Program Number 06-238

SERIES 3200
COMMERCIAL INSTRUCTION SET
TEST PROGRAM

Consists of:

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SERIES 3200

COMMERCIAL INSTRUCTION SET TEST PROGRAM DESCRIPTION

1. GENERAL

The Series 3200 Commercial Instruction Set Test Program is designed to verify proper operation of the string handling instructions that generally are referred to as commercial instructions.

The default tests check the following instructions:

MNEMONIC	OP CODE	FUNCTION CODE	FORMAT
LPB	6F	---	RX
STBP	6E	---	RX
MVTU	8C	00	RXRX
MOVE	8C	01	RXRX
MOVEP	8C	21	RXRX
CPAN	8C	02	RXRX
CPANP	8C	22	RXRX
PMV	8C	03	RXRX
PMVA	8C	23	RXRX
UMV	8C	04	RXRX
UMVA	8C	24	RXRX

In addition, an optional test checks the interruptibility of the commercial instructions. This test is optional in the sense that a requirement to run the test is a source of interrupts provided by a precision interval clock on a universal clock interface. It is highly desirable to run this interrupt-driven test to fully check the operational capabilities of the commercial instruction set.

2. REQUIREMENTS

The following is a list of the minimum hardware requirements for this test:

- Series 3200 Processor.
- Minimum 128 KB of memory.
- Console device (see Appendix A). The default console is a Model 550 type video display terminal on the X'10'/X'11' PASLA type interface.
- Object input device or multimedia loader.

The following test programs should be run prior to loading this test:

o	Series 3200 Basic Confidence Test	06-230
o	Series 3200 Processor Test Part 1	06-228
o	Series 3200 Processor Test Part 2	06-229
o	Series 3200 19-221 MOS Memory Test	06-236

The following test programs are also applicable:

o	Common Universal Clock Test	06-133
o	Model 550 Terminal Test	06-243
o	Model 1100 Terminal Test	06-217
o	Model 1200 Terminal Test	06-218
o	Common Carousel 300 Test	06-183

3. LOADING PROCEDURES

The program object is self-loading using the 50 sequence shown below:

LOCATION	CONTENTS	
'0030'	0000	Illegal instruction
'0032'	0000	New PSW
'0034'	0000	
'0036'	0050	
'0050'	D500	Auto load instruction
'0052'	00CF	Final address = '00CF'
'0054'	4300	Branch
'0056'	0080	To address '0080'
		Object input specification
'0078'	1399	For HSPTR/P
'0078'	85A1	For 800 BPI mag tape
'0078'	C186	For floppy media disc

Execute from address '0030'.
To load the program using the multimedia diagnostic loader or the floppy diagnostic loader, refer to the appropriate loader program description.

4. PROGRAM EXECUTION

When the program is loaded, refer to Appendix A and set up the console and list device parameters if devices other than the standard system console are desired.

Select the program start address, X'A00', and begin execution. Observe that the following title is output to the console device:

```
Series 3200 Commercial Instruction Set Test      06-238 R00
*
```

4.1 Normal Testing

After the program title has been output, an asterisk (*) operator prompt character is output to indicate that the program is ready to receive operator commands (see Appendix B). To automatically execute all tests in the default sequence, type the following sequence:

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

As each test is begun, the message

```
TEST nn
```

is output. At the end of the entire test sequence, the message

```
END OF TEST
```

is output followed by an asterisk (*) operator prompt.

The following tests are executed in the default sequence:

TEST 1
The instruction LPB, load packed decimal string as binary (convert from decimal to binary), is tested.

TEST 2
The instruction STBP, store binary as packed decimal string, (convert from binary to decimal), is tested.

TEST 3
The instructions MOVE, move and pad, and MOVEP, move and pad with default pad, are tested.

TEST 4
The instructions CPAN, compare alphanumeric, and CPANP, compare alphanumeric with default pad, are tested.

TEST 5
The instructions PMV, pack and move (convert unpacked decimal string to packed decimal string), and PMVA, pack and move absolute (forced positive result), are tested.

TEST 6
The instructions UMV, unpack and move (convert packed decimal string to unpacked decimal string), and UMVA, unpack and move absolute (forced positive result), are tested.

TEST 7
The instruction MVTU, move translated until, is tested with and without translation.

This concludes the set of default tests. There is one more test--TEST 8---that should be run in order to verify complete capabilities of the commercial instruction set. This test requires a precision interval clock to provide the interrupt source for the test to check the interruptibility of all of the above instructions. To run TEST 8, it can be individually selected by typing:

```
TEST 8 CR
```

If the address of the PIC is other than the default address (see Appendix C), then modify the option entry by typing:

```
PICADR nn CR    , where nn = the PIC address.
```

To execute the test, type:

```
RUN CR
```

This test can also be included with the previous tests to run together in sequence by typing:

```
TEST 1,2,3,4,5,6,7,8 CR
```

4.2 Continuous Testing

A single test or sequence of tests can be repeated a number of times by using the LOOP option. For example, the following commands cause tests 1, 2, and 3 to be executed four times.

```
TEST 1,2,3 CR
LOOP 3 CR
RUN CR
```

Each test selected by the test option is executed four times; then the NO ERROR message is output, and the next test is executed. After all tests are executed, the END OF TEST message is output followed by the asterisk (*) operator prompt.

To cancel the loop option, enter the command

```
LOOP 0 CR
```

A single test or sequence of tests can be repeated continuously by using the CONTIN option. For example, the following commands cause all tests in the default sequence to be executed continuously.

```
TEST  CR
CONTIN  1  CR
RUN  CR
```

As each test begins, the message

```
TEST nn
```

is output. As each test is concluded, the message

```
NO ERROR
```

is output if appropriate. To terminate the CONTIN option, the user must press the break key on the system console. At that time the asterisk (*) operator prompt is output. To then cancel the CONTIN option, type

```
CONTIN  0  CR
```

The continuous mode can also be invoked by turning the list device off or off line after test execution has been started by the RUN command. All selected tests are run continuously. Obviously, there will be no message output at all.

When the list device is turned back on, the current running test is allowed to complete. Then the message

```
TOTAL    TOTERR
XXXX     YYYY
```

is output, where XXXX is the hexadecimal number of times that the test was repeated and YYYY is the hexadecimal number of errors that were encountered.

NOTE

If the value of either TOTAL or TOTERR exceed X'7FFF', test execution is aborted by way of a breakpoint instruction and control is given to the programmer's console. When execution is resumed from the breakpoint, the TOTAL and TOTERR messages are output.

5. ERROR PROCEDURES

In any of the default tests, the occurrence of an error condition causes an error message to be output. After the error message is output, the test resumes from either the point of error or the next sequential section of the test depending on the error involved. In the event of an error encountered in optional test 8, the test will respond as above with the exception on any errors involving interrupts or the setting of the IIP (interruptible instruction in progress) bit of the PSW, these errors aborting the test sequence. Sequential instruction testing in Test 8 provides results from one instruction to be used as the source data for the next instruction, so an early error may cause a chaining of errors from the first error encountered onward.

5.1 Recoverable Errors

In the case of a recoverable error, the program prints an error message on the output device as shown below, and the next section is executed as outlined above.

```
ERROR 0TXX

Where T = test number in which error was detected
      XX = error code within the subtest
```

Additional data may also be printed, such as expected and actual condition codes, expected and actual results, and first and second operands. The address of the instruction under test is always printed.

Refer to Appendix E for an explanation of error printouts.

5.2 Unrecoverable Errors

Unrecoverable errors are those associated with interrupts that occur unexpectedly or don't occur when they should. Upon detection of such an error, an error message is output as shown below and testing stops.

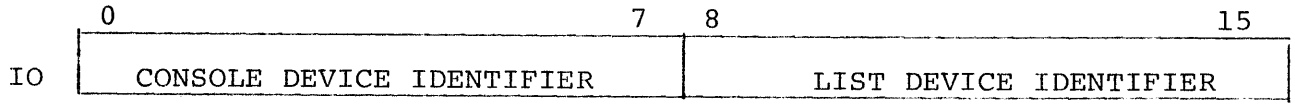
```
ERROR 0TFX

Where T = test number in which error was detected
      F = hexadecimal digit 'F'
      X = error code
```

Additional data may also be printed, such as program status word and location count value at the time of the error, error reason code, incremented location count value, etc.

APPENDIX A
USER DEVICE DEFINITION

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



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

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

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

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

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

APPENDIX B
COMMAND/OPTION INPUT

An asterisk (*) operator prompt is output to the console device to indicate that the program is waiting for user input. All option names must be typed in from the console, followed by a carriage return CR if there are no arguments or if default arguments are to be used. If arguments are required, the option name must be followed by a space, and then the desired argument or arguments separated by commas. A carriage return must be used to signal the end of every option/command input.

An invalid command/option name or option value causes a question mark (?) to be output, followed by a carriage return, line feed, and an asterisk prompt. If during command/option input, a mistake is made, the hash mark (#) can be typed to delete the entire command line. A carriage return, line feed, and new prompt is output. The left arrow (←) can be typed to delete the previously typed character, or a string of characters can be deleted by typing a left arrow for each character to be deleted. The backspace character and delete character are treated the same as a left arrow.

APPENDIX C
OPTION/COMMAND SUMMARY

Examine each option in the following list. If a default value is specified and is the value desired, no action is necessary. If the default value is not the value desired, the option MUST be entered. See Appendix B for option entry.

OPTION	DEFAULT VALUE	DESCRIPTION
TEST n,n	1,2,3,4,5,6,7	This command chooses the test or tests to be run.
LOOP n	0	Each test is repeated n + 1 $0 \leq n \leq$ X'7FFF'
CONTIN n	0	Enables the user to run all selected tests continuously until the break key causes return to the command mode. n=0 : normal execution n=1 : continuous execution
NOMSG n	0	Controls message output n=0 : all messages output n=1 : error messages only
PICADR nn	6C	This command selects PIC address.
INTLEV n	0	Sets interrupt level.
OPTION	N/A	This command causes the program to output all options with their current value.
RUN	N/A	This command causes testing to begin.
CON 1	N/A	This command results in a breakpoint instruction to return control to the system console.

APPENDIX D
EXPECTED RESULTS

SERIES 3200 COMMERCIAL INSTRUCTION SET TEST 06-238 R00

```
* TEST  CR
* OPTION  CR

TEST 1,2,3,4,5,6,7
LOOP   0
CONTIN 0
NOMSG  0
PICADR 6C
INTLEV 0

* RUN  CR

TEST 1
NO ERROR
TEST 2
NO ERROR
TEST 3
NO ERROR
TEST 4
NO ERROR
TEST 5
NO ERROR
TEST 6
NO ERROR
TEST 7
NO ERROR

END OF TEST

* TEST 8  CR
* RUN  CR

TEST 8
NO ERROR
END OF TEST
*
```

APPENDIX E
ERROR MESSAGES

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TTF1	ALL	32 BIT ARITHMETIC FAULT INT
TTF2	ALL	ILLEGAL INSTRUCTION INT
TTF3	ALL	MACHINE MALFUNCTION INT
TTF4	ALL	UNEXPECTED EXTERNAL DEVICE INT
TTF5	ALL	32 BIT RELOCATION/PROTECTION INT (MAC OR MMU)
TTF6	ALL	EXP EXTERNAL DEVICE INT IN WRONG INT LEVEL
TTF7	ALL	DATA FORMAT/ALIGNMENT FAULT INT

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT10	LPB	EXP CC = 0000 NOT RETURNED
TT11	LPB	EXP CC = 0010 NOT RETURNED
TF12	LPB	EXP CC = 0001 NOT RETURNED
TT13	LPB	EXP CC = 0100 NOT RETURNED
TT14	LPB	NO DATA FORMAT FAULT INT FOR INVALID SIGN
TT15	LPB	EXP REASON CODE OF 2 NOT RETURNED
TT16	LPB	NO DATA FORMAT FAULT INT FOR INVALID DATA
TT17	LPB	EXP REASON CODE OF 3 NOT RETURNED
TT18	LPB	RESULT OF INSTRUCTION INCORRECT

APPENDIX E (Continued)
ERROR MESSAGES

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT20	STBP	EXP CC = 0000 NOT RETURNED
TT21	STBP	EXP CC = 0010 NOT RETURNED
TT22	STBP	EXP CC = 0001 NOT RETURNED
TT23	STBP	RESULT OF INSTRUCTION INCORRECT

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT30	MOVE	EXP CC = 0000 NOT RETURNED
TT31	MOVE	CONTENTS REG 1 INCORRECT (FINAL ADDRESS)
TT32	MOVE	EXP CC = 0100 NOT RETURNED
TT33	MOVE	DATA ERROR
TT34	MOVE	INCORRECT PAD

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT40	CPAN	EXP CC = 0000 NOT RETURNED
TT41	CPAN	PAD CHAR DOES NOT MATCH CONTENTS REG 0
TT42	CPAN	EXP CC = 0010 NOT RETURNED
TT43	CPAN	DEFAULT PAD CHAR DOES NOT MATCH X'20'
TT44	CPAN	EXP CC = 1001 NOT RETURNED
TT45	CPAN	INCORRECT OFFSET RETURNED IN REG 1

APPENDIX E (Continued)
ERROR MESSAGES

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT50	PMV	EXP CC = 0000 NOT RETURNED
TT51	PMV	EXP CC = 0010 NOT RETURNED
TT52	PMV	EXP CC = 0001 NOT RETURNED
TT53	PMV	EXP CC = 0010 (FORCED) NOT RETURNED
TT54	PMV	SIGN ERROR
TT55	PMV	DIGIT ERROR
TT56	PMV	LEADING ZERO FILL NO GOOD
TT57	PMV	EXP CC = 0110 NOT RETURNED
TT58	PMV	EXP CC = 1010 NOT RETURNED

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT60	UMV	EXP CC = 0000 NOT RETURNED
TT61	UMV	EXP CC = 0010 NOT RETURNED
TT62	UMV	EXP CC = 0001 NOT RETURNED
TT63	UMV	EXP CC = 0010 (FORCED) NOT RETURNED
TT64	UMV	SIGN ERROR
TT65	UMV	DIGIT ERROR
TT66	UMV	LEADING ZERO (FILL CHAR = X'30') NO GOOD
TT67	UMV	EXP CC = 0110 NOT RETURNED
TT68	UMV	EXP CC = 1010 NOT RETURNED

APPENDIX E (Continued)
ERROR MESSAGES

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT70	MVTU	EXP CC = 0000 NOT RETURNED
TT71	MVTU	CONTENTS REG 1 INCORRECT (FINAL ADDRESS)
TT72	MVTU	EXP CC = 0100 NOT RETURNED
TT73	MVTU	EXP CC = 1000 NOT RETURNED
TT74	MVTU	EXP CC = 0000 NOT RETURNED - W/ TRANSLATION
TT75	MVTU	CONTENTS REG 1 INCORRECT (FINAL ADDRESS) - W/ TRANSLATION
TT76	MVTU	EXP CC = 0100 NOT RETURNED - W/ TRANSLATION
TT77	MVTU	EXP CC = 1000 NOT RETURNED - W/ TRANSLATION
TT78	MVTU	DATA ERROR - W/ TRANSLATION OR W/O TRANSLATION

APPENDIX E (Continued)
ERROR MESSAGES

ERROR NUMBER	ASSOCIATED INSTRUCTION	EXPLANATION OF ERROR
TT80	STBP	IIP FLAG = 0, NO PIC INT
TT81	STBP	PIC INT BUT IIP BIT NOT SET
TT82	STBP	IIP BIT NOT RESET IN CURRENT PSW
TT83	UMV	IIP FLAG = 0, NO PIC INT
TT84	UMV	PIC INT BUT IIP BIT NOT SET
TT85	UMV	IIP BIT NOT RESET IN CURRENT PSW
TT86	MOVE	IIP FLAG = 0, NO PIC INT
TT87	MOVE	PIC INT BUT IIP BIT NOT SET
TT88	MOVE	IIP BIT NOT RESET IN CURRENT PSW
TT89	CPAN	IIP FLAG = 0, NO PIC INT
TT8A	CPAN	PIC INT BUT IIP BIT NOT SET
TT8B	CPAN	IIP BIT NOT RESET IN CURRENT PSW
TT8C	MVTU	IIP FLAG = 0, NO PIC INT
TT8D	MVTU	PIC INT BUT IIP BIT NOT SET
TT8E	MVTU	IIP BIT NOT RESET IN CURRENT PSW
TT8F	PMV	IIP FLAG = 0, NO PIC INT
TT90	PMV	PIC INT BUT IIP BIT NOT SET
TT91	PMV	IIP BIT NOT RESET IN CURRENT PSW
TT92	LPB	IIP FLAG = 0, NO PIC INT
TT93	LPB	PIC INT BUT IIP BIT NOT SET
TT94	LPB	IIP BIT NOT RESET IN CURRENT PSW

APPENDIX F
RELATED DOCUMENTS

Test Program Listing	06-238M91A13
Model 3220 Processor User's Manual	25-683
Model 3240 Processor User's Manual	29-685

