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DIAGNOSTIC PROGRAM MANUAL

SIGMA 5 AND 7 INTERRUPT TEST

PROGRAM NO. 704143C

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RELATED PUBLICATIONS

Publication Title	Publication No.
SDS Sigma 5 Computer, Reference Manual	900959
SDS Sigma 7 Computer, Reference Manual	900950
Sigma 7 Computer, Technical Manual	901060
Sigma 5 Computer, Technical Manual	901172
Sigma Symbol and Meta-Symbol, Reference Manual	900952
Sigma 5 and 7 Diagnostic Relocatable Loader, Diagnostic Program Manual	900972

SECTION I
INTRODUCTION

1-1 SCOPE OF MANUAL

This manual describes the Sigma 5 and 7 interrupt diagnostic program. General information regarding various subroutines is included so that, by using the text of the manual and the program listing, diagnostic techniques such as address SYNC may be implemented.

Loading and operating instructions are included, as well as a complete assembly listing. Also included is a list of publications from which more detailed information on related subjects can be obtained.

1-2 PROGRAM OBJECTIVES

The purpose of this program is to test the Sigma 5 and 7 interrupt system for various failures and to report the results of these tests. Specific tests verify whether each interrupt level presents the correct address to the CPU, verify the priority of the levels implemented, and make running checks to assure that failing conditions of an intermittant nature do not go undetected. Conditions that are considered failures are as follows:

a. Unexpected interrupts

b. Expected interrupts that fail to occur

c. Interrupts that present addresses outside the range X'50' through X'13F'

d. Interrupts that occur out of priority sequence

e. Interrupts that occur more than once per trigger.

Overseer-type checks are used wherever possible to detect conditions such as a. an interrupt level breaking into the active state of the highest priority interrupt implemented, or b. an interrupt level presenting an address within the current register page.

1-3 GENERAL SPECIFICATIONS (See table 1-1)

Table 1-1. General Specifications

Computer Configuration	Sigma 5 or 7 computer with 8K words of memory
Required Equipment	A card reader or paper tape reader; a KSR/ASR printer
Optional Equipment	None
Prerequisites	The AUTO diagnostic must have been run error free
Storage	8K words
Source Language	Metasymbol
Program Media	Paper tape or cards

SECTION II
OPERATING PROCEDURE

2-1 PROGRAM LOADING PROCEDURE

The standard fill procedure is used to load program. See page 2 of the program listing, page 4-2, for successful load indications.

2-2 LOADING OPTIONS

This program should be run with the WATCHDOG TIMER switch set to NORMAL, the PARITY ERROR MODE switch set to CONT, the ALARM switch ON, and SENSE switches 1 and 2 at 0, at least until the program is loaded.

2-3 SUCCESS/ERROR INDICATIONS

If a watchdog timer trap occurs, an error interrupt from X'46' will be indicated. If a memory parity error occurs, an unexpected interrupt from X'56' will occur. If error printing is suppressed by setting control bit 0 to a one, the ALARM will go on each time a failure is detected. If very few or highly intermittant failures occur, the alarm indication may not be visible or audible.

If SENSE switches 1 or 2, or both, are set to 1 as the program is loading, waits will occur in the load process, as described in the diagnostic loader manual (No. 900972).

2-4 PROGRAM OPERATING PROCEDURE

After loading, the program runs as follows:

a. The address of every interrupt that responds to a WD instruction is verified.

b. The sequence of priorities is determined and the following checks are made:

1. All interrupts that occurred during the address test occur during this test.

2. No interrupt occurred during this test that did not occur during the address test.

c. During tests a and b, above, overall checks, as described in section I, paragraph 1-2, c and e, are carried out.

d. The priority of interrupts received (step b, above) is printed out on the KSR/ASR printer and verification or correction must be made by the operator.

e. After verification or correction of the priority sequence, a basic test of the entire interrupt system is carried out with all patterns tested under all eight combinations of the inhibit bits in the PSD.

The patterns can be: All levels armed-disabled, triggered, and enabled, all levels armed-disabled, triggered, even numbered levels enabled, all levels armed-disabled, triggered, odd-numbered levels enabled, all levels armed-disabled, even numbered levels triggered, all levels enabled, and so forth.

This pattern of "all", "odd", "even", even-odd pairs, and odd-even pairs, is continued for all 343 combinations of X'FFFF', X'5555', X'AAAA', X'9999', X'CCCC', X'3333', X'6666', taken three at a time with all checks made.

f. A routine is then entered that generates every possible combination of armed-disabled, triggered, enabled, inhibited, and not inhibited condition that can occur within the interrupt system implemented. It is not expected that this routine will be allowed to cycle, even complete one pass, on a machine with many interrupt levels implemented, since the run time increases by binary powers with each additional interrupt implemented.

The run time for a given number of patterns can be reduced considerably by setting SENSE switch 1 to ON. This causes a bypass of tests for optional functions, such as setting control bits, entering routines, and so forth.

This pattern generator function is included to allow detection of highly intermittant failures or failures that occur only under unique conditions of the interrupt system. The loop on error and dump pattern on error facilities used in conjunction with the pattern generator will aid in defining unique failing conditions.

The above flow can be varied by setting the control bits described in the preface to the program listing. Such functions as loop on error, halt on error, loop on manually entered pattern, dump pattern on error, loop on various patterns, and so forth, are available via the control bits. The control exercised by the control panel sense switches are indicated in the preface to the program listing, section IV.

2-5 RESTART PROCEDURE

Other than clearing the waits described in the responses to program messages, no restart of this program, as loaded, is

programmed. If a condition arises in which the operator feels a restart is necessary, the program should be reloaded. If it is absolutely necessary to restart the program without reloading, a manual transfer to the address of the label INITAUTO may be tried.

2-6 TEST DIRECTIVES

Test directives as such do not exist for this program. Optional functional controls via sense switches and control bits are described in detail in the program listing preface.

2-7 SUCCESS INDICATIONS

Successful load of this program is indicated as described on page 1 of the program listing.

The M1, ADDRESSES VERIFIED and M5, SUCCESS printouts are indications of the passage of certain tests, as described in the program listing under message description. These messages serve mainly as milestones so that, should some unexpected hang-up occur, an indication of the point reached is available. In the event of a failure, an error message could replace either or both of the above messages.

The printout following the M6 PRI SEQ message varies according to the number of levels implemented and the priority in which they are cabled, with each change in WD group starting a new line.

The response to the M6 message is detailed in the preface to the program listing.

Note

No attempt should be made to delete the unassigned levels in WD group 0 from the sequence. If they appear in the printout, they must respond to WD instructions; therefore, to delete them from the sequence would cause false failure indications.

2-8 FAILURE INDICATIONS

To save output time, most messages from this program have been condensed to message flags (with detailed text defining the flags in the program listing) rather than having lengthy outputs on a failure.

Certain failures generate unique flags, but 13 failing conditions are defined under the M2 error flag. This flag indicates that one or more entries have been made in the error stack and that the stack scanning routine is dumping the errors. This stacking is done in lieu of dumping failure information immediately upon detection of the failure. This is done to prevent an attempt to perform I/O operations while interrupts are active or pending.

The failure information generated by this program in the event of failure detection is intended to be used in combination, as presented, rather than as isolated particles. If, for instance, a failure output indicates that an unexpected interrupt occurred from address X'75', and an expected interrupt from address X'74' failed to occur; this, in most cases, means that the interrupt level expected to interrupt at location X'74' has picked a bit in the address it presented to the CPU. This conclusion is verified by the fact that, at some point, there is an indication that more than one interrupt occurred for a single trigger at address X'75', if the failure is solid.

Since, in the event of multiple failure indications, failures may affect the interrupt addresses presented to the CPU, the address information is considered primary. Since information such as expected sequence is extracted from the address that a level presents, if any kind of addressing failure is indicated, other failure information should be viewed critically for possible false indications. For example, in a test pattern, interrupts might be expected from addresses X'64', X'66', and X'6A'. It may be that, due to a failure, the following errors were indicated:

a. Unexpected interrupt from X'62'

b. X'64' and X'66' occurred before X'62'

c. Expected interrupt from X'6A' failed to occur

In this case, the error in sequence indicated should be ignored since, as in the preceding example, other information available indicates that X'6A' has dropped a bit in its address.

SECTION III
PROGRAM DESCRIPTION

3-1 GENERAL

This section contains a general description of the function of certain major routines used to accomplish the program outputs and results.

Figure 3-1 is a flow chart that indicates the program flow if the program is loaded with no control bits entered. The program flow may be altered as described in the control bit explanations.

3-2 TERMINATING FAILURES

The nature of certain failures is such that, should the failure occur, this program can no longer continue. Most of these failures involve the highest priority interrupt implemented.

The program outputs an error message and enters an endless loop, if one of the following conditions occurs:

a. When all levels in WD group 0 are armed, enabled and triggered, while computing the highest priority level implemented, no interrupts occur. A loop is entered to arm-disable, trigger, and enable all levels in WD group 0. If any interrupts do occur, they will be ignored.

b. An address other than X'52' or X'54' is presented as the address of the highest priority interrupt implemented. The program goes into a loop to arm-disable, trigger, and enable count pulse 1 and count pulse 3 interrupts. All interrupts are ignored.

c. The highest priority interrupt implemented presents an address other than the address it presented when computed. The program goes into a loop to arm-disable, trigger, and enable only the highest priority interrupt implemented.

d. If a WD instruction addressing WD group 1 generates an interrupt, the program enters a loop addressing all levels to arm-disable, trigger, and enable, specifying a WD group of one. Any interrupts that occur are ignored.

3-3 SUBROUTINES, GENERAL

The subroutines SETEXP, IGEN, and CHKPATT are used in concert to prepare for, to trigger, and to check, respectively, the patterns of interrupts used in most of the test routines.

SETEXP generates a field of data predicting the levels from which interrupts are expected to occur. This data is extracted from the input to the IGEN routine, to determine which levels will be armed-disabled, triggered, and enabled. The inhibit bit configuration under which the interrupts will occur is then used to complete the expected field.

IGEN sets the highest priority interrupt implemented into the active state via SETHI, then addresses the levels contained in its input fields by the corresponding WD instructions. The inhibit bits desired are set, the interrupt handling routine exit is set to CHKPATT, and exit is taken.

CHKPATT records the sequence in which the interrupts generated occur, checks for more than one interrupt per level, checks for unexpected interrupts as well as the absence of expected interrupts, verifies that no level occurs before a level of higher priority, and outputs any failures that occur.

Wherever possible, before interrupts are allowed to occur, as many registers as are available are loaded with XPSD instructions to prevent a hang-up due to the presentation by an interrupt level of an address between 0 and 15. If such an address is presented, an error message is printed out indicating the address presented.

The common interrupt handling routine extracts its output from the first 15 bits of the PSD stored by the common XPSD instruction at CMPINTAD and the zero or nonzero state of the register page pointer stored. This information is used to determine the address from which an interrupt occurred, as follows:

The bits corresponding to the condition code setting, the floating point masks, the decimal trap mask, and the fixed point overflow mask, stored in the PSD store location CMPAD, are compressed into a contiguous, nine-bit field. The halfword containing the stored register page pointer is then tested for a zero content. If the content is zero, the nine-bit field contains the correct address and exit is taken. If the content is not zero, a bias of 248 (X'F8') is added to the nine-bit field, and exit is taken.

The bias of 248 is determined by the fact that XPSD instructions from X'108' to X'1FF' are coded to cause the loading of a new register page pointer. The XPSD instructions from X'10' to X'107' are coded not to change the register page pointer, although addressing the same PSD locations as the XPSD instructions from X'108' to X'1FF'.

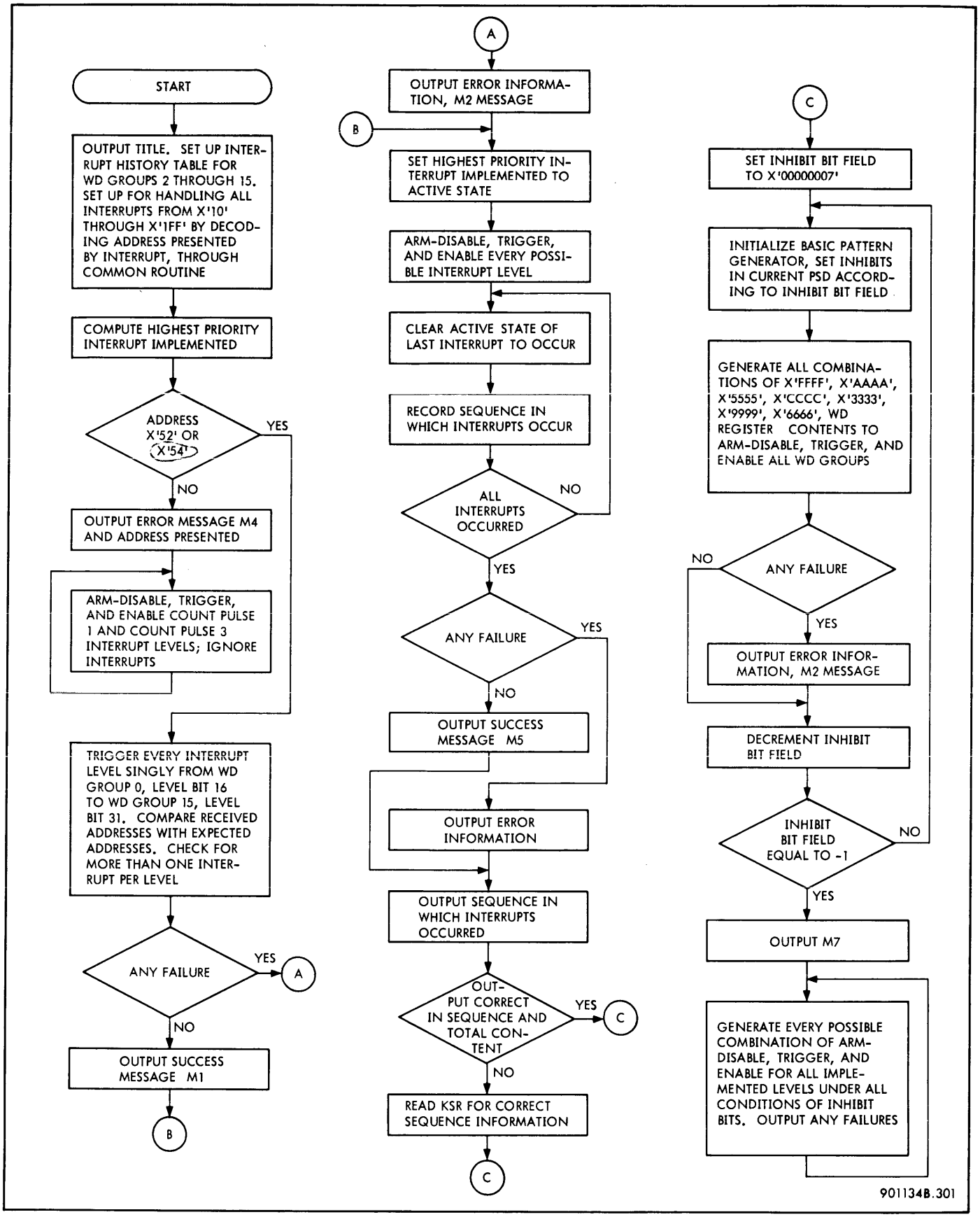

Figure 3-1. Sigma 5 and 7 Interrupt Test, Flow Chart

The subroutine SETPSDS encodes the required information and sets up the required XPSD instructions.

Any time the routine to set the highest priority interrupt, implemented into the active state (SETHI) is entered, the common interrupt handling routine exit address (ADRDCODE) is set to the address of a routine that handles any interrupt that occurs as a failure. This course is taken so that a level that can break into the active state of the highest priority level is detected as a failure. Just before the highest priority interrupt implemented is cleared from the active state, the routine generating the interrupts inserts the desired address in the indirect exit (ADRDCODE).

Each time SETHI is entered, the address of the highest priority interrupt implemented is compared to the address that it presented when originally computed. If the address does not match or if the interrupt fails to occur, the program prints out a failure message and goes into an endless loop, addressing only the level originally computed as the highest priority implemented.

SECTION IV

PROGRAM LISTING


```
*                                                                  *C
*                                                                  *C
*  REVISION C00                                                    *C
*                                                                  *C
*   'C' REVISION CHANGES ARE INDICATED BY *C IN COLUMNS 71 AND 72  *C
*   OF THE LISTING.                                                *C
*                                                                  *C
*   'C' REVISION CORRECTS THE MASKING OF THE RESPONCE FROM THE JX58 *C
*   TEST EQUIPMENT.                                                *C
*                                                                  *C
*
*        TABLE OF CONTENTS OF LISTING
*                                                                  *C
*  INFORMATION                                                     *C
*                                                                  *C
*  SUCCESSFUL LOAD INDICATION                                      *C
*                                                                  *C
*  GENERAL INTRODUCTION                                            *C
*                                                                  *C
*  SENSE SWITCH CONTROL                                            *C
*                                                                  *C
*  WD POINTER TO ADDRESS CROSS REFERENCE                           *C
*                                                                  *C
*  JX-58  TEST DESCRIPTION                                         *C
*                                                                  *C
*  RESPONSE AND MESSAGE DESCRIPTION                                *C
*                                                                  *C
*  CONTROL BIT DESCRIPTION                                         *C
*                                                                  *C
*  DESCRIPTION OF MANUAL ENTRY ROUTINE INPUT                       *C
*                                                                  *C
*  DESCRIPTION OF INTERPROCESSOR INTERRUPT TEST                    *C
*                                                                  *C
*  DESCRIPTION OF INTERRUPT HISTORY TABLE                          *C
*                                                                  *C
*                    * * * DELEATED PAGE DIRECTIVE * * *           *C
*  SUCCESSFUL LOAD AND EXECUTION OF THIS PROGRAM WILL BE INDICATED
```



```
*  BY THE FOLLOWING PRINT-OUT:
*
*
*    SIGMA 5/7 INTERRUPT DIAGNOSTIC                                *C
*    PROGRAM NO. 704143C00                                         *C
*    MANUAL NO. 901134C                                            *C
*
*    M1, ADDRESSES VERIFIED
*
*    M5, SUCCESS
*
*    M6
*    PRI SEQ
*    XX XX XX XX XX XX XX
*    XX XX XX XX
*    RESPOND, M6
*    REVERSE SS 2 IF SEQUENCE IS
*    COMPLETE AND IN ORDER
*
*    M7, ENTERING PATTERN GENERATOR
*
*
*  THE PRIORITY WHICH APPEARS IN THE 'M6' MESSAGE WILL VARY DEPENDING
*  ON THE NUMBER OF INTERRUPTS IMPLEMENTED, AND THE PRIORITY IN WHICH
*  THE LEVELS ARE CABLED.
*
*  POWER FAIL-SAFE INTERRUPTS HAVE BEEN ARBITRARILY ASSIGNED POINTERS
*  OF X'0E' AND X'0F' FOR PROGRAMMING CONVENIENCE. THEY CAN NOT BE
*  TRIGGERED BY WRITE DIRECT INSTRUCTIONS, SO THE APPEARANCE OF EITHER
*  OF THOSE TWO POINTERS WOULD ALWAYS BE A FAILURE INDICATION, PROBABLY
*  IN THE INTERRUPT ADDRESS LINES.
*                    * * * DELEATED PAGE DIRECTIVE * * *           *C
*  TO ACCOMPLISH MOST COMBINATION TESTS OF INTERRUPTS, THE HIGHEST
*  PRIORITY INTERRUPT IMPLEMENTED WILL BE TRIGGERED AND THE TRIGGERING
*  OF ALL OTHER INTERRUPTS WILL BE DONE BEFORE THE HIGHEST PRIORITY
*  INTERRUPT IS CLEARED. THIS WILL ALLOW CHECKING THE LARGEST NUMBERS
*  OF INTERRUPTS COMPETING FOR PRIORITY CONCURRENTLY.
```

```
                *
                *  TO HANDLE INTERRUPTS GENERATED DURING THE VARIOUS TESTS PERFORMED,
                *  A SET OF 496 XPSD INSTRUCTIONS IS GENERATED, FROM X'10' TO X'1FF'.
                *
                *  A SET OF 248 PROGRAM STATUS DOUBLEWORDS IS ALSO GENERATED, WITH THE
                *  ADDRESS OF THE XPSD INSTRUCTION ADDRESSING EACH PSD ENCODED INTO THE
                *  CC, FS, F2, FN, DM, AND AM BITS, AND A REGISTER PAGE POINTER OF 15.
                *
                *  THIS SET OF INSTRUCTIONS WILL ALLOW THE HANDLING OF ALL INTERRUPTS
                *  GENERATED, EVEN IF INCORRECT ADDRESSES ARE PRESENTED TO THE CPU
                *  FROM THE INTERRUPT LOGIC. THE ONE CASE WHICH IS NOT COVERED IS
                *  THE CASE IN WHICH AN INTERRUPT PRESENTS AN ADDRESS BETWEEN 0 AND
                *  X'0F'. SINCE THE INTERRUPT LOGIC ONLY PRESENTS 8 ADDRESS LINES TO
                *  THE CPU, WITH THE EXCEPTION NOTED, ALL INTERRUPTS WILL OCCUR WITH-
                *  IN THIS FIELD OF XPSD INSTRUCTIONS. THE EXCHANGE OF PROGRAM STATUS
                *  DOUBLEWORDS CAUSED BY THE EXECUTION OF ANY OF THESE INSTRUCTIONS
                *  WILL RESULT IN THE DECODING OF THE ADDRESS OF THE LEVEL WHICH
                *  GENERATED THE INTERRUPT. THIS ADDRESS IS THEN CROSS-CHECKED BY
                *  A ROUTINE WHICH EXTRACTS THE CORRECT ADDRESS FROM THE WD GROUP
                *  AND LEVEL OF THE INTERRUPT. A LEVEL WHICH PRESENTS AN ADDRESS
                *  BETWEEN 0 AND X'F' WILL GENERATE AN ERROR MESSAGE INDICATING
                *  THE ADDRESS WHICH WAS PRESENTED. IF THE FAILURE IS SOLID, AND THE
                *  ADDRESS PRESENTED IS EITHER 5 OR 9, A HANG-UP CONDITION WILL OCCUR.
                *
                *  IF THE ERROR MESSAGE INDICATED IS PRINTED OUT, AN INTERRUPT WHICH
                *  SHOULD HAVE OCCURRED WILL NOT BE RECORDED BY THE CHECKING ROUTINES.
                *  THIS WILL GENERATE ADDITIONAL ERROR INFORMATION WHICH SHOULD
                *  DIRECTLY INDICATE THE FAILING LEVEL(S).
                *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                *  IN INSTRUCTIONS REFERRING TO SENSE SWITCH CONTROL BY 'REVERSING'
                *  THE SWITCH REFERRED TO, THE INITIAL STATE OF THE SWITCH IS
                *  INCONSEQUENTIAL, AND THE OPPOSITE STATE WILL ACCOMPLISH THE
                *  RESULTS INDICATED.
                *
                *  AN 'IGNORED' INTERRUPT IS ONE WHICH IS CLEARED AS SOON AS ITS
                *  ADDRESS IS DECODED, WITH NO CHECKING PERFORMED.
                *
```



```
                *  GENERAL TEST PROCEDURE.
                *  1. TEST ADDRESSES PRESENTED TO CPU BY INTERRUPT LOGIC.
                *  2. CHECK SEQUENCE OF INTERRUPT PRIORITIES.
                *  3. TEST STABILITY AND INDEPENDENCE OF STATES OF THE
                *     INTERRUPT SYSTEM.
                *
                *  OPTIONAL FUNCTIONS AVAILABLE.
                *  1. LOOP ON FAILING CONDITION, ONCE DETECTED.
                *  2. LOOP ON JX-58 ROUTINE, WITH SUB-ROUTINE LOOP CONTROL.
                *  3. LOOP ON GENERATE ALL INTERRUPTS CONCURRENTLY. (NO CHECKING)
                *  4. LOOP ON INTERRUPTS GENERATED SINGLY, FROM WD GROUP ZERO,
                *     LEVEL BIT 16 TO WD GROUP 15 LEVEL BIT 31. (NO CHECKING)
                *  5. REVERSE OF 4, ABOVE.
                *  6. LOOP ON PATTERN ENTERED VIA KSR. (FULL CHECKING)
                *     THIS ROUTINE MAY BE SET UP TO TEST THE 7700 INTERPROCESSOR
                *     INTERRUPT FEATURE.
                *  7. SURPRESS ERROR PRINTING.
                *  8. PRESERVE UP TO 64 ERROR RECORDS IF ERROR PRINTING SURPRESSED.
                *  9. LOOP ON BASIC TEST GENERATOR.
                *
                *  SEE EXPANATIONS OF CONTROL BITS, BELOW, FOR ENTRY TO OPTIONAL
                *  ROUTINES, AND CONTROL OF LOOPS.
                *
                *  ALTHOUGH CONTROL BITS FOR ENTRY TO THE OPTIONAL ROUTINES MAY BE
                *  SET AS SOON AS THE PROGRAM IS LOADED, THEY WILL NOT BE TESTED
                *  UNTIL THE INTERRUPT PRIORITY SEQUENCE HAS BEEN VERIFIED OR
                *  CORRECTED.
                *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                *  SENSE SWITCH CONTROL.
                *
                *  SS1   CONTROLS EXIT FROM OPTIONAL ROUTINES. SEE CONTROL BIT
                *        EXPLANATIONS FOR CONTROL BITS 4, 5, 6, AND 7.
                *
                *        SS1 SET ON WILL APPECIABLY DECREASE THE EXECUTION TIME
                *        FOR A SINGLE PASS OF THE INTERRUPT PATTERN GENERATOR.
                *        IT WILL HAVE TO BE SET OFF TO MAKE ANY OPTIONS, SUCH
                *        AS CHANGING CONTROL BIT SETTINGS VIA KSR, AVAILABLE.
```

```
                        *
                        *  SS2,SS3        RESPONSE TO MESSAGES. SEE EXPLANATION OF
                        *                 'RESPOND,MN' OUTPUT.
                        *
                        *                 IF JX-58 ROUTINE IS ENTERED, SS 2 ON WILL CAUSE
                        *                 LOOP ON FIRST SUBROUTINE, SS 3 ON WILL CAUSE LOOP
                        *                 ON SECOND SUBROUTINE.
                        *
                        *  SS4    EACH TIME SS4 IS REVERSED THE KSR WILL BE ADDRESSED
                        *         FOR CONTROL BIT SETTINGS, UNLESS THE INTERRUPT PATTERN
                        *         GENERATOR HAS BEEN ENTERED, AND SENSE SWITCH ONE IS SET
                        *         ON.
                        *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                        *  WD POINTER TO INTERRUPT ADDRESS CROSS REFERENCE
                        *LEVEL X0  X1  X2  X3  X4  X5  X6  X7  X8  X9  XA  XB  XC  XD  XE  XF
                        * GROUP
                        *  0X  052 053 054 055 056 057 058 059 05A 05B 05C 05D 05E 05F 05D 051
                        *
                        *  2X  060 061 062 063 064 065 066 067 068 069 06A 06B 06C 06D 06E 06F
                        *
                        *  3X  070 071 072 073 074 07  076 077 078 079 07A 07B 07C 07D 07E 07F
                        *
                        *  4X  080 081 082 083 084 08  086 087 088 089 08A 08B 08C 08D 08E 08F
                        *
                        *  5X  090 091 092 093 094 09  096 097 098 099 09A 09B 09C 09D 09E 09F
                        *
                        *  6X  0A0 0A1 0A2 0A3 0A4 0A  0A6 0A7 0A8 0A9 0AA 0AB 0AC 0AD 0AE 0AF
                        *
                        *  7X  0B0 0B1 0B2 0B3 0B4 0B  0B6 0B7 0B8 0B9 0BA 0BB 0BC 0BD 0BE 0BF
                        *
                        *  8X  0C0 0C1 0C2 0C3 0C4 0C  0C6 0C7 0C8 0C9 0CA 0CB 0CD 0CD 0CE 0CF
                        *
                        *  9X  0D0 0D1 0D2 0D3 0D4 0D  0D6 0D7 0D8 0D9 0DA 0DB 0DC 0DD 0DE 0DF
                        *
                        *  AX  0E0 0E1 0E2 0E3 0E4 0E  0E6 0E7 0E8 0E9 0EA 0EB 0EC 0ED 0EE 0EF
                        *
                        *  BX  0F0 0F1 0F2 0F3 0F4 0F5 0F6 0F7 0F8 0F9 0FA 0FB 0FC 0FD 0FE 0FF
```



```
                        *
                        *  CX  100 101 102 103 104 105 106 107 108 109 10A 10B 10C 10D 10E 10F
                        *
                        *  DX  110 111 112 113 114 115 116 117 118 119 11A 11B 11C 11D 11E 11F
                        *
                        *  EX  120 121 122 123 124 125 126 127 128 129 12A 12B 12C 12D 12E 12F
                        *
                        *  FX  130 131 132 133 134 135 136 137 138 139 13A 13B 13C 13D 13E 13F
                        *  WD GROUP ZERO LEVEL NAMES, IN ORDER OF TABLE:
                        *  CP1 CP2 CP3 CP4 MP UA C1=0 C2=0 C3=0 C4=0 I/O PCP UA JA P9N P9FF
                        *  OPT OPT               OPT  OPT                      OPT OPT
                        *                                * * * DELEATED PAGE DIRECTIVE * * *          *C
                        *  OPTIONAL JX-58 ROUTINE.
                        *
                        *  ENTRY TO THIS ROUTINE IS ACCOMPLISHED BY SETTING CONTROL BIT 9
                        *  TO THE ONE STATE. AS SOON AS ENTRY IS MADE, CONTROL BIT 9 IS
                        *  ZEROED.
                        *
                        *  THIS ROUTINE IS COMPOSED OF TWO SUB-ROUTINES. THE FIRST SUB-ROUTINE
                        *  TRIGGERS ALL LEVELS IN THE TEST GROUP SIMULTANEOUSLY, TESTS THAT
                        *  ALL IMPLEMENTED LEVELS ADVANCE TO THE WAITING STATE, THEN HANDLES
                        *  ALL INTERRUPTS WHICH OCCUR WITH FULL CHECKING. THE SECOND SUB-ROUTINE
                        *  TRIGGERS ALL IMPLEMENTED LEVELS SINGLY, CHECKS FOR THE ADVANCE TO
                        *  THE WAITING STATE, THEN HANDLES THE INTERRUPT WITH FULL CHECKING.
                        *
                        *  SETTING SS 2 ON WILL CAUSE LOOPING IN THE FIRST SUB-ROUTINE, AND
                        *  SS 3 WILL ACCOMPLISH THE SAME FOR THE SECOND SUB-ROUTINE, BUT IF
                        *  BOTH ARE SET ON, SS 3 IS NEVER TESTED. IF NEITHER IS SET ON, A LOOP
                        *  A LOOP FROM ONE SUB-ROUTINE TO THE OTHER IS MAINTAINED UNTIL SS 1
                        *  IS REVERSED.
                        *
                        *  IF A WATCH-DOG TIMER TRAP OCCURS IN THE JX-58 ROUTINE, THE ROUTINE
                        *  IS ABORTED AFTER THE FOLLOWING MESSAGE IS PRINTED OUT:
                        *
                        *  'WDT, JX-58 ROUTINE ABORTED'
                        *
                        *  THE INVALID INPUT MSG, 'INV', WILL OCCUR IF WD GROUP ZERO OR ONE
```

```
223                          *  IS SPECIFIED AS THE JX-58 TEST GROUP.
224                          *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
225                          *  AT CERTAIN POINTS IN THE PROGRAM, THE MESSAGE 'MN', OR 'RESPOND,
226                          *  MN' WILL BE PRINTED OUT. 'MN' WILL CORRESPOND TO ONE OF THE
227                          *  FOLLOWING MESSAGES, FOR INFORMATION AND/OR RESPONSE, AND
228                          *  THE APPROPRIATE ACTION INDICATED SHOULD BE TAKEN. CLEARING THE
229                          *  WAIT, OR ENTERING THE INFORMATION REQUESTED WILL DIRECT THE PROGRAM
230                          *  TO THE ROUTINE TO IMPLEMENT THE DECISION. IF THE WAIT IS CLEARED
231                          *  BEFORE ANY ACTION HAS BEEN TAKEN, OR THE INFORMATION IS NOT ENTERED
232                          *  CORRECTLY, THE REQUEST CONDITION WILL OCCUR AGAIN.
233                          *
234                          *  AT ANY POINT AT WHICH A RESPONSE VIA SENSE SWITCHES IS REQUESTED,
235                          *  THE SETTING OF THE SENSE SWITCHES AT THE TIME OF THE REQUEST WILL
236                          *  BE SEEN IN BITS 24-27 OF THE INSTRUCTION ADDRESS BEING DISPLAYED
237                          *  BY THE WAIT.
238                          *
239                          *  THE FORMAT FOR ANY ADDITIONAL INFORMATION FOLLOWS EACH EXPLANATION.
240                          *  SEE 'M2 ERROR' DESCRIPTION, BELOW, FOR FORMAT CONVENTIONS.
241                          *
242                          *  M1
243                          *  THIS MESSAGE INDICATES THAT THE INTERRUPT LOGIC PRESENTED THE
244                          *  CORRECT ADDRESS FOR EVERY INTERRUPT WHICH OCCURRED IN THE INTERRUPT
245                          *  ADDRESS TEST.
246                          *
247                          *  M2    (ERROR FLAG. FORMAT=T XXXXXXX. T=TYPE,XXXXXXX=ERROR DATA.)
248                          *  THE OUTPUT FOLLOWING THIS MESSAGE INDICATES AN ERROR DETECTED
249                          *  IN A CHECKING ROUTINE. THE ERROR TYPES, INDICATED BY THE FIRST
250                          *  DIGIT PRINTED, ARE AS FOLLOWS:
251                          *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
252                          *  IN THE SYMBOLIC EXAMPLES FOR ERROR TYPES, THE THE FOLLOWING
253                          *  CONVENTIONS ARE USED:
254                          *  G= WD GROUP    L= LEVEL BIT MINUS 16, WITHIN GROUP.
255                          *  BBBB= WD REGISTER BITS.
256                          *  C= FAILING CONDITIONS.      R= ROUTINE POINTER.
257                          *  AAA OR A = ADDRESS PRESENTED.
258                          *  SS= PRIORITY SEQUENCE.
259                          *  DIGITS SHOWN AS ZEROES WILL ALWAYS BE ZEROES FOR THE TYPE.
```



```
260                          *
261                          *  TYPE     SIGNIFICANCE OF SEVEN DIGITS FOLLOWING TYPE.
262                          *
263                          *  1. MORE THAN ONE INTERRUPT WAS RECEIVED FOR A SINGLE TRIGGER
264                          *     ADDRESSING THE WD GROUP AND LEVEL INDICATED BY THE TWO LOW
265                          *     ORDER DIGITS.
266                          *
267                          *        1 00000GL
268                          *
269                          *  2. EXPECTED ADDRESS AND RECEIVED ADDRESS FOR A LEVEL DO NOT MATCH.
270                          *     THE LOW ORDER 3 DIGITS ARE THE RECIEVED ADDRESS, AND THE HIGH
271                          *     ORDER 3 DIGITS ARE THE EXPECTED ADDRESS.
272                          *
273                          *        2 AAAOAAA
274                          *
275                          *  3. MORE THAN ONE INTERRUPT WAS RECEIVED FOR A SINGLE TRIGGER
276                          *     DURING THE SEQUENCE DETERMINATION ROUTINE. THE HIGH ORDER
277                          *     TWO DIGITS ARE THE SEQUENCE NUMBER OF THE LEVEL, AND THE LOW
278                          *     ORDER TWO DIGITS ARE THE WD GROUP AND LEVEL.
279                          *
280                          *        3 SSOOOGL
281                          *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
282                          *  4. A LEVEL OR LEVELS OCCURRED EITHER DURING THE ADDRESS CHECK
283                          *     ROUTINE, OR DURING THE SEQUENCE DETERMINATION ROUTINE, BUT
284                          *     NOT DURING BOTH ROUTINES. THE LOW ORDER FOUR DIGITS ARE THE
285                          *     WD REGISTER BITS, AND THE HIGH ORDER DIGIT IS THE WD GROUP.
286                          *     IF THE THIRD FROM THE HIGH ORDER DIGIT IS A ONE, ALL OF THE
287                          *     LEVELS INDICATED OCCURRED DURING THE ADDRESS TEST, WHEN LEVELS
288                          *     ARE TRIGGERED SINGLY, BUT NOT DURING THE SEQUENCE DETERMINATION
289                          *     ROUTINE, WHEN ALL LEVELS ARE TRIGGERED CONCURRENTLY. IF THE
290                          *     THIRD FROM THE HIGH ORDER DIGIT IS A ZERO, AT LEAST ONE OF
291                          *     THE LEVELS INDICATED OCCURRED DURING THE SEQUENCE DETERMINATION
292                          *     ROUTINE, BIT NOT DURING THE ADDRESS TEST. UNDER THE LATTER
293                          *     CONDITION THE ADDRESS PRESENTED MAY BE INCORRECT, AND IF IT
294                          *     IS, THIS WILL BECOME APPARENT BY THE ERROR INFORMATION THAT
295                          *     WILL BE PRINTED OUT AS THE PROGRAM CONTINUES.
296                          *
```

```
                  *     4 00RBBBB
                  *
                  *  5. AN INTERRUPT OCCURRED BEFORE A LEVEL OF HIGHER PRIORITY. THE
                  *     HIGH ORDER TWO DIGITS INDICATE THE LEVEL WHICH OCCURRED FIRST,
                  *     AND THE LOW ORDER TWO DIGITS INDICATE THE LEVEL WHICH OCCURRED
                  *     SECOND, OPPOSITE TO THE EXPECTED SEQUENCE OF THE TWO.
                  *
                  *     5 GLOOOGL
                  *
                  *  6. AN UNEXPECTED INTERRUPT OCCURRED FOR THE GROUP AND LEVEL
                  *     INDICATED BY THE TWO LOW ORDER DIGITS.
                  *     THE HIGH ORDER DIGIT INDICATES THE CONDITIONS UNDER WHICH THE
                  *     FAILURE OCCURRED, AS INDICATED FOR TYPE SEVEN FAILURES.
                  *     IF AN INTERRUPT IS INDICATED AS A TYPE 6 FAILURE, AND THE
                  *     FAILING CONDITION WAS THAT THE LEVEL WAS ARMED, ENABLED,
                  *     TRIGGERED, AND NOT INHIBITED, THE LEVEL IS NOT INCLUDED IN
                  *     THE FIELD OF INTERRUPTS IMPLEMENTED. IT WILL PROBABLEY CAUSE
                  *     A SEQUENCE ERROR INDICATION ALSO.
                  *
                  *     6 C0000GL
                  *                      * * * DELEATED PAGE DIRECTIVE * * *          *C
                  *  7. AN INTERRUPT LEVEL OR LEVELS FAILED TO OCCUR WHEN EXPECTED.
                  *     THE HIGH ORDER DIGIT INDICATES THE WD GROUP, AND THE LOW
                  *     ORDER FOUR DIGITS ARE THE WD REGISTER BITS. THE SECOND HIGHEST
                  *     ORDER DIGIT INDICATES THE CONDITIONS UNDER WHICH THE LEVEL
                  *     CORRESPONDING TO THE HIGHEST ORDER REGISTER BIT FAILED, AS
                  *     FOLLOWS:
                  *
                  *     AR=ARMED, EN=ENABLED,TR=TRIGGERED,IN=INHIBITED. N PREFIX=NOT.
                  *
                  *     0. NAR,NEN,NTR,NIN.           8. AR,NEN,NTR,NIN.
                  *     1. NAR,NEN,NTR,IN             9. AR,NEN,NTR,IN.
                  *     2. NAR,NEN,TR,NIN.            A. AR,NEN,TR,NIN.
                  *     3. NAR,NEN,TR,IN              B. AR,NEN,TR,IN.
                  *     4. NAR,EN,NTR,NIN.            C. AR,EN,NTR,NIN.
                  *     5. NAR,EN,NTR,IN.             D. AR,EN,NTR,IN.
                  *     6. NAR,EN,TR,NIN.             E. AR,EN,TR,NIN.
```



```
                  *     7. NAR,EN,TR,IN.              F. AR,EN,TR,IN.
                  *
                  *     7 GC0BBBB
                  *
                  *  8. AN INTERRUPT PRESENTED AN ADDRESS OUTSIDE THE RANGE X'50'-X'13F'.
                  *     THE THREE LOW ORDER DIGITS ARE THE ADDRESS PRESENTED.
                  *
                  *     8 0000AAA
                  *                      * * * DELEATED PAGE DIRECTIVE * * *          *C
                  *  9. AN INTERRUPT PRESENTED AN ADDRESS BETWEEN 0 AND 15. THE
                  *     LOW ORDER DIGIT IS THE ADDRESS PRESENTED.
                  *
                  *     9 000000A
                  *
                  *  A. ALL IMPLEMENTED LEVELS IN WD GROUP UNDER TEST DID NOT ADVANCE
                  *     TO THE WAITING STATE WHEN TRIGGERED VIA THE JX-58. THE FOUR
                  *     LOW ORDER DIGITS ARE THE LEVEL BITS WHICH FAILED.
                  *
                  *     A 000BBBB
                  *
                  *  B. IN THE SECOND SUB-ROUTINE OF THE JX-58 TEST ROUTINE, A LEVEL
                  *     WHICH HAS INTERRUPTED AT SOME PREVIOUS TIME FAILED TO ADVANCE
                  *     TO THE WAITING STATE WHEN TRIGGERED VIA THE JX-58.
                  *     THE SINGLE BIT INDICATED WITHIN THE FOUR LOW ORDER DIGITS
                  *     IS THE WD REGISTER BIT FOR THE FAILING LEVEL. IF THE LEVEL
                  *     INDICATED ONLY FAILS VIA THE JX-58, THE FAILURE IS PROBABLY
                  *     THE NORMAL TRIGGERING DIODE.
                  *
                  *     B 000BBBB
                  *
                  *  C. AN INTERRUPT LEVEL PRESENTED AN ADDRESS OUTSIDE THE RANGE X'50'
                  *     X'13F' DURING THE SEQUENCE DETERMINATION ROUTINE. THE HIGH ORDER
                  *     TWO DIGITS ARE THE SEQUENCE NUMBER, AND THE LOW ORDER THREE
                  *     DIGITS ARE THE ADDRESS PRESENTED.
                  *
                  *     C SS00AAA
                  *                      * * * DELEATED PAGE DIRECTIVE * * *          *C
```

```
                        *  D. AN INTERRUPT OCCURRED WHILE THE HIGHEST PRIORITY INTERRUPT WAS
                        *     IN THE ACTIVE STATE. THE THREE LOW ORDER DIGITS ARE THE ADDRESS
                        *     PRESENTED.
                        *
                        *     D 0000AAA
                        *
                        *  M3
                        *  WHEN ALL LEVELS IN WD GROUP ZERO WERE ADDRESSED BY WD INSTRUCTIONS
                        *  TO ARM-DISABLE, TRIGGER, ENABLE, NO INTERRUPTS OCCURRED. THE PROGRAM
                        *  HAS GONE INTO A LOOP ARMING, ENABLING, AND TRIGGERING ALL WD GROUP
                        *  ZERO LEVELS. IF ANY INTERRUPTS DO OCCUR, THEY WILL BE IGNORED.
                        *
                        *  M4
                        *  AN ADDRESS OTHER THAN X'52' OR X'54' WAS PRESENTED AS THE LOCATION
                        *  OF THE HIGHEST PRIORITY INTERRUPT IMPLEMENTED. THE ADDRESS PRESENTED
                        *  FOLLOWS THIS MESSAGE. THE PROGRAM GOES INTO A LOOP ADDRESSING ONLY
                        *  COUNTER PULSE ONE AND COUNTER PULSE THREE INTERRUPTS.
                        *
                        *  AAA
                        *
                        *  M5
                        *  ALL INTERRUPTS WHICH OCCURRED DURING SEQUENCE DETERMINATION ROUTINE
                        *  PRESENTED CORRECT ADDRESSES, NO MULTIPLE INTERRUPTS OCCURRED FOR
                        *  ANY SINGLE TRIGGER, AND ALL LEVELS WHICH OCCURRED IN THE ADDRESS
                        *  CHECK ROUTINE OCCURRED IN THIS ROUTINE. SEQUENCE FOLLOWS.
                        *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                        *  M6
                        *  THE PRINT-OUT FOLLOWING THIS MESSAGE IS THE PRIORITY SEQUENCE
                        *  OF ALL INTERRUPTS WHICH WERE GENERATED BY WD INSTRUCTIONS. THE
                        *  FIRST DIGIT OF EACH PAIR OF DIGITS IS THE WD GROUP, AND THE
                        *  SECOND DIGIT IS THE WD REGISTER BIT NUMBER MINUS SIXTEEN, THUS:
                        *
                        *   03  WOULD REFER TO COUNTER FOUR COUNT PULSE INTERRUPT, AND
                        *   26  WOULD REFER TO THE SEVENTH INTERRUPT LEVEL IN EXTERNAL
                        *   CHASSIS 2. ALL DIGITS ARE HEXIDECIMAL.
                        *
                        *  THE LIST SHOULD BE CHECKED FOR ACCURACY IN SEQUENCE, AND IN TOTAL
```



