SERIES 32

PROCESSOR TEST

PART 3

Consists of:

Test Program Description	B06-178R02A15
Test Program Listing	06-178R01A13
Test Program Object Tape	06-178R01M17

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SERIES 32 PROCESSOR TEST PART 3

1 GENERAL

Related items:
Test Program Listing   06-178R01M91A13
Test Program Paper Tape   06-178R01M17

Test programs to be run prior to loading this test:
Series 32 Processor Test Part 1   06-154
Series 32 Processor Test Part 2   06-155
Memory Access Controller Test   06-160
Series 32 Memory Test   06-156

Other applicable test programs:
Teletype Basic Confidence Test   06-004
CRT Test   06-146
Carousel 300 Test   06-183
Current Loop Interface Test   06-184

2 PURPOSE OF THE TEST

This program is designed to test certain features of the Series 32
processors not tested by Series 32 Processor Test, Part 1, Program Num-
ber 06-154 or Series 32 Processor Test, Part 2, Program Number 06-155.

The program consists of four subtests. Refer to the Program
Listing for a detailed description of each subtest. The subtests
check the instructions/features described below:

Subtest 1 tests LPSW from extended memory with and without address
translation. Test LPSW in halfword mode with and without address
translation. This test should only be run when MAC testing is
indicated and extended memory is present in the system.

Subtest 2 checks extended address truncation in halfword mode.
It checks system queue service interrupt, fullword and halfword
mode, with and without address translation, with system queues
below 64kb and in extended memory. (See NOTE.)

Subtest 3 tests console interrupt with and without address trans-
lation in fullword and halfword modes. Check relocation of auto-
load instruction through address translation in fullword and
halfword modes. (See NOTE.)

Subtest 4 tests whether a memory parity error does cause a machine
malfunction interrupt. This test should only be run on a Model
7/32 Processor with MAC and parity option.

NOTE

Halfword mode testing is performed only
on a Model 7/32 Processor with halfword
mode features. Address translation is
performed only when MAC testing is
indicated.

3 MINIMUM HARDWARE REQUIRED:

- Series 32 Processor
- Minimum 96kb of memory (contiguous)
- A Teletype type device, Carousel 300, or CRT on PASLA (see
  Section 4).
- A paper-tape reader
- The console panel is optional
- High-speed, paper-tape reader is optional

4 REQUIREMENTS OF THE MACHINE UNDER TEST

Console Device Selection:
The halfword labeled I/O (see the Program Listing) has the
default value for Teletype type device (address X'02') as the
console device. If the configuration is different, the test
program must be changed as follows:

	0	7 8	15
I/O	Console Device Identifier		List Device Identifier

CONSOLE/LIST DEVICE IDENTIFIER	EXPLANATION
X'01'	GDT/CRT on PASLA/PALM interface strapped for FDX and the highest baud rate.
X'02'	TTY on TTY interface GDT/CRT on Current Loop interface.
X'03'	Line Printer (Data Printer or Centronics) on LP interface.
X'04'	Carousel 300 on PASLA/PALM interface, strapped for FDX and the highest baud rate.
X'05'	Micro I/O Bus Interface.
0,X'06'-X'FF'	Reserved. The program defaults it to 2.

The Teletype type device or current loop interface, if used, should be strapped for the device address of X'02'. If it is different, the halfword labeled TTYADR (see the Program Listing) must be changed accordingly.

The Carousel, Graphic Display Terminal (GDT), or CRT, if used, should be strapped for the device address of X'10' and X'11' for receiving and transmitting sides respectively. If it is different, the halfword labeled CRTADR (for a CRT) or C300ADR (for a Carousel) must be changed accordingly (see the Program Listing).

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

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

5 LOADING PROCEDURES

The program tape is a self-loading bootstrap tape (M17 format) and loads using the 50 sequence in Appendix A.

When the program is loaded and executed at ORIGIN1 (X'A00'), the following message is output:

```
S32PT3 R01
CPU
*
```

If this message is not printed, the user should run the tests described in Section 1.

6 OPERATING PROCEDURES

6.1 NORMAL TESTING

When the program is loaded and executed at ORIGIN1 (see the Program Listing), it prints the characters shown below:

```
S32PT3 R01
CPU
*
```

The user should depress two keys, identifying the processor under test (see Appendix B). The program then initializes low core and searches for the top of available contiguous memory. If the required memory is not available, the following message is printed and a branch is made to ENTRY1:

INSUFFICIENT CORE

If sufficient core is available, the program proceeds to locate the Memory Access Controller (MAC). If the MAC is not found at any of the following locations: X'300, X'500', or X'900', the following message is printed:

NO MAC RESPONSE

If the MAC is located by the program, its location is stored in location MACSTAT and a flag is set for later reference. A message is then printed. Example:

MAC RESPONSE AT 00300

All memory above the program to the top of detected available memory is filled with zeros. Portions of the program normally resident in this area are restored. The following message is then printed:

SUBTEST
*

The user must enter the subtest number to be selected by depressing keys 1, 2, 3, or 4 followed by a carriage return. The program branches to the selected subtest.

NOTE

Testing procedure differs for different
system configurations. Refer to Appendix
E for the normal printouts for each subtest
as run in different configurations.

If no error is detected, the following characters are output to the console:

NO ERROR
SUBTEST
*

The user may then select another subtest.

6.2 OPTIONAL TESTING

The program executes certain portions of the subtests only if these portions are applicable to the particular system configuration. Refer to Appendix E.

7 ERROR PROCEDURES

7.1 RECOVERABLE ERROR

If a recoverable error occurs, the program prints an error message on the console or list device as shown below:

ERROR TTNN

Where: TT = number of subtest in which error is detected.
        NN = error code within the subtest.

(Refer to Appendix D for a description of each error number.) The error number is also copied into the console panel indicators as shown in Figure 2 of Appendix C. Each subtest is divided into many smaller parts. Each part of a subtest has a unique error number. Therefore, if error 0301 is printed, the error was detected during the execution of Subtest 3, Part 1 (T3P1). Refer to the Program Listing.

7.2 SPURIOUS INTERRUPT

Upon the detection of a spurious interrupt (generally illegal instruction interrupt, due to the type of testing performed), the error number is copied into the console panel indicators, as shown in Figure 2 of Appendix C. The processor is halted by loading a PSW of X'8000'. When the RUN switch is depressed, an error message is printed on the Teletype type device:

ERROR TTFN

Where: TT = number of subtest in which the error was detected.
        FN = spurious interrupt error code (see Appendix D).

Testing then resumes.

In some cases, a detected error will cause the WAIT light on the console panel display to be lit. After noting that the numbers in the display correspond to Figure 1 of Appendix C, the user should examine LOC (Function 5). Depressing the RUN switch should cause an error message to be printed out on the console or list device.

6.3.3 USEFUL DEBUG OPTIONS

The constant DELAY in routine CKPOINT may be modified to slow the transfer of control between portions of a subtest to aid in visually tracing program execution.

The constant MATCH in routine CKPOINT may be modified to allow halting of the processor prior to execution of a portion of a subtest. For example, changing location MATCH to X'0301' causes a halt when CKPOINT is called by T3P1. Depressing the RUN switch on the console causes testing to resume from T3P1.

If you want to establish a patch area, the area beginning at X'3F00' is reserved for this purpose. Location PATCHES in table USDTAB must be modified to contain the number of bytes occupied by the patch area to avoid interpretation of nonzero bytes as spurious writes during execution of the test.

LOCATION	SUGGESTED SETTING	FUNCTION
0300	0000	Illegal Instruction New PSW
0032	8000	
0034	0000	
0036	0050	
0038	0000	Machine Malfunction New PSW
003A	8000	
003C	0000	
003E	0050	
0050	D500	50 Sequence
0052	00CF	
0054	4300	
0056	0080	
0078	YYZZ	

```
YYZZ = Tape Reader Device Number and Command Byte
     = 1399 for HSPTR/P
     = 0399 for HSPTR
     = 0294 TTY Tape Reader
```

APPENDIX B
PROCESSOR TYPE CODES

KEYS	MODELS DENOTED
7X	Model 7/32 Processor with halfword mode feature and display.
7D	Model 7/32 Processor with halfword mode feature but no display.
8X	Models 7/32 or 8/32 Processors with display but without halfword mode feature.
8D	Models 7/32 or 8/32 Processors with neither display nor halfword mode feature.

NOTE

The two characters denoting the model under test are stored in memory location labeled CPUNO (see the Program Listing).

APPENDIX C
CONSOLE PANEL INDICATORS

1. Normal Testing:

```
 ◄──T        T        P        P──►◄────────────Zeros────────────►

  0000     0000     0000     0000    0000     0000     0000     0000

 ◄─────────Memory Address─────────►◄─────────Memory Data─────────►
```
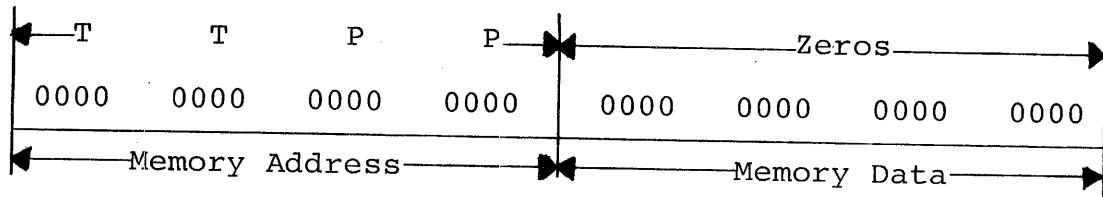
2. When an error is detected:

```
                                    ┌───────────────ERRNO───────────────►
 ◄──T        T        P        ─P──►    T        T        N        N

  0000     0000     0000     0000    0000     0000     0000     0000

 ◄─────────Memory Address─────────►◄─────────Memory Data─────────►
```
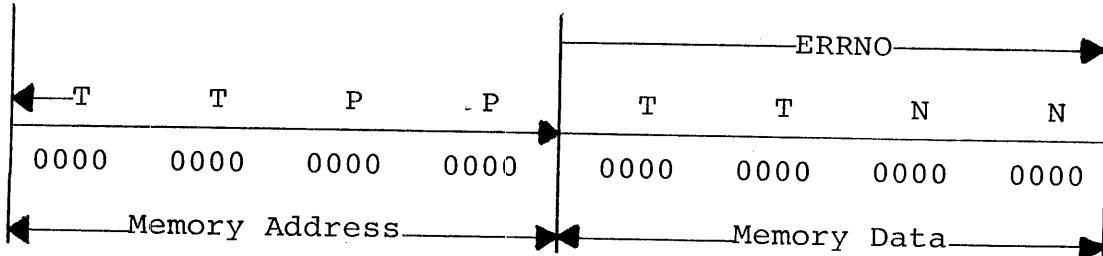
TT = Test Number
PP = Portion of Test Being Executed
NN = Error Number

APPENDIX D
ERROR MESSAGES

TEST	ERROR	TYPE OF FAILURE
1	0101	Current PSW = Y'0'. Test LPSW with new PSW resident above 64kb, new status = Y'0'.
	0102	Current PSW = Y'0'. Test LPSW with new PSW resident above 64kb, new status = Y'100000' (halfword mode), new loc < 64kb.
	0103	Current PSW = Y'0'. Test LPSW with new PSW resident above 64kb, new status = Y'100000' (halfword mode), new loc > 64kb. Check for truncation of location counter (to < 64kb).
	0104	Current PSW = Y'0'. Set up MAC for 1:1 translation. Test LPSW with new PSW resident below 64kb. New status = Y'100400' (halfword mode, MAC enabled), new loc < 64kb.
	0105	Current PSW = Y'0'. Set up MAC register F to translate to above 64kb (physical) in HW mode. Test LPSW with new PSW resident below 64kb. New status = Y'100400' (halfword mode, MAC enabled), new loc translating to > 64kb. Ensure that the new loc is translated properly.
	0106	Current PSW = Y'0'. Set up MAC for translation. Test LPSW with new PSW resident below 64kb, new stat = Y'0400' (fullword mode, MAC enabled). Ensure that a new loc is translated properly.
	0107	Current PSW = Y'0'. Test LPSW with new PSW resident above 64kb, new stat = Y'0400' (fullword mode, MAC enabled). Ensure that new loc is translated properly.
	01CC	Spurious core write during subtest execution.
2	0200	STM R0, X'FFFC' instruction in halfword mode did not result in 64kb address wrap.
	0201	LM R0, X'FFFC' instruction in halfword mode did not result in 64kb address wrap.
	0202	Spurious system queue service interrupt; fullword mode; system queue above 64kb. (EPSR)

TEST	ERROR	TYPE OF FAILURE
2	0203	No system queue service interrupt when expected; fullword mode; system queue above 64kb. (EPSR)
	0204	Contents of registers 13, 14, or 15, or PSW bad following system queue service interrupt; fullword mode; system queue above 64kb. (EPSR)
	0205	Spurious system queue service interrupt; halfword mode, system queue below 64kb. (EPSR)
	0206	No system queue service interrupt when expected; halfword mode; system queue below 64kb. (EPSR)
	0207	Contents of registers 13, 14, or 15, or PSW bad following system queue service interrupt; halfword mode; system queue below 64kb. (EPSR)
	0208	Spurious system queue service interrupt; halfword mode; system queue above 64kb. (EPSR)
	0209	No system queue service interrupt when expected; halfword mode; system queue above 64kb. (EPSR)
	020A	Contents of registers 13, 14, or 15, or PSW bad following system queue service interrupt; halfword mode; system queue above 64kb. (EPSR)
	0212	Spurious system queue service interrupt; fullword mode; system queue above 64kb. (LPSW)
	0213	No system queue service interrupt when expected; fullword mode; system queue above 64kb. (LPSW)
	0214	Contents of registers 13, 14, or 15, or PSW bad following system queue service interrupt; fullword mode, system queue above 64kb. (LPSW)
	0215	Spurious system queue service interrupt; halfword mode; system queue below 64kb. (LPSW)
	0216	No system queue service interrupt when expected; halfword mode, system queue below 64kb. (LPSW)
	0217	Contents of registers 13, 14, or 15, or PSW bad following system queue service interrupt; halfword mode, system queue below 64kb. (LPSW)

TEST	ERROR	TYPE OF FAILURE
2	0218	Spurious system queue service interrupt; halfword mode; system queue above 64kb. (LPSW)
	0219	No system queue service interrupt when expected; halfword mode, system queue above 64kb. (LPSW)
	021A	Contents of registers 13, 14, or 15, or PSW bad following system queue service interrupt; halfword mode, system queue above 64kb. (LPSW)
	0222	Spurious system queue service interrupt; fullword mode; system queue above 64kb. (LPSWR)
	0223	No system queue service interrupt; fullword mode; system queue above 64kb. (LPSWR)
	0224	Contents of registers 13, 14, or 15, or PSW bad following system queue service interrupt; fullword mode; system queue above 64kb. (LPSWR)
	02CC	Spurious core write during subtest execution.
3	0301	No console interrupt generated; halfword mode; MAC disabled.
	0302	Contents of registers 0, 1, 2, or 3, or PSW bad following console interrupt; halfword mode; MAC disabled.
	0303	No console interrupt generated; fullword mode; MAC enabled.
	0304	Contents of registers 0, 1, 2, or 3, or PSW bad following console interrupt; fullword mode; MAC enabled.
	0305	No console interrupt generated; halfword mode; MAC enabled.
	0306	Contents of registers 0, 1, 2, or 3, or PSW bad following console interrupt; halfword mode, MAC enabled.
	0307	Data compare failure; autoload; fullword mode with address translation.

TYPE	ERROR	TYPE OF FAILURE
3	0308	Data compare failure; autoload, halfword mode with address translation.
	03CC	Spurious core write during subtest execution.
4	0401	No interrupt on memory parity error.

Other errors common to all the tests:

ERROR NUMBER	TYPE OF FAILURE
NNF1	Arithmetic fault interrupt (NOTE 2).
NNF2	Illegal Instruction interrupt (NOTE 2).
NNF3	Machine malfunction interrupt (NOTES 2, 3).
NNF4	External interrupt (HW mode) (NOTE 2).
NNF5	Memory access controller interrupt.
NNF6	System queue service interrupt.
NNF7	SVC executed from one of the locations from X'80' through X'CF' (NOTE 2)
NNF8	Incorrect service pointer used (one of X'D0' through X'2CE') (NOTE 2).

NOTES

1. NN = Test number from 01 through FF.

2. Certain registers of Set 0 are used by the microprogram for interrupt handling. Prior to printing an error message the fullword 16 registers of set 0 are stored in memory starting at location labeled REGSAV. These locations may be opened to study the old PSW at the time of the interrupt, etc.

NOTES (Continued)

3.   The new PSW is captured in register
     zero and stored in memory location
     labeled REG0. The last 4 bits define
     the type of failure as described
     below:

     X100   Parity error on data fetch

     0010   Parity error on instruction
               fetch

     X001   Power fail

     0000   Power restore

     1X0X   Parity error or power fail-
               ure during an auto driver
               channel operation.

APPENDIX E
SAMPLE PRINTOUTS

MODEL 7/32 WITH MAC

S32PT3 R00
CPU
*
7X
MAC RESPONSE AT   000300

SUBTEST
*
1
NO ERROR

SUBTEST
*
2
NO ERROR

SUBTEST
*
3
FUNCTION 0   (Depress keys FN and 0 on display panel)

FUNCTION 0

FUNCTION 0

DEPRESS KEYS
1234567890
1234567890
DEPRESS KEYS
1234567890
1234567890
NO ERROR

SUBTEST
*
4
NO ERROR
*

MODEL 7/32 WITHOUT MAC

S32PT3 R00
CPU
*
7X
NO MAC RESPONSE

SUBTEST
*
1
NO ERROR

SUBTEST
*
2
NO ERROR

SUBTEST
*
3
FUNCTION 0   (Depress keys FN and 0 on display panel)

NO ERROR

SUBTEST
*

MODEL 8/32 WITH MAC

S32PT3 R00
CPU
*
8X
MAC RESPONSE AT   000300

SUBTEST
*
1
NO ERROR

SUBTEST
*
2
NO ERROR

SUBTEST
*
3
FUNCTION 0   (Depress keys FN and 0 on display panel)