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

```
                   **CML3200                                                         CML00010
                   TSTCOM    PROG  SERIES 3200 COMMERCIAL INSTRUCTION SET TEST 06-238 R00   CML00020
                             CROSS                                                   CML00030
                             WIDTH 120                                               CML00040
                             NORX3                                                   CML00050
                             NOSQZ                                                   CML00060
                   *                                                                 CML00070
                   *        COPYRIGHT   PERKIN-ELMER     MAY 1979                    CML00080
                   *                                                                 CML00090
                   *                                                                 CML00100
                   *                                                                 CML00110
                   *         CONDITIONAL ASSEMBLY PARAMETERS TO FOLLOW               CML00120
                   *                                                                 CML00130
                   *               IN ALL CASES, 0 EQUALS DELETE                     CML00140
                   *                             1 EQUALS INCLUDE                    CML00150
                   *                                                                 CML00160
                   *               EXCEPT FOR $TIMER, 0 EQUALS DELETED               CML00170
                   *                                  1 EQUALS INCLUDE SOFTWARE      CML00180
                   *                                  2 EQUALS INCLUDE HARDWARE      CML00190
                   *                                  3 EQUALS INCLUDE BOTH          CML00200
                   *               TIMER LABEL IS "TIMER" FOR SOFTWARE AND           CML00210
                   *               HARDWARE, EXCEPT WHEN BOTH ARE INCLUDED.          CML00220
                   *               THEN LABELS ARE "STIMER" AND "HTIMER"             CML00230
                   *               RESPECTIVELY.                                     CML00240
                   *                                                                 CML00250
                   *               LABEL "CLOCK" MUST BE EQUAL TO THE LFC ADDRESS.   CML00260
                   *                                                                 CML00270
                   *                                                                 CML00280
                   *                                                                 CML00290
                   *                                                                 CML00300
0000 4500          PSWSAVE   EQU   PSWSAVEA+X'100'&X'FF00'                           CML00310
0000 4508          RSAVE     EQU   RSAVEA+X'100'&X'FF00'+X'08'                       CML00320
0000 0000          $R5BIN    EQU   0                                                 CML00330
0000 0000          $DECTAB   EQU   0                                                 CML00340
0000 0000          $DECHEX   EQU   0                                                 CML00350
0000 0000          $DECASC   EQU   0                                                 CML00360
0000 0000          $KBINT    EQU   0                                                 CML00370
0000 0001          $CLOCK    EQU   1                                                 CML00380
0000 0000          $DISPLAY  EQU   0                                                 CML00390
0000 0000          R0        EQU   0                                                 CML00400
0000 0001          R1        EQU   1                                                 CML00410
0000 0002          R2        EQU   2                                                 CML00420
0000 0003          R3        EQU   3                                                 CML00430
0000 0004          R4        EQU   4                                                 CML00440
0000 0005          R5        EQU   5                                                 CML00450
0000 0006          R6        EQU   6                                                 CML00460
0000 0007          R7        EQU   7                                                 CML00470
0000 0008          R8        EQU   8                                                 CML00480
0000 0009          R9        EQU   9                                                 CML00490
0000 000A          R10       EQU   10                                                CML00500
0000 000B          R11       EQU   11                                                CML00510
0000 000C          R12       EQU   12                                                CML00520
0000 000D          R13       EQU   13                                                CML00530
```

```
        0000 000E          54  R14      EQU   14                                                   CML00540
        0000 000E          55  RET      EQU   14                                                   CML00550
        0000 000F          56  R15      EQU   15                                                   CML00560
        0000 000F          57  LINK     EQU   15                                                   CML00570
                           58  *                                                                   CML00580
                           59  *  BOOTLOADER WITH CHKSUM                                           CML00590
                           60  *                                                                   CML00600
                           61           NOSQZ                                                      CML00610
000000I                    62           ORG   X'80'                                                CML00620
000080  2421               63           LIS   R2,1                                                 CML00630
000082  2303               64           BS    BOOT                                                 CML00640
000084  4500               65           DC    Z(PSWSAVE)      CURRENT PSW SAVE POINTER(32-BIT M/C)  CML00650
000086  4508               66           DC    Z(RSAVE)        REGISTER SAVE POINTER(32-BIT M/C)     CML00660
000088  C810 0A00          67  BOOT     LHI   R1,ORIGIN1      R1 = ADR( FIRST BYTE OF TEST PROG )   CML00670
00008C  C830 42AE          68           LHI   R3,LNZB+1       R3 = ADR( LAST NON-ZERO BYTE )        CML00680
000090  4030 0022          69           STH   R3,X'22'        REGISTER SAVE POINTER(16-BIT M/C)     CML00690
000094  2731               70           SIS   R3,1                                                 CML00700
000096  C860 00FF          71  MN       LHI   R6,X'00FF'      R6 = CHKSUM BYTE = X'MN'              CML00710
00009A  D340 0078          72           LB    R4,X'78'        INPUT DEV ADR                         CML00720
00009E  DE40 0079          73           OC    R4,X'79'                                             CML00730
0000A2  9D45               74  LEADER   SSR   R4,R5                                                CML00740
0000A4  2091               75           BTBS  9,1             DU,BSY                                CML00750
0000A6  9B45               76           RDR   R4,R5                                                CML00760
0000A8  0855               77           LDAR  R5,R5                                                CML00770
0000AA  2234               78           BZS   LEADER          IGNORE LEADER                         CML00780
0000AC  D251 0000          79  LOAD     STB   R5,0(R1)        STORE 1ST NON-ZERO & SUBSEQUENT BYTE  CML00790
0000B0  D351 0000          80           LB    R5,0(R1)        RELOAD DATA BYTE TO                   CML00800
0000B4  0765               81           XAR   R6,R5           GENERATE CHKSUM                       CML00810
0000B6  9481               82           EXBR  R8,R1                                                CML00820
0000B8  9828               83           WHR   R2,R8           DISPLAY MEMORY ADDRESS                CML00830
0000BA  9D45               84           SSR   R4,R5                                                CML00840
0000BC  2091               85           BTBS  9,1             DU,BSY                                CML00850
0000BE  9B45               86           RDR   R4,R5                                                CML00860
0000C0  C110 00AC          87           BXLE  R1,LOAD         LOAD TILL LAST BYTE                   CML00870
0000C4  9486               88           EXBR  R8,R6                                                CML00880
0000C6  9828               89           WHR   R2,R8           FINAL CHKSUM                          CML00890
0000C8  2478               90  LDWT     LIS   R7,8                                                 CML00900
0000CA  117C               91           SLLS  R7,12           R7 = X'8000'                          CML00910
0000CC  9557               92           EPSR  R5,R7           HALT PROCESSOR.                       CML00920
0000CE  2203               93           BS    LDWT                                                 CML00930
```

```
                                      SQUEZ                                                          CML00950
0000D0                                ORG   X'A00'                                                   CML00960
000A00   4300 0A60          ORIGIN1   B     STARTA              START HERE FOR 32-BIT PROCESSOR      CML00970
000A00                                IFZ   ADC-2                                                    CML00980
                            ORIGIN2   B     STARTA              START HERE FOR 16-BIT PROCESSOR      CML00990
                            ORIGIN3   B     START3              SPECIAL 32-BIT PROCESSOR START       CML01000
                            ORIGIN4   B     START4              SPECIAL 16-BIT PROCESSOR START       CML01010
                                      ELSF                                                           CML01020
000A04   4300 0A98          ORIGIN2   B     START3              SPECIAL START(S) - 32 BIT PROCESSOR  CML01030
000A08   4300 0A98                    B     START3                                                   CML01040
000A0C   4300 0A98                    B     START3                                                   CML01050
                                      ENDC                                                           CML01060
                            *                                                                        CML01070
                            *----------------------------                                            CML01080
                            *   TEST CONSTANTS                                *                      CML01090
                            *                                                                        CML01100
000A10   0101               IO        DC    X'0101'             I/O DEVICE(S) IDENTIFIER             CML01110
000A12   0010               PASLADR   DC    X'0010'             PALSA/PALM READ ADDRESS              CML01120
000A14   0011                         DC    X'0011'             PASLA/PALM WRITE ADDRES#S            CML01130
000A16   0002               CLIFADR   DC    X'0002'             CURRENT LOOP INTERFACE READ ADDRESS  CML01140
000A18   0002                         DC    X'0002'             CURRENT LOOP INTERFACE WRITE ADDRESS CML01150
000A1A   0062               LPADR     DC    X'0062'             DUMMY FOR LINE PRINTER               CML01160
000A1C   0062                         DC    X'0062'             WRITE ADDRESS                        CML01170
000A1E   0010               C300ADR   DC    X'0010'             CAROUSEL/PASLA READ ADDRESS          CML01180
000A20   0011                         DC    X'0011'             CAROUSEL/PASLA WRITE ADDRESS         CML01190
000A22   00C0               MICROBUS  DC    X'00C0'             MICROBUS READ ADDRESS                CML01200
000A24   00C0                         DC    X'00C0'             MICROBUS WRITE ADDRESS               CML01210
000A26   0000                         DCX   0                   PROVISION FOR SPECIAL DEVICE (READ)  CML01220
000A28   0000                         DCX   0                   WRITE ADDRESS                        CML01230
                            *                                                                        CML01240
                            **IO =    0101  FOR CRT ON PASLA                                         CML01250
                            *         0202  FOR TELETYPE, CAROUSEL 15/30                             CML01260
                            *         XX03  FOR LINE PRINTER                                         CML01270
                            *         0404  FOR CAROUSEL 300                                         CML01280
                            *         0505  FOR MICROBUS                                             CML01290
                            *                                                                        CML01300
                            *-----------------------------------------------------------             CML01310
                            *  ETPE IO COMMANDS                                                      CML01320
                            *                                                                        CML01330
000A2A   0000               CONRADR   DCX   0                   CONSOLE DEVICE READ ADDRESS          CML01340
000A2C   0000               CONWADR   DCX   0                   CONSOLE DEVICE WRITE ADDRESS         CML01350
                            *                                                                        CML01360
000A2E   0000               CONRD     DCX   0                   CONSOLE READ/WRITE COMMANDS          CML01370
         0000 0A2F          CONWRT    EQU   CONRD+1                                                  CML01380
000A30   0000               CON2ND    DCX   0                                                        CML01390
         0000 0A31          CONENRD   EQU   CON2ND+1                                                 CML01400
000A32   0000               CONCMD    DCX   0                   DUMMY HW AS POINTER                  CML01410
000A34   A1A3               CRTRD     DCX   A1A3                FOR CRT                              CML01420
000A36   EE61               CRT2ND    DCX   EE61                                                     CML01430
000A38   9498               CLIFRD    DCX   9498                *   CURRENT LOOP INTERFACE           CML01440
000A3A   0054               CLIF2ND   DCX   0054                                                     CML01450
000A3C   0080               LPWRT     DCX   0080                *   LINE PRINTER                     CML01460
000A3E   0000                         DCX   0                   DUMMY FOR LP                         CML01470
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000A40  A1A3                148  CARRD    DCX   A1A3              *   CAROUSEL 300                    CML01480
000A42  F060                149  CAR2ND   DCX   F060                                                  CML01490
000A44  8202                150  MREADC   DCX   8202              *   MICROBUS                        CML01500
000A46  0000                151           DCX   0                 DUMMY HW FOR MICROBUS           CML01510
                            152  *                                                                     CML01520
                            153  *-------------------------------------------------------------       CML01530
000A48  00                  154  CONRQ2S  DB    0                 CONSOLE REQUEST TO SEND CMD     CML01540
000A49  23                  155  CRTRQ2S  DB    X'23'             FOR CRT                         CML01550
000A4A  00                  156           DB    0                 *   DUMMY BYTE FOR CLI          CML01560
000A4B  00                  157           DB    0                 *   DUMMY BYTE FOR LP           CML01570
000A4C  23                  158  CARRQ2S  DB    X'23'             *   CAROUSEL 300                CML01580
000A4D  00                  159           DB    0                 *   DUMMY BYTE FOR MICROBUS     CML01590
000A4E                      160           DB    *                 (ALIGN ON HW BOUNDRY)           CML01600
000A4E  0140                161  TIME     DC    X'140'            CONSTANT FOR 1 MS DELAY(X'C8'-MOD70)  CML01610
000A50  0000                162           DCX   0                 RESERVED                        CML01620
000A52  70F0                163  PSW      DCX   70F0              PSW USED IN PROGRAM             CML01630
000A54  30F0                164  PSW2     DCX   30F0              PSW USED IN EXEC                CML01640
000A56  20F0                165  PSW3     DCX   20F0              WAIT/MMF PSW                    CML01650
000A58  0000                166           DCX   0                 RESERVED                        CML01660
000A5A  0000                167           DCX   0                 RESERVED                        CML01670
000A5C  0000                168           DCX   0                 RESERVED                        CML01680
000A5E  0000                169           DCX   0                 RESERVED                        CML01690
                            170  *-----------------------------                                       CML01700
                            171  *                                                                     CML01710
000A60  C810 4000           172  STARTA   LHI   R1,X'4000'        LOAD TEST VALUE                 CML01720
000A64  0A11                173           AAR   R1,R1             DOUBLE                          CML01730
000A66  211C                174           BMS   START2            16 BIT MACHINE                  CML01740
000A68  2410                175  START1   LIS   R1,0                                               CML01750
000A6A  4010 0030           176           STH   R1,X'30'          DISABLE INT AT PROCESSOR LEVEL  CML01760
000A6E  4820 0A54           177           LH    R2,PSW2                                           CML01770
000A72  4020 0032           178           STH   R2,X'32'          SELECT REG SET 15               CML01780
000A76  2521                179           LCS   R2,1                                              CML01790
000A78  4020 1732           180           STH   R2,MOD32          SET MODEL 32 PROCESSOR FLAG     CML01800
*000A7C 2306                181           B     ST                                                CML01810
000A7E  2410                182  START2   LIS   R1,0                                               CML01820
000A80  4010 1732           183           STH   R1,MOD32          RESET MOD 32 PROCESSOR FLAG     CML01830
000A84  4810 0A54           184           LH    R1,PSW2                                           CML01840
000A88  C820 0B18           185  ST       LHI   R2,START                                          CML01850
000A8C  4010 0034           186           STH   R1,X'34'                                          CML01860
000A90  4020 0036           187           STH   R2,X'36'          II INT NEW PSW LOC              CML01870
000A94  0000                188           DCX   0                 TAKE AN ILLEGAL INSTRUCTION INT  CML01880
000A96  2200                189           BS    *                 HALT IF II NOT TAKEN            CML01890
                            190  *                                                                     CML01900
000A98  4300 0A60           191  START3   B     STARTA           INSERT SPECIAL ROUTINE HERE     CML01910
000A98                      192           IFZ   ADC-2                                             CML01920
                            193  START4   B     STARTA           INSERT SPECIAL ROUTINE HERE     CML01930
                            194           ENDC                                                    CML01940
                            195  *                                                                     CML01950
000A9C  D310 0A10           196  STCON    LB    R1,IO            GET I/O IDENTIFIERS             CML01960
000AA0  D320 0A11           197           LB    R2,IO+1                                           CML01970
000AA4  2436                198           LIS   R3,6              IDENTIFIER CAN BE 1,2,3,4,5     CML01980
000AA6  0513                199           CLAR  R1,R3                                             CML01990
000AA8  2182                200           BLS   IO.OK1            BRANCH IF KB IDENTIFIER OK      CML02000
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 000AAA   2412                       LIS    R1,2              OTHERWISE FORCE IT TO BE TTY          CML02010
 000AAC   0523             IO.OK1    CLAR   R2,R3                                                   CML02020
*000AAE   2182                       BL     IO.OK2            SAME TEST FOR LIST DEVICE             CML02030
 000AB0   2422                       LIS    R2,2                                                    CML02040
 000AB2   D210 0A10        IO.OK2    STB    R1,IO             REESTABLISH VALUES                    CML02050
 000AB6   D220 0A11                  STB    R2,IO+1                                                 CML02060
 000ABA   D362 0A48                  LB     R6,CONRQ2S(R2)                                          CML02070
 000ABE   4060 1750                  STH    R6,PASFLG2        SET PASLA FLAG (LIST DEVICE)          CML02080
 000AC2   0866                       LDAR   R6,R6                                                   CML02090
*000AC4   2336                       BZ     IO.OK3            SKIP IF NOT PASLA                     CML02100
 000AC6   9122                       SLHLS  R2,2                                                    CML02110
 000AC8   4802 0A10                  LH     R0,IO(R2)                                               CML02120
 000ACC   DE02 0A32                  OC     R0,CONCMD(R2)     ISSUE 2ND COMMAND (TO LIST DEVICE)    CML02130
                           *                                                                        CML02140
 000AD0   41F0 1492        IO.OK3    BAL    LINK,SETKB        ESTABLISH KEYBOARD DEVICE (& IOSAVE)  CML02150
 000AD4   9310                       LBR    R1,R0             (R1) = 1,2,4,5 ; (R0 = KBIDENT)       CML02160
 000AD6   9112                       SLHLS  R1,2              (R1)=4,8,16,20                        CML02170
 000AD8   2712                       SIS    R1,2                                                    CML02180
 000ADA   4831 0A10                  LH     R3,IO(R1)                                               CML02190
 000ADE   4030 0A2A                  STH    R3,CONRADR        SET UP CONSOLE DEVICE READ ADDRESS    CML02200
 000AE2   4831 0A12                  LH     R3,IO+2(R1)                                             CML02210
 000AE6   4030 0A2C                  STH    R3,CONWADR        SET UP CONSOLE WRITE ADDRESS          CML02220
 000AEA   4821 0A32                  LH     R2,CONCMD(R1)                                           CML02230
 000AEE   4020 0A2E                  STH    R2,CONRD          SET UP R/W COMMANDS                   CML02240
 000AF2   4821 0A34                  LH     R2,CONCMD+2(R1)                                         CML02250
 000AF6   4020 0A30                  STH    R2,CON2ND         2ND CMD; ENABLE READ CMD              CML02260
 000AFA   9310                       LBR    R1,R0                                                   CML02270
 000AFC   D341 0A48                  LB     R4,CONRQ2S(R1)                                          CML02280
 000B00   D240 0A48                  STB    R4,CONRQ2S        CONSOLE REQUEST TO SEND               CML02290
 000B04   4040 174E                  STH    R4,PASFLG         SET PASLA FLAG (CONSOLE)              CML02300
 000B08   0844                       LDAR   R4,R4                                                   CML02310
 000B0A   2333                       BZS    IO.OK4            SKIP 2ND OC IF NOT PASLA DEVICE       CML02320
 000B0C   9422                       EXBR   R2,R2                                                   CML02330
 000B0E   9E32                       OCR    R3,R2             ISSUE 2ND COMMAND (TO CONSOLE)        CML02340
 000B10   DE30 0A2E        IO.OK4    OC     R3,CONRD          PUT CONSOLE IN READ MODE              CML02350
 000B14   9B33                       RDR    R3,R3             READ A DUMMY CHARACTER (SET BUSY)     CML02360
 000B16   030E                       BR     RET               RETURN                                CML02370
                           *                                                                        CML02380
 000B18   41E0 0A9C        START     BAL    RET,STCON         SETUP CONSOLE                         CML02390
 000B1C   41F0 14D4                  BAL    LINK,LCORE        SET UP LOW CORE                       CML02400
 000B20   2400                       LIS    R0,0                                                    CML02410
 000B22   4000 175E                  STH    R0,WASDU          RESET 'DEVICE UNAVAILABLE' FLAGS      CML02420
 000B26   4000 1760                  STH    R0,WASDU1                                               CML02430
 000B2A   41F0 12AE                  BAL    LINK,CRLF                                               CML02440
 000B2E   C850 18B0                  LHI    R5,TITLE                                                CML02450
 000B32   41F0 1222                  BAL    R15,PRINT         PRINT TEST PROGRAM TITLE              CML02460
 000B36   48F0 B770 =0042AA          LH     R15,DUSAVE        LOAD NOMSG VALUE                      CML02470
 000B3A   C5F0 0002                  CLHI   R15,2             DU??                                  CML02480
 000B3E   4330 0F9C                  BE     KEEP10                                                  CML02490
 000B42   4300 0B72                  B      OPTIN                                                   CML02500
                           *                                                                        CML02510
                           **FORCE PRINT                                                            CML02520
                           *                                                                        CML02530
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000B46  4850 B760 =0042AA     254  FORPRT   LH    R14,DUSAVE          LOAD VALUE                              CML02540
000B4A  40E0 B75E =0042AC     255            STH   R14,DUSAVE1         SAVE                                    CML02550
000B4E  24EE                  256            LIS   R14,R14                                                     CML02560
000B50  40E0 1758             257            STH   R14,ISITERR        FORCE PRINT                             CML02570
000B54  24E0                  258            LIS   R14,0                                                       CML02580
000B56  40E0 B750 =0042AA     259            STH   R14,DUSAVE         FORCE PRINT                             CML02590
000B5A  030F                  260            BR    LINK               RETURN                                  CML02600
                              261  *                                                                          CML02610
                              262  *  KEYBOARD INPUT ROUTINE                                                  CML02620
                              253  *                                                                          CML02630
000B5C  24F0                  264  OPTIN2   LIS   LINK,0                                                     CML02640
000B5E  40F0 1754             265            STH   LINK,BRKFLG          CLEAR FLAG                            CML02650
000B62  41F0 0B46             266            BAL   LINK,FORPRT          FORCE PRINT                           CML02660
000B66  C850 181C             267            LHI   R5,BRKMSG                                                   CML02670
000B6A  41F0 1222             268            BAL   LINK,PRINT                                                  CML02680
000B6E  41F0 0C08             269            BAL   LINK,RESPRT          RESTORE                               CML02690
000B72  41F0 0B46             270  OPTIN    BAL   LINK,FORPRT          FORCE PRINT                           CML02700
000B76  41F0 12AE             271            BAL   LINK,CRLF                                                   CML02710
000B7A  41F0 0C08             272            BAL   LINK,RESPRT          RESTORE                               CML02720
000B7E  4820 0A54             273  OPTIN1   LH    R2,PSW2                                                    CML02730
000B82  9512                  274            EPSR  R1,R2                NO INT. REG SET 15                    CML02740
000B84  41F0 1492             275            BAL   LINK,SETKB           ESTABLISH CONSOLE                     CML02750
000B88  D340 181A             276            LB    R4,AMSG              OUTPUT AN * TO INDICATE               CML02760
000B8C  41F0 12DE             277            BAL   LINK,OUTCHR          COMMAND MODE ESTABLISHED              CML02770
000B90  2541                  278            LCS   R4,1                 X'FF'                                 CML02780
000B92  41F0 12DE             279            BAL   LINK,OUTCHR                                                 CML02790
000B96  C8C0 139E             280            LHI   R12,QUESTN           SET UP R12 FOR EPR ROUTINE            CML02800
000B9A  C800 2020             281            LHI   R0,X'2020'           BLANK OUT COMMAND BUFFER              CML02810
000B9E  4000 B70C =0042AE     282            STH   R0,OPTBUF            WHICH WILL CONTAIN OPTION             CML02820
000BA2  4000 B70A =0042B0     283            STH   R0,OPTBUF+2          NAME                                  CML02830
000BA6  4000 B708 =0042B2     284            STH   R0,OPTBUF+4                                                 CML02840
000BAA  2410                  285            LIS   R1,0                 CLEAR OPTBUF INDEX                    CML02850
000BAC  41F0 136C             286  RDCHR    BAL   R15,GETCHR           GET A CHAR IN R4                      CML02860
000BB0  C540 0060             287            CLHI  R4,X'60'             UPPER CASE ALPHA ?                    CML02870
000BB4  2183                  288            BLS   RDCHAR0              BRANCH IF NO.                         CML02880
000BB6  CB40 0020             289            SHI   R4,X'20'             CONVERT TO LOWER CASE                 CML02890
000BBA  C540 0023             290  RDCHAR0  CLHI  R4,X'23'             IS IT # ?                             CML02900
*000BBE  2135                 291            BNE   RDCHR2               NO                                    CML02910
000BC0  41F0 0C08             292            BAL   LINK,RESPRT          RESTORE                               CML02920
000BC4  4300 0B72             293            B     OPTIN                                                       CML02930
000BC8  C540 005F             294  RDCHR2   CLHI  R4,X'5F'             LEFT ARROW, UNDERLINE, OR DELETE??    CML02940
000BCC  2334                  295            BES   RDCHAR1                                                    CML02950
000BCE  C540 0008             296            CLHI  R4,X'08'             BACK SPACE ?                          CML02960
000BD2  213C                  297            BNES  RDCHR1               NO, BRANCH                            CML02970
000BD4  2711                  298  RDCHAR1  SIS   R1,1                 YES, DECREMENT INDEX                  CML02980
*000BD6  2314                 299            BNM   RDCHR3                                                      CML02990
000BD8  41F0 0C08             300            BAL   LINK,RESPRT          RESTORE                               CML03000
000BDC  030C                  301            BR    R12                  UNDERFLOW EXIT                        CML03010
000BDE  C800 0020             302  RDCHR3   LHI   R0,X'20'                                                   CML03020
000BE2  D201 B6C8 =0042AE     303            STB   R0,OPTBUF(R1)                                             CML03030
000BE6  4300 0BAC             304            B     RDCHR                                                       CML03040
000BEA  C540 000D             305  RDCHR1   CLHI  R4,X'0D'             IS IT CR ?                            CML03050
000BEE  4330 0C12             306            BE    LOOKUP               YES, TRY MATCH                        CML03060
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 000BF2   C540 0020             307          CLHI  R4,X'20'          SPACE??                                  CML03070
*000BF6   233E                  308          BE    LOOKUP            TRY LOOKUP                               CML03080
 000BF8   C510 0006             309          CLHI  R1,6              7 CHARACTERS INPUT ?                     CML03090
 000BFC   038C                  310          BNLR  R12               IF YES, ERROR                            CML03100
 000BFE   D241 B6AC =0042AE     311          STB   R4,OPTBUF(R1)     STORE CURRENT BYTE                       CML03110
 000C02   2611                  312          AIS   R1,1              BUMP BUFFER INDEX                        CML03120
 000C04   4300 0BAC             313          B     RDCHR             READ NEXT CHARACTER                      CML03130
                                314  *                                                                        CML03140
                                315  **RESTORE PRINT PARAMETERS                                               CML03150
                                316  *                                                                        CML03160
 000C08   48E0 B6A0 =0042AC     317  RESPRT   LH    R14,DUSAVE1       LOAD VALUE                               CML03170
 000C0C   40E0 B69A =0042AA     318          STH   R14,DUSAVE        RESTORE                                  CML03180
 000C10   030F                  319          BR    LINK              RETURN                                   CML03190
                                320  *-----------------------------------                                     CML03200
                                321  *  OPTION MATCH ROUTINE                                                  CML03210
                                322  *                                                                        CML03220
 000C12   41F0 0C08             323  LOOKUP   BAL   LINK,RESPRT       RESTORE                                  CML03230
 000C16   C810 1838             324          LHI   R1,OPT            LOAD ADDRESS OF OPTION TABLE             CML03240
 000C1A   2430                  325  LOOK1    LIS   R3,0              CLEAR BUFFER INDEX                       CML03250
 000C1C   0861                  326          LDAR  R6,R1             SET OPTION WORD INDEX                    CML03260
 000C1E   4856 0000             327  LOOK2    LH    R5,0(R6)                                                   CML03270
 000C22   021C                  328          BMR   R12               IF MINUS, THEN NO MATCH = ERROR          CML03280
 000C24   4553 B686 =0042AE     329          CLH   R5,OPTBUF(R3)     COMPARE TO OPTBUF HW                     CML03290
*000C28   2333                  330          BE    LOOK3                                                      CML03300
 000C2A   261C                  331          AIS   R1,12                                                      CML03310
*000C2C   2209                  332          B     LOOK1                                                      CML03320
 000C2E   2632                  333  LOOK3    AIS   R3,2              TRY NEXT HW                              CML03330
 000C30   2562                  334          AIS   R6,2                                                       CML03340
 000C32   C530 0006             335          CLHI  R3,6              3 MATCHING HW FOUND ?                    CML03350
*000C36   208C                  336          BL    LOOK2                                                      CML03360
                                337  *                                                                        CML03370
 000C38   C510 188C             338          CLHI  R1,RUN            RUN COMMAND ?                            CML03380
 000C3C   4330 0E02             339          BE    RUNIT                                                      CML03390
 000C40   C510 1880             340          CLHI  R1,OPTION         OPTION CMD ?                             CML03400
 000C44   4230 0D5C             341          BNE   LOOK4             NO, LOOK FURTHER                         CML03410
                                342  *-----------------------------                                          CML03420
                                343  *  TO PROCESS INPUT COMMAND 'OPTION'                                     CML03430
                                344  *                                                                        CML03440
 000C48   41F0 0B46             345          BAL   LINK,FORPRT       FORCE PRINT                              CML03450
 000C4C   C540 000D             346          CLHI  R4,X'0D'          CR ?                                     CML03460
*000C50   233B                  347          BE    OPTEXX            YES, BRANCH                              CML03470
 000C52   41E0 116E             348          BAL   R14,OPTVAL        NO, GET OPTION DEV. PRINTOUT NUM.        CML03480
 000C56   C560 0006             349          CLHI  R6,6              IS DEVICE NUMBER VALID ?                 CML03490
 000C5A   2386                  350          BNLS  OPTEXX            NO, BRANCH                               CML03500
*000C5C   244A                  351          LHI   R4,X'0A'          YES, LOAD AN LF CHARACTER                CML03510
 000C5E   41F0 12DE             352          BAL   LINK,OUTCHR       WRITE IT TO THE CONSOLE                  CML03520
 000C62   D260 B64F =0042B5     353          STB   R6,IOSAVE+1       CHANGE THE LIST DEVICE                   CML03530
 000C66   4820 1888             354  OPTEXX   LH    R2,OPTION+8       CHECK FOR SPECIAL ROUTINE                CML03540
 000C6A   0232                  355          BNZR  R2                LINK TO ROUTINE                          CML03550
                                356  *                                                                        CML03560
 000C6C   C830 1838             357  OPTRTN   LHI   R3,TEST           RETURN HERE                              CML03570
 000C70   C8E0 0CF6             358          LHI   R14,OPTCMD8                                                CML03580
 000C74   41F0 12AE             359          BAL   LINK,CRLF                                                  CML03590
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000C78   2420                360  OPTCMD   LIS   R2,0              RESET COUNTER                          CML03600
000C7A   D342 1838           361  OPTCMD1  LB    R4,OPT(R2)        TO PRINT TEST                          CML03610
000C7E   41F0 12DE           362           BAL   LINK,OUTCHR                                                CML03620
000C82   2621                363           AIS   R2,1                                                      CML03630
000C84   C520 0006           364           CLHI  R2,6                                                      CML03640
*000C88  2087                365           BL    OPTCMD1                                                   CML03650
000C8A   C840 0020           366           LHI   R4,C' '                                                   CML03660
000C8E   41F0 12DE           367           BAL   LINK,OUTCHR         OUTPUT 1 SPACE                         CML03670
000C92   2450                368           LIS   R5,0                TO PRINT SELECTED TEST NUMBERS         CML03680
000C94   4050 1730           369           STH   R5,FIRST                                                  CML03690
000C98   4823 0006           370           LH    R2,6(R3)            FIRST TEST WORD                        CML03700
000C9C   2440                371  OPTCMD2  LIS   R4,0                START WITH TEST 0                      CML03710
000C9E   4040 B614 =0042B6   372           STH   R4,TEMP                                                   CML03720
000CA2   9121                373  OPTCMD3  SLHLS R2,1                                                      CML03730
000CA4   4380 0CD6           374           BNC   OPTCMD7                                                   CML03740
000CA8   4040 B60A =0042B6   375  OPTCMD4  STH   R4,TEMP             OPTION VALUE FOUND.                    CML03750
000CAC   4800 1730           376           LH    R0,FIRST            IS IT FIRST ?                          CML03760
*000CB0  2335                377           BZ    OPTCMD5                                                   CML03770
000CB2   C840 002C           378           LHI   R4,C','             NO, OUTPUT COMMA                       CML03780
000CB6   41F0 12DE           379           BAL   LINK,OUTCHR                                               CML03790
000CBA   40F0 1730           380  OPTCMD5  STH   LINK,FIRST                                                CML03800
000CBE   0855                381           LDAR  R5,R5               TEST VALUE FROM SECOND HW              CML03810
*000CC0  2335                382           BZ    OPTCMD6             NO                                     CML03820
000CC2   C840 0031           383           LHI   R4,C'1'             YES,OUTPUT '1'                         CML03830
000CC6   41F0 12DE           384           BAL   LINK,OUTCHR                                               CML03840
000CCA   4840 B5E8 =0042B6   385  OPTCMD6  LH    R4,TEMP             RESTORE R4                             CML03850
000CCE   D344 1780           386           LB    R4,HEXTAB(R4)       CONVERT                                CML03860
000CD2   41F0 12DE           387           BAL   LINK,OUTCHR         OUTPUT 0-F                             CML03870
000CD6   4840 B5DC =0042B6   388  OPTCMD7  LH    R4,TEMP             RESTORE                                CML03880
000CDA   2641                389           AIS   R4,1                INCREMENT TEST #                       CML03890
000CDC   4040 B5D6 =0042B6   390           STH   R4,TEMP                                                   CML03900
000CE0   C540 0010           391           CLHI  R4,16                                                     CML03910
000CE4   4280 0CA2           392           BL    OPTCMD3                                                   CML03920
000CE8   0855                393  OPTCMD71 LDAR  R5,R5               DONE ?                                 CML03930
000CEA   023E                394           BNZR  R14                                                       CML03940
000CEC   4823 0008           395           LH    R2,8(R3)            SECOND TEST WORD                       CML03950
000CF0   2451                396           LIS   R5,1                R5 = 1 FOR SECOND TEST HW              CML03960
000CF2   4300 0C9C           397           B     OPTCMD2                                                   CML03970
                             398  *----------------------------------                                       CML03980
                             399  *  TO OUTPUT OTHER OPTION NAMES & VALUES                                  CML03990
                             400  *                                                                         CML04000
000CF6   41F0 12AE           401  OPTCMD8  BAL   LINK,CRLF                                                 CML04010
000CFA   2461                402           LIS   R6,1                SET LINE COUNTER                       CML04020
000CFC   C820 1844           403           LHI   R2,OPT+12           R2 POINTS TO THE NAME                  CML04030
000D00   2436                404  OPTCMD9  LIS   R3,6                                                      CML04040
000D02   D342 0000           405  OPTCMD10 LB    R4,0(R2)                                                  CML04050
000D06   41F0 12DE           406           BAL   LINK,OUTCHR         OUTPUT OPTION NAME CHAR                CML04060
000D0A   2621                407           AIS   R2,1                                                      CML04070
000D0C   2731                408           SIS   R3,1                6 CHARACTERS OUTPUT ?                  CML04080
000D0E   2026                409           BPS   OPTCMD10            NO,LOOP                                CML04090
000D10   C840 0020           410           LHI   R4,C' '                                                   CML04100
000D14   41F0 12DE           411           BAL   LINK,OUTCHR         OUTPUT ONE SPACE                       CML04110
000D18   4852 0000           412           LH    R5,0(R2)            R5 = OPTION VALUE                      CML04120
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 000D1C   2404                        LIS   R0,4                                             CML04130
 000D1E   41F0 11D2                   BAL   LINK,R5HEX          WRITE OPTION VALUE IN HEX (4 DIGITS)  CML04140
 000D22   D300 0A10                   LB    R0,IC                                            CML04150
 000D26   2701                        SIS   R0,1                CONSOLE = CRT ?              CML04160
*000D28   213D                        BNZ   OPTCMD12            BRANCH: NO.                  CML04170
 000D2A   2661                        AIS   R6,1                INCREMENT LINE COUNTER.      CML04180
 000D2C   C560 0014                   CLHI  R6,20               PAGE FULL ?                  CML04190
 000D30   2189                        BLS   OPTCMD12            NO                           CML04200
 000D32   2460                        LIS   R6,0                INITIALIZE LINE COUNT        CML04210
 000D34   41F0 136C         OPTCMD11  BAL   LINK,GETCHR                                      CML04220
 000D38   274D                        SIS   R4,13               CR ?                         CML04230
 000D3A   4330 0B7E                   BZ    OPTIN1              TO ACCEPT NEXT COMMAND       CML04240
 000D3E   2643                        AIS   R4,3                LF ?                         CML04250
 000D40   2036                        BNZS  OPTCMD11            IF YES, PRINT NEXT PAGE      CML04260
 000D42   41F0 12AE         OPTCMD12  BAL   LINK,CRLF                                        CML04270
 000D46   41F0 13B8                   BAL   LINK,TSTBRK         EXIT IF 'BREAK' PRESSED.     CML04280
 000D4A   2626                        AIS   R2,6                                             CML04290
 000D4C   C520 1880                   CLHI  R2,OPTEND2          ALL PRINTING OPTIONS DONE ?  CML04300
 000D50   4280 0D00                   BL    OPTCMD9             NO,LOOP FOR NEXT ONE         CML04310
 000D54   41F0 0C08                   BAL   LINK,RESPRT         RESTORE                      CML04320
 000D58   4300 0B72                   B     OPTIN               TO ACCEPT NEXT COMMAND       CML04330
                            *------------------------------                                  CML04340
 000D5C   C510 1838         LOOK4     CLHI  R1,TEST             'TEST' OPTION ?              CML04350
 000D60   4330 0DB0                   BE    TESTOP                                           CML04360
                            *                                                                CML04370
                            *  TO PROCESS COMMANDS OTHER THAN 'TEST', 'OPTION'.              CML04380
                            *                                                                CML04390
 000D64   274D                        SIS   R4,13               OPT FOLLOWED BY CR ?         CML04400
 000D66   033C                        BZR   R12                 YES, ERROR                   CML04410
 000D68   41E0 116E                   BAL   R14,OPTVAL          GET OPTION VALUE IN R6       CML04420
 000D6C   274D                        SIS   R4,13               TERMINATED BY CR ?           CML04430
 000D6E   023C                        BNZR  R12                 IF NO, BRANCH                CML04440
 000D70   48E1 0008                   LH    R14,8(R1)           GET OPTION CHECK ROUTINE ADDRESS  CML04450
*000D74   2332                        BZ    LOOK5                                            CML04460
 000D76   01FE                        BALR  R15,R14             LINK OPTION CHECK ROUTINE    CML04470
                            *                                   RETURN HERE                  CML04480
 000D78   4061 0006         LOOK5     STH   R6,6(R1)            STORE OPTION VALUE           CML04490
 000D7C   4860 1862                   LH    R6,NOMSG+6          LOAD VALUE                   CML04500
 000D80   4060 B526 =0042AA           STH   R6,DUSAVE           SAVE TO FLAG                 CML04510
 000D84   4300 0B72                   B     OPTIN               TO ACCEPT NEXT COMMAND       CML04520
                            *                                                                CML04530
 000D88   C560 0003         ZERONE2   CLHI  R6,3                MAXIMUM+1                    CML04540
 000D8C   038C                        BNLR  R12                 ERROR RETURN                 CML04550
 000D8E   030F                        BR    R15                 OKAY                         CML04560
                            *                                                                CML04570
 000D90   C360 FFFE         ZERONE    THI   R6,X'FFFE'          IGNORE LSB                   CML04580
 000D94   033F                        BZR   R15                 OKAY                         CML04590
 000D96   030C                        BR    R12                 ERROR RETURN                 CML04600
                            *                                                                CML04610
 000D98   C560 0400         ADR       CLHI  R6,X'400'           (R6) = 10 BIT DEVICE ADDRESS CML04620
 000D9C   028F                        BLR   R15                 RETURN TO LOOK5              CML04630
 000D9E   030C                        BR    R12                                              CML04640
                            *                                                                CML04650
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000DA0   C560 000F          466  LEVEL    CLHI  R6,15              (R6) = INTERRUPT LEVEL HEX DIGIT      CML04660
000DA4   028F               467           BLR   R15                RETURN TO LOOKS                       CML04670
000DA6   030C               468           BR    R12                                                    CML04680
000DA8   030C               469           BR    R12                                                    CML04690
                            470  *                                                                      CML04700
000DAA   8800               471  STOP.IT  DCX   8800               BREAK POINT                           CML04710
000DAC   4300 0B18          472           B     START                                                  CML04720
                            473  *                                                                      CML04730
000DAC                      474           IFZ   $DECHEX-1                                              CML04740
                            475  *---------------------------------                                    CML04750
                            476  **TO CHECK THAT OPTION ENTRY IN R6 IS IN DECIMAL DIGITS.              CML04760
                            477  **TO CONVERT DECIMAL ENTRY IN R6 TO HEX VALUE AND                     CML04770
                            478  **STORE IT @ 0(R5).                                                   CML04780
                            479  *                                                                      CML04790
                            480  DECHEX   STM   R0,RSAVE                                              CML04800
                            481           LIS   R0,0                ACCUMULATOR                         CML04810
                            482           LIS   R1,0                TABLE INDEX                         CML04820
                            483           LIS   R2,0                SHIFT COUNTER                       CML04830
                            484  DECLP1   LDAR  R3,R6               COPY INPUT VALUE                    CML04840
                            485           SRAL  R3,0(R2)                                                CML04850
                            486           BZ    DECHEX1             TO RETURN                           CML04860
                            487           NHI   R3,15                                                   CML04870
                            488           CLHI  R3,10               VALID DECIMAL DIGIT ?               CML04880
                            489           BNLR  R12                 IF NOT, ERROR.                      CML04890
                            490           LDA   R7,DECTAB(R1)       1,10,...,10000                      CML04900
                            491  DECLP2   SIS   R3,1                                                    CML04910
                            492           BM    DECLP3                                                  CML04920
                            493           AAR   R0,R7               ADD IN CURRENT VALUE                CML04930
                            494           B     DECLP2                                                  CML04940
                            495  DECLP3   AIS   R2,4                INCREMENT SHIFTER                   CML04950
                            496           AIS   R1,ADC              INCREMENT POINTER                   CML04960
                            497           B     DECLP1                                                  CML04970
                            498  DECHEX1  STH   R0,0(R5)           STORE HEX OPTION VALUE              CML04980
                            499           LM    R0,RSAVE                                                CML04990
                            500           BR    LINK                RETURN                              CML05000
                            501           ENDC                                                          CML05010
                            502  *-----------------------------                                       CML05020
                            503  *  TEST OPTION PROCESS ROUTINE                                        CML05030
                            504  *                                                                      CML05040
000DB0   274D               505  TESTOP   SIS   R4,13               'TEST' FOLLOWED BY (CR) ?           CML05050
000DB2   213B               506           BNZS  TSTOP1                                                  CML05060
000DB4   4800 18F2          507           LH    R0,DEFTESTS         YES, SET TEST OPTION TO             CML05070
000DB8   4000 183E          508           STH   R0,TEST+6           FIRST TEST WORD                     CML05080
000DBC   4800 18F4          509           LH    R0,DEFTESTS+2       ALL DEFAULT TESTS IN PROGRAM        CML05090
000DC0   4000 1840          510           STH   R0,TEST+8           SECOND TEST WORD                    CML05100
000DC4   4300 0B72          511           B     OPTIN               TO ACCEPT NEXT COMMAND              CML05110
                            512  *                                                                      CML05120
000DC8   4850 18F8          513  TSTOP1   LH    R5,MAXTST                                               CML05130
000DCC   2470               514           LIS   R7,0                TEST BIT ACCUMULATORS               CML05140
000DCE   2480               515           LIS   R8,0                                                    CML05150
000DD0   41E0 116E          516  TSTOP2   BAL   R14,OPTVAL          GET OPTION VALUE IN R6              CML05160
000DD4   0556               517           CLAP  R5,R6                                                   CML05170
000DD6   028C               518           BLR   R12                 ERROR: INVALID TEST NUMBER          CML05180
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 000DD8   C560 0010                        CLHI  R6,16              R6 < 16 ?                        CML05190
 000DDC   2385                             BNLS  TSTOP3             NO                               CML05200
 000DDE   41E0 11AA                        BAL   R14,UNARY          GET UNARY OPERAND IN R3          CML05210
 000DE2   0673                             OAR   R7,R3              SET CURRENT BIT                  CML05220
*000DE4   2306                             B     TSTOP4                                              CML05230
 000DE6   CB60 0010               TSTOP3   SHI   R6,16              R6 = 0-F                         CML05240
 000DEA   41E0 11AA                        BAL   R14,UNARY                                           CML05250
 000DEE   0683                             OAR   R8,R3              SET CURRENT BIT                  CML05260
 000DF0   274D                    TSTOP4   SIS   R4,13              TERMINATED BY CR ?               CML05270
 000DF2   4230 0DD0                        BNZ   TSTOP2                                              CML05280
 000DF6   4070 183E                        STH   R7,TEST+6          STORE VALID SELECTED TESTS       CML05290
 000DFA   4080 1840                        STH   R8,TEST+8                                           CML05300
 000DFE   4300 0B72                        B     OPTIN              TO ACCEPT NEXT COMMAND           CML05310
                                  *-----------------------------                                     CML05320
                                  *                                                                  CML05330
 000E02   24F0                    RUNIT    LIS   LINK,0                                              CML05340
 000E04   40F0 1754                        STH   LINK,BRKFLG        CLEAR FLAG                       CML05350
 000E08   40F0 1756                        STH   LINK,PRTFLG        CLEAR FLAG                       CML05360
 000E0C   41F0 12AE                        BAL   LINK,CRLF                                           CML05370
 000E10   24F0                             LIS   R15,0                                               CML05380
 000E12   40F0 175E                        STH   R15,WASDU          RESET DU FLAGS                   CML05390
 000E16   40F0 1760                        STH   R15,WASDU1                                          CML05400
 000E1A   240F                             LIS   R0,15              TO FIND HIGHEST SELECTED TEST  NO.   CML05410
 000E1C   4810 1840                        LH    R1,TEST+8          CHECK SECOND TEST HW             CML05420
 000E20   1011                    KEEP1    SRLS  R1,1                                                CML05430
*000E22   218B                             BC    FOUND1             R0 = F-0                         CML05440
 000E24   2701                             SIS   R0,1                                                CML05450
*000E26   2213                             BNM   KEEP1              TRY NEXT DIGIT                   CML05460
 000E28   240F                             LIS   R0,15              INITIALIZE AGAIN                 CML05470
 000E2A   4810 183E                        LH    R1,TEST+6          CHECK FIRST TEST HW              CML05480
 000E2E   1011                    KEEP2    SRLS  R1,1                                                CML05490
*000E30   2186                             BC    FOUND2             R0 = F-0 = TEST #                CML05500
 000E32   2701                             SIS   R0,1                                                CML05510
*000E34   2213                             BNM   KEEP2              LOOP                             CML05520
 000E36   030C                             BR    R12                TEST NOT SELECTED                CML05530
 000E38   CA00 0010               FOUND1   AHI   R0,16              ADJUST TEST # FOR SECOND HW      CML05540
 000E3C   4000 175C               FOUND2   STH   R0,SELTST          HIGHEST SELECTED TEST NUMBER     CML05550
 000E40   4800 0A10                        LH    R0,IC                                               CML05560
 000E44   4000 B46C =0042B4                STH   R0,IOSAVE          RESTORE USER'S I/O CHOICE        CML05570
 000E48   41F0 12AE                        BAL   LINK,CRLF                                           CML05580
 000E4C   41F0 18A8                        BAL   LINK,INIT          LINK USER INITIALIZATION ROUTINE CML05590
                                  *                                                                  CML05600
                                  *                                                                  CML05610
                                  *  RESET TEST PARAMETERS                                           CML05620
                                  *                                                                  CML05630
 000E50   2400                    INITRET  LIS   R0,0               RETURN HERE FROM USER'S INIT ROUTINE  CML05640
 000E52   4000 1758                        STH   R0,ISITERR         RESET ERROR FLAG                 CML05650
 000E56   4000 1762                        STH   R0,TOTAL           RESET TOTAL                      CML05660
 000E5A   4000 1764                        STH   R0,TOTERR          RESET TOTERR                     CML05670
 000E5E   4000 175E                        STH   R0,WASDU           RESET WASDU                      CML05680
 000E62   C810 3030                        LHI   R1,C'00'                                            CML05690
 000E66   4010 1796                        STH   R1,MTESTNO         RESET THESE FLAGS TO C'00'       CML05700
 000E6A   4010 17A0                        STH   R1,ETESTNO                                          CML05710
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 000E6E   4010 17A2               STH   R1,ERRNO
 000E72   41F0 14D4               BAL   LINK,LCORE          SET UP LOW CORE
                          *
                          *  START SELECTION FROM TEST 0
                          *
 000E76   2400            KEEP3   LIS   R0,0
 000E78   4000 1766               STH   R0,BTESTNO          RESET BINARY TEST NUMBER
 000E7C   4000 176A               STH   R0,NEXTST           RESET NEXT TEST #
                          *
                          *  TO FIND THE NEXT SELECTED TEST.
                          *
 000E80   4820 176A       KEEP4   LH    R2,NEXTST           GET NEXT TEST #
 000E84   2408            KEEP41  LIS   R0,8
 000E86   910C                    SLHLS R0,12               R0 = X'8000'
 000E88   CC02 0000               SRHL  R0,0(R2)            R0 = NEXT TEST BIT
 000E8C   C520 0010               CLHI  R2,X'10'            NEXT TEST < 16
*000E90   2185                    BL    KEEP42
 000E92   4400 1840               NH    R0,TEST+8           LOOK AT TEST HW 2
*000E96   2137                    BNZ   KEEP5
*000E98   2304                    B     KEEP43
 000E9A   4400 183E       KEEP42  NH    R0,TEST+6           LOOK AT TEST HW 1
*000E9E   2133                    BNZ   KEEP5
 000EA0   2621            KEEP43  AIS   R2,1
*000EA2   220F                    B     KEEP41              LOOP FOR NEXT TEST #
 000EA4   4020 1766       KEEP5   STH   R2,BTESTNO          CURRENT TEST #
 000EA8   0812                    LDAR  R1,R2               R1 = TEST # IN BINARY
 000EAA   2621                    AIS   R2,1
 000EAC   4020 176A               STH   R2,NEXTST
 000EB0   2402                    LIS   R0,2                SET DIGITS TO PRINT = 2
 000EB2   C820 1796               LHI   R2,MTESTNO          R2 = A(MTESTNO)
 000EB6   41F0 11FA               BAL   LINK,HEXASC         STORE TEST # IN ASCII @ MTESTNO
 000EBA   4820 1796               LH    R2,MTESTNO
 000EBE   4020 17A0               STH   R2,ETESTNO          STORE TEST # IN ASCII @ ETESTNO
 000EC2   41F0 13B8               BAL   LINK,TSTBRK         TEST BREAK
 000EC6   C850 1790               LHI   R5,TSTMSG
 000ECA   41F0 1222               BAL   LINK,PRINT          PRINT 'TEST NN'
 000ECE   2400                    LIS   R0,0
 000ED0   4000 175A               STH   R0,NOERR            RESET ERROR FLAG
 000ED4   4000 1768               STH   R0,COUNT            RESET COUNT
 000ED8   4810 0A52       KEEP6   LH    R1,PSW              ENABLE INTERRUPTS
 000EDC   9501                    EPSR  R0,R1
 000EDE   4820 1766               LH    R2,BTESTNO          R2 = TEST #
 000EE2   1122                    SLLS  R2,LADC
 000EE4   5812 18FC               LDA   R1,TESTS(R2)
 000EE8   0301                    BR    R1                  GO TO TEST MODULE
                          *------------------------------
                          *
                          *  TEST MODULE END ROUTINE
                          *
 000EEA   4810 0A54       TSTEND  LH    R1,PSW2
 000EEE   9501                    EPSR  R0,R1               DISABLE INT @ PROCESSOR LEVEL
 000EF0   4800 1768               LH    R0,COUNT
 000EF4   2601                    AIS   R0,1                INCREMENT COUNT
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 000EF6   4000 1768        625         STH   R0,COUNT                                  CML06250
 000EFA   4500 184A        626         CLH   R0,LOOP+6          IF COUNT > LOOP,       CML06260
 000EFE   2385             627         BNLS  KEEP7              GO TO NEXT TEST MODULE CML06270
 000F00   41F0 13B8        628         BAL   LINK,TSTBRK        IF BREAK GO TO OPTIN   CML06280
 000F04   4300 0ED8        629         B     KEEP6              OTHERWISE, REPEAT SAME TEST CML06290
 000F08   4800 175A        630 KEEP7   LH    R0,NOERR           LOOK @ ERROR FLAG      CML06300
*000F0C   2135             631         BNZ   KEEP71                                    CML06310
 000F0E   C850 17B6        632         LHI   R5,NOERMSG                                CML06320
 000F12   41F0 1222        633         BAL   LINK,PRINT         PRINT "NO ERROR"       CML06330
 000F16   4810 1766        634 KEEP71  LH    R1,BTESTNO         GET TEST #             CML06340
 000F1A   4510 175C        635         CLH   R1,SELTST          IS THE LAST SELECTED TEST DONE ? CML06350
 000F1E   4280 0E80        636         BL    KEEP4              NO, GO SELECT NEXT TEST CML06360
                           637 *                                                       CML06370
                           638 *  ALL THE SELECTED TESTS HAVE NOW RUN                  CML06380
                           639 *                                                       CML06390
 000F22   4200 0F22        640 ABORT   NOP   *                  COME HERE TO ABORT TEST SEQUENCE. CML06400
 000F26   4810 0A54        641         LH    R1,PSW2                                   CML06410
 000F2A   9501             642         EPSR  R0,R1              PSW = 30F0             CML06420
 000F2A                    643         IFZ   $DISPLAY-1                                CML06430
                           644         BAL   LINK,DISPLAY       DISPLAY TOTAL & TOTERR CML06440
                           645         DC    Z(TOTAL),Z(TOTERR)                        CML06450
                           646         ENDC                                            CML06460
 000F2C   41F0 146C        647         BAL   LINK,TSTDU         RETURN WITH R1 = DU BIT CML06470
 000F30   4230 0F62        648         BNZ   KEEP9              IF DU, DISPLAY TOTAL   CML06480
 000F34   4810 1760        649         LH    R1,WASDU1          WAS IT EVER ?          CML06490
 000F38   4230 0F96        650         BNZ   KEEP92             YES, PRINT TOTAL, TOTERR CML06500
 000F3C   41F0 13B8        651         BAL   LINK,TSTBRK                               CML06510
 000F40   4810 1856        652         LH    R1,CONTIN+6        IF CONTIN = 1,         CML06520
 000F44   4230 0F66        653         BNZ   ABORT2             INCREMENT & GO TO TEST 0 CML06530
 000F48   41F0 1492        654         BAL   LINK,SETKB         KB DEVICE = LIST DEVICE CML06540
 000F4C   C850 180A        655         LHI   R5,EOTMSG                                 CML06550
 000F50   4050 1758        656         STH   R5,ISITERR         (FORCE PRINTING)       CML06560
 000F54   41F0 1222        657         BAL   LINK,PRINT         'END OF TEST'          CML06570
 000F58   24F0             658         LIS   R15,0                                     CML06580
 000F5A   40F0 1758        659         STH   R15,ISITERR        (RESET PRINTING FLAG)  CML06590
 000F5E   4300 0B72        660         B     OPTIN                                     CML06600
                           661 *                                                       CML06610
                           662 *---------------------------------                      CML06620
                           663 *  ROUTINE INCREMENTS,DISPLAYS & CHECKS 'TOTAL'         CML06630
                           664 *                                                       CML06640
 000F62   4010 175E        665 KEEP9   STH   R1,WASDU           SET 'WASDU' FLAG       CML06650
 000F66   4810 1762        666 ABORT2  LH    R1,TOTAL           INCREMENT TOTAL        CML06660
 000F6A   2611             667         AIS   R1,1                                      CML06670
 000F6C   4010 1762        668         STH   R1,TOTAL                                  CML06680
 000F70   4200 0000        669 KEEP91  NOP                                             CML06690
 000F70                    670         IFZ   $DISPLAY-1                                CML06700
                           671         BAL   LINK,DISPLAY       DISPLAY TOTAL & TOTERR CML06710
                           672         DC    Z(TOTAL),Z(TOTERR)                        CML06720
                           673         ENDC                                            CML06730
 000F74   4810 1762        674         LH    R1,TOTAL                                  CML06740
 000F78   C510 7FFF        675         CLHI  R1,X'7FFF'         TOTAL < MAX RETAINABLE ? CML06750
*000F7C   2389             676         BNL   HALT9                                     CML06760
 000F7E   4300 1766        677         LH    R0,BTESTNO         R0 = CURRENT TEST #    CML06770
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000F82   4500 175C          CLH   R0,SELTST          IS IT LAST TEST ?              CML06780
000F86   4280 0E80          BL    KEEP4              NO, GO TO NEXT TEST            CML06790
000F8A   4300 0E76          B     KEEP3              GO TO TEST 0                   CML06800
                     *                                                              CML06810
000F8E   C810 080F   HALT9  LHI   R1,X'080F'                                        CML06820
000F92   9114               SLHLS R1,4               (R1) = X'80F0'                 CML06830
000F94   9521               EPSR  R2,R1              HALT PROCESSOR                 CML06840
                     *                                                              CML06850
                     *  WHEN EXE/RUN IS PRESSED, PRINT TOTAL & TOTERR               CML06860
                     *                                                              CML06870
000F96   41F0 146C   KEEP92 BAL   LINK,TSTDU         SEE IF LIST DEV IS ON          CML06880
000F9A   2036               BNZS  HALT9              NO, HALT                       CML06890
000F9C   2400        KEEP10 LIS   R0,0                                              CML06900
000F9E   4000 175E          STH   R0,WASDU           RESET FLAG                     CML06910
000FA2   41F0 0B46          BAL   LINK,FORPRT        FORCE PRINT                    CML06920
000FA6   41F0 12AE          BAL   LINK,CRLF                                         CML06930
000FAA   C850 17A6          LHI   R5,TOTMSG                                         CML06940
000FAE   4050 1758          STH   R5,ISITERR                                        CML06950
000FB2   41F0 1222          BAL   LINK,PRINT         PRINT 'TOTAL   TOTERR'         CML06960
000FB6   2404               LIS   R0,4               TO PRINT 4 HEX DIGITS          CML06970
000FB8   4850 1762          LH    R5,TOTAL                                          CML06980
000FBC   41F0 11D2          BAL   LINK,R5HEX         PRINT TOTAL IN HEX             CML06990
000FC0   2434               LIS   R3,4                                              CML07000
000FC2   C840 0020          LHI   R4,C' '            SPACE                          CML07010
000FC6   41F0 12DE   KEEP101 BAL  LINK,OUTCHR        OUTPUT IT                      CML07020
000FCA   2731               SIS   R3,1                                              CML07030
*000FCC  2023               BP    KEEP101            4 TIMES                        CML07040
000FCE   2404               LIS   R0,4               TO PRINT 4 HEX DIGITS          CML07050
000FD0   4850 1764          LH    R5,TOTERR                                         CML07060
000FD4   41F0 11D2          BAL   LINK,R5HEX         PRINT TOTERR IN HEX            CML07070
000FD8   41F0 0C08          BAL   LINK,RESPRT        RESTORE                        CML07080
000FDC   4300 0B72          B     OPTIN              GO TO BEGINNING                CML07090
000FDC                      IFZ   $DISPLAY-1                                        CML07100
                     ***************************************                        CML07110
                     *                                                              CML07120
                     DISPLAY LIS  R0,1               DISPLAY PANEL ADDRESS          CML07130
                            OC    R0,INCR            INCREMENTAL MODE               CML07140
                            LH    R1,2(LINK)         GET 2ND PARAMETER ADDRESS      CML07150
                            LH    R1,0(R1)           GET DATA                       CML07160
                            EXBR  R1,R1                                             CML07170
                            WHR   R0,R1              WRITE DATA                     CML07180
                            LH    R1,0(LINK)         GET 1ST PARAMETER ADDRESS      CML07190
                            LH    R1,0(R1)           GET DATA                       CML07200
                            EXBR  R1,R1                                             CML07210
                            WHR   R0,R1              WRITE DATA TO D1,D2            CML07220
                            OC    R0,NORM            NORMAL MODE                    CML07230
                            B     4(LINK)            RETURN                         CML07240
                     *                                                              CML07250
                            ENDC                                                    CML07260
                     ***************************************                        CML07270
                     *                                                              CML07280
                     *  ERROR ROUTINES               (OVERRIDE NOMSG OPTION)        CML07290
                     *                                                              CML07300
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000FE0  D000 B314 =0042F8     731  ERR      STM   R0,ERRSAVE        STORE REGISTERS                        CML07310
000FE4  4120 1072             732            BAL   R2,ERRCOM        RETURN IF LIST DEVICE IS ON            CML07320
000FE8  41E0 10A6             733            BAL   RET,ERR1         PRINT 'ERROR TTNN'                     CML07330
000FEC  2400                  734  ERRCOM2   LIS   R0,0                                                    CML07340
000FEE  4000 1758             735            STH   R0,ISITERR       RESET ERROR FLAG                       CML07350
000FF2  4820 0A52             736            LH    R2,PSW                                                   CML07360
000FF6  9502                  737            EPSR  R0,R2                                                    CML07370
000FF8  D100 B2FC =0042F8     738            LM    R0,ERRSAVE        RESTORE REGISTERS                      CML07380
000FFC  030F                  739            BR    LINK              RETURN TO TEST                         CML07390
000FFE  D000 B2F6 =0042F8     740  ERRD     STM   R0,ERRSAVE        STORE REGISTERS                        CML07400
001002  4120 1072             741            BAL   R2,ERRCOM        RETURN IF LIST DEVICE IS ON            CML07410
001006  41E0 10A6             742            BAL   RET,ERR1         PRINT 'ERROR TTNN'                     CML07420
00100A  41E0 10B0             743            BAL   RET,ERRD1        PRINT 'DEV DDD'                        CML07430
00100E  4300 0FEC             744            B     ERRCOM2                                                  CML07440
001012  D000 B2E2 =0042F8     745  ERRS     STM   R0,ERRSAVE        STORE REGISTERS                        CML07450
001016  4120 1072             746            BAL   R2,ERRCOM        RETURN IF LIST DEVICE IS ON            CML07460
00101A  41E0 10A6             747            BAL   RET,ERR1         PRINT 'ERROR TTNN'                     CML07470
00101E  41E0 10C8             748            BAL   RET,ERRS1        PRINT 'STA SS'                         CML07480
001022  4300 0FEC             749            B     ERRCOM2                                                  CML07490
001026  D000 B2CE =0042F8     750  ERRDS    STM   R0,ERRSAVE        STORE REGISTERS                        CML07500
00102A  4120 1072             751            BAL   R2,ERRCOM        RETURN IF LIST DEVICE IS ON            CML07510
00102E  41E0 10A6             752            BAL   RET,ERR1         PRINT 'ERROR TTNN'                     CML07520
001032  41E0 10E0             753            BAL   RET,ERRDS1       PRINT 'DEV DDD STA SS'                 CML07530
001036  4300 0FEC             754            B     ERRCOM2                                                  CML07540
00103A  D000 B2BA =0042F8     755  ERRL     STM   R0,ERRSAVE        STORE REGISTERS                        CML07550
00103E  40F0 173E             756            STH   R15,CLOC         STORE TO LS HW                         CML07560
001042  10F8                  757            SRLS  R15,8            SCALE                                  CML07570
001044  10F8                  758            SRLS  R15,8            SCALE                                  CML07580
001046  40F0 173C             759            STH   R15,OLOC32       STORE TO MS HW                         CML07590
00104A  4120 1072             760            BAL   R2,ERRCOM        RETURN IF LIST DEVICE IS ON            CML07600
00104E  41E0 10A6             761            BAL   RET,ERR1         PRINT 'ERROR TTNN'                     CML07610
001052  41E0 1106             762            BAL   RET,ERRL1        PRINT 'LOC LLLL'                       CML07620
001056  4300 0FEC             763            B     ERRCOM2                                                  CML07630
00105A  D000 B29A =0042F8     764  ERRALL   STM   R0,ERRSAVE        STORE REGISTERS                        CML07640
00105E  4120 1072             765            BAL   R2,ERRCOM        RETURN IF LIST DEVICE IS ON            CML07650
001062  41E0 10A6             766            BAL   RET,ERR1         PRINT 'ERROR TTNN'                     CML07660
001066  41E0 10E0             767            BAL   RET,ERRDS1       PRINT 'DEV DDD STA SS'                 CML07670
00106A  41E0 1130             768            BAL   RET,ERRPL1       PRINT 'PSW PPPP  LOC LLLL'             CML07680
00106E  4300 0FEC             769            B     ERRCOM2                                                  CML07690
                              770  *                                                                       CML07700
                              771  *  COMMON ERROR ROUTINE                                                 CML07710
                              772  *                                                                       CML07720
001072  5020 177C             773  ERRCOM   STA   R2,COMRET         STORE RETURN ADDRESS                   CML07730
001076  4810 0A54             774            LH    R1,PSW2                                                  CML07740
00107A  9501                  775            EPSR  R0,R1            DISABLE INT. @ PROCESSOR LEVEL         CML07750
00107C  41F0 146C             776            BAL   LINK,TSTDU       GET LIST DEVICE DU BIT IN R1           CML07760
001080  2138                  777            BNZS  ERRCOM1          BRANCH IF OFF-LINE                     CML07770
001082  4020 1758             778            STH   R2,ISITERR       SET ERROR FLAG                         CML07780
001086  4020 175A             779            STH   R2,NOERR                                                 CML07790
00108A  5820 177C             780            LDA   R2,COMRET                                                CML07800
00108E  0302                  781            BR    R2               GO, PRINT ERROR MESSAGE                CML07810
                              782  *                                                                       CML07820
001090  4810 1764             783  ERRCOM1  LH    R1,TOTERR          LIST DEVICE IS OFF                     CML07830
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001094   2611                     AIS   R1,1                                                    CML07840
001096   4010 1764                STH   R1,TOTERR          INCREMENT TOTERR                     CML07850
00109A   C510 7FFF                CLHI  R1,X'7FFF'         TOTERR < MAX RETAINABLE ?            CML07860
00109E   4280 0F70                BL    KEEP91             NO, ABORT CURRENT TEST & GOTO NEXT   CML07870
0010A2   4300 0F8E                B     HALT9              YES, HALT PROCESSOR                  CML07880
                          *-----------------------------                                        CML07890
                          **MESSAGE PRINT ROUTINES         (DO NOT OVERRIDE NOMSG OPTION)       CML07900
                          *                                                                     CML07910
                          *  TO PRINT 'ERROR TTNN'                                              CML07920
                          *                                                                     CML07930
0010A6   C850 179A        ERR1    LHI   R5,ERRMSG                                               CML07940
0010AA   41F0 1222                BAL   LINK,PRINT         PRINT 'ERROR TTNN'                   CML07950
                          *                                TT = TEST #, NN = ERROR #            CML07960
0010AE   030E                     BR    RET                RETURN                               CML07970
                          *                                                                     CML07980
                          *  TO PRINT 'DEV DDD'                                                 CML07990
                          *                                                                     CML08000
0010B0   2403             ERRD1   LIS   R0,3               SET UP DIGITS = 3                    CML08010
0010B2   4810 1744                LH    R1,ERRDEV          R1 = ERROR DEV # IN BINARY           CML08020
0010B6   C820 17D4                LHI   R2,ASCIDEV2                                             CML08030
0010BA   41F0 11FA                BAL   LINK,HEXASC        CONVERT IT TO ASCII                  CML08040
0010BE   C850 17D0                LHI   R5,DEVMSG2                                              CML08050
0010C2   41F0 1222                BAL   LINK,PRINT         PRINT 'DEV DD'                       CML08060
0010C6   030E                     BR    RET                RETURN                               CML08070
                          *                                                                     CML08080
                          *  TO PRINT 'STA SS'                                                  CML08090
                          *                                                                     CML08100
0010C8   2402             ERRS1   LIS   R0,2               SET UP DIGITS = 2                    CML08110
0010CA   D310 1746                LB    R1,ERRSTA          R1 = ERROR STATUS                    CML08120
0010CE   C820 17CC                LHI   R2,ASCISTA                                              CML08130
0010D2   41F0 11FA                BAL   LINK,HEXASC        CONVERT IT TO ASCII                  CML08140
0010D6   C850 17C8                LHI   R5,STAMSG                                               CML08150
0010DA   41F0 1222                BAL   LINK,PRINT         PRINT 'STA SS'                       CML08160
0010DE   030E                     BR    RET                RETURN                               CML08170
                          *                                                                     CML08180
                          *  TO PRINT 'DEV DDD STA SS'                                          CML08190
                          *                                                                     CML08200
0010E0   2403             ERRDS1  LIS   R0,3               SET UP DIGITS = 3                    CML08210
0010E2   4810 1744                LH    R1,ERRDEV          R1 = ERROR DEV #                     CML08220
0010E6   C820 17C4                LHI   R2,ASCIDEV                                              CML08230
0010EA   41F0 11FA                BAL   LINK,HEXASC        CONVERT IT TO ASCII                  CML08240
0010EE   2402                     LIS   R0,2               SET UP DIGITS = 2                    CML08250
0010F0   D310 1746                LB    R1,ERRSTA          R1 = ERROR STATUS                    CML08260
0010F4   C820 17CC                LHI   R2,ASCISTA                                              CML08270
0010F8   41F0 11FA                BAL   LINK,HEXASC        CONVERT IT TO ASCII                  CML08280
0010FC   C850 17C0                LHI   R5,DEVMSG                                               CML08290
001100   41F0 1222                BAL   LINK,PRINT         PRINT 'DEV DD STA SS'                CML08300
001104   030E                     BR    RET                RETURN                               CML08310
                          *                                                                     CML08320
                          *  TO PRINT 'LOC LLLL'                                                CML08330
                          *                                                                     CML08340
001106   4800 1732        ERRL1   LH    R0,MOD32           GET FLAG                             CML08350
00110A   2333                     BZS   ERRL1A             NOT 32 BIT                           CML08360
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00110C  2406           837           LIS   R0,6              LOAD COUNT                          CML08370
00110E  2302           838           BS    ERRL1B            SKIP                                CML08380
001110  2404           839 ERRL1A    LIS   R0,4              LOAD COUNT                          CML08390
001112  4810 173C       840 ERRL1B    LH    R1,OLOC32         GET MS HW                           CML08400
001116  1118           841           SLLS  R1,8              SCALE                               CML08410
001118  1118           842           SLLS  R1,8              SCALE                               CML08420
00111A  4610 173E       843           OH    R1,OLOC           GET LS HW                           CML08430
00111E  C820 17EA       844           LHI   R2,ASCILOC                                          CML08440
001122  41F0 11FA       845           BAL   LINK,HEXASC       CONVERT IT TO ASCII                 CML08450
001126  C850 17E6       846           LHI   R5,LOCMSG                                           CML08460
00112A  41F0 1222       847           BAL   LINK,PRINT        PRINT 'LOC LLLL'                    CML08470
00112E  030E           848           BR    RET               RETURN                              CML08480
                       849 *                                                                     CML08490
                       850 *  TO PRINT 'PSW PPPP  LOC LLLL'                                      CML08500
                       851 *                                                                     CML08510
001130  4800 1732       852 ERRPL1    LH    R0,MOD32          GET FLAG                            CML08520
001134  2333           853           BZS   ERRPL1A           NOT 32 BIT                          CML08530
001136  2406           854           LIS   R0,6              LOAD COUNT                          CML08540
001138  2302           855           BS    ERRPL1B           SKIP                                CML08550
00113A  2404           856 ERRPL1A   LIS   R0,4              LOAD COUNT                          CML08560
00113C  4810 1738       857 ERRPL1B   LH    R1,OPSW32         GET MS HW                           CML08570
001140  1118           858           SLLS  R1,8              SCALE                               CML08580
001142  1118           859           SLLS  R1,8              SCALE                               CML08590
001144  4610 173A       860           OH    R1,OPSW           GET LS HW                           CML08600
001148  C820 17DE       861           LHI   R2,ASCIPSW                                          CML08610
00114C  41F0 11FA       862           BAL   LINK,HEXASC       CONVERT IT TO ASCII                 CML08620
001150  4810 173C       863           LH    R1,OLOC32         GET MS HW                           CML08630
001154  1118           864           SLLS  R1,8              SCALE                               CML08640
001156  1118           865           SLLS  R1,8              SCALE                               CML08650
001158  4510 173E       866           OH    R1,OLOC           GET LS HW                           CML08660
00115C  C820 17EA       867           LHI   R2,ASCILOC                                          CML08670
001160  41F0 11FA       868           BAL   LINK,HEXASC       CONVERT IT TO ASCII                 CML08680
001164  C850 17DA       869           LHI   R5,PSWMSG                                           CML08690
001168  41F0 1222       870           BAL   LINK,PRINT        PRINT 'PSW PPPP  LOC LLLL'          CML08700
00116C  030E           871           BR    RET               RETURN                              CML08710
                       872 ************************************                                  CML08720
                       873 *  TO OBTAIN OPTION VALUE IN R6    (16 BITS, TARGT 16)                CML08730
                       874 *                                                                     CML08740
00116E  2460           875 OPTVAL    LIS   R6,0              INITIALIZE ACCUMULATOR              CML08750
001170  41F0 136C       876           BAL   R15,GETCHR        GET A CHAR IN R4                    CML08760
001174  24FF           877 OPTVAL0   LIS   R15,15                                                CML08770
001176  D44F 1780       878 OPTVAL1   CLB   R4,HEXTAB(R15)     SCAN TABLE                          CML08780
00117A  2334           879           BES   OPTVAL2           MATCH                               CML08790
00117C  27F1           880           SIS   R15,1                                               CML08800
00117E  2214           881           BNMS  OPTVAL1                                             CML08810
001180  030C           882           BR    R12               ERROR; VALUE NOT IN TABLE.          CML08820
001182  1164           883 OPTVAL2   SLLS  R6,4              SHIFT LEFT 4                        CML08830
001184  066F           884           OAR   R6,R15            OR IN CURRENT DIGIT                 CML08840
001186  41F0 136C       885 OPTVAL3   BAL   R15,GETCHR        GET NEXT CHAR                       CML08850
00118A  C540 005F       886           CLHI  R4,X'5F'          IS IT LEFT ARROW ?                  CML08860
00118E  2334           887           BES   OPTVAL5           YES, BRANCH                         CML08870
001190  C540 0008       888           CLHI  R4,X'08'          BACK SPACE ?                        CML08880
001194  2133           889           BNES  OPTVAL4           NO, BRANCH                          CML08890
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001196   1064                890  OPTVAL5  SRLS  R6,4              THROW AWAY LAST HEX ENTRY          CML08900
001198   2209                891           BS    OPTVAL3                                             CML08910
00119A   C540 000D            892  OPTVAL4  CLHI  R4,13             EXIT IF CR                         CML08920
00119E   033E                893           BER   R14                                                 CML08930
0011A0   C540 002C            894           CLHI  R4,X'2C'          OR COMMA                           CML08940
0011A4   4230 1174            895           BNE   OPTVAL0           LOOP TO PROCESS                    CML08950
0011A8   030E                896           BR    R14               RETURN                             CML08960
                              897  *---------------------------------                                  CML08970
                              898  **TO CONVERT (R6) FROM BINARY TO UNARY PATTERN, IN R3               CML08980
                              899  *                                                                   CML08990
0011AA   2431                900  UNARY    LIS   R3,1               INITIALIZE                         CML09000
0011AC   C560 000F            901  UNARY1   CLHI  R6,15              DONE ?                             CML09010
0011B0   033E                902           BER   R14                 RETURN                           CML09020
0011B2   0A33                903           AAR   R3,R3               NO. SHIFT R3.                    CML09030
0011B4   2661                904           AIS   R6,1                INCREMENT COUNTER                CML09040
*0011B6  2205                905           B     UNARY1                                               CML09050
0011B8                       906           IFZ   $CLOCK-1                                             CML09060
                              907  *-----------------------------                                     CML09070
                              908  *  TO PROVIDE # OF MILLISECONDS DELAY SPECIFIED BY R0               CML09080
                              909  *                                                                   CML09090
0011B8   D000 B34C =004508    910  TIMER    STM   R0,RSAVE            SAVE REGISTERS                   CML09100
0011EC   2410                911  $TIMER1  LIS   R1,0                                                 CML09110
0011BE   2421                912           LIS   R2,1                                                 CML09120
0011C0   4830 0A4E            913           LH    R3,TIME             R3 = TIME CONSTANT FOR 1 MS DELAY CML09130
0011C4   C110 11C4            914           BXLE  R1,*                                                 CML09140
0011C8   2701                915           SIS   R0,1                                                 CML09150
*0011CA  2037                916           BNZ   $TIMER1             LOOP TILL SPECIFIED DELAY        CML09160
0011CC   D100 B338 =004508    917           LM    R0,RSAVE            RESTORE REGISTERS                CML09170
0011D0   030F                918  $TIMXT   BR    LINK                RETURN                           CML09180
                              919           ENDC                                                       CML09190
0011D2                        920           IFZ   $CLOCK-3                                             CML09200
                              921  *-----------------------------                                     CML09210
                              922  *  TO PROVIDE # OF MILLISECONDS DELAY SPECIFIED BY R0               CML09220
                              923  *                                                                   CML09230
                              924  $TIMER   STM   R0,RSAVE            SAVE REGISTERS                   CML09240
                              925  $TIMER1  LIS   R1,0                                                 CML09250
                              926           LIS   R2,1                                                 CML09260
                              927           LH    R3,TIME             R3 = TIME CONSTANT FOR 1 MS DELAY CML09270
                              928           BXLE  R1,*                                                 CML09280
                              929           SIS   R0,1                                                 CML09290
                              930           BNZ   $TIMER1             LOOP TILL SPECIFIED DELAY        CML09300
                              931           LM    R0,RSAVE            RESTORE REGISTERS                CML09310
                              932  $TIMXT   BR    LINK                RETURN                           CML09320
                              933  HTIMER   NOP                                                       
                              934           BR    LINK                                               CML09340
                              935  CLOCK    DCX   6C                                                 CML09350
                              936           ENDC                                                       CML09360
0011D2                        937           IFZ   $CLOCK-2                                           CML09370
                              938  TIMER    NOP                                                       
                              939           BR    LINK                                               CML09390
                              940  CLOCK    DCX   6C                                                 CML09400
                              941           ENDC                                                       CML09410
                              942  *-----------------------------                                     CML09420
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                                943  *  R5HEX PRINTS CONTENTS OF R5 IN HEX                                  CML09430
                                944  *        PRINTS UPTO 4 DIGITS      (8 DIGITS, TAPCT 32)              CML09440
                                945  *                                                                    CML09450
 0011D2   D000 B332 =004508     946  R5HEX    STM   R0,RSAVE           STORE REGISTERS                   CML09460
 0011D6   0820                  947           LDAR  R2,R0              R2 = # OF DIGITS TO BE PRINTED    CML09470
 0011D8   2721                  948           SIS   R2,1                                                 CML09480
*0011DA   211D                  949           BM    R5XB                                                 CML09490
 0011DC   1122                  950           SLLS  R2,2               R2 = 4(DIGITS-1)                  CML09500
 0011DE   0845                  951  R5X      LDAR  R4,R5                                                CML09510
 0011E0   EC42 0000             952           SRAL  R4,0(R2)                                             CML09520
 0011E4   C440 000F             953           NHI   R4,15              R4 = HEX DIGIT                    CML09530
 0011E8   D344 1780             954           LB    R4,HEXTAB(R4)                                        CML09540
 0011EC   41F0 12DE             955  R5XA     BAL   R15,OUTCHR                                           CML09550
 0011F0   2724                  956           SIS   R2,4                                                 CML09560
*0011F2   221A                  957           BNM   R5X                LOOP TILL ALL DIGITS              CML09570
 0011F4   D100 B310 =004508     958  R5XB     LM    R0,RSAVE           RESTORE REGISTERS                 CML09580
 0011F8   030F                  959           BR    LINK               RETURN                            CML09590
 0011F8                         960           IFZ   SR5BIN-1                                             CML09600
                                961  *-----------------------------                                      CML09610
                                962  *  R5BIN PRINTS CONTENTS OF R5 IN BINARY                            CML09620
                                963  *        PRINTS UPTO 16 DIGITS                                      CML09630
                                964  *                                                                    CML09640
                                965  R5BIN    STM   R0,RSAVE           STORE REGISTERS                   CML09650
                                966           LDAR  R3,R0              R3 = # OF DIGITS TO BE PRINTED    CML09660
                                967           LHI   R1,16                                                CML09670
                                968           SAR   R1,R3                                                CML09680
                                969           BM    R5B2               EXIT                              CML09690
                                970           SLHL  R5,0(R1)           R5 = DATA TO BE PRINTED           CML09700
                                971  R5B      LHI   R4,C'0'                                              CML09710
                                972           SLHLS R5,1                                                 CML09720
                                973           BNC   R5B1                                                 CML09730
                                974           AIS   R4,1               IF CARRY, PRINT 1                 CML09740
                                975  R5B1     BAL   LINK,OUTCHR                                          CML09750
                                976           SIS   R3,1               R3 = # OF REMAINING DIGITS        CML09760
                                977           BP    R5B3                                                 CML09770
                                978  R5B2     LM    R0,RSAVE           RESTORE REGISTERS                 CML09780
                                979           BR    LINK               RETURN                            CML09790
                                980  R5B3     THI   R3,3               4,8 OR 12 DIGITS LEFT ?           CML09800
                                981           BNZ   R5B4               NO                                CML09810
                                982           LHI   R4,C' '            YES, OUTPUT ONE SPACE             CML09820
                                983           BAL   R15,OUTCHR                                           CML09830
                                984  R5B4     B     R5B                LOOP FOR NEXT DIGIT               CML09840
                                985           ENDC                                                       CML09850
                                986  *-----------------------------                                      CML09860
                                987  *  TO CONVERT HEXADECIMAL DATA IN R1 TO ASCII CHAR & STORE @ 0(R2)  CML09870
                                988  *                                                                    CML09880
 0011FA   D000 B30A =004508     989  HEXASC   STM   R0,RSAVE           STORE REGISTERS                   CML09890
 0011FE   0830                  990           LDAR  R3,R0              R3 = DIGITS                       CML09900
 001200   1132                  991           SLLS  R3,2                                                 CML09910
 001202   2734                  992           SIS   R3,4               R3 = 4(DIGITS)-4                  CML09920
 001204   0841                  993  HEXASC1  LDAR  R4,R1              R4 = HEX DATA                     CML09930
 001206   EC43 0000             994           SRAL  R4,0(R3)                                             CML09940
 00120A   C440 000F             995           NHI   R4,15              R4 = HEX DIGIT TO BE CONVERTED    CML09950
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 00120E   D344 1780                    LB    R4,HEXTAB(R4)                                CML09960
 001212   D242 0000                    STB   R4,0(R2)            STORE ASCII CHAR          CML09970
 001216   2621                         AIS   R2,1                                          CML09980
 001218   2734                         SIS   R3,4                                          CML09990
*00121A   221B                         BNM   HEXASC1             LOOP TILL ALL DIGITS      CML10000
 00121C   D100 B2E8 =004508            LM    R0,RSAVE            RESTORE REGISTERS         CML10010
 001220   030F                         BR    LINK                RETURN                    CML10020
 001220                                IFZ   $DECASC-1                                     CML10030
                            *----------------------------                                  CML10040
                            *  TO CONVERT BINARY DATA IN R1 INTO DECIMAL DIGITS            CML10050
                            *      AND STORE THEM IN ASCII @ 0(R2)                         CML10060
                            *                                                              CML10070
                            DECASC     STM   R0,RSAVE                                      CML10080
                                       LDAR  R3,R0           COPY DIGIT COUNT              CML10090
                                       SLLS  R3,LADC         &ESTABLISH DECTAB INDEX.      CML10100
                                       SIS   R3,ADC                                        CML10110
                            $DEC1      LIS   R4,0            CLEAR MODULUS COUNTER         CML10120
                                       LDA   R5,DECTAB(R3)   LOAD LARGEST REQ. POWER OF 10.  CML10130
                            $DEC2      CLAR  R1,R5           EXCEEDS TEST VALUE ?          CML10140
                                       BLS   $DEC3           BRANCH IF YES.                CML10150
                                       SAR   R1,R5           DECREMENT TEST VALUE          CML10160
                                       AIS   R4,1            INCREMENT MODULUS COUNTER     CML10170
                                       CLHI  R4,10           VALID DECIMAL DIGIT ?         CML10180
                                       BL    $DEC2           BRANCH IF YES; EL E           CML10190
                                       SIS   R4,10           FORCE VALID DIGIT,            CML10200
                                       BS    $DEC2           REPEAT DECREMENT.             CML10210
                            $DEC3      LB    R4,HEXTAB(R4)   CONVERT MODULUS COUNT TO ASCII  CML10220
                                       STB   R4,0(R2)        AND STORE AT DESTINATION MSB.  CML10230
                                       AIS   R2,1            INCREMENT DESTINATION POINTER  CML10240
                                       SIS   R3,ADC          DECREMENT DECTAB POINTER      CML10250
                                       BNM   $DEC1           FALL THROUGH ON DECTAB UNDERFLOW.  CML10260
                                       LM    R0,RSAVE        RESTORE USER'S REGISTERS      CML10270
                                       BR    LINK            RETURN.                       CML10280
                                       ENDC                                                CML10290
                            *----------------------------                                  CML10300
                            *  TO PRINT THE ASCII MESSAGE                                  CML10310
                            *                                                              CML10320
 001222   D000 B2E2 =004508 PRINT      STM   R0,RSAVE        STORE REGISTERS               CML10330
 001226   41F0 146C                    BAL   LINK,TSTDU                                    CML10340
 00122A   40F0 1756                    STH   LINK,PRTFLG     SET FLAG                      CML10350
 00122E   2337                         BZS   P1                                            CML10360
 001230   4010 175E                    STH   R1,WASDU        SET WASDU FLAGS               CML10370
 001234   4010 1760                    STH   R1,WASDU1                                     CML10380
 001238   4300 1296                    B     PRINT5          EXIT                          CML10390
 00123C   4820 175E         P1         LH    R2,WASDU                                      CML10400
*001240   233B                         BZ    P3                                            CML10410
 001242   2541                         LCS   R4,1            CHARACTER = X'FF'             CML10420
 001244   4040 1760                    STH   R4,WASDU1                                     CML10430
 001248   2434                         LIS   R3,4                                          CML10440
 00124A   41F0 12DE         P2         BAL   LINK,OUTCHR                                   CML10450
 00124E   2731                         SIS   R3,1                                          CML10460
*001250   2023                         BP    P2                                            CML10470
 001252   4300 0F9C                    B     KEEP10          PRINT TOTAL, TOTERR           CML10480
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 001256   4800 B050 =0042AA    1049  P3        LH    R0,DUSAVE                                  CML10490
*00125A   2335                1050            BZ    PRINT2              NO, PRINT ALL MESSAGES CML10500
 00125C   4800 1758            1051            LH    R0,ISITERR                                 CML10510
 001260   4330 1296            1052            BZ    PRINT5              NOT AN ERROR MSG. EXIT CML10520
                               1053  *                                                          CML10530
 001264   2462                1054  PRINT2    LIS   R6,2                LOAD "LOOK" COUNT      CML10540
 001266   0345 0000            1055  PRINT2A   LB    R4,0(R5)            GET A MESSAGE BYTE     CML10550
 00126A   41F0 12DE            1056            BAL   LINK,OUTCHR         OUTPUT IT              CML10560
 00126E   274D                1057            SIS   R4,13               CR ?                   CML10570
*001270   2337                1058            BZ    PRINT3              MSG OVER               CML10580
 001272   2651                1059            AIS   R5,1                                       CML10590
 001274   2761                1060            SIS   R6,1                DECREMENT COUNT        CML10600
*001276   2038                1061            BNZ   PRINT2A             CONTINUE               CML10610
 001278   41F0 13B8            1062            BAL   R15,TSTBRK                                 CML10620
 00127C   220C                1063            BS    PRINT2              LOOP FOR NEXT CHAR     CML10630
 00127E   244A                1064  PRINT3    LIS   R4,10               LF                     CML10640
 001280   D310 B031 =0042B5    1065            LB    R1,IOSAVE+1         GET LIST DEV IDENTIFIER CML10650
 001284   2713                1066            SIS   R1,3                LINE PRINTER ?         CML10660
*001286   2335                1067            BZ    PRINT3A             BRANCH IF YES.         CML10670
 001288   41F0 12DE            1068            BAL   LINK,OUTCHR         LF                     CML10680
 00128C   2541                1069            LCS   R4,1                DEL                    CML10690
 00128E   2302                1070            BS    PRINT3B                                    CML10700
 001290   2441                1071  PRINT3A   LIS   R4,1                YES, OUTPUT X'01'      CML10710
 001292   41F0 12DE            1072  PRINT3B   BAL   LINK,OUTCHR         TERMINAL CHARACTER     CML10720
 001296   24F0                1073  PRINT5    LIS   LINK,0                                     CML10730
 001298   40F0 1756            1074            STH   LINK,PRTFLG         CLEAR FLAG             CML10740
 00129C   41F0 13B8            1075            BAL   LINK,TSTBRK                                CML10750
 0012A0   48F0 1754            1076            LH    LINK,BRKFLG                                CML10760
 0012A4   4230 0B5C            1077            BNZ   OPTIN2              BREAK HAS OCCURRED     CML10770
 0012A8   D100 B25C =004508    1078            LM    R0,RSAVE            RESTORE REGISTERS      CML10780
 0012AC   030F                1079            BR    LINK                RETURN                 CML10790
                               1080  *---------------------------------                         CML10800
                               1081  *  SMALL SUPPORT ROUTINES                                  CML10810
                               1082  *                                                          CML10820
                               1083  *  TO OUTPUT CR,LF TO LIST DEVICE                         CML10830
                               1084  *                                                          CML10840
 0012AE   D000 B256 =004508    1085  CRLF      STM   R0,RSAVE            STORE REGISTERS        CML10850
 0012B2   4800 AFF4 =0042AA    1086            LH    R0,DUSAVE           GET NOMSG VALUE        CML10860
 0012B6   4230 12D8            1087            BNZ   PRINT3C1            NOT ZERO, EXIT         CML10870
 0012BA   244D                1088            LIS   R4,13                                      CML10880
 0012BC   41F0 12DF            1089            BAL   LINK,OUTCHR         OUTPUT CR              CML10890
 0012C0   244A                1090            LIS   R4,10               LF                     CML10900
 0012C2   D310 AFEF =0042B5    1091            LB    R1,IOSAVE+1         GET LIST DEV IDENTIFIER CML10910
 0012C6   2713                1092            SIS   R1,3                LINE PRINTER ?         CML10920
 0012C8   2335                1093            BZS   PRINT3A1            BRANCH IF YES.         CML10930
 0012CA   41F0 12DE            1094            BAL   LINK,OUTCHR         LF                     CML10940
 0012CE   2541                1095            LCS   R4,1                DEL                    CML10950
*0012D0   2302                1096            B     PRINT3B1                                   CML10960
 0012D2   2441                1097  PRINT3A1  LIS   R4,1                YES, OUTPUT X'01'      CML10970
 0012D4   41F0 12DE            1098  PRINT3B1  BAL   LINK,OUTCHR         TERMINAL CHARACTER     CML10980
 0012D8   D100 B22C =004508    1099  PRINT3C1  LM    R0,RSAVE            RESTORE REGISTERS      CML10990
 0012DC   030F                1100            BR    LINK                RETURN                 CML11000
                               1101  *---------------------------------                         CML11010
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                          1102  *  TO OUTPUT A CHARACTER TO THE LIST DEVICE                                  CML11020
                          1103  *                                                                           CML11030
 0012DE   50F0 1770       1104  OUTCHR   STA   R15,OUT.SAV        SAVE RETURN ADDRESS                      CML11040
 0012E2   D300 AFCF =0042B5 1105          LB    R0,IOSAVE+1                                                CML11050
 0012E6   2704            1106          SIS   R0,4                                                       CML11060
 0012E8   4230 1326       1107          BNZ   OUTCHR2           BRANCH IF NOT CAROUSEL                   CML11070
 0012EC   4000 176E       1108          STH   R0,PAUSE                                                   CML11080
 0012F0   41F0 146C       1109  OTC.0    BAL   LINK,TSTDU          ON LINE ?                              CML11090
 0012F4   4230 1362       1110          BNZ   OUT0              NO, BRANCH                               CML11100
 0012F8   9D01            1111          SSR   R0,R1             GET CAROUSEL STATUS                      CML11110
*0012FA   2386            1112          BFC   8,OTC.2           BRANCH IF CHAR. IS TO BE READ            CML11120
 0012FC   4810 176E       1113  OTC.1    LH    R1,PAUSE          PAUSED NOW ?                           CML11130
 001300   2038            1114          BNZS  OTC.0             YES, LOOP                                CML11140
 001302   4300 1326       1115          B     OUTCHR2           NO, GO OUTPUT CHARACTER                  CML11150
 001306   9B01            1116  OTC.2    RDR   R0,R1             GET CAROUSEL CHARACTER                   CML11160
 001308   C410 007F       1117          NHI   R1,X'7F'                                                   CML11170
 00130C   CB10 0012       1118          SHI   R1,X'12'          DC2 ?                                    CML11180
*001310   2134            1119          BNZ   OTC.3                                                      CML11190
 001312   4010 176E       1120          STH   R1,PAUSE                                                   CML11200
 001316   2308            1121          BS    OUTCHR2                                                    CML11210
 001318   2712            1122  OTC.3    SIS   R1,2              DC4 ?                                    CML11220
 00131A   4230 12F0       1123          BNZ   OTC.0             NO, GO WAIT FOR DC2                      CML11230
 00131E   40F0 176E       1124          STH   LINK,PAUSE                                                 CML11240
 001322   4300 12F0       1125          B     OTC.0                                                      CML11250
                          1126  *                                                                        CML11260
 001326   4010 176E       1127  OUTCHR2  STH   R1,PAUSE          RESET FLAG                             CML11270
 00132A   41F0 146C       1128          BAL   LINK,TSTDU          OFF-LINE ?                             CML11280
 00132E   4230 1362       1129          BNZ   OUT0              BRANCH IF OFF-LINE                       CML11290
 001332   4110 14BC       1130          BAL   R1,SETUP           SET UP FOR OUTPUT                        CML11300
 001336   9D01            1131  OTC.4    SSR   R0,R1             WAIT FOR NOT BUSY                        CML11310
 001338   4230 1362       1132          BTC   3,OUT0            BRANCH IF OFF-LINE                       CML11320
 00133C   C510 000C       1133          CLHI  R1,12             PASLA OFFLINE ?                          CML11330
 001340   4330 1362       1134          BE    OUT0              BRANCH: YES.                             CML11340
 001344   C310 0008       1135          THI   R1,8              BUSY ?                                   CML11350
*001348   2039            1136          BNZ   OTC.4             WAIT FOR NOT BUSY.                       CML11360
 00134A   9A04            1137          WDR   R0,R4             OUTPUT DATA BYTE                         CML11370
 00134C   41F0 146C       1138  OTC.5    BAL   LINK,TSTDU                                                 CML11380
*001350   2139            1139          BNZ   OUT0                                                       CML11390
 001352   D310 AF5F =0042B5 1140          LB    R1,IOSAVE+1                                                CML11400
 001356   9112            1141          SLHLS R1,2                                                       CML11410
 001358   4801 0A10       1142          LH    R0,IO(R1)         GET CONSOLE WRITE ADDRESS                CML11420
 00135C   9D01            1143          SSR   R0,R1                                                      CML11430
*00135E   2089            1144          BTC   8,OTC.5           WAIT FOR BUSY TO DROP                    CML11440
*001360   2303            1145          B     OUT1                                                       CML11450
 001362   4010 175E       1146  OUT0     STH   R1,WASDU          SET FLAG                                 CML11460
 001366   58F0 1770       1147  OUT1     LDA   R15,OUT.SAV                                                CML11470
 00136A   030F            1148          BR    R15               RETURN AS SET UP ABOVE                   CML11480
                          1149  *-------------------------                                               CML11490
                          1150  *  TO GET A CHAR FROM KEYBOARD (IN REG R4)                                CML11500
                          1151  *                                                                        CML11510
 00136C   4140 14A0       1152  GETCHR   BAL   R4,KBREAD          PUT KB DEVICE IN READ MODE             CML11520
 001370   0890            1153          LDAR  R9,R0             SAVE CONSOLE ADDRESS                     CML11530
 001372   9D04            1154          SSR   R0,R4                                                      CML11540
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001374   2081              1155          BTBS  8,1                IF BUSY, LOOP (POSSIBLE HANG)          CML11550
001376   9B04              1156          RDR   R0,R4               READ A CHAR IN R4                      CML11560
                           1157  **TO ECHO RECEIVED CHARACTERS TO CONSOLE DEVICE IN FDX MODE              CML11570
                                                                                                          CML11580
         0000 1378         1158  ECHO    EQU   *                                                         CML11590
001378   4890 0A2A         1159          LH    R9,CONRADR          GET CONSOLE READ ADDRESS               CML11600
00137C   D300 0A10         1160          LB    R0,IO               GET CONSOLE TYPE                       CML11610
001380   C500 0002         1161          CLHI  R0,X'02'            CLI??                                  CML11620
001384   2339              1162          BES   ECHO1               YES, ECHO                              CML11630
001386   C500 0005         1163          CLHI  R0,X'05'            MICRO I/O BUS??                        CML11640
00138A   2336              1164          BES   ECHO1               YES, ECHO                              CML11650
00138C   4890 0A2C         1165          LH    R9,CONWADR          GET WRITE ADDRESS                      CML11660
001390   DD90 174A         1166          SS    R9,SINK             SENSE STATUS                           CML11670
001394   2082              1167          BTBS  8,2                 WAIT FOR BUSY NOT                      CML11680
001396   9A94              1168  ECHO1   WDR   R9,R4               ECHO RECEIVED BYTE                     CML11690
001398   C440 007F         1169  ECHRTN  NHI   R4,X'7F'            REMOVE PARITY BIT                      CML11700
00139C   030F              1170          BR    LINK                RETURN                                 CML11710
                           1171  *-----------------------------                                          CML11720
                           1172  *  TO OUTPUT '?' TO CONSOLE                                             CML11730
                           1173  *                                                                       CML11740
00139E   41F0 12AE         1174  QUESTN  BAL   LINK,CRLF                                                  CML11750
0013A2   40F0 1758         1175          STH   LINK,ISITERR        SET FLAG                               CML11760
0013A6   C850 1818         1176          LHI   R5,QMSG                                                    CML11770
0013AA   41F0 1222         1177          BAL   LINK,PRINT          PRINT '?'                              CML11780
0013AE   2400              1178          LIS   R0,0                                                       CML11790
0013B0   4000 1758         1179          STH   R0,ISITERR                                                 CML11800
0013B4   4300 0B7E         1180          B     OPTIN1              TO ACCEPT COMMAND INPUT                CML11810
                           1181  *-----------------------------                                          CML11820
                           1182  **IF BREAK KEY DEPRESSED, GO TO 'OPTIN' OR (BRKVECT); ELSE RETURN.      CML11830
                           1183  *                                                                       CML11840
0013B8   D000 B18C =004548 1184  TSTBRK  STM   R0,RSAVE+64         STORE REGISTERS                        CML11850
0013BC   50F0 1774         1185          STA   LINK,BRK.SAV        SAVE RETURN ADDRESS                    CML11860
0013C0   48F0 1754         1186          LH    LINK,BRKFLG         ALREADY SET??                          CML11870
0013C4   4230 143C         1187          BNZ   TSTBRK3             YES,EXIT                               CML11880
0013C8   48F0 AEDE =0042AA 1188          LH    LINK,DUSAVE         DU??                                   CML11890
0013CC   C5F0 0002         1189          CLHI  LINK,2                                                     CML11900
0013D0   4330 143C         1190          BE    TSTBRK3             YES,DON'T RESPOND IF KEY DEPRESSED     CML11910
0013D4   D310 AEDC =0042B4 1191          LB    R1,IOSAVE           LOAD CONSOLE READ DEVICE               CML11920
0013D8   9112              1192          SLHLS R1,2                                                       CML11930
0013DA   2712              1193          SIS   R1,2                                                       CML11940
0013DC   4811 0A10         1194          LH    R1,IO(R1)                                                  CML11950
0013E0   4010 174A         1195          STH   R1,SINK             SAVE ADDRESS                           CML11960
0013E4   D310 AECC =0042B4 1196          LB    R1,IOSAVE           RE-LOAD DEVICE IDENTIFIER              CML11970
0013E8   C510 0005         1197          CLHI  R1,5                MICRO-BUS??                            CML11980
*0013EC  233D              1198          BE    TSTBRK1             YES                                    CML11990
 0013EE  4810 174A         1199          LH    R1,SINK             RE-LOAD CONSOLE ADDRESS                CML12000
 0013F2  9D12              1200          SSR   R1,R2                                                      CML12010
 0013F4  4280 143C         1201          BTC   8,TSTBRK3           NO KEY DEPRESSED = NO BREAK            CML12020
 0013F8  9B12              1202          RDR   R1,R2               DUMMY READ                             CML12030
 0013FA  9B12              1203          RDR   R1,R2               READ KEY DEPRESSED                     CML12040
 0013FC  0822              1204          LDAR  R2,R2               SET CC                                 CML12050
 0013FE  4330 1420         1205          BZ    TSTBRK2             ZERO CHARACTER = BREAK                 CML12060
 001402  4300 143C         1206          B     TSTBRK3             NO BREAK                               CML12070
 001406  4810 174A         1207  TSTBRK1 LH    R1,SINK             RE-LOAD CONSOLE ADDRESS
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 00140A   C830 7FFF            1208           LHI   R3,X'7FFF'          LOAD LOOP VALUE                                  CML12080
          0000 140E            1209  TSTBRK8  EQU   *                                                                       CML12090
 00140E   2731                 1210           SIS   R3,1                DECREMENT                                        CML12100
 001410   2211                 1211           BNMS  TSTBRK8             LOOP                                             CML12110
 001412   9B12                 1212           RDR   R1,R2               DUMMY READ                                       CML12120
 001414   9D12                 1213           SSR   R1,R2               SENSE STATUS                                     CML12130
 001416   C320 0020            1214           THI   R2,X'20'            BREAK STATUS??                                   CML12140
 00141A   4230 1454            1215           BNZ   TSTBRK4             YES, WAIT UNTIL RELEASED                         CML12150
*00141E   230F                 1216           B     TSTBRK3             NO                                               CML12160
 001420   48F0 1752            1217  TSTBRK2  LH    R15,BRKVECT         CHECK FOR SPECIAL ROUTINE                        CML12170
 001424   4230 144C            1218           BNZ   TSTBRK5             HOUSE-KEEP BEFORE SPECIAL EXIT                   CML12180
 001428   24FF                 1219           LIS   LINK,LINK                                                            CML12190
 00142A   40F0 1754            1220           STH   LINK,BRKFLG         SET FLAG                                         CML12200
 00142E   48F0 1756            1221           LH    LINK,PRTFLG         LOAD FLAG                                        CML12210
 001432   4330 0B5C            1222           BZ    OPTIN2              NOT PRINTING, EXIT                               CML12220
*001436   2303                 1223           B     TSTBRK3             PSEUDO NO BREAK EXIT                             CML12230
 001438   50F0 1774            1224  TSTBRK6  STA   R15,BRK.SAV         SETUP FOR EXIT                                   CML12240
 00143C   2400                 1225  TSTBRK3  LIS   R0,0                                                                CML12250
 00143E   4000 1752            1226           STH   R0,BRKVECT          DELETE VECTOR AFTER ONE SHOT.                    CML12260
 001442   D100 B102 =004548    1227           LM    R0,RSAVE+64         RESTORE REGISTERS                                CML12270
 001446   58F0 1774            1228           LDA   LINK,BRK.SAV                                                         CML12280
 00144A   030F                 1229           BR    LINK                RETURN TO PROGRAM                                CML12290
 00144C   2420                 1230  TSTBRK5  LIS   R2,0                                                                CML12300
 00144E   4020 1754            1231           STH   R2,BRKFLG           CLEAR FLAG                                       CML12310
*001452   220D                 1232           B     TSTBRK6                                                              CML12320
 001454   9B12                 1233  TSTBRK4  RDR   R1,R2               DUMMY READ                                       CML12330
 001456   C830 4000            1234           LHI   R3,X'4000'          LOAD CONSTANT                                    CML12340
 00145A   1131                 1235           SLLS  R3,1                DOUBLE (NO HW EXTENSION)                         CML12350
 00145C   9D12                 1236           SSR   R1,R2               SENSE STATUS                                     CML12360
 00145E   2731                 1237  TSTBRK7  SIS   R3,1                DECREMENT                                        CML12370
 001460   2031                 1238           BNZS  TSTBRK7             WAIT 1 CHARACTER TIME (100MS MAX)                CML12380
 001462   C320 0020            1239           THI   R2,X'20'            BREAK STATUS STILL SET??                         CML12390
 001466   2039                 1240           BNZS  TSTBRK4             WAIT UNTIL RELEASED                              CML12400
 001468   4300 1420            1241           B     TSTBRK2             EXIT                                             CML12410
                               1242  *------------------------------                                                      CML12420
                               1243  **SEE IF CURRENT LIST DEVICE IS OFF-LINE (R1 & CC NON-ZERO IF OFF)                   CML12430
                               1244  *                                                                                    CML12440
 00146C   D310 AE45 =0042B5    1245  TSTDU    LB    R1,IOSAVE+1         GET I/O POINTER FOR LIST DEVICE                  CML12450
 001470   9112                 1246           SLHLS R1,2                                                                 CML12460
 001472   2712                 1247           SIS   R1,2                                                                 CML12470
 001474   4811 0A10            1248           LH    R1,IO(R1)           GET DEVICE ADDRESS                               CML12480
 001478   4010 174A            1249           STH   R1,SINK             AND SAVE IT                                      CML12490
 00147C   4810 AE2A =0042AA    1250           LH    R1,DUSAVE           GET PARAMETER                                    CML12500
 001480   C510 0002            1251           CLHI  R1,2                DU??                                             CML12510
*001484   2332                 1252           BE    $TSTDU2                                                              CML12520
 001486   2511                 1253           LCS   R1,1                "NOT DU" EXIT: R1=CC=0                           CML12530
 001488   4800 174A            1254  $TSTDU2  LH    R0,SINK             PUT DEVICE ADDRESS IN R0                         CML12540
 00148C   C710 FFFF            1255           XHI   R1,-1               "DU" EXIT:R1=CC<>0                               CML12550
 001490   030F                 1256           BR    LINK                RETURN                                           CML12560
                               1257  **-------------------------------                                                   CML12570
                               1258  **TO DIRECT INPUT AND OUTPUT TO CONSOLE DEVICE                                       CML12580
                               1259  *                                                                                    CML12590
 001492   D300 0A10            1260  SETKB    LB    R0,IO               GET KEYBOARD DEVICE                              CML12600
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001496   9410                1261          EXBR  R1,R0                                                  CML12610
001498   0610                1262          OAR   R1,R0                                                  CML12620
00149A   4010 AE16 =0042B4   1263          STH   R1,IOSAVE          KB DEVICE = LIST DEVICE             CML12630
00149E   030F                1264          BR    LINK               RETURN                              CML12640
                             1265  *------------------------------                                      CML12650
                             1266  *  TO PUT KEYBOARD DEVICE IN READ MODE                               CML12660
                             1267  *                                                                    CML12670
0014A0   4800 0A2A           1268  KBREAD  LH    R0,CONRADR                                             CML12680
0014A4   DE00 0A2E           1269          OC    R0,CONRD           OC CONSOLE - READ COMMAND           CML12690
0014A8   DB00 174A           1270          RD    R0,SINK            READ A DUMMY CHARACTER (SET BUSY)   CML12700
0014AC   4890 174E           1271          LH    R9,PASFLG          PASLA ?                             CML12710
0014B0   4200 14B0           1272          NOP   *                  FOR SPECIAL KB DEVICE               CML12720
*0014B4  2333                1273  TTYGET  BZ    KBXIT              NO, BRANCH TO EXIT                  CML12730
0014B6   DE00 0A48           1274          OC    R0,CONRQ2S         YES, OC (REQUEST TO SEND)           CML12740
0014BA   0304                1275  KBXIT   BR    R4                 RETURN                              CML12750
0014BA                       1276          IFZ   $KBINT-1                                               CML12760
                             1277  *------------------------------                                      CML12770
                             1278  *  TO SET UP KEYBOARD DEV TO READ WITH INT ENABLED                   CML12780
                             1279  *                                                                    CML12790
                             1280  KBRD    STM   R0,RSAVE           SAVE REGISTERS                      CML12800
                             1281          LH    R0,CONRADR         GET KB DEV ADR                      CML12810
                             1282          LH    R1,PASFLG          PASLA ?                             CML12820
                             1283          BZ    KBRD1                                                  CML12830
                             1284          OC    R0,CONRQ2S                                             CML12840
                             1285  KBRD1   OC    R0,CONENRD         CONSOLE : ENABLE, READ              CML12850
                             1286          LM    R0,RSAVE           RESTORE REGISTERS                   CML12860
                             1287          BR    LINK               RETURN                              CML12870
                             1288          ENDC                                                         CML12880
                             1289  *------------------------------                                      CML12890
                             1290  *  LIST DEVICE SET UP ROUTINE                                        CML12900
                             1291  *                                                                    CML12910
0014BC   5010 1778           1292  SETUP   STA   R1,SET.RTN                                             CML12920
0014C0   D310 ADF1 =0042B5   1293          LB    R1,IOSAVE+1        GET LIST DEVICE IDENTIFIER          CML12930
0014C4   9112                1294          SLHLS R1,2               HW INDEX                            CML12940
0014C6   4801 0A10           1295          LH    R0,IO(R1)          GET LIST DEVICE WRITE ADDRESS       CML12950
0014CA   DE01 0A31           1296          OC    R0,CONCMD-1(R1)                                        CML12960
0014CE   5810 1778           1297          LDA   R1,SET.RTN                                             CML12970
0014D2   0301                1298          BR    R1                 RETURN                              CML12980
                             1299  ******************************                                      CML12990
                             1300  *  LOW CORE SET UP ROUTINE                                           CML13000
                             1301  *                                                                    CML13010
0014D4   2410                1302  LCORE   LIS   R1,0                                                   CML13020
0014D6   2422                1303          LIS   R2,2                                                   CML13030
0014D8   C830 004E           1304          LHI   R3,X'4E'                                               CML13040
0014DC   2400                1305          LIS   R0,0                                                   CML13050
0014DE   4001 0000           1306  ZERO1   STH   R0,0(R1)                                               CML13060
0014E2   C110 14DE           1307          BXLE  R1,ZERO1           ZERO CORE FROM 0 THRU X'4F'         CML13070
0014E6   C810 0080           1308          LHI   R1,X'80'                                               CML13080
0014EA   C830 00CE           1309          LHI   R3,X'CE'                                               CML13090
0014EE   4001 0000           1310  ZERO2   STH   R0,0(R1)                                               CML13100
0014F2   C110 14EE           1311          BXLE  R1,ZERO2           ZERO CORE FROM X'80' THRU X'CF'     CML13110
0014F6   C800 1572           1312          LHI   R0,XI32            INTERRUPT HANDLER ROUTINE           CML13120
0014FA   C830 09FF           1313          LHI   R3,X'9FF'                                              CML13130
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0014FE  4001 0000   ZERO3    STH   R0,0(R1)                                                   CML13140
001502  C110 14FE            BXLE  R1,ZERO3         SET UP INT SERVICE POINTER TABLE          CML13150
001506  C830 1572            LHI   R3,II                                                      CML13160
00150A  4030 0036            STH   R3,X'36'         ILL INST INT NEW PSW LOC                  CML13170
00150E  C840 167E            LHI   R4,MM                                                      CML13180
001512  4040 003E            STH   R4,X'3E'         M. M. INT NEW PSW LOC                     CML13190
001516  C830 163C            LHI   R3,AF                                                      CML13200
00151A  4030 004E            STH   R3,X'4E'         ARITHMETIC FAULT NEW PSW LOC(32-BIT)      CML13210
                    *                              FIXED PT DIVIDE FAULT NEW PSW LOC          CML13220
00151E  C840 4508            LHI   R4,RSAVE                                                   CML13230
00151E                       IFZ   ADC-2                                                      CML13240
                             LH    R1,MOD32                                                   CML13250
                             BNZ   LCORE32                                                    CML13260
                    *                                                                         CML13270
                    *  SET UP LOW CORE FOR 16 BIT MACHINE                                     CML13280
                    *                                                                         CML13290
                             STH   R4,X'22'         REG SAVE POINTER                          CML13300
                             LHI   R3,FP                                                      CML13310
                             STH   R3,X'2E'         FLOATING PT FAULT INT NEW PSW LOC         CML13320
                             LH    R5,PSW2                                                    CML13330
                             STH   R5,X'44'         HW EXT INT NEW PSW STATUS                 CML13340
                             LHI   R5,XI16                                                    CML13350
                             STH   R5,X'46'         EXT INT NEW PSW LOC                       CML13360
                             BR    LINK                                                       CML13370
                             ENDC                                                             CML13380
                    *                                                                         CML13390
                    *  SET UP LOW CORE FOR 32 BIT MACHINE                                     CML13400
                    *                                                                         CML13410
001522  4040 0086   LCORE32  STH   R4,X'86'         REG SAVE POINTER                          CML13420
001526  C840 4500            LHI   R4,PSWSAVE       PPF PSW SAVE AREA                         CML13430
00152A  4040 0084            STH   R4,X'84'         .   POINTER                               CML13440
00152E  C830 1632            LHI   R3,PP                                                      CML13450
001532  4030 0096            STH   R3,X'96'         RELOC/PROTECT INT NEW PSW LOC             CML13460
001536  C830 16E6            LHI   R3,DFF           DATA FORMAT FAULT NEW PSW (LOC)  ***      CML13470
00153A  4030 00CE            STH   R3,X'CE'         STORE                                     CML13480
00153E  C830 1718            LHI   R3,SYSQERR       LOAD ADDRESS                              CML13490
001542  4030 008E            STH   R3,X'8E'         STORE                                     CML13500
001546  C830 1724            LHI   R3,SVCERR        LOAD ADDRESS                              CML13510
00154A  C840 009C            LHI   R4,X'9C'         LOAD START ADDRESS                        CML13520
00154E  2452                 LIS   R5,2             LOAD INCREMENT                            CML13530
001550  C860 00AC            LHI   R6,X'9C'+16      LOAD END ADDRESS                          CML13540
001554  4034 0000   LCORE32B STH   R3,0(R4)         STORE                                     CML13550
001558  C140 1554            BXLE  R4,LCORE32B      LOOP                                      CML13560
001558                       IFZ   SKBINT-1                                                   CML13570
                             LH    R1,CONRADR       LOAD CONSOLE I/O ADDRESS                  CML13580
                             AAR   R1,R1                                                      CML13590
                             LHI   R0,KBINTO        R0 = A(KEYBOARD INT HANDLER)              CML13600
                             STH   R0,X'D0'(R1)     STORE @  X'D0'+2(KB DEV ADR)              CML13610
                             ENDC                                                             CML13620
00155C  2410                 LIS   R1,0             TO SET UP SERVICE POINTER TABLE           CML13630
00155E  C830 1572            LHI   R3,XI32                                                    CML13640
001562  4821 18AA   LCORE32A LH    R2,DEVSADR(R1)   GET DEV ADR FROM TABLE                    CML13650
001566  021F                 BMR   LINK             DONE. RETURN                              CML13660
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001568   0A22              1367          AAR   R2,R2                                          CML13670
00156A   4032 00D0         1368          STH   R3,X'D0'(R2)       STORE @  X'D0'+2(DEV ADR)  CML13680
00156E   2612              1369          AIS   R1,2                                           CML13690
*001570  2207              1370          B     LCORE32A                                       CML13700
001570                     1371          IFZ   SKBINT-1                                       CML13710
                           1372  *-------------------------------                             CML13720
                           1373  *  KEYBOARD INTERRUPT HANDLER                                CML13730
                           1374  *                                                            CML13740
                           1375  KBINT0  THI   R3,X'20'           IS BREAK KEY DEPRESSED ?   CML13750
                           1376          BZ    KBINT1             NO                         CML13760
                           1377          LB    R0,IO                                         CML13770
                           1378          CLHI  R0,5               IS IT MICROBUS ?           CML13780
                           1379          BNE   KBINTOB            NO, BRANCH                 CML13790
                           1330          OC    R2,MREADC          YES, ISSUE READ            CML13800
                           1381          SSR   R2,R3                                          CML13810
                           1382          BTBS  8,1                                            CML13820
                           1383  KBINTOC RDR   R2,R4              KNOCK DOWN BREAK           CML13830
                           1384          SSR   R2,R3                                          CML13840
                           1385          THI   R3,X'20'           BREAK STILL THERE ?        CML13850
                           1386          BNZ   KBINTOC            YES, KNOCK IT DOWN AGAIN   CML13860
                           1387          B     RETOPSW            NO, RETURN ON OLD PSW      CML13870
                           1388  KBINTOB LH    R5,PASFLG          CONSOLE ON PASLA ?         CML13880
                           1389          BZ    KBINTOA            BRANCH IF NO.              CML13890
                           1390          RDR   R2,R4                                          CML13900
                           1391          SSR   R2,R3                                          CML13910
                           1392          BFBS  8,1                                            CML13920
                           1393          LDAR  R4,R4                                          CML13930
                           1394          BNZ   RETOPSW            IGNORE FRERR ONLY          CML13940
                           1395  KBINT00 B     KBINT3                                         CML13950
                           1396  KBINTOA SSR   R2,R3                                          CML13960
                           1397          THI   R3,X'20'                                       CML13970
                           1398          BTC   3,KBINTOA          WAIT FOR BREAK RELEASE     CML13980
                           1399          BS    KBINT00            GO TO COMMAND MODE         CML13990
                           1400  KBINT1  CLHI  R0,5               IS IT MICROBUS ?           CML14000
                           1401          BNE   KBINT3             NO, BRANCH                 CML14010
                           1402          OC    R2,MREADC          READ COMMAND TO MICROBUS   CML14020
                           1403          SSR   R2,R3                                          CML14030
                           1404          BTBS  8,1                                            CML14040
                           1405          RDR   R2,R4              KNOCK DOWN INTERRUPT       CML14050
                           1406          B     RETOPSW            RETURN                     CML14060
                           1407  KBINT3  STH   R2,INTDEV                                      CML14070
                           1408          STB   R3,INTSTA                                      CML14080
                           1409          IFZ   ADC-2                                          CML14090
                           1410          LH    R4,MOD32                                       CML14100
                           1411          BZS   KBINT2                                         CML14110
                           1412          ENDC                                                 CML14120
                           1413          STH   R0,OPSW            STORE OLD PSW OF 32-BIT PROCESSOR  CML14130
                           1414          STH   R1,OLOC            IN ORDER TO RETURN BACK TO TEST  CML14140
                           1415  KBINT2  RDR   R2,R4                                          CML14150
                           1416          BAL   LINK,ECHO          ECHO RECEIVED BYTE         CML14160
                           1417          LH    R9,KBINT           IF ZERO,IGNORE; ELSE       CML14170
                           1418          BNZR  R9                 GO,PROCESS KB INT FURTHER  CML14180
                           1419  **-------------------------------                           CML14190
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                         1420  *  TO RETURN ON OLD PSW                                                    CML14200
                         1421  *                                                                         CML14210
                         1422            IFZ   ADC-2                                                    CML14220
                         1423  RETOPSW   LH    R9,MOD32                                                 CML14230
                         1424            BNZ   RETOPSW1                                                 CML14240
                         1425            LM    R0,INTSAV          RESTORE REGISTERS                     CML14250
                         1426            LPSW  X'40'              RETURN ON OLD PSW AFTER KB INT        CML14260
                         1427  *                                                                         CML14270
                         1428  RETOPSW1  LPSW  OPSW32                                                   CML14280
                         1429            ELSE                                                           CML14290
                         1430  RETOPSW   LPSW  OPSW32                                                   CML14300
                         1431            ENDC                                                           CML14310
                         1432            ENDC                                                           CML14320
                         1433  *                                                                         CML14330
                         1434  ************************************************                        CML14340
                         1435  *  EXTERNAL INTERRUPT HANDLER                                            CML14350
001572                   1436            IFZ   ADC-2                                                    CML14360
                         1437  XI16      STM   R0,INTSAV          FOR 16-BIT PROCESSOR                  CML14370
                         1438            ACKR  R2,R3              ACKNOWLEDGE THE INTERRUPT             CML14380
                         1439            IFZ   SKBINT-1                                                 CML14390
                         1440            CLH   R2,CONRADR         FROM KEYBOARD DEVICE ?                CML14400
                         1441            BE    KBINTO                                                   CML14410
                         1442            ENDC                                                           CML14420
                         1443            ENDC                                                           CML14430
                         1444  *                                                                         CML14440
                         1445  *                                  FOR 32-BIT PROCESSOR                  CML14450
001572   95AA            1446  XI32      EPSR  R10,R10            CAPTURE CURRENT PSW                   CML14460
001574   40A0 1734       1447            STH   R10,INTPSW                                               CML14470
001578   4020 1744       1448            STH   R2,INTDEV          STORE INTERRUPTING DEVICE ADDRESS     CML14480
00157C   D230 1746       1449            STB   R3,INTSTA          STORE INTERRUPTING DEVICE STATUS      CML14490
00157C                   1450            IFZ   ADC-2                                                    CML14500
                         1451            LH    R5,MOD32                                                 CML14510
                         1452            BNZ   XI32A                                                    CML14520
                         1453            LH    R0,X'40'           16-BIT OLD PSW                        CML14530
                         1454            LH    R1,X'42'                                                 CML14540
                         1455            ENDC                                                           CML14550
001580   4000 173A       1456  XI32A     STH   R0,OPSW            STORE LS HW                           CML14560
001584   1008            1457            SRLS  R0,8               SCALE                                 CML14570
001586   1008            1458            SRLS  R0,8               SCALE                                 CML14580
001588   4000 1738       1459            STH   R0,OPSW32          STORE MS HW                           CML14590
00158C   4010 173E       1460            STH   R1,OLOC            STORE LS HW                           CML14600
001590   1018            1461            SRLS  R1,8               SCALE                                 CML14610
001592   1018            1462            SRLS  R1,8               SCALE                                 CML14620
001594   4010 173C       1463            STH   R1,OLOC32          STORE MS HW                           CML14630
001594                   1464            IFZ   ADC-2                                                    CML14640
                         1465            LDAR  R5,R5              MOD32 = 0 ?                           CML14650
                         1466            BZS   XI16A              BRANCH IF YES.                        CML14660
                         1467            ENDC                                                           CML14670
001598   4820 0A54       1468            LH    R2,PSW2                                                  CML14680
00159C   9512            1469            EPSR  R1,R2              SELECT USER REGISTER SET              CML14690
00159E   D000 AD16 =0042B8 1470          STM   R0,INTSAV          SAVE USER REGISTERS                   CML14700
0015A2   4820 1744       1471            LH    R2,INTDEV                                                CML14710
0015A6   48A0 1734       1472            LH    R10,INTPSW                                               CML14720
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                               *                                                         CML14730
0015AA   2450                  XI16A    LIS   R5,0                                       CML14740
0015AC   4865 18AA             XI1      LH    R6,DEVSADR(R5)     GET DEV ADRS FROM TABLE  CML14750
0015B0   4210 15FE                      BM    XIERR              TABLE OVERFLOW.          CML14760
0015B4   0562                           CLAR  R6,R2              COMPARE INTERRUPTING DEVICE ADDRESS  CML14770
0015B6   2333                           BES   XI2                                        CML14780
0015B8   2652                           AIS   R5,2                                       CML14790
0015BA   2207                           BS    XI1                                        CML14800
0015BC   4865 18AC             XI2      LH    R6,DEVINT(R5)      GET INTERRUPT HANDLER ADDRESS  CML14810
0015C0   4330 15FE                      BZ    XIERR              INTERRUPT NOT EXPECTED   CML14820
0015C4   4060 15FC                      STH   R6,XIEXIT                                  CML14830
                               *                                                         CML14840
0015C4                                  IFZ   ADC-2                                      CML14850
                                        IFNZ  $CLOCK-2                                   CML14860
                                        LH    R6,MOD32           32-BIT MACHINE ?         CML14870
                                        BZ    XI3                BRANCH IF NO.            CML14880
                                        ENDC                                             CML14890
                                        ENDC                                             CML14900
0015C8   1051                           SRLS  R5,1                                       CML14910
0015CA   10A4                           SRLS  R10,4                                      CML14920
0015CC   C4A0 000F                      NHI   R10,15                                     CML14930
0015D0   D4A5 18AE                      CLB   R10,INTLVL(R5)     CHECK PROPER INTERRUPT LEVEL  CML14940
0015D4   4230 160E                      BNE   LVLERR                                     CML14950
                               *                                                         CML14960
0015D8                                  IFNZ  $CLOCK-2                                   CML14970
0015D8   4860 173C             XI3      LH    R6,OLOC32          GET MS HW OF INTERRUPT PSW  CML14980
0015DC   1168                           SLLS  R6,8               SCALE                    CML14990
0015DE   1168                           SLLS  R6,8               SCALE                    CML15000
0015E0   4650 173E                      OH    R6,OLOC            GET LS HW OF INTERRUPT PSW  CML15010
0015E4   C560 11BC                      CLHI  R6,$TIMER1                                 CML15020
0015E8   2187                           BLS   XI4                WAS INTERRUPT IN TIMER ROUTINE ?  CML15030
0015EA   C560 11D0                      CLHI  R6,$TIMXT                                  CML15040
*0015EE  2384                           BNL   XI4                BRANCH IF NO             CML15050
0015F0   D100 AF14 =004508              LM    R0,RSAVE           YES, RESTORE FROM 'TIMER' ENTRY  CML15060
*0015F4  2303                           B     XI5                                        CML15070
                                        ENDC                                             CML15080
0015F6   D100 ACBE =0042B8     XI4      LM    R0,INTSAV          RESTORE FROM XI16/XI32 ENTRY  CML15090
                                        NOSQZ                                            CML15100
0015FA   4300 15FA             XI5      B     *                  AND GO TO INTERRUPT HANDLER  CML15110
                                        SQUEZ                                            CML15120
         0000 15FC             XIEXIT   EQU   XI5+2              NOTE:  16 KB RESTRICTION !  CML15130
                               *-----------------------------------                      CML15140
                               *  EXTERNAL INTERRUPT ERROR ROUTINE                       CML15150
                               *                                                         CML15160
0015FE   C860 4634             XIERR    LHI   R6,C'F4'           ERROR # F4               CML15170
001602   4060 17A2                      STH   R6,ERRNO                                   CML15180
001606   41F0 105A                      BAL   LINK,ERRALL        'ERROR XXF4', 'DEV DDD STA SS'  CML15190
                               *                                 'PSW PPPP  LOC LLLL'     CML15200
00160A   4300 0B7E                      B     OPTIN1             TO ENTER COMMAND MODE    CML15210
                               *-----------------------------------                      CML15220
                               **DEVICE INTERRUPTED IN WRONG INTERRUPT LEVEL             CML15230
                               *                                                         CML15240
00160E   C860 4636             LVLERR   LHI   R6,C'F6'           ERROR # F6               CML15250
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001612   4060 17A2   1526          STH   R6,ERRNO                                    CML15260
001616   D3AA 1780   1527          LB    R10,HEXTAB(R10)     CONVERT TO ASCII       CML15270
00161A   D2A0 1807   1528          STB   R10,ERRLVL          AND STORE ERROR LEVEL IN MESSAGE CML15280
00161E   41F0 195A   1529          BAL   LINK,ERRALL         'ERROR XXF6', 'DEV DDD STA SS' CML15290
                     1530  *                                 'PSW PPPP  LOC LLLL'   CML15300
001622   C850 17F2   1531          LHI   R5,INTLVLM                                   CML15310
001626   4050 1758   1532          STH   R5,ISITERR          SET FLAG TO OVERRIDE NOMSG OPTION CML15320
00162A   41F0 1222   1533          BAL   LINK,PRINT          'INTERRUPTED IN LEVEL  N' CML15330
00162E   4300 037E   1534          B     OPTIN1              ENTER COMMAND MODE.    CML15340
                     1535  *------------------------------                          CML15350
                     1536  *  SPURIOUS INTERRUPT HANDLERS                           CML15360
                     1537  *                                                        CML15370
                     1538  *                                                        CML15380
00162E               1539          IFZ   ADC-2                                      CML15390
                     1540  *  FLOATING-PT ARITH FAULT INT TRAP  (16 BIT PROCESSOR)  CML15400
                     1541  *                                                        CML15410
                     1542  FP      LH    R14,X'28'           OLD PSW (16-BIT PROCESSOR) CML15420
                     1543          LH    R15,X'2A'           OLD LOC                CML15430
                     1544          ENDC                                             CML15440
                     1545  *                                                        CML15450
                     1546  *  RELOCATION/PROTECTION INT TRAP                        CML15460
                     1547  *                                                        CML15470
001632   C820 4635   1548  RP      LHI   R2,C'F5'                                   CML15480
001636   4020 17A2   1549          STH   R2,ERRNO            SET ERROR # F5         CML15490
*00163A  2305        1550          B     COMM                                       CML15500
                     1551  *                                                        CML15510
                     1552  *  ARITHMETIC FAULT INT (32-BIT PROCESSOR) TRAP          CML15520
00163A               1553          IFZ   ADC-2                                      CML15530
                     1554  *  FIXED-PT DIVIDE FAULT INT (16-BIT PROCESSOR) TRAP     CML15540
                     1555          ENDC                                             CML15550
                     1556  *                                                        CML15560
00163C   C820 4631   1557  AF      LHI   R2,C'F1'                                   CML15570
001640   4020 17A2   1558          STH   R2,ERRNO            SET ERROR # F1         CML15580
001640               1559          IFZ   ADC-2                                      CML15590
                     1560          LH    R2,MOD32                                   CML15600
                     1561          BNZ   COMM                                       CML15610
                     1562          LH    R14,X'48'           OLD PSW (16-BIT PROCESSOR) CML15620
                     1563          LH    R15,X'4A'           OLD LOC (16-BIT PROCESSOR) CML15630
                     1564          ENDC                                             CML15640
001644   40E0 173A   1565  COMM    STH   R14,OPSW           STORE LS HW            CML15650
001648   10E8        1566          SRLS  R14,8               SCALE                  CML15660
00164A   10E8        1567          SRLS  R14,8               SCALE                  CML15670
00164C   40F0 1738   1568          STH   R14,OPSW32          STORE MS HW            CML15680
001650   40F0 173E   1569          STH   R15,OLOC            STORE LS HW            CML15690
001654   10F8        1570          SRLS  R15,8               SCALE                  CML15700
001656   10F8        1571          SRLS  R15,8               SCALE                  CML15710
001658   40F0 173C   1572          STH   R15,OLOC32          STORE MS HW            CML15720
00165C   4800 0A54   1573  COMM1   LH    R0,PSW2                                    CML15730
001660   9520        1574          EPSR  R2,R0               NO INT. , REG SET 15   CML15740
001662   41F0 0FE0   1575          BAL   LINK,ERR            PRINT 'ERROR XXFN'     CML15750
001666   40F0 1758   1576          STH   LINK,ISITERR        FORCE PRINT            CML15760
00166A   41E0 1130   1577          BAL   RET,ERRPL1          PRINT 'PSW PPPP  LOC LLLL' CML15770
00166E   4300 037E   1578          B     OPTIN1              ENTER COMMAND MODE     CML15780
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                         1579  *                                                                      CML15790
                         1580  *  ILLEGAL INSTRUCTION INTERRUPT TRAP                                  CML15800
                         1581  *                                                                      CML15810
001672   C820 4632       1582  II       LHI   R2,C'F2'                                               CML15820
001676   4020 17A2       1583           STH   R2,ERRNO          SET ERROR # F2                       CML15830
001676                   1584           IFZ   ADC-2                                                  CML15840
                         1585           LH    R2,MOD32                                               CML15850
                         1586           BNZ   II32                                                   CML15860
                         1587           LH    R14,X'30'         OLD PSW                              CML15870
                         1588           LH    R15,X'32'         OLD LOC                              CML15880
                         1589           ENDC                                                         CML15890
00167A   4300 1644       1590  II32     B     COMM                                                   CML15900
                         1591  *                                                                      CML15910
                         1592  *  MACHINE MALFUNCTION INTERRUPT TRAP                                  CML15920
                         1593  *                                                                      CML15930
00167E   95AA            1594  MM       EPSR  R10,R10           CAPTURE MMINT PSW                    CML15940
001680   C820 4633       1595           LHI   R2,C'F3'          SET ERROR F3                         CML15950
001684   4020 17A2       1596           STH   R2,ERRNO          STORE                                CML15960
001688   4820 1732       1597           LH    R2,MOD32          GET FLAG                             CML15970
*00168C  2139            1598           BNZ   MM32              SET=32 BIT                           CML15980
00168E   43E0 0038       1599           LH    R14,X'38'         GET OLD PSW (16 BIT)                 CML15990
001692   48F0 003A       1600           LH    R15,X'3A'         GET OLD LOC (16 BIT)                 CML16000
001696   C3E0 0001       1601  NOT3200  THI   R14,X'1'          TEST L FLAG                          CML16010
*00169A  213B            1602           BNZ   LOCKUP            POWER FAIL                           CML16020
*00169C  230E            1603           B     MMCOM             NOT POWER FAIL                       CML16030
         0000 169E       1604  MM32     EQU   *                                                      CML16040
00169E   48E0 0022       1605           LH    R14,X'22'         GET OLD PSW                          CML16050
0016A2   48F0 0026       1606           LH    R15,X'26'         GET OLD LOC                          CML16060
0016A6   5820            1607           DCX   5820              L   R2,X'40'                        CML16070
0016A8   0040            1608           DCX   40                                                     CML16080
0016AA   223A            1609           BZS   NOT3200           ZERO=NOT 3200                        CML16090
*0016AC  2112            1610           BM    LOCKUP            POWER FAIL                           CML16100
0016AE   2305            1611           BS    MMCOM             NOT POWER FAIL                       CML16110
0016B0   4820 0A56       1612  LOCKUP   LH    R2,PSW3           LOAD WAIT MMF PSW                    CML16120
0016B4   95A2            1613           EPSR  R10,R2            SWAP PSW, WAIT WITH MMF ENABLED      CML16130
0016B6   2200            1614           DC    X'2200'           BRANCH TO SELF                       CML16140
0016B8   C4E0 FFF0       1615  MMCOM    NHI   R14,X'FFF0'                                            CML16150
0016BC   C4A0 000F       1616           NHI   R10,X'000F'                                           CML16160
0016C0   06EA            1617           OAR   R14,R10                                                CML16170
0016C2   40E0 173A       1618           STH   R14,OPSW          STORE LS HW                          CML16180
0016C6   10E8            1619           SRLS  R14,8             SCALE                                CML16190
0016C8   10E8            1620           SRLS  R14,8             SCALE                                CML16200
0016CA   40E0 1738       1621           STH   R14,OPSW32        STORE MS HW                          CML16210
0016CE   40F0 173E       1622           STH   R15,OLOC          STORE LS HW                          CML16220
0016D2   10F8            1623           SRLS  R15,8             SCALE                                CML16230
0016D4   10F8            1624           SRLS  R15,8             SCALE                                CML16240
0016D6   40F0 173C       1625           STH   R15,OLOC32        STORE MS HW                          CML16250
0016DA   41E0 0A9C       1626           BAL   RET,STCON         RE-INITIALIZE I/O                    CML16260
0016DE   DE30 0A2F       1627           OC    R3,CONWRT         SET WRITE MODE                       CML16270
0016E2   4300 165C       1628           B     COMM1             PRINT ERROR MESSAGE                  CML16280
                         1629  *                                                                      CML16290
                         1630  *                                                                      CML16300
                         1631  *  DATA FORMAT FAULT INTERRUPT TRAP       SPECIAL FOR THIS TEST ***     CML16310
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                         *                                                       CML16320
0016E6   C820 4637       DFF      LHI    R2,C'F7'                                CML16330
0016EA   4020 17A2                STH    R2,ERRNO         SET ERROR F7           CML16340
0016EE   50E0 1738                ST     R14,OPSW32       SAVE OLD PSW           CML16350
0016F2   50F0 173C                ST     R15,OLOC32       SAVE OLD LOC           CML16360
0016F6   D2D0 1749                STB    R13,FCODE        SAVE REASON CODE       CML16370
0016FA   50C0 1740                ST     R12,VIRTADRS     SAVE ADDRESS (BOUNDARY FAULT)  CML16380
                         *                                                       CML16390
0016FE   4800 0A54       COMM2    LH     R0,PSW2                                 CML16400
001702   9520                     EPSR   R2,R0            NO INT, REG SET 15     CML16410
001704   41F0 0FE0                BAL    LINK,ERR         PRINT 'ERROR XXFN'     CML16420
001708   40F0 1758                STH    LINK,ISITERR     FORCE PRINT            CML16430
00170C   41F0 1130                BAL    LINK,ERRPL1      PRINT 'PSW PPPPPP  LOC LLLLLL'  CML16440
001710   41F0 3FDA                BAL    LINK,RCODE       PRINT REASON CODE      CML16450
001714   4300 0B7E                B      OPTIN1           ENTER COMMAND MODE     CML16460
                         *                                                       CML16470
                         *                                                       CML16480
001718   C820 4638       SYSQERR  LHI    R2,C'F8'         LOAD ERROR CODE        CML16490
00171C   4020 17A2                STH    R2,ERRNO         STORE                  CML16500
001720   4300 1644                B      COMM             PRINT                  CML16510
                         *                                                       CML16520
001724   C820 4639       SVCERR   LHI    R2,C'F9'         LOAD ERROR CODE        CML16530
001728   4020 17A2                STH    R2,ERRNO         STORE                  CML16540
00172C   4300 1644                B      COMM             PRINT                  CML16550
                         ******************************                          CML16560
                         *  ETPE CONSTANTS & TABLES                              CML16570
                         *                                                       CML16580
001730   0000            FIRST    DCX    0                                       CML16590
001732   0000            MOD32    DCX    0                FLAG FOR 32-BIT M/C(NON-ZERO)  CML16600
001734   0000            INTPSW   DCX    0                (FOR 32-BIT M/C ONLY)  CML16610
001738                            ALIGN 8                                        CML16620
                         *-----------------------                                CML16630
001738   0000            OPSW32   DCX    0                OLD PSW STORAGE AREA   CML16640
00173A   0000            OPSW     DCX    0                                       CML16650
00173C   0000            OLOC32   DCX    0                                       CML16660
00173E   0000            OLOC     DCX    0                                       CML16670
001740   0000 0000       VIRTADRS DCY    0                                       CML16680
                         *-----------------------                                CML16690
001744   0000            INTDEV   DCX    0                INTERRUPTING DEV ADR   CML16700
         0000 1744       ERRDEV   EQU    INTDEV           ERROR DEVICE #         CML16710
001746   00              INTSTA   DB     0                INTERRUPTING DEV STATUS  CML16720
         0000 1746       ERRSTA   EQU    INTSTA           ERRONEOUS STATUS       CML16730
001747   80              NORM     DB     X'80'                                   CML16740
001748   40              INCR     DB     X'40'                                   CML16750
001749   00              FCODE    DB     0                FAULT REASON CODE      CML16760
00174A   0000 0000       SINK     DC     0                BIT BUCKET             CML16770
00174E   0000            PASFLG   DCX    0                SET WHEN CONSOLE ON PASLA/PALM  CML16780
001750   0000            PASFLG2  DCX    0                SET WHEN LIST DEVICE ON PASLA  CML16790
                         **-------------------                                   CML16800
001752                            IFZ    SKBINT-1                                CML16810
                         KBINT    DC     Z(RETOPSW)       KEYBOARD INT RETURN ADR  CML16820
                                  ENDC                                           CML16830
001752   0000            BRKVECT  DC     Z(0)             BREAK KEY VECTOR       CML16840
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001754   0000                 1685  BRKFLG   DCX   0                                                   CML16850
001756   0000                 1686  PRTFLG   DCX   0                                                   CML16860
001758   0000                 1687  ISITERR  DCX   0                                                   CML16870
00175A   0000                 1688  NOERR    DCX   0                                                   CML16880
00175C   0000                 1689  SELTST   DCX   0                    HIGHEST SELECTED TEST #        CML16890
00175E   0000                 1690  WASDU    DCX   0                    1 IF KEYBOARD DEVICE WAS OFF   CML16900
001760   0000                 1691  WASDU1   DCX   0                    NON-ZERO IF TOTAL,TOTERR TO PRINT   CML16910
001762   0000                 1692  TOTAL    DCX   0                    # OF TIMES THE SELECTED TESTS RUN   CML16920
001764   0000                 1693  TOTERR   DCX   0                    TOTAL ERRORS DETECTED WHILE DU  CML16930
001766   0000                 1694  BTESTNO  DCX   0                    CURRENT TEST # IN BINARY       CML16940
001768   0000                 1695  COUNT    DCX   0                                                   CML16950
00176A   0000                 1696  NEXTST   DCX   0                    NEXT TEST #                    CML16960
00176C   0000                 1697  $NULL    DCX   0                    NULL HW FOR DISPLAY USE        CML16970
00176E   0000                 1698  PAUSE    DCX   0                    SET DURING TRANSMISSION PAUSE (C300)   CML16980
001770   0000 0000            1699  OUT.SAV  DAC   0                    OUTCHR RETURN ADDRESS SAVE     CML16990
001774   0000 0000            1700  BRK.SAV  DAC   0                    TSTBRK RETURN ADDRESS SAVE     CML17000
001778   0000 0000            1701  SET.RTN  DAC   0                    SETUP RETURN ADDRESS SAVE      CML17010
00177C   0000 0000            1702  COMRET   DAC   0                    ERRCOM RETURN ADDRESS SAVE     CML17020
                              1703  *                                                                  CML17030
001780                        1704           IFZ   $DECTAB-1                                           CML17040
                              1705  DECTAB   DC    1,10,100,1000,10000                                 CML17050
                              1706           ENDC                                                      CML17060
001780   3031 3233 3435 3637  1707  HEXTAB   DB    C'0123456789ABCDEF'                                 CML17070
001788   3839 4142 4344 4546
                              1708  *-------------------------------                                  CML17080
                              1709  *  ETPE MESSAGES                                                  CML17090
                              1710  *                                                                  CML17100
001790   5445 5354 2020 2A2A  1711  TSTMSG   DC    C'TEST  **',X'0D00'                                 CML17110
001798   0D00
         0000 1796            1712  MTESTNO  EQU   TSTMSG+6                                            CML17120
00179A   4552 524F 5220 2A2A  1713  ERRMSG   DC    C'ERROR ****',X'0D00'                               CML17130
0017A2   2A2A
0017A4   0D00
         0000 17A0            1714  ETESTNO  EQU   ERRMSG+6             STORED BY ETPE                 CML17140
         0000 17A2            1715  ERRNO    EQU   ERRMSG+8             STORE ERRNO AS CHAR CONSTANT   CML17150
0017A6   544F 5441 4C20 2020  1716  TOTMSG   DC    C'TOTAL   TOTERR',X'0D00'                           CML17160
0017AE   544F 5445 5252
0017B4   0D00
0017B6   4E4F 2045 5252 4F52  1717  NOERMSG  DC    C'NO ERROR',X'0D00'                                 CML17170
0017BE   0D00
0017C0   4445 5620 2A2A 2A20  1718  DEVMSG   DC    C'DEV *** STA **',X'0D00'                           CML17180
0017C8   5354 4120 2A2A
0017CE   0D00
         0000 17C4            1719  ASCIDEV  EQU   DEVMSG+4                                            CML17190
         0000 17C8            1720  STAMSG   EQU   DEVMSG+8                                            CML17200
         0000 17CC            1721  ASCISTA  EQU   DEVMSG+12                                           CML17210
0017D0   4445 5620 2A2A 2A20  1722  DEVMSG2  DC    C'DEV ***',X'0D00'                                  CML17220
0017D8   0D00
         0000 17D4            1723  ASCIDEV2 EQU   DEVMSG2+4                                           CML17230
0017DA   5053 5720 2A2A 2A2A  1724  PSWMSG   DC    C'PSW ****    LOC ****  ',X'0D0A'                   CML17240
0017E2   2020 2020 4C4F 4320
0017EA   2A2A 2A2A 2020
0017F0   0D0A
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          0000 17DE             1725  ASCIPSW  EQU   PSWMSG+4                                                  CML17250
          0000 17E6             1726  LOCMSG   EQU   PSWMSG+12                                                 CML17260
          0000 17EA             1727  ASCILOC  EQU   PSWMSG+16                                                 CML17270
0017F2    494E 5445 5252 5550   1728  INTLVLM  DC    C'INTERRUPTED IN LEVEL *',X'0D00'                         CML17280
0017FA    5445 4420 494E 204C
001802    4556 454C 202A
001808    0D00
          0000 1807             1729  ERRLVL   EQU   INTLVLM+21                                                CML17290
00180A    454E 4420 4F46 2054   1730  EOTMSG   DC    C'END OF TEST',X'0D00'                                    CML17300
001812    4553 5420
001816    0D00
001818    3F0D                  1731  QMSG     DC    X'3F0D'                                                   CML17310
00181A    2A0D                  1732  AMSG     DC    X'2A0D'                                                   CML17320
00181C    FFFF                  1733  BRKMSG   DCX   FFFF,FFFF                                                CML17330
00181E    FFFF
001820    FFFF                  1734           DC    X'FFFF',X'FFFF',C'BREAK TERMINATION',X'FF0D'              CML17340
001822    FFFF
001824    4252 4541 4B20 5445
00182C    524D 494E 4154 494F
001834    4E20
001836    FF0D
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                         1736 *------------------------------                                  CML17360
                         1737 *  OPTION/COMMAND TABLE                                          CML17370
                         1738 *                                                                CML17380
         0000 1838       1739 OPT      EQU   *                                                 CML17390
001838   5445 5354 2020  1740 TEST     DC    C'TEST  ',X'7F00',X'0000',X'0000'                 CML17400
00183E   7F00
001840   0000
001842   0000
001844   4C4F 4F50 2020  1741 LOOP     DC    C'LOOP  ',X'0000',X'0000',X'0000'                 CML17410
00184A   0000
00184C   0000
00184E   0000
001850   434F 4E54 494E  1742 CONTIN   DC    C'CONTIN',X'0000',Z(ZERONE),X'0000'               CML17420
001856   0000
001858   0D90
00185A   0000
00185C   4E4F 4D53 4720  1743 NOMSG    DC    C'NOMSG',X'0000',Z(ZERONE2),X'0000'               CML17430
001862   0000
001864   0D38
001866   0000
001868   5049 4341 4452  1744 PICADR   DC    C'PICADR',X'006C',X'0000',X'0000'                 CML17440
00186E   006C
001870   0000
001872   0000
001874   494E 544C 4556  1745 INTLEV   DC    C'INTLEV',X'0000',Z(LEVEL),X'0000'                CML17450
00187A   0000
00187C   0DA0
00187E   0000
                         1746 *  END OF ETPE FILE                                             CML17460
                         1747         NOSQZ                                                    CML17470
         0000 1880       1748 OPTEND2  EQU   *                    END OF PRINTING OPTIONS     CML17480
                         1749 *                                                                CML17490
001880   4F50 5449 4F4E  1750 OPTION   DC    C'OPTION',X'0000',X'0000',X'0000'                 CML17500
001886   0000
001888   0000
00188A   0000
         0000 1880       1751 OPTEND   EQU   OPTION                                            CML17510
                         1752 *                                                                CML17520
00188C   5255 4E20 2020  1753 RUN      DC    C'RUN   ',X'0000',X'0000',X'0000'                 CML17530
001892   0000
001894   0000
001896   0000
001898   434F 4E20 2020  1754 CON      DC    C'CON   ',X'0000',Z(STOP.IT),X'0000'              CML17540
00189E   0000
0018A0   0DAA
0018A2   0000
0018A4   FFFF FFFF       1755         DC    -1                 END OF OPTION TABLE            CML17550
                         1756 *                                                                CML17560
         0000 18A8       1757 INIT     EQU   *                                                 CML17570
0018A8   030F            1758         BR    LINK               RETURN                         CML17580
                         1759 *                                                                CML17590
0018AA   FFFF            1760 DEVSADR  DC    X'FFFF'                                         CML17600
0018AC   0000            1761 DEVINT   DC    X'0000'                                         CML17610
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0018AE   00                      1762  INTLVL   DB    0                                                      CML17620
0018AF   00                      1763           DB    *                                                      CML17630
                                 1764  *                                                                     CML17640
                                 1765  *                                                                     CML17650
0018B0   5345 5249 4553 2033     1766  TITLE    DC    C'SERIES 3200 COMMERCIAL INSTRUCTION SET TEST'         CML17660
0018B8   3230 3020 434F 4D4D
0018C0   4552 4349 414C 2049
0018C8   4E53 5452 5543 5449
0018D0   4F4E 2053 4554 2054
0018D8   4553 5420
0018DC   2020 3036 2D32 3338     1767           DC    C'  06-238 R00        ',X'0D00'                        CML17670
0018E4   2052 3030 2020 2020
0018EC   2020 2020
0018F0   0D00
0018F2   7F00                    1768  DEFTESTS DC    X'7F00',X'0000',X'0000'                                CML17680
0018F4   0000
0018F6   0000
0018F8   0008                    1769  MAXTST   DC    H'8'                                                   CML17690
0018FC                           1770           ALIGN ADC                 MANDATORY TARGET 32 !              CML17700
0018FC   0000 0000               1771  TESTS    DC    0                   DUMMY FOR TEST 0                   CML17710
001900   0000 1920               1772           DC    TEST1,TEST2,TEST3,TEST4,TEST5,TEST6,TEST7              CML17720
001904   0000 1B64
001908   0000 1CC4
00190C   0000 1F00
001910   0000 21D4
001914   0000 241C
001918   0000 2666
00191C   0000 2900               1773           DC    TEST8               OPTIONAL TEST 8                    CML17730
                                 1774  *                                                                     CML17740
                                 1775  *                                                                     CML17750
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ERROR CODE LISTING

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1777  *                                                                    CML17770
1778  *                                                                    CML17780
1779  * ERROR   ASSOCIATED                                                 CML17790
1780  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                         CML17800
1781  *                                                                    CML17810
1782  *------------------------------------------------------------------  CML17820
1783  *                                                                    CML17830
1784  *  TTF1      ALL        32 BIT ARITHMETIC FAULT INT                  CML17840
1785  *                                                                    CML17850
1786  *  TTF2      ALL        ILLEGAL INSTRUCTION INT                      CML17860
1787  *                                                                    CML17870
1788  *  TTF3      ALL        MACHINE MALFUNCTION INT                      CML17880
1789  *                                                                    CML17890
1790  *  TTF4      ALL        UNEXPECTED EXTERNAL DEVICE INT               CML17900
1791  *                                                                    CML17910
1792  *  TTF5      ALL        32 BIT RELOCATION/PROTECTION INT (MAC OR MMU) CML17920
1793  *                                                                    CML17930
1794  *  TTF6      ALL        EXP EXTERNAL DEVICE INT IN WRONG INT LEVEL   CML17940
1795  *                                                                    CML17950
1796  *  TTF7      ALL        DATA FORMAT/ALIGNMENT FAULT INT              CML17960
1797  *                                                                    CML17970
1798  *------------------------------------------------------------------  CML17980
1799  *                                                                    CML17990
1800  * ERROR   ASSOCIATED                                                 CML18000
1801  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                         CML18010
1802  *                                                                    CML18020
1803  *------------------------------------------------------------------  CML18030
1804  *                                                                    CML18040
1805  *  TT10      LPB        EXP CC = 0000 NOT RETURNED                   CML18050
1806  *                                                                    CML18060
1807  *  TT11      LPB        EXP CC = 0010 NOT RETURNED                   CML18070
1808  *                                                                    CML18080
1809  *  TT12      LPB        EXP CC = 0001 NOT RETURNED                   CML18090
1810  *                                                                    CML18100
1811  *  TT13      LPB        EXP CC = 0100 NOT RETURNED                   CML18110
1812  *                                                                    CML18120
1813  *  TT14      LPB        NO DATA FORMAT FAULT INT FOR INVALID SIGN    CML18130
1814  *                                                                    CML18140
1815  *  TT15      LPB        EXP REASON CODE OF 2 NOT RETURNED            CML18150
1816  *                                                                    CML18160
1817  *  TT16      LPB        NO DATA FORMAT FAULT INT FOR INVALID DATA    CML18170
1818  *                                                                    CML18180
1819  *  TT17      LPB        EXP REASON CODE OF 3 NOT RETURNED            CML18190
1820  *                                                                    CML18200
1821  *  TT18      LPB        RESULT OF INSTRUCTION INCORRECT              CML18210
1822  *                                                                    CML18220
1823  *------------------------------------------------------------------  CML18230
1824  *                                                                    CML18240
1825  * ERROR   ASSOCIATED                                                 CML18250
1826  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                         CML18260
1827  *                                                                    CML18270
1828  *------------------------------------------------------------------  CML18280
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ERROR CODE LISTING

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1830  *  TT20      STBP       EXP CC = 0000 NOT RETURNED                          CML18300
1831  *                                                                           CML18310
1832  *  TT21      STBP       EXP CC = 0010 NOT RETURNED                          CML18320
1833  *                                                                           CML18330
1834  *  TT22      STBP       EXP CC = 0001 NOT RETURNED                          CML18340
1835  *                                                                           CML18350
1836  *  TT23      STBP       RESULT OF INSTRUCTION INCORRECT                     CML18360
1837  *                                                                           CML18370
1838  *-----------------------------------------------------------------          CML18380
1839  *                                                                           CML18390
1840  * ERROR   ASSOCIATED                                                       CML18400
1841  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                                CML18410
1842  *                                                                           CML18420
1843  *-----------------------------------------------------------------          CML18430
1844  *                                                                           CML18440
1845  *  TT30      MOVE       EXP CC = 0000 NOT RETURNED                          CML18450
1846  *                                                                           CML18460
1847  *  TT31      MOVE       CONTENTS REG 1 INCORRECT (FINAL ADDRESS)            CML18470
1848  *                                                                           CML18480
1849  *  TT32      MOVE       EXP CC = 0100 NOT RETURNED                          CML18490
1850  *                                                                           CML18500
1851  *  TT33      MOVE       DATA ERROR                                          CML18510
1852  *                                                                           CML18520
1853  *  TT34      MOVE       INCORRECT PAD                                       CML18530
1854  *                                                                           CML18540
1855  *-----------------------------------------------------------------          CML18550
1856  *                                                                           CML18560
1857  * ERROR   ASSOCIATED                                                       CML18570
1858  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                                CML18580
1859  *                                                                           CML18590
1860  *-----------------------------------------------------------------          CML18600
1861  *                                                                           CML18610
1862  *  TT40      CPAN       EXP CC = 0000 NOT RETURNED                          CML18620
1863  *                                                                           CML18630
1864  *  TT41      CPAN       PAD CHAR DOES NOT MATCH CONTENTS REG 0              CML18640
1965  *                                                                           CML18650
1866  *  TT42      CPAN       EXP CC = 0010 NOT RETURNED                          CML18660
1867  *                                                                           CML18670
1868  *  TT43      CPAN       DEFAULT PAD CHAR DOES NOT MATCH X'20'               CML18680
1869  *                                                                           CML18690
1870  *  TT44      CPAN       EXP CC = 1001 NOT RETURNED                          CML18700
1871  *                                                                           CML18710
1872  *  TT45      CPAN       INCORRECT OFFSET RETURNED IN REG 1                  CML18720
1873  *                                                                           CML18730
1874  *-----------------------------------------------------------------          CML18740
1875  *                                                                           CML18750
1876  * ERROR   ASSOCIATED                                                       CML18760
1877  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                                CML18770
1878  *                                                                           CML18780
1879  *-----------------------------------------------------------------          CML18790
1880  *                                                                           CML18800
1881  *  TT50      PMV        EXP CC = 0000 NOT RETURNED                          CML18810
1882  *                                                                           CML18820
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ERROR CODE LISTING

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1883  *  TT51      PMV        EXP CC = 0010 NOT RETURNED                          CML18830
1884  *                                                                           CML18840
1885  *  TT52      PMV        EXP CC = 0001 NOT RETURNED                          CML18850
1886  *                                                                           CML18860
1887  *  TT53      PMV        EXP CC = 0010 (FORCED) NOT RETURNED                 CML18870
1888  *                                                                           CML18880
1889  *  TT54      PMV        SIGN ERROR                                          CML18890
1890  *                                                                           CML18900
1891  *  TT55      PMV        DIGIT ERROR                                         CML18910
1892  *                                                                           CML18920
1893  *  TT56      PMV        LEADING ZERO FILL NO GOOD                           CML18930
1894  *                                                                           CML18940
1895  *  TT57      PMV        EXP CC = 0110 NOT RETURNED                          CML18950
1896  *                                                                           CML18960
1897  *  TT58      PMV        EXP CC = 1010 NOT RETURNED                          CML18970
1898  *-------------------------------------------------------------------------  CML18980
1899  *                                                                           CML18990
1900  * ERROR   ASSOCIATED                                                       CML19000
1901  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                                CML19010
1902  *                                                                           CML19020
1903  *-------------------------------------------------------------------------  CML19030
1904  *                                                                           CML19040
1905  *  TT60      UMV        EXP CC = 0000 NOT RETURNED                          CML19050
1906  *                                                                           CML19060
1907  *  TT61      UMV        EXP CC = 0010 NOT RETURNED                          CML19070
1908  *                                                                           CML19080
1909  *  TT62      UMV        EXP CC = 0001 NOT RETURNED                          CML19090
1910  *                                                                           CML19100
1911  *  TT63      UMV        EXP CC = 0010 (FORCED) NOT RETURNED                 CML19110
1912  *                                                                           CML19120
1913  *  TT64      UMV        SIGN ERROR                                          CML19130
1914  *                                                                           CML19140
1915  *  TT65      UMV        DIGIT ERROR                                         CML19150
1916  *                                                                           CML19160
1917  *  TT66      UMV        LEADING ZERO (FILL CHAR = X'30') NO GOOD            CML19170
1918  *                                                                           CML19180
1919  *  TT67      UMV        EXP CC = 0110 NOT RETURNED                          CML19190
1920  *                                                                           CML19200
1921  *  TT68      UMV        EXP CC = 1010 NOT RETURNED                          CML19210
1922  *                                                                           CML19220
1923  *-------------------------------------------------------------------------  CML19230
1924  *                                                                           CML19240
1925  * ERROR   ASSOCIATED                                                       CML19250
1926  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                                CML19260
1927  *                                                                           CML19270
1928  *-------------------------------------------------------------------------  CML19280
1929  *                                                                           CML19290
1930  *  TT70      MVTU       EXP CC = 0000 NOT RETURNED                          CML19300
1931  *                                                                           CML19310
1932  *  TT71      MVTU       CONTENTS REG 1 INCORRECT (FINAL ADDRESS)            CML19320
1933  *                                                                           CML19330
1934  *  TT72      MVTU       EXP CC = 0100 NOT RETURNED                          CML19340
1935  *                                                                           CML19350
```

