```
                    IDENTIFICATION
PRODUCT CODE:              MAINDEC-12-DØSA-D
PRODUCT NAME:              KF12B (AUTOMATIC PRIORITY INTERRUPT)
DATE CREATED:              4-5-71
MAINTAINER:                DIAGNOSTIC GROUP
AUTHOR:                    WALTER MANTER
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KF12B

SDS 0-1
RSW : 0001
8-HOOK 1.0 PRESET START 200
59 SECONDS PASS

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/1. ABSTRACT

THE AUTOMATIC PRIORITY INTERRUPT SYSTEM (KF12B VERSION) DIAGNOSTIC IS DESIGNED TO TEST ALL ASSOCIATED IOT'S, INSTRUCTIONS AND SIMULATE AUTOMATIC PRIORITY INTERRUPTS (A.P.I.) VIA MAINTENANCE IOT'S. THIS PROGRAM REQUIRES NO TELETYPE COMMUNICATIONS AS ERROR HALTS ARE USED EXCLUSIVELY. THE ASSUMPTION IS MADE THAT THE PDP-12 USED IN CONJUNCTION WITH THE API SYSTEM IS A SOLID, ERROR FREE MACHINE.

/2. REQUIREMENTS

/2.1 EQUIPMENT

1. A PDP-12 WITH THE KF12B AUTOMATIC PRIORITY INTERRUPT OPTION.

2. AN ASR-33 TELETYPE OR EQUIVALENT

/2.2 STORAGE

THIS PROGRAM IS DESIGNED TO RUN IN MEMORY BANK Ø AND IT OCCUPIES VIRTUALLY ALL BANK Ø. WITH SENSE SWITCH Ø DEPRESSED THE EXTENDED MEMORY ADDRESSING PORTION OF THE DIAGNOSTIC IS ENABLED TESTING AS MANY MEMORY FIELDS AS ARE SPECIFIED BY RIGHT SWITCHES 9-11.

/2.3 PRELIMINARY PROGRAMS

ALL PDP-12 BASIC INSTRUCTION DIAGNOSTICS AND EXERCISERS MUST HAVE BEEN SUCCESSFULLY RUN PRIOR TO RUNNING THE PROGRAM.

/3. LOADING PROCEDURE

/3.1 METHOD

THIS PROGRAM MUST BE LOADED WITH THE BINARY LOADER. IF YOU ARE UNFAMILIAR WITH THE PROPER BINARY LOADING PROCEDURES REFER TO APPENDIX A OF THIS DOCUMENT, OTHERWISE PROCEDE WITH THE FOLLOWING!

A. SET THE TELETYPE READER SWITCH TO FREE.

B. OPEN THE TELETYPE READER AND INSERT THE PROGRAM TAPE SO THAT THE ARROWS ON THE TAPE ARE VISIBLE TO AND POINTING TOWARD THE OPERATOR.

C. CLOSE THE READER AND SET THE READER SWITCH TO START.

D. SET THE TELETYPE FRONT PANEL SWITCH TO START.

E. SET THE LEFT SWITCHES TO 7777.

F. SET THE RIGHT SWITCHES TO 4ØØØ.

G. SET THE MODE SWITCH TO 8 MODE,

H. DEPRESS I/O PRESET.

I. DEPRESS START LS.

J. WHEN THE PROGRAM TAPE HAS BEEN READ IN THE ACCUMULATOR MUST BE ØØØØ. IF IT IS NOT, A READ-IN ERROR HAS OCCURRED AND ONE MIGHT TRY RELOADING THE BINARY LOADER. SEE APPENDIX A.

K. REMOVE THE PROGRAM TAPE FROM THE READER.

/4. STARTING PROCEDURE

THIS PRELIMINARY SET UP PROCEDURE IS CRITICAL AND ANY OMISSION WILL RESULT IN AN ERROR,

1. SET SENSE SWITCH Ø IF YOU DESIRE TO UTILIZE THE EXTENDED MEMORY ADDRESSING FEATURE OF THE PROGRAM.

2. SET THE RIGHT SWITCH REGISTER SWITCHES 9 TO 11 EQUAL TO THE NUMBER OF EXTENDED MEMORY FIELDS TO BE TESTED. (NOTE: WITH SNS SW Ø SET AND RSW=ØØØØ THE PROGRAM HALTS).

3. SET THE MODE SWITCH TO 8-MODE.

4. DEPRESS I/O PRESET

5. DEPRESS START 2Ø

THE PROGRAM IS RUNNING.

About 1 min / pass

/4.1 CONTROL SWITCH SETTINGS

SENSE SWITCH Ø ALLOWS THE PROGRAM TO TEST SEQUENTIALLY AS MANY EXTENDED 4K MEMORY BANKS AS ARE SPECIFIED BY THE RIGHT SWITCH REGISTER BITS 9-11.

Bell rings every 44 seconds when testing only field Ø,
every 59 seconds when testing fields Ø & 1

```
/
FOR EXAMPLE WITH SNS Ø=1:
RSW=XXX1--TEST EXT MEM FIELD 1
RSW=XXX2--TEST EXT MEM FIELD 1 AND 2
  ETC
RSW=XXX7--TEST EXT MEM FIELD 1, 2, 3, 4, 5, 6 AND 7
```

IF SNS Ø=1 AND RSW=XXXØ THE PROGRAM WILL HALT AND ALLOW THE OPERATOR TO SET THE RIGHT SWITCH REGISTER BITS 9-11 TO THE DESIRED NUMBER OF EXTENDED MEMORY FIELDS. KEY CONTINUE WILL TRY TO RESTART THE EXTENDED MEMORY TEST.

NOTE: IT IS VITAL TO A COMPLETE TEST OF THE KW12B AUTOMATIC PRIORITY INTERRUPT SYSTEM TO TEST AT LEAST 1 EXTENDED MEMORY FIELD.

/5. MESSAGE FORMAT

1. THERE ARE NO EROR TYPEOUTS IN THE PROGRAM. THE DIAGNOSTIC IS OF THE FORM OF A BASIC INSTRUCTION TEST AND ERROP HALTS AVE BEEN USED EXCLUSIVELY WITH A WELL DOCUMENTED [illegible] ING.

/6. ITENANCE INSTRUCTIONS

THERE ARE TWO MAINTENANCE IOT'S USED IN THE PROGRAM.

1. MAIN1=6Ø51

THIS ICT USED IN CONJUNCTION WITH THE CONTENTS OF THE AC SIMULATES AN AUTOMATIC PRIORITY INTERRUPT TO THE HIGHEST PRIORITY LEVEL SPECIFIED BY THE AC.

FOR EXAMPLE WITH THE MACHINE LEVEL SET TO ALLOW ALL LEVELS OF INTERRUPTS:

```
AC=ØØØØ AND MAIN1 IOT--NO INTERRUPT
AC=4XXX AND MAIN1 IOT--LEVØ INTERRUPT
AC=7XXX AND MAIN1 IOT--LEVØ INTERRUPT
AC=3XXX AND MAIN1 IOT--LEV1 INTERRUPT
AC=1XXX AND MAIN1 IOT--LEV2 INTERRUPT
    ETC
AC=ØØØ1 AND MAIN1 IOT--LEV11 INTERRUPT
```

2. MAIN2=6Ø52

THIS IOT USED IN CONJUNCTION WITH THE CONTENTS OF THE AC BITS 9-11 SIMULATES AN AUTOMATIC PRIORITY INTERRUPT TO THE HIGHEST PRIORITY LEVEL SPECIFIED BY THE AC.

FOR EXAMPLE WITH THE MACHINE LEVEL SET TO ALLOW ALL LEVELS OF INTERRUPTS:

```
AC=XXX4 AND MAIN2 IOT--LEV12 INTERRUPT
AC=XXX7 AND MAIN2 IOT--LEV12 INTERRUPT
AC=XXX2 AND MAIN2 IOT--LEV13 INTERRUPT
AC=XXX3 AND MAIN2 IOT--LEV13 INTERRUPT
AC=XXX1 AND MAIN2 IOT--LEV14 INTERRUPT
AC=XXXØ AND MAIN2 IOT--NO INTERRUPT
```

APPENDIX A

PDP-8 MODE PERFORATED - TAPE LOADER

READIN MODE LOADER

THE READIN MODE (RIM) LOADER IS A MINIMUM LENGTH, BASIC, PERFORATED-TAPE PROGRAM FOR THE 33 ASR. IT IS INITIALLY STORED IN MEMORY BY MANUAL USE OF THE OPERATOR CONSOLE KEYS AND SWITCHES. THE LOADER IS PERMANENTLY STORED IN 18 LOCATIONS OF PAGE 37.

THE RIM LOADER CAN ONLY BE USED IN CONJUNCTION WITH THE 33ASR READER (NOT THE HIGH-SPEED PERFORATED-TAPE READER). BECAUSE A TAPE IN RIM FORMAT IS, IN EFFECT, TWICE AS LONG AS IT NEED BE, IT IS SUGGESTED THAT THE RIM LOADER BE USED ONLY TO READ THE BINARY LOADER WHEN USING THE 33 ASR. (NOTE: SOME PDP-12 DIAGNOSTIC PROGRAM TAPES ARE IN RIM FORMAT).

THE COMPLETE PDP-12 RIM LOADER (SA=7756 IS AS FOLLOWS:)

```
ABSOLUTE        OCTAL
ADDRESS         CONTENT         TAG      INSTRUCTION I Z        COMMENTS
------------------------------------------------------------------------

7756            6Ø32            BEG,       KCC           /CLEAR AC AND FLAG
7757            6Ø31                       KSF           /SKIP IF FLAG = 1
776Ø            5357                       JMP-1         /LOOKING FOR CHARACTER
7761,           6Ø36                       KRB           /READ BUFFER
7762,           71Ø6                       CLL RTL
7763,           7ØØ6                       RTL           /CHANNEL 8 IN ACØ
7764,           751Ø                       SPA           /CHECKING FOR LEADER
7765,           5357                       JMP BEG+1     /FOUND LEADER
7766,           7ØØ6                       RTL           /OK, CHANNEL 7 IN LINK
7767            6Ø31                       KSF
777Ø,           5367                       JMP-1
7771,           6Ø34                       KRS           /READ, DO NOT CLEAR
7772,           742Ø                       SNL           /CHECKING FOR ADDRESS
7773,           3776                       DCA 1 TEMP    /STORE CONTENT
7774,           3376                       DCA TEMP      /STORE ADDRESS
7775,           5356                       JMP BEG       /NEXT WORD
7776,           Ø               TEMP,      Ø             /TEMP STORAGE
7777,           5XXX                       JMP X         /JMP START OF BIN
                                                          LOADER
```

PLACING THE RIM LOADER IN CORE MEMORY BY WAY OF THE OPERATOR CONSOLE KEYS AND SWITCHES IS ACCOMPLISHED AS FOLLOWS:

A. SET THE STARTING ADDRESS 7756 IN THE LEFT SWITCHES.
B. SET THE FIRST INSTRUCTION (6Ø32) IN THE RIGHT SWITCHES.
C. PRESS THE FILL SWITCH.
D. PRESS THE FILL STEP SWITCH
E. SET THE NEXT INSTRUCTION (6Ø31) IN THE RIGHT SWITCHES.
F. PRESS THE FILL STEP SWITCH.
G. REPEAT STEPS D AND E UNTIL ALL 16 INSTRUCTIONS HAVE BEEN DEPOSITED.

DAD A TAPE IN RIM FORMAT, PLACE THE TAPE IN THE READER, SET THE LEFT SWITCHES TO THE STARTING ADDRESS 7756 OF THE RIM LOADER

(NOT OF THE PROGRAM BEING READ), PRESS THE START LS KEY, AND
START THE TELETYPE READER,