DEPRESS KEYS
1234567890
1234567890
NO ERROR

SUBTEST
*

B06-178R02A15

MODEL 8/32 WITHOUT MAC

S32PT3 R00
CPU
*
8X
NO MAC RESPONSE

SUBTEST
*
1
NO ERROR

SUBTEST
*
2
NO ERROR

SUBTEST
*
3
NO ERROR

SUBTEST
*

```
 1   **0617800
 2              TARGT 32                                                          XP300010
 3              CROSS                                                             XP300020
 4              NORX3                                                             XP300030
 5              WIDTH 120                                                         XP300040
 6   S32PT3  PROG  SERIES 32 PROCESSOR TEST PART 3          06-178R01M91A13       XP300050
 7   *                                                                           XP300060
 8   * COPYRIGHT  C  1978 BY PERKIN-ELMER CORPORATION                            XP300070
 9   * PRINTED IN U.S.A.  JUNE 1978                                              XP300080
10   *                                                                           XP300085
11   * PROGRAM USES SERIES 32 INSTRUCTION SET.                                   XP300090
12   *                                                                           XP300100
13   * PURPOSE OF TEST:                                                          XP300110
14   * THIS PROGRAM IS DESIGNED TO TEST CERTAIN FEATURES OF SERIES 32           XP300120
15   * PROCESSORS NOT TESTED BY                                                  XP300130
16   *        06-154 SERIES 32 PROCESSOR TEST PART 1                            XP300140
17   *        06-155 SERIES 32 PROCESSOR TEST PART 2                            XP300150
18   *                                                                           XP300160
19   * ASSUMPTIONS:                                                              XP300170
20   * IT IS ASSUMED THAT THE FOLLOWING TESTS HAVE BEEN RUN WITHOUT              XP300180
21   * DETECTING AN ERROR, PRIOR TO LOADING THIS TEST:                          XP300190
22   *        06-154 SERIES 32 PROCESSOR TEST PART 1                            XP300200
23   *        06-155 SERIES 32 PROCESSOR TEST PART 2                            XP300210
24   *        06-160 MEMORY ACCESS CONTROLLER TEST                             XP300220
25   *        06-156 SERIES 32 MEMORY TEST                                     XP300230
26   * THE FOLLOWING TESTS ARE ALSO APPLICABLE:                                 XP300240
27   *        06-004 TELETYPE BASIC CONFIDENCE TEST                            XP300250
28   *        06-146 CRT TEST                                                  XP300260
29   *        06-183 CAROUSEL 300 TEST                                         XP300270
30   *        06-184 LINEPRINTER TEST                                          XP300280
31   *                                                                           XP300290
32   * NORMAL TESTING:                                                           XP300300
33   * THIS TEST REQUIRES 96 KB CONTIGUOUS LOCAL MEMORY                          XP300310
34   * THIS TEST IS NOT DESIGNED TO BE RUN ON MODEL 7/32 WITH MICROCODE          XP300320
35   * BELOW THE R02 REVISION LEVEL.                                             XP300330
36   *                                                                           XP300340
37   *    A TELETYPE MUST BE ATTACHED AT THE DEVICE ADDRESS X'02'. IF THE        XP300350
38   * TELETYPE IS ATTACHED AT A DIFFERENT ADDRESS, CHANGE LOCATION TTYADR       XP300360
39   * TO THE ACTUAL TELETYPE ADDRESS. IF CRT ON PASLA (FDX ONLY)               XP300370
40   * USED FOR I/O, CHANGE LOCATION 'IO' TO X'0101'.PASLA DEVICE                XP300380
41   * ADDRESSES ARE ASSUMED TO BE X'10' (READ SIDE) AND X'11' (WRITE SIDE)      XP300390
42   * IF THE PASLA IS CONNECTED AT DIFFERENT ADDRESSES, CHANGE LOCATION         XP300400
43   * CRTADR OR C300ADR TO ACTUAL PASLA ADDRESSES. AFTER STARTING PROGRAM       XP300410
44   * EXECUTION AND ENTERING THE PROCESSOR IDENTIFIER (E.G. 7X), SUBTESTS       XP300420
45   * 1 TO 4 MAY BE SELECTED INDIVIDUALLY. ERROR MESSAGES ARE PRINTED ON        XP300430
46   * THE CONSOLE DEVICE OR THE LIST DEVICE.                                    XP300440
                                                                                 XP300450
```

```
                 0000 0000          48  R0      EQU    0                                                                        XP300470
                 0000 0001          49  R1      EQU    1                                                                        XP300480
                 0000 0002          50  R2      EQU    2                                                                        XP300490
                 0000 0003          51  R3      EQU    3                                                                        XP300500
                 0000 0004          52  R4      EQU    4                                                                        XP300510
                 0000 0005          53  R5      EQU    5                                                                        XP300520
                 0000 0006          54  R6      EQU    6                                                                        XP300530
                 0000 0007          55  R7      EQU    7                                                                        XP300540
                 0000 0008          56  R8      EQU    8                                                                        XP300550
                 0000 0009          57  R9      EQU    9                                                                        XP300560
                 0000 000A          58  R10     EQU    10                                                                       XP300570
                 0000 000B          59  R11     EQU    11                                                                       XP300580
                 0000 000C          60  R12     EQU    12                                                                       XP300590
                 0000 000D          61  R13     EQU    13                                                                       XP300600
                 0000 000E          62  R14     EQU    14                                                                       XP300610
                 0000 000F          63  R15     EQU    15                                                                       XP300620
                                    64  *                                                                                       XP300630
                                    65  *                                                                                       XP300640
                                    66  *                                                                                       XP300650
                                    67  *   BOOTLOADER WITH CHKSUM                                                              XP300660
                                    68  *                                                                                       XP300670
0000001                             69          ORG    X'80'                                                                    XP300680
000080   2421                       70          LIS    R2,1                                                                     XP300690
000082   2303                       71          BS     BOOT                                                                     XP300700
000084   1AA8                       72          DC     Z(OLDPSW)          CURRENT PSW SAVE POINTER(32-BIT M/C) X                XP300710
000086   1B84                       73          DC     Z(REGSAV)          REGISTER SAV POINTER(32-BIT M/C)                      XP300720
000088   C810 0A00                  74  BOOT    LHI    R1,ORIGIN1         R1 = ADR( FIRST BYTE OF TEST PROG )                   XP300730
00008C   C830 1C04                  75          LHI    R3,PROGTOP+1       R3 = ADR( LAST NON-ZERO BYTE )                        XP300740
000090   2731                       76          SIS    R3,1                                                                     XP300750
000092   C860 0000                  77  MN      LHI    R6,0               R6 = CHKSUM BYTE = X'MN'                              XP300760
000096   D340 0078                  78          LB     R4,X'78'           INPUT DEV ADR                                         XP300770
00009A   DE40 0079                  79          OC     R4,X'79'                                                                 XP300780
00009E   9D45                       80  LEADER  SSR    R4,R5                                                                    XP300790
0000A0   2091                       81          BTBS   9,1                DU,BSY                                                XP300800
0000A2   9B45                       82          RDR    R4,R5                                                                    XP300810
0000A4   0855                       83          LDAR   R5,R5                                                                    XP300820
0000A6   2234                       84          BZS    LEADER             IGNORE LEADER                                         XP300830
0000A8   D251 0000                  85  LOAD    STB    R5,0(R1)           STORE 1ST NON-ZERO & SUBSEQUENT BYTE                  XP300840
0000AC   D351 0000                  86          LB     R5,0(R1)           RELOAD DATA BYTE TO                                   XP300850
0000B0   0765                       87          XAR    R6,R5              GENERATE CHKSUM                                       XP300860
0000B2   9481                       88          EXBR   R8,R1                                                                    XP300870
0000B4   9828                       89          WHR    R2,R8              DISPLAY MEMORY ADDRESS                                XP300880
0000B6   9D45                       90          SSR    R4,R5                                                                    XP300890
0000B8   2091                       91          BTBS   9,1                DU,BSY                                                XP300900
0000BA   9B45                       92          RDR    R4,R5                                                                    XP300910
0000BC   C110 00A8                  93          BXLE   R1,LOAD            LOAD TILL LAST BYTE                                   XP300920
0000C0   9486                       94          EXBR   R8,R6                                                                    XP300930
0000C2   9828                       95          WHR    R2,R8              FINAL CHKSUM                                          XP300940
0000C4   2478                       96  LDWT    LIS    R7,8                                                                     XP300950
0000C6   117C                       97          SLLS   R7,12              R7 = X'8000'                                          XP300960
0000C8   9557                       98          EPSR   R5,R7              HALT PROCESSOR.                                       XP300970
0000CA   2203                       99          BS     LDWT                                                                     XP300980
```

```
101  ******************************************************************************  XP301000
102  * CODE TO BE STORED IN HIGH CORE                                               XP301010
103  *        ORG    T1P3A+Y'10000'                                                 XP301020
104  * RETURN TO LOW CORE IN HW MODE - EXTENDED ADDRESS BITS NOT                    XP301030
105  *T1HIGH1  DCX    0                         TRUNCATED IN HW MODE.          HW   XP301040
106  *                                                                              XP301050
107  *        ORG    AUTO1+Y'10000'     FULLWORD MODE AUTOLOAD                      XP301060
108  *        AL     X'89'              WITH MAC RELOCATION                         XP301070
109  *        LHI    R0,0                                                           XP301080
110  *        EPSR   R6,R0              DISABLE MAC                                 XP301090
111  *                                                                              XP301100
112  *        ORG    AUTO2+Y'10000'     HALFWORD MODE AUTOLOAD                      XP301110
113  *        AL     X'89'              WITH MAC RELOCATION                         XP301120
114  *        LHI    R0,0                                                           XP301130
115  *        EPSR   R6,R0              DISABLE MAC                                 XP301140
116  *                                                                              XP301150
117  *        ORG    Y'11000'                                                       XP301160
118  * RETURN TO LOW CORE IN FW MODE TO CHECK IF HERE IN HW MODE. W/MAC.            XP301170
119  *T1HIGH2  EPSR   R6,R6              *                                     HW   XP301180
120  *        LHI    R1,T1P5A                                                       XP301190
121  *        STH    R1,X'36'                                                       XP301200
122  *        DCX    0                  FORCE PSW = 0 BY ILLEGAL INST               XP301210
123  *T1HILOC1 EQU    *-2                                                           XP301220
124  *                                                                              XP301230
125  *        ORG    Y'15000'                                                       XP301240
126  *T1PSW1   DCY    0                                                             XP301250
127  *        DC     T1P1A              CLEAR ALL PSW BITS                          XP301260
128  *T1PSW2   DCY    0                                                             XP301270
129  *        DC     T1P2A              HW MODE, < 64 KB.                           XP301280
130  *T1PSW3   DCY    100000                                                        XP301290
131  *        DC     T1HIGH1            HW MODE, > 64 KB                            XP301300
132  *T1PSW7   DCY    400                                                           XP301310
133  *        DC     T1P7A+Y'E0000'     MAC ENABLED                                 XP301320
134  *TABLE2   DCY    0,0,0              SYSTEM QUEUE 2 (HIGH CORE)                  XP301330
135  *                                                                              XP301340
136  ******************************************************************************  XP301350
137  *                                                                              XP301360
138  *        HIGH CORE EQUATES                                                     XP301370
139  ALBUF1   EQU    Y'10080'           HIGH-CORE AUTO-LOAD BUFFER IN TEST          XP301380
140  T1HIGH1  EQU    T1P3A+Y'10000'                                                 XP301390
141  T1HIGH2  EQU    Y'11000'                                                       XP301400
142  T1HILOC1 EQU    Y'1100A'                                                       XP301410
143  T1PSW1   EQU    Y'15000'                                                       XP301420
144  T1PSW2   EQU    Y'15008'                                                       XP301430
145  T1PSW3   EQU    Y'15010'                                                       XP301440
146  T1PSW7   EQU    Y'15018'                                                       XP301450
147  TABLE2   EQU    Y'15020'                                                       XP301460
148  T1P6RTN  EQU    T1P6A+Y'E0000'                                                 XP301470
149  T1P6RTN2 EQU    T1P7A+Y'E0000'                                                 XP301480
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0001 0080
0001 0E16
0001 1000
0001 100A
0001 5000
0001 5008
0001 5010
0001 5018
0001 5020
000E 0EFC
000E 0F14
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                                    151  *****************************************************      XP301500
0000CC                              152           ORG    X'A00'                                     XP301510
000A00    4300 0A1C                 153  ORIGIN1  B      ENTRY1                                      XP301520
000A04                              154           DO     3                      FILLER              XP301530
000A04    0000 0000                 155           DC     0                                          XP301540
000A08    0000 0000                 155           DC     0
000A0C    0000 0000                 155           DC     0
000A10    0202                      156  IO       DCX    0202                   I/O DEVICE POINTERS  XP301550
000A12    1011                      157  CRTADR   DCX    1011                   CRT READ/WRITE ADDRESSES  XP301560
000A14    0202                      158  TTYADR   DCX    0202                   CURRENT LOOP ADDRESS  XP301570
000A16    6262                      159  LPADR    DCX    6262                   LINE PRINTER ADDRESS  XP301580
000A18    1011                      160  C300ADR  DCX    1011                   CAROUSEL 300 ADDRESS  XP301590
000A1A    C0C0                      161  MCRBUS   DCX    C0C0                   MICROBUS ADDRESS     XP301600
                                    162  *                                                          XP301610
000A1C    4300 0A24                 163  ENTRY1   B      GETCPU                 NORMAL START         XP301620
000A20    4300 0CC0                 164  ENTRY2   B      GETSUB1                PROG. DEV. ENTRY     XP301630
000A24    4100 173E                 165  GETCPU   BAL    R0,CLEARPSW                                 XP301640
                                    166  **  PROCESSOR IS NOW IN FULLWORD MODE                      XP301650
000A28    D310 0A10                 167           LB     R1,IO                  LOAD CONSOLE POINTER XP301660
000A2C    C510 0006                 168           CLHI   R1,6                                        XP301670
000A30    2182                      169           BLS    IO.00                                       XP301680
000A32    2412                      170           LIS    R1,2                   SET IT TO TTY        XP301690
000A34    D320 0A11                 171  IO.00    LB     R2,IO+1                LOAD LISTDEVICE POINTER  XP301700
000A38    C520 0006.                172           CLHI   R2,6                                        XP301710
000A3C    2182                      173           BLS    IO.10                                       XP301720
000A3E    2422                      174           LIS    R2,2                                        XP301730
000A40    D210 0A10                 175  IO.10    STB    R1,IO                  RESTORE CONSOLE POINTER  XP301740
000A44    D210 1B0C                 176           STB    R1,IOLIST              STORE CONSOLE POINTER XP301750
000A48    D220 0A11                 177           STB    R2,IO+1                RESTORE #LISTDEV POINTER XP301760
000A4C    CD20 0001                 178           SLHL   R2,1                   DOUBLE LISTDEV POINTER..2,4,6,8,10 XP301770
000A50    D332 0A11                 179           LB     R3,IO+1(R2)            LOAD LIST DEVICE ADDRESS XP301780
000A54    4842 1B16                 180           LH     R4,CON2ND(R2)          LOAD COMMAND         XP301790
000A58    D240 1B0B                 181           STB    R4,PASLFLG2            SET FLAG IF PASLA    XP301800
000A5C    9444                      182           EXBR   R4,R4                  SET THE CMD BYTE IN LOWER BITS OF REG XP301810
000A5E    9E34                      183           OCR    R3,R4                  OUTPUT INITIAL COMMAND XP301820
000A60    CD10 0001                 184  IO.20,   SLHL   R1,1                   DOUBLE CONSOLE POINTER..2,4,6,8,10 XP301830
000A64    D331 0A11                 185           LB     R3,IO+1(R1)            LOAD CONSOLE ADDRESS XP301840
000A68    4841 1B16                 186           LH     R4,CON2ND(R1)          LOAD COMMAND         XP301850
000A6C    D240 1B0A                 187           STB    R4,PASLFLG1            SET FLAG IF PASLA    XP301860
000A70    D240 1B08                 188           STB    R4,PASLFLG             SET FLAG IF PASLA    XP301870
000A74    9444                      189           EXBR   R4,R4                  ADJUST COMMAND BYTE TO RIGHT XP301880
000A76    9E34                      190           OCR    R3,R4                  OUTPUT THE INTIAL COMMAND XP301890
          0000 0A78                 191  IO.30    EQU    *                                           XP301900
000A78    C810 3030                 192           LHI    R1,C'00'                                    XP301910
000A7C    D210 18F5                 193           STB    R1,TESTNO              IF ERROR '00FN'      XP301920
000A80    E6B0 18D8                 194           LA     R11,TITLE                                   XP301930
000A84    E6C0 18ED                 195           LA     R12,TITEND                                  XP301940
000A88    41F0 16BA                 196           BAL    R15,PRINT              'S32PT3', 'CPU *'    XP301950
                                    197  *        GET RESPONSE FROM TELETYPE                         XP301960
000A8C    41E0 163A                 198           BAL    R14,READASC                                 XP301970
000A90    4040 1B04                 199  KEY0     STH    R4,CPUNO               CPU IDENTIFIER       XP301980
000A94    1048                      200           SRLS   R4,8                   MOVE FIRST CHAR READ TO LOW BYTE XP301990
000A96    C540 0037                 201           CLHI   R4,C'7'                                     XP302000
000A9A    2334                      202           BES    KEY1                                        XP302010
000A9C    C540 0038                 203           CLHI   R4,C'8'                                     XP302020
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000AA0  2139           204        BNES  KEYERR                                            XP302030
000AA2  D340 1B05      205  KEY1  LB    R4,CPUNO+1     MUST BE D OR X                     XP302040
000AA6  C540 0044      206        CLHI  R4,C'D'                                           XP302050
000AAA  233C           207        BES   KEY2                                              XP302060
000AAC  C540 0058      208        CLHI  R4,C'X'                                           XP302070
000AB0  2339           209        BES   KEY2                                              XP302080
        0000 0AB2      210  KEYERR EQU  *              PRINT'?'                           XP302090
000AB2  E6B0 18D4      211        LA    R11,QUESTN                                        XP302100
000AB6  E6C0 18D9      212        LA    R12,QUESTNZ                                       XP302110
000ABA  41F0 16BA      213        BAL   R15,PRINT      '?'                                XP302120
000ABE  4300 0A24      214        B     GETCPU                                            XP302130
                       215  ***********************************************************   XP302140
        0000 0AC2      216  KEY2  EQU   *                                                 XP302150
000AC2  E6F0 0B8C      217        LA    R15,GETMTOP    LOCAL RETURN                       XP302160
000AC6  0700           218        XR    R0,R0                                             XP302170
000AC8  4000 1B06      219        STH   R0,MALFLAG     CLEAR MMF FLAG                     XP302180
        0000 0ACC      220  LCORE32 EQU *              DEFINES INIT MACHINE STATE         XP302190
000ACC  2410           221        LIS   R1,0                                             XP302200
000ACE  C820 00C0      222        LHI   R2,X'C0'                                          XP302210
000AD2  9E12           223  SYSCLR OCR  R1,R2          DISABLE ALL EXTERNAL DEVICE INTPTS. XP302220
000AD4  2611           224        AIS   R1,1                                             XP302230
000AD6  C510 0400      225        CLHI  R1,X'400'                                         XP302240
000ADA  2084           226        BLS   SYSCLR                                            XP302250
                       227  *          SET UP LOW CORE FOR SPURIOUS INTERRUPTS           XP302260
000ADC  2400           228        LIS   R0,0                                             XP302270
000ADE  5000 0020      229        ST    R0,X'20'       MACHINE MALFUNCTION INTRPT.        XP302280
000AE2  5000 0024      230        ST    R0,X'24'       OLD PSW                            XP302290
000AE6  5000 0028      231        ST    R0,X'28'       RESERVED,MUST BE ZERO              XP302300
000AEA  5000 002C      232        ST    R0,X'2C'                                          XP302310
000AEE  5000 0030      233        ST    R0,X'30'       ILLEG.INSTR.INTRPT.NEW PSW         XP302320
000AF2  E610 1846      234        LA    R1,ILGINT      NEW PSW LOC.                       XP302330
000AF6  5010 0034      235        ST    R1,X'34'                                          XP302340
000AFA  5000 0038      236        ST    R0,X'38'       MACHINE MALFUNCTION INTRPT.        XP302350
000AFE  E610 184A      237        LA    R1,MALFTN      NEW PSW LOC.                       XP302360
000B02  5010 003C      238        ST    R1,X'3C'                                          XP302370
000B06  5000 0040      239        ST    R0,X'40'       OLD PSW , HW EXT.INTRPT            XP302380
000B0A  C810 1862      240        LHI   R1,XINTHW      -- HW EXT INTPT                    XP302390
000B0E  5010 0044      241        ST    R1,X'44'       NEW PSW LOC. HW EXT INT            XP302400
000B12  5000 0048      242        ST    R0,X'48'       ARITH.FAULT NEW PSW                XP302410
000B16  E610 1842      243        LA    R1,ARTFLT                                         XP302420
000B1A  5010 004C      244        ST    R1,X'4C'                                          XP302430
000B1E  5000 1AE8      245        ST    R0,TABLE       INITIALIZE TABLE                   XP302440
000B22  5000 1AEC      246        ST    R0,TABLE+4                                        XP302450
000B26  E610 1AE8      247        LA    R1,TABLE       SYSTEM QUEUE POINTER               XP302460
000B2A  5010 0080      248        ST    R1,X'80'                                          XP302470
000B2E  E610 1AA8      249        LA    R1,OLDPSW      CURRENT PSW SAVE POINTER           XP302480
000B32  4010 0084      250        STH   R1,X'84'                                          XP302490
000B36  E610 1B84      251        LA    R1,REGSAV      REG.SAVE POINTER (SET 0)           XP302500
000B3A  4010 0086      252        STH   R1,X'86'                                          XP302510
000B3E  5000 0088      253        ST    R0,X'88'       SYST.Q SERVICE INTRPT. NEW PSW     XP302520
000B42  E610 185E      254        LA    R1,CHANIO                                         XP302530
000B46  5010 008C      255        ST    R1,X'8C'                                          XP302540
000B4A  5000 0090      256        ST    R0,X'90'       MEMORY ACCESS CONTROLLER INTRPT.   XP302550
000B4E  E610 185A      257        LA    R1,MACINT      NEW PSW                            XP302560
000B52  5010 0094      258        ST    R1,X'94'                                          XP302570
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000B56    5000 0098        259           ST    R0,X'98'          SVC INTRPT,NEW PSW              XP302580
000B5A    E630 1866        260           LA    R3,SVCERR                                        XP302590
000B5E    C810 009C        261           LHI   R1,X'9C'                                         XP302600
000B62    4031 0000        262   X9C     STH   R3,0(R1)          SVC CALL,ERR.TRAP              XP302610
000B66    2612             263           AIS   R1,2                                             XP302620
000B68    C510 00BC        264           CLHI  R1,X'BC'                                         XP302630
000B6C    2035             265           BNES  X9C                                              XP302640
000B6E    5001 0000        266   XBC     ST    R0,0(R1)          RESERVED ,MUST BE ZERO         XP302650
000B72    2614             267           AIS   R1,4                                             XP302660
000B74    C510 00D0        268           CLHI  R1,X'D0'                                         XP302670
000B78    2035             269           BNES  XBC                                              XP302680
000B7A    E630 186A        270           LA    R3,DEVERR                                        XP302690
000B7E    4031 0000        271   XD0B    STH   R3,0(R1)                                         XP302700
000B82    2612             272           AIS   R1,2                                             XP302710
000B84    C510 02D0        273           CLHI  R1,X'2D0'                                        XP302720
000B88    2035             274           BNES  XD0B                                             XP302730
000B8A    030F             275           BR    R15               RETURN                         XP302740
                           276   ************************************************************   XP302750
          0000 0B8C        277   GETMTOP EQU   *                 NONDESTRUCTIVE TOP/CORE SEARCH XP302760
000B8C    E610 2000        278           LA    R1,PROGTOP+X'3FF'/1024*1024                      XP302770
000B90    58B1 0000        279   TOP2    L     R11,0(R1)         SAVE CONTENTS                  XP302780
000B94    5011 0000        280           ST    R1,0(R1)          ST ORE PATTERN                 XP302790
000B98    58E1 0000        281           L     R14,0(R1)         READ BACK                      XP302800
000B9C    05E1             282           CLR   R14,R1            EQUAL ?                        XP302810
000B9E    2139             283           BNES  FOUNDTOP          FOUND TOP OF LOCAL MEMORY      XP302820
000BA0    5081 0000        284           ST    R11,0(R1)         RESTORE ORIGINAL DATA          XP302830
000BA4    CA10 0400        285           AHI   R1,X'400'         1 KB INCREMENT                 XP302840
000BA8    F510 0010 0000   286           CLI   R1,Y'100000'                                     XP302850
000BAE    203F             287           BNES  TOP2                                             XP302860
000BB0    5010 1AFC        288   FOUNDTOP ST   R1,MEMTOP         FOR FURTHER REFERENCE          XP302870
000BB4    C8B0 2000        289           LHI   R11,X'2000'                                      XP302880
000BB8    95CB             290           EPSR  R12,R11           ENABLE MACHINE MALFUNCTION     XP302890
000BBA    F510 0001 502B   291           CLI   R1,TABLE2+11      LAST ACCESSED HIGH-CORE CODE   XP302900
000BC0    2389             292           BNLS  FINDMAC                                          XP302910
000BC2    E6B0 1954        293   NOCORE  LA    R11,NOCORMSG                                     XP302920
000BC6    E6C0 1969        294           LA    R12,NOCORMSZ                                     XP302930
000BCA    41E0 1718        295           BAL   R14,PRINTL        'INSUFFICIENT CORE'            XP302940
000BCE    4300 0A24        296           B     GETCPU                                           XP302950
                           297   * ************************************************************** XP302960
          0000 0BD2        298   FINDMAC EQU   *                 *                          FW  XP302970
000BD2    2431             299           LIS   R3,1                                             XP302980
000BD4    4030 1B06        300           STH   R3,MALFLAG        SET MALFLAG                    XP302990
000BD8    F830 0FF0 0010   301           LI    R3,Y'FF00010'     SEG REG 0 - NO TRANS           XP303000
000BDE    5030 0300        302           ST    R3,X'300'                                        XP303010
000BE2    5030 0500        303           ST    R3,X'500'         SET UP FOR NO INTERRUPTS       XP303020
000BE6    5030 0900        304           ST    R3,X'900'                                        XP303030
000BEA    2400             305           LIS   R0,0                                             XP303040
000BEC    4000 0342        306           STH   R0,X'342'                                        XP303050
000BF0    4000 0542        307           STH   R0,X'542'         CLEAR MAC INTERRUPT STATUS REGISTER XP303060
000BF4    4000 0942        308           STH   R0,X'942'                                        XP303070
000BF8    F870 0000 0400   309           LI    R7,Y'400'                                        XP303080
000BFE    9567             310           EPSR  R6,R7             ENABLE MAC                     XP303090
                           311   * MAY GET INTERRUPT HERE IF MAC MALFUNCTIONING - ESP. ON READ XP303100
000C00    4830 0000        312           LH    R3,X'0'           INTERRUPT HERE ?              XP303110
000C04    9560             313           EPSR  R6,R0             DISABLE MAC                    XP303120
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000C06	E610 0C52	314		LA	R1,RESPONSE	HANDLER FOR EXPECTED MAC INTPT.	XP303130
000C0A	5010 0094	315		ST	R1,X'94'	NEW PSW LOC.	XP303140
000C0E	C840 0300	316		LHI	R4,X'300'		XP303150
000C12	5004 0000	317		ST	R0,0(R4)	SET 300 UP FOR INTERRUPT	XP303160
000C16	9567	318		EPSR	R6,R7	ENABLE MAC	XP303170
000C18	4834 0000	319		LH	R3,0(R4)	MAY INTERRUPT	XP303180
000C1C	9560	320		EPSR	R6,R0	DISABLE MAC	XP303190
000C1E	C840 0500	321		LHI	R4,X'500'		XP303200
000C22	5004 0000	322		ST	R0,0(R4)	SET 500 UP FOR INTERRUPT	XP303210
000C26	9567	323		EPSR	R6,R7	ENABLE MAC	XP303220
000C28	4834 0000	324		LH	R3,0(R4)	MAY INTERRUPT	XP303230
000C2C	9560	325		EPSR	R6,R0	DISABLE MAC	XP303240
000C2E	C840 0900	326		LHI	R4,X'900'		XP303250
000C32	5004 0000	327		ST	R0,0(R4)	SET UP 900 FOR INTERRUPT	XP303260
000C36	9567	328		EPSR	R6,R7	ENABLE MAC	XP303270
000C38	4834 0000	329		LH	R3,0(R4)	MAY INTERRUPT	XP303280
		330	* IF NO MAC INTERRUPT HERE, LOG FACT & TELL USER				XP303290
000C3C	9560	331		EPSR	R6,R0	DISABLE MAC - NEVER RE-ENABLE.	XP303300
000C3E	5000 1AF8	332		ST	R0,MACSTAT	IF ZERO, NO MAC INDICATED.	XP303310
000C42	E660 1902	333		LA	R11,MACMSG		XP303320
000C46	E6C0 1915	334		LA	R12,MACMSGZ		XP303330
000C4A	41E0 1718	335		BAL	R14,PRINTL	'NO MAC RESPONSE'	XP303340
000C4E	4300 0C72	336		B	GETSUBT		XP303350
		337	* IF HERE, MAC HAS BEEN FOUND. PSW = 0				XP303360
000C52	0804	338	RESPONSE	LR	R0,R4	GET COPY	XP303370
000C54	F640 8000 0000	339		OI	R4,Y'80000000'	SET PRESENCE FLAG	XP303380