ERROR CODE LISTING

```
1936  *  TT73      MVTU       EXP CC = 1000 NOT RETURNED                          CML19360
1937  *                                                                           CML19370
1938  *  TT74      MVTU       EXP CC = 0000 NOT RETURNED - W/ TRANSLATION         CML19380
1939  *                                                                           CML19390
1940  *  TT75      MVTU       CONTENTS REG 1 INCORRECT (FINAL ADDRESS)            CML19400
1941  *                        - W/ TRANSLATION                                   CML19410
1942  *                                                                           CML19420
1943  *  TT76      MVTU       EXP CC = 0100 NOT RETURNED - W/ TRANSLATION         CML19430
1944  *                                                                           CML19440
1945  *  TT77      MVTU       EXP CC = 1000 NOT RETURNED - W/ TRANSLATION         CML19450
1946  *                                                                           CML19460
1947  *  TT78      MVTU       DATA ERROR - W/ TRANSLATION OR W/O TRANSLATION      CML19470
1948  *                                                                           CML19480
1949  *-------------------------------------------------------------------        CML19490
1950  *                                                                           CML19500
1951  * ERROR   ASSOCIATED                                                       CML19510
1952  * NUMBER  INSTRUCTION   EXPLANATION OF ERROR                                CML19520
1953  *                                                                           CML19530
1954  *-------------------------------------------------------------------        CML19540
1955  *                                                                           CML19550
1956  *  TT80      STBP       IIP FLAG = 0, NO PIC INT                            CML19560
1957  *                                                                           CML19570
1958  *  TT81      STBP       PIC INT BUT IIP BIT NOT SET                         CML19580
1959  *                                                                           CML19590
1960  *  TT82      STBP       IIP BIT NOT RESET IN CURRENT PSW                    CML19600
1961  *                                                                           CML19610
1962  *  TT83      UMV        IIP FLAG = 0, NO PIC INT                            CML19620
1963  *                                                                           CML19630
1964  *  TT84      UMV        PIC INT BUT IIP BIT NOT SET                         CML19640
1965  *                                                                           CML19650
1966  *  TT85      UMV        IIP BIT NOT RESET IN CURRENT PSW                    CML19660
1967  *                                                                           CML19670
1968  *  TT86      MOVE       IIP FLAG = 0, NO PIC INT                            CML19680
1969  *                                                                           CML19690
1970  *  TT87      MOVE       PIC INT BUT IIP BIT NOT SET                         CML19700
1971  *                                                                           CML19710
1972  *  TT88      MOVE       IIP BIT NOT RESET IN CURRENT PSW                    CML19720
1973  *                                                                           CML19730
1974  *  TT89      CPAN       IIP FLAG = 0, NO PIC INT                            CML19740
1975  *                                                                           CML19750
1976  *  TT8A      CPAN       PIC INT BUT IIP BIT NOT SET                         CML19760
1977  *                                                                           CML19770
1978  *  TT8B      CPAN       IIP BIT NOT RESET IN CURRENT PSW                    CML19780
1979  *                                                                           CML19790
1980  *  TT8C      MVTU       IIP FLAG = 0, NO PIC INT                            CML19800
1981  *                                                                           CML19810
1982  *  TT8D      MVTU       PIC INT BUT IIP BIT NOT SET                         CML19820
1983  *                                                                           CML19830
1984  *  TT8E      MVTU       IIP BIT NOT RESET IN CURRENT PSW                    CML19840
1985  *                                                                           CML19850
1986  *  TT8F      PMV        IIP FLAG = 0, NO PIC INT                            CML19860
1987  *                                                                           CML19870
1988  *  TT90      PMV        PIC INT BUT IIP BIT NOT SET                         CML19880
```

ERROR CODE LISTING

```
1989  *                                                                    CML19890
1990  *  TT91      PMV        IIP BIT NOT RESET IN CURRENT PSW             CML19900
1991  *                                                                    CML19910
1992  *  TT92      LPB        IIP FLAG = 0, NO PIC INT                     CML19920
1993  *                                                                    CML19930
1994  *  TT93      LPB        PIC INT BUT IIP BIT NOT SET                  CML19940
1995  *                                                                    CML19950
1996  *  TT94      LPB        IIP BIT NOT RESET IN CURRENT PSW             CML19960
1997  *                                                                    CML19970
1998  *--------------------------------------------------------------      CML19980
1999  *                                                                    CML19990
2000  *                                                                    CML20000
2001  * --------------------------------------------------------------     CML20010
2002  *                                                                    CML20020
2003  *                                                                    CML20030
```

```
                              *
                              ***********************************************************************
                              *                                                                     *
                              *                          TEST 1  -  LPB                             *
                              *                                                                     *
                              *            CONVERT PACKED DECIMAL TO BINARY AND LOAD.               *
                              *                                                                     *
                              ***********************************************************************
                              *
                              *
          0000 1920           TEST1    EQU   *
                              *
001920    2521                         LCS   R2,1                 CLEAR DEST REGS
001922    2531                         LCS   R3,1
001924    5850 3018                    L     R5,LPB.01A           LOAD RESULT IN REGS
001928    5860 301C                    L     R6,LPB.01B
00192C    41F0 A85E =00418E            BAL   LINK,REST3           SAVE INSTRUCTION ADDRESS
                              *
001930    5F20 2DF8                    LPB   R2,LPB.01
                              *
                              * LPB  RX1 SOURCE IS ALL ZEROES
                              *
001934    9577                         EPSR  R7,R7                CAPTURE CONDITION CODE
001936    C470 000F                    NHI   R7,X'F'              MASK TO GET CC
00193A    C570 0000                    CLHI  R7,X'0'              CHECK THAT CC = 0000
00193E    4330 1952                    BE    CNVRT2               CC OK, CONTINUE
001942    C8A0 3130                    LHI   R10,C'10'            LOAD ERROR NO
001946    40A0 17A2                    STH   R10,ERRNO            STORE
00194A    40A0 175A                    STH   R10,NOERR            SET ERR FLAG
00194E    41E0 3F94                    BAL   RET,CCNG             ERROR 10 CC=0000 NOT RETURNED
001952    41F0 39CA           CNVRT2   BAL   LINK,LPBCHK          CHECK DEST REGS
                              *
001956    2420                         LIS   R2,0                 CLEAR DEST REGS
001958    2430                         LIS   R3,0
00195A    5850 3020                    L     R5,LPB.02A           LOAD RESULT IN REGS
00195E    5860 3024                    L     R6,LPB.02B
001962    41F0 A828 =00418E            BAL   LINK,REST3           SAVE INSTRUCTION ADDRESS
                              *
001966    5F20                         DCX   6F20                 OP CODE,DEST REG
001968    949E                         DC    Z(LPB.02-*-2+X'8000')
                              * LPB  RX2 SOURCE IS 9223372036854775807 C  = 7FFF FFFF FFFF FFFF
                              *
00196A    9577                         EPSR  R7,R7                CAPTURE CONDITION CODE
00196C    C470 000F                    NHI   R7,X'F'              MASK TO GET CC
001970    C570 0002                    CLHI  R7,X'2'              CHECK THAT CC = 0010
001974    4330 1988                    BE    CNVRT3               CC OK, CONTINUE
001978    C8A0 3131                    LHI   R10,C'11'            LOAD ERROR NO
00197C    40A0 17A2                    STH   R10,ERRNO            STORE
001980    40A0 175A                    STH   R10,NOERR            SET ERR FLAG
001984    41E0 3F94                    BAL   RET,CCNG             ERROR 11 CC=0010 NOT RETURNED
001988    41F0 39CA           CNVRT3   BAL   LINK,LPBCHK          CHECK DEST REGS
                              *
00198C    2420                         LIS   R2,0                 CLEAR DEST REGS
```

TEST 1 - LPB

```
  00198E   2430                     LIS   R3,0                                               CML20580
  001990   5850 3028                L     R5,LPB.03A           LOAD RESULT IN REGS           CML20590
  001994   5860 302C                L     R6,LPB.03B                                         CML20600
  001998   41F0 A7F2 =00418E        BAL   LINK,REST3           SAVE INSTRUCTION ADDRESS      CML20610
                          *                                                                  CML20620
? 00199C   6F20 4000 2E18           LPB   R2,LPB.03(R0,R0)                                   CML20630
                          *                                                                  CML20640
                          * LPB  RX3 SOURCE IS 9223372036854775807 D = 8000 0000 0000 0001   CML20650
                          *                                                                  CML20660
  0019A2   9577                     EPSR  R7,R7                CAPTURE CONDITION CODE        CML20670
  0019A4   C470 000F                NHI   R7,X'F'              MASK TO GET CC                CML20680
  0019A8   C570 0001                CLHI  R7,X'1'              CHECK THAT CC = 0001          CML20690
  0019AC   4330 19C0                BE    CNVRT4               CC OK, CONTINUE               CML20700
  0019B0   C8A0 3132                LHI   R10,C'12'            LOAD ERROR NO                 CML20710
  0019B4   40A0 17A2                STH   R10,ERRNO            STORE                         CML20720
  0019B8   40A0 175A                STH   R10,NOERR            SET ERR FLAG                  CML20730
  0019BC   41E0 3F94                BAL   RET,CCNG             ERROR 12 CC=0001 NOT RETURNED CML20740
  0019C0   41F0 39CA      CNVRT4    BAL   LINK,LPBCHK          CHECK RESULT REGS             CML20750
                          *                                                                  CML20760
  0019C4   2420                     LIS   R2,0                 CLEAR DEST REGS               CML20770
  0019C6   2430                     LIS   R3,0                                               CML20780
  0019C8   5850 3018                L     R5,LPB.04A           LOAD RESULT IN REGS           CML20790
  0019CC   5860 301C                L     R6,LPB.04B                                         CML20800
  0019D0   41F0 A7BA =00418E        BAL   LINK,REST3           SAVE INSTRUCTION ADDRESS      CML20810
                          *                                                                  CML20820
? 0019D4   6F20 4000 2E28           LPB   R2,LPB.04(R0,R0)                                   CML20830
                          *                                                                  CML20840
                          * LPB  RX3 SOURCE IS 20 DECIMAL DIGITS TO CHECK OVERFLOW           CML20850
                          *       MAX IS 19 DIGITS TO FILL 64 BITS                           CML20860
                          *                                                                  CML20870
  0019DA   9577                     EPSR  R7,R7                CAPTURE CONDITION CODE        CML20880
  0019DC   C470 000F                NHI   R7,X'F'              MASK TO GET CC                CML20890
  0019E0   C570 0004                CLHI  R7,X'4'              CHECK THAT CC = 0100          CML20900
  0019E4   4330 19F8                BE    CNVRT5               CC OK, CONTINUE               CML20910
  0019E8   C8A0 3133                LHI   R10,C'13'            LOAD ERROR NO                 CML20920
  0019EC   40A0 17A2                STH   R10,ERRNO            STORE                         CML20930
  0019F0   40A0 175A                STH   R10,NOERR            SET ERR FLAG                  CML20940
  0019F4   41E0 3F94                BAL   RET,CCNG             ERROR 13 CC=0100 NOT RETURNED CML20950
  0019F8   41F0 39CA      CNVRT5    BAL   LINK,LPBCHK          CHECK RESULT REGS             CML20960
                          *                                                                  CML20970
  0019FC   2420                     LIS   R2,0                 CLEAR DEST REGS               CML20980
  0019FE   2430                     LIS   R3,0                                               CML20990
  001A00   5850 3018                L     R5,LPB.05A           LOAD RESULT IN REGS           CML21000
  001A04   5860 301C                L     R6,LPB.05B           R5 AND R6 = R2 AND R3 = 0     CML21010
                          *                                                                  CML21020
  001A08   E640 1A2E                LA    R4,CNVRT6            LOAD INT HANDLER ADR          CML21030
  001A0C   5040 00CC                ST    R4,X'CC'             STORF FOR INT                 CML21040
                          *                                                                  CML21050
                          * LOAD DATA FORMAT FAULT INT VECTOR WITH CNVRT6 ADR                CML21060
                          *                                                                  CML21070
  001A10   41F0 A77A =00418E        BAL   LINK,REST3           SAVE INSTRUCTION ADDRESS      CML21080
                          *                                                                  CML21090
? 001A14   6F20 4000 2E38           LPB   R2,LPB.05(R0,R0)                                   CML21100
```

TEST 1 - LPB

```
                                2111  *                                                                      CML21110
                                2112  *  LPB  RX3 SOURCE IS 0000  INVALID SIGN                               CML21120
                                2113  *       EXPECT REASON CODE IN R13 = 2 (INVALID SIGN PACKED)            CML21130
                                2114  *                                                                      CML21140
  001A1A   C8A0 3134            2115          LHI   R10,C'14'          LOAD ERROR NO                       CML21150
  001A1E   40A0 17A2            2116          STH   R10,ERRNO          STORE                               CML21160
  001A22   40A0 175A            2117          STH   R10,NOERR          SET ERR FLAG                        CML21170
  001A26   41E0 3EBC            2118          BAL   RET,LINTNG         ERROR 14 NO INT FOR INVALID SIGN LPB CML21180
  001A2A   4300 1A58            2119          B     CNVRT7.1           SKIP TO NEXT SECTION                CML21190
                                2120  *                                                                      CML21200
  001A2E   D2D0 1749            2121  CNVRT6  STB   R13,FCODE          STORE REASON CODE (NOW IN REGSET 0)  CML21210
  001A32   C810 30F0            2122          LHI   R1,X'30F0'         LOAD PSW TO RETURN TO SET F         CML21220
  001A36   9501                 2123          EPSR  R0,R1              PSW SWAP AFTER INTERRUPT            CML21230
  001A38   D3D0 1749            2124          LB    R13,FCODE          LOAD REASON CODE (R13 SET F)        CML21240
  001A3C   C5D0 0002            2125          CLHI  R13,X'2'           CHECK IF REASON CODE IS CORRECT      CML21250
  001A40   4330 1A54            2126          BE    CNVRT7             REASON CODE OK GO CHECK REGS        CML21260
  001A44   C8A0 3135            2127          LHI   R10,C'15'          LOAD ERROR NO                       CML21270
  001A48   40A0 17A2            2128          STH   R10,ERRNO          STORE                               CML21280
  001A4C   40A0 175A            2129          STH   R10,NOERR          SET ERR FLAG                        CML21290
  001A50   41E0 3FDE            2130          BAL   RET,RCNG           ERROR 15 REASON CODE 2 NOT RETURNED CML21300
  001A54   41F0 39CA            2131  CNVRT7  BAL   LINK,LPBCHK       CHECK RESULT REGS ARE UNCHANGED     CML21310
                                2132  *                                                                      CML21320
  001A58   2420                 2133  CNVRT7.1 LIS  R2,0               CLEAR RESULT REGS                   CML21330
  001A5A   2430                 2134          LIS   R3,0                                                   CML21340
  001A5C   5850 3018            2135          L     R5,LPB.06A         LOAD RESULTS IN REGS                CML21350
  001A60   5860 301C            2136          L     R6,LPB.06B                                             CML21360
                                2137  *                                                                      CML21370
  001A64   C840 1A8A            2138          LHI   R4,CNVRT8          LOAD INT HANDLER ADR                CML21380
  001A68   4040 00CE            2139          STH   R4,X'CE'           STORE FOR INT                       CML21390
                                2140  *                                                                      CML21400
                                2141  * LOAD DATA FORMAT FAULT INT VECTOR WITH CNVRT8 ADR                   CML21410
                                2142  *                                                                      CML21420
  001A6C   41F0 A71E =00418E    2143          BAL   LINK,REST3         SAVE INSTRUCTION ADDRESS            CML21430
                                2144  *                                                                      CML21440
? 001A70   6F20 4000 2E48       2145          LPB   R2,LPB.06(R0,R0)                                       CML21450
                                2146  *                                                                      CML21460
                                2147  * LPB  RX3 SOURCE IS 00FC INVALID DIGIT DATA                         CML21470
                                2148  *      EXPECT REASON CODE = 3 (INVALID DATA PACKED)                   CML21480
                                2149  *                                                                      CML21490
  001A76   C8A0 3136            2150          LHI   R10,C'16'          LOAD ERROR NO                       CML21500
  001A7A   40A0 17A2            2151          STH   R10,ERRNO          STORE                               CML21510
  001A7E   40A0 175A            2152          STH   R10,NOERR          SET ERR FLAG                        CML21520
  001A82   41E0 3EBC            2153          BAL   RET,LINTNG         ERROR 16 NO INT FOR INVALID DATA LPB CML21530
  001A86   4300 1AB4            2154          B     CNVRT9.1           SKIP TO NEXT SECTION                CML21540
                                2155  *                                                                      CML21550
  001A8A   D2D0 1749            2156  CNVRT8  STB   R13,FCODE          STORE REASON CODE (NOW IN REGSET 0)  CML21560
  001A8E   C810 30F0            2157          LHI   R1,X'30F0'         LOAD PSW TO RETURN TO SET F         CML21570
  001A92   9501                 2158          EPSR  R0,R1              PSW SWAP AFTER INTERRUPT            CML21580
  001A94   D3D0 1749            2159          LB    R13,FCODE          LOAD REASON CODE (R13 SET F)        CML21590
  001A98   C5D0 0003            2160          CLHI  R13,X'3'           CHECK IF REASON CODE CORRECT         CML21600
  001A9C   4330 1AB0            2161          BE    CNVRT9             REASON CODE OK GO TO CHECK REGS     CML21610
  001AA0   C8A0 3137            2162          LHI   R10,C'17'          LOAD ERROR NO                       CML21620
  001AA4   40A0 17A2            2163          STH   R10,ERRNO          STORE                               CML21630
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PREVIOUS WARNING ON PAGE 43

TEST 1 - LPB

```
001AA8   40A0 175A            2164            STH   R10,NOERR          SET ERR FLAG                          CML21640
001AAC   41E0 3FDE            2165            BAL   RET,RCNG           ERROR 17 REASON CODE 3 NOT RETURNED   CML21650
001AB0   41F0 39CA            2166  CNVRT9    BAL   LINK,LPBCHK         CHECK RESULT REGS ARE UNCHANGED       CML21660
                              2167  *                                                                       CML21670
001AB4   C840 16E6            2168  CNVRT9.1  LHI   R4,DFF             LOAD STANDARD INT HANDLER ADR         CML21680
001AB8   4040 00CE            2169            STH   R4,X'CE'           RESTORE                               CML21690
                              2170  *                                                                       CML21700
001ABC   24C0                 2171  CNVRT10   LIS   R12,0              ZERO INDEX                            CML21710
001ABE   24D0                 2172            LIS   R13,0                                                   CML21720
001AC0   2420                 2173  CNVRT11   LIS   R2,0               CLEAR RESULT REGS                     CML21730
001AC2   2430                 2174            LIS   R3,0                                                    CML21740
001AC4   585D 3030            2175            L     R5,LPB.07A(R13)     LOAD RESULTS IN REGS                  CML21750
001AC8   586D 3034            2176            L     R6,LPB.07B(R13)                                           CML21760
001ACC   41F0 A6BE =00418E    2177            BAL   LINK,REST3          SAVE INSTRUCTION ADDRESS              CML21770
                              2178  *                                                                       CML21780
001AD0   6F2C 2E58            2179            LPB   R2,LPB.07(R12)                                          CML21790
                              2180  *                                                                       CML21800
                              2181  * LPB SRC FROM TABLE LPB.07 - LPB.26  ALL POSITIVE                      CML21810
                              2182  *                                                                       CML21820
001AD4   9577                 2183            EPSR  R7,R7               CAPTURE CONDITION CODE                CML21830
001AD6   C470 000F            2184            NHI   R7,X'F'             MASK TO GET CC                        CML21840
001ADA   C570 0002            2185            CLHI  R7,X'2'             CHECK THAT CC = 0010                  CML21850
001ADE   4330 1AF2            2186            BE    CNVRT12             CC OK, CONTINUE                       CML21860
001AE2   C8A0 3131            2187            LHI   R10,C'11'           LOAD ERROR NO                         CML21870
001AE6   40A0 17A2            2188            STH   R10,ERRNO           STORE                                 CML21880
001AEA   40A0 175A            2189            STH   R10,NOERR           SET ERR FLAG                          CML21890
001AEE   41E0 3F94            2190            BAL   RET,CCNG            ERROR 11 CC=0010 NOT RETURNED         CML21900
001AF2   41F0 39CA            2191  CNVRT12   BAL   LINK,LPBCHK         CHECK RESULT REGS                     CML21910
                              2192  *                                                                       CML21920
001AF6   C5C0 0130            2193            CLHI  R12,304             CHECK IF ALL DONE                     CML21930
001AFA   4380 1B0E            2194            BNL   CNVRT13             DONE, CONTINUE                        CML21940
001AFE   FAC0 0000 0010       2195            AI    R12,16              INCREMENT SRC INDEX                   CML21950
001B04   FAD0 0000 0008       2196            AI    R13,8               INCREMENT RESULT INDEX                CML21960
001B0A   4300 1AC0            2197            B     CNVRT11             LOOP TIL ALL DONE                     CML21970
                              2198  *                                                                       CML21980
001B0E   24C0                 2199  CNVRT13   LIS   R12,0              ZERO INDEX                            CML21990
001B10   24D0                 2200            LIS   R13,0                                                   CML22000
001B12   2420                 2201  CNVRT14   LIS   R2,0               CLEAR RESULT REGS                     CML22010
001B14   2430                 2202            LIS   R3,0                                                    CML22020
001B16   585D 30D0            2203            L     R5,LPB.27A(R13)     LOAD RESULTS IN REGS                  CML22030
001B1A   586D 30D4            2204            L     R6,LPB.27B(R13)                                           CML22040
001B1E   41F0 A66C =00418E    2205            BAL   LINK,REST3          SAVE INSTRUCTION ADDRESS              CML22050
                              2206  *                                                                       CML22060
001B22   6F2C 2F98            2207            LPB   R2,LPB.27(R12)                                          CML22070
                              2208  *                                                                       CML22080
                              2209  * LPB SRC FROM TABLE LPB.27 - LPB.33  ALL NEGATIVE                      CML22090
                              2210  *                                                                       CML22100
001B26   9577                 2211            EPSR  R7,R7               CAPTURE CONDITION CODE                CML22110
001B28   C470 000F            2212            NHI   R7,X'F'             MASK TO GET CC                        CML22120
001B2C   C570 0001            2213            CLHI  R7,X'1'             CHECK THAT CC = 0001                  CML22130
001B30   4330 1B44            2214            BE    CNVRT15             CC OK, CONTINUE                       CML22140
001B34   C8A0 3132            2215            LHI   R10,C'12'           LOAD ERROR NO                         CML22150
001B38   40A0 17A2            2216            STH   R10,ERRNO           STORE                                 CML22160
```

TEST 1 - LPB

```
001B3C   40A0 175A          2217            STH   R10,NOERR          SET ERR FLAG                          CML22170
001B40   41E0 3F94          2218            BAL   RET,CCNG           ERROR 12 CC=0001 NOT RETURNED         CML22180
001B44   41F0 39CA          2219  CNVRT15   BAL   LINK,LPBCHK        CHECK RESULT REGS                     CML22190
                            2220  *                                                                       CML22200
001B48   C5C0 0070          2221            CLHI  R12,112            CHECK IF ALL DONE                     CML22210
001B4C   4380 1B60          2222            BNL   CNVRT16            DONE, CONTINUE                        CML22220
001B50   FAC0 0000 0010     2223            AI    R12,16             INCREMENT SRC INDEX                   CML22230
001B56   FAD0 0000 0008     2224            AI    R13,8              INCREMENT RESULT INDEX                CML22240
001B5C   4300 1B12          2225            B     CNVRT14            LOOP TIL ALL DONE                     CML22250
                            2226  *                                                                       CML22260
001B60   4300 0EEA          2227  CNVRT16   B     TSTEND             EXIT TEST 1                           CML22270
                            2228  *                                                                       CML22280
```

TEST 2 - STBP

```
                          2230  *                                                                      CML22300
                          2231  ************************************************************************CML22310
                          2232  *                                                                      *CML22320
                          2233  *                          TEST 2  -  STBP                             *CML22330
                          2234  *                                                                      *CML22340
                          2235  *          CONVERT BINARY TO PACKED DECIMAL AND STORE.                  *CML22350
                          2236  *                                                                      *CML22360
                          2237  ************************************************************************CML22370
                          2238  *                                                                      CML22380
                          2239  *                                                                      CML22390
        0000 1B64         2240  TEST2    EQU   *                                                       CML22400
                          2241  *                                                                      CML22410
001B64  5820 3018         2242           L     R2,STBP.01A          LOAD EVEN REG SRC                 CML22420
001B68  5830 301C         2243           L     R3,STBP.01B          LOAD ODD REG SRC                  CML22430
001B6C  C850 2DF8         2244           LHI   R5,SRES.01           LOAD EXP RESULT ADR               CML22440
001B70  C860 351C         2245           LHI   R6,SDEST             LOAD DEST STRING ADR              CML22450
001B74  41F0 A616 =00418E 2246           BAL   LINK,REST3           SAVE INSTRUCTION ADDRESS          CML22460
                          2247  *                                                                      CML22470
001B78  6E20 351C         2248           STBP  R2,SDEST                                               CML22480
                          2249  *                                                                      CML22490
                          2250  * STBP RX1  SOURCE IS ALL ZEROES                                       CML22500
                          2251  *                                                                      CML22510
001B7C  9577              2252           EPSR  R7,R7                CAPTURE CONDITION CODE            CML22520
001B7E  C470 000F         2253           NHI   R7,X'F'              MASK TO GET CC                    CML22530
001B82  C570 0000         2254           CLHI  R7,X'0'              CHECK THAT CC = 0000              CML22540
001B86  4330 1B9A         2255           BE    STORE2               CC OK, CONTINUE                   CML22550
001B8A  C8A0 3230         2256           LHI   R10,C'20'            LOAD ERROR NO                     CML22560
001B8E  40A0 17A2         2257           STH   R10,ERRNO            STORE                             CML22570
001B92  40A0 175A         2258           STH   R10,NOERR            SET ERR FLAG                      CML22580
001B96  41E0 3F94         2259           BAL   RET,CCNG             ERROR 20 CC=0000 NOT RETURNED     CML22590
001B9A  41F0 3A50         2260  STORE2   BAL   LINK,STBPCHK         CHECK DEST STRING IS CORRECT      CML22600
                          2261  *                                                                      CML22610
001B9E  5820 3020         2262           L     R2,STBP.02A          LOAD EVEN REG SRC                 CML22620
001BA2  5830 3024         2263           L     R3,STBP.02B          LOAD ODD REG SRC                  CML22630
001BA6  C850 2E08         2264           LHI   R5,SRES.02           LOAD EXP RESULT ADR               CML22640
001BAA  C860 351C         2265           LHI   R6,SDEST             LOAD DEST STRING ADR              CML22650
001BAE  41F0 A5DC =00418F 2266           BAL   LINK,REST3           SAVE INSTRUCTION ADDRESS          CML22660
                          2267  *                                                                      CML22670
001BB2  6E20              2268           DCX   6E20                 OP CODE,SRC REG                   CML22680
001BB4  9966              2269           DC    Z(SDEST-*-2+X'8000')                                   CML22690
                          2270  * STBP  RX2 SOURCE IS 7FFF FFFF FFFF FFFF = 9223372036854775807 C      CML22700
                          2271  *                                                                      CML22710
001BB6  9577              2272           EPSR  R7,R7                CAPTURE CONDITION CODE            CML22720
001BB8  C470 000F         2273           NHI   R7,X'F'              MASK TO GET CC                    CML22730
001BBC  C570 0002         2274           CLHI  R7,X'2'              CHECK THAT CC = 0010              CML22740
001BC0  4330 1BD4         2275           BE    STORE3               CC OK, CONTINUE                   CML22750
001BC4  C8A0 3231         2276           LHI   R10,C'21'            LOAD ERROR NO                     CML22760
001BC8  40A0 17A2         2277           STH   R10,ERRNO            STORE                             CML22770
001BCC  40A0 175A         2278           STH   R10,NOERR            SET ERR FLAG                      CML22780
001BD0  41E0 3F94         2279           BAL   RET,CCNG             ERROR 21 CC=0010 NOT RETURNED     CML22790
001BD4  41F0 3A50         2280  STORE3   BAL   LINK,STBPCHK         CHECK DEST STRING IS CORRECT      CML22800
                          2281  *                                                                      CML22810
001BD8  5820 3028         2282           L     R2,STBP.03A          LOAD EVEN REG SRC                 CML22820
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TEST 2 - STBP

