Program Number 06-212R01

MODEL 8/16E PROCESSOR TEST
PART 2

Consists of:

Test Program Listing	**06-212M96R00**
Test Program Description	**06-212M95R00**
Test Program Paper Tape	**06-212M17R00**
Patch Information (R01)	**Sheet i/ii**

PERKIN-ELMER

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R01 PATCH INFORMATION FOR 06-212

LOCATION	CHANGE TO		CONTENTS
0BFA	4300	1860	B PATCH
1860	D340	02D8	PATCH LB R4 CONADR
1864	D240	1870	STB R4, CURDSTA
1868	4810	1828	LH R1, CRTFLG
186C	4300	0BFE	B S24D+8
1870	0008		CURDSTA DC X'0008'
DC16	4500	1870	TERM 5 CLH R0,CURDSTA

These patches to be incorporated into object labeled R00.1 on Multimedia Packages.

July, 1977
B06-212R00A15

MODEL 8/16E PROCESSOR TEST PART 2

1. RELATED ITEMS

1.1 Related Documents

Test Program Listing	06-212R00M96 A13
Test Program Tape	06-212R00M17

1.2 Test Programs to be run prior to this test

Model 8/16E Memory Test	06-221
Model 8/16E Processor Test Part 1	06-209

1.3 Other Applicable Test Programs

Common Teletype Basic Confidence Test	06-004
Common Current Loop Interface	06-184
Common Carousel Test	06-183
Common CRT Test	06-146

2. PURPOSE OF TEST

This program exhaustively tests the Model 8/16E Processor. All the optional features are tested. The Floating Point Instructions are not tested (refer to Test 06-205).

3. MINIMUM HARDWARE REQUIRED

3.1 Processor

Model 8/16E Processor
8 KB of memory

3.2 Console Device

Teletype
CRT
Carousel 15, 30, 35, or 300

3.3 Paper Tape Reader

Teletype, High Speed Paper Tape Reader, or Carousel 35

4. REQUIREMENTS OF MACHINE UNDER TEST

Location IO contains X'02' for the Console address. If the Console address is different, this location must be changed. (See Appendix 1 for appropriate setup.)

5. LOADING PROCEDURES

5.1 Test Tape Format

The test tape, 06-212R00M17, is an absolute, non-zoned object tape with a front end bootloader. This program occupies approximately 8KB.

5.2 Normal Loading Procedure

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

	LOCATION	CONTENTS
	X'30'	X'0000'
	X'32'	X'0000'
	X'34'	X'0000'
	X'36'	X'0050'
	X'50'	X'D500'
	X'52'	X'00CF'
	X'54'	X'4300'
	X'56'	X'0080'
for TTY or Carousel 35	X'78'	X'0294'
HSPTR	X'78'	X'0399'
HSPTR/P	X'78'	X'1399'

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

When the Processor halts, observe the Display panel. If zero is shown, loading is complete, otherwise repeat the loading procedure.

5.3 Multi-Media Diagnostic Loading Procedure

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

6. OPERATING PROCEDURES

6.1 Normal Testing

Each test assumes that the Model 8/16E Processor Test Part 1 was run successfully without detecting an error, therefore, in order to get any meaningful results out of the error Number Dictionary, Part 1 must be run prior to Part 2. Load Part 2 of the Processor Test as explained in Loading Procedures and execute at X'2D0'.

Observe that the following is printed:

```
MODEL    8/16E PROCESSOR TEST PART 2
CPU
*
```

Depress 2 numeric keys corresponding to the Processor under test. The valid key depressions are 8A, 8B, 8C, or 8D. See Appendix 2 for appropriate key entry.

Observe that the following is printed:

```
SUBTEST
*
```

Enter a zero (and a carriage return) and the I/O test will be executed. This test should be executed initially to insure that the I/O instructions are operating correctly.

Observe that the following is printed:

```
DEPRESS KEYS
1234567890
```

If this is not printed, the WB instruction failed. When it is printed, depress keys 1 through 9 and 0. If the test is aborted while depressing any of these keys, and an error message is printed, refer to the Error Procedures.

After all the keys are depressed, observe the printout. It should be:

```
DEPRESS KEYS
1234567890
```

If these are not printed, the WBR instruction failed. If these characters are printed, depress keys 1 through 9 and 0 and observe the printout. If characters:

```
SUBTEST
*
```

are printed, the I/O test has detected no errors. Otherwise refer to Error Procedures. Now select desired subtest in accordance with Appendix 4.

6.2 Optional Testing

The MODEL 8/16E Processor Test Part 2 is divided into 9 different subtests. Each subtest can be selected individually. A subtest should be selected only if the Processor under test has the features tested by the subtest; e.g., Subtest 4 should be performed only if the machine has Machine Malfunction Interrupt and power Fail/Auto restart.

Subtest 6 of the Model 8/16E Processor Test Part 2 is a test for the Extended Console Panel. The Break Key on the Teletype must be depressed to execute the next part of the test (hexadecimal digits are displayed from right to left).

1)	Character Printed Console:	A
	Display Panel Mode:	Normal
	Data Displayed:	Status (right 2 hexadecimal digits)
2)	Character Printed Console:	AB
	Display Panel Mode:	Normal
	Data Displayed:	ØØØØ → FFFF → ØØØØ (right 4 hexadecimal digits)
3)	Character Printed Console:	ABC
	Display Panel Mode:	Normal
	Data Displayed:	all hexadecimal digits displayed as a counter (Ø → F)
4)	Character Printed Console:	ABCD
	Display Panel Mode:	Normal
	Data Displayed:	A5A5 → 5A5A → A5A5 → A55A
5)	Character Printed Console:	ABCDE
	Display Panel Mode:	Incremental
	Data Displayed:	The above pattern is seen shifted through display
6)	Character Printed Console:	ABCDEF
	Display Panel Mode:	Normal
	Data Displayed:	Contents of switch register

7. ERROR PROCEDURES

Each error message is printed using a WB command. Refer to Appendix 5 for Error Number Table.

If one of the spurious interrupt errors occurs, the error number is copied into the Display Panel Indicators D2 and the Processor is halted by loading a PSW of X'8000'. The error number has the form X'2TFN', where T is the test number which was executing at the time of the error; N defines the spurious interrupt. See the error numbers in Appendix 5. When the EXECUTE switch is depressed, the error number is printed.

8. RESTART PROCEDURES

The starting address is X'2D0'. However, in certain cases the program can be restarted as described below.

a) To avoid repeating Test 0, the program can be restarted at RENTRY (see program listing).

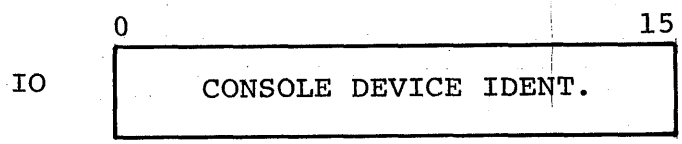
b) An illegal instruction can be performed from the Console Panel Switches. The error number is copied into the Console Panel Indicators Display 2 and the Processor is halted. When the EXECUTE switch is depressed, the following is printed:

```
ERROR 2TF2        (where  T = subtest in which error occured)
SUBTEST
*
```

and any one of the 9 subtests may be selected.

APPENDIX 1
USER DEVICE DEFINITION

The halfword labeled IO (see listing) has the default value for Teletype as an Input/Output Console Device. If the console is different, it must be changed as follows:



Console Device Identifier	Explanation
X'0101'	CRT on PASLA/PALM Interface strapped for FDX at highest baud.
X'0202'	TTY, Carousel 15, 30, 35 on TTY Interface or GDT/CRT on Current Loop Interface.
X'0404'	Carousel 300 on PASLA/PALM Interface strapped for FDX at highest baud rate

The location CONADR should be equal to the address of the Console Device except if connected through a PALM/PASLA Interface. In that case, the location PASADR should equal the receive/send addresses.

APPENDIX 2
PROCESSOR AND SUBTEST SELECTION

MODEL UNDER TEST	REQUIRED INPUT (CPU) Part 2	SUBTEST SELECTION Part 2
8/16E BASIC	8A	1,2,3,4,5,6,7,8,9
8/16E BASIC M/D	8B	1,2,3,4,5,6,7,8,9
8/16E BASIC M/D Single Precision Floating Point	8C	1,2,3,4,5,6,7,8,9
8/16E BASIC M/D Single/ Double Precision Floating Point	8D	1,2,3,4,5,6,7,8,9

APPENDIX 3
EXPECTED RESULTS

```
MODEL 8/16E PROCESSOR TEST PART 2
CPU
*8 (A,B,C, or D)

SUBTEST
*0                                          Input by User

DEPRESS KEYS
1234566780
1234567890                                  USER
DEPRESS KEYS
1234567890
1234567890
                                            USER

SUBTEST
*1                                          USER
PRESS BRK
NO ERROR

SUBTEST
*2
1234567890
1234567890
1234567890

DEPRESS KEYS
1234567890
1234567890                                  USER

NO ERROR

SUBTEST                                     USER
*3

PRESS INIT
PRESS BRK
NO ERROR

SUBTEST                                     USER
*4

PRESS INIT
PRESS BRK
NO ERROR

SUBTEST                                     USER
*5
NO ERROR

SUBTEST
*6                                          USER
ABCDE
ABCDE
```

SUBTEST
*7 USER
PRESS FUNC Ø
PRESS BREAK
NO ERROR

SUBTEST
*8 USER
PRESS FUNC Ø
PRESS BREAK
NO ERROR

SUBTEST USER
*9
NO ERROR

APPENDIX 4
INSTRUCTIONS OR FEATURES

The following table indicates the particular instructions or optional features checked in each test.

TEST NUMBER	INSTRUCTION or FEATURE
TEST 1	ACK,ACKR, Break Key Interrupt
TEST 2	Automatic Input/Output Channel and List Instructions
TEST 3	Initialize, Power Fail, Auto Restart (Machine Malfunction disabled)
TEST 4	Intialize, Power Fail, Auto Restart (Machine Malfunction enabled)
TEST 5	Priviledge Instructions
TEST 6	Hexadecimal Display Panel
TEST 7	Function Zero (Console Interrupt), interrupt enabled
TEST 8	Function Zero (Console Interrupt), interrupt disabled
TEST 9	SVC Instructions

APPENDIX 5
ERROR MESSAGES

Subtest Number	Error Number	Type of Failure, Instructions Failed
I/O Test	2001	RDR
	2002	SS (Even Address)
	2003	RD (Even Address)
	2004	SS (Odd Address)
	2005	RD (Odd Address)
	2006	RH (Odd Address)
	2007	RH (Odd Address)
	2008	RBR
	2009	RB
	200A	RHR
1	2101	AIR, AI, False SYNC from device zero incorrect.
	2102	No interrupt generated when TTY mode changed from Read to Write.
	2103	AIR TTY address and status not received correctly.
	2104	External Interrupt not generated properly when the break key on the Console is depressed.
2	2201	Condition Code fails for List instructions.
	2202	Entry into table placed in wrong location of memory.
	2203	RBL does not set the Nest Top Pointer to the maximum slot number during a List Wrap condition.
	2204	ATL does not set the Next Bottom Pointer to maximum slot number during a List Wrap condition.
	2205	RTL does not set the Next Top Pointer to zero during a List Wrap condition.
	2206	ABL does not set the Next Bottom Pointer to zero during a List Wrap condition.

Subtest Number	Error Number	Type of Failure, Instructions Failed
	2207	DMT using CCW
	2208	Channel I/O Operation
	2209	Channel I/O Operation
	220A	Channel I/O Termination Interrupt not taken. PSW Swaps not OK.
	220B	Queue overflow interrupt not generated properly.
	220C	Read operation from TTY using Channel I/O does not work.
3	2301	Contents of one or more registers destroyed when initialized.
	2302	Registers not stored in memory correctly by the microprogram when initialized.
	2303	Current PSW not stored properly at X'24'.
	2304	Machine Malfunction Interrupt taken when it was disabled.
4	2401	Contents of one or more registers destroyed when initialized.
	2402	Registers not stored in memory correctly by the microprogram when initialized.
	2403	PSW not stored properly at X'24' or registers destroyed when initialized.
5	2501	Proviledged Instruction performed while in Protect Mode.
	2502	PSW swap not OK when a priviledged instruction is attempted while in Protect Mode.
	2503	SVC is not performed correctly in Protect Mode.
7	2701	Console interrupt was not taken when eanbled.
8	2801	Console interrupt was taken when disabled.
9	2901	SVC Instruction Error

OTHER ERRORS

ERROR NUMBER	TYPE OF FAILURE
2TF1	Floating Point Arithmetic Fault Interrupt is detected.
2TF2	Illegal Instruction Interrupt is detected.
2TF3	Machine Malfunction Interrupt is detected.
2TF4	External Interrupt is detected.
2TF5	Fixed Point Divide Fault Interrupt is detected.
2TF6	Channel I/O Termination Interrupt is detected.
2TF7	Termination Queue Overflow Interrupt is detected.
2TF8	SVC is performed from an incorrect location (one of X'9C' through X'BA').
2TF9	Incorrect Service Pointer used (one of X'D0'-X'2CE').

NOTE

T - test number from 1 through 5.