000C5A	5040 1AF8	340		ST	R4,MACSTAT	AND SAVE FOR REFERENCE.	XP303390
000C5E	E630 1928	341		LA	R3,MACASCII		XP303400
000C62	41E0 181E	342		BAL	R14,CONVR6	CONVERT ADDRESS TO ASCII	XP303410
000C66	E680 1914	343		LA	R11,MACMSG2		XP303420
000C6A	E6C0 192F	344		LA	R12,MACMSG2Z		XP303430
000C6E	41E0 1718	345		BAL	R14,PRINTL	'MAC RESPONSE AT...'	XP303440
		346	* ***				XP303450
	0000 0C72	347	GETSUBT	EQU	*		XP303460
000C72	41F0 0ACC	348		BAL	R15,LCORE32	RESTORE MACHINE STATE	XP303470
	0000 0C76	349	HCORE32	EQU	*	ZERO ALL CONTIG CORE ABOVE PROGTOP	XP303480
000C76	2400	350		LIS	R0,0	AND RESTORE DEDICATED AREAS.	XP303490
000C78	E610 1C04	351		LA	R1,PROGTOP+3/4*4		XP303500
000C7C	5820 1AFC	352		L	R2,MEMTOP		XP303510
000C80	D1E0 19A4	353		LM	R14,PATCHES-4	PATCH AREA	XP303520
000C84	051E	354	HCOR2	CLR	R1,R14		XP303530
000C86	2132	355		BNES	HCOR3		XP303540
000C88	0A1F	356		AR	R1,R15	DO NOT MODIFY PATCH AREA.	XP303550
000C8A	5001 0000	357	HCOR3	ST	R0,0(R1)		XP303560
000C8E	2614	358		AIS	R1,4		XP303570
000C90	0512	359		CLR	R1,R2	AT MEMTOP YET ?	XP303580
000C92	2087	360		BLS	HCOR2		XP303590
		361	* HIGH CORE DEDICATED LOCATION SETUP				XP303600
000C94	D1D0 196C	362		LM	R13,XDATA1		XP303610
000C98	D0D0 4001 1000	363		STM	R13,T1HIGH2	T1P5 HIGH CORE RETURN	XP303620
000C9E	D180 1978	364		LM	R8,XDATA2		XP303630
000CA2	D080 4001 5000	365		STM	R8,T1PSW1	HIGH CORE PSW'S	XP303640
000CA8	D1D0 1998	366		LM	R13,XDATA3	AUTOLOAD WITH MAC	XP303650
000CAC	F810 0001 1504	367		LI	R1,AUTO1+Y'10000'		XP303660
000CB2	F820 0001 1590	368		LI	R2,AUTO2+Y'10000'		XP303670

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000CB8    D0D1 0000        369              STM     R13,0(R1)                                                      XP303680
000CBC    D0D2 0000        370              STM     R13,0(R2)                                                      XP303690
000CC0    E6B0 18C6        371    GETSUB1   LA      R11,PRTSUBT                                                    XP303700
000CC4    E6C0 18D5        372              LA      R12,PRTSUBZ                                                    XP303710
000CC8    E6E0 0CC0        373              LA      R14,GETSUB1                                                    XP303720
000CCC    41F0 16BA        374              BAL     R15,PRINT               'SUBTEST *'                            XP303730
                          375    *         ACCEPT  INPUT FROM KEYBOARD                                            XP303740
000CD0    41E0 163A        376              BAL     R14,READASC             USER ENTERS SUBTEST NUMBER HERE.       XP303750
000CD4    C540 0031        377              CLHI    R4,C'1'                                                       XP303760
000CD8    4280 0D10        378              BL      BADKEY                                                        XP303770
000CDC    C540 0038        379              CLHI    R4,C'8'                 MAY ADD TESTS BY CHANGING FANOUT       XP303780
000CE0    4380 0D10        380              BNL     BADKEY                                                        XP303790
000CE4    2411             381              LIS     R1,1                                                          XP303800
000CE6    DE10 1B23        382              OC      R1,DISINC                                                     XP303810
000CEA    D810 1A64        383              WH      R1,BUF0                 CLEAR DISPLAY                          XP303820
000CEE    D810 1A64        384              WH      R1,BUF0                                                        XP303830
000CF2    D810 1A64        385              WH      R1,BUF0                                                        XP303840
000CF6    D240 18F5        386              STB     R4,TESTNO                                                     XP303850
000CFA    CB40 0030        387              SHI     R4,X'30'                                                      XP303860
000CFE    C540 000B        388              CLHI    R4,X'B'                                                       XP303870
000D02    2182             389              BLS     SHIFT                                                         XP303880
000D04    2747             390              SIS     R4,7                                                          XP303890
000D06    D240 1801        391    SHIFT     STB     R4,ERRNO+1              (TESTNO)                               XP303900
000D0A    1142             392              SLLS    R4,2                                                          XP303910
000D0C    4304 0D1C        393              B       FANOUT-4(R4)            BRANCH TO TEST                         XP303920
000D10    E6B0 18D4        394    BADKEY    LA      R11,QUESTN                                                    XP303930
000D14    E6C0 18D9        395              LA      R12,QUESTNZ                                                   XP303940
000D18    41F0 16BA        396              BAL     R15,PRINT              '?'                                    XP303950
000D1C    4300 0CC0        397              B       GETSUB1                                                       XP303960
          0000 0020        398    FANOUT    EQU     *                                                             XP303970
000D20    4300 0D96        399              B       SUBT1                   LPSW TESTING                           XP303980
000D24    4300 0F30        400              B       SUBT2                   64 KB WRAP, SYSQS INTPT                XP303990
000D28    4300 1328        401              B       SUBT3                   CONSOLE INTPT, AUTOLOAD W/MAC          XP304000
000D2C    4300 15D8        402              B       SUBT4                   PARITY CHECK TEST                      XP304010
000D30    4300 0D10        403              B       BADKEY                  TEMP                                   XP304020
000D34    4300 0D10        404              B       BADKEY                                                        XP304030
000D38    4300 0D10        405              B       BADKEY                                                        XP304040
                          406    * *****************************************************************************   XP304050
000D3C    4100 173E        407    NOERR     BAL     R0,CLEARPSW                                                   XP304060
000D40    E610 1C00        408    WRTCHK    LA      R1,PROGTOP/4*4          FULLWORD IN WHICH PROGTOP LIES         XP304070
000D44    2424             409              LIS     R2,4                    SEARCH INCREMENT (4 BYTES)             XP304080
000D46    5830 1AFC        410              L       R3,MEMTOP                                                     XP304090
000D4A    2734             411              SIS     R3,4                                                          XP304100
000D4C    E6D0 19A4        412              LA      R13,USDTAB              TABLE OF NON-ZERO AREAS                XP304110
000D50    C5D0 19EC        413    SPWR1     CLHI    R13,USDTBND+8           IF AT END, WRAP TO MEMTOP.             XP304120
000D54    2336             414              BES     SPWR2                                                         XP304130
000D56    D1ED 0000        415              LM      R14,0(R13)              R14 = LOC'N, R15 = LENGTH              XP304140
000D5A    26F3             416              AIS     R15,3                                                         XP304150
000D5C    C4F0 FFFC        417              NHI     R15,X'FFFC'            WHEN ADDED MUST BE FULLWORD ADDRESS     XP304160
000D60    C010 0D86        418    SPWR2     BXH     R1,PRNOER               ALL TESTED                             XP304170
000D64    051E             419              CLR     R1,R14                  USED AREA?                             XP304180
000D66    2335             420              BES     SPWR3                   YES.                                   XP304190
000D68    5801 0000        421              L       R0,0(R1)                                                      XP304200
000D6C    2236             422              BZS     SPWR2                   AND TRY ANOTHER                        XP304210
000D6E    2306             423              BS      CHECK                                                         XP304220
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000D70   0A1F              424  SPWR3   AR     R1,R15              YES. IGNORE                        XP304230
000D72   2714              425          SIS    R1,4               WILL BE ADDED BACK AT SPWR2        XP304240
000D74   26D8              426          AIS    R13,8              INDEX TO NEXT USDTAB ENTRY.        XP304250
000D76   4300 0050         427          B      SPWR1              AND TRY MORE.                      XP304260
         0000 0D7A         428  CHECK   EQU    *                  *TEMP*                             XP304270
                           429  * SPURIOUS WRITE TO MEMORY ABOVE PROGRAM DETECTED.                   XP304280
000D7A   D000 1BC4         430          STM    R0,REGF0           R0 = BAD DATA, R1 = ADDRESS        XP304290
000D7E   C8D0 00CC         431          LHI    R13,X'CC'          ERROR TTCC - SPURIOUS C6RE  *****  XP304300
000D82   4300 1896         432          B      ERROR              WRITE DETECTED.                    XP304310
                           433  *                                                                    XP304320
                           434  *                                                                    XP304330
000D86   E6B0 18F8         435  PRNOER  LA     R11,NOERMSG                                           XP304340
000D8A   E6C0 1903         436          LA     R12,NOERMSZ                                           XP304350
000D8E   41E0 1718         437          BAL    R14,PRINTL         'NO ERROR'                         XP304360
000D92   4300 0C72         438          B      GETSUBT                                              XP304370
                           439  *                                                                    XP304380
                           440  * *******************************************************************  XP304390
         0000 0D96         441  SUBT1   EQU    *                                                     XP304400
                           442  * TEST LPSW FROM EXTENDED MEMORY, FW MODE, WITH & WITHOUT ADRS XLATION XP304410
                           443  * TEST LPSW INSTRUCTION IN HW MODE WITH & WITHOUT MAC TRANSLATION.   XP304420
                           444  * BEFORE SUBTEST 1 IS ENTERED, ALL LOW CORE POINTERS ARE INITIALIZED. XP304430
                           445  * AND ALL MEMORY ABOVE PROGTOP IS FILLED WITH ZEROS. PROGRAM SEGMENTS XP304440
                           446  * IN EXTENDED MEMORY ARE THEN RESTORED.                              XP304450
                           447  *                                                            MODE    XP304460
                           448  * *******************************************************************  XP304470
                           449  * IN T1P1, THE PROGRAM ATTEMPTS TO LOAD A PSW RESIDENT IN EXTENDED   XP304480
                           450  * MEMORY, IN FULLWORD MODE. NEW PSW STATUS = Y'0', NEW LOC BELOW 64 KB. XP304490
000D96   E610 0DAC         451  T1P1    LA     R1,T1R1                                               XP304500
000D9A   5010 0034         452          ST     R1,X'34'           SET T1P1 ILLEGAL TRAP              XP304510
000D9E   4170 17C4         453          BAL    R7,CKPOINT                                            XP304520
000DA2   0101              454          DCX    0101                                                  XP304530
000DA4   C200 4001 5000    455          LPSW   T1PSW1             STAT = 0,LOC = T1P1A               XP304540
000DAA   0000              456          DCX    0                  TRAP NON-TAKE LPSW                 XP304550
000DAC   24D1              457  T1R1    LIS    R13,1              ERROR 0101 - BAD STAT OR LOC *****  XP304560
000DAE   4300 1896         458          B      ERROR                                                XP304570
000DB2   9566              459  T1P1A   EPSR   R6,R6                                                 XP304580
000DB4   C560 0005         460          CLHI   R6,X'5'            GOOD PSW STAT ?                    XP304590
000DB8   4230 0DAC         461          BNE    T1R1               BAD STATUS, NEW PSW                XP304600
000DBC   D330 1B04         462          LB     R3,CPUNO                                              XP304610
000DC0   C530 0037         463          CLHI   R3,C'7'                                               XP304620
000DC4   4230 0EC0         464          BNE    T1P6               NO. NO HALFWORD MODE.              XP304630
                           465  *                                                                    XP304640
                           466  * *******************************************************************  XP304650
                           467  * IN T1P2, THE PROGRAM ATTEMPTS TO LOAD A PSW RESIDENT IN EXTENDED   XP304660
                           468  * MEMORY, IN FULLWORD MODE. NEW PSW STATUS = Y'00100000', NEW PSW LOC XP304670
                           469  * BELOW 64 KB.                                                        XP304680
                           470  * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR   XP304690
                           471  * EQUIPPED WITH THE HALFWORD MODE FEATURE.                            XP304700
000DC8   D100 1A64         472  T1P2    LM     R0,BUF0            ALL ZEROS                          XP304710
000DCC   D0C0 0000         473          STM    R12,X'0'           TRAP OUT IF TRIES LPSW THROUGH 0   XP304720
000DD0   E610 0DE6         474          LA     R1,T1R2                                               XP304730
000DD4   5010 0034         475          ST     R1,X'34'           SET UP FIRST T1R2 ILLEGAL TRAP    XP304740
                           476  *                                                                    XP304750
000DD8   4170 17C4         477          BAL    R7,CKPOINT                                            XP304760
000DDC   0102              478          DCX    0102                                                  XP304770
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000DDE   C200 4001 5008    479          LPSW   T1PSW2          STAT = 00100000, LOC = T1P2A              XP304780
000DE4   0000              480          DCX    0               TRAP NON-TAKE LPSW                        XP304790
000DE6   24D2              481   T1R2   LIS    R13,2           ERROR 0102 - BAD STAT OR LOC  *****       XP304800
000DE8   4300 1896         482          B      ERROR           *                                    FW  XP304810
000DEC   4100 173E         483   T1P2A  BAL    R0,CLEARPSW                                               XP304820
000DF0   5560 4001 5008    484          CL     R6,T1PSW2       CHECK FOR STAT = T1PSW2 STAT             XP304830
000DF6   4230 0DE6         485          BNE    T1R2            (BAD STAT)                               XP304840
                           486   * ***********************************************************************  XP304850
                           487   * IN T1P3, THE PROGRAM ATTEMPTS TO LOAD A PSW RESIDENT IN EXTENDED      XP304860
                           488   * MEMORY, IN FULLWORD MODE. NEW PSW STATUS = Y'00100000', NEW PSW LOC  XP304870
                           489   * ABOVE 64 KB. TRUNCATION OF NEW PSW LOC TO LESS THAN 64 KB IS TESTED. XP304880
                           490   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR      XP304890
                           491   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                             XP304900
                           492   *                                                                     XP304910
000DFA   E610 0E10         493   T1P3   LA     R1,T1R3         *                                    FW  XP304920
000DFE   5010 0034         494          ST     R1,X'34'        SET UP T1R3 ILLEGAL TRAP                 XP304930
000E02   4170 17C4         495          BAL    R7,CKPOINT                                               XP304940
000E06   0103              496          DCX    0103                                                     XP304950
000E08   C200 4001 5010    497          LPSW   T1PSW3          STAT = 00100000, LOC = T1P3A+10000       XP304960
000E0E   0000              498          DCX    0               TRAP NON-TAKE LPSW                       XP304970
000E10   24D3              499   T1R3   LIS    R13,3           ERROR 0103 - BAD STAT OR LOC  *****       XP304980
000E12   4300 1896         500          B      ERROR           *                                    FW  XP304990
000E16   4100 173E         501   T1P3A  BAL    R0,CLEARPSW                                               XP305000
000E1A   5560 4001 5010    502          CL     R6,T1PSW3       CHECK FOR STAT = T1PSW3 STAT             XP305010
000E20   4230 0E10         503          BNE    T1R3                                                     XP305020
                           504   * ***********************************************************************  XP305030
                           505   * IN T1P4, MAC SEGMENTATION REGISTERS ARE SET UP FOR 1-TO-1 TRANSLATION  XP305040
                           506   * AND THE PROGRAM ATTEMPTS TO LOAD A PSW RESIDENT BELOW 64 KB, IN      XP305050
                           507   * FULLWORD MODE. NEW PSW STATUS = Y'00100400', NEW PSW LOC BELOW 64 KB. XP305060
                           508   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR      XP305070
                           509   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                             XP305080
                           510   * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED. XP305090
                           511   *                                                                     XP305100
000E24   5820 1AF8         512   T1P4   L      R2,MACSTAT      MAC PRESENT ? WHERE ARE SEGREGS ? FW     XP305110
000E28   4310 0F2C         513          BNM    T1END           IF NOT MINUS, NO MAC.                    XP305120
000E2C   C420 7FFF         514          NHI    R2,X'7FFF'      REMOVE PRESENCE FLAG - LOC'N OF REGS     XP305130
000E30   D180 19E4         515          LM     R8,NOTRANS      SET UP MAC FOR 1:1 TRANSLATION:          XP305140
000E34   D082 0000         516          STM    R8,0(R2)        MAC SEGREGS 0-7                          XP305150
000E38   D180 1A04         517          LM     R8,NOTRANS+32                                            XP305160
000E3C   D082 0020         518          STM    R8,32(R2)       MAC SEGREGS 8-F                          XP305170
000E40   E610 0E5A         519          LA     R1,T1R4         SET UP T1R4 ILLEGAL TRAP                 XP305180
000E44   5010 0034         520          ST     R1,X'34'        MAY GO TO BOONDOCKS FROM LPSW.           XP305190
000E48   2400              521          LIS    R0,0                                                     XP305200
000E4A   4002 0042         522          STH    R0,X'42'(R2)    CLEAR MAC ISR                            XP305210
000E4E   4170 17C4         523          BAL    R7,CKPOINT                                               XP305220
000E52   0104              524          DCX    0104                                                     XP305230
000E54   C200 1AB0         525          LPSW   T1PSW4          STAT = 100400, LOC = T1P4A               XP305240
000E58   0000              526          DCX    0               TRAP NON-TAKE LPSW                       XP305250
000E5A   4100 173E         527   T1R4   BAL    R0,CLEARPSW                                               XP305260
000E5E   24D4              528          LIS    R13,4           ERROR 0104 - BAD STAT OR LOC  *****       XP305270
000E60   4300 1896         529          B      ERROR           *                                    FW  XP305280
000E64   4100 173E         530   T1P4A  BAL    R0,CLEARPSW                                               XP305290
000E68   5560 1AB0         531          CL     R6,T1PSW4       CHECK FOR STAT = T1PSW4 STAT             XP305300
000E6C   4230 0E5A         532          BNE    T1R4                                                     XP305310
                           533   * ***********************************************************************  XP305320
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                                    534   * IN T1P5, MAC SEGMENTATION REGISTER 15 IS SET UP TO TRANSLATE INTO        XP305330
                                    535   * Y'10000' PHYSICAL IN HALFWORD MODE. THE PROGRAM THEN ATTEMPTS TO LOAD      XP305340
                                    536   * A PSW RESIDENT BELOW 64 KB, IN FULLWORD MODE. NEW PSW STATUS =            XP305350
                                    537   * Y'00100400', NEW PSW LOC = Y'F000'. PROPER TRANSLATION TO ABOVE 64 KB     XP305360
                                    538   * IN HALFWORD MODE IS TESTED.                                              XP305370
                                    539   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR          XP305380
                                    540   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                                 XP305390
                                    541   * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED.     XP305400
                                    542   *                                                                         XP305410
000E70   7320 1AFA                 543   T1P5     LHL    R2,MACSTAT+2       MAC REGISTER LOCATION.          FW       XP305420
000E74   D180 19E4                 544            LM     R8,NOTRANS                                                  XP305430
000E78   D082 0000                 545            STM    R8,0(R2)           SET UP FOR NO TRANSLATION, REGS 0-E.     XP305440
000E7C   D180 1A04                 546            LM     R8,NOTRANS+32      SPECIFY NO TRANSLATION                   XP305450
000E80   D082 0020                 547            STM    R8,32(R2)                                                   XP305460
000E84   F880 0FF1 1010            548            LI     R8,Y'0FF11010'     SEG REG F TRANS + Y'11000' IN HW         XP305470
000E8A   5082 003C                 549            ST     R8,60(R2)          MAC SEG REG F                            XP305480
000E8E   E610 0EA8                 550            LA     R1,T1R5            SET UP T1R5 ILLEGAL TRAP                 XP305490
000E92   5010 0034                 551            ST     R1,X'34'                                                    XP305500
000E96   2400                      552            LIS    R0,0                                                        XP305510
000E98   4002 0042                 553            STH    R0,X'42'(R2)       CLEAR MAC ISR                            XP305520
000E9C   4170 17C4                 554            BAL    R7,CKPOINT                                                  XP305530
000EA0   0105                      555            DCX    0105                                                        XP305540
000EA2   C200 1AB8                 556            LPSW   T1PSW5             STAT = 100400, LOC = F000                XP305550
000EA6   0000                      557            DCX    0                  TRAP NON-TAKE LPSW                       XP305560
000EA8   4100 173E                 558   T1R5     BAL    R0,CLEARPSW                                                 XP305570
000EAC   24D5                      559            LIS    R13,5                                                       XP305580
000EAE   4300 1896                 560            B      ERROR              ERROR 0105 - BAD STAT OR LOC    *****    XP305590
000EB2   55E0 1AB8                 561   T1P5A    CL     R14,T1PSW5         TEST FOR T1PSW5 STAT                     XP305600
000EB6   2037                      562            BNES   T1R5               BAD STAT                                 XP305610
000EB8   F5F0 0000 F00A            563            CLI    R15,T1HILOC1-X'2000'                                        XP305620
000EBE   203B                      564            BNES   T1R5               BAD LOC                                  XP305630
                                    565   * *******************************************************************     XP305640
                                    566   * IN T1P6, MAC SEGMENTATION REGISTER 14 IS SET UP TO TRANSLATE INTO       XP305650
                                    567   * Y'00000' PHYSICAL IN FULLWORD MODE. THE PROGRAM THEN ATTEMPTS           XP305660
                                    568   * TO LOAD A PSW RESIDENT BELOW 64 KB IN FULLWORD MODE. NEW PSW STATUS =   XP305670
                                    569   * Y'00000400', NEW PSW LOC ABOVE Y'E0000'. RESULTS ARE CHECKED.           XP305680
                                    570   * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED.    XP305690
                                    571   *                                                                         XP305700
000EC0   7320 1AFA                 572   T1P6     LHL    R2,MACSTAT+2       MAC REGISTER LOCATION           FW       XP305710
000EC4   D180 19E4                 573            LM     R8,NOTRANS                                                  XP305720
000EC8   D082 0000                 574            STM    R8,0(R2)           SEG REGS 0-7                             XP305730
000ECC   D180 1A44                 575            LM     R8,TRANSFW+32                                               XP305740
000ED0   D082 0020                 576            STM    R8,32(R2)          SEG REGS 8-F                             XP305750
000ED4   E610 0EF2                 577            LA     R1,T1R6            SET UP T1R6 ILLEGAL TRAP                 XP305760
000ED8   5010 0034                 578            ST     R1,X'34'           IF ADDRESS DOESN'T 'TAKE'               XP305770
000EDC   2400                      579            LIS    R0,0                                                        XP305780
000EDE   4000 0000                 580            STH    R0,0                                                        XP305790
000EE2   4002 0042                 581            STH    R0,X'42'(R2)       CLEAR MAC ISR                            XP305800
000EE6   4170 17C4                 582            BAL    R7,CKPOINT                                                  XP305810
000EEA   0106                      583            DCX    0106                                                        XP305820
000EEC   C200 1AC0                 584            LPSW   T1PSW6             STAT = 0400, LOC = T1P6A+Y'E0000'        XP305830
000EF0   0000                      585            DCX    0                  TRAP NON-TAKE LPSW                       XP305840
000EF2   4100 173E                 586   T1R6     BAL    R0,CLEARPSW                                                 XP305850
000EF6   24D6                      587            LIS    R13,6              ERROR 0106 - BAD STAT OR LOC    *****    XP305860
000EF8   4300 1896                 588            B      ERROR                                                       XP305870
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000EFC   4100 173E          589  T1P6A    BAL    R0,CLEARPSW                                              XP305880
000F00   5560 1AC0          590           CL     R6,T1PSW6          CHECK STAT = T1PSW6 STAT             XP305890
000F04   2039               591           BNES   T1R6               BAD STATUS                           XP305900
                            592  * *************************************************************************  XP305910
                            593  * IN T1P7, THE PROGRAM ATTEMPTS TO LOAD A PSW RESIDENT ABOVE 64 KB,      XP305920
                            594  * IN FULLWORD MODE. NEW PSW STATUS = Y'00000400', NEW PSW LOC ABOVE      XP305930
                            595  * Y'E0000'. RESULTS ARE CHECKED.                                         XP305940
                            596  * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED.   XP305950
                            597  *                                                                        XP305960
000F06   4170 17C4          598  T1P7     BAL    R7,CKPOINT                                               XP305970
000F0A   0107               599           DCX    0107                                                     XP305980
000F0C   C200 4001 5018     600           LPSW   T1PSW7             IN EXTENDED MEMORY                    XP305990
000F12   0000               601           DCX    0                  TRAP NON-TAKE LPSW                   XP306000
000F14   4100 173E          602  T1P7A    BAL    R0,CLEARPSW                                              XP306010
000F18   5560 4001 5018     603           CL     R6,T1PSW7          CHECK STAT = T1PSW7 STAT             XP306020
000F1E   4330 0F2C          604           BE     T1END                                                   XP306030
000F22   4100 173E          605  T1R7     BAL    R0,CLEARPSW                                              XP306040
000F26   24D7               606           LIS    R13,7              ERROR 0107 - BAD STAT OR LOC,        XP306050
000F28   4300 1896          607           B      ERROR                                                   XP306060
                            608  *                                                                        XP306070
000F2C   4300 0D3C          609  T1END    B      NOERR                                                   XP306080


                            611  * *************************************************************************  XP306100
                            612  * BEFORE SUBTEST 2 IS ENTERED, ALL LOW-CORE POINTERS ARE INITIALIZED,   XP306110
                            613  * AND ALL MEMORY ABOVE PROGTOP IS FILLED WITH ZEROS. PROGRAM SEGMENTS   XP306120
                            614  * IN EXTENDED MEMORY ARE THEN RESTORED.                                  XP306130
                            615  * TEST FOR WRAP IN HW MODE ON STM R0,X'FFFC' INSTRUCTION.                XP306140
                            616  * CHECK SYSTEM QUEUE INTERRUPT, FULLWORD MODE, MAC ENABLED.              XP306150
                            617  * TEST SYSTEM QUEUE INTERRUPT, HALFWORD MODE, WITH & WITHOUT MAC.        XP306160
                            618  * USES SYSTEM QUEUES TABLE, BELOW 64 KB; TABLE2, ABOVE 64 KB.            XP306170
                            619  *                                                                        XP306180
         0000 0F30          620  SUBT2    EQU    *                                                        XP306180
000F30   D310 1B04          621           LB     R1,CPUNO           IS THIS A 7/32 ?                     XP306190
000F34   C510 0037          622           CLHI   R1,C'7'                                                 XP306200
000F38   4230 0FAC          623           BNE    T2P2                                                     XP306210
                            624  * *************************************************************************  XP306220
                            625  * IN T2P1, ADDRESS WRAP IS TESTED FOR HALFWORD MODE LOAD MULTIPLE AND    XP306230
                            626  * STORE MULTIPLE INSTRUCTIONS WHEN ENCOUNTERING THE 64 KB BOUNDARY.      XP306240
                            627  * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR        XP306250
                            628  * EQUIPPED WITH THE HALFWORD MODE FEATURE.                               XP306260
                            629  *                                                                        XP306270
000F3C   D180 1A64          630  T2P1     LM     R8,BUF0                                                  XP306280
000F40   D080 0000          631           STM    R8,X'0'            INITIALIZE STORAGE                    XP306290
000F44   C080 4000 FFFC     632           STM    R8,X'FFFC'         AREAS (TWO POSSIBLE)                 XP306300
000F4A   4170 17C4          633           BAL    R7,CKPOINT                                               XP306310
000F4E   0201               634           DCX    0201                                                     XP306320
000F50   F870 0010 0000     635           LI     R7,Y'100000'       SELECT HALFWORD MODE                 XP306330
000F56   9567               636           EPSR   R6,R7                                                    XP306340
                            637  *        LM     R0,BUFN            R0,R1,R2,... = 0,1,2...         HW    XP306350
000F58   D100               638           DC     X'D100',Z(BUFN)    HW MODE RX FOR ABOVE INSTRUCTION.    XP306360
000F5A   1B64                                                                                            XP306370
                            639  *        STM    R0,X'FFFC'         JUST BELOW 64 KB BOUNDARY            XP306380
000F5C   D000               640           DCX    D000,FFFC          HW MODE RX FOR THE INSTRUCTION       XP306390
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000F5E  FFFC
000F60  4100 173E        641           BAL   R0,CLEARPSW                                               XP306400
000F64  0180 4000 FFFC   642           LM    R8,X'FFFC'        *                                  FW    XP306410
000F6A  F590 0002 0003   643           CLI   R9,Y'20003'                                                XP306420
000F70  4330 0FA2        644           BE    T2R1              NO 64 KB WRAP IN HW MODE, STM            XP306430
000F74  0190 0000        645           LM    R9,X'0'                                                    XP306440
000F78  F590 0002 0003   646           CLI   R9,Y'20003'       EXPECTED RESULT.                         XP306450
000F7E  4230 0FA2        647           BNE   T2R1                                                       XP306460
000F82  F870 0010 0000   648           LI    R7,Y'100000'      SELECT HALFWORD MODE                     XP306470
000F88  9567             649           EPSR  R6,R7             *                                  HW    XP306480
                         650   *       LM    R0,X'FFFC'        TEST ADDRESS WRAP                        XP306490
000F8A  0100             651           DCX   D100,FFFC                                                  XP306500
000F8C  FFFC
000F8E  0800             652           LR    R0,R0                                                      XP306510