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  001BDC   5830 302C            2283           L     R3,STBP.03B         LOAD ODD REG SRC                          CML22830
  001BE0   C850 2E18            2284           LHI   R5,SRES.03          LOAD EXP RESULT ADR                       CML22840
  001BE4   C860 351C            2285           LHI   R6,SDEST            LOAD DEST STRING ADR                      CML22850
  001BE8   41F0 A5A2 =00418E    2286           BAL   LINK,REST3          SAVE INSTRUCTION ADDRESS                  CML22860
                                2287  *                                                                          CML22870
? 001BEC   6E20 4000 351C       2288           STBP  R2,SDEST(R0,R0)                                           CML22880
                                2289  *                                                                          CML22890
                                2290  * STBP RX3 SOURCE IS 8000 0000 0000 0001 = 9223372036854775807 D          CML22900
                                2291  *                                                                          CML22910
  001BF2   9577                 2292           EPSR  R7,R7               CAPTURE CONDITION CODE                    CML22920
  001BF4   C470 000F            2293           NHI   R7,X'F'             MASK TO GET CC                            CML22930
  001BF8   C570 0001            2294           CLHI  R7,X'1'             CHECK THAT CC = 0001                      CML22940
  001BFC   4330 1C10            2295           BE    STORE4              CC OK, CONTINUE                           CML22950
  001C00   C8A0 3232            2296           LHI   R10,C'22'           LOAD ERROR NO                             CML22960
  001C04   40A0 17A2            2297           STH   R10,ERRNO           STORE                                     CML22970
  001C08   40A0 175A            2298           STH   R10,NOERR           SET ERR FLAG                              CML22980
  001C0C   41E0 3F94            2299           BAL   RET,CCNG            ERROR 22 CC=0001 NOT RETURNED             CML22990
  001C10   41F0 3A50            2300  STORE4   BAL   LINK,STBPCHK        CHECK DEST STRING IS CORRECT              CML23000
                                2301  *                                                                          CML23010
  001C14   24C0                 2302           LIS   R12,0               CLEAR INDEX                               CML23020
  001C16   24D0                 2303           LIS   R13,0                                                         CML23030
  001C18   582D 3030            2304  STORE5   L     R2,STBP.07A(R13)    LOAD EVEN REG SRC                         CML23040
  001C1C   583D 3034            2305           L     R3,STBP.07B(R13)    LOAD ODD REG SRC                          CML23050
  001C20   C85C 2E58            2306           LHI   R5,SRES.07(R12)     LOAD EXP RESULT ADR                       CML23060
  001C24   C860 351C            2307           LHI   R6,SDEST            LOAD DEST STRING ADR                      CML23070
  001C28   41F0 A562 =00418E    2308           BAL   LINK,REST3          SAVE INSTRUCTION ADDRESS                  CML23080
                                2309  *                                                                          CML23090
  001C2C   6E20 351C            2310           STBP  R2,SDEST                                                  CML23100
                                2311  *                                                                          CML23110
                                2312  * STBP SRC REGS CHECK STBP.07 - STBP.26  ALL POSITIVE                     CML23120
                                2313  *                                                                          CML23130
  001C30   9577                 2314           EPSR  R7,R7               CAPTURE CONDITION CODE                    CML23140
  001C32   C470 000F            2315           NHI   R7,X'F'             MASK TO GET CC                            CML23150
  001C36   C570 0002            2316           CLHI  R7,X'2'             CHECK THAT CC = 0010                      CML23160
  001C3A   4330 1C4E            2317           BE    STORE6              CC OK, CONTINUE                           CML23170
  001C3E   C8A0 3231            2318           LHI   R10,C'21'           LOAD ERROR NO                             CML23180
  001C42   40A0 17A2            2319           STH   R10,ERRNO           STORE                                     CML23190
  001C46   40A0 175A            2320           STH   R10,NOERR           SET ERR FLAG                              CML23200
  001C4A   41E0 3F94            2321           BAL   RET,CCNG            ERROR 21 CC=0010 NOT RETURNED             CML23210
  001C4E   41F0 3A50            2322  STORE6   BAL   LINK,STBPCHK        CHECK DEST STRING IS CORRECT              CML23220
  001C52   C5D0 0098            2323           CLHI  R13,152             CHECK IF ALL DONE                         CML23230
  001C56   4380 1C6A            2324           BNL   STORE7              DONE, CONTINUE                            CML23240
  001C5A   FAC0 0000 0010       2325           AI    R12,16              INCREMENT RESULT INDEX                    CML23250
  001C60   FAD0 0000 0008       2326           AI    R13,8               INCREMENT SRC INDEX                       CML23260
  001C66   4300 1C18            2327           B     STORE5              LOOP TIL ALL #DONE                        CML23270
                                2328  *                                                                          CML23280
                                2329  *                                                                          CML23290
  001C6A   24C0                 2330  STORE7   LIS   R12,0               CLEAR INDEX                               CML23300
  001C6C   24D0                 2331           LIS   R13,0                                                         CML23310
  001C6E   582D 30D0            2332  STORE8   L     R2,STBP.27A(R13)    LOAD EVEN REG SRC                         CML23320
  001C72   583D 30D4            2333           L     R3,STBP.27B(R13)    LOAD ODD REG SRC                          CML23330
  001C76   C85C 2F98            2334           LHI   R5,SRES.27(R12)     LOAD EXP RESULT ADR                       CML23340
  001C7A   C860 351C            2335           LHI   R6,SDEST            LOAD DEST STRING ADR                      CML23350
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TEST 2 - STBP

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001C7E  41F0 A50C =00418E   2336            BAL   LINK,REST3          SAVE INSTRUCTION ADDRESS          CML23360
                            2337  *                                                                    CML23370
001C82  6E20 351C           2338            STBP  R2,SDEST                                           CML23380
                            2339  *                                                                    CML23390
                            2340  * STBP SRC REGS CHECK STBP.27 - STBP.33  ALL NEGATIVE               CML23400
                            2341  *                                                                    CML23410
001C86  9577                2342            EPSR  R7,R7               CAPTURE CONDITION CODE         CML23420
001C88  C470 000F           2343            NHI   R7,X'F'             MASK TO GET CC                 CML23430
001C8C  C570 0001           2344            CLHI  R7,X'1'             CHECK THAT CC = 0001           CML23440
001C90  4330 1CA4           2345            BE    STORE9              CC OK, CONTINUE                CML23450
001C94  C8A0 3232           2346            LHI   R10,C'22'           LOAD ERROR NO                  CML23460
001C98  40A0 17A2           2347            STH   R10,ERRNO           STORE                          CML23470
001C9C  40A0 175A           2348            STH   R10,NOERR           SET ERR FLAG                   CML23480
001CA0  41E0 3F94           2349            BAL   RET,CCNG            ERROR 22 CC=0001 NOT RETURNED  CML23490
001CA4  41F0 3A50           2350  STORE9    BAL   LINK,STBPCHK        CHECK DEST STRING IS CORRECT   CML23500
001CA8  C5D0 0038           2351            CLHI  R13,56              CHECK IF ALL DONE              CML23510
001CAC  4380 1CC0           2352            BNL   STORE10             DONE, CONTINUE                 CML23520
001CB0  FAC0 0000 0010      2353            AI    R12,16              INCREMENT RESULT INDEX         CML23530
001CB6  FAD0 0000 0008      2354            AI    R13,8               INCREMENT SRC INDEX            CML23540
001CBC  4300 1C6E           2355            B     STORE8              LOOP TIL ALL #DONE             CML23550
                            2356  *                                                                    CML23560
001CC0  4300 0FEA           2357  STORE10   B     TSTEND              EXIT TEST 2                    CML23570
                            2358  *                                                                    CML23580
                            2359  *                                                                    CML23590
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TEST 3 - MOVE

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                                  2361 *                                                                     CML23610
                                  2362 *********************************************************************  CML23620
                                  2363 *                                                                 *   CML23630
                                  2364 *                        TEST 3  -  MOVE (MOVEP)                   *   CML23640
                                  2365 *                                                                 *   CML23650
                                  2366 *           MOVE DATA FROM SOURCE AREA TO DESTINATION AREA.        *   CML23660
                                  2367 *           PAD SHORTER STRING TO LENGTH LONGER STRING,            *   CML23670
                                  2368 *           USING PAD CHARACTER CONTAINED IN REG 0.                *   CML23680
                                  2369 *                                                                 *   CML23690
                                  2370 *           MOVEP (MOVE WITH DEFAULT PAD - C BIT = 1)              *   CML23700
                                  2371 *           DEFAULT PAD CHARACTER = X'20'.                         *   CML23710
                                  2372 *                                                                 *   CML23720
                                  2373 *********************************************************************  CML23730
                                  2374 *                                                                     CML23740
                                  2375 *                                                                     CML23750
         0000 1CC4                2376 TEST3    EQU  *                                                       CML23760
001CC4   2421                     2377          LIS  R2,1                 LOAD INITIAL BYTE LENGTH           CML23770
001CC6   2431                     2378          LIS  R3,1                 LOAD INITIAL BYTE LENGTH           CML23780
001CC8   2460                     2379          LIS  R6,0                 ZERO SHIFT COUNT                   CML23790
001CCA   41F0 A49A =004168        2380 SET3     BAL  LINK,RESTORE         RESTORE ALL                        CML23800
                                  2381 *                                                                     CML23810
001CCE   8C20 3684                2382          MOVE R2,OPN1,R3,OPN2                                         CML23820
001CD2   0130 3584
                                  2383 *                                                                     CML23830
                                  2384 * MOVE RX1,RX1                                                        CML23840
                                  2385 *                                                                     CML23850
001CD6   9577                     2386          EPSR R7,R7                CAPTURE CONDITION CODE             CML23860
001CD8   C470 000F                2387          NHI  R7,X'F'              MASK TO GET CC                     CML23870
001CDC   C570 0000                2388          CLHI R7,X'0'              CHECK THAT CC = 0000               CML23880
001CE0   4330 1CF4                2389          BE   SET3.01              CC OK, CONTINUE                    CML23890
001CE4   C8A0 3330                2390          LHI  R10,C'30'            LOAD ERROR NO                      CML23900
001CE8   40A0 17A2                2391          STH  R10,ERRNO            STORE                              CML23910
001CEC   40A0 175A                2392          STH  R10,NOERR            SET ERR FLAG                       CML23920
001CF0   41E0 3F94                2393          BAL  RET,CCNG             ERROR 30 EXP CC=0000 NOT RETURNED  CML23930
                                  2394 *                                                                     CML23940
001CF4   C840 3684                2395 SET3.01  LHI  R4,OPN1              LOAD DESTINATION ADR               CML23950
001CF8   C850 3784                2396          LHI  R5,MASTER            LOAD MASTER ADR                    CML23960
001CFC   41F0 A4A0 =0041A0        2397          BAL  LINK,MVCHK           GO TO BYTE BY BYTE CHECK           CML23970
001D00   C843 3584                2398          LHI  R4,OPN2(R3)          LOAD EXP NEXT SRC ADR              CML23980
001D04   0514                     2399          CLR  R1,R4                COMPARE ACTUAL TO EXP SRC ADDRESS  CML23990
001D06   4330 1D1A                2400          BE   SET3.02              CHECK OK                           CML24000
001D0A   C8A0 3331                2401          LHI  R10,C'31'            LOAD ERROR NO                      CML24010
001D0E   40A0 17A2                2402          STH  R10,ERRNO            STORE                              CML24020
001D12   40A0 175A                2403          STH  R10,NOERR            SET ERR FLAG                       CML24030
001D16   41E0 A32E =004048        2404          BAL  RET,ADRERR           ERROR 31  REG 1 INCORRECT          CML24040
                                  2405 *                                                                     CML24050
001D1A   C560 00FF                2406 SET3.02  CLHI R6,255               CHECK IF DONE ALL PASSES           CML24060
001D1E   4330 1D2C                2407          BE   SET3.03              GO TO NEXT SECTION                 CML24070
001D22   2621                     2408          AIS  R2,1                 INCREMENT FOR NEXT MOVE            CML24080
001D24   2631                     2409          AIS  R3,1                 INCREMENT FOR NEXT MOVE            CML24090
001D26   2661                     2410          AIS  R6,1                 INCREMENT PASS COUNT               CML24100
001D28   4300 1CCA                2411          B    SET3                 RETURN                             CML24110
                                  2412 *                                                                     CML24120
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TEST 3 - MOVE

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                          2413  *                                                                      CML24130
                          2414  *                                                                      CML24140
 001D2C   2421            2415  SET3.03  LIS   R2,1              LOAD INITIAL BYTE COUNT              CML24150
 001D2E   2431            2416           LIS   R3,1              LOAD INITIAL BYTE COUNT              CML24160
 001D30   2460            2417           LIS   R6,0              ZERO SHIFT COUNT                     CML24170
 001D32   41F0 A432 =004168 2418 SET3.04  BAL   LINK,RESTORE     RESTORE ALL                          CML24180
                          2419  *                                                                      CML24190
 001D36   8C20            2420           DCX   8C20              OP CODE,DEST REG                     CML24200
 001D38   994A            2421           DC    Z(OPN1-*-2+X'8000')                                    CML24210
 001D3A   0130            2422           DCX   0130                                                   CML24220
 001D3C   9846            2423           DC    Z(OPN2-*-2+X'8000')                                    CML24230
                          2424  *  MOVE RX2,RX2                                                      CML24240
                          2425  *                                                                      CML24250
 001D3E   9577            2426           EPSR  R7,R7             CAPTURE CONDITION CODE               CML24260
 001D40   C470 000F       2427           NHI   R7,X'F'           MASK TO GET CC                       CML24270
 001D44   C570 0000       2428           CLHI  R7,X'0'           CHECK THAT CC = 0000                 CML24280
 001D48   4330 1D5C       2429           BE    SET3.05           CC OK, CONTINUE                      CML24290
 001D4C   C8A0 3330       2430           LHI   R10,C'30'         LOAD ERROR NO                        CML24300
 001D50   40A0 17A2       2431           STH   R10,ERRNO         STORE                                CML24310
 001D54   40A0 175A       2432           STH   R10,NOERR         SET ERR FLAG                         CML24320
 001D58   41E0 3F94       2433           BAL   RET,CCNG          ERROR 30,EXP CC=0000 NOT RETURNED    CML24330
                          2434  *                                                                      CML24340
 001D5C   C840 3684       2435  SET3.05  LHI   R4,OPN1           LOAD DESTINATION ADR                 CML24350
 001D60   C850 3784       2436           LHI   R5,MASTER         LOAD MASTER ADR                      CML24360
 001D64   41F0 A438 =0041A0 2437          BAL   LINK,MVCHK        GO TO BYTE BY BYTE CHECK             CML24370
 001D68   C843 3584       2438           LHI   R4,OPN2(R3)       LOAD EXP NEXT SRC ADR                CML24380
 001D6C   0514            2439           CLR   R1,R4             COMPARE ACTUAL TO EXP SRC ADDRESS    CML24390
 001D6E   4330 1D82       2440           BE    SET3.06                                                CML24400
 001D72   C8A0 3331       2441           LHI   R10,C'31'         LOAD ERROR NO                        CML24410
 001D76   40A0 17A2       2442           STH   R10,ERRNO         STORE                                CML24420
 001D7A   40A0 175A       2443           STH   R10,NOERR         SET ERR FLAG                         CML24430
 001D7E   41E0 A2C6 =004048 2444          BAL   RET,ADRERR        ERROR 31  REG 1 INCORRECT            CML24440
                          2445  *                                                                      CML24450
 001D82   C560 00FF       2446  SET3.06  CLHI  R6,255            CHECK IF DONE ALL PASSES             CML24460
 001D86   4330 1D94       2447           BE    SET3.07           GO TO NEXT SECTION                   CML24470
 001D8A   2621            2448           AIS   R2,1              INCREMENT FOR NEXT MOVE              CML24480
 001D8C   2631            2449           AIS   R3,1              INCREMENT FOR NEXT MOVE              CML24490
 001D8E   2661            2450           AIS   R6,1              INCREMENT SHIFT COUNT                CML24500
 001D90   4300 1D32       2451           B     SET3.04           RETURN                               CML24510
                          2452  *                                                                      CML24520
                          2453  *                                                                      CML24530
                          2454  *                                                                      CML24540
 001D94   2421            2455  SET3.07  LIS   R2,1              LOAD INITIAL BYTE LENGTH             CML24550
 001D96   2431            2456           LIS   R3,1              LOAD INITIAL BYTE LENGTH             CML24560
 001D98   2460            2457           LIS   R6,0              ZERO SHIFT COUNT                     CML24570
 001D9A   41F0 A3CA =004168 2458 SET3.08  BAL   LINK,RESTORE     RESTORE ALL                          CML24580
                          2459  *                                                                      CML24590
? 001D9E   8C20 4000 3684 2460           MOVE  R2,OPN1(R0,R0),R3,OPN2(R0,R0)                          CML24600
? 001DA4   0130 4000 3584
                          2461  *                                                                      CML24610
                          2462  *  MOVE RX3,RX3                                                      CML24620
                          2463  *                                                                      CML24630
 001DAA   9577            2464           EPSR  R7,R7             CAPTURE CONDITION CODE               CML24640
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TEST 3 - MOVE

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001DAC   C470 000F            2465           NHI   R7,X'F'          MASK TO GET CC                          CML24650
001DB0   C570 0000            2466           CLHI  R7,X'0'          CHECK THAT CC = 0000                    CML24660
001DB4   4330 1DC8            2467           BE    SET3.09          CC OK, CONTINUE                         CML24670
001DB8   C8A0 3330            2468           LHI   R10,C'30'        LOAD ERROR NO                           CML24680
001DBC   40A0 17A2            2469           STH   R10,ERRNO        STORE                                   CML24690
001DC0   40A0 175A            2470           STH   R10,NOERR        SET ERR FLAG                            CML24700
001DC4   41E0 3F94            2471           BAL   RET,CCNG         ERROR 30 EXP CC=0000 NOT RETURNED       CML24710
                              2472   *                                                                       CML24720
001DC8   C840 3684            2473   SET3.09 LHI   R4,OPN1         LOAD DESTINATION ADR                    CML24730
001DCC   C850 3784            2474           LHI   R5,MASTER        LOAD MASTER ADR                         CML24740
001DD0   41F0 A3CC =0041A0    2475           BAL   LINK,MVCHK       GO TO BYTE BY BYTE CHECK                CML24750
001DD4   C843 3584            2476           LHI   R4,OPN2(R3)      LOAD EXP NEXT SRC ADR                   CML24760
001DD8   0514                 2477           CLR   R1,R4            COMPARE ACTUAL TO EXP SRC ADDRESS       CML24770
001DDA   4330 1DEE            2478           BE    SET3.10                                                  CML24780
001DDE   C8A0 3331            2479           LHI   R10,C'31'        LOAD ERROR NO                           CML24790
001DE2   40A0 17A2            2480           STH   R10,ERRNO        STORE                                   CML24800
001DE6   40A0 175A            2481           STH   R10,NOERR        SET ERR FLAG                            CML24810
001DEA   41E0 A25A =004048    2482           BAL   RET,ADRERR       ERROR 31 REG 1 INCORRECT                CML24820
                              2483   *                                                                       CML24830
001DEE   C560 00FF            2484   SET3.10 CLHI  R6,255           CHECK IF DONE ALL PASSES                CML24840
001DF2   4330 1E00            2485           BE    SET3.11          GO TO NEXT SECTION                      CML24850
001DF6   2621                 2486           AIS   R2,1             INCREMENT FOR NEXT MOVE                 CML24860
001DF8   2631                 2487           AIS   R3,1             INCREMENT FOR NEXT MOVE                 CML24870
001DFA   2661                 2488           AIS   R6,1             INCREMENT SHIFT COUNT                   CML24880
001DFC   4300 1D9A            2489           B     SET3.08          RETURN                                  CML24890
                              2490   *                                                                       CML24900
                              2491   *                                                                       CML24910
                              2492   *                                                                       CML24920
001E00   2421                 2493   SET3.11 LIS   R2,1             LOAD DESTINATION LENGTH                 CML24930
001E02   2432                 2494           LIS   R3,2             LOAD SOURCE LENGTH                      CML24940
001E04   41F0 A360 =004168    2495   SET3.12 BAL   LINK,RESTORE     RESTORE ALL                             CML24950
                              2496   *                                                                       CML24960
001E08   8C20 3684            2497           MOVE  R2,OPN1,R3,OPN2                                          CML24970
001E0C   0130 3584
                              2498   *                                                                       CML24980
                              2499   *  MOVE RX1,RX1  SOURCE LEN > DEST LEN                                  CML24990
                              2500   *                                                                       CML25000
001E10   9577                 2501           EPSR  R7,R7            CAPTURE CONDITION CODE                  CML25010
001E12   C470 000F            2502           NHI   R7,X'F'          MASK TO GET CC                          CML25020
001E16   C570 0004            2503           CLHI  R7,X'4'          CHECK THAT CC = 0100                    CML25030
001E1A   4330 1E2E            2504           BE    SET3.13          CC OK, CONTINUE                         CML25040
001E1E   C8A0 3332            2505           LHI   R10,C'32'        LOAD ERROR NO                           CML25050
001E22   40A0 17A2            2506           STH   R10,ERRNO        STORE                                   CML25060
001E26   40A0 175A            2507           STH   R10,NOERR        SET ERR FLAG                            CML25070
001E2A   41E0 3F94            2508           BAL   RET,CCNG         ERROR 32 EXP CC = 0100 NOT RETURNED     CML25080
                              2509   *                                                                       CML25090
                              2510   *                                                                       CML25100
                              2511   *                                                                       CML25110
                              2512   *                                                                       CML25120
001E2E   C800 00FF            2513   SET3.13 LHI   R0,X'FF'         LOAD PAD CHARACTER                      CML25130
001E32   2421                 2514           LIS   R2,1             LOAD INITIAL BYTE LENGTH                CML25140
001E34   2432                 2515           LIS   R3,2             LOAD INITIAL BYTE LENGTH                CML25150
001E36   2460                 2516           LIS   R6,0             LOAD SHIFT COUNT                        CML25160
```

TEST 3 - MOVE

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001E38  41F0 A32C =004168    2517  SET3.14  BAL   LINK,RESTORE        RESTORE ALL                                CML25170
                             2518  *                                                                                CML25180
001E3C  8C30 3684            2519            MOVE  R3,OPN1,R2,OPN2                                                  CML25190
001E40  0120 3584
                             2520  *                                                                                CML25200
                             2521  *  MOVE RX1,RX1  DEST = SOURCE X 2  HALF STRING HALF PAD                        CML25210
                             2522  *                                                                                CML25220
001E44  9577                 2523            EPSR  R7,R7               CAPTURE CONDITION CODE                     CML25230
001E46  C470 000F            2524            NHI   R7,X'F'             MASK TO GET CC                             CML25240
001E4A  C570 0000            2525            CLHI  R7,X'0'             CHECK THAT CC = 0000                       CML25250
001E4E  4330 1E62            2526            BE    SET3.15             CC OK, CONTINUE                            CML25260
001E52  C8A0 3330            2527            LHI   R10,C'30'           LOAD ERROR NO                              CML25270
001E56  40A0 17A2            2528            STH   R10,ERRNO           STORE                                      CML25280
001E5A  40A0 175A            2529            STH   R10,NOERR           SET ERR FLAG                               CML25290
001E5E  41E0 3F94            2530            BAL   RET,CCNG            ERROR 30 EXP CC=0000 NOT RETURNED          CML25300
                             2531  *                                                                                CML25310
001E62  C840 3684            2532  SET3.15   LHI   R4,OPN1             LOAD DESTINATION ADR                       CML25320
001E66  C850 3784            2533            LHI   R5,MASTER           LOAD MASTER ADR                            CML25330
001E6A  41F0 A332 =0041A0    2534            BAL   LINK,MVCHK          GO TO BYTE BY BYTE CHECK                   CML25340
001E6E  C842 3584            2535            LHI   R4,OPN2(R2)         LOAD EXP NEXT SRC ADR                      CML25350
001E72  0514                 2536            CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS          CML25360
001E74  4330 1F88            2537            BE    SET3.16                                                        CML25370
001E78  C8A0 3331            2538            LHI   R10,C'31'           LOAD ERROR NO                              CML25380
001E7C  40A0 17A2            2539            STH   R10,ERRNO           STORE                                      CML25390
001E80  40A0 175A            2540            STH   R10,NOERR           SET ERR FLAG                               CML25400
001E84  41E0 A1C0 =004048    2541            BAL   RET,ADRERR          ERROR 31  REG 1 INCORRECT                  CML25410
                             2542  *                                                                                CML25420
001E88  C560 0007            2543  SET3.16   CLHI  R6,7                CHECK IF DONE ALL PASSES                   CML25430
001E8C  4330 1F9A            2544            BE    SET3.17             GO TO NEXT SECTION                         CML25440
001E90  9121                 2545            SLHLS R2,1                SHIFT FOR NEXT MOVE                        CML25450
001E92  9131                 2546            SLHLS R3,1                SHIFT FOR NEXT MOVE                        CML25460
001E94  2661                 2547            AIS   R6,1                INCREMENT SHIFT COUNT                      CML25470
001E96  4300 1E38            2548            B     SET3.14             RETURN                                     CML25480
                             2549  *                                                                                CML25490
                             2550  *                                                                                CML25500
                             2551  *                                                                                CML25510
                             2552  *                                                                                CML25520
001E9A  2432                 2553  SET3.17   LIS   R3,2                LOAD INITIAL BYTE LENGTH                   CML25530
001E9C  2421                 2554            LIS   R2,1                LOAD INITIAL BYTE LENGTH                   CML25540
001E9E  41F0 A2C6 =004168    2555  SET3.18   BAL   LINK,RESTORE         RESTORE ALL                                CML25550
                             2556  *                                                                                CML25560
001EA2  8C30 3684            2557            MOVEP R3,OPN1,R2,OPN2                                                  CML25570
001EA6  2120 3584
                             2558  *                                                                                CML25580
                             2559  * MOVEP RX1,RX1 DEFAULT PAD CHAR '20'                                           CML25590
                             2560  *                                                                                CML25600
001EAA  9577                 2561            EPSR  R7,R7               CAPTURE CONDITION CODE                     CML25610
001EAC  C470 000F            2562            NHI   R7,X'F'             MASK TO GET CC                             CML25620
001EB0  C570 0000            2563            CLHI  R7,X'0'             CHECK THAT CC = 0000                       CML25630
001EB4  4330 1EC8            2564            BE    SET3.19             CC OK, CONTINUE                            CML25640
001EB8  C8A0 3330            2565            LHI   R10,C'30'           LOAD ERROR NO                              CML25650
001EBC  40A0 17A2            2566            STH   R10,ERRNO           STORE                                      CML25660
001EC0  40A0 175A            2567            STH   R10,NOERR           SET ERR FLAG                               CML25670
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TEST 3 - MOVE

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001EC4   41E0 3F94           2568            BAL   RET,CCNG            ERROR 30 EXP CC=0000 NOT RETURNED      CML25680
                             2569  *                                                                          CML25690
001EC8   C840 3684           2570  SET3.19   LHI   R4,OPN1             LOAD DESTINATION ADR                   CML25700
001ECC   C850 3784           2571            LHI   R5,MASTER           LOAD MASTER ADR                        CML25710
001ED0   41F0 A2CC =0041A0   2572            BAL   LINK,MVCHK          GO TO BYTE BY BYTE CHECK               CML25720
001ED4   C842 3584           2573            LHI   R4,OPN2(R2)         LOAD EXP NEXT SRC ADR                  CML25730
001ED8   0514                2574            CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS      CML25740
001EDA   4330 1EEE           2575            BE    SET3.1A                                                    CML25750
001EDE   C8A0 3331           2576            LHI   R10,C'31'           LOAD ERROR NO                          CML25760
001EE2   40A0 17A2           2577            STH   R10,ERRNO           STORE                                  CML25770
001EE6   40A0 175A           2578            STH   R10,NOFRR           SET ERR FLAG                           CML25780
001EEA   41E0 A15A =004048   2579            BAL   RET,ADRERR          ERROR 31 REG 1 INCORRECT               CML25790
                             2580  *                                                                          CML25800
001EEE   C530 00FF           2581  SET3.1A   CLHI  R3,255              DONE ?                                 CML25810
001EF2   4330 1EFC           2582            BE    SET3.1B             CONTINUE                               CML25820
001EF6   2531                2583            AIS   R3,1                INCREMENT DEST LENGTH                  CML25830
001EF8   4300 1E9E           2584            B     SET3.18             LOOP TIL ALL PAD CHECKED               CML25840
                             2585  *                                                                          CML25850
001EFC   4300 0EEA           2586  SET3.1B   B     TSTEND              EXIT TEST 3                            CML25860
                             2587  *                                                                          CML25870
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                                 *                                                                  CML25890
                                 ********************************************************************  CML25900
                                 *                                                                *  CML25910
                                 *                     TEST 4  -  CPAN (CPANP)                    *  CML25920
                                 *                                                                *  CML25930
                                 *     COMPARE DATA FROM SOURCE AREA TO DATA IN DESTINATION AREA.  *  CML25940
                                 *          PAD SHORTER STRING TO LENGTH LONGER STRING,           *  CML25950
                                 *          USING PAD CHARACTER CONTAINED IN REG 0.               *  CML25960
                                 *                                                                *  CML25970
                                 *          CPANP (COMPARE WITH DEFAULT PAD - C BIT = 1)          *  CML25980
                                 *          DEFAULT PAD CHARACTER = X'20'.                        *  CML25990
                                 *                                                                *  CML26000
                                 ********************************************************************  CML26010
                                 *                                                                   CML26020
                                 *                                                                   CML26030
         0000 1F00               TEST4    EQU   *                                                    CML26040
001F00   242A                    PRE.00   LIS   R2,10                  LOAD INITIAL BYTE LENGTH      CML26050
001F02   2430                             LIS   R3,0                   LOAD SPECIAL OFFSET LENGTH    CML26060
001F04   41F0 A260 =004168       PRE4.01  BAL   LINK,RESTORE           RESTORE ALL                   CML26070
                                 *                                                                   CML26080
001F08   8C20 3990                        CPAN  R2,NUMB10HI,=10,NUMB10                               CML26090
001F0C   42A0 3986
                                 *                                                                   CML26100
                                 * CPAN RX1,RX1  OPN1 LEN = [R2]   OPN2 LEN = 10 IMMEDIATE           CML26110
                                 *  PRECHECK FOR IMMEDIATE LEN OPN2                                  CML26120
                                 *                                                                   CML26130
001F10   9577                             EPSR  R7,R7                  CAPTURE CONDITION CODE        CML26140
001F12   C470 000F                        NHI   R7,X'F'                MASK TO GET CC                CML26150
001F16   C570 0002                        CLHI  R7,2                   CHECK THAT CC = 0010          CML26160
001F1A   4330 1F2E                        BE    PRE4.02                CC OK, CONTINUE               CML26170
001F1E   C8A0 3432                        LHI   R10,C'42'              LOAD ERROR NO                 CML26180
001F22   40A0 17A2                        STH   R10,ERRNO              STORE                         CML26190
001F26   40A0 175A                        STH   R10,NOERR              SET ERR FLAG                  CML26200
001F2A   41E0 3F94                        BAL   RET,CCNG               ERROR 42 EXP CC=0010 NOT RETURNED  CML26210
                                 *                                                                   CML26220
001F2E   C510 0000               PRE4.02  CLHI  R1,0                   CHECK IF OFFSET CORRECT (=0)  CML26230
001F32   4330 1F46                        BE    PRE4.03                OK, CONTINUE                  CML26240
001F36   C8A0 3436                        LHI   R10,C'46'              LOAD ERROR NO                 CML26250
001F3A   40A0 17A2                        STH   R10,ERRNO              STORE                         CML26260
001F3E   40A0 175A                        STH   R10,NOERR              SET ERR FLAG                  CML26270
001F42   41E0 A1A0 =0040E6                BAL   RET,OFFERR             ERROR 46 OFFSET RETURNED INCORRECT  CML26280
                                 *                                                                   CML26290
001F46   243A                    PRE4.03  LIS   R3,10                  LOAD INITIAL LENGTH           CML26300
001F48   41F0 A21C =004168                BAL   LINK,RESTORE           RESTORE ALL                   CML26310
                                 *                                                                   CML26320
001F4C   8CA0 3986                        CPAN  =10,NUMB10,R3,NUMB10HI                               CML26330
001F50   8230 3990
                                 *                                                                   CML26340
                                 *  CPAN RX1,RX1  OPN1 LEN = 10 IMMEDIATE   OPN2 LEN = [R3]          CML26350
                                 *   PRECHECK FOR IMMEDIATE LENGTH OPN1                              CML26360
                                 *                                                                   CML26370
001F54   9577                             EPSR  R7,R7                  CAPTURE CONDITION CODE        CML26380
001F56   C470 000F                        NHI   R7,X'F'                MASK TO GET CC                CML26390
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TEST 4 - CPAN

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001F5A   C570 0009            2640          CLHI  R7,9               CHECK THAT CC = 1001                    CML26400
001F5E   4330 1F72            2641          BE    PRE4.04            CC OK, CONTINUE                         CML26410
001F62   C8A0 3434            2642          LHI   R10,C'44'          LOAD ERROR NO                           CML26420
001F66   40A0 17A2            2643          STH   R10,ERRNO          STORE                                   CML26430
001F6A   40A0 175A            2644          STH   R10,NOERR          SET ERR FLAG                            CML26440
001F6E   41E0 3F94            2645          BAL   RET,CCNG           ERROR 44 EXP CC=1001 NOT RETURNED       CML26450
                              2646  *                                                                        CML26460
001F72   C510 0000            2647  PRE4.04 CLHI  R1,0               CHECK IF OFFSET CORRECT (=0)            CML26470
001F76   4330 1F8C            2648          BE    PRE4.05            OK, CONTINUE                            CML26480
001F7A   2430                 2649          LIS   R3,0               SET EXP OFFSET FOR ERR PRINT            CML26490
001F7C   C8A0 3436            2650          LHI   R10,C'46'          LOAD ERROR NO                           CML26500
001F80   40A0 17A2            2651          STH   R10,ERRNO          STORE                                   CML26510
001F84   40A0 175A            2652          STH   R10,NOERR          SET ERR FLAG                            CML26520
001F88   41E0 A15A =0040E6    2653          BAL   RET,OFFERR         ERROR 46 OFFSET RETURNED INCORRECT      CML26530
                              2654  *                                                                        CML26540
001F8C   2410                 2655  PRE4.05 LIS   R1,0               CLEAR REG 1                             CML26550
001F8E   2430                 2656          LIS   R3,0               LOAD SPECIAL OFFSET LENGTH              CML26560
001F90   41F0 A1D4 =004168    2657          BAL   LINK,RESTORE       RESTORE ALL                             CML26570
                              2658  *                                                                        CML26580
001F94   8C10 3990            2659          CPAN  =1,NUMB10HI,=1,NUMB10+9                                    CML26590
001F98   C210 398F
                              2660  *  CPAN RX1,RX1  OPN1 LEN = OPN2 LEN = 1  IMMEDIATE                      CML26600
                              2661  *   PRECHECK FOR BOTH OPN1 AND OPN2 IMMEDIATE LENGTHS                     CML26610
                              2662  *                                                                        CML26620
001F9C   9577                 2663          EPSR  R7,R7              CAPTURE CONDITION CODE                  CML26630
001F9E   C470 000F            2664          NHI   R7,X'F'            MASK TO GET CC                          CML26640
001FA2   C570 0000            2665          CLHI  R7,0               CHECK THAT CC = 0000                    CML26650
001FA6   4330 1FBA            2666          BE    PRE4.06            CC OK, CONTINUE                         CML26660
001FAA   C8A0 3430            2667          LHI   R10,C'40'          LOAD ERROR NO                           CML26670
001FAE   40A0 17A2            2668          STH   R10,ERRNO          STORE                                   CML26680
001FB2   40A0 175A            2669          STH   R10,NOERR          SET ERR FLAG                            CML26690
001FB6   41E0 3F94            2670          BAL   RET,CCNG           ERROR 40 EXP CC=0000 NOT RETURNED       CML26700
                              2671  *                                                                        CML26710
001FBA   C510 0000            2672  PRE4.06 CLHI  R1,0               CHECK IF OFFSET CORRECT (=0)            CML26720
001FBE   4330 1FD2            2673          BE    PRE4.07            OK, CONTINUE                            CML26730
001FC2   C8A0 3436            2674          LHI   R10,C'46'          LOAD ERROR NO                           CML26740
001FC6   40A0 17A2            2675          STH   R10,ERRNO          STORE                                   CML26750
001FCA   40A0 175A            2676          STH   R10,NOERR          SET ERR FLAG                            CML26760
001FCE   41E0 A114 =0040E6    2677          BAL   RET,OFFERR         ERROR 46 OFFSET RETURNED INCORRECT      CML26770
                              2678  *                                                                        CML26780
001FD2   2421                 2679  PRE4.07 LIS   R2,1               LOAD INITIAL BYTE LENGTH                CML26790
001FD4   2431                 2680          LIS   R3,1               LOAD INITIAL BYTE LENGTH                CML26800
001FD6   41F0 A18E =004168    2681  SET4    BAL   LINK,RESTORE       RESTORE ALL                             CML26810
                              2682  *                                                                        CML26820
001FDA   8C20 3784            2683          CPAN  R2,MASTER,R3,OPN2                                          CML26830
001FDE   0230 3584
                              2684  *                                                                        CML26840
                              2685  * CPAN RX1,RX1  EQUAL STRING COMPARE 1 TO 256 BYTES                     CML26850
                              2686  *                                                                        CML26860
001FE2   9577                 2687          EPSR  R7,R7              CAPTURE CONDITION CODE                  CML26870
001FE4   C470 000F            2688          NHI   R7,X'F'            MASK TO GET CC                          CML26880
001FE8   C570 0000            2689          CLHI  R7,X'0'            CHECK THAT CC = 0000                    CML26890
001FEC   4330 2000            2690          BE    SET4.01            CC OK, CONTINUE                         CML26900
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TEST 4 - CPAN

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001FF0  C8A0 3430                     LHI   R10,C'40'           LOAD ERROR NO                        CML26910
001FF4  40A0 17A2                     STH   R10,ERRNO           STORE                                CML26920
001FF8  40A0 175A                     STH   R10,NOERR           SET ERR FLAG                         CML26930
001FFC  41E0 3F94                     BAL   RET,CCNG            ERROR 40 EXP CC=0000 NOT RETURNED    CML26940
                             *                                                                       CML26950
002000  C513 FFFF            SET4.01  CLHI  R1,-1(R3)           CHECK IF OFFSET CORRECT              CML26960
002004  4330 2018                     BE    SET4.02             OK, CONTINUE                         CML26970
002008  C8A0 3436                     LHI   R10,C'46'           LOAD ERROR NO                        CML26980
00200C  40A0 17A2                     STH   R10,ERRNO           STORE                                CML26990
002010  40A0 175A                     STH   R10,NOERR           SET ERR FLAG                         CML27000
002014  41E0 A0CE =0040E6             BAL   RET,OFFERR          ERROR 46 OFFSET RETURNED INCORRECT   CML27010
                             *                                                                       CML27020
002018  C530 00FF            SET4.02  CLHI  R3,255              DONE ?                               CML27030
00201C  4330 2028                     BE    SET4.03             GO TO NEXT SECTION                   CML27040
002020  2621                          AIS   R2,1                INCREMENT LENGTH                     CML27050
002022  2631                          AIS   R3,1                INCREMENT LENGTH                     CML27060
002024  4300 1FD6                     B     SET4                RETURN NEXT PASS                     CML27070
                             *                                                                       CML27080
002028  2420                 SET4.03  LIS   R2,0                LOAD INITIAL BYTE LENGTH             CML27090
00202A  2431                          LIS   R3,1                LOAD INITIAL BYTE LENGTH             CML27100
00202C  C800 00FF                     LHI   R0,X'FF'            LOAD REG 0 WITH PAD CHAR             CML27110
002030  41F0 A134 =004168    SET4.04  BAL   LINK,RESTORE                                             CML27120
                             *                                                                       CML27130
002034  8C20 3784                     CPAN  R2,MASTER,R3,OPN2                                        CML27140
002038  0230 3584
                             *                                                                       CML27150
                             * CPAN WITH OPN1 LEN = 0 TO CHECK PAD CHAR                              CML27160
                             *                                                                       CML27170
00203C  9577                          EPSR  R7,R7               CAPTURE CONDITION CODE               CML27180
00203E  C470 000F                     NHI   R7,X'F'             MASK TO GET CC                       CML27190
002042  C570 0000                     CLHI  R7,X'0'             CHECK THAT CC = 0000 PAD = [REG 0]   CML27200
002046  4330 205A                     BE    SET4.05             CC OK, CONTINUE                      CML27210
                             *                                  THAT IS [OPN1] = [REG 0]  CORRECT PAD CML27220
00204A  C8A0 3431                     LHI   R10,C'41'           LOAD ERROR NO                        CML27230
00204E  40A0 17A2                     STH   R10,ERRNO           STORE                                CML27240
002052  40A0 175A                     STH   R10,NOERR           SET ERR FLAG                         CML27250
002056  41E0 3E22                     BAL   RET,PADERR          ERROR 41 PAD CHAR NOT MATCH REG 0    CML27260
                             *                                                                       CML27270
00205A  C513 FFFF            SET4.05  CLHI  R1,-1(R3)           CHECK IF OFFSET CORRECT              CML27280
00205E  4330 2072                     BE    SET4.06             OK, CONTINUE                         CML27290
002062  C8A0 3435                     LHI   R10,C'45'           LOAD ERROR NO                        CML27300
002066  40A0 17A2                     STH   R10,ERRNO           STORE                                CML27310
00206A  40A0 175A                     STH   R10,NOERR           SET ERR FLAG                         CML27320
00206E  41E0 A074 =0040E6             BAL   RET,OFFERR          ERROR 45 OFFSET RETURNED INCORRECT   CML27330
                             *                                                                       CML27340
002072  2421                 SET4.06  LIS   R2,1                LOAD INITIAL BYTE LENGTH             CML27350
002074  2432                          LIS   R3,2                LOAD INITIAL BYTE LENGTH             CML27360
002076  C800 00FE                     LHI   R0,X'FE'            LOAD REGO WITH PAD CHAR              CML27370
00207A  41F0 A0EA =004168    SET4.07  BAL   LINK,RESTORE        RESTORE ALL                          CML27380
                             *                                                                       CML27390
00207E  8C20                          DCX   8C20                OP CODE,DEST REG                     CML27400
002080  9702                          DC    Z(MASTER-*-2+X'8000')                                    CML27410
002082  0230                          DCX   0230                OP MOD,SRC REG                       CML27420
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TEST 4 - CPAN

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002084  94FE                      DC    Z(OPN2-*-2+X'8000')                                      CML27430
                          * CPAN RX2,RX2  LEN OPN2 > LEN OPN1 (PAD OPN1 TO LEN OPN2)             CML27440
                          *                                                                      CML27450
002086  9577                      EPSR  R7,R7          CAPTURE CONDITION CODE                    CML27460
002088  C470 000F                 NHI   R7,X'F'        MASK TO GET CC                            CML27470
00208C  C570 0000                 CLHI  R7,X'0'        CHECK THAT CC = 0000 OPN1(PAD)=OPN2       CML27480
002090  4330 20A4                 BE    SET4.08        CC OK, CONTINUE                           CML27490
002094  C8A0 3430                 LHI   R10,C'40'      LOAD ERROR NO                             CML27500
002098  40A0 17A2                 STH   R10,ERRNO      STORE                                     CML27510
00209C  40A0 175A                 STH   R10,NOERR      SET ERR FLAG                              CML27520
0020A0  41E0 3F94                 BAL   RET,CCNG       ERROR 40 EXP CC=0000 NOT RETURNED         CML27530
                          *                                                                      CML27540
0020A4  C513 FFFF         SET4.08 CLHI  R1,-1(R3)      CHECK IF OFFSET CORRECT                   CML27550
0020A8  4330 20BC                 BE    SET4.09        OK, CONTINUE                              CML27560
0020AC  C8A0 3435                 LHI   R10,C'45'      LOAD ERROR NO                             CML27570
0020B0  40A0 17A2                 STH   R10,ERRNO      STORE                                     CML27580
0020B4  40A0 175A                 STH   R10,NOERR      SET ERR FLAG                              CML27590
0020B8  41E0 A02A =0040E6         BAL   RET,OFFERR     ERROR 45 OFFSET RETURNED INCORRECT        CML27600
                          *                                                                      CML27610
                          *                                                                      CML27620
0020BC  C530 00FF         SET4.09 CLHI  R3,255         DONE?                                     CML27630
0020C0  4330 20CE                 BE    SET4.10        GO TO NEXT SECTION                        CML27640
0020C4  2621                      AIS   R2,1           INCREMENT LENGTH                          CML27650
0020C6  2631                      AIS   R3,1           INCREMENT LENGTH                          CML27660
0020C8  2701                      SIS   R0,1           DECREMENT PAD CHAR                        CML27670
0020CA  4300 207A                 B     SET4.07        RETURN NEXT PASS                          CML27680
                          *                                                                      CML27690
0020CE  2421              SET4.10 LIS   R2,1           LOAD INITIAL BYTE LENGTH                  CML27700
0020D0  2432                      LIS   R3,2           LOAD INITIAL BYTE LENGTH                  CML27710
0020D2  C800 00FF                 LHI   R0,X'FF'       LOAD REG 0 WITH PAD CHAR                  CML27720
0020D6  41F0 A08E =004168 SET4.11 BAL   LINK,RESTORE                                             CML27730
                          *                                                                      CML27740
0020DA  8C20                      DCX   8C20           OP CODE,DEST ADR                          CML27750
0020DC  96A6                      DC    Z(MASTER-*-2+X'8000')                                    CML27760
0020DE  0230                      DCX   0230           OP MOD,SRC REG                            CML27770
0020E0  94A2                      DC    Z(OPN2-*-2+X'8000')                                      CML27780
                          * CPAN PAD OPN1 TO LEN OPN2 , [OPN1] > [OPN2]                          CML27790
                          *                                                                      CML27800
0020E2  9577                      EPSR  R7,R7          CAPTURE CONDITION CODE                    CML27810
0020E4  C470 000F                 NHI   R7,X'F'        MASK TO GET CC                            CML27820
0020E8  C570 0002                 CLHI  R7,X'2'        CHECK THAT CC = 0010                      CML27830
0020EC  4330 2100                 BE    SET4.12        CC OK, CONTINUE                           CML27840
0020F0  C8A0 3432                 LHI   R10,C'42'      LOAD ERROR NO                             CML27850
0020F4  40A0 17A2                 STH   R10,ERRNO      STORE                                     CML27860
0020F8  40A0 175A                 STH   R10,NOERR      SET ERR FLAG                              CML27870
0020FC  41F0 3F94                 BAL   LINK,CCNG      ERROR 42 EXP CC=0010 NOT RETURNED         CML27880
                          *                                                                      CML27890
002100  C513 FFFF         SET4.12 CLHI  R1,-1(R3)      CHECK IF OFFSET CORRECT                   CML27900
002104  4330 2118                 BE    SET4.13        OK, CONTINUE                              CML27910
002108  C8A0 3435                 LHI   R10,C'45'      LOAD ERROR NO                             CML27920
00210C  40A0 17A2                 STH   R10,ERRNO      STORE                                     CML27930
002110  40A0 175A                 STH   R10,NOERR      SET ERR FLAG                              CML27940
002114  41E0 9FCE =0040E6         BAL   RET,OFFERR     ERROR 45 OFFSET RETURNED INCORRECT        CML27950
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TEST 4 - CPAN

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                                2796  *                                                                      CML27960
  002118   C530 00FF            2797  SET4.13  CLHI  R3,255          DONE ?                                 CML27970
  00211C   4330 2128            2798           BE    SET4.14         GO TO NEXT SECTION                     CML27980
  002120   2621                  2799           AIS   R2,1            INCREMENT LENGTH                       CML27990
  002122   2631                  2800           AIS   R3,1            INCREMENT LENGTH                       CML28000
  002124   4300 20D6            2801           B     SET4.11         RETURN NEXT PASS                       CML28010
                                2802  *                                                                      CML28020
  002128   2421                  2803  SET4.14  LIS   R2,1            LOAD INITIAL BYTE LENGTH               CML28030
  00212A   2430                  2804           LIS   R3,0            LOAD INITIAL BYTE LENGTH               CML28040
  00212C   C800 00FF            2805           LHI   R0,X'FF'        LOAD REG 0 (CHECK DEFAULT USED)        CML28050
  002130   41F0 A034 =004168    2806  SET4.15  BAL   LINK,RESTORE                                           CML28060
                                2807  *                                                                      CML28070
? 002134   8C20 4000 3863       2808           CPANP R2,MASTER+223(R0,R0),R3,OPN2(R0,R0)                    CML28080
? 00213A   2230 4000 3584
                                2809  *                                                                      CML28090
                                2810  * CPANP OPN2 LEN = 0  PAD WITH DEFAULT '20' TO LEN OPN1               CML28100
                                2811  *                                                                      CML28110
  002140   9577                  2812           EPSR  R7,R7           CAPTURE CONDITION CODE                 CML28120
  002142   C470 000F            2813           NHI   R7,X'F'         MASK TO GET CC                         CML28130
  002146   C570 0000            2814           CLHI  R7,X'0'         CHECK THAT CC = 0000                   CML28140
  00214A   4330 215E            2815           BE    SET4.16         CC OK, CONTINUE                        CML28150
  00214E   C8A0 3433            2816           LHI   R10,C'43'       LOAD ERROR NO                          CML28160
  002152   40A0 17A2            2817           STH   R10,ERRNO       STORE                                  CML28170
  002156   40A0 175A            2818           STH   R10,NOERR       SET ERR FLAG                           CML28180
  00215A   41E0 3E22            2819           BAL   RET,PADERR      ERROR 43 DEFAULT PAD NOT MATCH '20'    CML28190
                                2820  *                                                                      CML28200
  00215E   0513                  2821  SET4.16  CLR   R1,R3           CHECK IF OFFSET CORRECT                CML28210
  002160   4330 2174            2822           BE    SET4.17         OK, CONTINUE                           CML28220
  002164   C8A0 3436            2823           LHI   R10,C'46'       LOAD ERROR NO                          CML28230
  002168   40A0 17A2            2824           STH   R10,ERRNO       STORE                                  CML28240
  00216C   40A0 175A            2825           STH   R10,NOERR       SET ERR FLAG                           CML28250
  002170   41E0 9F72 =0040E6    2826           BAL   RET,OFFERR      ERROR 46 OFFSET RETURNED INCORRECT     CML28260
                                2827  *                                                                      CML28270
  002174   2422                  2828  SET4.17  LIS   R2,2            LOAD INITIAL BYTE LENGTH               CML28280
  002176   2431                  2829           LIS   R3,1            LOAD INITIAL BYTE LENGTH               CML28290
  002178   2400                  2830           LIS   R0,0            LOAD REG 0 (CHECK DEFAULT USED)        CML28300
  00217A   41F0 9FEA =004168    2831  SET4.18  BAL   LINK,RESTORE     RESTORE ALL                            CML28310
                                2832  *                                                                      CML28320
? 00217E   8C20 4000 3864       2833           CPANP R2,MASTER+224(R0,R0),R3,OPN2+224(R0,R0)                CML28330
? 002184   2230 4000 3664
                                2834  *                                                                      CML28340
                                2835  * CPANP RX3,RX3 DEFAULT PAD  OPN2+224=1F                              CML28350
                                2836  *       PAD CHAR = '20'  OPN + 224 = 1F                              CML28360
                                2837  *                                                                      CML28370
  00218A   9577                  2838           EPSR  P7,R7           CAPTURE CONDITION CODE                 CML28380
  00218C   C470 000F            2839           NHI   R7,X'F'         MASK TO GET CC                         CML28390
  002190   C570 0009            2840           CLHI  R7,X'9'         CHECK THAT CC = 1001 OPN1<OPN2(PAD)    CML28400
  002194   4330 21A8            2841           BE    SET4.19         CC OK, CONTINUE                        CML28410
  002198   C8A0 3434            2842           LHI   R10,C'44'       LOAD ERROR NO                          CML28420
  00219C   40A0 17A2            2843           STH   R10,ERRNO       STORE                                  CML28430
  0021A0   40A0 175A            2844           STH   R10,NOERR       SET ERR FLAG                           CML28440
  0021A4   41E0 3F94            2845           BAL   RET,CCNG        ERROR 44 EXP CC=1001 NOT RETURNED      CML28450
                                2846  *                                                                      CML28460
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TEST 4 - CPAN

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0021A8   C513 FFFF            2847  SET4.19  CLHI  R1,-1(R3)        CHECK IF OFFSET CORRECT                  CML28470
0021AC   4330 21C0            2848           BE    SET4.20         OK, CONTINUE                             CML28480
0021B0   C8A0 3435            2849           LHI   R10,C'45'       LOAD ERROR NO                            CML28490
0021B4   40A0 17A2            2850           STH   R10,ERRNO       STORE                                    CML28500
0021B8   40A0 175A            2851           STH   R10,NOERR       SET ERR FLAG                             CML28510
0021BC   41E0 9F26 =0040E6    2852           BAL   RET,OFFERR      ERROR 45 OFFSET RETURNED INCORRECT       CML28520
0021C0   C520 001F            2853  SET4.20  CLHI  R2,31           DONE?                                    CML28530
0021C4   4330 21D0            2854           BE    SET4.21         GO TO NEXT SECTION                       CML28540
0021C8   2621                 2855           AIS   R2,1            INCREMENT LENGTH                         CML28550
0021CA   2631                 2856           AIS   R3,1            INCREMENT LENGTH                         CML28560
0021CC   4300 217A            2857           B     SET4.18         LOOP TIL ALL LENGTHS 0-1F CHECKED        CML28570
0021D0   4300 0EEA            2858  SET4.21  B     TSTEND          EXIT TEST 4                              CML28580
                              2859  *                                                                       CML28590
                              2860  *                                                                       CML28600
                              2861  *                                                                       CML28610
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TEST 5 - PMV

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                              2863  *                                                                        CML28630
                              2864  ***********************************************************************  CML28640
                              2865  *                                                                     *  CML28650
                              2866  *                         TEST 5  -  PMV (PMVA)                       *  CML28660
                              2867  *                                                                     *  CML28670
                              2868  *          CONVERT UNPACKED DECIMAL DATA FROM SOURCE AREA TO          *  CML28680
                              2869  *          PACKED DECIMAL DATA AND MOVE TO DESTINATION AREA.          *  CML28690
                              2870  *                                                                     *  CML28700
                              2871  *          PMVA (FORCE RESULT POSITIVE - C BIT = 1).                  *  CML28710
                              2872  *                                                                     *  CML28720
                              2873  ***********************************************************************  CML28730
                              2874  *                                                                        CML28740
                              2875  *                                                                        CML28750
         0000 21D4            2876  TEST5    EQU   *                                                         CML28760
                              2877  *                                                                        CML28770
0021D4   C820 000F            2878  SET5     LHI   R2,15                 SET DEST LENGTH                     CML28780
0021D8   C830 001E            2879           LHI   R3,30                 LOAD SRC LENGTH                     CML28790
0021DC   2490                 2880           LIS   R9,0                  ZERO INDEX                          CML28800
0021DE   41F0 9FAC =00418E    2881           BAL   LINK,REST3            SAVE INSTRUCTION ADR                CML28810
                              2882  *                                                                        CML28820
0021E2   8C20 399A            2883           PMV   R2,PKDEST,R3,UPKSRC                                       CML28830
0021E6   0330 3110
                              2884  *                                                                        CML28840
                              2885  * PMV RX1,RX1 OPN2=1ST IN BUF TRUE ZERO CHECK                            CML28850
                              2886  *                                                                        CML28860
0021EA   9577                 2887           EPSR  R7,R7                 CAPTURE CONDITION CODE              CML28870
0021EC   C470 000F            2888           NHI   R7,X'F'               MASK TO GET CC                      CML28880
0021F0   C570 0000            2889           CLHI  R7,X'0'               CHECK THAT CC = 0000 [OPN1]=0       CML28890
0021F4   4330 2208            2890           BE    SET5.01               CC OK, CONTINUE                     CML28900
0021F8   C8A0 3530            2891           LHI   R10,C'50'             LOAD ERROR NO                       CML28910
0021FC   40A0 17A2            2892           STH   R10,ERRNO             STORE                               CML28920
002200   40A0 175A            2893           STH   R10,NOERR             SET ERR FLAG                        CML28930
002204   41E0 3F94            2894           BAL   RET,CCNG              ERROR 50 EXP CC=0000 NOT RETURNED   CML28940
                              2895  *                                                                        CML28950
002208   41F0 3AFA            2896  SET5.01  BAL   LINK,PKCHK            GO TO CHECK DIGITS                  CML28960
                              2897  *                                                                        CML28970
                              2898  *                                                                        CML28980
00220C   C890 0020            2899           LHI   R9,32                 LOAD INDEX 1ST POS UNPACKED SRC     CML28990
002210   2481                 2900           LIS   R8,1                  LOAD PASS COUNT                     CML29000
002212   C820 000F            2901  SET5.02  LHI   R2,15                 LOAD DEST LENGTH                    CML29010
002216   C830 001E            2902           LHI   R3,30                 LOAD SRC LENGTH                     CML29020
00221A   41F0 9F70 =00418E    2903           BAL   LINK,REST3            SAVE INSTRUCTION ADR                CML29030
                              2904  *                                                                        CML29040
00221E   8C20                 2905           DCX   8C20                  OP CODE,DEST REG                    CML29050
002220   9778                 2906           DC    Z(PKDEST-*-2+X'8000')                                     CML29060
002222   0339                 2907           DCX   0339                  OP MOD,SRC REG,INDEX                CML29070
002224   8EEA                 2908           DC    Z(UPKSRC-*-2+X'8000')                                     CML29080
                              2909  * PMV RX2,RX2 R9=SRC INDEX FOR POSITIVE STRINGS                          CML29090
                              2910  *                                                                        CML29100
002226   9577                 2911           EPSR  R7,R7                 CAPTURE CONDITION CODE              CML29110
002228   C470 000F            2912           NHI   R7,X'F'               MASK TO GET CC                      CML29120
00222C   C570 0002            2913           CLHI  R7,X'2'               CHECK THAT CC = 0010 [OPN1] > 0     CML29130
002230   4330 2244            2914           BE    SET5.03               CC OK, CONTINUE                     CML29140
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  002234   C8A0 3531                         LHI   R10,C'51'           LOAD ERROR NO                  CML29150
  002238   40A0 17A2                         STH   R10,ERRNO           STORE                          CML29160
  00223C   40A0 175A                         STH   R10,NOERR           SET ERR FLAG                   CML29170
  002240   41E0 3F94                         BAL   RET,CCNG            ERROR 51 EXP CC=0010 NOT RETURNED CML29180
                                   *                                                                CML29190
  002244   41F0 3AFA               SET5.03   BAL   LINK,PKCHK          GO CHECK DIGITS                CML29200
  002248   C580 0009                         CLHI  R8,9                DONE ALL PASSES 1'S TO 9'S     CML29210
  00224C   4330 225C                         BE    SET5.04             YES CONTINUE                   CML29220
  002250   FA90 0000 0020                    AI    R9,32               ADD LENGTH INCREMENT           CML29230
  002256   2681                              AIS   R8,1                INCREMENT PASS COUNT           CML29240
  002258   4300 2212                         B     SET5.02             LOOP TIL ALL PASSES DONE       CML29250
                                   *                                                                CML29260
                                   *                                                                CML29270
  00225C   C890 0140               SET5.04   LHI   R9,320              LOAD INDEX TO 1ST NEG UNPACKED SRC CML29280
  002260   2481                              LIS   R8,1                PASS COUNT                     CML29290
  002262   C820 000F               SET5.05   LHI   R2,15               LOAD DEST LENGTH               CML29300
  002266   C830 001E                         LHI   R3,30               LOAD SRC LENGTH                CML29310
  00226A   41F0 9F20 =00418E                 BAL   LINK,REST3          SAVE INSTRUCTION ADR           CML29320
                                   *                                                                CML29330
? 00226E   8C20 4000 399A                    PMV   R2,PKDEST(R0,R0),R3,UPKSRC(R9,R0)                  CML29340
? 002274   0339 4000 3110
                                   *                                                                CML29350
                                   * PMV RX3,RX3 R9=INDEX TO NEGATIVE STRINGS                       CML29360
                                   *                                                                CML29370
  00227A   9577                              EPSR  R7,R7               CAPTURE CONDITION CODE         CML29380
  00227C   C470 000F                         NHI   R7,X'F'             MASK TO GET CC                 CML29390
  002280   C570 0001                         CLHI  R7,X'1'             CHECK THAT CC = 0001 [OPN1] < 0 CML29400
  002284   4330 2298                         BE    SET5.06             CC OK, CONTINUE                CML29410
  002288   C8A0 3532                         LHI   R10,C'52'           LOAD ERROR NO                  CML29420
  00228C   40A0 17A2                         STH   R10,ERRNO           STORE                          CML29430
  002290   40A0 175A                         STH   R10,NOERR           SET ERR FLAG                   CML29440
  002294   41E0 3F94                         BAL   RET,CCNG            ERROR 52 EXP CC=0001 NOT RETURNED CML29450
                                   *                                                                CML29460
  002298   41F0 3B06               SET5.06   BAL   LINK,PKCHK1         CHECK DIGITS AND NEG SIGN      CML29470
  00229C   C580 0009                         CLHI  R8,9                CHECK PASS COUNT               CML29480
  0022A0   4330 22B0                         BE    SET5.07             CONTINUE                       CML29490
  0022A4   FA90 0000 0020                    AI    R9,32               INCREMENT BY LENGTH            CML29500
  0022AA   2681                              AIS   R8,1                INCREMENT PASS COUNT           CML29510
  0022AC   4300 2262                         B     SET5.05             LOOP TIL ALL PASSES DONE       CML29520
  0022B0   C820 000F               SET5.07   LHI   R2,15               LOAD DEST LENGTH               CML29530
  0022B4   C830 001E                         LHI   R3,30               LOAD SRC LENGTH                CML29540
  0022B8   C890 0140                         LHI   R9,320              LOAD INDEX 1ST NEG UNPACKED SRC CML29550
  0022BC   41F0 9ECE =00418E                 BAL   LINK,REST3          SAVE INSTRUCTION ADR           CML29560
                                   *                                                                CML29570
  0022C0   8C20 399A                         PMVA  R2,PKDEST,R3,UPKSRC(R9)                            CML29580
  0022C4   2339 3110
                                   *                                                                CML29590
                                   * PMVA RX1,RX1  USE NEG NUMBER TO CHECK FORCE SIGN POS           CML29600
                                   * C BIT IS SET, R9 INDEX TO NEGATIVE STRING                      CML29610
                                   *                                                                CML29620
  0022C8   9577                              EPSR  R7,R7               CAPTURE CONDITION CODE         CML29630
  0022CA   C470 000F                         NHI   R7,X'F'             MASK TO GET CC                 CML29640
  0022CE   C570 0002                         CLHI  R7,X'2'             CHECK THAT CC = 0010           CML29650
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                              *                               FOR [OPN1] FORCED > 0             CML29660
0022D2   4330 22E6                       BE    SET5.08        CC OK, CONTINUE                   CML29670
0022D6   C8A0 3533                       LHI   R10,C'53'      LOAD ERROR NO                     CML29680
0022DA   40A0 17A2                       STH   R10,ERRNO      STORE                             CML29690
0022DE   40A0 175A                       STH   R10,NOERR      SET ERR FLAG                      CML29700
0022E2   41E0 3F94                       BAL   RET,CCNG       ERROR 53 EXP CC=0010 (FORCED)     CML29710
                              *                                        NOT RETURNED             CML29720
                              *                                                                 CML29730
0022E6   41F0 3AFA            SET5.08    BAL   LINK,PKCHK     CHECK DIGITS                      CML29740
                              *                                                                 CML29750
0022EA   C820 0000                       LHI   R2,0           LOAD DEST LENGTH                  CML29760
0022EE   C830 001E                       LHI   R3,30          LOAD SRC LENGTH                   CML29770
0022F2   C890 0000                       LHI   R9,0           OFFSET                            CML29780
0022F6   41F0 9E94 =00418E               BAL   LINK,REST3     SAVE INSTRUCTION ADR              CML29790
                              *                                                                 CML29800
0022FA   8C20 399A                       PMV   R2,PKDEST,R3,UPKSRC                              CML29810
0022FE   0330 3110
                              *  PMV SRC = ZEROES TO CHECK LEAD ZERO THROW AWAY                 CML29820
                              *                                                                 CML29830
002302   9577                            EPSR  R7,R7          CAPTURE CONDITION CODE            CML29840
002304   C470 000F                       NHI   R7,X'F'        MASK TO GET CC                    CML29850
002308   C570 0000                       CLHI  R7,X'0'        CHECK THAT CC = 0000              CML29860
00230C   4330 2320                       BE    SET5.09        CC OK, CONTINUE                   CML29870
002310   C8A0 3530                       LHI   R10,C'50'      LOAD ERROR NO                     CML29880
002314   40A0 17A2                       STH   R10,ERRNO      STORE                             CML29890
002318   40A0 175A                       STH   R10,NOERR      SET ERR FLAG                      CML29900
00231C   41E0 3F94                       BAL   RET,CCNG       ERROR 50 EXP CC=0000 NOT RETURNED CML29910
                              *                                                                 CML29920
002320   41F0 3AFA            SET5.09    BAL   LINK,PKCHK     CHECK DIGITS                      CML29930
002324   C820 0000                       LHI   R2,0           LOAD DEST LENGTH                  CML29940
002328   C830 0001                       LHI   R3,1           LOAD SRC LENGTH                   CML29950
00232C   C890 0020            SET5.10    LHI   R9,32          OFFSET                            CML29960
002330   41F0 9E5A =00418E               BAL   LINK,REST3     SAVE INSTRUCTION ADR              CML29970
                              *                                                                 CML29980
002334   8C20 399A                       PMV   R2,PKDEST,R3,UPKSRC(R9)                          CML29990
002338   0339 3110
                              *  SRC IS 1 OR MORE LARGER THAN DEST CAN HANDLE TO SET OVF FLAG   CML30000
                              *                                                                 CML30010
00233C   9577                            EPSR  R7,R7          CAPTURE CONDITION CODE            CML30020
00233E   C470 000F                       NHI   R7,X'F'        MASK TO GET CC                    CML30030
002342   C570 0006                       CLHI  R7,X'6'        CHECK THAT CC = 0110              CML30040
002346   4330 235A                       BE    SET5.11        CC OK, CONTINUE                   CML30050
00234A   C8A0 3537                       LHI   R10,C'57'      LOAD ERROR NO                     CML30060
00234E   40A0 17A2                       STH   R10,ERRNO      STORE                             CML30070
002352   40A0 175A                       STH   R10,NOERR      SET ERR FLAG                      CML30080
002356   41E0 3F94                       BAL   RET,CCNG       ERROR 57 EXP CC=0110 NOT RETURNED CML30090
                              *                                                                 CML30100
00235A   41F0 3AFA            SET5.11    BAL   LINK,PKCHK     CHECK DIGITS                      CML30110
00235E   0873                            LR    R7,R3          COPY SRC LENGTH                   CML30120
002360   1071                            SRLS  R7,1           DIVIDE BY 2 TO COMPUTE MIN LEN REQ'D CML30130
002362   2621                            AIS   R2,1           INCREMENT DEST LENGTH             CML30140
002364   0527                            CLR   R2,R7          COMPARE WITH MIN REQ'D            CML30150
002366   4380 236E                       BNL   SET5.12        LESS, LOOP                        CML30160
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00236A   4300 232C                     B     SET5.10            LOOP TIL DONE
                               *
00236E   2631                  SET5.12 AIS   R3,1               INCREMENT SRC LENGTH
002370   C820 0000                     LHI   R2,0               CLEAR DEST TO MINIMUM LENGTH
002374   C530 001F                     CLHI  R3,31              COMPARE SRC TO MAXIMUM LENGTH
002378   4380 2380                     BNL   SET5.13            DONE, GO TO NEXT SECTION
00237C   4300 232C                     B     SET5.10            CONTINUE ALL SRC LENGTHS
                               *
002380   E690 0280             SET5.13 LA    R9,UPKDAT-UPKSRC   OFFSET TO INVALID DATA UNPACKED
002384   2480                          LIS   R8,0               ZERO PASS COUNT
002386   C820 0000             SET5.14 LHI   R2,0               LOAD DEST LENGTH
00238A   C830 0000                     LHI   R3,0               LOAD SRC LENGTH
00238E   41F0 9DFC =00418E             BAL   LINK,REST3         SAVE INSTRUCTION ADR
                               *
002392   8C20 399A                     PMV   R2,PKDEST,R3,UPKSRC(R9)
002396   0339 3110
                               *  SRC IS INVALID DATA ( INVALID DATA = A,B,C,D,E,F )
                               *  UNPACKED SRC = 3A,3B,3C,3D,3E,3F
                               *
00239A   9577                          EPSR  R7,R7              CAPTURE CONDITION CODE
00239C   C470 000F                     NHI   R7,X'F'            MASK TO GET CC
0023A0   C570 000A                     CLHI  R7,X'A'            CHECK THAT CC = 1010
0023A4   4330 23B8                     BE    SET5.15            CC OK, CONTINUE
0023A8   C8A0 3538                     LHI   R10,C'58'          LOAD ERROR NC
0023AC   40A0 17A2                     STH   R10,ERRNO          STORE
0023B0   40A0 175A                     STH   R10,NOERR          SET ERR FLAG
0023B4   41E0 3F94                     BAL   RET,CCNG           ERROR 58 EXP CC=1010 NOT RETURNED
                               *
0023B8   41F0 3AFA             SET5.15 BAL   LINK,PKCHK         GO TO CHECK DIGITS
0023BC   C580 0005                     CLHI  R8,5               CHECK PASS COUNT
0023C0   4330 23CC                     BE    SET5.16            DONE, CONTINUE
0023C4   2691                          AIS   R9,1               INCREMENT TO NEXT INVALID DATA DIGIT
0023C6   2681                          AIS   R8,1               INCREMENT PASS COUNT
0023C8   4300 2386                     B     SET5.14            LOOP TIL ALL DONE
                               *
0023CC   E690 0286             SET5.16 LA    R9,UPKSGN-UPKSRC   OFFSET TO INVALID SIGNS UNPACKED
0023D0   2480                          LIS   R8,0               ZERO PASS COUNT
0023D2   C820 0000             SET5.17 LHI   R2,0               LOAD DEST LENGTH
0023D6   C830 0000                     LHI   R3,0               LOAD SRC LENGTH
0023DA   41F0 9DB0 =00418E             BAL   LINK,REST3         SAVE INSTRUCTION ADR
                               *
0023DE   8C20 399A                     PMV   R2,PKDEST,R3,UPKSRC(R9)
0023E2   0339 3110
                               *  SRC IS INVALID SIGNS ( INVALID SIGNS = 0,1,2,4,5,6,7,8,9 )
                               *  UNPACKED SRC = 03,13,23,43,53,63,73,83,93
                               *
0023E6   9577                          EPSR  R7,R7              CAPTURE CONDITION CODE
0023E8   C470 000F                     NHI   R7,X'F'            MASK TO GET CC
0023EC   C570 000A                     CLHI  R7,X'A'            CHECK THAT CC = 1010
0023F0   4330 2404                     BE    SET5.18            CC OK, CONTINUE
0023F4   C8A0 3538                     LHI   R10,C'58'          LOAD ERROR NO
0023F8   40A0 17A2                     STH   R10,ERRNO          STORE
0023FC   40A0 175A                     STH   R10,NOERR          SET ERR FLAG
```