```

                     /
                     /KF12B
                     /
                     /AUTOMATIC PRIORITY INTERRUPT OPTION TEST
                     ////////////////////////////////////////
                     /
                     /SYMBOL TABLE
                     /
           6ØØ6              APION=6ØØ6
           676Ø              PJA=676Ø
           6771              RES=6771
           6772              SMLV=6772
           6773              RMLV=6773
           6774              RSTK=6774
           6775              RVEC=6775
           6776              SSTK=6776
           6777              SVEC=6777
           6Ø51              MAIN1=6Ø51
           6Ø52              MAIN2=6Ø52
           6ØØ1              ION=6ØØ1
           6ØØ2              IOF=6ØØ2
           6224              RIF=6224
           6214              RDF=6214
                     /
                             PMODE
                     /
                     /PAGE Ø
                     /CONSTANTS, TEMPORARY STORAGE AND FLAGS
                     /
           ØØØØ              *Ø
     ØØØØ  ØØØØ      LOCØ,   Ø               /SHOULD NOT GET AN 8 MODE INTERRUPT VIA LOC Ø
     ØØØ1  74Ø2              HLT             /EXCEPT IN TEST TØ WHERE LOC 1 = JMP .-1
     ØØØ2  ØØØØ      IMAGE,  Ø
     ØØØ3  Ø266      INC,    INCC
     ØØØ4  14Ø2      UT16A,  UT16
     ØØØ5  34Ø2      UT37A,  UT37
     ØØØ6  Ø213      SETUP,  SETUPP
     ØØØ7  Ø23Ø      CLRSTK, CLRST
                     /
           ØØ2Ø              *2Ø
     ØØ2Ø  5421              JMP I   .+1     /JMP TO
     ØØ21  Ø4ØØ              TØ              /START OF PROG
     ØØ22  Ø2Ø2      IOPRES, IOPRE
     ØØ23  1122      COUNT,  CNT-1
     ØØ24  Ø275      RAN,    RANN
     ØØ25  4731      RAN1,   4731
     ØØ26  5Ø74      RAN2,   5Ø74
     ØØ27  1212      PJPC,   TSTPJ-4
     ØØ3Ø  1421      PJPC1,  TSTPJ1-4
     ØØ31  2Ø47      PJPC2,  TSTPJ2-4
```

```

        0032  5620    STACK,  STACKK
        0033  5621            STACKK+1
        0034  5622            STACKK+2
        0035  5623            STACKK+3
        0036  5624            STACKK+4
        0037  5625            STACKK+5
                      /
              0040            *40
        0040  0000            0
        0041  7402            HLT                     /SHOULD NOT GET A LINC MODE INTERRUPT VIA LOC 40
        0042  6036    TSTA,   TST
        0043  0001    K1,     1
        0044  0002    K2,     2
        0045  0003    K3,     3
        0046  0004    K4,     4
        0047  0007    K7,     7
        0050  0010    K10,    10
        0051  0017    K17,    17
        0052  0020    K20,    20
        0053  0037    K37,    37
        0054  0040    K40,    40
        0055  0060    K60,    60
        0056  0077    K77,    77
        0057  0100    K100,   100
        0060  0177    K177,   177
        0061  0200    K200,   200
        0062  0207    K207,   207
        0063  0220    K220,   220
        0064  0377    K377,   377
        0065  0400    K400,   400
        0066  0520    K520,   520
        0067  0720    K720,   720
        0070  0777    K777,   777
        0071  1000    K1000,  1000
        0072  1441    K1441,  1441
        0073  1641    K1641,  1641
        0074  1741    K1741,  1741
        0075  1777    K1777,  1777
        0076  2000    K2000,  2000
        0077  2020    K2020,  2020
        0100  2071    K2071,  2071
        0101  2076    K2076,  2076
        0102  2103    K2103,  2103
        0103  2110    K2110,  2110
        0104  2115    K2115,  2115
        0105  2122    K2122,  2122
        0106  2127    K2127,  2127
        0107  2134    K2134,  2134
        0110  2141    K2141,  2141
        0111  2146    K2146,  2146
        0112  2153    K2153,  2153
        0113  2160    K2160,  2160
        0114  2165    K2165,  2165
        0115  2172    K2172,  2172
```

```

Ø116  2177    K2177,   2177
Ø117  25ØØ    K25ØØ,   25ØØ
Ø12Ø  25Ø1    K25Ø1,   25Ø1
Ø121  2525    K2525,   2525
Ø122  2777    K2777,   2777
Ø123  35ØØ    K35ØØ,   35ØØ
Ø124  3777    K3777,   3777
Ø125  4ØØØ    K4ØØØ,   4ØØØ
Ø126  44ØØ    K44ØØ,   44ØØ
Ø127  5Ø2Ø    K5Ø2Ø,   5Ø2Ø
Ø13Ø  524Ø    K524Ø,   524Ø
Ø131  5241    K5241,   5241
Ø132  5252    K5252,   5252
Ø133  54ØØ    K54ØØ,   54ØØ
Ø134  5577    K5577,   5577
Ø135  56ØØ    K56ØØ,   56ØØ
Ø136  5777    K5777,   5777
Ø137  6ØØØ    K6ØØØ,   6ØØØ
Ø14Ø  61ØØ    K61ØØ,   61ØØ
Ø141  63ØØ    K63ØØ,   63ØØ
Ø142  7ØØØ    K7ØØØ,   7ØØØ
Ø143  7Ø17    K7Ø17,   7Ø17
Ø144  7Ø2Ø    K7Ø2Ø,   7Ø2Ø
Ø145  7Ø77    K7Ø77,   7Ø77
Ø146  7277    K7277,   7277
Ø147  74ØØ    K74ØØ,   74ØØ
Ø15Ø  74Ø2    K74Ø2,   74Ø2
Ø151  7577    K7577,   7577
Ø152  76ØØ    K76ØØ,   76ØØ
Ø153  774Ø    K774Ø,   774Ø
Ø154  7741    K7741,   7741
Ø155  776Ø    K776Ø,   776Ø
Ø156  777Ø    K777Ø,   777Ø
Ø157  7772    M6,      -6
Ø16Ø  7762    M16,     -16
Ø161  614Ø    VECØ,    VECTØ
Ø162  6145    VEC1,    VECT1
Ø163  6152    VEC2,    VECT2
Ø164  6157    VEC3,    VECT3
Ø165  6164    VEC4,    VECT4
Ø166  62ØØ    VEC5,    VECT5
Ø167  62Ø5    VEC6,    VECT6
Ø17Ø  6212    VEC7,    VECT7
Ø171  6217    VEC1Ø,   VECT1Ø
Ø172  6224    VEC11,   VECT11
Ø173  6231    VEC12,   VECT12
Ø174  6236    VEC13,   VECT13
Ø175  6244    VEC14,   VECT14
Ø176  6251    VEC15,   VECT15
Ø177  6256    VEC16,   VECT16
```

```
                  /
                  /
      0200                *200
0200  5601                JMP I   .+1
0201  0400                T0
                  /
                  /
                  /LINC MODE PROGRAMABLE IO PRESET
                  /ENTERED IN 8-MODE
                  /
0202  0000        IOPRE,  0               /CONTAINS RETURN JUMP ADDRESS
0203  6141                LINC            /LINC MODE
                          LMODE
0204  0011                CLR             /CLEAR AC LINK AND MQ
0205  1020                LDA I           /LOAD AC
0206  0020                20              /WITH 0020
0207  0004                ESF             /AC TO SPECIAL FUNCTIONS REGISTER
0210  0002                PDP             /8-MODE
                          PMODE
0211  7200                CLA             /CLEAR AC
0212  5602                JMP I   IOPRE   /RETURN TO MAIN PROGRAM
                  /
                  /SETUP ROUTINE FOR STACK, VECTOR AND
                  /MACHINE LEVEL PARAMETERS
                  /ENTERED IN 8-MODE
                  /
0213  0000        SETUPP, 0               /CONTAINS RETURN JUMP ADDRESS
0214  7300                CLA CLL         /CLEAR AC AND LINC
0215  4202                JMS     IOPRE   /IO PRESET
0216  1135                TAD     K5600   /AC = 5600
0217  6776                SSTK            /SET STACK POINTER REGISTER TO 5600
0220  7200                CLA             /CLEAR AC
0221  1140                TAD     K6100   /AC = 6100
0222  6777                SVEC            /SET VECTOR POINTER REGISTER TO 6100
0223  7200                CLA             /CLEAR AC
0224  1032                TAD     K20     /AC = 20
0225  6772                SMLV            /SET MACHINE LEVEL TO 0 AND CLEAR THE STACK AND VECTOR FIELD BITS
0226  7300                CLA CLL         /CLEAR AC AND LINK
0227  5613                JMP I   SETUPP  /RETURN TO MAIN PROGRAM
```