000F90  4230 0FA2        653           BNZ   T2R1                                                       XP306520
000F94  C550 0005        654           CLHI  R5,5                                                       XP306530
000F98  4230 0FA2        655           BNE   T2R1                                                       XP306540
000F9C  C5F0 000F        656           CLHI  R15,15                                                     XP306550
000FA0  2336             657           BES   T2P2                                                       XP306560
000FA2  4100 173E        658   T2R1    BAL   R0,CLEARPSW                                                XP306570
000FA6  24D1             659           LIS   R13,1             ERROR 0201 -                             XP306580
000FA8  4300 1896        660           B     ERROR             NO STM WRAP @ 64KB, HW MODE     *****    XP306590
                         661   * *********************************************************************  XP306600
                         662   * IN T2P2, SPURIOUS SYSTEM QUEUE INTERRUPT IS TESTED, FOR SYSTEM QUEUE   XP306610
                         663   * ABOVE 64 KB, IN FULLWORD MODE. (VIA EPSR, LPSW, LPSWR)                 XP306620
                         664   *                                                                        XP306630
000FAC  4100 173E        665   T2P2    BAL   R0,CLEARPSW                                                XP306640
000FB0  E610 4001 5020   666           LA    R1,TABLE2         HIGH-CORE SYSTEM QUEUE             FW    XP306650
000FB6  5010 0080        667           ST    R1,X'80'          SYSTEM QUEUE POINTER                     XP306660
                         668   * NOTE - NEW PSW TO SEL REG SET 0 ON 7/32                                XP306670
                         669   *       FOR 8/32, MUST SET UP LINKS IN PROPER REG SET IF NOT 0.          XP306680
                         670   *       MAY BE IMPLEMENTED BY EPSR FROM DATA IN X'8A'.                   XP306690
000FBA  C800 0000        671           LHI   R0,0                                                       XP306700
000FBE  D310 1B04        672           LB    R1,CPUNO                                                   XP306710
000FC2  C510 0037        673           CLHI  R1,C'7'                                                    XP306720
000FC6  2333             674           BES   T2P2A                                                      XP306730
000FC8  C800 0000        675           LHI   R0,0                                                       XP306740
000FCC  5000 0088        676   T2P2A   ST    R0,X'88'          SYS QUEUE INTPT NEW PSW STATUS           XP306750
000FD0  E610 1042        677           LA    R1,T2R2                                                    XP306760
000FD4  5010 008C        678           ST    R1,X'8C'          SYS QUEUE INTPT NEW PSW LOC              XP306770
000FD8  D1D0 1A64        679           LM    R13,BUF0                                                   XP306780
000FDC  D0D0 4001 5020   680           STM   R13,TABLE2        EMPTY SYSTEM QUEUE                       XP306790
000FE2  2422             681           LIS   R2,2                                                       XP306800
000FE4  4020 4001 5020   682           STH   R2,TABLE2         TABLE SIZE = 2, ENTRIES = 0             XP306810
000FEA  7320 1AFA        683           LHL   R2,MACSTAT+2                                               XP306820
000FEE  D180 19E4        684           LM    R8,NOTRANS                                                 XP306830
000FF2  D082 0000        685           STM   R8,0(R2)                                                   XP306840
000FF6  D180 1A04        686           LM    R8,NOTRANS+32                                              XP306850
000FFA  D082 0020        687           STM   R8,32(R2)                                                  XP306860
000FFE  2400             688           LIS   R0,0                                                       XP306870
001000  4002 0042        689           STH   R0,X'42'(R2)                                              XP306880
001004  D1D0 1A64        690           LM    R13,BUF0                                                   XP306890
001008  40D0 1B02        691           STH   R13,TEMP1         (EPSR)                                   XP306900
00100C  4170 17C4        692           BAL   R7,CKPOINT                                                 XP306910
001010  0202             693           DCX   0202                                                       XP306920
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001012   F870 0000 0600    694            LI    R7,Y'0600'
001018   9567              695            EPSR  R6,R7                   ENABLE SYSTEM QUEUE SERVICE INTPT    XP306930
                           696    *       WILL GO TO T2R2 IF INTERRUPT TAKEN.                              XP306940
00101A   4100 173E         697            BAL   R0,CLEARPSW                                                XP306950
00101E   C8D0 0010         698            LHI   R13,X'10'              (LPSW)                              XP306960
001022   40D0 1B02         699            STH   R13,TEMP1                                                  XP306970
001026   C200 1AC8         700            LPSW  T2P2PSW                                                    XP306980
                           701    *       WILL GO TO T2R2 IF INTERRUPT TAKEN.                              XP306990
00102A   4100 173E         702   T2P2B    BAL   R0,CLEARPSW                                                XP307000
00102E   C8D0 0020         703            LHI   R13,X'20'              (LPSWR)                             XP307010
001032   40D0 1B02         704            STH   R13,TEMP1                                                  XP307020
001036   F8E0 0000 0600    705            LI    R14,Y'600'             MAC, SYS QUEUE                       XP307030
00103C   E6F0 1050         706            LA    R15,T2P3                                                   XP307040
001040   180E              707            LPSWR R14                                                        XP307050
                           708    *       WILL GO TO T2R2 IF INTERRUPT TAKEN.                              XP307060
001042   4100 173E         709   T2R2     BAL   R0,CLEARPSW                                                XP307070
001046   24D2              710            LIS   R13,2                                                      XP307080
001048   4AD0 1B02         711            AH    R13,TEMP1              ERROR 0202, 0212, 0222 :            XP307090
00104C   4300 1896         712            B     ERROR                  SPURIOUS SYSQ INT, FW, HICORE Q **** XP307100
                           713    * *****************************************************************      XP307110
                           714    * IN T2P3, THE PROGRAM ATTEMPTS TO GENERATE SYSTEM QUEUE INTERRUPTS      XP307120
                           715    * WITH A SYSTEM QUEUE ABOVE 64 KB, IN FULLWORD MODE (VIA EPSR, LPSW,     XP307130
                           716    * LPSWR).                                                               XP307140
                           717    *                                                                       XP307150
001050   4100 173E         718   T2P3     BAL   R0,CLEARPSW                                                XP307160
001054   4170 17C4         719            BAL   R7,CKPOINT                                                 XP307170
001058   0203              720            DCX   0203                                                       XP307180
00105A   E610 10E2         721            LA    R1,T2P4                                                    XP307190
00105E   5010 008C         722            ST    R1,X'8C'               NEW PSW LOC ON INTPT.               XP307200
001062   6410 4001 5020    723            ATL   R1,TABLE2                                                  XP307210
001068   E6A0 1084         724            LA    R10,T2P3A              RETURN                              XP307220
00106C   E6C0 1080         725            LA    R12,T2R3A              INTPT ADRS.                         XP307230
001070   D1D0 1A64         726            LM    R13,BUF0                                                   XP307240
001074   40D0 1B02         727            STH   R13,TEMP1              (EPSR)                              XP307250
001078   F870 0000 86F0    728            LI    R7,Y'86F0'             SYS QUEUE, MAC, WAIT                XP307260
00107E   9567              729            EPSR  R6,R7                  ENABLE SYSTEM QUEUE INTPT           XP307270
                           730    *       WILL GO TO T2P4 IF INTERRUPT TAKEN, THEN T2P3A.                 XP307280
001080   4300 10D4         731   T2R3A    B     T2R3                                                       XP307290
001084   4100 173E         732   T2P3A    BAL   R0,CLEARPSW                                                XP307300
001088   4170 17C4         733            BAL   R7,CKPOINT                                                 XP307310
00108C   0203              734            DCX   0203                                                       XP307320
00108E   E6A0 10AA         735            LA    R10,T2P3B              RETURN                              XP307330
001092   E6C0 10A6         736            LA    R12,T2R3B              INTPT ADRS.                         XP307340
001096   C8D0 0010         737            LHI   R13,X'10'              (LPSW)                              XP307350
00109A   40D0 1B02         738            STH   R13,TEMP1                                                  XP307360
00109E   D1D0 1A64         739            LM    R13,BUF0                                                   XP307370
0010A2   C200 1AD0         740            LPSW  T2P3PSW                STAT = 86F0, LOC = T2R3B            XP307380
                           741    *       WILL GO TO T2P4 IF INTERRUPT TAKEN, THEN T2P3B.                 XP307390
0010A6   4300 10D4         742   T2R3B    B     T2R3                                                       XP307400
0010AA   4100 173E         743   T2P3B    BAL   R0,CLEARPSW                                                XP307410
0010AE   4170 17C4         744            BAL   R7,CKPOINT                                                 XP307420
0010B2   0203              745            DCX   0203                                                       XP307430
0010B4   E6A0 1110         746            LA    R10,T2P5               RETURN                              XP307440
0010B8   E6C0 10D4         747            LA    R12,T2R3               INTPT ADRS.                         XP307450
0010BC   C8D0 0020         748            LHI   R13,X'20'              (LPSWR)                             XP307460
                                                                                                          XP307470
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0010C0   40D0 1B02        749          STH    R13,TEMP1                                                    XP307480
0010C4   F860 0000 86F0   750          LI     R6,Y'86F0'         WAIT, MAC, SYS QUEUE, REG SET F           XP307490
0010CA   E670 10D4        751          LA     R7,T2R3                                                      XP307500
0010CE   D1D0 1A64        752          LM     R13,BUF0                                                     XP307510
0010D2   1806            753          LPSWR  R6                                                           XP307520
                          754    *            WILL GO TO T2P4 IF INTERRUPT TAKEN, THEN T2P5.               XP307530
0010D4   4100 173E        755    T2R3  BAL    R0,CLEARPSW                                                  XP307540
0010D8   24D3            756          LIS    R13,3                                                        XP307550
0010DA   4AD0 1B02        757          AH     R13,TEMP1          ERROR 0203, 0213, 0223:                   XP307560
0010DE   4300 1896        758    *     B      ERROR              NO SYSQ INTPT, FW, HICORE QUEUE ****       XP307570
                          759    * ****************************************************************         XP307580
                          760    * IN T2P4, THE MACHINE STATE RESULTING FROM THE SYSTEM QUEUE SERVICE      XP307590
                          761    * INTERRUPTS GENERATED IN T2P3 IS CHECKED. THIS CODE IS EXECUTED THREE    XP307600
                          762    * TIMES: FOR EPSR, LPSW, AND LPSWR.                                       XP307610
                          763    *                                                                         XP307620
0010E2   9566            764    T2P4  EPSR   R6,R6                         *                         FW    XP307630
0010E4   4170 17C4        765          BAL    R7,CKPOINT                                                   XP307640
0010E8   0204            766          DCX    0204                                                         XP307650
0010EA   5560 0088        767          CL     R6,X'88'           PROPER SYSQ NEW PSW STAT ?                XP307660
0010EE   4230 1106        768          BNE    T2R4                                                         XP307670
0010F2   F5D0 0001 5020   769          CLI    R13,TABLE2         PROPER QUEUE ADDRESS ?                     XP307680
0010F8   2137            770          BNES   T2R4                                                         XP307690
0010FA   F5E0 0000 86F0   771          CLI    R14,Y'86F0'        OLD STAT SAVED PROPERLY ?                  XP307700
001100   2133            772          BNES   T2R4                                                         XP307710
001102   05FC            773          CLR    R15,R12            OLD LOC SAVED PROPERLY ?                   XP307720
001104   033A            774          BER    R10                                                          XP307730
001106   24D4            775    T2R4  LIS    R13,4                                                        XP307740
001108   4AD0 1B02        776          AH     R13,TEMP1          ERROR 0204, 0214, 0224 :                  XP307750
                          777    *                               REGS 13, 14, 15 , OR PSW BAD    *****     XP307760
00110C   4300 1896        778          B      ERROR              AFTER SYSQ INTPT, HICORE, FW MODE.        XP307770
                          779    * ****************************************************************         XP307780
                          780    * IN T2P5, SPURIOUS SYSTEM QUEUE SERVICE INTERRUPT IS TESTED.             XP307790
                          781    * FOR SYSTEM QUEUE BELOW 64 KB, IN HALFWORD MODE. (VIA EPSR, LPSW)        XP307800
                          782    * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR         XP307810
                          783    * EQUIPPED WITH THE HALFWORD MODE FEATURE.                                XP307820
                          784    *                                                                         XP307830
001110   4100 173E        785    T2P5  BAL    R0,CLEARPSW                   *                         FW    XP307840
001114   D310 1B04        786          LB     R1,CPUNO           IF NOT 7/32, NO HALFWORD MODE             XP307850
001118   C510 0037        787          CLHI   R1,C'7'                                                      XP307860
00111C   4230 1324        788          BNE    T2P11                                                        XP307870
001120   4170 17C4        789          BAL    R7,CKPOINT                                                   XP307880
001124   0205            790          DCX    0205                                                         XP307890
001126   D1D0 1A64        791          LM     R13,BUF0           ALL ZEROS                                 XP307900
00112A   D0D0 1AE8        792          STM    R13,TABLE          LOW-CORE SYSTEM QUEUE                      XP307910
00112E   2422            793          LIS    R2,2                                                         XP307920
001130   4020 1AE8        794          STH    R2,TABLE           TABLE SIZE = 2, ENTRIES = 0               XP307930
001134   E610 1AE8        795          LA     R1,TABLE                                                     XP307940
001138   5010 0080        796          ST     R1,X'80'           SYSTEM QUEUE POINTER                       XP307950
00113C   C800 0000        797          LHI    R0,0                                                         XP307960
001140   5000 0088        798          ST     R0,X'88'           NEW PSW STAT                              XP307970
001144   E610 1176        799          LA     R1,T2R5                                                      XP307980
001148   5010 008C        800          ST     R1,X'8C'                                                     XP307990
00114C   40D0 1B02        801          STH    R13,TEMP1          (EPSR)                                    XP308000
001150   F870 0010 0000   802          LI     R7,Y'100000'       SELECT HALFWORD MODE                       XP308010
001156   9567            803          EPSR   R6,R7                                                        XP308020
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001158   C870 06F0        804           LHI    R7,X'06F0'                                          XP308030
00115C   9567             805           EPSR   R6,R7                  SYSTEM QUEUE SERVICE INT.     XP308040
                          806    *      WILL GO TO T2R5 IF INTERRUPT TAKEN.                         XP308050
00115E   4100 173E        807           BAL    R0,CLEARPSW                                          XP308060
001162   F870 0010 0000   808           LI     R7,Y'100000'           SELECT HW MODE               XP308070
001168   9567             809           EPSR   R6,R7                                               XP308080
00116A   C8D0 0010        810           LHI    R13,X'10'              (LPSW)                        XP308090
00116E   40D0 1B02        811           STH    R13,TEMP1                                            XP308100
001172   C200 1AD8        812           LPSW   T2P5PSW                STAT = 0600, LOC = T2P6       XP308110
                          813    *      WILL GO TO T2R5 IF INTERRUPT TAKEN.                         XP308120
001176   4100 173E        814   T2R5    BAL    R0,CLEARPSW                                          XP308130
00117A   24D5             815           LIS    R13,5                                               XP308140
00117C   4AD0 1B02        816           AH     R13,TEMP1              ERROR 0205, 0215 :            XP308150
                          817    *                                   SPURIOUS SYSTEM QUEUE INTERRUPT, XP308160
001180   4300 1896        818           B      ERROR                 HALFWORD MODE, LOW-CORE QUEUE ***** XP308170
                          819    * ***************************************************************** XP308180
                          820    * IN T2P6, THE PROGRAM ATTEMPTS TO GENERATE SYSTEM QUEUE SERVICE   XP308190
                          821    * INTERRUPTS WITH A SYSTEM QUEUE BELOW 64 KB, IN HALFWORD MODE.    XP308200
                          822    * (VIA EPSR, LPSW)                                                 XP308210
                          823    * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR  XP308220
                          824    * EQUIPPED WITH THE HALFWORD MODE FEATURE.                         XP308230
                          825    *                                                                  XP308240
001184   4100 173E        826   T2P6    BAL    R0,CLEARPSW            *                        HW    XP308250
001188   4170 17C4        827           BAL    R7,CKPOINT                                           XP308260
00118C   0206             828           DCX    0206                                                XP308270
00118E   C810 11EA        829           LHI    R1,T2P7                                             XP308280
001192   4010 008E        830           STH    R1,X'8E'               NEW PSW LOC                  XP308290
001196   6410 1AE8        831           ATL    R1,TABLE               ENTRIES = MANY!             XP308300
00119A   C8A0 11BA        832           LHI    R10,T2P6A              RETURN                       XP308310
00119E   C8C0 11B6        833           LHI    R12,T2R6A              INTPT ADRS                   XP308320
0011A2   24D0             834           LIS    R13,0                  (EPSR)                       XP308330
0011A4   40D0 1B02        835           STH    R13,TEMP1                                           XP308340
0011A8   F870 0010 0000   836           LI     R7,Y'100000'           SELECT HALFWORD MODE         XP308350
0011AE   9567             837           EPSR   R6,R7                                               XP308360
0011B0   C870 86F0        838           LHI    R7,X'86F0'             WAIT, MAC.SYS QUEUE, REG SET F XP308370
0011B4   9567             839           EPSR   R6,R7                  ENABLE SYSTEM QUEUE SERVICE INTPT XP308380
                          840    *      WILL GO TO T2P7 IF INTERRUPT TAKEN,THEN T2P6A.             XP308390
0011B6   4300 11DC        841   T2R6A   B      T2R6                                                XP308400
0011BA   4170 17C4        842   T2P6A   BAL    R7,CKPOINT                                          XP308410
0011BE   0206             843           DCX    0206                                                XP308420
0011C0   F870 0010 0000   844           LI     R7,Y'100000'           SELECT HALFWORD MODE         XP308430
0011C6   9567             845           EPSR   R6,R7                  *                        HW   XP308440
0011C8   C8D0 0010        846           LHI    R13,X'10'              (LPSW)                       XP308450
0011CC   40D0 1B02        847           STH    R13,TEMP1                                           XP308460
0011D0   C8A0 1216        848           LHI    R10,T2P8               RETURN                       XP308470
0011D4   C8C0 11DC        849           LHI    R12,T2R6               INTPT ADRS.                  XP308480
0011D8   C200 1ADC        850           LPSW   T2P6PSW                STAT = 86F0, LOC = T2R6      XP308490
                          851    *      WILL GO TO T2P7 IF INTERRUPT TAKEN, THEN T2P8.             XP308500
0011DC   4100 173E        852   T2R6    BAL    R0,CLEARPSW                                          XP308510
0011E0   24D6             853           LIS    R13,6                                               XP308520
0011E2   4AD0 1B02        854           AH     R13,TEMP1              ERROR 0206, 0216 :            XP308530
                          855    *                                   SYSTEM QUEUE INTERRUPT NOT TAKEN, XP308540
0011E6   4300 1896        856           B      ERROR                 HALFWORD MODE, LOW-CORE QUEUE **** XP308550
                          857    * ***************************************************************** XP308560
                          858    * IN T2P7, THE MACHINE STATE RESULTING FROM THE SYSTEM QUEUE SERVICE XP308570
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                                     859   * INTERRUPTS GENERATED IN T2P6 IS CHECKED. THIS CODE IS EXECUTED TWO      XP308580
                                     860   * TIMES: FOR EPSR AND LPSW.                                               XP308590
                                     861   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR         XP308600
                                     862   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                                XP308610
                                     863   *                                                                        XP308620
0011EA   9566                        864   T2P7      EPSR   R6,R6              IN REG SET 0 HERE.               FW    XP308620
0011EC   4170 17C4                   865             BAL    R7,CKPOINT                                               XP308630
0011F0   0207                        866             DCX    0207                                                    XP308640
0011F2   5560 0088                   867             CL     R6,X'88'           PROPER SYSQ NEW PSW STAT ?            XP308650
0011F6   213B                        868             BNES   T2R7                                                    XP308660
0011F8   F5D0 0000 1AE8              869             CLI    R13,TABLE          PROPER QUEUE ADDRESS ?               XP308670
0011FE   2137                        870             BNES   T2R7                                                    XP308680
001200   F5E0 0010 86F0              871             CLI    R14,Y'1086F0'      OLD STAT SAVED PROPERLY ?            XP308690
001206   2133                        872             BNES   T2R7                                                    XP308700
001208   05FC                        873             CLR    R15,R12            OLD LOC SAVED PROPERLY ?             XP308710
00120A   033A                        874             BER    R10                                                     XP308720
00120C   24D7                        875   T2R7      LIS    R13,7                                                    XP308730
00120E   4AD0 1B02                   876             AH     R13,TEMP1          ERROR 0207, 0217 :                   XP308740
                                     877   *                                  REGS 13,14,15, OR PSW BAD. SYSQ      XP308750
001212   4300 1896                   878             B      ERROR             INTPT. HW MODE, LOW-CORE QUEUE *****   XP308760
                                     879   * **************************************************************  XP308770
                                     880   * IN T2P8, SPURIOUS SYSTEM QUEUE SERVICE INTERRUPT IS TESTED, FOR        XP308780
                                     881   * SYSTEM QUEUE ABOVE 64 KB, IN HALFWORD MODE. (VIA EPSR, LPSW)           XP308790
                                     882   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR        XP308800
                                     883   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                               XP308810
                                     884   *                                                                        XP308820
001216   4100 173E                   885   T2P8      BAL    R0,CLEARPSW                                              XP308830
00121A   4170 17C4                   886             BAL    R7,CKPOINT                                              XP308840
00121E   0208                        887             DCX    0208                                                   XP308850
001220   E610 4001 5020              888             LA     R1,TABLE2                                               XP308860
001226   5010 0080                   889             ST     R1,X'80'           POINTER TO HICORE SYSTEM QUEUE       XP308870
00122A   D1D0 1A64                   890             LM     R13,BUF0           *                               FW    XP308880
00122E   D0D0 4001 5020              891             STM    R13,TABLE2                                               XP308890
001234   2422                        892             LIS    R2,2                                                    XP308900
001236   4020 4001 5020              893             STH    R2,TABLE2          QUEUE SIZE = 2, ENTRIES = 0          XP308910
00123C   E610 126E                   894             LA     R1,T2R8                                                 XP308920
001240   5010 008C                   895             ST     R1,X'8C'           SYS QUEUE INTPT NEW PSW LOC          XP308930
001244   40D0 1B02                   896             STH    R13,TEMP1          (EPSR)                               XP308940
001248   F870 0010 0000              897             LI     R7,Y'100000'       SELECT HW MODE                       XP308950
00124E   9567                        898             EPSR   R6,R7                                                   XP308960
001250   C870 06F0                   899             LHI    R7,X'06F0'                                              XP308970
001254   9567                        900             EPSR   R6,R7              ENABLE SYS QUEUE SERVICE INTPT       XP308980
                                     901   *         WILL GO TO T2R8 IF INTERRUPT TAKEN.                            XP308990
001256   4100 173E                   902             BAL    R0,CLEARPSW                                             XP309000
00125A   F870 0010 0000              903             LI     R7,Y'100000'       SELECT HW MODE                       XP309010
001260   9567                        904             EPSR   R6,R7                                                   XP309020
001262   C8D0 0010                   905             LHI    R13,X'10'          (LPSW)                               XP309030
001266   40D0 1B02                   906             STH    R13,TEMP1                                         HW    XP309040
00126A   C200 1AE0                   907             LPSW   T2P8PSW            STAT = 06F0, LOC = T2P9              XP309050
                                     908   *         WILL GO TO T2R8 IF INTERRUPT TAKEN.                            XP309060
00126E   4100 173E                   909   T2R8      BAL    R0,CLEARPSW                                             XP309070
001272   24D8                        910             LIS    R13,8                                                   XP309080
001274   4AD0 1B02                   911             AH     R13,TEMP1          ERROR 0208, 0218 :                   XP309090
                                     912   *                                  SPURIOUS SYSTEM QUEUE INTERRUPT,      XP309100
001278   4300 1896                   913             B      ERROR             HW MODE, QUEUE ABOVE 64 KB.  *****    XP309110
                                                                                                                   XP309120
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                                    914  * *******************************************************************   XP309130
                                    915  * IN T2P9, THE PROGRAM ATTEMPTS TO GENERATE SYSTEM QUEUE SERVICE         XP309140
                                    916  * INTERRUPTS WITH A SYSTEM QUEUE ABOVE 64 KB, IN HALFWORD MODE.          XP309150
                                    917  * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR        XP309160
                                    918  * EQUIPPED WITH THE HALFWORD MODE FEATURE.                               XP309170
                                    919  * (VIA EPSR, LPSW)                                                       XP309180
                                    920  *                                                                        XP309190
00127C    4100 173E                921  T2P9     BAL    R0,CLEARPSW           *                         HW        XP309200
001280    4170 17C4                922           BAL    R7,CKPOINT                                                XP309210
001284    0209                     923           DCX    0209                                            FW       XP309220
001286    E610 12F8                924           LA     R1,T2P10              *                                  XP309230
00128A    5010 008C                925           ST     R1,X'8C'                                                 XP309240
00128E    F810 0001 0001           926           LI     R1,Y'10001'                                              XP309250
001294    5010 4001 5020           927           ST     R1,TABLE2             SIZE= 1, ENTRIES = 1               XP309260
00129A    F870 0010 0000           928           LI     R7,Y'100000'                                             XP309270
0012A0    9567                     929           EPSR   R6,R7                 SELECT HALFWORD MODE               XP309280
                                    930  * ADD CODE TO CHECK THAT HW BIT IN PSW IF SPEC'D, ON SYSQINT.   HW       XP309290
0012A2    01D0 1A64                931           LM     R13,BUF0              *                                  XP309300
0012A6    4000 1B02                932           STH    R13,TEMP1             (EPSR)                             XP309310
0012AA    C8A0 12C0                933           LHI    R10,T2P9B             RETURN                             XP309320
0012AE    C8C0 12BC                934           LHI    R12,T2R9A             INTPT ADRS.                        XP309330
0012B2    C870 86F0                935           LHI    R7,X'86F0'            *                         HW        XP309340
0012B6    01D0 1A64                936           LM     R13,BUF0                                                 XP309350
0012BA    9567                     937           EPSR   R6,R7                 ENABLE SYSTEM QUEUE SERVICE INTPT.  XP309360
                                    938  *        WILL GO TO T2P10 IF INTERRUPT TAKEN, THEN T2P9B.               XP309370
                                                                                                                 XP309380
0012BC    4300 12EA                939  T2R9A    B      T2P9                                                     XP309390
0012C0    4100 173E                940  T2P9B    BAL    R0,CLEARPSW                                              XP309400
0012C4    4170 17C4                941           BAL    R7,CKPOINT                                               XP309410
0012C8    0209                     942           DCX    0209                                                    XP309420
0012CA    F870 0010 0000           943           LI     R7,Y'100000'          SELECT HW MODE                     XP309430
0012D0    9567                     944           EPSR   R6,R7                                                    XP309440
0012D2    C8D0 0010                945           LHI    R13,X'10'             (LPSW)                             XP309450
0012D6    40D0 1B02                946           STH    R13,TEMP1                                                XP309460
0012DA    C8A0 1324                947           LHI    R10,T2P11             RETURN                             XP309470
0012DE    C8C0 12EA                948           LHI    R12,T2R9              INTPT ADRS.                        XP309480