PROG= PT212 ASSEMBLED BY CAL 03-066R05-00 (32-BIT)

```
                                    1          CROSS                                                    PT200010
                                    2          WIDTH 120                                                PT200020
                                    3          TARGT 16                                                 PT200030
                                    4  PT212   PROG  MODEL 8/16E PROCESSOR TEST PART 2  06-212R00      PT200040
                                    5  *                                                               PT200050
                                    6  *       COPYRIGHT   INTERDATA,INC.   (MAY 1977)                P PT200060
                                    7  *                                                               PT200070
                                    8  *                                                               PT200080
        0000 0000                   9  R0      EQU   0                                                  PT200090
        0000 0001                  10  R1      EQU   1                                                  PT200100
        0000 0002                  11  R2      EQU   2                                                  PT200110
        0000 0003                  12  R3      EQU   3                                                  PT200120
        0000 0004                  13  R4      EQU   4                                                  PT200130
        0000 0005                  14  R5      EQU   5                                                  PT200140
        0000 0006                  15  R6      EQU   6                                                  PT200150
        0000 0007                  16  R7      EQU   7                                                  PT200160
        0000 0008                  17  R8      EQU   8                                                  PT200170
        0000 0009                  18  R9      EQU   9                                                  PT200180
        0000 000A                  19  R10     EQU   10                                                 PT200190
        0000 000B                  20  R11     EQU   11                                                 PT200200
        0000 000C                  21  R12     EQU   12                                                 PT200210
        0000 000D                  22  R13     EQU   13                                                 PT200220
        0000 000E                  23  R14     EQU   14                                                 PT200230
        0000 000F                  24  R15     EQU   15                                                 PT200240
                                   25  *                                                                PT200250
  0000R                            26          ORG   X'80'                                              PT200260
                                   27  *                                                                PT200270
  0080  2421                       28          LIS   R2,1                                               PT200280
  0082  2303                       29          BS    BOOT                                               PT200290
  0084  02DE                       30          DC    Z(PSWSAVE)                                         PT200300
  0086  1012                       31          DC    Z(RSAVE)                                           PT200310
  0088  4020 0022                  32  BOOT    STH   R2,X'22'                                           PT200320
  008C  C810 02D0                  33          LHI   R1,X'2D0'                                          PT200330
  0090  C830 1845                  34          LHI   R3,LNZB                                            PT200340
  0094  C860 0000                  35  MN      LHI   R6,0                                               PT200350
  0098  D340 0078                  36          LB    R4,X'78'                                           PT200360
  009C  DE40 0079                  37          OC    R4,X'79'                                           PT200370
  00A0  9D45                       38  LEADER  SSR   R4,R5                                              PT200380
  00A2  2091                       39          BTBS  9,1                                                PT200390
  00A4  9845                       40          RDR   R4,R5                                              PT200400
  00A6  0855                       41          LDAR  R5,R5                                              PT200410
  00A8  2234                       42          BZS   LEADER                                             PT200420
  00AA  D251 0000                  43  LOADER  STB   R5,0(R1)                                           PT200430
  00AE  D351 0000                  44          LB    R5,0(R1)                                           PT200440
  00B2  0765                       45          XAR   R6,R5                                              PT200450
  00B4  9481                       46          EXBR  R8,R1                                              PT200460
  00B6  9828                       47          WHR   R2,R8                                              PT200470
  00B8  9D45                       48          SSR   R4,R5                                              PT200480
  00BA  2091                       49          BTBS  9,1                                                PT200490
  00BC  9845                       50          RDR   R4,R5                                              PT200500
  00BE  C110 00AA                  51          BxLE  R1,LOADER                                          PT200510
  00C2  9486                       52          EXBR  R8,R6                                              PT200520
  00C4  9828                       53          WHR   R2,R8                                              PT200530
  00C6  2478                       54  LDWT    LIS   R7,8
```

```
00C8  917C                  54            SLLS  R7,12                                        PT200540
00CA  9557                  55            EPSR  R5,R7                                        PT200550
00CC  2203                  56            BS    LDWT                                         PT200560
00CE                        57            ORG   X'2D0'                                      PT200570
02D0  4300 02E0             58  ORIGIN1   B     ENTRY1                                       PT200580
                            59  ************************************************************ PT200590
02D4  0202                  60  IO        DCX   0202              IO INDICATOR               PT200600
02D6  0101                  61  CRT       DCX   0101              CRT  VALUE                 PT200610
02D8  0202                  62  CONADR    DCX   0202              CONSL                      PT200620
02DA  0404                  63  CAR       DCX   0404              CAROUSEL VALUE             PT200630
02DC  1011                  64  PASADR    DCX   1011              PASLA ADDRESS REC/SND DEFAULT 1 PT200640
02DE  0000                  65  PSWSAVE   DC    0                                            PT200650
                            66  *                                                            PT200660
                            67  *                                                            PT200670
      0000 02E0             68  ENTRY1    EQU   *                                            PT200680
02E0  C200 02E4             69  PART2     LPSW  PART2A                                       PT200690
02E4  0000                  70  PART2A    DC    0,PART2AA                                    PT200700
02E6  02E8
                            71  ************************************************************************ PT200710
      0000 02E8             72  PART2AA   EQU   *                                            PT200720
02E8  C800 1845             73            LHI   R0,LNZB                                      PT200730
02EC  4000 0022             74            STH   R0,X'22'                                     PT200740
02F0  C800 F800             75            LHI   R0,X'F800'                                   PT200750
02F4  4000 182A             76            STH   R0,FIRSTCMD                                  PT200760
02F8  D300 02D4             77  IOTEST1   LB    R0,IO                                        PT200770
02FC  C500 0004             78            CLHI  R0,4                                         PT200780
0300  2135                  79            BNES  CRTIO                                        PT200790
0302  C800 F000             80            LHI   R0,X'F000'                                   PT200800
0306  4000 182A             81            STH   R0,FIRSTCMD                                  PT200810
030A  D300 02D4             82  CRTIO     LB    R0,IO                                        PT200820
030E  C500 0002             83            CLHI  R0,2                                         PT200830
0312  4330 035C             84            BE    TTYIO                                        PT200840
0316  C800 B979             85            LHI   R0,X'B979'                                   PT200850
031A  4000 1832             86            STH   R0,$C4                                       PT200860
031E  C800 6B6B             87            LHI   R0,X'6B6B'                                   PT200870
0322  4000 1834             88            STH   R0,$58                                       PT200880
0326  C800 7979             89            LHI   R0,X'7979'                                   PT200890
032A  4000 1836             90            STH   R0,$44                                       PT200900
032E  C800 7979             91            LHI   R0,X'7979'                                   PT200910
0332  4000 1838             92            STH   R0,$66                                       PT200920
0336  D320 1824             93            LB    R2,CRTOUT                                    PT200930
033A  D310 1825             94            LB    R1,CRTOUT+1                                  PT200940
033E  D210 1823             95            STB   R1,INCMND                                    PT200950
0342  D310 02DC             96            LB    R1,PASADR                                    PT200960
0346  D210 1830             97            STB   R1,INDEV                                     PT200970
034A  D310 02DD             98            LB    R1,PASADR+1                                  PT200980
034E  DE10 182A             99            OC    R1,FIRSTCMD                                  PT200990
0352  2531                 100            LCS   R3,1                                         PT201000
0354  4030 1828            101            STH   R3,CRTFLG                                    PT201010
0358  4300 039A            102            B     IO2                                          PT201020
      0000 035C            103  TTYIO     EQU   *                                            PT201030
035C  C810 00A4            104            LHI   R1,X'A4'                                     PT201040
0360  D210 1823            105            STB   R1,INCMND                                    PT201050
0364  C800 C454            106            LHI   R0,X'C454'                                   PT201060
0368  4000 1832            107            STH   R0,$C4                                       PT201070
```

```
036C  C800 5848          108           LHI   R0,X'5848'                                  PT201080
0370  4000 1834          109           STH   R0,$58                                      PT201090
0374  C800 4456          110           LHI   R0,X'4456'                                  PT201100
0378  4000 1836          111           STH   R0,$44                                      PT201110
037C  C800 6664          112           LHI   R0,X'6664'                                  PT201120
0380  4000 1838          113           STH   R0,$66                                      PT201130
0384  D310 02D8          114           LB    R1,CONADR                                   PT201140
0388  D210 1830          115           STB   R1,INDEV                                    PT201150
038C  2410               116           LIS   R1,0                                        PT201160
038E  4010 1828          117           STH   R1,CRTFLG                                   PT201170
0392  D310 02D8          118           LB    R1,CONADR                                   PT201180
0396  D320 1826          119           LB    R2,CONOUT                                   PT201190
      0000 039A          120  IO2      EQU   *                                           PT201200
039A  D210 182F          121           STB   R1,OUTDEV                                   PT201210
039E  D220 1822          122           STB   R2,OUTCMD                                   PT201220
03A2  D320 182F          123  PART2B   LB    R2,OUTDEV     R2 = ADD. OF TTY             PT201230
03A6  C8A0 17B6          124           LHI   R10,TITLE2    PRINT                       PT201240
03AA  C8B0 17F1          125           LHI   R11,TITEND                                  PT201250
03AE  DE20 1822          126  PART2C   OC    R2,OUTCMD     PROCESSOR TEST PART 2       PT201260
03B2  9D23               127  PART2D   SSR   R2,R3                                      PT201270
03B4  4210 03AE          128           BTC   1,PART2C      TTY DEV. UNAVA.  ?          PT201280
03B8  4280 03B2          129           BTC   8,PART2D      TTY BUSY   ?                PT201290
03BC  C430 00FC          130           NHI   R3,X'FC'                                    PT201300
03C0  C530 000C          131           CLHI  R3,X'0C'                                    PT201310
03C4  4330 03B2          132           BE    PART2D                                      PT201320
03C8  D30A 0000          133           LB    R0,0(R10)                                   PT201330
03CC  41E0 1666          134           BAL   R14,WRITE1                                  PT201340
03D0  26A1               135           AIS   R10,1                                       PT201350
03D2  05AB               136           CLHR  R10,R11                                     PT201360
                         137  *                                                          PT201370
03D4  4230 03B2          138           BNE   PART2D                                      PT201380
                         139  *                                                          PT201390
03D8  D320 1830          140           LB    R2,INDEV                                    PT201400
03DC  41E0 164A          141           BAL   R14,READ1                                   PT201410
03E0  D200 181E          142           STB   R0,CPUNO                                    PT201420
03E4  41E0 164A          143           BAL   R14,READ1                                   PT201430
03E8  D200 181F          144           STB   R0,CPUNO+1                                  PT201440
03EC  4800 181E          145           LH    R0,CPUNO                                    PT201450
03F0  C500 3841          146           CLHI  R0,C'8A'                                    PT201460
03F4  4330 05E4          147           BE    RENTRY                                      PT201470
03F8  C500 3842          148           CLHI  R0,C'8B'                                    PT201480
03FC  4330 05E4          149           BE    RENTRY                                      PT201490
0400  C500 3843          150           CLHI  R0,C'8C'                                    PT201500
0404  4330 05E4          151           BE    RENTRY                                      PT201510
0408  C500 3844          152           CLHI  R0,C'8D'                                    PT201520
040C  4330 05E4          153           BE    RENTRY                                      PT201530
0410  C800 003F          154  CPUERR   LHI   R0,C'?'                                    PT201540
0414  41E0 1666          155           BAL   R14,WRITE1                                  PT201550
0418  4300 02E0          156           B     PART2                                       PT201560
                         157  *                                                          PT201570
041C  24F0               158  IOTEST   LIS   R15,0                                      PT201580
041E  40F0 1782          159           STH   R15,TEMP                                    PT201590
0422  41C0 167C          160           BAL   R12,CRLF                                    PT201600
0426  C800 0030          161           LHI   R0,C'0'                                     PT201610
042A  D200 179D          162           STB   R0,TESTNO+1                                 PT201620
```

```
                0000 042E
042E    D320 182F
0432    DE20 1822
0436    D620 0DEE
043A    D320 1830
043E    DE20 1823
0442    9D23
0444    2281
0446    9D23
0448    4280 0446
044C    9B21
044E    C410 007F
0452    C510 0031
0456    4230 05CA
045A    DD20 17B3
045E    4280 045A
0462    9D23
0464    4530 17B2
0468    4230 05C8
046C    DB20 17B2
0470    4110 05D6
0474    C800 3200
0478    4500 17B2
047C    4230 05C6
0480    DD20 17B3
0484    4280 0480
0488    4500 17B2
048C    4230 05C4
0490    DB20 17B3
0494    4110 05D6
0498    C800 3233
049C    4500 17B2
04A0    4230 05C2
04A4    9D23
04A6    4280 04A4
04AA    D920 17B2
04AE    4110 05D6
04B2    C800 0034
04B6    D400 17B2
04BA    4230 05C0
04BE    9D23
04C0    4280 04BE
04C4    D920 17B3

04C8    4110 05D6
04CC    C800 0035
04D0    D400 17B3
04D4    4230 058E
04D8    D1B0 0FAA
04DC    D6B0 0FF2
04E0    C8B0 0FF2
04E4    C8C0 0FF6
04E8    972B
04EA    4800 0FF2
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163  *
164  IOSTA    EQU   *                                          PT201630
165           LB    R2,OUTDEV                                  PT201640
166           OC    R2,OUTCMD                                  PT201650
167           WB    R2,WBSTRT      1234567890                  PT201660
168           LB    R2,INDEV                                   PT201670
169           OC    R2,INCMND                                  PT201680
170           SSR   R2,R3                                      PT201690
171           BFBS  8,1                                        PT201700
172  IOA2     SSR   R2,R3                                      PT201710
173           BTC   8,IOA2                                     PT201720
174           RDR   R2,R1          READ KEY 1 IN R1            PT201730
175           NHI   R1,X'7F'                                   PT201740
176           CLHI  R1,X'31'                                   PT201750
177           BNE   IOERR1                                     PT201760
178  IOA4     SS    R2,TEMP+1                                  PT201770
179           BTC   8,IOA4                                     PT201780
180           SSR   R2,R3                                      PT201790
181           CLH   R3,TEMP        READ KEY 2 IN TEMP          PT201800
182           BNE   IOERR2                                     PT201810
183           RD    R2,TEMP                                    PT201820
184           BAL   R1,PARITY                                  PT201830
185  TERM1    LHI   R0,X'3200'                                 PT201840
186           CLH   R0,TEMP                                    PT201850
187           BNE   IOERR3                                     PT201860
188  IOA6     SS    R2,TEMP+1      TTY STATUS IN TEMP          PT201870
189           BTC   8,IOA6                                     PT201880
190           CLH   R0,TEMP                                    PT201890
191           BNE   IOERR4                                     PT201900
192           RD    R2,TEMP+1      READ KEY 3 IN TEMP          PT201910
193           BAL   R1,PARITY                                  PT201920
194           LHI   R0,X'3233'                                 PT201930
195           CLH   R0,TEMP                                    PT201940
196           BNE   IOERR5                                     PT201950
197  IOA8     SSR   R2,R3          TTY STATUS IN R3            PT201960
198           BTC   8,IOA8                                     PT201970
199           RH    R2,TEMP        READ KEY 4 TEMP             PT201980
200           BAL   R1,PARITY                                  PT201990
201           LHI   R0,X'34'                                   PT202000
202           CLH   R0,TEMP                                    PT202010
203           BNE   IOERR6                                     PT202020
204  IOA10    SSR   R2,R3          TTY STATUS IN R3            PT202030
205           BTC   8,IOA10                                    PT202040
206           RH    R2,TEMP+1(R0)  READ KEY 5 IN TEMP          PT202050
207  *                             (DUMMY INDEX REGISTER)      PT202060
208           BAL   R1,PARITY                                  PT202070
209           LHI   R0,X'35'                                   PT202080
210           CLH   R0,TEMP+1                                  PT202090
211           BNE   IOERR7                                     PT202100
212           LM    R11,BUFR0      R11 THRU R15  =  0          PT202110
213           STM   R11,BUFR2                                  PT202120
214           LHI   R11,BUFR2                                  PT202130
215           LHI   R12,BUFR2+4                                PT202140
216           RBR   R2,R11                                     PT202150
217           LH    R0,BUFR2                                   PT202160
                                                               PT202170
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04EE  C400 7F7F          218          NHI   R0,X'7F7F'                                  PT202180
04F2  4000 0FF2          219          STH   R0,BUFR2                                    PT202190
04F6  4800 0FF4          220          LH    R0,BUFR2+2                                  PT202200
04FA  C400 7F7F          221          NHI   R0,X'7F7F'                                  PT202210
04FE  4000 0FF4          222          STH   R0,BUFR2+2                                  PT202220
0502  D300 0FF6          223          LB    R0,BUFR2+4                                  PT202230
0506  C400 7F7F          224          NHI   R0,X'7F7F'                                  PT202240
050A  D200 0FF6          225          STB   R0,BUFR2+4                                  PT202250
050E  C800 3637          226          LHI   R0,X'3637'                                  PT202260
0512  4500 0FF2          227          CLH   R0,BUFR2                                    PT202270
0516  4230 05BC          228          BNE   IOERR8                                      PT202280
051A  C800 3839          229          LHI   R0,X'3839'                                  PT202290
051E  4500 0FF4          230          CLH   R0,BUFR2+2          CHECK KEYS 8 , 9        PT202300
0522  4230 05BC          231          BNE   IOERR8                                      PT202310
0526  C800 0030          232          LHI   R0,X'30'                                    PT202320
052A  D400 0FF6          233          CLB   R0,BUFR2+4          CHECK KEY 0             PT202330
052E  4230 05BC          234          BNE   IOERR8                                      PT202340
0532  41C0 167C          235          BAL   R12,CRLF            CR  LF                  PT202350
                         236  *                                                         PT202360
0536  D320 182F          237          LB    R2,OUTDEV                                   PT202370
053A  C840 0DF2          238          LHI   R4,S26MSG           PRINT CHARACTERS        PT202380
053E  C850 0E0D          239          LHI   R5,S26MSD           DEPRESS KEYS   CR  LF   PT202390
0542  DE20 1822          240          OC    R2,OUTCMD           1234567890              PT202400
0546  9624               241          WBR   R2,R4                                       PT202410
0548  D320 1830          242          LB    R2,INDEV                                    PT202420
054C  DE20 1823          243          OC    R2,INCMND                                   PT202430
0550  9D23               244          SSR   R2,R3                                       PT202440
0552  2281               245          BFBS  8,1                                         PT202450
0554  D720 0FEE          246          RB    R2,BF2ST            READ 10 KEYS IN BUFR2   PT202460
0558  2458               247          LIS   R5,8                                        PT202470
      0000 055A          248  PARTY1  EQU   *                                           PT202480
055A  4865 0FF2          249          LH    R6,BUFR2(R5)                                PT202490
055E  C460 7F7F          250          NHI   R6,X'7F7F'                                  PT202500
0562  4065 0FF2          251          STH   R6,BUFR2(R5)                                PT202510
0566  2752               252          SIS   R5,2                                        PT202520
0568  2217               253          BNMS  PARTY1                                      PT202530
056A  C800 3132          254          LHI   R0,X'3132'                                  PT202540
056E  4500 0FF2          255          CLH   R0,BUFR2                                    PT202550
0572  4230 05BA          256          BNE   IOERR9                                      PT202560
0576  C800 3334          257          LHI   R0,X'3334'                                  PT202570
057A  4500 0FF4          258          CLH   R0,BUFR2+2                                  PT202580
057E  4230 05BA          259          BNE   IOERR9                                      PT202590
0582  C800 3536          260          LHI   R0,X'3536'                                  PT202600
0586  4500 0FF6          261          CLH   R0,BUFR2+4                                  PT202610
058A  4230 05BA          262          BNE   IOERR9                                      PT202620
058E  C800 3738          263          LHI   R0,X'3738'                                  PT202630
0592  4500 0FF8          264          CLH   R0,BUFR2+6                                  PT202640
0596  4230 05BA          265          BNE   IOERR9                                      PT202650
059A  C800 0039          266          LHI   R0,X'39'            PT                      PT202660
059E  D400 0FFA          267          CLB   R0,BUFR2+8                                  PT202670
05A2  4230 05BA          268          BNE   IOERR9                                      PT202680
05A6  9D23               269  IOA9    SSR   R2,R3                                       PT202690
05A8  2081               270          BTBS  8,1                                         PT202700
05AA  9924               271          RHR   R2,R4                                       PT202710
05AC  C440 7F7F          272          NHI   R4,X'7F7F'                                  PT202720
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05B0  C540 3030          273          CLHI  R4,X'3030'                                  PT202730
05B4  4330 05E4          274          BE    RENTRY                                      PT202740
05B8  26F1               275  IOERRA  AIS   R15,1                                       PT202750
05BA  26F1               276  IOERR9  AIS   R15,1                                       PT202760
05BC  26F1               277  IOERR8  AIS   R15,1                                       PT202770
05BE  26F1               278  IOERR7  AIS   R15,1                                       PT202780
05C0  26F1               279  IOERR6  AIS   R15,1                                       PT202790
05C2  26F1               280  IOERR5  AIS   R15,1                                       PT202800
05C4  26F1               281  IOERR4  AIS   R15,1                                       PT202810
05C6  26F1               282  IOERR3  AIS   R15,1                                       PT202820
05C8  26F1               283  IOERR2  AIS   R15,1                                       PT202830
05CA  26F1               284  IOERR1  AIS   R15,1                                       PT202840
05CC  2501               285  IOERR   LCS   R0,1                                        PT202850
05CE  4000 182C          286          STH   R0,IOERHW                                   PT202860
05D2  4300 16DE          287          B     ERROR                                       PT202870
      0000 05D6          288  PARITY  EQU   *                                           PT202880
05D6  4800 17B2          289          LH    R0,TEMP                                     PT202890
05DA  C400 7F7F          290          NHI   R0,X'7F7F'                                  PT202900
05DE  4000 17B2          291          STH   R0,TEMP                                     PT202910
05E2  0301               292          BR    R1                                          PT202920
                         293  *                                                         PT202930
                         294  *       FLPTNT  =  FLPT ARITHMETIC FAULT INTERRUPT        PT202940
                         295  *                                                         PT202950
                         296  *       ILGINT  =  ILLEGAL INSTRUCTION INTERRUPT          PT202960
                         297  *                                                         PT202970
                         298  *       MALFTN  =  MACHINE MALFUNCTION INTERRUPT          PT202980
                         299  *                                                         PT202990
                         300  *       EXTINT  =  EXTERNAL INTERRUPT                     PT203000
                         301  *                                                         PT203010
                         302  *       DVOFLT  =  FIXED POINT DIVIDE FAULT INTERRUPT     PT203020
                         303  *                                                         PT203030
                         304  *       CHANIO  =  CHANNEL I/O TERMINATION INTERRUPT      PT203040
                         305  *                                                         PT203050
                         306  *       QVRFLO  =  TERMINATION QUEUE OVERFLOW INTERRUPT   PT203060
                         307  *                                                         PT203070
                         308  *                                                         PT203080
                         309  *       SVCERR  =  INCORRECT SVC INTRPT                   PT203090
                         310  *                                                         PT203100
                         311  *       DEVERR  =  INCORRECT SERVICE POINTER USED    OR   PT203110
                         312  *       *       =  INCORRECT DEV. GENERATED INTRPT.       PT203120
                         313  *                                                         PT203130
05E4  41C0 167C          314  RENTRY  BAL   R12,CRLF                                    PT203140
05E8  2430               315          LIS   R3,0                                        PT203150
05EA  4030 182C          316          STH   R3,IOERHW                                   PT203160
05EE  4030 002C          317  M5008   STH   R3,X'2C'    NEW PSW FLPT ARITH. FAULT INTRPT.  PT203170
05F2  4030 0034          318          STH   R3,X'34'    NEW PSW ILLG. INSTR. INTRPT.       PT203180
05F6  4030 003C          319          STH   R3,X'3C'    NEW PSW MCHN. MALFNTN. INTRPT.     PT203190
05FA  4030 0044          320          STH   R3,X'44'    NEW PSW EXTERNAL INTRPT.           PT203200
05FE  4030 004C          321          STH   R3,X'4C'    NEW PSW FXDPT. DIV. FAULT INTRPT.  PT203210
0602  4030 0086          322          STH   R3,X'86'    NEW PSW CHAN. I/O TERM. INTRPT.    PT203220
0606  4030 0090          323  M5009   STH   R3,X'90'    NEW PSW TERM. Q OVERFLO. INTRPT    PT203230
                         324  *                                                         PT203240
                         325  *                                                         PT203250
060A  C810 1692          326          LHI   R1,ILGINT   NEW PSW ADDRESS FOR             PT203260
060E  4010 0036          327          STH   R1,X'36'    ILLEGAL INSTR. INTRPT.          PT203270
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0612  C810 1696   328          LHI   R1,MALFTN     NEW PSW ADDRESS FOR                PT203280
0616  4010 003E   329          STH   R1,X'3E'      MACHINE MALFUNCTION INTERRUPT      PT203290
061A  C810 169A   330          LHI   R1,EXTINT     NEW PSW ADDRESS FOR                PT203300
061E  4010 0046   331          STH   R1,X'46'      EXTERNAL INTERRUPT                 PT203310
0622  C810 168E   332          LHI   R1,FLPTNT     NEW PSW ADDRESS FOR                PT203320
0626  4010 002E   333          STH   R1,X'2E'      FLPT ARITH. FAULT INTRPT.          PT203330
062A  C810 169E   334          LHI   R1,DVDFLT     NEW PSW ADDRESS FOR                PT203340
062E  4010 004E   335          STH   R1,X'4E'      FIXED PT. DIV. FAULT INTRPT.       PT203350
0632  C810 163A   336          LHI   R1,TABLE                                         PT203360
0636  4010 0080   337          STH   R1,X'80'                                         PT203370
063A  C810 16A2   338          LHI   R1,CHANIO                                        PT203380
063E  4010 0088   339          STH   R1,X'88'                                         PT203390
0642  C810 16A6   340          LHI   R1,QVRFLO     NEW PSW ADDRESS FOR                PT203400
0646  4010 0092   341          STH   R1,X'92'      TERM. QUEUE OVERFLO INTRPT.        PT203410
                  342  *                                                             PT203420
                  343  *                                                             PT203430
064A  C800 0FF2   344          LHI   R0,BUFR2                                         PT203440
064E  4000 0022   345          STH   R0,X'22'                                         PT203450
                  346  *                                                             PT203460
0652  C800 16AA   347          LHI   R0,SVCERR                                        PT203470
0656  C840 009C   348          LHI   R4,X'9C'                                         PT203480
065A  4004 0000   349  RENTR0  STH   R0,0(R4)                                       PT203490
065E  2642        350          AIS   R4,2                                             PT203500
0660  C540 00D0   351          CLHI  R4,X'D0'                                         PT203510
0664  2035        352          BNES  RENTR0                                           PT203520
                  353  *                                                             PT203530
0666  C800 16AE   354          LHI   R0,DEVERR     DEVERR  = ADDR. FOR                PT203540
066A  4004 0000   355  RENTR2  STH   R0,0(R4)      STORE THIS ADR.                    PT203550
066E  2642        356          AIS   R4,2          IN ALL SERVICE POINTERS            PT203560
0670  C540 02D0   357          CLHI  R4,X'2D0'                                        PT203570
0674  2035        358          BNES  RENTR2                                           PT203580
                  359  *                                                             PT203590
                  360  *       RESET THE TABLE                                       PT203600
                  361  *                                                             PT203610
0676  C800 0400   362          LHI   R0,X'400'                                        PT203620
067A  4000 163A   363          STH   R0,TABLE                                         PT203630
                  364  *                                                             PT203640
                  365  *                                                             PT203650
067E  D320 182F   366          LB    R2,OUTDEV                                        PT203660
0682  DE20 1822   367          OC    R2,OUTCMD                                        PT203670
0686  C840 17EF   368          LHI   R4,SUBTST-3                                      PT203680
068A  C850 1801   369          LHI   R5,SUBTSTND                                      PT203690
068E  2641        370  RENTR4  AIS   R4,1                                             PT203700
0690  D364 0000   371          LB    R6,0(R4)                                         PT203710
0694  9D23        372  RENTR1  SSR   R2,R3                                            PT203720
0696  4290 0694   373          BTC   9,RENTR1                                         PT203730
069A  9A26        374          WDR   R2,R6                                            PT203740
069C  0545        375          CLHR  R4,R5                                            PT203750
069E  4230 068E   376          BNE   RENTR4                                           PT203760
06A2  41E0 164A   377          BAL   R14,READ1     R0 = KEY READ FROM TTY             PT203770
06A6  C500 0030   378          CLHI  R0,X'30'      LOOK FOR A NUMERIC KEY             PT203780
06AA  2184        379          BLS   RENTR3        FROM 0 THROU 8                     PT203790
06AC  C500 003A   380          CLHI  R0,X'3A'                                         PT203800
06B0  2187        381          BLS   RENTR6                                           PT203810
06B2  C800 003F   382  RENTR3  LHI   R0,C'?'       PRINT  ?                           PT203820
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06B6  41E0 1666          383          BAL   R14,WRITE1                                  PT203830
06BA  4300 05E4          384          B     RENTRY                                      PT203840
06BE  D200 179D          385  RENTR6  STB   R0,TESTNO+1                                PT203850
06C2  C400 000F          386          NHI   R0,15                                       PT203860
06C6  D200 182E          387          STB   R0,SUBTNO          SUBTNO = SUBTEST NO. STORED  PT203870
06CA  41E0 164A          388          BAL   R14,READ1          R0 = KEY READ             PT203880
06CE  C500 000D          389          CLHI  R0,X'0D'                                    PT203890
06D2  4230 06B2          390          BNE   RENTR3                                      PT203900
06D6  240A               391          LIS   R0,10                                       PT203910
06D8  41E0 1666          392          BAL   R14,WRITE1                                  PT203920
06DC  D300 182E          393          LB    R0,SUBTNO                                   PT203930
06E0  9102               394          SLLS  R0,2                                        PT203940
06E2  C810 06F2          395          LHI   R1,RENTR8                                   PT203950
06E6  0A10               396          AHR   R1,R0                                       PT203960
06E8  C200 06EC          397          LPSW  *+4                                         PT203970
06EC  7C00               398  KPIO1   DC    X'7C00',*+2                               PT203980
06EE  06F0                                                                             PT203990
06F0  0301               399          BR    R1                                          PT204000
06F2  4300 041C          400  RENTR8  B     IOTEST                                      PT204010
06F6  4300 071A          401          B     SUBT1                                       PT204020
06FA  4300 087A          402          B     SUBT2                                       PT204030
06FE  4300 0E0E          403          B     SUBT3                                       PT204040
0702  4300 0E1C          404          B     SUBT4                                       PT204050
0706  4300 1214          405          B     SUBT5                                       PT204060
070A  4300 12D0          406          B     SUBT6                                       PT204070
070E  4300 1456          407          B     SUBT7                                       PT204080
0712  4300 149E          408          B     SUBT8                                       PT204090
0716  4300 14F8          409          B     SUBT9                                       PT204100
                         410  *                                                         PT204110
                         411  *                                                         PT204120
                         412  *                                                         PT204130
                         413  ************************************************************  PT204140
                         414  *                                                         PT204150
                         415  *        TEST INSTRUCTIONS  ACK  AND  ACKR                PT204160
                         416  *                                                         PT204170
      0000 071A          417  SUBT1   EQU   *                                           PT204180
071A  C200 071E          418          LPSW  SUB12                                       PT204190
071E  2C00               419  SUB12   DC    X'2C00',SUB13                             PT204200
0720  0722                                                                             PT204210
      0000 0722          420  SUB13   EQU   *                                           PT204220
0722  C800 3231          421          LHI   R0,C'21'           PART2,SUBTEST1           PT204230
0726  4000 179C          422          STH   R0,TESTNO                                   PT204240
                         423  *                                                         PT204250
072A  2400               424          LIS   R0,0                                        PT204260
072C  2410               425          LIS   R1,0                                        PT204270
072E  9F01               426          ACKR  R0,R1                                       PT204280
0730  4340 0746          427          BFC   4,S1RA             ERROR IF OVERFLO = 0     PT204290
0734  0800               428          LHR   R0,R0                                       PT204300
0736  2138               429          BNZS  S1RA                                        PT204310
0738  C510 0004          430          CLHI  R1,4                                        PT204320
073C  2135               431          BNES  S1RA                                        PT204330
073E  2400               432          LIS   R0,0                                        PT204340
0740  9F00               433          ACKR  R0,R0                                       PT204350
0742  4240 074C          434          BTC   4,S1P              ERROR IF OVERFLO = 0
0746  24F1               435  S1RA    LIS   R15,1
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0748  4300 16DE          436          B     ERROR                                    PT204360
074C  C830 3035          437  S1P     LHI   R3,C'05'      LOOK FOR MODEL 5           PT204370
0750  4530 181E          438          CLH   R3,CPUNO                                 PT204380
                                                                                     PT204390
0754  2335              439          BES   S1P1          IS R0 = 4 = EX. (FALSE SINK) PT204400
0756  C500 0004          440          CLHI  R0,4                                     PT204410
075A  203A              441          BNES  S1RA                                     PT204420
075C  2303              442          BS    S1P2                                     PT204430
075E  0800              443  S1P1    LHR   R0,R0         MODEL 5 , IS R0 = 0  ?     PT204440
0760  203D              444          BNZS  S1RA                                     PT204450
0762  2500              445  S1P2    LCS   R0,0                                     PT204460
0764  4000 17B2          446          STH   R0,TEMP                                  PT204470
0768  DF00 17B2          447          ACK   R0,TEMP                                  PT204480
076C  4340 0746          448          BFC   4,S1RA                                   PT204490
0770  0800              449          LHR   R0,R0                                    PT204500
0772  4230 0746          450          BNZ   S1RA                                     PT204510
0776  2404              451          LIS   R0,4                                     PT204520
0778  D400 17B2          452          CLB   R0,TEMP       IS TEMP = 4 = EX. (FALSE SINK) PT204530
077C  4230 0746          453          BNE   S1RA                                     PT204540
0780  9F22              454          ACKR  R2,R2                                    PT204550
0782  D320 1830          455          LB    R2,INDEV                                 PT204560
0786  D310 1832          456          LB    R1,$C4        LOAD COMMAND BYTE          PT204570
078A  9E21              457          OCR   R2,R1         TTY IN READ MODE           PT204580
078C  2500              458          LCS   R0,0                                     PT204590
078E  4000 0040          459          STH   R0,X'40'      OLD PSW EXT. INTRPT.       PT204600
0792  2400              460          LIS   R0,0                                     PT204610
0794  4000 0044          461          STH   R0,X'44'      NEW PSW EXT. INTRPT.       PT204620
0798  C830 07D8          462          LHI   R3,S1INT                                 PT204630
079C  4030 0046          463          STH   R3,X'46'                                 PT204640
07A0  D310 1833          464          LB    R1,$54        LOAD COMMAND BYTE          PT204650
07A4  9E21              465          OCR   R2,R1         TTY IN READ MODE           PT204660
07A6  4800 1828          466          LH    R0,CRTFLG                                PT204670
07AA  2332              467          BZS   S1M                                      PT204680
07AC  9F00              468          ACKR  R0,R0                                    PT204690
07AE  9D23              469  S1M     SSR   R2,R3         R3 = TTY STATUS            PT204700
07B0  4380 07AE          470          BFC   8,S1M         WAIT TIL TTY BUSY          PT204710
07B4  C200 07B8          471          LPSW  S1QQ                                     PT204720
07B8  4000              472  S1QQ    DC    X'4000',*+2   ENABLE EXT. INT.          PT204730
07BA  07BC                                                                           PT204740
07BC  D310 1834          473          LB    R1,$58        LOAD COMMAND BYTE          PT204750
07C0  D320 182F          474          LB    R2,OUTDEV                                PT204760
07C4  9E21              475          OCR   R2,R1                                    PT204770
07C6  9D23              476          SSR   R2,R3                                    PT204780
07C8  2081              477          BTBS  8,1                                      PT204790
07CA  DA20 17B0          478          WD    R2,NULL                                  PT204800
07CE  41E0 1744          479          BAL   R14,TSTBRK                               PT204810
07D2  24F2              480  S1RB    LIS   R15,2                                    PT204820
07D4  4300 16DE          481          B     ERROR                                    PT204830
07D8  2500              482  S1INT   LCS   R0,0                                     PT204840
07DA  2510              483          LCS   R1,0                                     PT204850
07DC  9F01              484          ACKR  R0,R1                                    PT204860
07DE  4240 07D2          485          BO    S1RB          IS R0 = R2 = TTY ADD.      PT204870
07E2  0520              486          CLHR  R2,R0                                    PT204880
07E4  213F              487          BNES  S1RB1                                    PT204890
07E6  4300 07F6          488  TERM2   B     KPIO2
07EA  C510 0010          489          CLHI  R1,X'10'
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07EE  4230 0802          490          BNE   S1RB1                                                    PT204900
07F2  4300 0808          491          B     S1K                                                      PT204910
07F6  0811               492  KPI02   LHR   R1,R1                                                    PT204920
07F8  2338               493  KPI03   BZS   S1K                                                      PT204930
07FA  C510 0008          494          CLHI  R1,8                                                     PT204940
07FE  4330 0808          495          BE    S1K                                                      PT204950
0802  24F3               496  S1RB1   LIS   R15,3                                                    PT204960
0804  4300 16DE          497          B     ERROR                                                    PT204970
0808  4800 0040          498  S1K     LH    R0,X'40'          OLD PSW EXT. INTRPT.                   PT204980
080C  C400 FFF0          499          NHI   R0,X'FFF0'                                               PT204990
0810  C500 4000          500          CLHI  R0,X'4000'        IS IT = 4000  ?                        PT205000
0814  2039               501          BNES  S1RB1                                                    PT205010
0816  C840 1810          502          LHI   R4,PRBRK          PRINT                                  PT205020
081A  C650 181D          503          LHI   R5,BRK            PRESS BRK                              PT205030
081E  D320 182F          504          LB    R2,OUTDEV                                                PT205040
0822  DE20 1822          505          OC    R2,OUTCMD                                                PT205050
0826  9624               506          wBR   R2,R4                                                    PT205060
0828  C800 0852          507          LHI   R0,S1XINT         EXT. INT. ADR.                         PT205070
082C  4000 0046          508          STH   R0,X'46'                                                 PT205080
0830  D310 1833          509          LB    R1,$54            LOAD COMMAND BYTE                      PT205090
0834  D320 1830          510          LB    R2,INDEV                                                 PT205100
0838  9E21               511          OCR   R2,R1                                                    PT205110
083A  9D23               512  S1MM    SSR   R2,R3                                                    PT205120
083C  4380 083A          513          BFC   8,S1MM                                                   PT205130
0840  C200 0844          514          LPSW  S1PP                                                     PT205140
0844  C000               515  S1PP    DC    X'C000',*+2                                              PT205150
0846  0848                                                                                           PT205160
0848  41F0 173C          516          BAL   R15,TSTBRKC                                              PT205170
084C  24F4               517  S1R4    LIS   R15,4                                                    PT205180
084E  4300 16DE          518          B     ERROR                                                    PT205190
                         519  *                                                                      PT205200
0852  9F03               520  S1XINT  ACKR  R0,R3                                                    PT205210
0854  9D25               521  S1T     SSR   R2,R5                                                    PT205220
0856  C350 0020          522          THI   R5,X'20'                                                 PT205230
085A  2233               523          BZS   S1T                                                      PT205240
085C  0502               524          CLHR  R0,R2                                                    PT205250
085E  4230 084C          525          BNE   S1R4                                                     PT205260
0862  C330 0020          526          THI   R3,X'20'                                                 PT205270
0866  4330 084C          527          BZ    S1R4                                                     PT205280
086A  C8F0 0876          528          LHI   R15,S1END                                                PT205290
086E  40F0 1010          529          STH   R15,BUFR2+X'1E'                                          PT205300
0872  4300 175C          530          B     TSTBRK12                                                 PT205310
0876  4300 1716          531  S1END   B     NOERR                                                    PT205320
                         532  ********************************************************************  PT205330
                         533  *                                                                      PT205340
                         534  *       THIS SUBJECT CHECKS THE                                        PT205350
                         535  *                                                                      PT205360
                         536  *       LIST INSTRUCTIONS       AND                                    PT205370
                         537  *                                                                      PT205380
                         538  *       AUTOMATIC INPUT/OUTPUT CHANNEL                                 PT205390
                         539  *                                                                      PT205400
                         540  *                                                                      PT205410
     0000 087A           541  SUBT2   EQU   *                                                        PT205420
087A C880 08AC           542          LHI   R11,T23A                                                 PT205430
087E C800 0400           543  S2      LHI   R0,X'400'         SET UP THE LIST CALLED TABLE
```