TEST 5 - PMV

```
002400  41E0 3F94          3068           BAL   RET,CCNG          ERROR 58 EXP CC=1010 NOT RETURNED      CML30680
                           3069  *                                                                      CML30690
002404  41F0 3AFA          3070  SET5.18  BAL   LINK,PKCHK        GO TO CHECK DIGITS                     CML30700
002408  0580 0008          3071           CLHI  R8,8              CHECK PASS COUNT                       CML30710
00240C  4330 2416          3072           BE    SET5.19           DONE, CONTINUE                         CML30720
002410  2691               3073           AIS   R9,1              INCREMENT TO NEXT INVALID SIGN DIGIT   CML30730
002412  2681               3074           AIS   R8,1              INCREMENT PASS COUNT                   CML30740
002414  4300 23D2          3075           B     SET5.17           LOOP TIL ALL DONE                      CML30750
                           3076  *                                                                      CML30760
002418  4300 0EEA          3077  SET5.19  B     TSTEND            EXIT TEST 5                            CML30770
                           3078  *                                                                      CML30780
                           3079  *                                                                      CML30790
                           3080  *                                                                      CML30800
```

```
                                   3082 *                                                                   CML30820
                                   3083 ********************************************************************CML30830
                                   3084 *                                                                 * CML30840
                                   3085 *                           TEST 6  -  UMV (UMVA)                 * CML30850
                                   3086 *                                                                 * CML30860
                                   3087 *          CONVERT PACKED DECIMAL DATA FROM SOURCE AREA TO        * CML30870
                                   3088 *          UNPACKED DECIMAL DATA AND MOVE TO DESTINATION AREA.    * CML30880
                                   3089 *                                                                 * CML30890
                                   3090 *          UMVA (FORCE RESULT POSITIVE - C BIT = 1).              * CML30900
                                   3091 *                                                                 * CML30910
                                   3092 ********************************************************************CML30920
                                   3093 *                                                                   CML30930
                                   3094 *                                                                   CML30940
         0000 241C                 3095 TEST6    EQU   *                                                     CML30950
                                   3096 *                                                                   CML30960
00241C   C820 001E                 3097 SET6     LHI   R2,30                SET DEST LENGTH                  CML30970
002420   C830 000F                 3098          LHI   R3,15                LOAD SRC LENGTH                  CML30980
002424   2490                      3099          LIS   R9,0                 ZERO INDEX                       CML30990
002426   41F0 9D64 =00418E         3100          BAL   LINK,REST3           SAVE INSTRUCTION ADR             CML31000
                                   3101 *                                                                   CML31010
00242A   8C20 39AA                 3102          UMV   R2,UPKDEST,R3,PKSRC                                   CML31020
00242E   0430 33A0
                                   3103 *                                                                   CML31030
                                   3104 * UMV RX1,RX1 OPN2=1ST IN BUF TRUE ZERO CHECK                        CML31040
                                   3105 *                                                                   CML31050
002432   9577                      3106          EPSR  R7,R7                CAPTURE CONDITION CODE           CML31060
002434   C470 000F                 3107          NHI   R7,X'F'              MASK TO GET CC                   CML31070
002438   C570 0000                 3108          CLHI  R7,X'0'              CHECK THAT CC = 0000 [OPN1] = 0  CML31080
00243C   4330 2450                 3109          BE    SET6.01              CC OK, CONTINUE                  CML31090
002440   C8A0 3630                 3110          LHI   R10,C'60'            LOAD ERROR NO                    CML31100
002444   40A0 17A2                 3111          STH   R10,ERRNO            STORE                            CML31110
002448   40A0 175A                 3112          STH   R10,NOERR            SET ERR FLAG                     CML31120
00244C   41E0 3F94                 3113          BAL   RET,CCNG             ERROR 60 EXP CC=0000 NOT RETURNED CML31130
                                   3114 *                                                                   CML31140
002450   41F0 3C12                 3115 SET6.01  BAL   LINK,UPKCK           GO TO CHECK DIGITS               CML31150
002454   C890 0010                 3116          LHI   R9,16                LOAD INDEX 1ST POS PACKED STRING CML31160
002458   2481                      3117          LIS   R8,1                 LOAD PASS COUNT                  CML31170
00245A   C820 001E                 3118 SET6.02  LHI   R2,30                LOAD DEST LENGTH                 CML31180
00245E   C830 000F                 3119          LHI   R3,15                LOAD SRC LENGTH                  CML31190
002462   41F0 9D28 =00418E         3120          BAL   LINK,REST3           SAVE INSTRUCTION ADR             CML31200
                                   3121 *                                                                   CML31210
002466   8C20                      3122          DCX   8C20                 OP CODE,DEST REG                 CML31220
002468   9540                      3123          DC    Z(UPKDEST-*-2+X'8000')                                CML31230
00246A   0439                      3124          DCX   0439                 OP MOD,SRC REG                   CML31240
00246C   8F32                      3125          DC    Z(PKSRC-*-2+X'8000')                                  CML31250
                                   3126 * UMV RX2,RX2 R9=INDEX 1ST POSITIVE STRINGS                          CML31260
                                   3127 *                                                                   CML31270
00246E   9577                      3128          EPSR  R7,R7                CAPTURE CONDITION CODE           CML31280
002470   C470 000F                 3129          NHI   R7,X'F'              MASK TO GET CC                   CML31290
002474   C570 0002                 3130          CLHI  R7,X'2'              CHECK THAT CC = 0010 [OPN1] > 0  CML31300
002478   4330 248C                 3131          BE    SET6.03              CC OK, CONTINUE                  CML31310
00247C   C8A0 3631                 3132          LHI   R10,C'61'            LOAD ERROR NO                    CML31320
002480   40A0 17A2                 3133          STH   R10,ERRNO            STORE                            CML31330
```

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  002484    40A0 175A                      STH   R10,NOERR            SET ERR FLAG
  002488    41E0 3F94                      BAL   RET,CCNG             ERROR 61 EXP CC=0010 NOT RETURNED
                                  *
  00248C    41F0 3C12             SET6.03  BAL   LINK,UPKCK           GO CHECK DIGITS
  002490    C580 0009                      CLHI  R8,9                 DONE ALL PASSES 1'S TO 9'S
  002494    4330 24A4                      BE    SET6.04              YES CONTINUE
  002498    FA90 0000 0010                 AI    R9,16                ADD LENGTH INCREMENT
  00249E    2681                           AIS   R8,1                 INCREMENT PASS COUNT
  0024A0    4300 245A                      B     SET6.02              LOOP TIL ALL PASSES DONE
  0024A4    C890 00A0             SET6.04  LHI   R9,160               LOAD INDEX 1ST NEG PACKED SRC
  0024A8    2481                           LIS   R8,1                 PASS COUNT
  0024AA    C820 001E             SET6.05  LHI   R2,30                LOAD DEST LENGTH
  0024AE    C830 000F                      LHI   R3,15                LOAD SRC LENGTH
  0024B2    41F0 9CD8 =00418E              BAL   LINK,REST3           SAVE INSTRUCTION ADR
                                  *
? 0024B6    8C20 4000 39AA                 UMV   R2,UPKDEST(R0,R0),R3,PKSRC(R9,R0)
? 0024BC    0439 4000 33A0
                                  *
                                  * UMV RX3,RX3  R9=INDEX 1ST NEGATIVE STRINGS
                                  *
  0024C2    9577                           EPSR  R7,R7                CAPTURE CONDITION CODE
  0024C4    C470 000F                      NHI   R7,X'F'              MASK TO GET CC
  0024C8    C570 0001                      CLHI  R7,X'1'              CHECK THAT CC = 0001 [OPN1] < 0
  0024CC    4330 24E0                      BE    SET6.06              CC OK, CONTINUE
  0024D0    C8A0 3632                      LHI   R10,C'62'            LOAD ERROR NO
  0024D4    40A0 17A2                      STH   R10,ERRNO            STORE
  0024D8    40A0 175A                      STH   R10,NOERR            SET ERR FLAG
  0024DC    41E0 3F94                      BAL   RET,CCNG             ERROR 62 EXP CC=0001 NOT RETURNED
                                  *
  0024E0    41F0 3C1E             SET6.06  BAL   LINK,UPKCK1          CHECK DIGITS AND NEG SIGN
  0024E4    C580 0009                      CLHI  R8,9                 CHECK PASS COUNT
  0024E8    4330 24F8                      BE    SET6.07              CONTINUE
  0024EC    FA90 0000 0010                 AI    R9,16                INCREMENT BY LENGTH
  0024F2    2681                           AIS   R8,1                 INCREMENT PASS COUNT
  0024F4    4300 24AA                      B     SET6.05              LOOP TIL ALL PASSES DONE
  0024F8    C820 001E             SET6.07  LHI   R2,30                LOAD DEST LENGTH
  0024FC    C830 000F                      LHI   R3,15                LOAD SRC LENGTH
  002500    C890 00A0                      LHI   R9,160               LOAD INDEX 1ST NEG PACKED SRC
  002504    41F0 9C86 =00418E              BAL   LINK,REST3           SAVE INSTRUCTION ADR
                                  *
  002508    8C20 39AA                      UMVA  R2,UPKDEST,R3,PKSRC(R9)
  00250C    2439 33A0
                                  *
                                  * UMVA RX1,RX1  USE NEG NUMBER TO CHECK FORCE SIGN POS
                                  * C BIT SET, R9=INDEX TO NEGATIVE STRING
                                  *
  002510    9577                           EPSR  R7,R7                CAPTURE CONDITION CODE
  002512    C470 000F                      NHI   R7,X'F'              MASK TO GET CC
  002516    C570 0002                      CLHI  R7,X'2'              CHECK THAT CC = 0010
                                  *                                   FOR [OPN1] FORCED > 0
  00251A    4330 252E                      BE    SET6.08              CC OK, CONTINUE
  00251E    C8A0 3633                      LHI   R10,C'63'            LOAD ERROR NO
  002522    40A0 17A2                      STH   R10,ERRNO            STORE
```

TEST 6 - UMV

```
002526  40A0 175A
00252A  41E0 3F94

00252E  41F0 3C12

002532  C820 0000
002536  C830 000F
00253A  C890 0000
00253E  41F0 9C4C =00418E

002542  8C20 39AA
002546  0430 33A0

00254A  9577
00254C  C470 000F
002550  C570 0000
002554  4330 2568
002558  C8A0 3630
00255C  40A0 17A2
002560  40A0 175A
002564  41E0 3F94

002568  41F0 3C12
00256C  C820 0000
002570  C830 0001
002574  C890 001F
002578  0B93
00257A  41F0 9C10 =00418F

00257E  8C20 39AA
002582  0439 33A0

002586  9577
002588  C470 000F
00258C  C570 0006
002590  4330 25A4
002594  C8A0 3637
002598  40A0 17A2
00259C  40A0 175A
0025A0  41E0 3F94

0025A4  41F0 3C12
0025A8  0873
0025AA  1171
0025AC  2621
0025AE  0527
0025B0  4380 25B8
0025B4  4300 2574

0025B8  2631
```

```
3185            STH   R10,NOERR          SET ERR FLAG                          CML31850
3186            BAL   RET,CCNG           ERROR 63 EXP CC=0010 (FORCED)         CML31860
3187  *                                            NOT RETURNED                  CML31870
3188  *                                                                          CML31880
3189  SET6.08   BAL   LINK,UPKCK         CHECK DIGITS                          CML31890
3190  *                                                                          CML31900
3191            LHI   R2,0               LOAD DEST LENGTH                      CML31910
3192            LHI   P3,15              LOAD SRC LENGTH                       CML31920
3193            LHI   R9,0               OFFSET                                CML31930
3194            BAL   LINK,REST3         SAVE INSTRUCTION ADR                  CML31940
3195  *                                                                          CML31950
3196            UMV   R2,UPKDEST,R3,PKSRC                                      CML31960
3197  *  UMV SRC = ZEROES TO CHECK LEAD ZERO THROW AWAY                         CML31970
3198  *                                                                          CML31980
3199            EPSR  R7,R7              CAPTURE CONDITION CODE                CML31990
3200            NHI   R7,X'F'            MASK TO GET CC                        CML32000
3201            CLHI  R7,X'0'            CHECK THAT CC = 0000                  CML32010
3202            BE    SET6.09            CC OK, CONTINUE                       CML32020
3203            LHI   R10,C'60'          LOAD ERROR NO                         CML32030
3204            STH   R10,ERRNO          STORE                                 CML32040
3205            STH   R10,NOERR          SET ERR FLAG                          CML32050
3206            BAL   RET,CCNG           ERROR 60 EXP CC=0000 NOT RETURNED     CML32060
3207  *                                                                          CML32070
3208  SET6.09   BAL   LINK,UPKCK         CHECK DIGITS                          CML32080
3209            LHI   R2,0               LOAD DEST LENGTH                      CML32090
3210            LHI   R3,1               LOAD SRC LENGTH                       CML32100
3211  SET6.10   LHI   R9,31              OFFSET TO LAST DIGIT SRC WITH SIGN    CML32110
3212            SR    R9,R3              ADJUST START ADR TO REFLECT LENGTH    CML32120
3213            BAL   LINK,REST3         SAVE INSTRUCTION ADR                  CML32130
3214  *                                                                          CML32140
3215            UMV   R2,UPKDEST,R3,PKSRC(R9)                                  CML32150
3216  *  SRC IS 1 OR MORE LARGER THAN DEST CAN HANDLE TO SET OVF FLAG           CML32160
3217  *                                                                          CML32170
3218            EPSR  R7,R7              CAPTURE CONDITION CODE                CML32180
3219            NHI   R7,X'F'            MASK TO GET CC                        CML32190
3220            CLHI  R7,X'6'            CHECK THAT CC = 0110                  CML32200
3221            BE    SET6.11            CC OK, CONTINUE                       CML32210
3222            LHI   R10,C'67'          LOAD ERROR NO                         CML32220
3223            STH   R10,ERRNO          STORE                                 CML32230
3224            STH   R10,NOERR          SET ERR FLAG                          CML32240
3225            BAL   RET,CCNG           ERROR 67 EXP CC=0110 NOT RETURNED     CML32250
3226  *                                                                          CML32260
3227  SET6.11   BAL   LINK,UPKCK         CHECK DIGITS                          CML32270
3228            LR    R7,R3              COPY SRC LENGTH                       CML32280
3229            SLLS  R7,1               MULTIPLY BY 2 TO COMPUTE MIN LEN REQ' CML32290
3230            AIS   R2,1               INCREMENT DEST LENGTH                 CML32300
3231            CLR   R2,R7              COMPARE WITH MIN REQ'D                CML32310
3232            BNL   SET6.12            LESS, LOOP                            CML32320
3233            B     SET6.10            LOOP TIL DONE                         CML32330
3234  *                                                                          CML32340
3235  SET6.12   AIS   R3,1               INCREMENT SRC LENGTH                  CML32350
```

TEST 5 - UMV

```
0025BA  C820 0000            3236          LHI   R2,0                CLEAR DEST TO MINIMUM LENGTH          CML32360
0025BE  C530 0010            3237          CLHI  R3,16               COMPARE SRC TO MAXIMUM LENGTH         CML32370
0025C2  4380 25CA            3238          BNL   SET6.13             DONE, GO TO NEXT SECTION              CML32380
0025C6  4300 2574            3239          B     SET6.10             CONTINUE ALL SRC LENGTHS              CML32390
                             3240  *                                                                       CML32400
0025CA  E690 0130            3241  SET6.13 LA    R9,PKDAT-PKSRC      OFFSET TO INVALID DATA PACKED         CML32410
0025CE  2480                 3242          LIS   R8,0                ZERO PASS COUNT                       CML32420
0025D0  C820 0000            3243  SET6.14 LHI   R2,0                LOAD DEST LENGTH                      CML32430
0025D4  C830 0000            3244          LHI   R3,0                LOAD SRC LENGTH                       CML32440
0025D8  41F0 9BB2 =00418F    3245          BAL   LINK,REST3          SAVE INSTRUCTION ADR                  CML32450
                             3246  *                                                                       CML32460
0025DC  8C20 39AA            3247          UMV   R2,UPKDEST,R3,PKSRC(R9)                                   CML32470
0025E0  0439 33A0
                             3248  *  SRC IS INVALID DATA ( INVALID DATA = A,B,C,D,E,F )                    CML32480
                             3249  *  PACKED SRC = A3,B3,C3,D3,E3,F3                                       CML32490
                             3250  *                                                                       CML32500
0025E4  9577                 3251          EPSR  R7,R7               CAPTURE CONDITION CODE                CML32510
0025E6  C470 000F            3252          NHI   R7,X'F'             MASK TO GET CC                        CML32520
0025EA  C570 000A            3253          CLHI  R7,X'A'             CHECK THAT CC = 1010                  CML32530
0025EE  4330 2602            3254          BE    SET6.15             CC OK, CONTINUE                       CML32540
0025F2  C8A0 3638            3255          LHI   R10,C'68'           LOAD ERROR NO                         CML32550
0025F6  40A0 17A2            3256          STH   R10,ERRNO           STORE                                 CML32560
0025FA  40A0 175A            3257          STH   R10,NOERR           SET ERR FLAG                          CML32570
0025FE  41E0 3F94            3258          BAL   RET,CCNG            ERROR 68 EXP CC=1010 NOT RETURNED     CML32580
                             3259  *                                                                       CML32590
002602  41F0 3C12            3260  SET6.15 BAL   LINK,UPKCK          GO TO CHECK DIGITS                    CML32600
002606  C580 0005            3261          CLHI  R8,5                CHECK PASS COUNT                      CML32610
00260A  4330 2616            3262          BE    SET6.16             DONE, CONTINUE                        CML32620
00260E  2591                 3263          AIS   R9,1                INCREMENT TO NEXT INVALID DATA DIGIT  CML32630
002610  2681                 3264          AIS   R8,1                INCREMENT PASS COUNT                  CML32640
002612  4300 25D0            3265          B     SET6.14             LOOP TIL ALL DONE                     CML32650
                             3266  *                                                                       CML32660
002616  E690 0136            3267  SET6.16 LA    R9,PKSGN-PKSRC      OFFSET TO INVALID SIGNS PACCKED       CML32670
00261A  2490                 3268          LIS   R8,0                ZERO PASS COUNT                       CML32680
00261C  C820 0000            3269  SET6.17 LHI   R2,0                LOAD DEST LENGTH                      CML32690
002620  C830 0000            3270          LHI   R3,0                LOAD SRC LENGTH                       CML32700
002624  41F0 9B66 =00418F    3271          BAL   LINK,REST3          SAVE INSTRUCTION ADR                  CML32710
                             3272  *                                                                       CML32720
002628  8C20 39AA            3273          UMV   R2,UPKDEST,R3,PKSRC(R9)                                   CML32730
00262C  0439 33A0
                             3274  *  SRC IS INVALID SIGNS ( INVALID SIGNS = 0,1,2,4,5,6,7,8,9 )           CML32740
                             3275  *                                                                       CML32750
002630  9577                 3276          EPSR  R7,R7               CAPTURE CONDITION CODE                CML32760
002632  C470 000F            3277          NHI   R7,X'F'             MASK TO GET CC                        CML32770
002636  C570 000A            3278          CLHI  R7,X'A'             CHECK THAT CC = 1010                  CML32780
00263A  4330 264E            3279          BE    SET6.18             CC OK, CONTINUE                       CML32790
00263E  C8A0 3638            3280          LHI   R10,C'68'           LOAD ERROR NO                         CML32800
002642  40A0 17A2            3281          STH   R10,ERRNO           STORE                                 CML32810
002646  40A0 175A            3282          STH   R10,NOERR           SET ERR FLAG                          CML32920
00264A  41E0 3F94            3283          BAL   RET,CCNG            ERROR 68 EXP CC=1010 NOT RETURNED     CML32830
                             3284  *                                                                       CML32840
00264E  41F0 3C12            3285  SET6.18 BAL   LINK,UPKCK          GO TO CHECK DIGITS                    CML32850
002652  C580 0008            3286          CLHI  R8,8                CHECK PASS COUNT                      CML32860
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```
002656   4330 2662     3287          BE    SET6.19          DONE, CONTINUE                         CML32870
00265A   2691          3288          AIS   R9,1             INCREMENT TO NEXT INVALID SIGN DIGIT   CML32880
00265C   2681          3289          AIS   R8,1             INCREMENT PASS COUNT                   CML32890
00265E   4300 261C     3290          B     SET6.17          LOOP TIL ALL DONE                      CML32900
                       3291  *                                                                     CML32910
002662   4300 0EEA     3292  SET6.19 B     TSTEND           EXIT TEST 6                            CML32920
                       3293  *                                                                     CML32930
                       3294  *                                                                     CML32940
```

TEST 7 - MVTU

```
                                  *                                                                      CML32960
                                  ***********************************************************************CML32970
                                  *                                                                   *  CML32980
                                  *                       TEST 7  -  MVTU                             *  CML32990
                                  *                                                                   *  CML33000
                                  *              MOVE TRANSLATED UNTIL TERMINATION (ESCAPE)           *  CML33010
                                  *                      CHARACTER IS DETECTED.                       *  CML33020
                                  *                                                                   *  CML33030
                                  *              ESCAPE CHARACTER CONTAINED IN REG 0                  *  CML33040
                                  *                                                                   *  CML33050
                                  *              TRANSLATION TABLE ADDRESS CONTAINED IN REG 2         *  CML33060
                                  *                                                                   *  CML33070
                                  *              IF REG 2 = 0 THEN NO TRANSLATION, BUT SOURCE         *  CML33080
                                  *              CHAR IS CHECKED IF ESCAPE CHAR MATCH.IF REG 2        *  CML33090
                                  *              IS NON ZERO, THEN TRANSLATED CHAR IS CHECKED         *  CML33100
                                  *              IF ESCAPE CHAR MATCH.                                *  CML33110
                                  *                                                                   *  CML33120
                                  *                                                                   *  CML33130
                                  ***********************************************************************CML33140
                                  *                                                                      CML33150
                                  *                                                                      CML33160
         0000 2666                TEST7    EQU   *                                                       CML33170
002666   2461                              LIS   R6,1                LOAD INITIAL BYTE LENGTH            CML33180
002668   2431                              LIS   R3,1                LOAD INITIAL BYTE LENGTH            CML33190
00266A   C800 00FE                         LHI   R0,X'FE'            LOAD TERM ESC CHAR                  CML33200
                                  *                                                                      CML33210
00266E   2420                     SET7     LIS   R2,0                TRANS TABLE ADR ZERO                CML33220
002670   41F0 9AF4 =004168                 BAL   LINK,RESTORE        RESTORE ALL                         CML33230
                                  *                                                                      CML33240
002674   8C50 3684                         MVTU  R6,OPN1,R3,OPN2                                         CML33250
002678   0030 3584
                                  *                                                                      CML33260
                                  * MVTU RX1,RX1 NO TRANS ESC CHAR NOT FOUND OPN2 EXHAUSTED               CML33270
                                  *                                                                      CML33280
00267C   9577                              EPSR  R7,R7               CAPTURE CONDITION CODE              CML33290
00267E   C470 000F                         NHI   R7,X'F'             MASK TO GET CC                      CML33300
002682   C570 0000                         CLHI  R7,X'0'             CHECK THAT CC = 0000 OPN2 EXHAUSTED CML33310
002686   4330 269A                         BE    SET7.01             CC OK, CONTINUE                     CML33320
00268A   C8A0 3730                         LHI   R10,C'70'           LOAD ERROR NO                       CML33330
00268E   40A0 17A2                         STH   R10,ERRNO           STORE                               CML33340
002692   40A0 175A                         STH   R10,NOERR           SET ERR FLAG                        CML33350
002696   41E0 3F94                         BAL   RET,CCNG            ERROR 70 EXP CC=0000 NOT RETURNED   CML33360
                                  *                                                                      CML33370
00269A   C840 3684                SET7.01  LHI   R4,OPN1             LOAD DESTINATION ADR                CML33380
00269E   C850 3784                         LHI   R5,MASTER           LOAD MASTER ADR                     CML33390
0026A2   41F0 9AEE =004194                 BAL   LINK,MVTUCHK        GO TO BYTE BY BYTE CHECK            CML33400
0026A6   C843 3584                         LHI   R4,OPN2(R3)         LOAD EXP NEXT SRC ADR               CML33410
0026AA   0514                              CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS   CML33420
0026AC   4330 26C0                         BE    SET7.02             CHECK OK                            CML33430
0026B0   C8A0 3731                         LHI   R10,C'71'           LOAD ERROR NO                       CML33440
0026B4   40A0 17A2                         STH   R10,ERRNO           STORE                               CML33450
0026B8   40A0 175A                         STH   R10,NOERR           SET ERR FLAG                        CML33460
0026BC   41E0 9988 =004048                 BAL   RET,ADRERR          ERROR 71  REG 1 INCORRECT           CML33470
```

TEST 7 - MVTU

```
                                3348  *                                                                    CML33480
0026C0   C530 00FF              3349  SET7.02  CLHI  R3,255              CHECK IF ALL MOVES TRIED          CML33490
0026C4   4330 26D2              3350           BE    SET7.03             GO TO NEXT SECTION                CML33500
0026C8   2661                   3351           AIS   R6,1                INCREMENT FOR NEXT MOVE           CML33510
0026CA   2631                   3352           AIS   R3,1                INCREMENT FOR NEXT MOVE           CML33520
0026CC   2701                   3353           SIS   R0,1                DECREMENT ESC CHAR VALUE          CML33530
0026CE   4300 266E              3354           B     SET7                RETURN                            CML33540
                                3355  *                                                                    CML33550
                                3356  *                                                                    CML33560
                                3357  *                                                                    CML33570
0026D2   2460                   3358  SET7.03  LIS   R6,0                LOAD INITIAL BYTE COUNT           CML33580
0026D4   2431                   3359           LIS   R3,1                LOAD INITIAL BYTE COUNT           CML33590
0026D6   C800 00FE              3360           LHI   R0,X'FE'            LOAD TERM ESC CHAR                CML33600
                                3361  *                                                                    CML33610
0026DA   2420                   3362  SET7.04  LIS   R2,0                TRANS TABLE ADR ZERO              CML33620
0026DC   41F0 9A88 =004168      3363           BAL   LINK,RESTORE        RESTORE ALL                       CML33630
                                3364  *                                                                    CML33640
0026E0   8C60                   3365           DCX   8C60                OP CODE,DEST REG                  CML33650
0026E2   8FA0                   3366           DC    Z(OPN1-*-2+X'8000')                                   CML33660
0026E4   0030                   3367           DCX   0030                                                  CML33670
0026E6   8E9C                   3368           DC    Z(OPN2-*-2+X'8000')                                   CML33680
                                3369  * MVTU RX2,RX2 NO TRANS ESC CHAR NOT FOUND OPN1 EXHAUSTED            CML33690
                                3370  *                                                                    CML33700
0026E8   9577                   3371           EPSR  R7,R7               CAPTURE CONDITION CODE            CML33710
0026EA   C470 000F              3372           NHI   R7,X'F'             MASK TO GET CC                    CML33720
0026EE   C570 0004              3373           CLHI  R7,X'4'             CHECK THAT CC = 0100 OPN1 EXHAUSTED CML33730
0026F2   4330 2706              3374           BE    SET7.05             CC OK, CONTINUE                   CML33740
0026F6   C8A0 3732              3375           LHI   R10,C'72'           LOAD ERROR NO                     CML33750
0026FA   40A0 17A2              3376           STH   R10,ERRNO           STORE                             CML33760
0026FE   40A0 175A              3377           STH   R10,NOERR           SET ERR FLAG                      CML33770
002702   41E0 3F94              3378           BAL   RET,CCNG            ERROR 72,EXP CC=0100 NOT RETURNED CML33780
                                3379  *                                                                    CML33790
002706   C840 3684              3380  SET7.05  LHI   R4,OPN1             LOAD DESTINATION ADR              CML33800
00270A   C850 3784              3381           LHI   R5,MASTER           LOAD MASTER ADR                   CML33810
00270E   41F0 9A82 =004194      3382           BAL   LINK,MVTUCHK        GO TO BYTE BY BYTE CHECK          CML33820
002712   C846 3584              3383           LHI   R4,OPN2(R6)         LOAD EXP NEXT SRC ADR (USE R6)    CML33830
002716   0514                   3384           CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS CML33840
002718   4330 272C              3385           BE    SET7.06                                               CML33850
00271C   C8A0 3731              3386           LHI   R10,C'71'           LOAD ERROR NO                     CML33860
002720   40A0 17A2              3387           STH   R10,ERRNO           STORE                             CML33870
002724   40A0 175A              3388           STH   R10,NOERR           SET ERR FLAG                      CML33880
002728   41E0 991C =004048      3389           BAL   RET,ADRERR          ERROR 71  REG 1 INCORRECT         CML33890
                                3390  *                                                                    CML33900
00272C   C530 00FF              3391  SET7.06  CLHI  R3,255              CHECK IF DONE ALL PASSES          CML33910
002730   4330 273E              3392           BE    SET7.07             GO TO NEXT SECTION                CML33920
002734   2661                   3393           AIS   R6,1                INCREMENT FOR NEXT MOVE           CML33930
002736   2631                   3394           AIS   R3,1                INCREMENNT FOR NEXT MOVE          CML33940
002738   2701                   3395           SIS   R0,1                DECREMENT ESC CHAR VALUE          CML33950
00273A   4300 26DA              3396           B     SET7.04             RETURN                            CML33960
                                3397  *                                                                    CML33970
                                3398  *                                                                    CML33980
                                3399  *                                                                    CML33990
00273E   2462                   3400  SET7.07  LIS   R6,2                LOAD INITIAL BYTE LENGTH          CML34000
```

TEST 7 - MVTU

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002740   2432                    3401          LIS   R3,2                LOAD INITIAL BYTE LENGTH                CML34010
002742   C800 00FE               3402          LHI   R0,X'FE'            LOAD TERM ESC CHAR VALUE                CML34020
                                 3403  *                                                                         CML34030
002746   2420                    3404  SET7.08 LIS   R2,0                TRANS TABLE ADR ZERO                    CML34040
002748   41F0 9A1C =004168       3405          BAL   LINK,RESTORE        RESTORE ALL                             CML34050
                                 3406  *                                                                         CML34060
? 00274C 8C60 4000 3684          3407          MVTU  R6,OPN1(R0,R0),R3,OPN2(R0,R0)                             CML34070
? 002752 0030 4000 3584                                                                                          CML34080
                                 3408  *                                                                         CML34090
                                 3409  * MVTU RX3,RX3 NO TRANS ESC CHAR WAS FOUND LAST CHAR OPN2                 CML34100
                                 3410  *                                                                         CML34110
002758   9577                    3411          EPSR  R7,R7               CAPTURE CONDITION CODE                  CML34120
00275A   C470 000F               3412          NHI   R7,X'F'             MASK TO GET CC                          CML34130
00275E   C570 0008               3413          CLHI  R7,X'8'             CHECK THAT CC = 1000 TERMINATION        CML34140
002762   4330 2776               3414          BE    SET7.09             CC OK, CONTINUE                         CML34150
002766   C8A0 3733               3415          LHI   R10,C'73'           LOAD ERROR NO                           CML34160
00276A   40A0 17A2               3416          STH   R10,ERRNO           STORE                                   CML34170
00276E   40A0 175A               3417          STH   R10,NOERR           SET ERR FLAG                            CML34180
002772   41E0 3F94               3418          BAL   RET,CCNG            ERROR 73 EXP CC=1000 NOT RETURNED       CML34190
                                 3419  *                                                                         CML34200
002776   C840 3684               3420  SET7.09 LHI   R4,OPN1             LOAD DESTINATION ADR                    CML34210
00277A   C850 3784               3421          LHI   R5,MASTER           LOAD MASTER ADR                         CML34220
00277E   2761                    3422          SIS   R6,1                DECREMENT TO POINT TO ACTUAL BYTE       CML34230
002780   2731                    3423          SIS   R3,1                DECREMENT TO POINT TO ACTUAL BYTE       CML34240
002782   41F0 9A0E =004194       3424          BAL   LINK,MVTUCHK        GO TO BYTE BY BYTE CHECK                CML34250
002786   C843 3584               3425          LHI   R4,OPN2(R3)         LOAD EXP NEXT SRC ADR                   CML34260
00278A   0514                    3426          CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS       CML34270
00278C   4330 27A0               3427          BE    SET7.10                                                     CML34280
002790   C8A0 3731               3428          LHI   R10,C'71'           LOAD ERROR NO                           CML34290
002794   40A0 17A2               3429          STH   R10,ERRNO           STORE                                   CML34300
002798   40A0 175A               3430          STH   R10,NOERR           SET ERR FLAG                            CML34310
00279C   41E0 98A8 =004046       3431          BAL   RET,ADRERR          ERROR 71 REG 1 INCORRECT                CML34320
                                 3432  *                                                                         CML34330
0027A0   C530 00FF               3433  SET7.10 CLHI  R3,255              CHECK IF DONE ALL PASSES                CML34340
0027A4   4330 27B2               3434          BE    SET7.11             GO TO NEXT SECTION                      CML34350
0027A8   2662                    3435          AIS   R6,2                INCREMENT FOR NEXT MOVE                 CML34360
0027AA   2632                    3436          AIS   R3,2                INCREMENT FOR NEXT MOVE                 CML34370
0027AC   2701                    3437          SIS   R0,1                DECREMENT ESC CHAR VALUE                CML34380
0027AE   4300 2746               3438          B     SET7.08             RETURN                                  CML34390
                                 3439  *                                                                         CML34400
                                 3440  *                                                                         CML34410
                                 3441  *                                                                         CML34420
0027B2   2461                    3442  SET7.11 LIS   R6,1                LOAD INITIAL BYTE LENGTH                CML34430
0027B4   2431                    3443          LIS   R3,1                LOAD INITIAL BYTE LENGTH                CML34440
0027B6   C800 0001               3444          LHI   R0,X'01'            LOAD ESC CHAR VALUE                     CML34450
                                 3445  *                                                                         CML34460
0027BA   C820 3584               3446  SET7.12 LHI   R2,OPN2             LOAD TRANS TABLE ADR                    CML34470
0027BE   41F0 99A6 =004168       3447          BAL   LINK,RESTORE        RESTORE ALL                             CML34480
                                 3448  *                                                                         CML34490
0027C2   8C60 3684               3449          MVTU  R6,OPN1,R3,OPN2                                           CML34500
0027C6   0030 3584                                                                                               CML34510
                                 3450  *
                                 3451  * MVTU TRANSLATED ESC CHAR NOT FOUND OPN2 EXHAUSTED
```

TEST 7 - MVTU

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                                 3452  *                                                                          CML34520
0027CA   9577                    3453          EPSR  R7,R7               CAPTURE CONDITION CODE                   CML34530
0027CC   C470 000F               3454          NHI   R7,X'F'             MASK TO GET CC                           CML34540
0027D0   C570 0000               3455          CLHI  R7,X'0'             CHECK THAT CC = 0000 OPN2 EXHAUSTED      CML34550
0027D4   4330 27E8               3456          BE    SET7.13             CC OK, CONTINUE                          CML34560
0027D8   C8A0 3734               3457          LHI   R10,C'74'           LOAD ERROR NO                            CML34570
0027DC   40A0 17A2               3458          STH   R10,ERRNO           STORE                                    CML34580
0027E0   40A0 175A               3459          STH   R10,NOERR           SET ERR FLAG                             CML34590
0027E4   41E0 3F94               3460          BAL   RET,CCNG            ERROR 74 EXP CC=0000 NOT RETURNED        CML34600
                                 3461  *                                                                          CML34610
0027E8   C840 3684               3462  SET7.13 LHI   R4,OPN1             LOAD DESTINATION ADR                     CML34620
0027EC   C850 3884               3463          LHI   R5,TRANSTAB         LOAD TRANS TABLE ADR                     CML34630
0027F0   41F0 99A0 =004194       3464          BAL   LINK,MVTUCHK        GO TO BYTE BY BYTE CHECK                 CML34640
0027F4   C843 3584               3465          LHI   R4,OPN2(R3)         LOAD EXP NEXT SRC ADR                    CML34650
0027F8   0514                    3466          CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS        CML34660
0027FA   4330 280A               3467          BE    SET7.14                                                      CML34670
0027FE   C8A0 3735               3468          LHI   R10,C'75'           LOAD ERROR NO                            CML34680
002802   40A0 17A2               3469          STH   R10,ERRNO           STORE                                    CML34690
002806   41E0 963E =004048       3470          BAL   RET,ADRERR          ERROR 75 REG 1 INCORRECT                 CML34700
                                 3471  *                                                                          CML34710
00280A   C530 00FF               3472  SET7.14 CLHI  R3,255              CHECK IF DONE ALL PASSES                 CML34720
00280E   4330 281C               3473          BE    SET7.15             GO TO NEXT SECTION                       CML34730
002812   2661                    3474          AIS   R6,1                INCREMENT FOR NEXT MOVE                  CML34740
002814   2631                    3475          AIS   R3,1                INCREMENT FOR NEXT MOVE                  CML34750
002816   2601                    3476          AIS   R0,1                INCREMENT ESC CHAR VALUE                 CML34760
002818   4300 27BA               3477          B     SET7.12             RETURN                                   CML34770
                                 3478  *                                                                          CML34780
                                 3479  *                                                                          CML34790
                                 3480  *                                                                          CML34800
00281C   2461                    3481  SET7.15 LIS   R6,1                LOAD DESTINATION LENGTH                  CML34810
00281E   2432                    3482          LIS   R3,2                LOAD SOURCE LENGTH                       CML34820
002820   C800 00FE               3483          LHI   R0,X'FE'            LOAD TERM ESC CHAR VALUE                 CML34830
                                 3484  *                                                                          CML34840
002824   C820 3584               3485  SET7.16 LHI   R2,OPN2             LOAD TRANS TABLE ADR                     CML34850
002828   41F0 993C =004168       3486          BAL   LINK,RESTORE        RESTORE ALL                              CML34860
                                 3487  *                                                                          CML34870
00282C   8C60                    3488          DCX   8C60                OP CODE,DEST REG                         CML34880
00282E   8E54                    3489          DC    Z(OPN1-*-2+X'8000')                                          CML34890
002830   0030                    3490          DCX   0030                OP MOD,SRC REG                           CML34900
002832   8D50                    3491          DC    Z(OPN2-*-2+X'8000')                                          CML34910
                                 3492  * MVTU RX2,RX2 TRANSLATION ESC CHAR NOT FOUND OPN1 EXHAUSTED                CML34920
                                 3493  *                                                                          CML34930
002834   9577                    3494          EPSR  R7,R7               CAPTURE CONDITION CODE                   CML34940
002836   C470 000F               3495          NHI   R7,X'F'             MASK TO GET CC                           CML34950
00283A   C570 0004               3496          CLHI  R7,X'4'             CHECK THAT CC = 0100 OPN1 EXHAUSTED      CML34960
00283E   4330 2852               3497          BE    SET7.17             CC OK, CONTINUE                          CML34970
002842   C8A0 3736               3498          LHI   R10,C'76'           LOAD ERROR NO                            CML34980
002846   40A0 17A2               3499          STH   R10,ERRNO           STORE                                    CML34990
00284A   40A0 175A               3500          STH   R10,NOERR           SET ERR FLAG                             CML35000
00284E   41E0 3F94               3501          BAL   RET,CCNG            ERROR 76 EXP CC = 0100 NOT RETURNED      CML35010
                                 3502  *                                                                          CML35020
002852   C840 3684               3503  SET7.17 LHI   R4,OPN1             LOAD DESTINATION ADR                     CML35030
002856   C850 3884               3504          LHI   R5,TRANSTAB         LOAD TRANS TABLE ADR                     CML35040
```

TEST 7 - MVTU

```
002858   41F0 9936 =004194   3505          BAL   LINK,MVTUCHK        GO TO BYTE BY BYTE CHECK                CML35050
00285E   C846 3584           3506          LHI   R4,OPN2(R6)        LOAD EXP NEXT SRC ADR (USE R6)          CML35060
002862   0514                3507          CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS       CML35070
002864   4330 2874           3508          BE    SET7.18                                                     CML35080
002868   C8A0 3735           3509          LHI   R10,C'75'           LOAD ERROR NO                           CML35090
00286C   40A0 17A2           3510          STH   R10,ERRNO           STORE                                   CML35100
002870   41E0 97D4 =004048   3511          BAL   RET,ADRERR          ERROR 75 REG 1 INCORRECT                CML35110
                             3512  *                                                                         CML35120
002874   C530 00FF           3513  SET7.18 CLHI  R3,255              CHECK IF DONE ALL PASSES                CML35130
002878   4330 2886           3514          BE    SET7.19             GO TO NEXT SECTION                      CML35140
00287C   2661                3515          AIS   R6,1                INCREMENT FOR NEXT MOVE                 CML35150
00287E   2631                3516          AIS   R3,1                INCREMENT FOR NEXT MOVE                 CML35160
002880   2501                3517          AIS   R0,1                INCREMENT ESC CHAR VALUE                CML35170
002882   4300 2824           3518          B     SET7.16             RETURN                                  CML35180
                             3519  *                                                                         CML35190
                             3520  *                                                                         CML35200
                             3521  *                                                                         CML35210
002886   2462                3522  SET7.19 LIS   R6,2                LOAD INITIAL BYTE LENGTH                CML35220
002888   2432                3523          LIS   R3,2                LOAD INITIAL BYTE LENGTH                CML35230
00288A   C800 0001           3524          LHI   R0,X'01'            LOAD TERM ESC CHAR VALUE                CML35240
                             3525  *                                                                         CML35250
00288E   C820 3584           3526  SET7.1A LHI   R2,OPN2             LOAD TRANS TABLE ADR                    CML35260
002892   41F0 98D2 =004168   3527          BAL   LINK,RESTORE        RESTORE ALL                             CML35270
                             3528  *                                                                         CML35280
? 002896   8C60 4000 3684    3529          MVTU  R6,OPN1(R0,R0),R3,OPN2(R0,R0)                             CML35290
? 00289C   0030 4000 3584
                             3530  *                                                                         CML35300
                             3531  * MVTU RX3,RX3 TRANSLATED ESC CHAR WAS FOUND LAST CHAR OPN2              CML35310
                             3532  *                                                                         CML35320
0028A2   9577                3533          EPSR  R7,R7               CAPTURE CONDITION CODE                  CML35330
0028A4   C470 000F           3534          NHI   R7,X'F'             MASK TO GET CC                          CML35340
0028A8   C570 0008           3535          CLHI  R7,X'8'             CHECK THAT CC = 1000 TERMINATION        CML35350
0028AC   4330 28C0           3536          BE    SET7.1B             CC OK, CONTINUE                         CML35360
0028B0   C8A0 3737           3537          LHI   R10,C'77'           LOAD ERROR NO                           CML35370
0028B4   40A0 17A2           3538          STH   R10,ERRNO           STORE                                   CML35380
0028B8   40A0 175A           3539          STH   R10,NOERR           SET ERR FLAG                            CML35390
0028BC   41E0 3F94           3540          BAL   RET,CCNG            ERROR 77 EXP CC=1000 NOT RETURNED       CML35400
                             3541  *                                                                         CML35410
0028C0   C840 3684           3542  SET7.1B LHI   R4,OPN1             LOAD DESTINATION ADR                    CML35420
0028C4   C850 3884           3543          LHI   R5,TRANSTAB         LOAD TRANS TABLE ADR                    CML35430
0028C8   2761                3544          SIS   R6,1                DECREMENT TO POINT TO ACTUAL BYTE       CML35440
0028CA   2731                3545          SIS   R3,1                DECREMENT TO POINT TO ACTUAL BYTE       CML35450
0028CC   41F0 98C4 =004194   3546          BAL   LINK,MVTUCHK        GO TO BYTE BY BYTE CHECK                CML35460
0028D0   C843 3584           3547          LHI   R4,OPN2(R3)         LOAD EXP NEXT SRC ADR                   CML35470
0028D4   0514                3548          CLR   R1,R4               COMPARE ACTUAL TO EXP SRC ADDRESS       CML35480
0028D6   4330 28EA           3549          BE    SET7.1C                                                     CML35490
0028DA   C8A0 3735           3550          LHI   R10,C'75'           LOAD ERROR NO                           CML35500
0028DE   40A0 17A2           3551          STH   R10,ERRNO           STORE                                   CML35510
0028E2   40A0 175A           3552          STH   R10,NOERR           SET ERR FLAG                            CML35520
0028E6   41E0 975E =004048   3553          BAL   RET,ADRERR          ERROR 75  REG 1 INCORRECT               CML35530
                             3554  *                                                                         CML35540
0028EA   C530 00FF           3555  SET7.1C CLHI  R3,255              CHECK IF DONE ALL PASSES                CML35550
0028EE   4330 28FC           3556          BE    SET7.1D             GO TO NEXT SECTION                      CML35560
```

TEST 7 - MVTU

```
0028F2   2662                       AIS    R6,2         INCREMENT FOR NEXT MOVE        CML35570
0028F4   2632                       AIS    R3,2         INCREMENT FOR NEXT MOVE        CML35580
0028F6   2601                       AIS    R0,1         INCREMENT ESC CHAR VALUE       CML35590
0028F8   4300 288E                  B      SET7.1A      RETURN                         CML35600
                     *                                                                 CML35610
                     *                                                                 CML35620
                     *                                                                 CML35630
                     *                                                                 CML35640
0028FC   4300 0EEA   SET7.1D        B      TSTEND       EXIT TEST 7                    CML35650
                     *                                                                 CML35660
                     *                                                                 CML35670
```

```
                                 *
                                 ***********************************************************************
                                 *                                                                     *
                                 *    TEST 8  -  INTERRUPTIBLE INSTRUCTION TEST                        *
                                 *                                                                     *
                                 *    *** NOTE: THIS TEST IS OPTIONAL DUE TO THE REQUIREMENT ***       *
                                 *    ***       FOR A PRECISION INTERVAL CLOCK (PIC) USED TO ***       *
                                 *    ***       GENERATE INTERRUPTS. DEFAULT CLOCK ADDRESS   ***       *
                                 *    ***       IS X'6C', ANY OTHER ADDRESS MUST BE ENTERED  ***       *
                                 *    ***       VIA THE "PICADR" OPTION IN THE OPTION TABLE. ***       *
                                 *                                                                     *
                                 * THIS TEST CHECKS THE IIP (INTERRUPTIBLE INSTRUCTION IN PROGRESS)    *
                                 * BIT IN THE PSW FOR ABILITY TO BE SET DURING EXECUTION OF THE        *
                                 * INSTRUCTIONS STBP, UMV, MOVE, CPAN, MVTU, PMV, LPB.                 *
                                 * THE INSTRUCTION EXECUTION IS THEN EXTERNALLY INTERRUPTED            *
                                 * BY THE PIC AND THE INT HANDLER CHECKS IF THE IIP BIT IS SET.        *
                                 * IF THE BIT (PSW BIT 14) IS SET, THE INSTRUCTION IS RESUMED.         *
                                 * UPON COMPLETION OF THE INSTRUCTION EXECUTION, THE IIP BIT IS        *
                                 * CHECKED TO DETERMINE IF IT HAS NOW BEEN RESET IN THE CURRENT PSW.   *
                                 * ERRORS IN SETTING/RESETTING THE IIP BIT ARE PRINTED AND THE TEST    *
                                 * ABORTED. IF NO ERROR DETECTED, THE RESULTS OF THE INSTRUCTION       *
                                 * ARE CHECKED AND IF CORRECT, THE NEXT SECTION IS RUN.                *
                                 ***********************************************************************
                                 *
                                 *
         0000 2900               TEST8    EQU   *
                                 *
002900   48A0 186E               SETINT   LH    R10,PICADR+6         LOAD PRECISION CLOCK ADR
002904   C8B0 2DBA                        LHI   R11,IIPINT           LOAD INT HANDLER ADR
002908   40BA 4A00 00D0                   STH   R11,X'D0'(R10,R10)   STORE HANDLER ADR TO TABLE
                                 *
                                 *
00290E   C800 00E0               SETINT1  LHI   R0,X'E0'             LOAD PIC CMD DISARM/START
002912   C870 0040                        LHI   R7,X'40'             LOAD PIC CMD ENABLE
002916   C8C0 00C0                        LHI   R12,X'C0'            LOAD PIC CMD DISARM
00291A   0799                             XR    R9,R9                ZERO REG 9
00291C   4090 2DF0                        STH   R9,IIPFLAG           CLEAR IIP FLAG
002920   C890 1040                        LHI   R9,X'1040'           SET R=1 US, IC=64 US
002924   C8D0 70F0                        LHI   R13,X'70F0'          LOAD INT PSW
002928   C8B0 294E                        LHI   R11,TEST8.1          LOAD TEST INSTRUCTION ADR
00292C   50B0 9974 =0042A4                ST    R11,INSTADR          STORE TEST INSTRUCTION ADR
002930   2521                             LCS   R2,1                 LOAD,R2 = FFFF FFFF
002932   1021                             SRLS  R2,1                 SHIFT,REG 2 = 7FFF FFFF
002934   2531                             LCS   R3,1                 LOAD,REG 3 = FFFF FFFF
002936   C850 2E08                        LHI   R5,SRES.02           LOAD EXP RESULT ADR
00293A   C860 351C                        LHI   R6,SDEST             LOAD DEST STRING ADR
                                 *
00293E   98A9                    SETPIC1  WHR   R10,R9               SET PIC RESOLUTION AND COUNT
002940   9DA8                             SSR   R10,R8               SENSE STATUS
002942   4280 293E                        BTC   8,SETPIC1            CHECK FOR OVERFLOW
002946   9EA0                             OCR   R10,R0               DISARM PIC AND START CLOCK
002948   95ED                             EPSR  R14,R13              ENABLE PROC INTS
00294A   9EA7                             OCR   R10,R7               ENABLE PIC INTS
```

TEST 8 - IIP

```
00294C  030B                3622            BR    R11              ADR IN R11 FOR LOC COMPARE UPON INT   CML36220
                            3623  *                                                                      CML36230
                            3624  *                                                                      CML36240
                            3625  * INTERRUPTIBLE INSTR EXECUTION - STBP                                 CML36250
                            3626  * SOURCE IS REG 2,REG 3  =  7FFF FFFF FFFF FFFF                       CML36260
                            3627  * DESTINATION IS SDEST AS SOURCE FOR UMV NEXT                         CML36270
                            3628  *                                                                      CML36280
                            3629  *                                                                      CML36290
00294E  6E20 351C           3630  TEST8.1 STBP  R2,SDEST                                               CML36300
                            3631  *                                                                      CML36310
                            3632  * CONVERT REGS CONTENTS TO 16 BYTES PACKED DECIMAL                     CML36320
                            3633  *                                                                      CML36330
002952  9EAC                3634            OCR   R10,R12            DISARM PIC                        CML36340
002954  4890 2DF0           3635  CHKSET1   LH    R9,IIPFLAG         LOAD IIP FLAG                     CML36350
002958  4230 2970           3636            BNZ   CHKSET2            IF IIP FLAG ZERO, ERROR           CML36360
00295C  C840 3830           3637            LHI   R4,C'80'           LOAD ERROR NO                     CML36370
002960  4040 17A2           3638            STH   R4,ERRNO           STORE                             CML36380
002964  4040 175A           3639            STH   R4,NOERR           SET ERR FLAG                      CML36390
002968  41E0 3EBC           3640            BAL   RET,LINTNG         ERROR 80 IIP FLAG = 0 NO PIC INT  CML36400
00296C  4300 2DA8           3641            B     ENDIIP             ABORT TEST                        CML36410
                            3642  *                                                                      CML36420
002970  4220 2988           3643  CHKSET2   BP    CHKSET3            IF IIP FLAG NEGATIVE,ERROR        CML36430
002974  C840 3831           3644            LHI   R4,C'81'           LOAD ERROR NO                     CML36440
002978  4040 17A2           3645            STH   R4,ERRNO           STORE                             CML36450
00297C  4040 175A           3646            STH   R4,NOERR           SET ERR FLAG                      CML36460
002980  41E0 3F12           3647            BAL   RET,IIPSETNG       ERROR 81 PIC INT BUT IIP BIT NOT SET CML36470
002984  4300 2DA8           3648            B     ENDIIP             ABORT TEST                        CML36480
                            3649  *                                                                      CML36490
002988  95EE                3650  CHKSET3   EPSR  R14,R14            COPY CURRENT PSW                  CML36500
00298A  F3E0 0002 0000      3651            TI    R14,Y'00020000'    CHECK FOR IIP BIT (14) RESET      CML36510
002990  4330 29A8           3652            BZ    RESIIP1            NOT SET,OK CONTINUE               CML36520
002994  C840 3832           3653            LHI   R4,C'82'           LOAD ERROR NO                     CML36530
002998  4040 17A2           3654            STH   R4,ERRNO           STORE                             CML36540
00299C  4040 175A           3655            STH   R4,NOERR           SET ERR FLAG                      CML36550
0029A0  41E0 3F1A           3656            BAL   RET,IIPRESNG       ERROR 82 IIP BIT NOT RESET        CML36560
                            3657  *                                        IN CURRENT PSW               CML36570
0029A4  4300 2DA8           3658            B     ENDIIP             ABORT TEST                        CML36580
0029A8  41F0 3A50           3659  RESIIP1   BAL   LINK,STBPCHK       CHECK RESULT OF INSTRUCTION       CML36590
                            3660  *                                                                      CML36600
                            3661  *                                                                      CML36610
0029AC  48A0 186E           3662  SETINT2   LH    R10,PICADR+6       LOAD PRECISION CLOCK ADR          CML36620
0029B0  C860 00E0           3663            LHI   R6,X'E0'           LOAD PIC CMD DISARM/START         CML36630
0029B4  C870 0040           3664            LHI   R7,X'40'           LOAD PIC CMD ENABLE               CML36640
0029B8  C8C0 00C0           3665            LHI   R12,X'C0'          LOAD PIC CMD DISARM               CML36650
0029BC  0799                3666            XR    R9,R9              ZERO REG 9                        CML36660
0029BE  4090 2DF0           3667            STH   R9,IIPFLAG         CLEAR IIP FLAG                    CML36670
0029C2  C890 1020           3668            LHI   R9,X'1020'         SET R=1 US, IC=32 US              CML36680
0029C6  C8D0 70F0           3669            LHI   R13,X'70F0'        LOAD INT PSW                      CML36690
0029CA  C8B0 29EE           3670            LHI   R11,TEST8.2        LOAD TEST INSTRUCTION ADR         CML36700
0029CE  50B0 98D2 =0042A4   3671            ST    R11,INSTADR        STORE TEST INSTRUCTION ADR        CML36710
0029D2  F820 0000 001E      3672            LI    R2,30              LOAD DEST LENGTH                  CML36720
0029D8  F830 0000 000F      3673            LI    R3,15              LOAD SRC LENGTH                   CML36730
                            3674  *                                                                      CML36740
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TEST 8 - IIP

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0029DE   98A9              3675  SETPIC2  WHR   R10,R9            SET PIC RESOLUTION AND COUNT          CML36750
0029E0   9DA8              3676           SSR   R10,R8            SENSE STATUS                          CML36760
0029E2   4280 29DE         3677           BTC   8,SETPIC2         CHECK FOR OVERFLOW                    CML36770
0029E6   9EA6              3678           OCR   R10,R6            DISARM PIC AND START CLOCK            CML36780
0029E8   95ED              3679           EPSR  R14,R13           ENABLE PROC INTS                      CML36790
0029EA   9EA7              3680           OCR   R10,R7            ENABLE PIC INTS                       CML36800
0029EC   030B              3681           BR    R11               ADR IN R11 FOR LOC COMPARE UPON INT   CML36810
                           3682  *                                                                      CML36820
                           3683  *                                                                      CML36830
                           3684  * INTERRUPTIBLE INSTR EXECUTION - UNPACK AND MOVE                      CML36840
                           3685  * SOURCE IS 16 BYTES PACKED DECIMAL FROM STEP PREVIOUS                 CML36850
                           3686  * DESTINATION CONTAINS 31 BYTE UNPACKED DECIMAL STRING                 CML36860
                           3687  * AS SOURCE FOR MOVE NEXT                                              CML36870
                           3688  *                                                                      CML36880
                           3689  *                                                                      CML36890
0029EE   8C20 39AF         3690  TEST8.2  UMV   R2,UPKDEST,R3,SDEST                                    CML36900
0029F2   0430 351C
                           3691  *                                                                      CML36910
                           3692  * UNPACK AND MOVE SDEST TO UPKDEST                                     CML36920
                           3693  *                                                                      CML36930
0029F6   9EAC              3694           OCR   R10,R12           DISARM PIC                            CML36940
0029F8   4890 2DF0         3695  CHKSET4  LH    R9,IIPFLAG        LOAD IIP FLAG                         CML36950
0029FC   4230 2A14         3696           BNZ   CHKSET5           IF IIP FLAG ZERO, ERROR               CML36960
002A00   C840 3833         3697           LHI   R4,C'83'          LOAD ERROR NO                         CML36970
002A04   4040 17A2         3698           STH   R4,ERRNO          STORE                                 CML36980
002A08   4040 175A         3699           STH   R4,NOERR          SET ERR FLAG                          CML36990
002A0C   41E0 3EBC         3700           BAL   RET,LINTNG        ERROR 83 IIP FLAG = 0 NO PIC INT      CML37000
002A10   4300 2DA8         3701           B     ENDIIP            ABORT TEST                            CML37010
                           3702  *                                                                      CML37020
002A14   4220 2A2C         3703  CHKSET5  BP    CHKSET6           IF IIP FLAG NEGATIVE,ERROR            CML37030
002A18   C840 3834         3704           LHI   R4,C'84'          LOAD ERROR NO                         CML37040
002A1C   4040 17A2         3705           STH   R4,ERRNO          STORE                                 CML37050
002A20   4040 175A         3706           STH   R4,NOERR          SET ERR FLAG                          CML37060
002A24   41E0 3F12         3707           BAL   RET,IIPSETNG      ERROR 84 PIC INT BUT IIP BIT NOT SET  CML37070
002A28   4300 2DA8         3708           B     ENDIIP            ABORT TEST                            CML37080
                           3709  *                                                                      CML37090
002A2C   95EE              3710  CHKSET6  EPSR  R14,R14           COPY CURRENT PSW                      CML37100
002A2E   F3E0 0002 0000    3711           TI    R14,Y'00020000'   CHECK FOR IIP BIT (14) RESET          CML37110
002A34   4330 2A4C         3712           BZ    RESIIP2           NOT SET,OK CONTINUE                   CML37120
002A38   C840 3735         3713           LHI   R4,C'75'          LOAD ERROR NO                         CML37130
002A3C   4040 17A2         3714           STH   R4,ERRNO          STORE                                 CML37140
002A40   4040 175A         3715           STH   R4,NOERR          SET ERR FLAG                          CML37150
002A44   41E0 3F1A         3716           BAL   RET,IIPRESNG      ERROR 75 IIP BIT NOT RESET            CML37160
                           3717  *                                        IN CURRENT PSW                CML37170
002A48   4300 2DA8         3718           B     ENDIIP            ABORT TEST                            CML37180
002A4C   E690 D018         3719  RESIIP2  LA    R9,LPB.02-PKSRC   OFFSET TO RESULT FOR UPKCK           CML37190
002A50   41F0 3C12         3720           BAL   LINK,UPKCK         CHECK RESULT OF INSTRUCTION           CML37200
                           3721  *                                                                      CML37210
002A54   48A0 186E         3722  SETINT3  LH    R10,PICADR+6      LOAD PRECISION CLOCK ADR              CML37220
002A58   C860 00E0         3723           LHI   R6,X'E0'          LOAD PIC CMD DISARM/START             CML37230
002A5C   C870 0040         3724           LHI   R7,X'40'          LOAD PIC CMD ENABLE                   CML37240
002A60   C8C0 00C0         3725           LHI   R12,X'C0'         LOAD PIC CMD DISARM                   CML37250
002A64   0799              3726           XR    R9,R9             ZERO REG 9                            CML37260
```

TEST 8 - IIP