0012E2    01D0 1A64                949           LM     R13,BUF0                                                 XP309490
0012E6    C200 1AE4                950           LPSW   T2P9PSW                                                  XP309500
                                    951  *        WILL GO TO T2P10 IF INTERRUPT TAKEN, THEN T2P11.               XP309510
0012EA    4100 173E                952  T2R9     BAL    R0,CLEARPSW                                              XP309520
0012EE    24D9                     953           LIS    R13,9                                                    XP309530
0012F0    4AD0 1B02                954           AH     R13,TEMP1             ERROR 0209, 0219 :                 XP309540
                                    955  *                                   NO INTERRUPT, HALFWORD MODE.        XP309550
0012F4    4300 1896                956           B      ERROR                 SYSTEM QUEUE ABOVE 64 KB.   *****  XP309560
                                    957  * *******************************************************************   XP309570
                                    958  * IN T2P10, THE MACHINE STATE RESULTING FROM THE SYSTEM QUEUE SERVICE    XP309580
                                    959  * INTERRUPTS GENERATED IN T2P9 IS CHECKED. THIS CODE IS EXECUTED TWO     XP309590
                                    960  * TIMES: FOR EPSR AND LPSW.                                             XP309600
                                    961  * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR        XP309610
                                    962  * EQUIPPED WITH THE HALFWORD MODE FEATURE.                               XP309620
                                    963  *                                                               FW       XP309630
0012F8    9566                     964  T2P10    EPSR   R6,R6                 *                         FW        XP309640
0012FA    4170 17C4                965           BAL    R7,CKPOINT                                               XP309650
0012FE    020A                     966           DCX    020A                                                    XP309660
001300    5560 0088                967           CL     R6,X'88'              PROPER SYSQ NEW PSW STAT ?         XP309670
001304    213B                     968           BNES   T2R10
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001306  F5D0 0001 5020   969            CLI   R13,TABLE2       PROPER QUEUE ADDRESS ?               XP309680
00130C  2137             970            BNES  T2R10                                                 XP309690
00130E  F5E0 0010 86F0   971            CLI   R14,Y'1086F0'    OLD STAT SAVED PROPERLY ?            XP309700
001314  2133             972            BNES  T2R10                                                 XP309710
001316  05FC             973            CLR   R15,R12          OLD LOC SAVED PROPERLY ?             XP309720
001318  033A             974            BER   R10              RETURN                               XP309730
00131A  240A             975  T2R10     LIS   R13,10                                                XP309740
00131C  4AD0 1802        976            AH    R13,TEMP1        ERROR 020A, 021A :                   XP309750
                         977  *                               REGS 13,14,15, OR PSW BAD, SYS Q      XP309760
001320  4300 1896        978            B     ERROR           INTPT, HW MODE, HICORE QUEUE  *****   XP309770
                         979  * *************************************************************************  XP309780
        0000 1324        980  T2P11     EQU   *                EXPAND TEST FROM HERE.                XP309790
001324  4300 0D3C        981  T2END     B     NOERR                                                 XP309800


                         983  * *************************************************************************  XP309820
                         984  * BEFORE SUBTEST 3 IS ENTERED, ALL LOW CORE POINTERS ARE INITIALIZED.  XP309830
                         985  * AND ALL MEMORY ABOVE PROGTOP IS FILLED WITH ZEROS. PROGRAM SEGMENTS   XP309840
                         986  * IN EXTENDED MEMORY ARE THEN RESTORED.                                XP309850
                         987  *                                                                     XP309860
        0000 1328        988  SUBT3     EQU   *                                                     XP309870
001328  F870 0000 4000   989            LI    R7,Y'4000'       *                              FW     XP309880
00132E  9567             990            EPSR  R6,R7            ENABLE IMMEDIATE INTERRUPT.           XP309890
                         991  *         INTERRUPT HERE TREATED AS SPURIOUS.                         XP309900
001330  4100 173E        992            BAL   R0,CLEARPSW                                           XP309910
001334  D300 1B04        993            LB    R0,CPUNO                                              XP309920
001338  C500 0037        994            CLHI  R0,C'7'                                               XP309930
00133C  4230 13AA        995            BNE   T3P3                                                  XP309940
                         996  *                                                                     XP309950
                         997  * *************************************************************************  XP309960
                         998  * IN T3P1, THE PROGRAM PRINTS 'FUNCTION 0', AND SETS THE PROCESSOR UP  XP309970
                         999  * FOR A CONSOLE INTERRUPT. THE PROCESSOR IS HALTED, IN HALFWORD MODE.  XP309980
                        1000  * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR     XP309990
                        1001  * EQUIPPED WITH THE HALFWORD MODE FEATURE AND EQUIPPED WITH DISPLAY PNL XP310000
                        1002  *                                                                     XP310010
001340  D310 1B05       1003            LB    R1,CPUNO+1                                            XP310020
001344  C510 0044       1004            CLHI  R1,C'D'                                               XP310030
001348  4330 1498       1005            BE    T3P7             NO DISPLAY PANEL FOR 'FN 0'          XP310040
00134C  E6B0 192E       1006  T3P1      LA    R11,T3MSG1                                            XP310050
001350  E6C0 193B       1007            LA    R12,T3MSG1Z                                           XP310060
001354  41F0 16BA       1008            BAL   R15,PRINT        'FUNCTION 0'                         XP310070
001358  C810 1378       1009            LHI   R1,T3P2                                               XP310080
00135C  4010 00D2       1010            STH   R1,X'D2'         SERVICE POINTER                      XP310090
001360  4170 17C4       1011            BAL   R7,CKPOINT                                            XP310100
001364  0301            1012            DCX   0301                                                  XP310110
001366  F870 0010 C000  1013            LI    R7,Y'10C000'     HW, WAIT, IMMED. INTPT.              XP310120
00136C  9567            1014            EPSR  R6,R7                                                 XP310130
                        1015  *         INTERRUPT BRANCHES TO T3P2. IF NO INTERRUPT, HIT RUN:       XP310140
00136E  4100 173E       1016  T3R1      BAL   R0,CLEARPSW                                           XP310150
001372  2401            1017            LIS   R13,1            ERROR 0301 - NO CONSOLE              XP310160
001374  4300 1896       1018            B     ERROR           INTERRUPT, HW MODE (NO MAC)   *****   XP310170
                        1019  * *************************************************************************  XP310180
                        1020  * IN T3P2, THE MACHINE STATE RESULTING FROM THE CONSOLE INTERRUPT IN  XP310190
                        1021  * T3P1 IS CHECKED.                                                    XP310200
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                                    1022  * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR           XP310210
                                    1023  * EQUIPPED WITH THE HALFWORD MODE FEATURE AND EQUIPPED WITH DISPLAY PNL      XP310220
                                    1024  *                                                                           XP310230
001378   9566                       1025  T3P2      EPSR    R6,R6                                                      XP310240
00137A   4170 17C4                  1026            BAL     R7,CKPOINT                                                 XP310250
00137E   0302                       1027            DCX     0302                                                       XP310260
001380   C560 2800                  1028            CLHI    R6,X'2800'          PSW AT ENTRY TO T3P2                   XP310270
001384   4230 13A0                  1029            BNE     T3R2                                                       XP310280
001388   F500 0010 C000             1030            CLI     R0,Y'10C000'        OLD PSW STATUS                    FW   XP310290
00138E   4230 13A0                  1031            BNE     T3R2                                                       XP310300
001392   C510 136E                  1032            CLHI    R1,T3R1             OLD PSW LOC                            XP310310
001396   4230 13A0                  1033            BNE     T3R2                                                       XP310320
00139A   C520 0001                  1034            CLHI    R2,1                CONSOLE DEVICE ADDRESS                 XP310330
00139E   2336                       1035            BES     T3P3                                                       XP310340
0013A0   4100 173E                  1036  T3R2      BAL     R0,CLEARPSW                                                XP310350
0013A4   2402                       1037            LIS     R13,2               ERROR 0302 - INCORRECT REGISTERS,      XP310360
0013A6   4300 1896                  1038            B       ERROR               PSW, CONSOLE INTPT, HW MODE,MAC*****   XP310370
                                    1039  * ****************************************************************************XP310380
                                    1040  * IN T3P3, THE PROGRAM PRINTS 'FUNCTION 0' AND SETS THE PROCESSOR UP         XP310390
                                    1041  * FOR A CONSOLE INTERRUPT. THE PROCESSOR IS HALTED IN HALFWORD MODE,         XP310400
                                    1042  * WITH MAC ENABLED.                                                         XP310410
                                    1043  * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED.       XP310420
                                    1044  * AND THE PROCESSOR IS EQUIPPED WITH A DISPLAY PANEL.                        XP310430
                                    1045  *                                                                           XP310440
0013AA   D310 1B05                  1046  T3P3      LB      R1,CPUNO+1                                                 XP310450
0013AE   C510 0044                  1047            CLHI    R1,C'D'                                                    XP310460
0013B2   4330 1498                  1048            BE      T3P7                NO CONSOLE PANEL FOR 'FN 0'            XP310470
0013B6   5820 1AF8                  1049            L       R2,MACSTAT          *                                FW   XP310480
0013BA   4310 15D4                  1050            BNM     T3END               NO MAC INDICATED                       XP310490
0013BE   4170 17C4                  1051            BAL     R7,CKPOINT                                                 XP310500
0013C2   0303                       1052            DCX     0303                                                       XP310510
0013C4   C420 7FFF                  1053            NHI     R2,X'7FFF'                                                 XP310520
0013C8   D180 1A24                  1054            LM      R8,TRANSFW                                                 XP310530
0013CC   D082 0000                  1055            STM     R8,0(R2)            MAC SEG REGS 0-7                       XP310540
0013D0   D180 1A44                  1056            LM      R8,TRANSFW+32                                              XP310550
0013D4   D082 0020                  1057            STM     R8,32(R2)           MAC SEG REGS 8-F                       XP310560
0013D8   2400                       1058            LIS     R0,0                                                       XP310570
0013DA   4002 0042                  1059            STH     R0,X'42'(R2)        CLEAR MAC ISR                          XP310580
0013DE   C810 1404                  1060            LHI     R1,T3P4                                                    XP310590
                                    1061  *                 SERVICE POINTER IS NOT TO BE RELOCATED]]                  XP310600
0013E2   4010 00D2                  1062            STH     R1,X'D2'            SERVICE POINTER                        XP310610
0013E6   E6B0 192E                  1063            LA      R11,T3MSG1                                                 XP310620
0013EA   E6C0 193B                  1064            LA      R12,T3MSG1Z                                                XP310630
0013EE   41F0 16BA                  1065            BAL     R15,PRINT           'FUNCTION 0'                           XP310640
0013F2   F870 0000 C400             1066            LI      R7,Y'C400'          FW, WAIT, IMM. INT., MAC               XP310650
0013F8   9567                       1067            EPSR    R6,R7                                                      XP310660
                                    1068  *                 INTERRUPT BRANCHES TO T3P4. IF NO INTERRUPT, HIT RUN:     XP310670
0013FA   4100 173E                  1069  T3R3      BAL     R0,CLEARPSW                                                XP310680
0013FE   2403                       1070            LIS     R13,3               ERROR 0303 - NO CONSOLE INTERRUPT,     XP310690
001400   4300 1896                  1071            B       ERROR               FULLWORD MODE, WITH MAC       *****   XP310700
                                    1072  * ****************************************************************************XP310710
                                    1073  * IN T3P4, THE MACHINE STATE RESULTING FROM THE CONSOLE INTERRUPT IN        XP310720
                                    1074  * T3P3 IS CHECKED.                                                          XP310730
                                    1075  * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED.       XP310740
                                    1076  * AND THE PROCESSOR IS EQUIPPED WITH A DISPLAY PANEL.                        XP310750
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                                    1077   *
001404    9566                      1078   T3P4    EPSR   R6,R6                                              XP310760
001406    4170 17C4                 1079           BAL    R7,CKPOINT        CATCH PSW                        XP310770
00140A    0304                      1080           DCX    0304                                               XP310780
00140C    C560 2800                 1081           CLHI   R6,X'2800'                                         XP310790
001410    4230 142C                 1082           BNE    T3R4                                               XP310800
001414    F500 0000 C400            1083           CLI    R0,Y'C400'        OLD PSW STATUS              FW   XP310810
00141A    4230 142C                 1084           BNE    T3R4                                               XP310820
00141E    C510 13FA                 1085           CLHI   R1,T3R3           OLD PSW LOC                      XP310830
001422    4230 142C                 1086           BNE    T3R4                                               XP310840
001426    C520 0001                 1087           CLHI   R2,1              CONSOLE DEVICE                   XP310850
00142A    2334                      1088           BES    T3P5                                               XP310860
00142C    24D4                      1089   T3R4    LIS    R13,4             ERROR 0304 - BAD REGS, PSW,      XP310870
00142E    4300 1896                 1090           B      ERROR             CONSOLE INTPT, FW W/MAC    ***** XP310880
                                    1091   * ************************************************************    XP310890
                                    1092   * IN T3P5, THE PROGRAM PRINTS 'FUNCTION 0' AND SETS THE PROCESSOR UP XP310900
                                    1093   * FOR A CONSOLE INTERRUPT. THE PROCESSOR IS HALTED IN HALFWORD MODE, XP310910
                                    1094   * WITH MAC ENABLED.                                               XP310920
                                    1095   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR XP310930
                                    1096   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                        XP310940
                                    1097   * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED. XP310950
                                    1098   * AND THE PROCESSOR IS EQUIPPED WITH A DISPLAY PANEL              XP310960
                                    1099   *                                                                XP310970
001432    D300 1B04                 1100   T3P5    LB     R0,CPUNO          *                          FW   XP310980
001436    C500 0037                 1101           CLHI   R0,C'7'           MODEL 7/32 ?                     XP310990
00143A    4230 1498                 1102           BNE    T3P7              NO, NO HALFWORD MODE             XP311000
00143E    4170 17C4                 1103           BAL    R7,CKPOINT                                         XP311010
001442    0305                      1104           DCX    0305                                              XP311020
001444    C810 146A                 1105           LHI    R1,T3P6                                            XP311030
001448    4010 00C2                 1106           STH    R1,X'D2'          SERVICE POINTER                  XP311040
00144C    E680 192E                 1107           LA     R11,T3MSG1                                         XP311050
001450    E6C0 193B                 1108           LA     R12,T3MSG1Z                                        XP311060
001454    41F0 16BA                 1109           BAL    R15,PRINT         'FUNCTION 0'                     XP311070
001458    F870 0010 C400            1110           LI     R7,Y'10C400'      HW, WAIT, IMM, INT,, MAC         XP311080
00145E    9567                      1111           EPSR   R6,R7                                              XP311090
                                    1112   *       INTERRUPT BRANCHES TO T3P6. IF NO INTERRUPT, HIT RUN:    XP311100
001460    4100 173E                 1113   T3R5    BAL    R0,CLEARPSW                                        XP311110
001464    24D5                      1114           LIS    R13,5             ERROR 0305 - NO CONSOLE     HW   XP311120
001466    4300 1896                 1115           B      ERROR             INTERRUPT, HW MODE (W/MAC)  ***** XP311130
                                    1116   * ************************************************************    XP311140
                                    1117   * IN T3P6, THE MACHINE STATE RESULTING FROM THE CONSOLE INTERRUPT IN XP311150
                                    1118   * T3P5 IS CHECKED.                                               XP311160
                                    1119   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR XP311170
                                    1120   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                        XP311180
                                    1121   * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED. XP311190
                                    1122   * AND THE PROCESSOR IS EQUIPPED WITH A DISPLAY PANEL.            XP311200
                                    1123   *                                                                XP311210
00146A    9566                      1124   T3P6    EPSR   R6,R6             CAPTURE PSW                      XP311220
00146C    4170 17C4                 1125           BAL    R7,CKPOINT                                         XP311230
001470    0306                      1126           DCX    0306                                              XP311240
001472    C560 2800                 1127           CLHI   R6,X'2800'                                         XP311250
001476    4230 1492                 1128           BNE    T3R6                                               XP311260
00147A    F500 0010 C400            1129           CLI    R0,Y'10C400'      OLD PSW STAT                FW   XP311270
001480    4230 1492                 1130           BNE    T3R6                                               XP311280
001484    C510 1460                 1131           CLHI   R1,T3R5           OLD PSW LOC                      XP311290
                                                                                                            XP311300
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001488    4230 1492        1132            BNE    T3R6                                             XP311310
00148C    C520 0001        1133            CLHI   R2,1           CONSOLE DEVICE ADDRESS            XP311320
001490    2334             1134            BES    T3P7                                             XP311330
001492    24D6             1135   T3R6     LIS    R13,6          ERROR 0306 - BAD REGS OR PSW,     XP311340
001494    4300 1896        1136            B      ERROR          CONSOLE INTPT, HW MODE W/MAC  ***** XP311350
                           1137   *                                                               XP311360
                           1138   * *****************************************************************  XP311370
                           1139   * IN T3P7, MAC SEGMENTATION REGISTER 0 IS SET UP TO TRANSLATE TO XP311380
                           1140   * Y'10000' PHYSICAL, AND MAC IS ENABLED IN FULLWORD MODE. AN AUTOLOAD XP311390
                           1141   * INSTRUCTION RESIDENT ABOVE 64 KB ATTEMPTS TO LOAD A BUFFER ABOVE XP311400
                           1142   * 64 KB IN FULLWORD MODE. RESULTS ARE CHECKED.                   XP311410
                           1143   * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED. XP311420
                           1144   *                                                               XP311430
001498    4100 173E        1145   T3P7     BAL    R0,CLEARPSW                                      XP311440
00149C    4170 17C4        1146            BAL    R7,CKPOINT                                       XP311450
0014A0    0307             1147            DCX    0307                                    FW       XP311460
0014A2    C810 186A        1148            LHI    R1,DEVERR      *                        FW       XP311470
0014A6    4010 00D2        1149            STH    R1,X'D2'       RESTORE ERROR POINTER             XP311480
0014AA    D380 0A10        1150            LB     R8,IO                                            XP311490
0014AE    CD80 0001        1151            SLHL   R8,1                                             XP311500
0014B2    0318 0A10        1152            LB     R1,IO(R8)                                        XP311510
0014B6    0328 160C        1153            LB     R2,CONCMD(R8)                                    XP311520
0014BA    9E12             1154            OCR    R1,R2                                            XP311530
0014BC    9B12             1155            RDR    R1,R2                                            XP311540
0014BE    1118             1156            SLLS   R1,8                                             XP311550
0014C0    0328 1B0C        1157            LB     R2,CONCMD(R8)                                    XP311560
0014C4    9221             1158            STBR   R2,R1          COMPOSITE COMMAND                 XP311570
0014C6    4010 0078        1159            STH    R1,X'78'       TTY NEW BINDV                     XP311580
0014CA    7320 1AFA        1160            LHL    R2,MACSTAT+2   *                        FW       XP311590
0014CE    F680 0FF1 0010   1161            LI     R8,Y'0FF10010' TRANS 1000 TO 11000, ETC, FW MODE XP311600
0014D4    5082 0000        1162            ST     R8,0(R2)       MAC SEG REG 0                     XP311610
0014D8    5082 0004        1163            ST     R8,4(R2)       TRANS 10000 INTO ITSELF, FW       XP311620
0014DC    2400             1164            LIS    R0,0                                             XP311630
0014DE    4002 0042        1165            STH    R0,X'42'(R2)   CLEAR MAC ISR                     XP311640
0014E2    E6B0 193A        1166            LA     R11,ALMSG                                        XP311650
0014E6    E6C0 1955        1167            LA     R12,ALMSGZ                                       XP311660
0014EA    41F0 16BA        1168            BAL    R15,PRINT      'DEPRESS KEYS 1234567890'         XP311670
0014EE    D1C0 1A64        1169            LM     R12,BUF0                                         XP311680
0014F2    D0C0 4001 0080   1170            STM    R12,ALBUF1                                       XP311690
0014F8    F870 0000 0400   1171            LI     R7,Y'400'      TO ENABLE MAC                     XP311700
0014FE    0200             1172            CNOP   4              ALIGNS HIGH CORE CODE             XP311710
001500    0200             1173            NOPR                                                   XP311720
001502    9567             1174            EPSR   R6,R7                                            XP311730
                           1175   * AUTOLOAD WILL BEGIN X'80' BYTES ABOVE ADDRESS TRANSLATED      XP311740
                           1176   * BY MAC SEGMENTATION REGISTER 0 (ZERO).                        XP311750
001504    4200 0000        1177   AUT01    NOP                   * AL X'8F' FROM *+Y'10000'        XP311760
001508    4200 0000        1178            NOP                                                    XP311770
00150C    0200             1179            NOPR                                                   XP311780
00150E    0200             1180            NOPR                                                   XP311790
001510    D1C0 4001 0080   1181            LM     R12,ALBUF1     CHECK DATA                        XP311800
001516    F4C0 7F7F 7F7F   1182            NI     R12,Y'7F7F7F7F' STRIP PARITY BIT                 XP311810
00151C    F4D0 7F7F 7F7F   1183            NI     R13,Y'7F7F7F7F'                                  XP311820
001522    F4E0 7F7F 7F7F   1184            NI     R14,Y'7F7F7F7F'                                  XP311830
001528    F5C0 3132 3334   1185            CLI    R12,Y'31323334' 1 2 3 4                          XP311840
00152E    2139             1186            BNES   T3R7                                             XP311850
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001530    F5D0 3536 3738    1187          CLI    R13,Y'35363738'     5 6 7 8                              XP311860
001536    2135              1188          BNES   T3R7                                                     XP311870
001538    F5E0 3930 0000    1189          CLI    R14,Y'39300000'     90                                   XP311880
00153E    2334              1190          BES    T3P8                                                     XP311890
001540    24D7              1191   T3R7   LIS    R13,7               ERROR 0307 - AUTOLOAD WITH MAC       XP311890
001542    4300 1896         1192          B      ERROR               TRANSLATION, FW MODE         *****   XP311900
                            1193   *                                                                      XP311910
                            1194   * ***********************************************************************   XP311920
                            1195   * IN T3P8, MAC SEGMENTATION REGISTER 0 IS SET UP TO TRANSLATE TO       XP311930
                            1196   * Y'10000' IN THE HALFWORD MODE, AND MAC IS ENABLED IN HALFWORD MODE.  XP311940
                            1197   * AN AUTOLOAD INSTRUCTION RESIDENT ABOVE 64 KB ATTEMPTS TO LOAD A      XP311950
                            1198   * BUFFER ABOVE 64 KB IN HALFWORD MODE. RESULTS ARE CHECKED.            XP311960
                            1199   * THIS PROGRAM SEGMENT IS EXECUTED ONLY ON A MODEL 7/32 PROCESSOR      XP311970
                            1200   * EQUIPPED WITH THE HALFWORD MODE FEATURE.                             XP311980
                            1201   * THIS PROGRAM SEGMENT IS EXECUTED ONLY WHEN MAC TESTING IS INDICATED. XP311990
001546    D300 1B04         1202   T3P8   LB     R0,CPUNO                                                 XP312000
00154A    C500 0037         1203          CLHI   R0,C'7'             MODEL 7/32 ?                         XP312010
00154E    4230 15D4         1204          BNE    T3END               NO. NO HALFWORD MODE                 XP312020
001552    4170 17C4         1205          BAL    R7,CKPOINT                                               XP312030
001556    0308              1206          DCX    0308                                                     XP312040
001558    7320 1AFA         1207          LHL    R2,MACSTAT+2                                             XP312050
00155C    F880 0FF1 1010    1208          LI     R8,Y'0FF11010'                                           XP312060
001562    5082 0004         1209          ST     R8,4(R2)            TRANS 1000 INTO 11000, HW MODE       XP312070
001566    C800 0000         1210          LHI    R0,0                                                     XP312080
00156A    4002 0042         1211          STH    R0,X'42'(R2)        CLEAR MAC ISR                        XP312090
00156E    E6B0 193A         1212          LA     R11,ALMSG                                                XP312100
001572    E6C0 1955         1213          LA     R12,ALMSGZ                                               XP312110
001576    41F0 16BA         1214          BAL    R15,PRINT           'DEPRESS KEYS 1234567890'            XP312120
00157A    D1C0 1A64         1215          LM     R12,BUF0                                                 XP312130
00157E    DCC0 4001 0080    1216          STM    R12,ALBUF1                                               XP312140
001584    F870 0010 0400    1217          LI     R7,Y'100400'        ENABLE MAC, HW MODE                  XP312150
00158A    0200              1218          CNOP   4                   ALIGNS HIGH CORE CODE                XP312160
00158C    0200              1219          NOPR                                                            XP312170
00158E    9567              1220          EPSR   R6,R7               *                              HW    XP312180
                            1221   *      AUTOLOAD WILL BEGIN X'80' BYTES ABOVE ADDRESS TRANSLATED        XP312190
                            1222   *      BY MAC SEGMENTATION REGISTER 0 (ZERO).                          XP312200
001590    4200 0000         1223   AUTO2  NOP                        * AL X'8F' FROM *+Y'10000'           XP312210
001594    4200 0000         1224          NOP                                                             XP312220
001598    0200              1225          NOPR                                                            XP312230
00159A    4100 173E         1226          BAL    R0,CLEARPSW                                              XP312240
00159E    D1C0 4001 0080    1227          LM     R12,ALBUF1          *                              FW    XP312250
0015A4    F4C0 7F7F 7F7F    1228          NI     R12,Y'7F7F7F7F'     STRIP PARITY BIT                     XP312260
0015AA    F4D0 7F7F 7F7F    1229          NI     R13,Y'7F7F7F7F'                                          XP312270
0015B0    F4E0 7F7F 7F7F    1230          NI     R14,Y'7F7F7F7F'                                          XP312280
0015B6    F5C0 3132 3334    1231          CLI    R12,Y'31323334'     1 2 3 4                              XP312290
0015BC    2139              1232          BNES   T3R8                                                     XP312300
0015BE    F5D0 3536 3738    1233          CLI    R13,Y'35363738'     5 6 7 8                              XP312310
0015C4    2135              1234          BNES   T3R8                                                     XP312320
0015C6    F5E0 3930 0000    1235          CLI    R14,Y'39300000'     90                                   XP312330
0015CC    2334              1236          BES    T3END                                                    XP312340
0015CE    24D8              1237   T3R8   LIS    R13,8               ERROR 0308 - AUTOLOAD WITH MAC       XP312350
0015D0    4300 1896         1238          B      ERROR               TRANSLATION, HALFWORD MODE   *****   XP312360
0015D4    4300 0D3C         1239   T3END  B      NOERR                                                    XP312370
                            1240   *                                                                      XP312380
                            1241   * ***********************************************************************   XP312390
                                                                                                         XP312400
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                0000 15D8              1242  SUBT4     EQU   *                                                              XP312410
                                       1243  * IN TEST 4 A CHECK IS MADE WHETHER A MEMORY PARITY ERROR DOES                 XP312420
                                       1244  * CAUSE A MACHINE MALFUNTION INTERRUPT. THE MMF BIT IN THE                     XP312430
                                       1245  * PSW IS SET. A DATA PATTERN IS STORED IN THE SEMENTATION                      XP312440
                                       1246  * REGISTERS AND READ BACK. A INTERRUPT IS EXPECTED . IF NO                     XP312450
                                       1247  * INTERRUPT OCCURS AN ERROR IS INDICATED. THIS TEST IS RUN                     XP312460
                                       1248  * ONLY WHEN MAC IS  INDICATED. AND THE PROCESSOR IS A 7-32 WITH                XP312470