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0882  4000 183A      544            STH   R0,TABLE          FOR A TOTAL OF 4 ENTRIES                PT205440
0886  2400           545            LIS   R0,0                                                        PT205450
0888  2303           546            BS    SKIP                                                      PT205460
088A  4030 183A      547  RESTORE   STH   R3,TABLE                                                   PT205470
088E  4000 183C      548  SKIP      STH   R0,TABLE+2                                                 PT205480
0892  4000 183E      549            STH   R0,TABLE+4                                                 PT205490
0896  4000 1840      550            STH   R0,TABLE+6                                                 PT205500
089A  4000 1842      551            STH   R0,TABLE+8                                                 PT205510
089E  4000 1844      552            STH   R0,TABLE+10                                                PT205520
                     553  *                                                                           PT205530
08A2  C200 08A6      554            LPSW  T23                                                        PT205540
08A6  7C00           555  T23       DC    X'7C00',T23B                                               PT205550
08A8  08AA
08AA  030B           556  T23B      BR    R11                                                        PT205560
                     557  *                                                                           PT205570
                                                                                                      PT205580
08AC  C8D0 16DE      558  T23A      LHI   R13,ERROR                                                  PT205590
08B0  24F1           559            LIS   R15,1                                                      PT205600
08B2  C800 0400      560            LHI   R0,X'400'         SET UP THE LIST CALLED TABLE             PT205610
08B6  4000 183A      561            STH   R0,TABLE          FOR FOUR ENTRIES                         PT205620
08BA  2400           562            LIS   R0,0              ZERO OTHER                               PT205630
08BC  4000 183C      563            STH   R0,TABLE+2        CONTROL BYTES                            PT205640
08C0  6730 183A      564            RBL   3,TABLE           LIST IS EMPTY                            PT205650
08C4  034D           565            BFCR  4,R13             IS COND CODE V = 1                       PT205660
08C6  6630 183A      566            RTL   R3,TABLE          YES                                      PT205670
08CA  034D           567            BFCR  4,R13             IS COND CODE V = 1                       PT205680
08CC  2401           568            LIS   R0,1              YES, SET R0 TO 1                         PT205690
08CE  6400 183A      569            ATL   R0,TABLE          SET TOP OF LIST = 1                      PT205700
08D2  02FD           570            BTCR  X'F',R13          IS COND CODE C,V,G,L = 0                 PT205710
08D4  2601           571            AIS   R0,1              R0 = 2 NOW                               PT205720
08D6  6500 183A      572            ABL   R0,TABLE          ENTRY 2  =  2                            PT205730
08DA  02FD           573            BTCR  X'F',R13          IS COND CODE C,V,G,L = 0                 PT205740
08DC  2601           574            AIS   R0,1              R0 = 3 NOW                               PT205750
08DE  6500 183A      575            ABL   R0,TABLE          ENTRY 3  =  3                            PT205760
08E2  02FD           576            BTCR  X'F',R13          IS COND CODE C,V,G,L = 0                 PT205770
08E4  2601           577            AIS   R0,1              R0 = 4 NOW                               PT205780
08E6  6500 183A      578            ABL   R0,TABLE          ENTRY 4  =  4                            PT205790
08EA  02FD           579            BTCR  X'F',R13          IS COND CODE C,V,G,L = 0                 PT205800
                     580  *                                                                           PT205810
08EC  D1C0 183E      581  CHEKTAB   LM    R12,TABLE+4       CHECK IF TABLE ENTRIES IN               PT205820
08F0  C5C0 0002      582            CLHI  R12,2             PROPER MEMORY LOCATION                   PT205830
08F4  213A           583            BNES  TAERR                                                      PT205840
08F6  C5D0 0003      584            CLHI  R13,3                                                      PT205850
08FA  2137           585            BNES  TAERR                                                      PT205860
08FC  C5E0 0004      586            CLHI  R14,4                                                      PT205870
0900  2134           587            BNES  TAERR                                                      PT205880
0902  C5F0 0001      588            CLHI  R15,1                                                      PT205890
0906  2334           589            BES   CONTIN                                                     PT205900
                     590  *                                                                           PT205910
0908  24F2           591  TAERR     LIS   R15,X'2'            ERROR 2202                             PT205920
090A  4300 16DE      592            B     ERROR                                                      PT205930
                     593  *         THE LIST IS NOW FULL , WITH FOUR ENTRIES                         PT205940
                     594  *                                                                           PT205950
                     595  *         1,2,3,4  FROM TOP TO BOTTOM                                      PT205960
                     596  *                                                                           PT205970
090E  C8D0 16DE      597  CONTIN    LHI   R13,ERROR
```

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0912  2601
0914  6500 183A
0918  034D
091A  6400 183A
091E  034D
0920  6600 183A
0924  032D
0926  C500 0001
092A  02FD
092C  6700 183A
0930  032D
0932  C500 0004
0936  02FD
0938  6600 183A
093C  032D
093E  C500 0002
0942  02FD
0944  6700 183A
0946  02FD
094A  C500 0003
094E  02FD


0950  6700 183A
0954  034D
0956  6600 183A
095A  034D
095C  C880 096A
0960  2400
0962  C630 0400
0966  4300 088A


096A  2421
096C  6420 183A
0970  6720 183A
0974  0310 183D
0978  C510 0003
097C  2135
097E  C880 0990
0982  4300 088A

0986  24F3
0988  4300 16DE
098C  24F4
098E  2203


0990  6420 183A
0994  0310 183C
0998  C510 0003
099C  2038
099E  C880 09AE
09A2  C830 0402
```

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598           AIS   R0,1
599           ABL   R0,TABLE
600           BFCR  X'4',R13
601           ATL   R0,TABLE
602           BFCR  X'4',R13
603           RTL   R0,TABLE
604           BFCR  X'2',R13
605           CLHI  R0,1
606           BTCR  X'F',R13
607           RBL   R0,TABLE
608           BFCR  X'2',R13
609           CLHI  R0,4
610           BTCR  X'F',R13
611           RTL   R0,TABLE
612           BFCR  2,R13
613           CLHI  R0,2
614           BTCR  X'F',R13
615           RBL   R0,TABLE
616           BTCR  X'F',R13
617           CLHI  R0,3
618           BTCR  X'F',R13
619   *
620   *       THE LIST IS NOW EMPTY
621   *
622           RBL   R0,TABLE
623           BFCR  4,R13
624           RTL   R0,TABLE
625           BFCR  4,R13
626           LHI   R11,CHRBL
627           LIS   R0,0
628           LHI   R3,X'400'
629           B     RESTORE
630   *
631   *
632   CHRBL   LIS   R2,1
633           ATL   R2,TABLE
634           RBL   R2,TABLE
635           LB    R1,TABLE+3
636           CLHI  R1,3
637           BNES  LIS400
638           LHI   R11,CHATL
639           B     RESTORE
640   *
641   LIS400  LIS   R15,3
642   LIERR1  B     ERROR
643   LIS401  LIS   R15,4
644           BS    LIERR1
645   *
646   *
647   CHATL   ATL   R2,TABLE
648           LB    R1,TABLE+2
649           CLHI  R1,3
650           BNES  LIS401
651           LHI   R11,CHRTL
652           LHI   R3,X'0402'
```

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R0 = 5 NOW                                          PT205980
ADD TO FULL LIST,TEST OVRFLO                        PT205990
IS COND CODE V = 1                                  PT206000
OVERFLOW THE LIST AGAIN                             PT206010
IS COND CODE V = 1                                  PT206020
FETCH TOP ENTRY WHICH IS 1                          PT206030
IS COND CODE G = 1                                  PT206040
IS TOP ENTRY REMOVED = 1                            PT206050
                                                    PT206060
FETCH BOTTOM ENTRY WHICH IS 4                       PT206070
IS COND CODE G = 1                                  PT206080
IS THE ENTRY REMOVED = 4                            PT206090
                                                    PT206100
FETCH NEW TOP ENTRY (= 2)                           PT206110
IS COND CODE G = 1                                  PT206120
IS THE ENTRY REMOVED = 2                            PT206130
IS COND CODE C,V,G,L = 0                            PT206140
REMOVE THE LAST ENTRY                               PT206150
IS COND CODE C,V,G,L = 0                            PT206160
IS THE ENTRY REMOVED = 3                            PT206170
                                                    PT206180
                                                    PT206190
                                                    PT206200
                                                    PT206210
                                                    PT206220
REMOVE FROM EMPTY LIST                              PT206230
IS COND CODE V = 1                                  PT206240
REMOVE FROM EMPTY LIST                              PT206250
                                                    PT206260
                                                    PT206270
                                                    PT206280
                                                    PT206290
                                                    PT206300
                                                    PT206310
CHECK LIST WRAP CONDITON FOR RBL                    PT206320
                                                    PT206330
                                                    PT206340
                                                    PT206350
                                                    PT206360
                                                    PT206370
                                                    PT206380
                                                    PT206390
                                                    PT206400
LIST WRAP ERROR ON RBL INSTRUCTION                  PT206410
                                                    PT206420
LIST WRAP ERROR ON ATL INSTRUCTION                  PT206430
                                                    PT206440
                                                    PT206450
                                                    PT206460
CHECK LIST WRAP CONDITION FOR ATL                   PT206470
                                                    PT206480
                                                    PT206490
                                                    PT206500
                                                    PT206510
                                                    PT206520
```

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09A6  C800 0303      653          LHI   R0,X'0303'                                    PT206530
09AA  4300 088A      654          B     RESTORE                                       PT206540
                     655  *                                                           PT206550
09AE  6620 183A      656  CHRTL   RTL   R2,TABLE          CHECK LIST WRAP CONDITION FOR RTL  PT206560
09B2  D310 183C      657          LB    R1,TABLE+2                                    PT206570
09B6  C510 0000      658          CLHI  R1,0                                          PT206580
09BA  2135           659          BNES  LIS040                                        PT206590
09BC  C8B0 09CE      660          LHI   R11,CHABL                                     PT206600
09C0  4300 088A      661          B     RESTORE                                       PT206610
                     662  *                                                           PT206620
09C4  24F5           663  LIS040  LIS   R15,5            LIST WRAP ERROR ON RTL INSTRUCTION  PT206630
09C6  4300 16DE      664  LIERR2  B     ERROR                                         PT206640
09CA  24F6           665  LIS041  LIS   R15,6            LIST WRAP ERROR ON ABL INSTRUCTION  PT206650
09CC  2203           666          BS    LIERR2                                        PT206660
                     667  *                                                           PT206670
09CE  6520 183A      668  CHABL   ABL   R2,TABLE          CHECK LIST WRAP CONDITION FOR ABL  PT206680
09D2  D310 183D      669          LB    R1,TABLE+3                                    PT206690
09D6  C510 0000      670          CLHI  R1,0                                          PT206700
09DA  2038           671          BNES  LIS041            CONCLUSION OF LIST INSTRUCTION TEST  PT206710
                     672  *                                                           PT206720
09DC  C8A0 0400      673          LHI   R10,X'400'                                    PT206730
09E0  C8B0 0101      674          LHI   R11,X'0101'                                   PT206740
09E4  24C2           675          LIS   R12,2                                         PT206750
09E6  24D3           676          LIS   R13,3                                         PT206760
09E8  24E4           677          LIS   R14,4                                         PT206770
09EA  24F1           678          LIS   R15,1                                         PT206780
09EC  D0A0 183A      679          STM   R10,TABLE                                     PT206790
                     680  *                                                           PT206800
                     681  *       DMT NOT 0 , CHAIN , CONTINUE                       PT206810
                     682  *                                                           PT206820
09F0  C8C0 0A46      683  S21A    LHI   R12,S21G           CHAIN VALUE               PT206830
09F4  94D2           684          EXBR  R13,R2                                        PT206840
09F6  C8E0 A031      685          LHI   R14,X'A031'        1010,0000,0011,0001       PT206850
09FA  24FD           686          LIS   R15,13                                        PT206860
09FC  D0C0 0D96      687          STM   R12,DMT-4                                     PT206870
0A00  D320 182F      688          LB    R2,OUTDEV          R2 = TTY ADDRESS          PT206880
0A04  0872           689          LHR   R7,R2              R1 = TTY ADDRESS          PT206890
0A06  9171           690          SLLS  R7,1                                          PT206900
0A08  CA70 0DD0      691          AHI   R7,X'D0'           R1 = SERVICE POINTER FOR TTY  PT206910
0A0C  C800 0D9D      692          LHI   R0,DMT+1           STORE ADD. OF DMT+1       PT206920
0A10  4007 0000      693          STH   R0,0(R7)           INTO THE SERVICE POINTER R1  PT206930
?                    694                                                             PT206940
0A14  C200 0A18      695          LPSW  S21C                                          PT206950
0A18  7E00           696  S21C    DC    X'7E00',S21D                                PT206960
0A1A  0A1C                                                                           PT206970
0A1C  C840 0DD0      697  S21D    LHI   R4,S2BUF1                                     PT206980
0A20  2400           698          LIS   R0,0                                          PT206990
0A22  D350 1835      699          LB    R5,$48             LOAD COMMAND BYTE         PT207000
0A26  9E25           700          OCR   R2,R5              INTRPTS. ENABLED          PT207010
0A28  9D23           701  S21E    SSR   R2,R3                                        PT207020
0A2A  4280 0A28      702          BTC   8,S21E                                        PT207030
0A2E  DA24 0000      703          WD    R2,0(R4)           WRITE TO TTY WITH INTERRUPTS  PT207040
0A32  2641           704          AIS   R4,1               ENABLED                   PT207050
0A34  C540 0DDC      705          CLHI  R4,S2BUF1+12                                  PT207060
0A38  2038           706          BNES  S21E
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PREVIOUS WARNING ON PAGE 4