```

                  /
                  /ROUTINE TO ZERO STACK AREA
                  /LOCATION 56ØØ TO LOCATION 561Ø
                  /ENTERED IN 8-MODE
                  /
 Ø23Ø  ØØØØ       CLRST,  Ø                 /CONTAINS RETURN JUMP ADDRESS
Ø231  73ØØ               CLA CLL           /CLEAR AC AND LINK
Ø232  1134               TAD     K5577     ~~/AC = 5777~~ → /AC = 5577
Ø233  3Ø1Ø               DCA     1Ø        ~~/LOC 1Ø = 5777~~ → /LOC 10=5577
Ø234  1156               TAD     K777Ø     /AC = 777Ø
Ø235  3Ø11               DCA     11        /LOC 11 = 777Ø
Ø236  73ØØ               CLA CLL           /CLEAR AC AND LINK
Ø237  341Ø               DCA I   1Ø        /CLEAR STACK ADDRESS IN LOC 1Ø
Ø24Ø  2Ø11               ISZ     11        /DONE IF LOC 11 = Ø
Ø241  5237               JMP     .-2       /NO-DO IT AGAIN
Ø242  563Ø               JMP I   CLRST     /RETURN TO MAIN PROGRAM
                  /
                  /LINC MODE SUBROUTINE
                  /TO MOVE MQ REGISTER INTO AC
                  /
                         LMODE
Ø243  ØØØ6       XACMQ,  DJR               /DISABLE JUMP RETURN
Ø244  ØØØ5               QAC               /MQ Ø-1Ø TO AC 1-11
Ø245  Ø261               ROL I   1         /ROTATE LEFT 1
Ø246  Ø475               QLZ I             /SKIP IF MQ 11 = 1
Ø247  6253               JMP     .+4       /JMP 4 LOC (ENABLE JMP Ø)
Ø25Ø  162Ø               BSE I             /SET AC BIT Ø
Ø251  ØØØ1               1                 /TO 1
Ø252  6253               JMP     .+1       /ENABLE JMP Ø
Ø253  6ØØØ               JMP     Ø         /RETURN TO MAIN PROG
                  /
                  /LINC MODE SUBROUTINE
                  /TO SET AC AND MQ = 7777
                  /ALSO SET LINC AND FLO FLIP FLOPS
                  /
Ø254  1Ø2Ø       SACMQL, LDA I             /AC =
Ø255  7777               7777              /7777
Ø256  Ø334               ROR I   14        /MQ = 7777 AND LINC = 1
Ø257  1Ø2Ø               LDA I             /AC =
Ø26Ø  3777               3777              /3777
Ø261  112Ø               ADA I             /ADD
Ø262  ØØØ1               1                 /1 SETTING FLO = 1
Ø263  1Ø2Ø               LDA I             /AC =
Ø264  7777               7777              /7777
Ø265  6ØØØ               JMP     Ø         /RETURN TO MAIN PROG
```

c(0134) = 5577
c(0136) = 5777
c(0156) = 7770

```

                        /
                        /8-MODE SUBROUTINE
                        /TO INCREMENT RETURN PC STORED IN LOC STACKK+1
                        /AS A RESULT OF A PUSH JUMP IOT OR AN INTERRUPT
                        /
                                PMODE
        Ø266  ØØØØ      INCC,   Ø                       /RETURN JUMP ADDRESS TO MAIN PROGRAM
        Ø267  73ØØ              CLA CLL                 /CLEAR AC AND LINC
        Ø27Ø  1433              TAD I   STACK+1 /GET PC STORED IN LOC STACKK*1
        Ø271  1Ø43              TAD     K1              /INCREMENT
        Ø272  3433              DCA I   STACK+1 /STORE BACK IN LOC STACKK*1
        Ø273  115Ø              TAD     K74Ø2   /AC = 74Ø2 OR AN 8-MODE HLT
        Ø274  5666              JMP I   INCC    /RETURN TO MAIN PROGRAM
                        /
                        /RANDOM NUMBER GENERATOR
                        /USED IN TEST T65
                        /
        Ø275  ØØØØ      RANN,   Ø                       /CONTAINS RETURN JUMP ADDRESS
        Ø276  73ØØ              CLA CLL                 /CLEAR AC AND LINC
        Ø277  1Ø25              TAD     RAN1    /AC = RAN1
        Ø3ØØ  7ØØ6              RTL                     /ROTATE 2 LEFT
        Ø3Ø1  7ØØ1              IAC                     /INCREMENT
        Ø3Ø2  1Ø26              TAD     RAN2    /ADD RAN2
        Ø3Ø3  3Ø26              DCA     RAN2    /STORE IN RAN2
        Ø3Ø4  1Ø26              TAD     RAN2    /GET RAN2
        Ø3Ø5  7ØØ6              RTL                     /ROTATE 2 LEFT
        Ø3Ø6  7ØØ6              RTL                     /ROTATE 2 LEFT
        Ø3Ø7  7ØØ1              IAC                     /INCREMENT
        Ø31Ø  3Ø25              DCA     RAN1    /STORE IN RAN1
        Ø311  73ØØ              CLA CLL                 /CLEAR LINC
        Ø312  5675              JMP I   RANN    /RETURN TO MAIN PROGRAM
```

```
                        /
                        ////////
                        /AUTOMATIC PRIORITY INTERRUPT
                        /DIAGNOSTIC TESTS
                        ////////
                        /
                        /TEST NORMAL INTERRUPT SYSTEM VIA TELETYPE
                        /BY OUTPUTTING 2Ø7 (BELL) TO TTY
                        /AND WAITING FOR AN INTERRUPT TO OCCURE
                        /A TIME OUT LOOP IS USED TO DETECT
                        /AN INTERRUPT NOT OCCURRING WITHIN 12Ø MS
                        /
                ØØ4ØØ           *4ØØ
        Ø4ØØ    6ØØ2    TØ,     IOF                     /INTERRUPTS OFF
        Ø4Ø1    73ØØ            CLA CLL                 /CLEAR AC AND LINK
        Ø4Ø2    1133            TAD     K54ØØ   /AC = 54ØØ
        Ø4Ø3    3ØØ1            DCA     1       /LOC 1 = 54ØØ OR A JMP .-1
        Ø4Ø4    6ØØ1            ION                     /INTERRUPTS ON
        Ø4Ø5    1Ø62            TAD     K2Ø7    /AC = 2Ø7
        Ø4Ø6    6Ø46            TLS                     /AC TO TTY, PRINT AND CLEAR FLAG
        Ø4Ø7    73ØØ            CLA CLL                 /CLEAR AC AND LINK
        Ø41Ø    1157            TAD     M6      /AC = 7772
        Ø411    3Ø15            DCA     15      /LOC 15 = 7776
        Ø412    3Ø16            DCA     16      /LOC 16 = Ø
        Ø413    1152            TAD     K76ØØ   /AC = 76ØØ
        Ø414    3Ø17            DCA     17      /LOC 17 = 76ØØ
        Ø415    6Ø41            TSF                     /SKIP ON TTY FLAG SET
        Ø416    522Ø            JMP     .+2     /NOT SET
        Ø417    5225            JMP     .+6     /SET-GO TO TEST ONE
        Ø42Ø    2Ø16            ISZ     16      /INCREMENT TIME OUT LOOP
        Ø421    5215            JMP     .-4     /TEST TTY FLAG AGAIN
        Ø422    2Ø15            ISZ     15      /INC LOC 15 AND SKIP IF = Ø
        Ø423    5215            JMP     .-6     /NO-DO IT AGAIN
        Ø424    74Ø2            HLT                     /ERROR-TTY DID NOT INTERRUPT
        Ø425    6Ø42            TCF                     /CLEAR FLAG
        Ø426    1147            TAD     K74ØØ   /AC = 74Ø2
        Ø427    3ØØ1            DCA     1       /LOC 1 = 74Ø2 OR AN 8-MODE HLT
        Ø43Ø    6244            RMF                     /RESTORE MEMORY FIELDS
                        /
                        /SET STACK ADDRESS REGISTER TO ZERO
                        /READ STACK POINTER REGISTER INTO CLEARED AC
                        /IT COMES BACK IN COMPLIMENT FORM
                        /
                        /
        Ø431    6ØØ2    T1,     IOF                     /INTERRUPTS OFF
        Ø432    73ØØ            CLA CLL                 /CLEAR AC AND LINK
        Ø433    6776            SSTK                    /SET BTS 3-14 OF STK ADD TO AC BTS Ø-11
        Ø434    72ØØ            CLA                     /CLEAR AC
        Ø435    6774            RSTK                    /READ STK ADD BITS 3-14 INTO AC BTS Ø-11
        Ø436    7Ø4Ø            CMA                     /COMPLIMENT AC
        Ø437    744Ø            SZA                     /SHOULD BE Ø
        Ø44Ø    74Ø2            HLT                     /ERR-EXAMINE AC
```

```

                     /
                     /SET MACHINE LEVEL AND THE STACK AND VECTOR FIELD BITS ALL TO ZERO
                     /READ THEM BACK INTO CLEARED AC
                     /BITS 6 AND 7 ALWAYS COME BACK IN THE 1 STATE
                     /THE MACHINE LEVEL AND THE STACK AND VECTOR FIELD BITS COME BACK IN COMPLIMENT FORM
                     /
0441  7300           T2,     CLA CLL         /CLEAR AC AND LINC
0442  1052                   TAD     K20     /AC = 20
0443  6772                   SMLV            /SET STACK AND VECTOR FIELD BITS AND MACHINE LEVEL = 0
0444  7200                   CLA             /CLEAR AC
0445  6773                   RMLV            /READ STK FLD INTO AC BTS 0=2 AND VCT FLD INTO AC BTS 3-5
0446  3002                   DCA     IMAGE   /IMAGE OF AC
0447  1002                   TAD     IMAGE   /GET IMAGE
0450  7040                   CMA             /COMPLIMENT AC
0451  7440                   SZA             /AC = 0
0452  7402                   HLT             /ERR-EXAMINE AC
                     /
                     /SET STACK ADDRESS REGISTER TO ZERO
                     /GENERATE AN IO PRESET
                     /READ STACK REGISTER INTO CLEARED AC
                     /IO PRESET SHOULD HAVE SET STACK POINTER REGISTER TO ALL ONES
                     /READ BACK IN COMPLIMENT FORM
                     /
0453  7300           T3,     CLA CLL         /CLEAR AC AND LINC
0454  6776                   SSTK            /SET BTS 3-14 OF STK ADD TO AC BTS 0-11
0455  7200                   CLA             /CLEAR AC
0456  6774                   RSTK            /READ STK BTS 3-14 INTO AC BTS 0-11
0457  7040                   CMA             /COMPLIMENT AC
0460  7440                   SZA             /SHOULD BE 0
0461  7402                   HLT             /ERR-EXAMINE AC
0462  4422                   JMS I   IOPRES  /LINC MODE IO PRESET
0463  6774                   RSTK            /READ STACK ADD BTS 3-14 INTO AC BTS 0=11
0464  7440                   SZA             /AC SHOULD = 0
0465  7402                   HLT             /ERR AC NOT = 0
                     /
                     /SET STACK ADDRESS REGISTER TO 7777 IN LINC MODE
                     /READ STACK POINTER REGISTER INTO CLEARED AC
                     /IT COMES BACK IN COMPLIMENT FORM
                     /
0466  7340           T4,     CLA CLL CMA     /AC = 7777
0467  6141                   LINC            /LINC MODE
                             LMODE
0470  0500                   IOB             /EXEC 8MODE INST
0471  0776                   SSTK            /SET BITS 3-14 OF STACK ADD TO AC BITS 0=11
0472  0011                   CLR             /CLEAR AC LINC AND MQ
0473  0500                   IOB             /EXEC 8MODE INST
0474  0774                   RSTK            /READ STACK ADD BITS 3-14 TO AC BITS 0=11
0475  1460                   SAE I           /SKIP IF AC
0476  0000                   0               /EQUALS 0
0477  0000                   HLT             /ERR-AC NOT = 7777
0500  0002                   PDP             /8MODE
                             PMODE
```