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                        *  CONTENT. IF CORRECT IN ALL RESPECTS, SENSE SWITCH 2 SHOULD BE
                        *  REVERSED AND THE WAIT CLEARED.
                        *
                        *  IF AN ERROR EXISTS, SENSE SWITCH 3 SHOULD BE REVERSED. IF SENSE
                        *  SWITCH 3 IS REVERSED, THE KSR WILL BE ADDRESSED FOR INPUT. THE
                        *  CORRECT SEQUENCE SHOULD BE ENTERED, IN THE FORMAT OF THE OUTPUT,
                        *  EXCEPT THAT CONSECUTIVE LEVELS MAY BE INDICATED WITH A DASH, THUS
                        *
                        *  02-05 NEW LINE CHARACTER
                        *  20-3F NEW LINE CHARACTER
                        *  06-0A NEW LINE CHARACTER
                        *  40-65 NEW LINE CHARACTER
                        *  /END  NEW LINE CHARACTER
                        *
                        *  THE '/END' INPUT INDICATES THAT ALL ENTRIES HAVE BEEN COMPLETED.
                        *
                        *  SINGLE LEVELS MAY BE ENTERED AS FOLLOWS:
                        *  02 NEW LINE CHARACTER
                        *  03 NEW LINE CHARACTER
                        *  /END NEW LINE CHARACTER
                        *
                        *  IF AN ERROR IS MADE IN THE INPUT, ENTER '/SEQ', AND RE-ENTER
                        *  THE ENTIRE SEQUENCE.
                        *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                        *  IF AN UN-NOTICED ERROR IS MADE IN THE INPUT, THE MESSAGE
                        *  'INV' WILL BE PRINTED, AND THE KSR RE-ADDRESSED FOR INPUT.
                        *  RE-ENTER ONLY THE LAST ENTRY. THE SEQUENCE MUST NOT BE RE-STARTED.
                        *
                        *  IF THE SEQUENCE INDICATES THAT INTERRUPTS HAVE OCCURRED FROM THE
                        *  UNASSIGNED LEVELS IN WD GROUP ZERO, THEY SHOULD NOT BE CONSIDERED
                        *  ERRORS, NOR SHOULD ANY ATTEMPT BE MADE TO DELETE THEM FROM THE
                        *  PRIORITY SEQUENCE. SUCH AN ATTEMPT WOULD CAUSE A FALSE INDICATION
                        *  OF UNEXPECTED INTERRUPTS FROM THOSE LEVELS ANY TIME THEY ARE ARMED,
                        *  ENABLED, TRIGGERED, AND NOT INHIBITED.
                        *
                        *  M7
                        *  THE BASIC TESTS OF THE INTERRUPT SYSTEM HAVE BEEN COMPLETED. SINCE
```

```
448                    *  NO CONTROL BITS DIRECTED OTHERWISE, THE INTERRUPT PATTERN
446                    *  GENERATOR ROUTINE IS BEING ENTERED.
447                    *
448                    *  M8
449                    *  A WD INSTRUCTION ADDRESSING WD GROUP ONE GENERATED AN INTERRUPT.
450                    *  THE PROGRAM HAS GONE INTO A LOOP ARM-DISABLE, TRIGGER, ENABLE ALL
451                    *  LEVEL BITS, SPECIFYING WD GROUP ONE. ANY INTERRUPTS WHICH OCCUR
452                    *  WILL BE CLEARED AND IGNORED.
453                    *
454                    *  M9
455                    *  THE PREVIOUSLY COMPUTED HIGHEST PRIORITY INTERRUPT IMPLEMENTED
456                    *  FAILED TO OCCUR WHEN ADDRESSED BY WD INSTRUCTIONS TO ARM, ENABLE,
457                    *  TRIGGER. THE PROGRAM HAS GONE INTO A LOOP ADDRESSING ONLY THAT
458                    *  LEVEL, CLEARING ANY INTERRUPTS WHICH DO OCCUR.
459                    *                    * * * DELEATED PAGE DIRECTIVE * * *          *C
460                    *  MA
461                    *  THE HIGHEST PRIORITY INTERRUPT IMPLEMENTED PRESENTED AN ADDRESS
462                    *  WHICH WAS DIFFERENT FROM THE ADDRESS IT PRESENTED WHEN ORIGINALLY
463                    *  COMPUTED. THE PROGRAM IS LOOPING AS DESCRIBED FOR M9, ABOVE.
464                    *  THE ADDRESS PRESENTED FOLLOWS.
465                    *
466                    *  AAA
467                    *
468                    *  MB
469                    *  KSR IS ADDRESSED FOR INPUT. ENTER WD GROUP, IN HEXIDECIMAL, FOR
470                    *  JX-58 TEST, FOLLOWED BY NEW LINE CHARACTER.
471                    *
472                    *  MC
473                    *  ENTRY HAS BEEN MADE TO THE MANUAL PATTERN ROUTINE. THE KSR HAS BEEN
474                    *  ADDRESSED FOR INPUT. ENTER PATTERN INFORMATION ACCORDING TO INST-
475                    *  RUCTIONS BELOW.
476                    *
477                    *  MD
478                    *  THE INTERRUPT PATTERN GENERATOR HAS COMPLETED A PASS.
479                    *
480                    *  IN ANY CASE REQUIRING THE REVERSAL OF SS 2 OR 3, IF BOTH ARE
481                    *  REVERSED BEFORE THE WAIT IS CLEARED, THE EFFECT WILL BE THAT
```



```
482                    *  OF REVERSING SS 2 ONLY.
483                    *                    * * * DELEATED PAGE DIRECTIVE * * *          *C
484                    *  CONTROL BITS
485                    *
486                    *  CONTROL BITS 4, 5, 6, 7, AND 9 ARE RESET AS SOON AS ENTRY
487                    *  IS MADE TO THE ROUTINES THEY CONTROL.
488                    *
489                    *   BIT          ZERO STATE.                ONE STATE.
490                    *
491                    *  0. NORMAL ERROR PRINOUTS.          0. SUPPRESS ERROR PRINTOUTS.
492                    *                                        IF PRINTING IS SURPRESSED, THE
493                    *                                        ALARM INDICATOR WILL BE SET ON
494                    *                                        IF A ROUTINE ATTEMPTS TO OUTPUT
495                    *                                        AN ERROR MESSAGE.
496                    *
497                    *  1. CONTINUE ON ERROR.              1. WAIT ON ERROR, AFTER OUTPUTTING
498                    *                                        ERROR INFORMATION.
499                    *
500                    *  2. CONTINUE ON ERROR.              2. LOOP ON ERROR UNTIL SS1
501                    *                                        IS REVERSED.
502                    *
503                    *  3. CONTINUE SEQUENCE OF PROGRAM,   3. LOOP ON BASIC TESTS.
504                    *     ENTER PATTERN GENERATOR AFTER
505                    *     BASIC TESTS.
506                    *
507                    *  4. CONTINUE AUTOMATIC TESTS.       4. GENERATE ALL POSSIBLE INTERRUPTS,
508                    *                                        CLEAR ACTIVE STATES, AND IGNORE.
509                    *                                        LOOP IS MAINTAINED UNTIL SS 1
510                    *                                        IS REVERSED.
511                    *                    * * * DELEATED PAGE DIRECTIVE * * *          *C
512                    *  5. CONTINUE AUTOMATIC TESTS.       5. ARM-DISABLE, TRIGGER, ENABLE
513                    *                                        ALL INTERRUPT LEVELS SINGLY,
514                    *                                        STARTING WITH WD GROUP ZERO,
515                    *                                        LEVEL BIT 16. LEVEL BIT IS
516                    *                                        SHIFTED RIGHT, AND THE WD
517                    *                                        GROUP IS INCREMENTED. THE
518                    *                                        PATTERN RESTARTS AFTER LEVEL
```

```
*                                               BIT 31 OF WD GROUP 15 IS
*                                               ADDRESSED, AND THE LOOP IS
*                                               MAINTAINED UNTIL SS 1 IS
*                                               REVERSED.
*
*  6. SAME AS 5, ABOVE.                     6. SAME AS 5, ABOVE, EXCEPT THAT
*                                               THE SEQUENCE IS STARTED AT WD
*                                               GROUP 15, LEVEL BIT 31, THE
*                                               LEVEL BIT IS SHIFTED LEFT, AND
*                                               THE WD GROUP IS DECREMENTED.
*
*  7. CONTINUE PROGRAM SEQUENCE.            7. LOOP IN JX-58 ROUTINE UNTIL
*                                               SS1 IS REVERSED.
*
*  8. DUMP PATTERN NUMBER IF THE            8. DO NOT DUMP PATTERN NUMBER
*     INTERRUPT PATTERN GENERATOR               ON ERROR.
*     GENERATES A FAILING CONDITION,
*     AND CONTROL BIT 10 IS SET TO
*     A ONE.
*
*  9. CONTINUE NORMAL SEQUENCE.             9. ADDRESS KSR FOR INPUT OF
*                                               INTERRUPT PATTERN TO LOOP ON.
*                                               SEE TEXT, BELOW, FOR INPUT
*                                               FORMAT. EXIT WHEN SS1 IS SET ON.
                              * * * DELEATED PAGE DIRECTIVE * * *        *C
*  10. NO EFFECT                            10. DUMP PATTERN ON ERROR, THUS:
*
*
*                                                ARMED, DISABLED LEVELS.
*                                                ENABLED LEVELS.
*                                                TRIGGERED LEVELS.
*                                                INHIBITED LEVELS.
*
*                                                FOR IMPLEMENTED WD GROUPS ONLY.
*
*  11. DO NOT PRESERVE ERROR DATA           11. PRESERVE FIRST 64 ERROR
*      IF ERROR PRINTING IS                     RECORDS IF ERROR PRINTING
```



```
*      SURPRESSED.                              IS SURPRESSED.
*
*  TO MODIFY CONTROL BIT SETTINGS VIA THE KSR, REVERSE SS 4.
*  WHEN THE SENSE SWITCHES ARE READ, THE MESSAGE 'CONTROL BITS'
*  WILL BE OUTPUTTED, AND THE KSR WILL BE ADDRESSED FOR INPUT.
*  ENTER THE HEX DIGITS TO BE SET INTO THE CONTROL BITS. THE DIGITS
*  ENTERED WILL BE LEFT JUSTIFIED INTO THE FIELD IF FEWER THAN 8
*  DIGITS ARE ENTERED. ONLY THE NUMBER OF DIGITS ENTERED WILL BE
*  MODIFIED.
*
*  UNLESS SPECIFICALLY NOTED OTHERWISE, IF A CONFLICT EXISTS
*  IN THE RESULTS OF TWO OR MORE CONTROL BIT SETTINGS, THE LOWEST
*  NUMBER CONTROL BIT IN THE ONE STATE WILL CONTROL THE OUTCOME.
                              * * * DELEATED PAGE DIRECTIVE * * *        *C
*  IF CONTROL BITS ONE AND TWO ARE BOTH SET TO ONES, IF AN ERROR OCCURS
*  THE PROGRAM WILL WAIT THE FIRST TIME ONLY, THEN LOOP ON THE ERROR
*  UNTIL SENSE SWITCH ONE IS REVERSED.
*
*  IF CONTROL BIT 11 IS SET ON, AND PRINTING IS SURPRESSED, ALL ERROR
*  RECORDS, UP TO 64, WHICH HAVE BEEN STACKED WILL BE DUMPED THE FIRST
*  TIME THE ERROR STACK IS TESTED AFTER CONTROL BIT ZERO IS ZEROED. IF
*  CONTROL BIT 11 IS RESET BEFORE ERROR PRINTING IS ALLOWED, ALL ERROR
*  RECORDS PRESERVED WILL BE DELETED.
*
*  THE ERROR RECORDS PRESERVED BY CONTROL BIT 11 ARE THE 'M2 ERROR'
*  RECORDS ONLY, AND NOT THE FAILING PATTERNS. IF CONTROL BIT 10 IS
*  SET TO A ONE, AND ERROR PRINTING IS ALLOWED AFTER MORE THAN 63
*  ERRORS HAVE OCCURRED, THE 'M2 ERROR' RECORD FOR THE PATTERN WHICH
*  WILL BE DUMPED WILL NOT BE AVAILABLE.
*
*  THE CONTROL BITS MAY BE SET OR RESET BY MANUAL ENTRY AT ANY TIME.
*  THE FIELD LABELED 'CONBITS' CONTAINS THE CONTROL BITS, AND ITS
*  LOCATION MAY BE DETERMINED BY CHECKING THE DATA FIELDS IN THIS
*  LISTING.
                              * * * DELEATED PAGE DIRECTIVE * * *        *C
*  INPUT FORMAT FOR CONTROL BIT 9 IS AS FOLLOWS, IN HEXIDECIMAL.
*
```

```
*       FORMAT                        MEANING
*
*  XXXX NEW LINE CHARACTER     LEVEL BITS FOR WD GRP 0 TO ARM, DISABLE.
*  XXXX NEW LINE CHARACTER     LEVEL BITS FOR WD GRP 2 TO ARM, DISABLE.
*  .                                                      .
*  XXXX  ''  ''      ''         ''    ''      LAST WD GRP IMPLEMENTED.
*  AEND  ''  ''      ''        END OF ARM, DISABLE INPUT.
*
*  XXXX  ''  ''      ''        LEVEL BITS FOR WD GRP 0 TO ENABLE.
*  .                                                     2
*  XXXX  ''  ''      ''         ''    ''      LAST WD GRP IMPLEMENTED.
*  EEND  ''  ''      ''        END OF ENABLE INPUT.
*
*  XXXX  ''  ''      ''        LEVEL BITS FOR WD GRP 0 TO TRIGGER
*  .                                                     2
*  XXXX  ''  ''      ''         ''    ''      LAST WD GRP IMPLEMENTED
*  TEND  ''  ''      ''        END OF TRIGGER INPUT.
*
*  X     ''  ''      ''        INHIBIT BIT CONFIGURATION.
*  IEND  ''  ''      ''        END OF ALL INPUT.
*
*  THE INHIBIT INPUT MAY BE SPECIFIED AS A SINGLE HEX DIGIT FROM ZERO
*  TO SEVEN, IN WHICH CASE ONLY THAT INHIBIT BIT PATTERN WILL BE USED
*  FOR THE MANUAL PATTERN LOOP, OR THE ALPHA CHARACTER 'R' MAY BE
*  SPECIFIED. IN THE LATTER CASE, THE INHIBIT BIT CONFIGURATION WILL
*  ROTATE FROM SEVEN DOWN TO ZERO AND BACK TO SEVEN AS THE MANUAL
*  PATTERN IS EXECUTED.
*
*  THE VARIOUS INPUTS MUST BE IN THE ORDER INDICATED. ANY WD GROUPS
*  NOT SPECIFIED FOR A SPECIFIC TYPE OF INPUT WILL BE ZEROED FOR
*  THAT FUNCTION.
*                          * * * DELEATED PAGE DIRECTIVE * * *          *C
*  FOR EXAMPLE:
*
*  FC30 NL
*  F000 NL
*  FFFF NL
```



```
*  AEND NL
*
*  F130 NL
*  1000 NL
*  EEND NL
*
*  3000 NL
*  TEND NL
*
*  0 NL
*  IEND NL
*
*  THE ABOVE INPUT WOULD GENERATE THE FOLLOWING RESULTS. NOTE THAT
*  THE HIGHEST LEVEL IMPLEMENTED WILL NOT BE ADDRESSED TO ARM, DISABLE.
*  THIS IS TRUE BECAUSE THE ACTIVE STATE OF THE INTERRUPT WOULD BE
*  CLEARED PREMATURELY IF THE ARM, DISABLE WD ADDRESSED IT.
*
*  LEVELS ARMED AND DISABLED:
*  WD GROUP ZERO, LEVEL BITS  7C30
*  WD GROUP TWO, LEVEL BITS   F000
*  WD GROUP THREE, LEVEL BITS FFFF
*
*  LEVELS ENABLED:
*  WD GROUP ZERO, LEVEL BITS  F130
*  WD GROUP TWO, LEVEL BITS   1000
*
*  LEVELS TRIGGERED
*  WD GROUP ZERO, LEVEL BITS  3000
*                          * * * DELEATED PAGE DIRECTIVE * * *          *C
*  NO INHIBITS WILL BE SET.
*
*  WITH NO FAILURES, ONLY TWO LEVELS IN WD GROUP ZERO WILL GENERATE
*  INTERRUPTS. NO LEVELS IN WD GROUP FOUR THROUGH FIFTEEN WILL BE
*  ARMED AND DISABLED, NO LEVELS IN WD GROUP THREE THROUGH FIFTEEN
*  WILL BE ENABLED, AND NO LEVELS IN WD GROUP TWO THROUGH FIFTEEN
*  WILL BE TRIGGERED.
*
```

```
667                     *  IF ANY ERRORS ARE MADE IN THE INPUT, THE MESSAGE
668                     *  'INV' WILL BE PRINTED. RE-ENTER ONLY THE LAST WD GROUP.
669                     *  TO RE-START THE ENTIRE ENTRY, ENTER /PAT NEW LINE CHARACTER.
670                     *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
671                     *  THE FOLLOWING PROCEDURE MAY BE USED TO TEST THE 7700 INTERPROCESSOR
672                     *  INTERRUPT FEATURE. (CPU-TO-CPU INTERRUPT)
673                     *
674                     *  IF CPU'S INVOLVED SHARE MEMORY LOCATIONS, BE CERTAIN THAT THERE
675                     *  IS NO OVERLAP OF ADDRESSES WITHIN THE FIRST 8K WORDS OF CORE
676                     *  BETWEEN THE PROCESSORS.
677                     *
678                     *  LOAD THE PROGRAM ON BOTH PROCESSORS. WHEN THE BASIC TESTS HAVE
679                     *  BEEN COMPLETED, SET CONTROL BIT 9 ON EACH PROCESSOR, TO SELECT
680                     *  THE MANJAL ENTRY ROUTINE. MAKE THE FOLLOWING ENTRIES ON BOTH
681                     *  PROCESSORS.
682                     *
683                     *  ARM AND DISABLE ALL LEVELS.
684                     *
685                     *  ENABLE ALL LEVELS EXCEPT IN WD GROUP IN WHICH INTERPROCESSOR
686                     *  INTERRUPTS APPEAR. IN THIS GROUP, ENABLE THE ODD LEVELS WHICH
687                     *  ARE INTERCONNECTED AND ALL OTHERS NOT INTERCONNECTED.
688                     *
689                     *  TRIGGER ONLY THE EVEN LEVELS IN THE WD GROUP IN WHICH THE
690                     *  INTERPROCESSOR INTERRUPTS APPEAR.
691                     *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
692                     *  SET INHIBITS TO ZERO.
693                     *
694                     *  WHEN ALL THE ABOVE INFORMATION HAS BEEN ENTERED ON BOTH PROCESSORS,
695                     *  EACH PROCESSOR WILL ACTUALLY BE TRIGGERING INTERRUPTS IN THE OTHER.
696                     *  BY OBSERVING THE INPUT, IT CAN BE SEEN THAT NO INTERRUPTS SHOULD
697                     *  BE EXPECTED IN EITHER PROCESSOR, CONSIDERING THE FACT THAT THE
698                     *  PREDICTING ROUTINE ONLY USES ITS OWN INPUT TO DETERMINE WHICH
699                     *  INTERRUPTS SHOULD OCCUR. ONCE A SYNCHRONISM BETWEEN THE PROCESSORS
700                     *  HAS BEEN ACHIEVED, THEY WILL BEGIN TO RECEIVE INTERRUPTS FROM EACH
701                     *  OTHER. THIS WILL GENERATE ERROR INFORMATION. THE ERROR INFORMATION
702                     *  SHOULD INDICATE UNEXPECTED INTERRUPTS FROM ALL INTERPROCESSOR LEVELS.
703                     *
```



```
704                     *  SYNCHRONISM IS ACHIEVED BY ADDRESS STOPPING BOTH PROCESSORS AT THE
705                     *  ADDRESS OF 'CHKPATTC'+3 (X'632'). BY ALTERNATELY CLEARING THE WAIT
706                     *  CONDITION ON EACH PROCESSOR BY MOVING THE COMPUTE SWITCH FROM RUN
707                     *  TO IDLE TO RUN, ERROR PRINTOUTS SHOULD OCCUR FOR EVERY INTERPROCESSOR
708                     *  LEVEL, AND NO OTHER LEVELS.
709                     *
710                     *  AN EXAMPLE OF THE INPUTS AND CORRECT OUTPUTS FOR THE SPECIFIED COND-
711                     *  ITIONS FOLLOWS.
712                     *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
713                     *  CONDITIONS:
714                     *  2 SIGMA 7 PROCESSORS.
715                     *  NO SHARED MEMORY.
716                     *  FIRST EXTERNAL CHASSIS (WD GROUP 2) ON PROCESSOR 'A' IS
717                     *    CONNECTED TO SECOND EXTERNAL CHASSIS (WD GROUP 3) ON
718                     *    PROCESSOR 'B' VIA A 7700, WITH 3 LEVELS CONNECTED IN
719                     *    EACH DIRECTION. LEVELS 6-11 ON PROCESSOR 'A' ARE
720                     *    CONNECTED TO LEVELS 0-5 ON PROCESSOR 'B'.
721                     *  PROCESSOR 'A' HAS THE FOLLOWING ADDITIONAL LEVELS IMPLEMENTED.
722                     *  00 01 02 03 04 06 07 08 09 0A 0B
723                     *  20 21 22 23 24 25
724                     *  30 31
725                     *  40 41 42 43
726                     *  PROCESSOR 'B' HAS THE FOLLOWING ADDITIONAL LEVELS IMPLEMENTED.
727                     *  02 03 04 05 08 09 0A 0B
728                     *  20 21 22 23
729                     *  36 37
730                     *  40 41
731                     *
732                     *
733                     *  THE FOLLOWING INPUT IS MADE:
734                     *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
735                     *  ON PROCESSOR 'A'
736                     *
737                     *  F3F0
738                     *  FFF0
739                     *  C                                   (EITHER ONE OR FOUR CHARACTERS)
740                     *  F                                   (BEFORE THE NL CHARACTER IS    )
```

```
                        *  AEND                          (ACCEPTED BY THE PROGRAM      )
                        *
                        *  FBF0
                        *  FD50
                        *  C
                        *  F
                        *  EEND
                        *
                        *  0
                        *  02A0
                        *  TEND
                        *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                        *  ON PROCESSOR 'B'
                        *
                        *  3CF0
                        *  F
                        *  FF00
                        *  C
                        *  AEND
                        *
                        *  3CF0
                        *  F
                        *  5700
                        *  C
                        *  EEND
                        *
                        *  0
                        *  0
                        *  A800
                        *  TEND
                        *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                        *  THE FOLLOWING 'ERROR' MESSAGES WOULD INDICATE CORRECT
                        *  OPERATION.
                        *
                        *  ON PROCESSOR 'A':
                        *
                        *  M2 ERROR
```



```
                        *  6 C00002A
                        *  6 C000028
                        *  6 C000026
                        *
                        *  ON PROCESSOR 'B':
                        *
                        *  M2 ERROR
                        *  6 C000034
                        *  6 C000032
                        *  6 C000030
                        *
                        *  ANY MISSING OR ADDITION INFORMATION WOULD INDICATE A FAILURE.
                        *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                        *  DESCRIPTION OF INTERRUPT HISTORY TABLE
                        *  THERE ARE 256 POSSIBLE ENTRIES IN THIS TABLE, CORRESPONDING TO
                        *  THE 256 COMBINATIONS OF WD GROUPS AND REGISTER BITS. TO FACILITATE
                        *  ACCESSING THIS TABLE, POWER FAIL-SAFE INTERRUPTS HAVE BEEN ASSIGNED
                        *  PRIORITIES OF 14 AND 15, AND A GAP HAS BEEN LEFT BETWEEN GROUP 0
                        *  AND GROUP 2. THE ENTRIES IN THE TABLE HAVE BEEN ARRANGED SO THAT
                        *  THERE IS A DIRECT RELATIONSHIP BETWEEN THE LOCATION OF AN ENTRY
                        *  IN THE TABLE, THE ADDRESS FROM WHICH THE CORRESPONDING INTERRUPT
                        *  SHOULD OCCUR, AND THE WD GROUP AND LEVEL BIT.
                        *
                        *  WORD ONE.
                        *
                        *  BIT            SIGNIFICANCE OF BIT IN THE ONE STATE.
                        *  0-3. WD GROUP.
                        *
                        *  4-7. LEVEL BIT NUMBER MINUS SIXTEEN.
                        *
                        *  8-17. NOT USED.
                        *
                        *  18. INTERRUPT RECEIVED FROM THIS LEVEL THIS PATTERN.
                        *
                        *  19-22 NOT USED.
                        *
                        *  23-31. ADDRESS WHICH CORRESPONDING LEVEL IS EXPECTED
```

```
                                *          TO PRESENT TO CPU.
                                *
                                *  WORD TWO
                                *
                                *  BIT      SIGNIFICANCE OF BIT IN ONE STATE.
                                *  0-15. NOT USED.
                                *
                                *  16-23. ORDER IN WHICH INTERRUPT OCCURRED.
                                *
                                *  24-31. ORDER IN WHICH INTERRUPT SHOULD HAVE OCCURRED,
                                *         ACCORDING TO OPERATOR INPUT.
                                *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
                                          SYSTEM   SIG7FDP
00000000                        SPD       CNAME
                                          PROC
                                          BOUND    8
                                LF        DATA     AF(1)-1
                                          GEN,1,15,1,15  1,AF(2),1,0
                                          PEND
00000000                        PSD       CNAME    0
                                          PROC
                                          BOUND    8
                                LF        DATA     AF(1),0
                                          PEND
00000022                        CDWC      CNAME    X'22'
00000002                        CDW       CNAME    X'02'
00000000                        CDWN      CNAME    0
                                          PROC
                                          BOUND    8
                                LF        EQU      DA(*)
                                          GEN,8,24 AF(1),BA(AF(2))
                                          GEN,8,24 NAME,AF(3)
                                          PEND
00000000                        LDATA     CNAME
                                          PROC
                                          BOUND    4
                                LF        EQU      *
```