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                  *                                                         PT207070
0A3A  9023        S21F   SSR   R2,R3                                        PT207080
0A3C  4280 0A3A          BTC   8,S21F                                       PT207090
0A40  24F7        S2R1   LIS   R15,7                                        PT207100
0A42  4300 16DE          B     ERROR                                        PT207110
0A46  0000        S21G   DC    0              OLD PSW                       PT207120
0A48  0000               DC    0              OLD PSW                       PT207130
0A4A  0000               DC    0              NEW PSW                       PT207140
0A4C  4800 0D9E          LH    R0,DMT+2       COUNT MUST BE ZERO            PT207150
0A50  4230 0A40          BNZ   S2R1                                         PT207160
0A54  4800 0D9C          LH    R0,DMT                                       PT207170
0A58  C500 2031          CLHI  R0,X'2031'                                   PT207180
0A5C  4230 0A40          BNE   S2R1                                         PT207190
0A60  C8C0 0A46          LHI   R12,S21G                                     PT207200
0A64  45C7 0000          CLH   R12,0(R7)      CHAIN VALUE AT 0(R7)          PT207210
0A68  4230 0A40          BNE   S2R1                                         PT207220
0A6C  6700 183A          RBL   R0,TABLE                                     PT207230
0A70  4340 0A40          BFC   4,S2R1         NOT Q SO LIST MUST BE MT      PT207240
0A74  9023        S21H   SSR   R2,R3          WAIT UNTIL THE LAST CHAR.     PT207250
0A76  4280 0A74          BTC   8,S21H         IS PRINTED ON THE TTY         PT207260
                  *                                                         PT207270
0A7A  C600 0DA9          LHI   R0,CCW1+1      RESTORE SERVICE POINTER       PT207280
0A7E  4007 0000          STH   R0,0(R7)                                     PT207290
                  *                                                         PT207300
                  *      SET UP CCW1 TO PRINT 1234567890 AND CR,LF          PT207310
                  *                                                         PT207320
                  *      NOT Q , CHAIN , CONTINUE                           PT207330
                  *                                                         PT207340
0A82  C8A0 0AB8   S22    LHI   R10,S22D       CHAIN VALUE                   PT207350
0A86  94B2               EXBR  R11,R2         R11 = TTY ADR.   , 0          PT207360
0A88  C8C0 9431          LHI   R12,X'9431'    1001,0100,0011,0001           PT207370
0A8C  C8D0 0DD0          LHI   R13,S2BUF1     Q                             PT207380
0A90  C8E0 0DDB          LHI   R14,S2BUF1+11                                PT207390
0A94  D3F0 1835          LB    R15,$48        LOAD COMMAND BYTE             PT207400
0A98  91F8               SLLS  R15,8                                        PT207410
0A9A  C6F0 000A          OHI   R15,X'0A'                                    PT207420
0A9E  D0A0 0DA4          STM   R10,CCW1-4                                   PT207430
0AA2  C200 0AA6          LPSW  S22B                                         PT207440
0AA6  7E00        S22B   DC    X'7E00',S22A                                 PT207450
0AA8  0AAA
0AAA  E202 0000   S22A   SINT  0(R2)                                        PT207460
0AAE  41E0 15E0          BAL   R14,DELAY                                    PT207470
                  *                                                         PT207480
0AB2  24F8        S2R2   LIS   R15,8                                        PT207490
0AB4  4300 16DE          B     ERROR                                        PT207500
0AB8  0000        S22D   DC    0                                            PT207510
0ABA  0000               DC    0                                            PT207520
0ABC  0000               DC    0                                            PT207530
0ABE  4300 0AC6   TERM3  B     S2D                                          PT207540
0AC2  C8B0 0210          LHI   R11,X'210'                                   PT207550
      0000 0AC6   S2D    EQU   *                                            PT207560
0AC6  45B0 0DA6          CLH   R11,CCW1-2     CHECK DEV.NO. AND STATUS      PT207570
0ACA  4230 0AB2          BNE   S2R2                                         PT207580
0ACE  C800 5431          LHI   R0,X'5431'                                   PT207590
0AD2  4500 0DA8          CLH   R0,CCW1                                      PT207600
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0AD6  4230 0AB2          761           BNE   S2R2                                          PT207610
0ADA  C8E0 0DDC          762           LHI   R14,S2BUF1+12                                 PT207620
0ADE  45E0 0DAA          763           CLH   R14,CCW1+2                                    PT207630
0AE2  4230 0AB2          764           BNE   S2R2                                          PT207640
0AE6  D32U 182F          765           LB    R2,OUTDEV                                     PT207650
0AEA  9D23               766  S22E     SSR   R2,R3                                         PT207660
0AEC  4280 0AEA          767           BTC   8,S22E                                        PT207670
0AF0  6600 183A          768           RTL   R0,TABLE          NO QUEUED SO LIST MUST BE MT  PT207680
0AF4  4340 0AB2          769           BFC   4,S2R2                                        PT207690
                         770  *                                                            PT207700
                         771  *        SET UP CCW1 TO PRINT 123456789 AND CR LF            PT207710
                         772  *                                                            PT207720
                         773  *        QUEUE , NOT CHAIN , NOT CONTINUE                    PT207730
                         774  *                                                            PT207740
0AF8  C800 0DA9          775           LHI   R0,CCW1+1                                     PT207750
0AFC  4007 0000          776           STH   R0,0(R7)          R7 = X'D0' + 2(OUTDEV)      PT207760
0B00  C8A0 0B40          777  S23      LHI   R10,S23D          CHAIN VALUE                 PT207770
                         778  *        *                      R11 = OUTDEV. , 0           PT207780
0B04  C8C0 9681          779           LHI   R12,X'9681'       1001,0110,1000,0001         PT207790
0B08  C8D0 0DD0          780           LHI   R13,S2BUF1                                    PT207800
0B0C  C8E0 0DDC          781           LHI   R14,S2BUF1+12                                 PT207810
0B10  D3F0 1835          782           LB    R15,$48           LOAD COMMAND BYTE           PT207820
0B14  91F8               783           SLLS  R15,8                                         PT207830
0B16  C6F0 00FF          784           OHI   R15,X'FF'                                     PT207840
0B1A  D0A0 0DA4          785           STM   R10,CCW1-4                                    PT207850
0B1E  C600 0B48          786           LHI   R0,S23E           Q TERM. INTRPT. TO S23E      PT207860
0B22  4000 0088          787           STH   R0,X'88'                                      PT207870
0B26  4200 0000          788           NOP                                                 PT207880
0B2A  C200 0B2E          789           LPSW  S23A                                          PT207890
0B2E  7E00               790  S23A     DC    X'7E00',S23A2                                 PT207900
0B30  0B32                                                                                 PT207910
0B32  E202 0000          791  S23A2    SINT  0(R2)                                         PT207920
0B36  41E0 15E0          792           BAL   R14,DELAY                                     PT207930
0B3A  24F9               793  S2R3     LIS   R15,9                                         PT207940
0B3C  4300 16DE          794           B     ERROR                                         PT207950
0B40  0000               795  S23D     DC    0                                             PT207960
0B42  0000               796           DC    0                                             PT207970
0B44  0000               797           DC    0                                             PT207980
0B46  2206               798           BS    S2R3                                          PT207990
      0000 0B48          799  S23E     EQU   *                                             PT208000
      0000 0B46          800  TERM4    EQU   *                                             PT208010
0B48  4300 0B50          801           B     S23E1                                         PT208020
0B4C  C8B0 0210          802           LHI   R11,X'210'                                    PT208030
0B50  45B0 0DA6          803  S23E1    CLH   R11,CCW1-2                                    PT208040
0B54  4230 0B3A          804           BNE   S2R3                                          PT208050
0B58  C800 5681          805           LHI   R0,X'5681'                                    PT208060
0B5C  4500 0DA8          806           CLH   R0,CCW1                                       PT208070
0B60  4230 0B3A          807           BNE   S2R3                                          PT208080
0B64  C8E0 0DDD          808           LHI   R14,S2BUF1+13                                 PT208090
0B68  45E0 0DAA          809           CLH   R14,CCW1+2        START. ADR. = ENDING ADR.   PT208100
0B6C  4230 0B3A          810           BNE   S2R3                                          PT208110
0B70  6700 183A          811           RBL   R0,TABLE          REMORE FIRST ENTRY          PT208120
0B74  42F0 0B3A          812           BTC   X'F',S2R3                                     PT208130
0B78  C500 0DA8          813           CLHI  R0,CCW1           IS R0 = ADR. OF CCW1        PT208140
0B7C  4230 0B3A          814           BNE   S2R3
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0B80  4500 183E          815          CLH   R0,TABLE+4                                  PT208150
0B84  4230 0B3A          816          BNE   S2R3                                        PT208160
0B88  D320 182F          817          LB    R2,OUTDEV                                   PT208170
0B8C  9D23               818  S23F    SSR   R2,R3                                      PT208180
0B8E  42C0 0B8C          819          BTC   8,S23F                                      PT208190
                         820  *                                                         PT208200
                         821  *       SET UP CCW1 TO PRINT      123                     PT208210
                         822  *                                                         PT208220
                         823  *       TOTAL CHAR. = 3                                 PT208230
                         824  *                                                         PT208240
                         825  *       TERM. CHAR. = LF                                PT208250
                         826  *                                                         PT208260
                         827  *       QUEUE ,HI/LO = 1,CHAIN,CONTINUE                 PT208270
                         828  *                                                         PT208280
0B92  C800 0DA9          829  S24     LHI   R0,CCW1+1                                 PT208290
0B96  4007 0000          830          STH   R0,0(R7)                                  PT208300
                         831  *                                                         PT208310
0B9A  C8A0 0BEE          832          LHI   R10,S24IN                                 PT208320
0B9E  94B2               833          EXBR  R11,R2                                    PT208330
0BA0  C8C0 9731          834          LHI   R12,X'9731'         1001,0111,0011,0001   PT208340
0BA4  C8D0 0DD0          835          LHI   R13,S2BUF1          STARTING ADDRESS      PT208350
0BA8  C8E0 0DD2          836          LHI   R14,S2BUF1+2        ENDING ADDRESS(OF NUM. 3) PT208360
0BAC  D3F0 1835          837          LB    R15,$48             LOAD COMMAND BYTE     PT208370
0BB0  91F8               838          SLLS  R15,8                                     PT208380
0BB2  C6F0 000A          839          OHI   R15,X'0A'                                 PT208390
0BB6  D0A0 0DA4          840          STM   R10,CCW1-4                                PT208400
                         841  *                                                         PT208410
0BBA  D360 1838          842          LB    R6,$66                                    PT208420
0BBE  D320 1830          843          LB    R2,INDEV                                  PT208430
0BC2  9E26               844          OCR   R2,R6                                     PT208440
0BC4  9D23               845  S24B    SSR   R2,R3                                     PT208450
0BC6  43B0 0BC4          846          BFC   8,S24B                                    PT208460
                         847  *                                                         PT208470
0BCA  C800 0BF6          848          LHI   R0,S24D                                   PT208480
0BCE  4000 0088          849          STH   R0,X'88'                                  PT208490
0BD2  D320 182F          850          LB    R2,OUTDEV                                 PT208500
0BD6  9F00               851          ACKR  R0,R0                                     PT208510
0BD8  C200 0BDC          852          LPSW  S24P                                      PT208520
0BDC  7E00               853  S24P    DC    X'7E00',S24P4                             PT208530
0BDE  0BE0
0BE0  E202 0000          854  S24P4   SINT  0(R2)                                     PT208540
0BE4  41E0 15E0          855          BAL   R14,DELAY                                 PT208550
0BE8  24FA               856  S2R4    LIS   R15,X'A'                                  PT208560
0BEA  43B0 16DE          857          B     ERROR                                     PT208570
0BEE  0000               858  S24IN   DC    0                                         PT208580
0BF0  0000               859          DC    0                                         PT208590
0BF2  0000               860          DC    0                                         PT208600
0BF4  2206               861          BS    S2R4                                      PT208610
0BF6  4800 0DA6          862  S24D    LH    R0,CCW1-2                                 PT208620
0BFA  4810 1828          863          LH    R1,CRTFLG                                 PT208630
0BFE  4330 0C16          864          BZ    TERM5                                     PT208640
0C02  D310 182F          865          LB    R1,OUTDEV                                 PT208650
0C06  9118               866          SLLS  R1,8                                      PT208660
0C08  C610 0008          867          OHI   R1,X'8'                                   PT208670
0C0C  0501               868          CLHR  R0,R1                                     PT208680
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0C0E  4230 0BE8          869          BNE   S2R4                                    PT208690
0C12  4300 0C1E          870          B     S25                                     PT208700
0C16  C500 0208          871  TERM5   CLHI  R0,X'208'                              PT208710
0C1A  4230 0BE8          872          BNE   S2R4                                    PT208720
                         873  *                                                     PT208730
                         874  *       SET UP CCW1 TO PRINT ON TTY                   PT208740
                         875  *                                                     PT208750
                         876  *       KEEP TTY BUSY SO COMMAND IS ABORTED           PT208760
                         877  *                                                     PT208770
                         878  *       KEEP THE LIST FULL SO ONE MORE ENTRY CAUSES OVERFLOW  PT208780
                         879  *                                                     PT208790
                         880  *       TAKE TERMINATION QUEUE-OVERFLO INTERRUPT      PT208800
                         881  *                                                     PT208810
0C1E  C800 0404          882  S25     LHI   R0,X'404'          FILL UP THE LIST    PT208820
0C22  4000 183A          883          STH   R0,TABLE                                PT208830
0C26  C8A0 0C7C          884          LHI   R10,S25INT                              PT208840
?  0C2A  48B0 182F       885          LH    R11,OUTDEV(R0)      (DUMMY INDEX REGISTER)  PT208850
0C2E  C8C0 9731          886          LHI   R12,X'9731'         Q,CHN.,NO OUTCMND.  PT208860
0C32  C8D0 0DD0          887          LHI   R13,S2BUF1                              PT208870
0C36  C8E0 0DDC          888          LHI   R14,S2BUF1+12                           PT208880
0C3A  D3F0 1835          889          LB    R15,$48             LOAD COMMAND BYTE   PT208890
0C3E  91F8               890          SLLS  R15,8                                   PT208900
0C40  C6F0 000A          891          OHI   R15,X'0A'                               PT208910
0C44  D0A0 0DA8          892          STM   R10,CCW1                                PT208920
0C48  D310 1836          893          LB    R1,$44                                  PT208930
0C4C  9E21               894          OCR   R2,R1                                   PT208940
0C4E  9D23               895  S25C    SSR   R2,R3               WAINT UNTIL TTY IS BUSY  PT208950
0C50  4380 0C4E          896          BFC   8,S25C                                  PT208960
0C54  C800 0C88          897          LHI   R0,S25INK           Q OVERFLO ADD.      PT208970
0C58  4000 0092          898          STH   R0,X'92'                                PT208980
0C5C  C8E0 0DDC          899          LHI   R14,S2BUF1+12                           PT208990
0C60  C800 0DA9          900          LHI   R0,CCW1+1                               PT209000
0C64  4007 0000          901          STH   R0,0(R7)                                PT209010
0C68  C200 0C6C          902          LPSW  S25D                                    PT209020
0C6C  7C00               903  S25D    DC    X'7C00',S25E                            PT209030
0C6E  0C70                                                                          PT209040
0C70  E202 0000          904  S25E    SINT  0(R2)                                   PT209050
0C74  D310 1836          905          LB    R1,$44              LOAD COMMAND BYTE   PT209060
0C78  9E21               906          OCR   R2,R1                                   PT209070
0C7A  2304               907          BS    S2R5                                    PT209080
0C7C  0000               908  S25INT  DC    0                                       PT209090
0C7E  0000               909          DC    0                                       PT209100
0C80  0000               910          DC    0                                       PT209110
0C82  24FB               911  S2R5    LIS   R15,X'B'                               PT209120
0C84  4300 16DE          912          B     ERROR                                   PT209130
                         913  *                                                     PT209140
                         914  *       QUEUE OVERFLO INTERRUPT DETECTED              PT209150
                         915  *                                                     PT209160
0C88  C800 7C00          916  S25INK  LHI   R0,X'7C00'                             PT209170
0C8C  4500 008C          917          CLH   R0,X'8C'                                PT209180
0C90  4230 0C82          918          BNE   S2R5                                    PT209190
0C94  4800 0DA6          919          LH    R0,CCW1-2                               PT209200
0C98  C400 0008          920          NHI   R0,8                                    PT209210
0C9C  4330 0C82          921          BZ    S2R5                                    PT209220
0CA0  2410               922          LIS   R1,0                RESET COND. CODE
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0CA2  9500                    923          EPSR  R0,R0                                  PT209230
0CA4  4230 0CB2               924          BNZ   S2R5                                   PT209240
                              925  *                                                     PT209250
                              926  *       RESTORE OVRFLO ADD. FOR ERROR MESSAGE         PT209260
                              927  *                                                     PT209270
0CA8  C800 0400               928          LHI   R0,X'400'                             PT209280
0CAC  4000 183A               929          STH   R0,TABLE          RESET TABLE         PT209290
0CB0  C800 16A6               930          LHI   R0,OVRFLO                             PT209300
0CB4  4000 0092               931          STH   R0,X'92'                              PT209310
                              932  *                                                     PT209320
                              933  *       SET UP CCW1 TO READ 10 KEYS FROM TTY KEYBOARD  PT209330
                              934  *                                                     PT209340
                              935  *       NOT   Q , CHAIN , CONTINUE                    PT209350
                              936  *                                                     PT209360
      0000 0CB8               937  S26     EQU   *                                     PT209370
0CB8  D320 1830               938          LB    R2,INDEV                              PT209380
0CBC  D1B0 0FAA               939          LM    R11,BUFR0                             PT209390
0CC0  D0B0 0DE2               940          STM   R11,S2INBF        S2INBF = 0          PT209400
0CC4  C800 0DA9               941          LHI   R0,CCW1+1                             PT209410
0CC8  4007 0000               942          STH   R0,0(R7)                              PT209420
0CCC  C8A0 0D4E               943          LHI   R10,S26IN         CHAIN VALUE         PT209430
0CD0  94B2                    944          EXBR  R11,R2                                PT209440
0CD2  C8C0 84B1               945          LHI   R12,X'84B1'       1000,0100,1011,0001 PT209450
0CD6  C8D0 0DE2               946          LHI   R13,S2INBF                            PT209460
0CDA  C8E0 0DEB               947          LHI   R14,S2NBFD                            PT209470
0CDE  D3F0 1839               948          LB    R15,$64           LOAD COMMAND BYTE   PT209480
0CE2  91F8                    949          SLLS  R15,8                                 PT209490
0CE4  C6F0 0030               950          OHI   R15,X'30'                             PT209500
0CE8  D0A0 0DA4               951          STM   R10,CCW1-4                            PT209510
0CEC  D320 182F               952          LB    R2,OUTDEV                             PT209520
0CF0  DE20 1822               953          OC    R2,OUTCMD                             PT209530
0CF4  C840 0DF2               954          LHI   R4,S26MSG         PRINT CHARACTERS    PT209540
0CF8  C850 0E0D               955          LHI   R5,S26MSD         DEPRESS KEYS        PT209550
0CFC  9D23                    956  S26C    SSR   R2,R3             1234567890          PT209560
0CFE  4280 0CFC               957          BTC   8,S26C                                PT209570
0D02  9624                    958          WBR   R2,R4                                 PT209580
0D04  D320 182F               959          LB    R2,OUTDEV                             PT209590
0D08  0872                    960          LHR   R7,R2                                 PT209600
0D0A  9171                    961          SLLS  R7,1                                  PT209610
0D0C  CA70 0DD0               962          AHI   R7,X'D0'                              PT209620
0D10  C800 16AE               963          LHI   R0,DEVERR                             PT209630
0D14  4007 0000               964          STH   R0,0(R7)                              PT209640
0D18  D320 1830               965          LB    R2,INDEV                              PT209650
0D1C  0872                    966          LHR   R7,R2                                 PT209660
0D1E  9171                    967          SLLS  R7,1                                  PT209670
0D20  CA70 0DD0               968          AHI   R7,X'D0'                              PT209680
0D24  C800 0DA9               969          LHI   R0,CCW1+1                             PT209690
0D28  4007 0000               970          STH   R0,0(R7)                              PT209700
0D2C  D310 1839               971          LB    R1,$64            LOAD COMMAND BYTE   PT209710
0D30  9E21                    972          OCR   R2,R1                                 PT209720
0D32  9D23                    973  S26D    SSR   R2,R3                                 PT209730
0D34  4380 0D32               974          BFC   8,S26D                                PT209740
0D38  C200 0D3C               975          LPSW  S26E                                  PT209750
0D3C  7C00                    976  S26E    DC    X'7C00',S26F                          PT209760
0D3E  0D40
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0D40   E202 0000          977  S26F    SINT  0(R2)                                    PT209770
0D44   41F0 173C          978          BAL   R15,TSTBRKC                              PT209780
0D48   24FC               979  S2R6    LIS   R15,X'C'                                 PT209790
0D4A   4300 16DE          980          B     ERROR                                      PT209800
                          981  *                                                        PT209810
0D4E   0000               982  S26IN   DC    0                                          PT209820
0D50   0000               983          DC    0                                          PT209830
0D52   0000               984          DC    0                                          PT209840
0D54   D100 0DE2          985          LM    R0,S2INBF                                  PT209850
0D58   C400 7F7F          986          NHI   R0,X'7F7F'                                 PT209860
0D5C   C500 3132          987          CLHI  R0,C'12'                                   PT209870
0D60   4230 0D48          988          BNE   S2R6                                       PT209880
0D64   C410 7F7F          989          NHI   R1,X'7F7F'                                 PT209890
0D68   C510 3334          990          CLHI  R1,C'34'                                   PT209900
0D6C   4230 0D48          991          BNE   S2R6                                       PT209910
0D70   C420 7F7F          992          NHI   R2,X'7F7F'                                 PT209920
0D74   C520 3536          993          CLHI  R2,C'56'                                   PT209930
0D78   4230 0D48          994          BNE   S2R6                                       PT209940
0D7C   C430 7F7F          995          NHI   R3,X'7F7F'                                 PT209950
0D80   C530 3738          996          CLHI  R3,C'78'                                   PT209960
0D84   4230 0D48          997          BNE   S2R6                                       PT209970
0D88   C440 7F7F          998          NHI   R4,X'7F7F'                                 PT209980
0D8C   C540 3930          999          CLHI  R4,C'90'                                   PT209990
0D90   4230 0D48         1000          BNE   S2R6                                       PT210000
0D94   4300 1716         1001          B     NOERR                                      PT210010
                         1002  *                                                        PT210020
                         1003  *                                                        PT210030
                         1004  *       SUBTEST 2 DATA CONSTANTS                         PT210040
                         1005  *                                                        PT210050
                         1006  *                                                        PT210060
0D98   0000              1007          DC    0         CHAIN VALUE                      PT210070
0D9A   0000              1008          DC    0         DEV. = TTY , STATUS              PT210080
0D9C   A0B1              1009  DMT     DC    X'A0B1'                                    PT210090
0D9E   0000              1010          DC    0         TOTAL COUNT =                    PT210100
0DA0   0000              1011          DC    0         DUMMY HW                         PT210110
0DA2   0000              1012          DC    0         DUMMY                            PT210120
0DA4   0000              1013          DC    0         CHAIN VALUE                      PT210130
0DA6   0000              1014          DC    0         DEV.NO. , FINAL STATUS           PT210140
0DA8   0000              1015  CCW1    DC    0         C.C.WORD 1                       PT210150
0DAA   0000              1016          DC    0         START ADR.                       PT210160
0DAC   0000              1017          DC    0         END ADR.                         PT210170
0DAE   0000              1018          DC    0         CMND. BYTE , TERM.CHAR.          PT210180
0DB0   0000              1019          DC    0         DUMMY                            PT210190
                         1020  *                                                        PT210200
0DB2   0000              1021          DC    0         CHAIN VALUE                      PT210210
0DB4   0000              1022  CCW2    DC    0         DEV. NO. , FINAL STATUS          PT210220
0DB6   0000              1023          DC    0         C.C.WORD 2                       PT210230
0DB8   0000              1024          DC    0         START ADR.                       PT210240
0DBA   0000              1025          DC    0         END ADR.                         PT210250
0DBC   0000              1026          DC    0         CMND. BYTE , TERM. CHAR.         PT210260
0DBE   0000              1027          DC    0         DUMMY                            PT210270
                         1028  *                                                        PT210280
0DC0   0000              1029          DC    0         CHAIN VALUE                      PT210290
0DC2   0000              1030          DC    0         DEV. NO. , STATUS                PT210300
0DC4   0000              1031  CCW3    DC    0         COMMAND WORD                     PT210310
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0DC6  0000                1032          DC    0                    STARTING ADDRESS                PT210320
0DC8  0000                1033          DC    0                    END ADDRESS                     PT210330
0DCA  0000                1034          DC    0                    COMND. BYTE , TERM. CHAR.       PT210340
0DCC  0000                1035          DC    0                    DUMMY                           PT210350
                          1036  *                                                                  PT210360
0DCE  4142                1037          DC    C'AB'                                               PT210370
0DD0  3132                1038  S2BUF1  DC    C'12'                                               PT210380
0DD2  3334                1039          DC    C'34'                                               PT210390
0DD4  3536                1040          DC    C'56'                                               PT210400
0DD6  3738                1041          DC    C'78'                                               PT210410
0DD8  3930                1042          DC    C'90'                                               PT210420
0DDA  0D0A                1043          DC    X'D0A'                                              PT210430
0DDC  FFFF                1044          DCX   FFFF                                                PT210440
0DDE  4344                1045          DC    C'CD'                                               PT210450
                          1046  *                                                                  PT210460
                          1047  *                                                                  PT210470
0DE0  0000                1048          DC    0                                                   PT210480
0DE2  0000                1049  S2INBF  DC    0                                                   PT210490
0DE4  0000                1050          DC    0                                                   PT210500
0DE6  0000                1051          DC    0                                                   PT210510
0DE8  0000                1052          DC    0                                                   PT210520
0DEA  0000                1053          DC    0                                                   PT210530
      0000 0DEB           1054  S2NBFD  EQU   *-1                                                 PT210540
0DEC  0000                1055          DC    0                                                   PT210550
                          1056  *                                                                  PT210560
0DEE  0DF2                1057  WBSTRT  DC    S26MSG                                              PT210570
0DF0  0E0D                1058          DC    S26MSD                                              PT210580
      0000 0DF2           1059  S26MSG  EQU   *                                                   PT210590
0DF2  4445 5052 4553 5320 1060          DC    C'DEPRESS KEYS'                                     PT210600
0DFA  4B45 5953
0DFE  0D0A                1061          DC    X'D0A'                                              PT210610
0E00  3132 3334 3536 3738 1062          DC    C'1234567890'                                       PT210620
0E08  3930
0E0A  0D0A                1063          DC    X'D0A'                                              PT210630
0E0C  FFFF                1064          DCX   FFFF                                                PT210640
      0000 0E0D           1065  S26MSD  EQU   *-1                                                 PT210650
                          1066  ********************************************************************PT210660
                          1067  *                                                                  PT210670
                          1068  *       TEST 3                                                     PT210680
                          1069  *                                                                  PT210690
      0000 0E0E           1070  SUBT3   EQU   *                                                   PT210700
                          1071  *       THIS SUBTEST CHECKS INITIALIZE/POWER FAIL/AUTO RESTART      PT210710
                          1072  *       MACHINE MALFUNCTION INTERRUPT IS DISABLED.                 PT210720
                          1073  *                                                                  PT210730
0E0E  2400                1074          LIS   R0,0                                                PT210740
0E10  4000 1212           1075          STH   R0,S3MM             S3MM = 0 : MMINT DISABLED       PT210750
0E14  C200 0E18           1076          LPSW  S3A                                                 PT210760
0E18  5C00                1077  S3A     DC    X'5C00',S34B                                        PT210770
0E1A  0E2A
                          1078  *                                                                  PT210780
                          1079  *                                                                  PT210790
                          1080  ********************************************************************PT210800
                          1081  *                                                                  PT210810
                          1082  *       TEST 4                                                     PT210820
                          1083  *                                                                  PT210830
```