                                       1249  * PARITY OPTION.                                                              XP312480
                0000 15D8              1250  TEST4     EQU   *                                                              XP312490
  0015D8   4100 173E                   1251            BAL   R0,CLEARPSW                                                    XP312500
  0015DC   4170 17C4                   1252            BAL   R7,CKPOINT                                                     XP312510
  0015E0   0401                        1253            DCX   0401                                                          XP312520
  0015E2   E610 1626                   1254            LA    R1,SEGMM                                                       XP312530
  0015E6   5010 003C                   1255            ST    R1,X'3C'                       STORE NEW PSW LOC FOR MACH. MLF.INT.  XP312540
  0015EA   5880 1AF8                   1256            L     R8,MACSTAT                     GET MAC STARTING ADDRESS        XP312550
  0015EE   4310 1636                   1257            BNM   T4END                          NO MAC, BRANCH TO END           XP312560
  0015F2   C480 7FFF                   1258            NHI   R8,X'7FFF'                                                     XP312570
  0015F6   0744                        1259            XR    R4,R4                                                         XP312580
  0015F8   2454                        1260            LIS   R5,4                                                          XP312590
  0015FA   C860 0040                   1261            LHI   R6,64                                                         XP312600
  0015FE   5814 1B24                   1262  DO.AGN    L     R1,TABLE3(R4)                                                 XP312610
  001602   5018 4400 0000              1263            ST    R1,0(R8,R4)                    STORE PATTERN                   XP312620
  001608   C140 15FE                   1264            BXLE  R4,DO.AGN                                                      XP312630
  00160C   0744                        1265            XR    R4,R4                                                         XP312640
  00160E   C830 2000                   1266  RD.AGN    LHI   R3,X'2000'                                                    XP312650
  001612   9523                        1267            EPSR  R2,R3                          ENABLE MACHINE MALFUNCTION      XP312660
  001614   2764                        1268            SIS   R6,4                                                          XP312670
  001616   5828 4400 0000              1269            L     R2,0(R8,R4)                    READ FROM SEGM REG              XP312680
  00161C   4100 173E                   1270            BAL   R0,CLEARPSW                    NO INTERRUPT...ERROR            XP312690
  001620   24D1                        1271            LIS   R13,01                                                        XP312700
  001622   4300 1896                   1272            B     ERROR                                                         XP312710
  001626   9511                        1273  SEGMM     EPSR  R1,R1                          SAVE PSW                        XP312720
  001628   2424                        1274            LIS   R2,4                                                          XP312730
  00162A   0421                        1275            NR    R2,R1                          IS IT PARITY ERROR.....IF NOT   XP312740
  00162C   4330 184A                   1276            BZ    MALFTN                         GO TO STANDARD MALFUNCTION ROUTINE  XP312750
  001630   0826                        1277            LR    R2,R6                          DONE?                           XP312760
  001632   4230 160E                   1278            BNZ   RD.AGN                         IF NO,BRANCH                    XP312770
  001636   4300 0D3C                   1279  T4END     B     NOERR                          PRINT NO ERROR                  XP312780
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                              1281  * *************************************************************************  XP312800
                              1282  *   SUBROUTINE READASC GETS UP TO 4 BYTES OF DATA FROM TTY, LESS PARITY.    XP312810
                              1283  *   CALLING SEQ - BAL R14,READASC                                           XP312820
                              1284  * ERROR RETURN - THROUGH READ1 ON R14                                       XP312830
                              1285  * *************************************************************************  XP312840
00163A   2440                 1286  READASC   LIS   R4,0                                                         XP312850
00163C   2410                 1287            LIS   R1,0              ACKNOWLEDGED KEY COUNTER                   XP312860
00163E   2400                 1288            LIS   R0,0              CLEAR DATA REGISTER                        XP312870
001640   41F0 165E            1289  ASKEY1    BAL   R15,READ1         GO GET DATA FROM TTY                       XP312880
001644   C500 000D            1290            CLHI  R0,13             CARRIAGE RETURN ?                          XP312890
001648   033E                 1291            BER   R14               YES, RETURN.                               XP312900
00164A   1148                 1292            SLLS  R4,8                                                         XP312910
00164C   0640                 1293            OR    R4,R0             APPEND LAST INPUT                          XP312920
00164E   0811                 1294            LR    R1,R1             PATCH FOR CPUNO                            XP312930
001650   2334                 1295            BZS   ASKOK             *                                          XP312940
001652   C5E0 0A90            1296            CLHI  R14,KEY0          *                                          XP312950
001656   033E                 1297            BER   R14               *                                          XP312960
001658   2611                 1298  ASKOK     AIS   R1,1              INCREMENT KEY COUNTER                      XP312970
00165A   4300 1640            1299            B     ASKEY1                                                       XP312980
                              1300  *************************************************************************    XP312990
                              1301  *   SUBROUTINE READ1 GETS 1 KEY FROM TTY LESS PARITY BIT                    XP313000
                              1302  *   CALLING SEQ - BAL R15,READ1                                             XP313010
                              1303  *   ERROR RETN - R14                                                        XP313020
                              1304  *   R0 = 1 KEY FROM TTY LESS PARITY BIT.                                    XP313030
                              1305  * *************************************************************************  XP313040
00165E   D350 0A10            1306  READ1     LB    R5,IO             LOAD CONSOLE POINTER                       XP313050
001662   CD50 0001            1307            SLHL  R5,1              DOUBLE                                     XP313060
001666   D325 0A10            1308            LB    R2,IO(R5)         LOAD CONSOLE ADDRESS                       XP313070
00166A   DE25 1B0C            1309            OC    R2,CONCMD(R5)     OUTPUT COMMAND                             XP313080
00166E   9B20                 1310            RDR   R2,R0             DUMMY READ TO FORCE BUSY                   XP313090
001670   4800 1B08            1311            LH    R0,PASLFLG                                                   XP313100
001674   2333                 1312            BZS   RD1A              SKIP IF NOT PASLA                          XP313110
001676   DE20 1B0D            1313            OC    R2,PASRQ2S        OUT PASLA COMMAND                          XP313120
00167A   9D23                 1314  RD1A      SSR   R2,R3                                                        XP313130
00167C   C530 0004            1315            CLHI  R3,4              FALSE SYNC ?                               XP313140
001680   033E                 1316            BER   R14               YES, NO INTERFACE PRESENT                  XP313150
001682   C330 0003            1317            THI   R3,3              RING OR DU?                                XP313160
001686   023E                 1318            BNZR  R14               YES,RETURN                                 XP313170
001688   C430 00FC            1319            NHI   R3,X'FC'                                                     XP313180
00168C   C530 000C            1320            CLHI  R3,X'0C'          PASLA DU?                                  XP313190
001690   033E                 1321            BER   R14               YES,RETURN                                 XP313200
001692   C330 0008            1322            THI   R3,X'08'          BUSY?                                      XP313210
001696   4230 167A            1323            BNZ   RD1A              LOOP                                       XP313220
00169A   9B20                 1324            RDR   R2,R0             GET DATA BYTE.                             XP313230
00169C   C550 000A            1325            CLHI  R5,10             IS IT MICROBUS?                            XP313240
0016A0   2132                 1326            BNES  RD2A                                                         XP313250
0016A2   9A20                 1327            WDR   R2,R0             ECHO                                       XP313260
0016A4   C550 0008            1328  RD2A      CLHI  R5,8              IS IT  CAROUSEL 300                        XP313270
0016A8   2136                 1329            BNES  RD3A                                                         XP313280
0016AA   C620 0001            1330            OHI   R2,1              INCREMENT ADR..TRANSMIT ADDRESS            XP313290
0016AE   9D25                 1331            SSR   R2,R5                                                        XP313300
0016B0   2081                 1332            BTBS  8,1                                                          XP313310
0016B2   9A20                 1333            WDR   R2,R0             ECHO                                       XP313320
0016B4   C400 007F            1334  RD3A      NHI   R0,X'7F'                                                     XP313330
0016B8   030F                 1335            BR    R15               RETURN TO CALLER.                          XP313340
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                                  1336  ************************************************************************  XP313350
                                  1337  *   SUBROUTINE PRINT OUTPUTS A BLOCK OF DATA TO THE TELETYPE.             XP313360
                                  1338  *   CALLING SEQ -                        LHI R11,START                    XP313370
                                  1339  *                                       LHI R12,END                      XP313380
                                  1340  *                                       BAL R15,PRINT                    XP313390
                                  1341  *            ERROR RETURN - R15                                           XP313400
                                  1342  ************************************************************************  XP313410
0016BA    D350 1B0C               1343  PRINT    LB    R5,IOLIST              LOAD LISTDEV POINTER               XP313420
00168E    9151                    1344           SLHLS R5,1                   DOUBLE IT...                       XP313430
0016C0    D325 0A11               1345           LB    R2,IO+1(R5)            LOAD LIST DEV ADDRESS              XP313440
0016C4    4800 1B08               1346           LH    R0,PASLFLG             LOAD PASLA FLAG                    XP313450
0016C8    2333                    1347           BZS   PRT1                   SKIP NEXT CMD IF ZERO              XP313460
0016CA    DE25 1B16               1348           OC    R2,CON2ND(R5)          ISSUE COMMAND FOR PASLA            XP313470
0016CE    DE25 1B0D               1349  PRT1     OC    R2,CONCMD+1(R5)        ISSUE OUTPUT COMMAND               XP313480
0016D2    D325 0A10               1350  PRT2     LB    R2,IO(R5)              GET RECIEVE SIDE ADDRESS           XP313490
0016D6    9D23                    1351           SSR   R2,R3                                                     XP313500
0016D8    C530 0004               1352           CLHI  R3,4                   FALSE SYNC?                        XP313510
0016DC    033F                    1353           BER   R15                    RETURN TO CALL                     XP313520
0016DE    C330 0003               1354           THI   R3,3                   RING OR DU?                        XP313530
0016E2    023F                    1355           BNZR  R15                    RETURN TO CALL                     XP313540
0016E4    C430 00FC               1356           NHI   R3,X'FC'                                                  XP313550
0016E8    C530 000C               1357           CLHI  R3,X'0C'               PASLA DU?                          XP313560
0016EC    033F                    1358           BER   R15                    IF TRUE, RETURN                    XP313570
0016EE    D325 0A11               1359  PRT3     LB    R2,IO+1(R5)                                               XP313580
0016F2    9D23                    1360           SSR   R2,R3                                                     XP313590
0016F4    2081                    1361           BTBS  8,1                    BUSY?                              XP313600
0016F6    DA2B 0000               1362           WD    R2,0(R11)              OUTPUT BYTE                        XP313610
0016FA    26B1                    1363           AIS   R11,1                                                     XP313620
0016FC    05CB                    1364           CLR   R12,R11                                                   XP313630
0016FE    4380 16D2               1365           BNL   PRT2                                                      XP313640
001702    24B1                    1366           LIS   R11,1                                                     XP313650
001704    C550 0006               1367           CLHI  R5,6                   LINE PRINTER?                      XP313660
001708    2332                    1368           BES   WD1                                                       XP313670
00170A    25B1                    1369           LCS   R11,1                                                     XP313680
00170C    9D23                    1370  WD1      SSR   R2,R3                  LOOP ON BUSY                       XP313690
00170E    2081                    1371           BTBS  8,1                                                       XP313700
001710    9A2B                    1372           WDR   R2,R11                 OUTPUT A NULL                      XP313710
001712    9D23                    1373           SSR   R2,R3                                                     XP313720
001714    2081                    1374           BTBS  8,1                                                       XP313730
001716    030F                    1375           BR    R15                    RETURN                            XP313740
                                  1376  *                                                                        XP313750
                                  1377  **********************************************************************    XP313760
                                  1378  *    SUBROUTINE TO PRINT ON THE LIST DEVICE                              XP313770
001718    D310 0A11               1379  PRINTL   LB    R1,IO+1                LOAD LISTDEVICE POINTER            XP313780
00171C    D210 1B0C               1380           STB   R1,IOLIST              STORE                              XP313790
001720    D320 1B0B               1381           LB    R2,PASLFLG2            LOAD PASLAFLAG OF LSTDEV           XP313800
001724    D220 1B08               1382           STB   R2,PASLFLG             STORE                              XP313810
001728    41F0 16BA               1383           BAL   R15,PRINT              PRINT IT ON THE LSTDEV             XP313820
00172C    D310 0A10               1384  PRINTP   LB    R1,IO                  RESTORE CONSOLE POINTER            XP313830
001730    D210 1B0C               1385           STB   R1,IOLIST              IN LISTDEVICE POINTER              XP313840
001734    D320 1B0A               1386           LB    R2,PASLFLG1                                               XP313850
001738    D220 1B08               1387           STB   R2,PASLFLG             RESTORE CONSOLE FLAG               XP313860
00173C    030E                    1388           BR    R14                                                       XP313870
                                  1389  **********************************************************************    XP313880
          0000 173E               1390  CLEARPSW EQU   *                                                         XP313890
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                                    1391  *  SUBROUTINE CLEARPSW STORES THE CURRENT REGISTER SET, THEN EXECUTES      XP313900
                                    1392  *  AN ILLEGAL INSTRUCTION TO CLEAR THE PSW. REGISTERS OF SET 0 ARE         XP313910
                                    1393  *  LOADED FROM DATA STORED ON ENTRY TO THE ROUTINE. IF ENTRY WAS MADE      XP313920
                                    1394  *  WHILE IN THE HALFWORD MODE, HIGH-ORDER BITS IN REGISTERS ARE           XP313930
                                    1395  *  FORCED TO ZERO. THE CURRENT PSW ON ENTRY IS RETURNED IN REGISTER 6.    XP313940
                                    1396  *  CALLING SEQUENCE - BAL R0,CLEARPSW                                     XP313950
00173E    D000 1B84                 1397         STM   R0,REGSAV             SAVE REGISTER CONTENTS                 XP313960
001742    9566                      1398         EPSR  R6,R6                 CATCH PSW                              XP313970
001744    4060 1AAA                 1399         STH   R6,OLDPSW+2           & SAVE HW OF STATUS.                   XP313980
001748    2460                      1400         LIS   R6,0                                                        XP313990
00174A    4060 0030                 1401         STH   R6,X'30'                                                    XP314000
00174E    4060 0032                 1402         STH   R6,X'32'                                                    XP314010
001752    4060 0034                 1403         STH   R6,X'34'                                                    XP314020
001756    C860 1760                 1404         LHI   R6,CLEARX                                                   XP314030
00175A    4060 0036                 1405         STH   R6,X'36'                                                    XP314040
00175E    0000                      1406         DCX   0                     ILLEGAL INSTRUCTION                   XP314050
001760    E610 1846                 1407  CLEARX LA    R1,ILGINT                                                   XP314060
001764    5010 0034                 1408         ST    R1,X'34'              RESTORE POINTER                       XP314070
001768    ECE0 0010                 1409         SRL   R14,16                                                      XP314080
00176C    40E0 1AA8                 1410         STH   R14,OLDPSW            TOP HALF OF STATUS                     XP314090
001770    C3E0 0010                 1411         THI   R14,X'10'             TEST HW MODE PSW BIT                   XP314100
001774    4330 17B6                 1412         BZ    CLEAR1                                                      XP314110
001778    7300 1B84                 1413         LHL   R0,REGSAV             CONSTRAIN REGS TO 16 BITS             XP314120
00177C    7310 1B86                 1414         LHL   R1,REGSAV+2           IF HW BIT SET IN REG 14.              XP314130
001780    7320 1B88                 1415         LHL   R2,REGSAV+4                                                 XP314140
001784    7330 1B8A                 1416         LHL   R3,REGSAV+6                                                 XP314150
001788    7340 1B8C                 1417         LHL   R4,REGSAV+8                                                 XP314160
00178C    7350 1B8E                 1418         LHL   R5,REGSAV+10                                                XP314170
001790    7370 1B92                 1419         LHL   R7,REGSAV+14                                                XP314180
001794    7380 1B94                 1420         LHL   R8,REGSAV+16                                                XP314190
001798    7390 1B96                 1421         LHL   R9,REGSAV+18                                                XP314200
00179C    73A0 1B98                 1422         LHL   R10,REGSAV+20                                               XP314210
0017A0    73B0 1B9A                 1423         LHL   R11,REGSAV+22                                               XP314220
0017A4    73C0 1B9C                 1424         LHL   R12,REGSAV+24                                               XP314230
0017A8    73D0 1B9E                 1425         LHL   R13,REGSAV+26                                               XP314240
0017AC    73E0 1BA0                 1426         LHL   R14,REGSAV+28                                               XP314250
0017B0    73F0 1BA2                 1427         LHL   R15,REGSAV+30                                               XP314260
0017B4    2305                      1428         BS    CLEAR2                                                      XP314270
0017B6    7300 1B86                 1429  CLEAR1 LHL   R0,REGSAV+2           ADDRESS ONLY 64 KB                    XP314280
0017BA    D110 1B88                 1430         LM    R1,REGSAV+4           RESTORE OTHER REGISTERS               XP314290
0017BE    5860 1AA8                 1431  CLEAR2 L     R6,OLDPSW             PSW ON ENTRY                          XP314300
0017C2    0300                      1432         BR    R0                    RETURN.                               XP314310
                                    1433  *                                                                        XP314320
                                    1434  ***********************************************************************  XP314330
                                    1435  *  SUBROUTINE CKPOINT ALLOWS VISUAL CHECK OF TRANSFER OF CONTROL         XP314340
                                    1436  *  BETWEEN PROGRAM MODULES. A HALT-ON-MATCH OPTION IS ALSO PROVIDED.     XP314350
                                    1437  *  CALLING SEQUENCE - BAL R7,CKPOINT                                     XP314360
                                    1438  *  USER MAY MODIFY 'DELAY', 'MATCH' AS A TEST AID.                       XP314370
          0000 17C4                 1439  CKPOINT EQU  *                     MODE-INDEPENDENT CHECKPOINT           XP314380
0017C4    D000 1B84                 1440         STM   R0,REGSAV                                                   XP314390
0017C8    9566                      1441         EPSR  R6,R6                 CATCH CURRENT PSW                     XP314400
0017CA    7320 1810                 1442         LHL   R2,DELAY                                                    XP314410
0017CE    4330 1804                 1443         BZ    CHEXIT                NO DISPLAY IF NO DELAY.               XP314420
0017D2    4837 0000                 1444         LH    R3,0(R7)                                                    XP314430
0017D6    9433                      1445         EXBR  R3,R3                                                       XP314440
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0017D8   2400              1446          LIS    R0,0                                                     XP314450
0017DA   2411              1447          LIS    R1,1                                                     XP314460
0017DC   DE10 1B23         1448          OC     R1,DISINC                                                XP314470
0017E0   9810              1449          WHR    R1,R0                                                    XP314480
0017E2   9813              1450          WHR    R1,R3                                                    XP314490
0017E4   9810              1451          WHR    R1,R0            DISPLAY NOW: TTPP00                     XP314500
0017E6   EA00 001F         1452   DLY    RRL    R0,31           DELAY TACTIC                            XP314510
0017EA   EB00 001F         1453          RLL    R0,31                                                    XP314520
0017EE   2721              1454          SIS    R2,1                                                     XP314530
0017F0   2035              1455          BNZS   DLY                                                      XP314540
0017F2   9433              1456          EXBR   R3,R3                                                    XP314550
0017F4   4530 180E         1457          CLH    R3,MATCH                                                 XP314560
0017F8   2136              1458          BNES   CHEXIT                                                   XP314570
0017FA   C8F0 0080         1459          LHI    R15,X'80'                                                XP314580
0017FE   94FF              1460          EXBR   R15,R15          R15 = Y'8000'                           XP314590
001800   06F6              1461          OR     R15,R6           TO APPEND WAIT BIT                      XP314600
001802   958F              1462          EPSR   R8,R15           AND WAIT ON MATCH.                      XP314610
001804   95F6              1463   CHEXIT EPSR   R15,R6           RESTORE PSW ON ENTRY TO CKPOINT         XP314620
001806   D100 1B84         1464          LM     R0,REGSAV        RESTORE REGISTERS.                      XP314630
00180A   4307 0002         1465          B      2(R7)            RETURN                                  XP314640
00180E   0000              1466   MATCH  DCX    0                OPTIONAL CHECKPOINT CALL MATCH          XP314650
001810   0000              1467   DELAY  DCX    0                DELAY TIME CONSTANT                     XP314660
                           1468   * ********************************************************************  XP314670
                           1469   *                                                                     XP314680
                           1470   * SUBROUTINE CONVR6 UNPACKS REGISTER 0 FROM HEX TO ASCII              XP314690
                           1471   * TOTAL 6 BYTES STORED IN MEMORY LOCATIONS 0,5(R3)                    XP314700
                           1472   *                                                                     XP314710
                           1473   * SUBROUTINE CONVR4 UNPACKS REGISTER 0 FROM HEX TO ASCII              XP314720
                           1474   * TOTAL 4 BYTES STORED IN MEMORY LOCATIONS 0,3(R3).                   XP314730
                           1475   *                                                                     XP314740
                           1476   * SUBROUTINE CONVR2 UNPACKS REGISTER 0 FROM HEX TO ASCII              XP314750
                           1477   * TOTAL 2 BYTES STORED IN MEMORY LOCATIONS 0,1(R3).                   XP314760
                           1478   ********************************************************************** XP314770
                           1479   *                                                                     XP314780
001812   2631              1480   CONVR2 AIS    R3,1                                                     XP314790
001814   2442              1481          LIS    R4,2                                                     XP314800
001816   2306              1482          BS     CONVR                                                    XP314810
001818   2633              1483   CONVR4 AIS    R3,3                                                     XP314820
00181A   2444              1484          LIS    R4,4                                                     XP314830
00181C   2303              1485          BS     CONVR                                                    XP314840
00181E   2635              1486   CONVR6 AIS    R3,5                                                     XP314850
001820   2446              1487          LIS    R4,6                                                     XP314860
001822   C850              1488   CONVR  LR     R5,R0                                                    XP314870
001824   C450 000F         1489          NHI    R5,X'F'          MASK OFF UNWANTED BITS                  XP314880
001828   CA50 0030         1490          AHI    R5,X'30'                                                 XP314890
00182C   C550 003A         1491          CLHI   R5,X'3A'         IF < 3A, NO = 1 - 9                     XP314900
001830   2182              1492          BLS    CONV1                                                    XP314910
001832   2657              1493          AIS    R5,7             ELSE NO = A - F                         XP314920
001834   D253 0000         1494   CONV1  STB    R5,0(R3)                                                 XP314930
001838   1004              1495          SRLS   R0,4             GET NEXT DIGIT                          XP314940
00183A   2741              1496          SIS    R4,1                                                     XP314950
00183C   033E              1497          BZR    R14              RETURN TO CALLER                        XP314960
00183E   2731              1498          SIS    R3,1                                                     XP314970
001840   220F              1499          BS     CONVR                                                    XP314980
                           1500   ********************************************************************** XP314990
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                              1501   **   ERROR ROUTINES FOR ANY SPURIOUS INTERRUPTS DETECTED
                              1502   *                                                                    XP315000
                              1503   *                                                                    XP315010
001842   24B1                 1504   ARTFLT   LIS    R11,1           ARITHMETIC FAULT INTERRUPT            XP315020
001844   230E                 1505            BS     ERRF6                                                 XP315030
001846   24B2                 1506   ILGINT   LIS    R11,2           ILLEGAL INSTRUCTION INTERRUPT         XP315040
001848   230C                 1507            BS     ERRF6                                                 XP315050
00184A   9500                 1508   MALFTN   EPSR   R0,R0           CAPTURE CURRENT PSW                   XP315060
00184C   48B0 1B06            1509            LH     R11,MALFLAG                                           XP315070
001850   2133                 1510            BNZS   MALFTN1                                               XP315080
001852   C200 0020            1511            LPSW   X'20'                                                 XP315090
001856   24B3                 1512   MALFTN1  LIS    R11,3           MACH.MALFTN.INTRPT.ERROR              XP315100
001858   2304                 1513            BS     ERRF6                                                 XP315110
00185A   24B5                 1514   MACINT   LIS    R11,5           MEM.ACCESS CONTROL.INTRPT.            XP315120
00185C   2302                 1515            BS     ERRF6                                                 XP315130
00185E   24B6                 1516   CHANIO   LIS    R11,6           SYSTEM QUEUE SERVICE INTERRUPT        XP315140
001860   2306                 1517   ERRF6    BS     ERRINT                                               XP315150
001862   24B4                 1518   XINTHW   LIS    R11,4           HALFWORD MODE EXT INT ERROR           XP315160
001864   2304                 1519            BS     ERRINT                                                XP315170
001866   24B7                 1520   SVCERR   LIS    R11,7           SVC CALL ERROR                        XP315180
001868   2302                 1521            BS     ERRINT                                                XP315190
00186A   24B8                 1522   DEVERR   LIS    R11,8           I/O DEVICE ERROR                      XP315200
                              1523   *                                                                    XP315210
                              1524   *                                                                    XP315220
00186C   C6B0 00F0            1525   ERRINT   OHI    R11,X'F0'       ERROR  F1 THRU F8                     XP315230
001870   02B0 1B00            1526            STB    R11,ERRNO                                             XP315240
001874   D000 1B84            1527            STM    R0,REG0         STORE REG. SET 0                      XP315250
001878   956B                 1528            EPSR   R6,R11          GO TO REG SET F  (R11 = Y'FX')        XP315260
00187A   D000 1BC4            1529            STM    R0,REGF0        STORE USER REGISTERS                  XP315270
00187E   2411                 1530            LIS    R1,1                                                  XP315280
001880   DE10 1B22            1531            OC     R1,DISNORM      CONSOLE TO NORMAL MODE                XP315290
001884   4830 1B00            1532            LH     R3,ERRNO                                              XP315300
001888   9813                 1533            WHR    R1,R3           DISPLAY NOW: TTPPTTNN  ERROR NO.      XP315310
00188A   F870 0000 8000       1534            LI     R7,Y'8000'                                            XP315320
001890   9567                 1535            EPSR   R6,R7           WAIT                                  XP315330
001892   4300 18AA            1536            B      ERRORB                                               XP315340