```
                                P         SET      AF(1)-128*(AF(1)/128)
                                          D0       AF(1)/128
                                          D9       15R
                                          DATA     AF(2)
                                          FIN
                                          FIN
                                          D9       P
                                          GEN,32   AF(2)
                                          FIN
                                          PEND
                                *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
00000000                        IO        EQU      0               IO COMMAND SET UP.
00000001                        XA        EQU      1
00000002                        OT        EQU      P               SUB-ROUTINE REGISTER OUTPUT.
00000003                        XB        EQU      3
00000004                        IA        EQU      4               SUB-ROUTINE INPUT ADDRESS.
00000005                        GR        EQU      5               WD GROUP INDEX.
00000006                        OA        EQU      6               SUB-ROUTINE OUTPUT ADDRESS.
00000007                        LNK       EQU      7               SUB-ROUTINE LINKAGE.
00000008                        WKA       EQU      8
00000009                        LV        EQU      9               WD INTERRUPT LEVEL REGISTER.
0000000A                        CSA       EQU      10              COMPARE SELECTIVE ARGUEMENT.
0000000B                        CSM       EQU      11              COMPARE SELECTIVE MASK.
0000000C                        WKB       EQU      12
0000000D                        WKC       EQU      13
0000000E                        WKD       EQU      14
0000000F                        IN        EQU      15              SUB-ROUTINE REGISTER INPUT.
00001100                        DISARM    EQU      X'1100'
00001200                        ARME      EQU      X'1200'
00001300                        ARMD      EQU      X'1300'
00001400                        ENABLE    EQU      X'1400'
00001500                        DISABLE   EQU      X'1500'
00001600                        ENADISA   EQU      X'1600'
00001700                        TRIG      EQU      X'1700'
                                BITSWTCH  EQU      CONBITS
                                *
                                *  COMPUTE HIGHEST PRIORITY INTERRUPT IMPLEMENTED.
```

```
                                      *
01 00200                                       ORG       512
01 00200
01 00200    02200000 A    COMPHIGH LCI       0
01 00201    2A0009AC               LM,0      CTCHHNG1          SET UP FOR HANDLING POSSIBLE
                                   *                           INTERRUPT WITHIN REG PAGE.
01 00202    2290FFFF A             LI,LV     65535
01 00203    6D901300 A             WD,LV     ARMD              ARM, DISABLE
01 00204    6D901700 A             WD,LV     TRIG               TRIGGER,
01 00205    6D901400 A             WD,LV     ENABLE              ENABLE, ALL WD GROUP ZERO LEVELS.
01 00206    20000000 A             AI,0      0
01 00207    6A700414               BAL,LNK   CHKSTK            NO INT OCCURRED, OR INT OCCURRED
01 00208    02000000 A             NOP                         WITHIN REG PAGE.
01 00209    68000545               B         HIFAILA
01 0020A    35200915      HIGHA    STW,OT    HIPRI             STORE ADDR OF HIGHEST PRI INT.
01 0020B    6A700414               BAL,LNK   CHKSTK
01 0020C    02000000 A             NOP
01 0020D    32200915               LW,OT     HIPRI
01 0020E    21200052 A             CI,OT     82
01 0020F    68300212               BE        HIGHB             BR IF CNT PULSE ONE IS HIGHEST PRI.
01 00210    21200054 A             CI,OT     84
01 00211    69300551               BNE       HIFAILB           BR IF CNT PULSE 3 IS NOT HIGH PRI.
01 00212    32840976      HIGHB    LW,WKA    BIT16-82,OT
01 00213    35800917               STW,WKA   HIBIT
01 00214    48008FE                EOR,WKA   BIT16X31
01 00215    35800916               STW,WKA   NOTHI
01 00216    6A70058B               BAL,LNK   KILLINTS
                          *
                          *  CHECK INTERRUPT ADDRESS LINES.
                          *
01 00217    6A70048E      CKINTAD  BAL,LNK   SETPSDS
01 00218    22800239               LI,WKA    CKINTADD
01 00219    358008F7               STW,WKA   ADRDCODE          SET UP INT RETURN ADDRESS.
01 0021A    22800010 A             LI,WKA    16
01 0021B    358008EF               STW,WKA   GRPCNT
01 0021C    22500000 A             LI,GR     0
01 0021D    3550089F               STW,GR    IPHOLD+GR
```

M 1


```
01 0021E    329009C8      CKINTADA LW,LV     BIT16
01 0021F    359008A3               STW,LV    IPHOLD+LV
01 00220    22800002 A    CKINTADB LI,WKA    2
01 00221    35800A20               STW,WKA   WAITCNT
01 00222    02200000 A             LCI       0                 SETUP FOR HANDLING INTERRUPTS
01 00223    2A0009AC               LM,0      CTCHHNG1          FROM ADDRESSES X'0'-X'F'.
01 00224    329008A3               LW,LV     IPHOLD+LV
01 00225    3250089F               LW,GR     IPHOLD+GR
01 00226    6D9A1300 A             WD,LV     ARMD,GR
01 00227    6D9A1700 A             WD,LV     TRIG,GR
01 00228    6D9A1400 A             WD,LV     ENABLE,GR
01 00229    33F00A20               MTW,-1    WAITCNT
01 0022A    69200229               BCS,2     $-1
01 0022B    2590007F A    CKINTADC SLS,LV    -1
01 0022C    02200000 A             LCI       0
01 0022D    2300089A               STM,0     IPHOLD
01 0022E    32900009 A             LW,LV     LV
01 0022F    69300220               BCS,3     CKINTADB
01 00230    20500001 A             AI,GR     1
01 00231    02200000 A             LCI       0
01 00232    2300089A               STM,0     IPHOLD
01 00233    33F008EF               MTW,-1    GRPCNT
01 00234    6920021E               BCS,2     CKINTADA
01 00235    22000499               LI,IO     MSG1CDW
01 00236    6A700414               BAL,LNK   CHKSTK
01 00237    6A700483               BAL,LNK   KSRA
01 00238    68000257               B         GETSEQ
01 00239    21500001 A    CKINTADD CI,GR     1
01 0023A    68300536               BE        GRPONE            BR IF INT FROM WD GRP ONE.
01 0023B    32800002 A             LW,WKA    OT
01 0023C    6A700580               BAL,LNK   YLDINTAD          EXTRACT HISTORY TABLE ENTRY ADDR
                          *                                    FROM GROUP AND LEVEL.
01 0023D    32A00008 A             LW,CSA    WKA
01 0023E    22B001FF A             LI,CSM    511
01 0023F    C5A00002 A             CS,CSA    *OT               COMPARE RECEIVED ADDR WITH EXPECTED.
01 00240    69300250               BNE       CKINTADH          BR IF NOT EQUAL.
01 00241    328009CA               LW,WKA    BIT18
```

```
01 00242   C8800002 A            AND,WKA   *BT          TEST FOR PREVIOUS INT
01 00243   68300248              BCR,3     CKINTADE     BR IF NO PREVIOUS INT FROM LEVEL.
01 00244   F2800002 A            LB,WKA    *BT
01 00245   498009C1              OR,WKA    BIT3         FLAG ERROR TYPE.
01 00246   09800930              PSW,WKA   ERRSTK
01 00247   6800024B              B         CKINTADF
01 00248   B2800002 A   CKINTADE LW,WKA    *BT
01 00249   498009CA              OR,WKA    BIT18
01 0024A   B5800002 A            STW,WKA   *BT
01 0024B   528A08E3     CKINTADF LH,WKA    NTNTIMPL,GR
01 0024C   49800009 A            OR,WKA    LV
01 0024D   558A08E3              STH,WKA   NTNTIMPL,GR  MAKE ENTRY TO TABLE OF IMPLEMENTED
                        *                               INTERRUPT LEVELS.
01 0024E   6D9A1100 A   CKINTADG WD,LV     DISARM,GR    CLEAR INTERRUPT FROM ACTIVE STATE,
                        *                               AND CONTINUE TRIGGERING.
01 0024F   6800022B              B         CKINTADC
01 00250   B2800002 A   CKINTADH LW,WKA    *BT
01 00251   25800014 A            SLS,WKA   20
01 00252   25800079 A            SLS,WKA   -7
01 00253   4980000A A            OR,WKA    CSA          COMBINE REC AND EXPECTED INT.
01 00254   498009C0              OR,WKA    BITTWO
01 00255   09800930              PSW,WKA   ERRSTK
01 00256   6800024E              B         CKINTADG
                        *
                        *  DETERMINE INTERRUPT PRIORITY SEQUENCE.
                        *
01 00257   2280029F     GETSEQ   LI,WKA    GETSEQH
01 00258   358008FA              STW,WKA   HIEXIT
01 00259   6A7004A7              BAL,LNK   SETSTKS
01 0025A   6A700574              BAL,LNK   SETHI        PUT HIGHEST PRI INT IN ACTIVE STATE.
01 0025B   22800001 A            LI,WKA    1
01 0025C   358009BD              STW,WKA   CNTR
01 0025D   22500000 A            LI,GR     0
01 0025E   22E00010 A            LI,WKD    16
01 0025F   32900916              LW,LV     NOTHI
01 00260   68000262              B         $+2
01 00261   2290FFFF A   GETSEQA  LI,LV     65535
```



```
01 00262   6D9A1300 A            WD,LV     ARMD,GR
01 00263   6D9A1700 A            WD,LV     TRIG,GR
01 00264   6D9A1400 A            WD,LV     ENABLE,GR
01 00265   20500001 A            AI,GR     1
01 00266   64E00261              BDR,WKD   GETSEQA
01 00267   22E00200 A            LI,WKD    512
01 00268   35E00A20              STW,WKD   WAITCNT
01 00269   22500000 A            LI,GR     0
01 0026A   32900917              LW,LV     HIBIT
01 0026B   22800271              LI,WKA    GETSEQC
01 0026C   358008F7              STW,WKA   ADRDCODE
01 0026D   68000287              B         GETSEQE-6
01 0026E   33F00A20     GETSEQB  MTW,-1    WAITCNT
01 0026F   6920026D              BCS,2     $-2
01 00270   680002A9              B         CHKSEQ
01 00271   328009BD     GETSEQC  LW,WKA    CNTR
01 00272   22100AC6              LI,XA     ITRNHIST
01 00273   22C00100 A            LI,WKB    256
01 00274   22300002 A            LI,XB     2
01 00275   32A00002 A            LW,CSA    BT
01 00276   22B001FF A            LI,CSM    511
01 00277   C5A00001 A   GETSEQD  CS,CSA    *XA
01 00278   6930028E              BNE       GETSEQF
01 00279   20100001 A            AI,XA     1
01 0027A   22C00000 A            LI,WKB    0
01 0027B   F1C60001 A            CB,WKB    *XA,XB
01 0027C   69300296              BNE       GETSEQG      BR IF MORE THAN ONE INT PER TRIG.
01 0027D   F5860001 A            STB,WKA   *XA,XB
01 0027E   331009BD              MTW,1     CNTR
01 0027F   201FFFFF A            AI,XA     -1
01 00280   F2900001 A            LB,LV     *XA
01 00281   32500009 A            LW,GR     LV
01 00282   2590001C A            SLS,LV    28
01 00283   25900064 A            SLS,LV    -28
01 00284   2550007C A            SLS,GR    -4
01 00285   221009C8              LI,XA     BIT16
01 00286   B2920009 A            LW,LV     *LV,XA       LOAD LEVEL BIT FOR LAST INTERRUPT
```

```
                                *                               TO OCCUR.
     01 00287   528A0846               LH,WKA     LEVBITSA,GR
     01 00288   49800009 A             OR,WKA     LV
     01 00289   558A0846               STH,WKA    LEVBITSA,GR
     01 0028A   609A1500 A             WD,LV      DISABLE,GR
     01 0028B   02200000 A             LCI        0
     01 0028C   2A0009AC               LH,0       CTCHHNG1
     01 0028D   0E200928    GETSEQE    LPSD,2     GETSEQ1
2B0  01 0028E   20100002 A  GETSEQF    AI,XA      2
     01 0028F   64C00277               BDR,WKB    GETSEQD
     01 00290   25800014 A             SLS,WKA    20
     01 00291   49800002 A             OR,WKA     OT
     01 00292   498009BE               OR,WKA     BITZERO           FLAG ERROR TYPE.
     01 00293   498009BF               OR,WKA     BITONE            *
2BC  01 00294   09800930               PSW,WKA    ERRSTK            ENTER IN ERROR STACK.
     01 00295   6800028D               B          GETSEQE
     01 00296   3293FFFF A  GETSEQG    LW,LV      -1,XA
     01 00297   25900068 A             SLS,LV     -24
     01 00298   328009BD               LW,WKA     CNTR
     01 00299   25800014 A             SLS,WKA    20
     01 0029A   49800009 A             OR,WKA     LV
     01 0029B   498009C0               OR,WKA     BITTWO
     01 0029C   498009C1               OR,WKA     BIT3
2BF  01 0029D   09800930               PSW,WKA    ERRSTK
     01 0029E   6800027F               B          GETSEQD+8
     01 0029F   6A70058B    GETSEQH    BAL,LNK    KILLINTS
     01 002A0   6A700414               BAL,LNK    CHKSTK
     01 002A1   02000000 A             NOP
     01 002A2   22800000 A             LI,WKA     0
     01 002A3   22100000 A             LI,XA      0
     01 002A4   22C00100 A             LI,WKB     256
     01 002A5   35820AC6               STW,WKA    ITRNHIST,XA
     01 002A6   20100002 A             AI,XA      2
     01 002A7   64C002A5               BDR,WKB    $-2
     01 002A8   68000257               B          GETSEQ
                            *
     01 002A9   221FFFF8 A  CHKSEQ     LI,XA      -8
```



```
     01 002AA   328208EB    CHKSEQA    LW,WKA     NTNTIMPL+8,XA
     01 002AB   4882084E               EOR,WKA    LEVBITSA+8,XA
     01 002AC   693002B2               BCS,3      CHKSEQC           BR IF INT DID NOT OCCUR EVERY TIME
                            *                                       IT WAS TRIGGERED.
     01 002AD   651002AA               BIR,XA     CHKSEQA
     01 002AE   220004A7               LI,IO      MSG5CDW
     01 002AF   6A700414    CHKSEQB    BAL,LNK    CHKSTK
     01 002B0   6A700483               BAL,LNK    KSRA
     01 002B1   680002CB               B          CHKSEQE
     01 002B2   32A00008 A  CHKSEQC    LW,CSA     WKA
     01 002B3   25A00170 A             SLD,CSA    -16
     01 002B4   25B00070 A             SLS,CSM    -16
     01 002B5   22800008 A             LI,WKA     8
     01 002B6   30800001 A             AW,WKA     XA
     01 002B7   25800001 A             SLS,WKA    1
     01 002B8   32A0000A A             LW,CSA     CSA
     01 002B9   693002BC               BCS,3      CHKSEQD           BR IF EVEN WD GROUP.
     01 002BA   20800001 A             AI,WKA     1
     01 002BB   32A0000B A             LW,CSA     CSM
     01 002BC   32B0000A A  CHKSEQD    LW,CSM     CSA
     01 002BD   32500008 A             LW,GR      WKA
     01 002BE   25800014 A             SLS,WKA    20
     01 002BF   52CA08E3               LH,WKB     NTNTIMPL,GR
     01 002C0   4BC0000B A             AND,WKB    CSM
     01 002C1   683002C3               BCR,3      $+2               BR IF LEVELS DID NOT INTERRUPT
                            *                                       DURING ADDRESS TEST.
     01 002C2   498009C7               OR,WKA     BIT15
     01 002C3   4980000B A             OR,WKA     CSM
     01 002C4   498009BF               OR,WKA     BITONE            FLAG ERROR TYPE.
     01 002C5   09800930               PSW,WKA    ERRSTK
     01 002C6   528A08E3               LH,WKA     NTNTIMPL,GR
     01 002C7   558A0846               STH,WKA    LEVBITSA,GR       DELETE ERRORS ONCE RECORDED.
     01 002C8   680002AA               B          CHKSEQA
     01 002C9   F2C0000C A  CHKSEQH    LB,WKB     *WKB
     01 002CA   680002DA               B          CHKSEQG
     01 002CB   32B00917    CHKSEQE    LW,CSM     HIBIT
     01 002CC   6A70056D               BAL,LNK    BITCNT
```

```
1110  01 002CD  202FFFF0 A          AI,8T   -16
1111  01 002CE  55200CC6           STH,8T  LAST
1112  01 002CF  22E000FF A         LI,WKD  255
1113  01 002D0  22100006 A         LI,XA   6
1114  01 002D1  22300001 A         LI,XB   1                 GTH INDEX.
1115  01 002D2  22D00001 A         LI,WKC  1                 NEXT-IN-SEQ SEARCH ARGUEMENT.
1116  01 002D3  22C00AC6    CHKSEQF LI,WKB  ITRNHIST
1117  01 002D4  22800100 A         LI,WKA  256
1118  01 002D5  F1D2000C A         CB,WKC  *WKB,XA
1119  01 002D6  683002C9           BE      CHKSEQH
1120  01 002D7  20C00002 A         AI,WKB  2
1121  01 002D8  648002D5           BDR,WKA $-3
1122  01 002D9  22C0FF00 A         LI,WK9  255**8
1123  01 002DA  55C60CC6    CHKSEQG STH,WKB LAST,XB
1124  01 002DB  20300001 A         AI,XB   1
1125  01 002DC  20D00001 A         AI,WKC  1                 INCR SEARCH ARGUEMENT.
1126  01 002DD  64E002D3           BDR,WKD CHKSEQF
1127                               *
1128                               *  FORMAT PRIORITY SEQUENCE FOR OUTPUT.
1129                               *
1130  01 002DE  6A7004A7    OUTPSEQ BAL,LNK SETSTKS
1131  01 002DF  22E000ED A         LI,WKD  237
1132  01 002E0  22D000FF A         LI,WKC  255
1133  01 002E1  22100000 A         LI,XA   0
1134  01 002E2  35100868           STW,XA  LEVBITSN+2
1135  01 002E3  35100867           STW,XA  LEVBITSN+1
1136  01 002E4  22600DC6           LI,9A   LAST+256
1137  01 002E5  35600866           STW,9A  LEVBITSN
1138  01 002E6  22C00000 A         LI,WK9  0
1139  01 002E7  32100868    OUTPSEQA LW,XA  LEVBITSN+2
1140  01 002E8  71D20CC6           CB,WKC  LAST,XA
1141  01 002E9  683002F3           BE      OUTPSEQB
1142  01 002EA  32300867           LW,XB   LEVBITSN+1
1143  01 002EB  52F60CC6           LH,1N   LAST,XB
1144  01 002EC  32600866           LW,9A   LEVBITSN
1145  01 002ED  6A700563           BAL,LNK TRANOUT
1146  01 002EE  328DFFFF A         LW,WKA  -1,8A
```