```
                0000 0E1C

0E1C   2501
0E1E   4000 1212
0E22   C200 0E26
0E26   7C00
0E28   0E2A

0E2A   C800 0EFA
0E2E   4000 003E
0E32   C800 0FF2
0E36   4000 0022
0E3A   D100 0FAA
0E3E   D000 0FF2
0E42   4000 0024
0E46   4000 0026
0E4A   4000 0038
0E4E   4000 003A
0E52   4000 003C

0E56   D320 182F
0E5A   C840 1802
0E5E   C850 1810
0E62   9624

0E64   D100 0FCA
0E68   41F0 0F52
0E6C   2334

0E6E   24F1
0E70   4300 16DE

                0000 0E74
0E74   D320 1830
0E78   9D20
0E7A   C300 0020
0E7E   4230 0E8A
0E82   2422
0E84   2400
0E86   4300 0E68
                0000 0E8A
0E8A   D320 1830
0E8E   9D23
0E90   C8F0 0E9C
0E94   40F0 1010
0E98   4300 175C
                0000 0E9C

0E9C   D100 0FF2
0EA0   2400
0EA2   2422

1084  SUBT4   EQU   *                                                    PT210840
1085  *       THIS SUBTEST CHECKS INITIALIZE/POWER FAIL/AUTO RESTART      PT210850
1086  *       MACHINE MALFUNCTION INTERRUPT IS ENABLED.                P PT210860
1087  *                                                                  PT210870
1088            LCS   R0,1                                               PT210880
1089            STH   R0,S3MM          S3MM = FFFF : MMINT ENABLED.      PT210890
1090            LPSW  S4A                                                PT210900
1091  S4A       DC    X'7C00',S34B                                       PT210910
1092  *                                                                  PT210920
1093  *       THE FOLLOWING IS COMMON CODE FOR SUBTESTS 3 AND 4.         PT210930
1094  *                                                                  PT210940
1095  S34B      LHI   R0,S3INT                                           PT210950
1096            STH   R0,X'3E'         MMINT NEW PSW LOC                 PT210960
1097            LHI   R0,BUFR2                                           PT210970
1098            STH   R0,X'22'         PPF REGISTER SAVE POINTER         PT210980
1099            LM    R0,BUFR0         ALL REGS = 0                      PT210990
1100            STM   R0,BUFR2         INITIALIZE SAVE AREA              PT211000
1101            STH   R0,X'24'         CURRENT PSW PPF SAVE AREA         PT211010
1102            STH   R0,X'26'         CURRENT PSW PPF SAVE AREA         PT211020
1103            STH   R0,X'38'         MMINT OLD PSW STATUS              PT211030
1104            STH   R0,X'3A'         MMINT OLD PSW LOC                 PT211040
1105            STH   R0,X'3C'         MMINT NEW PSW STATUS              PT211050
1106  *                                                                  PT211060
1107  S34C      LB    R2,OUTDEV                                          PT211070
1108            LHI   R4,PRESS                                           PT211080
1109            LHI   R5,BRK                                             PT211090
1110            WBR   R2,R4            'PRESS INIT PRESS BRK'            PT211100
1111  *                                                                  PT211110
1112            LM    R0,BUFR1         SET SINGLE BIT IN EACH REGISTER   PT211120
1113  S3B       BAL   R15,CMPARE       CHECK REGISTERS                   PT211130
1114            BES   S3B4                                               PT211140
1115  *                                                                  PT211150
1116  S4R1      LIS   R15,1            REGISTERS CHANGED           *****PT211160
1117            B     ERROR                                              PT211170
1118  *                                                                  PT211180
1119  S3B4      EQU   *                                                  PT211190
1120            LB    R2,INDEV                                           PT211200
1121            SSR   R2,R0                                              PT211210
1122            THI   R0,X'20'                                           PT211220
1123            BNZ   S3B6                                               PT211230
1124            LIS   R2,2                                               PT211240
1125            LIS   R0,0                                               PT211250
1126            B     S3B                                                PT211260
1127  S3B6      EQU   *                                                  PT211270
1128            LB    R2,INDEV                                           PT211280
1129            SSR   R2,R3                                              PT211290
1130            LHI   R15,S3B61                                          PT211300
1131            STH   R15,BUFR2+X'1E'                                    PT211310
1132            B     TSTBRK12                                           PT211320
1133  S3B61     EQU   *                                                  PT211330
1134  *                                                                  PT211340
1135            LM    R0,BUFR2         WERE REGISTERS STORED ?           PT211350
1136            LIS   R0,0                                               PT211360
1137            LIS   R2,2             (WORK REG)                        PT211370
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0EA4  41F0 0F52          1136          BAL   R15,CMPARE                                    PT211380
0EA8  2334               1139          BZS   S3C              IF CC = 0, COMPARE OK.       PT211390
                         1140  *                                                           PT211400
0EAA  24F2               1141  S3R2    LIS   R15,2            REGISTERS NOT STORED  *****  PT211410
0EAC  4300 16DE          1142          B     ERROR                                         PT211420
                         1143  *                                                           PT211430
0EB0  2403               1144  S3C     LIS   R0,3                                         PT211440
0EB2  D400 182E          1145          CLB   R0,SUBTNO                                     PT211450
0EB6  213C               1146          BNES  S4D                                           PT211460
0EB8  4800 0024          1147          LH    R0,X'24'         PPF PSW STATUS               PT211470
0EBC  C400 FFF0          1148          NHI   R0,X'FFF0'                                    PT211480
0EC0  C500 5C00          1149          CLHI  R0,X'5C00'       WAS STATUS SAVED ?           PT211490
0EC4  4330 1716          1150  S3END   BE    NOERR                                         PT211500
                         1151  *                                                           PT211510
0EC8  24F3               1152  S3R3    LIS   R15,3            PSW NOT STORED AT X'24'  *****  PT211520
0ECA  4300 16DE          1153          B     ERROR                                         PT211530
                         1154  *                                                           PT211540
0ECE  4800 0F4E          1155  S4D     LH    R0,S4PSW1        PSW SEEN ON EPF              PT211550
0ED2  C500 0001          1156          CLHI  R0,X'0001'       HAS L FLAG SET BY MICRO-CODE PT211560
0ED6  4230 0F42          1157          BNE   S4R5                                          PT211570
                         1158  *                                                           PT211580
0EDA  4800 0F50          1159          LH    R0,S4PSW2        PSW SEEN ON POWER RESTORE    PT211590
0EDE  C500 0000          1160          CLHI  R0,X'0000'       HAS NO FLAGS SET.            PT211600
0EE2  4230 0F48          1161          BNE   S4R6                                          PT211610
                         1162  *                                                           PT211620
0EE6  4800 0038          1163          LH    R0,X'38'                                      PT211630
0EEA  C400 FFF0          1164          NHI   R0,X'FFF0'                                    PT211640
0EEE  C500 7C00          1165          CLHI  R0,X'7C00'                                    PT211650
0EF2  4230 0EC8          1166          BNE   S3R3                                          PT211660
0EF6  4300 1716          1167  S4END   B     NOERR                                         PT211670
                         1168  *                                                           PT211680
0EFA  9500               1169  S3INT   EPSR  R0,R0            CAPTURE EPF NEW PSW          PT211690
0EFC  4820 1212          1170          LH    R2,S3MM          WAS INTERRUPT ENABLED ?      PT211700
0F00  213B               1171          BNZS  S4INT1           BRANCH = YES.                PT211710
                         1172  *                                                           PT211720
0F02  24F4               1173  S3R4    LIS   R15,4            MMINT TAKEN WHEN DISABLED,   *****  PT211730
0F04  2421               1174          LIS   R2,1             OR NOT TAKEN WHEN ENABLED.   PT211740
0F06  CA20 0001          1175  S3R4B   AHI   R2,1                                          PT211750
0F0A  C520 0200          1176          CLHI  R2,X'200'        DELAY AT LEAST 1 MS.         PT211760
0F0E  4230 0F06          1177          BNE   S3R4B                                         PT211770
0F12  4300 16DE          1178          B     ERROR                                         PT211780
                         1179  *                                                           PT211790
0F16  4000 0F4E          1180  S4INT1  STH   R0,S4PSW1        PSW SEEN ON EPF              PT211800
0F1A  C800 0F2C          1181          LHI   R0,S4INT2                                     PT211810
0F1E  4000 003E          1182          STH   R0,X'3E'         MMINT NEW PSW LOC (FOR RESTORE) PT211820
0F22  2400               1183          LIS   R0,0                                          PT211830
0F24  C200 0F28          1184          LPSW  S4B                                           PT211840
0F28  7C00               1185  S4B     DC    X'7C00',S3R4                                  PT211850
0F2A  0F02
                         1186  *       EXECUTE A 1-MS DELAY BEFORE POWER RESTORE INTERRUPT TAKEN.  PT211860
                         1187  *       IF NO INTERRUPT, ERROR 2404 RESULTS.               PT211870
                         1188  *                                                          PT211880
0F2C  9500               1189  S4INT2  EPSR  R0,R0            CAPTURE POWER RESTORE NEW PSW  PT211890
0F2E  4000 0F50          1190          STH   R0,S4PSW2                                     PT211900
0F32  C800 1696          1191          LHI   R0,MALFTN        IN CASE OF 3RD INTERRUPT.    PT211910
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0F36  4000 003E      1192            STH   R0,X'3E'          RESTORE POINTER.                          PT211920
0F3A  2400           1193            LIS   R0,0              (WORK REGISTER)                           PT211930
0F3C  2422           1194            LIS   R2,2                                                        PT211940
0F3E  4300 0E68      1195            B     S3B               TO WAIT FOR BRK KEY                       PT211950
                     1196  *                                                                           PT211960
0F42  24F5           1197  S4R5      LIS   R15,5             CC NOT 0001 ON EPF        *****           PT211970
0F44  4300 16DE      1198            B     ERROR                                                       PT211980
                     1199  *                                                                           PT211990
0F48  24F6           1200  S4R6      LIS   R15,6             CC NOT 0000 ON POWER RESTORE  *****       PT212000
0F4A  4300 16DE      1201            B     ERROR                                                       PT212010
                     1202  *                                                                           PT212020
0F4E  0000           1203  S4PSW1    DCX   0                                                           PT212030
0F50  0000           1204  S4PSW2    DCX   0                                                           PT212040
                     1205  *                                                                           PT212050
                     1206  *                                                                           PT212060
0F52  0800           1207  CMPARE    LHR   R0,R0                                                       PT212070
0F54  023F           1208            BNZR  R15                                                         PT212080
0F56  C510 0001      1209            CLHI  R1,1              R1  =  1  ?                               PT212090
0F5A  023F           1210            BNER  R15                                                         PT212100
0F5C  C520 0002      1211            CLHI  R2,2                                                        PT212110
0F60  023F           1212            BNER  R15                                                         PT212120
0F62  C530 0004      1213            CLHI  R3,4              R3  =  4  ?                               PT212130
0F66  023F           1214            BNER  R15                                                         PT212140
0F68  C540 0008      1215            CLHI  R4,8              R4  =  8  ?                               PT212150
0F6C  023F           1216            BNER  R15                                                         PT212160
0F6E  C550 0010      1217            CLHI  R5,16                                                       PT212170
0F72  023F           1218            BNER  R15                                                         PT212180
0F74  C560 0020      1219            CLHI  R6,X'20'          R6  = 0020  ?                             PT212190
0F78  023F           1220            BNER  R15                                                         PT212200
0F7A  C570 0040      1221            CLHI  R7,X'40'          R7  = 0040  ?                             PT212210
0F7E  023F           1222            BNER  R15                                                         PT212220
0F80  C580 0080      1223            CLHI  R8,X'80'                                                    PT212230
0F84  023F           1224            BNER  R15                                                         PT212240
0F86  C590 0100      1225            CLHI  R9,X'100'                                                   PT212250
0F8A  023F           1226            BNER  R15                                                         PT212260
0F8C  C5A0 0200      1227            CLHI  R10,X'200'                                                  PT212270
0F90  023F           1228            BNER  R15                                                         PT212280
0F92  C5B0 0400      1229            CLHI  R11,X'400'        R11  = 0400                               PT212290
0F96  023F           1230            BNER  R15                                                         PT212300
0F98  C5C0 0800      1231            CLHI  R12,X'800'        R12  = 0800  ?                            PT212310
0F9C  023F           1232            BNER  R15                                                         PT212320
0F9E  C5D0 1000      1233            CLHI  R13,X'1000'                                                 PT212330
0FA2  023F           1234            BNER  R15                                                         PT212340
0FA4  C5E0 2000      1235            CLHI  R14,X'2000'                                                 PT212350
0FA8  030F           1236            BR    R15                                                         PT212360
                     1237  *                                                                           PT212370
0FAA  0000           1238  BUFR0     DC    0                                                           PT212380
0FAC  0000           1239            DC    0                                                           PT212390
0FAE  0000           1240            DC    0                                                           PT212400
0FB0  0000           1241            DC    0                                                           PT212410
0FB2  0000           1242            DC    0                                                           PT212420
0FB4  0000           1243            DC    0                                                           PT212430
0FB6  0000           1244            DC    0                                                           PT212440
0FB8  0000           1245            DC    0                                                           PT212450
0FBA  0000           1246            DC    0                                                           PT212460
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0FBC  0000                1247          DC    0                                                    PT212470
0FBE  0000                1248          DC    0                                                    PT212480
0FC0  0000                1249          DC    0                                                    PT212490
0FC2  0000                1250          DC    0                                                    PT212500
0FC4  0000                1251          DC    0                                                    PT212510
0FC6  0000                1252          DC    0                                                    PT212520
0FC8  0000                1253          DC    0                                                    PT212530
0FCA  0000                1254  BUFR1   DC    0                                                    PT212540
0FCC  0001                1255          DC    1                                                    PT212550
0FCE  0002                1256          DC    2                                                    PT212560
0FD0  0004                1257          DC    4                                                    PT212570
0FD2  0008                1258          DC    8                                                    PT212580
0FD4  0010                1259          DC    16                                                   PT212590
0FD6  0020                1260          DC    32                                                   PT212600
0FD8  0040                1261          DC    64                                                   PT212610
0FDA  0080                1262          DC    128                                                  PT212620
0FDC  0100                1263          DC    X'100'                                               PT212630
0FDE  0200                1264          DC    X'200'                                               PT212640
0FE0  0400                1265          DC    X'400'                                               PT212650
0FE2  0800                1266          DC    X'800'                                               PT212660
0FE4  1000                1267          DC    X'1000'                                              PT212670
0FE6  2000                1268          DC    X'2000'                                              PT212680
0FE8  4000                1269          DC    X'4000'                                              PT212690
0FEA  8000                1270          DC    X'8000'                                              PT212700
0FEC  0000                1271          DC    0                                                    PT212710
                          1272  *                                                                  PT212720
                          1273  *                                                                  PT212730
0FEE  0FF2                1274  BF2ST   DC    BUFR2                                                PT212740
0FF0  0FFA                1275          DC    BUFR2+8                                              PT212750
0FF2  0000                1276  BUFR2   DC    0               BUFFER FOR READING DATA              PT212760
0FF4  0000                1277          DC    0                                                    PT212770
0FF6  0000                1278          DC    0               AND STORING REGISTERS                PT212780
0FF8  0000                1279          DC    0                                                    PT212790
0FFA  0000                1280          DC    0                                                    PT212800
0FFC  0000                1281          DC    0                                                    PT212810
0FFE  0000                1282          DC    0                                                    PT212820
1000  0000                1283          DC    0                                                    PT212830
1002  0000                1284          DC    0                                                    PT212840
1004  0000                1285          DC    0                                                    PT212850
1006  0000                1286          DC    0                                                    PT212860
1008  0000                1287          DC    0                                                    PT212870
100A  0000                1288          DC    0                                                    PT212880
100C  0000                1289          DC    0                                                    PT212890
100E  0000                1290          DC    0                                                    PT212900
1010  0000                1291          DC    0                                                    PT212910
1012                      1292  RSAVE   DS    512                                                  PT212920
                          1293  *                                                                  PT212930
1212  0000                1294  S3MM    DC    0                                                    PT212940
                          1295  *                                                                  PT212950
      0000 1213           1296  S4MM    EQU   *-1                                                  PT212960
                          1297  *                                                                  PT212970
                          1298  ********************************************************************PT212980
                          1299  *                                                                  PT212990
                          1300  *       TEST 5                                                     PT213000
                          1301  *                                                                  PT213010
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                        1302  *  THIS TEST CHECKS THE PRIVILEDGED INSTRUCTIONS.                    PT213020
                        1303  *                                                                    PT213030
1214  2410              1304  SUBT5   LIS   R1,0              R1 = 0                             PT213040
1216  C840 12B6         1305          LHI   R4,T52BYT                                            PT213050
      0000 121A         1306  T52     EQU   *                                                    PT213060
121A  D364 0000         1307  T52D    LB    R6,0(R4)           R6 = PRIV. INSTR.                 PT213070
121E  D260 1240         1308          STB   R6,T52PRV                                            PT213080
1222  2400              1309          LIS   R0,0                                                 PT213090
1224  4000 0030         1310          STH   R0,X'30'           ILLEGAL INSTRUCTION               PT213100
1226  4000 0032         1311          STH   R0,X'32'           OLD PSW                           PT213110
122C  4000 0034         1312          STH   R0,X'34'                                             PT213120
1230  C830 1248         1313          LHI   R3,T52INT                                            PT213130
1234  4030 0036         1314          STH   R3,X'36'           ILLEGAL INSTRUCTION               PT213140
1238  C200 123C         1315          LPSW  T52A                                                 PT213150
123C  0100              1316  T52A    DC    X'100',T52B                                          PT213160
123E  1240
      0000 1240         1317  T52B    EQU   *                                                    PT213170
1240  0000              1318  T52PRV  DC    0                                                    PT213180
1242  24F1              1319  T52R1   LIS   R15,1                                                PT213190
1244  4300 16DE         1320          B     ERROR                                                PT213200
1248  0811              1321  T52INT  LHR   R1,R1              IF R1=0,PRIV.INSTR.INTRPT.        PT213210
124A  4230 129E         1322          BNZ   T52R3              IF R1=1,SVC PERFORMED             PT213220
124E  C830 0100         1323          LHI   R3,X'100'          OLD PSW                           PT213230
1252  4530 0030         1324          CLH   R3,X'30'           IS OLD PSW = 100   ?              PT213240
1256  2138              1325          BNES  T52R2              IF NOT , ERROR                    PT213250
1258  C830 1240         1326          LHI   R3,T52PRV          OLD PSW LOCATION                  PT213260
125C  4530 0032         1327          CLH   R3,X'32'                                             PT213270
1260  2133              1328          BNES  T52R2                                                PT213280
1262  9533              1329          EPSR  R3,R3                                                PT213290
1264  2334              1330          BZS   T52F                                                 PT213300
1266  24F2              1331  T52R2   LIS   R15,2                                                PT213310
1268  4300 16DE         1332          B     ERROR                                                PT213320
                        1333  *                                                                  PT213330
                        1334  *       PRIV. INST. DETECTED AND PSW SWAP OK                       PT213340
                        1335  *                                                                  PT213350
126C  2641              1336  T52F    AIS   R4,1               R4=ADD. OF NEXT PRIV. INSTR.      PT213360
126E  C540 12CF         1337          CLHI  R4,T52LST+1                                          PT213370
1272  4230 121A         1338          BNE   T52                                                  PT213380
                        1339  *                                                                  PT213390
                        1340  *       ALL PRIVILEGED INSTRUCTIONS TESTED                         PT213400
                        1341  *                                                                  PT213410
1276  C800 1692         1342          LHI   R0,ILGINT                                            PT213420
127A  4000 0036         1343          STH   R0,X'36'           RESTORE ILGINT ADR. AT ?          PT213430
127E  2411              1344          LIS   R1,1               R1 = 1                            PT213440
1280  C830 12A4         1345  T52HB   LHI   R3,T52SVC                                           PT213450
1284  4030 009C         1346          STH   R3,X'9C'                                             PT213460
1286  2400              1347          LIS   R0,0                                                 PT213470
128A  4000 0096         1348          STH   R0,X'96'           OLD PSW SVC                       PT213480
128E  4000 009A         1349          STH   R0,X'9A'           NEW PSW SVC 0                     PT213490
1292  C200 1296         1350          LPSW  T52HC                                                PT213500
1296  0100              1351  T52HC   DC    X'100',T52K                                          PT213510
1298  129A
129A  E100 0004         1352  T52K    SVC   0,R4                                                PT213520
129E  24F3              1353  T52R3   LIS   R15,3                                                PT213530
12A0  4300 16DE         1354          B     ERROR                                                PT213540
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12A4   C850 0100          1355  T52SVC   LHI   R3,X'100'                                    PT213550
12A8   4550 0096          1356           CLH   R3,X'96'                                     PT213560
12AC   2037               1357           BNES  T52R3                                        PT213570
12AE   9533               1358           EPSR  R3,R3                                        PT213580
12B0   2039               1359           BNZS  T52R3                                        PT213590
12B2   4300 1716          1360  T52END   B     NOERR                                        PT213600
12B6   13                 1361  T52BYT   DB    X'13'          SETMR                         PT213610
12B7   33                 1362           DB    X'33'          LPSR                          PT213620
12B8   53                 1363           DB    X'53'          SETM                          PT213630
12B9   73                 1364           DB    X'73'          LPS                           PT213640
12BA   96                 1365           DB    X'96'          WBR                           PT213650
12BB   97                 1366           DB    X'97'          RBR                           PT213660
12BC   98                 1367           DB    X'98'          WHR                           PT213670
12BD   99                 1368           DB    X'99'          RHR                           PT213680
12BE   9A                 1369           DB    X'9A'          WDR                           PT213690
12BF   9B                 1370           DB    X'9B'          RDR                           PT213700
12C0   9D                 1371           DB    X'9D'          SSR                           PT213710
12C1   9E                 1372           DB    X'9E'          OCR                           PT213720
12C2   9F                 1373           DB    X'9F'          AIR                           PT213730
12C3   C2                 1374           DB    X'C2'          LPSW                          PT213740
12C4   D5                 1375           DB    X'D5'          AL                            PT213750
12C5   D6                 1376           DB    X'D6'          WB                            PT213760
12C6   D7                 1377           DB    X'D7'          RB                            PT213770
12C7   D8                 1378           DB    X'D8'          WH                            PT213780
12C8   D9                 1379           DB    X'D9'          RH                            PT213790
12C9   DA                 1380           DB    X'DA'          WD                            PT213800
12CA   DB                 1381           DB    X'DB'          RD                            PT213810
12CB   DD                 1382           DB    X'DD'          SS                            PT213820
12CC   DE                 1383           DB    X'DE'          OC                            PT213830
12CD   DF                 1384           DB    X'DF'          AI                            PT213840
12CE   E2                 1385  T52LST   DB    X'E2'          SINT                          PT213850
12CF   00                 1386           DB    *                                            PT213860
                          1387  *                                                          PT213870
                          1388  ************************************************************PT213880
                          1389  *                                                          PT213890
                          1390  *      TEST  6                                             PT213900
                          1391  *                                                          PT213910
                          1392  *        THIS TEST EXERCISES THE HEXIDECIMAL DISPLAY PANEL  PT213920
                          1393  *                                                          PT213930
12D0   D320 182F          1394  SUBT6    LB    R2,OUTDEV       TEST FOR EXTENDED DISPLAY   PT213940
12D4   C800 0041          1395           LHI   R0,C'A'         PRINT CHARACTER A           PT213950
12D8   41E0 1666          1396           BAL   R14,WRITE1                                  PT213960
                          1397  *                              OUTPUT TO DISPLAY CONSOLE STATUSPT213970
12DC   2411               1398  S61      LIS   R1,1            R1 = 1 = CONSOLE ADR        PT213980
12DE   C880 0080          1399           LHI   R8,X'80'        R8 = X'80' = NORMAL MODE    PT213990
12E2   9E18               1400           OCR   R1,R8           NORMAL MODE                 PT214000
12E4   9D14               1401  S61A     SSR   R1,R4           R4 = CONSOLE STATUS         PT214010
12E6   9A14               1402           WDR   R1,R4           DISPLAY CONSOLE STATUS, RT 2 HEX DIGITPT214020
12E8   C8E0 12DC          1403           LHI   R14,S61                                     PT214030
12EC   41F0 1744          1404           BAL   R15,TSTBRK                                  PT214040
                          1405  *                                                          PT214050
                          1406  *                              OUTPUT TO DISPLAY           PT214060
                          1407  *                              ALL ZERO ALTERNATED WITH X'FFFFF'PT214070
                          1408  *                              TEST LAMPS                  PT214080
12F0   C800 0042          1409  S62      LHI   R0,C'B'         PRINT CHARACTER B           PT214090
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12F4  41E0 1666          1410           BAL   R14,WRITE1                                  PT214100
12F8  C680 0040          1411           LHI   R8,X'40'        INCREMENTAL MODE              PT214110
12FC  0700               1412  S62A     XHR   R0,R0           CLEAR R0                      PT214120
12FE  9E18               1413  S62B     OCR   R1,R8                                         PT214130
1300  9A10               1414           WDR   R1,R0           OUTPUT TO DISPLAR 1           PT214140
1302  9A10               1415           WDR   R1,R0           OUTPUT TO DISPLAR 2           PT214150
1304  9A10               1416           WDR   R1,R0           OUTPUT TO DISPLAR 3           PT214160
1306  9A10               1417           WDR   R1,R0           OUTPUT TO DISPLAR 4           PT214170
1308  9A10               1418           WDR   R1,R0           OUTPUT TO DISPLAR 5           PT214180
130A  C890 1322          1419           LHI   R9,S63          NEXT TEST                     PT214190
130E  41E0 15E0          1420           BAL   R14,DELAY                                     PT214200
1312  C900 FFFF          1421  S62E     CHI   R0,X'FFFF'                                    PT214210
1316  4330 12FC          1422           BE    S62A                                          PT214220
131A  C800 FFFF          1423           LHI   R0,X'FFFF'                                    PT214230
131E  4300 12FE          1424           B     S62B                                          PT214240
                         1425  *                                                           PT214250
                         1426  *                        OUTPUT COUNTER TO DISPLAY          PT214260
                         1427  *                        TEST CONSOLE SHIFT REGISTERS       PT214270
1322  C800 0043          1428  S63      LHI   R0,C'C'     PRINT CHARACTER C                 PT214280
1326  41E0 1666          1429           BAL   R14,WRITE1                                    PT214290
132A  C840 1394          1430           LHI   R4,DISBUF       LOAD R4 & R5 WITH DISPLAY BUFFER PT214300
132E  C850 1398          1431           LHI   R5,DISBUF+4     WITH LOWER AND UPER LIMITS    PT214310
1332  C800 1032          1432           LHI   R0,X'1032'      LOAD DATA INTO DISPLAY BUFFER PT214320
1336  4000 1394          1433           STH   R0,DISBUF                                     PT214330
133A  C800 5476          1434           LHI   R0,X'5476'                                    PT214340
133E  4000 1396          1435           STH   R0,DISBUF+2                                   PT214350
1342  C800 9800          1436           LHI   R0,X'9800'                                    PT214360
1346  4000 1398          1437           STH   R0,DISBUF+4                                   PT214370
134A  9E18               1438  S63A     OCR   R1,R8           OUTPUT CMD TO RESET DISPLAY   PT214380
134C  DA14 0000          1439           WD    R1,0(R4)        OUTPUT DISPLAY 1              PT214390
1350  DA14 0001          1440           WD    R1,1(R4)        OUTPUT DISPLAY 2              PT214400
1354  DA14 0002          1441           WD    R1,2(R4)        OUTPUT DISPLAY 3              PT214410
1358  DA14 0003          1442           WD    R1,3(R4)        OUTPUT DISPLAY 4              PT214420
135C  DA14 0004          1443           WD    R1,4(R4)        OUTPUT DISPLAY 5              PT214430
1360  C890 139A          1444           LHI   R9,S64          NEXT TEST                     PT214440
1364  41E0 15E0          1445           BAL   R14,DELAY       WAIT FOR DELAY TIME OUT       PT214450
1368  C860 1394          1446  S63D     LHI   R6,DISBUF       R6 = ADDRESS OF DISPLAY BUFFER PT214460
136C  D376 0000          1447  S63E     LB    R7,0(R6)        GET BYTE FROM BUFFER          PT214470
1370  2671               1448           AIS   R7,1            ADD 1 TO RIGHT HEx DIDGIT     PT214480
1372  C470 000F          1449           NHI   R7,X'000F'      R7 = STRIPPED RIGHT HEX DIDGIT PT214490
1376  D396 0000          1450           LB    R9,0(R6)        AGAIN GET BYTE FROM BUFF      PT214500
137A  CA90 0010          1451           AHI   R9,X'0010'      ADD 1 TO LEFT HEX DIDGIT      PT214510
137E  C490 00F0          1452           NHI   R9,X'00F0'      R9 = STRIPPED LEFT HEX DIDGIT PT214520
1382  0679               1453           CHR   R7,R9           COMBINE RIGHT & LEFT HEX DIDGIT PT214530
1384  D276 0000          1454           STB   R7,0(R6)        STORE UPDATEX HEX DIDGITS     PT214540
1388  2661               1455           AIS   R6,1            INDEX BUFFER TO NEXT BYTE     PT214550
138A  0956               1456           CHR   R5,R6           CHECK FOR BUFFER END          PT214560
138C  4380 136C          1457           BNL   S63E            NO                            PT214570
1390  4300 134A          1458           B     S63A            YES, GO OUTPUT BUFFER         PT214580
1394                     1459  DISBUF   DS    6               DISPLAY BUFFER                PT214590
                         1460  *                                                           PT214600
                         1461  *                        OUTPUT TO DISPLAY IN NORMAL MODE   PT214610
                         1462  *                                                           PT214620
139A  C800 0044          1463  S64      LHI   R0,C'D'     PRINT CHARACTER D                 PT214630
139E  41E0 1666          1464           BAL   R14,WRITE1                                    PT214640
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13A2   C880 0080          1465           LHI   R8,X'80'
13A6   9E18               1466           OCR   R1,R8
13A8   C870 5A5A          1467           LHI   R7,X'5A5A'
13AC   C860 A5A5          1468           LHI   R6,X'A5A5'
13B0   9A17               1469   S64A    WDR   R1,R7
13B2   C890 13DC          1470           LHI   R9,S65
13B6   41E0 15E0          1471           BAL   R14,DELAY
13BA   9A16               1472           WDR   R1,R6
13BC   C890 13DC          1473           LHI   R9,S65
13C0   41E0 15E0          1474           BAL   R14,DELAY
13C4   9817               1475           WHR   R1,R7
13C6   C890 13DC          1476           LHI   R9,S65
13CA   41E0 15E0          1477           BAL   R14,DELAY
13CE   9816               1478           WHR   R1,R6
13D0   C890 13DC          1479           LHI   R9,S65
13D4   41E0 15E0          1480           BAL   R14,DELAY
13D8   4300 13B0          1481           B     S64A
                          1482   *
                          1483   *
                          1484   *
13DC   C800 0045          1485   S65     LHI   R0,C'E'
13E0   41E0 1666          1486           BAL   R14,WRITE1
13E4   C890 1438          1487           LHI   R9,S66
13E8   C880 0040          1488           LHI   R8,X'40'
13EC   9E18               1489   S651    OCR   R1,R8
13EE   2450               1490           LIS   R5,0
13F0   9A17               1491   S65B    WDR   R1,R7
13F2   41E0 15E0          1492           BAL   R14,DELAY
13F6   2651               1493           AIS   R5,1
13F8   C950 0005          1494           CHI   R5,X'05'
13FC   2036               1495           BNES  S65B
13FE   2450               1496           LIS   R5,0
1400   9E18               1497           OCR   R1,R8
1402   9A16               1498   S65C    WDR   R1,R6
1404   41E0 15E0          1499           BAL   R14,DELAY
1408   2651               1500           AIS   R5,1
140A   C950 0005          1501           CHI   R5,X'05'
140E   2036               1502           BNES  S65C
1410   2450               1503           LIS   R5,0
1412   9E18               1504           OCR   R1,R8
1414   9817               1505   S65D    WHR   R1,R7
1416   41E0 15E0          1506           BAL   R14,DELAY
141A   2651               1507           AIS   R5,1
141C   C950 0003          1508           CHI   R5,X'03'
1420   2036               1509           BNES  S65D
1422   2450               1510           LIS   R5,0
1424   9E18               1511           OCR   R1,R8
1426   9816               1512   S65E    WHR   R1,R6
1428   41E0 15E0          1513           BAL   R14,DELAY
142C   2651               1514           AIS   R5,1
142E   C950 0003          1515           CHI   R5,X'03'
1432   2036               1516           BNES  S65E
1434   4300 13EC          1517           B     S65A
                          1518   *
                          1519   *
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                                                                    PT214650
      NORMAL MODE                                                   PT214660
                                                                    PT214670
      R7 & R6 = ALTERNATE LIGHT PATTERN                             PT214680
                                                                    PT214690
      OUTPUT TO DISPLAY X'5A'                                       PT214700
      NEXT TEST                                                     PT214710
      WAIT                                                          PT214720
      OUTPUT TO DISPLAY X'5A'                                       PT214730
      NEXT TEST                                                     PT214740
      WAIT                                                          PT214750
      OUTPUT TO DISPLAY X'5A5A'                                     PT214760
      NEXT TEST                                                     PT214770
      WAIT                                                          PT214780
      OUTPUT TO DISPLAY X'A5A5'                                     PT214790
      NEXT TEST                                                     PT214800
      WAIT                                                          PT214810
      NO BREAK KEY GO AGAIN                                         PT214820
                                                                    PT214830
OUTPUT TO DISPLAY IN INCREMENTAL MODE                               PT214840
                                                                    PT214850
      PRINT CHARACTER E                                             PT214860
                                                                    PT214870
      NEXT TEST                                                     PT214880
      COMMAND FOR INCREMENTAL MODE                                  PT214890
                                                                    PT214900
      LOOP COUNTER                                                  PT214910
      OUT TO DISPLAY X'5A',TWO HEX DIDGITS                          PT214920
      AT A TIME                                                     PT214930
      INCREMENT LOOP COUNTER                                        PT214940
      FIVE TIMES THROUGH LOOP                                       PT214950
      NO                                                            PT214960
      LOOP COUNTER                                                  PT214970
      OUTPUT CMT TO RESET DISPLAY                                   PT214980
      OUTPUT TO DISPLAY X'A5'                                       PT214990
      WAIT                                                          PT215000
      INCREMENT LOOP COUNTER                                        PT215010
      5 TIMES THROUGH LOOP                                          PT215020
      NO                                                            PT215030
      LOOP COUNTER                                                  PT215040
      OUTPUT CMT TO RESET DISPLAY                                   PT215050
      OUTPUT TO DISPLAY X'5A5A'                                     PT215060
      WAIT                                                          PT215070
      INCREMENT LOOP COUNTER                                        PT215080
