          SET UP INTERRUPT RETURN ADDRESS   CCT30830
1FD2  4050 16AC      2084          STH   R5,DEVINT+2                                        CCT30840
1FD6  48B0 32DC      2085          LH    R11,RLIM           STARTING ADDRESS                  CCT30850
1FDA  48C0 32DE      2086          LH    R12,RLIM+2         ENDING ADDRESS                    CCT30860
1FDE  26C1           2087          AIS   R12,1                                              CCT30870
1FE0  41D0 2E6E      2088          BAL   R13,WAIT2                                          CCT30880
1FE4  DE60 31E3      2089          OC    DEV,ENABL                                          CCT30890
1FE8  DE60 31DE      2090          OC    DEV,READ           READ COMMAND                      CCT30900
1FEC  41E0 2E40      2091  BSYRAT  BAL   R14,TIMEOUT                                        CCT30910
1FF0  0032           2092          DC    H'50'                                              CCT30920
1FF2  3336           2093          DC    C'36'                                              CCT30930

1FF4  2303           2094          BS    RTN09C+4                                           CCT30940
1FF6  D350 1498      2095  RTN09C  LB    STAT,INTSTA        GET STATUS                      CCT30950
1FFA  C350 0001      2096          THI   STAT,1                                             CCT30960
1FFE  4230 2FC6      2097          BNZ   MTDU                                               CCT30970
2002  C350 0040      2098          THI   STAT,X'40'         EOF?                            CCT30980
2006  4230 1DAE      2099          BNZ   NOREAD                                             CCT30990
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TEST 3 INTERRUPT TEST

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200A  C350 009E        2100          THI   STAT,X'9E'       ERROR IF ANY OF THE BITS IS SET      CCT31000
200E  4230 203A        2101          BNZ   BSYAB2           EXCEPT ET                            CCT31010
2012  DB6B 0000        2102          RD    DEV,0(R11)       READ A CHARACTER                     CCT31020
2016  26B1             2103          AIS   R11,1                                                 CCT31030
2018  05BC             2104          CLHR  R11,R12                                               CCT31040
201A  4280 1FEC        2105          BL    BSYRAT           READ A FULL RECORD?                  CCT31050
201E  C850 1D6E        2106          LHI   R5,RTN09A                                             CCT31060
2022  4050 16AC        2107          STH   R5,DEVINT+2                                           CCT31070
2026  DE60 31E4        2108          OC    DEV,DISARM       DISARM DEVICE                        CCT31080
202A  4300 1D5A        2109          B     STA09                                                 CCT31090
202E  C800 3132        2110  BSYAB1  LHI   R0,C'12'         ERROR 12                             CCT31100
2032  41E0 2CF2        2111          BAL   R14,ERRMSG1                                           CCT31110
2036  4300 1C62        2112          B     STA06A                                                CCT31120
203A  C800 3133        2113  BSYAB2  LHI   R0,C'13'         ERROR 13                             CCT31130
203E  41E0 2CF2        2114          BAL   R14,ERRMSG1                                           CCT31140
2042  4300 1DA0        2115          B     TRYDUM                                                CCT31150
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                   * ***************************************************************    CCT31170
                   *                           T E S T 4                           *    CCT31180
                   *                                                               *    CCT31190
                   *   PURPOSE:                                                    *    CCT31200
                   *       TO TEST THE READ AND BACKSPACE FUNCTIONS WITH           *    CCT31210
                   *       CONTINUOUS MODE                                         *    CCT31220
                   *                                                               *    CCT31230
                   *   ASSUMPTIONS:                                                *    CCT31240
                   *       THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT      *    CCT31250
                   *       DETECTING ANY FAILURE.                                  *    CCT31260
                   *                                                               *    CCT31270
                   *   DESIGN SPECIFICATION:                                       *    CCT31280
                   *       THE TEST GENERATES A FILE OF RECORDS USING THE WRITE-   *    CCT31290
                   *       BACKSPACE-READ FEATURE. THIS ENSURES THAT THE FILES     *    CCT31300
                   *       IS CORRECTLY WRITTEN. IF ANY FAILURES OCCUR DURING      *    CCT31310
                   *       FILE GENERATION, THE TEST IS ABORTED. THEN THE TEST     *    CCT31320
                   *       BACKSPACE CONTINUOUSLY OVER THE RECORDS. FINALLY        *    CCT31330
                   *       THE FILE IS READ CONTINUOUSLY IN RD MODE.               *    CCT31340
                   *                                                               *    CCT31350
                   *   HOW TO RUN TEST:                                            *    CCT31360
                   *       SEE TEST 0 AND SELECT TEST 4                            *    CCT31370
                   *                                                               *    CCT31380
                   *   OPTIONS:                                                    *    CCT31390
                   *       TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,       *    CCT31400
                   *       MODE, RECFIL, DUMP                                      *    CCT31410
                   *                                                               *    CCT31420
                   *   ERRORS:                                                     *    CCT31430
                   *       00, 01, 02, 03, 04, 05, 08, 10, 11, 12, 13, 14, 15,     *    CCT31440
                   *       40, 41, 42, 43, 44, 45, 47, 47, 50.                     *    CCT31450
                   *                                                               *    CCT31460
                   * ***************************************************************    CCT31470
                   *                                                                    CCT31480
2046  C840 204E    TEST4    LHI   R4,TEST41      STARTING ADDRESS SET UP FOR            CCT31490
204A  41E0 285C             BAL   R14,TSTSUP     SECOND DEVICE TEST                     CCT31500
204E  41E0 283C    TEST41   BAL   R14,TSTINIT    TEST INITIALIZE                        CCT31510
2052  41D0 2F0C             BAL   R13,WAIT1                                             CCT31520
2056  DE60 31DC             OC    DEV,REWD       REWIND TAPE                            CCT31530
205A  41E0 2BC0             BAL   R14,RESET      RESET BUFFER LIMITS                    CCT31540
205E  41E0 2BDA             BAL   R14,BSET       SET UP WRITE BUFFER                    CCT31550
2062  2491                  LIS   R9,1                                                  CCT31560
2064  48A0 15AE             LH    R10,RECFIL+6   NUMBER OF RECORDS PER FILE             CCT31570
2068  41D0 2F0C             BAL   R13,WAIT1                                             CCT31580
206C  41E0 28B2             BAL   R14,FSTEOF     WRITE EOF                              CCT31590
2070  2481                  LIS   R8,1                                                  CCT31600
2072  41E0 2980    CFIL4    BAL   R14,WRTREC     WRITE A RECORD                         CCT31610
2076  4300 212E             B     CWER41                                                CCT31620
207A  41E0 293A    CPRC41   BAL   R14,BSPACE     BACKSPACE A RECORD                     CCT31630
207E  41E0 2A58             BAL   R14,RDREC      READ A RECORD                          CCT31640
2082  41E0 0E86             BAL   R14,ERRDS                                             CCT31650
2086  41E0 2B08             BAL   R14,COMPAR     COMPARE THE RECORD                     CCT31660
208A  4850 164A             LH    R5,SDUMP+6                                            CCT31670
208E  2333                  BZS   CNODMP4                                               CCT31680
2090  41E0 2C22             BAL   R14,DUMP       BUMP READ BUFFER                       CCT31690
2094  C180 2072    CNODMP4  BXLE  R8,CFIL4                                              CCT31700
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TEST 4   CONTINUOUS MODE

```
2098  41D0 2E6E    CFILEND BAL   R13,WAIT2                                     CCT31710
209C  DE60 31E5            OC    DEV,WEOF        WRITE EOF                      CCT31720
20A0  41D0 2E6E            BAL   R13,WAIT2                                     CCT31730
20A4  DE60 31E6            OC    DEV,BSEOF       BACKSPACE OVER EOF             CCT31740
                   *                                                           CCT31750
                   *       CONTINUOUS MODE                                     CCT31760
                   *                                                           CCT31770
20A8  2481                 LIS   R8,1                                          CCT31780
20AA  41D0 2E6E            BAL   R13,WAIT2                                     CCT31790
20AE  DE60 31DD    CBSP    OC    DEV,BKSPAC      BACKSPACE CONTINUOUS OVER RECORD CCT31800
20B2  41E0 2148            BAL   R14,SENS04      CHECK FOR EOM                  CCT31810
20B6  C180 20AE            BXLE  R8,CBSP                                       CCT31820
20BA  2421                 LIS   R2,1                                          CCT31830
20BC  4830 31C4            LH    R3,NBYTE                                      CCT31840
20C0  2481                 LIS   R8,1                                          CCT31850
20C2  41D0 2E6E            BAL   R13,WAIT2                                     CCT31860
20C6  DE60 31DE    CRDREC  OC    DEV,READ        READ RECORD BYTE BY BYTE       CCT31870
20CA  0711                 XHR   R1,R1                                         CCT31880
20CC  41D0 2F68    RDCHAR  BAL   R13,WAIT4       WAIT FOR BSY=0                 CCT31890
20D0  4300 2188            B     CONERR          FINISHED TOO SOON              CCT31900
20D4  9B64                 RDR   DEV,CHAR        READ A BYTE                    CCT31910
20D6  0755                 XHR   R5,R5                                         CCT31920
20D8  4050 31CE            STH   R5,RTYCNT                                     CCT31930
20DC  D351 33EA            LB    R5,WBUFF(R1)    GET BYTE WRITTEN               CCT31940
20E0  0545                 CLHR  CHAR,R5         COMPARE BYTE                   CCT31950
20E2  2139                 BNES  CONER1                                        CCT31960
20E4  C110 20CC            BXLE  R1,RDCHAR                                     CCT31970
20E8  41E0 2152    CPRC42  BAL   R14,SENS04A                                   CCT31980
20EC  C180 20C6            BXLE  R8,CRDREC                                     CCT31990
20F0  4300 288C            B     CHKEND1                                       CCT32000
                   *                                                           CCT32010
                   *       ERROR RECOVERY PROCEDURE                            CCT32020
                   *                                                           CCT32030
20F4  C800 3435    CONER1  LHI   R0,C'45'        ERROR 45                       CCT32040
20F8  4000 14E0            STH   R0,ERRNO                                      CCT32050
20FC  41F0 0E74            BAL   R15,ERRD                                      CCT32060
                   *                                                      *    CCT32070
                   *       THIS ROUTINE PRINTS THE EXPECTED DATA FROM WRITE    *    CCT32080
                   *       BUFFER AND THE DATA READ FROM REG. CHAR.       *    CCT32090
                   *                                                           CCT32100
2100  D010 3328    DUMDAT  STM   R1,RSAVE1                                     CCT32110
2104  2402                 LIS   R0,2                                          CCT32120
2106  0815                 LHR   R1,R5           GET DATA WRITTEN               CCT32130
2108  C820 3280            LHI   R2,MSG05+14                                   CCT32140
210C  41F0 0FEC            BAL   R15,HEXASC      CONVERT TO ASCII               CCT32150
2110  0814                 LHR   R1,CHAR         GET DATA READ                  CCT32160
2112  C820 328B            LHI   R2,MSG05+25                                   CCT32170
2116  41F0 0FEC            BAL   R15,HEXASC      CONVERT TO ASCII               CCT32180
211A  C850 3272            LHI   R5,MSG05                                      CCT32190
211E  41D0 2E2C            BAL   R13,MSGPRT      PRINT MESSAGE                  CCT32200
2122  D110 3328            LM    R1,RSAVE1                                     CCT32210
2126  41D0 2E6E    CRTRY   BAL   R13,WAIT2                                     CCT32220
212A  4300 20C6            B     CRDREC                                        CCT32230
212E  4850 31C8    CWER41  LH    R5,EOTFLG       EOT?                           CCT32240
```

TEST 4 CONTINUOUS MODE

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2132  2135                2225          BNZS   CEOT                                    CCT32250
2134  41F0 0E86           2226          BAL    R15,ERRDS                               CCT32260
2138  4300 207A           2227          B      CPRC41                                  CCT32270
213C  C850 3266           2228  CEOT    LHI    R5,MSG04                                CCT32280
2140  41F0 101E           2229          BAL    R15,PRINT       YES - ABORT TEST        CCT32290
2144  4300 288C           2230          B      CHKEND1                                 CCT32300
2148  C8B0 3430           2231  SENS04  LHI    R11,C'40'       ERROR 40                CCT32310
214C  C8C0 3432           2232          LHI    R12,C'42'       ERROR 42                CCT32320
2150  2305                2233          BS     SES04                                   CCT32330
2152  C8B0 3431           2234  SENS04A LHI    R11,C'41'       ERROR 41                CCT32340
2156  C8C0 3433           2235          LHI    R12,C'43'       ERROR 43                CCT32350
215A  9D65                2236  SES04   SSR    DEV,STAT                                CCT32360
215C  4210 2FC6           2237          BTC    1,MTDU                                  CCT32370
2160  C350 0010           2238          THI    STAT,X'10'      NMTN?                   CCT32380
2164  2333                2239          BZS    S041                                    CCT32390
2166  080B                2240          LHR    R0,R11                                  CCT32400
2168  2308                2241          BS     CERROR                                  CCT32410
216A  C350 0062           2242  S041    THI    STAT,X'62'      EOF, ET OR EOM=1?       CCT32420
216E  223A                2243          BZS    SES04                                   CCT32430
2170  C350 00E0           2244          THI    STAT,X'E0'      ERR, EOF OR ET=1?       CCT32440
2174  033E                2245          BZR    R14                                     CCT32450
2176  080C                2246          LHR    R0,R12                                  CCT32460
2178  4000 14E0           2247  CERROR  STH    R0,ERRNO                                CCT32470
217C  D250 1499           2248          STB    STAT,ERRSTA                             CCT32480
2180  41F0 0E86           2249          BAL    R15,ERRDS                               CCT32490
2184  4300 288C           2250          B      CHKEND1                                 CCT32500
2188  C800 3434           2251  CONERR  LHI    R0,C'44'        ERROR 44                CCT32510
218C  D250 1499           2252          STB    STAT,ERRSTA                             CCT32520
2190  4000 14E0           2253          STH    R0,ERRNO                                CCT32530
2194  41F0 0E86           2254          BAL    R15,ERRDS                               CCT32540
2198  41E0 2D36           2255          BAL    R14,RETRY       RETRY 5 TIMES           CCT32550
219C  4300 2126           2256          B      CRTRY                                   CCT32560
21A0  4300 20E8           2257          B      CPRC42                                  CCT32570
```

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                 * ***************************************************************  CCT32590
                 *                         T E S T 5                             *  CCT32600
                 *                                                               *  CCT32610
                 *    PURPOSE:                                                   *  CCT32620
                 *        TO TEST THE PROPER FUNCTIONING OF THE OVERFLOW         *  CCT32630
                 *        CIRCUITRY, AND THE DETECTION OF ABNORMAL I/O           *  CCT32640
                 *        CONDITIONS.                                            *  CCT32650
                 *                                                               *  CCT32660
                 *    ASSUMPTIONS:                                                  CCT32670
                 *        THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT     *  CCT32680
                 *        DETECTING ANY FAILURE.                                 *  CCT32690
                 *                                                               *  CCT32700
                 *    DESIGN SPECIFICATION:                                      *  CCT32710
                 *        A RECORD IS GENERATED AND THE SAME RECORD IS READ      *  CCT32720
                 *        PLUS 32 BYTES. THE PROGRAM TESTS FOR DETECTION OF      *  CCT32730
                 *        ABNORMAL TERMINATION OF THE READ OPERATION.            *  CCT32740
                 *        CONVERSELY, OVERFLOW IS CHECKED BY READING A RECORD    *  CCT32750
                 *        SHORTER THAN THE ONE WRITTEN.                          *  CCT32760
                 *                                                               *  CCT32770
                 *    OPTIONS:                                                   *  CCT32780
                 *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,      *  CCT32790
                 *        INTLEN, MODE, TRACK, RECFIL, DUMP                      *  CCT32800
                 *                                                               *  CCT32810
                 *    ERRORS:                                                    *  CCT32820
                 *        00, 01, 02, 03, 04, 05, 08, 10, 11, 12, 13, 14, 15,    *  CCT32830
                 *        16, 17, 18 ,46, 47, 50.                                *  CCT32840
                 *                                                               *  CCT32850
                 * ***************************************************************  CCT32860
                 *                                                                  CCT32870
21A4  C840 21AC  TEST5    LHI  R4,TEST51        STARTING ADDRESS SET UP FOR         CCT32880
21A8  41E0 285C           BAL  R14,TSTSUP       SECOND DEVICE TEST                  CCT32890
21AC  41E0 283C  TEST51   BAL  R14,TSTINIT      TEST INITIALIZE                     CCT32900
21B0  41D0 2F0C  NXTMOD4  BAL  R13,WAIT1        WAIT FOR NMTN=1                     CCT32910
21B4  DE60 31DC           OC   DEV,REWD         REWIND                              CCT32920
21B8  41D0 2F0C           BAL  R13,WAIT1        WAIT FOR NMTN=1                     CCT32930
21BC  41E0 28B2           BAL  R14,FSTEOF       WRITE & SENSE EOF                   CCT32940
21C0  0755                XHR  R5,R5            CLEAR WRITE-LONG/READ-SHORT FLAG    CCT32950
21C2  4050 31D4           STH  R5,WLRS                                              CCT32960
21C6  41E0 2BC0           BAL  R14,RESET        SET BUFFER LIMITS                   CCT32970
21CA  41E0 2BDA           BAL  R14,BSET         SET WRITE BUFFER                    CCT32980
21CE  4850 32DA           LH   R5,WLIM+2        DECREASE WRITE BUFFER LIMIT         CCT32990
21D2  CB50 0020           SHI  R5,32            BY 32                               CCT33000
21D6  4050 32DA           STH  R5,WLIM+2                                            CCT33010
21DA  48A0 15AE           LH   R10,RECFIL+6     NUMBER OF RECORDS                   CCT33020
21DE  2491                LIS  R9,1                                                 CCT33030
21E0  2481       GENFIL4  LIS  R8,1                                                 CCT33040
21E2  41E0 2980  GFIL41   BAL  R14,WRTREC       WRITE A RECORD                      CCT33050
21E6  4300 226A           B    WRTER4                                               CCT33060
21EA  0755                XHR  R5,R5                                                CCT33070
21EC  4050 31CE           STH  R5,RTYCNT                                            CCT33080
21F0  41E0 293A  PROC41   BAL  R14,BSPACE       BACKSPACE A RECORD                  CCT33090
21F4  41E0 2A58  RERDR4   BAL  R14,RDREC        READ A RECORD                       CCT33100
21F8  4300 2282           B    RDER4            ERROR RETURN - CHECK STATUS         CCT33110
21FC  D250 1499           STB  STAT,ERRSTA      NORMAL RETURN -                     CCT33120
```

TEST 5 WRITE LONG/READ SHORT

```
2200  C800 3136          LHI   R0,C'16'      ERROR 16                                  CCT33130
2204  4000 14E0          STH   R0,ERRNO                                                CCT33140
2208  41E0 2CFA          BAL   R14,ERRMSG2                                             CCT33150
220C  41E0 2D36          BAL   R14,RETRY     RETRY 5 TIMES                             CCT33160
2210  4300 21F4          B     RERDR4                                                  CCT33170
2214  4850 164A  PROC42  LH    R5,SDUMP+6    DUMP OPTION?                              CCT33180
2218  2333               BZS   PROC43                                                  CCT33190
221A  41E0 2C22          BAL   R14,DUMP      YES - DUMP READ BUFFER                    CCT33200
221E  C180 21E2  PROC43  BXLE  R8,GFIL41     CONTINUE                                  CCT33210
2222  41D0 2E6E          BAL   R13,WAIT2     WAIT FOR NMTN=1                           CCT33220
2226  DE60 31E5          OC    DEV,WEOF                                                CCT33230
222A  4850 31D4  TAPEND4 LH    R5,WLRS       WRITE-LONG/READ-SHORT?                    CCT33240
222E  2339               BZS   CONT4                                                   CCT33250
2230  41D0 2E6E          BAL   R13,WAIT2                                               CCT33260
2234  DE60 31DC          OC    DEV,REWD      REWIND                                    CCT33270
2238  41D0 2D12          BAL   R13,TSTMOD    YES - CHECK MORE MODE                     CCT33280
223C  4300 21B0          B     NXTMOD4                                                 CCT33290
2240  245F       CONT4   LIS   R5,15         NO - SET WRITE-LONG/READ-SHORT FLAG       CCT33300
2242  4050 31D4          STH   R5,WLRS                                                 CCT33310
2246  41D0 2E6E          BAL   R13,WAIT2     WAIT FOR NMTN=1                           CCT33320
224A  DE60 31DC          OC    DEV,REWD      REWIND                                    CCT33330
224E  41D0 2F0C          BAL   R13,WAIT1     WAIT FOR NMTN=1                           CCT33340
2252  41E0 28B2          BAL   R14,FSTEOF    WRITE & SENSE EOF                         CCT33350
2256  41E0 2BC0          BAL   R14,RESET     SET BUFFER LIMITS                         CCT33360
225A  4850 32DE          LH    R5,RLIM+2     DECREASE READ BUFFER LIMIT                CCT33370
225E  CB50 0020          SHI   R5,32         BY 32                                     CCT33380
2262  4050 32DE          STH   R5,RLIM+2                                               CCT33390
2266  4300 21E0          B     GENFIL4       GO TO NEXT STEP                           CCT33400
                 *                                                                     CCT33410
                 *       ERROR PROCEDURE                                               CCT33420
                 *                                                                     CCT33430
226A  4850 31C8  WRTER4  LH    R5,EOTFLG     EOT?                                      CCT33440
226E  4230 222A          BNZ   TAPEND4       YES - END OF STEP                         CCT33450
2272  41E0 2CFA          BAL   R14,ERRMSG2                                             CCT33460
2276  41E0 2D36          BAL   R14,RETRY     RETRY 5 TIMES                             CCT33470
227A  4300 21E2          B     GFIL41                                                  CCT33480
227E  4300 21F0          B     PROC41                                                  CCT33490
2282  4800 31D4  RDER4   LH    R0,WLRS       WRITE-LONG/READ-SHORT?                    CCT33500
2286  4330 22AA          BZ    WSRL                                                    CCT33510
228A  C350 0080          THI   STAT,X'80'    YES - ERR SET?                            CCT33520
228E  4230 22B6          BNZ   NORMAL        YES - CONTINUE                            CCT33530
2292  C800 3137          LHI   R0,C'17'      NO - ERROR 17                             CCT33540
2296  4000 14E0  WERLS   STH   R0,ERRNO                                                CCT33550
229A  41E0 2CFA          BAL   R14,ERRMSG2                                             CCT33560
229E  41E0 2D36          BAL   R14,RETRY     RETRY 5 TIMES                             CCT33570
22A2  4300 21F4          B     RERDR4                                                  CCT33580
22A6  4300 2214          B     PROC42                                                  CCT33590
22AA  C350 0080  WSRL    THI   STAT,X'80'    ERR SET?                                  CCT33600
22AE  2334               BZS   NORMAL        NO - CONTINUE                             CCT33610
22B0  C800 3138          LHI   R0,C'18'      YES - ERROR 18                            CCT33620
22B4  220F               BS    WERLS                                                   CCT33630
22B6  0755       NORMAL  XHR   R5,R5                                                   CCT33640
22B8  4050 31CE          STH   R5,RTYCNT                                               CCT33650
22BC  4300 2214          B     PROC42                                                  CCT33660
```