```

                         /
                         /TEST STACK REGISTER ADDRESS POINTER
                         /IN 8-MODE
                         /
      Ø5Ø1  734Ø         T5,     CLA CLL CMA       /AC = 7777
      Ø5Ø2  6776                 SSTK              /SET BTS 3-14 OF STACK ADD TO AC BTS Ø-11
      Ø5Ø3  72ØØ                 CLA               /CLEAR AC
      Ø5Ø4  1144                 TAD      K7Ø2Ø    /AC=7Ø2Ø
      Ø5Ø5  6772                 SMLV              /SET STK FLD TO AC BTS Ø-2
      Ø5Ø6  72ØØ                 CLA               /CLEAR AC
      Ø5Ø7  6773                 RMLV              /READ STACK FIELD BTS Ø-2 INTO AC BTS Ø-2
      Ø51Ø  3ØØ2                 DCA      IMAGE    /IMAGE OF RESULT
      Ø511  1ØØ2                 TAD      IMAGE    /GET IMAGE
      Ø512  7Ø41                 CIA               /COMPLIMENT AND INCRIMENT
      Ø513  1Ø7Ø                 TAD      K777     /IMAGE SHOULD = 777
      Ø514  744Ø                 SZA               /SHOULD BE Ø
      Ø515  74Ø2                 HLT               /ERR-EXAMINE LOC IMAGE
      Ø516  4422                 JMS I    IOPRES   /LINC MODE IO PRESET
      Ø517  6773                 RMLV              /READ STACK FIELD BTS Ø-2 INTO AC BTS Ø-2
      Ø52Ø  3ØØ2                 DCA      IMAGE    /IMAGE OF AC
      Ø521  1ØØ2                 TAD      IMAGE    /GET IMAGE
      Ø522  7Ø41                 CIA               /COMPLIMENT AND INC
      Ø523  1Ø55                 TAD      K6Ø      /IMAGE SHOULD = 6Ø
      Ø524  744Ø                 SZA               /AC SHOULD  =  Ø
      Ø525  74Ø2                 HLT               /ERR
                         /
                         /TEST STACK REGISTER ADDRESS POINTER
                         /IN 8-MODE
                         /
      Ø526  73ØØ         T6,     CLA CLL           /CLEAR AC AND LINC
      Ø527  1127                 TAD      K5Ø2Ø    /AC=5Ø2Ø
      Ø53Ø  6772                 SMLV              /SET STK FLD TO AC BTS Ø-2
      Ø531  72ØØ                 CLA               /CLEAR AC
      Ø532  1121                 TAD      K2525    /AC=2525
      Ø533  6776                 SSTK              /SET BTS 3-14 OF STK ADD TO AC BTS Ø-11
      Ø534  72ØØ                 CLA               /CLEAR AC
      Ø535  6773                 RMLV              /READ STK FLD BTS Ø-2 INTO AC BTS Ø-2 ALSO GET VCT FLD BTS 3-5
      Ø536  3ØØ2                 DCA      IMAGE    /IMAGE OF RESULT
      Ø537  1ØØ2                 TAD      IMAGE    /GET IMAGE
      Ø54Ø  7Ø41                 CIA               /COMPLIMENT AND INCREMENT
      Ø541  1122                 TAD      K2777    /IMAGE SHOULD = 2777
      Ø542  744Ø                 SZA               /AC SHOULD = Ø
      Ø543  74Ø2                 HLT               /ERR-EXAMINE LOC IMAGE
      Ø544  6774                 RSTK              /READ STACK ADD BTS 3-14 INTO AC BTS Ø-11
      Ø545  3ØØ2                 DCA      IMAGE    /IMAGE OF RESULT
      Ø546  1ØØ2                 TAD      IMAGE    /GET IMAGE
      Ø547  7Ø41                 CIA               /COMPLIMENT AND INCREMENT
      Ø55Ø  1132                 TAD      K5252    /IMAGE SHOULD = 5252
      Ø551  744Ø                 SZA               /AC SHOULD = Ø
      Ø552  74Ø2                 HLT               /ERR-EXAMINE LOC IMAGE
      Ø553  5754                 JMP I    .+1      /JMP TO
      Ø554  Ø6ØØ                 T7                /TEST T7
```

```

              /
              /TEST STACK REGISTER ADDRESS POINTER
              /IN 8-MODE
              /
      Ø6ØØ            *6ØØ
Ø6ØØ  73ØØ    T7,     CLA CLL         /CLEAR AC AND LINC
Ø6Ø1  1Ø77            TAD     K2Ø2Ø   /AC=2Ø2Ø
Ø6Ø2  6772            SMLV            /SET STK FLD BTS Ø-2 TO AC BTS Ø-2 ALSO SET VCT BTS = Ø
Ø6Ø3  72ØØ            CLA             /CLEAR AC
Ø6Ø4  1132            TAD     K5252   /AC=5252
Ø6Ø5  6776            SSTK            /SET BTS 3-14 OF STK ADD EQUAL TO AC BTS Ø-11
Ø6Ø6  72ØØ            CLA             /CLEAR AC
Ø6Ø7  6773            RMLV            /READ STK FLD BTS Ø-2 INTO AC BTS Ø-2
Ø61Ø  3ØØ2            DCA     IMAGE   /IMAGE OF RESULT
Ø611  1ØØ2            TAD     IMAGE   /GET IMAGE
Ø612  7Ø41            CIA             /COMPLIMENT AND INCRIMENT
Ø613  1136            TAD     K5777   /IMAGE SHOULD = 5777
Ø614  744Ø            SZA             /AC SHOULD = Ø
Ø615  74Ø2            HLT             /ERR-EXAMINE LOC IMAGE
Ø616  6774            RSTK            /READ STACK ADD BTS 3-14 INTO AC BTS Ø-11
Ø617  3ØØ2            DCA     IMAGE   /IMAGE OF RESULT
Ø62Ø  1ØØ2            TAD     IMAGE   /GET IMAGE
Ø621  7Ø41            CIA             /COMPLIMENT AND INCREMENT
Ø622  1121            TAD     K2525   /IMAGE SHOULD = 2525
Ø623  744Ø            SZA             /AC = Ø
Ø624  74Ø2            HLT             /ERR-EXAMINE LOC IMAGE
              /
              /TEST VECTOR REGISTER ADDRESS POINTER
              /IN 8-MODE
              /
Ø625  73ØØ    T1Ø,    CLA CLL         /CLEAR AC AND LINC
Ø626  6777            SVEC            /SET VECTOR ADD BTS 3-9 TO AC BTS Ø-6
Ø627  72ØØ            CLA             /CLEAR AC
Ø63Ø  6775            RVEC            /READ VECTOR ADD BTS 3-14 INTO AC BTS Ø-11
Ø631  3ØØ2            DCA     IMAGE   /IMAGE OF AC
Ø632  1ØØ2            TAD     IMAGE   /GET IMAGE
Ø633  7Ø41            CIA             /COMPLIMENT AND INCREMENT
Ø634  1154            TAD     K7741   /IMAGE SHOULD = 7741
Ø635  744Ø            SZA             /AC = Ø
Ø636  74Ø2            HLT             /ERR-EXAMINE AC
```

```
                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN 8-MODE
                        /
      Ø637  732Ø        T11,    CLA CLL           /CLEAR AC AND LINC
      Ø64Ø  1153                TAD     K774Ø     /AC=774Ø
      Ø641  6777                SVEC              /SET VECTOR ADD BTS 3-9 TO AC BTS Ø-6
      Ø642  72ØØ                CLA               /CLEAR AC
      Ø643  6775                RVEC              /READ VECTOR ADD BTS 3-14 INTO AC BTS Ø-11
      Ø644  3ØØ2                DCA     IMAGE     /IMAGE OF AC
      Ø645  1ØØ2                TAD     IMAGE     /GET IMAGE
      Ø646  7Ø41                CIA               /COMPLIMENT AND INC
      Ø647  1Ø43                TAD     K1        /IMAGE SHOULD = 1
      Ø65Ø  744Ø                SZA               /AC = Ø
      Ø651  74Ø2                HLT               /ERR-EXAMINE AC
      Ø652  4422                JMS I   IOPRES    /LINC MODE IO PRESET
      Ø653  6775                RVEC              /READ VECTOR ADDRESS BITS 3-14 INTO AC BITS Ø-11
      Ø654  3ØØ2                DCA     IMAGE     /IMAGE OF AC
      Ø655  1ØØ2                TAD     IMAGE     /GET IMAGE
      Ø656  7Ø41                CIA               /COMPLIMENT AND INC
      Ø657  1Ø43                TAD     K1        /IMAGE SHOULD = 1
      Ø66Ø  744Ø                SZA               /AC = Ø
      Ø661  74Ø2                HLT               /ERR-IO PRESET DID NOT CLEAR VECTOR ADD BTS 3-14
                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN 8-MODE
                        /  LINC
      Ø662  73ØØ        T12,    CLA CLL           /CLEAR AC AND LINK
      Ø663  6141                LINC              /LINC MODE
                                LMODE
      Ø664  1Ø2Ø                LDA I             /LOAD AC WITH
      Ø665  774Ø                774Ø              /OPERAND = 774Ø
      Ø666  Ø5ØØ                IOB               /EXEC 8MODE INST
      Ø667  Ø777                SVEC              /SET VECTOR BITS 3-9 TO AC BITS Ø-6
      Ø67Ø  ØØ11                CLR               /CLEAR AC MQ LINK
      Ø671  Ø5ØØ                IOB               /EXEC 8MODE INST
      Ø672  Ø775                RVEC              /READ VECTOR ADD BITS 3-14 INTO AC BITS Ø-11
      Ø673  146Ø                SAE I             /AC =
      Ø674  ØØØ1                1                 /1
      Ø675  ØØØØ                HLT               /ERR-AC NOT = 774Ø
      Ø676  ØØØ2                PDP               /8 MODE
                                PMODE
      Ø677  4422                JMS I   IOPRES    /LINK MODE PROG IO PRESET
```