      3 TIMES THROUGH LOOP                                          PT215090
      NO                                                            PT215100
      LOOP COUNTER                                                  PT215110
      OUTPUT CMT TO RESET DISPLAY                                   PT215120
      OUTPUT TO DISPLAY X'A5A5'                                     PT215130
      WAIT                                                          PT215140
      INCREMENT LOOP COUNTER                                        PT215150
      3 TIMES THROUGH LOOP                                          PT215160
      NO                                                            PT215170
      NO BREAK KEY GO AGAIN                                         PT215180
                                                                    PT215190
OUTPUT CONTENTS OF SWITCH REGISTER IS
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                        1520  *                                   PRESENTED TO THE DISPLAY. THE SWITCH   PT215200
                        1521  *                                   REGISTER IS UPDATED BY FIRST DEPRE-    PT215210
                        1522  *                                   SSING 'DTA' & THEN HEX KEYS. BREAK     PT215220
                        1523  *                                   POINT ENDS TEST                        PT215230
1438  C800 0046         1524  S66       LHI   R0,C'F'             PRINT CHARACTER F                      PT215240
143C  41E0 1666         1525            BAL   R14,WRITE1                                                 PT215250
1440  C880 0080         1526            LHI   R8,X'80'            COMMAND FOR NORMAL MODE                PT215260
1444  9E18              1527  S66A      OCR   R1,R8                                                      PT215270
1446  9914              1528            RHR   R1,R4               READ SWITCH REGISTER                   PT215280
1448  9814              1529            WHR   R1,R4               OUTPUT TO DISPLAY CONTENTS OF SWITCH REPT215290
144A  C8E0 1444         1530            LHI   R14,S66A                                                   PT215300
144E  41F0 1744         1531            BAL   R15,TSTBRK                                                 PT215310
1452  4300 1716         1532  S66END    B     NOERR               P                                      PT215320
                        1533  *                                                                          PT215330
                        1534  ************************************************************             PT215340
                        1535  *                                                                          PT215350
                        1536  *         TEST 7                                                           PT215360
                        1537  *                                                                          PT215370
                        1538  *           THIS TEST CHECKS FUNCTION ZERO (CONSOLE INTERRUPT)              PT215380
                        1539  *           WITH INTERRUPTS ENABLED.                                       PT215390
                        1540  *                                                                          PT215400
1456  C8E0 00D2         1541  SUBT7     LHI   R14,X'D2'                                                  PT215410
145A  C8F0 1490         1542            LHI   R15,FZI1                                                   PT215420
145E  40FE 0000         1543            STH   R15,0(R14)                                                 PT215430
1462  C200 1466         1544            LPSW  FUNC0               ENABLE CONSOLE INTERRUPT               PT215440
1466  7800              1545  FUNC0     DC    X'7800',INRET1                                             PT215450
1468  146A                                                                                               PT215460
146A  0755              1546  INRET1    XHR   R5,R5                                                      PT215470
146C  D310 182F         1547            LB    R1,OUTDEV                                                  PT215480
1470  C820 14D8         1548            LHI   R2,FZERM            BEGINNING ADDRESS OF MESSAGE           PT215490
1474  C830 14F7         1549            LHI   R3,FZEND            ENDING ADDRESS OF MESSAGE              PT215500
1478  DE10 1822         1550            OC    R1,OUTCMD                                                  PT215510
147C  9612              1551            WBR   R1,R2               PRINT: PRESS FUNC 0, PRESS BREAK KEY   PT215520
147E  41F0 173C         1552            BAL   R15,TSTBRKC                                                PT215530
                        1553  *                                                                          PT215540
1482  C550 0001         1554  FZ1       CLHI  R5,1                IF FLAG = 1, THEN INTERRUPT TAKEN      PT215550
1486  4330 1716         1555            BE    NOERR               INTERRUPT TAKEN, THEREFORE PRINT 'NO   PT215560
148A  24F1              1556            LIS   R15,1               ERROR 2601                             PT215570
148C  4300 16DE         1557            B     ERROR                                                      PT215580
1490  0000              1558  FZI1      DC    0                                                          PT215590
1492  0000              1559            DC    0                                                          PT215600
1494  7800              1560            DC    X'7800'                                                    PT215610
1496  2451              1561            LIS   R5,1                                                       PT215620
1498  41F0 173C         1562            BAL   R15,TSTBRKC                                                PT215630
149C  220D              1563            BS    FZ1                                                        PT215640
                        1564  *                                                                          PT215650
                        1565  ************************************************************             PT215660
                        1566  *                                                                          PT215670
                        1567  *  TEST 8                                                                  PT215680
                        1568  *                                                                          PT215690
                        1569  *  THIS TEST CHECKS FUNCTION ZERO (CONSOLE INTERRUPT)                      PT215700
                        1570  *  WITH THE INTERRUPT DISABLED.                                            PT215710
                        1571  *                                                                          PT215720
149E  C8E0 00D2         1572  SUBT8     LHI   R14,X'D2'           STORE RETURN ADDRESS IN MEMORY         PT215730
14A2  C8F0 14CC         1573            LHI   R15,FZI2
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14A6  40FE 0000          1574          STH   R15,0(R14)                                  PT215740
14AA  C200 14AE          1575          LPSW  FUNCON          DISABLE CONSOLE INTERRUPT   PT215750
14AE  7000               1576  FUNCON  DC    X'7000',INRET2                              PT215760
14B0  14B2                                                                               PT215770
14B2  0310 182F          1577  INRET2  LB    R1,OUTDEV                                   PT215780
14B6  C820 14D8          1578          LHI   R2,FZERM        BEGINNING ADDRESS OF MESSAGE PT215790
14BA  C830 14F7          1579          LHI   R3,FZEND        ENDING ADDRESS OF MESSAGE    PT215800
14BE  DE10 1822          1580          OC    R1,OUTCMD                                   PT215810
14C2  9612               1581          WBR   R1,R2           PRINT: PRESS FUNC 0, PRESS BREAK KEY PT215820
14C4  41F0 173C          1582          BAL   R15,TSTBRKC                                 PT215830
                         1583  *                                                         PT215840
14C8  4300 1716          1584  FZ2     B     NOERR           INTERRUPT RETURN ROUTINE    PT215850
                         1585  *                                                         PT215860
14CC  0000               1586  FZI2    DC    0                                           PT215870
14CE  0000               1587          DC    0                                           PT215880
14D0  7000               1588          DC    X'7000'                                     PT215890
14D2  24F1               1589          LIS   R15,1           ERROR 2701                  PT215900
14D4  4300 16DE          1590          B     ERROR                                       PT215910
                         1591  *                                                         PT215920
                         1592  *                                                         PT215930
14D8  5052 4553 5320 4655 1593  FZERM   DC    C'PRESS FUNC 0'  COMMON MESSAGE FOR TEST 7 AND 8
14E0  4E43 2030                                                                          PT215940
14E4  0A0D               1594          DC    X'A0D'                                      PT215950
14E6  FFFF               1595          DC    X'FFFF'                                     PT215960
14E8  5052 4553 5320 4252 1596          DC    C'PRESS BREAK'                              PT215970
14F0  4541 4B20                                                                          PT215980
14F4  0A0D               1597          DC    X'A0D'                                      PT215990
14F6  FFFF               1598          DC    X'FFFF'                                     PT216000
      0000 14F7          1599  FZEND   EQU   *-1             END OF COMMON MESSAGE       PT216010
                         1600  *                                                         PT216020
                         1601  *                                                         PT216030
                         1602  ********************************************************  PT216040
                         1603  *                                                         PT216050
                         1604  *       TEST 9                                            PT216060
                         1605  *                                                         PT216070
                         1606  *  THIS TEST CHECKS THE SVC INSTRUCTIONS                   PT216080
                         1607  *                                                         PT216090
14F8  C8D0 15DA          1608  SUBT9   LHI   R13,TERR13      R13 = ADDRESS OF ERROR ROUTINE PT216100
14FC  C830 009C          1609          LHI   R3,X'9C'                                    PT216110
1500  40D3 0000          1610  SVC004  STH   R13,0(R3)                                   PT216120
1504  2632               1611          AIS   R3,2                                        PT216130
1506  C530 00BC          1612          CLHI  R3,X'BC'                                    PT216140
150A  2035               1613          BNES  SVC004                                      PT216150
150C  246E               1614          LIS   R6,14                                       PT216160
150E  2410               1615          LIS   R1,0                                        PT216170
1510  2400               1616  SVC100  LIS   R0,0            R0 = 0                      PT216180
1512  4000 0094          1617          STH   R0,X'94'        SVC ARGUMENT POINTER        PT216190
1516  4000 0096          1618          STH   R0,X'96'        OLD PSW                     PT216200
151A  4000 0098          1619          STH   R0,X'98'                                    PT216210
151E  4000 009A          1620          STH   R0,X'9A'        NEW PSW                     PT216220
1522  0831               1621          LHR   R3,R1           R1 = SVC CALL 0 THRU 15     PT216230
1524  9131               1622          SLLS  R3,1            R3 = R1 X 2                 PT216240
1526  CA30 009C          1623          AHI   R3,X'9C'        R3 = R1 X 2 + 9C            PT216250
152A  C800 15AC          1624          LHI   R0,SVCINT
152E  4003 0000          1625          STH   R0,0(R3)
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1532  0801                1626           LHR   R0,R1                                  PT216260
1534  9102                1627           SLLS  R0,2          R0 = 4 X R1                PT216270
1536  0841                1628           LHR   R4,R1                                  PT216280
1538  9141                1629           SLLS  R4,1          R4 = 2 X R1                PT216290
153A  0A04                1630           AHR   R0,R4         R0 = 6 X R1                PT216300
153C  C850 154C           1631           LHI   R5,SVC200                                PT216310
1540  0A05                1632           AHR   R0,R5                                    PT216320
1542  C200 1546           1633           LPSW  SVC150                                   PT216330
1546  2805                1634  SVC150   DC    X'2805',SVC175                          PT216340
1548  154A                                                                             PT216350
154A  0300                1635  SVC175   BR    R0                                     PT216360
154C  E100 0000           1636  SVC200   SVC   0,R0                                   PT216370
1550  030D                1637           BR    R13                                    PT216380
      0000 1552           1638  SVC      EQU   *                                      PT216390
1552  E110 0001           1639  SVC201   SVC   1,R1                                   PT216400
1556  030D                1640           BR    R13                                    PT216410
1558  E120 0002           1641  SVC202   SVC   2,R2                                   PT216420
155C  030D                1642           BR    R13                                    PT216430
155E  E130 0003           1643           SVC   3,R3                                   PT216440
1562  030D                1644           BR    R13                                    PT216450
1564  E140 0004           1645           SVC   4,R4                                   PT216460
1568  030D                1646           BR    R13                                    PT216470
156A  E150 0005           1647           SVC   5,R5                                   PT216480
156E  030D                1648           BR    13                                     PT216490
1570  E160 0006           1649           SVC   6,R6                                   PT216500
1574  030D                1650           BR    R13                                    PT216510
1576  E170 0007           1651           SVC   7,R7                                   PT216520
157A  030D                1652           BR    R13                                    PT216530
157C  E180 0008           1653  SVC208   SVC   8,R8                                   PT216540
1580  030D                1654           BR    R13                                    PT216550
1582  E190 0009           1655           SVC   9,R9                                   PT216560
1586  030D                1656           BR    R13                                    PT216570
1588  E1A0 000A           1657           SVC   10,R10                                 PT216580
158C  030D                1658           BR    R13                                    PT216590
158E  E1B0 000B           1659           SVC   11,R11                                 PT216600
1592  030D                1660           BR    13                                     PT216610
1594  E1C0 000C           1661  SVC212   SVC   12,R12                                 PT216620
1598  030D                1662           BR    13                                     PT216630
159A  E1D0 000D           1663           SVC   13,R13                                 PT216640
159E  030D                1664           BR    R13                                    PT216650
15A0  E1E6 0000           1665           SVC   14,0(R6)                               PT216660
15A4  030D                1666           BR    R13                                    PT216670
15A6  E1F0 000F           1667  SVC215   SVC   15,R15                                 PT216680
15AA  030D                1668           BR    R13                                    PT216690
                          1669  *                                                      PT216700
15AC  4840 0094           1670  SVCINT   LH    R4,X'94'      SUPVC CALL ARGU. POINTER PT216710
15B0  0541                1671           CLHR  R4,R1         MUST EQUAL R1            PT216720
15B2  023D                1672           BNER  R13                                    PT216730
15B4  4840 0096           1673           LH    R4,X'96'      OLD PSW                  PT216740
15B8  C540 2805           1674  M5005    CLHI  R4,X'2805'                             PT216750
15BC  023D                1675           BNER  R13                                    PT216760
15BE  4840 0098           1676           LH    R4,X'98'      OLD PSW LOCATION         PT216770
15C2  2604                1677           AIS   R0,4          MUST EQUAL R3 + 4        PT216780
15C4  0504                1678           CLHR  R0,R4                                  PT216790
15C6  023D                1679           BNER  R13
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15C8  40D3 0000          1680           STH   R13,0(R3)        RESTORE ERR. ADD. AT SVC TESTED      PT216800
15CC  2611               1681           AIS   R1,1                                                 PT216810
15CE  C510 0010          1682           CLHI  R1,16                                                PT216820
15D2  4230 1510          1683           BNE   SVC100                                               PT216830
15D6  4300 1716          1684           B     NOERR                                                PT216840
                         1685  *                                                                    PT216850
15DA  24F1               1686  TERR13   LIS   R15,1                                                PT216860
15DC  4300 16DE          1687           B     ERROR                                                PT216870
                         1688  *                                                                    PT216880
                         1689  *                          DELAY ROUTINE                           PT216890
                         1690  *                                                                    PT216900
15E0  D000 160A          1691  DELAY    STM   R0,DSAVE         SAVE ALL REGISTERS                   PT216910
15E4  C8A0 0000          1692           LHI   R10,X'0'          CLEAR REG 10                         PT216920
15E8  EAC0 000F          1693  DELAY1   RRL   R12,15            34.5 US PER INSTRUCTION              PT216930
15EC  C8E0 15FA          1694           LHI   R14,DELAY3                                             PT216940
15F0  41F0 1744          1695           BAL   R15,TSTBRK                                             PT216950
15F4  D100 160A          1696           LM    R0,DSAVE          RESTORE REGISTERS                    PT216960
15F8  0309               1697           BR    R9                BREAK POINT RECEIVED RETURN        PT216970
15FA  26A1               1698  DELAY3   AIS   R10,1             1.5                                  PT216980
15FC  C9A0 7FFF          1699           CHI   R10,X'7FFF'       3.0                                  PT216990
1600  4230 15E8          1700           BNE   DELAY1            1.5                                  PT217000
                         1701  *                                47.5 US TOTAL TIME PER LOOP          PT217010
1604  D100 160A          1702           LM    R0,DSAVE                                               PT217020
1608  030E               1703           BR    R14                                                    PT217030
160A                     1704  DSAVE    DS    64                REGISTER SAVE AREA                   PT217040
                         1705  *                                                                    PT217050
                         1706  *        SUBROUTINES                                                 PT217060
                         1707  *                                                                    PT217070
                         1708  ********************************************************************* PT217080
                         1709  *                                                                    PT217090
      0000 164A          1710  READ1    EQU   *                                                    PT217100
164A  D320 1830          1711           LB    R2,INDEV                                             PT217110
164E  DE20 1823          1712           OC    R2,INCMND                                            PT217120
1652  9B23               1713           RDR   R2,R3                                                PT217130
1654  9D23               1714           SSR   R2,R3                                                PT217140
1656  2281               1715           BFBS  8,1                                                  PT217150
1656  9D23               1716  READ3    SSR   R2,R3             R2 = 2 , R3 = TTY STATUS           PT217160
165A  4290 165E          1717           BTC   9,READ3                                              PT217170
165E  9B20               1718           RDR   R2,R0             READ THE KEY PRESSED IN R0         PT217180
1660  C400 007F          1719           NHI   R0,X'7F'          ZERO OUT THE PARITY BIT            PT217190
1664  030E               1720           BR    R14                                                  PT217200
1666  D320 182F          1721  WRITE1   LB    R2,OUTDEV                                            PT217210
166A  DE20 1822          1722           OC    R2,OUTCMD                                            PT217220
166E  9D23               1723  WRITE3   SSR   R2,R3                                                PT217230
1670  4210 1666          1724           BTC   1,WRITE1                                             PT217240
1674  4280 166E          1725           BTC   8,WRITE3                                             PT217250
1678  9A20               1726           WDR   R2,R0                                                PT217260
167A  030E               1727           BR    R14                                                  PT217270
167C  C800 000D          1728  CRLF     LHI   R0,13                                                PT217280
1680  41E0 1666          1729           BAL   R14,WRITE1                                           PT217290
1684  C800 000A          1730           LHI   R0,10                                                PT217300
1688  41E0 1666          1731           BAL   R14,WRITE1                                           PT217310
168C  030C               1732           BR    R12                                                  PT217320
                         1733  *                                                                    PT217330
                         1734  *                                                                    PT217340
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168E   24F1                1735  FLPTNT   LIS   R15,1                FLPT ARITH. FAULT INTRPT.          PT217350
1690   230C                1736           BS    ERR2F                                                   PT217360
1692   24F2                1737  ILGINT   LIS   R15,2                ILL. INSTR. INTRPT.                PT217370
1694   230A                1738           BS    ERR2F                                                   PT217380
1696   24F3                1739  MALFTN   LIS   R15,3                MACH. MALFTN. INTRPT.              PT217390
1698   2308                1740           BS    ERR2F                                                   PT217400
169A   24F4                1741  EXTINT   LIS   R15,4                ENTERNAL INTRPT.                   PT217410
169C   2306                1742           BS    ERR2F                                                   PT217420
169E   24F5                1743  DVDFLT   LIS   R15,5                FIXD. PT. DIV. FAULT INTRPT.       PT217430
16A0   2304                1744           BS    ERR2F                                                   PT217440
16A2   24F6                1745  CHANIO   LIS   R15,6                THIS INTRPT. IS AN ERROR           PT217450
16A4   2302                1746           BS    ERR2F                                                   PT217460
16A6   24F7                1747  QVRFLO   LIS   R15,7                THIS INTERRUPT IS AN ERROR         PT217470
16A8   2307                1748  ERR2F    BS    ERR2FF                                                  PT217480
16AA   24F8                1749  SVCERR   LIS   R15,8                                                   PT217490
16AC   2305                1750           BS    ERR2FF                                                  PT217500
16AE   0000                1751  DEVERR   DC    0                                                       PT217510
16B0   0000                1752           DC    0                                                       PT217520
16B2   0000                1753           DC    0                                                       PT217530
16B4   24F9                1754           LIS   R15,9                                                   PT217540
16B6   C800 0046           1755  ERR2FF   LHI   R0,C'F'              THIS 'F' IS USED AT ERR2           PT217550
16BA   C8A0 F020           1756           LHI   R10,X'F020'           BACKWARDS FOR DISPLAY PANEL        PT217560
16BE   4870 179C           1757           LH    R7,TESTNO                                               PT217570
16C2   C470 000F           1758           NHI   R7,X'000F'                                              PT217580
16C6   06A7                1759           OHR   R10,R7                                                  PT217590
16C8   087F                1760           LHR   R7,R15                                                  PT217600
16CA   9178                1761           SLLS  R7,8                                                    PT217610
16CC   06A7                1762           OHR   R10,R7                                                  PT217620
16CE   2471                1763           LIS   R7,1                                                    PT217630
16D0   987A                1764           WHR   R7,R10                                                  PT217640
16D2   C200 16D6           1765           LPSW  WAITF                                                   PT217650
16D6   8000                1766  WAITF    DC    X'8000',ERR2                                            PT217660
16D8   16F4
16DA   4000 179C           1767           STH   R0,TESTNO                                               PT217670
                           1768  *                                                                       PT217680
16DE   95D0                1769  ERROR    EPSR  R13,R13               SAVE COND. CODE FOR SUBT. 4        PT217690
16E0   2471                1770           LIS   R7,1                                                    PT217700
16E2   080F                1771           LHR   R0,R15                                                  PT217710
16E4   9108                1772           SLLS  R0,8                                                    PT217720
16E6   900C                1773           SRLS  R0,12                                                   PT217730
16E8   CA00 0030           1774           AHI   R0,X'30'                                                PT217740
16EC   C500 003A           1775           CLHI  R0,X'3A'                                                PT217750
16F0   2182                1776           BLS   ERR2                                                    PT217760
16F2   26D7                1777           AIS   R0,7                                                    PT217770
16F4   D200 179E           1778  ERR2     STB   R0,ERRNO                                               PT217780
16F8   C4F0 000F           1779           NHI   R15,15                                                  PT217790
16FC   CAF0 0030           1780           AHI   R15,X'30'                                               PT217800
1700   C5F0 003A           1781           CLHI  R15,X'3A'                                               PT217810
1704   2132                1782           BLS   ERR4                                                    PT217820
1706   26F7                1783           AIS   R15,7                                                   PT217830
1708   D2F0 179F           1784  ERR4     STB   R15,ERRNO+1                                            PT217840
                           1785  *                                                                       PT217850
170C   C840 1792           1786           LHI   R4,ERRMSG                                               PT217860
1710   C850 17A1           1787           LHI   R5,ERRMSG+15                                            PT217870
1714   2306                1788           BS    PRTMSG                                                  PT217880
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1716  2470                1789  *                                                                  PT217890
1718  C640 17A4           1790  NOERR    LIS   R7,0                                               PT217900
171C  C850 17AF           1791           LHI   R4,NOER                                            PT217910
1720  D320 182F           1792           LHI   R5,NOER+11                                         PT217920
1724  DE20 1822           1793  PRTMSG   LB    R2,OUTDEV                                          PT217930
1728  9D23                1794           OC    R2,OUTCMD                                          PT217940
172A  4290 1720           1795           SSR   R2,R3                                              PT217950
172E  9624                1796           BTC   9,PRTMSG                                           PT217960
1730  4800 182C           1797           WBR   R2,R4                                              PT217970
1734  4230 02E0           1798           LH    R0,IOERHW          IF IOERHW = 0 , I/O ERR.        PT217980
1738  4300 05E4           1799           BNZ   PART2                                              PT217990
                          1800           B     RENTRY                                             PT218000
      0000 173C           1801  *                                                                  PT218010
173C  2400                1802  TSTBRKC  EQU   *                                                  PT218020
173E  4000 1820           1803           LIS   R0,0                                               PT218030
1742  2304                1804           STH   R0,OUTFLAG                                         PT218040
      0000 1744           1805           BS    TTBRK                                              PT218050
1744  2401                1806  TSTBRK   EQU   *                                                  PT218060
1746  4000 1820           1807           LIS   R0,1                                               PT218070
      0000 174A           1808           STH   R0,OUTFLAG                                         PT218080
174A  D000 0FF2           1809  TTBRK    EQU   *                                                  PT218090
174E  D320 1830           1810           STM   R0,BUFR2                                           PT218100
      0000 1752           1811           LB    R2,INDEV                                           PT218110
1752  9D23                1812  TSTBRK1  EQU   *                                                  PT218120
1754  C330 0020           1813           SSR   R2,R3              SENSE STATUS                    PT218130
1758  4330 1784           1814           THI   R3,X'20'           BREACK KEY PRESSED              PT218140
      0000 175C           1815           BZ    TSTBRKB                                            PT218150
175C  4800 1828           1816  TSTBRK12 EQU   *                                                  PT218160
1760  233A                1817           LH    R0,CRTFLG          IS IT PASALA                    PT218170
1762  C530 0024           1818           BZS   TSTBRK11                                           PT218180
1766  4230 1752           1819           CLHI  R3,X'24'                                           PT218190
176A  9624                1820           BNE   TSTBRK1                                            PT218200
176C  9D23                1821           RDR   R2,R4              READ DUMMY CHARACTER            PT218210
176E  2281                1822           SSR   R2,R3                                              PT218220
1770  0844                1823           BFBS  8,1                                                PT218230
1772  2336                1824           LHR   R4,R4                                              PT218240
      0000 1774           1825           BZS   TSTBRK2                                            PT218250
1774  9D23                1826  TSTBRK11 EQU   *                                                  PT218260
1776  C330 0020           1827           SSR   R2,R3                                              PT218270
177A  4230 175C           1828           THI   R3,X'20'           WAIT FOR BRK RELEASED           PT218280
      0000 177E           1829           BNZ   TSTBRK12                                           PT218290
177E  D100 0FF2           1830  TSTBRK2  EQU   *                                                  PT218300
1782  030F                1831           LM    R0,BUFR2                                           PT218310
      0000 1784           1832           BR    R15                                                PT218320
1784  4800 1820           1833  TSTBRKB  EQU   *                                                  PT218330
1788  4330 1752           1834           LH    R0,OUTFLAG                                         PT218340
178C  D100 0FF2           1835           BZ    TSTBRK1                                            PT218350
1790  030E                1836           LM    R0,BUFR2                                           PT218360
                          1837           BR    R14                                                PT218370
                          1838  ********************************************************************PT218380
                          1839  *                                                                  PT218390
                          1840  *        DATA CONSTANTS                                            PT218400
                          1841  *                                                                  PT218410
                          1842  ********************************************************************PT218420
                          1843  *                                                                  PT218430
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1792  0D0A                  1844  ERRMSG  DC    X'D0A'              CR , LF                    PT218440
1794  4552 524F 5220        1845          DC    C'ERROR '                                      PT218450
179A  2000                  1846          DC    X'2000'                                        PT218460
179C  3230                  1847  TESTNO  DC    C'20'                                          PT218470
179E  0000                  1848  ERRNO   DC    0                                              PT218480
17A0  0D0A                  1849          DC    X'D0A'              CR , LF                    PT218490
17A2  FFFF                  1850          DCX   FFFF                                           PT218500
                            1851  *                                                            PT218510
17A4  0D0A                  1852  NOER    DC    X'D0A'              CR , LF                    PT218520
17A6  4E4F 2045 5252 4F52   1853          DC    C'NO ERROR'                                    PT218530
17AE  0D0A                  1854          DC    X'D0A'                                         PT218540
      0000 17B0             1855  NULL    EQU   *                                              PT218550
17B0  FFFF                  1856          DCX   FFFF                                           PT218560
                            1857  *                                                            PT218570
17B2  0000                  1858  TEMP    DC    0                                              PT218580
17B4  0000                  1859          DC    0                                              PT218590
17B6  0D0A                  1860  TITLE2  DC    X'D0A'                                         PT218600
17B8  4D4F 4445 4C20 382F   1861          DC    C'MODEL 8/16E PROCESSOR TEST PART 2  06-212R00'  PT218610
17C0  3136 4520 5052 4F43
17C8  4553 534F 5220 5445
17D0  5354 2050 4152 5420
17D8  3220 2030 362D 3231
17E0  3252 3030
17E4  0D0A                  1862          DCX   0D0A                                           PT218620
17E6  FFFF                  1863          DCX   FFFF                                           PT218630
17E8  4350 5520             1864          DC    C'CPU'                                         PT218640
17EC  0D0A                  1865          DCX   0D0A                                           PT218650
17EE  2A                    1866          DB    C'*'                *                          PT218660
17F0  FFFF                  1867          DCX   FFFF                                           PT218670
      0000 17F1             1868  TITEND  EQU   *-1                                            PT218680
17F2  5355 4254 4553 5420   1869  SUBTST  DC    C'SUBTEST'                                     PT218690
17FA  0D0A                  1870          DC    X'D0A'                                         PT218700
17FC  FFFF                  1871          DCX   FFFF                                           PT218710
17FE  2A20                  1872          DC    C'*'                                           PT218720
1800  FFFF                  1873          DCX   FFFF                                           PT218730
      0000 1801             1874  SUBTSTND EQU  *-1                                            PT218740
                            1875  *                                                            PT218750
                            1876  *                                                            PT218760
                            1877  *                                                            PT218770
1802  5052 4553 5320 494E   1878  PRESS   DC    C'PRESS INIT'                                  PT218780
180A  4954
180C  0D0A                  1879          DC    X'D0A'                                         PT218790
180E  FFFF                  1880          DCX   FFFF                                           PT218800
1810  5052 4553 5320 4252   1881  PRBRK   DC    C'PRESS BRK'                                   PT218810
1818  4B20
181A  0D0A                  1882          DC    X'D0A'                                         PT218820
181C  FFFF                  1883          DCX   FFFF                                           PT218830
      0000 181D             1884  BRK     EQU   *-1                                            PT218840
                            1885  *                                                            PT218850
                            1886  *                                                            PT218860
                            1887  *                                                            PT218870
181E  0000                  1888  CPUNO   DC    0                                              PT218880
1820  0000                  1889  OUTFLAG DC    0                                              PT218890
1822  C8E4                  1890  OUTC 1D DC    X'C8E4'                                        PT218900
      0000 1823             1891  INCMND  EQU   OUTCMD+1                                       PT218910
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1824  ABB9                1892  CRTOUT   DCX   ABB9                                                    PT218920
1826  C8E4                1893  CONOUT   DCX   C8E4                                                    PT218930
1828  0000                1894  CRTFLG   DCX   0                                                       PT218940
182A  0000                1895  FIRSTCMD DCX   0                                                       PT218950
182C  0000                1896  IOERHW   DC    0                                                       PT218960
182E  00                  1897  SUBTNO   DB    0          SUBTEST NO. 1 THROUGH 9                      PT218970
182F  02                  1898  OUTDEV   DB    2          OUTDEV = 2 = TTY ADDRESS                     PT218980
1830  02                  1899  INDEV    DB    2                                                       PT218990
1831  00                  1900  STATUS   DB    0                                                       PT219000
1832                      1901           DB    *                                                       PT219010
1832  00                  1902  $C4      DB    0                                                       PT219020
1833  00                  1903  $54      DB    0                                                       PT219030
1834  00                  1904  $58      DB    0                                                       PT219040
1835  00                  1905  $48      DB    0                                                       PT219050
1836  00                  1906  $44      DB    0                                                       PT219060
1837  00                  1907  $56      DB    0                                                       PT219070
1838  00                  1908  $66      DB    0                                                       PT219080
1839  00                  1909  $64      DB    0                                                       PT219090
                          1910  *                                                                     PT219100
183A                      1911  TABLE    DS    12                                                      PT219110
                          1912  *                                                                     PT219120
      0000 1845           1913  LNZB     EQU   *-1                                                    PT219130
                          1914                                                                        PT219140
?                         1915  *        CHKSUM                                                       PT219150
                          1916  *        (THE FOLLOWING CODE IS NOT PART OF THE TEST.)                PT219160
                          1917  *                                                                     PT219170
                          1918  *                                                                     PT219180
1846  2400                1919  $CHKSUM  LIS   R0,0          PUNCH M17 TAPE WITH CHECKSUM             PT219190
1848  9510                1920           EPSR  R1,R0         SELECT REG. SET 0                        PT219200
                          1921  *                                                                     PT219210
184A  C810 02D0           1922           LDAI  R1,ORIGIN1    START                                    PT219220
184E  2421                1923           LIS   R2,1          INCREMENT                                PT219230
1850  C830 1845           1924           LDAI  R3,LNZB       FINAL                                    PT219240
1854  2440                1925           LIS   R4,0          CHECKSUM BYTE                            PT219250
1856  D351 0000           1926  $GEN     LB    R5,0(R1)                                               PT219260
185A  0745                1927           XAR   R4,R5                                                  PT219270
185C  C110 1856           1928           BXLE  R1,$GEN                                                PT219280
1860  D240 0097           1929           STB   R4,MN+3       CHECKSUM BYTE TO BOOT LOADER             PT219290
                          1930  *                                                                     PT219300
1864  C810 0080           1931  $TAPE    LHI   R1,X'0080'                                             PT219310
1868  9E21                1932           OCR   R2,R1         DISPLAY : NORMAL MODE                    PT219320
186A  9444                1933           EXBR  R4,R4                                                  PT219330
186C  9824                1934           WHR   R2,R4         CHECKSUM BYTE TO D1                      PT219340
186E  9411                1935           EXBR  R1,R1                                                  PT219350
1870  9501                1936           EPSR  R0,R1         HALT PROCESSOR.                          PT219360