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                      * ******************************************************** CCT33680
                      *                         T E S T 6                     * CCT33690
                      *                                                       * CCT33700
                      *    PURPOSE:                                             CCT33710
                      *        TO TEST THE PROPER GENERATION OF INTER-RECORD-GAPS.  * CCT33720
                      *        AND DETECTION OF GAP DATA.                     * CCT33730
                      *        NOTE: PROLONGED REPETITION OF THIS TEST MAY WEAR THE * CCT33740
                      *        FRONT PORTION OF THE TAPE.                     * CCT33750
                      *                                                       * CCT33760
                      *    ASSUMPTIONS:                                       * CCT33770
                      *        THIS TEST ASSUMES THAT TESTS 0 AND 4 HAD BEEN RUN * CCT33780
                      *        WITHOUT DETECTING ANY FAILURE.                 * CCT33790
                      *                                                       * CCT33800
                      *    DESIGN SPECIFICATIONS:                               CCT33810
                      *        THIS TEST GENERATES LONG (512 BYTES) RECORDS OF * CCT33820
                      *        ALL ONES (FF) ON THE TAPE. IT THEN REWINDS AND * CCT33830
                      *        WRITE A SHORT RECORD OF VARIOUS DATA (00-FF) OVER * CCT33840
                      *        THE SAME PORTION OF THE TAPE FOR 100 TIMES. SINCE * CCT33850
                      *        BACKSPACE DOES NOT ALWAYS STOP AT THE SAME SPOT, * CCT33860
                      *        ALL THE RECORDS ARE NOT WRITTEN DIRECTLY OVER EACH * CCT33870
                      *        OTHER. THE LAST RECORD IS WRITTEN REVERSED. THE * CCT33880
                      *        TAPE IS REWOUND AND THE RECORD READ. THE READ IS * CCT33890
                      *        REPEATED FOR THE NUMBER OF TIMES AS SPECIFIED BY * CCT33900
                      *        OPTION IRG. THIS ENSURES THE PICKING UP OF ANY * CCT33910
                      *        DATA LEFT BY THE PREVIOUS RECORDS WRITTEN.     * CCT33920
                      *                                                       * CCT33930
                      *    OPTIONS:                                           * CCT33940
                      *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH, * CCT33950
                      *        INTLEV, MODE, TRACK, IRG                       * CCT33960
                      *                                                       * CCT33970
                      *    ERRORS:                                            * CCT33980
                      *        00, 01, 02, 03, 04, 05, 07, 08, 10, 11, 12, 13, 14, * CCT33990
                      *        15, 19, 46, 47, 50.                            * CCT34000
                      *                                                       * CCT34010
                      * ******************************************************** CCT34020
                      *                                                         CCT34030
22C0  C840 22C8       TEST6    LHI   R4,TEST61       STARTING ADDRESS SET UP FOR CCT34040
22C4  41E0 285C                BAL   R14,TSTSUP      SECOND DEVICE TEST       CCT34050
22C8  41E0 283C       TEST61   BAL   R14,TSTINIT     TEST INITIALIZE          CCT34060
22CC  41D0 2F0C                BAL   R13,WAIT1       WAIT FOR NMTN=1          CCT34070
22D0  DE60 31DC                OC    DEV,REWD        REWIND                   CCT34080
22D4  41D0 2F0C                BAL   R13,WAIT1       WAIT FOR NMTN=1          CCT34090
22D8  41E0 28B2                BAL   R14,FSTEOF      WRITE & SENSE EOF        CCT34100
22DC  2492                     LIS   R9,2                                     CCT34110
22DE  C8A0 01FF                LHI   R10,511         SET UP FOR 512 BYTE RECORD CCT34120
22E2  40A0 31C4                STH   R10,NBYTE                                CCT34130
22E6  41E0 2BC0                BAL   R14,RESET       SET BUFFER LIMITS        CCT34140
22EA  0788                     XHR   R8,R8                                    CCT34150
22EC  C840 FFFF                LHI   CHAR,X'FFFF'    DATA OF RECORD IS        CCT34160
22F0  4048 33EA       JUNK1    STH   CHAR,WBUFF(R8)  X'FF'                    CCT34170
22F4  C180 22F0                BXLE  R8,JUNK1                                 CCT34180
22F8  C850 003F                LHI   R5,X'3F'                                 CCT34190
22FC  4050 31C4                STH   R5,NBYTE                                 CCT34200
2300  2491                     LIS   R9,1                                     CCT34210
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TEST 6 INTER-RECORD GAP TEST

```
2302  24A4            2422          LIS   R10,4          SET UP FOR 4 RECORDS          CCT34220
2304  0788            2423          XHR   R8,R8                                        CCT34230
2306  41E0 2980       2424  JUNK2   BAL   R14,WRTREC      WRITE 4 LONG RECORDS          CCT34240
230A  41F0 0E86       2425          BAL   R15,ERRDS                                    CCT34250
230E  C180 2306       2426          BXLE  R8,JUNK2                                     CCT34260
2312  41D0 2E6E       2427          BAL   R13,WAIT2                                    CCT34270
2316  DE60 31E5       2428          OC    DEV,WEOF         WRITE EOF MARK              CCT34280
231A  41D0 2E6E       2429          BAL   R13,WAIT2        WAIT FOR NMTN=1             CCT34290
231E  DE60 31DC       2430          OC    DEV,REWD         REWIND                      CCT34300
2322  41E0 28C0       2431          BAL   R14,RESET        SET BUFFER LIMITS           CCT34310
2326  41E0 28DA       2432          BAL   R14,BSET         GENERATE WRITE BUFFER       CCT34320
232A  41D0 2F0C       2433          BAL   R13,WAIT1        WAIT FOR NMTN=1             CCT34330
232E  41E0 28B2       2434          BAL   R14,FSTEOF       WRITE & SENSE EOF           CCT34340
2332  41D0 2E6E       2435          BAL   R13,WAIT2        WAIT FOR NMTN=1             CCT34350
2336  DE60 31E6       2436          OC    DEV,BSEOF        BACKSPACE OVER EOF          CCT34360
233A  41E0 2C6C       2437          BAL   R14,SENS03       CHECK FOR EOF               CCT34370
233E  4300 288C       2438          B     CHKEND1          NO EOF - ABORT T5ST         CCT34380
2342  C8A0 0064       2439          LHI   R10,100          SET 100 TIMES               CCT34390
2346  0788            2440          XHR   R8,R8                                        CCT34400
2348  41E0 2980       2441  CIGCHK  BAL   R14,WRTREC       WRITE A RECORD              CCT34410
234C  4300 23A2       2442          B     WRTER51                                      CCT34420
2350  41E0 293A       2443  PROC51  BAL   R14,BSPACE       BACKSPACE A RECORD          CCT34430
2354  C180 2348       2444          BXLE  R8,CIGCHK                                    CCT34440
2358  41E0 2960       2445          BAL   R14,SWAP         REVERSE WRITE BUFFER        CCT34450
235C  41E0 2980       2446          BAL   R14,WRTREC       WRITE A RECORD              CCT34460
2360  4300 23C4       2447          B     WRTER52                                      CCT34470
2364  41D0 2E6E       2448  PROC52  BAL   R13,WAIT2        WAIT FOR NMTN=1             CCT34480
2368  DE60 31E5       2449          OC    DEV,WEOF         WRITE EOF                   CCT34490
236C  41D0 2E6E       2450          BAL   R13,WAIT2        WAIT FOR NMTN=1             CCT34500
2370  DE60 31DC       2451          OC    DEV,REWD         REWIND                      CCT34510
2374  41D0 2F0C       2452          BAL   R13,WAIT1        WAIT FOR NMTN=1             CCT34520
2378  41E0 2A58       2453          BAL   R14,RDREC        READ A RECORD               CCT34530
237C  41F0 0E86       2454          BAL   R15,ERRDS                                    CCT34540
2380  41E0 2B08       2455          BAL   R14,COMPAR       COMPARE DATA OF LAST RECORD CCT34550
2384  48A0 15DE       2456          LH    R10,IRGDAT+6                                 CCT34560
2388  0788            2457          XHR   R8,R8                                        CCT34570
238A  41E0 293A       2458  GAPDAT  BAL   R14,BSPACE       BACKSPACE                   CCT34580
238E  41E0 2A58       2459          BAL   R14,RDREC        READ A RECORD               CCT34590
2392  41F0 0E86       2460          BAL   R15,ERRDS                                    CCT34600
2396  41E0 2B08       2461          BAL   R14,COMPAR                                   CCT34610
239A  C180 238A       2462          BXLE  R8,GAPDAT        REPEAT OVER SAME RECORD     CCT34620
239E  4300 288C       2463          B     CHKEND1                                      CCT34630
                      2464  *                                                          CCT34640
                      2465  *       ERROR PROCEDURE                                    CCT34650
                      2466  *                                                          CCT34660
23A2  4850 31C8       2467  WRTER51 LH    STAT,EOTFLG      EOT?                        CCT34670
23A6  233B            2468          BZS   WER51                                       CCT34680
23A8  D250 1499       2469  MTNERR  STB   STAT,ERRSTA      YES - TAPE MOTION ERROR     CCT34690
23AC  C800 3139       2470          LHI   R8,C'19'         ERROR 19                    CCT34700
23B0  4000 19E0       2471          STH   R0,ERRNO                                     CCT34710
23B4  41F0 0E86       2472          BAL   R15,ERRDS                                    CCT34720
23B8  4300 2894       2473          B     CHKEND                                       CCT34730
                      2474  *                                                          CCT34740
                      2475  *       ERROR PROCEDURE                                    CCT34750
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TEST 6 INTER-RECORD GAP TEST

```
                        2476  *                                                    CCT34760
                        2477  *                                                    CCT34770
23BC  41F0 0E86         2477  WER51    BAL     R15,ERRDS                           CCT34780
23C0  4300 2350         2478           B       PROC51          GO ON               CCT34790
23C4  4850 31C8         2479  WRTER52  LH      STAT,EOTFLG     EOT?                CCT34800
23C8  4230 23A8         2480           BNZ     MTNERR                              CCT34810
23CC  41F0 0E86         2481           BAL     R15,ERRDS                           CCT34820
23D0  4300 2364         2482           B       PROC52          GO ON
```

```
                    * *************************************************************** CCT34840
                    *                              T E S T 7                        * CCT34850
                    *                                                               * CCT34860
                    *    PURPOSE:                                                   * CCT34870
                    *        TO PROVIDE A SIMPLE READ/WRITE TEST.                   * CCT34880
                    *                                                               * CCT34890
                    *    ASSUMPTION:                                                * CCT34900
                    *        THIS TEST ASSUMES THAT TEST 0 HAD BEEN RUN WITHOUT     * CCT34910
                    *        DETECTING ANY ERROR.                                   * CCT34920
                    *                                                               * CCT34930
                    *    DESIGN SPECIFICATION:                                      * CCT34940
                    *        TO GENERATE A TAPE OF FILES WITH SOFTWARE GENERATED    * CCT34950
                    *        FILE MARKS.                                            * CCT34960
                    *                                                               * CCT34990
                    *    HOW TO RUN THE TEST:                                       * CCT35000
                    *        REFER TO TEST 0. SELECT TEST 7 AND RUN.                * CCT35010
                    *                                                               * CCT35020
                    *    OPTIONS:                                                   * CCT35030
                    *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,      * CCT35040
                    *        INTLEV, MODE, RECFIL, FILES                            * CCT35050
                    *                                                               * CCT35060
                    *    ERRORS:                                                    * CCT35070
                    *        00, 01, 02, 03, 04, 05, 07, 08, 10, 11, 12, 13, 14,    * CCT35080
                    *        15, 46, 47, 50.                                        * CCT35090
                    *                                                               * CCT35100
                    * *************************************************************** CCT35110
                    *                                                                 CCT35120
23D4  C840 23DC     TEST7    LHI   R4,TEST71        STARTING ADDRESS SET UP FOR       CCT35130
23D8  41E0 285C              BAL   R14,TSTSUP       SECOND DEVICE TEST                CCT35140
23DC  41E0 283C     TEST71   BAL   R14,TSTINIT      TEST INITIALIZE                   CCT35150
23E0  41D0 2F0C              BAL   R13,WAIT1                                          CCT35160
23E4  DE60 31DC              OC    DEV,REWD         REWIND                            CCT35170
23E8  41D0 2F0C     ECNXTMD  BAL   R13,WAIT1        WAIT FOR NMTN=1                   CCT35180
23EC  41E0 28B2              BAL   R14,FSTEOF                                         CCT35190
23F0  41D0 2E6E              BAL   R13,WAIT2                                          CCT35200
23F4  DE60 31E6              OC    DEV,BSEOF        BACKSPACE OVER EOF                CCT35210
23F8  41E0 2C6C              BAL   R14,SENS03       CHECK FOR EOF                     CCT35220
23FC  4300 288C              B     CHKEND1                                            CCT35230
2400  41E0 28EE              BAL   R14,ECEOF                                          CCT35240
2404  2492                   LIS   R9,2                                               CCT35250
2406  C8A0 32D1              LHI   R10,ENECMA                                         CCT35260
240A  CBA0 32CA              SHI   R10,ECMAR                                          CCT35270
240E  40A0 31C4              STH   R10,NBYTE                                          CCT35280
2412  0788                   XHR   R8,R8                                              CCT35290
2414  4858 32CA     ECREC    LH    R5,ECMAR(R8)                                       CCT35300
2418  4058 33EA              STH   R5,WBUFF(R8)     WRITE BUFFER                      CCT35310
241C  C180 2414              BXLE  R8,ECREC                                           CCT35320
2420  41E0 28C0              BAL   R14,RESET                                          CCT35330
2424  2421                   LIS   R2,1                                               CCT35340
2426  2491                   LIS   R9,1                                               CCT35350
2428  4830 15C6              LH    R3,FILES+6       NUMBER OF FILES                   CCT35360
242C  48A0 15AE              LH    R10,RECFIL+6     RECORDS PER FILE                  CCT35370
2430  2411                   LIS   R1,1                                               CCT35380
2432  2481          ECGFIL   LIS   R8,1                                               CCT35390
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TEST 7 READ / WRITE TEST

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2434  41E0 2980          2538  ECGREC   BAL    R14,WRTREC                          CCT35400
2438  4300 247E          2539           B      WEREC1                              CCT35410
243C  0755               2540           XHR    R5,R5                               CCT35420
243E  4050 31CE          2541           STH    R5,RTYCNT                           CCT35430
2442  41E0 293A          2542  ECPRC1   BAL    R14,BSPACE       BACKSPACE RECORD   CCT35440
2446  41E0 2A58          2543  ECREAD   BAL    R14,RDREC                           CCT35450
244A  4300 249C          2544           B      REREC1                              CCT35460
244E  0755               2545           XHR    R5,R5                               CCT35470
2450  4050 31CE          2546           STH    R5,RTYCNT                           CCT35480
2454  41E0 2B08          2547  ECPRC2   BAL    R14,COMPAR       COMPARE RECORD     CCT35490
2458  4850 164A          2548           LH     R5,SDUMP+6                          CCT35500
245C  2333               2549           BZS    NODMPEC                             CCT35510
245E  41E0 2C22          2550           BAL    R14,DUMP         DUMP RECORD IF SET CCT35520
2462  C180 2434          2551  NODMPEC  BXLE   R8,ECGREC                           CCT35530
2466  41E0 28EE          2552           BAL    R14,ECEOF                           CCT35540
246A  C110 2432          2553           BXLE   R1,ECGFIL                           CCT35550
246E  41D0 2E6E          2554  ECMAND   BAL    R13,WAIT2                           CCT35560
2472  DE60 31DC          2555           OC     DEV,REWD         REWIND AND         CCT35570
2476  41D0 2D12          2556           BAL    R13,TSTMOD       EXIT               CCT35580
247A  4300 23E8          2557           B      ECNXTMD                             CCT35590
                         2558  *                                                   CCT35600
                         2559  *        ERROR RECOVERY PROCEDURE                   CCT35610
                         2560  *                                                *  CCT35620
247E  4850 31C8          2561  WEREC1   LH     R5,EOTFLG        EOT?               CCT35630
2482  2139               2562           BNZS   ECEOT                               CCT35640
2484  41E0 2CFA          2563           BAL    R14,ERRMSG2      NO - ERROR MESSAGE CCT35650
2488  41E0 2D36          2564           BAL    R14,RETRY                           CCT35660
248C  4300 2434          2565           B      ECGREC                              CCT35670
2490  4300 2442          2566           B      ECPRC1                              CCT35680
2494  41E0 28EE          2567  ECEOT    BAL    R14,ECEOF                           CCT35690
2498  4300 246E          2568           B      ECMAND           A                  CCT35700
249C  41E0 2CFA          2569  REREC1   BAL    R14,ERRMSG2                         CCT35710
24A0  41E0 2D36          2570           BAL    R14,RETRY                           CCT35720
24A4  4300 2446          2571           B      ECREAD                              CCT35730
24A8  4300 2454          2572           B      ECPRC2                              CCT35740
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* *****************************************************************      CCT35760
*                            T E S T 8                            *      CCT35770
*                                                                 *      CCT35780
*    PURPOSE:                                                     *      CCT35790
*        A UTILITY TEST TO ALLOW USER TO TEST THE DEVICE          *      CCT35800
*        IN HIS OWN CHOSEN METHOD. OPTIONS ARE PROVIDED           *      CCT35810
*        TO SELECT THE INDIVIDUAL FUNCTIONS AS SPECIFIED          *      CCT35820
*        IN APPENDIX 6 OF PUBLICATION 06-172A15. A SCOPE          *      CCT35830
*        LOOP OPTION IS ALSO PROVIDED.                            *      CCT35840
*                                                                 *      CCT35850
*    ASSUMPTIONS:                                                 *      CCT35860
*        SAME AS IN TEST 0.                                       *      CCT35870
*                                                                 *      CCT35880
*    DESIGN SPECIFICATION:                                        *      CCT35890
*        SEVERAL OPTIONS ARE PROVIDED TO THE USER TO SELECT       *      CCT35900
*        THE DESIRED FUNCTIONS. THE SCOPE LOOP FUNCTIONS          *      CCT35910
*        SUPERCEDE ALL OTHER FUNCTIONS. IF SCOPE=0, THEN          *      CCT35920
*        READ ONLY HAS HIGHEST PRIORITY, FOLLOWED BY WRITE        *      CCT35930
*        EOF CONTINUOUS. SCOPE LOOP IS EXECUTED CONTINUOUSLY      *      CCT35940
*        WITHOUT ANY ERROR CHECKING. SCOPE 1, 2 & 3 INVOLVES      *      CCT35950
*        WRITE OPERATION, AND IN ORDER TO ENSURE PROPER           *      CCT35960
*        TERMINATION WITH AN EOF, X-OFF IS INCORPORATED           *      CCT35970
*        TO STOP THE TEST. SCOPE 4 & 5 CAN BE STOPPED BY          *      CCT35980
*        BREAK OR DU. SCOPE 5 WILL SKIP FORWARD UNTIL EOT         *      CCT35990
*        AND THEN SKIP REVERSE TILL BOT. THIS WILL CONTINUE       *      CCT36000
*        UNTIL STOPPED BY THE USER.                               *      CCT36010
*        WHEN SCOPE=0 THE DEFAULT OPTIONS WILL GENERATE A         *      CCT36020
*        FILE, BACKSPACE OVER IT AND READ IT. THE BUFFERS         *      CCT36030
*        ARE COMPARED. IF BACKSPACE IS NOT SPECIFIED, A SKIP      *      CCT36040
*        FILE REVERSE IS PERFORMED BEFORE READING. MORE THAN      *      CCT36050
*        ONE FILES CAN BE SPECIFIED BY OPTION FILES.              *      CCT36060
*        THE WEOF CONTINUOUS OPERATION IS PERFORMED IN THIS       *      CCT36070
*        TEST WITH NO ERROR CHECKING.                             *      CCT36080
*                                                                 *      CCT36090
*        SEVERAL SIMPLE SUBROUTINES ARE IMPLEMENTED TO            *      CCT36100
*        PERFORM DIFFERENT TAPE FUNCTIONS. NO ERROR CHECK         *      CCT36110
*        IS DONE. THIS ALLOWS THE USER TO WRITE SHORT             *      CCT36120
*        UTILITY PROGRAMS:                                        *      CCT36130
*        BAL   R14,EOF             WRITE EOF MARK                 *      CCT36140
*        BAL   R14,RWND            REWIND TAPE                    *      CCT36150
*        BAL   R14,SKFW            SKIP EOF FORWARD               *      CCT36160
*        BAL   R14,SKRV            SKIP EOF REVERSE               *      CCT36170
*        BAL   R14,BKSP            BACKSPACE RECORD               *      CCT36180
*        BAL   R14,WRTBLK          WRITE RECORD BLOCK MODE        *      CCT36190
*        BAL   R14,WRTSEL          WRITE RECORD SLECH MODE        *      CCT36200
*        BAL   R14,WRTD            WRITE RECORD DATA MODE         *      CCT36210
*        BAL   R14,RDBLK           READ RECORD BLOCK MODE         *      CCT36220
*        BAL   R14,RDSEL           READ RECORD SELCH MODE         *      CCT36230
*        BAL   R14,RDD             READ RECORD DATA MODE          *      CCT36240
*        NOTE: ALL READ/WRITE RECORD ROUTINES ASSUME THAT         *      CCT36250
*              R11 CONTAINS THE STARTING ADDRESS, AND R12         *      CCT36260
*              CONTAINS THE ENDING ADDRESS OF THE RECORD          *      CCT36270
*                                                                 *      CCT36280
*        THE RECORD SIZE IN THIS TEST CAN BE VARIED BY THE        *      CCT36290
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                        2628  *        OPTION BYTES. THE LIMITS ARE FROM 2 TO X'400'. IF       *        CCT36300
                        2629  *        THE USER WISHES TO INCREASE THE UPPER LIMIT, HE MAY     *        CCT36310
                        2630  *        DO SO BY INCREASING THE CONTENT OF LOCATION LABELLED    *        CCT36320
                        2631  *        "X400". IT MUST BE NOTED THAT THE LOWER LIMIT          *        CCT36330
                        2632  *        CANNOT BE LESS THAN 2 AND THE HIGHER LIMIT MUST        *        CCT36340
                        2633  *        NOT BE CHANGED TO A VALUE HIGHER THAN X'7FFF'.          *        CCT36350
                        2634  *    HOW TO RUN THE TEST:                                       *        CCT36360
                        2635  *        REFER TO TEST 0. SELECT THE APPROPRIATE OPTION          *        CCT36370
                        2636  *        AND RUN TEST 8.                                        *        CCT36380
                        2637  *                                                               *        CCT36390
                        2638  *    OPTIONS:                                                   *        CCT36400
                        2639  *        TEST, LOOP, CONTIN, NOMSG, DEVADR, DV2ADR, SELCH,      *        CCT36410
                        2640  *        INTLEV, MODE, TRACK, RECFIL, FILES, WRITE, READ,       *        CCT36420
                        2641  *        BKSPAC, WEOF, BYTES, SCOPE.                            *        CCT36430
                        2642  *                                                               *        CCT36440
                        2643  *    ERRORS:                                                    *        CCT36450
                        2644  *        00, 01, 02, 03, 04, 05, 08, 10, 11, 12, 13, 14, 15,    *        CCT36460
                        2645  *        46, 47, 50.                                            *        CCT36470
                        2646  *                                                               *        CCT36480
                        2647  * ***************************************************************        CCT36490
                        2648  *                                                                        CCT36500
24AC  C840 24B4         2649  TEST8     LHI   R4,TEST81       STARTING ADDRESS SET UP FOR      CCT36510
24B0  41E0 285C         2650            BAL   R14,TSTSUP      SECOND DEVICE TEST               CCT36520
24B4  41E0 283C         2651  TEST81    BAL   R14,TSTINIT     TEST INITIALIZE                  CCT36530
24B8  48A0 15BA         2652            LH    R10,NOBYTE+6    GET NO. BYTES PER RECORD         CCT36540
24BC  27A1              2653            SIS   R10,1           REDUCE BY 1                      CCT36550
24BE  40A0 31C4         2654            STH   R10,NBYTE                                        CCT36560
24C2  2421              2655            LIS   R2,1                                             CCT36570
24C4  4830 15AE         2656            LH    R3,RECFIL+6     GET RECORD PER FILE              CCT36580
24C8  41E0 2BC0         2657            BAL   R14,RESET       RESET BUFFER LIMITS              CCT36590
24CC  41E0 2BDA         2658            BAL   R14,BSET        SET WRITE BUFFER 00-FF           CCT36600
24D0  41D0 2F0C         2659  NXTMOD7   BAL   R13,WAIT1       WAIT FOR NMTN=1                  CCT36610
24D4  DE60 31DC         2660            OC    DEV,REWD        REWIND                           CCT36620
24D8  41D0 2F0C         2661            BAL   R13,WAIT1       WAIT FOR NMTN=1                  CCT36630
24DC  4850 1662         2662            LH    R5,SCOPE+6      SCOPE LOOP?                      CCT36640
24E0  4230 2604         2663            BNZ   SCLOOP          YES - GO TO SCOPE LOOP           CCT36650
24E4  0788              2664            XHR   R8,R8           NO - RESET FILE COUNTER          CCT36660
24E6  4850 160E         2665            LH    R5,OPWRT+6      WRITE OPTION?                    CCT36670
24EA  2135              2666            BNZS  CHKEOF          YES - CHECK WEOF OPTION          CCT36680
24EC  4850 1602         2667            LH    R5,OPRD+6       NO - READ OPTION?                CCT36690
24F0  4230 2548         2668            BNZ   RONLY7          YES - READ ONLY                  CCT36700
24F4  4850 1632         2669  CHKEOF    LH    R5,OPWEOF+6     WRITE EOF TO SUPERCEDE WRITE?    CCT36710
24F8  4230 2772         2670            BNZ   CONEOF         YES - WRITE EOF CONTINUOUSLY     CCT36720
24FC  41E0 2D6A         2671            BAL   R14,INDATA      NO - ACQUIRE DATA STRING         CCT36730
2500  41D0 2E6E         2672            BAL   R13,WAIT2       WAIT FOR NMTN=1                  CCT36740
2504  41E0 28B2         2673            BAL   R14,FSTEOF      WRITE & CHECK EOF                CCT36750
2508  2411              2674  WRTFIL    LIS   R1,1                                             CCT36760
250A  41E0 2980         2675  GENFIL7   BAL   R14,WRTREC      WRITE A RECORD                   CCT36770
250E  4300 25C6         2676            B     WRTER71                                          CCT36780
2512  C110 250A         2677  WCON7     BXLE  R1,GENFIL7      CONTINUE FOR A FILE              CCT36790
2516  41D0 2E6E         2678            BAL   R13,WAIT2                                        CCT36800
251A  DE60 31E5         2679            OC    DEV,WEOF                                         CCT36810
251E  4850 161A         2680            LH    R5,OPBSP+6      BACKSPACE OPTION?                CCT36820
2522  4330 259E         2681            BZ    NOBSP7          NO - SKIP BACK IF TO READ        CCT36830
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TEST 8 UTILITY TEST