```

                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN 8-MODE
                        /
0700  7300              T13,    CLA CLL              /CLEAR AC
0701  1153                      TAD     K7740        /AC = 7740
0702  6777                      SVEC                 /SET VECTOR ADD BTS 3-9 TO AC BTS 0-6
0703  7200                      CLA                  /CLEAR AC
0704  1067                      TAD     K720         /AC=0720
0705  6772                      SMLV                 /SET VECTOR FLD BTS 0-2 TO AC BTS 3-5
0706  7200                      CLA                  /CLEAR AC
0707  6773                      RMLV                 /READ VECTOR FLD BTS 0-2 INTO AC BTS 3-5 ALSO GET STK FLD BTS 0-2
0710  3002                      DCA     IMAGE        /IMAGE OF RESULT
0711  1002                      TAD     IMAGE        /GET IMAGE
0712  7041                      CIA                  /COMPLIMENT AND INC
0713  1145                      TAD     K7077        /IMAGE SHOULD = 7077
0714  7440                      SZA                  /AC = 0
0715  7402                      HLT                  /ERR-EXAMINE LOC IMAGE
0716  4422                      JMS I   IOPRES       /LINC MODE IO PRESET
0717  6773                      RMLV                 /READ VECTOR FIELD BITS INTO AC
0720  3002                      DCA     IMAGE        /IMAGE OF AC
0721  1002                      TAD     IMAGE        /GET IMAGE
0722  7041                      CIA                  /COMPLIMENT AND INC
0723  1055                      TAD     K60          /IMAGE SHOULD = 60
0724  7440                      SZA                  /AC = 0
0725  7402                      HLT                  /ERR-AC NOT = 0
                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN LINC MODE
                        /
0726  7300              T14,    CLA CLL              /CLEAR AC AND LINC
0727  6141                      LINC                 /LINC MODE
                                LMODE
0730  1020                      LDA I                /LOAD AC WITH
0731  7720                      7720                 /OPERAND = 7720
0732  0500                      IOB                  /EXEC 8MODE INST
0733  0772                      SMLV                 /SET STACK AND VECTOR FIELD BITS
0734  0011                      CLR                  /CLEAR AC MQ LINK
0735  0500                      IOB                  /EXEC 8MODE INST
0736  0773                      RMLV                 /READ STACK AND VECTOR FIELD BITS TO AC BITS 0-5
0737  1460                      SAE I                /AC =
0740  0077                      77                   /77
0741  0000                      HLT                  /ERR-AC NOT = 77
0742  0002                      PDP                  /8MODE
                                PMODE
0743  4422                      JMS I   IOPRES       /LINK MODE PROG IO PRESET
```

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                    /
                    /TEST VECTOR REGISTER ADDRESS POINTER
                    /IN 8-MODE
                    /
Ø744   73ØØ         T15,    CLA CLL             /CLEAR AC AND LINC
Ø745   1Ø66                 TAD       K52Ø      /AC=Ø52Ø
Ø746   6772                 SMLV                /SET VECTOR FLD BTS Ø-2 TO AC BTS 3-5
Ø747   72ØØ                 CLA                 /CLEAR AC
Ø75Ø   1117                 TAD       K25ØØ     /AC=25ØØ
Ø751   6777                 SVEC                /SET VECTOR ADD BTS 3-9 EQUAL TO AC BTS Ø-6
Ø752   72ØØ                 CLA                 /CLEAR AC
Ø753   6773                 RMLV                /READ VECTOR FLD BTS Ø-2 INTO AC BTS 3-5
Ø754   3ØØ2                 DCA       IMAGE     /IMAGE OF AC
Ø755   1ØØ2                 TAD       IMAGE     /GET IMAGE
Ø756   7Ø41                 CIA                 /COMPLIMENT AND INCREMENT
Ø757   1146                 TAD       K7277     /IMAGE SHOULD = 7277
Ø76Ø   744Ø                 SZA                 /AC SHOULD = Ø
Ø761   74Ø2                 HLT                 /ERR-EXAMINE LOC IMAGE
Ø762   72ØØ                 CLA                 /CLEAR AC
Ø763   6775                 RVEC                /READ VECTOR ADD BTS 3-14 INTO AC BTS Ø-11
Ø764   3ØØ2                 DCA       IMAGE     /IMAGE OF RESULT
Ø765   1ØØ2                 TAD       IMAGE     /GET RESULT
Ø766   7Ø41                 CIA                 /COMPLIMENT AND INCRIMENT
Ø767   1131                 TAD       K5241     /IMAGE SHOULD = 5241
Ø77Ø   744Ø                 SZA                 /AC SHOULD = Ø
Ø771   74Ø2                 HLT                 /ERR-EXAMINE LOC IMAGE
Ø772   5773                 JMP I     .+1       /JMP TO
Ø773   1ØØØ                 T16                 /TEST T16
                    /
                    /TEST VECTOR REGISTER ADDRESS POINTER
                    /IN 8-MODE
                    /
       1ØØØ                 *1ØØØ
1ØØØ   73ØØ         T16,    CLA CLL             /CLEAR AC AND LINC
1ØØ1   1Ø63                 TAD       K22Ø      /AC=Ø22Ø
1ØØ2   6772                 SMLV                /SET VECTOR ADD BTS Ø-2 TO AC BTS 3-5
1ØØ3   72ØØ                 CLA                 /CLEAR AC
1ØØ4   113Ø                 TAD       K524Ø     /AC = 524Ø
1ØØ5   6777                 SVEC                /SET VECTOR ADD BTS 3-9 TO AC BTS Ø-6
1ØØ6   72ØØ                 CLA                 /CLEAR AC
1ØØ7   6773                 RMLV                /READ VECTOR FLD BTS Ø-2 INTO AC BTS 3-5
1Ø1Ø   3ØØ2                 DCA       IMAGE     /IMAGE OF AC
1Ø11   1ØØ2                 TAD       IMAGE     /GET IMAGE
1Ø12   7Ø41                 CIA                 /COMPLIMENT AND INCREMENT
1Ø13   1151                 TAD       K7577     /IMAGE SHOULD = 7577
1Ø14   744Ø                 SZA                 /AC SHOULD = Ø
1Ø15   74Ø2                 HLT                 /ERR-EXAMINE LOC IMAGE
1Ø16   6775                 RVEC                /READ VECTOR ADD BTS 3-14 INTO AC BTS Ø-11
1Ø17   3ØØ2                 DCA       IMAGE     /IMAGE OF AC
1Ø2Ø   1ØØ2                 TAD       IMAGE     /GET IMAGE
1Ø21   7Ø41                 CIA                 /COMPLIMENT AND INC
1Ø22   112Ø                 TAD       K25Ø1     /IMAGE SHOULD = 25Ø1
1Ø23   744Ø                 SZA                 /AC = Ø
1Ø24   74Ø2                 HLT                 /ERR-EXAMINE LOC IMAGE
```

```

                        /
                        /TEST SETTING OF MACHINE LEVEL REGISTER AND STACK AND VECTOR FIELD BITS
                        /TO ZERO IN 8-MODE
                        /TEST THAT IO PRESET WILL SET THEM ALL HIGH AGAIN
                        /
1025  7300              T17,    CLA CLL         /CLEAR AC AND LINC
1026  1052                      TAD     K20     /AC = 20
1027  6772                      SMLV            /SET MACHINE LEVEL TO AC BTS 8-11 AND THE STACK AND VECTOR FIELD BITS TO 0
1030  7200                      CLA             /CLEAR AC
1031  6773                      RMLV            /READ MACHINE LEVEL INTO AC BTS 8-11 AND THE STACK AND VECTOR FIELD BITS
1032  3002                      DCA     IMAGE   /IMAGE OF RESULT
1033  1002                      TAD     IMAGE   /GET IMAGE
1034  7040                      CMA             /COMPLIMENT
1035  7440                      SZA             /AC SHOULD = 0
1036  7402                      HLT             /ERR-EXAMINE LOC IMAGE
1037  4422                      JMS I   IOPRES  /LINC MODE IO PRESET
1040  6773                      RMLV            /READ MACHINE LEVEL INTO AC BITS 8-11 AND THE STACK AND VECTOR FIELD BITS
1041  3002                      DCA     IMAGE   /IMAGE OF AC
1042  1002                      TAD     IMAGE   /GET IMAGE
1043  7041                      CIA             /COMPLIMENT AND INC
1044  1055                      TAD     K60     /IMAGE SHOULD = 60
1045  7440                      SZA             /SHOULD BE ZERO
1046  7402                      HLT             /ERR-IO PRESET DID NOT CLEAR MACHINE LEVEL REGISTER
                        /
                        /TEST SETTING OF MACHINE LEVEL REGISTER
                        /TO ZERO IN LINC MODE
                        /
1047  7300              T20,    CLA CLL         /CLEAR AC AND LINK
1050  6141                      LINC            /LINK MODE
                                LMODE
1051  1020                      LDA I           /LOAD THE AC
1052  0017                      17              /WITH 17
1053  0500                      IOB             /EXEC 8MODE IOT
1054  0772                      SMLV            /SET MACH LEVEL TO AC BTS 8-11
1055  0011                      CLR             /CLEAR AC LINC AND MQ
1056  0500                      IOB             /EXEC 8MODE IOT
1057  0773                      RMLV            /READ MACH LEVEL INTO AC BITS 8-11
1060  1460                      SAE I           /AC =
1061  0060                      60              /60
1062  0000                      HLT             /ERR-AC NOT = 17
1063  0011                      CLR             /CLEAR AC MQ LINK
1064  0002                      PDP             /8 MODE
                                PMODE
1065  4422                      JMS I   IOPRES  /LINC MODE IO PRESET
```

```

                    /
                    /TEST SETTING OF MACHINE LEVEL REGISTER
                    /TO ALL POSSIBLE COMBINATIONS
                    /IN 8-MODE
                    /
1066  7320          T21,    CLA CLL         /CLEAR AC AND LINC
1067  3010                  DCA     10      /LOC 10 = 0
1070  1160                  TAD     M16     /AC = -16
1071  3011                  DCA     11      /LOC 11 = -16
1072  1023                  TAD     COUNT   /POINTS TO TOP OF EXPECTED RESULT LIST
1073  3012                  DCA     12      /STORE IN LOC 12
1074  7300          AGAIN,  CLA CLL         /AC = 0
1075  1010                  TAD     10      /LOC 10 TO AC
1076  6772                  SMLV            /SET MACHINE LEVEL TO AC BTS 8-11
1077  7200                  CLA             /CLEAR AC
1100  6773                  RMLV            /READ MACHINE LEVEL INTO AC BTS 8-11
1101  3002                  DCA     IMAGE   /IMAGE OF AC
1102  1002                  TAD     IMAGE   /GET IMAGE
1103  7041                  CIA             /COMPLIMENT AND INCREMENT
1104  1412                  TAD I   12      /IMAGE SHOULD = CONTENTS OF ADDRESS SPECIFIED BY LOC 12
1105  7440                  SZA             /AC = 0
1106  7402                  HLT             /ERR-EXAMINE LOC IMAGE
1107  4422                  JMS I   IOPRES  /LINC MODE IO PRESET
1110  6773                  RMLV            /READ MACHINE LEVEL INTO AC BITS 8-11 AND STACK AND VECTOR FLD BITS INTO AC BITS 0-5
1111  0051                  AND     K17     /AC = 17
1112  7440                  SZA             /AC SHOULD = 0
1113  7402                  HLT             /ERR-MACHINE LEVEL NOT CLEARED BY IO PRESET
1114  2010                  ISZ     10      /INCREMENT LOC 10
1115  5317                  JMP     .+2     /LOC 10 NOT = 0--SHOULD NEVER = 0
1116  7402                  HLT             /--NEVER GET HERE--
1117  2011                  ISZ     11      /INCREMENT LOC 11 AND SKIP IF ZERO
1120  5274                  JMP     AGAIN   /NO-DO IT AGAIN
1121  5722                  JMP I   .+1     /JMP TO
1122  1200                  T22             /TEST T22
                    /
                    /EXPECTED RESULTS TABLE FOR TEST T21
                    /
1123  0077          CNT,    77
1124  0076                  76
1125  0075                  75
1126  0074                  74
1127  0073                  73
1130  0072                  72
1131  0071                  71
1132  0070                  70
1133  0067                  67
1134  0066                  66
1135  0065                  65
1136  0064                  64
1137  0063                  63
1140  0062                  62
1141  0061                  61
1142  0060                  60
```