1872  D360 007A           1938  $PUNCH   LB    R6,X'7A'      GET BOUTDV (PUNCH) ADDRESS.              PT219380
1876  DE60 007B           1939           OC    R6,X'7B'      START TAPE PUNCH                         PT219390
187A  9D60                1940           SSR   R6,R0                                                  PT219400
187C  2081                1941           BTBS  8,1                                                    PT219410
187E  41F0 18C0           1942           BAL   R15,$TAPL     PUNCH LEADER                             PT219420
1882  9411                1943           EXBR  R1,R1         (R1) = X'0080'                           PT219430
1884  C830 00CF           1944           LHI   R3,X'CF'                                               PT219440
1888  DA61 0000           1945  $PNCH1   WD    R6,0(R1)      PUNCH BOOT LOADER                        PT219450
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188C  9D60           1946          SSR   R6,R0                                        PT219460
188E  2081           1947          BTBS  8,1                                          PT219470
1890  C110 1888      1948          BXLE  R1,$PNCH1                                    PT219480
1894  41F0 18C6      1949          BAL   R15,$TAPL1      PUNCH ONE-FOLD GAP.          PT219490
                     1950  *                                                          PT219500
1898  D340 0097      1951          LB    R4,MN+3         GET CHECKSUM BYTE            PT219510
189C  C810 02D0      1952          LDAI  R1,ORIGIN1      (NORMALLY X'A00')            PT219520
18A0  C830 1845      1953          LDAI  R3,LNZB                                      PT219530
18A4  D351 0000      1954  $PNCH2  LB    R5,0(R1)        PUNCH PROGRAM                PT219540
18A8  0745           1955          XAR   R4,R5                                        PT219550
18AA  9A65           1956          WDR   R6,R5                                        PT219560
18AC  9401           1957          EXBR  R0,R1                                        PT219570
18AE  9820           1958          WHR   R2,R0           DATA ADDRESS TO DISPLAY.     PT219580
18B0  9D60           1959          SSR   R6,R0                                        PT219590
18B2  2081           1960          BTBS  8,1                                          PT219600
18B4  C110 18A4      1961          BXLE  R1,$PNCH2                                    PT219610
18B8  41F0 18C0      1962          BAL   R15,$TAPL       PUNCH TRAILER.               PT219620
18BC  4300 1864      1963          B     $TAPE           DISPLAY CHECKSUM. HALT PROCESSOR.  PT219630