```
1147  01 002EF  438008F4           AND,WKA BLNKSTRP
1148  01 002F0  358DFFFE A         STW,WKA -2,8A
1149  01 002F1  33100866           MTW,1   LEVBITSN          INCR OUTPUT ADDRESS.
1150  01 002F2  20C00001 A         AI,WKB  1
1151  01 002F3  33200868    OUTPSEQB MTW,2   LEVBITSN+2
1152  01 002F4  33100867           MTW,1   LEVBITSN+1
1153  01 002F5  64E002E7           BDR,WKD OUTPSEQA
1154  01 002F6  220004A8           LI,I8   MSG6ACDW
1155  01 002F7  6A700483           BAL,LNK KSRA
1156                               *
1157                               *  OUTPUT PRIORITY SEQUENCE RECEIVED.
1158                               *
1159  01 002F8  25C00002 A    DUMPSEQ SLS,WKB 2
1160  01 002F9  22100001 A         LI,XA   1
1161  01 002FA  55C20959           STH,WKB SEQCDW1+1,XA      STORE COUNT OF ENTRIES TO PRINT.
1162  01 002FB  22800015 A         LI,WKA  21
1163  01 002FC  75800DC6           STB,WKA LAST+256
1164  01 002FD  22100000 A         LI,XA   0
1165  01 002FE  32A00DC6           LW,CSA  LAST+256
1166  01 002FF  22B0FF00 A         LI,CSM  255**8
1167  01 00300  22C00100 A         LI,WKB  256
1168  01 00301  45A20DC6    DUMPSEQA CS,CSA  LAST+256,XA
1169  01 00302  68300307           BE      DUMPSEQB
1170  01 00303  25100002 A         SLS,XA  2
1171  01 00304  75820DC6           STB,WKA LAST+256,XA       STORE NEW LINE CHAR AS FIRST BYTE
                                                             OF EACH NEW WD GROUP.
1172                               *
1173  01 00305  2510007E A         SLS,XA  -2
1174  01 00306  32A20DC6           LW,CSA  LAST+256,XA
1175  01 00307  20100001 A    DUMPSEQB AI,XA   1
1176  01 00308  64C00301           BDR,WKB DUMPSEQA
1177  01 00309  220004AB           LI,I8   SEQCDW
1178  01 0030A  6A700483           BAL,LNK KSRA              BY-PASS TEST FOR PRINT SUPPRESSION.
1179  01 00308  220004B1           LI,I8   QUESTION
1180  01 0030C  6A7004D1           BAL,LNK RESP
1181  01 0030D  226004F5           LI,9A   BADSEQ
1182  01 0030E  6A7004BA           BAL,LNK SSANS
1183                               *
```

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1184                                * BASIC TEST GENERATOR.
1185                                *
1186   01 0030F  22800100 A  ALLAUTO LI,WKA   256             MOVE RECEIVED PRIORITY TO EXPECTED
1187   01 00310  22102131E           LI,XA    BA(ITRNHIST+1)+2 PRIORITY AFTER VERIFICATION.
1188   01 00311  22302131F           LI,XB    BA(ITRNHIST+1)+3
1189   01 00312  72C20000 A          LB,WKB   0,XA
1190   01 00313  75C60000 A          STB,WKB  0,XB
1191   01 00314  20100008 A          AI,XA    8
1192   01 00315  20300008 A          AI,XB    8
1193   01 00316  64800312           BDR,WKA  $-4
1194   01 00317  6A70048E     INITAUTO BAL,LNK  SETPSDS
1195   01 00318  6A7004D7           BAL,LNK  RDSS
1196   01 00319  6A7006F3           BAL,LNK  BS456
1197   01 0031A  226007D7           LI,0A    JX
1198   01 0031B  6A70059D           BAL,LNK  TESTBSW
1199   01 0031C  00000007 A         DATA     7
1200   01 0031D  226006FE           LI,0A    MANUAL
1201   01 0031E  6A70059D           BAL,LNK  TESTBSW
1202   01 0031F  00000009 A         DATA     9
1203   01 00320  22800007 A         LI,WKA   7
1204   01 00321  35800A23           STW,WKA  INHIBITS
1205        01 00322           ALLAUTOA EQU    $
1206   01 00322  22800006 A  ALLAUTOB LI,WKA   6
1207   01 00323  35800308           STW,WKA  AUTOSTEP
1208   01 00324  3580090C           STW,WKA  AUTOSTEP+1
1209   01 00325  3580090D           STW,WKA  AUTOSTEP+2
1210   01 00326  2280033D     ALLAUTOC LI,WKA   ALLAUTOD
1211   01 00327  358008F8           STW,WKA  CHKEXIT
1212   01 00328  22800603           LI,WKA   IGEN
1213   01 00329  358008F9           STW,WKA  EXECPATT
1214   01 0032A  2280035F           LI,WKA   ALLAUTOH
1215   01 00328  358008FA           STW,WKA  HIEXIT
1216   01 0032C  6A7004B0           BAL,LNK  CLEAR
1217   01 0032D  223FFFF8 A         LI,XB    -8
1218   01 0032E  32100908           LW,XA    AUTOSTEP
1219   01 0032F  32820904           LW,WKA   AP1,XA
1220   01 00330  3586084E           STW,WKA  LEVBITSA+8,XB
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1221   01 00331  65300330           BIR,XB   $-1
1222   01 00332  223FFFF8 A         LI,XB    -8
1223   01 00333  3210090C           LW,XA    AUTOSTEP+1
1224   01 00334  32820904           LW,WKA   AP1,XA
1225   01 00335  3586085E           STW,WKA  LEVBITST+8,XB
1226   01 00336  65300335           BIR,XB   $-1
1227   01 00337  223FFFF8 A         LI,XB    -8
1228   01 00338  3210090D           LW,XA    AUTOSTEP+2
1229   01 00339  32820904           LW,WKA   AP1,XA
1230   01 0033A  35860856           STW,WKA  LEVBITSE+8,XB
1231   01 00333  6530033A           BIR,XB   $-1
1232   01 0033C  680005D3           B        SETEXP
1233   01 0033D  32800A22     ALLAUTOD LW,WKA   ERROR
1234   01 0033E  68300345           BCR,3    $+7            BR IF NO ERROR OCCURRED.
1235   01 0033F  22600342           LI,0A    $+3
1236   01 00340  6A70059D           BAL,LNK  TESTBSW        TEST FOR HALT ON ERROR.
1237   01 00341  00000001 A         DATA     1
1238   01 00342  22600363           LI,0A    AUTOERLP
1239   01 00343  6A70059D           BAL,LNK  TESTBSW        TEST FOR LOOP ON ERROR.
1240   01 00344  00000002 A         DATA     2
1241   01 00345  226006FE           LI,0A    MANUAL
1242   01 00346  6A70059D           BAL,LNK  TESTBSW
1243   01 00347  00000009 A         DATA     9
1244   01 00348  6A7006F3           BAL,LNK  BS456
1245   01 00349  226007D7           LI,0A    JX
1246   01 0034A  6A70059D           BAL,LNK  TESTBSW
1247   01 0034B  00000007 A         DATA     7
1248   01 0034C  33F0090B           MTW,-1   AUTOSTEP
1249   01 0034D  68100326           BCR,1    ALLAUTOC
1250   01 0034E  22800006 A  ALLAUTOE LI,WKA   6
1251   01 0034F  3580090B           STW,WKA  AUTOSTEP
1252   01 00350  33F0090C           MTW,-1   AUTOSTEP+1
1253   01 00351  68100326           BCR,1    ALLAUTOC
1254   01 00352  22800006 A  ALLAUTOF LI,WKA   6
1255   01 00353  3580090C           STW,WKA  AUTOSTEP+1
1256   01 00354  33F0090D           MTW,-1   AUTOSTEP+2
1257   01 00355  68100326           BCR,1    ALLAUTOC
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1258  01 00356  33F00A23            MTW,-1  INHIBITS
1259  01 00357  68100322            BCR,1   ALLAUT0A
1260  01 00358  6A700589  ALLAUT0G  BAL,LNK  KILLINTS
1261  01 00359  22600318            LI,9A   INITAUT0+1
1262  01 0035A  6A70059D            BAL,LNK  TEST3SW
1263  01 0035B  00000003 A          DATA    3
1264  01 0035C  220004B4            LI,I8   MSG7CD#
1265  01 0035D  6A700483            BAL,LNK  ^SRA
1266  01 0035E  68000360            B       IPGEN
1267  01 0035F  6A700588  ALLAUT0H  BAL,LNK  KILLINTS
1268  01 00360  6A700414            BAL,LNK  CHKSTK
1269  01 00361  68000326            B       ALLAUT0C        CONTNUE, AFTER OUPTUTTING
1270  01 00362  68000326            B       ALLAUT0C        ERROR INFORMATION
1271  01 00363  357008F6  AUT0ERLP  STW,LNK  L00PEXIT
1272  01 00364  22800368            LI,WKA  AUT0ERRA
1273  01 00365  358008F8            STW,WKA CHKEXIT
1274  01 00366  6C000000 A          RD,0    0
1275  01 00367  740008F1            STCF    H0LDSS1         STORE SETTING OF SS1.
1276  01 00368  226005D3  AUT0ERRA  LI,9A   SETEXP
1277  01 00369  6A7004C9            BAL,LNK  REVRS1         TEST FOR SS1 REVERSED.
1278  01 0036A  2280033D            LI,WKA  ALLAUT0D
1279  01 0036B  358008F8            STW,WKA CHKEXIT
1280  01 0036C  E80008F6            B       *L00PEXIT       EXIT WHEN SS1 REVERSED.
1281                          *
1282                          *  END OF BASIC TEST GENERATOR.
1283                          *
1284                          *
1285                          *  GENERATE ALL POSSIBLE CONDITIONS OF THE INTERRUPT SYSTEM.
1286                          *
1287        01 0036D           IPGEN   EQU     $               THIS ROUTINE WILL GENERATE EVERY
1288                          *                               POSSIBLE COMBINATION OF CONDITIONS
1289                          *                               IN THE INTERRUPT SYSTEM. AS THESE
1290                          *                               CONDITIONS ARE GENERATED, THEY ARE
1291                          *                               VERFIED FOR ACCURACY, AND ANY
1292                          *                               FAILURES WHICH OCCUR WILL BE IND-
1293                          *                               ICATED.
1294                          *
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1295  01 0036D  22100002 A          LI,XA   2
1296  01 0036E  52820HE3            LH,WKA  NTNTIMPL,XA
1297  01 0036F  68300372            BCR,3   IPGENA          BR IF NO LEVEL IMPLEMENTED IN GR XA.
1298  01 00370  20100001 A          AI,XA   1
1299  01 00371  6800036E            B       IPGEN+1
1300  01 00372  201FFFFF A  IPGENA  AI,XA   -1
1301  01 00373  351008EC            STW,XA  HICHAS          STORE HIGHEST CHASSIS IMPLEMENTED.
1302  01 00374  201FFFFF A          AI,XA   -1
1303  01 00375  351008E0            STW,XA  HICHAS1
1304  01 00376  20100001 A          AI,XA   1
1305  01 00377  22C00002 A          LI,WKB  2
1306  01 00378  22800000 A  IPGENB  LI,CSM  0
1307  01 00379  52A208E3            LH,CSA  NTNTIMPL,XA
1308  01 0037A  22800010 A          LI,WKA  16
1309  01 0037B  25A0017F A  IPGENC  SLD,CSA  -1
1310  01 0037C  21B00000 A          CI,CSM  0
1311  01 0037D  6930037F            BNE     IPGEND
1312  01 0037E  6A80037B            BDR,WKA IPGENC
1313  01 0037F  3582088A  IPGEND    STW,WKA CHSLVCNT,XA     STORE NUM OF LEVELS IMPLEMENTED
1314                          *                               IN EACH WD GROUP.
1315  01 00380  64100378            BDR,XA  IPGENB
1316  01 00381  64C00378            BDR,WKB IPGENB
1317  01 00382  3280088A            LW,WKA  CHSLVCNT
1318  01 00383  221FFFF1 A          LI,XA   -15
1319  01 00384  3082089A            AW,WKA  CHSLVCNT+16,XA
1320  01 00385  65100384            BIR,XA  $-1
1321  01 00386  43B008FE            AND,WKA BIT16X31
1322  01 00387  35800A21            STW,WKA WAITCON         STORE NEW INTERRUPT WAIT CONSTANT.
1323  01 00388  22500000 A          LI,GR   0
1324  01 00389  22800010 A          LI,WKA  16
1325  01 0038A  3A1A088A  IPGENE    LCW,XA  CHSLVCNT,GR
1326  01 0038B  32C009C7            LW,WKB  BIT15
1327  01 0038C  25C20000 A          SLS,WKB 0,XA
1328  01 0038D  3AC000,C A          LCW,WKB WKB
1329  01 0038E  35CA088A            STW,WKB CHSLVCNT,GR     STORE PATTERN DECREMENT CONSTANT.
1330  01 0038F  20500001 A          AI,GR   1               INCR GROUP INDEX.
1331  01 00390  6A80038A            BDR,WKA IPGENE
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1332  01 00391  22800000 A          LI,WKA   0
1333  01 00392  35800844            STW,WKA  IPCOUNT
1334  01 00393  35800845            STW,WKA  IPCOUNT+1
1335  01 00394  221FFFF0 A          LI,XA    -16
1336  01 00395  528208EB            LH,WKA   NTNTIMPL+8,XA     EXPAND IMPLEMENTED TABLE ENTRIES
1337  01 00396  488008FE            AND,WKA  BIT16X31          TO FULL WORDS, MOVE TO PATTERN
1338  01 00397  358208AA            STW,WKA  IPH0LD+16,XA      GENERATOR HOLD AREA.
1339  01 00398  358208BA            STW,WKA  IPH0LDA+16,XA
1340  01 00399  358208CA            STW,WKA  IPH0LDT+16,XA
1341  01 0039A  358208DA            STW,WKA  IPH0LDE+16,XA
1342  01 0039B  65100395            BIR,XA   $-6
1343  01 0039C  228003C1            LI,WKA   STEPIP
1344  01 0039D  358008F8            STW,WKA  CHKEXIT
1345  01 0039E  228003BD            LI,WKA   IPGENH
1346  01 0039F  358008FA            STW,WKA  HIEXIT
1347  01 003A0  22800603            LI,WKA   IGEN
1348  01 003A1  358008F9            STW,WKA  EXECPATT
1349  01 003A2  22800007 A  IPGENF  LI,WKA   7
1350  01 003A3  35800A23            STW,WKA  INHIBITS
1351  01 003A4  6A7004B0    IPGENG  BAL,LNK  CLEAR
1352  01 003A5  33100845            MTW,1    IPCOUNT+1         INCR LOW ORDER PATTERN COUNT WORD.
1353  01 003A6  684003AC            BCR,4    $+6               BR IF NO OVERFLOW.
1354  01 003A7  22800000 A          LI,WKA   0
1355  01 003A8  35800845            STW,WKA  IPCOUNT+1
1356  01 003A9  33100844            MTW,1    IPCOUNT           INCR HIGH ORDER PATTERN COUNT WORD.
1357  01 003AA  684003AC            BCR,4    $+2               BR IF NO OVERFLOW.
1358  01 003AB  35800844            STW,WKA  IPCOUNT           COUNTS RESTARTS AT X'7FFFFFFF'
1359                        *                                  TIMES X'7FFFFFFF' TIMES 8.
1360  01 003AC  321008EC            LW,XA    HICHAS
1361  01 003AD  323008ED            LW,XB    HICHAS1
1362  01 003AE  328608AB            LW,WKA   IPH0LDA+1,XB
1363  01 003AF  55820846            STH,WKA  LEVBITSA,XA
1364  01 003B0  328608BB            LW,WKA   IPH0LDT+1,XB
1365  01 003B1  55820856            STH,WKA  LEVBITST,XA
1366  01 003B2  328608CB            LW,WKA   IPH0LDE+1,XB
1367  01 003B3  55820845            STH,WKA  LEVBITSE,XA
1368  01 003B4  641003B5            BDR,XA   $+1
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1369  01 003B5  643003AE            BDR,XB   $-7
1370  01 003B6  328008AA            LW,WKA   IPH0LDA
1371  01 003B7  55800846            STH,WKA  LEVBITSA
1372  01 003B8  328008BA            LW,WKA   IPH0LDT
1373  01 003B9  55800856            STH,WKA  LEVBITST
1374  01 003BA  328008CA            LW,WKA   IPH0LDE
1375  01 003BB  5580084E            STH,WKA  LEVBITSE
1376  01 003BC  6B0005D4            B        SETEXP+1
1377  01 003BD  6A70058B    IPGENH  BAL,LNK  KILLINTS
1378  01 003BE  6A700414            BAL,LNK  CHKSTK
1379  01 003BF  680003C1            B        STEPIP
1380  01 003C0  680003C1            B        STEPIP
1381  01 003C1  32800A22    STEPIP  LW,WKA   ERROR
1382  01 003C2  683003C9            BCR,3    STEPIPB           BR IF NO ERROR.
1383  01 003C3  226003C6            LI,9A    STEPIPA
1384  01 003C4  6A70059D            BAL,LNK  TESTBSW           TEST FOR HALT ON ERROR.
1385  01 003C5  00000001 A          DATA     1
1386  01 003C6  2260040B    STEPIPA LI,9A    IPERLOOP
1387  01 003C7  6A70059D            BAL,LNK  TESTBSW           TEST FOR LOOP ON ERROR.
1388  01 003C8  00000002 A          DATA     2
1389  01 003C9  6C000000 A  STEPIPB RD,0     0
1390  01 003CA  698003DB            BCS,8    $+17              BY-PASS OPTION TEST IF SS1 SET.
1391  01 003CB  22600317            LI,9A    INITAUTO
1392  01 003CC  6A70059D            BAL,LNK  TESTBSW           TEST FOR LOOP ON BASIC TESTS.
1393  01 003CD  00000003 A          DATA     3
1394  01 003CE  6A7006F3            BAL,LNK  BS456             TEST FOR ENTRY TO OPTIONAL ROUTINES.
1395  01 003CF  226007D7            LI,9A    JX
1396  01 003D0  6A70059D            BAL,LNK  TESTBSW           TEST FOR ENTRY TO JX-58 ROUTINE.
1397  01 003D1  00000007 A          DATA     7
1398  01 003D2  226006FE            LI,9A    MANUAL
1399  01 003D3  6A70059D            BAL,LNK  TESTBSW           TEST FOR ENTRY TO MANUAL INPUT TEST.
1400  01 003D4  00000009 A          DATA     9
1401  01 003D5  228003C1            LI,WKA   STEPIP
1402  01 003D6  358008F8            STW,WKA  CHKEXIT
1403  01 003D7  228003BD            LI,WKA   IPGENH
1404  01 003D8  358008FA            STW,WKA  HIEXIT
1405  01 003D9  22800603            LI,WKA   IGEN
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1406  01 003DA  358008F9            STW,WKA  EXECPATT
1407  01 003D8  33F00A23            MTW,-1   INHIBITS
1408  01 003DC  681003A4            BCR,1    IPGENG          LOOP THROUGH 8 INHIBIT STATES.
1409  01 003DD  6C000000 A          RD,0     0
1410  01 003DE  698003E0            BCS,8    $+2             BY-PASS SS TEST IF SS1 SET ON.
1411  01 003DF  6A7004D7            BAL,LNK  RDSS
1412  01 003E0  321008EC            LW,XA    HICHAS
1413  01 003E1  21100001 A  STEPIPC CI,XA    1
1414  01 003E2  682003E9            BLE      STEPIPD
1415  01 003E3  3282088A            LW,WKA   CHSLVCNT,XA
1416  01 003E4  668208CA            AWM,WKA  IPH0LDE,XA
1417  01 003E5  681003A2            BCR,1    IPGENF
1418  01 003E6  3282089A            LW,WKA   IPH0LD,XA
1419  01 003E7  358208CA            STW,WKA  IPH0LDE,XA
1420  01 003E8  641003E1            BDR,XA   STEPIPC
1421  01 003E9  3280088A     STEPIPD LW,WKA  CHSLVCNT
1422  01 003EA  668008CA            AWM,WKA  IPH0LDE
1423  01 003EB  681003A2            BCR,1    IPGENF
1424  01 003EC  3280089A            LW,WKA   IPH0LD
1425  01 003ED  358008CA            STW,WKA  IPH0LDE
1426  01 003EE  321008EC            LW,XA    HICHAS
1427  01 003EF  21100001 A  STEPIPE CI,XA    1
1428  01 003F0  682003F7            BLE      STEPIPF
1429  01 003F1  3282088A            LW,WKA   CHSLVCNT,XA
1430  01 003F2  668208BA            AWM,WKA  IPH0LDT,XA
1431  01 003F3  681003A2            BCR,1    IPGENF
1432  01 003F4  3282089A            LW,WKA   IPH0LD,XA
1433  01 003F5  358208BA            STW,WKA  IPH0LDT,XA
1434  01 003F6  641003EF            BDR,XA   STEPIPE
1435  01 003F7  3280088A     STEPIPF LW,WKA  CHSLVCNT
1436  01 003F8  668008BA            AWM,WKA  IPH0LDT
1437  01 003F9  681003A2            BCR,1    IPGENF
1438  01 003FA  3280089A            LW,WKA   IPH0LD
1439  01 003FB  358008BA            STW,WKA  IPH0LDT
1440  01 003FC  321008EC            LW,XA    HICHAS
1441  01 003FD  21100001 A  STEPIPG CI,XA    1
1442  01 003FE  68200405            BLE      STEPIPH
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1443  01 003FF  3282088A            LW,WKA   CHSLVCNT,XA
1444  01 00400  668208AA            AWM,WKA  IPH0LDA,XA
1445  01 00401  681003A2            BCR,1    IPGENF
1446  01 00402  3282089A            LW,WKA   IPH0LD,XA
1447  01 00403  358208AA            STW,WKA  IPH0LDA,XA
1448  01 00404  641003FD            BDR,XA   STEPIPG
1449  01 00405  3280088A     STEPIPH LW,WKA  CHSLVCNT
1450  01 00406  668008AA            AWM,WKA  IPH0LDA
1451  01 00407  681003A2            BCR,1    IPGENF
1452  01 00408  220004B8            LI,I8    MSGDCDW
1453  01 00409  6A700483            BAL,LNK  KSRA
1454  01 0040A  68000391            B        IPGENE+7
1455                          *
1456  01 00408  357008F6     IPERL0OP STW,LNK  L0OPEXIT
1457  01 0040C  6A7004F2            BAL,LNK  STHLDSS
1458  01 0040D  2280040F            LI,WKA   IPERRA
1459  01 0040E  358008F8            STW,WKA  CHKEXIT
1460  01 0040F  226005D3     IPERRA  LI,9A    SETEXP
1461  01 00410  6A7004C9            BAL,LNK  REVRS1          TEST FOR SS1 REVERSED.
1462  01 00411  228003C1            LI,WKA   STEPIP
1463  01 00412  358008F8            STW,WKA  CHKEXIT
1464  01 00413  E80008F6            B        *L0OPEXIT       EXIT WHEN SS1 REVERSED.
1465                          *
1466                          *  END OF INTERRUPT PATTERN GENERATOR.
1467                          *
1468                          *
1469                          *  CHECK ERROR STACK FOR ENTRIES, TRANSLATE AND OUTPUT ANY ERRORS.
1470                          *
1471  01 00414  12A0091A     CHKSTK  LD,CSA   ERRMSK1
1472  01 00415  45A00930            CS,CSA   ERRSTK
1473  01 00416  E8300007 A          BE       *LNK
1474  01 00417  6D000041 A          WD,0     65              SET ALARM INDICATOR ON ERROR.
1475  01 00418  32A00841            LW,CSA   BITSWTCH
1476  01 00419  6910046E            BCS,1    CHKSTKE         BR IF PRINTING SUPPRESSED.
1477  01 0041A  0970092E            PSW,LNK  LNKSTK
1478  01 0041B  2200049A            LI,I8    MSG2CDW
1479  01 0041C  6A700481            BAL,LNK  KSR
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1480  01 0041D  08F00930      CHKSTKA  PLW,IN   ERRSTK
1481  01 0041E  68E00425               BCR,14   CHKSTKB
1482  01 0041F  2260042A               LI,9A    CHKSTKC
1483  01 00420  6A70059D               BAL,LNK  TESTBSW          TEST FOR REQUEST TO OUTPUT PATTERN
1484  01 00421  0000000A A             DATA     10               ON ERROR.
1485  01 00422  0870092E               PLW,LNK  LNKSTK
1486  01 00423  6D000040 A             WD,0     64               RESET ALARM INDICATOR.
1487  01 00424  680E0001 A             B        1,LNK
1488  01 00425  22600AE6      CHKSTKB  LI,9A    ITRNHIST+32
1489  01 00426  6A700563               BAL,LNK  TRANOUT
1490  01 00427  220004A1               LI,I0    STKCDW
1491  01 00428  6A700481               BAL,LNK  KSR
1492  01 00429  68000410               B        CHKSTKA
1493                    *
1494  01 0042A  32A008F7      CHKSTKC  LW,CSA   ADRDCODE
1495  01 0042B  21A0020A               CI,CSA   HIGHA
1496  01 0042C  68300422               BE       CHKSTKB-3
1497  01 0042D  21A00239               CI,CSA   CKINTADD
1498  01 0042E  68300422               BE       CHKSTKB-3
1499  01 0042F  21A00271               CI,CSA   GETSEQC
1500  01 00430  68300422               BE       CHKSTKB-3
1501  01 00431  22600447               LI,9A    DMPNUMC
1502  01 00432  6A70059D               BAL,LNK  TESTBSW
1503  01 00433  00000008 A             DATA     8
1504  01 00434  328008F8               LW,WKA   CHKEXIT
1505  01 00435  218003C1               CI,WKA   STEPIP
1506  01 00436  69300447               BNE      DMPNUMC
1507  01 00437  22100003 A   DMPNUM   LI,XA    3
1508  01 00438  22800010 A             LI,WKA   16
1509  01 00439  32F00844               LW,IN    IPCOUNT
1510  01 0043A  68300440               BCR,3    DMPNUMA
1511  01 0043B  75820961               STB,WKA  NUMCDW+1,XA
1512  01 0043C  22600AE6               LI,9A    ITRNHIST+32
1513  01 0043D  6A700563               BAL,LNK  TRANOUT
1514  01 0043E  22600AE8               LI,9A    ITRNHIST+34
1515  01 0043F  68000443               B        DMPNUMB
1516  01 00440  22800008 A   DMPNUMA  LI,WKA   8
```



```
1517  01 00441  75820961               STB,WKA  NUMCDW+1,XA
1518  01 00442  22600AE6               LI,9A    ITRNHIST+32
1519  01 00443  32F00845      DMPNUMB  LW,IN    IPCOUNT+1
1520  01 00444  6A700563               BAL,LNK  TRANOUT
1521  01 00445  220004AF               LI,I0    PATTLEAD
1522  01 00446  6A700483               BAL,LNK  KSRA
1523  01 00447  2260000F A   DMPNUMC  LI,9A    15
1524  01 00448  528C08E3               LH,WKA   NTNTIMPL,0A
1525  01 00449  69300448               BCS,3    $+2              BR IF WD GROUP IMPLEMENTED.
1526  01 0044A  64600448               BDR,0A   $-2
1527  01 0044B  35600305               STW,0A   EXTRNAL-1        STORE HIGHEST WD GROUP IMPLEMENTED.
1528  01 0044C  22A00002 A             LI,CSA   2
1529  01 0044D  35A00304               STW,CSA  EXTRNAL-2
1530  01 0044E  22100000 A             LI,XA    0
1531  01 0044F  22F000F0 A             LI,IN    240
1532  01 00450  55F00AE6      CHKSTKD  STH,IN   ITRNHIST+32
1533  01 00451  52F20846               LH,IN    LEVBITSA,XA
1534  01 00452  22600001 A             LI,9A    1
1535  01 00453  52A2084E               LH,CSA   LEVBITSE,XA
1536  01 00454  55F00AE7               STH,IN   ITRNHIST+33
1537  01 00455  55AC0AE7               STH,CSA  ITRNHIST+33,0A
1538  01 00456  52F20856               LH,IN    LEVBITST,XA
1539  01 00457  52A2085E               LH,CSA   LEVBITSI,XA
1540  01 00458  55F00AE8               STH,IN   ITRNHIST+34
1541  01 00459  55AC0AE8               STH,CSA  ITRNHIST+34,0A
1542  01 0045A  32F00AE7               LW,IN    ITRNHIST+33
1543  01 0045B  22600AE9               LI,9A    ITRNHIST+35
1544  01 0045C  6A700563               BAL,LNK  TRANOUT          *
1545  01 0045D  22600AE8               LI,9A    ITRNHIST+37
1546  01 0045E  32F00AE8               LW,IN    ITRNHIST+34
1547  01 0045F  6A700563               BAL,LNK  TRANOUT          *
1548  01 00460  6A700776               BAL,LNK  EDIT             FORMAT OUTPUT.
1549  01 00461  220004BC               LI,I0    PDMPCDW
1550  01 00462  6A700483               BAL,LNK  KSRA             OUTPUT PATTERN.
1551  01 00463  32F00804               LW,IN    EXTRNAL-2
1552  01 00464  31F00305               CW,IN    EXTRNAL-1
1553  01 00465  69200422               BG       CHKSTKB-3        BR IF ALL IMPLEMENTED WD GROUPS
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                                   *                                      OUTPUTTED.
01 00466   21F00009 A                  CI,IN     9
01 00467   6920046A                    BG        $+3
01 00468   20F000F0 A                  AI,IN     240              ADD 'F' ZONE.
01 00469   6800046B                    B         $+2
01 0046A   20F000B7 A                  AI,IN     183              ADD 'C' ZONE.
01 0046B   32100304                    LW,XA     EXTRNAL-2
01 0046C   33100304                    MTW,1     EXTRNAL-2        INCR GROUP POINTER.
01 0046D   68000450                    B         CHKSTKD
01 0046E   0970092E        CHKSTKE     PSW,LNK   LNKSTK
01 0046F   22600474                    LI,PA     CHKSTKF
01 00470   6A70059D                    BAL,LNK   TESTBSW          TEST TO PRESERVE ERROR RECORDS.
01 00471   0000000B A                  DATA      11
01 00472   12A00918                    LD,CSA    ERRMSK
01 00473   15A00930                    STD,CSA   ERRSTK           CLEAR ERROR INFORMATION IF
                           *                                      PRINTING IS SURPRESSED.
01 00474   0870092E        CHKSTKF     PLW,LNK   LNKSTK
01 00475   6D000040 A                  WD,0      64               RESET ALARM INDICATOR.
01 00476   680E0001 A                  B         1,LNK            TAKE ERROR EXIT.
                           *         * * * DELEATED PAGE DIRECTIVE * * *          *C
01 00477   32100000 A      RDCHK       LW,XA     IB
01 00478   25100001 A                  SLS,XA    1
01 00479   328009C4                    LW,WKA    BIT6
01 0047A   C3800001 A                  AND,WKA   *XA
01 0047B   69300483                    BCS,3     KSRA             BR IF READ CDW.
01 0047C   328009C0                    LW,WKA    BITTWO
01 0047D   4B820001 A                  AND,WKA   1,XA
01 0047E   E8300007 A                  BCR,3     *LNK             BR IF NO COMMAND CHAINING.
01 0047F   20100002 A                  AI,XA     2
01 00480   68000479                    B         RDCHK+2
01 00481   32800841        KSR         LW,WKA    BITSWTCH
01 00482   69100477                    BCS,1     RDCHK            BR IF PRINTING SURPRESSED.
01 00483   12A00020 A      KSRA        LD,CSA    32
01 00484   0970092E                    PSW,LNK   LNKSTK
01 00485   6A70058B                    BAL,LNK   KILLINTS         ASSURE THAT NO INT IS IN THE ACTIVE
                           *                                      STATE BEFORE ATTEMPTING TO PERFORM
                           *                                      I/O OPERATION.
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```
01 00486   4D000001 A                  TIO,0     1
01 00487   69400486                    BIOSNP    $-1
01 00488   4C000001 A                  SIO,0     1
01 00489   4D000001 A                  TIO,0     1
01 0048A   69400489                    BIOSNP    $-1
01 0048B   15A00020 A      OUTPA       STD,CSA   32
01 0048C   0870092E                    PLW,LNK   LNKSTK
01 0048D   E8000007 A                  B         *LNK
                           *
                           *  SET UP FOR HANDLING INTERRUPTS FROM X'10' TO X'1FF'.
                           *
01 0048E   328008FB        SETPSDS     LW,WKA    DCDXPSD1
01 0048F   22E00002 A                  LI,WKD    2
01 00490   22100000 A                  LI,XA     0
01 00491   22D000F8 A      SETPSDSA    LI,WKC    248
01 00492   35820010 A      SETPSDSB    STW,WKA   16,XA
01 00493   20800004 A                  AI,WKA    4
01 00494   20100001 A                  AI,XA     1
01 00495   64D00492                    BDR,WKC   SETPSDSB
01 00496   328008FC                    LW,WKA    DCDXPSD2
01 00497   64E00491                    BDR,WKD   SETPSDSA
                           *
01 00498   22800010 A                  LI,WKA    16               SET UP PSDS ADDRESSED BY PRECEDING
01 00499   22100001 A                  LI,XA     1                XPSD INSTRUCTIONS.
01 0049A   22C000F8 A                  LI,WKB    248
01 0049B   32B00008 A      SETPSDSC    LW,CSM    WKA
01 0049C   25A0011B A                  SLD,CSA   27               ENCODE ADDRESS.
01 0049D   25A00001 A                  SLS,CSA   1                *
01 0049E   25A00103 A                  SLD,CSA   3                *
01 0049F   25A00002 A                  SLS,CSA   2                *
01 004A0   25A00116 A                  SLD,CSA   22               *
01 004A1   22B000F0 A                  LI,CSM    240              INSERT REG PAGE POINTER.
01 004A2   49A00842                    OR,CSA    SETRTRN          INSERT RETURN ADDRESS.
01 004A3   15A20CC6                    STD,CSA   LAST,XA
01 004A4   20100002 A                  AI,XA     2                INCR STD INDEX.
01 004A5   20800001 A                  AI,WKA    1                INCR ADDRESS TO BE ENCODED.
01 004A6   64C0049B                    BDR,WKB   SETPSDSC
```

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                                 *
01 004A7   12A00918     SETSTKS  LD,CSA    ERRMSK
01 004A8   15A00930              STD,CSA   ERRSTK
01 004A9   32B00903     CLR18X21 LW,CSM    BIT18X21          ZERO TEMPROARY INFO IN INT HISTORY
01 004AA   22100000 A            LI,XA     0                 TABLE.
01 004AB   22800100 A            LI,WKA    256
01 004AC   22A00000 A            LI,CSA    0
01 004AD   47A20AC6              STS,CSA   ITRNHIST,XA
01 004AE   20100002 A            AI,XA     2
01 004AF   648004AD              BDR,WKA   $-2
01 004B0   22A00000 A   CLEAR    LI,CSA    0
01 004B1   22B00000 A            LI,CSM    0
01 004B2   221FFFF0 A            LI,XA     -16
01 004B3   15A20866              STD,CSA   LEVBITSA+32,XA
01 004B4   651004B3              BIR,XA    $-1
01 004B5   221FFFF0 A            LI,XA     -16
01 004B6   15A20306              STD,CSA   ITRNHIST+64,XA
01 004B7   651004B6              BIR,XA    $-1
01 004B8   35A00A22              STW,CSA   ERROR
01 004B9   E8000007 A            B         *LNK
                                 *
                                 *  TEST FOR REVERSAL OF SS 2 OR SS 3.
                                 *
01 004BA   22100003 A   SSANS    LI,XA     3                 XA,WKA,CSM,CSA.
01 004BB   6C000000 A            RD,0      0
01 004BC   740204BE              STCF      SSANSA,XA         STORE SS SETTING.
01 004BD   2E000000 A            WAIT                        WAIT FOR ANSWER, AND
01 004BE   02000000 A   SSANSA   NOP       0                 DISPLAY SS SETTING IN BYTE 3.
01 004BF   32B009BF              LW,CSM    BITONE
01 004C0   6C000000 A            RD,0      0
01 004C1   7400000A A            STCF      CSA
01 004C2   25A0016R A            SLD,CSA   -24
01 004C3   45A004BE              CS,CSA    SSANSA
01 004C4   E9300007 A            BNE       *LNK              BR IF SS 2 IS REVERSED.
01 004C5   25B0007F A            SLS,CSM   -1
01 004C6   45A004BE              CS,CSA    SSANSA
01 004C7   683004BA              BE        SSANS
```



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01 004C8   E8000006 A            B         *BA               BR IF SS 3 IS REVERSED.
                                 *
                                 *  TEST FOR REVERSAL OF SS 1.
                                 *
01 004C9   6C000000 A   REVRS1   RD,0      0                 READ SENSE SWITCHES.
01 004CA   74000008 A            STCF      WKA
01 004CB   4B8009BE              AND,WKA   BITZERO           STRIP ALL BUT SS1.
01 004CC   32C009BE              LW,WKB    BITZERO
01 004CD   4BC008F1              AND,WKB   HOLDSS1           STRIP ORIGINAL TO SS1.
01 004CE   4880000C A            EOR,WKA   WKB
01 004CF   E8300006 A            BCR,3     *BA               BR IF SS1 NOT REVERSED.
01 004D0   E8000007 A            B         *LNK              RETURN IF SS1 REVERSED.
                                 *                  * * * DELEATED PAGE DIRECTIVE * * *        *C
           01 004D1     RESP     EQU       $
01 004D1   32800954              LW,WKA    COMMCDW+2
01 004D2   4B8008FD              AND,WKA   BITOX15
01 004D3   49800000 A            OR,WKA    IO
01 004D4   35800954              STW,WKA   COMMCDW+2
01 004D5   220004A9              LI,IO     DA(COMMCDW)
01 004D6   68000483              B         KSRA              BY-PASS TEST FOR PRINT SURPRESSION.
                                 *
                                 *  TEST FOR REVERSAL OF SS 4.
                                 *
01 004D7   6C000000 A   RDSS     RD,0      0
01 004D8   740008F1              STCF      HOLDSS1           STORE SENSE SWITCH SETTING.
01 004D9   328009C1              LW,WKA    BIT3
01 004DA   4B8008F0              AND,WKA   HOLDSS
01 004DB   32C009C1              LW,WKB    BIT3
01 004DC   4BC008F1              AND,WKB   HOLDSS1
01 004DD   4880000C A            EOR,WKA   WKB
01 004DE   E8200007 A            BCR,2     *LNK              BR IF SS4 HAS NOT BEEN REVERSED.
01 004DF   328008F1              LW,WKA    HOLDSS1
01 004E0   358008F0              STW,WKA   HOLDSS            STORE CURRENT SS4.
01 004E1   0970092E              PSW,LNK   LNKSTK
01 004E2   220004AD              LI,IO     BITSWCDW
01 004E3   6A700481              BAL,LNK   KSR
01 004E4   226004F0              LI,BA     RDSSA
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```
     1702   01 004E5    6A7005AF              BAL,LNK  TRANIN
     1703   01 004E6    3210000F A            LW,XA    IN
     1704   01 004E7    25100002 A            S_S,XA   2
     1705   01 004E8    3A100001 A            LCW,XA   XA
     1706   01 004E9    228FFFFF A            LI,WKA   -1
     1707   01 004EA    25820000 A            SLS,WKA  0,XA
     1708   01 004EB    48800841              AND,WKA  BITSWTCH
     1709   01 004EC    49800002 A            OR,WKA   BT
     1710   01 004ED    35800841              STW,WKA  BITSWTCH
     1711   01 004EE    0870092E              PLW,LNK  LNKSTK
     1712   01 004EF    E8000007 A            B        *LNK
     1713   01 004F0    227004E2    RDSSA     LI,LNK   RDSS+11
     1714   01 004F1    68000534              B        OUTPINV
     1715                            *
     1716   01 004F2    6C000000 A  STHLDSS   RD,0      0
     1717   01 004F3    740008F1              STCF     HOLDSS1
     1718   01 004F4    E8000007 A            B        *LNK
     1719                            *
     1720                            *  RECEIVED PRIORITY SEQUENCE DOES NOT MATCH EXPECTED SEQUENCE.
     1721                            *  READ KSR FOR CORRECT SEQUENCE, ENTER SEQUENCE IN HISTORY TABLE.
     1722                            *
     1723   01 004F5    22800000 A  BADSEQ   LI,WKA   0
     1724   01 004F6    358009BD              STW,WKA  CNTR
     1725   01 004F7    221FFFF8 A            LI,XA    -8
     1726   01 004F8    358208EB              STW,WKA  NTNTIMPL+8,XA
     1727   01 004F9    651004F8              BIR,XA   $-1
     1728   01 004FA    220004B2    BADSEQA   LI,16    CORRCDW
     1729.  01 004FB    6A700481              BAL,LNK  KSR
     1730   01 004FC    32800AE6              LW,WKA   ITRNHIST+32
     1731   01 004FD    3180090F              CW,WKA   ENDFLAG
     1732   01 004FE    69300504              BNE      $+6
     1733   01 004FF    6A70048E              BAL,LNK  SETPSDS
     1734   01 00500    226007D7              LI,9A    JX
     1735   01 00501    6A70059D              BAL,LNK  TEST3SW
     1736   01 00502    00000007 A            DATA     7
     1737   01 00503    68000317              B        INITAUTB
     1738   01 00504    31800910              CW,WKA   ZER0SEQ
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     1739   01 00505    683004F5              BE       BADSEQ
     1740   01 00506    22100002 A            LI,XA    2
     1741   01 00507    22300005 A            LI,XB    5
     1742   01 00508    22800015 A            LI,WKA   21
     1743   01 00509    71820AE6              CB,WKA   ITRNHIST+32,XA
     1744   01 0050A    6830052F              BE       BADSEQD          BR IF SINGLE LEVEL ENTRY.
     1745   01 0050B    71860AE6              CB,WKA   ITRNHIST+32,XB
     1746   01 0050C    69300533              BNE      BADSEQE          BR IF INVALID FORMAT.
     1747   01 0050D    32A00AE6              LW,CSA   ITRNHIST+32
     1748   01 0050E    32B00AE7              LW,CSM   ITRNHIST+33
     1749   01 0050F    25A00170 A            SLD,CSA  -16
     1750   01 00510    25B00008 A            SLS,CSM  8
     1751   01 00511    25A00110 A            SLD,CSA  16
     1752   01 00512    35A00AE7    BADSEQB   STW,CSA  ITRNHIST+33
     1753   01 00513    22800000 A            LI,WKA   0
     1754   01 00514    35800AE6              STW,WKA  ITRNHIST+32
     1755   01 00515    22600533              LI,9A    BADSEQE
     1756   01 00516    6A7005AF              BAL,LNK  TRANIN
     1757   01 00517    35200AE6              STW,BT   ITRNHIST+32
     1758   01 00518    22100002 A            LI,XA    2
     1759   01 00519    72920AE6              LB,LV    ITRNHIST+32,XA
     1760   01 0051A    32500009 A  BADSEQC   LW,GR    LV
     1761   01 0051B    2590001C A            SLS,LV   28
     1762   01 0051C    25900064 A            SLS,LV   -28
     1763   01 0051D    2550007C A            SLS,GR   -4
     1764   01 0051E    223009C8              LI,XB    BIT16
     1765   01 0051F    82960009 A            LW,LV    *LV,XB           LOAD LEVEL BIT.
     1766   01 00520    6A700580              BAL,LNK  YLOINTAD
     1767   01 00521    22300007 A            LI,XB    7
     1768   01 00522    328009BD              LW,WKA   CNTR
     1769   01 00523    F5860002 A            STB,WKA  *BT,XB
     1770   01 00524    52CA08E3              LH,WKB   NTNTIMPL,GR
     1771   01 00525    49C00009 A            OR,WKB   LV
     1772   01 00526    55CA08E3              STH,WKB  NTNTIMPL,GR      MAKE ENTRY IN IMPLEMENTED TABLE.
     1773   01 00527    331009BD              MTW,1    CNTR
     1774   01 00528    73120AE6              MTB,1    ITRNHIST+32,XA
     1775   01 00529    72920AE6              LB,LV    ITRNHIST+32,XA
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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                    49
     1776   01 0052A    22300003 A            LI,XB    3
     1777   01 0052B    220004B3              LI,I8    CORRCDW+1
     1778   01 0052C    71960AE6              CB,LV    ITRNHIST+32,XB
     1779   01 0052D    692004FB              BG       BADSEQA+1          BR IF ENTIRE CONTIGOUS SEQUENCE
     1780                              *                                  ENTERED.
     1781   01 0052E    6800051A              B        BADSEQC
     1782   01 0052F    32A00AE6    BADSEQD   LW,CSA   ITRNHIST+32
     1783   01 00530    25A00070 A            SLS,CSA  -16
     1784   01 00531    25A00008 A            SLS,CSA  8
     1785   01 00532    68000512              B        BADSEQB
     1786   01 00533    227004FA    BADSEQE   LI,LNK   BADSEQA
     1787   01 00534    220004BE    BUTPINV   LI,I8    INVCDW
     1788   01 00535    68000483              B        KSRA
     1789                              *                        * * * DELEATED PAGE DIRECTIVE * * *          *C
     1790   01 00536    220004B5    GRP0NE    LI,I8    MSG8CDW
     1791   01 00537    6A700483              BAL,LNK  KSRA
     1792   01 00538    22800541              LI,WKA   GRP0NEB
     1793   01 00539    358008F7              STW,WKA  ADRDC8DE
     1794   01 0053A    2290FFFF A  GRP0NEA   LI,LV    65535
     1795   01 0053B    22500001 A            LI,GR    1
     1796   01 0053C    22E00010 A            LI,WKD   16
     1797   01 0053D    35E00A20              STW,WKD  WAITCNT
     1798   01 0053E    6D9A1300 A            WD,LV    ARMD,GR
     1799   01 0053F    6D9A1700 A            WD,LV    TRIG,GR
     1800   01 00540    6D9A1400 A            WD,LV    ENABLE,GR
     1801   01 00541    0E20092A    GRP0NER   LPSD,2   GRP0NE1
     1802   01 00542    33F00A20    GRP0NEC   MTW,-1   WAITCNT
     1803   01 00543    69100541              BCS,1    *-2
     1804   01 00544    6800053A              B        GRP0NEA
     1805                              *                        * * * DELEATED PAGE DIRECTIVE * * *          *C
     1806   01 00545    2200049B    HIFAILA   LI,I8    MSG3CDW
     1807   01 00546    6A700483              BAL,LNK  KSRA
     1808   01 00547    2280054D              LI,WKA   HIFAILAB
     1809   01 00548    358008F7              STW,WKA  ADRDC8DE
     1810   01 00549    2290FFFF A  HIFAILAA  LI,LV    65535
     1811   01 0054A    22E00010 A            LI,WKD   16
     1812   01 0054B    6D901200 A            WD,LV    ARME
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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                    50
     1813   01 0054C    6D901700 A            WD,LV    TRIG
     1814   01 0054D    0E20091C    HIFAILAB  LPSD,2   HIFAILA1
     1815   01 0054E    20000000 A  HIFAILAC  AI,0     0
     1816   01 0054F    64E0054E              BDR,WKD  $-1
     1817   01 00550    68000549              B        HIFAILAA
     1818                              *
     1819   01 00551    32F00002 A  HIFAILB   LW,IN    8T
     1820   01 00552    22600846              LI,9A    LEVBITSA
     1821   01 00553    6A700563              BAL,LNK  TRANBUT
     1822   01 00554    22800015 A            LI,WKA   21
     1823   01 00555    75800847              STB,WKA  LEVBITSA+1
     1824   01 00556    75800848              STB,WKA  LEVBITSA+2
     1825   01 00557    220004A5              LI,I8    MSG4CDW
     1826   01 00558    6A700481              BAL,LNK  KSR
     1827   01 00559    2280055F              LI,WKA   HIFAILBB
     1828   01 0055A    358008F7              STW,WKA  ADRDC8DE
     1829   01 0055B    329009C8    HIFAILBA  LW,LV    BIT16
     1830   01 0055C    499009CA              BR,LV    BIT18
     1831   01 0055D    6D901200 A            WD,LV    ARME
     1832   01 0055E    6D901700 A            WD,LV    TRIG
     1833   01 0055F    0E20091E    HIFAILBB  LPSD,2   HIFAILB1
     1834   01 00560    20000000 A  HIFAILBC  AI,0     0
     1835   01 00561    20000000 A            AI,0     0
     1836   01 00562    6800055B              B        HIFAILBA
     1837                              *
     1838                              *  TRANSLATE FROM HEX TO EBCDIC.
     1839                              *
     1840        01 00563              TRANBUT  EQU     $
     1841   01 00563    32B0000F A            LW,CSM   IN
     1842   01 00564    221FFFF8 A            LI,XA    -8
     1843   01 00565    20600002 A            AI,9A    2
     1844   01 00566    22A00000 A  TRANBUTA  LI,CSA   0
     1845   01 00567    25A00104 A            SLD,CSA  4
     1846   01 00568    3230000A A            LW,XB    CSA
     1847   01 00569    728609D8              LB,WKA   TABLE,XB
     1848   01 0056A    F5820006 A            STB,WKA  *9A,XA
     1849   01 00568    65100566              BIR,XA   TRANBUTA
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01 0056C     E8000007 A            B        *LNK
                          *                                 * * * DELEATED PAGE DIRECTIVE * * *      *C
        01 0056D          BITCNT   EQU      $
01 0056D     222FFFFF A            LI,BT    -1
01 0056E     22A00000 A            LI,CSA   0
01 0056F     25A00101 A   BITCNTA  SLD,CSA  1
01 00570     20200001 A            AI,BT    1
01 00571     31A00900              CW,CSA   NOBITS
01 00572     6830056F              BE       BITCNTA
01 00573     E8000007 A            B        *LNK
                          *
                          *  SET HIGHEST PRIORITY INTERRUPT IMPLEMENTED INTO ONE ACTIVE
                          *  STATE, EXIT IF INTERRUPT OCCURS AND ADDRESS IS CORRECT.
                          *
01 00574     2280057B             SETHI    LI,WKA   SETHIA
01 00575     35800BF7              STW,WKA  ADRDCODE
01 00576     32900917              LW,LV    HIBIT
01 00577     6D901200 A            WD,LV    ARME
01 00578     6D901700 A            WD,LV    TRIG
01 00579     20000000 A            AI,0     0
01 0057A     680006DF              B        HIFAILC          INT HAS FAILED.
01 0057B     228005CB     SETHIA   LI,WKA   BREAKHI
01 0057C     358008F7              STW,WKA  ADRDCODE
01 0057D     31200915              CW,BT    HIPRI
01 0057E     693006EB              BNE      HIFAILD          BR IF ADDRESS MIS-MATCH.
01 0057F     E8000007 A            B        *LNK
                          *                                 * * * DELEATED PAGE DIRECTIVE * * *      *C
        01 00580          YLDINTAD EQU      $
01 00580     0970092E              PSW,LNK  LNKSTK
01 00581     32B00009 A            LW,CSM   LV
01 00582     6A70056D              BAL,LNK  BITCNT
01 00583     202FFFF0 A            AI,BT    -16
01 00584     25500004 A            SLS,GR   4
01 00585     30200005 A            AW,BT    GR
01 00586     2550007C A            SLS,GR   -4
01 00587     25200001 A            SLS,BT   1
01 00588     20200AC6              AI,BT    ITRNHIST
```