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                        /
                        /TEST PUSHJ INSTRUCTION WITH API OFF
                        /WITH ALL STORED STATUS CLEARED IF POSSIBLE
                        /TEST RESTORE IOT WITH API OFF
                        /AFTER ALTERING VALUE OF RETURN PC IN STACK+1
                        /AND SETTING MACHINE PARAMETERS TO BE RESTORED
                        /TO THE OPPOSITE OF THE EXPECTED STATE
                        /
        12ØØ                    *12ØØ
12ØØ    44Ø7            T22,    JMS I   CLRSTK  /CLEAR STACK
12Ø1    44Ø6                    JMS I   SETUP   /SETUP API REGISTERS
12Ø2    6141                    LINC            /LINC MODE
                                LMODE
12Ø3    Ø474                    FLO I           /SKIP IF FLO = Ø
12Ø4    ØØØØ                    HLT             /ERR-FLO SET
12Ø5    ØØØ2                    PDP             /8-MODE
                                PMODE
12Ø6    734Ø                    CLA CLL CMA     /AC = 7777
12Ø7    3ØØØ                    DCA     LOCØ    /LOC Ø = 7777
121Ø    676Ø                    PJAIØ           /PUSH JUMP WITH FIELD BITS = Ø
1211    1216                    TSTPJ           /TO LOC TSTPJ
1212    74Ø2                    HLT             /ERR--PUSH JUMP DID NOT EXECUTE