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2526  41D0 2E6E  2682  TRNBSP  BAL   R13,WAIT2                                  CCT36840
252A  DE60 31E6  2683          OC    DEV,BSEOF       BACKSPACE OVER EOF         CCT36850
252E  2411       2684          LIS   R1,1                                       CCT36860
2530  41E0 293A  2685  BSFIL7  BAL   R14,BSPACE      BACKSPACE A RECORD         CCT36870
2534  C110 2530  2686          BXLE  R1,BSFIL7       CONTINUE FOR A FILE        CCT36880
2538  4850 1602  2687          LH    R5,OPRD+6       READ OPTION?               CCT36890
253C  4330 257A  2688          BZ    ENDFIL7         NO - CHECK FOR MORE FILES  CCT36900
2540  41D0 2E6E  2689          BAL   R13,WAIT2                                  CCT36910
2544  DE60 31E6  2690          OC    DEV,BSEOF       BACKSPACE OVER EOF         CCT36920
2548  41D0 2E6E  2691  RONLY7  BAL   R13,WAIT2       YES -                      CCT36930
254C  DE60 31E7  2692          OC    DEV,RDEOF       READ PASS EOF              CCT36940
2550  2411       2693  RDFIL7  LIS   R1,1                                       CCT36950
2552  41E0 2A58  2694  RERDR7  BAL   R14,RDREC       READ A RECORD              CCT36960
2556  4300 25E8  2695          B     RDER71                                     CCT36970
255A  4850 163E  2696          LH    R5,CMPRE+6      COMPARE?                   CCT36980
255E  2333       2697          BZS   NOCOM                                      CCT36990
2560  41E0 2B08  2698          BAL   R14,COMPAR      YES - COMPARE DATA         CCT37000
2564  4850 164A  2699  NOCOM   LH    R5,SDUMP+6      DUMP?                      CCT37010
2568  2333       2700          BZS   RDON                                       CCT37020
256A  41E0 2C22  2701          BAL   R14,DUMP        YES - DUMP READ BUFFER     CCT37030
256E  C110 2552  2702  RDON    BXLE  R1,RERDR7       CONTINUE FOR A FILE        CCT37040
2572  41D0 2E6E  2703          BAL   R13,WAIT2       WAIT FOR NMTN=1            CCT37050
2576  DE60 31E7  2704          OC    DEV,RDEOF       READ PASS EOF              CCT37060
257A  2681       2705  ENDFIL7 AIS   R8,1                                       CCT37070
257C  4580 15C6  2706          CLH   R8,FILES+6      ALL FILES WRITTEN/READ?    CCT37080
2580  2387       2707          BNLS  END7                                       CCT37090
2582  4850 160E  2708          LH    R5,OPWRT+6      NO - WRITE?                CCT37100
2586  4230 2508  2709          BNZ   WRTFIL          YES - WRITE NEXT FILE      CCT37110
258A  4300 2550  2710          B     RDFIL7          NO - READ NEXT FILE        CCT37120
258E  41D0 2E6E  2711  END7    BAL   R13,WAIT2                                  CCT37130
2592  DE60 31DC  2712          OC    DEV,REWD        REWIND                     CCT37140
2596  41D0 2D12  2713          BAL   R13,TSTMOD                                 CCT37150
259A  4300 24D0  2714          B     NXTMOD7                                    CCT37160
259E  4850 1602  2715  NOBSP7  LH    R5,OPRD+6       READ OPTION SET?           CCT37170
25A2  4330 257A  2716          BZ    ENDFIL7         NO - CHECK FOR MORE FILES  CCT37180
25A6  4850 15EA  2717          LH    R5,TRANSP+6     TRANSPARENT MODE?          CCT37190
25AA  4230 2526  2718          BNZ   TRNBSP          YES - FORCE BACKSPACE      CCT37200
25AE  41D0 2E6E  2719          BAL   R13,WAIT2                                  CCT37210
25B2  DE60 31E1  2720          OC    DEV,SKIPR       YES - SKIP BACK EOF        CCT37220
25B6  41D0 2E6E  2721          BAL   R13,WAIT2       WAIT FOR NMTN=1            CCT37230
25BA  DE60 31E1  2722          OC    DEV,SKIPR       SKIP FILE REVERSE          CCT37240
25BE  DE60 31E1  2723          OC    DEV,SKIPR       YES - SKIP REVERSE ONE FILE CCT37250
25C2  4300 2548  2724          B     RONLY7          GO TO READ                 CCT37260
                 2725  *                                                        CCT37270
                 2726  *       ERROR PROCEDURE                                  CCT37280
                 2727  *                                                        CCT37290
25C6  4850 31C8  2728  WRTER71 LH    R5,EOTFLG       EOT?                       CCT37300
25CA  2135       2729          BNZS  WEOT7                                      CCT37310
25CC  41E0 2CFA  2730          BAL   R14,ERRMS02     NO - PRINT ERROR MESSAGE   CCT37320
25D0  4300 2512  2731          B     WCON7                                      CCT37330
25D4  41D0 2E6E  2732  WEOT7   BAL   R13,WAIT2                                  CCT37340
25D8  DE60 31DD  2733          OC    DEV,BKSPAC      BACKSPACE A RECORD         CCT37350
25DC  41D0 2E6E  2734          BAL   R13,WAIT2                                  CCT37360
25E0  DE60 31E5  2735          OC    DEV,WEOF        WRITE EOF                  CCT37370
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25E4 4300 258E 2736          B      END7                                        CCT37380
25E8 C350 0040 2737 ROER71   THI    STAT,X'40'                                  CCT37390
25EC 4230 257A 2738          BNZ    ENDFIL7                                     CCT37400
25F0 C350 0020 2739          THI    STAT,X'20'          EOT?                    CCT37410
25F4 4230 258E 2740          BNZ    END7                                        CCT37420
25F8 41E0 2CFA 2741          BAL    R14,ERRMSG2                                 CCT37430
25FC 4300 2564 2742          B      NOCOM                                       CCT37440
2600 4300 1336 2743 SELINT   B      RETOPSW                                     CCT37450
               2744 *                                                           CCT37460
               2745 *        SCOPE LOOPS: NO ERROR CHECK                       CCT37470
2604 C550 0005 2746 SCLOOP   CLHI   R5,5                                        CCT37480
2608 4330 2794 2747          BE     SKPCON                                      CCT37490
260C C550 0004 2748          CLHI   R5,4                                        CCT37500
2610 4380 26F6 2749          BNL    RDCON                                       CCT37510
2614 41E0 206A 2750          BAL    R14,INDATA          YES - GET DATA PATTERN  CCT37520
2618 2751      2751          SIS    R5,1                                        CCT37530
261A 0805      2752          LHR    R0,R5                                       CCT37540
261C 0A55      2753          AHR    R5,R5                                       CCT37550
261E 0A50      2754          AHR    R5,R0                                       CCT37560
2620 4800 31CC 2755          LH     R0,MODFLG                                   CCT37570
2624 C500 0001 2756          CLHI   R0,1                MODE 1?                 CCT37580
2628 2337      2757          BES    BLKMOD                                      CCT37590
262A C500 0002 2758          CLHI   R0,2                MODE 2?                 CCT37600
262E 2133      2759          BNES   DATMOD                                      CCT37610
2630 2651      2760          AIS    R5,1                                        CCT37620
2632 2302      2761          BS     BLKMOD                                      CCT37630
2634 2652      2762 DATMOD   AIS    R5,2                                        CCT37640
2636 D3A5 3212 2763 BLKMOD   LB     R10,SQMASK(R5)                              CCT37650
263A C840 27FE 2764          LHI    R4,LOOPBRK                                  CCT37660
263E 4040 14A6 2765          STH    R4,KBINT                                    CCT37670
2642 41F0 11E4 2766          BAL    R15,KBRD            SET KEYBOARD INTERRUPT  CCT37680
2646 C850 2600 2767          LHI    R5,SELINT                                   CCT37690
264A 4050 16AA 2768          STH    R5,DEVINT                                   CCT37700
264E 4840 0A20 2769          LH     R4,PSW              ENABLE PSW INTERRUPT    CCT37710
2652 9554      2770          EPSR   R5,R4                                       CCT37720
2654 41E0 2FE8 2771          BAL    R14,EOF                                     CCT37730
2658 088A      2772 ADVANCE  LHR    R8,R10                                      CCT37740
               2773 *        THIS ROUTINE WRITES A FILE WITH LEADING EOF. IF EOT CCT37750
               2774 *        IS DETECTED, IT REWINDS TAPE AND WRITES WHOLE FILE  CCT37760
               2775 *        AGAIN. ROUTINE WFILB USES THE WB MODE AND ROUTINE   CCT37770
               2776 *        WFILS USES SELCH MODE                               CCT37780
265A 48B0 32D8 2777          LH     R11,WLIM            STARTING ADDRESS        CCT37790
265E 48C0 32DA 2778          LH     R12,WLIM+2          ENDING ADDRESS          CCT37800
2662 9081      2779 WFILB    SRLS   R8,1                SHIFT SEQUENCE MASK     CCT37810
2664 4380 268E 2780          BNC    WFILS               NO CARRY - BYPASS       CCT37820
2668 41E0 300A 2781          BAL    R14,WRTBLK          WRITE A RECORD (BLOCK MODE) CCT37830
266C 9D65      2782          SSR    DEV,STAT                                    CCT37840
266E 2221      2783          BFBS   2,1                                         CCT37850
2670 C350 0020 2784          THI    STAT,X'20'          EOT?                    CCT37860
2674 233D      2785          BZS    WFILS               NO - GO ON              CCT37870
2676 41E0 3022 2786 EOT7     BAL    R14,BKSP            YES - BACKSPACE THE LAST RECORD CCT37880
267A 41E0 2FE8 2787          BAL    R14,EOF             WRITE EOF               CCT37890
267E 41E0 2FF2 2788 PREOT    BAL    R14,RWND            REWIND                  CCT37900
2682 C850 3266 2789          LHI    R5,MSG04            EXIT TEST               CCT37910
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TEST 8 UTILITY TEST

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2686  41F0 181E            BAL   R15,PRINT                              CCT37920
268A  4300 2894            B     CHKEND                                 CCT37930
268E  9081          WFILS  SRLS  R8,1          SHIFT SEQUENCE MASK      CCT37940
2690  238D                 BNCS  WFILD                                  CCT37950
2692  41E0 302C            BAL   R14,WRTSEL    WRITE A RECORD (SELCH MODE) CCT37960
2696  9D75                 SSR   SELCH,STAT    WAIT FOR SELCH IDLE      CCT37970
2698  2081                 BTBS  8,1                                    CCT37980
269A  DE70 31D8            OC    SELCH,STOP                             CCT37990
269E  9D65                 SSR   DEV,STAT                               CCT38000
26A0  2221                 BFBS  2,1                                    CCT38010
26A2  C350 0020            THI   STAT,X'20'    EOT?                     CCT38020
26A6  4230 2676            BNZ   EOT7                                   CCT38030
26AA  9081          WFILD  SRLS  R8,1                                   CCT38040
26AC  2389                 BNCS  BSFIL         NO CARRY - BYPASS        CCT38050
26AE  41E0 3058            BAL   R14,WRTD      WRITE RECORD DATA MODE   CCT38060
26B2  9D65                 SSR   DEV,STAT                               CCT38070
26B4  2021                 BTBS  2,1                                    CCT38080
26B6  C350 0020            THI   STAT,X'20'    EOT?                     CCT38090
26BA  4230 2676            BNZ   EOT7                                   CCT38100
                    *      THIS ROUTINE BACKSPACE A FILE BEYOND ITS LEADING CCT38110
                    *      EOF MARK                                     CCT38120
26BE  9081          BSFIL  SRLS  R8,1          SHIFT SEQUENCE MASK      CCT38130
26C0  4380 2658            BNC   ADVANCE       NO CARRY - BYPASS        CCT38140
26C4  41E0 3022            BAL   R14,BKSP      BACKSPACE A RECORD       CCT38150
                    *      THIS ROUTINE READS A FILE WITH LEADING EOF. IF EOT CCT38160
                    *      IS DETECTED, IT REWINDS AND READS AGAIN      CCT38170
                    *      ROUTINE RFILB USES RB MODE AND RFILS USES SELCH MODE CCT38180
                    *                                                   CCT38190
26C8  48B0 32DC     RFILB  LH    R11,RLIM      STARTING ADDRESS         CCT38200
26CC  48C0 32DE            LH    R12,RLIM+2    ENDING ADDRESS           CCT38210
26D0  9081                 SRLS  R8,1          SHIFT SEQUENCE MASK      CCT38220
26D2  2383                 BNCS  RFILS         NO CARRY - BYPASS        CCT38230
26D4  41E0 3016            BAL   R14,RDBLK     READ A RECORD (BLOCK MODE) CCT38240
26D8  9081          RFILS  SRLS  R8,1          SHIFT SEQUENCE MASK      CCT38250
26DA  2387                 BNCS  RFILD                                  CCT38260
26DC  41E0 3042            BAL   R14,RDSEL     READ A RECORD (SELCH MODE) CCT38270
26E0  9D75                 SSR   SELCH,STAT                             CCT38280
26E2  2081                 BTBS  8,1                                    CCT38290
26E4  DE70 31D8            OC    SELCH,STOP                             CCT38300
26E8  9081          RFILD  SRLS  R8,1                                   CCT38310
26EA  4380 2658            BNC   ADVANCE       NO CARRY - RESTART CYCLE CCT38320
26EE  41E0 3072            BAL   R14,RDD       READ RECORD DATA MODE    CCT38330
26F2  4300 2658            B     ADVANCE       RESTART CYCLE            CCT38340
                    *                                                   CCT38350
                    *      READ ONLY SCOPE LOOP                         CCT38360
                    *      THIS ROUTINE READS RECORDS ON THE TAPE UNTIL AN CCT38370
                    *      EOF IS DETECTED. THEN THE TEST WILL PAUSE WITH THE CCT38380
                    *      MESSAGE "EOF". IF CR IS ENTERED ON KEYBOARD, THE CCT38390
                    *      TEST IS ABORTED. IF LF IS ENTERED, THE TEST READS CCT38400
                    *      ON TO THE NEXT EOF. IF EOT IS DETECTED, THE TEST CCT38410
                    *      IS ABORTED.                                  CCT38420
                    *                                                   CCT38430
26F6  48B0 32DC     RDCON  LH    R11,RLIM                               CCT38440
26FA  48C0 32DE            LH    R12,RLIM+2                             CCT38450
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26FE 41D0 2FFC 2844          BAL   R13,SENMTN      CHECK FOR NMTN          CCT38460
2702 DE60 31E7 2845          OC    DEV,RDEOF       READ PASS EOF           CCT38470
2706 4850 31CC 2846          LH    R5,MODFLG                               CCT38480
270A C550 0002 2847          CLHI  R5,2            MODE 2?                 CCT38490
270E 4330 274A 2848          BE    RDCONS          YES - SELCH MODE        CCT38500
2712 41E0 3016 2849 RDCONB   BAL   R14,RDBLK       READ RECORD BLOCK MODE  CCT38510
2716 9D65      2850          SSR   DEV,STAT                                CCT38520
2718 4210 2FC6 2851          BTC   1,MTDU                                  CCT38530
271C 2223      2852          BFBS  2,3                                     CCT38540
271E C350 0020 2853          THI   STAT,X'20'      EOT?                    CCT38550
2722 4230 267E 2854          BNZ   PREOT           YES - END TEST          CCT38560
2726 C350 0040 2855          THI   STAT,X'40'      EOF?                    CCT38570
272A 223C      2856          BZS   RDCONB          NO - CONTINUE           CCT38580
272C C850 326C 2857 PAUSE    LHI   R5,MSG04A                               CCT38590
2730 41F0 101E 2858          BAL   R15,PRINT                               CCT38600
2734 41F0 10E8 2859 PAUSE1   BAL   R15,GETCHR       GET A CHARACTER         CCT38610
2738 C540 000D 2860          CLHI  CHAR,X'0D'      CR?                     CCT38620
273C 4330 0A9E 2861          BE    OPTIN           YES - EXIT              CCT38630
2740 C540 000A 2862          CLHI  CHAR,X'0A'      LF?                     CCT38640
2744 4330 26F6 2863          BE    RDCON           YES - CONTINUE READ     CCT38650
2748 220A      2864          BS    PAUSE1          ELSE GET ANOTHER CHARACTER CCT38660
274A 41E0 3042 2865 RDCONS   BAL   R14,RDSEL       READ RECORD SELCH MODE  CCT38670
274E 9D75      2866          SSR   SELCH,STAT                              CCT38680
2750 2081      2867          BTBS  8,1                                     CCT38690
2752 DE70 31D8 2868          OC    SELCH,STOP                              CCT38700
2756 9D65      2869          SSR   DEV,STAT                                CCT38710
2758 4210 2FC6 2870          BTC   1,MTDU                                  CCT38720
275C 2223      2871          BFBS  2,3                                     CCT38730
275E C350 0020 2872          THI   STAT,X'20'      EOT?                    CCT38740
2762 4230 267E 2873          BNZ   PREOT           YES - EXIT              CCT38750
2766 C350 0040 2874          THI   STAT,X'40'      EOF?                    CCT38760
276A 4330 274A 2875          BZ    RDCONS                                  CCT38770
276E 4300 272C 2876          B     PAUSE           YES - PAUSE FOR INPUT   CCT38780
2772 41E0 2FE8 2877 CONEOF   BAL   R14,EOF         WRITE EOF               CCT38790
2776 9D65      2878          SSR   DEV,STAT                                CCT38800
2778 4210 2FC6 2879          BTC   1,MTDU                                  CCT38810
277C 2223      2880          BFBS  2,3             EOM?                    CCT38820
277E C350 0020 2881          THI   STAT,X'20'      YES - EOT ?             CCT38830
2782 2238      2882          BZS   CONEOF                                  CCT38840
2784 41E0 2FF2 2883          BAL   R14,RWND        EOT - REWIND TAPE       CCT38850
2788 C850 3266 2884          LHI   R5,MSG04                                CCT38860
278C 41F0 101E 2885          BAL   R15,PRINT                               CCT38870
2790 4300 0A9E 2886          B     OPTIN                                   CCT38880
               2887 *        THIS ROUTINE PERFORM SKIP OPERATIONS CONTINUOUSLY CCT38890
               2888 *        IT REVERSES DIRECTION UPON DETECTION OF ET    CCT38900
2794 41D0 2FFC 2889 SKPCON   BAL   R13,SENMTN                               CCT38910
2798 DE60 31E7 2890          OC    DEV,RDEOF       READ PASS EOF           CCT38920
279C 41E0 3088 2891 SKPCON1  BAL   R14,SKFW        SKIP FORWARD            CCT38930
27A0 9D65      2892          SSR   DEV,STAT                                CCT38940
27A2 4210 2FC6 2893          BTC   1,MTDU                                  CCT38950
27A6 41F0 1136 2894          BAL   R15,TSTBRK                              CCT38960
27AA C350 0060 2895          THI   STAT,X'60'      EOF OR EOT?             CCT38970
27AE 2237      2896          BZS   SKPCON1+4                               CCT38980
27B0 C350 0020 2897          THI   STAT,X'20'      EOT?                    CCT38990
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27B4  223C           2898           BZS   SKPCON1                                  CCT39000
27B6  DE60 31D9      2899           OC    DEV,CLEAR       YES - CLEAR DEVICE       CCT39010
27BA  41E0 3092      2900  REVRS    BAL   R14,SKRV        SKIP REVERSE             CCT39020
27BE  41D0 2FFC      2901           BAL   R13,SENMTN      WAIT FOR NMTN=1          CCT39030
27C2  9D65           2902           SSR   DEV,STAT                                 CCT39040
27C4  4210 2FC6      2903           BTC   1,MTDU                                   CCT39050
27C8  C350 0020      2904           THI   STAT,X'20'      EOT?                     CCT39060
27CC  2239           2905           BZS   REVRS           NO - SKIP REVERSE AGAIN  CCT39070
27CE  DE60 31D9      2906           OC    DEV,CLEAR       YES - CLEAR DEVICE       CCT39080
27D2  9D65           2907           SSR   DEV,STAT                                 CCT39090
27D4  C350 0020      2908           THI   STAT,X'20'      BOT?                     CCT39100
27D8  4230 2794      2909           BNZ   SKPCON          YES - GO SKIP FORWARD    CCT39110
27DC  41E0 3092      2910  REVRS1   BAL   R14,SKRV        CONTINUE SKIP REVERSE    CCT39120
27E0  9D65           2911           SSR   DEV,STAT                                 CCT39130
27E2  4210 2FC6      2912           BTC   1,MTDU                                   CCT39140
27E6  41F0 1136      2913           BAL   R15,TSTBRK                               CCT39150
27EA  C350 0060      2914           THI   STAT,X'60'      EOF OR EOT?              CCT39160
27EE  2237           2915           BZS   REVRS1+4                                 CCT39170
27F0  C350 0020      2916           THI   STAT,X'20'      BOT?                     CCT39180
27F4  223C           2917           BZS   REVRS1                                   CCT39190
27F6  DE60 31D9      2918           OC    DEV,CLEAR                                CCT39200
27FA  4300 2794      2919           B     SKPCON          GO SKIP FORWARD          CCT39210
                     2920  *                                                       CCT39220
                     2921  *        THIS SECTION CHECKS IF THE KEYBOARD CHARACTER IS CCT39230
                     2922  *        X-OFF                                          CCT39240
                     2923  *                                                       CCT39250
27FE  9B24           2924  LOOPBRK  RDR   R2,R4           GET THE CHARACTER        CCT39260
2800  C440 007F      2925           NHI   R4,X'7F'                                 CCT39270
2804  C540 0013      2926           CLHI  R4,X'13'        X-OFF?                   CCT39280
2808  4230 1336      2927           BNE   RETOPSW         NO - CONTINUE LOOP       CCT39290
280C  C840 1330      2928           LHI   R4,NOBRK        YES - RESTORE BRK CHECK ROUTINE CCT39300
2810  4040 14A6      2929           STH   R4,KBINT        IN ETPE                  CCT39310
2814  C820 00F0      2930           LHI   R2,X'F0'        RESTORE REG. SET         CCT39320
2818  9512           2931           EPSR  R1,R2                                    CCT39330
281A  4850 31CC      2932           LH    R5,MODFLG                                CCT39340
281E  C550 0002      2933           CLHI  R5,2            MODE 2?                  CCT39350
2822  2135           2934           BNES  CLRDEV                                   CCT39360
2824  9D75           2935           SSR   SELCH,STAT                               CCT39370
2826  2081           2936           BTBS  8,1                                      CCT39380
2828  DE70 31D8      2937           OC    SELCH,STOP      STOP SELCH               CCT39390
282C  DE60 31D9      2938  CLRDEV   OC    DEV,CLEAR       CLEAR DEVICE             CCT39400
2830  41E0 2FE8      2939           BAL   R14,EOF         WRITE EOF                CCT39410
2834  41E0 2FF2      2940           BAL   R14,RWND        REWIND                   CCT39420
2838  4300 0A9E      2941           B     OPTIN                                    CCT39430
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SUBROUTINES