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01 00589     0870092E              PLW,LNK  LNKSTK
01 0058A     E8000007 A            B        *LNK
                          *
                          *  CLEAR ALL ACTIVE AND PENDING INTERRUPTS.
                          *
01 0058B     325008ED     KILLINTS LW,GR    HICHAS1
01 0058C     2290FFFF A            LI,LV    65535
01 0058D     6D9A1101 A            WD,LV    DISARM+1,GR
01 0058E     6450058D              BDR,GR   $-1
01 0058F     6D901100 A            WD,LV    DISARM
01 00590     6D000040 A            WD,0     64               RESET ALARM INDICATOR.
01 00591     E8000007 A            B        *LNK
                          *
                          *  INTERRUPT HANDLING ROUTINE.
                          *
                          *  THIS ROUTINE SUPPLIES THE ADDRESS OF EVERY INTERRUPT
                          *  WHICH OCCURS. USING ROUTINES SET RETURN ADDRESS IN
                          *  'ADRDCODE', AND RECEIVE THE INTERRUPT ADDRESS
                          *  IN REGISTER 'BT'.
                          *
                          *  PSD BITS          0   1   2   3   5   6   7  10  11
                          *  ADDRESS BITS     23  24  25  26  27  28  29  30  31
                          *
                          *  ADD X'F8' IF REGISTER PAGE POINTER STORED IS NOT ZERO.
                          *
01 00592     72200988     COMPADDR LB,BT    CMPAD
01 00593     32300988              LW,XB    CMPAD
01 00594     2530000A A            SLS,XB   10
01 00595     2520017D A            SLD,BT   -3
01 00596     2520007F A            SLS,BT   -1
01 00597     25200105 A            SLD,BT   5
01 00598     22300001 A            LI,XB    1
01 00599     52360989              LH,XB    CMPAD+1,XB
01 0059A     E83008F7              BCR,3    *ADRDCODE        BR IF REG PAGE POINTER NOT LOADED.
01 0059B     202000F8 A            AI,BT    248
01 0059C     E80008F7              B        *ADRDCODE
                          *
```

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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                    53
     1924                              *  TEST CONTROL BITS. EXIT TO ADDRESS IN '0A' IF BIT
     1925                              *  IS A ONE, ADDRESS IN 'LNK'+1 IF BIT IS A ZERO.
     1926                              *
     1927   01 0059D   22800001 A      TESTBSW  LI,WKA   1
     1928   01 0059E   B1800007 A               CW,WKA   *LNK
     1929   01 0059F   683005A7                 BE       TESTBSWA          BR IF TEST FOR BIT SWITCH ONE.
     1930   01 005A0   328009BE                 LW,WKA   BITZERO
     1931   01 005A1   BA100007 A               LCW,XA   *LNK
     1932   01 005A2   25820000 A               SLS,WKA  0,XA
     1933   01 005A3   43800841                 AND,WKA  BITSWTCH
     1934   01 005A4   683E0001 A               BCR,3    1,LNK            BR IF SWITCH NOT SET.
     1935   01 005A5   20700001 A               AI,LNK   1
     1936   01 005A6   E8000006 A               B        *0A
     1937   01 005A7   2580001E A      TESTBSWA SLS,WKA  30
     1938   01 005A8   43800841                 AND,WKA  BITSWTCH
     1939   01 005A9   693005AB                 BCS,3    TESTBSWB          BR IF BIT SWITCH ONE SET.
     1940   01 005AA   680E0001 A               B        1,LNK
     1941   01 005AB   2E00FFFF A      TESTBSWB WAIT     65535
     1942   01 005AC   0200FFFF A               NOP      65535
     1943   01 005AD   20700001 A               AI,LNK   1
     1944   01 005AE   E8000006 A               B        *0A               EXIT WHEN WAIT IS CLEARED.
     1945                              *
     1946                              *  TRANSLATE FROM EBCDIC TO HEX.
     1947                              *
     1948   01 005AF   22F00000 A      TRANIN   LI,IN    0                 TRANSLATE 8 BYTES FROM ITRNHIST+32,
     1949   01 005B0   221FFFF8 A               LI,XA    -8                IGNORE HIGH ORDER ZEROS, LEFT
     1950   01 005B1   22800015 A               LI,WKA   21                JUSTIFY OUTPUT IF NL CHAR IS
     1951                              *                                   ENCOUNTERED IN INPUT, PUT COUNT
     1952                              *                                   OF BYTES TRANSLATED IN 'IN'.
     1953   01 005B2   71820AE8       TRANINA  CB,WKA   ITRNHIST+34,XA
     1954   01 005B3   683005C3                 BE       TRANIND           OF DIGITS IN 'IN'.
     1955   01 005B4   20F00001 A               AI,IN    1
     1956   01 005B5   651005B2                 BIR,XA   TRANINA
     1957   01 005B6   22200000 A               LI,0T    0
     1958   01 005B7   221FFFF8 A               LI,XA    -8
     1959   01 005B8   72820AE8       TRANINB  LB,WKA   ITRNHIST+34,XA
     1960   01 005B9   683005BF                 BCR,3    TRANINC
```

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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                    54
     1961   01 005BA   19800980                 CLM,WKA  HEXLIMF
     1962   01 005BB   686005C9                 BCR,6    TRANINF
     1963   01 005BC   19800982                 CLM,WKA  HEXLIMC
     1964   01 005BD   E9600006 A               BCS,6    *0A               BR IF INVALID CHAR INPUT.
     1965   01 005BE   208FFF49 A               AI,WKA   -183              STRIP 'C' ZONE.
     1966   01 005BF   25200004 A      TRANINC  SLS,8T   4                 ALIGN OUTPUT.
     1967   01 005C0   49200008 A               OR,8T    WKA               INSERT NEXT DIGIT.
     1968   01 005C1   651005B8                 BIR,XA   TRANINB
     1969   01 005C2   E8000007 A               B        *LNK
     1970   01 005C3   221FFFF8 A      TRANIND  LI,XA    -8
     1971   01 005C4   3010000F A               AW,XA    IN
     1972   01 005C5   228000F0 A               LI,WKA   240
     1973   01 005C6   75820AE8                 STB,WKA  ITRNHIST+34,XA
     1974   01 005C7   651005C6                 BIR,XA   $-1
     1975   01 005C8   68000586                 B        TRANINB-2
     1976   01 005C9   208FFF10 A      TRANINF  AI,WKA   -240
     1977   01 005CA   680005BF                 B        TRANINC
     1978                              *                        * * * DELEATED PAGE DIRECTIVE * * *          *C
     1979   01 005CB   32100002 A      BREAKHI  LW,XA    8T
     1980   01 005CC   492009BE                 OR,8T    BITZERO           FLAG ERROR TYPE.
     1981   01 005CD   492009BF                 OR,8T    BITONE            *
     1982   01 005CE   492009C1                 OR,8T    BIT3              *
     1983   01 005CF   09200930                 PSW,8T   ERRSTK
     1984   01 005D0   33F00A22                 MTW,-1   ERROR
     1985   01 005D1   6A70058B                 BAL,LNK  KILLINTS
     1986   01 005D2   E80008FA                 B        *HIEXIT
     1987                              *
     1988                              *  SET UP FIELD OF EXPECTED INTERRUPTS.
     1989                              *
     1990   01 005D3   6A7004D7       SETEXP   BAL,LNK  RDSS
     1991   01 005D4   32800A21                 LW,WKA   WAITCON
     1992   01 005D5   35800A20                 STW,WKA  WAITCNT
     1993   01 005D6   22802790                 LI,WKA   BA(SEQLIST+1)
     1994   01 005D7   358009E3                 STW,WKA  SEQLIST
     1995   01 005D8   22800001 A               LI,WKA   1
     1996   01 005D9   48800A23                 AND,WKA  INHIBITS
     1997   01 005DA   683005DF                 BCR,3    SETEXPA
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1998  01 005D8  228FFFFF A          LI,WKA   -1
1999  01 005DC  221FFFF9 A          LI,XA    -7
2000  01 005DD  35820866            STW,WKA  LEVBITSI+8,XA    SET BITS FOR INHIBITED INTERRUPTS.
2001  01 005DE  651005DD            BIR,XA   $-1
2002  01 005DF  22800002 A  SETEXPA LI,WKA   2
2003  01 005E0  43800A23            AND,WKA  INHIBITS
2004  01 005E1  683005E7            BCR,3    SETEXPB
2005  01 005E2  32800888            LW,WKA   NOTIINHB
2006  01 005E3  48800FFF            EOR,WKA  BITOX31
2007  01 005E4  52C0085E            LH,WKB   LEVBITSI
2008  01 005E5  49C00008 A          OR,WKB   WKA
2009  01 005E6  55C0085E            STH,WKB  LEVBITSI         SET BITS FOR INHIBITED INTERRUPTS.
2010  01 005E7  22800004 A  SETEXPB LI,WKA   4
2011  01 005E8  43800A23            AND,WKA  INHIBITS
2012  01 005E9  683005EF            BCR,3    SETEXPC
2013  01 005EA  32800902            LW,WKA   NOTCINHB
2014  01 005EB  488008FF            EOR,WKA  BITOX31
2015  01 005EC  52C0085E            LH,WKB   LEVBITSI
2016  01 005ED  49C00008 A          OR,WKB   WKA
2017  01 005EE  55C0085E            STH,WKB  LEVBITSI         SET BITS FOR INHIBITED CNTR=ZERO
2018                   *                                     INTERRUPTS
2019  01 005EF  221FFFF8 A  SETEXPC LI,XA    -8               GENERATE FIELD OF LEVELS
2020  01 005F0  32820866            LW,WKA   LEVBITSI+8,XA    WHICH ARE NOT INHIBITED
2021  01 005F1  488008FF            EOR,WKA  BITOX31          THIS PATTERN.
2022  01 005F2  3582086E            STW,WKA  LEVBITSN+8,XA    *
2023  01 005F3  651005F0            BIR,XA   $-3              *
2024  01 005F4  221FFFF8 A          LI,XA    -8
2025  01 005F5  3282084E  SETEXPD   LW,WKA   LEVBITSA+8,XA    THE LOGICAL PRODUCT OF LEVELS
2026  01 005F6  4382085E            AND,WKA  LEVBITST+8,XA    ARMED, ENABLED, TRIGGERED, NOT
2027  01 005F7  43820856            AND,WKA  LEVBITSE+8,XA    INHIBITED, AND IMPLEMENTED, FORMS
2028  01 005F8  4382086E            AND,WKA  LEVBITSN+8,XA    A FIELD OF EXPECTED INTERRUPTS.
2029  01 005F9  438208E8            AND,WKA  NTNTIMPL+8,XA    EACH PATTERN OF INTERRUPTS WILL
2030  01 005FA  358208E2            STW,WKA  EXPFIELD+8,XA    BE CHECKED AGAINST THIS FIELD AND
2031  01 005FB  651005F5            BIR,XA   SETEXPD          VARIATIONS WILL BE CONSIDERED
2032                   *                                     ERRORS.
2033  01 005FC  52800846            LH,WKA   LEVBITSA
2034  01 005FD  43800916            AND,WKA  NOTHI
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2035  01 005FE  55800846            STH,WKA  LEVBITSA
2036  01 005FF  52800DA             LH,WKA   EXPFIELD
2037  01 00600  43800916            AND,WKA  NOTHI
2038  01 00601  558008DA            STH,WKA  EXPFIELD
2039  01 00602  E80008F9            B        *EXECPATT
2040                   *
2041                   *  GENERATE PATTERNS OF INTERRUPTS SPECIFIED BY USING ROUTINES.
2042                   *
2043  01 00603  6A700574  IGEN     BAL,LNK  SETHI
2044  01 00604  225FFFF2 A          LI,3R    -14
2045  01 00605  529A084E            LH,LV    LEVBITSA+8,GR
2046  01 00606  6D9A1310 A          WD,LV    ARMD+16,GR       ARM=DISABLE WD GROUPS 2-15 LEVELS.
2047  01 00607  65500605            BIR,GR   $-2
2048  01 00608  52900846            LH,LV    LEVBITSA
2049  01 00609  6D901300 A          WD,LV    ARMD             ARM=DISABLE WD GROUP ZERO LEVELS.
2050  01 0060A  225FFFF2 A          LI,3R    -14
2051  01 0060B  529A085E            LH,LV    LEVBITST+8,GR
2052                   *                                     TRIGGER WD GROUPS 2-15 LEVELS.
2053  01 0060C  6D9A1710 A          WD,LV    TRIG+16,GR
2054  01 0060D  65500608            BIR,GR   $-2
2055  01 0060E  52900856            LH,LV    LEVBITST
2056                   *                                     TRIGGER WD GROUP ZERO LEVELS.
2057  01 0060F  6D901700 A          WD,LV    TRIG
2058  01 00610  225FFFF2 A          LI,3R    -14
2059  01 00611  529A0856            LH,LV    LEVBITSE+8,GR
2060                   *                                     ENABLE WD GROUPS 2-15 LEVELS.
2061  01 00612  6D9A1410 A          WD,LV    ENABLE+16,GR
2062  01 00613  65500611            BIR,GR   $-2
2063  01 00614  5290084E            LH,LV    LEVBITSE
2064                   *                                     ENABLE WD GROUP ZERO LEVELS.
2065  01 00615  6D901400 A          WD,LV    ENABLE
2066  01 00616  529008DA            LH,LV    EXPFIELD
2067  01 00617  489008E2            AND,LV   STRP2CNT
2068  01 00618  489008E2            EOR,LV   STRP2CNT
2069  01 00619  48900916            AND,LV   NOTHI
2070  01 0061A  6D901100 A          WD,LV    DISARM           CLEAR UNEXPECTED CNT PULSE INTS.
2071  01 0061B  2280061E  IGENA    LI,WKA   CHKPATT
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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                    57
     2072   01 0061C    358008F7              STW,WKA  ADRDCODE
     2073   01 0061D    68000629              B        CHKPATTB
     2074                              *
     2075                              *  CHECK RESULTS OF INTERRUPT PATTERN GENERATION. EACH PATTERN IS
     2076                              *  CHECKED TO DETERMINE THE FOLLOWING:
     2077                              *  1. ALL EXPECTED INTERRUPTS OCCURRED.
     2078                              *  2. NO UNEXPECTED INTERRUPTS OCCURRED.
     2079                              *  3. THE ADDRESS RECEIVED MATCHES THE ADDRESS EXPECTED.
     2080                              *  4. THE SEQUENCE IN WHICH INTERRUPTS OCCUR IS CORRECT.
     2081                              *  5. NO MORE THAN ONE INTERRUPT OCCURS FOR ANY LEVEL.
     2082                              *
     2083   01 0061E    22800100 A    CHKPATT  LI,WKA   256
     2084   01 0061F    223001FF A             LI,XB    511
     2085   01 00620    22100000 A             LI,XA    0
     2086   01 00621    45220AC6      CHKPATTA CS,BT    ITRNHIST,XA        TEST FOR ADDRESS MATCH.
     2087   01 00622    68300634              BE       CHKPATTD
     2088   01 00623    20100002 A             AI,XA    2
     2089   01 00624    64800621              BDR,WKA  CHKPATTA
     2090   01 00625    492009BE              OR,BT    BITZERO            FLAG ERROR TYPE.
     2091   01 00626    09200930              PSW,BT   ERRSTK
     2092   01 00627    228FFFFF A            LI,WKA   -1
     2093   01 00628    35800A22              STW,WKA  ERROR
     2094   01 00629    32800A23      CHKPATTB LW,WKA   INHIBITS
     2095   01 0062A    48800889              AND,WKA  INHBMSK
     2096   01 0062B    75800920              STB,WKA  CHKPATT1+1         SET CURRENT INHIBIT BITS.
     2097                              *
     2098   01 0062C    02200000 A             LCI      0                 SET UP FOR INTERRUPT PRESENTING
     2099   01 0062D    2A0009AC              LM,0     CTCHHNG1          ADDRESS BETWEEN 0 AND X'F'.
     2100                              *                                  CLEAR ACTIVE STATE OF CURRENT LEVEL.
     2101                              *
     2102   01 0062E    0E20092C              LPSD,2   CHKPATT1
     2103   01 0062F    33F00A20      CHKPATTC MTW,-1   WAITCNT
     2104   01 00630    6920062F              BCS,2    CHKPATTC
     2105   01 00631    02000000 A             NOP      0                 THIS NOP IS INCLUDED FOR THE 7700
     2106                              *                                  INTERPROCESSOR TEST.
     2107   01 00632    6A70058B              BAL,LNK  KILLINTS
     2108   01 00633    68000643              B        CHKPATTE
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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                    58
     2109   01 00634    25100002 A    CHKPATTD SLS,XA   2
     2110   01 00635    72820AC6              LB,WKA   ITRNHIST,XA
     2111   01 00636    321009E3              LW,XA    SEQLIST
     2112   01 00637    223FD86F N            LI,XB    -(BA(SEQLIST+1)+1)
     2113   01 00638    30300001 A             AW,XB    XA
     2114   01 00639    6810063D              BCR,1    $+4                BR IF NOT FIRST ENTRY.
     2115   01 0063A    75820000 A             STB,WKA  0,XA
     2116   01 0063B    331009E3              MTW,1    SEQLIST
     2117   01 0063C    68000629              B        CHKPATTB
     2118   01 0063D    718609E4              CB,WKA   SEQLIST+1,XB
     2119   01 0063E    68300676              BE       CHKPATTM           BR IF MORE THAN ONE INT PER TRIG.
     2120   01 0063F    6430063D              BDR,XB   $-2
     2121   01 00640    718009E4              CB,WKA   SEQLIST+1
     2122   01 00641    68300676              BE       CHKPATTM
     2123   01 00642    6800063A              B        $-8
     2124   01 00643    321009E3      CHKPATTE LW,XA    SEQLIST
     2125   01 00644    201FD86F N             AI,XA    -(BA(SEQLIST+1)+1)
     2126   01 00645    6910066C              BCS,1    CHKPATTK           BR IF NO INT OCCURRED.
     2127   01 00646    351008EE              STW,XA   SQLSTCNT
     2128   01 00647    33F008EE      CHKPATTF MTW,-1   SQLSTCNT
     2129   01 00648    69100674              BCS,1    CHKPATTL
     2130   01 00649    728209E4              LB,WKA   SEQLIST+1,XA
     2131   01 0064A    321008EE      CHKPATTG LW,XA    SQLSTCNT
     2132   01 0064B    72C209E4              LB,WKB   SEQLIST+1,XA       LOAD NEXT LOWER POINTER.
     2133   01 0064C    22102318              LI,XA    BA(ITRNHIST)
     2134   01 0064D    71820000 A             CB,WKA   0,XA
     2135   01 0064E    68300651              BE       CHKPATTH           BR IF WD POINTER EQUAL.
     2136   01 0064F    20100008 A             AI,XA    8
     2137   01 00650    6800064D              B        $-3
     2138   01 00651    20100007 A    CHKPATTH AI,XA    7
     2139   01 00652    72820000 A             LB,WKA   0,XA               LOAD EXPECTED SEQ OF INTERRUPT.
     2140   01 00653    22302318              LI,XB    BA(ITRNHIST)
     2141   01 00654    71C60000 A             CB,WKB   0,XB
     2142   01 00655    68300658              BE       CHKPATTI           BR IF WD POINTER EQUAL.
     2143   01 00656    20300008 A             AI,XB    8
     2144   01 00657    68000654              B        $-3
     2145   01 00658    20300007 A    CHKPATTI AI,XB    7
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2146  01 00659  71860000 A            CB,WKA   0,XB
2147  01 0065A  68200673              BLE      CHKPATTN          BR IF LOWER PRI INT OCCURRED FIRST.
2148  01 0065B  201FFFF9 A            AI,XA    -7
2149  01 0065C  72920000 A            LB,LV    0,XA
2150  01 0065D  32500009 A  CHKPATTJ  LW,GR     LV
2151  01 0065E  2550007C A            SLS,GR   -4
2152  01 0065F  2590001C A            SLS,LV   28
2153  01 00660  25900064 A            SLS,LV   -28
2154  01 00661  32300009 A            LW,XB    LV
2155  01 00662  329609C8              LW,LV    BIT16,XB
2156  01 00663  528A08DA              LH,WKA   EXPFIELD,GR
2157  01 00664  48800009 A            AND,WKA  LV
2158  01 00665  6830068F              BCR,3    CHKPATTP          BR IF INT NOT EXPECTED.
2159  01 00666  528A08DA              LH,WKA   EXPFIELD,GR
2160  01 00667  48800009 A            EOR,WKA  LV
2161  01 00668  558A08DA              STH,WKA  EXPFIELD,GR
2162  01 00669  321008EE              LW,XA    SQLSTCNT
2163  01 0066A  211FFFFF A            CI,XA    -1
2164  01 0066B  69300647              BNE      CHKPATTF
2165  01 0066C  221FFFF8 A  CHKPATTK  LI,XA     -8
2166  01 0066D  328208EB              LW,WKA   NTNTIMPL+8,XA
2167  01 0066E  488208E2              AND,WKA  EXPFIELD+8,XA
2168  01 0066F  693006A0              BCS,3    CHKPATTQ          BR IF EXPECTED INT DID NOT OCCUR.
2169  01 00670  65100660              BIR,XA   $-3
2170  01 00671  6A700414              BAL,LNK  CHKSTK
2171  01 00672  E80008F8              B        *CHKEXIT          EXIT, ERROR OR NOT.
2172  01 00673  E80008F8              B        *CHKEXIT
2173  01 00674  729009E4  CHKPATTL  LB,LV    SEQLIST+1
2174  01 00675  6800065D              B        CHKPATTJ
2175  01 00676  498009C1  CHKPATTM  BR,WKA   BIT3              FLAG ERROR TYPE.
2176  01 00677  09800930              PSW,WKA  ERRSTK
2177  01 00678  33F00A22              MTW,-1   ERROR
2178  01 00679  64100645              BDR,XA   CHKPATTG-5
2179  01 0067A  6800064A              B        CHKPATTG
2180  01 0067B  201FFFF9 A  CHKPATTN  AI,XA    -7
2181  01 0067C  72820000 A            LB,WKA   0,XA              LOAD WD POINTER.
2182  01 0067D  21800003 A            CI,WKA   3
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2183  01 0067E  69200688              BG       $+10             BR IF NOT CNT PULSE INT.
2184  01 0067F  32D00846              LW,WKC   LEVBITSA
2185  01 00680  43D0084E              AND,WKC  LEVBITSE
2186  01 00681  223009C8              LI,XB    BIT16
2187  01 00682  82E60008 A            LW,WKD   *WKA,XB           LOAD LEVEL BIT.
2188  01 00683  25E00010 A            SLS,WKD  16
2189  01 00684  43D0000E A            AND,WKC  WKD
2190  01 00685  68300658              BCR,3    CHKPATTJ-2       BR IF INT NOT ARMED AND ENABLED.
2191  01 00686  43D00856              AND,WKC  LEVBITST
2192  01 00687  68300669              BCR,3    CHKPATTK-3       BR IF INT ARMED AND ENABLED,
2193                          *                                 BUT NOT TRIGGERED.
2194  01 00688  25C00014 A            SLS,WKB  20
2195  01 00689  49C00008 A            BR,WKB   WKA
2196  01 0068A  49C009C1              BR,WKB   BIT3              FLAG ERROR TYPE.
2197  01 0068B  49C009BF              BR,WKB   BITONE            *
2198  01 0068C  09C00930              PSW,WKB  ERRSTK
2199  01 0068D  33F00A22              MTW,-1   ERROR
2200  01 0068E  6800065C              B        CHKPATTJ-1
2201  01 0068F  329609C8  CHKPATTP  LW,LV    BIT16,XB
2202  01 00690  21500000 A            CI,GR    0
2203  01 00691  69300695              BNE      $+4              BR IF UNEXPECTED INTERRUPT IS NOT
2204                          *                                 FROM WD GROUP ZERO.
2205  01 00692  2280F000 A            LI,WKA   15**12
2206  01 00693  48800009 A            AND,WKA  LV
2207  01 00694  693006BA              BCS,3    CHKPATTR         BR IF UNEXPECTED INTERRUPT IS
2208                          *                                 FROM COUNTER PULSE INTERRUPT.
2209  01 00695  6A7006C1              BAL,LNK  DESCRIBE
2210  01 00696  25200018 A            SLS,BT   24
2211  01 00697  32800005 A            LW,WKA   GR
2212  01 00698  25800004 A            SLS,WKA  4
2213  01 00699  49800003 A            BR,WKA   XB               COMBINE GROUP AND LEVEL.
2214  01 0069A  498009BF              BR,WKA   BITONE           FLAG ERROR TYPE.
2215  01 0069B  498009C0              BR,WKA   BITTWO           *
2216  01 0069C  49800002 A            BR,WKA   BT
2217  01 0069D  09800930              PSW,WKA  ERRSTK
2218  01 0069E  33F00A22              MTW,-1   ERROR
2219  01 0069F  68000669              B        CHKPATTK-3
```

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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                                    61
     2220   01 006A0   33F00A22      CHKPATTQ MTW,-1   ERROR
     2221   01 006A1   25100001 A              SLS,XA   1
     2222   01 006A2   20100010 A              AI,XA    16
     2223   01 006A3   32C008FE                LW,WKB   BIT16X31
     2224   01 006A4   48C00008 A              AND,WKB  WKA
     2225   01 006A5   683006A8                BCR,3    *+3
     2226   01 006A6   20100001 A              AI,XA    1
     2227   01 006A7   25800010 A              SLS,WKA  16
     2228   01 006A8   32B00008 A              LW,CSM   WKA
     2229   01 006A9   6A70056D                BAL,LNK  BITCNT
     2230   01 006AA   329409C8                LW,LV    BIT16,BT
     2231   01 006AB   32500001 A              LW,GR    XA
     2232   01 006AC   6A7006C1                BAL,LNK  DESCRIBE
     2233   01 006AD   25200014 A              SLS,BT   20
     2234   01 006AE   25100018 A              SLS,XA   24
     2235   01 006AF   528A08DA                LH,WKA   EXPFIELD,GR
     2236   01 006B0   488008FE                AND,WKA  BIT16X31
     2237   01 006B1   491009BF                BR,XA    BITBNE          FLAG ERROR TYPE.
     2238   01 006B2   491009C0                BR,XA    BITTWB          *
     2239   01 006B3   491009C1                BR,XA    BIT3            *
     2240   01 006B4   49100008 A              BR,XA    WKA             COMBINE ERROR INFORMATION.
     2241   01 006B5   49100002 A              BR,XA    BT
     2242   01 006B6   09100930                PSW,XA   ERRSTK
     2243   01 006B7   22800000 A              LI,WKA   0
     2244   01 006B8   558A08DA                STH,WKA  EXPFIELD,GR     DELETE ERROR ONCE RECORDED.
     2245   01 006B9   6800066C                B        CHKPATTK
     2246                      *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
     2247   01 006BA   32800846      CHKPATTR LW,WKA   LEVBITSA
     2248   01 006BB   4880084E                AND,WKA  LEVBITSE
     2249   01 006BC   5590000C A              STH,LV   WKB
     2250   01 006BD   48C00FFD                AND,WKB  BITOX15
     2251   01 006BE   4880000C A              AND,WKA  WKB
     2252   01 006BF   68300695                BCR,3    CHKPATTP+6      BR IF UNEXPECTED COUNTER PULSE
     2253                      *                                       INTERRUPT WAS NOT ARMED,
     2254                      *                                       AND ENABLED.
     2255   01 006C0   68000669                B        CHKPATTK-3
     2256                      *
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SIGMA 5/7 INTERRUPT TEST   704143-51C00   FEBRUARY 20,1969                                                    62
     2257                      *
     2258                      *  OUTPUT CONDITIONS IN CURRENT PATTERN FOR WD GRP 'GR',
     2259                      *  LEVEL BIT 'LV'.
     2260                      *
     2261   01 006C1   32100005 A   DESCRIBE LW,XA    GR
     2262   01 006C2   22D00004 A            LI,WKC   4
     2263   01 006C3   22200000 A            LI,BT    0
     2264   01 006C4   22800008 A            LI,WKA   8
     2265   01 006C5   52E20846     DESCRIBA LH,WKD   LEVBITSA,XA
     2266   01 006C6   48E00009 A            AND,WKD  LV
     2267   01 006C7   683006C9              BCR,3    *+2             BR IF CONDITION IS FALSE.
     2268   01 006C8   30200008 A            AW,BT    WKA
     2269   01 006C9   2580007F A            SLS,WKA  -1
     2270   01 006CA   20100010 A            AI,XA    16
     2271   01 006CB   64D006C5              BDR,WKC  DESCRIBA
     2272   01 006CC   E8000007 A            B        *LNK
     2273                      *
     2274                      *                                       AN INT LEVEL MUST PRESENT AN
     2275                      *                                       ADDRESS BETWEEN 0 AND X'F' TO
     2276                      *                                       ENTER THIS ROUTINE.
     2277   01 006CD   0F800984     HNGDCODE XPSD,8   CTCHHANG
     2278   01 006CE   02200000 A            LCI      0
     2279   01 006CF   280010A6              STM,0    LAST+992
     2280   01 006D0   72800984              LB,WKA   CTCHHANG
     2281   01 006D1   22100001 A            LI,XA    1
     2282   01 006D2   52C20985              LH,WKB   CTCHHANG+1,XA
     2283   01 006D3   683006D5              BCR,3    *+2
     2284   01 006D4   20800008 A            AI,WKA   8
     2285   01 006D5   498009BE              BR,WKA   BITZERO         FLAG ERROR TYPE.
     2286   01 006D6   498009C1              BR,WKA   BIT3            *
     2287   01 006D7   09800930              PSW,WKA  ERRSTK
     2288   01 006D8   33F00A22              MTW,-1   ERROR
     2289   01 006D9   72100984              LB,XA    CTCHHANG
     2290   01 006DA   2010098C              AI,XA    HANGPSDS
     2291   01 006DB   351009BC              STW,XA   HANGBACK
     2292   01 006DC   02200000 A            LCI      0
     2293   01 006DD   2A0010A6              LM,0     LAST+992
```

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01 006DE    8E2009BC               LPSD,2     *HANGBACK
                         *                    * * * DELEATED PAGE DIRECTIVE * * *         *C
01 006DF    6A700583     HIFAILC   BAL,LNK    KILLINTS
01 006E0    220004B6               LI,I8      MSG9CDW
01 006E1    6A700483               BAL,LNK    KSRA
01 006E2    228006E9     DLINK     LI,WKA     HIFAILCB
01 006E3    358008F7               STW,WKA    ADRDCBDE
01 006E4    32900917     HIFAILCA  LW,LV      HIBIT
01 006E5    6D901300 A             WD,LV      ARMD
01 006E6    6D901700 A             WD,LV      TRIG
01 006E7    6D901400 A             WD,LV      ENABLE
01 006E8    20000000 A             AI,0       0
01 006E9    0E200920     HIFAILCB  LPSD,2     HIFAILC1
01 006EA    680006E4     HIFAILCC  B          HIFAILCA
                         *
01 006EB    32F00002 A   HIFAILD   LW,IN      BT
01 006EC    22600846               LI,9A      LEVBITSA
01 006ED    6A700563               BAL,LNK    TRANBUT
01 006EE    22800015 A             LI,WKA     21
01 006EF    75800847               STB,WKA    LEVBITSA+1
01 006F0    220004B7               LI,I8      MSGACDW
01 006F1    6A700483               BAL,LNK    KSRA
01 006F2    680006E2               B          DLINK
                         *                    * * * DELEATED PAGE DIRECTIVE * * *         *C
01 006F3    357008F6     BS456     STW,LNK    L00PEXIT
01 006F4    2260078B               LI,9A      MULTINT
01 006F5    6A70059D               BAL,LNK    TESTBSW
01 006F6    00000004 A             DATA       4
01 006F7    226007A9               LI,9A      SNGLUP
01 006F8    6A70059D               BAL,LNK    TESTBSW
01 006F9    00000005 A             DATA       5
01 006FA    226007C0               LI,9A      SNGLDWN
01 006FB    6A70059D               BAL,LNK    TESTBSW
01 006FC    00000006 A             DATA       6
01 006FD    E80008F6               B          *L00PEXIT
                         *
                         *  READ KSR F0R PATTERN, TRANSLATE AND EXECUTE.
```



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                         *
01 006FE    357008F6     MANUAL    STW,LNK    L00PEXIT
01 006FF    32800841               LW,WKA     C0NBITS
01 00700    488009C6               E0R,WKA    BIT9
01 00701    35800841               STW,WKA    C0NBITS
01 00702    22800000 A             LI,WKA     0
01 00703    35800887               STW,WKA    R0LL
01 00704    2280076D               LI,WKA     MANUALJ
01 00705    358008FA               STW,WKA    HIEXIT
01 00706    6A700583               BAL,LNK    KILLINTS
01 00707    6A7004A7               BAL,LNK    SETSTKS
01 00708    6A7004F2               BAL,LNK    STHLDSS
01 00709    32800911               LW,WKA     AEND              SET UP T0 READ ARM, DISABLE INPUT.
01 0070A    358008F2               STW,WKA    TERM              *
01 0070B    2280100C               LI,WKA     HA(MANPATT)       *
01 0070C    3580084E               STW,WKA    LEVBITSE          *
01 0070D    22800000 A             LI,WKA     0
01 0070E    221FFFE8 A             LI,XA      -24
01 0070F    35820886               STW,WKA    MANPATT+24,XA
01 00710    6510070F               BIR,XA     $-1
01 00711    22800735               LI,WKA     MANUALB
01 00712    358008F3               STW,WKA    TERM+1
01 00713    2200049C               LI,I8      MANCDW1
01 00714    6A7004D1               BAL,LNK    RESP
01 00715    2200049D     MANUALA   LI,I8      MANCDW2
01 00716    6A700483               BAL,LNK    KSRA
01 00717    32800AE6               LW,WKA     ITRNHIST+32
01 00718    318008F2               CW,WKA     TERM
01 00719    E83008F3               BE         *TERM+1           BR IF END 0F INPUT.
01 0071A    3180090E               CW,WKA     NEWPATT
01 0071B    683006FE               BE         MANUAL            BR T0 ENTER C0MPLETE NEW PATTERN.
01 0071C    25800068 A             SLS,WKA    -24
01 0071D    21800009 A             CI,WKA     'R'
01 0071E    68300770               BE         MANUALK           BR IF INCR INHIBITS REQUESTED.
01 0071F    22600774               LI,9A      INVMAN
01 00720    6A7005AF               BAL,LNK    TRANIN
01 00721    21F00004 A             CI,IN      4
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2368  01 00722  68300725          BE      $+3
2369  01 00723  21F00001 A        CI,IN   1
2370  01 00724  69300774          BNE     INVMAN
2371  01 00725  221FFFF8 A        LI,XA   -8
2372  01 00726  3010000F A        AW,XA   IN
2373  01 00727  25100002 A        SLS,XA  2
2374  01 00728  25220000 A        SLS,BT  0,XA
2375  01 00729  3210084E          LW,XA   LEVBITSE
2376  01 0072A  55220000 A        STH,BT  0,XA
2377  01 0072B  3310084E          MTW,1   LEVBITSE
2378  01 0072C  3280084E          LW,WKA  LEVBITSE
2379  01 0072D  218010DD          CI,WKA  HA(MANPATT)+1
2380  01 0072E  68300733          BE      MANUALB+2
2381  01 0072F  218010ED          CI,WKA  HA(MANPATT+8)+1
2382  01 00730  68300733          BE      MANUALB+2
2383  01 00731  218010FD          CI,WKA  HA(MANPATT+16)+1
2384  01 00732  69300715          BNE     MANUALA
2385  01 00733  3310084E          MTW,1   LEVBITSE
2386  01 00734  68000715          B       MANUALA
2387  01 00735  2280073E  MANUALB LI,WKA  MANUALC          SET UP T8 READ ENABLE INPUT.
2388  01 00736  358008F3          STW,WKA TERM+1          *
2389  01 00737  32800912          LW,WKA  EEND            *
2390  01 00738  35800RF2          STW,WKA TERM            *
2391  01 00739  228010EC          LI,WKA  HA(MANPATT+8)   *
2392  01 0073A  3580084E          STW,WKA LEVBITSE
2393  01 0073B  2200049E          LI,I8   MANCDW3
2394  01 0073C  6A700483          BAL,LNK KSRA
2395  01 0073D  68000715          B       MANUALA
2396  01 0073E  22800747  MANUALC LI,WKA  MANUALD          SET UP T8 READ TRIGGER INPUT.
2397  01 0073F  358008F3          STW,WKA TERM+1          *
2398  01 00740  228010FC          LI,WKA  HA(MANPATT+16)  *
2399  01 00741  3580084E          STW,WKA LEVBITSE        *
2400  01 00742  32800913          LW,WKA  TEND            *
2401  01 00743  358008F2          STW,WKA TERM            *
2402  01 00744  2200049F          LI,I8   MANCDW4
2403  01 00745  6A700483          BAL,LNK KSRA
2404  01 00746  68000715          B       MANUALA
```