1213    74Ø2                    HLT
1214    ØØØØ                    AND     LOCØ    /DECODES AS A HLT IF RESTORE NOT TO 8-MODE
1215    5276                    JMP     T22A    /CONTINUE WITH TEST
1216    ØØØØ            TSTPJ,  AND     LOCØ    /ARRIVE FROM PUSH JUMP IN 8-MODE (DECODES HLT IN LINC MODE)
1217    744Ø                    SZA             /AC = Ø
122Ø    74Ø2                    HLT             /ERR-AC NOT = Ø
1221    743Ø                    SZL             /LINC = Ø
1222    74Ø2                    HLT             /ERR-LINC NOT = Ø
1223    6141                    LINC            /LINC MODE
                                LMODE
1224    Ø474                    FLO I           /FLO = Ø
1225    ØØØØ                    HLT             /ERROR
1226    6243                    JMP     XACMQ   /EXCHANGE AC AND MQ
1227    ØØØ2                    PDP             /8-MODE
                                PMODE
123Ø    744Ø                    SZA             /AC = Ø
1231    74Ø2                    HLT             /ERR-AC NOT = Ø THEREFORE MQ WAS NOT = Ø
1232    6774                    RSTK            /READ STACK REGISTER POINTER INTO AC
1233    3ØØ2                    DCA     IMAGE   /IMAGE OF AC
1234    1ØØ2                    TAD     IMAGE   /GET IMAGE
1235    7Ø41                    CIA             /COMPLIMENT AND INCREMENT
1236    1115                    TAD     K2172   /IMAGE SHOULD = 2172
1237    744Ø                    SZA             /AC = Ø
124Ø    74Ø2                    HLT             /ERR
1241    1432                    TAD I   STACK   /GET AC STORED ON STACK BY PUSH JUMP
1242    744Ø                    SZA             /AC = Ø
1243    74Ø2                    HLT             /ERR
```

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1244  1433           TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP
1245  7Ø41           CIA             /COMPLIMENT
1246  1Ø27           TAD     PJPC    /SHOULD EQUAL TSTPJ-4
1247  744Ø           SZA             /AC SHOULD = Ø
125Ø  74Ø2           HLT             /ERR
1251  1434           TAD I   STACK+2 /GET MODE FLO LINK AND MACH LEV STORED ON STACK BY PUSH JUMP
1252  744Ø           SZA             /AC = Ø
1253  74Ø2           HLT             /ERR
1254  1435           TAD I   STACK+3 /GET MQ STORED ON STACK BY PUSH JUMP
1255  744Ø           SZA             /AC SHOULD = Ø
1256  74Ø2           HLT             /ERR
1257  1436           TAD I   STACK+4 /GET UF IF AND DF STORED ON STACK BY PUSH JUMP
126Ø  7Ø41           CIA             /COMPLIMENT AND INC
1261  1Ø45           TAD     K3      /LOC STACKK+4 SHOULD = 3
1262  744Ø           SZA             /AC = Ø
1263  74Ø2FAILED 4 JUL'83 HLT        /ERR  DF WAS Ø VICE 3
1264  1433           TAD I   STACK+1 /GET PC STORED IN LOC STACK+1
1265  1Ø44           TAD     K2      /INCREMENT BY 2
1266  3433           DCA I   STACK+1 /STORE BACK IN LOC STACK+1
1267  6141           LINC            /LINC MODE
                     LMODE
127Ø  6254           JMP     SACMQL  /SET AC LINC MQ AND FLO
1271  1Ø4Ø           STA             /SET LOC Ø
1272  ØØØØ           Ø               /TO 7777
1273  Ø5ØØ           IOB             /EXECUTE 8-MODE INST
1274  Ø771           RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
1275  ØØØØ           HLT             /ERR-RESTORE IOT DID NOT EXECUTE
                     PMODE
1276  744Ø    T22A,  SZA             /AC = Ø
1277  74Ø2           HLT             /ERR-AC NOT = Ø
13ØØ  743Ø           SZL             /LINC = Ø
13Ø1  74Ø2           HLT             /ERR-LINC NOT = Ø
13Ø2  6141           LINC            /LINC MODE
                     LMODE
13Ø3  Ø474           FLO I           /FLO = Ø
13Ø4  ØØØØ           HLT             /ERR-FLO NOT = Ø
13Ø5  6243           JMP     XACMQ   /MQ TO AC
13Ø6  146Ø           SAE I           /AC =
13Ø7  ØØØØ           Ø               /Ø
131Ø  ØØØØ           HLT             /ERR-AC NOT = Ø THEREFORE MQ WAS NOT = Ø
1311  Ø5ØØ           IOB             /EXECUTE 8-MODE INST
1312  Ø224           RIF             /READ INSTRUCTION FIELD
1313  146Ø           SAE I           /AC =
1314  ØØØØ           Ø               /Ø
1315  ØØØØ           HLT             /ERR-AC NOT = Ø
```

```
        1316  0011          CLR             /CLEAR AC LINC AND MQ
        1317  0500          IOB             /EXECUTE 8-MODE INST
        1320  0214          RDF             /READ DATA FIELD
        1321  1460          SAE I           /AC =
        1322  0006          6               /6
        1323  0000          HLT             /ERR-DF IN AC NOT = 6
        1324  0011          CLR             /CLEAR AC LINC AND MQ
        1325  0002          PDP             /8-MODE
                            PMODE
        1326  6773          RMLV            /READ MACHINE LEVEL AND THE STACK AND VECTOR FIELD BITS INTO AC
        1327  3002          DCA     IMAGE   /IMAGE OF AC
        1330  1002          TAD     IMAGE   /GET IMAGE
        1331  7040          CMA             /COMPLIMENT AC
        1332  7440          SZA             /AC = 0
        1333  7402          HLT             /ERR
        1334  6774          RSTK            /READ STACK POINTER REGISTER INTO AC
        1335  3002          DCA     IMAGE   /IMAGE OF AC
        1336  1002          TAD     IMAGE   /GET IMAGE
        1337  7041          CIA             /COMPLIMENT AND INC
        1340  1116          TAD     K2177   /IMAGE SHOULD EQUAL 2177
        1341  7440          SZA             /AC = 0
        1342  7402          HLT             /ERR
        1343  6775          RVEC            /READ VECTOR POINTER REGISTER INTO AC
        1344  3002          DCA     IMAGE   /IMAGE OF AC
        1345  1002          TAD     IMAGE   /GET IMAGE
        1346  7041          CIA             /COMPLIMENT AND INC
        1347  1073          TAD     K1641   /IMAGE SHOULD = 1641
        1350  7440          SZA             /AC = 0
        1351  7402          HLT             /ERR
        1352  5753          JMP I   .+1     /JMP TO
        1353  1403          T24             /TEST T24
                      /
                      /THE FIRST INSTRUCTION EXECUTED AFTER A RESTORE IOT WHEN
                      /THE MACHINE SHOULD BE RETURNED TO LINC MODE IS A LINC MODE JUMP TO LOC 1402
                      /OF THE CURRENT INSTRUCTION FIELD
                      /THIS DECODES AS AN 8-MODE HLT IF THE RESTORE TO LINC MODE SHOULD FAIL
                      /
              1402          *1402
        1402  0000    UT16, 0
```

```



                  /
                  /TEST PUSHJ INSTRUCTION WITH API OFF   IN  LINC  MODE
                  /AND ALL STATUS TO BE STORED SET TO
                  /1 STATE IF POSSIBLE
                  /TEST RESTORE IOT WITH API OFF
                  /AFTER ALTERING THE VALUE OF THE RETURN PC
                  /ALSO SET MACHINE PARAMETERS THAT WILL BE RESTORED
                  /TO OPPOSITE OF EXPECTED STATE
                  /
      1403              *1403
1403  4407        T24,  JMS I   CLRSTK  /CLEAR STACK
1404  4406              JMS I   SETUP   /SETUP API REGISTERS
1405  1053              TAD     K37     /AC = 37
1406  6772              SMLV            /SET MACH LEV = 17 AND THE STACK AND VECTOR FIELD BITS = 0
1407  6141              LINC            /LINC MODE
                        LMODE
1410  1020              LDA I           /AC =
1411  7426              6000!TSTPJ1+1   /JMP TO TSTPJ1+1
1412  1040              STA             /STORE AC
1413  1402              1402            /LOC 1402 OF FIELD 0 (DECODES AS HLT IN 8-MODE)
1414  0643              LDF     3       /SET DATA FIELD = 3
1415  6254              JMP     SACMQL  /SET AC LINC MQ AND FLO
1416  0500              IOB             /EXECUTE 8-MODE INST
1417  0760              PJAI0           /PUSH JUMP (WITH FIELD BITS = 0)
1420  1425              TSTPJ1          /TO LOC TSTPJ1
1421  0000              HLT             /ERR - PUSH JUMP SKIPPED
1422  0000              HLT
1423  7402              JMP     UT16    /DECODES AS AN 8-MODE HLT IF RESTOR WAS NOT TO LINC MODE
1424  7527              JMP     T24A    /CONTINUE WITH TEST
                        LMODE
1425  7402        TSTPJ1; JMP   UT16    /ARRIVE FROM PUSH JUMP IN LINC MODE (DECODES AS HLT IF 8-MODE)
1426  0472  HANG-UP     LZE I           /LINC BIT =1
1427  0000  THUR 16 MAY 74 HLT          /ERR
1430  1460              SAE I           /AC =
1431  7777              7777            /7777
1432  0000              HLT             /ERR
1433  0454              FLO             /FLO =1
1434  0000              HLT             /ERR-FLO NOT = 1
1435  6243              JMP     XACMQ   /MQ TO AC
1436  1460              SAE I           /AC =
1437  7777              7777            /7777
1440  0000              HLT             /ERR
1441  0011              CLR             /CLEAR AC LINC AND MQ
1442  0500              IOB             /EXECUTE 8-MODE INST
1443  0214              RDF             /READ DATA FIELD
1444  1460              SAE I           /AC =
1445  0006              6               /6
1446  0000              HLT             /ERR
1447  0011              CLR             /CLEAR AC LINC AND MQ
1450  0643              LDF     3       /LOAD DATA FIELD 3
```

```

1451 Ø5ØØ           IOB               /EXECUTE 8 MODE INST
1452 Ø774           RSTK              /READ STACK POINTER REGISTER INTO AC
1453 146Ø           SAE I             /AC =
1454 2172           2172              /2172
1455 ØØØØ           HLT               /ERR


1456 ØØ11           CLR               /CLEAR AC LINC AND MQ
1457 ØØØ2           PDP               /8 - MODE
                    PMODE
146Ø 1432           TAD I   STACK     /GET AC STORED ON STACK BY PUSH JUMP
1461 7Ø4Ø           CMA               /COMPLIMENT
1462 744Ø           SZA               /AC = Ø
1463 74Ø2           HLT               /ERR
1464 1433           TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP
1465 7Ø41           CIA               /COMPLIMENT AND INC
1466 1Ø3Ø           TAD     PJPC1     /SHOULD EQUAL TSTPJ1-4
1467 744Ø           SZA               /AC = Ø
147Ø 74Ø2           HLT               /ERR
1471 1434           TAD I   STACK+2 /GET MODE FLO LINC AND MACHINE LEVEL STORED ON STACK BY PUSH JUMP
1472 7Ø41           CIA               /COMPLIMENT AND INC
1473 1143           TAD     K7Ø17     /LOCATION STACK+2 SHOULD=7Ø17
1474 744Ø           SZA               /AC = Ø
1475 74Ø2           HLT               /ERR
1476 1435           TAD I   STACK+3 /GET MQ STORED ON STACK BY PUSH JUMP
1477 7Ø4Ø           CMA               /COMPLIMENT AC
15ØØ 744Ø           SZA               /AC SHOULD = Ø
15Ø1 74Ø2           HLT               /ERR
15Ø2 1436           TAD I   STACK+4 /GET UF IF AND DF STORED ON STACK BY PUSH JUMP
15Ø3 7Ø41           CIA               /COMPLIMENT AND INC
15Ø4 1Ø45           TAD     K3        /STACK+4 SHOULD = 3
15Ø5 744Ø           SZA               /AC SHOULD = Ø
15Ø6 74Ø2           HLT               /ERR
15Ø7 1433           TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP
151Ø 1Ø44           TAD     K2        /INCREMENT BY 2
1511 3433           DCA I   STACK+1 /STORE BACK IN STACK+1
1512 6141           LINC              /LINC MODE
                    LMODE
1513 1Ø2Ø           LDA I             /AC =
1514 7424           6ØØØ!TSTPJ1-1     /JMP TO LOC TSTPJ1-1
1515 1Ø4Ø           STA               /STORE AC
1516 14Ø2           14Ø2              /IN LOC 14Ø2 OF FIELD Ø (DECODES AS HLT IN 8-MODE)
1517 ØØ11           CLR               /CLEAR AC LINC AND MQ
152Ø 112Ø           ADA I             /ADD
1521 ØØØØ           Ø                 /Ø TO AC
1522 Ø474           FLO I             /TO INSURE FLO = Ø
1523 ØØØØ           HLT               /ERR-FLO NOT = Ø
1524 ØØØ2           PDP               /8 - MODE
                    PMODE
1525 6771           RES               /RESTORE MACHINE TO LAST STATUS STORED ON STACK
1526 74Ø2           HLT               /ERR - RESTORE SKIPPED
```

```

                      LMODE
1527  146Ø   T24A,    SAE I               /AC =
153Ø  7777            7777                /7777
1531  ØØØØ            HLT                 /ERR-AC NOT = 7777
1532  Ø472            LZE I               /LINC = 1
1533  ØØØØ            HLT                 /ERR-LINC NOT = 1
1534  Ø454            FLO                 /FLO = 1
1535  ØØØØ            HLT                 /ERR-FLO NOT = 1
1536  6243            JMP       XACMQ     /MQ TO AC
1537  146Ø            SAE I               /AC =
154Ø  7777            7777                /7777
1541  ØØØØ            HLT                 /ERR-AC NOT = 7777 THEREFORE MQ WAS NOT = 7777
1542  ØØ11            CLR                 /CLEAR AC LINC AND MQ
1543  Ø5ØØ            IOB                 /EXECUTE 8-MODE INST
1544  Ø224            RIF                 /READ INST FIELD
1545  146Ø            SAE I               /AC =
1546  ØØØØ            Ø                   /Ø
1547  ØØØØ            HLT                 /ERR-IF IN AC NOT = Ø
155Ø  ØØ11            CLR                 /CLEAR AC LINC AND MQ
1551  Ø5ØØ            IOB                 /EXECUTE 8-MODE INST
1552  Ø214            RDF                 /READ DATA FIELD
1553  146Ø            SAE I               /AC =
1554  ØØØ6            6                   /6
1555  ØØØØ            HLT                 /ERR-DF IN AC NOT = 76
1556  Ø643            LDF       3         /LOAD DATA FIELD 3
1557  ØØ11            CLR                 /CLEAR AC LINC AND MQ
156Ø  Ø5ØØ            IOB                 /EXECUTE 8-MODE INST
1561  Ø774            RSTK                /READ STACK POINTER REGISTER INTO AC
1562  146Ø            SAE I               /AC =
1563  2177            2177                /2177
1564  ØØØØ            HLT                 /ERR
1565  ØØØ2            PDP                 /8-MODE
                      PMODE
1566  5767            JMP I     .+1       /JMP TO
1567  16ØØ            T26                 /TEST 26
```

```


                         /
                         /TURN ON API ---FIRST TIME---
                         /TEST THAT STACK AND VECTOR FIELD BITS
                         /CANNOT BE ALTERED IN 8MODE WITH API ON
                         /TURN API OFF WITH IOF ---FIRST TIME---
                         /TEST THAT STACK AND VECTOR FIELD BITS CAN BE ALTERED
                         /
                  16ØØ             *16ØØ