18C0  C800 0100      1965  $TAPL   LHI   R0,256         TO PUNCH BLANK LEADER        PT219650
18C4  2303           1966          BS    $TAPLP                                       PT219660
18C6  C800 0055      1967  $TAPL1  LHI   R0,85          TO PUNCH 1-FOLD GAP          PT219670
18CA  2701           1968  $TAPLP  SIS   R0,1                                         PT219680
18CC  032F           1969          BNPR  R15             RETURN                       PT219690
18CE  2430           1970          LIS   R3,0                                         PT219700
18D0  9A63           1971          WDR   R6,R3           PUNCH BLANK FRAME            PT219710
18D2  9D68           1972          SSR   R6,R8                                        PT219720
18D4  2081           1973          BTBS  8,1                                          PT219730
18D6  2206           1974          BS    $TAPLP          CONTINUE.                    PT219740
                     1975  *                                                          PT219750
18D8                 1976          END                                              PT219760
```

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

START OPTIONS: T=16

NO CAL ERRORS
4 CAL WARNINGS PREVIOUS WARNING ON PAGE 36
2 PASSES

$44	0000 1836	90 111 893 905 1906*
$48	0000 1835	699 740 782 837 889 1905*
$54	0000 1833	464 509 1903*
$56	0000 1837	1907*
$58	0000 1834	88 109 473 1904*
$64	0000 1839	948 971 1909*
$66	0000 1838	92 113 842 1908*
$C4	0000 1832	86 107 456 1902*
$CHKSUM	0000 1846	1919*
$GEN	0000 1856	1926* 1928
$PNCH1	0000 1888	1945* 1948
$PNCH2	0000 18A4	1954* 1961
$PUNCH	0000 1872	1938*
$TAPE	0000 1864	1931* 1963
$TAPL	0000 18C0	1942 1962 1965*
$TAPL1	0000 18C6	1949 1967*
$TAPLP	0000 18CA	1966 1968* 1974
ABSTOP	0000 18D8	
ADC	0000 0002	
BF2ST	0000 0FEE	246 1274*
BOOT	0000 0088	26 31*
BRK	0000 181D	503 1109 1884*
BUFR0	0000 0FAA	212 939 1099 1238*
BUFR1	0000 0FCA	1112 1254*
BUFR2	0000 0FF2	213 214 215 217 219 220 222 223 225 227 230 233 249 251 255 258 261 264 267 344 529 1097 1100 1131 1135 1274 1275 1276* 1810 1831 1836
CAR	0000 02DA	63*
CCW1	0000 0DA8	728 743 757 760 763 775 785 803 806 809 813 829 840 862 692 900 919 941 951 969 1015*
CCW2	0000 0DB4	1022*
CCW3	0000 0DC4	1031*
CHABL	0000 09CE	660 668*
CHANIO	0000 16A2	338 1745*
CHATL	0000 0990	638 647*
CHEKTAB	0000 08EC	581*
CHRBL	0000 096A	626 632*
CHRTL	0000 09AE	651 656*
CMPARE	0000 0F52	1113 1138 1207*
CONADR	0000 02D8	62* 114 118
CONOUT	0000 1826	119 1893*
CONTIN	0000 090E	589 597*
CPUERR	0000 0410	154*
CPUNO	0000 181E	142 144 145 438 1888*
CRLF	0000 167C	160 235 314 1728*
CRT	0000 02D6	61*
CRTFLG	0000 1828	101 117 466 863 1817 1894*

CRTIO 0000 030A 79 82*
CRTOUT 0000 1824 93 94 1892*
DELAY 0000 15E0 747 792 855 1420 1445 1471 1474 1477 1480 1492 1499 1506 1513
1691*
DELAY1 0000 15E8 1693* 1700
DELAY3 0000 15FA 1694 1698*
DEVERR 0000 16AE 354 963 1751*
DISBUF 0000 1394 1430 1431 1433 1435 1437 1446 1459*
DMT 0000 0D9C 687 692 715 717 1009*
DSAVE 0000 160A 1691 1696 1702 1704*
DVDFLT 0000 169E 334 1743*
ENTRY1 0000 02E0 58 68*
ERR2 0000 16F4 1766 1776 1778*
ERR2F 0000 16A8 1736 1738 1740 1742 1744 1746 1748*
ERR2FF 0000 1686 1748 1750 1755*
ERR4 0000 1708 1782 1784*
ERRMSG 0000 1792 1786 1787 1844*
ERRNO 0000 179E 1778 1784 1848*
ERROR 0000 16DE 287 436 481 497 518 558 592 597 642 664 711 750 794
857 912 980 1117 1142 1153 1178 1198 1201 1320 1332 1354 1557
1590 1687 1769*
EXTINT 0000 169A 330 1741*
FIRSTCMD 0000 182A 76 81 99 1895*
FLPTNT 0000 168E 332 1735*
FUNCO 0000 1466 1544 1545*
FUNCON 0000 14AE 1575 1576*
FZ1 0000 1482 1554* 1563
FZ2 0000 14C8 1584*
FZEND 0000 14F7 1549 1579 1599*
FZERM 0000 14D8 1548 1578 1593*
FZI1 0000 1490 1542 1558*
FZI2 0000 14CC 1573 1586*
ILGINT 0000 1692 326 1342 1737*
IMPTOP 0000 0000R
INCMND 0000 1823 95 105 169 243 1712 1891*
INDEV 0000 1830 97 115 140 168 242 455 510 843 938 965 1120 1128 1711
1811 1899*
INRET1 0000 146A 1545 1546*
INRET2 0000 14B2 1576 1577*
IO 0000 02D4 60* 77 82
IO2 0000 039A 102 120*
IOA10 0000 04BE 204* 205
IOA2 0000 0446 172* 173
IOA4 0000 045A 178* 179
IOA6 0000 0480 188* 189
IOA8 0000 04A4 197* 198
IOA9 0000 05A6 269*
IOERHw 0000 182C 286 316 1798 1896*
IOERR 0000 05CC 285*
IOERR1 0000 05CA 177 284*
IOERR2 0000 05C8 182 283*
IOERR3 0000 05C6 187 282*
IOERR4 0000 05C4 191 281*
IOERR5 0000 05C2 196 280*
IOERR6 0000 05C0 203 279*

IOERR7 0000 05BE 211 278*
IOERR8 0000 05BC 228 231 234 277*
IOERR9 0000 05BA 256 259 262 265 268 276*
IOERRA 0000 05B8 275*
IOSTA 0000 042E 164*
IOTEST 0000 041C 158* 400
IOTEST1 0000 02F8 77*
KPIO1 0000 06EC 396*
KPIO2 0000 07F6 488 492*
KPIO3 0000 07F8 493*
LADC 0000 0001
LOWT 0000 00C6 53* 56
LEADER 0000 00A0 37* 41
LIERR1 0000 0988 642* 644
LIERR2 0000 09C6 664* 666
LIS040 0000 09C4 659 663*
LIS041 0000 09CA 665* 671
LIS400 0000 0986 637 641*
LIS401 0000 098C 643* 650
LNZB 0000 1845 33 73 1913* 1924 1953
LOADER 0000 00AA 42* 50
M5005 0000 15B8 1674*
M5008 0000 05EE 317*
M5009 0000 0606 323*
MALFTN 0000 1696 328 1191 1739*
MN 0000 0094 34* 1929 1951
NOER 0000 17A4 1791 1792 1852*
NOERR 0000 1716 531 1001 1150 1167 1360 1532 1555 1584 1684 1790*
NULL 0000 17B0 478 1855*
ORIGIN1 0000 02D0 58* 1922 1952
OUTCMD 0000 1822 122 126 166 240 367 505 953 1550 1580 1722 1794 1890* 1891
OUTDEV 0000 182F 121 123 165 237 366 474 504 688 765 817 850 865 885
952 959 1107 1394 1547 1577 1721 1793 1898*
OUTFLAG 0000 1820 1804 1808 1834 1889*
PARITY 0000 05D6 184 193 200 208 288*
PART2 0000 02E0 69* 156 1799
PART2A 0000 02E4 69 70*
PART2AA 0000 02E8 70 72*
PART2B 0000 03A2 123*
PART2C 0000 03AE 126* 128
PART2D 0000 03B2 127* 129 132 138
PARTY1 0000 055A 248* 253
PASADR 0000 02DC 64* 96 98
PRBRK 0000 1810 502 1881*
PRESS 0000 1802 1108 1878*
PRTMSG 0000 1720 1788 1793* 1796
PSWSAVE 0000 02DE 29 65*
PURETOP 0000 0000R
QVRFLO 0000 16A6 340 930 1747*
R0 0000 0000 8* 73 74 75 76 77 78 80 81 82 83 85 86
87 88 89 90 91 92 106 107 108 109 110 111 112
113 133 142 144 145 146 148 150 152 154 161 162 185
186 190 194 195 201 202 206 209 210 217 218 219 220
221 222 223 224 225 226 227 229 230 232 233 254 255
257 258 260 261 263 264 266 267 285 286 289 290 291

		344	345	347	349	354	355	362	363	378	380	382	385	386
		387	389	391	393	394	396	421	422	424	426	428	428	432
		433	433	440	443	443	445	446	447	449	449	451	452	458
		459	460	461	466	468	468	482	484	486	498	499	500	507
		508	520	524	543	544	545	548	549	550	551	552	560	561
		562	563	568	569	571	572	574	575	577	578	598	599	601
		603	605	607	609	611	613	615	617	622	624	627	653	692
		693	698	715	717	718	723	728	729	759	760	768	775	776
		786	787	805	806	811	813	815	829	830	848	849	851	851
		862	868	871	882	883	885	897	898	900	901	916	917	919
		920	923	923	928	929	930	931	941	942	963	964	969	970
		985	986	987	1074	1075	1088	1089	1095	1096	1097	1098	1099	1100
		1101	1102	1103	1104	1105	1112	1121	1122	1125	1135	1136	1144	1145
		1147	1148	1149	1155	1156	1159	1160	1163	1164	1165	1169	1169	1180
		1181	1182	1183	1189	1189	1190	1191	1192	1193	1207	1207	1309	1310
		1311	1312	1342	1343	1347	1348	1349	1395	1409	1412	1412	1414	1415
		1416	1417	1418	1421	1423	1428	1432	1433	1434	1435	1436	1437	1463
		1485	1524	1616	1617	1618	1619	1620	1624	1625	1626	1627	1630	1632
		1635	1636	1677	1678	1691	1696	1702	1718	1719	1726	1728	1730	1755
		1767	1771	1772	1773	1774	1775	1777	1778	1798	1803	1804	1807	1808
		1810	1817	1831	1834	1836	1919	1920	1936	1940	1946	1957	1958	1959
		1965	1967	1968										
R1	0000 0001	9*	32	42	43	45	50	94	95	96	97	98	99	104
		105	114	115	116	117	118	121	174	175	176	184	193	200
		208	292	326	327	328	329	330	331	332	333	334	335	336
		337	338	339	340	341	395	396	399	425	426	430	456	457
		464	465	473	475	483	484	489	492	492	494	509	511	635
		636	648	649	657	658	669	670	863	865	866	867	868	893
		894	905	906	922	971	972	989	990	1209	1304	1321	1321	1344
		1398	1400	1401	1402	1413	1414	1415	1416	1417	1418	1438	1439	1440
		1441	1442	1443	1466	1469	1472	1475	1478	1489	1491	1497	1498	1504
		1505	1511	1512	1527	1528	1529	1547	1550	1551	1577	1580	1581	1615
		1621	1626	1628	1639	1671	1681	1682	1920	1922	1926	1928	1931	1932
		1935	1935	1936	1943	1943	1945	1948	1952	1954	1957	1961		
R10	0000 000A	18*	124	133	135	136	673	679	735	743	777	785	832	840
		884	892	943	951	1227	1657	1692	1698	1699	1756	1759	1762	1764
R11	0000 000B	19*	125	136	212	213	214	216	542	556	626	638	651	660
		674	736	755	757	802	803	833	885	939	940	944	1229	1659
R12	0000 000C	20*	160	215	235	314	581	582	675	683	687	720	721	737
		779	834	886	945	1231	1661	1693	1732					
R13	0000 000D	21*	558	565	567	570	573	576	579	584	597	600	602	604
		606	608	610	612	614	616	618	623	625	676	684	738	780
		835	887	946	1233	1608	1610	1637	1640	1642	1644	1646	1650	1652
		1654	1656	1658	1663	1664	1666	1668	1672	1675	1679	1680	1769	1769
R14	0000 000E	22*	134	141	143	155	377	383	388	392	479	586	677	685
		739	747	762	763	781	792	808	809	836	855	888	899	947
		1235	1396	1403	1410	1420	1429	1445	1464	1471	1474	1477	1480	1486
		1492	1499	1506	1513	1525	1530	1541	1543	1572	1574	1694	1703	1720
		1727	1729	1731	1837									
R15	0000 000F	23*	158	159	275	276	277	278	279	280	281	282	283	284
		435	480	496	516	517	528	529	559	588	591	641	643	663
		665	678	686	710	740	741	742	749	782	783	784	793	837
		838	839	856	889	890	891	911	948	949	950	978	979	1113
		1116	1130	1131	1138	1141	1152	1173	1197	1200	1208	1210	1212	1214
		1216	1218	1220	1222	1224	1226	1228	1230	1232	1234	1236	1319	1331

		1353 1404 1531 1542 1543 1552 1556 1562 1573 1574 1582 1589 1667
		1686 1695 1735 1737 1739 1741 1743 1745 1747 1749 1754 1760 1771
		1779 1780 1781 1783 1784 1832 1942 1949 1962 1969
R2	0000 0002	10* 27 31 46 52 93 119 122 123 126 127 140 165
		166 167 168 169 170 172 174 178 180 183 188 192 197
		199 204 206 216 237 240 241 242 243 244 246 269 271
		366 367 372 374 454 454 455 457 465 469 474 475 476
		476 486 504 505 506 510 511 512 521 524 632 633 634
		647 656 668 684 688 689 700 701 703 708 725 736 746
		765 766 791 817 818 833 843 844 845 850 854 894 895
		904 906 938 944 952 953 956 958 959 960 965 966 972
		973 977 992 993 1107 1110 1120 1121 1124 1128 1129 1137 1170
		1174 1175 1176 1194 1211 1394 1548 1551 1578 1581 1641 1711 1712
		1713 1714 1716 1718 1721 1722 1723 1726 1793 1794 1795 1797 1811
		1813 1821 1822 1827 1923 1932 1934 1958
R3	0000 0003	11* 33 100 101 127 130 131 170 172 180 181 197 204
		244 269 315 316 317 318 319 320 321 322 323 372 437
		438 462 463 469 476 512 520 526 547 566 628 652 701
		708 725 766 818 845 895 956 973 995 996 1129 1213 1313
		1314 1323 1324 1326 1327 1329 1329 1345 1346 1355 1356 1358 1358
		1549 1579 1609 1610 1611 1612 1621 1622 1623 1625 1643 1680 1713
		1714 1716 1723 1795 1813 1814 1819 1822 1827 1828 1924 1944 1953
		1970 1971
R4	0000 0004	12* 35 36 37 39 47 49 238 241 271 272 273 348
		349 350 351 355 356 357 368 370 371 375 502 506 697
		703 704 705 954 958 998 999 1108 1110 1215 1305 1307 1336
		1337 1352 1401 1402 1430 1439 1440 1441 1442 1443 1528 1529 1628
		1629 1630 1645 1670 1671 1673 1674 1676 1678 1786 1791 1797 1821
		1824 1824 1925 1927 1929 1933 1933 1934 1951 1955
R5	0000 0005	13* 37 39 40 40 42 43 44 47 49 55 239 247
		249 251 252 369 375 503 521 522 699 700 955 1109 1217
		1431 1456 1490 1493 1494 1496 1500 1501 1503 1507 1508 1510 1514
		1515 1546 1546 1554 1561 1631 1632 1647 1787 1792 1926 1927 1954
		1955 1956
R6	0000 0006	14* 34 44 51 249 250 251 371 374 842 844 1219 1307
		1308 1446 1447 1450 1454 1455 1456 1468 1472 1478 1498 1512 1614
		1649 1665 1936 1939 1940 1945 1946 1956 1959 1971 1972
R7	0000 0007	15* 53 54 55 689 690 691 693 721 729 776 830 901
		942 960 961 962 964 966 967 968 970 1221 1447 1448 1449
		1453 1454 1467 1469 1475 1491 1505 1651 1757 1758 1759 1760 1761
		1762 1763 1764 1770 1790
R8	0000 0008	16* 45 46 51 52 1223 1399 1400 1411 1413 1438 1465 1466
		1486 1489 1497 1504 1511 1526 1527 1653 1972
R9	0000 0009	17* 1225 1419 1444 1450 1451 1452 1453 1470 1473 1476 1479 1487
		1655 1697
READ1	0000 164A	141 143 377 388 1710*
READ3	0000 1658	1716* 1717
RENTR0	0000 065A	349* 352
RENTR1	0000 0694	372* 373
RENTR2	0000 066A	355* 358
RENTR3	0000 06B2	379 382* 390
RENTR4	0000 068E	370* 376
RENTR6	0000 06BE	381 385*
RENTR8	0000 06F2	395 400*
RENTRY	0000 05E4	147 149 151 153 274 314* 384 1800

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RESTORE  0000 088A   547*  629   639   654   661
RSAVE    0000 1012    30  1292*
S1END    0000 0876   528   531*
S1INT    0000 07D8   462   482*
S1K      0000 0808   491   493   495   498*
S1M      0000 07AE   467   469*  470
S1MM     0000 083A   512*  513
S1P      0000 074C   434   437*
S1P1     0000 075E   439   443*
S1P2     0000 0762   442   445*
S1PP     0000 0844   514   515*
S1QQ     0000 07B8   471   472*
S1R4     0000 084C   517*  525   527
S1RA     0000 0746   427   429   431   435*  441   444   448   450   453
S1RB     0000 07D2   480*  485
S1RB1    0000 0802   487   490   496*  501
S1T      0000 0854   521*  523
S1XINT   0000 0852   507   520*
S2       0000 087E   543*
S21A     0000 09F0   683*
S21C     0000 0A18   695   696*
S21D     0000 0A1C   696   697*
S21E     0000 0A28   701*  702   706
S21F     0000 0A3A   708*  709
S21G     0000 0A46   683   712*  720
S21H     0000 0A74   725*  726
S22      0000 0A82   735*
S22A     0000 0AAA   745   746*
S22B     0000 0AA6   744   745*
S22D     0000 0AB8   735   751*
S22E     0000 0AEA   766*  767
S23      0000 0B00   777*
S23A     0000 0B2E   789   790*
S23A2    0000 0B32   790   791*
S23D     0000 0B40   777   795*
S23E     0000 0B48   786   799*
S23E1    0000 0B50   801   803*
S23F     0000 0B8C   818*  819
S24      0000 0B92   829*
S24B     0000 0BC4   845*  846
S24D     0000 0BF6   848   862*
S24IN    0000 0BEE   832   858*
S24P     0000 0BDC   852   853*
S24P4    0000 0BE0   853   854*
S25      0000 0C1E   870   882*
S25C     0000 0C4E   895*  896
S25D     0000 0C6C   902   903*
S25E     0000 0C70   903   904*
S25INK   0000 0C88   897   916*
S25INT   0000 0C7C   884   908*
S26      0000 0CB8   937*
S26C     0000 0CFC   956*  957
S26D     0000 0D32   973*  974
S26E     0000 0D3C   975   976*
S26F     0000 0D40   976   977*
```

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S26IN     0000 0D4E    943   982*
S26MSD    0000 0E0D    235   955   1058  1065*
S26MSG    0000 0DF2    238   954   1057  1059*
S2BUF1    0000 0DD0    697   705   736   739   762   780   781   808   835   836   887   888   899
                      1038*
S2D       0000 0AC6    754   756*
S2INBF    0000 0DE2    940   946   985   1049*
S2NBFD    0000 0DEB    947   1054*
S2R1      0000 0A40    710*  716   719   722   724
S2R2      0000 0AB2    749*  758   761   764   769
S2R3      0000 0B3A    792*  798   804   807   810   812   814   816
S2R4      0000 0BE8    856*  861   869   872
S2R5      0000 0C82    907   911*  918   921   924
S2R6      0000 0D48    979*  988   991   994   997   1000
S34B      0000 0E2A   1077  1091  1095*
S34C      0000 0E56   1107*
S3A       0000 0E18   1076  1077*
S3B       0000 0E68   1113*  1126  1195
S3B4      0000 0E74   1114  1119*
S3B6      0000 0E8A   1123  1127*
S3B61     0000 0E9C   1130  1133*
S3C       0000 0EB0   1139  1144*
S3END     0000 0EC4   1150*
S3INT     0000 0EFA   1095  1169*
S3MM      0000 1212   1075  1089  1170  1294*
S3R2      0000 0EAA   1141*
S3R3      0000 0EC8   1132*  1166
S3R4      0000 0F02   1173*  1185
S3R4B     0000 0F06   1175*  1177
S4A       0000 0E26   1090  1091*
S4B       0000 0F28   1184  1185*
S4D       0000 0ECE   1146  1155*
S4END     0000 0EF6   1167*
S4INT1    0000 0F16   1171  1180*
S4INT2    0000 0F2C   1181  1189*
S4MM      0000 1213   1296*
S4PSW1    0000 0F4E   1155  1180  1203*
S4PSW2    0000 0F50   1159  1190  1204*
S4R1      0000 0E6E   1116*
S4R5      0000 0F42   1157  1197*
S4R6      0000 0F48   1161  1200*
S61       0000 12DC   1398*  1403
S61A      0000 12E4   1401*
S62       0000 12F0   1409*
S62A      0000 12FC   1412*  1422
S62B      0000 12FE   1413*  1424
S62E      0000 1312   1421*
S63       0000 1322   1419  1428*
S63A      0000 134A   1436*  1458
S63D      0000 1368   1446*
S63E      0000 136C   1447*  1457
S64       0000 139A   1444  1463*
S64A      0000 13B0   1469*  1481
S65       0000 13DC   1470  1473  1476  1479  1485*
S65A      0000 13EC   1489*  1517
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