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                        2943  * ***************************************************************      CCT39450
                        2944  * SUBROUTINE TSTINIT                                            *      CCT39460
                        2945  *       THIS ROUTINE SETS UP THE TEST MODE AND APPROPRIATE       *      CCT39470
                        2946  *       MEMORY LOCATIONS FOR EACH TEST MODULE.                   *      CCT39480
                        2947  *       CALLING SEQUENCE:                                       *      CCT39490
                        2948  *       BAL   R14,TSTINIT                                       *      CCT39500
                        2949  * ***************************************************************      CCT39510
                        2950  *                                                                      CCT39520
283C  DE60 31E4         2951  TSTINIT  OC    DEV,DISARM                                             CCT39530
2840  C850 003F         2952           LHI   R5,X'3F'          SET NUMBER OF BYTES PER RECORD       CCT39540
2844  4050 31C4         2953           STH   R5,NBYTE                                               CCT39550
2848  41D0 2D08         2954           BAL   R13,SETMOD                                             CCT39560
284C  0755              2955           XHR   R5,R5                                                  CCT39570
284E  4050 16AA         2956           STH   R5,DEVINT         CLEAR INTERRUPT TABLE                CCT39580
2852  4050 16AC         2957           STH   R5,DEVINT+2                                            CCT39590
2856  4050 31C8         2958           STH   R5,EOTFLG                                              CCT39600
285A  030E              2959           BR    R14                                                    CCT39610
                        2960  *                                                                      CCT39620
                        2961  * ***************************************************************      CCT39630
                        2962  * SUBROUTINE TSTSUP                                             *      CCT39640
                        2963  *       THIS ROUTINE SETS UP THE SELCH ADDRESS AND DEVICE        *      CCT39650
                        2964  *       ADDRESS OF THE FIRST DEVICE TO BE TESTED.               *      CCT39660
                        2965  *       THIS ROUTINE SHOULD NOT BE CALLED IF TESTING IS TO      *      CCT39670
                        2966  *       BE DONE ON THE SECOND DEVICE.                           *      CCT39680
                        2967  *       RETURN ON R14.                                          *      CCT39690
                        2968  * ***************************************************************      CCT39700
                        2969  *                                                                      CCT39710
285C  4040 31D0         2970  TSTSUP   STH   R4,NXTDEV                                             CCT39720
2860  4870 158A         2971           LH    SELCH,SELADR+6    GET SELCH ADDRESS                    CCT39730
2864  4860 1572         2972           LH    DEV,DEVADR+6      GET DEVICE ADDRESS                   CCT39740
2868  4060 1496         2973           STH   DEV,ERRDEV                                             CCT39750
286C  0755              2974           XHR   R5,R5             RESET SECOND DEVICE FLAG             CCT39760
286E  4050 31D2         2975           STH   R5,DEV2                                                CCT39770
2872  030E              2976           BR    R14                                                    CCT39780
                        2977  *                                                                      CCT39790
                        2978  * ***************************************************************      CCT39800
                        2979  * SUBROUTINE TRANST                                             *      CCT39810
                        2980  *       THIS ROUTINE CHECKS IF OPTION TRANSP IS SET, IF         *      CCT39820
                        2981  *       SO IT SETS THE TRANSPARENT MODE OF OPERATION.           *      CCT39830
                        2982  * ***************************************************************      CCT39840
                        2983  *                                                                      CCT39850
2874  4850 15EA         2984  TRANST   LH    R5,TRANSP+6       TRANSPARENT MODE?                    CCT39860
2878  033E              2985           BZR   R14                                                    CCT39870
287A  C850 2526         2986           LHI   R5,X'2526'        TRANSPARENT READ & WRITE             CCT39880
287E  4050 31DE         2987           STH   R5,READ                                                CCT39890
2882  C850 3815         2988           LHI   R5,X'3815'        TRANSPARENT BACKSPACE                CCT39900
2886  4050 31DC         2989           STH   R5,REWD                                                CCT39910
288A  030E              2990           BR    R14                                                    CCT39920
                        2991  *                                                                      CCT39930
                        2992  * ***************************************************************      CCT39940
                        2993  * SUBROUTINE CHKEND & CHKEND1                                   *      CCT39950
                        2994  *       THIS ROUTINE CHECKS IF A SECOND DEVICE IS TO BE         *      CCT39960
                        2995  *       TESTED. IF NOT, IT WILL GO TO TSTEND.                   *      CCT39970
                        2996  *       IF A SECOND DEVICE IS TO BE TESTED, IT PICKS UP         *      CCT39980
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SUBROUTINES

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                                2997  *        ITS ADDRESS, SET THE FLAG AND BRANCH TO A PRESET        *        CCT39990
                                2998  *        ADDRESS AT LOCATION NXTDEV.                             *        CCT40000
                                2999  * ************************************************************           CCT40010
                                3000  *                                                                       CCT40020
288C   41D0 2E6E                3001  CHKEND1  BAL     R13,WAIT2                                              CCT40030
2890   DE60 31DC                3002           OC      DEV,REWD          REWIND                               CCT40040
2894   4850 31D2                3003  CHKEND   LH      R5,DEV2           SECOND DEVICE FLAG SET?              CCT40050
2898   4230 0D74                3004           BNZ     TSTEND            YES - END TEST                       CCT40060
289C   4860 157E                3005           LH      DEV,DV2ADR+6      GET 2ND DEVICE ADDRESS               CCT40070
28A0   4330 0D74                3006           BZ      TSTEND            ZERO - END TEST                      CCT40080
28A4   48F0 31D0                3007           LH      R15,NXTDEV        TEST AGAIN                           CCT40090
28A8   4060 31D2                3008           STH     DEV,DEV2          SET 2ND DEVICE FLAG                  CCT40100
28AC   4060 1496                3009           STH     DEV,ERRDEV                                             CCT40110
28B0   030F                    3010           BR      R15                                                    CCT40120
                                3011  *                                                                       CCT40130
                                3012  * ************************************************************           CCT40140
                                3013  * SUBROUTINE FSTEOF                                        *           CCT40150
                                3014  *        THIS ROUTINE WRITES AN EOF AND CHECKS IT. IF NMTN        *     CCT40160
                                3015  *        DOES NOT DROP WITHIN ONE INSTRUCTION TIME AFTER THE      *     CCT40170
                                3016  *        OUTPUT COMMAND, ERROR 50 IS LOGGED AND THE TEST          *     CCT40180
                                3017  *        ABORTED ASSUMING THAT THE TAPE DRIVE IS IN THE WRITE     *     CCT40190
                                3018  *        PROTECT MODE.                                            *     CCT40200
                                3019  *        IF NO EOF IS DETECTED AFTER A TIMED WAITING PERIOD,      *     CCT40210
                                3020  *        THIS TEST IS ABORTED.                                    *     CCT40220
                                3021  *        THIS ROUTINE IS USUALLY CALLED AFTER A REWIND, AND       *     CCT40230
                                3022  *        IT RESETS THE EOT FLAG.                                  *     CCT40240
                                3023  *        CALLING SEQUENCE:                                        *     CCT40250
                                3024  *        BAL   R14,FSTEOF                                         *     CCT40260
                                3025  *        ERROR: 50                                                *     CCT40270
                                3026  * ************************************************************           CCT40280
                                3027  *                                                                       CCT40290
28B2   40E0 33E8                3028  FSTEOF   STH     R14,SAVERTN       SAVE RETURN ADDRESS                  CCT40300
28B6   0755                     3029           XHR     R5,R5             RESET EOT FLAG                       CCT40310
28B8   4050 31C8                3030           STH     R5,EOTFLG                                              CCT40320
28BC   0E60 31E5                3031           OC      DEV,WEOF          WRITE     EOF                        CCT40330
28C0   4200 0000                3032           NOP     WAIT              FOR NMTN=0                           CCT40340
28C4   9D65                     3033           SSR     DEV,STAT                                               CCT40350
28C6   C350 0010                3034           THI     STAT,X'10'        NMTN=0?                              CCT40360
28CA   2138                     3035           BNZS    WRTPT             NO - WRITE PROTECT ERROR             CCT40370
28CC   41E0 2C66                3036           BAL     R14,SENS01        YES - CHECK FOR EOF                  CCT40380
28D0   4300 288C                3037           B       CHKEND1           NO EOF - ABORT TEST                  CCT40390
28D4   48E0 33E8                3038           LH      R14,SAVERTN                                            CCT40400
28D8   030E                     3039           BR      R14                                                    CCT40410
28DA   D250 1499                3040  WRTPT    STB     STAT,ERRSTA                                            CCT40420
28DE   C600 3530                3041           LHI     R0,C'50'          ERROR 50                             CCT40430
28E2   4000 14E0                3042           STH     R0,ERRNO                                               CCT40440
28E6   41F0 0E86                3043           BAL     R15,ERRDS                                              CCT40450
28EA   4300 0A9E                3044           B       OPTIN                                                  CCT40460
                                3045  *                                                                       CCT40470
                                3046  * ************************************************************           CCT40480
                                3047  * SUBROUTINE ECEOF                                         *           CCT40490
                                3048  *        THIS ROUTINE WRITES A DATA PATTERN ON THE TAPE TO        *     CCT40500
                                3049  *        BE RECOGNIZED AS A FILEMARK IN THE SOFTWARE              *     CCT40501
                                3050  *        RETURN ON R14                                            *     CCT40520
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                     *        ERROR 49                                              *
                     * ************************************************************
                     *
28EE   C8B0 32D2     ECEOF    LHI    R11,ECMAEF
28F2   C8C0 32D5              LHI    R12,ENEOF
28F6   41D0 2E6E              BAL    R13,WAIT2
28FA   DE60 31DF              OC     DEV,WRITE          WRITE THE EOF MARK
28FE   966B                   WBR    DEV,R11
2900   4370 2924              BFC    7,ECEOF1
2904   9D65                   SSR    DEV,STAT
2906   4210 2FC6              BTC    1,MTDU
290A   C350 0020              THI    STAT,X'20'         EOT?
290E   4230 246E              BNZ    ECMAND             YES - EXIT
2912   C800 3439     ECEOFER  LHI    R0,C'49'           ERROR 49
2916   4000 14E0              STH    R0,ERRNO
291A   D250 1499              STB    STAT,ERRSTA
291E   41F0 0E86              BAL    R15,ERRDS
2922   030E                   BR     R14
2924   41D0 2EC4     ECEOF1   BAL    R13,WAIT3
2928   9D65                   SSR    DEV,STAT
292A   C350 0080              THI    STAT,X'80'
292E   203E                   BNZS   ECEOFER
2930   C350 0020              THI    STAT,X'20'         EOT?
2934   4230 246E              BNZ    ECMAND             YES - EXIT
2938   030E                   BR     R14
                     *
                     * ************************************************************
                     * SUBROUTINE BSPACE                                          *
                     *        THIS ROUTINE BACKSPACES A RECORD. IF ERROR STATUS   *
                     *        IS SENSED, AN ERROR MESSAGE IS PRINTED.             *
                     *        RETURNS ON R14                                      *
                     *        ERROR: 08                                           *
                     * ************************************************************
                     *
293A   41D0 2E6E     BSPACE   BAL    R13,WAIT2          WAIT FOR NMTN=1
293E   DE60 31DD              OC     DEV,BKSPAC         BACKSPACE
2942   41D0 2EC4              BAL    R13,WAIT3          WAIT FOR EOM=1
2946   9D65                   SSR    DEV,STAT
2948   C350 00C0              THI    STAT,X'C0'         ERR OR EOF SET?
294C   033E                   BZR    R14                NO - RETURN
294E   D250 1499              STB    STAT,ERRSTA        STATUS ERROR
2952   C850 3038              LHI    R5,C'08'           ERROR 08
2956   4050 14E0              STH    R5,ERRNO
295A   41F0 0E86              BAL    R15,ERRDS
295E   030E                   BR     R14
                     *
                     * ************************************************************
                     * SUBROUTINE SWAP                                            *
                     *        THIS ROUTINE REVERSES THE WRITE BUFFER              *
                     *        CALLING SEQUENCE:                                   *
                     *        BAL   R14,SWAP                                      *
                     * ************************************************************
                     *
2960   07BB          SWAP     XHR    R11,R11
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SUBROUTINES

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2962  48C0 31C4  3105          LH    R12,NBYTE                                  CCT41070
2966  D34B 33EA  3106  SWP1    LB    CHAR,WBUFF(R11)   GET LOWER END BYTE (A)    CCT41080
296A  D35C 33EA  3107          LB    STAT,WBUFF(R12)   GET HIGHER END BYTE (B)   CCT41090
296E  D24C 33EA  3108          STB   CHAR,WBUFF(R12)   STORE A AT HIGHER END      CCT41100
2972  D25B 33EA  3109          STB   STAT,WBUFF(R11)   STORE B AT LOWER END       CCT41110
2976  26B1       3110          AIS   R11,1             INCREASE LOWER END POINTER CCT41120
2978  27C1       3111          SIS   R12,1             DECREASE UPPER END POINTER CCT41130
297A  05BC       3112          CLHR  R11,R12           POINTERS MEET OR CROSS?    CCT41140
297C  208B       3113          BLS   SWP1              NO - CONTINUE              CCT41150
297E  030E       3114          BR    R14               YES - EXIT                 CCT41160
                 3115  *                                                          CCT41170
                 3116  * ********************************************************** CCT41180
                 3117  * SUBROUTINE WRTREC                                       * CCT41190
                 3118  *       THIS ROUTINE WRITES A RECORD ONTO THE MAG. TAPE   * CCT41200
                 3119  *       IT OPERATES EITHER ON SELCH MODE OR RB/WB MODE.   * CCT41210
                 3120  *       THE STARTING ADDRESS OF RECORD TO BE WRITTEN IS   * CCT41220
                 3121  *       STORED AT LOCATION WLIM, AND THE ENDING ADDRESS   * CCT41230
                 3122  *       AT LOCATION WLIM+2. IF NO ERROR OCCURS DURING THE * CCT41240
                 3123  *       TRANSFER, IT WILL RETURN ON 4(R14). ERROR RETURN  * CCT41250
                 3124  *       IS AT 0(R14)                                     * CCT41260
                 3125  *       CALLING SEQUENCE:                                * CCT41270
                 3126  *       BAL   R14,WRTREC                                 * CCT41280
                 3127  *       B     ERROR             RETURN HERE ON ERROR     * CCT41290
                 3128  *       NEXT INSTRUCTION    RETURN HERE ON NORMAL COMPLETION * CCT41300
                 3129  * ********************************************************** CCT41310
                 3130  *                                                          CCT41320
2980  41D0 2E6E  3131  WRTREC  BAL   R13,WAIT2        WAIT FOR NMTN=1            CCT41330
2984  9D65       3132          SSR   DEV,STAT                                     CCT41340
2986  C350 0020  3133          THI   STAT,X'20'        EOT?                       CCT41350
298A  4230 29E8  3134          BNZ   WEOT              YES - SET EOTFLAG          CCT41360
298E  4850 31CC  3135          LH    R5,MODFLG         WHICH MODE?                CCT41370
2992  C550 0001  3136          CLHI  R5,1                                         CCT41380
2996  4330 2A28  3137          BE    WRTBMD            BLOCK MODE                 CCT41390
299A  C550 0003  3138          CLHI  R5,3                                         CCT41400
299E  4330 2A06  3139          BE    WRTDMD                                       CCT41410
                 3140  *                                                          CCT41420
                 3141  *       SELCH MODE                                         CCT41430
29A2  DE70 31D8  3142          OC    SELCH,STOP                                   CCT41440
29A6  D870 32D8  3143          WH    SELCH,WLIM        SET UP SELCH WRITE LIMITS  CCT41450
29AA  D870 32DA  3144          WH    SELCH,WLIM+2                                 CCT41460
29AE  DE60 31DF  3145          OC    DEV,WRITE         DEVICE WRITE               CCT41470
29B2  DE70 31DA  3146          OC    SELCH,GOWRT       SELCH GO & WRITE           CCT41480
29B6  9D75       3147          SSR   SELCH,STAT                                    CCT41490
29B8  2081       3148          BTBS  8,1                                          CCT41500
29BA  2375       3149          BFFS  7,WRTCOM          NORMAL COMPLETION?         CCT41510
29BC  DE70 31D8  3150          OC    SELCH,STOP        STOP SELCH                 CCT41520
29C0  4300 2A3A  3151          B     WABEND                                       CCT41530
29C4  DE70 31D8  3152  WRTCOM  OC    SELCH,STOP        YES - STOP SELCH           CCT41540
29C8  9975       3153          RHR   SELCH,R5                                     CCT41550
29CA  4550 32DA  3154          CLH   R5,WLIM+2         COMPARE END ADDRESS        CCT41560
29CE  4230 29EE  3155          BNE   MSMTCH                                       CCT41570
29D2  41D0 2EC4  3156  WRTTRM  BAL   R13,WAIT3         WAIT FOR EOM UNDER TIMED CONDITION CCT41580
29D6  9D65       3157          SSR   DEV,STAT          EOM - DEVICE STATUS        CCT41590
29D8  C350 0084  3158          THI   STAT,X'84'        EX OR ERR?                 CCT41600
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SUBROUTINES

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29DC  483E 0004  3159          BZ     4(R14)          NO - NORMAL EXIT                CCT41610
29E0  C800 3130  3160          LHI    R0,C'10'        ERROR 10                        CCT41620
29E4  4300 2A4E  3161          B      ERROUT                                          CCT41630
29E8  4050 31C8  3162  WEOT     STH    STAT,EOTFLG     SET EOTFLAG                     CCT41640
29EC  030E       3163          BR     R14                                             CCT41650
29EE  9D65       3164  MSMTCH   SSR    DEV,STAT        END ADDRESS MISMATCH            CCT41660
29F0  4210 2FC6  3165          BTC    1,MTDU          DU?                             CCT41670
29F4  C350 0020  3166          THI    STAT,X'20'      EOT                             CCT41680
29F8  2333       3167          BZS    WRTERR1                                         CCT41690
29FA  4050 31C8  3168          STH    STAT,EOTFLG     YES - SET EOT FLAG              CCT41700
29FE  C800 3134  3169  WRTERR1 LHI    R0,C'14'        ERROR 14                        CCT41710
2A02  4300 2A4E  3170          B      ERROUT                                          CCT41720
                 3171  *                                                             CCT41730
                 3172  *        DATA MODE                                            CCT41740
2A06  48B0 32D8  3173  WRTDMD   LH     R11,WLIM        STARTING ADDRESS                CCT41750
2A0A  48C0 32DA  3174          LH     R12,WLIM+2      ENDING ADDRESS                  CCT41760
2A0E  0E60 31DF  3175          OC     DEV,WRITE                                       CCT41770
2A12  41D0 2F68  3176  WDREC    BAL    R13,WAIT4       WAIT FOR BUSY=0                 CCT41780
2A16  4300 2A3A  3177          B      WABEND          FINISHED TOO SOON               CCT41790
2A1A  DA6B 0000  3178          WD     DEV,0(R11)      WRITE DATA                      CCT41800
2A1E  05BC       3179          CLHR   R11,R12                                         CCT41810
2A20  4380 29D2  3180          BNL    WRTTRM                                          CCT41820
2A24  26B1       3181          AIS    R11,1                                           CCT41830
2A26  220A       3182          BS     WDREC                                           CCT41840
                 3183  *                                                             CCT41850
                 3184  *        BLOCK MODE                                           CCT41860
2A28  48B0 32D8  3185  WRTBMD   LH     R11,WLIM        RB/WB MODE                      CCT41870
2A2C  48C0 32DA  3186          LH     R12,WLIM+2                                      CCT41880
2A30  0E60 31DF  3187          OC     DEV,WRITE                                       CCT41890
2A34  966B       3188          WBR    DEV,R11                                         CCT41900
2A36  43F0 29D2  3189          BFC    15,WRTTRM       CONDITION ZERO?                 CCT41910
2A3A  9D65       3190  WABEND   SSR    DEV,STAT                                        CCT41920
2A3C  4210 2FC6  3191          BTC    1,MTDU          DU?                             CCT41930
2A40  C350 0020  3192          THI    STAT,X'20'      EOT?                            CCT41940
2A44  2333       3193          BZS    WRTERR2                                         CCT41950
2A46  4050 31C8  3194          STH    STAT,EOTFLG     YES - SET UP EOT FLAG           CCT41960
2A4A  C800 3132  3195  WRTERR2 LHI    R0,C'12'        ERROR 12                        CCT41970
2A4E  D250 1499  3196  ERROUT   STB    STAT,ERRSTA                                     CCT41980
2A52  4000 14E0  3197          STH    R0,ERRNO                                        CCT41990
2A56  030E       3198          BR     R14                                             CCT42000
                 3199  *                                                             CCT42010
                 3200  * ************************************************************  CCT42020
                 3201  * SUBROUTINE RDREC                                          *   CCT42030
                 3202  *        THIS ROUTINE READS A RECORD FROM THE MAG. TAPE     *   CCT42040
                 3203  *        IT OPERATES EITHER ON SELCH MODE OR RB/WB MODE.    *   CCT42050
                 3204  *        THE STARTING ADDRESS OF THE READ BUFFER IS STORED  *   CCT42060
                 3205  *        AT LOCATION RLIM, AND THE ENDING ADDRESS AT        *   CCT42070
                 3206  *        LOCATION RLIM+2. IF NO ERROR OCCURS DURING THE     *   CCT42080
                 3207  *        TRANSFER, IT WILL RETURN ON 4(R14). ERROR RETURN   *   CCT42090
                 3208  *        IS AT 0(R14)                                       *   CCT42100
                 3209  *        CALLING SEQUENCE:                                  *   CCT42110
                 3210  *        BAL    R14,RDREC                                   *   CCT42120
                 3211  *        B      ERROR                                       *   CCT42130
                 3212  *        NEXT INSTRUCTION                                   *   CCT42140
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                  * ***************************************************************   CCT42150
                  *                                                                 CCT42160
2A58  41D0 2BF8   RDREC    BAL   R13,CRBUF                                          CCT42170
2A5C  41D0 2E6E            BAL   R13,WAIT2         WAIT FOR NMTN=1                  CCT42180
2A60  4850 31CC            LH    R5,MODFLG                                          CCT42190
2A64  C550 0001            CLHI  R5,1              RB/WB MODE?                      CCT42200
2A68  4330 2AE8            BE    RDBMD                                              CCT42210
2A6C  C550 0003            CLHI  R5,3                                               CCT42220
                  *                                                                 CCT42230
                  *                 SELCH MODE                                      CCT42240
2A70  4330 2AC6            BE    RDDMD                                              CCT42250
2A74  DE70 31D8            OC    SELCH,STOP                                         CCT42260
2A78  D870 32DC            WH    SELCH,RLIM        SET UP SELCH TRANSFER LIMIT      CCT42270
2A7C  D870 32DE            WH    SELCH,RLIM+2                                       CCT42280
2A80  DE60 31DE            OC    DEV,READ          SET DEVICE READ                  CCT42290
2A84  DE70 31DB            OC    SELCH,GORD        SET SELCH GO & READ              CCT42300
2A88  9D75                 SSR   SELCH,STAT        SELCH BUSY?                      CCT42310
2A8A  2081                 BTBS  8,1               YES - WAIT                       CCT42320
2A8C  2375                 BFFS  7,RDCOM           NORMAL COMPLETION?               CCT42330
2A8E  DE70 31D8            OC    SELCH,STOP        STOP SELCH                       CCT42340
2A92  4300 2AFA            B     RABEND                                             CCT42350
2A96  DE70 31D8   RDCOM    OC    SELCH,STOP        YES - STOP SELCH                 CCT42360
2A9A  9975                 RHR   SELCH,R5                                           CCT42370
2A9C  4550 32DE            CLH   R5,RLIM+2         COMPARE END ADDRESS              CCT42380
2AA0  213C                 BNES  MISMAT                                             CCT42390
2AA2  41D0 2EC4   RDTRM    BAL   R13,WAIT3         WAIT FOR EOM=1                   CCT42400
2AA6  9D65                 SSR   DEV,STAT                                           CCT42410
2AA8  C350 0080            THI   STAT,X'80'        ERR SET?                         CCT42420
2AAC  433E 0004            BZ    4(R14)            NORMAL RETURN                    CCT42430
2AB0  C800 3131            LHI   R0,C'11'          ERROR 11                         CCT42440
2AB4  4300 2A4E            B     ERROUT                                             CCT42450
2AB8  9D65        MISMAT   SSR   DEV,STAT          END ADDRESS MISMATCH             CCT42460
2ABA  4210 2FC6            BTC   1,MTDU            DU?                              CCT42470
2ABE  C800 3135            LHI   R0,C'15'          ERROR 15                         CCT42480
2AC2  4300 2A4E            B     ERROUT                                             CCT42490
                  *                                                                 CCT42500
                  *                 DATA MODE                                       CCT42510
2AC6  48B0 32DC   RDDMD    LH    R11,RLIM          STARTING ADDRESS                 CCT42520
2ACA  48C0 32DE            LH    R12,RLIM+2        ENDING ADDRESS                   CCT42530
2ACE  DE60 31DE            OC    DEV,READ                                           CCT42540
2AD2  41D0 2F68   RDDREC   BAL   R13,WAIT4         WAIT FOR BSY=0                   CCT42550
2AD6  4300 2AFA            B     RABEND            FINISHED TOO SOON                CCT42560
2ADA  DB6B 0000            RD    DEV,0(R11)        READ DATA                        CCT42570
2ADE  05BC                 CLHR  R11,R12                                            CCT42580
2AE0  4380 2AA2            BNL   RDTRM                                              CCT42590
2AE4  26B1                 AIS   R11,1                                              CCT42600
2AE6  220A                 BS    RDDREC                                             CCT42610
                  *                                                                 CCT42620
                  *                 BLOCK MODE                                      CCT42630
2AE8  48B0 32DC   RDBMD    LH    R11,RLIM          RB/WB MODE                       CCT42640
2AEC  48C0 32DE            LH    R12,RLIM+2                                         CCT42650
2AF0  DE60 31DE            OC    DEV,READ                                           CCT42660
2AF4  976B                 RBR   DEV,R11                                            CCT42670
2AF6  43F0 2AA2            BFC   15,RDTRM          CONDITION ZERO?                  CCT42680
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SUBROUTINES