```
002A66   4090 2DF0            3727           STH   R9,IIPFLAG          CLEAR IIP FLAG                          CML37270
002A6A   C890 1020            3728           LHI   R9,X'1020'          SET R=1 US, IC=32 US                    CML37280
002A6E   C8D0 70F0            3729           LHI   R13,X'70F0'         LOAD INT PSW                            CML37290
002A72   C8B0 2A96            3730           LHI   R11,TEST8.3         LOAD TEST INSTRUCTION ADR               CML37300
002A76   50B0 982A =0042A4    3731           ST    R11,INSTADR         STORE TEST INSTRUCTION ADR              CML37310
002A7A   F820 0000 001F       3732           LI    R2,31               LOAD DEST LENGTH                        CML37320
002A80   F830 0000 001F       3733           LI    R3,31               LOAD SRC LENGTH                         CML37330
                              3734   *                                                                        CML37340
002A86   98A9                 3735   SETPIC3 WHR   R10,R9              SET PIC RESOLUTION AND COUNT            CML37350
002A88   9DA8                 3736           SSR   R10,R8              SENSE STATUS                            CML37360
002A8A   4280 2A86            3737           BTC   8,SETPIC3           CHECK FOR OVERFLOW                      CML37370
002A8E   9EA6                 3738           OCR   R10,R6              DISARM PIC AND START CLOCK              CML37380
002A90   95ED                 3739           EPSR  R14,R13             ENABLE PROC INTS                        CML37390
002A92   9EA7                 3740           OCR   R10,R7              ENABLE PIC INTS                         CML37400
002A94   030B                 3741           BR    R11                 ADR IN R11 FOR LOC COMPARE UPON INT     CML37410
                              3742   *                                                                        CML37420
                              3743   *                                                                        CML37430
                              3744   * INTERRUPTIBLE INSTR EXECUTION - MOVE                                   CML37440
                              3745   * SOURCE IS UNPACKED DECIMAL STRING FROM UMV PREVIOUS                    CML37450
                              3746   * DESTINATION CONTAINS UNPACKED STRING AS SOURCE FOR CPAN NEXT           CML37460
                              3747   *                                                                        CML37470
                              3748   *                                                                        CML37480
002A96   8C20 3584            3749   TEST8.3 MOVE  R2,OPN2,R3,UPKDEST                                       CML37490
002A9A   0130 39AA
                              3750   *                                                                        CML37500
                              3751   * MOVE UPKDEST TO OPN2                                                  CML37510
                              3752   *                                                                        CML37520
002A9E   9EAC                 3753           OCR   R10,R12             DISARM PIC                              CML37530
002AA0   4890 2DF0            3754   CHKSET7 LH    R9,IIPFLAG          LOAD IIP FLAG                           CML37540
002AA4   4230 2ABC            3755           BNZ   CHKSET8             IF IIP FLAG ZERO, ERROR                 CML37550
002AA8   C840 3836            3756           LHI   R4,C'86'            LOAD ERROR NO                           CML37560
002AAC   4040 17A2            3757           STH   R4,ERRNO            STORE                                   CML37570
002AB0   4040 175A            3758           STH   R4,NOERR            SET ERR FLAG                            CML37580
002AB4   41E0 3EBC            3759           BAL   RET,LINTNG          ERROR 86 IIP FLAG = 0 NO PIC INT        CML37590
002AB8   4300 2DA8            3760           B     ENDIIP              ABORT TEST                              CML37600
                              3761   *                                                                        CML37610
002ABC   4220 2AD4            3762   CHKSET8 BP    CHKSET9             IF IIP FLAG NEGATIVE,ERROR              CML37620
002AC0   C940 3837            3763           LHI   R4,C'87'            LOAD ERROR NO                           CML37630
002AC4   4040 17A2            3764           STH   R4,ERRNO            STORE                                   CML37640
002AC8   4040 175A            3765           STH   R4,NOERR            SET ERR FLAG                            CML37650
002ACC   41E0 3F12            3766           BAL   RET,IIPSETNG        ERROR 87 PIC INT BUT IIP BIT NOT SET    CML37660
002AD0   4300 2DA8            3767           B     ENDIIP              ABORT TEST                              CML37670
                              3768   *                                                                        CML37680
002AD4   95EE                 3769   CHKSET9 EPSR  R14,R14             COPY CURRENT PSW                        CML37690
002AD6   F3E0 0002 0000       3770           TI    R14,Y'00020000'     CHECK FOR IIP BIT (14) RESET            CML37700
002ADC   4330 2AF4            3771           BZ    RESIIP3             NOT SET,OK CONTINUE                     CML37710
002AE0   C840 3838            3772           LHI   R4,C'88'            LOAD ERROR NO                           CML37720
002AE4   4040 17A2            3773           STH   R4,ERRNO            STORE                                   CML37730
002AE8   4040 175A            3774           STH   R4,NOERR            SET ERR FLAG                            CML37740
002AEC   41E0 3F1A            3775           BAL   RET,IIPRESNG        ERROR 88 IIP BIT NOT RESET              CML37750
                              3776   *                                        IN CUPRENT PSW                  CML37760
002AF0   4300 2DA8            3777           B     ENDIIP              ABORT TEST                              CML37770
002AF4   C840 3584            3778   RESIIP3 LHI   R4,OPN2            LOAD DEST ADR                           CML37780
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TEST 8 - IIP

```
002AF8  C850 39AA
002AFC  41F0 96A0 =0041A0

002B00  48A0 186E
002B04  C860 00E0
002B08  C870 0040
002B0C  C8C0 00C0
002B10  0799
002B12  4090 2DF0
002B16  C890 1020
002B1A  C8D0 70F0
002B1E  C8B0 2B42
002B22  50B0 977E =0042A4
002B26  F820 0000 001F
002B2C  F830 0000 001F

002B32  98A9
002B34  9DA8
002B36  4280 2B32
002B3A  9EA6
002B3C  95ED
002B3E  9EA7
002B40  030B

002B42  8C20 39AA
002B46  0230 3584

002B4A  9EAC
002B4C  4890 2DF0
002B50  4230 2B68
002B54  C840 3839
002B58  4040 17A2
002B5C  4040 175A
002B60  41E0 3EBC
002B64  4300 2DA8

002B68  4220 2B80
002B6C  C840 3841
002B70  4040 17A2
002B74  4040 175A
002B78  41E0 3F12
002B7C  4300 2DA8

002B80  95EE
002B82  F3E0 0002 0000
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3779            LHI   R5,UPKDEST          LOAD SRC ADR                                  CML37790
3780            BAL   LINK,MVCHK           CHECK RESULT OF INSTRUCTION                   CML37800
3781  *                                                                                   CML37810
3782  SETINT4   LH    R10,PICADR+6         LOAD PRECISION CLOCK ADR                      CML37820
3783            LHI   R6,X'E0'             LOAD PIC CMD DISARM/START                     CML37830
3784            LHI   R7,X'40'             LOAD PIC CMD ENABLE                           CML37840
3785            LHI   R12,X'C0'            LOAD PIC CMD DISARM                           CML37850
3786            XR    R9,R9                ZERO REG 9                                    CML37860
3787            STH   R9,IIPFLAG           CLEAR IIP FLAG                                CML37870
3788            LHI   R9,X'1020'           SET R=1 US, IC=32 US                          CML37880
3789            LHI   R13,X'70F0'          LOAD INT PSW                                  CML37890
3790            LHI   R11,TEST8.4          LOAD TEST INSTRUCTION ADR                     CML37900
3791            ST    R11,INSTADR          STORE TEST INSTRUCTION ADR                    CML37910
3792            LI    R2,31                LOAD DEST LENGTH                              CML37920
3793            LI    R3,31                LOAD SRC LENGTH                               CML37930
3794  *                                                                                   CML37940
3795  SETPIC4   WHR   R10,R9               SET PIC RESOLUTION AND COUNT                  CML37950
3796            SSR   R10,R8               SENSE STATUS                                  CML37960
3797            BTC   8,SETPIC4            CHECK FOR OVERFLOW                            CML37970
3798            OCR   R10,R6               DISARM PIC AND START CLOCK                    CML37980
3799            EPSR  R14,R13              ENABLE PROC INTS                              CML37990
3800            OCR   R10,R7               ENABLE PIC INTS                               CML38000
3801            BR    R11                  ADR IN R11 FOR LOC COMPARE UPON INT           CML38010
3802  *                                                                                   CML38020
3803  *                                                                                   CML38030
3804  * INTERRUPTIBLE INSTR EXECUTION - COMPARE                                           CML38040
3805  * SOURCE IS 31 BYTE UNPACKED DECIMAL STRING FROM MOVE PREVIOUS                      CML38050
3806  * DESTINATION CONTAINS 31 BYTE STRING FROM UMV TO COMPARE AGAINST                   CML38060
3807  *                                                                                   CML38070
3808  *                                                                                   CML38080
3809  TEST8.4   CPAN  R2,UPKDEST,R3,OPN2                                                CML38090
3810  *                                                                                   CML38100
3811  * COMPARE OPN2 TO UPKDEST                                                          CML38110
3812  *                                                                                   CML38120
3813            OCR   R10,R12              DISARM PIC                                    CML38130
3814  CHKSET10  LH    R9,IIPFLAG           LOAD IIP FLAG                                 CML38140
3815            BNZ   CHKSET11             IF IIP FLAG ZERO, ERROR                       CML38150
3816            LHI   R4,C'89'             LOAD ERROR NO                                 CML38160
3817            STH   R4,ERRNO             STORE                                         CML38170
3818            STH   R4,NOERR             SET ERR FLAG                                  CML38180
3819            BAL   RET,LINTNG           ERROR 89 IIP FLAG = 0 NO PIC INT              CML38190
3820            B     ENDIIP               ABORT TEST                                    CML38200
3821  *                                                                                   CML38210
3822  CHKSET11  BP    CHKSET12             IF IIP FLAG NEGATIVE,ERROR                    CML38220
3823            LHI   R4,C'8A'             LOAD ERROR NO                                 CML38230
3824            STH   R4,ERRNO             STORE                                         CML38240
3825            STH   R4,NOERR             SET ERR FLAG                                  CML38250
3826            BAL   RET,IIPSETNG         ERROR 8A PIC INT BUT IIP BIT NOT SET          CML38260
3827            B     ENDIIP               ABORT TEST                                    CML38270
3828  *                                                                                   CML38280
3829  CHKSET12  EPSR  R14,R14              COPY CURRENT PSW                              CML38290
3830            TI    R14,Y'00020000'      CHECK FOR IIP BIT (14) RESET                  CML38300
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TEST 8 - IIP

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002B88  4330 28A0          3831          BZ    RESIIP4          NOT SET,OK CONTINUE                    CML38310
002B8C  C840 3842          3832          LHI   R4,C'8B'         LOAD ERROR NO                          CML38320
002B90  4040 17A2          3833          STH   R4,ERRNO         STORE                                  CML38330
002B94  4040 175A          3834          STH   R4,NOERR         SET ERR FLAG                           CML38340
002B98  41E0 3F1A          3835          BAL   RET,IIPRESNG     ERROR 8B IIP BIT NOT RESET             CML38350
                           3836  *                                    IN CURRENT PSW                  CML38360
002B9C  4300 2DA8          3837          B     ENDIIP           ABORT TEST                             CML38370
        0000 2BA0          3838  RESIIP4 EQU   *                CPAN CHECKS ITSELF ***                 CML38380
                           3839  *                                                                     CML38390
002BA0  48A0 186E          3840  SETINT5 LH    R10,PICADR+6     LOAD PRECISION CLOCK ADR               CML38400
002BA4  C860 00E0          3841          LHI   R6,X'E0'         LOAD PIC CMD DISARM/START              CML38410
002BA8  C870 0040          3842          LHI   R7,X'40'         LOAD PIC CMD ENABLE                    CML38420
002BAC  C8C0 00C0          3843          LHI   R12,X'C0'        LOAD PIC CMD DISARM                    CML38430
002BB0  0799               3844          XR    R9,R9            ZERO REG 9                             CML38440
002BB2  4090 2DF0          3845          STH   R9,IIPFLAG       CLEAR IIP FLAG                         CML38450
002BB6  C890 1020          3846          LHI   R9,X'1020'       SET R=1 US, IC=32 US                   CML38460
002BBA  C8D0 70F0          3847          LHI   R13,X'70F0'      LOAD INT PSW                           CML38470
002BBE  C8B0 2BE6          3848          LHI   R11,TEST8.5      LOAD TEST INSTRUCTION ADR              CML38480
002BC2  50B0 96DE =0042A4  3849          ST    R11,INSTADR      STORE TEST INSTRUCTION ADR             CML38490
002BC6  F830 0000 001F     3850          LI    R3,31            LOAD SRC AND DEST LENGTH               CML38500
002BCC  F800 0000 00FE     3851          LI    R0,X'FE'         LOAD TERM ESC CHAR VALUE               CML38510
002BD2  C820 3884          3852          LHI   R2,TRANSTAB      LOAD TRANS TABLE ADR                   CML38520
                           3853  *                                                                     CML38530
002BD6  98A9               3854  SETPIC5 WHR   R10,R9           SET PIC RESOLUTION AND COUNT           CML38540
002BD8  9DA8               3855          SSR   R10,R8           SENSE STATUS                           CML38550
002BDA  4280 2BD6          3856          BTC   8,SETPIC5        CHECK FOR OVERFLOW                     CML38560
002BDE  9EA6               3857          OCR   R10,R6           DISARM PIC AND START CLOCK             CML38570
002BE0  95ED               3858          EPSR  R14,R13          ENABLE PROC INTS                       CML38580
002BE2  9EA7               3859          OCR   R10,R7           ENABLE PIC INTS                        CML38590
002BE4  030B               3860          BR    R11              ADR IN R11 FOR LOC COMPARE UPON INT    CML38600
                           3861  *                                                                     CML38610
                           3862  *                                                                     CML38620
                           3863  * INTERRUPTIBLE INSTR EXECUTION - MOVE TRANSLATED UNTIL               CML38630
                           3864  * SOURCE IS 31 BYTE UNPACKED DECIMAL STRING FROM CPAN PREVIOUS        CML38640
                           3865  * DESTINATION CONTAINS 31 BYTE TRANSLATED STRING AS SOURCE FOR PMV NEXT CML38650
                           3866  * DESTINATION STRING REMAINS UNCHANGED BY USING TRANSTAB ENTRIES       CML38660
                           3867  *                                                                     CML38670
                           3868  *                                                                     CML38680
002BE6  8C30 3684          3869  TEST8.5 MVTU  R3,OPN1,R3,OPN2                                        CML38690
002BEA  0030 3584
                           3870  *                                                                     CML38700
                           3871  * MOVE TRANSLATED UNTIL                                              CML38710
                           3872  *                                                                     CML38720
002BEE  9EAC               3873          OCR   R10,R12          DISARM PIC                             CML38730
002BF0  4890 2DF0          3874  CHKSET13 LH   R9,IIPFLAG       LOAD IIP FLAG                          CML38740
002BF4  4230 2C0C          3875          BNZ   CHKSET14         IF IIP FLAG ZERO, ERROR                CML38750
002BF8  C840 3843          3876          LHI   R4,C'8C'         LOAD ERROR NO                          CML38760
002BFC  4040 17A2          3877          STH   R4,ERRNO         STORE                                  CML38770
002C00  4040 175A          3878          STH   R4,NOERR         SET ERR FLAG                           CML38780
002C04  41E0 3EBC          3879          BAL   RET,LINTNG       ERROR 8C IIP FLAG = 0 NO PIC INT       CML38790
002C08  4300 2DA8          3880          B     ENDIIP           ABORT TEST                             CML38800
                           3881  *                                                                     CML38810
002C0C  4220 2C24          3882  CHKSET14 BP   CHKSET15         IF IIP FLAG NEGATIVE,ERROR             CML38820
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TEST 8 - IIP

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002C10   C840 3844
002C14   4040 17A2
002C18   4040 175A
002C1C   41E0 3F12
002C20   4300 2DA8

002C24   95EE
002C26   F3E0 0002 0000
002C2C   4330 2C44
002C30   C840 3845
002C34   4040 17A2
002C38   4040 175A
002C3C   41E0 3F1A

002C40   4300 2DA8
002C44   F830 0000 001F
002C4A   0863
002C4C   C840 3684
002C50   C850 3584
002C54   41F0 953C =004194

002C58   48A0 186E
002C5C   C860 00E0
002C60   C870 0040
002C64   C8C0 00C0
002C68   0799
002C6A   4090 2DF0
002C6E   C890 1020
002C72   C8D0 70F0
002C76   C8B0 2C9A
002C7A   50B0 9626 =0042A4
002C7E   F820 0000 000F
002C84   F830 0000 001E

002C8A   98A9
002C8C   9DA8
002C8E   4280 2C8A
002C92   9EA6
002C94   95ED
002C96   9EA7
002C98   030B

002C9A   8C20 399A
002C9E   0330 3684
```

```
3883             LHI   R4,C'8D'          LOAD ERROR NO                                  CML38830
3884             STH   R4,ERRNO           STORE                                          CML38840
3885             STH   R4,NCERR           SET ERR FLAG                                   CML38850
3886             BAL   RET,IIPSETNG       ERROR 8D PIC INT BUT IIP BIT NOT SET           CML38860
3887             B     ENDIIP             ABORT TEST                                     CML38870
3888  *                                                                                   CML38880
3889  CHKSET15   EPSR  R14,R14            COPY CURRENT PSW                               CML38890
3890             TI    R14,Y'00020000'    CHECK FOR IIP BIT (14) RESET                   CML38900
3891             BZ    RESIIP5            NOT SET,OK CONTINUE                            CML38910
3892             LHI   R4,C'8E'           LOAD ERROR NO                                  CML38920
3893             STH   R4,ERRNO           STORE                                          CML38930
3894             STH   R4,NOERR           SET ERR FLAG                                   CML38940
3895             BAL   RET,IIPRESNG       ERROR 8E IIP BIT NOT RESET                     CML38950
3896  *                                                 IN CURRENT PSW                   CML38960
3897             B     ENDIIP             ABORT TEST                                     CML38970
3898  RESIIP5    LI    R3,31              LOAD SRC AND DEST LENGTH                       CML38980
3899             LR    R6,R3              COPY DEST LENGTH FOR MVTUCHK USE               CML38990
3900             LHI   R4,OPN1            LOAD DEST ADR                                  CML39000
3901             LHI   R5,OPN2            LOAD SRC ADR                                   CML39010
3902             BAL   LINK,MVTUCHK       CHECK RESULT OF INSTRUCTION                    CML39020
3903  *                                                                                   CML39030
3904  SETINT6    LH    R10,PICADR+6       LOAD PRECISION CLOCK ADR                       CML39040
3905             LHI   R6,X'E0'           LOAD PIC CMD DISARM/START                      CML39050
3906             LHI   R7,X'40'           LOAD PIC CMD ENABLE                            CML39060
3907             LHI   R12,X'C0'          LOAD PIC CMD DISARM                            CML39070
3908             XR    R9,R9              ZERO REG 9                                     CML39080
3909             STH   R9,IIPFLAG         CLEAR IIP FLAG                                 CML39090
3910             LHI   R9,X'1020'         SET R=1 US, IC=32 US                           CML39100
3911             LHI   R13,X'70F0'        LOAD INT PSW                                   CML39110
3912             LHI   R11,TEST8.6        LOAD TEST INSTRUCTION ADR                      CML39120
3913             ST    R11,INSTADR        STORE TEST INSTRUCTION ADR                     CML39130
3914             LI    R2,15              LOAD DEST LENGTH                               CML39140
3915             LI    R3,30              LOAD SRC LENGTH                                CML39150
3916  *                                                                                   CML39160
3917  SETPIC6    WHR   R10,R9             SET PIC RESOLUTION AND COUNT                   CML39170
3918             SSR   R10,R8             SENSE STATUS                                   CML39180
3919             BTC   8,SETPIC6          CHECK FOR OVERFLOW                             CML39190
3920             OCR   R10,R6             DISARM PIC AND START CLOCK                     CML39200
3921             EPSR  R14,R13            ENABLE PROC INTS                               CML39210
3922             OCR   R10,R7             ENABLE PIC INTS                                CML39220
3923             BR    R11                ADR IN R11 FOR LOC COMPARE UPON INT            CML39230
3924  *                                                                                   CML39240
3925  *                                                                                   CML39250
3926  * INTERRUPTIBLE INSTR EXECUTION - PMV                                               CML39260
3927  * SOURCE 31 BYTE TRANSLATED UNPACKED DECIMAL STRING FROM MVTU PREVIOUS              CML39270
3928  * DESTINATION CONTAINS PACKED DECIMAL STRING AS SOURCE FOR LPB NEXT                 CML39280
3929  *                                                                                   CML39290
3930  *                                                                                   CML39300
3931  TEST8.6    PMV   R2,PKDEST,R3,OPN1                                                CML39310
3932  *                                                                                   CML39320
3933  * PACK AND MOVE                                                                    CML39330
3934  *                                                                                   CML39340
```

TEST 8 - IIP

```
002CA2   9EAC                        OCR   R10,R12            DISARM PIC                        CML39350
002CA4   4890 2DF0         CHKSET16  LH    R9,IIPFLAG         LOAD IIP FLAG                     CML39360
002CA8   4230 2CC0                   BNZ   CHKSET17           IF IIP FLAG ZERO, ERROR           CML39370
002CAC   C840 3846                   LHI   R4,C'8F'           LOAD ERROR NO                     CML39380
002CB0   4040 17A2                   STH   R4,ERRNO           STORE                             CML39390
002CB4   4040 175A                   STH   R4,NOERR           SET ERR FLAG                      CML39400
002CB8   41E0 3EBC                   BAL   RET,LINTNG         ERROR 8F IIP FLAG = 0 NO PIC INT  CML39410
002CBC   4300 2DA8                   B     ENDIIP             ABORT TEST                        CML39420
                           *                                                                    CML39430
002CC0   4220 2CD8         CHKSET17  BP    CHKSET18           IF IIP FLAG NEGATIVE,ERROR        CML39440
002CC4   C840 3930                   LHI   R4,C'90'           LOAD ERROR NO                     CML39450
002CC8   4040 17A2                   STH   R4,ERRNO           STORE                             CML39460
002CCC   4040 175A                   STH   R4,NOERR           SET ERR FLAG                      CML39470
002CD0   41E0 3F12                   BAL   RET,IIPSETNG       ERROR 90 PIC INT BUT IIP BIT NOT SET CML39480
002CD4   4300 2DA8                   B     ENDIIP             ABORT TEST                        CML39490
                           *                                                                    CML39500
002CD8   95EE              CHKSET18  EPSR  R14,R14            COPY CURRENT PSW                  CML39510
002CDA   F3E0 0002 0000              TI    R14,Y'00020000'    CHECK FOR IIP BIT (14) RESET      CML39520
002CE0   4330 2CF8                   BZ    RESIIP6            NOT SET,OK CONTINUE               CML39530
002CE4   C840 3931                   LHI   R4,C'91'           LOAD ERROR NO                     CML39540
002CE8   4040 17A2                   STH   R4,ERRNO           STORE                             CML39550
002CEC   4040 175A                   STH   R4,NOERR           SET ERR FLAG                      CML39560
002CF0   41E0 3F1A                   BAL   RET,IIPRESNG       ERROR 91 IIP BIT NOT RESET        CML39570
                           *                                            IN CURRENT PSW          CML39580
002CF4   4300 2DA8                   B     ENDIIP             ABORT TEST                        CML39590
002CF8   E690 0260         RESIIP6   LA    R9,BIGUN-UPKSRC    LOAD OFFSET TO LARGEST UNPACKED   CML39600
002CFC   41F0 3AFA                   BAL   LINK,PKCHK         CHECK RESULT OF INSTRUCTION       CML39610
                           *                                                                    CML39620
002D00   48A0 186E         SETINT7   LH    R10,PICADR+6       LOAD PRECISION CLOCK ADR          CML39630
002D04   C800 00E0                   LHI   R0,X'E0'           LOAD PIC CMD DISARM/START         CML39640
002D08   C870 0040                   LHI   R7,X'40'           LOAD PIC CMD ENABLE               CML39650
002D0C   C8C0 00C0                   LHI   R12,X'C0'          LOAD PIC CMD DISARM               CML39660
002D10   0799                        XR    R9,R9              ZERO REG 9                        CML39670
002D12   4090 2DF0                   STH   R9,IIPFLAG         CLEAR IIP FLAG                    CML39680
002D16   C890 1020                   LHI   R9,X'1020'         SET R=1 US, IC=32 US              CML39690
002D1A   C8D0 70F0                   LHI   R13,X'70F0'        LOAD INT PSW                      CML39700
002D1E   C8B0 2D4A                   LHI   R11,TEST8.7        LOAD TEST INSTRUCTION ADR         CML39710
002D22   50B0 957E =0042A4           ST    R11,INSTADR        STORE TEST INSTRUCTION ADR        CML39720
002D26   F820 0000 0000              LI    R2,0               CLEAR DEST REG                    CML39730
002D2C   F830 0000 0000              LI    R3,0               CLEAR 2ND DEST REG                CML39740
002D32   5850 3020                   L     R5,LPB.02A         LOAD RESULT IN REGS               CML39750
002D36   5860 3024                   L     R6,LPB.02B                                           CML39760
                           *                                                                    CML39770
002D3A   98A9              SETPIC7   WHR   R10,R9             SET PIC RESOLUTION AND COUNT      CML39780
002D3C   9DA8                        SSR   R10,R8             SENSE STATUS                      CML39790
002D3E   4280 2D3A                   BTC   8,SETPIC7          CHECK FOR OVERFLOW                CML39800
002D42   9EA0                        OCR   R10,R0             DISARM PIC AND START CLOCK        CML39810
002D44   95ED                        EPSR  R14,R13            ENABLE PROC INTS                  CML39820
002D46   9EA7                        OCR   R10,R7             ENABLE PIC INTS                   CML39830
002D48   030B                        BR    R11                ADR IN R11 FOR LOC COMPARE UPON INT CML39840
                           *                                                                    CML39850
                           *                                                                    CML39860
                           * INTERRUPTIBLE INSTR EXECUTION - LPB                                CML39870
```

```
                      * SOURCE IS 16 BYTE PACKED DECIMAL STRING FROM PMV PREVIOUS
                      * DESTINATION IS REG 2,REG 3   64 BIT BINARY NUMBER
                      *
                      *
002D4A   6F20 399A    TEST8.7  LPB   R2,PKDEST
                      *
                      * CONVERT 16 BYTE DECIMAL STRING TO 64 BIT NUMBER , LOAD IN REG 2,REG 3
                      *
002D4E   9EAC                  OCR   R10,R12           DISARM PIC
002D50   4890 2DF0    CHKSET19 LH    R9,IIPFLAG        LOAD IIP FLAG
002D54   4230 2D6C             BNZ   CHKSET20          IF IIP FLAG ZERO, ERROR
002D58   C840 3932             LHI   R4,C'92'          LOAD ERROR NO
002D5C   4040 17A2             STH   R4,ERRNO          STORE
002D60   4040 175A             STH   R4,NOERR          SET ERR FLAG
002D64   41E0 3EBC             BAL   RET,LINTNG        ERROR 92 IIP FLAG = 0 NO PIC INT
002D68   4300 2DA8             B     ENDIIP            ABORT TEST
                      *
002D6C   4220 2D84    CHKSET20 BP    CHKSET21          IF IIP FLAG NEGATIVE,ERROR
002D70   C840 3933             LHI   R4,C'93'          LOAD ERROR NO
002D74   4040 17A2             STH   R4,ERRNO          STORE
002D78   4040 175A             STH   R4,NOERR          SET ERR FLAG
002D7C   41E0 3F12             BAL   RET,IIPSETNG      ERROR 93 PIC INT BUT IIP BIT NOT SET
002D80   4300 2DA8             B     ENDIIP            ABORT TEST
                      *
002D84   95EE         CHKSET21 EPSR  R14,R14           COPY CURRENT PSW
002D86   F3E0 0002 0000        TI    R14,Y'00020000'   CHECK FOR IIP BIT (14) RESET
002D8C   4330 2DA4             BZ    RESIIP7           NOT SET,OK CONTINUE
002D90   C840 3934             LHI   R4,C'94'          LOAD ERROR NO
002D94   4040 17A2             STH   R4,ERRNO          STORE
002D98   4040 175A             STH   R4,NOERR          SET ERR FLAG
002D9C   41E0 3F1A             BAL   RET,IIPRESNG      ERROR 94 IIP BIT NOT RESET
                      *                                          IN CURRENT PSW
002DA0   4300 2DA8             B     ENDIIP            ABORT TEST
002DA4   41F0 39CA    RESIIP7  BAL   LINK,LPBCHK       CHECK RESULT OF INSTRUCTION
                      *
002DA8   48A0 186E    ENDIIP   LH    R10,PICADR+6      LOAD PRECISION CLOCK ADR
002DAC   C8B0 1572             LHI   R11,XI32          LOAD INT HANDLER ADR
002DB0   40BA 4A00 00D0        STH   R11,X'D0'(R10,R10) RESTORE HANDLER ADR TO TABLE
002DB6   4300 0EEA             B     TSTEND            EXIT TEST (ABORT)
                      *
                      *
         0000 2DBA    IIPINT   EQU   *
002DBA   5000 2DE8             ST    R0,IIPPSW         STORE INT PSW
002DBE   5010 2DEC             ST    R1,IIPLOC         STORE INT LOC
                      *
002DC2   F300 0002 0000        TI    R0,Y'00020000'    CHECK IF IIP BIT SET
002DC8   4230 2DD8             BNZ   IIPOK             IIP BIT SET, OK CONTINUE
002DCC   051B                  CLR   R1,R11            COMPARE INSTR ADR TO INT LOC
002DCE   4230 2DE2             BNE   CONIIP            IIP BIT NOT SET,LOC NOT SAME,
                      *                                      LOAD PSW AND GO
002DD2   2591                  LCS   R9,1              LOAD F'S TO REG
002DD4   4090 2DF0             STH   R9,IIPFLAG        SET IIP FLAG NEGATIVE
                      *
```

TEST 8 - IIP

```
002DD8   4890 2DF0          4041  IIPOK    LH    R9,IIPFLAG        LOAD IIP FLAG                              CML40410
002DDC   2691               4042            AIS   R9,1             INCREMENT (SET) IIP FLAG POSITIVE          CML40420
002DDE   4090 2DF0          4043            STH   R9,IIPFLAG       STORE BACK                                 CML40430
002DE2   C200 2DE8          4044  CONIIP   LPSW  IIPPSW           RESTORE PSW AT TIME OF INT                 CML40440
                            4045  *                                                                          CML40450
                            4046  *                                                                          CML40460
002DE8   0000 0000          4047  IIPPSW   DCY   0                 INT PSW SAVE AREA                          CML40470
002DEC   0000 0000          4048  IIPLOC   DCY   0                 INT LOC SAVE AREA                          CML40480
                            4049  *                                                                          CML40490
002DF0   0000               4050  IIPFLAG  DCX   0                 IIP FLAG                                   CML40500
                            4051  *                                IF 0 - NO PIC INTS DURING INSTR EXEC       CML40510
                            4052  *                                IF + - PIC INT & IIP BIT SET OK            CML40520
                            4053  *                                IF - - PIC INT & IIP BIT NOT SET           CML40530
                            4054  *                                                                          CML40540
```

OPERAND TABLES AND CONSTANTS

```
                                                                                         CML40560
                             4056  *                                                     CML40570
002DF8                       4057          ALIGN 8                                       CML40580
                             4058  *                                                     CML40590
                             4059  *   NOTE THAT THESE OPERAND TABLES MUST BE LOCATED BELOW   CML40600
                             4060  *   ADDRESS X'4000' TO ENSURE RX1 ASSEMBLED INSTRUCTIONS.  CML40610
                             4061  *--------------------------------------------------------  CML40620
                             4062  *                                                     CML40630
                             4063  *                                                     CML40640
                             4064  *  CONVERSION CONSTANTS FOR LPB AND STBP INSTRUCTIONS CML40650
                             4065  *                                                     CML40660
                             4066  *                                                     CML40670
002DF8   0000 0000           4067  LPB.01   DC    Y'00000000',Y'00000000',Y'00000000',Y'0000000C'
002DFC   0000 0000
002E00   0000 0000
002E04   0000 000C
         0000 2DF8           4068  SRES.01  EQU   LPB.01          LPB SRC EQUIVALENT STBP RESULT   CML40680
                             4069  *                                                     CML40690
002E08   0000 0000           4070  LPB.02   DC    Y'00000000',Y'00009223',Y'37203685',Y'4775807C'   CML40700
002E0C   0000 9223
002E10   3720 3685
002E14   4775 807C
         0000 2E08           4071  SRES.02  EQU   LPB.02          LPB SRC EQUIVALENT STBP RESULT   CML40710
                             4072  *                                                     CML40720
002E18   0000 0000           4073  LPB.03   DC    Y'00000000',Y'00009223',Y'37203685',Y'4775807D'   CML40730
002E1C   0000 9223
002E20   3720 3685
002E24   4775 807D
         0000 2E18           4074  SRES.03  EQU   LPB.03          LPB SRC EQUIVALENT STBP RESULT   CML40740
                             4075  *                                                     CML40750
002E28   0000 0000           4076  LPB.04   DC    Y'00000000',Y'00010000',Y'00000000',Y'0000000C'   CML40760
002E2C   0001 0000
002E30   0000 0000
002E34   0000 000C
002E38   0000 0000           4077  LPB.05   DC    Y'00000000',Y'00000000',Y'00000000',Y'00000000'   CML40770
002E3C   0000 0000
002E40   0000 0000
002E44   0000 0000
                             4078  *                          INVALID SIGN DIGIT      CML40780
002E48   0000 0000           4079  LPB.06   DC    Y'00000000',Y'00000000',Y'00000000',Y'000000FC'   CML40790
002E4C   0000 0000
002E50   0000 0000
002E54   0000 00FC
                             4080  *                          INVALID DATA DIGIT      CML40800
                             4081  *                                                     CML40810
                             4082  *                                                     CML40820
                             4083  *                                                     CML40830
002E58   0000 0000           4084  LPB.07   DC    Y'00000000',Y'00000429',Y'49672960',Y'0000000C'   CML40840
002E5C   0000 0429
002F60   4967 2960
002E64   0000 000C
                             4085  *                                                     CML40850
                             4086  *                          BIN 05F5 E100 0000 0000   CML40860
                             4087  *                                                     CML40870
```

OPERAND TABLES AND CONSTANTS

```
                0000 2E58          4088  SRES.07  EQU   LPB.07              LPB SRC = STBP RESULT                    CML40880
                                   4089  *                                                                          CML40890
002E68  0000 0000                  4090        DC    Y'00000000',Y'00000429',Y'49672959',Y'9999999C'              CML40900
002E6C  0000 0429
002E70  4967 2959
002E74  9999 999C
                                   4091  *                                                                          CML40910
                                   4092  *                        BIN 05F5 E0FF FFFF FFFF                         CML40920
                                   4093  *                                                                          CML40930
002E78  0000 0000                  4094        DC    Y'00000000',Y'00000429',Y'49672960',Y'0000001C'              CML40940
002E7C  0000 0429
002E80  4967 2960
002E84  0000 001C
                                   4095  *                                                                          CML40950
                                   4096  *                        BIN 05F5 E100 0000 0001                         CML40960
                                   4097  *                                                                          CML40970
                                   4098  *                                                                          CML40980
002E88  0000 0000                  4099        DC    Y'00000000',Y'00000214',Y'74836480',Y'0000000C'              CML40990
002E8C  0000 0214
002E90  7483 6480
002E94  0000 000C
                                   4100  *                                                                          CML41000
                                   4101  *                        BIN 02FA F080 0000 0000                         CML41010
                                   4102  *                                                                          CML41020
002E98  0000 0000                  4103        DC    Y'00000000',Y'00000214',Y'74836479',Y'9999999C'              CML41030
002E9C  0000 0214
002EA0  7483 6479
002EA4  9999 999C
                                   4104  *                                                                          CML41040
                                   4105  *                        BIN 02FA F07F FFFF FFFF                         CML41050
                                   4106  *                                                                          CML41060
002EA8  0000 0000                  4107        DC    Y'00000000',Y'00000214',Y'74836480',Y'0000001C'              CML41070
002EAC  0000 0214
002EB0  7483 6480
002EB4  0000 001C
                                   4108  *                                                                          CML41080
                                   4109  *                        BIN 02FA F080 0000 0001                         CML41090
                                   4110  *                                                                          CML41100
                                   4111  *                                                                          CML41110
002EB8  0000 0000                  4112        DC    Y'00000000',Y'00000000',Y'00000010',Y'0000000C'              CML41120
002EBC  0000 0000
002EC0  0000 0010
002EC4  0000 000C
                                   4113  *                                                                          CML41130
                                   4114  *                        BIN 0000 0000 05F5 E100                         CML41140
                                   4115  *                                                                          CML41150
002EC8  0000 0000                  4116        DC    Y'00000000',Y'00000000',Y'00000009',Y'9999999C'              CML41160
002ECC  0000 0000
002ED0  0000 0009
002ED4  9999 999C
                                   4117  *                                                                          CML41170
                                   4118  *                        BIN 0000 0000 05F5 E0FF                         CML41180
                                   4119  *                                                                          CML41190
```

OPERAND TABLES AND CONSTANTS

```
002ED8  0000 0000          4120          DC    Y'00000000',Y'00000000',Y'00000010',Y'0000001C'          CML41200
002EDC  0000 0000
002EE0  0000 0010
002EE4  0000 001C
                           4121  *                                                                       CML41210
                           4122  *                        BIN 0000 0000 05F5 E101                        CML41220
                           4123  *                                                                       CML41230
                           4124  *                                                                       CML41240
002EE8  0000 0000          4125          DC    Y'00000000',Y'00000000',Y'00000005',Y'0000000C'          CML41250
002EEC  0000 0000
002EF0  0000 0005
002EF4  0000 000C
                           4126  *                                                                       CML41260
                           4127  *                        BIN 0000 0000 02FA F080                        CML41270
                           4128  *                                                                       CML41280
002EF8  0000 0000          4129          DC    Y'00000000',Y'00000000',Y'00000004',Y'9999999C'          CML41290
002EFC  0000 0000
002F00  0000 0004
002F04  9999 999C
                           4130  *                                                                       CML41300
                           4131  *                        BIN 0000 0000 02FA F07F                        CML41310
                           4132  *                                                                       CML41320
002F08  0000 0000          4133          DC    Y'00000000',Y'00000000',Y'00000005',Y'0000001C'          CML41330
002F0C  0000 0000
002F10  0000 0005
002F14  0000 001C
                           4134  *                                                                       CML41340
                           4135  *                        BIN 0000 0000 02FA F081                        CML41350
                           4136  *                                                                       CML41360
                           4137  *                                                                       CML41370
002F18  0000 0000          4138  LPB.19  DC    Y'00000000',Y'00000081',Y'98552921',Y'6486895C'          CML41380
002F1C  0000 0081
002F20  9855 2921
002F24  6486 895C
                           4139  *                                                                       CML41390
                           4140  *                        BIN 0123 4567 89AB CDEF                        CML41400
                           4141  *                                                                       CML41410
                           4142  SRES.19 EQU   LPB.19             LPB SRC = STBP RESULT                 CML41420
0000 2F18                  4143  *                                                                       CML41430
002F28  0000 0000          4144          DC    Y'00000000',Y'00001229',Y'78293824',Y'7303441C'          CML41440
002F2C  0000 1229
002F30  7829 3824
002F34  7303 441C
                           4145  *                                                                       CML41450
                           4146  *                        BIN 1111 1111 1111 1111                        CML41460
                           4147  *                                                                       CML41470
002F38  0000 0000          4148          DC    Y'00000000',Y'00002459',Y'56587649',Y'4606882C'          CML41480
002F3C  0000 2459
002F40  5658 7649
002F44  4606 882C
                           4149  *                                                                       CML41490
                           4150  *                        BIN 2222 2222 2222 2222                        CML41500
                           4151  *                                                                       CML41510
```