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2405  01 00747  22800750  MANUALD LI,WKA  MANUALE          SET UP T8 READ INHIBIT INPUT.
2406  01 00748  358008F3          STW,WKA TERM+1
2407  01 00749  32800914          LW,WKA  IEND
2408  01 0074A  358008F2          STW,WKA TERM
2409  01 0074B  2280110D          LI,WKA  HA(MANINHB)+1
2410  01 0074C  3580084E          STW,WKA LEVBITSE
2411  01 0074D  220004A0          LI,I8   MANCDW5
2412  01 0074E  6A700483          BAL,LNK KSRA
2413  01 0074F  68000715          B       MANUALA
2414  01 00750  22800763  MANUALE LI,WKA  MANUALG
2415  01 00751  358008F8          STW,WKA CHKEXIT
2416  01 00752  22800603          LI,WKA  IGEN
2417  01 00753  358008F9          STW,WKA EXECPATT
2418  01 00754  32800887          LW,WKA  ROLL
2419  01 00755  6830075A          BCR,3   $+5
2420  01 00756  33F00886          MTW,-1  MANINHB
2421  01 00757  6810075A          BCR,1   $+3
2422  01 00758  22800007 A        LI,WKA  7
2423  01 00759  35800886          STW,WKA MANINHB
2424  01 0075A  32800886          LW,WKA  MANINHB
2425  01 0075B  35800A23          STW,WKA INHIBITS
2426  01 0075C  02200000 A  MANUALF LCI     0
2427  01 0075D  2A00086E          LM,0    MANPATT
2428  01 0075E  23000846          STM,0   LEVBITSA
2429  01 0075F  02200080 A        LCI     8
2430  01 00760  2A00087E          LM,0    MANPATT+16
2431  01 00761  23000856          STM,0   LEVBITST
2432  01 00762  680005D3          B       SETEXP
2433  01 00763  32800A22  MANUALG LW,WKA  ERROR
2434  01 00764  68300768          BCR,3   MANUALH          BR IF NO ERROR OCCURRED.
2435  01 00765  22600768          LI,9A   MANUALH
2436  01 00766  6A7005D0          BAL,LNK TESTBSW          TEST FOR WAIT ON ERROR.
2437  01 00767  00000001 A        DATA    1
2438  01 00768  6A7005BB  MANUALH BAL,LNK KILLINTS
2439  01 00769  6A7004B0          BAL,LNK CLEAR
2440  01 0076A  22600750          LI,9A   MANUALE
2441  01 0076B  6A7004C9          BAL,LNK REVRS1
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01 0076C   E80008F6               B         *LØØPEXIT        EXIT IF SS1 HAS BEEN REVERSED.
01 0076D   6A700414    MANUALJ    BAL,LNK   CHKSTK
01 0076E   68000768               B         MANUALH          NØRMAL RETURN.
01 0076F   68000768               B         MANUALH          ERRØR RETURN.
01 00770   22800007 A  MANUALK    LI,WKA    7
01 00771   35800886               STW,WKA   MANINHB
01 00772   35800887               STW,WKA   RØLL
01 00773   68000715               B         MANUALA
01 00774   22700715    INVMAN     LI,LNK    MANUALA
01 00775   68000534               B         ØUTPINV
                       *                    * * * DELEATED PAGE DIRECTIVE * * *          *C
01 00776   22F01540 A  EDIT       LI,IN     X'1540'
01 00777   226FFFE4 A             LI,8A     -28
01 00778   55FC0AFB               STH,IN    ITRNHIST+53,8A
01 00779   65600778               BIR,8A    $-1
01 0077A   22600001 A             LI,8A     1
01 0077B   52F00AE6               LH,IN     ITRNHIST+32
01 0077C   49F008F5               ØR,IN     BLANK
01 0077D   55F00AED               STH,IN    ITRNHIST+39
01 0077E   32F00AE9               LW,IN     ITRNHIST+35
01 0077F   35F00AEE               STW,IN    ITRNHIST+40
01 00780   52F00AEA               LH,IN     ITRNHIST+36
01 00781   55FC0AEF               STH,IN    ITRNHIST+41,8A
01 00782   52FC0AEA               LH,IN     ITRNHIST+36,8A
01 00783   55F00AF0               STH,IN    ITRNHIST+42
01 00784   32F00AEB               LW,IN     ITRNHIST+37
01 00785   35F00AF1               STW,IN    ITRNHIST+43
01 00786   52F00AEC               LH,IN     ITRNHIST+38
01 00787   55FC0AF2               STH,IN    ITRNHIST+44,8A
01 00788   52FC0AEC               LH,IN     ITRNHIST+38,8A
01 00789   55F00AF3               STH,IN    ITRNHIST+45
01 0078A   E8000007 A             B         *LNK
                       *
                       *  GENERATE EVERY IMPLEMENTED INTERRUPT, CLEAR AND IGNØRE.
                       *
01 0078B   6A70058B    MULTINT    BAL,LNK   KILLINTS
01 0078C   32800841               LW,WKA    CØNBITS
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01 0078D   488009C2               EØR,WKA   BIT4             TURN ØFF CØNTRØL BIT 4.
01 0078E   35800841               STW,WKA   CØNBITS
01 0078F   6A7004F2               BAL,LNK   STHLDSS
01 00790   6A700574    MULTINTA   BAL,LNK   SETHI
01 00791   228007A2               LI,WKA    MULTINTB
01 00792   358008F7               STW,WKA   ADRDCØDE
01 00793   358008FA               STW,WKA   HIEXIT
01 00794   32900916               LW,LV     NØTHI
01 00795   228000ED A             LI,WKA    237
01 00796   35800A20               STW,WKA   WAITCNT
01 00797   2280000F A             LI,WKA    15
01 00798   22500000 A             LI,GR     0
01 00799   6800079B               B         $+2
01 0079A   2290FFFF A             LI,LV     65535
01 0079B   6D9A1200 A             WD,LV     ARME,GR
01 0079C   6D9A1700 A             WD,LV     TRIG,GR
01 0079D   20500001 A             AI,GR     1
01 0079E   6480079A               BDR,WKA   $-4
01 0079F   02200000 A             LCI       0                SET UP TØ HANDLE PØSSIBLE INT
01 007A0   2A0009AC               LM,0      CTCHHNG1         WITHIN REG PAGE.
01 007A1   20000000 A             AI,0      0                ADDRESS SCØPE SYNC, ALL LEVELS
                       *                                     HAVE BEEN ARMED, ENABLED, AND
                       *                                     TRIGGERED, AND THE NEXT INSTRUCTIØN
                       *                                     WILL CLEAR THE HIGHEST PRIØRITY
                       *                                     INTERRUPT FRØM THE ACTIVE STATE.
01 007A2   0E200922    MULTINTB   LPSD,2    MULTINT1
01 007A3   33F00A20    MULTINTC   MTW,-1    WAITCNT
01 007A4   691007A3               BCS,1     $-1
01 007A5   22600790               LI,8A     MULTINTA
01 007A6   6A7004C9               BAL,LNK   REVRS1
01 007A7   327008F6               LW,LNK    LØØPEXIT
01 007A8   6800058B               B         KILLINTS
                       *
                       *  GENERATE EVERY INTERRUPT SINGLY FRØM WD GRØUP ZERØ, LEVEL BIT 16,
                       *  TØ WD GRØUP 15, LEVEL BIT 31, CLEAR AND IGNØRE.
                       *
01 007A9   6A70058B    SNGLUP     BAL,LNK   KILLINTS
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2516  01 007AA  32800841            LW,WKA   CONBITS
2517  01 007AB  488009C3            EOR,WKA  BIT5          TURN OFF CONTROL BIT 5.
2518  01 007AC  35800841            STW,WKA  CONBITS
2519  01 007AD  6A7004F2            BAL,LNK  STHLDSS
2520  01 007AE  228007B8            LI,WKA   SNGLUPD
2521  01 007AF  358008F7            STW,WKA  ADRDCODE
2522  01 007B0  22800010 A  SNGLUPA LI,WKA   16
2523  01 007B1  22500000 A          LI,GR    0
2524  01 007B2  22C00010 A  SNGLUPB LI,WKB   16
2525  01 007B3  329009C8            LW,LV    BIT16
2526  01 007B4  6D9A1300 A  SNGLUPC WD,LV    ARMD,GR
2527  01 007B5  6D9A1700 A          WD,LV    TRIG,GR
2528  01 007B6  6D9A1400 A          WD,LV    ENABLE,GR
2529  01 007B7  20000000 A          AI,0     0
2530  01 007B8  0E200924     SNGLUPD LPSD,2   SNGLUP1
2531  01 007B9  2590007F A  SNGLUPE SLS,LV    -1
2532  01 007BA  64C007B4            BDR,WKB  SNGLUPC
2533  01 007BB  20500001 A          AI,GR    1
2534  01 007BC  648007B2            BDR,WKA  SNGLUPB
2535  01 007BD  6C000000 A          RD,0     0
2536  01 007BE  688007B0            BCR,8    SNGLUPA
2537  01 007BF  680007A7            B        SNGLUP-2
2538                          *
2539                          *  GENERATE REVERSE PATTERN OF PRECEDING SUB-ROUTINE.
2540                          *
2541  01 007C0  6A700588     SNGLDWN  BAL,LNK  KILLINTS
2542  01 007C1  6A7004F2              BAL,LNK  STHLDSS
2543  01 007C2  32800841              LW,WKA   CONBITS
2544  01 007C3  488009C4              EOR,WKA  BIT6          TURN OFF CONTROL BIT 6.
2545  01 007C4  35800841              STW,WKA  CONBITS
2546  01 007C5  228007CF              LI,WKA   SNGLDWND
2547  01 007C6  358008F7              STW,WKA  ADRDCODE
2548  01 007C7  22800010 A  SNGLDWNA LI,WKA   16
2549  01 007C8  2250000F A            LI,GR    15
2550  01 007C9  22C00010 A  SNGLDWNB LI,WKB   16
2551  01 007CA  22900001 A            LI,LV    1
2552  01 007CB  6D9A1300 A  SNGLDWNC WD,LV    ARMD,GR
```



```
2553  01 007CC  6D9A1700 A            WD,LV    TRIG,GR
2554  01 007CD  6D9A1400 A            WD,LV    ENABLE,GR
2555  01 007CE  20000000 A            AI,0     0
2556  01 007CF  0E200926     SNGLDWND LPSD,2   SNGLDWN1
2557  01 007D0  25900001 A  SNGLDWNE SLS,LV    1
2558  01 007D1  64C007CB              BDR,WKB  SNGLDWNC
2559  01 007D2  205FFFFF A            AI,GR    -1
2560  01 007D3  648007C9              BDR,WKA  SNGLDWNB
2561  01 007D4  226007C7              LI,8A    SNGLDWNA
2562  01 007D5  6A7004C9              BAL,LNK  REVRS1
2563  01 007D6  680007A7              B        SNGLUP-2
2564                          *
2565                          *  READ KSR FOR WD GROUP TO TEST VIA JX-58, GENERATE AND VERIFY
2566                          *  ALL INTERRUPTS WHICH OCCUR.
2567                          *
2568  01 007D7  357008F6     JX       STW,LNK  LOOPEXIT
2569  01 007D8  32800841              LW,WKA   CONBITS
2570  01 007D9  488009C5              EOR,WKA  BIT7          TURN OFF CONTROL BIT 7.
2571  01 007DA  35800841              STW,WKA  CONBITS
2572  01 007DB  6A7004F2              BAL,LNK  STHLDSS
2573  01 007DC  22800837              LI,WKA   JXF
2574  01 007DD  358008FA              STW,WKA  HIEXIT
2575  01 007DE  22800804              LI,WKA   JXB
2576  01 007DF  358008F8              STW,WKA  CHKEXIT
2577  01 007E0  228007F6              LI,WKA   JXA
2578  01 007E1  358008F9              STW,WKA  EXECPATT
2579  01 007E2  22800000 A            LI,WKA   0
2580  01 007E3  35800A23              STW,WKA  INHIBITS
2581  01 007E4  220004B9              LI,I8    MSGBCDW
2582  01 007E5  6A7004D1              BAL,LNK  RESP
2583  01 007E6  2260083F              LI,9A    INVJX
2584  01 007E7  6A7005AF              BAL,LNK  TRANIN
2585  01 007E8  25200064 A            SLS,8T   -28
2586  01 007E9  21200001 A            CI,9T    1
2587  01 007EA  6820083F              BLE      INVJX         BR IF WD GROUP ZERO OR ONE.
2588  01 007EB  352008E8              STW,8T   JXGRP
2589  01 007EC  22800000 A            LI,WKA   0
```

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2590  01 007ED  221FFFE0 A          LI,XA    -32
2591  01 007EE  35820866           STW,WKA  LEVBITSA+32,XA
2592  01 007EF  651007EE           BIR,XA   $-1
2593  01 007F0  2290FFFF A        LI,LV    65535
2594  01 007F1  325008E8           LW,GR    JXGRP
2595  01 007F2  559A0846           STH,LV   LEVBITSA,GR
2596  01 007F3  559A0856           STH,LV   LEVBITST,GR
2597  01 007F4  559A084E           STH,LV   LEVBITSE,GR
2598  01 007F5  680005D3           B        SETEXP
2599  01 007F6  6A700574     JXA   BAL,LNK  SETHI
2600  01 007F7  2290FFFF A        LI,LV    65535
2601  01 007F8  325008E8           LW,GR    JXGRP
2602  01 007F9  609A1200 A         WD,LV    ARME,GR          ARM, ENABLE LEVELS FOR JX-58 TEST.
2603  01 007FA  60902000 A         WD,LV    X'2000'          TRIGGER VIA JX-58.
2604  01 007FB  6C902000 A         RD,LV    X'2000'
2605  01 007FC  22100001 A         LI,XA    1
2606  01 007FD  52920009 A         LH,LV    LV,XA            PROPAGATE SIGN BIT FOR HALF WORD
2607  01 007FE  519A08E3           CH,LV    NTNTIMPL,GR      COMPARE.
2608  01 007FF  68300616           BE       IGENA-5          BR IF ALL IMPLEMENTED LEVELS
2609                        *                                ADVANCED TO THE WAITING STATE.
2610  01 00800  499009BE           BR,LV    BITZERO
2611  01 00801  499009C0           BR,LV    BITTWO
2612  01 00802  09900930           PSW,LV   ERRSTK           STACK ERROR.
2613  01 00803  68000616           B        IGENA-5
2614  01 00804  6C000000 A   JX8   RD,0     0
2615  01 00805  694007EC           BCS,4    JXA-10           BR ON SS 2.
2616  01 00806  22600809           LI,9A    $+3
2617  01 00807  6A7004C9           BAL,LNK  REVRS1
2618  01 00808  68000834           B        JXE
2619  01 00809  22800818           LI,WKA   JXC
2620  01 0080A  358008F9           STW,WKA  EXECPATT
2621  01 00808  2280082A           LI,WKA   JXD
2622  01 0080C  358008F8           STW,WKA  CHKEXIT
2623  01 0080D  22800000 A         LI,WKA   0
2624  01 0080E  221FFFE0 A         LI,XA    -32
2625  01 0080F  35820866           STW,WKA  LEVBITSA+32,XA
2626  01 00810  6510080F           BIR,XA   $-1
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2627  01 00811  325008E8           LW,GR    JXGRP
2628  01 00812  329009C8           LW,LV    BIT16
2629  01 00813  3590086E           STW,LV   MANPATT
2630  01 00814  559A0846           STH,LV   LEVBITSA,GR
2631  01 00815  559A084E           STH,LV   LEVBITSE,GR
2632  01 00816  559A0856           STH,LV   LEVBITST,GR
2633  01 00817  680005D3           B        SETEXP
2634  01 00818  6A700574     JXC   BAL,LNK  SETHI
2635  01 00819  325008E8           LW,GR    JXGRP
2636  01 0081A  529A0846           LH,LV    LEVBITSA,GR                              *C
2637  01 00818  609A1200 A         WD,LV    ARME,GR
2638  01 0081C  60902000 A         WD,LV    X'2000'
2639  01 0081D  6C902000 A         RD,LV    X'2000'
2640  01 0081E  528A0846           LH,WKA   LEVBITSA,GR
2641  01 0081F  52CA08E3           LH,WKB   NTNTIMPL,GR
2642  01 00820  43C008FE           AND,WKB  BIT16X31
2643  01 00821  4B80000C A         AND,WKA  WKB
2644  01 00822  68300618           BCR,3    IGENA            BR IF LEVEL NOT IMPLEMENTED.
2645  01 00823  4B800009 A         AND,WKA  LV
2646  01 00824  69300616           BCS,3    IGENA-5          BR IF IMPLEMENTED LEVEL
2647                        *                                RESPONDS CORRECTLY.
2648  01 00825  499009BE           BR,LV    BITZERO
2649  01 00826  499009C0           BR,LV    BITTWO
2650  01 00827  499009C1           BR,LV    BIT3
2651  01 00828  09900930           PSW,LV   ERRSTK
2652  01 00829  68000616           B        IGENA-5
2653  01 0082A  325008E8     JXD   LW,GR    JXGRP
2654  01 00828  3290086E           LW,LV    MANPATT
2655  01 0082C  2590007F A         SLS,LV   -1
2656  01 0082D  3590086E           STW,LV   MANPATT
2657  01 0082E  32900009 A         LW,LV    LV
2658  01 0082F  69300814           BCS,3    JXC-4
2659  01 00830  6C000000 A         RD,0     0
2660  01 00831  69200804           BCS,2    JX8              BR ON SS 3.
2661  01 00832  226007EC           LI,9A    JXA-10
2662  01 00833  6A7004C9           BAL,LNK  REVRS1
2663  01 00834  6A700588     JXE   BAL,LNK  KILLINTS
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2664   01 00835   6A7004A7            BAL,LNK  SETSTKS
2665   01 00836   E80008F6            B        *L80PEXIT
2666   01 00837   21100046 A  JXF     CI,XA    X'46'          TEST FOR WATCH DOG TIMER TRAP.
2667   01 00838   6830083C            BE       JXG
2668   01 00839   6A700414            BAL,LNK  CHKSTK
2669   01 0083A   68000832            B        JXE-2
2670   01 0083B   68000832            B        JXE-2
2671   01 0083C   220004BF    JXG     LI,I8    WDTCDW         OUTPUT TRAP MESSAGE.
2672   01 0083D   6A700483            BAL,LNK  KSRA
2673   01 0083E   68000834            B        JXE            EXIT.
2674   01 0083F   227007E0    INVJX   LI,LNK   JX+9
2675   01 00840   68000534            B        OUTPINV
2676                          *                          *
2677                          *                       *
2678   01 00841   00000000 A  CONBITS DATA     0       * * * * * * * CONTROL BITS.
2679                          *                       *
2680                          *                          *
2681   01 00842   00000843    SETRTRN DATA     CMPINTAD
2682   01 00843   0F800988    CMPINTAD XPSD,8   CMPAD
2683   01 00844   00000000 A  IPCOUNT DATA     0,0
       01 00845   00000000 A
2684                                   BOUND    8
2685   01 00846                LEVBITSA RES     8
2686   01 0084E                LEVBITSE RES     8
2687   01 00856                LEVBITST RES     8
2688   01 0085E                LEVBITSI RES     8
2689   01 00866                LEVBITSN RES     8
2690   01 0086E                MANPATT  RES     24
2691   01 00886                MANINHB  RES     1
2692   01 00887                ROLL     RES     1
2693   01 00888   FFFFFFCF A   NOTIINHB DATA     X'FFFFFFCF'
2694   01 00889   00000007 A   INHBMSK  DATA     X'00000007'
2695   01 0088A                CHSL/CNT RES     16
2696   01 0089A                IPHOLD   RES     16
2697   01 008AA                IPHOLDA  RES     16
2698   01 008BA                IPHOLDT  RES     16
2699   01 008CA                IPHOLDE  RES     16
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2700   01 008DA                EXPFIELD RES     8
2701   01 008E2   0000F000 A   STRP2CNT DATA     X'0000F000'
2702   01 008E3   00000000 A   NTNTIMPL LDATA    8,0
       01 008E4   00000000 A
       01 008E5   00000000 A
       01 008E6   00000000 A
       01 008E7   00000000 A
       01 008E8   00000000 A
       01 008E9   00000000 A
       01 008EA   00000000 A
2703   01 008EB                JXGRP    RES     1
2704   01 008EC                HICHAS   RES     1
2705   01 008ED   0000000E A   HICHAS1  DATA    14
2706   01 008EE   00000000 A   SQLSTCNT DATA    0
2707   01 008EF                SRPCNT   RES     1
2708   01 008F0   00000000 A   HOLDSS   DATA    0
2709   01 008F1   00000000 A   HOLDSS1  DATA    0
2710   01 008F2                TERM     RES     2
2711   01 008F4   4040FFFF A   BLNKSTRP DATA    X'4040FFFF'
2712   01 008F5   40404040 A   BLANK    DATA    '    '
2713   01 008F6                L80PEXIT RES     1
2714   01 008F7                ADRDC8DE RES     1
2715   01 008F8                CHKEXIT  RES     1
2716   01 008F9                EXECPATT RES     1
2717   01 008FA   000005D1      HIEXIT   DATA    BREAKHI+6
2718   01 008FB   0F000CC6      OCDXPSD1 XPSD,0   LAST
2719   01 008FC   0F800CC6      OCDXPSD2 XPSD,8   LAST
2720   01 008FD   FFFF0000 A   BIT0X15  DATA    X'FFFF0000'
2721   01 008FE   0000FFFF A   BIT16X31 DATA    X'0000FFFF'
2722   01 008FF   FFFFFFFF A   BIT0X31  DATA    -1
2723   01 00900   00000000 A   NOBITS   DATA    0
2724   01 00901   FF80EFFF A   NOT9X16  DATA    X'FF80EFFF'
2725   01 00902   FFFFFC3F A   NOTCINHB DATA    X'FFFFFC3F'
2726   01 00903   00003C00 A   BIT18X21 DATA    X'00003C00'
2727   01 00904   55555555 A   AP1      DATA    X'55555555'
2728   01 00905   AAAAAAAA A            DATA    X'AAAAAAAA'
2729   01 00906   FFFFFFFF A            DATA    -1
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2730  01 00907  33333333 A            DATA    X'33333333'
2731  01 00908  CCCCCCCC A            DATA    X'CCCCCCCC'
2732  01 00909  99999999 A            DATA    X'99999999'
2733  01 0090A  66666666 A            DATA    X'66666666'
2734  01 0090B                AUTOSTEP RES     3
2735  01 0090E  61D7C1E3 A    NEWPATT  DATA    '/PAT'
2736  01 0090F  61C5D5C4 A    ENDFLAG  DATA    '/END'
2737  01 00910  61E2C5D9 A    ZEROSEQ  DATA    '/SEQ'
2738  01 00911  C1C5D5C4 A    AEND     DATA    'AEND'
2739  01 00912  C5C5D5C4 A    EEND     DATA    'EEND'
2740  01 00913  E3C5D5C4 A    TEND     DATA    'TEND'
2741  01 00914  C9C5D5C4 A    IEND     DATA    'IEND'
2742  01 00915  00000000 A    HIPRI    DATA    0
2743  01 00916  00000000 A    NOTHI    DATA    0
2744  01 00917  00000000 A    HIBIT    DATA    0
2745  01 00918  00000A84       ERRMSK   SPD     ST<2,64
      01 00919  80408000 A
2746  01 0091A  00000A84       ERRMSK1  DATA    STK2-1,X'1FFFF'
      01 0091B  0001FFFF A
2747  01 0091C  0000054E       HIFAILA1 PSD     HIFAILAC
      01 0091D  00000000 A
2748  01 0091E  00000560       HIFAILB1 PSD     HIFAILBC
      01 0091F  00000000 A
2749  01 00920  000006EA       HIFAILC1 PSD     HIFAILCC
      01 00921  00000000 A
2750  01 00922  000007A3       MULTINT1 PSD     MULTINTC
      01 00923  00000000 A
2751  01 00924  000007B9       SNGLUP1  PSD     SNGLUPE
      01 00925  00000000 A
2752  01 00926  000007DD       SNGLDWN1 PSD     SNGLDWNE
      01 00927  00000000 A
2753  01 00928  0000026E       GETSEQ1  PSD     GETSEQB
      01 00929  00000000 A
2754  01 0092A  00000542       GRPBNE1  PSD     GRPBNEC
      01 0092B  00000000 A
2755  01 0092C  0000062F       CHKPATT1 PSD     CHKPATTC
      01 0092D  00000000 A
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2756  01 0092E  00000A7F       LNKSTK   SPD     ST<1,5
      01 0092F  80058000 A
2757  01 00930  00000A84       ERRSTK   SPD     STK2,64
      01 00931  80408000 A
2758  01 00932  05002890       MSG1CDW  CDW     5,MSG1,24
      01 00933  02000018 A
2759  01 00934  050028A8       MSG2CDW  CDW     5,MSG2,11
      01 00935  02000008 A
2760  01 00936  050028B4       MSG3CDW  CDW     5,MSG3,10
      01 00937  0200000A A
2761  01 00938  05002970       MANCDW1  CDW     5,MSGC,27
      01 00939  02000018 A
2762  01 0093A  86002398       MANCDW2  CDW     X'86',ITRNHIST+32,5
      01 0093B  02000005 A
2763  01 0093C  050029C4       MANCDW3  CDW     5,ENTMANE,19
      01 0093D  02000013 A
2764  01 0093E  050029D8       MANCDW4  CDW     5,ENTMANT,20
      01 0093F  02000014 A
2765  01 00940  050029EC       MANCDW5  CDW     5,ENTMANI,20
      01 00941  02000014 A
2766  01 00942  05002398       STKCDW   CDWC    5,ITRNHIST+32,1
      01 00943  22000001 A
2767  01 00944  050023D0                CDWC    5,BLNKSTRP,1
      01 00945  22000001 A
2768  01 00946  05002399                GEN,8,24 5,BA(ITRNHIST+32)+1
2769  01 00947  22000007 A              GEN,8,24 34,7
2770  01 00948  050028A8                CDW     5,MSG2,1
      01 00949  02000001 A
2771  01 0094A  050028C0       MSG4CDW  CDWC    5,MSG4,10
      01 0094B  2200000A A
2772  01 0094C  0500211C                CDW     5,LEVBITSA+1,5
      01 0094D  02000005 A
2773  01 0094E  050028CC       MSG5CDW  CDW     5,MSG5,13
      01 0094F  0200000D A
2774  01 00950  050028DC       MSG6ACDW CDW     5,MSG6,3
      01 00951  02000003 A
2775  01 00952  050029B8       COMMCDW  GEN,8,24 5,BA(RESPOND)
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2776   01 00953   82000009 A            GEN,8,24 X'82',9
2777   01 00954   08000000 A            CDWN     8,0,0
       01 00955   00000000 A
2778   01 00956   050029A4     SEQCDW    CDWC     5,PRISEQ,8
       01 00957   22000008 A
2779   01 00958   05003718     SEQCDW1   GEN,8,24 5,BA(LAST+256)
2780   01 00959   02000000 A            GEN,8,24 2,0
2781   01 0095A   05002994     BITSWCDW  CDWC     5,ENTBSW,14
       01 0095B   2200000E A
2782   01 0095C   86002398              CDW      X'86',ITRNHIST+32,9
       01 0095D   02000009 A
2783   01 0095E   05002938     PATTLEAD  CDWC     5,PATTNUM,10
       01 0095F   2200000A A
2784   01 00960   05002398     NUMCDW    GEN,8,24 5,BA(ITRNHIST+32)
2785   01 00961   02000000 A            GEN,8,24 2,0
2786   01 00962   050028E0     QUESTION  CDW      5,MSG6B,54
       01 00963   02000036 A
2787   01 00964   050029AC     CORRCDW   CDWC     5,ENTSEQ,11
       01 00965   2200000B A
2788   01 00966   86002398              CDW      X'86',ITRNHIST+32,6
       01 00967   02000006 A
2789   01 00968   05002918     MSG7CDW   CDW      5,MSG7,32
       01 00969   02000020 A
2790   01 0096A   05002944     MSG8CDW   CDW      5,MSG8,10
       01 0096B   0200000A A
2791   01 0096C   05002950     MSG9CDW   CDW      5,MSG9,4
       01 0096D   02000004 A
2792   01 0096E   05002954     MSGACDW   CDWC     5,MSGA,4
       01 0096F   22000004 A
2793   01 00970   0500211C              CDW      5,LEVBITSA+1,4
       01 00971   02000004 A
2794   01 00972   05002958     MSGBCDW   CDWC     5,MSGB,22
       01 00973   22000016 A
2795   01 00974   86002398              CDW      X'86',ITRNHIST+32,2
       01 00975   02000002 A
2796   01 00976   0500298C     MSGDCDW   CDW      5,MSGD,4
       01 00977   02000004 A
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2797   01 00978   05002890     PDMPCDW   CDWC     5,MSG1,1
       01 00979   22000001 A
2798   01 0097A   05002BB4              CDW      5,ITRNHIST+39,26
       01 0097B   0200001A A
2799   01 0097C   05002990     INVCDW    CDW      5,INVAL,4
       01 0097D   02000004 A
2800   01 0097E   05002770     WDTCDW    CDW      5,TRPMSG,28
       01 0097F   0200001C A
2801   01 00980   000000F9 A   HEXLIMF   DATA     249,240
       01 00981   000000F0 A
2802   01 00982   000000C6 A   HEXLIMC   DATA     198,193
       01 00983   000000C1 A
2803   01 00984   00000000 A   CTCHHANG  DATA     0,0,HNGDCODE+1
       01 00985   00000000 A
       01 00986   000006CE
2804   01 00987   07000000 A            GEN,8,24 7,0
2805   01 00988   00000000 A   CMPAD     DATA     0,0,COMPADDR,0
       01 00989   00000000 A
       01 0098A   00000592
       01 0098B   00000000 A
2806         01 0098C          HANGPSDS EQU      $
2807                          X         DB       8
2808   01 0098C                         RES      2
2809   01 0098E   000006CD              GEN,4,28 X-1,HNGDCODE
2810   01 0098F   070000F0 A            GEN,8,24 7,240
2811                                    FIN
       01 00990
       01 00992   100006CD
       01 00993   070000F0 A
       01 00994
       01 00996   200006CD
       01 00997   070000F0 A
       01 00998
       01 0099A   300006CD
       01 0099B   070000F0 A
       01 0099C
       01 0099E   400006CD
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                01 0099F     070000F0 A
                01 009A0
                01 009A2     500006CD
                01 009A3     070000F0 A
                01 009A4
                01 009A6     600006CD
                01 009A7     070000F0 A
                01 009A8
                01 009AA     700006CD
                01 009AB     070000F0 A
     2812            01 009AC            CTCHHNG1 EQU      $
     2813                                X        DB       8
     2814    01 009AC     0F00098C               XPSD,0    HANGPSDS+4*(X-1)
     2815                                        FIN
                01 009AD     0F000990
                01 009AE     0F000994
                01 009AF     0F000998
                01 009B0     0F00099C
                01 009B1     0F0009A0
                01 009B2     0F0009A4
                01 009B3     0F0009A8
     2816            01 009B4            CTCHHNG2 EQU      $
     2817                                X        DB       8
     2818    01 009B4     0F80098C               XPSD,8    HANGPSDS+4*(X-1)
     2819                                        FIN
                01 009B5     0F800990
                01 009B6     0F800994
                01 009B7     0F800998
                01 009B8     0F80099C
                01 009B9     0F8009A0
                01 009BA     0F8009A4
                01 009BB     0F8009A8
     2820    01 009BC                 HANGBACK RES      1
     2821    01 009BD                 CNTR     RES      1
     2822    01 009BE     80000000 A  BITZERO  DATA     X'80000000'
     2823    01 009BF     40000000 A  BITONE   DATA     X'40000000'
     2824    01 009C0     20000000 A  BITTWO   DATA     X'20000000'
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     2825    01 009C1     10000000 A  BIT3     DATA     X'10000000'
     2826    01 009C2     08000000 A  BIT4     DATA     8**24
     2827    01 009C3     04000000 A  BIT5     DATA     4**24
     2828    01 009C4     02000000 A  BIT6     DATA     X'02000000'
     2829    01 009C5     01000000 A  BIT7     DATA     1**24
     2830    01 009C6     00400000 A  BIT9     DATA     4**20
     2831    01 009C7     00010000 A  BIT15    DATA     65536
     2832    01 009C8     00008000 A  BIT16    DATA     32768
     2833    01 009C9     00004000 A  BIT17    DATA     16384
     2834    01 009CA     00002000 A  BIT18    DATA     8192
     2835    01 009CB     00001000 A  BIT19    DATA     4096
     2836    01 009CC     00000800 A  BIT20    DATA     2048
     2837    01 009CD     00000400 A  BIT21    DATA     1024
     2838    01 009CE     00000200 A  BIT22    DATA     512
     2839    01 009CF     00000100 A  BIT23    DATA     256
     2840    01 009D0     00000080 A  BIT24    DATA     128
     2841    01 009D1     00000040 A  BIT25    DATA     64
     2842    01 009D2     00000020 A  BIT26    DATA     32
     2843    01 009D3     00000010 A  BIT27    DATA     16
     2844    01 009D4     00000008 A  BIT28    DATA     8
     2845    01 009D5     00000004 A  BIT29    DATA     4
     2846    01 009D6     00000002 A  BIT30    DATA     2
     2847    01 009D7     00000001 A  BIT31    DATA     1
     2848    01 009D8     F0F1F2F3 A  TABLE    TEXT     '0123456789ABCDEF'
                01 009D9     F4F5F6F7 A
                01 009DA     F8F9C1C2 A
                01 009DB     C3C4C5C6 A
     2849    01 009DC     15E6C4E3 A  TRPMSG   TEXT     'NWDT, JX-58 ROUTINE ABORTEDN'
                01 009DD     6340D1E7 A
                01 009DE     60F5F840 A
                01 009DF     D9D6E4E3 A
                01 009E0     C9D5C540 A
                01 009E1     C1C2D6D9 A
                01 009E2     E3C5C415 A
     2850    01 009E3                 SEQLIST  RES      61
     2851    01 00A20                 WAITCNT  RES      1
     2852    01 00A21     000000ED A  WAITCON  DATA     237
```

```
    2853   01 00A22                         ERROR     RES       1
    2854   01 00A23                         INHIBITS  RES       1
    2855   01 00A24      15D4F16B A   MSG1      TEXT      'NM1, ADDRESSES VERIFIEDN'
           01 00A25      40C1C4C4 A
           01 00A26      D9C5E2E2 A
           01 00A27      C5E240E5 A
           01 00A28      C5D9C9C6 A
           01 00A29      C9C5C415 A
    2856   01 00A2A      15D4F26B A   MSG2      TEXT      'NM2, ERRORN'
           01 00A2B      40C5D9D9 A
           01 00A2C      D6D91540 A
    2857   01 00A2D      15D4F315 A   MSG3      TEXT      'NM3N'
    2858   01 00A2E      C5D9D9D6 A             TEXT      'ERRORN'
           01 00A2F      D9154040 A
    2859   01 00A30      15D4F415 A   MSG4      TEXT      'NM4N'
    2860   01 00A31      C5D9D9D6 A             TEXT      'ERRORN'
           01 00A32      D9154040 A
    2861   01 00A33      15D4F56B A   MSG5      TEXT      'NM5, SUCCESSN'
           01 00A34      40E2E4C3 A
           01 00A35      C3C5E2E2 A
           01 00A36      15404040 A
    2862   01 00A37      15D4F615 A   MSG6      TEXT      'NM6N'
    2863   01 00A38      40D4F615 A   MSG63     TEXT      ' M6N'
    2864   01 00A39      D9C5E5C5 A             TEXT      'REVERSE SS 2 IF SEQUENCE ISN'
           01 00A3A      D9E2C540 A
           01 00A3B      E2E240F2 A
           01 00A3C      40C9C640 A
           01 00A3D      E2C5D8E4 A
           01 00A3E      C5D5C3C5 A
           01 00A3F      40C9E215 A
    2865   01 00A40      C3D6D4D7 A             TEXT      'COMPLETE AND IN ORDERN'
           01 00A41      D3C5E3C5 A
           01 00A42      40C1D5C4 A
           01 00A43      40C9D540 A
           01 00A44      D6D9C4C5 A
           01 00A45      D9154040 A
    2866   01 00A46      15D4F76B A   MSG7      TEXT      'NM7, ENTERING PATTERN GENERATORN'
```



```
           01 00A47      40C5D5E3 A
           01 00A48      C5D9C9D5 A
           01 00A49      C740D7C1 A
           01 00A4A      E3E3C5D9 A
           01 00A4B      D540C7C5 A
           01 00A4C      D5C5D9C1 A
           01 00A4D      E3D6D915 A
    2867   01 00A4E      15D7C1E3 A   PATTNUM   TEXT      'NPATT NUMN'
           01 00A4F      E340D5E4 A
           01 00A50      D4154040 A
    2868   01 00A51      15D4F815 A   MSG8      TEXT      'NM8N'
    2869   01 00A52      C5D9D9D6 A             TEXT      'ERRORN'
           01 00A53      D9154040 A
    2870   01 00A54      15D4F915 A   MSG9      TEXT      'NM9N'
    2871   01 00A55      15D4C115 A   MSGA      TEXT      'NMAN'
    2872   01 00A56      40D4C215 A   MSGB      TEXT      ' MBN'
    2873   01 00A57      C5D5E3C5 A             TEXT      'ENTER JX-58 GROUPN'
           01 00A58      D940D1E7 A
           01 00A59      60F5F840 A
           01 00A5A      C7D9D6E4 A
           01 00A5B      D7154040 A
    2874   01 00A5C      40D4C315 A   MSGC      TEXT      ' MCN'
    2875   01 00A5D      C5D5E3C5 A             TEXT      'ENTER ARM-DISABLE DATAN'
           01 00A5E      D940C1D9 A
           01 00A5F      D460C4C9 A
           01 00A60      E2C1C2D3 A
           01 00A61      C540C4C1 A
           01 00A62      E3C11540 A
    2876   01 00A63      15D4C415 A   MSGD      TEXT      'NMDN'
    2877   01 00A64      C9D5E515 A   INVAL     TEXT      'INVN'
    2878   01 00A65      15C3D6D5 A   ENTBSW    TEXT      'NCONTROL BITSN'
           01 00A66      E3D9D6D3 A
           01 00A67      40C2C9E3 A
           01 00A68      E2154040 A
    2879   01 00A69      15D7D9C9 A   PRISEQ    TEXT      'NPRI SEQ'
           01 00A6A      40E2C5D8 A
    2880   01 00A6B      15C5D5E3 A   ENTSEQ    TEXT      'NENTER SEQN'
```

```
                01 00A6C    C5D940E2 A
                01 00A6D    C5D81540 A
     2881       01 00A6E    15D9C5E2 A   RESPBND  TEXT     'NRESPBND,'
                01 00A6F    D7D6D5C4 A
                01 00A70    68404040 A
     2882       01 00A71    15C5D5E3 A   ENTMANE  TEXT     'NENTER ENABLE DATAN'
                01 00A72    C5D940C5 A
                01 00A73    D5C1C2D3 A
                01 00A74    C540C4C1 A
                01 00A75    E3C11540 A
     2883       01 00A76    15C5D5E3 A   ENTMANT  TEXT     'NENTER TRIGGER DATAN'
                01 00A77    C5D940E3 A
                01 00A78    D9C9C7C7 A
                01 00A79    C5D940C4 A
                01 00A7A    C1E3C115 A
     2884       01 00A7B    15C5D5E3 A   ENTMANI  TEXT     'NENTER INHIBIT DATAN'
                01 00A7C    C5D940C9 A
                01 00A7D    D5C8C9C2 A
                01 00A7E    C9E340C4 A
                01 00A7F    C1E3C115 A
     2885       01 00A80                 STK1     RES      5
     2886       01 00A85                 STK2     RES      64
     2887                                BOUND    8
     2888            01 00AC6            ITRNHIST EQU      *
     2889                                XJ       DB       14
     2890       01 00AC6    00000052 A               GEN,8,24 XJ-1,81+XJ
     2891       01 00AC7    00000000 A               DATA     0
     2892                                            FIN
                01 00AC8    01000053 A
                01 00AC9    00000000 A
                01 00ACA    02000054 A
                01 00ACB    00000000 A
                01 00ACC    03000055 A
                01 00ACD    00000000 A
                01 00ACE    04000056 A
                01 00ACF    00000000 A
                01 00AD0    05000057 A
```



```
                01 00AD1    00000000 A
                01 00AD2    06000058 A
                01 00AD3    00000000 A
                01 00AD4    07000059 A
                01 00AD5    00000000 A
                01 00AD6    0800005A A
                01 00AD7    00000000 A
                01 00AD8    09000058 A
                01 00AD9    00000000 A
                01 00ADA    0A00005C A
                01 00ADB    00000000 A
                01 00ADC    0B00005D A
                01 00ADD    00000000 A
                01 00ADE    0C00005E A
                01 00ADF    00000000 A
                01 00AE0    0D00005F A
                01 00AE1    00000000 A
     2893       01 00AE2    0E000050 A               DATA     X'0E000050'
     2894       01 00AE3    00000000 A               DATA     0
     2895       01 00AE4    0F000051 A               DATA     X'0F000051'
     2896       01 00AE5                             RES      33
     2897       01 00B06                 EXTRNAL  RES      448
     2898                                *                          * * * DELEATED PAGE DIRECTIVE * * *          *C
     2899                                            BOUND    8
     2900                                *
     2901                                *  ALL CODING BEYOND THIS POINT WILL BE OVERLAID BY A FIELD OF
     2902                                *  PROGRAM STATUS DOUBLEWORDS WHICH WILL BE USED BY THE INTERRUPT
     2903                                *  HANDLING ROUTINE TO DECODE THE ADDRESS FROM WHICH ANY INTERRUPT
     2904                                *  OCCURRED.
     2905                                *
     2906       01 00CC6    6C000000 A   LAST     RD,D     0
     2907       01 00CC7    740008F0                 STCF     HOLDSS
     2908       01 00CC8    22000673                 LI,I8    TITLCDW
     2909       01 00CC9    6A700481                 BAL,LNK  KSR
     2910       01 00CCA    22800000 A               LI,8     0                    SET UP HISTORY TABLE FOR WD
     2911       01 00CCB    221FFFDF A               LI,1     -33                  GROUPS TWO THROUGH FIFTEEN.
     2912       01 00CCC    35820B06                 STW,8    EXTRNAL,1
```

```
2913   01 00CCD   65100CCC              BIR,1    *-1
2914   01 00CCE   22100000 A            LI,1     0                 STORE INDEX
2915   01 00CCF   22F00002 A            LI,15    2                 GROUP.
2916   01 00CD0   22D00060 A            LI,13    96                STARTING ADDRESS.
2917   01 00CD1   22A00000 A            LI,10    0
2918   01 00CD2   2280000E A            LI,8     14                ENTRY COUNT.
2919   01 00CD3   22700010 A  HISTGENA  LI,7     16                LEVEL COUNTER.
2920   01 00CD4   22E00000 A            LI,14    0                 LEVEL.
2921   01 00CD5   3290000F A  HISTGENB  LW,9     15                LOAD GROUP.
2922   01 00CD6   25900004 A            SLS,9    4                 ALIGN GROUP.
2923   01 00CD7   4990000E A            OR,9     14
2924   01 00CD8   25900018 A            SLS,9    24                ALIGN POINTER.
2925   01 00CD9   4990000D A            OR,9     13                INSERT ADDRESS.
2926   01 00CDA   02200020 A            LCI      2
2927   01 00CDB   28920806              STM,9    EXTRNAL,1
2928   01 00CDC   20100002 A            AI,1     2                 INCR STM INDEX.
2929   01 00CDD   20E00001 A            AI,14    1                 INCR LEVEL.
2930   01 00CDE   20D00001 A            AI,13    1                 INCR EXPECTED ADDRESS.
2931   01 00CDF   64700CD5              BDR,7    HISTGENB
2932   01 00CE0   20F00001 A            AI,15    1                 INCR GROUP.
2933   01 00CE1   64800CD3              BDR,8    HISTGENA
2934   01 00CE2   22700200              LI,LNK   COMPHIGH
2935   01 00CE3   2280020A              LI,WKA   HIGHA
2936   01 00CE4   358008F7              STW,WKA  ADRDC8DE
2937   01 00CE5   6800048E              B        SETPSDS
2938   01 00CE6   050033A8   TITLCDW    CDWC     5,TITLE,32
       01 00CE7   22000020 A
2939   01 00CE8   050033C8              CDW      5,PRONUM,42                                    *C
       01 00CE9   0200002A A
2940   01 00CEA   15E2C9C7 A  TITLE     TEXT     'NSIGMA 5/7 INTERRUPT DIAGNOSTICN'
       01 00CEB   D4C140F5 A
       01 00CEC   61F740C9 A
       01 00CED   D5E3C5D9 A
       01 00CEE   D9E4D7E3 A
       01 00CEF   40C4C9C1 A
       01 00CF0   C7D5D6E2 A
       01 00CF1   E3C9C315 A
```



```
2941   01 00CF2   D7D9D6C7 A  PRONUM   TEXT     'PROGRAM NO. 704143C00MANUAL NO. 901134CNN'    *C
       01 00CF3   D9C1D440 A
       01 00CF4   D5D64B40 A
       01 00CF5   F7F0F4F1 A
       01 00CF6   F4F3C3F0 A
       01 00CF7   F015D4C1 A
       01 00CF8   D5E4C1D3 A
       01 00CF9   40D5D64B A
       01 00CFA   40F9F0F1 A
       01 00CFB   F1F3F4C3 A
       01 00CFC   15154040 A
2942        01 00CC6                    END      LAST
```