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2AFA   9D65           3267 RABEND   SSR    DEV,STAT                                 CCT42690
2AFC   4210 2FC6      3268          BTC    1,MTDU            DU?                    CCT42700
2B00   C800 3133      3269          LHI    R0,C'13'          ERROR 13               CCT42710
2B04   4300 2A4E      3270          B      ERROUT                                   CCT42720
                      3271 *                                                        CCT42730
                      3272 * ****************************************************** CCT42740
                      3273 * SUBROUTINE COMPAR                                      CCT42750
                      3274 *        THIS ROUTINE COMPARES THE DATA IN THE READ BUFFER      * CCT42760
                      3275 *        WITH THAT IN THE WRITE BUFFER. IF MISMATCH IS          * CCT42770
                      3276 *        DETECTED, THE BYTE FROM BOTH BUFFERS ARE PRINTED.      * CCT42780
                      3277 *        CALLING SEQUENCE:                                      * CCT42790
                      3278 *        BAL    R14,COMPAR                                      * CCT42800
                      3279 * ****************************************************** CCT42810
                      3280 *                                                        CCT42820
2B08   D010 3328      3281 COMPAR   STM    R1,RSAVE1                                CCT42830
2B0C   2491           3282          LIS    R9,1                                     CCT42840
2B0E   48A0 31C4      3283          LH     R10,NBYTE                                CCT42850
2B12   0788           3284          XHR    R8,R8                                    CCT42860
2B14   2402           3285          LIS    R0,2                                     CCT42870
2B16   41F0 1136      3286 COMBYT   BAL    R15,TSTBRK        CHECK BREAK KEY        CCT42880
2B1A   D348 37EA      3287          LB     CHAR,RBUFF(R8)    DATA FROM READ BUFFER  CCT42890
2B1E   D358 33EA      3288          LB     R5,WBUFF(R8)      DATA FROM WRITE BUFFER CCT42900
2B22   0545           3289          CLHR   CHAR,R5           COMPARE                CCT42910
2B24   4230 2B56      3290          BNE    COMERR                                   CCT42920
2B28   C180 2B16      3291          BXLE   R8,COMBYT         CONTINUE               CCT42930
2B2C   D34A 37EC      3292 CHKDEL   LB     CHAR,RBUFF+2(R10) DELIMITER              CCT42940
2B30   C540 00C3      3293          CLHI   CHAR,X'C3'        COMPARE - X'C3'        CCT42950
2B34   233B           3294          BES    ENDCOMP                                  CCT42960
2B36   C850 3437      3295          LHI    R5,C'47'          ERROR 47               CCT42970
2B3A   4050 14E0      3296          STH    R5,ERRNO                                 CCT42980
2B3E   41F0 0E74      3297          BAL    R15,ERRD                                 CCT42990
2B42   C850 3290      3298          LHI    R5,MSG08                                 CCT43000
2B46   41D0 2E2C      3299          BAL    R13,MSGPRT                               CCT43010
2B4A   0711           3300 ENDCOMP  XHR    R1,R1                                    CCT43020
2B4C   4010 31CA      3301          STH    R1,ERRFLG         RESET ERROR FLAG       CCT43030
2B50   D110 3328      3302          LM     R1,RSAVE1                                CCT43040
2B54   030E           3303          BR     R14               RETURN                 CCT43050
2B56   4810 31CA      3304 COMERR   LH     R1,ERRFLG         DATA NOT EQUAL - CHECK ERROR FLAG CCT43060
2B5A   4230 2B94      3305          BNZ    PRIND                                    CCT43070
2B5E   C800 3436      3306          LHI    R0,C'46'          ERROR 46               CCT43080
2B62   4000 14E0      3307          STH    R0,ERRNO                                 CCT43090
2B66   4000 31CA      3308          STH    R0,ERRFLG         SET ERROR FLAG         CCT43100
2B6A   41F0 0E74      3309          BAL    R15,ERRD                                 CCT43110
2B6E   4050 14AE      3310          STH    R5,TEMP                                  CCT43120
2B72   C850 3290      3311          LHI    R5,MSG08                                 CCT43130
2B76   41D0 2E2C      3312          BAL    R13,MSGPRT                               CCT43140
2B7A   C850 321C      3313          LHI    R5,MSG01A                                CCT43150
2B7E   41D0 2E2C      3314          BAL    R13,MSGPRT        PRINT MESSAGE          CCT43160
2B82   C850 322C      3315          LHI    R5,MSG01B                                CCT43170
2B86   41D0 2E2C      3316          BAL    R13,MSGPRT        PRINT MESSAGE          CCT43180
2B8A   4850 14AE      3317          LH     R5,TEMP                                  CCT43190
2B8E   0711           3318          XHR    R1,R1                                    CCT43200
2B90   4010 14A8      3319          STH    R1,ISITERR                               CCT43210
2B94   2402           3320 PRIND    LIS    R0,2                                     CCT43220
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2B96  41F0 0FB0           BAL   R15,R5HEX      PRINT DATA BYTE                 CCT43230
2B9A  0854                LHR   R5,CHAR                                        CCT43240
2B9C  C840 0020           LHI   R4,X'20'       SPACE                           CCT43250
2BA0  0722                XHR   R2,R2                                          CCT43260
2BA2  41F0 10B6   SPACE8  BAL   R15,OUTCHR                                     CCT43270
2BA6  2621                AIS   R2,1                                           CCT43280
2BA8  C520 0008           CLHI  R2,8                                           CCT43290
2BAC  2085                BLS   SPACE8                                         CCT43300
2BAE  2402                LIS   R0,2                                           CCT43310
2BB0  41F0 0FB0           BAL   R15,R5HEX      PRINT DATA BYTE                 CCT43320
2BB4  41F0 10FA           BAL   R15,CRLF                                       CCT43330
2BB8  C180 2B16           BXLE  R8,COMBYT      CONTINUE                        CCT43340
2BBC  4300 2B2C           B     CHKDEL                                         CCT43350
                  *                                                            CCT43360
                  * ********************************************************** CCT43370
                  * SUBROUTINE RESET                                         * CCT43380
                  *         THIS ROUTINE SETS UP THE READ AND WRITE BUFFER   * CCT43390
                  *         LIMITS.                                          * CCT43400
                  *         CALLING SEQUENCE:                                * CCT43410
                  *         BAL   R14,RESET                                  * CCT43420
                  * ********************************************************** CCT43430
                  *                                                            CCT43440
2BC0  4800 31C4   RESET   LH    R0,NBYTE                                       CCT43450
2BC4  4850 32D8           LH    R5,WLIM        SET UP WRITE BUFFER LIMITS      CCT43460
2BC8  0A50                AHR   R5,R0                                          CCT43470
2BCA  4050 32DA           STH   R5,WLIM+2                                      CCT43480
2BCE  4850 32DC           LH    R5,RLIM        SET UP READ BUFFER LIMITS       CCT43490
2BD2  0A50                AHR   R5,R0                                          CCT43500
2BD4  4050 32DE           STH   R5,RLIM+2                                      CCT43510
2BD8  030E                BR    R14                                            CCT43520
                  *                                                            CCT43530
                  * ********************************************************** CCT43540
                  * SUBROUTINE BSET                                          * CCT43550
                  *         THIS ROUTINE SETS UP THE WRITE BUFFER. IT FILLS  * CCT43560
                  *         THE BUFFER WITH DATA OF 00-FF, AND SETS THE DELIMITER * CCT43570
                  *         AT THE END OF THE READ BUFFER.                   * CCT43580
                  *         CALLING SEQUENCE:                                * CCT43590
                  *         BAL   R14,BSET                                   * CCT43600
                  * ********************************************************** CCT43610
                  *                                                            CCT43620
2BDA  D010 3328   BSET    STM   R1,RSAVE1                                      CCT43630
2BDE  2491                LIS   R9,1                                           CCT43640
2BE0  48A0 31C4           LH    R10,NBYTE                                      CCT43650
2BE4  0788                XHR   R8,R8                                          CCT43660
2BE6  D288 33EA   SETWBUF STB   R8,WBUFF(R8)                                   CCT43670
2BEA  41F0 1136           BAL   R15,TSTBRK     CHECK BREAK KEY                 CCT43680
2BEE  C180 2BE6           BXLE  R8,SETWBUF                                     CCT43690
2BF2  D110 3328           LM    R1,RSAVE1                                      CCT43700
2BF6  030E                BR    R14                                            CCT43710
                  *                                                            CCT43720
                  * ********************************************************** CCT43730
                  * SUBROUTINE CRBUF                                         * CCT43740
                  *         THIS ROUTING CLEARS THE READ BUFFER AND SETS THE * CCT43750
                  *         DELIMETER (X'C3C3') AT THE END OF THE BUFFER     * CCT43760
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                  *         CALLING SEQUENCE:                                   *     CCT43770
                  *         BAL    R13,CRBUF                                    *     CCT43780
                  * *********************************************************         CCT43790
                  *                                                                   CCT43800
2BF8  D010 3328   CRBUF     STM    R1,RSAVE1                                          CCT43810
2BFC  48A0 320E             LH     R10,RLIM+2                                         CCT43820
2C00  2492                  LIS    R9,2                                               CCT43830
2C02  0755                  XHR    R5,R5                                              CCT43840
2C04  4880 320C             LH     R8,RLIM                                            CCT43850
2C08  4058 0000   CRBUF1    STH    R5,0(R8)                                           CCT43860
2C0C  41F0 1136             BAL    R15,TSTBRK          CHECK BREAK KEY                CCT43870
2C10  C180 2C08             BXLE   R8,CRBUF1                                          CCT43880
2C14  C850 C3C3             LHI    R5,X'C3C3'                                         CCT43890
2C18  D25A 0002             STB    R5,2(R10)                                          CCT43900
2C1C  D110 3328             LM     R1,RSAVE1                                          CCT43910
2C20  030D                  BR     R13                                                CCT43920
                  *                                                                   CCT43930
                  * *********************************************************         CCT43940
                  * SUBROUTINE DUMP                                             *     CCT43950
                  *         THIS ROUTINE DUMPS THE READ BUFFER ONE BYTE AT A    *     CCT43960
                  *         TIME AND 16 BYTES IN A LINE.                        *     CCT43970
                  *         CALLING SEQUENCE:                                   *     CCT43980
                  *         BAL    R14,DUMP                                     *     CCT43990
                  * *********************************************************         CCT44000
                  *                                                                   CCT44010
2C22  D010 3328   DUMP      STM    R1,RSAVE1                                          CCT44020
2C26  2491                  LIS    R9,1                                               CCT44030
2C28  24AF                  LIS    R10,15              16 BYTES PER LINE              CCT44040
2C2A  0722                  XHR    R2,R2                                              CCT44050
2C2C  C840 0020             LHI    R4,X'20'            SPACE                          CCT44060
2C30  0788        OUTDMP    XHR    R8,R8                                              CCT44070
2C32  D352 37EA   DMPLIN    LB     R5,RBUFF(R2)        LOAD BYTE                      CCT44080
2C36  2402                  LIS    R0,2                                               CCT44090
2C38  41F0 0FB0             BAL    R15,R5HEX           PRINT BYTE                     CCT44100
2C3C  41F0 10B6             BAL    R15,OUTCHR          PRINT SPACE                    CCT44110
2C40  41F0 1136             BAL    R15,TSTBRK          BREAK?                         CCT44120
2C44  4520 31C4             CLH    R2,NBYTE            FULL BUFFER PRINTED?           CCT44130
2C48  2388                  BNLS   DUBLIN                                             CCT44140
2C4A  2621                  AIS    R2,1                NO - CONTINUE                  CCT44150
2C4C  C180 2C32             BXLE   R8,DMPLIN           16 BYTES?                      CCT44160
2C50  41F0 10FA             BAL    R15,CRLF            YES - CR,LF                    CCT44170
2C54  4300 2C30             B      OUTDMP                                             CCT44180
2C58  41F0 10FA   DUBLIN    BAL    R15,CRLF            DOUBLE LINE FEED               CCT44190
2C5C  41F0 10FA             BAL    R15,CRLF                                           CCT44200
2C60  D110 3328             LM     R1,RSAVE1                                          CCT44210
2C64  030E                  BR     R14                 RETURN                         CCT44220
                  *                                                                   CCT44230
                  * *********************************************************         CCT44240
                  * SUBROUTINES SENS01, SENS02, SENS03 & SENS05                 *     CCT44250
                  *         THIS ROUTINE DETERMINES WHETHER AN EOF HAS BEEN     *     CCT44260
                  *         DETECTED. IF NOT, AN ERROR MESSAGE WILL BE PRINTED  *     CCT44270
                  *         AND RETURN ON ERROR. IF NO ERROR IS DETECTED, IT    *     CCT44280
                  *         WILL RETURN TO LOCATION 4(R14)                      *     CCT44290
                  *         THREE ENTRY POINTS ARE PROVIDED:                    *     CCT44300
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SUBROUTINES

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                        3429  *       SENS01    FOR SENSING EOF AFTER WEOF                    *      CCT44310
                        3430  *       SENS02    FOR SENSING EOF AFTER READ                    *      CCT44320
                        3431  *       SENS03    FOR SENSING EOF AFTER BACKSPACE               *      CCT44330
                        3432  *       SENS05    FOR SENSING EOF AFTER SKIP                    *      CCT44340
                        3433  *       CALLING SEQUENCE:                                       *      CCT44350
                        3434  *       BAL   R14,SENS01          (EXAMPLE)                     *      CCT44360
                        3435  *       B     ERROR               ERROR RETURN HERE             *      CCT44370
                        3436  *       NEXT INSTRUCTION          NORMAL RETURN HERE            *      CCT44380
                        3437  * ************************************************************          CCT44390
                        3438  *                                                                     CCT44400
2C66  C800 3035         3439  SENS01  LHI   R0,C'05'            ERROR 05 (WEOF)                     CCT44410
2C6A  2303              3440          BS    SENEOF                                                  CCT44420
2C6C  C800 3037         3441  SENS03  LHI   R0,C'07'            ERROR 07 (SKIP & BACKSPACE EOF)     CCT44430
2C70  41D0 2EC4         3442  SENEOF  BAL   R13,WAIT3                                               CCT44440
2C74  9D65              3443          SSR   DEV,STAT                                                CCT44450
2C76  2348              3444          BFFS  4,EOFER             EX BIT SET?                         CCT44460
2C78  C350 0080         3445  SENEOF2 THI   STAT,X'80'          ERR BIT SET?                        CCT44470
2C7C  2135              3446          BNZS  EOFER                                                   CCT44480
2C7E  C350 0040         3447  SENEOF1 THI   STAT,X'40'          EOF DETECTED?                       CCT44490
2C82  423E 0004         3448          BNZ   4(R14)                                                  CCT44500
2C86  D250 1499         3449  EOFER   STB   STAT,ERRSTA                                             CCT44510
2C8A  4000 14E0         3450          STH   R0,ERRNO                                                CCT44520
2C8E  41F0 0E86         3451          BAL   R15,ERRDS                                               CCT44530
2C92  030E              3452          BR    R14                                                     CCT44540
2C94  C800 3036         3453  SENS02  LHI   R0,C'06'            ERROR 06 (READ EOF)                 CCT44550
2C98  41D0 2EC4         3454          BAL   R13,WAIT3                                               CCT44560
2C9C  9D65              3455          SSR   DEV,STAT                                                CCT44570
2C9E  224C              3456          BFBS  4,EOFER             EX BIT SET?                         CCT44580
2CA0  C350 0080         3457          THI   STAT,X'80'          ERR BIT SET?                        CCT44590
2CA4  223F              3458          BZS   EOFER               NO - ERROR                          CCT44600
2CA6  4300 2C7E         3459          B     SENEOF1                                                 CCT44610
2CAA  C800 3037         3460  SENS05  LHI   R0,C'07'            ERROR 07                            CCT44620
2CAE  D010 3328         3461          STM   R1,RSAVE1                                               CCT44630
2CB2  2491              3462          LIS   R9,1                                                    CCT44640
2CB4  C8A0 7FF0         3463          LHI   R10,X'7FF0'                                             CCT44650
2CB8  2421              3464          LIS   R2,1                                                    CCT44660
2CBA  C830 0064         3465          LHI   R3,100                                                  CCT44670
2CBE  0711              3466          XHR   R1,R1                                                   CCT44680
2CC0  0788              3467  WXS2    XHR   R8,R8                                                   CCT44690
2CC2  9D65              3468  WXS1    SSR   DEV,STAT                                                CCT44700
2CC4  4050 14AE         3469          STH   STAT,TEMP                                               CCT44710
2CC8  4210 2FC6         3470          BTC   1,MTDU              DU?                                 CCT44720
2CCC  214D              3471          BTFS  4,WSEXIT            EX BIT SET?                         CCT44730
2CCE  41F0 1136         3472          BAL   R15,TSTBRK                                              CCT44740
2CD2  C180 2CC2         3473          BXLE  R8,WXS1                                                 CCT44750
2CD6  C110 2CC0         3474          BXLE  R1,WXS2                                                 CCT44760
2CDA  D110 3328         3475          LM    R1,RSAVE1                                               CCT44770
2CDE  4850 14AE         3476          LH    STAT,TEMP                                               CCT44780
2CE2  4300 2C86         3477          B     EOFER                                                   CCT44790
2CE6  D110 3328         3478  WSEXIT  LM    R1,RSAVE1                                               CCT44800
2CEA  4850 14AE         3479          LH    STAT,TEMP                                               CCT44810
2CEE  4300 2C78         3480          B     SENEOF2                                                 CCT44820
                        3481  *                                                                     CCT44830
                        3482  * ************************************************************          CCT44840
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SUBROUTINES