OPERAND TABLES AND CONSTANTS

```
002F48   0000 0000          4152          DC    Y'00000000',Y'00003689',Y'34881474',Y'1910323C'          CML41520
002F4C   0000 3689
002F50   3488 1474
002F54   1910 323C
                            4153  *                                                                      CML41530
                            4154  *                          BIN 3333 3333 3333 3333                     CML41540
                            4155  *                                                                      CML41550
002F58   0000 0000          4156          DC    Y'00000000',Y'00004919',Y'13175298',Y'9213764C'          CML41560
002F5C   0000 4919
002F60   1317 5298
002F64   9213 764C
                            4157  *                                                                      CML41570
                            4158  *                          BIN 4444 4444 4444 4444                     CML41580
                            4159  *                                                                      CML41590
002F68   0000 0000          4160          DC    Y'00000000',Y'00006148',Y'91469123',Y'6517205C'          CML41600
002F6C   0000 6148
002F70   9146 9123
002F74   6517 205C
                            4161  *                                                                      CML41610
                            4162  *                          BIN 5555 5555 5555 5555                     CML41620
                            4163  *                                                                      CML41630
002F78   0000 0000          4164          DC    Y'00000000',Y'00007378',Y'69762948',Y'3820646C'          CML41640
002F7C   0000 7378
002F80   6976 2948
002F84   3820 646C
                            4165  *                                                                      CML41650
                            4166  *                          BIN 6666 6666 6666 6666                     CML41660
                            4167  *                                                                      CML41670
002F88   0000 0000          4168          DC    Y'00000000',Y'00008608',Y'48056773',Y'1124087C'          CML41680
002F8C   0000 8608
002F90   4805 6773
002F94   1124 087C
                            4169  *                                                                      CML41690
                            4170  *                          BIN 7777 7777 7777 7777                     CML41700
                            4171  *                                                                      CML41710
                            4172  *                                                                      CML41720
002F98   0000 0000          4173  LPB.27  DC    Y'00000000',Y'00008608',Y'48056773',Y'1124088D'          CML41730
002F9C   0000 8608
002FA0   4805 6773
002FA4   1124 088D
                            4174  *                                                                      CML41740
                            4175  *                          BIN 8888 8888 8888 8888                     CML41750
                            4176  *                                                                      CML41760
         0000 2F98          4177  SRES.27 EQU   LPB.27              LPB SRC = STBP RESULT               CML41770
                            4178  *                                                                      CML41780
002FA8   0000 0000          4179          DC    Y'00000000',Y'00007378',Y'69762948',Y'3820647D'          CML41790
002FAC   0000 7378
002FB0   6976 2948
002FB4   3820 647D
                            4180  *                                                                      CML41800
                            4181  *                          BIN 9999 9999 9999 9999                     CML41810
                            4182  *                                                                      CML41820
002FB8   0000 0000          4183          DC    Y'00000000',Y'00006148',Y'91469123',Y'6517206D'          CML41830
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002FBC   0000 6148
002FC0   9146 9123
002FC4   6517 206D
                         4184  *                                                        CML41840
                         4185  *                                BIN AAAA AAAA AAAA AAAA CML41850
                         4186  *                                                        CML41860
002FC8   0000 0000       4187            DC     Y'00000000',Y'00004919',Y'13175298',Y'9213765D'   CML41870
002FCC   0000 4919
002FD0   1317 5298
002FD4   9213 765D
                         4188  *                                                        CML41880
                         4189  *                                BIN BBBB BBBB BBBB BBBB CML41890
                         4190  *                                                        CML41900
002FD8   0000 0000       4191            DC     Y'00000000',Y'00003689',Y'34881474',Y'1910324D'   CML41910
002FDC   0000 3689
002FE0   3488 1474
002FE4   1910 324D
                         4192  *                                                        CML41920
                         4193  *                                BIN CCCC CCCC CCCC CCCC CML41930
                         4194  *                                                        CML41940
002FE8   0000 0000       4195            DC     Y'00000000',Y'00002459',Y'56587649',Y'4606883D'   CML41950
002FEC   0000 2459
002FF0   5558 7649
002FF4   4606 883D
                         4196  *                                                        CML41960
                         4197  *                                BIN DDDD DDDD DDDD DDDD CML41970
                         4198  *                                                        CML41980
002FF8   0000 0000       4199            DC     Y'00000000',Y'00001229',Y'78293824',Y'7303442D'   CML41990
002FFC   0000 1229
003000   7829 3824
003004   7303 442D
                         4200  *                                                        CML42000
                         4201  *                                BIN EEEE EEEE EEEE EEEE CML42010
                         4202  *                                                        CML42020
003008   0000 0000       4203            DC     Y'00000000',Y'00000000',Y'00000000',Y'0000001D'   CML42030
00300C   0000 0000
003010   0000 0000
003014   0000 001D
                         4204  *                                                        CML42040
                         4205  *                                BIN FFFF FFFF FFFF FFFF CML42050
                         4206  *                                                        CML42060
                         4207  *                                                        CML42070
003018   0000 0000       4208  STBP.01A DC     Y'00000000'                              CML42080
00301C   0000 0000       4209  STBP.01B DC     Y'00000000'                              CML42090
         0000 3018       4210  LPB.01A  EQU    STBP.01A       STBP SRC REG EQUIV LPB RESULT REG  CML42100
         0000 301C       4211  LPB.01B  EQU    STBP.01B                                 CML42110
                         4212  *                                                        CML42120
003020   7FFF FFFF       4213  STBP.02A DC     Y'7FFFFFFF'    REPRESENTS                CML42130
003024   FFFF FFFF       4214  STBP.02B DC     Y'FFFFFFFF'    LARGEST POSITIVE NUMBER   CML42140
         0000 3020       4215  LPB.02A  EQU    STBP.02A                                 CML42150
         0000 3024       4216  LPB.02B  EQU    STBP.02B                                 CML42160
                         4217  *                                                        CML42170
003028   8000 0000       4218  STBP.03A DC     Y'80000000'    REPRESENTS                CML42180
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003020   0000 0001          4219  STBP.03B DC    Y'00000001'          LARGEST NEGATIVE NUMBER   CML42190
         0000 3028          4220  LPB.03A  EQU   STBP.03A                                       CML42200
         0000 302C          4221  LPB.03B  EQU   STBP.03B                                       CML42210
         0000 3018          4222  LPB.04A  EQU   STBP.01A                                       CML42220
         0000 301C          4223  LPB.04B  EQU   STBP.01B                                       CML42230
         0000 3018          4224  LPB.05A  EQU   STBP.01A                                       CML42240
         0000 301C          4225  LPB.05B  EQU   STBP.01B                                       CML42250
         0000 3018          4226  LPB.06A  EQU   STBP.01A                                       CML42260
         0000 301C          4227  LPB.06B  EQU   STBP.01B                                       CML42270
                            4228  *                                                             CML42280
                            4229  *                                                             CML42290
003030   05F5 E100          4230  STBP.07A DC    Y'05F5E100'                                    CML42300
003034   0000 0000          4231  STBP.07B DC    Y'00000000'                                    CML42310
                            4232  *                                                             CML42320
                            4233  *        DEC 0000 0000 0000 0429 4967 2960 0000 000C          CML42330
                            4234  *                                                             CML42340
         0000 3030          4235  LPB.07A  EQU   STBP.07A            STBP SRC = LPB RESULT     CML42350
         0000 3034          4236  LPB.07B  EQU   STBP.07B                                       CML42360
                            4237  *                                                             CML42370
003038   05F5 E0FF          4238                 DC    Y'05F5E0FF'                              CML42380
00303C   FFFF FFFF          4239                 DC    Y'FFFFFFFF'                              CML42390
                            4240  *                                                             CML42400
                            4241  *        DEC 0000 0000 0000 0429 4967 2959 9999 999C          CML42410
                            4242  *                                                             CML42420
003040   05F5 E100          4243                 DC    Y'05F5E100'                              CML42430
003044   0000 0001          4244                 DC    Y'00000001'                              CML42440
                            4245  *                                                             CML42450
                            4246  *        DEC 0000 0000 0000 0429 4967 2960 0000 001C          CML42460
                            4247  *                                                             CML42470
003048   02FA F080          4248                 DC    Y'02FAF080'                              CML42480
00304C   0000 0000          4249                 DC    Y'00000000'                              CML42490
                            4250  *                                                             CML42500
                            4251  *        DEC 0000 0000 0000 0214 7483 6480 0000 000C          CML42510
                            4252  *                                                             CML42520
003050   02FA F07F          4253                 DC    Y'02FAF07F'                              CML42530
003054   FFFF FFFF          4254                 DC    Y'FFFFFFFF'                              CML42540
                            4255  *                                                             CML42550
                            4256  *        DEC 0000 0000 0000 0214 7483 6479 9999 999C          CML42560
                            4257  *                                                             CML42570
003058   02FA F080          4258                 DC    Y'02FAF080'                              CML42580
00305C   0000 0001          4259                 DC    Y'00000001'                              CML42590
                            4260  *                                                             CML42600
                            4261  *        DEC 0000 0000 0000 0214 7483 6480 0000 001C          CML42610
                            4262  *                                                             CML42620
003060   0000 0000          4263                 DC    Y'00000000'                              CML42630
003064   05F5 F100          4264                 DC    Y'05F5E100'                              CML42640
                            4265  *                                                             CML42650
                            4266  *        DEC 0000 0000 0000 0000 0000 0010 0000 000C          CML42660
                            4267  *                                                             CML42670
003068   0000 0000          4268                 DC    Y'00000000'                              CML42680
00306C   05F5 E0FF          4269                 DC    Y'05F5E0FF'                              CML42690
                            4270  *                                                             CML42700
                            4271  *        DEC 0000 0000 0000 0000 0000 0009 9999 999C          CML42710
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                          4272  *                                                       CML42720
003070   0000 0000        4273            DC    Y'00000000'                             CML42730
003074   05F5 E101        4274            DC    Y'05F5E101'                             CML42740
                          4275  *                                                       CML42750
                          4276  *         DEC 0000 0000 0000 0000 0000 0010 0000 001C   CML42760
                          4277  *                                                       CML42770
003078   0000 0000        4278            DC    Y'00000000'                             CML42780
00307C   02FA F080        4279            DC    Y'02FAF080'                             CML42790
                          4280  *                                                       CML42800
                          4281  *         DEC 0000 0000 0000 0000 0000 0005 0000 000C   CML42810
                          4282  *                                                       CML42820
003080   0000 0000        4283            DC    Y'00000000'                             CML42830
003084   02FA F07F        4284            DC    Y'02FAF07F'                             CML42840
                          4285  *                                                       CML42850
                          4286  *         DEC 0000 0000 0000 0000 0000 0004 9999 999C   CML42860
                          4287  *                                                       CML42870
003088   0000 0000        4288            DC    Y'00000000'                             CML42880
00308C   02FA F081        4289            DC    Y'02FAF081'                             CML42890
                          4290  *                                                       CML42900
                          4291  *         DEC 0000 0000 0000 0000 0000 0005 0000 001C   CML42910
                          4292  *                                                       CML42920
                          4293  *                                                       CML42930
003090   0123 4567        4294  STBP.19A DC Y'01234567'                                 CML42940
003094   89AB CDEF        4295  STBP.19B DC Y'89ABCDEF'                                 CML42950
                          4296  *                                                       CML42960
                          4297  *         DEC 0000 0000 0000 0081 9855 2921 6486 895C   CML42970
                          4298  *                                                       CML42980
         0000 3090        4299  LPB.19A  EQU   STBP.19A         STBP SRC = LPB RESULT   CML42990
         0000 3094        4300  LPB.19B  EQU   STBP.19B                                 CML43000
                          4301  *                                                       CML43010
003098   1111 1111        4302            DC    Y'11111111'                             CML43020
00309C   1111 1111        4303            DC    Y'11111111'                             CML43030
                          4304  *                                                       CML43040
                          4305  *         DEC 0000 0000 0000 1229 7829 3824 7303 441C   CML43050
                          4306  *                                                       CML43060
0030A0   2222 2222        4307            DC    Y'22222222'                             CML43070
0030A4   2222 2222        4308            DC    Y'22222222'                             CML43080
                          4309  *                                                       CML43090
                          4310  *         DEC 0000 0000 0000 2459 5658 7649 4606 882C   CML43100
                          4311  *                                                       CML43110
0030A8   3333 3333        4312            DC    Y'33333333'                             CML43120
0030AC   3333 3333        4313            DC    Y'33333333'                             CML43130
                          4314  *                                                       CML43140
                          4315  *         DEC 0000 0000 0000 3689 3488 1474 1910 323C   CML43150
                          4316  *                                                       CML43160
0030B0   4444 4444        4317            DC    Y'44444444'                             CML43170
0030B4   4444 4444        4318            DC    Y'44444444'                             CML43180
                          4319  *                                                       CML43190
                          4320  *         DEC 0000 0000 0000 4919 1317 5298 9213 764C   CML43200
                          4321  *                                                       CML43210
0030B8   5555 5555        4322            DC    Y'55555555'                             CML43220
0030BC   5555 5555        4323            DC    Y'55555555'                             CML43230
                          4324  *                                                       CML43240
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                        4325  *        DEC 0000 0000 0000 6148 9146 9123 6517 205C      CML43250
                        4326  *                                                         CML43260
0030C0   6666 6666      4327           DC    Y'66666666'                                CML43270
0030C4   6666 6666      4328           DC    Y'66666666'                                CML43280
                        4329  *                                                         CML43290
                        4330  *        DEC 0000 0000 0000 7378 6976 2948 3820 646C      CML43300
                        4331  *                                                         CML43310
0030C8   7777 7777      4332           DC    Y'77777777'                                CML43320
0030CC   7777 7777      4333           DC    Y'77777777'                                CML43330
                        4334  *                                                         CML43340
                        4335  *        DEC 0000 0000 0000 8608 4805 6773 1124 087C      CML43350
                        4336  *                                                         CML43360
                        4337  *                                                         CML43370
0030D0   8888 8888      4338  STBP.27A DC    Y'88888888'                                CML43380
0030D4   8888 8888      4339  STBP.27B DC    Y'88888888'                                CML43390
                        4340  *                                                         CML43400
                        4341  *        DEC 0000 0000 0000 8608 4805 6773 1124 088D      CML43410
                        4342  *                                                         CML43420
         0000 30D0      4343  LPB.27A  EQU   STBP.27A            LPB SRC = STBP RESULT CML43430
         0000 30D4      4344  LPB.27B  EQU   STBP.27B                                  CML43440
                        4345  *                                                         CML43450
0030D8   9999 9999      4346           DC    Y'99999999'                                CML43460
0030DC   9999 9999      4347           DC    Y'99999999'                                CML43470
                        4348  *                                                         CML43480
                        4349  *        DEC 0000 0000 0000 7378 6976 2948 3820 647D      CML43490
                        4350  *                                                         CML43500
0030E0   AAAA AAAA      4351           DC    Y'AAAAAAAA'                                CML43510
0030E4   AAAA AAAA      4352           DC    Y'AAAAAAAA'                                CML43520
                        4353  *                                                         CML43530
                        4354  *        DEC 0000 0000 0000 6148 9146 9123 6517 206D      CML43540
                        4355  *                                                         CML43550
0030E8   BBBB BBBB      4356           DC    Y'BBBBBBBB'                                CML43560
0030EC   BBBB BBBB      4357           DC    Y'BBBBBBBB'                                CML43570
                        4358  *                                                         CML43580
                        4359  *        DEC 0000 0000 0000 4919 1317 5298 9213 765D      CML43590
                        4360  *                                                         CML43600
0030F0   CCCC CCCC      4361           DC    Y'CCCCCCCC'                                CML43610
0030F4   CCCC CCCC      4362           DC    Y'CCCCCCCC'                                CML43620
                        4363  *                                                         CML43630
                        4364  *        DEC 0000 0000 0000 3689 3488 1474 1910 324D      CML43640
                        4365  *                                                         CML43650
0030F8   DDDD DDDD      4366           DC    Y'DDDDDDDD'                                CML43660
0030FC   DDDD DDDD      4367           DC    Y'DDDDDDDD'                                CML43670
                        4368  *                                                         CML43680
                        4369  *        DEC 0000 0000 0000 2459 5658 7649 4606 883D      CML43690
                        4370  *                                                         CML43700
003100   EEEE EEEE      4371           DC    Y'EEEEEEEE'                                CML43710
003104   EEEE EEEE      4372           DC    Y'EEEEEEEE'                                CML43720
                        4373  *                                                         CML43730
                        4374  *        DEC 0000 0000 0000 1229 7629 3824 7303 442D      CML43740
                        4375  *                                                         CML43750
003108   FFFF FFFF      4376           DC    Y'FFFFFFFF'                                CML43760
00310C   FFFF FFFF      4377           DC    Y'FFFFFFFF'                                CML43770
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                                                                                    CML43780
                         4378  *                                                    CML43790
                         4379  *        DEC 0000 0000 0000 0000 0000 0000 0000 001D CML43800
                         4380  *                                                    CML43810
                         4381  *                                                    CML43820
                         4382  *                                                    CML43830
                         4383  *                                                    CML43840
                         4384  *------------------------------------------------------- CML43850
                         4385  *                                                    CML43860
                         4386  *                                                    CML43870
          0000 3110      4387  UPKSRC   EQU   *                                     CML43880
                         4388  *                                                    CML43890
003110    3030 3030      4389           DC    Y'30303030',Y'30303030',Y'30303030',Y'30303030'
003114    3030 3030
003118    3030 3030
00311C    3030 3030                                                                 CML43900
003120    3030 3030      4390           DC    Y'30303030',Y'30303030',Y'30303030',X'3030'
003124    3030 3030
003128    3030 3030
00312C    3030                                                                      CML43910
00312E    C000           4391           DB    X'C0',0          SIGN +  VALUE ALL ZEROES CML43920
                         4392  *                                                    CML43930
003130    3131 3131      4393  UPKSRC.P DC    Y'31313131',Y'31313131',Y'31313131',Y'31313131'
003134    3131 3131
003138    3131 3131
00313C    3131 3131                                                                 CML43940
003140    3131 3131      4394           DC    Y'31313131',Y'31313131',Y'31313131',X'3131'
003144    3131 3131
003148    3131 3131
00314C    3131                                                                      CML43950
00314E    C100           4395           DB    X'C1',0          SIGN +  VALUE ALL ONES CML43960
                         4396  *                                                    CML43970
003150    3232 3232      4397           DC    Y'32323232',Y'32323232',Y'32323232',Y'32323232'
003154    3232 3232
003158    3232 3232
00315C    3232 3232                                                                 CML43980
003160    3232 3232      4398           DC    Y'32323232',Y'32323232',Y'32323232',X'3232'
003164    3232 3232
003168    3232 3232
00316C    3232                                                                      CML43990
00316E    C200           4399           DB    X'C2',0          SIGN +  VALUE ALL TWOS CML44000
                         4400  *                                                    CML44010
003170    3333 3333      4401           DC    Y'33333333',Y'33333333',Y'33333333',Y'33333333'
003174    3333 3333
003178    3333 3333
00317C    3333 3333                                                                 CML44020
003180    3333 3333      4402           DC    Y'33333333',Y'33333333',Y'33333333',X'3333'
003184    3333 3333
003188    3333 3333
00318C    3333                                                                      CML44030
00318E    C300           4403           DB    X'C3',0          SIGN +  VALUE ALL THREES CML44040
                         4404  *                                                    CML44050
003190    3434 3434      4405           DC    Y'34343434',Y'34343434',Y'34343434',Y'34343434'
003194    3434 3434
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003198   3434 3434
00319C   3434 3434
0031A0   3434 3434          4406          DC    Y'34343434',Y'34343434',Y'34343434',X'3434'                CML44060
0031A4   3434 3434
0031A8   3434 3434
0031AC   3434
0031AE   C400               4407          DB    X'C4',0              SIGN +  VALUE ALL FOURS               CML44070
                            4408  *                                                                        CML44080
0031B0   3535 3535          4409          DC    Y'35353535',Y'35353535',Y'35353535',Y'35353535'            CML44090
0031B4   3535 3535
0031B8   3535 3535
0031BC   3535 3535
0031C0   3535 3535          4410          DC    Y'35353535',Y'35353535',Y'35353535',X'3535'                CML44100
0031C4   3535 3535
0031C8   3535 3535
0031CC   3535
0031CE   C500               4411          DB    X'C5',0              SIGN +  VALUE ALL FIVES               CML44110
                            4412  *                                                                        CML44120
0031D0   3636 3636          4413          DC    Y'36363636',Y'36363636',Y'36363636',Y'36363636'            CML44130
0031D4   3636 3636
0031D8   3636 3636
0031DC   3636 3636
0031E0   3636 3636          4414          DC    Y'36363636',Y'36363636',Y'36363636',X'3636'                CML44140
0031E4   3636 3636
0031E8   3636 3636
0031EC   3636
0031EE   C600               4415          DB    X'C6',0              SIGN +  VALUE ALL SIXES               CML44150
                            4416  *                                                                        CML44160
0031F0   3737 3737          4417          DC    Y'37373737',Y'37373737',Y'37373737',Y'37373737'            CML44170
0031F4   3737 3737
0031F8   3737 3737
0031FC   3737 3737
003200   3737 3737          4418          DC    Y'37373737',Y'37373737',Y'37373737',X'3737'                CML44180
003204   3737 3737
003208   3737 3737
00320C   3737
00320E   C700               4419          DB    X'C7',0              SIGN +  VALUE ALL SEVENS              CML44190
                            4420  *                                                                        CML44200
003210   3838 3838          4421          DC    Y'38383838',Y'38383838',Y'38383838',Y'38383838'            CML44210
003214   3838 3838
003218   3838 3838
00321C   3838 3838
003220   3838 3838          4422          DC    Y'38383838',Y'38383838',Y'38383838',X'3838'                CML44220
003224   3838 3838
003228   3838 3838
00322C   3838
00322E   C800               4423          DB    X'C8',0              SIGN +  VALUE ALL EIGHTS              CML44230
                            4424  *                                                                        CML44240
003230   3939 3939          4425          DC    Y'39393939',Y'39393939',Y'39393939',Y'39393939'            CML44250
003234   3939 3939
003238   3939 3939
00323C   3939 3939
003240   3939 3939          4426          DC    Y'39393939',Y'39393939',Y'39393939',X'3939'                CML44260
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003244   3939 3939
003248   3939 3939
00324C   3939
00324E   C900          4427            DB   X'C9',0              SIGN +  VALUE ALL NINES     CML44270
                       4428   *                                                             CML44280
                       4429   *                                                             CML44290
003250   3131 3131     4430  UPKSRC.N DC   Y'31313131',Y'31313131',Y'31313131',Y'31313131'  CML44300
003254   3131 3131
003258   3131 3131
00325C   3131 3131
003260   3131 3131     4431            DC   Y'31313131',Y'31313131',Y'31313131',X'3131'      CML44310
003264   3131 3131
003268   3131 3131
00326C   3131
00326E   D100          4432            DB   X'D1',0              SIGN -  VALUE ALL ONES      CML44320
                       4433   *                                                             CML44330
003270   3232 3232     4434            DC   Y'32323232',Y'32323232',Y'32323232',Y'32323232'  CML44340
003274   3232 3232
003278   3232 3232
00327C   3232 3232
003280   3232 3232     4435            DC   Y'32323232',Y'32323232',Y'32323232',X'3232'      CML44350
003284   3232 3232
003288   3232 3232
00328C   3232
00328E   D200          4436            DB   X'D2',0              SIGN -  VALUE ALL TWOS      CML44360
                       4437   *                                                             CML44370
003290   3333 3333     4438            DC   Y'33333333',Y'33333333',Y'33333333',Y'33333333'  CML44380
003294   3333 3333
003298   3333 3333
00329C   3333 3333
0032A0   3333 3333     4439            DC   Y'33333333',Y'33333333',Y'33333333',X'3333'      CML44390
0032A4   3333 3333
0032A8   3333 3333
0032AC   3333
0032AE   D300          4440            DB   X'D3',0              SIGN -  VALUE ALL THREES    CML44400
                       4441   *                                                             CML44410
0032B0   3434 3434     4442            DC   Y'34343434',Y'34343434',Y'34343434',Y'34343434'  CML44420
0032B4   3434 3434
0032B8   3434 3434
0032BC   3434 3434
0032C0   3434 3434     4443            DC   Y'34343434',Y'34343434',Y'34343434',X'3434'      CML44430
0032C4   3434 3434
0032C8   3434 3434
0032CC   3434
0032CE   D400          4444            DB   X'D4',0              SIGN -  VALUF ALL FOURS     CML44440
                       4445   *                                                             CML44450
0032D0   3535 3535     4446            DC   Y'35353535',Y'35353535',Y'35353535',Y'35353535'  CML44460
0032D4   3535 3535
0032D8   3535 3535
0032DC   3535 3535
0032E0   3535 3535     4447            DC   Y'35353535',Y'35353535',Y'35353535',X'3535'      CML44470
0032E4   3535 3535
0032E8   3535 3535
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OPERAND TABLES AND CONSTANTS

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0032EC    3535
0032EE    D500                 4448          DB    X'D5',0              SIGN -  VALUE ALL FIVES          CML44480
                               4449    *                                                                CML44490
0032F0    3636 3636            4450          DC    Y'36363636',Y'36363636',Y'36363636',Y'36363636'      CML44500
0032F4    3636 3636
0032F8    3636 3636
0032FC    3636 3636
003300    3636 3636            4451          DC    Y'36363636',Y'36363636',Y'36363636',X'3636'          CML44510
003304    3636 3636
003308    3636 3636
00330C    3636
00330E    D600                 4452          DB    X'D6',0              SIGN -  VALUE ALL SIXES          CML44520
                               4453    *                                                                CML44530
003310    3737 3737            4454          DC    Y'37373737',Y'37373737',Y'37373737',Y'37373737'      CML44540
003314    3737 3737
003318    3737 3737
00331C    3737 3737
003320    3737 3737            4455          DC    Y'37373737',Y'37373737',Y'37373737',X'3737'          CML44550
003324    3737 3737
003328    3737 3737
00332C    3737
00332E    D700                 4456          DB    X'D7',0              SIGN -  VALUE ALL SEVENS         CML44560
                               4457    *                                                                CML44570
003330    3838 3838            4458          DC    Y'38383838',Y'38383838',Y'38383838',Y'38383838'      CML44580
003334    3838 3838
003338    3838 3838
00333C    3838 3838
003340    3838 3838            4459          DC    Y'38383838',Y'38383838',Y'38383838',X'3838'          CML44590
003344    3838 3838
003348    3838 3838
00334C    3838
00334E    D800                 4460          DB    X'D8',0              SIGN -  VALUE ALL EIGHTS         CML44600
                               4461    *                                                                CML44610
003350    3939 3939            4462          DC    Y'39393939',Y'39393939',Y'39393939',Y'39393939'      CML44620
003354    3939 3939
003358    3939 3939
00335C    3939 3939
003360    3939 3939            4463          DC    Y'39393939',Y'39393939',Y'39393939',X'3939'          CML44630
003364    3939 3939
003368    3939 3939
00336C    3939
00336E    D900                 4464          DB    X'D9',0              SIGN -  VALUE ALL NINES          CML44640
                               4465    *                                                                CML44650
                               4466    *                                                                CML44660
003370    3030 3030            4467  BIGUN   DC    Y'30303030',Y'30303030',Y'30303030',Y'39323233'      CML44670
003374    3030 3030
003378    3030 3030
00337C    3932 3233
003380    3337 3230            4468          DC    Y'33373230',Y'33363835',Y'34373735',X'3830'          CML44680
003384    3336 3835
003388    3437 3735
00338C    3830
00338E    C700                 4469          DB    X'C7',0              LARGEST (7FFF FFFF FFFF FFFF)    CML44690
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OPERAND TABLES AND CONSTANTS

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                                                             IN UNPACKED DECIMAL FORM        CML44700
                           4470  *                                                           CML44710
                           4471  *                                                           CML44720
                           4472  UPKDAT    DC    Y'3A3B3C3D',X'3E3F'                          CML44730
003390   3A3B 3C3D
003394   3E3F                                                INVALID DATA                    CML44740
                           4473  *                                                           CML44750
                           4474  *
                           4475  UPKSGN    DC    Y'03132343',Y'53637383',X'9300'
003396   0313 2343
00339A   5363 7383                                           INVALID SIGN                    CML44760
00339E   9300              4476  *                                                           CML44770
                           4477  *                                                           CML44780
                           4478  *                                                           CML44790
                           4479  *---------------------------------------------------------- CML44800
                           4480  *                                                           CML44810
                           4481  *                                                           CML44820
         0000 33A0         4482  PKSRC     EQU   *                                           CML44830
                           4483  *                                                           CML44840
                           4484            DC    Y'00000000',Y'00000000',Y'00000000',Y'0000000C'
0033A0   0000 0000
0033A4   0000 0000
0033A8   0000 0000                                                                           CML44850
0033AC   0000 000C                           SIGN + VALUE ALL ZEROES                         CML44860
                           4485  *                                                           CML44870
                           4486  *
                           4487  PKSRC.P   DC    Y'11111111',Y'11111111',Y'11111111',Y'1111111C'
0033B0   1111 1111
0033B4   1111 1111
0033B8   1111 1111                                                                           CML44880
0033BC   1111 111C                           SIGN + VALUE ALL ONES                           CML44890
                           4488  *                                                           CML44900
                           4489  *
                           4490            DC    Y'22222222',Y'22222222',Y'22222222',Y'2222222C'
0033C0   2222 2222
0033C4   2222 2222
0033C8   2222 2222                                                                           CML44910
0033CC   2222 222C                           SIGN + VALUE ALL TWOS                           CML44920
                           4491  *                                                           CML44930
                           4492  *
                           4493            DC    Y'33333333',Y'33333333',Y'33333333',Y'3333333C'
0033D0   3333 3333
0033D4   3333 3333
0033D8   3333 3333                                                                           CML44940
0033DC   3333 333C                           SIGN + VALUE ALL THREES                         CML44950
                           4494  *                                                           CML44960
                           4495  *
                           4496            DC    Y'44444444',Y'44444444',Y'44444444',Y'4444444C'
0033E0   4444 4444
0033E4   4444 4444
0033E8   4444 4444                                                                           CML44970
0033EC   4444 444C                           SIGN + VALUE ALL FOURS                          CML44980
                           4497  *                                                           CML44990
                           4498  *
                           4499            DC    Y'55555555',Y'55555555',Y'55555555',Y'5555555C'
0033F0   5555 5555
0033F4   5555 5555
0033F8   5555 5555                                                                           CML45000
0033FC   5555 555C                           SIGN + VALUE ALL FIVES                          CML45010
                           4500  *
                           4501  *
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OPERAND TABLES AND CONSTANTS

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003400  6666 6666          4502           DC    Y'66666666',Y'66666666',Y'66666666',Y'6666666C'          CML45020
003404  6666 6666
003408  6666 6666
00340C  6666 666C
                           4503  *              SIGN + VALUE ALL SIXES                                   CML45030
                           4504  *                                                                       CML45040
003410  7777 7777          4505           DC    Y'77777777',Y'77777777',Y'77777777',Y'7777777C'          CML45050
003414  7777 7777
003418  7777 7777
00341C  7777 777C
                           4506  *              SIGN + VALUE ALL SEVENS                                  CML45060
                           4507  *                                                                       CML45070
003420  8888 8888          4508           DC    Y'88888888',Y'88888888',Y'88888888',Y'8888888C'          CML45080
003424  8888 8888
003428  8888 8888
00342C  8888 888C
                           4509  *              SIGN + VALUE ALL EIGHTS                                  CML45090
                           4510  *                                                                       CML45100
003430  9999 9999          4511           DC    Y'99999999',Y'99999999',Y'99999999',Y'9999999C'          CML45110
003434  9999 9999
003438  9999 9999
00343C  9999 999C
                           4512  *              SIGN + VALUE ALL NINES                                   CML45120
                           4513  *                                                                       CML45130
003440  1111 1111          4514  PKS5C.N  DC    Y'11111111',Y'11111111',Y'11111111',Y'1111111D'          CML45140
003444  1111 1111
003448  1111 1111
00344C  1111 111D
                           4515  *              SIGN - VALUE ALL ONES                                    CML45150
                           4516  *                                                                       CML45160
003450  2222 2222          4517           DC    Y'22222222',Y'22222222',Y'22222222',Y'2222222D'          CML45170
003454  2222 2222
003458  2222 2222
00345C  2222 222D
                           4518  *              SIGN - VALUE ALL TWOS                                    CML45180
                           4519  *                                                                       CML45190
003460  3333 3333          4520           DC    Y'33333333',Y'33333333',Y'33333333',Y'3333333D'          CML45200
003464  3333 3333
003468  3333 3333
00346C  3333 333D
                           4521  *              SIGN - VALUE ALL THREES                                  CML45210
                           4522  *                                                                       CML45220
003470  4444 4444          4523           DC    Y'44444444',Y'44444444',Y'44444444',Y'4444444D'          CML45230
003474  4444 4444
003478  4444 4444
00347C  4444 444D
                           4524  *              SIGN - VALUE ALL FOURS                                   CML45240
                           4525  *                                                                       CML45250
003480  5555 5555          4526           DC    Y'55555555',Y'55555555',Y'55555555',Y'5555555D'          CML45260
003484  5555 5555
003488  5555 5555
00348C  5555 555D
                           4527  *              SIGN - VALUE ALL FIVES                                   CML45270
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                                      4528  *                                                                            CML45280
003490   6666 6666                    4529            DC    Y'66666666',Y'66666666',Y'66666666',Y'6666666D'              CML45290
003494   6666 6666
003498   6666 6666
00349C   6666 666D
                                      4530  *               SIGN - VALUE ALL SIXES                                       CML45300
                                      4531  *                                                                            CML45310
0034A0   7777 7777                    4532            DC    Y'77777777',Y'77777777',Y'77777777',Y'7777777D'              CML45320
0034A4   7777 7777
0034A8   7777 7777
0034AC   7777 777D
                                      4533  *               SIGN - VALUE ALL SEVENS                                      CML45330
                                      4534  *                                                                            CML45340
0034B0   8888 8888                    4535            DC    Y'88888888',Y'88888888',Y'88888888',Y'8888888D'              CML45350
0034B4   8888 8888
0034B8   8888 8888
0034BC   8888 888D
                                      4536  *               SIGN - VALUE ALL EIGHTS                                      CML45360
                                      4537  *                                                                            CML45370
0034C0   9999 9999                    4538            DC    Y'99999999',Y'99999999',Y'99999999',Y'9999999D'              CML45380
0034C4   9999 9999
0034C8   9999 9999
0034CC   9999 999D
                                      4539  *               SIGN - VALUE ALL NINES                                       CML45390
                                      4540  *                                                                            CML45400
0034D0   A3B3 C3D3                    4541  PKDAT     DC    Y'A3B3C3D3',X'E3F3'                                          CML45410
0034D4   E3F3
                                      4542  *                                     INVALID DATA                           CML45420
                                      4543  *                                                                            CML45430
0034D6   3031 3234                    4544  PKSGN     DC    Y'30313234',Y'35363738',X'3900'                              CML45440
0034DA   3536 3738
0034DE   3900
                                      4545  *                                     INVALID SIGN                           CML45450
                                      4546  *                                                                            CML45460
                                      4547  ******************************************************************           CML45470
                                      4548  *                                                                            CML45480
0034E0   4143 5455 414C 2020          4549  LPBACT    DC    C'ACTUAL   '                                                 CML45490
0034E8   2020
0034EA                                4550  ASCLPB1   DS    8                                                            CML45500
0034F2   2020                         4551            DC    X'2020'                 SPACE                                CML45510
0034F4                                4552  ASCLPB2   DS    8                                                            CML45520
0034FC   0D00                         4553            DC    X'0D00'                                                      CML45530
                                      4554  *                                                                            CML45540
0034FE   4558 5045 4354 4544          4555  LPBEXP    DC    C'EXPECTED '                                                 CML45550
003506   2020
003508                                4556  EXPLPB1   DS    8                                                            CML45560
003510   2020                         4557            DC    X'2020'                 SPACE                                CML45570
003512                                4558  EXPLPB2   DS    8                                                            CML45580
00351A   0D00                         4559            DC    X'0D00'                                                      CML45590
                                      4560  *                                                                            CML45600
00351C                                4561  SDEST     DS    16                      DESTINATION STRING FOR STBP          CML45610
                                      4562  *                                                                            CML45620
                                      4563  *                                                                            CML45630
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OPERAND TABLES AND CONSTANTS

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00352C  4143 5455 414C 2020  4564  STBPACT  DC    C'ACTUAL   '                                          CML45640
003534  2020
003536                       4565  ASCIWD2  DS    32                                                   CML45650
003556  0D00                 4566           DC    X'0D00'                                              CML45660
                             4567  *                                                                  CML45670
003558  4558 5045 4354 4544  4568  STBPEXP  DC    C'EXPECTED '                                         CML45680
003560  2020
003562                       4569  ASCIWD1  DS    32                                                   CML45690
003582  0D00                 4570           DC    X'0D00'                                              CML45700
                             4571  *                                                                  CML45710
003584                       4572  OPN2     DS    256                 256 BYTE SOURCE AREA             CML45720
003684                       4573  OPN1     DS    256                 256 BYTE DESTINATION AREA        CML45730
                             4574  *                                                                  CML45740
                             4575  *                                                                  CML45750
        0000 3784            4576  MASTER   EQU   *                   MASTER BYTE TABLE                CML45760
                             4577  *                                                                  CML45770
003784  FFFE FDFC            4578           DC    Y'FFFEFDFC',Y'FBFAF9F8',Y'F7F6F5F4',Y'F3F2F1F0'      CML45780
003788  F8FA F9F8
00378C  F7F6 F5F4
003790  F3F2 F1F0
003794  EFEE FDEC            4579           DC    Y'EFEEEDEC',Y'EBEAE9E8',Y'E7E6E5E4',Y'E3E2E1E0'      CML45790
003798  EBEA E9E8
00379C  E7E6 E5E4
0037A0  E3E2 E1E0
0037A4  DFDE DDDC            4580           DC    Y'DFDEDDDC',Y'DBDAD9D8',Y'D7D6D5D4',Y'D3D2D1D0'      CML45800
0037A8  DBDA D9D8
0037AC  D7D6 D5D4
0037B0  D3D2 D1D0
0037B4  CFCE CDCC            4581           DC    Y'CFCECDCC',Y'CBCAC9C8',Y'C7C6C5C4',Y'C3C2C1C0'      CML45810
0037B8  CBCA C9C8
0037BC  C7C6 C5C4
0037C0  C3C2 C1C0
0037C4  BFBE BDBC            4582           DC    Y'BFBEBDBC',Y'BBBAB9B8',Y'B7B6B5B4',Y'B3B2B1B0'      CML45820
0037C8  B3BA B9B8
0037CC  B7B6 B5B4
0037D0  B3B2 B1B0
0037D4  AFAE ADAC            4583           DC    Y'AFAEADAC',Y'ABAAA9A8',Y'A7A6A5A4',Y'A3A2A1A0'      CML45830
0037D8  ABAA A9A8
0037DC  A7A6 A5A4
0037E0  A3A2 A1A0
0037E4  9F9E 9D9C            4584           DC    Y'9F9E9D9C',Y'9B9A9998',Y'97969594',Y'93929190'      CML45840
0037E8  9B9A 9998
0037EC  9796 9594
0037F0  9392 9190
0037F4  8F8E 8D8C            4585           DC    Y'8F8E8D8C',Y'8B8A8988',Y'87868584',Y'83828180'      CML45850
0037F8  8B8A 8988
0037FC  8786 8584
003800  8382 8180
003804  7F7E 7D7C            4586           DC    Y'7F7E7D7C',Y'7B7A7978',Y'77767574',Y'73727170'      CML45860
003808  7B7A 7978
00380C  7776 7574
003810  7372 7170
003814  6F6E 6D6C            4587           DC    Y'6F6E6D6C',Y'6B6A6968',Y'67666564',Y'63626160'      CML45870
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OPERAND TABLES AND CONSTANTS

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003818  6B6A 6968
003810  6766 6564
003820  6362 6160
003824  5F5E 5D5C          4588          DC    Y'5F5E5D5C',Y'5B5A5958',Y'57565554',Y'53525150'          CML45880
003828  5B5A 5958
00382C  5756 5554
003830  5352 5150
003834  4F4E 4D4C          4589          DC    Y'4F4E4D4C',Y'4B4A4948',Y'47464544',Y'43424140'          CML45890
003838  4B4A 4948
00383C  4746 4544
003840  4342 4140
003844  3F3E 3D3C          4590          DC    Y'3F3E3D3C',Y'3B3A3938',Y'37363534',Y'33323130'          CML45900
003848  3B3A 3938
00384C  3736 3534
003850  3332 3130
003854  2F2E 2D2C          4591          DC    Y'2F2E2D2C',Y'2B2A2928',Y'27262524',Y'23222120'          CML45910
003858  2B2A 2928
00385C  2726 2524
003860  2322 2120
003864  1F1E 1D1C          4592          DC    Y'1F1E1D1C',Y'1B1A1918',Y'17161514',Y'13121110'          CML45920
003868  1B1A 1918
00386C  1716 1514
003870  1312 1110
003874  0F0E 0D0C          4593          DC    Y'0F0E0D0C',Y'0B0A0908',Y'07060504',Y'03020100'          CML45930
003878  0B0A 0908
00387C  0706 0504
003880  0302 0100
                           4594  *                                                                    CML45940
                           4595  *                                                                    CML45950
                           4596  TRANSTAB EQU  *                TRANSLATION TABLE FOR MVTU            CML45960
                           4597  *                                                                    CML45970
003884  0001 0203          4598          DC    Y'00010203',Y'04050607',Y'08090A0B',Y'0C0D0E0F'          CML45980
003888  0405 0607
00388C  0809 0A0B
003890  0C0D 0E0F
003894  1011 1213          4599          DC    Y'10111213',Y'14151617',Y'18191A1B',Y'1C1D1E1F'          CML45990
003898  1415 1617
00389C  1819 1A1B
0038A0  1C1D 1E1F
0038A4  2021 2223          4600          DC    Y'20212223',Y'24252627',Y'28292A2B',Y'2C2D2E2F'          CML46000
0038A8  2425 2627
0038AC  2829 2A2B
0038B0  2C2D 2E2F
0038B4  3031 3233          4601          DC    Y'30313233',Y'34353637',Y'38393A3B',Y'3C3D3E3F'          CML46010
0038B8  3435 3637
0038BC  3839 3A3B
0038C0  3C3D 3E3F
0038C4  4041 4243          4602          DC    Y'40414243',Y'44454647',Y'48494A4B',Y'4C4D4F4F'          CML46020
0038C8  4445 4647
0038CC  4849 4A4B
0038D0  4C4D 4E4F
0038D4  5051 5253          4603          DC    Y'50515253',Y'54555657',Y'58595A5B',Y'5C5D5E5F'          CML46030
0038D8  5455 5657
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OPERAND TABLES AND CONSTANTS

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0038DC  5859 5A5B
0038E0  5C5D 5E5F
0038E4  6061 6263          4604          DC    Y'60616263',Y'64656667',Y'68696A6B',Y'6C6D6E6F'          CML46040
0038E8  6465 6667
0038EC  6869 6A6B
0038F0  6C6D 6E6F
0038F4  7071 7273          4605          DC    Y'70717273',Y'74757677',Y'78797A7B',Y'7C7D7E7F'          CML46050
0038F8  7475 7677
0038FC  7879 7A7B
003900  7C7D 7E7F
003904  8081 8283          4606          DC    Y'80818283',Y'84858687',Y'88898A8B',Y'8C8D8E8F'          CML46060
003908  8485 8687
00390C  8889 8A8B
003910  8C8D 8E8F
003914  9091 9293          4607          DC    Y'90919293',Y'94959697',Y'98999A9B',Y'9C9D9E9F'          CML46070
003918  9495 9697
00391C  9899 9A9B
003920  9C9D 9E9F
003924  A0A1 A2A3          4608          DC    Y'A0A1A2A3',Y'A4A5A6A7',Y'A8A9AAAB',Y'ACADAEAF'          CML46080
003928  A4A5 A6A7
00392C  A8A9 AAAB
003930  ACAD AEAF
003934  B0B1 B2B3          4609          DC    Y'B0B1B2B3',Y'B4B5B6B7',Y'B8B9BABB',Y'BCBDBEBF'          CML46090
003938  B4B5 B6B7
00393C  B8B9 BABB
003940  BCBD BEBF
003944  C0C1 C2C3          4610          DC    Y'C0C1C2C3',Y'C4C5C6C7',Y'C8C9CACB',Y'CCCDCECF'          CML46100
003948  C4C5 C6C7
00394C  C8C9 CACB
003950  CCCD CECF
003954  D0D1 D2D3          4611          DC    Y'D0D1D2D3',Y'D4D5D6D7',Y'D8D9DADB',Y'DCDDDEDF'          CML46110
003958  D4D5 D6D7
00395C  D8D9 DADB
003960  DCDD DEDF
003964  E0E1 E2E3          4612          DC    Y'E0E1E2E3',Y'E4E5E6E7',Y'E8E9EAEB',Y'ECEDEEEF'          CML46120
003968  E4E5 E6E7
00396C  E8E9 EAEB
003970  ECED EEEF
003974  F0F1 F2F3          4613          DC    Y'F0F1F2F3',Y'F4F5F6F7',Y'F8F9FAFB',Y'FCFDFEFF'          CML46130
003978  F4F5 F6F7
00397C  F8F9 FAFB
003980  FCFD FEFF
                           4614  *                                                                      CML46140
                           4615  *                                                                      CML46150
003984  0000               4616          DCX   0                    FILL                              CML46160
                           4617  *                                                                      CML46170
003986  3031 3233 3435 3637 4618  NUMB10   DB    C'0123456789'                                          CML46180
00398E  3839
003990  3938 3736 3534 3332 4619  NUMB10HI DB    C'9876543210'                                          CML46190
003998  3130
                           4620  *                                                                      CML46200
                           4621  *                                                                      CML46210
                           4622  *                                                                      CML46220
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OPERAND TABLES AND CONSTANTS

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00399A                  4623  PKDEST   DS    16              DESTINATION AREA PMV      CML46230
                        4624  *                                                       CML46240
0039AA                  4625  UPKDEST  DS    32              DESTINATION AREA UMV      CML46250
                        4626  *                                                       CML46260
                        4627  *---------------------------------                     CML46270
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                          4629  ************************************************************************     CML46290
                          4630  *                                                                      *     CML46300
                          4631  *                                LPBCHK                                *     CML46310
                          4632  *                                                                      *     CML46320
                          4633  *   THIS ROUTINE CHECKS THE RESULT OF THE LPB INSTRUCTION BY A          *     CML46330
                          4634  *   COMPARISON OF THE TWO DESTINATION REGISTERS AGAINST THE             *     CML46340
                          4635  *   EXPECTED RESULT VALUES. LPBNG WILL PRINT THE EXPECTED RESULTS       *     CML46350
                          4636  *   AND THE ACTUAL CONTENTS OF THE TWO DESTINATION REGISTERS            *     CML46360
                          4637  *   IF A COMPARISON FAILS.                                             *     CML46370
                          4638  *                                                                      *     CML46380
                          4639  ************************************************************************     CML46390
                          4640  *                                                                            CML46400
                          4641  *                                                                            CML46410
0039CA  40F0 88DA =0042A8 4642  LPBCHK   STH   LINK,LINKSAV       SAVE LINKING ADDRESS                     CML46420
0039CE  0525              4643            CLR   R2,R5            CHECK EVEN REG AGAINST EXP RESULT        CML46430
0039D0  4230 39DA         4644            BNE   LCK1            IF OK CONTINUE                           CML46440
0039D4  0535              4645            CLR   R3,R6            CHECK ODD REG AGAINST EXP RESULT         CML46450
0039D6  4330 39EA         4646            BE    LCK2            IF OK SKIP                               CML46460
0039DA  C8A0 3138         4647  LCK1      LHI   R10,C'18'       LOAD ERROR NO                            CML46470
0039DE  40A0 17A2         4648            STH   R10,ERRNO        STORE                                    CML46480
0039E2  40A0 175A         4649            STH   R10,NOERR        SET ERR FLAG                             CML46490
0039E6  41E0 39F0         4650            BAL   RET,LPBNG        ERROR 18 RESULT LPB INSTR INCORRECT      CML46500
0039EA  48F0 88BA =0042A8 4651  LCK2      LH    LINK,LINKSAV     RESTORE LINK                             CML46510
0039EE  030F              4652            BR    LINK             RETURN TO CALL                           CML46520
                          4653  *                                                                          CML46530
                          4654  *                                                                          CML46540
        0000 39F0         4655  LPBNG     EQU   *                                                        CML46550
0039F0  2408              4656            LIS   R0,8             LOAD NO OF DIGITS                        CML46560
0039F2  0812              4657            LR    R1,R2            LOAD DIGITS TO CONVERT                   CML46570
0039F4  C820 34EA         4658            LHI   R2,ASCLPB1       LOAD DEST ADR (CONVERTED)                CML46580
0039F8  41F0 11FA         4659            BAL   LINK,HEXASC      CONVERT                                  CML46590
0039FC  2408              4660            LIS   R0,8             LOAD NO OF DIGITS                        CML46600
0039FE  0813              4661            LR    R1,R3            LOAD DIGITS TO CONVERT                   CML46610
003A00  C820 34F4         4662            LHI   R2,ASCLPB2       LOAD DEST ADR (CONVERTED)                CML46620
003A04  41F0 11FA         4663            BAL   LINK,HEXASC      CONVERT                                  CML46630
003A08  2408              4664            LIS   R0,8             LOAD NO OF DIGITS                        CML46640
003A0A  0815              4665            LR    R1,R5            LOAD DIGITS TO CONVERT                   CML46650
003A0C  C820 3508         4666            LHI   R2,EXPLPB1       LOAD DEST ADR (CONVERTED)                CML46660
003A10  41F0 11FA         4667            BAL   LINK,HEXASC      CONVERT                                  CML46670
003A14  2408              4668            LIS   R0,8             LOAD NO OF DIGITS                        CML46680
003A16  0816              4669            LR    R1,R6            LOAD DIGITS TO CONVERT                   CML46690
003A18  C820 3512         4670            LHI   R2,EXPLPB2       LOAD DEST ADR (CONVERTED)                CML46700
003A1C  41F0 11FA         4671            BAL   LINK,HEXASC      CONVERT                                  CML46710
003A20  2406              4672            LIS   R0,6             LOAD NO OF DIGITS                        CML46720
003A22  5810 887E =0042A4 4673            L     R1,INSTADR       LOAD INSTRUCTION ADR                     CML46730
003A26  C820 4298         4674            LHI   R2,ASCIADR       LOAD CONVERTED DEST ADR                  CML46740
003A2A  41F0 11FA         4675            BAL   LINK,HEXASC      CONVERT                                  CML46750
003A2E  C850 179A         4676            LHI   R5,ERRMSG        LOAD ERROR                               CML46760
003A32  41F0 1222         4677            BAL   LINK,PRINT       PRINT ERROR NO                           CML46770
003A36  C850 4284         4678            LHI   R5,INSTMSG       LOAD INST MSG ADR                        CML46780
003A3A  41F0 1222         4679            BAL   LINK,PRINT       PRINT MSG                                CML46790
003A3E  C850 34FE         4680            LHI   R5,LPBEXP        LOAD EXP REG CONTENTS                    CML46800
003A42  41F0 1222         4681            BAL   LINK,PRINT       PRINT EXPECTED RESULT                    CML46810
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003A46   C850 34E0            4682           LHI   R5,LPBACT          LOAD ACT REG CONTENTS                    CML46820
003A4A   41F0 1222            4683           BAL   LINK,PRINT          PRINT ACTUAL RESULT                      CML46830
003A4E   030E                 4684           BR    RET                 RETURN TO CALL                           CML46840
                              4685  *                                                                           CML46850
                              4686  *                                                                           CML46860
                              4687  ************************************************************************   CML46870
                              4688  *                                                                      *   CML46880
                              4689  *                              STBPCHK                                 *   CML46890
                              4690  *                                                                      *   CML46900
                              4691  *   THIS ROUTINE CHECKS THE RESULT OF THE STBP INSTRUCTION BY A         *   CML46910
                              4692  *   COMPARISON OF THE DESTINATION STRING IN MEMORY WITH THE STRING      *   CML46920
                              4693  *   EXPECTED. ALL 31 DIGITS AND THE CORRECT SIGN ARE CHECKED. IF       *   CML46930
                              4694  *   THE RESULTS DO NOT MATCH, STBPNG WILL PRINT THE EXPECTED STRING     *   CML46940
                              4695  *   AND THE ACTUAL STRING GENERATED.                                    *   CML46950
                              4696  *                                                                      *   CML46960
                              4697  ************************************************************************   CML46970
                              4698  *                                                                           CML46980
                              4699  *                                                                           CML46990
         0000 3A50            4700  STBPCHK  EQU   *                                                          CML47000
                              4701  *                                                                           CML47010
003A50   2490                 4702           LIS   R9,0                 CLEAR INDEX INTO STRING                  CML47020
003A52   5875 4900 0000       4703  SCHK1    L     R7,0(R5,R9)          LOAD WORD FROM EXP STRING                CML47030
003A58   5886 4900 0000       4704           L     R8,0(R6,R9)          LOAD WORD FROM ACT RESULT STRING         CML47040
003A5E   0578                 4705           CLR   R7,R8                COMPARE EXP TO ACT STRING SEGMENT        CML47050
003A60   4230 3A70            4706           BNE   SCHK2                NOT EQUAL, GO TO ERROR                   CML47060
003A64   2694                 4707           AIS   R9,4                 INCREMENT INTO STRING                    CML47070
003A66   C590 0010            4708           CLHI  R9,16                CHECK IF DONE ALL 31 + SIGN              CML47080
003A6A   4280 3A52            4709           BL    SCHK1                LOOP TIL DONE                            CML47090
003A6E   030F                 4710           BR    LINK                 RETURN TO TEST                           CML47100
003A70   C8A0 3233            4711  SCHK2    LHI   R10,C'23'            ERROR 23 STRING COMPARE FAILURE          CML47110
003A74   40A0 17A2            4712           STH   R10,ERRNO            STORE                                    CML47120
003A78   40A0 175A            4713           STH   R10,NOERR            SET ERR FLAG                             CML47130
003A7C   41E0 3A82            4714           BAL   RET,STBPNG           GO PRINT ERROR AND STRINGS               CML47140
003A80   030F                 4715           BR    LINK                 RETURN                                   CML47150
                              4716  *                                                                           CML47160
                              4717  *                                                                           CML47170
         0000 3A82            4718  STBPNG   EQU   *                                                          CML47180
003A82   40F0 8822 =0042A8    4719           STH   LINK,LINKSAV         SAVE LINK ADR                            CML47190
003A86   24A0                 4720           LIS   R10,0                CLEAR INDEX                              CML47200
003A88   24B0                 4721           LIS   R11,0                CLEAR DEST INDEX                         CML47210
003A8A   2408                 4722  SNG1     LIS   R0,8                 LOAD NO OF DIGITS                        CML47220
003A8C   5815 4A00 0000       4723           L     R1,0(R5,R10)         LOAD DIGITS TO CONVERT                   CML47230
003A92   C82B 3562            4724           LHI   R2,ASCIWD1(R11)      LOAD DEST ADR (CONVERTED)                CML47240
003A96   41F0 11FA            4725           BAL   LINK,HEXASC          CONVERT WORD EXPECTED                    CML47250
003A9A   25A4                 4726           AIS   R10,4                INCREMENT FOR NEXT WORD                  CML47260
003A9C   26B8                 4727           AIS   R11,8                INCR FOR NEXT DEST                       CML47270
003A9E   C5A0 0010            4728           CLHI  R10,16               CHECK IF ALL CONVERTED                   CML47280
003AA2   4280 3A8A            4729           BL    SNG1                 LOOP TIL ALL DONE                        CML47290
003AA6   24A0                 4730           LIS   R10,0                CLEAR INDEX                              CML47300
003AA8   24B0                 4731           LIS   R11,0                CLEAR DEST INDEX                         CML47310
003AAA   2408                 4732  SNG2     LIS   R0,8                 LOAD NO OF DIGITS                        CML47320
003AAC   5816 4A00 000C       4733           L     R1,0(R6,R10)         LOAD DIGITS TO CONVERT                   CML47330
003AB2   C82B 3536            4734           LHI   R2,ASCIWD2(R11)      LOAD DEST ADR (CONVERTED)                CML47340
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003AB6  41F0 11FA            4735          BAL   LINK,HEXASC         CONVERT                          CML47350
003ABA  26A4                 4736          AIS   R10,4               INCR INTO STRING                 CML47360
003ABC  26B8                 4737          AIS   R11,8               INCR DEST                        CML47370
003ABE  C5A0 0010            4738          CLHI  R10,16              CHECK IF DONE                    CML47380
003AC2  4280 3AAA            4739          BL    SNG2                LOOP TIL DONE                    CML47390
003AC6  2406                 4740          LIS   R0,6                LOAD NO OF DIGITS                CML47400
003AC8  5810 87D8 =0042A4    4741          L     R1,INSTADR          LOAD INSTRUCTION ADR             CML47410
003ACC  C820 429B            4742          LHI   R2,ASCIADR          LOAD CONVERTED DEST ADR          CML47420
003AD0  41F0 11FA            4743          BAL   LINK,HEXASC         CONVERT                          CML47430
003AD4  C850 179A            4744          LHI   R5,ERRMSG           LOAD ERROR                       CML47440
003AD8  41F0 1222            4745          BAL   LINK,PRINT          PRINT ERROR NO                   CML47450
003ADC  C850 4284            4746          LHI   R5,INSTMSG          LOAD INST MSG ADR                CML47460
003AE0  41F0 1222            4747          BAL   LINK,PRINT          PRINT MSG                        CML47470
003AE4  C850 3558            4748          LHI   R5,STBPEXP          LOAD MSG ADR                     CML47480
003AE8  41F0 1222            4749          BAL   LINK,PRINT          PRINT EXP STRING                 CML47490
003AEC  C850 352C            4750          LHI   R5,STBPACT          LOAD MSG ADR                     CML47500
003AF0  41F0 1222            4751          BAL   LINK,PRINT          PRINT ACT STRING                 CML47510
003AF4  48F0 87B0 =0042A8    4752          LH    LINK,LINKSAV        RESTORE LINK ADR                 CML47520
003AF8  030E                 4753          BR    RET                 RETURN TO CALL                   CML47530
                             4754  *                                                                    CML47540
                             4755  *                                                                    CML47550
                             4756  ************************************************************************CML47560
                             4757  *                                                                    *CML47570
                             4758  *                              PKCHK                                 *CML47580
                             4759  *                                                                    *CML47590
                             4760  *   THIS ROUTINE CHECKS THE RESULT OF THE PMV INSTRUCTION. IT DOES    *CML47600
                             4761  *   THIS BY FIRST COMPARING THE EXPECTED SIGN TO THE GENERATED SIGN   *CML47610
                             4762  *   AND THEN COMPARING THE INSTRUCTION GENERATED PACKED DIGITS TO     *CML47620
                             4763  *   DIGITS GENERATED IN THIS ROUTINE FROM THE UNPACKED SOURCE.        *CML47630
                             4764  *   IF LEADING ZERO FILL IS REQUIRED, THE FILL CHARACTER WILL BE      *CML47640
                             4765  *   CHECKED ALSO AS TO CHARACTER GENERATED AND CORRECT NUMBER         *CML47650
                             4766  *   OF LEADING ZEROES. ANY ERROR IN SIGN, DIGITS, OR LEAD FILL        *CML47660
                             4767  *   WILL BE PRINTED BY SGNERR, DIGERR, OR LZERR RESPECTIVELY.         *CML47670
                             4768  *                                                                    *CML47680
                             4769  ************************************************************************CML47690
                             4770  *                                                                     CML47700
                             4771  *                                                                     CML47710
003AFA  40F0 87AA =0042A8    4772  PKCHK   STH   LINK,LINKSAV        SAVE LINKING ADDRESS             CML47720
003AFE  C840 000C            4773          LHI   R4,X'0C'            LOAD + SIGN VALUE                CML47730
003B02  4300 3B1C            4774          B     PKCHK3              GO TO COMPARE                    CML47740
003B06  40F0 879E =0042A8    4775  PKCHK1  STH   LINK,LINKSAV        SAVE LINKING ADDRESS             CML47750
003B0A  C840 000D            4776          LHI   R4,X'0D'            LOAD - SIGN VALUE                CML47760
003B0E  4300 3B1C            4777          B     PKCHK3              GO TO COMPARE                    CML47770
003B12  0853                 4778  PKCHK2  LR    R5,R3               LOAD SRC LENGTH                  CML47780
003B14  D345 4900 3110       4779          LB    R4,UPKSRC(R5,R9)    LOAD SIGN BYTE                   CML47790
003B1A  9044                 4780          SRHLS R4,4                SHIFT TO GET SIGN DIGIT          CML47800
003B1C  0812                 4781  PKCHK3  LR    R1,R2               LOAD DEST LENGTH                 CML47810
003B1E  D361 399A            4782          LB    R6,PKDEST(R1)       LOAD LAST BYTE DEST              CML47820
003B22  C460 000F            4783          NHI   R6,X'0F'            AND TO GET SIGN                  CML47830
003B26  0546                 4784          CLR   R4,R6               COMPARE SIGNS                    CML47840
003B28  4330 3B3C            4785          BE    PKCHK4              EQUAL GO ON                      CML47850
003B2C  C8A0 3534            4786          LHI   R10,C'54'           LOAD ERROR NO                    CML47860
003B30  40A0 17A2            4787          STH   R10,ERRNO           STORE                            CML47870
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003B34   40A0 175A          4788           STH   R10,NOERR          SET ERR FLAG                                  CML47880
003B38   41E0 3D32          4789           BAL   RET,SGNERR         ERROR 54 SIGN ERROR                           CML47890
                            4790   *                                                                             CML47900
                            4791   PKCHK4  LR    R5,R3              LOAD SRC LENGTH                               CML47910
003B3C   0853              4792   PK1     LB    R4,UPKSRC(R5,R9)   LOAD LAST BYTE SRC                          CML47920
003B3E   D345 4900 3110     4793           NHI   R4,X'0F'           AND TO GET LAST DIGIT                         CML47930
003B44   C440 000F          4794           LR    R1,R2              LOAD DEST LENGTH                              CML47940
003B48   0812              4795           LB    R6,PKDEST(R1)      LOAD LAST BYTE DEST                           CML47950
003B4A   D361 399A          4796           SRHLS R6,4               SHIFT TO GET LAST DIGIT                       CML47960
003B4E   9064              4797           CLR   R4,R6              COMPARE LAST DIGITS                           CML47970
003B50   0546              4798           BE    PK2                EQUAL GO ON                                   CML47980
003B52   4330 3B66          4799           LHI   R10,C'55'          LOAD ERROR NO                                 CML47990
003B56   C8A0 3535          4800           STH   R10,ERRNO          STORE                                         CML48000
003B5A   40A0 17A2          4801           STH   R10,NOERR          SET ERR FLAG                                  CML48010
003B5E   40A0 175A          4802           BAL   RET,DIGERR         ERROR 55  DIGIT ERROR                         CML48020
003B62   41E0 3DA0          4803   *                                                                             CML48030
                            4804   PK2     CLHI  R5,0               CHECK IF SRC EXHAUSTED                        CML48040
003B66   C550 0000          4805           BE    ZEROCK             GO TO CHECK DEST FOR LEAD ZERO                CML48050
003B6A   4330 3BD6          4806           CLHI  R1,0               CHECK IF DEST EXHAUSTED                       CML48060
003B6E   C510 0000          4807           BE    ZCK3               RESTORE LINK, RETURN                          CML48070
003B72   4330 3C0C          4808           SIS   R5,1               DECREMENT COUNT                               CML48080
003B76   2751              4809           SIS   R1,1               DECREMENT COUNT                               CML48090
003B78   2711              4810           LB    R4,UPKSRC(R5,R9)   LOAD SRC DIGIT                               CML48100
003B7A   D345 4900 3110     4811           NHI   R4,X'0F'           AND TO GET RIGHT DIGIT, DROP ZONE             CML48110
003B80   C440 000F          4812           LB    R6,PKDEST(R1)      LOAD DEST DIGIT                               CML48120
003B84   D361 399A          4813           NHI   R6,X'0F'           AND TO GET RIGHT DIGIT                        CML48130
003B88   C460 000F          4814           CLR   R4,R6              COMPARE DIGITS                                CML48140
003B8C   0546              4815           BE    PK3                EQUAL GO ON                                   CML48150
003B8E   4330 3BA2          4816           LHI   R10,C'55'          LOAD ERROR NO                                 CML48160
003B92   C8A0 3535          4817           STH   R10,ERRNO          STORE                                         CML48170
003B96   40A0 17A2          4818           STH   R10,NOERR          SET ERR FLAG                                  CML48180
003B9A   40A0 175A          4819           BAL   RET,DIGERR         ERROR 55  DIGIT ERROR                         CML48190
003B9E   41E0 3DA0          4820   *                                                                             CML48200
                            4821   PK3     CLHI  R5,0               CHECK IF SRC EXHAUSTED                        CML48210
003BA2   C550 0000          4822           BE    ZEROCK             GO TO CHECK FOR LEAD ZERO                     CML48220
003BA6   4330 3BD6          4823           SIS   R5,1               DECREMENT SRC COUNT                           CML48230
003BAA   2751              4824           LB    R4,UPKSRC(R5,R9)   LOAD NEXT SRC DIGIT                         CML48240
003BAC   D345 4900 3110     4825           NHI   R4,X'0F'           AND TO GET DIGIT                              CML48250
003BB2   C440 000F          4826           LB    R6,PKDEST(R1)      LOAD DEST DIGIT AGAIN                         CML48260
003BB6   D361 399A          4827           SRLS  R6,4               SHIFT TO GET LEFT DIGIT, DROP ZONE            CML48270
003BBA   1064              4828           CLR   R4,R6              COMPARE DIGITS                                CML48280
003BBC   0546              4829           BE    PK4                EQUAL GO ON                                   CML48290
003BBE   4330 3BD2          4830           LHI   R10,C'55'          LOAD ERROR NO                                 CML48300
003BC2   C8A0 3535          4831           STH   R10,ERRNO          STORE                                         CML48310
003BC6   40A0 17A2          4832           STH   R10,NOERR          SET ERR FLAG                                  CML48320
003BCA   40A0 175A          4833           BAL   RET,DIGERR         ERROR 55  DIGIT ERROR                         CML48330
003BCE   41E0 3DA0          4834   *                                                                             CML48340
                            4835   PK4     B     PK2                                                           CML48350
003BD2   4300 3B66          4836   *                                                                             CML48360
                            4837   *                                                                             CML48370
                            4838   ZEROCK  LR    R6,R3              LOAD SRC LENGTH                               CML48380
003BD6   0863              4839           SRHLS R6,1               DIVIDE BY 2                                   CML48390
003BD8   9061              4840           AIS   R6,1               ADD 1 TO GET DEST MINIMUM LENGTH              CML48400
003BDA   2661
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003BDC   0842              4841          LR    R4,R2             LOAD DEST LENGTH                          CML48410
003BDE   2541              4842          AIS   R4,1              ADD 1 TO OBTAIN FINAL LENGTH              CML48420
003BE0   0564              4843          CLR   R6,R4             CHECK ACTUAL DEST LEN TO MIN RFQ'D        CML48430
003BE2   4330 3C0C         4844          BE    ZCK3              DONE ?                                    CML48440
003BE6   D371 399A         4845  ZCK1    LB    R7,PKDEST(R1)     LOAD FILL DIGIT                           CML48450
003BEA   C570 0000         4846          CLHI  R7,0              CHECK LEADING ZERO FILL                   CML48460
003BEE   4330 3C02         4847          BZ    ZCK2              ZERO FIIL OK                              CML48470
003BF2   C8A0 3536         4848          LHI   R10,C'56'         LOAD ERROR NO                             CML48480
003BF6   40A0 17A2         4849          STH   R10,ERRNO         STORE                                     CML48490
003BFA   40A0 175A         4850          STH   R10,NOERR         SET ERR FLAG                              CML48500
003BFE   41E0 3F62         4851          BAL   RET,LZERR         ERROR 56 LEAD ZERO FIIL NO GOOD           CML48510
                           4852  *                                                                         CML48520
003C02   2711              4853  ZCK2    SIS   R1,1              DECREMENT                                 CML48530
003C04   C510 0000         4854          CLHI  R1,X'0'           CHECK IF DEST EXHAUSTED                   CML48540
003C08   4230 3BE6         4855          BNE   ZCK1              NOT DONE W DEST, LOOP                     CML48550
003C0C   48F0 9698 =0042A8 4856  ZCK3    LH    LINK,LINKSAV      RESTORE LINK ADR                          CML48560
003C10   030F              4857          BR    LINK              RETURN TO TEST                            CML48570
                           4858  *                                                                         CML48580
                           4859  *                                                                         CML48590
                           4860  ************************************************************************  CML48600
                           4861  *                                                                      *  CML48610
                           4862  *                              UPKCK                                   *  CML48620
                           4863  *                                                                      *  CML48630
                           4864  *   THIS ROUTINE CHECKS THE RESULT OF THE UMV INSTRUCTION. IT DOES      *  CML48640
                           4865  *   THIS BY FIRST COMPARING THE EXPECTED SIGN TO THE GENERATED SIGN     *  CML48650
                           4866  *   AND THEN COMPARING THE INSTRUCTION GENERATED ZONED DIGITS TO        *  CML48660
                           4867  *   ZONED DIGITS GENERATED IN THIS ROUTINE FROM THE PACKED SOURCE.      *  CML48670
                           4868  *   IF LEADING ZERO (ZONED X'30') IS REQUIRED, THE FILL CHARACTER       *  CML48680
                           4869  *   WILL BE CHECKED ALSO AS TO CHARACTER GENERATED AND CORRECT          *  CML48690
                           4870  *   NUMBER OF LEADING ZEROES (X'30'). ANY ERROR IN SIGN, ZONED          *  CML48700
                           4871  *   DIGIT, OR FILL WILL BE PRINTED BY SGNERR, DIGERR, OR LD30ERR        *  CML48710
                           4872  *   RESPECTIVELY.                                                      *  CML48720
                           4873  *                                                                      *  CML48730
                           4874  ************************************************************************  CML48740
                           4875  *                                                                         CML48750
                           4876  *                                                                         CML48760
0000 3C12                  4877  UPKCK   EQU   *                                                           CML48770
003C12   40F0 8692 =0042A8 4878          STH   LINK,LINKSAV      SAVE LINKING ADDRESS                      CML48780
003C16   C840 000C         4879          LHI   R4,X'0C'          LOAD + SIGN VALUE                         CML48790
003C1A   4300 3C36         4880          B     UPKCK3            GO TO COMPARE                             CML48800
003C1E   40F0 8686 =0042A8 4881  UPKCK1  STH   LINK,LINKSAV      SAVE LINKING ADDRESS                      CML48810
003C22   C840 000D         4882          LHI   R4,X'0D'          LOAD - SIGN VALUE                         CML48820
003C26   4300 3C36         4883          B     UPKCK3            GO TO COMPARE                             CML48830
003C2A   0853              4884  UPKCK2  LR    R5,R3             LOAD SRC LENGTH                           CML48840
003C2C   D345 4900 33A0    4885          LB    R4,PKSRC(R5,R9)   LOAD LAST BYTE SRC                        CML48850
003C32   C440 000F         4886          NHI   R4,X'0F'          AND TO OBTAIN SIGN                        CML48860
003C36   0812              4887  UPKCK3  LR    R1,R2             LOAD DEST LENGTH                          CML48870
003C38   D361 39AA         4888          LB    R6,UPKDEST(R1)    LOAD LAST BYTE DEST                       CML48880
003C3C   9064              4889          SRHLS R6,4              SHIFT TO OBTAIN SIGN                      CML48890
003C3E   0546              4890          CLR   R4,R6             COMPARE SIGNS                             CML48900
003C40   4330 3C54         4891          BE    UNPK              SIGNS OK GO ON                            CML48910
003C44   C8A0 3634         4892          LHI   R10,C'64'         LOAD ERROR NO                             CML48920
003C48   40A0 17A2         4893          STH   R10,ERRNO         STORE                                     CML48930
```

SUBROUTINES

```
003C4C   40A0 175A               STH   R10,NOERR          SET ERR FLAG                    CML48940
003C50   41E0 3D32               BAL   RET,SGNERR         ERROR 64 SIGN ERROR             CML48950
                          *                                                               CML48960
003C54   0853             UNPK   LR    R5,R3              LOAD SRC LENGTH                 CML48970
003C56   D345 4900 33A0   UNPK1  LB    R4,PKSRC(R5,R9)    LOAD LAST BYTE SRC              CML48980
003C5C   9044                    SRHLS R4,4               SHIFT TO GET LAST DIGIT SRC     CML48990
003C5E   C640 0030               OHI   R4,X'30'           OR IN STD ZONE DIGIT            CML49000
003C62   0812                    LR    R1,R2              LOAD DEST LENGTH                CML49010
003C64   D361 39AA               LB    R6,UPKDEST(R1)     LOAD LAST BYTE DEST             CML49020
003C68   C460 000F               NHI   R6,X'0F'           AND TO OBTAIN LAST DIGIT        CML49030
003C6C   C660 0030               OHI   R6,X'30'           OR IN STD ZONE DIGIT            CML49040
003C70   0546                    CLR   R4,R6              COMPARE LAST DIGITS             CML49050
003C72   4330 3C86               BE    UNPK2              EQUAL GO ON                     CML49060
003C76   C8A0 3635               LHI   R10,C'65'          LOAD ERROR NO                   CML49070
003C7A   40A0 17A2               STH   R10,ERRNO          STORE                           CML49080
003C7E   40A0 175A               STH   R10,NOERR          SET ERR FLAG                    CML49090
003C82   41E0 3DA0               BAL   RET,DIGERR         ERROR 65 DIGIT ERROR            CML49100
                          *                                                               CML49110
003C86   C550 0000        UNPK2  CLHI  R5,0               CHECK IF SRC EXHAUSTED          CML49120
003C8A   4330 3CF6               BE    LD30               GO CHECK LEAD "30" FILL         CML49130
003C8E   C510 0000               CLHI  R1,0               CHECK IF DEST EXHAUSTED         CML49140
003C92   4330 3D2C               BE    LD30.03            RESTORE LINK, RETURN            CML49150
003C96   2751                    SIS   R5,1               DECREMENT SRC LENGTH            CML49160
003C98   2711                    SIS   R1,1               DECREMENT DEST LENGTH           CML49170
003C9A   D345 4900 33A0          LB    R4,PKSRC(R5,R9)    LOAD SRC #BYTE                  CML49180
003CA0   C440 000F               NHI   R4,X'F'            AND TO GET RIGHT DIGIT SRC      CML49190
003CA4   C640 0030               OHI   R4,X'30'           OR IN STD ZONE DIGIT            CML49200
003CA8   D361 39AA               LB    R6,UPKDEST(R1)     LOAD NEXT DEST BYTE WITH ZONE   CML49210
003CAC   0546                    CLR   R4,R6              COMPARE DIGITS AND ZONES        CML49220
003CAE   4330 3CC2               BE    UNPK3              EQUAL GO ON                     CML49230
003CB2   C8A0 3635               LHI   R10,C'65'          LOAD ERROR NO                   CML49240
003CB6   40A0 17A2               STH   R10,ERRNO          STORE                           CML49250
003CBA   40A0 175A               STH   R10,NOERR          SET ERR FLAG                    CML49260
003CBE   41E0 3DA0               BAL   RET,DIGERR         ERROR 65 DIGIT ERROR            CML49270
                          *                                                               CML49280
003CC2   C510 0000        UNPK3  CLHI  R1,0               CHECK IF DEST EXHAUSTED         CML49290
003CC6   4330 3D2C               BE    LD30.03            RESTORE LINK, RETURN            CML49300
003CCA   2711                    SIS   R1,1               DECREMENT DEST LENGTH           CML49310
003CCC   D345 4900 33A0          LB    R4,PKSRC(R5,R9)    LOAD SRC BYTE                   CML49320
003CD2   9044                    SRHLS R4,4               SHIFT TO OBTAIN LEFT DIGIT      CML49330
003CD4   C640 0030               OHI   R4,X'30'           OR IN STD ZONE DIGIT            CML49340
003CD8   D361 39AA               LB    R6,UPKDEST(R1)     LOAD NEXT DEST BYTE             CML49350
003CDC   0546                    CLR   R4,R6              COMPARE DIGITS AND ZONES        CML49360
003CDE   4330 3CF2               BE    UNPK4              EQUAL GO ON                     CML49370
003CE2   C8A0 3635               LHI   R10,C'65'          LOAD ERROR NO                   CML49380
003CE6   40A0 17A2               STH   R10,ERRNO          STORE                           CML49390
003CEA   40A0 175A               STH   R10,NOERR          SET ERR FLAG                    CML49400
003CEE   41E0 3DA0               BAL   RET,DIGERR         ERROR 65 DIGIT ERROR            CML49410
                          *                                                               CML49420
003CF2   4300 3C86        UNPK4  B     UNPK2              LOOP TIL SRC EXHAUSTED          CML49430
                          *                                                               CML49440
                          *                                                               CML49450
                          *                                                               CML49460
```

```
                                 *
003CF6   0863                    LD30     LR    R6,R3            LOAD SRC LENGTH
003CF8   1161                             SLLS  R6,1             SHIFT TO MULTIPLY BY TWO
003CFA   2661                             AIS   R6,1             ADD 1 TO GET DEST MINIMUM LENGTH
003CFC   0842                             LR    R4,R2            LOAD DEST LENGTH
003CFE   2641                             AIS   R4,1             ADD 1 TO GET DEST LENGTH
003D00   0564                             CLR   R6,R4            COMPARE ACTUAL DEST LEN TO MIN REQ'D
003D02   4330 3D2C                        BE    LD30.03          EQUAL GO ON
003D06   D371 39AA               LD30.1   LB    R7,UPKDEST(R1)   LOAD NEXT DEST BYTE
003D0A   C570 0030                        CLHI  R7,X'30'         CHECK LEADING "30" FILL CHAR
003D0E   4330 3D22                        BZ    LD30.02          LEAD ZERO CK
003D12   C8A0 3636                        LHI   R10,C'66'        LOAD ERROR NO
003D16   40A0 17A2                        STH   R10,ERRNO        STORE
003D1A   40A0 175A                        STH   R10,NOFERR       SET ERR FLAG
003D1E   41E0 3E62                        BAL   RET,LD30ERR      ERROR 66 LEAD ZERO (PAD '30') NG
                                 *
003D22   2711                    LD30.02  SIS   R1,1             DECREMENT DEST LENGTH
003D24   C510 0000                        CLHI  R1,X'0'          CHECK IF DEST EXHAUSTED
003D28   4230 3D06                        BNE   LD30.1           NOT DONE W DEST, LOOP
003D2C   48F0 8578 =0042A8       LD30.03  LH    LINK,LINKSAV     RESTORE LINK ADR
003D30   030F                             BR    LINK             DONE,RETURN TC TEST
                                 *
                                 *
                                 ***********************************************************************
                                 *                                                                     *
                                 *                                 SGNERR                              *
                                 *                                                                     *
                                 *  THIS ROUTINE PRINTS THE EXPECTED SIGN AND THE SIGN GENERATED       *
                                 *  BY THE PMV OR UMV INSTRUCTIONS.                                    *
                                 *                                                                     *
                                 ***********************************************************************
                                 *
                                 *
         0000 3D32               SGNERR   EQU   *
003D32   D000 85C2 =0042F8                STM   R0,ERRSAVE       SAVE TEST REGS
003D36   2401                             LIS   R0,1             LOAD NO OF DIGITS
003D38   0814                             LR    R1,R4            LOAD EXPECTED SIGN
003D3A   C820 3D8A                        LHI   R2,EXPSGN        LOAD CONVERTED DEST ADR
003D3E   41F0 11FA                        BAL   LINK,HEXASC      CONVERT
003D42   2401                             LIS   R0,1             LOAD NO OF DIGITS
003D44   0816                             LR    R1,R6            LOAD ACTUAL SIGN
003D46   C820 3D9C                        LHI   R2,ACTSGN        LOAD CONVERTED DEST ADR
003D4A   41F0 11FA                        BAL   LINK,HEXASC      CONVERT
003D4E   2406                             LIS   R0,6             LOAD NO OF DIGITS
003D50   5810 8550 =0042A4                L     R1,INSTADR       LOAD INSTRUCTION ADR
003D54   C820 429B                        LHI   R2,ASCIADR       LOAD CONVERTED DEST ADR
003D58   41F0 11FA                        BAL   LINK,HEXASC      CONVERT
003D5C   C850 179A                        LHI   R5,ERRMSG        LOAD ERROR
003D60   41F0 1222                        BAL   LINK,PRINT       PRINT ERROR NO
003D64   C850 4284                        LHI   R5,INSTMSG       LOAD INST MSG ADR
003D68   41F0 1222                        BAL   LINK,PRINT       PRINT MSG
003D6C   C850 3D7A                        LHI   R5,SGNMSG        LOAD SGN ERROR ADR
003D70   41F0 1222                        BAL   LINK,PRINT       PRINT SIGN ERROR MSG
```

SUBROUTINES

```
003D74   D100 8580 =0042F8    5000            LM    R0,ERRSAVE          RESTORE TEST REGS                          CML50000
003D78   030E                 5001            BR    RET                 RETURN TO CALL                             CML50010
                              5002  *                                                                                CML50020
                              5003  *                                                                                CML50030
003D7A   4558 5045 4354 4544  5004  SGNMSG    DC    C'EXPECTED SIGN = A   ACTUAL SIGN = B',X'0D00'                  CML50040
003D82   2053 4947 4E20 3D20
003D8A   4120 2020 4143 5455
003D92   414C 2053 4947 4E20
003D9A   3D20 4220
003D9E   0D00
         0000 3D8A            5005  EXPSGN    EQU   SGNMSG+16                                                      CML50050
         0000 3D9C            5006  ACTSGN    EQU   SGNMSG+34                                                      CML50060
                              5007  *                                                                              CML50070
                              5008  *                                                                              CML50080
                              5009  ********************************************************************************CML50090
                              5010  *                                                                              *CML50100
                              5011  *                              DIGERR                                          *CML50110
                              5012  *                                                                              *CML50120
                              5013  *   THIS ROUTINE PRINTS THE EXPECTED DIGIT AND THE DIGIT GENERATED              *CML50130
                              5014  *   BY THE PMV OR UMV INSTRUCTIONS.                                            *CML50140
                              5015  *                                                                              *CML50150
                              5016  ********************************************************************************CML50160
                              5017  *                                                                              CML50170
                              5018  *                                                                              CML50180
         0000 3DA0            5019  DIGERR    EQU   *                                                            CML50190
003DA0   D000 8554 =0042F8    5020            STM   R0,ERRSAVE          SAVE TEST REGS                             CML50200
003DA4   2402                 5021            LIS   R0,2                LOAD NO OF DIGITS                          CML50210
                              5022  * REG 1 CONTAINS DEST INDEX                                                      CML50220
003DA6   C820 3E04            5023            LHI   R2,DIGASC           LOAD CONVERTED DEST ADR                    CML50230
003DAA   41F0 11FA            5024            BAL   LINK,HEXASC         CONVERT                                    CML50240
003DAE   2402                 5025            LIS   R0,2                LOAD NO OF DIGITS                          CML50250
003DB0   0814                 5026            LR    R1,R4               LOAD EXP DIGIT                             CML50260
003DB2   C820 3E11            5027            LHI   R2,DIGEXP           LOAD CONVERTED DEST ADR                    CML50270
003DB6   41F0 11FA            5028            BAL   LINK,HEXASC         CONVERT                                    CML50280
003DBA   2402                 5029            LIS   R0,2                LOAD NO OF DIGITS                          CML50290
003DBC   0816                 5030            LR    R1,R6               LOAD ACT DIGIT                             CML50300
003DBE   C820 3E1D            5031            LHI   R2,DIGACT           LOAD CONVERTED DEST ADR                    CML50310
003DC2   41F0 11FA            5032            BAL   LINK,HEXASC         CONVERT                                    CML50320
003DC6   2406                 5033            LIS   R0,6                LOAD NO OF DIGITS                          CML50330
003DC8   5810 84D8 =0042A4    5034            L     R1,INSTADR          LOAD INSTRUCTION ADR                       CML50340
003DCC   C820 429B            5035            LHI   R2,ASCIADR          LOAD CONVERTED DEST ADR                    CML50350
003DD0   41F0 11FA            5036            BAL   LINK,HEXASC         CONVERT                                    CML50360
003DD4   C850 179A            5037            LHI   R5,ERRMSG           LOAD ERROR                                 CML50370
003DD8   41F0 1222            5038            BAL   LINK,PRINT          PRINT ERROR NO                             CML50380
003DDC   C850 4284            5039            LHI   R5,INSTMSG          LOAD INST MSG ADR                          CML50390
003DE0   41F0 1222            5040            BAL   LINK,PRINT          PRINT MSG                                  CML50400
003DE4   C850 3DF2            5041            LHI   R5,DIGMSG           LOAD DIGIT MSG ADR                         CML50410
003DE8   41F0 1222            5042            BAL   LINK,PRINT          PRINT DIGIT MSG                            CML50420
003DEC   D100 8508 =0042F8    5043            LM    R0,ERRSAVE          RESTORE TEST REGS                          CML50430
003DF0   030E                 5044            BR    RET                 RETURN TO CALL                             CML50440
                              5045  *                                                                              CML50450
                              5046  *                                                                              CML50460
003DF2   4445 5354 494E 4154  5047  DIGMSG    DC    C'DESTINATION DIGIT AA',X'8D0A'                                CML50470
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SUBROUTINES

```
003DFA  494F 4E20 4449 4749
003E02  5420 4141
003E06  8D0A
003E08  4558 5045 4354 4544  5048          DC    C'EXPECTED XX   ACTUAL YY',X'0D00'                          CMI50480
003E10  2058 5820 2020 4143
003E18  5455 414C 2059 5920
003E20  0D00
        0000 3E04            5049  DIGASC   EQU   DIGMSG+18                                                 CMI50490
        0000 3E11            5050  DIGEXP   EQU   DIGMSG+31                                                 CMI50500
        0000 3E1D            5051  DIGACT   EQU   DIGMSG+43                                                 CMI50510
                             5052  *                                                                        CMI50520
                             5053  *                                                                        CMI50530
                             5054  ************************************************************************  CMI50540
                             5055  *                                                                      *  CMI50550
                             5056  *                              PADERR                                  *  CMI50560
                             5057  *                                                                      *  CMI50570
                             5058  *   THIS ROUTINE PRINTS INSTRUCTION ADR ON INCORRECT PAD CHAR-          *  CMI50580
                             5059  *   ACTER DETECTED FOR CPAN, CPANP, MOVP, OR MOVEP INSTRUCTIONS.       *  CMI50590
                             5060  *                                                                      *  CMI50600
                             5061  ************************************************************************  CMI50610
                             5062  *                                                                        CMI50620
                             5063  *                                                                        CMI50630
        0000 3E22            5064  PADERR   EQU   *                  FOR CPAN / CPANP / MOVE / MOVEP       CMI50640
003E22  D000 84D2 =0042F8    5065           STM   R0,ERRSAVE         SAVE TEST REGS                        CMI50650
003E26  2406                 5066           LIS   R0,6               LOAD NO OF DIGITS                     CMI50660
003E28  5810 8478 =0042A4    5067           L     R1,INSTADR         LOAD INSTRUCTION ADR                  CMI50670
003E2C  C820 429B            5068           LHI   R2,ASCIADR         LOAD CONVERTED DEST ADR               CMI50680
003E30  41F0 11FA            5069           BAL   LINK,HEXASC        CONVERT                               CMI50690
                             5070  *                                                                        CMI50700
003E34  C850 179A            5071           LHI   R5,ERRMSG          LOAD PAD ERROR MSG ADR                CMI50710
003E38  41F0 1222            5072           BAL   LINK,PRINT         PRINT PAD ERROR                       CMI50720
003E3C  C850 4284            5073           LHI   R5,INSTMSG         LOAD INSTR ADR MASG                   CMI50730
003E40  41F0 1222            5074           BAL   LINK,PRINT         PRINT MSG                             CMI50740
003E44  C850 3E52            5075           LHI   R5,PADMSG          LOAD PAD MSG ADR                      CMI50750
003E48  41F0 1222            5076           BAL   LINK,PRINT         PRINT MSG                             CMI50760
003E4C  D100 84A8 =0042F8    5077           LM    R0,ERRSAVE         RESTORE TEST REGS                     CMI50770
003E50  030E                 5078           BR    RET                RETURN TO CALL                        CMI50780
                             5079  *                                                                        CMI50790
003E52  494E 434F 5252 4543  5080  PADMSG   DC    C'INCORRECT PAD',X'0D00'                                  CMI50800
003E5A  5420 5041 4420
003E60  0D00
                             5081  *                                                                        CMI50810
                             5082  *                                                                        CMI50820
                             5083  ************************************************************************  CMI50830
                             5084  *                                                                      *  CMI50840
                             5085  *                        LZERR  -  LD30FRR                             *  CMI50850
                             5086  *                                                                      *  CMI50860
                             5087  *   THIS ROUTINE PRINTS THE LEADING ZERO FILL CHARACTER THAT            *  CMI50870
                             5088  *   IS GENERATED BY THE PMV OR UMV INSTRUCTIONS.                       *  CMI50880
                             5089  *                                                                      *  CMI50890
                             5090  ************************************************************************  CMI50900
                             5091  *                                                                        CMI50910
                             5092  *                                                                        CMI50920
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SUBROUTINES

```
                0000 3E62              5093  LZERR    EQU   *                 FOR LEADING ZERO FILL (0 OR 30) ERROR  CML50930
                0000 3E62              5094  LD30ERR  EQU   LZERR                                                 CML50940
                                       5095  *                                                                    CML50950
003E62   D000 8492 =0042F8             5096           STM   R0,ERRSAVE        SAVE TEST REGS                      CML50960
003E66   2402                          5097           LIS   R0,2              LOAD NO OF DIGITS                   CML50970
003E68   0817                          5098           LR    R1,R7             LOAD FILL CHARACTER (EITHER 0 OR 30) CML50980
003E6A   C820 3EB7                     5099           LHI   R2,LDASC          LOAD CONVERTED DEST ADR             CML50990
003E6E   41F0 11FA                     5100           BAL   LINK,HEXASC       CONVERT                             CML51000
003F72   2406                          5101           LIS   R0,6              LOAD NO OF DIGITS                   CML51010
003E74   5810 842C =0042A4            5102           L     R1,INSTADR        LOAD INSTRUCTION ADR                CML51020
003E78   C820 429B                     5103           LHI   R2,ASCIADR        LOAD CONVERTED DEST ADR             CML51030
003E7C   41F0 11FA                     5104           BAL   LINK,HEXASC       CONVERT                             CML51040
003F80   C850 179A                     5105           LHI   R5,ERRMSG         LOAD ERROR                          CML51050
003E84   41F0 1222                     5106           BAL   LINK,PRINT        PRINT ERROR NO                      CML51060
003E88   C850 4284                     5107           LHI   R5,INSTMSG        LOAD INST MSG ADR                   CML51070
003E8C   41F0 1222                     5108           BAL   LINK,PRINT        PRINT MSG                           CML51080
003E90   C850 3E9E                     5109           LHI   R5,LDMSG          LOAD LEAD FILL ERR MSG ADR          CML51090
003E94   41F0 1222                     5110           BAL   LINK,PRINT        PRINT LEAD FILL ERROR               CML51100
003E98   D100 845C =0042F8            5111           LM    R0,ERRSAVE        RESTORE TEST REGS                   CML51110
003E9C   030E                          5112           BR    RET               RETURN TO CALL                      CML51120
                                       5113  *                                                                    CML51130
                                       5114  *                                                                    CML51140
003E9E   4C45 4144 494E 4720           5115  LDMSG    DC    C'LEADING ZERO FILL CHAR = LL',X'0D00'                CML51150
003EA6   5A45 524F 2046 494C
003EAE   4C20 4348 4152 203D
003EB6   204C 4C20
003EBA   0D00
                0000 3EB7              5116  LDASC    EQU   LDMSG+25                                             CML51160
                                       5117  *                                                                    CML51170
                                       5118  *                                                                    CML51180
                                       5119  ************************************************************************CML51190
                                       5120  *                                                                   *CML51200
                                       5121  *                              LINTNG                               *CML51210
                                       5122  *                                                                   *CML51220
                                       5123  *   THIS ROUTINE PRINTS THE INTERRUPT EXPECTED BUT NOT RECEIVED     *CML51230
                                       5124  *   MESSAGE FOR DATA FORMAT FAULT INTS AND IIP INTS.                 *CML51240
                                       5125  *                                                                   *CML51250
                                       5126  ************************************************************************CML51260
                                       5127  *                                                                    CML51270
                                       5128  *                                                                    CML51280
                0000 3EBC              5129  LINTNG   EQU   *                                                     CML51290
003EBC   D000 8438 =0042F8             5130           STM   R0,ERRSAVE        SAVE TEST REGS                      CML51300
003EC0   2406                          5131           LIS   R0,6              LOAD NO OF DIGITS                   CML51310
003EC2   5810 83DE =0042A4            5132           L     R1,INSTADR        LOAD INSTRUCTION ADR                CML51320
003EC6   C820 429B                     5133           LHI   R2,ASCIADR        LOAD CONVERTED DEST ADR             CML51330
003ECA   41F0 11FA                     5134           BAL   LINK,HEXASC       CONVERT                             CML51340
003ECE   C850 179A                     5135           LHI   R5,ERRMSG         LOAD ERROR                          CML51350
003ED2   41F0 1222                     5136           BAL   LINK,PRINT        PRINT ERROR NO                      CML51360
003ED6   C850 4284                     5137           LHI   R5,INSTMSG        LOAD INST MSG ADR                   CML51370
003EDA   41F0 1222                     5138           BAL   LINK,PRINT        PRINT MSG                           CML51380
003EDE   C850 3EEC                     5139           LHI   R5,LINTMSG        LOAD EXP INT MSG                    CML51390
003EE2   41F0 1222                     5140           BAL   LINK,PRINT        PRINT INT MSG                       CML51400
003EE6   D100 840E =0042F8             5141           LM    R0,ERRSAVE        RESTORE TEST REGS                   CML51410
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```
003EEA   030E                         BR    RET                     RETURN TO CALL                   CML51420
                                *                                                                    CML51430
                                *                                                                    CML51440
003EEC   494E 5445 5252 555C    LINTMSG  DC    C'INTERRUPT EXPECTED BUT NOT RECEIVED'                CML51450
003EF4   5420 4558 5045 4354
003EFC   4544 2042 5554 204E
003F04   4F54 2052 4543 4549
003F0C   5645 4420
003F10   0D00                         DC    X'0D00'                                                  CML51460
                                *                                                                    CML51470
                                *                                                                    CML51480
                                ******************************************************************** CML51490
                                *                                                                  * CML51500
                                *                      IIPSETNG  -  IIPRESNG                       * CML51510
                                *                                                                  * CML51520
                                *   THIS ROUTINE PRINTS THE MESSAGES FOR THE SETTING AND RESETTING * CML51530
                                *   ERRORS DETECTED FOR THE IIP BIT IN THE PSW DURING TEST 7.      * CML51540
                                *                                                                  * CML51550
                                ******************************************************************** CML51560
                                *                                                                    CML51570
                                *                                                                    CML51580
003F12   C860 3F44              IIPSETNG LHI   R6,SETMSG              LOAD 2ND MSG ADR - SET IIP NG   CML51590
003F16   4300 3F1E                       B     IIPNG                  GO COMMON                       CML51600
003F1A   C860 3F72              IIPPESNG LHI   R6,RESETMSG            LOAD 2ND MSG ADR - RESET IIP NG CML51610
003F1E   2406                   IIPNG    LIS   R0,6                   LOAD NO OF DIGITS               CML51620
003F20   5810 8380 =0042A4               L     R1,INSTADR             LOAD INSTRUCTION ADR            CML51630
003F24   C820 429B                       LHI   R2,ASCIADR             LOAD CONVERTED DEST ADR         CML51640
003F28   41F0 11FA                       BAL   LINK,HEXASC            CONVERT                         CML51650
003F2C   C850 179A                       LHI   R5,ERRMSG              LOAD ERROR                      CML51660
003F30   41F0 1222                       BAL   LINK,PRINT             PRINT ERROR NO                  CML51670
003F34   C850 4284                       LHI   R5,INSTMSG             LOAD INST MSG ADR               CML51680
003F38   41F0 1222                       BAL   LINK,PRINT             PRINT MSG                       CML51690
003F3C   0856                            LR    R5,R6                  COPY 2ND MSG ADR                CML51700
003F3E   41F0 1222                       BAL   LINK,PRINT             PRINT IIP MSG                   CML51710
003F42   030E                            BR    RET                    RETURN TO CALL                  CML51720
                                *                                                                    CML51730
                                *                                                                    CML51740
003F44   494E 5354 5255 4354    SETMSG   DC    C'INSTRUCTION INTERRUPTED BUT IIP BIT NOT SET'        CML51750
003F4C   494F 4E20 494E 5445
003F54   5252 5550 5445 4420
003F5C   4255 5420 4949 5020
003F64   4249 5420 4E4F 5420
003F6C   5345 5420
003F70   0D00                            DC    X'0D00'                                               CML51760
                                *                                                                    CML51770
003F72   4949 5020 4249 5420    RESETMSG DC    C'IIP BIT NOT RESET IN CURRENT PSW'                   CML51780
003F7A   4E4F 5420 5245 5345
003F82   5420 494E 2043 5552
003F8A   5245 4E54 2050 5357
003F92   0D00                            DC    X'0D00'                                               CML51790
                                *                                                                    CML51800
                                *                                                                    CML51810
                                ******************************************************************** CML51820
```

```
                                 *                                                                  *    CML51830
                                 *                        CCNG  -  RCNG                             *    CML51840
                                 *                                                                  *    CML51850
                                 *   THESE TWO ROUTINES PRINT THE CONDITION CODE OR THE REASON CODE *    CML51860
                                 *   FOR ALL CC ERRORS OR IN THE CASE OF THE REASON CODE ON DATA    *    CML51870
                                 *   FORMAT FAULT INTERRUPTS.                                       *    CML51880
                                 *                                                                  *    CML51890
                                 ********************************************************************    CML51900
                                 *                                                                       CML51910
                                 *                                                                       CML51920
        0000 3F94                CCNG     EQU   *                                                        CML51930
003F94  D000 8360 =0042F8                 STM   R0,ERRSAVE             SAVE TEST REGS                    CML51940
003F98  08C2                              LR    R12,R2                 SAVE R2                           CML51950
003F9A  C470 000F                         NHI   R7,X'F'                ISOLATE IT                        CML51960
003F9E  C670 0030                         OHI   R7,X'30'               CONVERT TO ASCII                  CML51970
003FA2  C570 003A                         CLHI  R7,X'3A'               CHECK IF LESS THAN 'A'            CML51980
003FA6  2182                              BLS   STCC                   YES, SKIP                         CML51990
003FA8  2677                              AIS   R7,7                   ADJUST FOR 'A' TO 'F'             CML52000
003FAA  D270 8085 =004C33        STCC     STB   R7,CCMSG+17            STORE TO MSG                      CML52010
003FAE  2406                              LIS   R0,6                   LOAD NO OF DIGITS                 CML52020
003FB0  5810 82F0 =0042A4                 L     R1,INSTADR             LOAD INSTRUCTION ADR              CML52030
003FB4  C820 429B                         LHI   R2,ASCIADR             LOAD CONVERTED DEST ADR           CML52040
003FB8  41F0 11FA                         BAL   LINK,HEXASC            CONVERT                           CML52050
003FBC  C850 179A                         LHI   R5,ERRMSG              LOAD ERROR                        CML52060
003FC0  41F0 1222                         BAL   LINK,PRINT             PRINT ERROR NO                    CML52070
003FC4  C850 4284                         LHI   R5,INSTMSG             LOAD INST MSG ADR                 CML52080
003FC8  41F0 1222                         BAL   LINK,PRINT             PRINT MSG                         CML52090
003FCC  C850 4022                         LHI   R5,CCMSG               LOAD CC ERROR MSG ADR             CML52100
003FD0  41F0 1222                         BAL   LINK,PRINT             PRINT CC ERROR                    CML52110
003FD4  D100 8320 =0042F8                 LM    R0,ERRSAVE             RESTORE TEST REGS                 CML52120
003FD8  030E                              BR    RET                    RETURN TO CALL                    CML52130
                                 *                                                                       CML52140
                                 *                                                                       CML52150
                                 *--------------------------------------------------------------         CML52160
                                 *                                                                       CML52170
                                 *                                                                       CML52180
        0000 3FDA                RCODE    EQU   *                                                        CML52190
003FDA  D3D0 1749                         LB    R13,FCODE              LOAD FAULT REASON CODE            CML52200
                                 *                                                                       CML52210
        0000 3FDE                RCNG     EQU   *                                                        CML52220
003FDE  D000 8316 =0042F8                 STM   R0,ERRSAVE             SAVE TEST REGS                    CML52230
003FE2  C4D0 000F                         NHI   R13,X'F'               ISOLATE REASON CODE               CML52240
003FE6  C6D0 0030                         OHI   R13,X'30'              CONVERT TO ASCII                  CML52250
003FEA  C5D0 003A                         CLHI  R13,X'3A'              CHECK IF LESS THAN 'A'            CML52260
003FEE  2182                              BLS   STRC                   YES, SKIP                         CML52270
003FF0  26D7                              AIS   R13,7                  ADJUST FOR 'A' TO 'F'             CML52280
003FF2  D2D0 804E =004044        STRC     STB   R13,RCMSG+14           STORE TO MSG                      CML52290
003FF6  2406                              LIS   R0,6                   LOAD NO OF DIGITS                 CML52300
003FF8  5810 82A8 =0042A4                 L     R1,INSTADR             LOAD INSTRUCTION ADR              CML52310
003FFC  C820 429B                         LHI   R2,ASCIADR             LOAD CONVERTED DEST ADR           CML52320
004000  41F0 11FA                         BAL   LINK,HEXASC            CONVERT                           CML52330
004004  C850 179A                         LHI   R5,ERRMSG              LOAD ERROR                        CML52340
004008  41F0 1222                         BAL   LINK,PRINT             PRINT ERROR NO                    CML52350
```