                              1537   *                                                                    XP315350
                              1538   ************************************************************          XP315360
         0000 1896            1539   ERROR    EQU    *                                                    XP315370
001896   02D0 1B00            1540            STB    R13,ERRNO                                             XP315380
00189A   D000 1B84            1541            STM    R0,REGSAV                                             XP315390
00189E   2411                 1542            LIS    R1,1                                                  XP315400
0018A0   DE10 1B22            1543            OC     R1,DISNORM                                            XP315410
0018A4   4830 1B00            1544            LH     R3,ERRNO                                              XP315420
0018A8   9813                 1545            WHR    R1,R3                                                 XP315430
0018AA   D300 1B00            1546   ERRORB   LB     R0,ERRNO                                              XP315440
0018AE   E630 18F6            1547            LA     R3,ERNOCH                                             XP315450
0018B2   41E0 1812            1548            BAL    R14,CONVR2      CONVERT ERRNO TO ASCII                XP315460
0018B6   E6B0 18EC            1549            LA     R11,ERRMSG                                            XP315470
0018BA   E6C0 18F9            1550            LA     R12,ERRMSGZ                                           XP315480
0018BE   41E0 1718            1551            BAL    R14,PRINTL      'ERROR TTNN'                          XP315490
0018C2   4300 0C72            1552            B      GETSUBT                                               XP315500
                              1553   *                                                                    XP315510
                              1554   ************************************************************          XP315520
                              1555   *                                                                    XP315530
                                                                                                          XP315540
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                              1556  **          MESSAGES OUTPUT TO THE TELETYPE:                      XP315550
0018C6   0D0A                 1557  PRTSUBT  DC    X'D0A'                 CR , LF                       XP315560
0018C8   5355 4254 4553 5420  1558           DC    C'SUBTEST'                                           XP315570
0018D0   0D0A                 1559           DC    X'D0A'                                               XP315580
0018D2   2A20                 1560           DC    C'* '                                                XP315590
0018D4   0D0A                 1561  QUESTN   DC    X'D0A'                 CR , LF                       XP315600
         0000 18D5            1562  PRTSUBZ  EQU   *-1                                                 XP315610
0018D6                        1563           DB    *                      ALIGN HALFWORD                XP315620
0018D6   3F20                 1564           DC    C'? '                                                XP315630
0018D8   0D0A                 1565  TITLE    DCX   D0A                                                 XP315640
         0000 18D9            1566  QUESTNZ  EQU   *-1                                                 XP315650
0018DA                        1567           DB    *                                                   XP315660
0018DA   5333 3250 5433 2052  1568           DC    C'S32PT3 R01'                                        XP315670
0018E2   3031
0018E4   0D0A                 1569           DC    X'D0A'                                               XP315680
0018E6   4350                 1570           DC    C'CP'                                                XP315690
0018E8   550D                 1571           DC    X'550D'                                             XP315700
0018EA   0A2A                 1572           DC    X'0A2A'                                             XP315710
         0000 18EC            1573  ERRMSG   EQU   *                                                   XP315720
         0000 18EC            1574  CRLFM    EQU   *                                                   XP315730
0018EC   0D0A                 1575           DC    X'D0A'                 CR , LF                       XP315740
         0000 18ED            1576  TITEND   EQU   *-1                                                 XP315750
0018EE                        1577           DB    *                                                   XP315760
0018EE   4552 524F 5220       1578           DC    C'ERROR '              ERROR                         XP315770
0018F4   3030                 1579  TSTNOCH  DC    C'00'                  XX   (XX = TEST NO., 2 CHAR.) XP315780
         0000 18F5            1580  TESTNO   EQU   *-1                                                 XP315790
0018F6   3030                 1581  ERNOCH   DC    C'00'                  YY   (YY = ERR.NO.,2 CHAR.)   XP315800
         0000 18F8            1582  NOERMSG  EQU   *                                                   XP315810
0018F8   0D0A                 1583           DC    X'D0A'                                              XP315820
         0000 18F9            1584  ERRMSGZ  EQU   *-1                                                 XP315830
0018FA                        1585           DB    *                                                   XP315840
0018FA   4E4F 2045 5252 4F52  1586           DC    C'NO ERROR'                                          XP315850
         0000 1902            1587  MACMSG   EQU   *                                                   XP315860
001902   0D0A                 1588           DC    X'D0A'                                              XP315870
         0000 1903            1589  NOERMSZ  EQU   *-1                                                 XP315880
001904   4E4F 204D 4143 2052  1590           DC    C'NO MAC RESPONSE'                                   XP315890
00190C   4553 504F 4E53 4520
         0000 1914            1591  MACMSG2  EQU   *                                                   XP315900
001914   0D0A                 1592           DCX   D0A                                                 XP315910
         0000 1915            1593  MACMSGZ  EQU   *-1                                                 XP315920
001916                        1594           DB    *                                                   XP315930
001916   4D41 4320 5245 5350  1595           DC    C'MAC RESPONSE AT '                                 XP315940
00191E   4F4E 5345 2041 5420
001926   2020
001928   0000                 1596  MACASCII DCX   0,0,0                                               XP315950
00192A   0000
00192C   0000
00192E   0D0A                 1597  T3MSG1   DC    X'D0A'                                              XP315960
         0000 192F            1598  MACMSG2Z EQU   *-1                                                 XP315970
001930                        1599           DB    *                                                   XP315980
001930   4655 4E43 5449 4F4E  1600           DC    C'FUNCTION 0'                                        XP315990
001938   2030
00193A   0D0A                 1601  ALMSG    DCX   D0A                                                 XP316000
         0000 193B            1602  T3MSG1Z  EQU   *-1                                                 XP316010
00193C                        1603           DB    *                                                   XP316020
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00193C    4445 5052 4553 5320    1604              DC      C'DEPRESS KEYS'                              XP316030
001944    4B45 5953
001948    0D0A                    1605              DC      X'D0A'                                       XP316040
00194A    3132 3334 3536 3738    1606              DC      C'1234567890'                                XP316050
001952    3930
001954    0D0A·                   1607    NOCORMSG  DCX     D0A                                          XP316060
          0000 1955               1608    ALMSGZ    EQU     *-1                                          XP316070
001956                            1609              DB      *                                            XP316080
001956    494E 5355 4646 4943    1610              DC      C'INSUFFICIENT CORE'                          XP316090
00195E    4945 4E54 2043 4F52
001966    4520
001968    0D0A                    1611              DCX     D0A                                          XP316100
          0000 1969               1612    NOCORMSZ  EQU     *-1                                          XP316110
00196A                            1613              DB      *                                            XP316120
                                  1614    * ************************************************************* XP316130
00196C                            1615              ALIGN   4                                            XP316140
00196C    9566                    1616    XDATA1    EPSR    R6,R6           THIS MOVES TO Y'11000'       XP316150
00196E    C810 0EB2               1617              LHI     R1,T1P5A                                     XP316160
001972    4010 0036               1618              STH     R1,X'36'                                     XP316170
001976    0000                    1619              DCX     0                                            XP316180
001978                            1620              ALIGN   4                                            XP316190
001978    0000 0005               1621    XDATA2    DCY     5               THIS MOVES TO Y'15000'       XP316200
30197C    0000 0DB2               1622              DC      T1P1A           (T1PSW1)                     XP316210
001980    0000 0000               1623              DCY     0                                            XP316220
001984    0000 0DEC               1624              DC      T1P2A           (T1PSW2)                     XP316230
001988    0010 0000               1625              DCY     100000                                      XP316240
00198C    0001 0E16               1626              DC      T1HIGH1         (T1PSW3)                     XP316250
001990    0000 0400               1627              DCY     400                                         XP316260
001994    000E 0F14               1628              DC      T1P7A+Y'E0000'  (T1PSW7)                     XP316270
001998                            1629              ALIGN   4                                            XP316280
          0000 1998               1630    XDATA3    EQU     *               FW, HW AUTOLOADS WITH MAC    XP316290
001998    D500 0089               1631              AL      X'89'           USED BY AUTO1,AUTO2          XP316300
00199C    C800 0000               1632              LHI     R0,0            IN THE RESPECTIVE HIGHCORE   XP316310
0019A0    9560                    1633              EPSR    R6,R0           AREAS   (DISABLE MAC)        XP316320
0019A4                            1634              ALIGN   4                                            XP316330
                                  1635    * ************************************************************* XP316340
          0000 19A4               1636    USDTAB    EQU     *                                            XP316350
                                  1637    * TABLE OF CORE ABOVE PROGTOP USED BY PROGRAM & NON-ZERO, ASCENDING.  XP316360
                                  1638    *               LOCATION, LENGTH IN BYTES                     XP316370
0019A4    0000 3F00               1639              DCY     3F00                                         XP316380
0019A8    0000 0000               1640    PATCHES   DCY     0                                            XP316390
0019AC    0000 FFFC               1641              DCY     FFFC,4                                       XP316400
0019B0    0000 0004
0019B4    0001 0080               1642              DC      ALBUF1,10                                    XP316410
0019B8    0000 000A
0019BC    0001 1000               1643              DC      T1HIGH2,12                                   XP316420
0019C0    0000 000C
0019C4    0001 1504               1644              DC      AUTO1+Y'10000',12                            XP316430
0019C8    0000 000C
0019CC    0001 1590               1645              DC      AUTO2+Y'10000',12                            XP316440
0019D0    0000 000C
0019D4    0001 5000               1646              DC      T1PSW1,32                                    XP316450
0019D8    0000 0020
0019DC    0001 5020               1647              DC      TABLE2,16                                    XP316460
0019E0    0000 0010
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              0000 19E4         1648  USDTBND  EQU   *                                                              XP316470
                                1649  * ***********************************************************************     XP316480
              0000 19E4         1650  NOTRANS  EQU   *                        SET UP FOR 1:1 TRANSLATION            XP316490
0019E4        OFF0 0010         1651           DCY   FF00010           SEGMENTATION REGISTER     0 : 0             XP316500
0019E8        OFF0 1010         1652           DCY   FF01010           SEGMENTATION REGISTER     1 : 1             XP316510
0019EC        OFF0 2010         1653           DCY   FF02010           SEGMENTATION REGISTER     2 : 2             XP316520
0019F0        OFF0 3010         1654           DCY   FF03010           SEGMENTATION REGISTER     3 : 3             XP316530
0019F4        OFF0 4010         1655           DCY   FF04010           SEGMENTATION REGISTER     4 : 4             XP316540
0019F8        OFF0 5010         1656           DCY   FF05010           SEGMENTATION REGISTER     5 : 5             XP316550
0019FC        OFF0 6010         1657           DCY   FF06010           SEGMENTATION REGISTER     6 : 6             XP316560
001A00        OFF0 7010         1658           DCY   FF07010           SEGMENTATION REGISTER     7 : 7             XP316570
001A04        OFF0 8010         1659           DCY   FF08010           SEGMENTATION REGISTER     8 : 8             XP316580
001A08        OFF0 9010         1660           DCY   FF09010           SEGMENTATION REGISTER     9 : 9             XP316590
001A0C        OFF0 A010         1661           DCY   FF0A010           SEGMENTATION REGISTER     A : A             XP316600
001A10        OFF0 B010         1662           DCY   FF0B010           SEGMENTATION REGISTER     B : B             XP316610
001A14        OFF0 C010         1663           DCY   FF0C010           SEGMENTATION REGISTER     C : C             XP316620
001A18        OFF0 D010         1664           DCY   FF0D010           SEGMENTATION REGISTER     D : D             XP316630
001A1C        OFF0 E010         1665           DCY   FF0E010           SEGMENTATION REGISTER     E : E             XP316640
001A20        OFF0 F010         1666           DCY   FF0F010           SEGMENTATION REGISTER     F : F             XP316650
                                1667  * ***********************************************************************     XP316660
              0000 1A24         1668  TRANSHW  EQU   *                                                              XP316670
              0000 1A24         1669  TRANSFW  EQU   *                                                              XP316680
001A24        OFF0 0010         1670           DCY   FF00010           SEGMENTATION REGISTER     0 : 0             XP316690
001A28        OFF0 1010         1671           DCY   FF01010           SEGMENTATION REGISTER     1 : 1             XP316700
001A2C        OFF0 2010         1672           DCY   FF02010           SEGMENTATION REGISTER     2 : 2             XP316710
001A30        OFF0 3010         1673           DCY   FF03010           SEGMENTATION REGISTER     3 : 3             XP316720
001A34        OFF0 4010         1674           DCY   FF04010           SEGMENTATION REGISTER     4 : 4             XP316730
001A38        OFF0 5010         1675           DCY   FF05010           SEGMENTATION REGISTER     5 : 5             XP316740
001A3C        OFF0 6010         1676           DCY   FF06010           SEGMENTATION REGISTER     6 : 6             XP316750
001A40        OFF0 7010         1677           DCY   FF07010           SEGMENTATION REGISTER     7 : 7             XP316760
001A44        OFF0 8010         1678           DCY   FF08010           SEGMENTATION REGISTER     8 : 8             XP316770
001A48        OFF0 9010         1679           DCY   FF09010           SEGMENTATION REGISTER     9 : 9             XP316780
001A4C        OFF0 A010         1680           DCY   FF0A010           SEGMENTATION REGISTER     A : A             XP316790
001A50        OFF0 B010         1681           DCY   FF0B010           SEGMENTATION REGISTER     B : B             XP316800
001A54        OFF0 C010         1682           DCY   FF0C010           SEGMENTATION REGISTER     C : C             XP316810
001A58        OFF0 D010         1683           DCY   FF0D010           SEGMENTATION REGISTER     D : D             XP316820
001A5C        OFF0 0010         1684           DCY   FF00010           SEGMENTATION REGISTER     E : 0             XP316830
001A60        OFF0 1110         1685           DCY   FF01110           SEGMENTATION REGISTER     F : 11            XP316840
                                1686  * ***********************************************************************     XP316850
              0000 1A64         1687  BUF0     EQU   *                        16 FULLWORDS OF ZEROS.               XP316860
001A64                          1688           DO    16                                                            XP316870
001A64        0000 0000         1689           DCY   0                                                             XP316880
001A68        0000 0000         1689           DCY   0
001A6C        0000 0000         1689           DCY   0
001A70        0000 0000         1689           DCY   0
001A74        0000 0000         1689           DCY   0
001A78        0000 0000         1689           DCY   0
001A7C        0000 0000         1689           DCY   0
001A80        0000 0000         1689           DCY   0
001A84        0000 0000         1689           DCY   0
001A88        0000 0000         1689           DCY   0
001A8C        0000 0000         1689           DCY   0
001A90        0000 0000         1689           DCY   0
001A94        0000 0000         1689           DCY   0
001A98        0000 0000         1689           DCY   0
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001A9C    0000 0000        1689            DCY    0
001AA0    0000 0000        1689            DCY    0
001AA8                     1690            ALIGN  8                                                              XP316890
                           1691    * *******************************************************************        XP316900
001AA8    0000 0000        1692    OLDPSW  DCY    0,0                                                            XP316910
001AAC    0000 0000
001AB0    0010 0400        1693    T1PSW4  DCY    100400          HW MODE, MAC ENABLED (1:1 TRANS)              XP316920
001AB4    0000 0E64        1694            DC     T1P4A                                                         XP316930
001AB8    0010 0402        1695    T1PSW5  DCY    100402          HW MODE, MAC ENABLED                          XP316940
001ABC    0000 F000        1696            DCY    F000            PHYSICAL ADDRESS OF Y'11000'                   XP316950
001AC0    0000 0400        1697    T1PSW6  DCY    400             ENABLE MAC, FW MODE                           XP316960
001AC4    000E 0EFC        1698            DC     T1P6A+Y'E0000'  ADDRESS OF T1P6A WILL BE RESULT               XP316970
001AC8    0000 06F0        1699    T2P2PSW DC     Y'6F0',T2P2B                                                  XP316980
001ACC    0000 102A
001AD0    0000 86F0        1700    T2P3PSW DC     Y'86F0',T2R3B                                                 XP316990
001AD4    0000 10A6
001AD8    0600             1701    T2P5PSW DC     X'0600',Z(T2P6)                                               XP317000
001ADA    1184
001ADC    86F0             1702    T2P6PSW DC     X'86F0',Z(T2R6)                                               XP317010
001ADE    11DC
001AE0    0600             1703    T2P8PSW DC     X'0600',Z(T2P9)                                               XP317020
001AE2    127C
001AE4    86F0             1704    T2P9PSW DC     X'86F0',Z(T2R9)                                               XP317030
001AE6    12EA
001AE8                     1705            ALIGN  ADC                                                           XP317040
                           1706    * *******************************************************************        XP317050
001AE8    0000 0000        1707    TABLE   DCY    0,0,0,0         SYSTEM QUEUE 1 (LOW CORE)                     XP317060
001AEC    0000 0000
001AF0    0000 0000
001AF4    0000 0000
001AF8    0000 0000        1708    MACSTAT DCY    0               DEFAULT = 'NO MAC'                            XP317070
001AFC    0000 0000        1709    MEMTOP  DCY    0                                                             XP317080
001B00    0000             1710    ERRNO   DCX    0                                                             XP317090
001B02    0000             1711    TEMP1   DCX    0               USED FOR TEMPORARY STORAGE                    XP317100
001B04    3758             1712    CPUNO   DC     C'7X'           DEFAULT 7/32 WITH DISPLAY                     XP317110
001B06    0000             1713    MALFLAG DCX    0               MACHINE MALFUNCTION FLAG                      XP317120
001B08    0000             1714    PASLFLG DCX    0               PASLFLAG USED IN PRINT,READ ROUT.             XP317130
001B0A    00               1715    PASLFLG1 DB    0               PASLA FLAG FOR CONSOLE DEVICE                 XP317140
001B0B    00               1716    PASLFLG2 DB    0                                                             XP317150
001B0C    00               1717    IOLIST  DB     0               LISTDEVICE POINTER                            XP317160
                           1718    *                                                                            XP317170
001B0D    3B               1719    PASRQ2S DB     X'3B'                                                         XP317180
                           1720    *                                                                            XP317190
                           1721    *                                                                            XP317200
          0000 1B0C        1722    CONCMD  EQU    *-2             DUMMY POINTER                                 XP317210
001B0E                     1723            DB     *                                                             XP317220
001B0E    B9AB             1724    CRTCMD  DCX    B9AB            CRT R-W COMMANDS                              XP317230
001B10    A4D8             1725    TTYCMD  DCX    A4D8            TTY R-W COMMANDS                              XP317240
001B12    0080             1726    LPCMD   DCX    0080            LINEPRINTER WRITE COMMAND                     XP317250
001B14    B9AB             1727    CARCMD  DCX    B9AB            C-300 R-W COMMANDS                            XP317260
001B16    8202             1728    MICBUS  DCX    8202            MICROBUS R-W COMMANDS                         XP317270
                           1729    *                                                                            XP317280
                           1730    *                                                                            XP317290
          0000 1B16        1731    CON2ND  EQU    *-2             DUMMY POINTER                                 XP317300
001B18    F879             1732    CRT2ND  DCX    F879            INITIAL COMMANDS                              XP317310
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001B1A  D800                1733 TTY2ND  DCX  D800                                                 XP317320
001B1C  8000                1734 LP2ND   DCX  8000                                                 XP317330
001B1E  F069                1735 CAR2ND  DCX  F069                                                 XP317340
001B20  0200                1736 MIC2ND  DCX  0200                                                 XP317350
                            1737 *                                                                 XP317360
                            1738 *                                                                 XP317370
001B22  8040                1739 DISNORM DCX  8040              CONSOLE DISPLAY NORMAL MODE         XP317380
        0000 1B23           1740 DISINC  EQU  *-1               CONSOLE DISPLAY INCREMENTAL MODE    XP317390
                            1741 * ***************************************************************** XP317400
001B24  1234 5678           1742 TABLE3  DC   Y'12345678'       PATTERN USED IN SUBTEST 4          XP317410
001B28  2345 6789           1743         DC   Y'23456789'       TO BE STORED IN SEGMM REGISTERS    XP317420
001B2C  3456 789A           1744         DC   Y'3456789A'                                          XP317430
001B30  4567 89AB           1745         DC   Y'456789AB'                                          XP317440
001B34  5678 9ABC           1746         DC   Y'56789ABC'                                          XP317450
001B38  6789 ABCD           1747         DC   Y'6789ABCD'                                          XP317460
001B3C  789A BCDE           1748         DC   Y'789ABCDE'                                          XP317470
001B40  89AB CDEF           1749         DC   Y'89ABCDEF'                                          XP317480
001B44  9ABC DEF1           1750         DC   Y'9ABCDEF1'                                          XP317490
001B48  ABCD EF12           1751         DC   Y'ABCDEF12'                                          XP317500
001B4C  BCDE F123           1752         DC   Y'BCDEF123'                                          XP317510
001B50  CDEF 1234           1753         DC   Y'CDEF1234'                                          XP317520
001B54  DEF1 2345           1754         DC   Y'DEF12345'                                          XP317530
001B58  EF12 3456           1755         DC   Y'EF123456'                                          XP317540
001B5C  F123 4567           1756         DC   Y'F1234567'                                          XP317550
001B60  0123 4567           1757         DC   Y'01234567'                                          XP317560
                            1758 **#****************************************************************XP317570
        0000 1B64           1759 BUFN    EQU  *                                                    XP317580
                            1760 * BUFN IS USED FOR DATA TO LOAD HALFWORD REGISTERS WHEN TESTING   XP317590
                            1761 * STM, LM ADDRESS WRAP IN HALFWORD MODE.                          XP317600
001B64  0000                1762         DCX  0                                                    XP317610
001B66  0001                1763         DCX  1                                                    XP317620
001B68  0002                1764         DCX  2                                                    XP317630
001B6A  0003                1765         DCX  3                                                    XP317640
001B6C  0004                1766         DCX  4                                                    XP317650
001B6E  0005                1767         DCX  5                                                    XP317660
001B70  0006                1768         DCX  6                                                    XP317670
001B72  0007                1769         DCX  7                                                    XP317680
001B74  0008                1770         DCX  8                                                    XP317690
001B76  0009                1771         DCX  9                                                    XP317700
001B78  000A                1772         DCX  A                                                    XP317710
001B7A  000B                1773         DCX  B                                                    XP317720
001B7C  000C                1774         DCX  C                                                    XP317730
001B7E  000D                1775         DCX  D                                                    XP317740
001B80  000E                1776         DCX  E                                                    XP317750
001B82  000F                1777         DCX  F                                                    XP317760
001B84                      1778         ALIGN ADC                                                 XP317770
                            1779 * ***************************************************************** XP317780
                            1780 * REGSAV IS THE REGISTER SAVE AREA. DATA CONSTANT OF Y'1' IS TO ENSURE XP317790
                            1781 * PROPER REPRODUCTION OF MASTER TAPE - IS A 'DUMMY'.              XP317800
        0000 1B84           1782 REGSAV  EQU  *                                                    XP317810
001B84  0000 0001           1783 REG0    DCY  1                 HW REGS 0,1    (SUPVSR SET)        XP317820
001B88  0000 0001           1784 REG1    DCY  1                    2,3                             XP317830
001B8C  0000 0001           1785 REG2    DCY  1                    4,5                             XP317840
001B90  0000 0001           1786 REG3    DCY  1                    6,7                             XP317850
001B94  0000 0001           1787 REG4    DCY  1                    8,9                             XP317860
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001B98	0000 0001		1788	REG5	DCY	1	A,B	XP317870
001B9C	0000 0001		1789	REG6	DCY	1	C,D	XP317880
001BA0	0000 0001		1790	REG7	DCY	1	E,F	XP317890
001BA4	0000 0001		1791	REG8	DCY	1		XP317900
001BA8	0000 0001		1792	REG9	DCY	1		XP317910
001BAC	0000 0001		1793	REGA	DCY	1		XP317920
001BB0	0000 0001		1794	REGB	DCY	1		XP317930
001BB4	0000 0001		1795	REGC	DCY	1		XP317940
001BB8	0000 0001		1796	REGD	DCY	1		XP317950
001BBC	0000 0001		1797	REGE	DCY	1		XP317960
001BC0	0000 0001		1798	REGF	DCY	1		XP317970
			1799	*				XP317980
001BC4	0000 0001		1800	REGF0	DCY	1	HW REGS F0,F1 (USER SET)	XP317990
001BC8	0000 0001		1801	REGF1	DCY	1	F2,F3	XP318000
001BCC	0000 0001		1802	REGF2	DCY	1	F4,F5	XP318010
001BD0	0000 0001		1803	REGF3	DCY	1	F6,F7	XP318020
001BD4	0000 0001		1804	REGF4	DCY	1	F8,F9	XP318030
001BD8	0000 0001		1805	REGF5	DCY	1	FA,FB	XP318040
001BDC	0000 0001		1806	REGF6	DCY	1	FC,FD	XP318050
001BE0	0000 0001		1807	REGF7	DCY	1	FE,FF	XP318060
001BE4	0000 0001		1808	REGF8	DCY	1		XP318070
001BE8	0000 0001		1809	REGF9	DCY	1		XP318080
001BEC	0000 0001		1810	REGFA	DCY	1		XP318090
001BF0	0000 0001		1811	REGFB	DCY	1		XP318100
001BF4	0000 0001		1812	REGFC	DCY	1		XP318110
001BF8	0000 0001		1813	REGFD	DCY	1		XP318120
001BFC	0000 0001		1814	REGFE	DCY	1		XP318130
001C00	0000 0001		1815	REGFF	DCY	1		XP318140
	0000 1C03		1816	PROGTOP	EQU	*-1	LAST CODE IN LOW CORE (<64 KB)	XP318150
001C08			1817		ALIGN	8		XP318160

		1820	*			XP318190
		1821	*	CHKSUM		XP318200
		1822	*	(THE FOLLOWING CODE IS NOT PART OF THE TEST.)		XP318210
		1823	*			XP318220
		1824	*			XP318230
001C08	2400	1825	$CHKSUM	LIS	R0,0	PUNCH M17 TAPE WITH CHECKSUM	XP318240
001C0A	9510	1826		EPSR	R1,R0	SELECT REG. SET 0	XP318250
		1827	*			XP318260
001C0C	E610 0A00	1828		LDAI	R1,ORIGIN1	START	XP318270
001C10	2421	1829		LIS	R2,1	INCREMENT	XP318280
001C12	E630 1C03	1830		LDAI	R3,PROGTOP	FINAL	XP318290
001C16	2440	1831		LIS	R4,0	CHECKSUM BYTE	XP318300
001C18	D351 0000	1832	$GEN	LB	R5,0(R1)		XP318310
001C1C	0745	1833		XAR	R4,R5		XP318320
001C1E	C110 1C18	1834		BXLE	R1,$GEN		XP318330
001C22	D240 0095	1835		STB	R4,MN+3	CHECKSUM BYTE TO BOOT LOADER	XP318340
		1836	*			XP318350
001C26	C810 0080	1837	$TAPE	LHI	R1,X'0080'		XP318360
001C2A	9E21	1838		OCR	R2,R1	DISPLAY : NORMAL MODE	XP318370
001C2C	9444	1839		EXBR	R4,R4		XP318380
001C2E	9824	1840		WHR	R2,R4	CHECKSUM BYTE TO D1	XP318390
001C30	9411	1841		EXBR	R1,R1		XP318400
001C32	9501	1842		EPSR	R0,R1	HALT PROCESSOR.	XP318410
001C34	D360 007A	1844	$PUNCH	LB	R6,X'7A'	GET BOUTDV (PUNCH) ADDRESS.	XP318430
001C38	DE60 007B	1845		OC	R6,X'7B'	START TAPE PUNCH	XP318440
001C3C	9D60	1846		SSR	R6,R0		XP318450
001C3E	2081	1847		BTBS	8,1		XP318460
001C40	41F0 1C82	1848		BAL	R15,$TAPL	PUNCH LEADER	XP318470
001C44	9411	1849		EXBR	R1,R1	(R1) = X'0080'	XP318480
001C46	C830 00CF	1850		LHI	R3,X'CF'		XP318490
001C4A	DA61 0000	1851	$PNCH1	WD	R6,0(R1)	PUNCH BOOT LOADER	XP318500
001C4E	9D60	1852		SSR	R6,R0		XP318510
001C50	2081	1853		BTBS	8,1		XP318520
001C52	C110 1C4A	1854		BXLE	R1,$PNCH1		XP318530
001C56	41F0 1C86	1855		BAL	R15,$TAPL1	PUNCH ONE-FOLD GAP.	XP318540
		1856	*			XP318550
001C5A	D340 0095	1857		LB	R4,MN+3	GET CHECKSUM BYTE	XP318560
001C5E	E610 0A00	1858		LDAI	R1,ORIGIN1	(NORMALLY X'A00')	XP318570
001C62	E630 1C03	1859		LDAI	R3,PROGTOP		XP318580
001C66	D351 0000	1860	$PNCH2	LB	R5,0(R1)	PUNCH PROGRAM	XP318590
001C6A	0745	1861		XAR	R4,R5		XP318600
001C6C	9A65	1862		WDR	R6,R5		XP318610
001C6E	9401	1863		EXBR	R0,R1		XP318620
001C70	9820	1864		WHR	R2,R0	DATA ADDRESS TO DISPLAY.	XP318630
001C72	9D60	1865		SSR	R6,R0		XP318640
001C74	2081	1866		BTBS	8,1		XP318650
001C76	C110 1C66	1867		BXLE	R1,$PNCH2		XP318660
001C7A	41F0 1C82	1868		BAL	R15,$TAPL	PUNCH TRAILER.	XP318670
001C7E	4300 1C26	1869		B	$TAPE	DISPLAY CHECKSUM, HALT PROCESSOR.	XP318680

CHKSUM

001C82	C800 0100	1871	$TAPL	LHI	R0,256	TO PUNCH BLANK LEADER	XP318700
001C86	2303	1872		BS	$TAPLP		XP318710
001C88	C800 0080	1873	$TAPL1	LHI	R0,128	TO PUNCH 1-FOLD GAP	XP318720
001C8C	2701	1874	$TAPLP	SIS	R0,1		XP318730
001C8E	032F	1875		BNPR	R15	RETURN	XP318740
001C90	2430	1876		LIS	R3,0		XP318750
001C92	9A63	1877		WDR	R6,R3	PUNCH BLANK FRAME	XP318760
001C94	9D68	1878		SSR	R6,R8		XP318770
001C96	2081	1879		BTBS	8,1		XP318780
001C98	2206	1880		BS	$TAPLP	CONTINUE.	XP318790
		1881	*				XP318800
001C9A		1882		END			XP318810

CHKSUM

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

START OPTIONS: T=32,ERLST

    NO CAL ERRORS
    NO CAL WARNINGS
    2 PASSES