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                        3483  * SUBROUTINE ERRMSG1 & ERRMSG2                                  *   CCT44850
                        3484  *       THESE SUBROUTINES PRINTS THE ERROR MESSAGES WITH THE     *   CCT44860
                        3485  *       MODE MESSAGE                                            *   CCT44870
                        3486  *       THE MESSAGE PRINTED IS:                                 *   CCT44880
                        3487  *       ERROR  XXYY              XX=TEST #, YY=ERROR #          *   CCT44890
                        3488  *       DEV  DD  STA SS          DD=DEVICE #, SS=STATUS         *   CCT44900
                        3489  *       MODE  N                  N=MODE NUMBER                  *   CCT44910
                        3490  *       RETURN ON R13                                           *   CCT44920
                        3491  * ********************************************************************   CCT44930
                        3492  *                                                                       CCT44940
2CF2  4000 14E0         3493  ERRMSG1  STH    R0,ERRNO                                              CCT44950
2CF6  D250 1499         3494           STB    STAT,ERRSTA                                           CCT44960
2CFA  41F0 0E86         3495  ERRMSG2  BAL    R15,ERRDS        PRINT ERROR MESSAGE                  CCT44970
2CFE  C850 3290         3496           LHI    R5,MSG08                                              CCT44980
2D02  41D0 2E2C         3497           BAL    R13,MSGPRT                                            CCT44990
2D06  030E              3498           BR     R14                                                   CCT45000
                        3499  *                                                                       CCT45010
                        3500  * ********************************************************************   CCT45020
                        3501  * SUBROUTINE SETMOD & TSTMOD                                      *   CCT45030
                        3502  *       THESE ROUTINES SET THE PROPER MODE THE DEVICE IS TO      *   CCT45040
                        3503  *       BE TESTED UNDER.                                        *   CCT45050
                        3504  *       ROUTINE SETMOD SETS THE INITIAL TEST MODE ACCORDING     *   CCT45060
                        3505  *       TO THE OPTION MODE. IF ZERO, IT WILL SET MODE 3         *   CCT45070
                        3506  *       ROUTINE TSTMOD TESTS IF ANY MORE TEST IS TO BE          *   CCT45080
                        3507  *       PERFORMED UNDER A DIFFERENT MODE. IF MODE OPTION         *   CCT45090
                        3508  *       IS ZERO, IT WILL DECREMENT MODE. IF MODE OPTION IS       *   CCT45100
                        3509  *       NON-ZERO OR DECREMENTED MODE IS ZERO. IT WILL BRANCH     *   CCT45110
                        3510  *       TO TEST END.                                            *   CCT45120
                        3511  *       CALLING SEQUENCE:                                           CCT45130
                        3512  *       BAL   R13,SETMOD     OR                                     CCT45140
                        3513  *       BAL   R13,TSTMOD                                            CCT45150
                        3514  * ********************************************************************   CCT45160
                        3515  *                                                                       CCT45170
2D08  4850 15A2         3516  SETMOD   LH     R5,MODE+6        GET MODE OPTION                      CCT45180
2D0C  213C              3517           BNZS   MSET                                                  CCT45190
2D0E  2453              3518           LIS    R5,3             MODE 0 - START WITH MODE 3           CCT45200
2D10  230A              3519           BS     MSET                                                  CCT45210
2D12  4850 15A2         3520  TSTMOD   LH     R5,MODE+6        MODE 0?                              CCT45220
2D16  4230 2894         3521           BNZ    CHKEND           NO - END TEST                        CCT45230
2D1A  4850 31CC         3522           LH     R5,MODFLG        YES -                                CCT45240
2D1E  2751              3523           SIS    R5,1             DECREMENT MODE FLAG                  CCT45250
2D20  4330 2894         3524           BZ     CHKEND           ZERO? - END TEST                     CCT45260
2D24  4050 31CC         3525  MSET     STH    R5,MODFLG        STORE                                CCT45270
2D28  CA50 0030         3526           AHI    R5,X'30'                                              CCT45280
2D2C  D250 3295         3527           STB    R5,MSG08+5       SET MODE MESSAGE                     CCT45290
2D30  41F0 1136         3528           BAL    R15,TSTBRK       CHECK BREAK KEY                      CCT45300
2D34  030D              3529           BR     R13                                                   CCT45310
                        3530  *                                                                       CCT45320
                        3531  * ********************************************************************   CCT45330
                        3532  * SUBROUTINE RETRY                                                *   CCT45340
                        3533  *       THIS ROUTINE KEEPS A RETRY COUNT. IF THE COUNT IS       *   CCT45350
                        3534  *       LESS THAN 5, THE ROUTINE WILL BACKSPACE AND RETURN      *   CCT45360
                        3535  *       AT LOCATION 0(R14). OTHERWISE, IT RETURNS AT 4(R14).    *   CCT45370
                        3536  *       CALLING SEQUENCE:                                       *   CCT45380
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                  *         BAL    R14,RETRY                                      *       CCT45390
                  *         B      TRY AGAIN            GO TRY AGAIN              *       CCT45400
                  *         B      PROCEED              PROCEED                   *       CCT45410
                  * ***************************************************************       CCT45420
                  *                                                                       CCT45430
2D36  4850 31CE   RETRY     LH     R5,RTYCNT            LOAD RETRY COUNTER                CCT45440
2D3A  C550 0005             CLHI   R5,5                 5 TIMES?                          CCT45450
2D3E  238B                  BNLS   RTYFAIL                                                CCT45460
2D40  2651                  AIS    R5,1                 INCREMENT COUNTER                 CCT45470
2D42  4050 31CE             STH    R5,RTYCNT                                              CCT45480
2D46  41D0 2E6E             BAL    R13,WAIT2            WAIT FOR NMTN=1                   CCT45490
2D4A  DE60 31DD             OC     DEV,BKSPAC           BACKSPACE                         CCT45500
2D4E  41F0 1136             BAL    R15,TSTBRK           CHECK BREAK KEY                   CCT45510
2D52  030E                  BR     R14                                                    CCT45520
2D54  0755        RTYFAIL   XHR    R5,R5                5 TIMES FAILED                    CCT45530
2D56  4050 31CE             STH    R5,RTYCNT                                              CCT45540
2D5A  C850 323C             LHI    R5,MSG02                                               CCT45550
2D5E  41D0 2E2C             BAL    R13,MSGPRT           PRINT MESSAGE                     CCT45560
2D62  41F0 1136             BAL    R15,TSTBRK           CHECK BREAK KEY                   CCT45570
2D66  430E 0004             B      4(R14)                                                 CCT45580
                  *                                                                       CCT45590
                  * ***************************************************************       CCT45600
                  * SUBROUTINE INDATA                                             *       CCT45610
                  *         THIS ROUTINE ACCEPTS A DATA STRING OF UP TO 64 BYTES  *       CCT45620
                  *         FROM THE TTY, THE INPUT CHARACTER MUST BE A VALID     *       CCT45630
                  *         HEX CHARACTER. AND THE PROGRAM WILL STORE THE         *       CCT45640
                  *         CORRESPONDING HEX VALUE INTO THE WRITE BUFFER. UPON   *       CCT45650
                  *         RECEPTION OF CR, THE ROUTING WILL GENERATE THE SHOLE  *       CCT45660
                  *         WRITE BUFFER BY REPEATING THE INPUTED STRING          *       CCT45670
                  *         IF THE TEST IS REPEATED BY MODE=0, CONTIN=1 OR LOOP,  *       CCT45680
                  *         THIS ROUTINE WILL BE BY-PASSED AFTER THE FIRST PASS.  *       CCT45690
                  *         NO DATA IS REQUESTED ON SUBSEQUENT PASSES. THIS       *       CCT45700
                  *         ROUTINE WILL NEVER BE EXECUTED IF OPTION DATA IS      *       CCT45710
                  *         RESET.                                                *       CCT45720
                  *                                                               *       CCT45730
                  *         CALLING SEQUENCE                                      *       CCT45740
                  *         BAL   R14,INDATA                                      *       CCT45750
                  * ***************************************************************       CCT45760
                  *                                                                       CCT45770
2D6A  4840 1656   INDATA    LH     R4,DATA+6            DATA OPTION SET?                  CCT45780
2D6E  033E                  BZR    R14                  NO - EXIT                         CCT45790
2D70  4840 31C6             LH     R4,DE                DATA FLAG SET?                    CCT45800
2D74  023E                  BNZR   R14                  YES - EXIT                        CCT45810
2D76  244F                  LIS    R4,15                NO - SET DATA FLAG                CCT45820
2D78  4040 31C6             STH    R4,DE                AND                               CCT45830
2D7C  D010 3328             STM    R1,RSAVE1            GET DATA PATTERN                  CCT45840
2D80  C850 3298             LHI    R5,MSG09             PRINT MESSAGE                     CCT45850
2D84  41D0 2E2C             BAL    R13,MSGPRT                                             CCT45860
2D88  41F0 1136             BAL    R15,TSTBRK           CHECK BREAK KEY                   CCT45870
2D8C  2491                  LIS    R9,1                                                   CCT45880
2D8E  0788                  XHR    R8,R8                                                  CCT45890
2D90  0722                  XHR    R2,R2                                                  CCT45900
2D92  41F0 10E8   GETDATA   BAL    R15,GETCHR           GET A CHARACTER                   CCT45910
2D96  C540 000D             CLHI   CHAR,X'0D'           CR?                               CCT45920
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2D9A   4330 2DF4        3591          BE     INEND              YES - INPUT END                CCT45930
2D9E   4100 2DFE        3592          BAL    R13,HEXCHK         CHECK FOR HEX CHAR             CCT45940
2DA2   4300 2D92        3593          B      GETDATA            INVALID DATA, GET ANOTHER      CCT45950
2DA6   0854             3594          LHR    R5,CHAR                                           CCT45960
2DA8   9154             3595          SLLS   R5,4               SHIFT FIRST HEX DIGIT LEFT     CCT45970
2DAA   41F0 10E8        3596 GTDAT2   BAL    R15,GETCHR         GET SECOND CHARACTER           CCT45980
2DAE   C540 000D        3597          CLHI   CHAR,X'0D'         CR?                            CCT45990
2DB2   4330 2DDA        3598          BE     INEND1             YES - INPUT END                CCT46000
2DB6   4100 2DFE        3599          BAL    R13,HEXCHK         CHECK HEX CHAR                 CCT46010
2DBA   4300 2DAA        3600          B      GTDAT2             INVALID DATA, GET ANOTHER      CCT46020
2DBE   0654             3601          OHR    R5,CHAR            APPEND SECOND HEX DIGIT        CCT46030
2DC0   D258 33EA        3602          STB    R5,WBUFF(R8)       STORE HEX BYTE TO WRITE BUFFER CCT46040
2DC4   2622             3603          AIS    R2,2                                              CCT46050
2DC6   C520 0040        3604          CLHI   R2,64              64 CHARACTERS (32 HEX)?        CCT46060
2DCA   238A             3605          BNLS   INEND2                                            CCT46070
2DCC   C180 2D92        3606          BXLE   R8,GETDATA         BUFFER LENGTH EXCEED?          CCT46080
2DD0   41F0 10FA        3607 DATFIL   BAL    R15,CRLF                                          CCT46090
2DD4   D110 3328        3608          LM     R1,RSAVE1                                         CCT46100
2DD8   030E             3609          BR     R14                                               CCT46110
2DDA   D258 33EA        3610 INEND1   STB    R5,WBUFF(R8)       STORE LAST BYTE                CCT46120
2DDE   0722             3611 INEND2   XHR    R2,R2                                             CCT46130
2DE0   C080 2DD0        3612 MOVDATA  BXH    R8,DATFIL                                         CCT46140
2DE4   D342 33EA        3613 MOVDAT1  LB     CHAR,WBUFF(R2)     PROPERGATE DATA IN BUFFER      CCT46150
2DE8   D248 33EA        3614          STB    CHAR,WBUFF(R8)                                    CCT46160
2DEC   41F0 1136        3615          BAL    R15,TSTBRK         CHECK BREAK KEY                CCT46170
2DF0   2621             3616          AIS    R2,1                                              CCT46180
2DF2   2209             3617          BS     MOVDATA                                           CCT46190
2DF4   0822             3618 INEND    LHR    R2,R2                                             CCT46200
2DF6   4330 2DD0        3619          BZ     DATFIL                                            CCT46210
2DFA   0722             3620          XHR    R2,R2                                             CCT46220
2DFC   220C             3621          BS     MOVDAT1                                           CCT46230
                        3622 *                                                                 CCT46240
                        3623 * ************************************************************   CCT46250
                        3624 * SUBROUTINE HEXCHK                                           *   CCT46260
                        3625 *        THIS ROUTIN CHECKS IF THE CONTENT OF R4 (CHAR) IS    *   CCT46270
                        3626 *        A VALID HEX CHARACTER. IT THEN CONVERTS IT INTO A    *   CCT46280
                        3627 *        HEX DIGIT, AND RETURNS AT 4(R13). IF THE CHARACTER   *   CCT46290
                        3628 *        IS NOT A VALID HEX CHARACTER, IT OUTPUTS A '?',      *   CCT46300
                        3629 *        AND RETURNS AT 0(R13)                                *   CCT46310
                        3630 *        CALLING SEQUENCE:                                    *   CCT46320
                        3631 *        BAL   R13,HEXCHK                                     *   CCT46330
                        3632 *        B     ERROR               ERROR RETURN               *   CCT46340
                        3633 *        NEXT  INSTRUCTION         NORMAL RETURN              *   CCT46350
                        3634 * ************************************************************   CCT46360
                        3635 *                                                                 CCT46370
2DFE   C540 0030        3636 HEXCHK   CLHI   CHAR,C'0'          LESS THAN 0?                   CCT46380
2E02   4280 2E22        3637          BL     NOHEX              YES - INVALID                  CCT46390
2E06   C540 003A        3638          CLHI   CHAR,X'3A'         NO - LESS THAN X'3A'?          CCT46400
2E0A   2188             3639          BLS    GDHEX              YES - VALID                    CCT46410
2E0C   C540 0041        3640          CLHI   CHAR,C'A'          NO - LESS THAN A?              CCT46420
2E10   2189             3641          BLS    NOHEX              YES - INVALID                  CCT46430
2E12   C540 0047        3642          CLHI   CHAR,C'G'          NO - GREATER THAN F?           CCT46440
2E16   2386             3643          BNLS   NOHEX              YES - INVALID                  CCT46450
2E18   2649             3644          AIS    CHAR,9             NO - CONVERT TO HEX DIGIT      CCT46460
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SUBROUTINES

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2E1A C440 000F 3645 GOHEX   NHI   CHAR,X'0F'                                  CCT46470
2E1E 430D 0004 3646         B     4(R13)                                      CCT46480
2E22 C840 003F 3647 NOHEX   LHI   CHAR,C'?'       INVALID CHAR -            CCT46490
2E26 41F0 10B6 3648         BAL   R15,OUTCHR      PRINT '?'                 CCT46500
2E2A 030D      3649         BR    R13                                         CCT46510
               3650 *                                                         CCT46520
               3651 * ***************************************************** CCT46530
               3652 * SUBROUTINE MSGPRT                                       CCT46540
               3653 *       THIS ROUTINE SETS UP THE CALLING SEQUENCE TO PRINT *  CCT46550
               3654 *       A MESSAGE. THE STARTING ADDRESS OF THE MESSAGE  *  CCT46560
               3655 *       SHOULD BE STORED IN R5.                         *  CCT46570
               3656 *       CALLING SEQUENCE:                               *  CCT46580
               3657 *       BAL   R13,MSGPRT                                *  CCT46590
               3658 * ***************************************************** CCT46600
               3659 *                                                         CCT46610
2E2C 4050 14A8 3660 MSGPRT  STH   R5,ISITERR                                   CCT46620
2E30 41F0 101E 3661         BAL   R15,PRINT                                    CCT46630
2E34 0755      3662         XHR   R5,R5                                        CCT46640
2E36 4050 14A8 3663         STH   R5,ISITERR                                   CCT46650
2E3A 41F0 1136 3664         BAL   R15,TSTBRK      CHECK BREAK KEY           CCT46660
2E3E 030D      3665         BR    R13                                         CCT46670
               3666 *                                                         CCT46680
               3667 * ***************************************************** CCT46690
               3668 * SUBROUTINE TIMEOUT                                    *  CCT46700
               3669 *       THIS ROUTINE WAITS FOR INTERRUPT WITH INTERRUPT  *  CCT46710
               3670 *       ENABLED AT PROCESSOR LEVEL. A TIMER IS SET UP TO *  CCT46720
               3671 *       TIME OUT THE INTERRUPT WAITING PERIOD AND THE    *  CCT46730
               3672 *       CALLING PROGRAM CAN SPECIFY THE TIME-OUT IN UNITS *  CCT46740
               3673 *       OF IOMS EACH BY SPECIFY THE NUMBER OF UNITS DESIRED *  CCT46750
               3674 *       AT THE HALFWORD FOLLOWING THE CALLING INSTRUCTION. *  CCT46760
               3675 *       IF INTERRUPT IS RECEIVED, EXIT IS MADE TO AN     *  CCT46770
               3676 *       INTERRUPT HANDLER IN THE PROGRAM EXECUTIVE, WHICH *  CCT46780
               3677 *       WILL IN TURN BRANCH TO LOCATION SET UP BY THE    *  CCT46790
               3678 *       PROGRAM BEFORE ENTERING TIMEOUT ROUTINE.         *  CCT46800
               3679 *       IF THE ROUTINE TIMES OUT, IT WILL PICK UP THE SECOND *  CCT46810
               3680 *       HALFWORD AFTER CALLING INSTRUCTION AS THE ERROR  *  CCT46820
               3681 *       NUMBER, PRINTS ERROR MESSAGE AND EXIT AT LOCATION *  CCT46830
               3682 *       4(R14).                                          *  CCT46840
               3683 *       CALLING SEQUENCE:                                *  CCT46850
               3684 *       BAL   R14,TIMEOUT                                *  CCT46860
               3685 *       DC    N           NUMBER OF IOMS UNITS FOR T.O. *  CCT46870
               3686 *       DC    C'00'       ERROR NUMBER (IN CHARACTER FORM) *  CCT46880
               3687 * ***************************************************** CCT46890
               3688 *                                                         CCT46900
2E40 4840 0A20 3689 TIMEOUT LH    R4,PSW          ENABLE INTERRUPT AT       CCT46910
2E44 9554      3690         EPSR  R5,R4           PROCESSOR LEVER           CCT46920
2E46 41F0 1136 3691         BAL   R15,TSTBRK      CHECK BREAK KEY           CCT46930
2E4A 480E 0000 3692         LH    R0,0(R14)       PICK UP DESIRED TIME PERIOD  CCT46940
2E4E 41F0 0F96 3693         BAL   R15,TIMER       DELAY TIMER (BASIC IOMS)  CCT46950
2E52 C840 30F0 3694         LHI   R4,X'30F0'                                 CCT46960
2E56 9554      3695         EPSR  R5,R4                                      CCT46970
2E58 480E 0002 3696         LH    R0,2(R14)       PICK UP ERROR NUMBER      CCT46980
2E5C 4000 14E0 3697         STH   R0,ERRNO                                   CCT46990
2E60 9D65      3698         SSR   DEV,STAT                                   CCT47000
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SUBROUTINES

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2E62  D250 1499          3699          STB   STAT,ERRSTA                                  CCT47010
2E66  41F0 0E86          3700          BAL   R15,ERRDS                                    CCT47020
2E6A  430E 0004          3701          B     4(R14)                                       CCT47030
                         3702  * ************************************************************ CCT47040
                         3703  * SUBROUTINE WAIT2                                          * CCT47050
                         3704  *       THIS ROUTINE WAITS FOR NMTN=1 UNDER TIMED CONDITION  * CCT47060
                         3705  *       IF ROUTINE TIMES OUT OR DETECTS END OF TAPE (EOT),   * CCT47070
                         3706  *       THE DEVICE IS RESET, ERROR MESSAGE IS PRINTED AND    * CCT47080
                         3707  *       THE CURRENT TEST IS ABORTED.                         * CCT47090
                         3708  *       RETURN ON R13                                        * CCT47100
                         3709  *       ERROR: 01                                            * CCT47110
                         3710  * ************************************************************ CCT47120
                         3711  *                                                            CCT47130
2E6E  9D65               3712  WAIT2   SSR   DEV,STAT                                     CCT47140
2E70  4210 2FC6          3713          BTC   1,MTDU          DEVICE UNAVAILABLE           CCT47150
2E74  C350 0010          3714          THI   STAT,X'10'      NMTN = 1?                    CCT47160
2E78  023D               3715          BNZR  R13             YES - EXIT                   CCT47170
2E7A  D010 3328          3716          STM   R1,RSAVE1                                    CCT47180
2E7E  2421               3717          LIS   R2,1                                         CCT47190
2E80  4830 0A1C          3718          LH    R3,TIME         10MS TIMING LOOP             CCT47200
2E84  0892               3719          LHR   R9,R2                                        CCT47210
2E86  24AA               3720          LIS   R10,10                                       CCT47220
2E88  0788               3721          XHR   R8,R8                                        CCT47230
2E8A  0711               3722  WX21    XHR   R1,R1           TIME OUT LOOP                CCT47240
2E8C  9D65               3723  WX22    SSR   DEV,STAT                                     CCT47250
2E8E  4210 2FC6          3724          BTC   1,MTDU          DU?                          CCT47260
2E92  C350 0010          3725          THI   STAT,X'10'      NMTN = 1?                    CCT47270
2E96  4230 2EBE          3726          BNZ   W2EXIT          YES EXIT                     CCT47280
2E9A  41F0 1136          3727          BAL   R15,TSTBRK       CHECK BREAK KEY              CCT47290
2E9E  C110 2E8C          3728          BXLE  R1,WX22                                      CCT47300
2EA2  C180 2E8A          3729          BXLE  R8,WX21                                      CCT47310
2EA6  DE60 31D9          3730          OC    DEV,CLEAR       TIMED OUT ON NMTN            CCT47320
2EAA  D250 1499          3731          STB   STAT,ERRSTA                                  CCT47330
2EAE  C850 3031          3732          LHI   R5,C'01'        ERROR 01                     CCT47340
2EB2  4050 14E0          3733          STH   R5,ERRNO                                     CCT47350
2EB6  41F0 0E86          3734          BAL   R15,ERRDS                                    CCT47360
2EBA  4300 0A9E          3735          B     OPTIN                                        CCT47370
2EBE  D110 3328          3736  W2EXIT  LM    R1,RSAVE1                                    CCT47380
2EC2  030D               3737          BR    R13                                          CCT47390
                         3738  *                                                          CCT47400
                         3739  * ************************************************************ CCT47410
                         3740  * SUBROUTINE WAIT3                                          * CCT47420
                         3741  *       THIS ROUTINE WAITS FOR EOM UNDER TIMED CONDITION.    * CCT47430
                         3742  *       IT IS CALLED AFTER EVERY READ, WRITE, BALKSPACE,     * CCT47440
                         3743  *       WEOF OR SKIP OPERATION. IF EOM IS NOT SET AFTER      * CCT47450
                         3744  *       TIME OUT, THE ROUTINE RETURNS WITH AN ERROR MESSAGE. * CCT47460
                         3745  *       CALLING SEQUENCE:                                    * CCT47470
                         3746  *       BAL   R13,WAIT3                                      * CCT47480
                         3747  * ************************************************************ CCT47490
                         3748  *                                                          CCT47500
2EC4  9D65               3749  WAIT3   SSR   DEV,STAT                                     CCT47510
2EC6  4210 2FC6          3750          BTC   1,MTDU          DU?                          CCT47520
2ECA  022D               3751          BTCR  2,R13           EOM - EXIT                   CCT47530
2ECC  D010 3328          3752          STM   R1,RSAVE1                                    CCT47540
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SUBROUTINES

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2ED0  2421          3753          LIS   R2,1              SET UP TIME OUT COUNTER          CCT47550
2ED2  4830 0A1C     3754          LH    R3,TIME                                            CCT47560
2ED6  0892          3755          LHR   R9,R2                                              CCT47570
2ED8  C8A0 012C     3756          LHI   R10,300                                            CCT47580
2EDC  0788          3757          XHR   R8,R8                                              CCT47590
2EDE  0711          3758  WX31    XHR   R1,R1                                              CCT47600
2EE0  9D65          3759  WX32    SSR   DEV,STAT                                           CCT47610
2EE2  4210 2FC6     3760          BTC   1,MTDU            DU?                              CCT47620
2EE6  4220 2F06     3761          BTC   2,W3EXIT          EOM - EXIT                       CCT47630
2EEA  41F0 1136     3762          BAL   R15,TSTBRK        CHECK BREAK KEY                  CCT47640
2EEE  C110 2EE0     3763          BXLE  R1,WX32                                            CCT47650
2EF2  C180 2EDE     3764          BXLE  R8,WX31                                            CCT47660
2EF6  D250 1499     3765          STB   STAT,ERRSTA       TIMED OUT                        CCT47670
2EFA  C850 3034     3766          LHI   R5,C'04'          ERROR 04                         CCT47680
2EFE  4050 14E0     3767          STH   R5,ERRNO                                           CCT47690
2F02  41F0 0E86     3768          BAL   R15,ERRDS                                          CCT47700
2F06  D110 3328     3769  W3EXIT  LM    R1,RSAVE1                                        CCT47710
2F0A  0300          3770          BR    R13               ERROR RETURN                   CCT47720
                    3771  *                                                              CCT47730
                    3772  * ************************************************************ CCT47740
                    3773  * SUBROUTINE WAIT1                                           * CCT47750
                    3774  *        THIS ROUTINE WAITS FOR NMTN=1 UNDER TIMED CONDITION.* CCT47760
                    3775  *        THE TIMEOUT PERIOD IS DESIGNED TO ACCOMODATE THE    * CCT47770
                    3776  *        TIME NECESSARY TO REWIND THE LONGEST TAPE. IF THE   * CCT47780
                    3777  *        ROUTINE TIMED OUT, THE TEST IS ABORTED WITH AN ERROR* CCT47790
                    3778  *        MESSAGE .                                           * CCT47800
                    3779  *        RETURN ON R13                                       * CCT47810
                    3780  *        ERROR: 02.                                          * CCT47820
                    3781  * ************************************************************ CCT47830
                    3782  *                                                              CCT47840
2F0C  D010 3328     3783  WAIT1   STM   R1,RSAVE1                                        CCT47850
2F10  0755          3784          XHR   R5,R5                                            CCT47860
2F12  4050 31C8     3785          STH   R5,EOTFLG                                        CCT47870
2F16  2421          3786          LIS   R2,1              SET UP LOOP COUNTER            CCT47880
2F18  C830 7FF0     3787          LHI   R3,X'7FF0'                                       CCT47890
2F1C  0892          3788          LHR   R9,R2                                            CCT47900
2F1E  C8A0 00FF     3789          LHI   R10,X'FF'                                        CCT47910
2F22  0788          3790          XHR   R8,R8                                            CCT47920
2F24  0711          3791  WX11    XHR   R1,R1             TIME OUT LOOP                  CCT47930
2F26  9D65          3792  WX12    SSR   DEV,STAT                                         CCT47940
2F28  4210 2FC6     3793          BTC   1,MTDU            DU?                            CCT47950
2F2C  C350 0010     3794          THI   STAT,X'10'        NMTN = 1 ?                     CCT47960
2F30  4230 2F62     3795          BNZ   W1EXIT            YES EXIT                       CCT47970
2F34  C350 0020     3796          THI   STAT,X'20'        EOT?                           CCT47980
2F38  2335          3797          BZS   WX13                                             CCT47990
2F3A  DE60 31D9     3798          OC    DEV,CLEAR         EOT - CLEAR DEVICE             CCT48000
2F3E  41F0 1136     3799          BAL   R15,TSTBRK        CHECK BREAK KEY                CCT48010
2F42  C110 2F26     3800  WX13    BXLE  R1,WX12                                          CCT48020
2F46  C180 2F24     3801          BXLE  R8,WX11                                          CCT48030
2F4A  DE60 31D9     3802          OC    DEV,CLEAR         TIME OUT ON NMTN               CCT48040
2F4E  D250 1499     3803          STB   STAT,ERRSTA                                      CCT48050
2F52  C850 3032     3804          LHI   R5,C'02'          ERROR 02                       CCT48060
2F56  4050 14E0     3805          STH   R5,ERRNO                                         CCT48070
2F5A  41F0 0E86     3806          BAL   R15,ERRDS                                        CCT48080
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SUBROUTINES