SECTION V
CONCORDANCE LISTING


```
ADRDCODE
        920/STW     1009/STW    1494/LW     1793/STW    1809/STW    1828/STW    1865/STW
       1872/STW     1920/BCR*   1922/B*     2072/STW    2300/STW    2484/STW    2521/STW
       2547/STW     2714-RES    2936/STW
AEND
       2343/LW      2738-DATA
AP
        831/DATA     832/GEN     837/DATA    845/GEN     845/GEN     846/GEN     852/SET
        852/SET      858/DO      855/DATA    859/GEN
ALLAUTO
       1186-LI
ALLAUTOB
       1206-LI
ALLAUTOA
       1205-EQU     1259/BCR
ALLAUTOE
       1250-LI
ALLAUTOH
       1214/LI      1267-BAL
ALLAUTOD
       1210/LI      1233-LW     1278/LI
ALLAUTOC
       1210-LI      1249/BCR    1253/BCR    1257/BCR    1269/B      1270/B
ALLAUTOG
       1260-BAL
ALLAUTOF
       1254-LI
AP1
       1219/LW      1224/LW     1229/LW     2727-DATA
ARMD
        881-EQU      895/WD      933/WD      999/WD     1798/WD     2046/WD     2049/WD
       2302/WD      2526/WD     2552/WD
ARME
        880-EQU     1812/WD     1831/WD     1867/WD     2493/WD     2602/WD     2637/WD
AUTOERLP
       1238/LI      1271-STW
AUTOERRA
```



```
       1272/LI      1276-LI
AUTOSTEP
       1207/STW     1208/STW    1209/STW    1218/LW     1223/LW     1228/LW     1248/MTW
       1251/STW     1252/MTW    1255/STW    1256/MTW    2734-RES
BA
        845/GEN     1187/LI     1188/LI     1993/LI     2112/LI     2125/AI     2133/LI
       2140/LI      2768/GEN    2775/GEN    2779/GEN    2784/GEN
BADSEQ
       1181/LI      1723-LI     1739/BE
BADSEQA
       1728-LI      1779/BG     1786/LI
BADSEQB
       1752-STW     1785/B
BADSEQC
       1760-LW      1781/B
BADSEQD
       1744/BE      1782-LW
BADSEQE
       1746/BNE     1755/LI     1786-LI
BITCNT
       1109/BAL     1852-EQU    1880/BAL    2229/BAL
BITCNTA
       1855-SLD     1858/BE
BITONE
       1049/BR      1101/BR     1656/LW     1981/BR     2197/BR     2214/BR     2237/BR
       2823-DATA
BITSWEDW
       1699/LI      2781-EDWC
BITSWTCH
        886-EQU     1475/LW     1584/LW     1708/AND    1710/STW    1933/AND    1938/AND
BITTWO
        982/BR      1057/BR     1579/LW     2215/BR     2238/BR     2611/BR     2649/BR
       2824-DATA
BITZERO
       1048/BR      1671/AND    1672/LW     1930/LW     1980/BR     2090/BR     2285/BR
       2510/BR      2648/BR     2822-DATA
BITOX15
```

1680/AND 2250/AND 2720-DATA
BITOX31
2006/EOR 2014/EOR 2021/EOR 2722-DATA
BIT15
1099/OR 1326/LW 2831-DATA
BIT16
910/LW 925/LW 1034/LI 1764/LI 1829/LW 2155/LW 2186/LI
2201/LW 2230/LW 2525/LW 2628/LW 2832-DATA
BIT16X31
912/EOR 1321/AND 1337/AND 2223/LW 2236/AND 2642/AND 2721-DATA
BIT17
2833-DATA
BIT18
961/LW 969/OR 1830/OR 2834-DATA
BIT18X21
1631/LW 2726-DATA
BIT19
2835-DATA
BIT20
2836-DATA
BIT21
2837-DATA
BIT22
2838-DATA
BIT23
2839-DATA
BIT24
2840-DATA
BIT25
2841-DATA
BIT26
2842-DATA
BIT27
2843-DATA
BIT28
2844-DATA
BIT29

2845-DATA
BIT3
965/OR 1058/OR 1690/LW 1692/LW 1982/OR 2175/OR 2196/OR
2239/OR 2286/OR 2650/OR 2825-DATA
BIT30
2846-DATA
BIT31
2847-DATA
BIT4
2479/EOR 2826-DATA
BIT5
2517/EOR 2827-DATA
BIT6
1576/LW 2544/EOR 2828-DATA
BIT7
2570/EOR 2829-DATA
BIT9
2334/EOR 2830-DATA
BLANK
2459/OR 2712-DATA
BLNKSTRP
1147/AND 2711-DATA 2767/CDWC
BREAKHI
1871/LI 1979-LW 2717/DATA
BS456
1196/BAL 1244/BAL 1394/BAL 2318-STW
CDW
840-CNAME
CDWC
889-CNAME
CDWN
841-CNAME
CHKEXIT
1211/STW 1273/STW 1279/STW 1344/STW 1402/STW 1459/STW 1463/STW
1504/LW 2171/B* 2172/B* 2415/STW 2576/STW 2622/STW 2715-RES
CHKPATT
2071/LI 2083-LI

```
   CHKPATTK
         2126/BCS        2165-LI         2192/BCR        2219/B          2245/B          2255/B
   CHKPATTM
         2119/BE         2122/BE         2175-BR
   CHKPATTE
         2108/B          2124-LW
   CHKPATTC
         2103-MTW        2104/BCB        2755/PSD
   CHKPATTI
         2096/STB        2102/LPSD       2755-PSD
   CHKPATTD
         2087/BE         2109-BLB
   CHKPATTA
         2086-CB         2089/BDR
   CHKPATTB
         2073/B          2094-LW         2117/B
   CHKPATTR
         2207/BCS        2247-LW
   CHKPATTQ
         2168/BCS        2220-MTW
   CHKPATTP
         2158/BCR        2201-LW         2252/BCR
   CHKPATTJ
         2150-LW         2174/B          2190/BCR        2200/B
   CHKPATTN
         2147/BLE        2180-AI
   CHKPATTI
         2142/BE         2145-AI
   CHKPATTH
         2135/BE         2138-AI
   CHKPATTG
         2131-LW         2178/BDR        2179/B
   CHKPATTL
         2129/BCS        2173-LB
   CHKPATTF
         2128-MTW        2164/BNE
   CHKSEQ
```



```
         1013/B          1072-LI
   CHKSEQA
         1073-LW         1077/BIR        1105/B
   CHKSEQB
         1079-BAL
   CHKSEQC
         1075/BCS        1082-LW
   CHKSEQD
         1089/BCS        1092-LW
   CHKSEQE
         1081/B          1108-LW
   CHKSEQF
         1116-LI         1126/BDR
   CHKSEQG
         1107/B          1123-STH
   CHKSEQH
         1106-LB         1119/BE
   CHKSTK
          899/BAL         903/BAL         949/BAL         1062/BAL        1079/BAL        1268/BAL        1378/BAL
         1471-LD         2170/BAL        2443/BAL        2668/BAL
   CHKSTKA
         1480-PLW        1492/B
   CHKSTKB
         1481/BCR        1488-LI         1496/BE         1498/BE         1500/BE         1553/BG
   CHKSTKC
         1482/LI         1494-LW
   CHKSTKD
         1532-STH        1562/B
   CHKSTKE
         1476/BCS        1568-PSW
   CHKSTKF
         1564/LI         1570-PLW
   CHSLVENT
         1313/STW        1317/LW         1319/AW         1325/LCW        1329/STW        1415/LW         1421/LW
         1429/LB         1438/LW         1443/LW         1449/LW         2695-RES
   CKINTAD
          918-BAL
```

```
   CKINTAD8
         975-WD          984/B
   CKINTADF
         967/B           971-LH
   CKINTADA
         925-LW          947/BCB
   CKINTADE
         963/BCR         968-LW
   CKINTADD
         919/LI          952-CI          1497/CI
   CKINTADH
         960/BNE         978-LW
   CKINTADC
         938-SLS         977/B
   CKINTADB
         927-LI          942/BCB
   CLEAR
        1216/BAL        1351/BAL        1638-LI         2439/BAL
   CLR18X21
        1681-LW
   CMPAD
        1912/LB         1913/LW         1919/LH         2682/XPSD       2805-DATA
   CMPINTAD
        2681/DATA       2682-XPSD
   CNTR
         993/STW        1014/LW         1027/MTW        1054/LW         1724/STW        1768/LW         1773/MTW
        2821-RES
   COMMCDW
        1679/LW         1682/STW        1683/LI         2775-GEN
   COMPADDR
        1912-LB         2805/DATA
   COMPHIGH
         891-LCI        2934/LI
   CONBITS
         886/EQU        2333/LW         2335/STW        2478/LW         2480/STW        2516/LW         2518/STW
        2543/LW         2545/STW        2569/LW         2571/STW        2678-DATA
   CORRCDW
```



```
        1728/LI         1777/LI         2787-CDWC
   CSA
         873-EQU         957/LW          959/CS          981/BR          1018/LW         1020/CS         1082/LW
        1083/SLD        1088/LW         1088/LW         1091/LW         1092/LW         1165/LW         1168/CS
        1174/LW         1307/LH         1309/SLD        1471/LD         1472/CS         1475/LW         1494/LW
        1495/CI         1497/CI         1499/CI         1528/LI         1529/STW        1535/LH         1537/STH
        1539/LW         1541/STH        1567/LD         1568/STD        1586/LD         1596/STD        1617/SLD
        1618/SLS        1619/BLD        1620/SLS        1621/SLD        1623/BR         1624/STD        1629/LD
        1630/STD        1634/LI         1635/STS        1638/LI         1641/STD        1644/STD        1646/STW
        1658/STCF       1659/SLD        1660/CS         1663/CS         1747/LW         1749/SLD        1751/SLD
        1752/STW        1782/LW         1783/SLS        1784/SLS        1844/LI         1845/SLD        1846/LW
        1854/LI         1855/SLD        1857/CW
   CSM
         874-EQU         958/LI          1019/LI         1084/SLS        1091/LW         1092/LW         1096/AND
        1100/BR         1108/LW         1166/LI         1306/LI         1310/CI         1616/LW         1622/LI
        1631/LW         1639/LI         1656/LW         1662/SLS        1748/LW         1750/SLS        1841/LW
        1879/LW         2228/LW
   CTCHHANG
        2277/XPSD       2280/LB         2282/LH         2289/LB         2803-DATA
   CTCHHNG1
         892/LM          930/LM         1042/LM         2099/LM         2498/LM         2812-EQU
   CTCHHNG2
        2816-EQU
   DA
         844/EQU        1683/LI
   DCDXPSD1
        1602/LW         2718-XPSD
   DCDXPSD2
        1610/LW         2719-XPSD
   DESCRIBE
        2209/BAL        2232/BAL        2261-LW
   DESCRIBA
        2265-LH         2271/BDR
   DISABLE
         883-EQU        1040/WD
   DISARM
         879-EQU         978/WD         1894/WD         1896/WD         2070/WD
```

```
   OEINK
         2299-LI         2316/B
   OMPNUM
         1507-LI
   OMPNUMA
         1510/BCR        1516-LI
   OMPNUMB
         1515/B          1519-LW
   OMPNUMC
         1501/LI         1506/BNE        1523-LI
   OUMPSEQ
         1159-SLS
   OUMPSEQA
         1168-CS         1176/BDR
   OUMPSEQB
         1169/BE         1175-AI
   EDIT
         1548/BAL        2459-LI
   EEND
         2389/LW         2739-DATA
   ENABLE
          882-EQU         897/WD          935/WD          1001/WD         1800/WD         2061/WD         2065/WD
         2304/WD         2528/WD         2554/WD
   ENADISA
          884-EQU
   ENDFLAG
         1731/CW         2736-DATA
   ENTBSW
         2781/CDWC       2878-TEXT
   ENTMANE
         2763/CDW        2882-TEXT
   ENTMANI
         2765/CDW        2884-TEXT
   ENTMANT
         2764/CDW        2883-TEXT
   ENTSEQ
         2787/CDWC       2880-TEXT
```



```
   ERRMSK
         1567/LD         1629/LD         2745-SPD
   ERRMSK1
         1471/LD         2746-DATA
   ERROR
         1233/LW         1381/LW         1646/STW        1984/MTW        2093/STW        2177/MTW        2199/MTW
         2218/MTW        2220/MTW        2288/MTW        2433/LW         2853-RES
   ERRSTK
          966/PSW         983/PSW        1050/PSW        1059/PSW        1102/PSW        1472/CS         1480/PLW
         1568/STD        1630/STD        1983/PSW        2091/PSW        2176/PSW        2198/PSW        2217/PSW
         2242/PSW        2257/PSW        2612/PSW        2651/PSW        2757-SPD
   EXECPATT
         1213/STW        1348/STW        1406/STW        2039/B*         2417/STW        2578/STW        2620/STW
         2716-RES
   EXPFIELD
         2030/STW        2036/LH         2038/STH        2066/LH         2156/LH         2159/LH         2161/STH
         2167/AND        2235/LH         2244/STH        2700-RES
   EXTRNAL
         1527/STW        1529/STW        1551/LW         1552/CW         1560/LW         1561/MTW        2897-RES
         2912/STW        2927/STW
   GETSEQ
          951/B           988-LI         1070/B
   GETSEQA
          998-LI         1008/BDR
   GETSEQB
         1011-MTW        2753/PSD
   GETSEQC
         1008/LI         1014-LW         1499/CI
   GETSEQD
         1020-CS         1045/BDR        1060/B
   GETSEQE
         1010/B          1043-LPSD       1051/B
   GETSEQF
         1021/BNE        1044-AI
   GETSEQG
         1025/BNE        1052-LW
   GETSEQH
```

```
          988/LI          1061-BAL
   GETSEQ1
         1043/LPSD       2758-PSD
   GR
           868-EQU        923/LI          924/STW         924/STW         932/LW          932/LW          933/WD
           934/WD         935/WD          943/AI          952/CI          971/LR          973/STH         975/WD
           994/LI         999/WD         1000/WD         1001/WD         1002/AI         1006/LI         1030/LW
          1033/SLS        1037/LH         1039/STH        1040/WD         1093/LW         1095/LH         1103/LH
          1104/STH        1323/LI         1325/LCW        1329/STW        1330/AI         1760/LW         1763/SLS
          1770/LR         1772/STH        1795/LI         1798/WD         1799/WD         1800/WD         1882/SLS
          1883/AW         1884/SLS        1892/LW         1894/WD         1895/BDR        2044/LI         2045/LH
          2046/WD         2047/BIR        2050/LI         2051/LH         2053/WD         2054/BIR        2058/LI
          2059/LR         2061/WD         2062/BIR        2150/LW         2151/SLS        2156/LH         2159/LH
          2161/STH        2202/CI         2211/LW         2231/LW         2235/LH         2244/STH        2261/LW
          2490/LI         2493/WD         2494/WD         2495/AI         2523/LI         2526/WD         2527/WD
          2528/WD         2533/AI         2549/LI         2552/WD         2553/WD         2554/WD         2559/AI
          2594/LW         2598/STH        2596/STH        2597/STH        2601/LW         2602/WD         2607/CH
          2627/LW         2630/STH        2631/STH        2632/STH        2635/LW         2636/LH         2637/WD
          2640/LR         2641/LH         2653/LW
   GRPCNT
           922/STW         946/MTW        2707-RES
   GRPONE
           953/BE         1790-LI
   GRPONEA
          1794-LI         1804/B
   GRPONEB
          1792/LI         1801-LPSD
   GRPONEC
          1802-MTW        2754/PSD
   GRPONE1
          1801/LPSD       2754-PSD
   HA
          2345/LI         2379/CI         2381/CI         2383/CI         2391/LI         2398/LI         2409/LI
   HANGBACK
          2291/STW        2294/LPSD*      2820-RES
   HANGPSDS
          2290/AI         2806-EQU        2814/XPSD       2818/XPSD
```



```
   HEXLIMC
          1963/CLM        2802-DATA
   HEXLIMF
          1961/CLM        2801-DATA
   HIBIT
           911/STW        1007/LW         1108/LW         1866/LW         2301/LW         2744-DATA
   HICHAS
          1301/STW        1360/LW         1412/LW         1426/LW         1440/LW         2704-RES
   HICHAS1
          1303/STW        1361/LW         1892/LW         2705-DATA
   HIEXIT
           989/STW        1215/STW        1346/STW        1404/STW        1986/B*         2339/STW        2485/STW
          2574/STW        2717-DATA
   HIFAILA
           901/B          1806-LI
   HIFAILAB
          1808/LI         1814-LPSD
   HIFAILAC
          1815-AI         2747/PSD
   HIFAILAI
          1814/LPSD       2747-PSD
   HIFAILAA
          1810-LI         1817/B
   HIFAILB
           909/BNE        1819-LW
   HIFAILBC
          1834-AI         2748/PSD
   HIFAILBI
          1833/LPSD       2748-PSD
   HIFAILBA
          1829-LW         1836/B
   HIFAILBB
          1827/LI         1838-LPSD
   HIFAILC
          1870/B          2296-BAL
   HIFAILCA
          2301-LW         2307/B
```