```
$CHKSUM    0000 1C08     1825*
$GEN       0000 1C18     1832*  1834
$PNCH1     0000 1C4A     1851*  1854
$PNCH2     0C00 1C66     1860*  1867
$PUNCH     0000 1C34     1844*
$TAPE      0000 1C26     1837*  1869
$TAPL      0000 1C82     1848   1868   1871*
$TAPL1     0000 1C88     1855   1873*
$TAPLP     0000 1C8C     1872   1874*  1880
ABSTOP     0000 1C9A
ADC        0000 0004     1705   1778
ALBUF1     0001 0080      139*  1170   1181   1216   1227   1642
ALMSG      0000 193A     1166   1212   1601*
ALMSGZ     0000 1955     1167   1213   1608*
ARTFLT     0000 1842      243   1504*
ASKEY1     0000 1640     1289*  1299
ASKOK      0000 1658     1295   1298*
AUTO1      0000 1504      367   1177*  1644
AUTO2      0000 1590      368   1223*  1645
BADKEY     0000 0D10      378    380    394*   403    404    405
BOOT       0000 0088       71     74*
BUFG       0000 1A64      383    384    385    472    630    679    690    726    739    752    791    890    931
                          936    949   1169   1215   1687*
BUFN       0000 1B64      638   1759*
C300ADR    0000 0A18      160*
CAR2ND     0000 1B1E     1735*
CARCMD     0000 1B14     1727*
CHANIO     0000 185E      254   1516*
CHECK      0000 0D7A      423    428*
CHEXIT     0000 1804     1443   1458   1463*
CKPOINT    0000 17C4      453    477    495    523    554    582    598    633    692    719    733    744    765
                          789    827    842    865    886    922    941    965   1011   1026   1051   1079   1103
                         1125   1146   1205   1252   1439*
CLEAR1     0000 17B6     1412   1429*
CLEAR2     0C00 17BE     1428   1431*
CLEARPSW   0000 173E      165    407    483    501    527    530    558    586    589    602    605    641    658
                          665    697    702    709    718    732    743    755    785    807    814    826    852
                          885    902    909    921    940    952    992   1016   1036   1069   1113   1145   1226
                         1251   1270   1390*
CLEARX     0000 1760     1404   1407*
CON2ND     0000 1B16      180    186   1348   1731*
CONCMD     0000 1B0C     1153   1157   1309   1349   1722*
CONV1      0000 1834     1492   1494*
CONVR      0000 1822     1482   1485   1488*  1499
CONVR2     0000 1812     1480*  1548
```

CHKSUM

Name		Addr	Ref												
CONVR4	0000	1818	1483*												
CONVR6	0000	181E	342	1486*											
CPUNO	0000	1B04	199	205	462	621	672	786	993	1003	1046	1100	1202	1712*	
CRLFM	0000	18EC	1574*												
CRT2ND	0000	1B18	1732*												
CRTADR	0000	0A12	157*												
CRTCMD	0000	1B0E	1724*												
DELAY	0000	1810	1442	1467*											
DEVERR	0000	186A	270	1148	1522*										
DISINC	0000	1B23	382	1448	1740*										
DISNORM	0000	1B22	1531	1543	1739*										
DLY	0000	17E6	1452*	1455											
DO.AGN	0000	15FE	1262*	1264											
ENTRY1	0000	0A1C	153	163*											
ENTRY2	0000	0A20	164*												
ERNOCH	0000	18F6	1547	1581*											
ERRF6	0000	1860	1505	1507	1513	1515	1517*								
ERRINT	0000	186C	1517	1519	1521	1525*									
ERRMSG	0000	18EC	1549	1573*											
ERRMSGZ	0000	18F9	1550	1584*											
ERRNO	0000	1B00	391	1526	1532	1540	1544	1546	1710*						
ERROR	0000	1896	432	458	482	500	529	560	588	607	660	712	758	778	818
			856	878	913	956	978	1018	1038	1071	1090	1115	1136	1192	1238
			1272	1539*											
ERRORB	0000	18AA	1536	1546*											
FANOUT	0000	0D20	393	398*											
FINDMAC	0000	0BD2	292	298*											
FOUNDTOP	0000	0BB0	283	288*											
GETCPU	0000	0A24	163	165*	214	296									
GETMTOP	0000	0B8C	217	277*											
GETSUB1	0000	0CC0	164	371*	373	397									
GETSUBT	0000	0C72	336	347*	438	1552									
HCOR2	0000	0C84	354*	360											
HCOR3	0000	0C8A	355	357*											
HCORE32	0000	0C76	349*												
ILGINT	0000	1846	234	1407	1506*										
IMPTOP	0000	00001													
IO	0000	0A10	156*	167	171	175	177	179	185	1150	1152	1306	1308	1345	1350
			1359	1379	1384										
IO.00	0000	0A34	169	171*											
IO.10	0000	0A40	173	175*											
IO.20	0000	0A60	184*												
IO.30	0000	0A78	191*												
IOLIST	0000	1B0C	176	1343	1380	1385	1717*								
KEY0	0000	0A90	199*	1296											
KEY1	0000	0AA2	202	205*											
KEY2	0000	0AC2	207	209	216*										
KEYERR	0000	0AB2	204	210*											
LADC	0000	0002													
LCORE32	0000	0ACC	220*	348											
LDWT	0000	00C4	96*	99											
LEADER	0000	009E	80*	84											
LOAD	0000	00A8	85*	93											

CHKSUM

LP2ND	0000 1B1C	1734*										
LPADR	0000 0A16	159*										
LPCMD	0000 1B12	1726*										
MACASCII	0000 1928	341	1596*									
MACINT	0000 185A	257	1514*									
MACMSG	0000 1902	333	1587*									
MACMSG2	0000 1914	343	1591*									
MACMSG2Z	0000 192F	344	1598*									
MACMSGZ	0000 1915	334	1593*									
MACSTAT	0000 1AF8	332	340	512	543	572	683	1049	1160	1207	1256	1708*
MALFLAG	0000 1B06	219	300	1509	1713*							
MALFTN	0000 184A	237	1276	1508*								
MALFTN1	0000 1856	1510	1512*									
MATCH	0000 180E	1457	1466*									
MCRBUS	0000 0A1A	161*										
MEMTOP	0000 1AFC	288	352	410	1709*							
MIC2ND	0000 1B20	1736*										
MICBUS	0000 1B16	1728*										
MN	0000 0092	77*	1835	1857								
NOCORE	0000 0BC2	293*										
NOCORMSG	0000 1954	293	1607*									
NOCORMSZ	0000 1969	294	1612*									
NOERMSG	0000 18F8	435	1582*									
NOERMSZ	0000 1903	436	1589*									
NOERR	0000 0D3C	407*	609	981	1239	1279						
NOTRANS	0000 19E4	515	517	544	546	573	684	686	1650*			
OLDPSW	0000 1AA8	72	249	1399	1410	1431	1692*					
ORIGIN1	0000 0A00	74	153*	1828	1858							
PASLFLG	0000 1B08	188	1311	1346	1382	1387	1714*					
PASLFLG1	0000 1B0A	187	1386	1715*								
PASLFLG2	0000 1B0B	181	1381	1716*								
PASRQ2S	0000 1B0D	1313	1719*									
PATCHES	0000 19A8	353	1640*									
PRINT	0000 16BA	196	213	374	396	1008	1065	1109	1168	1214	1343*	1383
PRINTL	0000 1718	295	335	345	437	1379*	1551					
PRINTP	0000 172C	1384*										
PRNOER	0000 0D86	418	435*									
PROGTOP	0000 1C03	75	278	351	408	1816*	1830	1859				
PRT1	0000 16CE	1347	1349*									
PRT2	0000 16D2	1350*	1365									
PRT3	0000 16EE	1359*										
PRTSUBT	0000 18C6	371	1557*									
PRTSUBZ	0000 18D5	372	1562*									
PURETOP	0000 0000P											
QUESTN	0000 18D4	211	394	1561*								
QUESTNZ	0000 18D9 ·	212	395	1566*								
R0	0000 0000	48*	165	218	218	219	228	229	230	231	232	233	236	239
		242	245	246	253	256	259	266	305	306	307	308	313	317
		320	322	325	327	331	332	338	350	357	407	421	430	472
		483	501	521	522	527	530	552	553	558	579	580	581	586
		589	602	605	641	652	652	658	665	671	675	676	688	689
		697	702	709	718	732	743	755	785	797	798	807	814	826
		852	885	902	909	921	940	952	992	993	994	1016	1030	1036

CHKSUM

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                        1058  1059  1069  1083  1100  1101  1113  1129  1145  1164  1165  1202  1203
                        1210  1211  1226  1251  1270  1288  1290  1293  1310  1311  1324  1327  1333
                        1334  1346  1397  1413  1429  1432  1440  1446  1449  1451  1452  1453  1464
                        1488  1495  1508  1508  1527  1529  1541  1546  1632  1633  1825  1826  1842
                        1846  1852  1863  1864  1865  1871  1873  1874
R1    0000 0001          49*   74    85    86    88    93   167   168   170   175   176   184   185
                         186   192   193   221   223   224   225   234   235   237   238   240   241
                         243   244   247   248   249   250   251   252   254   255   257   258   261
                         262   263   264   266   267   268   271   272   273   278   279   280   280
                         281   282   284   285   286   288   291   314   315   351   354   356   357
                         358   359   367   369   381   382   383   384   385   408   418   419   421
                         424   425   451   452   474   475   493   494   519   520   550   551   577
                         578   621   622   666   667   672   673   677   678   721   722   723   786
                         787   795   796   799   800   829   830   831   888   889   894   895   924
                         925   926   927  1003  1004  1009  1010  1032  1046  1047  1060  1062  1085
                        1105  1106  1131  1148  1149  1152  1154  1155  1156  1158  1159  1254  1255
                        1262  1263  1273  1273  1275  1287  1294  1294  1298  1379  1380  1384  1385
                        1407  1408  1414  1430  1447  1448  1449  1450  1451  1530  1531  1533  1542
                        1543  1545  1617  1618  1826  1828  1832  1834  1837  1838  1841  1841  1842
                        1849  1849  1851  1854  1858  1860  1863  1867
R10   0000 000A          58*  724   735   746   774   832   848   874   933   947   974  1422
R11   0000 000B          59*  194   211   279   284   289   290   293   333   343   371   394   435
                        1006  1063  1107  1166  1212  1362  1363  1364  1366  1369  1372  1423  1504
                        1506  1509  1512  1514  1516  1518  1520  1522  1525  1526  1528  1549
R12   0000 000C          60*  195   212   290   294   334   344   372   395   436   473   725   736
                         747   773   833   849   873   934   948   973  1007  1064  1108  1167  1169
                        1170  1181  1182  1185  1213  1215  1216  1227  1228  1231  1364  1424  1550
R13   0000 000D          61*  362   363   366   369   370   412   413   415   426   431   457   481
                         499   528   559   587   606   659   679   680   690   691   698   699   703
                         704   710   711   726   727   737   738   739   748   749   752   756   757
                         769   775   776   791   792   801   810   811   815   816   834   835   846
                         847   853   854   869   875   876   890   891   896   905   906   910   911
                         931   932   936   945   946   949   953   954   969   975   976  1017  1037
                        1070  1089  1114  1135  1183  1187  1191  1229  1233  1237  1271  1425  1540
R14   0000 000E          62*  198   281   282   295   335   342   345   353   354   373   376   415
                         419   437   561   705   707   771   871   971  1184  1189  1230  1235  1291
                        1296  1297  1316  1318  1321  1388  1409  1410  1411  1426  1497  1548  1551
R15   0000 000F          63*  196   213   217   275   348   356   374   396   416   417   424   563
                         656   706   773   873   973  1008  1065  1109  1168  1214  1289  1335  1353
                        1355  1358  1375  1383  1427  1459  1460  1460  1461  1462  1463  1848  1855
                        1868  1875
R2    0000 0002          50*   70    89    95   171   172   174   177   178   179   180   222   223
                         352   359   368   370   409   512   514   516   518   522   543   545   547
                         549   553   572   574   576   581   681   682   683   685   687   689   793
                         794   892   893  1034  1049  1053  1055  1057  1059  1087  1133  1153  1154
                        1155  1157  1158  1160  1162  1163  1165  1207  1209  1211  1267  1269  1274
                        1275  1277  1308  1309  1310  1313  1314  1324  1327  1330  1331  1333  1345
                        1348  1349  1350  1351  1359  1360  1362  1370  1372  1373  1381  1382  1386
                        1387  1415  1442  1454  1829  1838  1840  1864
R3    0000 0003          51*   75    76   179   183   185   190   260   262   270   271   299   300
                         301   302   303   304   312   319   324   329   341   410   411   462   463
                        1266  1267  1314  1315  1317  1319  1320  1322  1351  1352  1354  1356  1357
                        1360  1370  1373  1416  1444  1445  1445  1450  1456  1456  1457  1480  1483
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		1486	1494	1498	1532	1533	1544	1545	1547	1830	1850	1859	1876	1877
R4	0000 0004	52*	78	79	80	82	90	92	180	181	182	182	183	186
		187	188	189	189	190	199	200	201	203	205	206	208	316
		317	319	321	322	324	326	327	329	338	339	340	377	379
		386	387	388	390	391	392	393	1259	1259	1262	1263	1264	1265
		1265	1269	1286	1292	1293	1417	1481	1484	1487	1496	1831	1833	1835
		1839	1839	1840	1857	1861								
R5	0000 0005	53*	80	82	83	83	85	86	87	90	92	98	654	1260
		1306	1307	1308	1309	1325	1328	1331	1343	1344	1345	1348	1349	1350
		1359	1367	1418	1488	1489	1490	1491	1493	1494	1832	1833	1860	1861
		1862												
R6	0000 0006	54*	77	87	94	310	313	318	320	323	325	328	331	459
		459	460	484	502	531	590	603	636	649	695	729	750	753
		764	764	767	803	805	809	837	839	845	864	864	867	898
		900	904	929	937	944	964	964	967	990	1014	1025	1025	1028
		1067	1078	1078	1081	1111	1124	1124	1127	1174	1220	1261	1268	1277
		1398	1398	1399	1400	1401	1402	1403	1404	1405	1431	1441	1441	1461
		1463	1528	1535	1616	1616	1633	1844	1845	1846	1851	1852	1862	1865
		1877	1878											
R7	0000 0007	55*	96	97	98	309	310	318	323	328	453	477	495	523
		554	582	598	633	635	636	648	649	692	694	695	719	728
		729	733	744	751	765	789	802	803	804	805	808	809	827
		836	837	838	839	842	844	845	865	886	897	898	899	900
		903	904	922	928	929	935	937	941	943	944	965	989	990
		1011	1013	1014	1026	1051	1066	1067	1079	1103	1110	1111	1125	1146
		1171	1174	1205	1217	1220	1252	1419	1444	1465	1534	1535		
R8	0000 0008	56*	88	89	94	95	364	365	515	516	517	518	544	545
		546	547	548	549	573	574	575	576	630	631	632	642	684
		685	686	687	1054	1055	1056	1057	1150	1151	1152	1153	1157	1161
		1162	1163	1208	1209	1256	1258	1263	1269	1420	1462	1878		
R9	0000 0009	57*	643	645	646	1421								
RD.AGN	0000 160E	1266*	1278											
RD1A	0000 167A	1312	1314*	1323										
RD2A	0000 16A4	1326	1328*											
RD3A	0000 16B4	1329	1334*											
READ1	0000 165E	1289	1306*											
READASC	0000 163A	198	376	1286*										
REG0	0000 1B84	1527	1783*											
REG1	0000 1B88	1784*												
REG2	0000 1B8C	1785*												
REG3	0000 1B90	1786*												
REG4	0000 1B94	1787*												
REG5	0000 1B98	1788*												
REG6	0000 1B9C	1789*												
REG7	0000 1BA0	1790*												
REG8	0000 1BA4	1791*												
REG9	0000 1BA8	1792*												
REGA	0000 1BAC	1793*												
REGB	0000 1BB0	1794*												
REGC	0000 1BB4	1795*												
REGD	0000 1BB8	1796*												
REGE	0000 1BBC	1797*												
REGF	0000 1BC0	1798*												

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REGF0	0000 1BC4	430	1529	1800*									
REGF1	0000 1BC8	1801*											
REGF2	0000 1BCC	1802*											
REGF3	0000 1BD0	1803*											
REGF4	0000 1BD4	1804*											
REGF5	0000 1BD8	1805*											
REGF6	0000 1BDC	1806*											
REGF7	0000 1BE0	1807*											
REGF8	0000 1BE4	1808*											
REGF9	0000 1BE8	1809*											
REGFA	0000 1BEC	1810*											
REGFB	0000 1BF0	1811*											
REGFC	0000 1BF4	1812*											
REGFD	0000 1BF8	1813*											
REGFE	0000 1BFC	1814*											
REGFF	0000 1C00	1815*											
REGSAV	0000 1B84	73	251	1397	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422
		1423	1424	1425	1426	1427	1429	1430	1440	1464	1541	1782*		
RESPONSE	0000 0C52	314	338*										
SEGMM	0000 1626	1254	1273*										
SHIFT	0000 0D06	389	391*										
SPWR1	0000 0D50	413*	427										
SPWR2	0000 0D60	414	418*	422									
SPWR3	0000 0D70	420	424*										
SUBT1	0000 0D96	399	441*										
SUBT2	0000 0F30	400	620*										
SUBT3	0000 1328	401	988*										
SUBT4	0000 15D8	402	1242*										
SVCERR	0000 1866	260	1520*										
SYSCLR	0000 0AD2	223*	226										
T1END	0000 0F2C	513	604	609*									
T1HIGH1	0001 0E16	140*	1626										
T1HIGH2	0001 1000	141*	363	1643									
T1HILOC1	0001 100A	142*	563										
T1P1	0000 0D96	451*											
T1P1A	0000 0DB2	459*	1622										
T1P2	0000 0DC8	472*											
T1P2A	0000 0DEC	483*	1624										
T1P3	0000 0DFA	493*											
T1P3A	0000 0E16	140	501*										
T1P4	0000 0E24	512*											
T1P4A	0000 0E64	530*	1694										
T1P5	0000 0E70	543*											
T1P5A	0000 0EB2	561*	1617										
T1P6	0000 0EC0	464	572*										
T1P6A	0000 0EFC	148	589*	1698									
T1P6RTN	000E 0EFC	148*											
T1P6RTN2	000E 0F14	149*											
T1P7	0000 0F06	598*											
T1P7A	0000 0F14	149	602*	1628									
T1PSW1	0001 5000	143*	365	455	1646								
T1PSW2	0001 5008	144*	479	484									
T1PSW3	0001 5010	145*	497	502									

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T1PSW4	0000 1AB0	525	531	1693*		
T1PSW5	0000 1AB8	556	561	1695*		
T1PSW6	0000 1AC0	584	590	1697*		
T1PSW7	0001 5018	146*	600	603		
T1R1	0000 0DAC	451	457*	461		
T1R2	0000 0DE6	474	481*	485		
T1R3	0000 0E10	493	499*	503		
T1R4	0000 0E5A	519	527*	532		
T1R5	0000 0EA8	550	558*	562	564	
T1R6	0000 0EF2	577	586*	591		
T1R7	0000 0F22	605*				
T2END	0000 1324	981*				
T2P1	0000 0F3C	630*				
T2P10	0000 12F8	924	964*			
T2P11	0000 1324	788	947	980*		
T2P2	0000 0FAC	623	657	665*		
T2P2A	0000 0FCC	674	676*			
T2P2B	0000 102A	702*	1699			
T2P2PSW	0000 1AC8	700	1699*			
T2P3	0000 1050	706	718*			
T2P3A	0000 1084	724	732*			
T2P3B	0000 10AA	735	743*			
T2P3PSW	0000 1AD0	740	1700*			
T2P4	0000 10E2	721	764*			
T2P5	0000 1110	746	785*			
T2P5PSW	0000 1AD8	812	1701*			
T2P6	0000 1184	826*	1701			
T2P6A	0000 11BA	832	842*			
T2P6PSW	0000 1ADC	850	1702*			
T2P7	0000 11EA	829	864*			
T2P8	0000 1216	848	885*			
T2P8PSW	0000 1AE0	907	1703*			
T2P9	0000 127C	921*	1703			
T2P9B	0000 12C0	933	940*			
T2P9PSW	0000 1AE4	950	1704*			
T2R1	0000 0FA2	644	647	653	655	658*
T2R10	0000 131A	968	970	972	975*	
T2R2	0000 1042	677	709*			
T2R3	0000 10D4	731	742	747	751	755*
T2R3A	0000 1080	725	731*			
T2R3B	0000 10A6	736	742*	1700		
T2R4	0000 1106	768	770	772	775*	
T2R5	0000 1176	799	814*			
T2R6	0000 11DC	841	849	852*	1702	
T2R6A	0000 11B6	833	841*			
T2R7	0000 120C	868	870	872	875*	
T2R8	0000 126E	894	909*			
T2R9	0000 12EA	939	948	952*	1704	
T2R9A	0000 12BC	934	939*			
T3END	0000 15D4	1050	1204	1236	1239*	
T3MSG1	0000 192E	1006	1063	1107	1597*	
T3MSG1Z	0000 193B	1007	1064	1108	1602*	
T3P1	0000 134C	1006*				

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T3P2	0000 1378	1009	1025*											
T3P3	0000 13AA	995	1035	1046*										
T3P4	0000 1404	1060	1078*											
T3P5	0000 1432	1088	1100*											
T3P6	0000 146A	1105	1124*											
T3P7	0000 1498	1005	1048	1102	1134	1145*								
T3P8	0000 1546	1190	1202*											
T3R1	0000 136E	1016*	1032											
T3R2	0000 13A0	1029	1031	1033	1036*									
T3R3	0000 13FA	1069*	1085											
T3R4	0000 142C	1082	1084	1086	1089*									
T3R5	0000 1460	1113*	1131											
T3R6	0000 1492	1128	1130	1132	1135*									
T3R7	0000 1540	1186	1188	1191*										
T3R8	0000 15CE	1232	1234	1237*										
T4END	0000 1636	1257	1279*											
TABLE	0000 1AE8	245	246	247	792	794	795	831	869	1707*				
TABLE2	0001 5020	147*	291	666	680	682	723	769	888	891	893	927	969	1647
TABLE3	0000 1B24	1262	1742*											
TEMP1	0000 1B02	691	699	704	711	727	738	749	757	776	801	811	816	835
		847	854	876	896	906	911	932	946	954	976	1711*		
TEST4	0000 15D8	1250*												
TESTNO	0000 18F5	193	386	1580*										
TITEND	0000 18ED	195	1576*											
TITLE	0000 18D8	194	1565*											
TOP2	0000 0B90	279*	287											
TRANSFW	0000 1A24	575	1054	1056	1669*									
TRANSHW	0000 1A24	1668*												
TSTNOCH	0000 18F4	1579*												
TTY2ND	0000 1B1A	1733*												
TTYADR	0000 0A14	158*												
TTYCMD	0000 1B10	1725*												
USDTAB	0000 19A4	412	1636*											
USDTBND	0000 19E4	413	1648*											
WD1	0000 170C	1368	1370*											
WRTCHK	0000 0D40	408*												
X9C	0000 0B62	262*	265											
XBC	0000 0B6E	266*	269											
XDOB	0000 0B7E	271*	274											
XDATA1	0000 196C	362	1616*											
XDATA2	0000 1978	364	1621*											
XDATA3	0000 1998	366	1630*											
XINTHW	0000 1862	240	1518*											