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2F5E  4300 0A9E  3807          B      OPTIN                                          CCT48090
2F62  0110 3328  3808  W1EXIT  LM     R1,RSAVE1                                      CCT48100
2F66  030D       3809          BR     R13                                            CCT48110
                 3810  *                                                             CCT48120
                 3811  * ************************************************************ CCT48130
                 3812  * SUBROUTINE WAIT4                                            * CCT48140
                 3813  *        THIS ROUTINE WAITS FOR BUSY TO DROP UNDER TIMED      * CCT48150
                 3814  *        CONDITION. IF IT TIMES OUT, THE TEST IS ABORTED.     * CCT48160
                 3815  *        IF AN ERROR CONDITION IS DETECTED, THE ROUTINE       * CCT48170
                 3816  *        WILL RETURN AT 0(R13). NORMAL RETURN IS AT           * CCT48180
                 3817  *        4(R13).                                              * CCT48190
                 3818  *        CALLING SEQUENCE:                                    * CCT48200
                 3819  *        BAL    R13,WAIT4                                     * CCT48210
                 3820  *        B      ERROR              ABNORMAL RETURN            * CCT48220
                 3821  *        NEXT   INSTRUCTION        NORMAL RETURN              * CCT48230
                 3822  * ************************************************************ CCT48240
                 3823  *                                                             CCT48250
2F68  9D65       3824  WAIT4   SSR    DEV,STAT                                       CCT48260
2F6A  4210 2FC6  3825          BTC    1,MTDU             DU?                         CCT48270
2F6E  438D 0004  3826          BFC    8,4(R13)           BUSY = 0  -  EXIT           CCT48280
2F72  D010 3328  3827          STM    R1,RSAVE1                                      CCT48290
2F76  2491       3828          LIS    R9,1                                           CCT48300
2F78  48A0 0A1C  3829          LH     R10,TIME                                       CCT48310
2F7C  2421       3830          LIS    R2,1                                           CCT48320
2F7E  C830 0064  3831          LHI    R3,100                                         CCT48330
2F82  0711       3832          XHR    R1,R1                                          CCT48340
2F84  0788       3833  WX41    XHR    R8,R8                                          CCT48350
2F86  9D65       3834  WX42    SSR    DEV,STAT                                       CCT48360
2F88  4210 2FC6  3835          BTC    1,MTDU             DU?                         CCT48370
2F8C  4260 2FB8  3836          BTC    6,W4ER             FINISHED TOO SOON?          CCT48380
2F90  4380 2FBE  3837          BFC    8,W4EXIT           BUSY=0 - EXIT               CCT48390
2F94  41F0 1136  3838          BAL    R15,TSTBRK                                     CCT48400
2F98  C180 2F86  3839          BXLE   R8,WX42                                        CCT48410
2F9C  C110 2F84  3840          BXLE   R1,WX41                                        CCT48420
2FA0  DE60 31D9  3841          OC     DEV,CLEAR                                      CCT48430
2FA4  D250 1499  3842          STB    STAT,ERRSTA                                    CCT48440
2FA8  C800 3033  3843          LHI    R0,C'03'           ERROR 03                    CCT48450
2FAC  4000 14E0  3844          STH    R0,ERRNO                                       CCT48460
2FB0  41F0 0E86  3845          BAL    R15,ERRDS                                      CCT48470
2FB4  4300 288C  3846          B      CHKEND1                                        CCT48480
2FB8  D110 3328  3847  W4ER    LM     R1,RSAVE1          ERROR RETURN                CCT48490
2FBC  030D       3848          BR     R13                                            CCT48500
2FBE  D110 3328  3849  W4EXIT  LM     R1,RSAVE1          NORMAL RETURN.              CCT48510
2FC2  430D 0004  3850          B      4(R13)                                         CCT48520
                 3851  *                                                             CCT48530
                 3852  * ************************************************************ CCT48540
                 3853  *        DEVICE UNAVAILABLE:                                  CCT48550
                 3854  *        RETURN TO INPUT COMMAND MODE                         CCT48560
                 3855  * ************************************************************ CCT48570
                 3856  *                                                             CCT48580
2FC6  DE70 31D8  3857  MTDU    OC     SELCH,STOP                                     CCT48590
2FCA  D250 1499  3858          STB    STAT,ERRSTA                                    CCT48600
2FCE  C850 3254  3859          LHI    R5,MSG03           MAGNETIC TAPE DEVICE UNAVAILABLE CCT48610
2FD2  4050 14A8  3860          STH    R5,ISITERR                                     CCT48620
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SUBROUTINES

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2FD6  41F0 101E  3861          BAL   R15,PRINT          PRINT MESSAGE                    CCT48630
2FDA  41E0 0F02  3862          BAL   RET,ERRDS1         PRINT DEVICE # AND STATUS        CCT48640
2FDE  0755       3863          XHR   R5,R5                                               CCT48650
2FE0  4050 14A8  3864          STH   R5,ISITERR                                          CCT48660
2FE4  4300 0A9E  3865          B     OPTIN                                               CCT48670
                 3866  *                                                                 CCT48680
                 3867  *                                                                 CCT48690
                 3868  * ***************************************************************** CCT48700
                 3869  * SUBROUTINE EOF                                                   CCT48710
                 3870  *       THIS ROUTINE WRITE AN EOF. IF EOT IS DETECTED AFTER      * CCT48720
                 3871  *       THE OPERATION, IT REWINDS AND WRITE AGAIN.               * CCT48730
                 3872  *       CALLING SEQUENCE                                         * CCT48740
                 3873  *       BAL   R14,EOF                                            * CCT48750
                 3874  * ***************************************************************** CCT48760
                 3875  *                                                                * CCT48770
2FE8  41D0 2FFC  3876  EOF     BAL   R13,SENMTN         CHECK FOR NMTN=1                 CCT48780
2FEC  DE60 31E5  3877          OC    DEV,WEOF           WRITE AN EOF                     CCT48790
2FF0  030E       3878          BR    R14                NO EOT - EXIT                    CCT48800
                 3879  *                                                                * CCT48810
                 3880  * ***************************************************************** CCT48820
                 3881  * SUBROUTINE RWND                                                * CCT48830
                 3882  *       THIS ROUTINE REWINDS THE TAPE                            * CCT48840
                 3883  *       RETURNS ON R14                                           * CCT48850
                 3884  * ***************************************************************** CCT48860
                 3885  *                                                                * CCT48870
2FF2  41D0 2FFC  3886  RWND    BAL   R13,SENMTN         CHECK FOR NMTN=1                 CCT48880
2FF6  DE60 31DC  3887          OC    DEV,REWD           REWIND                           CCT48890
2FFA  030E       3888          BR    R14                RETURN                           CCT48900
                 3889  *                                                                * CCT48910
                 3890  * ***************************************************************** CCT48920
                 3891  * SUBROUTINE SENMTN                                              * CCT48930
                 3892  *       THIS ROUTINE WAITS FOR NMTN=1                            * CCT48940
                 3893  *       RETURNS ON R13                                           * CCT48950
                 3894  * ***************************************************************** CCT48960
                 3895  *                                                                * CCT48970
2FFC  9D65       3896  SENMTN   SSR   DEV,STAT                                          CCT48980
2FFE  C350 0010  3897          THI   STAT,X'10'         NMTN=1?                          CCT48990
3002  2233       3898          BZS   SENMTN             NO - LOOP CHECK                  CCT49000
3004  41F0 1136  3899          BAL   R15,TSTBRK         CHECK BREAK KEY                  CCT49010
3008  030D       3900          BR    R13                                                CCT49020
                 3901  * ***************************************************************** CCT49030
                 3902  * SUBROUTINE WRTBLK                                              * CCT49040
                 3903  *       THIS ROUTINE WAITS FOR NMTN, AND WRITES A RECORD         * CCT49050
                 3904  *       USING WB MODE                                            * CCT49060
                 3905  *       THE STARTING & ENDING ADDRESSES OF THE RECORD ARE        * CCT49070
                 3906  *       STORED IN R11 & R12 RESPECTIVELY                         * CCT49080
                 3907  * ***************************************************************** CCT49090
                 3908  *                                                                * CCT49100
300A  41D0 2FFC  3909  WRTBLK  BAL   R13,SENMTN         CHECK FOR NMTN=1                 CCT49110
300E  DE60 31DF  3910          OC    DEV,WRITE          DEVICE WRITE MODE                CCT49120
3012  966B       3911          WBR   DEV,R11            WRITE RECORD BLOCK MODE          CCT49130
3014  030E       3912          BR    R14                RETURN                           CCT49140
                 3913  * ***************************************************************** CCT49150
                 3914  * SUBROUTINE RDBLK                                               CCT49160
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SUBROUTINES

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                                3915  *        THIS ROUTINE READS A RECORD IN WB MODE. THE STARTING    *        CCT49170
                                3916  *        & ENDING ADDRESSES ARE ASSUMED TO BE IN R11 & R12       *        CCT49180
                                3917  *        RESPECTIVELY.                                           *        CCT49190
                                3918  * ********************************************************************        CCT49200
                                3919  *                                                                 *        CCT49210
3016  41D0 2FFC                 3920  RDBLK    BAL     R13,SENMTN          CHECK FOR NMTN=1                    CCT49220
301A  DE60 31DE                 3921           OC      DEV,READ            DEVICE READ MODE                    CCT49230
301E  976B                      3922           RBR     DEV,R11             READ RECORD BLOCK MODE              CCT49240
3020  030E                      3923           BR      R14                 RETURN                              CCT49250
                                3924  * ********************************************************************        CCT49260
                                3925  * SUBROUTINE BKSP                                                 *        CCT49270
                                3926  *        THIS ROUTINE WAITS FOR NMTN, AND DO A BACKSPACE         *        CCT49280
                                3927  *        IT MUST NOTED THAT THIS ROUTINE CANNOT BE CALLED        *        CCT49290
                                3928  *        AT    BOT                                               *        CCT49300
                                3929  * ********************************************************************        CCT49310
                                3930  *                                                                 *        CCT49320
3022  41D0 2FFC                 3931  BKSP     BAL     R13,SENMTN          CHECK FOR NMTN=1                    CCT49330
3026  DE60 31DD                 3932           OC      DEV,BKSPAC          BACK-SPACE                          CCT49340
302A  030E                      3933           BR      R14                 RETURN                              CCT49350
                                3934  * ********************************************************************        CCT49360
                                3935  * SUBROUTINE WRTSEL                                               *        CCT49370
                                3936  *        THIS ROUTINE WRITES A RECORD WITH SELCH MODE.           *        CCT49380
                                3937  *        THE STARTING & ENDING ADDRESSES OF THE RECORD           *        CCT49390
                                3938  *        ARE ASSUMED TO BE IN R11 & R12 RESPECTIVELY             *        CCT49400
                                3939  * ********************************************************************        CCT49410
302C  41D0 2FFC                 3940  WRTSEL   BAL     R13,SENMTN          CHECK FOR NMTN=1                    CCT49420
3030  DE70 31D8                 3941           OC      SELCH,STOP          STOP SELCH                          CCT49430
3034  987B                      3942           WHR     SELCH,R11           STARTING ADDRESS                    CCT49440
3036  987C                      3943           WHR     SELCH,R12           ENDING ADDRESS                      CCT49450
3038  DE60 31DF                 3944           OC      DEV,WRITE           DEVICE WRITE MODE                   CCT49460
303C  DE70 31DA                 3945           OC      SELCH,GOWRT         SELCH GO & WRITE                    CCT49470
3040  030E                      3946           BR      R14                 RETURN                              CCT49480
                                3947  * ********************************************************************        CCT49490
                                3948  * SUBROUTINE RDSEL                                               *        CCT49500
                                3949  *        THIS ROUTINE READS A RECORD IN THE SELCH MODE. THE      *        CCT49510
                                3950  *        STARTING & ENDING ADDRESSES ARE ASSUMED TO BE IN        *        CCT49520
                                3951  *        R11 & R12 RESPECTIVELY.                                 *        CCT49530
                                3952  * ********************************************************************        CCT49540
                                3953  *                                                                 *        CCT49550
3042  41D0 2FFC                 3954  RDSEL    BAL     R13,SENMTN          CHECK FOR NMTN=1                    CCT49560
3046  DE70 31D8                 3955           OC      SELCH,STOP          STOP SELCH                          CCT49570
304A  987B                      3956           WHR     SELCH,R11           STARTING ADDRESS                    CCT49580
304C  987C                      3957           WHR     SELCH,R12           ENDING ADDRESS                      CCT49590
304E  DE60 31DE                 3958           OC      DEV,READ            DEVICE READ MODE                    CCT49600
3052  DE70 31DB                 3959           OC      SELCH,GORD          SELCH GO & READ                     CCT49610
3056  030E                      3960           BR      R14                 RETURN                              CCT49620
                                3961  *                                                                 *        CCT49630
                                3962  * ********************************************************************        CCT49640
                                3963  * SUBROUTINE WRTD                                                 *        CCT49650
                                3964  *        THIS ROUTINE WRITES A RECORD IN THE WD MODE.            *        CCT49660
                                3965  *        THE STARTING & ENDING ADDRESSES OF THE RECORD ARE       *        CCT49670
                                3966  *        STORED IN R11 & R12 RESPECTIVELY.                       *        CCT49680
                                3967  * ********************************************************************        CCT49690
                                3968  *                                                                 *        CCT49700
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SUBROUTINES

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3058  41D0 2FFC  3969  WRTD    BAL   R13,SENMTN        WAIT FOR NMTN=1                CCT49710
305C  DE60 31DF  3970          OC    DEV,WRITE                                        CCT49720
3060  9D65       3971  WRTD1   SSR   DEV,STAT                                         CCT49730
3062  2091       3972          BTBS  9,1               BSY OR DU=1?                   CCT49740
3064  DA6B 0000  3973          WD    DEV,0(R11)        WRITE DATA                     CCT49750
3068  C5B0 000C  3974          CLHI  R11,R12                                          CCT49760
306C  038E       3975          BNLR  R14                                              CCT49770
306E  26B1       3976          AIS   R11,1                                            CCT49780
3070  2208       3977          BS    WRTD1                                            CCT49790
                 3978  *                                                             *CCT49800
                 3979  ***************************************************************CCT49810
                 3980  * SUBROUTINE RDD                                              *CCT49820
                 3981  *       THIS ROUTINE READS A RECORD IN WD MODE. THE STARTING  *CCT49830
                 3982  *       & ENDING ADDRESSES ARE ASSUMED TO BE IN R11 & R12     *CCT49840
                 3983  *       RESPECTIVELY.                                         *CCT49850
                 3984  ***************************************************************CCT49860
                 3985  *                                                             *CCT49870
3072  41D0 2FFC  3986  RDD     BAL   R13,SENMTN        WAIT FOR NMTN=1                CCT49880
3076  DE60 31DE  3987          OC    DEV,READ                                         CCT49890
307A  9D65       3988  RDD1    SSR   DEV,STAT                                         CCT49900
307C  2091       3989          BTBS  9,1               BSY OR DU=1                    CCT49910
307E  DB6B 0000  3990          RD    DEV,0(R11)        READ DATA                      CCT49920
3082  038E       3991          BNLR  R14                                              CCT49930
3084  26B1       3992          AIS   R11,1                                            CCT49940
3086  2206       3993          BS    RDD1                                             CCT49950
                 3994  *                                                             CCT49960
                 3995  ***************************************************************CCT49970
                 3996  * SUBROUTINES SKFW & SKRV                                     *CCT49980
                 3997  *       THIS ROUTINE SKIPS A FILE PASS AN EOF                 *CCT49990
                 3998  ***************************************************************CCT50000
                 3999  *                                                             *CCT50010
3088  41D0 2FFC  4000  SKFW    BAL   R13,SENMTN        CHECK FOR NMTN=1               CCT50020
308C  DE60 31E0  4001          OC    DEV,SKIPF         SKIP EOF FORWARD               CCT50030
3090  030E       4002          BR    R14                                              CCT50040
3092  41D0 2FFC  4003  SKRV    BAL   R13,SENMTN        CHECK FOR NMTN=1               CCT50050
3096  DE60 31E1  4004          OC    DEV,SKIPR         SKIP EOF REVERSE               CCT50060
309A  030E       4005          BR    R14                                              CCT50070
                 4006  *                                                             *CCT50080
                 4007  ***************************************************************CCT50090
                 4008  *       ROUTINES TO CHECK VALID OPTION VALUES                 *CCT50100
                 4009  ***************************************************************CCT50110
                 4010  *                                                             *CCT50120
309C  0866       4011  ZERONE   LHR   R6,R6                                          CCT50130
309E  021C       4012          BMR   R12               NEGATIVE - REJECT              CCT50140
30A0  C560 0002  4013          CLHI  R6,2              ZERO OR ONE                    CCT50150
30A4  028F       4014          BLR   R15                                              CCT50160
30A6  030C       4015          BR    R12                                              CCT50170
30A8  C560 0004  4016  MODES   CLHI  R6,4             NO MORE THAN 3                 CCT50180
30AC  028F       4017          BLR   R15                                              CCT50190
30AE  030C       4018          BR    R12                                              CCT50200
30B0  C560 0100  4019  X256    CLHI  R6,X'100'         NO MORE THAN X'FF'             CCT50210
30B4  028F       4020          BLR   R15                                              CCT50220
30B6  030C       4021          BR    R12                                              CCT50230
30B8  C560 0002  4022  MIN2    CLHI  R6,2                                             CCT50240
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30BC  028C          4023          BLR   R12               LESS THAN 2 - REJECT            CCT50250
30BE  2301          4024          BS    X3FF                                              CCT50260
      0000 30C0     4025 XF0      EQU   *                                                 CCT50270
30C0  4560 32D6     4026 X3FF     CLH   R6,X400           NO MORE THAN X'400'             CCT50300
30C4  028F          4027          BLR   R15                                               CCT50310
30C6  030C          4028          BR    R12                                               CCT50320
30C8  0866          4029 DEVCHN   LHR   R6,R6                                             CCT50330
30CA  2235          4030          BZS   X3FF              ZERO?                           CCT50340
30CC  0755          4031          XHR   R5,R5                                             CCT50350
30CE  4050 31D6     4032          STH   R5,ONCE                                           CCT50360
30D2  2209          4033          BS    X3FF                                              CCT50370
30D4  C560 0006     4034 SCOP     CLHI  R6,6              NO MORE THAN 5                  CCT50380
30D8  028F          4035          BLR   R15                                               CCT50390
30DA  030C          4036          BR    R12                                               CCT50400
30DC  C560 0005     4037 LEVEL    CLHI  R6,5              NO MORE THAN 4                  CCT50410
30E0  038C          4038          BNLR  R12                                               CCT50420
30E2  D260 16A6     4039          STB   R6,INTLVL                                         CCT50430
30E6  D260 16A7     4040          STB   R6,INTLVL+1                                       CCT50440
30EA  D260 16A8     4041          STB   R6,INTLVL+2                                       CCT50450
30EE  030F          4042          BR    R15                                               CCT50460
30F0  C560 1000     4043 TIMCHK   CLHI  R6,X'1000'        NO MORE THAN X'FFF'             CCT50470
30F4  036C          4044          BNLR  R12                                               CCT50480
30F6  4060 0A1C     4045          STH   R6,TIME                                           CCT50490
30FA  030F          4046          BR    R15                                               CCT50500
                    4047 * *********************************************************      CCT50510
                    4048 * SUBROUTINE INIT                                          *      CCT50520
                    4049 *        THIS ROUTINE INITIALIZES THE TEST. IT IS CALLED BY *    CCT50530
                    4050 *        ETPE  IT CHECKS FOR FALSE SYNC FROM DEVICES REQUESTED. * CCT50540
                    4051 *        AND DO THE NORMAL HOUSE CLEANING.                 *      CCT50550
                    4052 *        IF THE TEST IS EXECUTED THE FIRST TIME AFTER LOADING, * CCT50560
                    4053 *        IT ALSO FORCES THE EXECUTION OF TEST 0 AND SET UP THE * CCT50570
                    4054 *        10MS TIMER CONSTANT                               *      CCT50580
                    4055 *                                                          *      CCT50590
                    4056 *        CALLING SEQUENCE:                                 *      CCT50600
                    4057 *        BAL   R15,INIT                                    *      CCT50610
                    4058 * *********************************************************      CCT50620
                    4059 *                                                            *    CCT50630
30FC  4850 15A2     4060 INIT     LH    R5,MODE+6         WHICH MODE?                     CCT50670
3100  2334          4061          BZS   SELCHK                                            CCT50680
3102  C550 0002     4062          CLHI  R5,2              SELCH MODE?                     CCT50690
3106  213B          4063          BNES  SETDEV                                            CCT50700
                    4064 *                                                                CCT50710
                    4065 *        CHECK FOR SELCH FALSE SYNC                              CCT50720
                    4066 *                                                                CCT50730
3108  4870 158A     4067 SELCHK   LH    SELCH,SELADR+6    LOAD SELCH ADDRESS              CCT50740
310C  4070 16B0     4068          STH   SELCH,DEVSADR                                     CCT50750
3110  4070 1496     4069          STH   SELCH,ERRDEV                                      CCT50760
3114  DE70 31D8     4070          OC    SELCH,STOP        STOP SELCH                      CCT50770
3118  4240 31AE     4071          BTC   4,FALSYN          INSTRUCTION TIMED OUT           CCT50780
                    4072 *                                                                CCT50790
                    4073 *        CHECK FOR DEVICE FALSE SYNC.                            CCT50800
                    4074 *                                                                CCT50810
311C  4860 1572     4075 SETDEV   LH    DEV,DEVADR+6      LOAD DEVICE ADDRESS             CCT50820
3120  4060 16B2     4076          STH   DEV,DEVSADR+2                                     CCT50830
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SUBROUTINES