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   AIFAILCB
          2299/LI         2306-LPSD
   HIFAILCC
          2307-B          2749/PSD
   HIFAILC1
          2306/LPSD       2749-PSD
   HIFAILD
          1874/BNE        2309-LW
   HIGHA
           902-STW        1495/CI         2935/LI
   HIGHB
           907/BE          910-LW
   HIPRI
           902/STW         905/LW          1873/CW         2742-DATA
   HISTGENA
          2919-LI         2933/BDR
   HISTGENB
          2921-LW         2931/BDR
   HNGDCODE
          2277-XPSD       2803/DATA       2809/GEN
   HOLDSS
          1691/AND        1697/STW        2708-DATA       2907/STCF
   HOLDSS1
          1275/STCF       1673/AND        1689/STCF       1693/AND        1696/LW         1717/STCF       2709-DATA
   IA
           867-EQU
   IEND
          2407/LW         2741-DATA
   IGEN
          1212/LI         1347/LI         1405/LI         2043-BAL        2416/LI
   IOENA
          2071-LI         2608/BE         2613/B          2644/BCR        2646/BCS        2652/B
   IN
           878-EQU        1143/LH         1480/PLW        1509/LW         1519/LW         1531/LI         1532/STH
          1533/LH         1536/STH        1538/LH         1540/STH        1542/LW         1546/LW         1551/LW
          1552/CW         1555/CI         1557/AI         1559/AI         1703/LW         1819/LW         1841/LW
          1948/LI         1955/AI         1971/AW         2309/LW         2367/CI         2369/CI         2372/AW
```



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          2453/LI         2455/STH        2458/LH         2459/BR         2460/STH        2461/LW         2462/STW
          2463/LH         2464/STH        2465/LH         2466/STH        2467/LW         2468/STW        2469/LH
          2470/STH        2471/LH         2472/STH
   INHBMSK
          2095/AND        2694-DATA
   INHIBITS
          1204/STW        1258/MTW        1350/STW        1407/MTW        1996/AND        2003/AND        2011/AND
          2094/LW         2425/STW        2580/STW        2854-RES
   INITAUTO
          1194-BAL        1261/LI         1391/LI         1737/B
   INVAL
          2799/CDW        2877-TEXT
   INVCDW
          1787/LI         2799-CDW
   INVJX
          2583/LI         2587/BLE        2674-LI
   INVMAN
          2365/LI         2370/BNE        2450-LI
   IO
           863-EQU         948/LI         1078/LI         1154/LI         1177/LI         1179/LI         1264/LI
          1452/LI         1478/LI         1490/LI         1521/LI         1549/LI         1574/LW         1681/BR
          1683/CI         1699/CI         1728/LI         1777/LI         1787/LI         1790/LI         1806/LI
          1825/CI         2297/CI         2314/CI         2353/LI         2355/LI         2393/LI         2402/LI
          2411/LI         2581/CI         2671/LI         2908/LI
   IPCOUNT
          1333/STW        1334/STW        1352/MTW        1355/STW        1356/MTW        1358/STW        1509/LW
          1519/LW         2683-DATA
   IPERLOOP
          1386/LI         1456-STW
   IPERRA
          1458/LI         1460-LI
   IPGEN
          1266/B          1287-EQU        1299/B
   IPGENA
          1297/BCR        1300-AI
   IPGENB
          1306-LI         1315/BDR        1316/BDR
```

```
   AIFAILCB
         2299/LI         2306-LPSD
   HIFAILCC
         2307-B          2749/PSD
   HIFAILCI
         2306/LPSD       2749-PSD
   HIFAILD
         1874/BNE        2309-LW
   HIGHA
          902-STW        1495/CI         2935/LI
   HIGHB
          907/BE          910-LW
   HIPRI
          902/STW         905/LW         1873/CW         2742-DATA
   HISTGENA
         2919-LI         2933/BDR
   HISTGENB
         2921-LW         2931/BDR
   HNGDCODE
         2277-XPSD       2803/DATA       2809/GEN
   HOLDSS
         1691/AND        1697/STW        2708-DATA       2907/STCF
   HOLDSS1
         1275/STCF       1673/AND        1689/STCF       1693/AND        1696/LW         1717/STCF       2709-DATA
   IA
          847-EQU
   IEND
         2407/LW         2741-DATA
   IGEN
         1212/LI         1347/LI         1405/LI         2043-BAL        2416/LI
   IGENA
         2071-LI         2608/BE         2613/B          2644/BCR        2646/BCS        2652/B
   IN
          878-EQU        1143/LH         1480/PLW        1509/LW         1519/LW         1531/LI         1532/STH
         1533/LH         1536/STH        1538/LH         1540/STH        1542/LW         1546/LW         1551/LW
         1552/CW         1555/CI         1557/AI         1559/AI         1703/LW         1819/LW         1841/LW
         1948/LI         1955/AI         1971/AW         2309/LW         2367/CI         2369/CI         2372/AW
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         2453/LI         2455/STH        2458/LH         2459/BR         2460/STH        2461/LW         2462/STW
         2463/LH         2464/STH        2465/LH         2466/STH        2467/LW         2468/STW        2469/LH
         2470/STH        2471/LH         2472/STH
   INHBMSK
         2095/AND        2694-DATA
   INHIBITS
         1204/STW        1258/MTW        1350/STW        1407/MTW        1996/AND        2003/AND        2011/AND
         2094/LW         2425/STW        2580/STW        2854-RES
   INITAUTO
         1194-BAL        1261/LI         1391/LI         1737/B
   INVAL
         2799/CDW        2877-TEXT
   INVCDW
         1787/LI         2799-CDW
   INVJX
         2583/LI         2587/BLE        2674-LI
   INVMAN
         2365/LI         2370/BNE        2450-LI
   IO
          863-EQU         948/LI         1078/LI         1154/LI         1177/LI         1179/LI         1264/LI
         1452/LI         1478/LI         1490/LI         1521/LI         1549/LI         1574/LW         1681/BR
         1683/LI         1699/LI         1728/LI         1777/LI         1787/LI         1790/LI         1806/LI
         1825/LI         2297/LI         2314/LI         2353/LI         2355/LI         2393/LI         2402/LI
         2411/LI         2581/LI         2671/LI         2908/LI
   IPCOUNT
         1333/STW        1334/STW        1352/MTW        1355/STW        1356/MTW        1358/STW        1509/LW
         1519/LW         2683-DATA
   IPERLOOP
         1386/LI         1456-STW
   IPERRA
         1458/LI         1460-LI
   IPGEN
         1266/B          1287-EQU        1299/B
   IPGENA
         1297/BCR        1300-AI
   IPGENB
         1306-LI         1315/BDR        1316/BDR
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IPGENC
        1309-SLD        1312/BDR
IPGEND
        1311/BNE        1310-STW
IPGENE
        1325-LCW        1331/BDR        1454/B
IPGENF
        1349-LI         1417/BCR        1423/BCR        1431/BCR        1437/BCR        1445/BCR        1451/BCR
IPGENG
        1351-BAL        1408/BCR
IPGENH
        1345/LI         1377-BAL        1403/LI
IPH0LD
         924/STW         926/STW         931/LW          932/LW          940/STM         945/STM         1338/STW
        1418/LB         1424/LW         1432/LW         1438/LW         1446/LW         2696-RES
IPH0LDA
        1339/STW        1362/LW         1370/LW         1444/AWM        1447/STW        1450/AWM        2697-RES
IPH0LDE
        1341/STW        1366/LW         1374/LW         1416/AWM        1419/STW        1422/AWM        1425/STW
        2699-RES
IPH0LDT
        1340/STW        1364/LW         1372/LW         1430/AWM        1433/STW        1436/AWM        1439/STW
        2698-RES
ITRNHIST
        1015/LI         1067/STW        1116/LI         1187/LI         1188/LI         1488/LI         1512/LI
        1514/LI         1518/LI         1532/STH        1536/STH        1537/STH        1540/STH        1541/STH
        1542/LW         1548/LI         1545/LI         1546/LW         1635/STS        1644/STD        1730/LW
        1743/CB         1745/CB         1747/LW         1748/LW         1752/STW        1754/STW        1757/STW
        1759/LB         1774/MTB        1775/LB         1778/CB         1782/LW         1886/AI         1953/CB
        1959/LB         1973/STB        20866/CS        2110/LB         2133/LI         2140/LI         2357/LW
        2458/STH        2458/LH         2460/STH        2461/LW         2462/STW        2463/LH         2464/STH
        2465/LA         2466/STH        2467/LW         2468/STW        2469/LH         2470/STH        2471/LH
        2472/STH        2762/CDW        2766/CDWC       2768/GEN        2782/CDW        2784/GEN        2788/CDW
        2795/CDW        2798/CDW        2888-EQU
JX
        1197/LI         1245/LI         1395/LI         1734/LI         2568-STW        2674/LI
JXA
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        2577/LI         2599-BAL        2615/BCS        2661/LI
JXB
        2575/LI         2614-RD         2660/BCS
JXC
        2619/LI         2634-BAL        2658/BCS
JXD
        2621/LI         2653-LW
JXE
        2618/B          2663-BAL        2669/B          2670/B          2673/B
JXF
        2573/LI         2666-CI
JXG
        2667/BE         2671-LI
JXGRP
        2588/STW        2594/LW         2601/LW         2627/LW         2635/LW         2653/LW         2703-RES
KILLINTS
         914/BAL        1061/BAL        1260/BAL        1267/BAL        1377/BAL        1588/BAL        1892-LW
        1985/BAL        2107/BAL        2296/BAL        2340/BAL        2438/BAL        2477/BAL        2510/B
        2515/BAL        2541/BAL        2663/BAL
KBR
        1479/BAL        1491/BAL        1584-LW         1700/BAL        1729/BAL        1826/BAL        2909/BAL
KBRA
         950/BAL        1080/BAL        1155/BAL        1178/BAL        1265/BAL        1453/BAL        1522/BAL
        1550/BAL        1578/BCB        1586-LD         1684/B          1788/B          1791/BAL        1807/BAL
        2298/BAL        2315/BAL        2356/BAL        2394/BAL        2403/BAL        2412/BAL        2672/BAL
LAST
        1111/STH        1123/STH        1136/LI         1140/CB         1143/LH         1163/STB        1165/LW
        1168/CS         1171/STB        1174/LW         1624/STD        2279/STM        2293/LM         2718/XPSD
        2719/XPSD       2779/GEN        2906-RD         2942/END
LDATA
         848-CNAME
LEVBITSA
        1037/LH         1039/STH        1074/EBR        1104/STH        1220/STW        1363/STH        1371/STH
        1533/LH         1541/STD        1820/LI         1823/STB        1824/STB        2025/LA         2033/LH
        2035/STH        2048/LH         2048/LH         2184/LW         2247/LW         2265/LH         2310/LI
        2313/STB        2428/BTM        2591/STW        2595/STH        2625/STW        2630/STH        2636/LH
        2640/LA         2688-RES        2772/CDW        2793/CDW
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LEVBITSI
        1539/LH         2000/STW        2007/LH         2009/STH        2015/LH         2017/STH        2020/LW
        2688-RES
LEVBITSE
        1280/STW        1367/STH        1375/STH        1535/LH         2027/AND        2059/LH         2063/LH
        2185/AND        2248/AND        2346/STW        2375/LW         2377/MTW        2378/LW         2385/MTW
        2392/STW        2399/STW        2410/STW        2597/STH        2631/STH        2686-RES
LEVBITST
        1225/STW        1368/STH        1373/STH        1538/LH         2026/AND        2051/LH         2055/LH
        2191/AND        2431/STH        2596/STH        2632/STH        2687-RES
LEVBITSN
        1134/STW        1135/STW        1137/STW        1139/LW         1142/LW         1144/LW         1149/MTW
        1151/MTW        1152/MTW        2022/STW        2028/AND        2689-RES
LF
         831-DATA        837-DATA        844-EQU         851-EQU
LNK
         870-EQU         899/BAL         903/BAL         914/BAL         918/BAL         949/BAL         950/BAL
         955/BAL         990/BAL         991/BAL        1061/BAL        1062/BAL        1079/BAL        1080/BAL
        1109/BAL        1130/BAL        1145/BAL        1155/BAL        1178/BAL        1180/BAL        1182/BAL
        1194/BAL        1195/BAL        1196/BAL        1198/BAL        1201/BAL        1216/BAL        1236/BAL
        1239/BAL        1242/BAL        1244/BAL        1246/BAL        1260/BAL        1262/BAL        1265/BAL
        1267/BAL        1268/BAL        1271/STW        1277/BAL        1351/BAL        1377/BAL        1378/BAL
        1384/BAL        1387/BAL        1392/BAL        1394/BAL        1396/BAL        1399/BAL        1411/BAL
        1453/BAL        1456/STW        1457/BAL        1461/BAL        1473/BE*        1477/PSW        1479/BAL
        1483/BAL        1485/PLW        1487/B          1489/BAL        1491/BAL        1502/BAL        1513/BAL
        1520/BAL        1522/BAL        1544/BAL        1547/BAL        1548/BAL        1550/BAL        1563/PSW
        1565/BAL        1570/PLW        1572/B          1581/BCR*       1587/PSW        1588/BAL        1597/PLW
        1598/B*         1647/B*         1661/BNE*       1676/B*         1695/BCR*       1698/PSW        1700/BAL
        1702/BAL        1711/PLW        1712/B*         1713/LI         1718/B*         1729/BAL        1733/BAL
        1735/BAL        1756/BAL        1766/BAL        1786/LI         1791/BAL        1807/BAL        1821/BAL
        1826/BAL        1850/B*         1859/B*         1875/B*         1878/PSW        1880/BAL        1887/PLW
        1888/B*         1898/B*         1928/CW*        1931/LCW*       1934/BCR        1935/AI         1940/B
        1943/AI         1969/B*         1985/BAL        1990/BAL        2043/BAL        2107/BAL        2170/BAL
        2209/BAL        2229/BAL        2232/BAL        2272/B*         2296/BAL        2298/BAL        2311/BAL
        2315/BAL        2318/STW        2320/BAL        2323/BAL        2326/BAL        2332/STW        2340/BAL
        2341/BAL        2342/BAL        2354/BAL        2356/BAL        2366/BAL        2394/BAL        2403/BAL
        2412/BAL        2436/BAL        2438/BAL        2439/BAL        2441/BAL        2443/BAL        2450/LI
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        2473/B*         2477/BAL        2481/BAL        2482/BAL        2508/BAL        2509/LW         2515/BAL
        2519/BAL        2541/BAL        2542/BAL        2562/BAL        2568/STW        2572/BAL        2582/BAL
        2584/BAL        2599/BAL        2617/BAL        2634/BAL        2662/BAL        2663/BAL        2664/BAL
        2668/BAL        2672/BAL        2674/LI         2909/BAL        2934/LI
LNKSTK
        1477/PSW        1485/PLW        1563/PSW        1570/PLW        1587/PSW        1597/PLW        1698/PSW
        1711/PLW        1878/PSW        1887/PLW        2756-SPD
L80PEXIT
        1271/STW        1280/B*         1456/STW        1464/B*         2318/STW        2328/B*         2332/STW
        2442/B*         2509/LW         2568/STW        2665/B*         2713-RES
LV
         872-EQU         894/LI          895/WD          896/WD          897/WD          925/LW          926/STW
         926/STW         931/LW          931/LW          933/WD          934/WD          935/WD          938/SLS
         941/LW          941/LW          972/BR          975/WD          996/LW          998/LI          999/WD
        1000/WD         1001/WD         1007/LW         1029/LB         1030/LW         1031/SLS        1032/SLS
        1035/LW         1035/LW*        1038/BR         1040/WD         1052/LW         1053/SLS        1056/BR
        1759/LB         1760/LW         1761/SLS        1762/SLS        1765/LW         1765/LW*        1771/BR
        1775/LB         1778/CB         1794/LI         1798/WD         1799/WD         1800/WD         1810/LI
        1812/WD         1813/WD         1829/LW         1830/BR         1831/WD         1832/WD         1866/LW
        1867/WD         1868/WD         1879/LW         1893/LI         1894/WD         1896/WD         2045/LH
        2046/WD         2048/LH         2049/WD         2051/LH         2053/WD         2055/LH         2057/WD
        2059/LH         2061/WD         2063/LH         2065/WD         2066/LH         2067/AND        2068/EBR
        2069/AND        2070/WD         2149/LB         2150/LW         2152/SLS        2153/SLS        2154/LW
        2155/LW         2157/AND        2160/EBR        2173/LB         2201/LW         2206/AND        2230/LW
        2249/STH        2266/AND        2301/LW         2302/WD         2303/WD         2304/WD         2486/LW
        2492/LI         2493/WD         2494/WD         2525/LW         2526/WD         2527/WD         2528/WD
        2531/SLS        2551/LI         2552/WD         2553/WD         2554/WD         2557/SLS        2593/LI
        2595/STH        2596/STH        2597/STH        2600/LI         2602/WD         2603/WD         2604/RD
        2606/LW         2605/LH         2607/CH         2610/BR         2611/BR         2612/PSW        2628/LW
        2629/STW        2630/BTH        2631/STH        2632/STH        2636/LH         2637/WD         2638/WD
        2639/RD         2645/AND        2648/BR         2649/BR         2650/BR         2651/PSW        2654/LW
        2655/SLS        2656/STW        2657/LW         2657/LW
MANCDW1
        2353/LI         2761-CDW
MANCDW2
        2355/LI         2762-CDW
MANCDW3
```

```
        2393/LI         2769-CDW
   MANCDW4
        2402/LI         2764-CDW
   MANCDW5
        2411/LI         2765-CDW
   MANINHB
        2409/LI         2420/MTW        2423/STW        2424/LW         2447/STW        2691-REB
   MANPATT
        2345/LI         2349/STW        2379/CI         2381/CI         2383/CI         2391/LI         2398/LI
        2427/LM         2430/LM         2629/STW        2654/LW         2656/STW        2690-REB
   MANUAL
        1200/LI         1241/LI         1398/LI         2332-STW        2361/BE
   MANUALA
        2355-LI         2384/BNE        2386/B          2395/B          2404/B          2413/B          2449/B
        2450/LI
   MANUALB
        2351/LI         2380/BE         2382/BE         2387-LI
   MANUALC
        2387/LI         2396-LI
   MANUALD
        2396/LI         2405-LI
   MANUALE
        2405/LI         2414-LI         2440/LI
   MANUALF
        2426-LCI
   MANUALG
        2414/LI         2433-LW
   MANUALH
        2434/BCR        2435/LI         2438-BAL        2444/B          2445/B
   MANUALJ
        2338/LI         2443-BAL
   MANUALK
        2364/BE         2446-LI
   MSGA
        2792/CDWC       2871-TEXT
   MSGACDW
        2314/LI         2792-CDWC
```



```
   MSGB
        2794/CDWC       2872-TEXT
   MSGBCDW
        2581/LI         2794-CDWC
   MSGC
        2761/CDW        2874-TEXT
   MSGD
        2796/CDW        2876-TEXT
   MSGDCDW
        1452/LI         2796-CDW
   MSG1
        2758/CDW        2797/CDWC       2855-TEXT
   MSG1CDW
         948/LI         2758-CDW
   MSG2
        2759/CDW        2770/CDW        2856-TEXT
   MSG2CDW
        1478/LI         2759-CDW
   MSG3
        2760/CDW        2857-TEXT
   MSG3CDW
        1806/LI         2760-CDW
   MSG4
        2771/CDWC       2859-TEXT
   MSG4CDW
        1825/LI         2771-CDWC
   MSG5
        2773/CDW        2861-TEXT
   MSG5CDW
        1078/LI         2773-CDW
   MSG6
        2774/CDW        2862-TEXT
   MSG6ACDW
        1154/LI         2774-CDW
   MSG6B
        2786/CDW        2863-TEXT
   MSG7
```

```
        2789/CDW        2866-TEXT
MSG7CDW
        1264/LI         2789-CDW
MSG8
        2790/CDW        2868-TEXT
MSG8CDW
        1790/LI         2790-CDW
MSG9
        2791/CDW        2870-TEXT
MSG9CDW
        2297/LI         2791-CDW
MULTINT
        2319/LI         2477-BAL
MULTINTB
        2483/LI         2504-LPSD
MULTINTA
        2482-BAL        2507/LI
MULTINTC
        2505-MTW        2750/PSD
MULTINT1
        2504/LPSD       2750-PSD
NAME
         846/GEN
NEWPATT
        2360/CW         2735-DATA
NØBITB
        1857/CW         2723-DATA
NØTCINHB
        2013/LW         2725-DATA
NØTHI
         913/STW         996/LW         2034/AND        2037/AND        2069/AND        2486/LW         2743-DATA
NØTIINHB
        2005/LW         2693-DATA
NØT9X16
        2724-DATA
NTNTIMPL
         971/LH          973/STH        1073/LW         1095/LH         1103/LH         1296/LH         1307/LH
```



```
        1336/LH         1524/LH        1726/STW        1770/LH         1772/STH        2029/AND        2166/LW
        2607/CH         2641/LH        2702-LDATA
NUMCDW
        1511/STB        1517/STB       2784-GEN
ØA
         869-EQU        1136/LI        1137/STW        1144/LW         1146/LW         1148/STW        1181/LI
        1197/LI         1200/LI        1235/LI         1238/LI         1241/LI         1245/LI         1261/LI
        1276/LI         1383/LI        1386/LI         1391/LI         1395/LI         1398/LI         1460/LI
        1482/LI         1488/LI        1501/LI         1512/LI         1514/LI         1518/LI         1523/LI
        1524/LH         1526/BDR       1527/STW        1534/LI         1537/STH        1541/STH        1543/LI
        1545/LI         1564/LI        1665/B*         1675/BCR*       1701/LI         1734/LI         1755/LI
        1820/LI         1843/AI        1848/STB*       1936/B*         1944/B*         1964/BCS*       2310/LI
        2319/LI         2322/LI        2325/LI         2365/LI         2435/LI         2440/LI         2454/LI
        2455/STH        2456/BIR       2457/LI         2464/STH        2465/LH         2470/STH        2471/LH
        2507/LI         2561/LI        2583/LI         2616/LI         2661/LI
ØT
         865-EQU         902/STW        905/LW          906/CI          908/CI          910/LW          954/LW
         959/CS*         962/AND*       964/LB*         968/LW*         970/STW*        978/LW*        1018/LW
        1047/BR         1110/AI        1111/STH        1709/BR         1757/STW        1769/STB*      1819/LW
        1853/LI         1858/AI        1873/CW         1881/AI         1883/AW         1885/SLS       1886/AI
        1912/LB         1915/SLD       1916/SLS        1917/SLD        1921/AI         1957/LI        1966/SLS
        1967/BR         1979/LW        1980/BR         1981/BR         1982/BR         1983/PSW       2086/CS
        2090/BR         2091/PSW       2210/SLS        2216/BR         2230/LW         2233/SLS       2241/BR
        2263/LI         2268/AW        2309/LW         2374/SLS        2376/STH        2585/SLS       2586/CI
        2588/STW
ØUTPA
        1596-STD
ØUTPINV
        1714/B          1787-LI        2451/B          2675/B
ØUTPSEQ
        1130-BAL
ØUTPSEQA
        1139-LW         1153/BDR
ØUTPSEQB
        1141/BE         1151-MTW
P
         852-SET         858/DB
```

```
  PATTLEAD
        1521/LI         2783-CDWC
  PATTNUM
        2783/CDWC       2867-TEXT
  PDMPCDW
        1549/LI         2797-CDWC
  PRISEQ
        2778/CDWC       2879-TEXT
  PRONUM
        2939/CDW        2941-TEXT
  PSD
         834-CNAME
  QUESTION
        1179/LI         2786-CDW
  RDCHK
        1574-LW         1583/B          1585/BCS
  RDSS
        1195/BAL        1411/BAL        1688-RD         1713/LI         1990/BAL
  RDSSA
        1701/LI         1713-LI
  RESP
        1180/BAL        1678-EQU        2354/BAL        2582/BAL
  RESPOND
        2775/GEN        2881-TEXT
  REVRS1
        1277/BAL        1461/BAL        1669-RD         2441/BAL        2508/BAL        2562/BAL        2617/BAL
        2662/BAL
  ROLL
        2337/STW        2418/LW         2448/STW        2692-RES
  SEQCDW
        1177/LI         2778-CDWC
  SEQCDW1
        1161/STH        2779-GEN
  SEQLIST
        1993/LI         1994/STW        2111/LW         2112/LI         2116/MTW        2118/CB         2121/CB
        2124/LW         2128/AI         2130/LB         2132/LB         2173/LB         2850-RES
  SETEXP
```



```
        1282/B          1276/LI         1376/B          1460/LI         1990-BAL        2432/B          2598/B
        2633/B
  SETEXPA
        1997/BCR        2002-LI
  SETEXPB
        2004/BCR        2010-LI
  SETEXPC
        2012/BCR        2019-LI
  SETEXPD
        2025-LW         2031/BIR
  SETHI
         991/BAL        1864-LI         2043/BAL        2482/BAL        2599/BAL        2634/BAL
  SETHIA
        1864/LI         1871-LI
  SETPSDS
         918/BAL        1194/BAL        1602-LW         1733/BAL        2937/B
  SETPSDSB
        1606-STW        1609/BDR
  SETPSDSC
        1616-LW         1627/BDR
  SETPSDSA
        1605-LI         1611/BDR
  SETRTRN
        1623/BR         2681-DATA
  SETSTKS
         990/BAL        1130/BAL        1629-LD         2341/BAL        2664/BAL
  SNGLDWN
        2325/LI         2541-BAL
  SNGLDWNA
        2548-LI         2561/LI
  SNGLDWND
        2546/LI         2556-LPSD
  SNGLDWNE
        2557-SLS        2752/PSD
  SNGLDWN1
        2556/LPSD       2752-PSD
  SNGLDWNC
```

```
        2552-WD         2558/BDR
   SNGLDWNB
        2550-LI         2560/BDR
   SNGLUP
        2322/LI         2515-BAL        2537/B          2563/B
   SNGLUPA
        2522-LI         2536/BCR
   SNGLUPB
        2524-LI         2534/BDR
   SNGLUPC
        2526-WD         2532/BDR
   SNGLUPD
        2520/LI         2530-LPSD
   SNGLUPE
        2531-SLS        2751/PSD
   SNGLUP1
        2530/LPSD       2751-PSD
   SPD
         828-CNAME
   SQLSTENT
        2127/STW        2128/MTW        2131/LW         2162/LW         2706-DATA
   SSANS
        1182/BAL        1651-LI         1664/BE
   SSANSA
        1653/STCF       1655-NOP        1660/CS         1663/CS
   STEPIP
        1343/LI         1379/B          1380/B          1381-LW         1401/LI         1462/LI         1505/CI
   STEPIPA
        1383/LI         1386-LI
   STEPIPB
        1382/BCR        1389-RD
   STEPIPC
        1413-CI         1420/BDR
   STEPIPD
        1414/BLE        1421-LW
   STEPIPE
        1427-CI         1434/BDR
```



```
   STEPIPF
        1428/BLE        1435-LW
   STEPIPG
        1441-CI         1448/BDR
   STEPIPH
        1442/BLE        1449-LW
   STHLDSS
        1457/BAL        1716-RD         2342/BAL        2481/BAL        2519/BAL        2542/BAL        2572/BAL
   STKCDW
        1490/LI         2766-CDWC
   STK1
        2756/SPD        2885-RES
   STK2
        2745/SPD        2746/DATA       2757/SPD        2886-RES
   STRP2CNT
        2067/AND        2068/EOR        2701-DATA
   TABLE
        1847/LB         2848-TEXT
   TEND
        2400/LW         2740-DATA
   TERM
        2344/STW        2352/STW        2358/CW         2359/BE*        2388/STW        2390/STW        2397/STW
        2401/STW        2406/STW        2408/STW        2710-RES
   TESTBBW
        1198/BAL        1201/BAL        1236/BAL        1239/BAL        1242/BAL        1246/BAL        1262/BAL
        1384/BAL        1387/BAL        1392/BAL        1396/BAL        1399/BAL        1483/BAL        1502/BAL
        1565/BAL        1735/BAL        1927-LI         2320/BAL        2323/BAL        2326/BAL        2436/BAL
   TESTBSWB
        1939/BCS        1941-WAIT
   TESTBSWA
        1929/BE         1937-SLS
   TITLCDW
        2908/LI         2938-CDWC
   TITLE
        2938/CDWC       2940-TEXT
   TRANIN
        1702/BAL        1756/BAL        1948-LI         2366/BAL        2584/BAL
```

TRANINA
1953-CB 1956/BIR

TRANINB
1959-LB 1968/BIR 1975/B

TRANINC
1960/BCR 1966-SLS 1977/B

TRANIND
1954/BE 1970-LI

TRANINF
1962/BCR 1976-AI

TRANOUT
1145/BAL 1489/BAL 1513/BAL 1520/BAL 1544/BAL 1547/BAL 1821/BAL
1840-EQU 2311/BAL

TRANOUTA
1844-LI 1849/BIR

TRIG
885-EQU 896/WD 934/WD 1000/WD 1799/WD 1813/WD 1832/WD
1868/WD 2053/WD 2057/WD 2303/WD 2494/WD 2527/WD 2553/WD

TRPMSG
2800/CDW 2849-TEXT

WAITCNT
928/STW 936/MTW 1005/STW 1011/MTW 1797/STW 1802/MTW 1992/STW
2103/MTW 2488/STW 2505/MTW 2851-RES

WAITCON
1322/STW 1991/LW 2852-DATA

WDTCDW
2671/LI 2800-CDW

WKA
871-EQU 910/LW 911/STW 912/EOR 913/STW 919/LI 920/STW
921/LI 922/STW 927/LI 928/STW 954/LW 957/LW 961/LW
962/AND 964/LB 965/OR 966/PSW 968/LW 969/OR 970/STW
971/LA 972/OR 973/STH 978/LW 979/SLS 980/SLS 981/OR
982/OR 983/PSW 988/LI 989/STW 992/LI 993/STW 1008/LI
1009/STW 1014/LW 1026/STB 1037/LH 1038/OR 1039/STH 1046/SLS
1047/OR 1048/OR 1049/OR 1050/PSW 1054/LW 1055/SLS 1056/OR
1057/OR 1058/OR 1059/PSW 1064/LI 1067/STW 1073/LW 1074/EOR
1082/LW 1085/CI 1086/AW 1087/SLS 1090/AI 1093/LW 1094/SLS

1099/OR 1100/OR 1101/OR 1102/PSW 1103/LH 1104/STH 1117/LI
1121/BDR 1146/LW 1147/AND 1148/STW 1162/LI 1163/STB 1171/STB
1186/LI 1193/BDR 1203/LI 1204/STW 1206/LI 1207/STW 1208/STW
1209/STW 1210/LI 1211/STW 1212/LI 1213/STW 1214/LI 1215/STW
1219/LW 1220/BTW 1224/LW 1225/STW 1229/LW 1230/STW 1233/LW
1250/LI 1251/STW 1254/LI 1255/STW 1272/LI 1279/STW 1278/LI
1279/STW 1296/LW 1308/LI 1312/BDR 1313/STW 1317/LW 1319/AW
1321/AND 1322/STW 1324/LI 1331/BDR 1332/LI 1333/STW 1334/STW
1336/LW 1337/AND 1338/STW 1339/STW 1340/STW 1341/STW 1343/LI
1344/STW 1345/CI 1346/STW 1347/LI 1348/STW 1349/LI 1350/STW
1354/LI 1355/STW 1358/STW 1362/LW 1363/STH 1364/LW 1365/STH
1366/LW 1367/STW 1370/LW 1371/STH 1372/LW 1373/STH 1374/LW
1375/STH 1381/LW 1401/LI 1402/STW 1403/LI 1404/STW 1405/LI
1406/STW 1415/LW 1416/AWM 1418/LW 1419/STW 1421/LW 1422/AWM
1424/LW 1425/STW 1429/LW 1430/AWM 1432/LW 1433/STW 1435/LW
1436/AWM 1438/LW 1439/STW 1443/LW 1444/AWM 1446/LW 1447/STW
1449/LW 1450/AWM 1458/LI 1459/STW 1462/LI 1463/STW 1504/LW
1505/CI 1508/LI 1511/STB 1516/LI 1517/STB 1524/LH 1576/LW
1577/AND 1579/LW 1580/AND 1584/LW 1602/LW 1606/STW 1607/AI
1610/LW 1613/LI 1616/LW 1626/AI 1633/LI 1637/BDR 1670/STCF
1671/AND 1674/EOR 1679/LW 1680/AND 1681/OR 1682/STW 1690/LW
1691/AND 1694/EOR 1696/LW 1697/STW 1706/LI 1707/SLS 1708/AND
1709/OR 1710/STW 1723/LI 1724/STW 1726/STW 1730/LW 1731/CW
1738/CW 1742/LI 1743/CB 1745/CB 1753/LI 1754/STW 1768/LW
1769/STB 1792/LI 1793/STW 1808/LI 1809/STW 1822/LI 1823/STB
1824/STB 1827/LI 1828/STW 1847/LB 1848/STB 1864/LI 1865/STW
1871/LI 1872/STW 1927/LI 1928/CW 1930/LW 1932/SLS 1933/AND
1937/SLS 1938/AND 1950/LI 1953/CH 1959/LB 1961/CLM 1963/CLM
1965/AI 1967/OR 1972/LI 1973/STB 1976/AI 1991/LW 1992/STW
1993/LI 1994/STW 1995/LI 1996/AND 1998/LI 2000/STW 2002/LI
2003/AND 2005/LW 2006/EOR 2008/OR 2010/LI 2011/AND 2013/LW
2014/EOR 2016/OR 2020/LW 2021/EOR 2022/STW 2025/LW 2026/AND
2027/AND 2028/AND 2029/AND 2030/STW 2033/LH 2034/AND 2035/STH
2036/LA 2037/AND 2038/STH 2071/LI 2072/STW 2083/LI 2089/BDR
2092/LI 2093/STW 2094/LW 2095/AND 2096/STB 2110/LB 2115/STB
2118/CB 2121/CB 2130/LB 2134/CB 2139/LB 2146/CB 2156/LH
2187/AND 2159/LH 2160/EOR 2161/STH 2166/LW 2167/AND 2175/OR

2176/PSW 2181/LB 2182/CI 2187/LW* 2195/BR 2205/LI 2206/AND
2211/LW 2212/SLS 2213/BR 2214/BR 2215/BR 2216/BR 2217/PSW
2224/AND 2227/SLS 2228/LW 2235/LH 2236/AND 2240/BR 2243/LI
2244/STH 2247/LW 2248/AND 2251/AND 2264/LI 2268/AW 2269/SLS
2280/LB 2284/AI 2285/BR 2286/BR 2287/PSW 2299/LI 2300/STW
2312/LI 2313/STB 2333/LW 2334/EBR 2335/STW 2336/LI 2337/STW
2338/LI 2339/STW 2343/LW 2344/STW 2345/LI 2346/STW 2347/LI
2349/STW 2351/LI 2352/STW 2357/LW 2358/CW 2360/CW 2362/SLS
2363/CI 2378/LW 2379/CI 2381/CI 2383/CI 2387/LI 2388/STW
2389/LW 2390/STW 2391/LI 2392/STW 2396/LI 2397/STW 2398/LI
2399/STW 2400/LW 2401/STW 2405/LI 2406/STW 2407/LW 2408/STW
2409/LI 2410/STW 2414/LI 2415/STW 2416/LI 2417/STW 2418/LW
2422/LI 2423/STW 2424/LW 2425/STW 2433/LW 2446/LI 2447/STW
2448/STW 2478/LW 2479/EBR 2480/STW 2483/LI 2484/STW 2485/STW
2487/LI 2488/STW 2489/LI 2496/BDR 2516/LW 2517/EBR 2518/STW
2520/LI 2521/STW 2522/LI 2534/BDR 2543/LW 2544/EBR 2545/STW
2546/LI 2547/STW 2548/LI 2560/BDR 2569/LW 2570/EBR 2571/STW
2573/LI 2574/STW 2575/LI 2576/STW 2577/LI 2578/STW 2579/LI
2580/STW 2589/LI 2591/STW 2619/LI 2620/STW 2621/LI 2622/STW
2623/LI 2625/STW 2640/LH 2643/AND 2645/AND 2935/LI 2936/STW

WKB

875=EQU 1016/LI 1023/LI 1024/CB 1045/BDR 1066/LI 1069/BDR
1095/LH 1096/AND 1106/LB 1106/LB* 1116/LI 1118/CB* 1120/AI
1122/LI 1123/STW 1138/LI 1150/AI 1159/SLS 1161/STH 1167/LI
1176/BDR 1189/LB 1190/STB 1305/LI 1316/BDR 1326/LW 1327/SLS
1328/LCW 1328/LCW 1329/STW 1615/LI 1627/BDR 1672/LW 1673/AND
1674/EBR 1692/LW 1693/AND 1694/EBR 1770/LH 1771/BR 1772/STH
2007/LH 2008/BR 2009/STH 2015/LH 2016/BR 2017/STH 2132/LB
2141/CB 2194/SLS 2195/BR 2196/BR 2197/BR 2198/PSW 2223/LW
2224/AND 2249/STH 2250/AND 2251/AND 2282/LH 2524/LI 2532/BDR
2550/LI 2558/BDR 2641/LH 2642/AND 2643/AND

WKC

876=EQU 1115/LI 1118/CB 1125/AI 1132/LI 1140/CB 1605/LI
1609/BDR 2184/LW 2185/AND 2189/AND 2191/AND 2262/LI 2271/BDR

WKD

877=EQU 995/LI 1003/BDR 1004/LI 1005/STW 1112/LI 1126/BDR
1131/LI 1153/BDR 1603/LI 1611/BDR 1796/LI 1797/STW 1811/LI

1816/BDR 2187/LW 2188/SLS 2189/AND 2265/LH 2266/AND

X

2807=DB 2809/GEN 2813=DB 2814/XPSD 2817=DB 2818/XPSD

XA

864=EQU 1015/LI 1020/CS* 1022/AI 1024/CB* 1026/STB* 1028/AI
1029/LB* 1034/LI 1035/LW 1044/AI 1052/LW 1065/LI 1067/STW
1068/AI 1072/LI 1073/LW 1074/EBR 1077/BIR 1086/AW 1113/LI
1118/CB 1133/LI 1134/STW 1135/STW 1139/LW 1140/CB 1160/LI
1161/STH 1164/LI 1168/CS 1170/SLS 1171/STB 1173/SLS 1174/LW
1175/AI 1187/LI 1189/LB 1191/AI 1218/LW 1219/LW 1223/LW
1224/LW 1228/LW 1229/LW 1295/LI 1296/LH 1298/AI 1300/AI
1301/STW 1302/AI 1303/STW 1304/AI 1307/LH 1313/STW 1315/BDR
1318/LI 1319/AW 1320/BIR 1325/LCW 1327/SLS 1335/LI 1336/LH
1338/STW 1339/STW 1340/STW 1341/STW 1342/BIR 1360/LW 1363/STH
1365/STH 1367/STH 1368/BDR 1412/LW 1413/CI 1415/LW 1416/AWM
1418/LW 1419/STW 1420/BDR 1426/LW 1427/CI 1429/LW 1430/AWM
1432/LW 1433/STW 1434/BDR 1440/LW 1441/CI 1443/LW 1444/AWM
1446/LW 1447/STW 1448/BDR 1507/LI 1511/STB 1517/STB 1530/LI
1533/LW 1535/LH 1538/LH 1539/LH 1560/LW 1574/LW 1575/SLS
1577/AND* 1580/AND 1582/AI 1604/LI 1606/STW 1608/AI 1614/LI
1624/STD 1625/AI 1632/LI 1635/STS 1636/AI 1640/LI 1641/STD
1642/BIR 1643/LI 1644/STD 1645/BIR 1651/LI 1653/STCF 1703/LW
1704/SLS 1705/LCW 1705/LCW 1707/SLS 1725/LI 1726/STW 1727/BIR
1740/LI 1743/CB 1758/LI 1759/LB 1774/MTB 1775/LB 1842/LI
1848/STB 1849/BIR 1931/LCW 1932/SLS 1949/LI 1953/CB 1956/BIR
1958/LI 1959/CB 1968/BIR 1970/LI 1971/AW 1973/STB 1974/BIR
1979/LW 1999/LI 2000/STW 2001/BIR 2019/LI 2020/LW 2022/STW
2023/BIR 2024/LI 2025/LW 2026/AND 2027/AND 2028/AND 2029/AND
2030/STW 2031/BIR 2085/LI 2086/CS 2088/AI 2109/SLS 2110/LB
2111/LW 2113/AW 2115/STB 2124/LW 2125/AI 2127/STW 2130/LB
2131/LW 2132/LB 2133/LI 2134/CB 2136/AI 2138/AI 2139/LB
2148/AI 2149/CB 2162/LW 2163/CI 2165/LI 2166/LW 2167/AND
2169/BIR 2178/BDR 2180/AI 2181/LB 2221/SLS 2222/AI 2226/AI
2231/LW 2234/SLS 2237/BR 2238/BR 2239/BR 2240/BR 2241/BR
2242/PSW 2261/LW 2265/LH 2270/AI 2281/LI 2282/LH 2289/LB
2290/AI 2291/STW 2348/LI 2349/STW 2350/BIR 2371/LI 2372/AW
2373/SLS 2374/SLS 2375/LW 2376/STH 2590/LI 2591/STW 2592/BIR

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2605/LI         2606/LH         2624/LI         2625/STW        2626/BIR        2666/CI
XB
 866-EQU        1017/LI         1024/CB         1026/STB        1114/LI         1123/STH        1124/AI
1142/LW         1143/LH         1188/LI         1190/STB        1192/AI         1217/LI         1220/STW
1221/BIR        1222/LI         1225/STW        1226/BIR        1227/LI         1230/STW        1231/BIR
1361/CW         1362/CW         1364/LW         1366/LW         1369/BDR        1741/LI         1745/CB
1764/LI         1765/CW         1767/LI         1769/STB        1776/LI         1778/CB         1846/LW
1847/LB         1913/CW         1914/SLS        1918/LI         1919/LH         1919/LH         2084/LI
2112/LI         2113/AW         2118/CB         2120/BDR        2140/LI         2141/CB         2143/AI
2145/AI         2146/CB         2154/LW         2155/LW         2186/LI         2187/LW         2201/LW
2213/BR
XJ
2889-DB         2890/GEN        2890/GEN
YLDINTAD
 955/BAL        1766/BAL        1877-EQU
ZEROSEQ
1738/CW         2737-DATA
$
 844/EQU         851/EQU         937/BCS         997/B          1012/BCS        1069/BDR        1097/BCR
1121/BDR        1193/BDR        1205/EQU        1221/BIR        1226/BIR        1231/BIR        1234/BCR
1235/LI         1287/EQU        1320/BIR        1342/BIR        1353/BCR        1357/BCR        1368/BDR
1369/BDR        1390/BCS        1410/BCS        1525/BCS        1526/BDR        1556/BG         1558/B
1592/BIBSNP     1598/BIBSNP     1637/BDR        1642/BIR        1645/BIR        1678/EQU        1727/BIR
1732/BNE        1803/BCS        1816/BDR        1840/EQU        1852/EQU        1877/EQU        1895/BDR
1974/BIR        2001/BIR        2023/BIR        2047/BIR        2054/BIR        2062/BIR        2114/BCR
2120/BDR        2123/B          2137/B          2144/B          2169/BIR        2183/BG         2203/BNE
2225/BCR        2267/BCR        2283/BCR        2350/BIR        2368/BE         2419/BCR        2421/BCR
2456/BIR        2491/B          2496/BDR        2506/BCS        2592/BIR        2616/LI         2626/BIR
2806/EQU        2812/EQU        2816/EQU        2888/EQU        2913/BIR
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SDS

READER SURVEY

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IS MATERIAL PRESENTED PROPERLY:

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- CLEARLY EXPLAINED ? ☐
- WELL ILLUSTRATED ? ☐
- WELL ORGANIZED ? ☐
- OTHER _____ ☐

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- FOR PROGRAMMING INFORMATION ☐
- FOR OPERATING INFORMATION ☐
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- AS AN INSTRUCTOR ☐
- OTHER _____ ☐

WHAT IS YOUR POSITION?

CUSTOMER PERSONNEL

CUSTOMER ORGANIZATION _____

_____

- TECHNICIAN ☐
- ANALYST ☐
- MANAGER ☐
- OPERATOR ☐
- PROGRAMMER ☐
- STUDENT ☐
- OTHER _____ ☐

SDS PERSONNEL

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