SUBROUTINES

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00400C   C850 4284            5236           LHI   R5,INSTMSG          LOAD INST MSG ADR                    CML52360
004010   41F0 1222            5237           BAL   LINK,PRINT          PRINT MSG                            CML52370
004014   C850 4036            5238           LHI   R5,RCMSG            LOAD RC ERROR MSG ADR                CML52380
004018   41F0 1222            5239           BAL   LINK,PRINT          PRINT RC ERROR                       CML52390
00401C   D100 82D8 =0042F8    5240           LM    R0,ERRSAVE          RESTORE TEST REGS                    CML52400
004020   030E                 5241           BR    RET                 RETURN TO CALL                       CML52410
                              5242  *                                                                       CML52420
                              5243  *                                                                       CML52430
004022   434F 4E44 4954 494F  5244  CCMSG    DC    C'CONDITION CODE =  ',X'0D00'                            CML52440
00402A   4E20 434F 4445 203D
004032   2020
004034   0D00
004036   5245 4153 4F4F 2043  5245  RCMSG    DC    C'REASON CODE =  ',X'0D00'                               CML52450
00403E   4F44 4520 3D20 2020
004046   0D00
                              5246  *                                                                       CML52460
                              5247  *                                                                       CML52470
                              5248  ************************************************************************  CML52480
                              5249  *                                                                     *  CML52490
                              5250  *                              ADRERR                                 *  CML52500
                              5251  *                                                                     *  CML52510
                              5252  *           THIS ROUTINE PRINTS THE EXPECTED NEXT SOURCE              *  CML52520
                              5253  *           ADDRESS AND THE ACTUAL NEXT SOURCE ADDRESS THAT           *  CML52530
                              5254  *           IS RETURNED IN REGISTER 1 WHEN THE TWO DO NOT             *  CML52540
                              5255  *           COMPARE CORRECTLY. THIS IS PRINTED WHEN THE               *  CML52550
                              5256  *           CHECK FAILS IN MOVE OR MVTU TESTING.                      *  CML52560
                              5257  *                                                                     *  CML52570
                              5258  ************************************************************************  CML52580
                              5259  *                                                                       CML52590
                              5260  *                                                                       CML52600
         0000 4048            5261  ADRERR   EQU   *                                                       CML52610
004048   D000 82AC =0042F8    5262           STM   R0,ERRSAVE          SAVE TEST REGS                       CML52620
00404C   08C2                 5263           LR    R12,R2              SAVE REG 2                           CML52630
00404E   2406                 5264           LIS   R0,6                LOAD NO OF DIGITS                    CML52640
                              5265  *        REG 1 CONTAINS ACTUAL SRC ADR RETURNED                         CML52650
004050   C820 40DE            5266           LHI   R2,ACTADR+38        LOAD CONVERTED SRC ADR               CML52660
004054   41F0 11FA            5267           BAL   LINK,HEXASC         CONVERT                              CML52670
004058   2406                 5268           LIS   R0,6                LOAD NO OF DIGITS                    CML52680
00405A   0814                 5269           LR    R1,R4               LOAD EXP NEXT SRC ADR                CML52690
00405C   C820 40B0            5270           LHI   R2,EXPADR+32        LOAD CONVERTED SRC ADR               CML52700
004060   41F0 11FA            5271           BAL   LINK,HEXASC         CONVERT                              CML52710
004064   2406                 5272           LIS   R0,6                LOAD NO OF DIGITS                    CML52720
004066   5810 823A =0042A4    5273           L     R1,INSTADR          LOAD INSTRUCTION ADR                 CML52730
00406A   C820 429F            5274           LHI   R2,ASCIADR          LOAD CONVERTED DEST ADR              CML52740
00406E   41F0 11FA            5275           BAL   LINK,HEXASC         CONVERT                              CML52750
004072   C850 179A            5276           LHI   R5,ERRMSG           LOAD ERROR                           CML52760
004076   41F0 1222            5277           BAL   LINK,PRINT          PRINT ERROR NO                       CML52770
00407A   C850 4284            5278           LHI   R5,INSTMSG          LOAD INST MSG ADR                    CML52780
00407E   41F0 1222            5279           BAL   LINK,PRINT          PRINT MSG                            CML52790
004082   C850 4090            5280           LHI   R5,ADRMSG           LOAD ADRERR MSG ADR                  CML52800
004086   41F0 1222            5281           BAL   LINK,PRINT          PRINT OFFSET ERROR MSG               CML52810
00408A   D100 825A =0042F8    5282           LM    R0,ERRSAVE          RESTORE TEST REGS                    CML52820
00408E   030E                 5283           BR    RET                 RETURN TO CALL                       CML52830
```

SUBROUTINES

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                                5284  *                                                                      CML52840
                                5285  *                                                                      CML52850
      0000 4090                 5286  ADRMSG   EQU   *                                                       CML52860
004090 4558 5045 4354 4544      5287  EXPADR   DC    C'EXPECTED NEXT SRC ADDRESS WAS  ',C'XXXXXX'           CML52870
004098 204E 4558 5420 5352
0040A0 4320 4144 4452 4553
0040A8 5320 5741 5320 2020
0040B0 5858 5858 5858
0040B6 8D0A                     5288           DC    X'8D0A'             CRLF                             CML52880
0040B8 4143 5455 414C 204E      5289  ACTADR   DC    C'ACTUAL NEXT SRC ADDRESS RETURNED IS  ',C'YYYYYY'     CML52890
0040C0 4558 5420 5352 4320
0040C8 4144 4452 4553 5320
0040D0 5245 5455 524E 4544
0040D8 2049 5320 2020
0040DE 5959 5959 5959
0040E4 0D00                     5290           DC    X'0D00'                                                CML52900
                                5291  *                                                                      CML52910
                                5292  *                                                                      CML52920
                                5293  ************************************************************************CML52930
                                5294  *                                                                     *CML52940
                                5295  *                                                                     *CML52950
                                5296  *                          OFFERR                                     *CML52960
                                5297  *                                                                     *CML52970
                                5298  *                                                                     *CML52980
                                5299  *  THIS ROUTINE PRINTS THE EXPECTED OFFSET AND THE ACTUAL             *CML52990
                                5300  *  OFFSET RETURNED IN REGISTER 1 ON CPAN, CPANP TESTING,              *CML53000
                                5301  *  WHEN THE TWO DO NOT COMPARE CORRECTLY.                             *CML53010
                                5302  *                                                                     *CML53020
                                5303  *                                                                     *CML53030
                                5304  ************************************************************************CML53040
                                5305  *                                                                      CML53050
                                5306  *                                                                      CML53060
      0000 40E6                 5307  OFFERR   EQU   *                                                       CML53070
0040E6 D000 820E =0042F8        5308           STM   R0,ERRSAVE          SAVE TEST REGS                     CML53080
0040EA 08C2                     5309           LR    R12,R2              SAVE REG 2                         CML53090
0040EC 2402                     5310           LIS   R0,2                LOAD NO OF DIGITS                  CML53100
                                5311  *        REG 1 CONTAINS ACTUAL OFFSET RETURNED                        CML53110
0040EE C820 4164                5312           LHI   R2,ACTOFF+28        LOAD CONVERTED OFFSET              CML53120
0040F2 41F0 11FA                5313           BAL   LINK,HEXASC         CONVERT                            CML53130
0040F6 2402                     5314           LIS   R0,2                LOAD NO OF DIGITS                  CML53140
0040F8 0813                     5315           LR    R1,R3               LOAD OFFSET EXPECTED               CML53150
0040FA C820 4144                5316           LHI   R2,EXPOFF+22        LOAD CONVERTED OFFSET              CML53160
0040FE 41F0 11FA                5317           BAL   LINK,HEXASC         CONVERT                            CML53170
004102 2406                     5318           LIS   R0,6                LOAD NO OF DIGITS                  CML53180
004104 5810 819C =0042A4        5319           L     R1,INSTADR          LOAD INSTRUCTION ADR               CML53190
004108 C820 429B                5320           LHI   R2,ASCIADR          LOAD CONVERTED DEST ADR            CML53200
00410C 41F0 11FA                5321           BAL   LINK,HEXASC         CONVERT                            CML53210
004110 C850 179A                5322           LHI   R5,ERRMSG           LOAD ERROR                         CML53220
004114 41F0 1222                5323           BAL   LINK,PRINT          PRINT ERROR NO                     CML53230
004118 C850 4284                5324           LHI   R5,INSTMSG          LOAD INST MSG ADR                  CML53240
00411C 41F0 1222                5325           BAL   LINK,PRINT          PRINT MSG                          CML53250
004120 C850 412E                5326           LHI   R5,OFFMSG           LOAD OFFSET MSG ADR                CML53260
004124 41F0 1222                5327           BAL   LINK,PRINT          PRINT OFFSET ERROR MSG             CML53270
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004128   D100 81CC =0042F8             LM    R0,ERRSAVE           RESTORE TEST REGS                 CML53280
00412C   030E                          BR    RET                  RETURN TO CALL                    CML53290
                                 *                                                                CML53300
                                 *                                                                CML53310
         0000 412E               OFFMSG   EQU   *                                                 CML53320
00412E   4558 5045 4354 4544     EXPOFF   DC    C'EXPECTED OFFSET WAS  ',C'XX'                    CML53330
004136   204F 4646 5345 5420
00413E   5741 5320 2020
004144   5858
004146   8D0A                           DC    X'8D0A'             CRLF                              CML53340
004148   4143 5455 414C 204F     ACTOFF   DC    C'ACTUAL OFFSET RETURNED IS  ',C'YY'              CML53350
004150   4646 5345 5420 5245
004158   5455 524E 4544 2049
004160   5320 2020
004164   5959
004166   0D00                           DC    X'0D00'                                           CML53360
                                 *                                                                CML53370
                                 *                                                                CML53380
                                 *****************************************************************  CML53390
                                 *                                                             *  CML53400
                                 *                       RESTORE  -  REST3                     *  CML53410
                                 *                                                             *  CML53420
                                 *   THIS ROUTINE CLEARS THE CONTENTS OF AREA OPN1 AND COPIES  *  CML53430
                                 *   THE CONTENTS OF THE MASTER BYTE TABLE TO THE AREA OPN2 FOR *  CML53440
                                 *   USE AS A SOURCE. REST3 STORES THE LINK ADDRESS TO SAVE THE *  CML53450
                                 *   ACTUAL ADDRESS OF THE INSTRUCTION UNDER TEST.THIS ADDRESS  *  CML53460
                                 *   IS EITHER USED IN AN ERROR PRINTOUT OR IS COMPARED TO THE  *  CML53470
                                 *   INTERRUPT LOCATION IN THE IIP TEST (8) TO DETERMINE IF THE *  CML53480
                                 *   INSTRUCTION IS INDEED BEING INTERRUPTED.                   *  CML53490
                                 *                                                             *  CML53500
                                 *****************************************************************  CML53510
                                 *                                                                CML53520
                                 *                                                                CML53530
         0000 4168               RESTORE  EQU   *                    TO SET UP [OPN1] AND [OPN2]  CML53540
004168   2480                             LIS   R8,0                 LOAD ZERO                    CML53550
00416A   2490                             LIS   R9,0                 CLEAR INDEX                  CML53560
00416C   D289 3684               REST1    STB   R8,OPN1(R9)          CLEAR [OPN1] DEST AREA       CML53570
004170   2691                             AIS   R9,1                 INCREMENT                    CML53580
004172   C590 0100                        CLHI  R9,256               DONE ?                       CML53590
004176   4280 FFF2 =00416C                BL    REST1                NO, LOOP                     CML53600
00417A   2490                             LIS   R9,0                 CLEAR INDEX                  CML53610
00417C   D389 3784               REST2    LB    R8,MASTER(R9)        LOAD MASTER BYTE             CML53620
004180   D239 3584                        STB   R8,OPN2(R9)          COPY MASTER TO OPN2 SRC      CML53630
004184   2691                             AIS   R9,1                 INCREMENT                    CML53640
004186   C590 0100                        CLHI  R9,256               DONE ?                       CML53650
00418A   4280 FFEE =00417C                BL    REST2                NO, LOOP                     CML53660
00418E   50F0 8112 =0042A4       REST3    ST    LINK,INSTADR         STORE LINK ADR POINTS TO INST CML53670
                                 *                                         NEXT TESTED            CML53680
004192   030F                             BR    LINK                 RETURN TO CALL               CML53690
                                 *                                                                CML53700
                                 *                                                                CML53710
                                 *****************************************************************  CML53720
                                 *                                                             *  CML53730
```

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                            *                    MVCHK - MVTUCHK                          *      CML53740
                            *                                                             *      CML53750
                            *    THIS ROUTINE IS USED TO CHECK THE RESULT OF THE MOVE - MVTU  *  CML53760
                            *    INSTRUCTION. THE DATA FROM THE DESTINATION AREA IS COMPARED  *  CML53770
                            *    TO THE ORIGINAL DATA IN THE SOURCE AREA. IN ADDITION, THE    *  CML53780
                            *    PAD CHARACTER IS CHECKED IF REQUIRED. DATA ERRORS ARE PRINTED  * CML53790
                            *    BY MVERR AND PAD ERRORS BY PADERR.IF TRANSLATED,THE DESTINATION * CML53800
                            *    IS CHECKED AGAINST THE TRANSLATION TABLE ENTRIES.            *  CML53810
                            *                                                             *      CML53820
                            ***************************************************************      CML53830
                            *                                                                    CML53840
                            *                                                                    CML53850
        0000 4194           MVTUCHK  EQU   *                                                     CML53860
004194  2470                         LIS   R7,0           ZERO INDEX                             CML53870
004196  C8A0 3738                    LHI   R10,C'78'      LOAD ERROR NO FOR MVTU                 CML53880
00419A  0826                         LR    R2,R6          LOAD DEST LEN INTO R2                  CML53890
00419C  4300 8006 =0041A6            B     MVCK1                                                 CML53900
        0000 41A0           MVCHK    EQU   *                                                     CML53910
0041A0  2470                         LIS   R7,0           ZERO INDEX                             CML53920
0041A2  C8A0 3333                    LHI   R10,C'33'      LOAD ERROR NO FOR MOVE                 CML53930
0041A6  0572                MVCK1    CLR   R7,R2          IS DESTINATION STRING EXHAUSTED ?      CML53940
0041A8  033F                         BER   LINK           RETURN TO CALL                         CML53950
0041AA  0573                         CLR   R7,R3          IS SOURCE STRING EXHAUSTED ?           CML53960
0041AC  4220 8024 =0041D4            BP    PDCHK          YES,GO SEE IF PAD REQ'D TO BE CHECKED  CML53970
0041B0  D384 4700 0000               LB    R8,0(R4,R7)    LOAD DEST BYTE                         CML53980
0041B6  D395 4700 0000               LB    R9,0(R5,R7)    LOAD MASTER BYTE                       CML53990
0041BC  0589                         CLR   R8,R9          COMPARE BYTES                          CML54000
0041BE  4330 800C =0041CE            BE    MVCK2          NOT EQUAL, DATA ERROR                  CML54010
0041C2  40A0 17A2                    STH   R10,ERRNO      STORE                                  CML54020
0041C6  40A0 175A                    STH   R10,NOERR      SET ERR FLAG                           CML54030
0041CA  41E0 8032 =004200            BAL   RET,MVERR      DATA ERROR 33 OR 78 ON MOVE - MVTU     CML54040
                            *                                                                    CML54050
0041CE  2671                MVCK2    AIS   R7,1           INCREMENT INDEX                        CML54060
0041D0  4300 FFD2 =0041A6            B     MVCK1          LOOP TIL ALL CHECKED                   CML54070
                            *                                                                    CML54080
                            *                                                                    CML54090
                            *                                                                    CML54100
                            *                                                                    CML54110
        0000 41D4           PDCHK    EQU   *                                                     CML54120
0041D4  0572                         CLR   R7,R2          COMPARE INDEX TO DEST LENGTH           CML54130
0041D6  033F                         BER   LINK           DONE, RETURN                           CML54140
0041D8  D384 4700 0000               LB    R8,0(R4,R7)    LOAD DEST BYTE (PAD CHAR)              CML54150
0041DE  C580 0020                    CLHI  R8,X'20'       CHECK IF DEFAULT PAD CHAR              CML54160
0041E2  233C                         BES   PDCK1          PAD OK CONTINUE                        CML54170
0041E4  0580                         CLR   R8,R0          CHECK IF PAD CHAR = REG0 (24-31)       CML54180
0041E6  4330 8010 =0041FA            BE    PDCK1          IF NOT DEFAULT OR REG0, ERROR          CML54190
0041EA  C8A0 3334                    LHI   R10,C'34'      LOAD ERROR NO                          CML54200
0041EE  40A0 17A2                    STH   R10,ERRNO      STORE                                  CML54210
0041F2  40A0 175A                    STH   R10,NOERR      SET ERR FLAG                           CML54220
0041F6  41E0 3E22                    BAL   RET,PADERR     ERROR 34 INCORRECT PAD ON MOVE/MOVEP   CML54230
                            *                                                                    CML54240
0041FA  2671                PDCK1    AIS   R7,1           INCREMENT TO CHECK ALL PAD CHARS       CML54250
0041FC  4300 FFD4 =0041D4            B     PDCHK          GO AGAIN NEXT PAD                      CML54260
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                                5427  *                                                                     CML54270
                                5428  *                                                                     CML54280
                                5429  **********************************************************************CML54290
                                5430  *                                                                    *CML54300
                                5431  *                              MVERR                                 *CML54310
                                5432  *                                                                    *CML54320
                                5433  *   THIS ROUTINE PRINTS THE ADDRESS OF THE INSTRUCTION TESTED AND     *CML54330
                                5434  *   THE SOURCE AND DESTINATION DIGITS IF THE MOVE - MVTU  INSTRUC-    *CML54340
                                5435  *   TION RESULTS ARE INCORRECT.                                      *CML54350
                                5436  *                                                                    *CML54360
                                5437  **********************************************************************CML54370
                                5438  *                                                                     CML54380
                                5439  *                                                                     CML54390
        0000 4200               5440  MVERR    EQU   *                                                      CML54400
004200  D000 80F4 =0042F8       5441           STM   R0,ERRSAVE          SAVE TEST REGS                     CML54410
004204  2402                    5442           LIS   R0,2                LOAD NO OF DIGITS                  CML54420
004206  0817                    5443           LR    R1,R7               LOAD BYTE NUMBER                   CML54430
004208  C820 425D               5444           LHI   R2,MVNUM            LOAD CONVERTED DEST ADR            CML54440
00420C  41F0 11FA               5445           BAL   LINK,HEXASC         CONVERT                            CML54450
004210  2402                    5446           LIS   R0,2                LOAD NO OF DIGITS                  CML54460
004212  0819                    5447           LR    R1,R9               LOAD DEST BYTE                     CML54470
004214  C820 427F               5448           LHI   R2,MVDEST           LOAD CONVERTED DEST ADR            CML54480
004218  41F0 11FA               5449           BAL   LINK,HEXASC         CONVERT                            CML54490
00421C  2402                    5450           LIS   R0,2                LOAD NO OF DIGITS                  CML54500
00421E  0818                    5451           LR    R1,R8               LOAD SRC BYTE                      CML54510
004220  C820 426B               5452           LHI   R2,MVSRC            LOAD CONVERTED DEST ADR            CML54520
004224  41F0 11FA               5453           BAL   LINK,HEXASC         CONVERT                            CML54530
004228  2406                    5454           LIS   R0,6                LOAD NO OF DIGITS                  CML54540
00422A  5810 8076 =0042A4       5455           L     R1,INSTADR          LOAD INSTRUCTION ADR               CML54550
00422E  C820 429B               5456           LHI   R2,ASCIADR          LOAD CONVERTED DEST ADR            CML54560
004232  41F0 11FA               5457           BAL   LINK,HEXASC         CONVERT                            CML54570
004236  C850 179A               5458           LHI   R5,ERRMSG           LOAD ERROR                         CML54580
00423A  41F0 1222               5459           BAL   LINK,PRINT          PRINT ERROR NO                     CML54590
00423E  C850 4284               5460           LHI   R5,INSTMSG          LOAD INST MSG ADR                  CML54600
004242  41F0 1222               5461           BAL   LINK,PRINT          PRINT MSG                          CML54610
004246  C850 4254               5462           LHI   R5,MVMSG            LOAD MOVE DATA COMP FAIL MSG       CML54620
00424A  41F0 1222               5463           BAL   LINK,PRINT          PRINT MOVE ERROR                   CML54630
00424E  D100 80A6 =0042F8       5464           LM    R0,ERRSAVE          RESTORE TEST REGS                  CML54640
004252  030E                    5465           BR    RET                 RETURN TO CALL                     CML54650
                                5466  *                                                                     CML54660
                                5467  *                                                                     CML54670
004254  4259 5445 204F 4F2F     5468  MVMSG    DC    C'BYTE NO. YY',X'8D0A'                                   CML54680
00425C  2059 5920
004260  8D0A
        0000 425D               5469  MVNUM    EQU   MVMSG+9                                                CML54690
004262  534F 5552 4345 203D     5470  MVMSG2   DC    C'SOURCE = AA    DESTINATION = BB',X'0D00'           CML54700
00426A  2041 4120 2020 2044
004272  4553 5449 4E41 5449
00427A  4F4E 203D 2042 4220
004282  0D00
        0000 426B               5471  MVSRC    EQU   MVMSG2+9                                               CML54710
        0000 427F               5472  MVDEST   EQU   MVMSG2+29                                              CML54720
                                5473  *                                                                     CML54730
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                                   5474  *-------------------------------------------------------------               CML54740
                                   5475  *                                                                            CML54750
                                   5476  *                                                                            CML54760
004284   494E 5354 5255 4354      5477  INSTMSG  DC    C'INSTRUCTION AT ADDRESS XXXXXX',X'0D00'                       CML54770
00428C   494F 4E20 4154 2041
004294   4444 5245 5353 2058
00429C   5858 5858 5820
0042A2   0D00
         0000 429B                5478  ASCIADR  EQU   INSTMSG+23                                                    CML54780
                                   5479  *                                                                            CML54790
0042A4   0000 0000                5480  INSTADR  DCY   0                    ADR OF NEXT INSTRUCTION TO TEST           CML54800
                                   5481  *                                                                            CML54810
0042A8   0000                     5482  LINKSAV  DCX   0                    LINK ADR SAVE AREA                        CML54820
                                   5483  *                                                                            CML54830
                                   5484  *                                                                            CML54840
                                   5485  *-----------------------------------                                         CML54850
                                   5486  *                                                                            CML54860
0042AA   0000                     5487  DUSAVE   DCX   0                                                              CML54870
0042AC   0000                     5488  DUSAVE1  DCX   0                                                              CML54880
         0000 42AD                5489  LNZB     EQU   *-1                                                            CML54890
                                   5490  *-----------------------------------                                         CML54900
```

EXEC - ALL TEST PROGRAM STORAGE AREA

```
                         5492  *  EXEC & TEST PROGRAM (COMMON) STORAGE AREA                        CML54920
                         5493  *                                                                  CML54930
                         5494  *                                                                  CML54940
                         5495  **CHKSUM                                                           CML54950
                         5496  *  START OF CHKSUM FILE                                            CML54960
                         5497  *                                                                  CML54970
                         5498  *                                                                  CML54980
                         5499  *                                                                  CML54990
0042AE                   5500  OPTBUF   DS    6              OPTION INPUT BUFFER                 CML55000
0042B4                   5501  IOSAVE   DS    2                                                  CML55010
0042B6                   5502  TEMP     DS    2              TEMPORARY STORAGE LOC               CML55020
0042B8                   5503           ALIGN 8                                                  CML55030
0042B8                   5504  INTSAV   DS    64             REGISTERS ON EXT/IMM INTERRUPT      CML55040
0042F8                   5505  ERRSAVE  DS    64             REG STORAGE FOR ERROR ROUTINES      CML55050
004338                   5506           DS    256            REG SETS 4-F, 8/32 WITH 8 SETS      CML55060
004438                   5507           DS    64             DOUBLE PRECISION FP REG SAVE AREA   CML55070
004478                   5508  PSWSAVEA DS    8              PPF PSW SAVE AREA                   CML55080
004480                   5509  RSAVEA   DS    128            REGISTER SAVE AREA                  CML55090
```

CHKSUM/M17 PUNCHER

```
                                  NOSQZ                                            CML55110
004500  2400                SCHKSUM  LIS   R0,0           PUNCH M17 TAPE WITH CHECKSUM   CML55120
004502  9510                         EPSR  R1,R0          SELECT REG. SET 0              CML55130
                            *                                                            CML55140
004504  E510 0A00                    LDAI  R1,ORIGIN1     START                          CML55150
004508  2421                         LIS   R2,1           INCREMENT                      CML55160
00450A  E630 FD9F =0042AD            LDAI  R3,LNZB        FINAL                          CML55170
00450E  2440                         LIS   R4,0           CHECKSUM BYTE                  CML55180
004510  D351 0000           $GEN     LB    R5,0(R1)                                      CML55190
004514  0745                         XAR   R4,R5                                         CML55200
004516  C110 FFF6 =004510            BXLE  R1,$GEN                                       CML55210
00451A  D240 0099                    STB   R4,MN+3        CHECKSUM BYTE TO BOOT LOADER   CML55220
                            *                                                            CML55230
00451E  C810 0080           STAPE    LHI   R1,X'0080'                                    CML55240
004522  9E21                         OCR   R2,R1          DISPLAY : NORMAL MODE          CML55250
004524  9444                         EXBR  R4,R4                                         CML55260
004526  9824                         WHR   R2,R4          CHECKSUM BYTE TO D1            CML55270
004528  9411                         EXBR  R1,R1                                         CML55280
00452A  9501                         EPSR  R0,R1          HALT PROCESSOR.                CML55290
                            *                                                            CML55300
                            *-----------------------------------                         CML55310
                            *                                                            CML55320
00452C  D360 007A           $PUNCH   LB    R6,X'7A'       GET BOUTDV (PUNCH) ADDRESS.    CML55330
004530  DE60 007B                    OC    R6,X'7B'       START TAPE PUNCH               CML55340
004534  9D60                         SSR   R6,R0                                         CML55350
004536  2081                         BTBS  8,1                                           CML55360
004538  41F0 803E =00457A            BAL   R15,STAPL      PUNCH LEADER                   CML55370
00453C  9411                         EXBR  R1,R1          (R1) = X'0080'                 CML55380
00453E  C830 00CF                    LHI   R3,X'CF'                                      CML55390
004542  DA61 0000           $PNCH1   WD    R6,0(R1)       PUNCH BOOT LOADER              CML55400
004546  9D60                         SSR   R6,R0                                         CML55410
004548  2081                         BTBS  8,1                                           CML55420
00454A  C110 FFF4 =004542            BXLE  R1,$PNCH1                                     CML55430
00454E  41F0 802F =004580            BAL   R15,STAPL1     PUNCH ONE-FOLD GAP.            CML55440
                            *                                                            CML55450
004552  D340 0099                    LB    R4,MN+3        GET CHECKSUM BYTE              CML55460
004556  E610 0A00                    LDAI  R1,ORIGIN1     (NORMALLY X'A00')              CML55470
00455A  E630 FD4F =0042AD            LDAI  R3,LNZB                                       CML55480
00455E  D351 0000           SPNCH2   LB    R5,0(R1)       PUNCH PROGRAM                  CML55490
004562  0745                         XAR   R4,R5                                         CML55500
004564  9A65                         WDR   R6,R5                                         CML55510
004566  9401                         EXBR  R0,R1                                         CML55520
004568  9820                         WHR   R2,R0          DATA ADDRESS TO DISPLAY.       CML55530
00456A  9D60                         SSR   R6,R0                                         CML55540
00456C  2081                         BTBS  8,1                                           CML55550
00456E  C110 FFEC =00455E            BXLE  R1,SPNCH2                                     CML55560
004572  41F0 8004 =00457A            BAL   R15,STAPL      PUNCH TRAILER.                 CML55570
004576  4300 FFA4 =00451E            B     STAPE          DISPLAY CHECKSUM, HALT PROCESSOR.  CML55580
```

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                        5560  *   CHKSUM/M17 PUNCHER  (CONTINUED)                                  CML55600
                        5561  *                                                                    CML55610
                        5562  *                                                                    CML55620
00457A   C800 0100      5563  STAPL    LHI   R0,256            TO PUNCH BLANK LEADER             CML55630
00457E   2303           5564           BS    STAPLP                                               CML55640
                        5565  *                                                                    CML55650
004580   C800 0080      5566  STAPL1   LHI   R0,128            TO PUNCH 1-FOLD GAP+              CML55660
                        5567  *                                                                    CML55670
004584   2701           5568  STAPLP   SIS   R0,1                                                 CML55680
004586   032F           5569           BNPR  R15                RETURN                            CML55690
004588   2430           5570           LIS   R3,0                                                 CML55700
00458A   9A63           5571           WDR   R6,R3              PUNCH BLANK FRAME                 CML55710
00458C   9D68           5572           SSR   R6,R8                                                CML55720
00458E   2081           5573           BTBS  8,1                                                  CML55730
004590   2206           5574           BS    STAPLP             CONTINUE.                         CML55740
                        5575  *                                                                    CML55750
004592                  5576           END                                                        CML55760
```

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

START OPTIONS: T=32,CROSS,EPLST,

NO CAL ERRORS
19 CAL WARNINGS PREVIOUS WARNING ON PAGE 75
6 PASSES

TABLE SPACE USED : 21K

$CHKSUM	0000 4500	5512*												
$CLOCK	0000 0001	38*	906	920	937	1497								
$DECASC	0000 0000	36*	1003											
$DECHEX	0000 0000	35*	474											
$DECTAB	0000 0000	34*	1704											
$DISPLAY	0000 0000	39*	643	670	710									
$GEN	0000 4510	5519*	5521											
$KBINT	0000 0000	37*	1276	1357	1371	1681								
$NULL	0000 176C	1697*												
$PNCH1	0000 4542	5540*	5543											
$PNCH2	0000 455E	5549*	5556											
$PUNCH	0000 452C	5533*												
$P5BIN	0000 0000	33*	960											
$TAPE	0000 451E	5524*	5558											
$TAPL	0000 457A	5537	5557	5563*										
$TAPL1	0000 4580	5544	5566*											
$TAPLP	0000 4584	5564	5568*	5574										
$TIMER1	0000 11BC	911*	916	1502										
$TIMXT	0000 11D0	918*	1504											
$TSTDU2	0000 1488	1252	1254*											
ABORT	0000 0F22	640*												
ABORT2	0000 0F66	653	666*											
ABSTOP	0000 4592													
ACTADR	0000 40B8	5266	5289*											
ACTOFF	0000 4148	5312	5335*											
ACTSGN	0000 3D9C	4988	5006*											
ADC	0000 0004	98	192	1324	1436	1450	1464	1485	1539	1553	1559	1584	1770	
ADR	0000 0D98	462*												
ADRERR	0000 4048	2404	2444	2482	2541	2579	3347	3389	3431	3470	3511	3553	5261*	
ADRMSG	0000 4090	5280	5286*											
AF	0000 163C	1320	1557*											
AMSG	0000 181A	276	1732*											
ASCIADR	0000 429B	4674	4742	4992	5035	5068	5103	5133	5164	5204	5232	5274	5320	5456
		5478*												
ASCIDEV	0000 17C4	823	1719*											
ASCIDEV2	0000 17D4	803	1723*											
ASCILOC	0000 17EA	844	867	1727*										
ASCIPSW	0000 17DE	861	1725*											
ASCISTA	0000 17CC	813	827	1721*										
ASCIWD1	0000 3562	4569*	4724											
ASCIWD2	0000 3536	4565*	4734											
ASCLPB1	0000 34EA	4550*	4658											
ASCLPB2	0000 34F4	4552*	4662											
BIGUN	0000 3370	3960	4467*											
BOOT	0000 0088	64	67*											

```
BRK.SAV   0000 1774    1185   1224   1228   1700*
BRKFLG    0000 1754     265    535   1076   1186   1220   1231   1685*
BRKMSG    0000 181C     267   1733*
BRKVECT   0000 1752    1217   1226   1684*
BTESTNO   0000 1766     578    596    613    634    677   1694*
C300ADR   0000 0A1E     118*
CAR2ND    0000 0A42     149*
CARRD     0000 0A40     148*
CARRQ2S   0000 0A4C     158*
CCMSG     0000 4022    5201   5210   5244*
CCNG      0000 3F94    2034   2054   2074   2095   2190   2218   2259   2279   2299   2321   2349   2393   2433
                       2471   2508   2530   2568   2621   2645   2670   2694   2753   2788   2845   2894   2918
                       2945   2971   2991   3009   3042   3068   3113   3135   3160   3186   3206   3225   3258
                       3283   3336   3378   3418   3460   3501   3540   5193*
CHKSET1   0000 2954    3635*
CHKSET10  0000 2B4C    3814*
CHKSET11  0000 2B68    3815   3822*
CHKSET12  0000 2B80    3822   3829*
CHKSET13  0000 2BF0    3874*
CHKSET14  0000 2C0C    3875   3882*
CHKSET15  0000 2C24    3882   3889*
CHKSET16  0000 2CA4    3936*
CHKSET17  0000 2CC0    3937   3944*
CHKSET18  0000 2CD8    3944   3951*
CHKSET19  0000 2D50    3997*
CHKSET2   0000 2970    3636   3643*
CHKSET20  0000 2D6C    3998   4005*
CHKSET21  0000 2D84    4005   4012*
CHKSET3   0000 2988    3643   3650*
CHKSET4   0000 29F8    3695*
CHKSET5   0000 2A14    3696   3703*
CHKSET6   0000 2A2C    3703   3710*
CHKSET7   0000 2AA0    3754*
CHKSET8   0000 2ABC    3755   3762*
CHKSET9   0000 2AD4    3762   3769*
CLIF2ND   0000 0A3A     145*
CLIFADR   0000 0A16     114*
CLIFRD    0000 0A38     144*
CNVRT10   0000 1ABC    2171*
CNVRT11   0000 1AC0    2173*  2197
CNVRT12   0000 1AF2    2186   2191*
CNVRT13   0000 1B0E    2194   2199*
CNVRT14   0000 1B12    2201*  2225
CNVRT15   0000 1B44    2214   2219*
CNVRT16   0000 1B60    2222   2227*
CNVRT2    0000 1952    2030   2035*
CNVRT3    0000 1988    2050   2055*
CNVRT4    0000 19C0    2070   2075*
CNVRT5    0000 19F8    2091   2096*
CNVRT6    0000 1A2E    2103   2121*
CNVRT7    0000 1A54    2126   2131*
CNVRT7.1  0000 1A58    2119   2133*
CNVRT8    0000 1A8A    2138   2156*
CNVRT9    0000 1AB0    2151   2156*
CNVRT9.1  0000 1AB4    2154   2168*
```

PSW	0000 0A52	163* 611 736
PSW2	0000 0A54	164* 177 184 273 621 641 774 1468 1573 1640
PSW3	0000 0A56	165* 1612
PSWMSG	0000 17DA	869 1724* 1725 1726 1727
PSWSAVE	0000 4500	31* 65 1343
PSWSAVEA	0000 4478	31 5508*
PURETOP	0000 0000P	5576
QMSG	0000 1818	1176 1731*
QUESTN	0000 139E	280 1174*
R0	0000 0000	40* 212 213 216 227 241 242 243 281 282 283 284 302 303 376 413 415 416 507 508 509 510 541 545 547 551 554 555 556 557 564 565 566 567 568 577 578 579 584 585 586 589 592 600 608 609 610 612 622 623 624 625 626 630 642 677 678 690 691 697 705 731 734 735 737 738 740 745 750 755 764 775 801 811 821 825 835 837 839 852 854 856 910 915 917 946 947 958 989 990 1001 1033 1049 1051 1078 1085 1086 1099 1105 1106 1108 1111 1116 1131 1137 1142 1143 1153 1154 1156 1160 1161 1163 1178 1179 1184 1225 1226 1227 1254 1260 1261 1262 1268 1269 1270 1274 1295 1296 1305 1306 1310 1312 1314 1456 1457 1458 1459 1470 1506 1509 1573 1574 1640 1641 2063 2063 2083 2083 2110 2110 2123 2145 2145 2158 2288 2288 2450 2460 2460 2460 2513 2711 2737 2767 2772 2805 2808 2808 2808 2808 2830 2833 2833 2833 2833 2934 2934 2934 3149 3149 3149 3320 3353 3360 3395 3402 3407 3407 3407 3407 3437 3444 3476 3483 3517 3524 3529 3529 3529 3529 3559 3601 3619 3851 3964 3981 4030 4033 4656 4660 4664 4668 4672 4722 4732 4740 4981 4982 4986 4990 5000 5020 5021 5025 5029 5033 5043 5065 5066 5077 5096 5097 5101 5111 5130 5131 5141 5162 5194 5202 5212 5223 5230 5240 5262 5264 5268 5272 5282 5308 5310 5314 5318 5328 5418 5441 5442 5446 5450 5454 5464 5512 5513 5529 5535 5541 5552 5553 5554 5563 5566 5568
R1	0000 0001	41* 67 79 80 82 87 172 173 173 175 176 182 183 184 186 196 199 201 205 216 217 218 219 221 223 225 227 228 274 285 298 303 309 311 312 324 326 331 338 340 435 445 449 542 543 548 549 569 570 571 572 597 611 612 615 616 621 622 634 635 641 642 649 652 665 666 667 668 674 675 682 683 684 774 775 783 784 785 786 802 812 822 826 840 841 842 843 857 858 859 860 863 864 865 866 911 914 993 1037 1038 1065 1066 1091 1092 1111 1113 1116 1117 1118 1120 1122 1127 1130 1131 1133 1135 1140 1141 1142 1143 1146 1191 1192 1193 1194 1194 1195 1196 1197 1199 1200 1202 1203 1207 1212 1213 1233 1236 1245 1246 1247 1248 1248 1249 1250 1251 1253 1255 1261 1262 1263 1292 1293 1294 1295 1296 1297 1298 1302 1306 1307 1308 1310 1311 1314 1315 1363 1365 1369 1460 1461 1462 1463 1469 2122 2123 2157 2158 2399 2439 2477 2536 2574 2623 2647 2655 2672 2696 2728 2755 2790 2821 2847 3342 3384 3426 3466 3507 3548 4031 4035 4657 4661 4665 4669 4673 4723 4733 4741 4781 4782 4794 4795 4806 4809 4812 4826 4845 4853 4854 4887 4888 4901 4902 4914 4917 4921 4929 4931 4935 4955 4963 4964 4983 4987 4991 5026 5030 5034 5067 5098 5102 5132 5163 5203 5231 5269 5273 5315 5319 5443 5447 5451 5455 5513 5515 5519 5521 5524 5525 5528 5528 5529 5538 5538 5540 5543 5547 5549 5552 5556
R10	0000 000A	50* 1446 1446 1447 1472 1492 1493 1494 1527 1527 1528 1594 1594 1613 1616 1617 2031 2032 2033 2051 2052 2053 2071 2072 2073 2092 2093 2094 2115 2116 2117 2127 2128 2129 2150 2151 2152 2162 2163 2164 2187 2188 2189 2215 2216 2217 2256 2257 2258 2276 2277 2278

		2296	2297	2298	2318	2319	2320	2346	2347	2348	2390	2391	2392	2401
		2402	2403	2430	2431	2432	2441	2442	2443	2468	2469	2470	2479	2480
		2481	2505	2506	2507	2527	2528	2529	2538	2539	2540	2565	2566	2567
		2576	2577	2578	2618	2619	2620	2625	2626	2627	2642	2643	2644	2650
		2651	2652	2667	2668	2669	2674	2675	2676	2691	2692	2693	2698	2699
		2700	2723	2724	2725	2730	2731	2732	2750	2751	2752	2757	2758	2759
		2785	2786	2787	2792	2793	2794	2816	2817	2818	2823	2824	2825	2842
		2843	2844	2849	2850	2851	2891	2892	2893	2915	2916	2917	2942	2943
		2944	2968	2969	2970	2988	2989	2990	3006	3007	3008	3039	3040	3041
		3065	3066	3067	3110	3111	3112	3132	3133	3134	3157	3158	3159	3183
		3184	3185	3203	3204	3205	3222	3223	3224	3255	3256	3257	3280	3281
		3282	3333	3334	3335	3344	3345	3346	3375	3376	3377	3386	3387	3388
		3415	3416	3417	3428	3429	3430	3457	3458	3459	3468	3469	3498	3499
		3500	3509	3510	3537	3538	3539	3550	3551	3552	3596	3598	3598	3616
		3617	3619	3621	3634	3662	3675	3676	3678	3680	3694	3722	3735	3736
		3738	3740	3753	3782	3795	3796	3798	3800	3813	3840	3854	3855	3857
		3859	3873	3904	3917	3918	3920	3922	3935	3963	3978	3979	3981	3983
		3996	4023	4025	4025	4647	4648	4649	4711	4712	4713	4720	4723	4726
		4728	4730	4733	4736	4738	4786	4787	4788	4799	4800	4801	4816	4817
		4818	4830	4831	4832	4848	4849	4850	4892	4893	4894	4907	4908	4909
		4924	4925	4926	4938	4939	4940	4958	4959	4960	5388	5393	5402	5403
		5420	5421	5422										
R11	0000 000B	51*	3597	3598	3608	3609	3622	3670	3671	3681	3730	3731	3741	3790
		3791	3801	3848	3849	3860	3912	3913	3923	3971	3972	3984	4024	4025
		4035	4721	4724	4727	4731	4734	4737						
R12	0000 000C	52*	280	301	310	328	441	444	455	460	464	468	469	518
		553	882	1638	2171	2179	2193	2195	2199	2207	2221	2223	2302	2306
		2325	2330	2334	2353	3603	3634	3665	3694	3725	3753	3785	3813	3843
		3873	3907	3935	3966	3996	5195	5263	5309					
R13	0000 000D	53*	1637	2121	2124	2125	2156	2159	2160	2172	2175	2176	2196	2200
		2203	2204	2224	2303	2304	2305	2323	2326	2331	2332	2333	2351	2354
		3607	3620	3669	3679	3729	3739	3789	3799	3847	3858	3911	3921	3970
		3982	5220	5224	5225	5226	5228	5229						
R14	0000 000E	54*	254	255	256	256	257	258	259	317	318	348	358	394
		442	445	447	516	521	525	893	896	902	1565	1566	1567	1568
		1599	1601	1605	1615	1617	1618	1619	1620	1621	1635	3620	3650	3650
		3651	3679	3710	3710	3711	3739	3769	3769	3770	3799	3829	3829	3830
		3858	3889	3889	3890	3921	3951	3951	3952	3982	4012	4012	4013	
R15	0000 000F	56*	246	247	248	286	447	456	459	463	467	538	539	540
		658	659	756	757	758	759	876	877	878	880	884	885	955
		1062	1104	1147	1148	1217	1224	1569	1570	1571	1572	1600	1606	1622
		1623	1624	1625	1636	5537	5544	5557	5569					
R2	0000 0002	42*	63	83	89	177	178	179	180	185	187	197	202	204
		206	207	211	212	213	223	224	225	226	233	233	234	273
		274	354	355	360	361	363	364	370	373	395	403	405	407
		412	429	430	583	586	587	594	596	597	598	599	601	603
		604	613	614	615	684	732	736	737	741	746	751	760	765
		773	778	779	780	781	803	813	823	827	844	861	867	912
		947	948	950	952	956	997	998	1040	1200	1202	1203	1204	1204
		1212	1213	1214	1230	1231	1233	1236	1239	1303	1365	1367	1367	1368
		1448	1468	1469	1471	1477	1548	1549	1557	1558	1574	1582	1583	1595
		1596	1597	1612	1613	1633	1634	1641	1649	1650	1653	1654	2017	2023
		2037	2057	2063	2077	2083	2098	2110	2133	2145	2173	2179	2201	2207
		2242	2248	2262	2282	2288	2304	2310	2332	2338	2377	2382	2408	2415
		2448	2455	2460	2486	2493	2497	2514	2519	2535	2545	2554	2557	2573

		2605	2609	2679	2683	2705	2709	2714	2735	2765	2770	2799	2803	2808
		2828	2833	2853	2855	2878	2883	2901	2930	2934	2953	2958	2976	2981
		2994	2999	3014	3015	3020	3027	3031	3053	3057	3097	3102	3118	3145
		3149	3168	3173	3191	3196	3209	3215	3230	3231	3236	3243	3247	3269
		3273	3322	3362	3404	3446	3485	3526	3610	3611	3630	3672	3690	3732
		3749	3792	3809	3852	3914	3931	3973	3992	4643	4657	4658	4662	4666
		4670	4674	4724	4734	4742	4781	4794	4841	4887	4901	4951	4984	4988
		4992	5023	5027	5031	5035	5068	5099	5103	5133	5164	5195	5204	5232
		5263	5266	5270	5274	5309	5312	5316	5320	5389	5394	5413	5444	5448
		5452	5456	5516	5525	5527	5553							
R3	0000 0003	43*	68	69	70	198	199	202	219	220	221	222	234	235
		236	236	325	329	333	335	357	370	395	404	408	522	526
		700	703	900	903	903	913	990	991	992	994	999	1044	1046
		1208	1210	1234	1235	1237	1304	1309	1313	1315	1317	1320	1321	1345
		1346	1347	1348	1349	1350	1351	1355	1364	1368	1449	1627	2018	2038
		2058	2078	2099	2134	2174	2202	2243	2263	2283	2305	2333	2378	2382
		2398	2409	2416	2438	2449	2456	2460	2476	2487	2494	2497	2515	2519
		2546	2553	2557	2581	2583	2606	2630	2633	2649	2656	2680	2683	2696
		2703	2706	2710	2714	2728	2736	2755	2763	2766	2771	2790	2797	2800
		2804	2808	2821	2829	2833	2847	2856	2879	2883	2902	2931	2934	2954
		2958	2977	2981	2995	2999	3012	3019	3021	3028	3031	3054	3057	3098
		3102	3119	3146	3149	3169	3173	3192	3196	3210	3212	3215	3228	3235
		3237	3244	3247	3270	3273	3319	3325	3341	3349	3352	3359	3391	3394
		3401	3407	3423	3425	3433	3436	3443	3449	3465	3472	3475	3482	3513
		3516	3523	3529	3545	3547	3555	3558	3612	3673	3690	3733	3749	3793
		3809	3850	3869	3869	3898	3899	3915	3931	3974	4645	4661	4778	4791
		4838	4884	4897	4948	5315	5396	5517	5539	5548	5570	5571		
R4	0000 0004	44*	72	73	74	76	84	86	228	229	230	231	231	276
		278	287	289	290	294	296	305	307	311	346	351	361	366
		371	372	375	378	383	385	386	386	388	389	390	391	405
		410	423	425	440	443	505	527	701	878	886	888	892	894
		951	952	953	954	954	993	994	995	996	996	997	1042	1043
		1055	1057	1064	1069	1071	1088	1090	1095	1097	1137	1152	1154	1156
		1168	1169	1275	1318	1319	1323	1342	1343	1344	1352	1355	1356	2103
		2104	2138	2139	2168	2169	2395	2398	2399	2435	2438	2439	2473	2476
		2477	2532	2535	2536	2570	2573	2574	3338	3341	3342	3380	3383	3384
		3420	3425	3426	3462	3465	3466	3503	3506	3507	3542	3547	3548	3637
		3638	3639	3644	3645	3646	3653	3654	3655	3697	3698	3699	3704	3705
		3706	3713	3714	3715	3756	3757	3758	3763	3764	3765	3772	3773	3774
		3778	3816	3817	3818	3823	3824	3825	3832	3833	3834	3876	3877	3878
		3883	3884	3885	3892	3893	3894	3900	3938	3939	3940	3945	3946	3947
		3954	3955	3956	3999	4000	4001	4006	4007	4008	4015	4016	4017	4773
		4776	4779	4780	4784	4792	4793	4797	4810	4811	4814	4824	4825	4828
		4841	4842	4843	4879	4882	4885	4886	4890	4898	4899	4900	4905	4919
		4919	4920	4922	4932	4933	4934	4936	4951	4952	4953	4983	5026	5269
		5398	5415	5518	5520	5522	5526	5526	5527	5546	5550			
R5	0000 0005	45*	74	76	77	77	79	80	81	84	86	92	245	267
		327	329	368	369	381	381	393	393	396	412	513	517	606
		632	655	656	694	695	698	706	794	805	815	829	846	869
		951	1055	1059	1176	1353	1474	1475	1479	1481	1491	1494	1531	1532
		2019	2039	2059	2079	2100	2135	2175	2203	2244	2264	2284	2306	2334
		2396	2436	2474	2533	2571	3339	3381	3421	3463	3504	3543	3613	3779
		3901	3975	4643	4665	4676	4678	4680	4682	4703	4723	4744	4746	4748
		4750	4778	4779	4791	4792	4804	4808	4810	4821	4823	4824	4884	4885
		4897	4898	4912	4916	4918	4932	4994	4996	4998	5037	5039	5041	5071

		5073	5075	5105	5107	5109	5135	5137	5139	5166	5168	5170	5206	5208
		5210	5234	5236	5238	5276	5278	5280	5322	5324	5326	5399	5458	5460
		5462	5519	5520	5549	5550	5551							
R5HEX	0000 11D2	414	699	707	946*									
R5X	0000 11DF	951*	957											
R5XA	0000 11EC	955*												
R5XB	0000 11F4	949	958*											
R6	0000 0006	46*	71	81	88	207	208	209	209	326	327	334	349	353
		402	418	419	421	449	450	451	454	458	462	466	517	519
		524	875	883	884	890	901	904	1054	1060	1354	1475	1477	1481
		1483	1498	1499	1500	1501	1502	1504	1517	1518	1525	1526	2020	2040
		2060	2080	2101	2136	2176	2204	2245	2265	2285	2307	2335	2379	2406
		2410	2417	2446	2450	2457	2484	2488	2516	2543	2547	3318	3325	3351
		3358	3383	3393	3400	3407	3422	3435	3442	3449	3474	3481	3506	3515
		3522	3529	3544	3557	3614	3663	3678	3723	3738	3783	3798	3841	3857
		3899	3905	3920	3976	4645	4669	4704	4733	4782	4783	4784	4795	4796
		4797	4812	4813	4814	4826	4827	4828	4838	4839	4840	4843	4888	4889
		4890	4902	4903	4904	4905	4921	4922	4935	4936	4948	4949	4950	4953
		4987	5030	5159	5161	5170	5389	5533	5534	5535	5540	5541	5551	5554
		5571	5572											
R7	0000 0007	47*	90	91	92	514	522	529	2027	2027	2028	2029	2047	2047
		2048	2049	2067	2067	2068	2069	2088	2088	2089	2090	2183	2183	2184
		2185	2211	2211	2212	2213	2252	2252	2253	2254	2272	2272	2273	2274
		2292	2292	2293	2294	2314	2314	2315	2316	2342	2342	2343	2344	2386
		2386	2387	2388	2426	2426	2427	2428	2464	2464	2465	2466	2501	2501
		2502	2503	2523	2523	2524	2525	2561	2561	2562	2563	2614	2614	2615
		2616	2638	2638	2639	2640	2663	2663	2664	2665	2687	2687	2688	2689
		2718	2718	2719	2720	2746	2746	2747	2748	2781	2781	2782	2783	2812
		2812	2813	2814	2838	2838	2839	2840	2887	2887	2888	2889	2911	2911
		2912	2913	2938	2938	2939	2940	2963	2963	2964	2965	2984	2984	2985
		2986	3002	3002	3003	3004	3012	3013	3015	3035	3035	3036	3037	3061
		3061	3062	3063	3106	3106	3107	3108	3128	3128	3129	3130	3153	3153
		3154	3155	3178	3178	3179	3180	3199	3199	3200	3201	3218	3218	3219
		3220	3228	3229	3231	3251	3251	3252	3253	3276	3276	3277	3278	3329
		3329	3330	3331	3371	3371	3372	3373	3411	3411	3412	3413	3453	3453
		3454	3455	3494	3494	3495	3496	3533	3533	3534	3535	3602	3621	3654
		3680	3724	3740	3784	3800	3842	3859	3906	3922	3965	3983	4703	4705
		4845	4846	4955	4956	5098	5196	5197	5198	5200	5201	5387	5392	5394
		5396	5398	5399	5406	5413	5415	5425	5443					
R8	0000 0008	48*	82	83	88	89	515	526	530	2900	2921	2924	2929	2948
		2951	3026	3045	3048	3052	3071	3074	3117	3138	3141	3144	3163	3166
		3242	3261	3264	3268	3286	3289	3617	3676	3736	3796	3855	3918	3979
		4704	4705	5355	5357	5362	5363	5398	5400	5415	5416	5418	5451	5572
R9	0000 0009	49*	1153	1159	1165	1166	1168	1271	2880	2899	2923	2928	2934	2950
		2955	2958	2978	2996	2999	3025	3031	3047	3051	3057	3073	3099	3116
		3140	3143	3149	3165	3170	3173	3193	3211	3212	3215	3241	3247	3263
		3267	3273	3288	3604	3604	3605	3606	3616	3635	3666	3666	3667	3668
		3675	3695	3719	3726	3726	3727	3728	3735	3754	3786	3786	3787	3788
		3795	3814	3844	3844	3845	3846	3854	3874	3908	3908	3909	3910	3917
		3936	3960	3967	3967	3968	3969	3978	3997	4038	4039	4041	4042	4043
		4702	4703	4704	4707	4708	4779	4792	4810	4824	4885	4898	4918	4932
		5356	5357	5358	5359	5361	5362	5363	5364	5365	5399	5400	5447	
RCMSG	0000 4036	5229	5238	5245*										
RCNG	0000 3FDE	2130	2165	5222*										
RCODE	0000 3FDA	1645	5219*											

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RDCHAR0   0000 0BBA    288   290*
RDCHAR1   0000 0BD4    295   298*
RDCHR     0000 0BAC    286*  304   313
RDCHR1    0000 0BEA    297   305*
RDCHR2    0000 0BC8    291   294*
RDCHR3    0000 0BDE    299   302*
RESETMSG  0000 3F72   5161  5178*
RESIIP1   0000 29A8   3652  3659*
RESIIP2   0000 2A4C   3712  3719*
RESIIP3   0000 2AF4   3771  3778*
RESIIP4   0000 2BA0   3831  3838*
RESIIP5   0000 2C44   3891  3898*
RESIIP6   0000 2CF8   3953  3960*
RESIIP7   0000 2DA4   4014  4021*
RESPRT    0000 0C08    269   272   292   300   317*  323   432   708
REST1     0000 415C   5357* 5360
REST2     0000 417C   5362* 5366
REST3     0000 418E   2021  2041  2061  2081  2108  2143  2177  2205  2246  2266  2286  2308  2336
                      2881  2903  2932  2956  2979  2997  3029  3055  3100  3120  3147  3171  3194
                      3213  3245  3271  5367*
RESTORE   0000 4168   2380  2418  2458  2495  2517  2555  2607  2631  2657  2681  2712  2738  2773
                      2806  2831  3323  3363  3405  3447  3486  3527  5354*
RET       0000 000E     55*  237   239   733   742   743   747   748   752   753   761   762   766
                       767   768   797   807   817   831   848   871  1577  1626  2034  2054  2074
                      2095  2118  2130  2153  2165  2190  2218  2259  2279  2299  2321  2349  2393
                      2404  2433  2444  2471  2482  2508  2530  2541  2568  2579  2621  2628  2645
                      2653  2670  2677  2694  2701  2726  2733  2753  2760  2795  2819  2826  2845
                      2852  2894  2918  2945  2971  2991  3009  3042  3068  3113  3135  3160  3186
                      3206  3225  3258  3283  3336  3347  3378  3389  3418  3431  3460  3470  3501
                      3511  3540  3553  3640  3647  3656  3700  3707  3716  3759  3766  3775  3819
                      3826  3835  3879  3886  3895  3941  3948  3957  4002  4009  4018  4650  4684
                      4714  4753  4789  4802  4819  4833  4851  4895  4910  4927  4941  4961  5001
                      5044  5078  5112  5142  5172  5213  5241  5283  5329  5404  5423  5465
RP        0000 1632   1345  1548*
RSAVE     0000 4508     32*   56   910   917   946   958   989  1001  1033  1078  1085  1099  1184
                      1227  1323  1506
RSAVEA    0000 4480     32  5509*
RUN       0000 188C    338  1753*
RUNIT     0000 0E02    339   534*
SCHK1     0000 3A52   4703* 4709
SCHK2     0000 3A70   4706  4711*
SDEST     0000 351C   2245  2248  2265  2269  2285  2288  2307  2310  2335  2338  3614  3630  3690
                      4561*
SELTST    0000 175C    555   635   678  1689*
SET.RTN   0000 1778   1292  1297  1701*
SET3      0000 1CCA   2380* 2411
SET3.01   0000 1CF4   2389  2395*
SET3.02   0000 1D1A   2400  2406*
SET3.03   0000 1D2C   2407  2415*
SET3.04   0000 1D32   2418* 2451
SET3.05   0000 1D5C   2429  2435*
SET3.06   0000 1D82   2440  2446*
SET3.07   0000 1D94   2447  2455*
SET3.08   0000 1D9A   2458* 2489
SET3.09   0000 1DC8   2467  2473*
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SET3.10   0000 1DEE       2478   2484*
SET3.11   0000 1E00       2485   2493*
SET3.12   0000 1E04       2495*
SET3.13   0000 1E2E       2504   2513*
SET3.14   0000 1E38       2517*  2548
SET3.15   0000 1E62       2526   2532*
SET3.16   0000 1E88       2537   2543*
SET3.17   0000 1E9A       2544   2553*
SET3.18   0000 1E9E       2555*  2584
SET3.19   0000 1EC8       2564   2570*
SET3.1A   0000 1EEE       2575   2581*
SET3.1B   0000 1EFC       2582   2586*
SET4      0000 1FD6       2681*  2707
SET4.01   0000 2000       2690   2696*
SET4.02   0000 2018       2697   2703*
SET4.03   0000 2028       2704   2709*
SET4.04   0000 2030       2712*
SET4.05   0000 205A       2721   2728*
SET4.06   0000 2072       2729   2735*
SET4.07   0000 207A       2738*  2768
SET4.08   0000 20A4       2749   2755*
SET4.09   0000 20BC       2756   2763*
SET4.10   0000 20CE       2764   2770*
SET4.11   0000 20D6       2773*  2801
SET4.12   0000 2100       2784   2790*
SET4.13   0000 2118       2791   2797*
SET4.14   0000 2128       2798   2803*
SET4.15   0000 2130       2805*
SET4.16   0000 215E       2815   2821*
SET4.17   0000 2174       2822   2828*
SET4.18   0000 217A       2831*  2857
SET4.19   0000 21A8       2841   2847*
SET4.20   0000 21C0       2848   2853*
SET4.21   0000 21D0       2854   2858*
SET5      0000 21D4       2878*
SET5.01   0000 2208       2890   2896*
SET5.02   0000 2212       2901*  2925
SET5.03   0000 2244       2914   2920*
SET5.04   0000 225C       2922   2928*
SET5.05   0000 2262       2930*  2952
SET5.06   0000 2298       2941   2947*
SET5.07   0000 22B0       2949   2953*
SET5.08   0000 22E6       2967   2974*
SET5.09   0000 2320       2987   2993*
SET5.10   0000 232C       2996*  3017   3023
SET5.11   0000 235A       3005   3011*
SET5.12   0000 236E       3016   3019*
SET5.13   0000 2380       3022   3025*
SET5.14   0000 2386       3027*  3049
SET5.15   0000 23B8       3038   3044*
SET5.16   0000 23CC       3046   3051*
SET5.17   0000 23D2       3053*  3075
SET5.18   0000 2404       3064   3070*
SET5.19   0000 2418       3072   3077*
SET6      0000 241C       3097*
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SET6.01   0000 2450      3109  3115*
SET6.02   0000 245A      3118* 3142
SET6.03   0000 248C      3131  3137*
SET6.04   0000 24A4      3139  3143*
SET6.05   0000 24AA      3145* 3167
SET6.06   0000 24E0      3156  3162*
SET6.07   0000 24F8      3164  3168*
SET6.08   0000 252E      3182  3189*
SET6.09   0000 2568      3202  3208*
SET6.10   0000 2574      3211* 3233  3239
SET6.11   0000 25A4      3221  3227*
SET6.12   0000 25B8      3232  3235*
SET6.13   0000 25CA      3238  3241*
SET6.14   0000 25D0      3243* 3265
SET6.15   0000 2602      3254  3260*
SET6.16   0000 2616      3262  3267*
SET6.17   0000 261C      3269* 3290
SET6.18   0000 264E      3279  3285*
SET6.19   0000 2662      3287  3292*
SET7      0000 266F      3322* 3354
SET7.01   0000 269A      3332  3338*
SET7.02   0000 26C0      3343  3349*
SET7.03   0000 26D2      3350  3358*
SET7.04   0000 26DA      3362* 3396
SET7.05   0000 2706      3374  3380*
SET7.06   0000 272C      3385  3391*
SET7.07   0000 273E      3392  3400*
SET7.08   0000 2746      3404* 3438
SET7.09   0000 2776      3414  3420*
SET7.10   0000 27A0      3427  3433*
SET7.11   0000 27B2      3434  3442*
SET7.12   0000 27BA      3446* 3477
SET7.13   0000 27F8      3456  3462*
SET7.14   0000 280A      3467  3472*
SET7.15   0000 281C      3473  3481*
SET7.16   0000 2824      3485* 3518
SET7.17   0000 2852      3497  3503*
SET7.18   0000 2874      3508  3513*
SET7.19   0000 2886      3514  3522*
SET7.1A   0000 288E      3525* 3560
SET7.1B   0000 28C0      3536  3542*
SET7.1C   0000 28EA      3549  3555*
SET7.1D   0000 28FC      3556  3565*
SETINT    0000 2900      3596*
SETINT1   0000 290E      3601*
SETINT2   0000 29AC      3662*
SETINT3   0000 2A54      3722*
SETINT4   0000 2B00      3782*
SETINT5   0000 2BA0      3840*
SETINT6   0000 2C58      3904*
SETINT7   0000 2D00      3963*
SETKB     0000 1492       215   275   654  1260*
SETMSG    0000 3F44      5159  5175*
SETPIC1   0000 293E      3616* 3618
SETPIC2   0000 29DE      3675* 3677
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SETPIC3   0000 2A86      3735*  3737
SETPIC4   0000 2B32      3795*  3797
SETPIC5   0000 2BD6      3854*  3856
SETPIC6   0000 2C8A      3917*  3919
SETPIC7   0000 2D3A      3978*  3980
SETUP     0000 14BC      1130   1292*
SGNERR    0000 3D32      4789   4895   4980*
SGNMSG    0000 3D7A      4998   5004*  5005   5006
SINK      0000 174A      1166   1195   1199   1207   1249   1254   1270   1677*
SNG1      0000 3A8A      4722*  4729
SNG2      0000 3AAA      4732*  4739
SRES.01   0000 2DF8      2244   4068*
SRES.02   0000 2E08      2264   3613   4071*
SRES.03   0000 2E18      2284   4074*
SRES.07   0000 2E58      2306   4088*
SRES.19   0000 2F18      4142*
SRES.27   0000 2F98      2334   4177*
ST        0000 0A88       181    185*
STAMSG    0000 17C8       815   1720*
START     0000 0B18       185    239*   472
START1    0000 0A68       175*
START2    0000 0A7E       174    182*
START3    0000 0A98       103    104    105    191*
STARTA    0000 0A60        97    172*   191
STBP.01A  0000 3018      2242   4208*  4210   4222   4224   4226
STBP.01B  0000 301C      2243   4209*  4211   4223   4225   4227
STBP.02A  0000 3020      2262   4213*  4215
STBP.02B  0000 3024      2263   4214*  4216
STBP.03A  0000 3028      2282   4218*  4220
STBP.03B  0000 302C      2283   4219*  4221
STBP.07A  0000 3030      2304   4230*  4235
STBP.07B  0000 3034      2305   4231*  4236
STBP.19A  0000 3090      4294*  4299
STBP.19B  0000 3094      4295*  4300
STBP.27A  0000 30D0      2332   4338*  4343
STBP.27B  0000 30D4      2333   4339*  4344
STBPACT   0000 352C      4564*  4750
STBPCHK   0000 3A50      2260   2280   2300   2322   2350   3659   4700*
STBPEXP   0000 3558      4568*  4748
STBPNG    0000 3A82      4714   4718*
STCC      0000 3FAA      5199   5201*
STCON     0000 0A9C       196*   239   1626
STOP.IT   0000 0DAA       471*  1754
STORE10   0000 1CC0      2352   2357*
STORE2    0000 1B9A      2255   2260*
STORE3    0000 1BD4      2275   2280*
STORE4    0000 1C10      2295   2300*
STORE5    0000 1C18      2304*  2327
STORE6    0000 1C4E      2317   2322*
STORE7    0000 1C6A      2324   2330*
STORE8    0000 1C6E      2332*  2355
STORE9    0000 1CA4      2345   2350*
STRC      0000 3FF2      5227   5229*
SVCERR    0000 1724      1351   1653*
SYSOERR   0000 1718      1349   1649*
```

```
TEMP      0000 42B6    372   375   385   388   390  5502*
TEST      0000 1838    357   435   508   510   529   530   542   548   589   592  1740*
TEST1     0000 1920   1772  2015*
TEST2     0000 1B64   1772  2240*
TEST3     0000 1CC4   1772  2376*
TEST4     0000 1F00   1772  2604*
TEST5     0000 21D4   1772  2876*
TEST6     0000 241C   1772  3095*
TEST7     0000 2666   1772  3317*
TEST8     0000 2900   1773  3594*
TEST8.1   0000 294E   3608  3630*
TEST8.2   0000 29EE   3670  3690*
TEST8.3   0000 2A96   3730  3749*
TEST8.4   0000 2B42   3790  3809*
TEST8.5   0000 2BF6   3848  3869*
TEST8.6   0000 2C9A   3912  3931*
TEST8.7   0000 2D4A   3971  3992*
TESTOP    0000 0DB0    436   505*
TESTS     0000 18FC    615  1771*
TIME      0000 0A4E    161*  913
TIMER     0000 11B8    910*
TITLE     0000 18B0    245  1766*
TOTAL     0000 1762    566   666   668   674   698  1692*
TOTERR    0000 1764    567   706   783   785  1693*
TOTMSG    0000 17A6    694  1716*
TRANSTAB  0000 3884   3463  3504  3543  3852  4596*
TSTBRK    0000 13B8    428   605   628   651  1052  1075  1184*
TSTBRK1   0000 1406   1198  1207*
TSTBRK2   0000 1420   1205  1217*  1241
TSTBRK3   0000 143C   1187  1190  1201  1206  1216  1223  1225*
TSTBRK4   0000 1454   1215  1233*  1240
TSTBRK5   0000 144C   1218  1230*
TSTBRK6   0000 1438   1224*  1232
TSTBRK7   0000 145E   1237*  1238
TSTBRK8   0000 140E   1209*  1211
TSTDU     0000 146C    647   688   776  1034  1109  1128  1138  1245*
TSTEND    0000 0EEA    621*  2227  2357  2586  2858  3077  3292  3565  4026
TSTMSG    0000 1790    606  1711*  1712
TSTOP1    0000 0DC8    506   513*
TSTOP2    0000 0DD0    516*  528
TSTOP3    0000 0DE6    520   524*
TSTOP4    0000 0DF0    523   527*
TTYGET    0000 14B4   1273*
UNARY     0000 11AA    521   525   900*
UNARY1    0000 11AC    901*  905
UNPK      0000 3C54   4891  4897*
UNPK1     0000 3C56   4898*
UNPK2     0000 3C86   4906  4912*  4943
UNPK3     0000 3CC2   4923  4929*
UNPK4     0000 3CF2   4937  4943*
UPKCK     0000 3C12   3115  3137  3189  3208  3227  3260  3285  3720  4877*
UPKCK1    0000 3C1E   3162  4881*
UPKCK2    0000 3C2A   4884*
UPKCK3    0000 3C36   4880  4883  4887*
UPKDAT    0000 3390   3025  4472*
```

ERROR & WARNING SUMMARY :

? @ LINE 2063
? @ LINE 2083
? @ LINE 2110
? @ LINE 2145
? @ LINE 2288
? @ LINE 2460
? @ LINE 2460
? @ LINE 2809
? @ LINE 2808
? @ LINE 2833
? @ LINE 2833
? @ LINE 2934
? @ LINE 2934
? @ LINE 3149
? @ LINE 3149
? @ LINE 3407
? @ LINE 3407
? @ LINE 3529
? @ LINE 3529