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3124 4060 1496 4077          STH   DEV,ERRDEV                                  CCT50840
3128 DE60 31E4 4078          OC    DEV,DISARM        DISARM DEVICE             CCT50850
312C 4240 31AE 4079          BTC   4,FALSYN          INSTRUCTION TIMED OUT     CCT50860
3130 DE60 31D9 4080          OC    DEV,CLEAR         CLEAR DEVICE              CCT50870
3134 4860 157E 4081          LH    DEV,DV2ADR+6      GET SECOND DEVICE ADDRESS CCT50880
3138 4060 16B4 4082          STH   DEV,DEVSADR+4                               CCT50890
313C 233D      4083          BZS   SETTRK                                      CCT50900
313E 4060 1496 4084          STH   DEV,ERRDEV                                  CCT50910
3142 DE60 31E4 4085          OC    DEV,DISARM        DISARM DEVICE             CCT50920
3146 4240 31AE 4086          BTC   4,FALSYN          INSTRUCTION TIMED OUT     CCT50930
314A DE60 31D9 4087          OC    DEV,CLEAR         CLEAR DEVICE              CCT50940
314E 41D0 2F0C 4088          BAL   R13,WAIT1                                   CCT50950
3152 DE60 31DC 4089          OC    DEV,REWD          REWIND TAPE               CCT50960
               4090 *                                                          CCT50970
               4091 *        RESET FLAGS                                       CCT50980
               4092 *                                                          CCT50990
3156 48C0 1596 4093 SETTRK   LH    R12,INLEVEL+6                               CCT51000
315A D2C0 16A6 4094          STB   R12,INTLVL                                  CCT51010
315E D2C0 16A7 4095          STB   R12,INTLVL+1                                CCT51020
3162 07CC      4096          XHR   R12,R12                                     CCT51030
3164 40C0 31C8 4097          STH   R12,EOTFLG                                  CCT51040
3168 40C0 31CE 4098          STH   R12,RTYCNT                                  CCT51050
316C 40C0 31CA 4099          STH   R12,ERRFLG                                  CCT51060
3170 40C0 31CC 4100          STH   R12,MODFLG                                  CCT51070
3174 40C0 31D4 4101          STH   R12,WLRS                                    CCT51080
3178 40C0 31D2 4102          STH   R12,DEV2                                    CCT51090
317C 40C0 31C6 4103          STH   R12,DE                                      CCT51100
3180 C850 2122 4104          LHI   R5,X'2122'        NORMAL READ & WRITE       CCT51110
3184 4050 31DE 4105          STH   R5,READ                                     CCT51120
3188 C850 3811 4106          LHI   R5,X'3811'        NORMAL BACKSPACE          CCT51130
318C 4050 31DC 4107          STH   R5,REWD                                     CCT51140
3190 41E0 2874 4108          BAL   R14,TRANST        CHECK FOR TRANSPARENT MODE CCT51150
               4109 *                                                          CCT51160
               4110 *        IF FIRST EXECUTION, FORCE TEST 0 AND SET UP TIMER CCT51170
               4111 *        CONSTANT                                          CCT51180
               4112 *                                                          CCT51190
3194 4850 31D6 4113          LH    R5,ONCE           EXECUTED ONCE BEFORE?     CCT51200
3198 023F      4114          BNZR  R15                                         CCT51210
319A 245F      4115          LIS   R5,15             NO -                      CCT51220
319C 4050 31D6 4116          STH   R5,ONCE           SET BYPASS FLAG           CCT51230
31A0 4850 1544 4117          LH    R5,TEST+8                                   CCT51240
31A4 C650 8000 4118          OHI   R5,X'8000'        FORCE EXECUTION OF TEST 0 CCT51250
31A8 4050 1544 4119          STH   R5,TEST+8                                   CCT51260
31AC 030F      4120          BR    R15                                         CCT51270
               4121 *                                                          CCT51280
               4122 *        ERROR 00  -  DEVICE FALSE SYNC.                   CCT51290
               4123 *                                                          CCT51300
31AE 9065      4124 FALSYN   SSR   DEV,STAT          SYNC ERROR                CCT51310
31B0 D250 1499 4125          STB   STAT,ERRSTA                                 CCT51320
31B4 C850 3030 4126          LHI   R5,C'00'          ERROR 00                  CCT51330
31B8 4050 1AE0 4127          STH   R5,ERRNO                                    CCT51340
31BC 41F0 0E86 4128          BAL   R15,ERRDS                                   CCT51350
31C0 4300 0A9E 4129          B     OPTIN                                       CCT51360
               4130 *                                                        *  CCT51370
```

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                       4132 * ************************************************************      CCT51390
                       4133 *        CONSTANTS                                           *      CCT51400
                       4134 * ************************************************************      CCT51410
                       4135 *                                                            *      CCT51420
31C4  00FF             4136 NBYTE    DC     X'FF'                                               CCT51430
31C6  0000             4137 DE       DC     0                                                   CCT51440
31C8  0000             4138 EOTFLG   DC     0                                                   CCT51450
31CA  0000             4139 ERRFLG   DC     0                                                   CCT51460
31CC  0000             4140 MODFLG   DC     0                                                   CCT51470
31CE  0000             4141 RTYCNT   DC     0                                                   CCT51480
31D0  0000             4142 NXTDEV   DC     0                                                   CCT51490
31D2  0000             4143 DEV2     DC     0                                                   CCT51500
31D4  0000             4144 WLRS     DC     0                                                   CCT51510
31D6  0000             4145 ONCE     DC     0                                                   CCT51520
31D8  0820             4146 STOP     DC     X'0820'                                             CCT51530
      0000 31D9        4147 CLEAR    EQU    STOP+1                                              CCT51540
31DA  1030             4148 GOWRT    DC     X'1030'                                             CCT51550
      0000 31DB        4149 GORD     EQU    GOWRT+1                                             CCT51560
31DC  3811             4150 REWD     DC     X'3811'                                             CCT51570
      0000 31DD        4151 BKSPAC   EQU    REWD+1                                              CCT51580
31DE  2122             4152 READ     DC     X'2122'                                             CCT51590
      0000 31DF        4153 WRITE    EQU    READ+1                                              CCT51600
31E0  2313             4154 SKIPF    DC     X'2313'                                             CCT51610
      0000 31E1        4155 SKIPR    EQU    SKIPF+1                                             CCT51620
31E2  8040             4156 DSABL    DC     X'8040'                                             CCT51630
      0000 31E3        4157 ENABL    EQU    DSABL+1                                             CCT51640
31E4  C030             4158 DISARM   DC     X'C030'                                             CCT51650
      0000 31E5        4159 WEOF     EQU    DISARM+1                                            CCT51660
31E6  1121             4160 BSEOF    DC     X'1121'                                             CCT51670
      0000 31E7        4161 RDEOF    EQU    BSEOF+1                                             CCT51680
31E8  00FF             4162 WDATA    DC     X'00FF',X'00FF'                                     CCT51690
31EA  00FF
31EC  00FF             4163          DC     X'00FF',X'00FF'                                     CCT51700
31EE  00FF
31F0  0102             4164          DC     X'0102',X'0408'                                     CCT51710
31F2  0408
31F4  1020             4165          DC     X'1020',X'4080'                                     CCT51720
31F6  4080
31F8  7FBF             4166          DC     X'7FBF',X'DFEF'                                     CCT51730
31FA  DFEF
31FC  F7FB             4167          DC     X'F7FB',X'FDFE'                                     CCT51740
31FE  FDFE
3200  AA55             4168          DC     X'AA55',X'AA55'                                     CCT51750
3202  AA55
3204  AA55             4169          DC     X'AA55',X'AA55'                                     CCT51760
3206  AA55
3208  F00F             4170          DC     X'F00F',X'F00F'                                     CCT51770
320A  F00F
320C  F00F             4171          DC     X'F00F',X'F00F'                                     CCT51780
320E  F00F
3210  0000             4172          DC     0                                                   CCT51790
3212  192A             4173 SQMASK   DC     X'192A',X'4C01',X'0204'                             CCT51800
3214  4C01
3216  0204
3218  090A             4174          DC     X'090A',X'0C00'                                     CCT51810
321A  0C00
```

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321C  44415441           4175  MSG01A   DC    C'DATA     DATA',X'D00'                       CCT51820
      20202020
      20204441
      5441
322A  0D00
322C  57524954           4176  MSG01B   DC    C'WRITTEN   READ',X'D00'                      CCT51830
      54454E20
      20205245
      4144
323A  0D00
323C  5245434F           4177  MSG02    DC    C'RECOVERY UNSUCCESSFUL',X'0A0D'               CCT51840
      56455259
      20554E53
      55434345
      53534655
      4C20
3252  0A0D
3254  44455649           4178  MSG03    DC    C'DEVICE OFF-LINE',X'D00'                      CCT51850
      4345204F
      46462D4C
      494E4520
3264  0D00
3266  454F5420           4179  MSG04    DC    C'EOT',X'D00'                                  CCT51860
326A  0D00
326C  454F4620           4180  MSG04A   DC    C'EOF',X'D00'                                  CCT51870
3270  0D00
3272  44415441           4181  MSG05    DC    C'DATA EXPT''D =   , READ =   .',X'D00'         CCT51880
      20455850
      54274420
      3D202020
      2C205245
      4144203D
      2020202E
328E  0D00
3290  4D4F4445           4182  MSG08    DC    C'MODE  ',X'D00'                               CCT51890
      2020
3296  0D00
3298  454E5445           4183  MSG09    DC    C'ENTER DATA:',X'D00'                          CCT51900
      52204441
      54413A20
32A4  0D00
32A6  5455524E           4184  MSG10    DC    C'TURN DEVICE OFF-LINE MOMENTARILY.',X'D00'    CCT51910
      20444556
      49434520
      4F46462D
      4C494E45
      204D4F4D
      454E5441
      52494C59
      2E20
32C8  0D00
32CA  5520               4185  ECMAR    DC    X'5520',C'ECMA',X'3655'                        CCT51920
32CC  45434D41
32D0  3655
      0000 32D1          4186  ENECMA   EQU   *-1                                            CCT51930
32D2  5500               4187  ECMAEF   DC    X'5500',X'5500'                                CCT51940
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32D4   5500
       0000 32D5       4188 ENEOF    EQU    *-1                                        CCT51950
32D6   0401            4189 X400     DC     X'401'                                     CCT51960
32D8   33EA            4190 WLIM     DC     WBUFF                                      CCT51970
32DA   33EB            4191          DC     WBUFF+1                                    CCT51980
32DC   37EA            4192 RLIM     DC     RBUFF                                      CCT51990
32DE   37EB            4193          DC     RBUFF+1                                    CCT52000
       0000 32DF       4194 LNZB     EQU    *-1                                        CCT52010
32E0                   4195 ERRSAVE  DS     64           REG STORAGE FOR ERROR ROUTINES CCT52030
3320                   4196 OPTBUF   DS     6            OPTION INPUT BUFFER           CCT52040
3326                   4197 IOSAVE   DS     2            USER'S I/O CHOICE             CCT52050
3328                   4198          ALIGN  4                                          CCT52051
3328                   4199 RSAVE1   DS     64                                         CCT52060
3368                   4200 RSAVE    DS     128          REGISTER SAVE AREA            CCT52065
33E8                   4201 SAVERTN  DS     2                                          CCT52070
33EA                   4202 WBUFF    DS     X'400'                                     CCT52080
37EA                   4203 RBUFF    DS     X'402'                                     CCT52090
       0000 3BEB       4204 LAST     EQU    *-1          LAST BYTE OF TEST PROGRAM     CCT52100
                       4205 *                                                          CCT52110
                       4206 *        CHKSUM                                            CCT52120
                       4207 *        (THE FOLLOWING CODE IS NOT PART OF THE TEST.)     CCT52125
                       4208 *                                                          CCT52130
                       4209          IF     0                                          CCT52140
3BEC                   4210 IF1      IF     1                                          CCT52150
                       4211 *                                                          CCT52160
3BEC   C810 0A00       4212 CHKSUM   LHI    R1,X'A00'    START OF CHKSUM GENERATE ROUTINE CCT52170
3BF0   2421            4213          LIS    R2,1                                       CCT52180
3BF2   C830 32DF       4214          LHI    R3,LNZB      R3 = ADR( LAST NON-ZERO BYTE ) CCT52190
3BF6   0744            4215          XHR    R4,R4                                      CCT52200
3BF8   D351 0000       4216 GEN      LB     R5,0(R1)                                   CCT52210
3BFC   0745            4217          XHR    R4,R5        R4 = CHKSUM                   CCT52220
3BFE   C110 3BF8       4218          BXLE   R1,GEN                                     CCT52230
3C02   C810 0080       4219          LHI    R1,X'80'                                   CCT52240
3C06   9E21            4220          OCR    R2,R1        DISPLAY : NORMAL MODE         CCT52250
3C08   9A24            4221          WDR    R2,R4        DISPLAY CHKSUM BYTE = X'MN' SAY CCT52260
3C0A   9411            4222          EXBR   R1,R1        R1 = X'8000'                  CCT52270
3C0C   9521            4223          EPSR   R2,R1        HALT PROCESSOR                CCT52280
3C0E   4300 3BEC       4224          B      CHKSUM                                     CCT52290
3C12                   4225          END                                               CCT52300
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NO ERRORS 0 SQUEZ PASSES

CALR03

			3301	3302	3304	3316	3318	3319	3361	3368	3379	3389	3400	3419	3461
			3466	3466	3474	3475	3478	3582	3608	3716	3722	3722	3728	3736	3752
			3758	3758	3763	3769	3783	3791	3791	3800	3808	3827	3832	3832	3840
			3847	3849	4212	4216	4218	4219	4220	4222	4222	4223			
R10		000A	989	989	990	1012	1014	1015	1281	1393	1511	1677	2157	2302	2412
			2413	2422	2439	2456	2524	2525	2526	2535	2652	2653	2654	2763	2772
			3283	3292	3363	3380	3388	3402	3463	3720	3756	3789	3829		
R11		000B	1283	1283	1285	1322	1785	1789	1881	1885	2060	2075	2076	2077	2085
			2102	2103	2104	2231	2234	2240	2777	2818	2842	3054	3058	3104	3104
			3106	3109	3110	3112	3173	3178	3179	3181	3185	3188	3250	3255	3256
			3258	3262	3265	3911	3922	3942	3956	3973	3974	3976	3990	3992	
R12		000C	204	225	324	327	351	387	604	608	610	1786	1882	2061	2062
			2077	2086	2087	2104	2232	2235	2246	2778	2819	2843	3055	3105	3107
			3108	3111	3112	3174	3179	3186	3251	3256	3263	3943	3957	3974	4012
			4015	4018	4021	4023	4028	4036	4038	4044	4093	4094	4095	4096	4096
			4097	4098	4099	4100	4101	4102	4103						
R13		000D	1266	1268	1272	1309	1313	1315	1326	1336	1338	1389	1418	1421	1423
			1430	1437	1439	1494	1496	1508	1514	1516	1527	1533	1540	1560	1643
			1665	1678	1691	1716	1770	1787	1797	1814	1822	1847	1863	1869	1873
			1883	1890	1911	1913	1923	1942	1959	1961	2000	2007	2021	2043	2063
			2088	2152	2158	2171	2173	2179	2186	2189	2220	2222	2291	2293	2322
			2326	2328	2332	2334	2407	2409	2427	2429	2433	2435	2448	2450	2452
			2514	2516	2518	2554	2556	2659	2661	2672	2678	2682	2689	2691	2703
			2711	2713	2719	2721	2732	2734	2844	2889	2901	2954	3001	3056	3069
			3085	3087	3131	3156	3176	3215	3216	3238	3253	3299	3312	3314	3316
			3390	3442	3454	3497	3529	3547	3554	3584	3592	3599	3646	3649	3665
			3715	3737	3751	3770	3809	3826	3848	3850	3876	3886	3900	3909	3920
			3931	3940	3954	3969	3986	4000	4003	4088					
R14		000E	244	280	325	328	330	349	354	359	566	617	620	625	1049
			1051	1068	1075	1079	1081	1094	1264	1265	1267	1270	1274	1282	1295
			1299	1300	1304	1307	1317	1331	1339	1341	1342	1345	1346	1349	1387
			1388	1390	1391	1403	1404	1408	1409	1413	1416	1425	1440	1442	1443
			1446	1447	1450	1488	1493	1497	1498	1499	1503	1509	1524	1529	1535
			1542	1547	1551	1553	1563	1564	1567	1573	1574	1640	1641	1655	1674
			1675	1690	1703	1713	1736	1745	1754	1793	1804	1812	1826	1844	1887
			1903	1906	1909	1927	1946	1984	2004	2027	2049	2066	2091	2111	2114
			2150	2151	2154	2155	2159	2161	2163	2164	2165	2166	2169	2181	2198
			2245	2255	2289	2290	2294	2297	2298	2305	2309	2310	2315	2316	2320
			2335	2336	2346	2347	2356	2357	2405	2406	2410	2414	2424	2431	2432
			2434	2437	2441	2443	2445	2446	2453	2455	2458	2459	2461	2512	2513
			2517	2520	2522	2531	2538	2542	2543	2547	2550	2552	2563	2564	2567
			2569	2570	2650	2651	2657	2658	2671	2673	2675	2685	2694	2698	2701
			2730	2741	2750	2771	2781	2786	2787	2788	2794	2804	2813	2822	2825
			2831	2849	2865	2877	2883	2891	2900	2910	2939	2940	2959	2976	2985
			2990	3028	3036	3038	3039	3068	3075	3090	3095	3114	3159	3163	3198
			3241	3303	3350	3369	3420	3448	3452	3498	3550	3556	3577	3579	3609
			3692	3696	3701	3878	3888	3912	3923	3933	3946	3960	3975	3991	4002
			4005	4108											
R15		000F	189	203	210	330	602	615	659	743	788	1050	1052	1069	1076
			1080	1082	1095	1523	1653	1654	1726	1767	1861	1996	2206	2215	2218
			2226	2229	2249	2254	2425	2454	2460	2472	2877	2481	2766	2790	2858
			2859	2885	2894	2913	3007	3010	3043	3067	3094	3286	3297	3309	3321
			3325	3330	3331	3366	3385	3408	3409	3410	3415	3417	3418	3451	3472
			3495	3528	3549	3555	3585	3589	3596	3607	3615	3648	3661	3664	3691
			3693	3700	3727	3734	3762	3768	3799	3806	3838	3845	3861	3899	4014
			4017	4020	4027	4035	4042	4046	4114	4120	4128				

R2 0002

100 104 111 119 125 157 159 160 164 166 194 195 241
242 246 246 247 249 250 254 256 281 287 289 290 292
314 315 405 408 409 416 418 419 420 421 423 425 426
433 434 434 435 481 482 484 495 521 528 533 538 549
550 551 570 578 582 590 593 634 647 648 650 650 651
651 653 660 679 680 694 714 722 726 729 732 733 802
803 807 897 939 941 941 942 953 955 956 959 963 972
973 985 986 991 1002 1029 1033 1045 1046 1047 1054 1064 1065
1066 1073 1074 1077 1088 1099 1100 1278 1288 1394 1500 2183 2214
2217 2532 2655 2924 2930 2931 3324 3324 3326 3327 3403 3403 3406
3411 3413 3464 3588 3588 3603 3604 3611 3611 3613 3616 3618 3618
3620 3620 3717 3719 3753 3755 3786 3788 3830 4213 4220 4221 4223

R3 0003

106 222 222 226 230 232 243 254 281 288 288 293 294
355 356 360 361 508 511 623 626 626 635 668 669 669
670 670 671 673 681 703 706 898 903 907 910 911 914
915 922 923 931 932 938 942 948 953 956 959 960 964
985 992 1030 1032 1033 1279 1323 1395 1501 1512 1539 2184 2534
2656 3465 3718 3754 3787 3831 4214

R4 0004

108 109 112 114 120 122 202 211 213 215 247 255 258
261 263 266 268 270 271 273 275 277 290 296 308 310
323 326 337 362 509 603 605 607 609 611 612 614 616
618 652 653 654 655 656 658 672 673 674 675 676 678
679 704 750 763 764 767 768 774 776 780 853 858 912
913 917 921 928 929 929 930 955 965 973 993 1263 1386
1487 1639 1666 1667 1669 1670 1692 1693 1695 1696 2149 2288 2404
2511 2649 2764 2765 2769 2770 2924 2925 2926 2928 2929 2970 3323
3404 3576 3578 3580 3581 3689 3690 3694 3695 4215 4215 4217 4221

R5 0005

112 114 115 115 117 118 120 122 188 224 226 252 252
253 264 264 279 279 282 289 345 350 428 453 472 503
506 514 563 572 584 595 652 713 720 789 924 925 950
951 999 999 1000 1004 1006 1011 1015 1083 1084 1276 1276 1277
1297 1297 1298 1302 1302 1303 1305 1319 1319 1320 1334 1398 1399
1401 1402 1406 1406 1407 1411 1411 1412 1414 1427 1427 1428 1435
1489 1490 1491 1492 1505 1505 1506 1544 1544 1545 1549 1549 1550
1558 1644 1646 1650 1652 1661 1662 1667 1670 1671 1672 1673 1679
1681 1686 1687 1693 1696 1700 1701 1708 1709 1731 1732 1743 1744
1752 1753 1766 1771 1778 1779 1781 1783 1784 1816 1820 1821 1837
1838 1865 1874 1875 1877 1879 1880 1904 1907 1914 1916 1921 1922
1940 1941 1982 1983 1998 1999 2017 2018 2019 2019 2020 2031 2031
2032 2033 2034 2039 2040 2041 2041 2042 2053 2053 2054 2055 2056
2058 2059 2079 2080 2083 2084 2106 2107 2167 2192 2192 2193 2194
2195 2213 2219 2224 2228 2295 2295 2296 2299 2300 2301 2307 2307
2308 2318 2324 2330 2331 2337 2338 2339 2344 2364 2364 2365 2419
2420 2528 2529 2540 2540 2541 2545 2545 2546 2548 2561 2662 2665
2667 2669 2680 2687 2696 2699 2708 2715 2717 2728 2746 2748 2751
2752 2753 2753 2754 2760 2762 2763 2767 2768 2770 2789 2846 2847
2857 2884 2932 2933 2952 2953 2955 2955 2956 2957 2958 2974 2974
2975 2984 2986 2987 2988 2989 3003 3029 3029 3030 3092 3093 3135
3136 3138 3153 3154 3217 3218 3220 3235 3236 3288 3289 3295 3296
3298 3310 3311 3313 3315 3317 3322 3344 3345 3346 3347 3348 3349
3382 3382 3384 3387 3388 3406 3496 3516 3518 3520 3522 3523 3525
3526 3527 3542 3543 3545 3546 3551 3551 3552 3553 3585 3594 3595
3601 3602 3610 3660 3662 3662 3663 3690 3695 3732 3733 3766 3767
3784 3784 3785 3804 3805 3859 3860 3863 3863 3864 4031 4031 4032
4060 4062 4104 4105 4106 4107 4113 4115 4116 4117 4118 4119 4126
4127 4216 4217

WX12	2F26	3800									
WX13	2F42	3797									
WX21	2E8A	3729									
WX22	2E8C	3728									
WX31	2EDE	3764									
WX32	2EE0	3763									
WX41	2F84	3840									
WX42	2F86	3839									
WXS1	2CC2	3473									
WXS2	2CC0	3474									
X256	30B0	1183	1184								
X3FF	30C0	1180	1182	4024	4030	4033					
X400	32D6	4026									
XF0	30C0	1177									
XI1	137C	1005									
XI16	1348	924									
XI2	138C	1003									
XI3	1388	1010	1020								
XI32	1356	938									
XI32A	1372	994									
XIERR	13C0	906	971	1001	1007	1016					
XIEXIT	13BE	1008									
ZERO1	124E	901									
ZERO2	125E	905									
ZERO3	126E	909									
ZERONE	309C	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194

```
      LH     R15,X'3A'          OLD LOC                                  CCT20800
2     STH    R14,OPSW                                                    CCT20810
      STH    R15,OLOC                                                    CCT20820
      LHI    R5,X'7FFF'                                                  CCT20830
VE    SIS    R5,1                                                        CCT20840
      BNZS   ABOVE                                                       CCT20850
      LHI    R0,X'080F'                                                  CCT20860
      SLHLS  R0,4               R0 = X'80F0'                             CCT20870
      EPSR   R2,R0              HALT PROCESSOR                           CCT20880
 WHEN EXE/RUN IS DEPRESSED, ERROR MSG IS PRINTED.                        CCT20890
      B      COMM1                                                       CCT20900
FLOATING-PT ARITH FAULT INT TRAP                                         CCT20910
                                                                         CCT20920
      EQU    *                                                           CCT20930
      LH     R14,X'28'          OLD PSW (16-BIT PROCESSOR)               CCT20940
      LH     R15,X'2A'          OLD LOC                                  CCT20950
RELOCATION/PROTECTION INT TRAP                                           CCT20960
                                                                         CCT20970
      EQU    *                                                           CCT20980
      LHI    R2,C'F5'                                                    CCT20990
      STH    R2,ERRNO           SET ERROR # F5                           CCT21000
      B      COMM                                                        CCT21010
**************************                                               CCT21020
ETPE CONSTANTS & STORAGE AREAS                                           CCT21030
                                                                         CCT21040
----------------------                                                   CCT21050
      ALIGN  8                                                           CCT21060
W32   DC     0                  OLD PSW STORAGE AREA                     CCT21070
W     DC     0                                                           CCT21080
      DC     0                                                           CCT21090
C     DC     0                                                           CCT21100
----------------------                                                   CCT21110
PSW   DC     0                  (FOR 32-BIT M/C ONLY)                    CCT21120
32    DC     0                  FLAG FOR 32-BIT M/C(NON-ZERO)            CCT21130
DEV   DC     0                  INTERRUPTING DEV ADR                     CCT21140
DEV   DC     0                  ERROR DEVICE #                           CCT21150
STA   DB     0                  INTERRUPTING DEV STATUS                  CCT21160
STA   DB     0                  ERRONEOUS STATUS                         CCT21170
DR    DB     2                  KEYBOARD DEV ADR                         CCT21180
M     DB     X'80'                                                       CCT21190
WRT   DB     X'AB'                                                       CCT21200
RD    DB     X'B9'                                                       CCT21210
ENRD  DB     X'79'                                                       CCT21220
S     DB     X'3B'                                                       CCT21230
OND   DB     X'78'                                                       CCT21240
RT    DB     X'80'                                                       CCT21250
WRT   DB     X'D8'                                                       CCT21260
RD    DB     X'A4'                                                       CCT21270
ENRD  DB     X'64'                                                       CCT21280
                                                                         CCT21290
NT    DC     NOBRK              KEYBOARD INT RETURN ADR                  CCT21300
TERR  DC     0                                                           CCT21310
RR    DC     0                                                           CCT21320
ST    DC     0                                                           CCT21330
P     DC     0                  TEMPORARY STORAGE LOC                    CCT21340
TST   DC     0                  HIGHEST SELECTED TEST #                  CCT21350
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