          16ØØ    44Ø7   T26,      JMS I    CLRSTK   /CLEAR STACK
          16Ø1    4422             JMS I    IOPRES   /GENERATE IO PRESET
          16Ø2    6141             LINC              /LINC MODE
                                   LMODE
          16Ø3    ØØ11             CLR               /CLEAR AC LINC AND MQ
          16Ø4    ØØØ2             PDP               /8-MODE
                                   PMODE
          16Ø5    6ØØ6             APION             /TURN API INTERRUPT SYS ON
          16Ø6    1Ø52             TAD      K2Ø      /AC = 2Ø
          16Ø7    6772             SMLV              /SET MACHINE LEVEL = Ø
          161Ø    72ØØ             CLA               /CLEAR AC
          1611    6773             RMLV              /READ STACK AND VECTOR FIELD BITS - MACHINE LEVEL INTO AC
          1612    3ØØ2             DCA      IMAGE    /IMAGE OF AC
          1613    1ØØ2             TAD      IMAGE    /GET IMAGE
          1614    7Ø41             CIA               /COMPLIMENT AND INC
          1615    1Ø56             TAD      K77      /IMAGE SHOULD = 77
          1616    744Ø             SZA               /AC = Ø
          1617    74Ø2             HLT               /ERR
          162Ø    6ØØ2             IOF               /TURN API INTERRUPT SYS OFF
          1621    1Ø52             TAD      K2Ø      /AC = 2Ø
          1622    6772             SMLV              /CLEAR STACK AND VECTOR FIELD BITS = SET MACHINE LEVEL = Ø
          1623    72ØØ             CLA               /CLEAR AC
          1624    6773             RMLV              /READ STACK AND VECTOR FIELD BITS - MACHINE LEVEL INTO AC
          1625    3ØØ2             DCA      IMAGE    /IMAGE OF AC
          1626    1ØØ2             TAD      IMAGE    /GET IMAGE
          1627    7Ø4Ø             CMA               /COMPLIMENT AC
          163Ø    744Ø             SZA               /AC = Ø
          1631    74Ø2             HLT               /ERR
```

```


                  /
                  /TURN API ON
                  /TEST THAT STACK AND VECTOR FIELD BITS
                  /CANNOT BE ALTERED IN LINC MODE WITH API ON
                  /TURN API OFF WITH IOF
                  /TEST THAT STACK AND VECTOR FIELD BITS CAN BE ALTERED
                  /
1632  4422        T27,    JMS I   IOPRES  /GENERATE IO PRESET
1633  6141                LINC            /LINC MODE
                          LMODE
1634  0500                IOB             /EXECUTE 8-MODE INST
1635  0006                APION           /TURN API INTERRUPT SYSTEM ON
1636  1020                LDA I           /AC =
1637  0020                20              /20
1640  0500                IOB             /EXECUTE 8-MODE INST
1641  0772                SMLV            /SET MACHINE LEVEL = 0
1642  0011                CLR             /CLEAR AC LINC AND MQ
1643  0500                IOB             /EXECUTE 8-MODE INST
1644  0773                RMLV            /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
1645  1460                SAE I           /AC =
1646  0077                77              /77
1647  0000                HLT             /ERR
1650  0500                IOB             /EXECUTE 8-MODE INST
1651  0002                IOF             /TURN API INTERRUPT SYS OFF
1652  1020                LDA I           /AC =
1653  0020                20              /20
1654  0500                IOB             /EXECUTE 8-MODE INST
1655  0772                SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL =0
1656  0011                CLR             /CLEAR AC LINK AND MQ
1657  0500                IOB             /EXECUTE 8-MODE INST
1660  0773                RMLV            /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
1661  1460                SAE I           /AC =
1662  7777                7777            /7777
1663  0000                HLT             /ERR
1664  0002                PDP             /8-MODE
                          PMODE
```

```

                      /
                      /TURN API ON
                      /TEST THAT BITS 3-14 OF THE STACK ADDRESS
                      /CANNOT BE ALTERED IN 8MODE WITH API ON
                      /TURN API OFF
                      /TEST THAT STACK ADD CAN BE ALTERED
                      /
1665  4422            T3Ø,    JMS I   IOPRES  /GENERATE IO PRESET
1666  6ØØ6                    APION           /TURN AP INTERRUPT SYS ON
1667  6776                    SSTK            /TRY TO SET STACK ADDRESS REGISTER = Ø
167Ø  72ØØ                    CLA             /CLEAR AC
1671  6774                    RSTK            /READ STACK ADDRESS REGISTER INTO AC
1672  744Ø                    SZA             /AC = Ø
1673  74Ø2                    HLT             /ERR
1674  6ØØ2                    IOF             /TURN API INTERRUPT SYS OFF
1675  73ØØ                    CLA CLL         /CLEAR AC AND LINC
1676  6776                    SSTK            /SET STACK ADDRESS REGISTER = Ø
1677  72ØØ                    CLA             /CLEAR AC
17ØØ  6774                    RSTK            /READ STACK ADDRESS REGISTER INTO AC
17Ø1  7Ø4Ø                    CMA             /COMPILMENT AC
17Ø2  744Ø                    SZA             /AC = Ø
17Ø3  74Ø2                    HLT             /ERR
```

```

                        /
                        /TURN API ON
                        /TEST THAT STACK ADDRESS BITS 3-14
                        /CANNOT BE ALTERED IN LINC MODE WITH API ON
                        /TURN API OFF
                        /TEST THAT STACK ADDRESS CAN BE ALTERED
                        /
        1704  4422      T31,    JMS I   IOPRES  /GENERATE IO PRESET
        1705  6776              SSTK            /SET STACK ADDRESS REGISTER = 0
        1706  6141              LINC            /LINC MODE
                                LMODE
        1707  0500              IOB             /EXECUTE 8-MODE INST
        1710  0026              APION           /TURN API INTERRUPT SYS ON
        1711  1020              LDA I           /AC =
        1712  7777              7777            /7777
        1713  0500              IOB             /EXECUTE 8-MODE INST
        1714  0776              SSTK            /TRY TO SET STACK ADDRESS REG = 7777
        1715  0011              CLR             /CLEAR AC LINC AND MQ
        1716  0500              IOB             /EXECUTE 8-MODE INST
        1717  0774              RSTK            /READ STACK ADDRESS REG INTO AC
        1720  1460              SAE I           /AC =
        1721  7777              7777            /7777
        1722  0000              HLT             /ERR
        1723  0500              IOB             /EXECUTE 8-MODE INST
        1724  0001              ION             /TURN API OFF BY TURNING NORMAL INTERRUPT SYS ON
        1725  1020              LDA I           /AC =
        1726  7777              7777            /7777
        1727  0500              IOB             /EXECUTE 8-MODE INST
        1730  0776              SSTK            /SET STACK ADDRESS REGISTER = 7777
        1731  0011              CLR             /CLEAR AC LINC AND MQ
        1732  0500              IOB             /EXECUTE 8-MODE INST
        1733  0774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
        1734  1460              SAE I           /AC =
        1735  0000              0               /0
        1736  0000              HLT             /ERR
        1737  0002              PDP             /8-MODE
                                PMODE
        1740  6002              IOF             /TURN NORMAL INTERRUPT SYS OFF
```

```


                        /
                        /TURN API ON
                        /TEST THAT VECTOR ADDRESS
                        /CANNOT BE ALTERED IN 8MODE WITH API ON
                        /TURN API OFF
                        /TEST THAT VECTOR ADDRESS CAN BE ALTERED
                        /
        1741  4406      T32,    JMS I   SETUP   /SETUP API REGISTERS
        1742  6777              SVEC            /SET VECTOR ADDRESS REGISTER = 0
        1743  6006              APION           /TURN API INTERRUPT SYS ON
        1744  1153              TAD     K7740   /AC = 7740
        1745  6777              SVEC            /TRY TO SET VECTOR ADDRESS REG = 7740
        1746  7200              CLA             /AC = 0
        1747  6775              RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
        1750  3002              DCA     IMAGE   /IMAGE OF AC
        1751  1002              TAD     IMAGE   /GET IMAGE
        1752  7041              CIA             /COMPLIMENT AND INC
        1753  1154              TAD     K7741   /IMAGE SHOULD = 7741
        1754  7440              SZA             /AC = 0
        1755  7402              HLT             /ERR
        1756  6002              IOF             /TURN API INTERRUPT SYS OFF
        1757  1153              TAD     K7740   /AC = 7740
        1760  6777              SVEC            /SET VECTOR ADDRESS = 7740
        1761  7200              CLA             /AC = 0
        1762  6775              RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
        1763  3002              DCA     IMAGE   /IMAGE OF AC
        1764  1002              TAD     IMAGE   /GET IMAGE
        1765  7041              CIA             /COMPLIMENT AND INC
        1766  1043              TAD     K1      /IMAGE SHOULD = 1
        1767  7440              SZA             /AC = 0
        1770  7402              HLT             /ERR
        1771  5772              JMP I   .+1     /JMP TO
        1772  2001              T33             /TEST T33
```

```



                 /
                 /TURN API ON
                 /TEST THAT VECTOR ADDRESS
                 /CANNOT BE ALTERED IN LINC MODE WITH API ON
                 /TURN API OFF
                 /TEST THAT VECTOR ADDRESS CAN BE ALTERED
                 /
        2001             *2001
2001    7300     T33,    CLA CLL         /CLEAR AC AND LINC
2002    4406             JMS I   SETUP   /SETUP API REGISTERS
2003    6777             SVEC            /SET VECTOR ADDRESS REG = 0
2004    6141             LINC            /LINC MODE
                         LMODE
2005    0500             IOB             /EXECUTE 8-MODE INST
2006    0006             APION           /TURN API INTERRUPT SYS ON
2007    1020             LDA I           /AC =
2010    7740             7740            /7740
2011    0500             IOB             /EXECUTE 8-MODE INST
2012    0777             SVEC            /TRY TO SET VECTOR ADDRESS REG = 7740
2013    0011             CLR             /CLEAR AC LINC AND MQ
2014    0500             IOB             /EXECUTE 8-MODE INST
2015    0775             RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
2016    1460             SAE I           /AC =
2017    7741             7741            /7741
2020    0000             HLT             /ERR
2021    0500             IOB             /EXECUTE 8-MODE INST
2022    0002             IOF             /TURN API INTERRUPT SYS OFF
2023    0011             CLR             /CLEAR AC LINC AND MQ
2024    1020             LDA I           /AC =
2025    7740             7740            /7740
2026    0500             IOB             /EXECUTE 8-MODE INST
2027    0777             SVEC            /SET VECTOR ADDRESS REGISTER = 7740
2030    0011             CLR             /CLEAR AC LINC AND MQ
2031    0500             IOB             /EXECUTE 8-MODE INST
2032    0775             RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
2033    1460             SAE I           /AC =
2034    0001             1               /1
2035    0000             HLT             /ERR
2036    0002             PDP             /8-MODE
                         PMODE
```

```



                        /
                        /EXECUTE IN 8 MODE
                        /TEST PUSHJ AND RES IOTS WITH API ON
                        /
     2037  4407         T34,    JMS I   CLRSTK  /CLEAR STACK
     2040  4406                 JMS I   SETUP   /SET UP API REGISTERS
     2041  7060                 CML CMA         /SET LINC = 1 AND AC = 7777
     2042  3000                 DCA     LOC0    /LOC 0 = 7777
     2043  3405                 DCA I   UT37A   /LOC UT37A = 0
     2044  6006                 APION           /TURN API INTERRUPT SYS ON
     2045  6760                 PJAI0           /PUSH JUMP WITH FIELD BITS = 0
     2046  2053                 TSTPJ2          /TO LOC TSTPJ2
     2047  7402                 HLT             /ERR - PUSHJ SKIPPED
     2050  7402                 HLT
     2051  0000                 AND     LOC0    /RETURN FROM RESTORE IOT (DECODES AS HLT IN LINC MODE)
     2052  5305                 JMP     T34A    /CONTINUE WITH TEST
     2053  0000         TSTPJ2, AND     LOC0    /TEST THAT ARRIVAL FROM PUSHJ IOT WAS IN 8-MODE
     2054  7440                 SZA             /AC = 0
     2055  7402                 HLT             /ERR
     2056  6774                 RSTK            /READ STACK ADDRESS REGISTER INTO AC
     2057  3002                 DCA     IMAGE   /IMAGE OF AC
     2060  1002                 TAD     IMAGE
     2061  7041                 CIA             /COMPLIMENT AND INC
     2062  1115                 TAD     K2172   /IMAGE SHOULD = 2172
     2063  7440                 SZA             /AC = 0
     2064  7402                 HLT             /ERR
     2065  1436                 TAD I   STACK+4 /GET UF IF AND DF STORED ON STACK BY PUSH JUMP IOT
     2066  7041                 CIA             /COMPLIMENT AND INC
     2067  1045                 TAD     K3      /STACK+4 SHOULD = 3
     2070  7440                 SZA             /AC = 0
     2071  7402                 HLT             /ERR
     2072  7300                 CLA CLL         /CLEAR AC AND LINC
     2073  1433                 TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP IOT
     2074  7041                 CIA             /COMPLIMENT AND INC
     2075  1031                 TAD     PJPC2   /STACKK+1 SHOULD = PJPC2
     2076  7440                 SZA             /AC = 0
     2077  7402                 HLT             /ERR
     2100  1433                 TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP IOT
     2101  1044                 TAD     K2      /INCREMENT BY 2
     2102  3433                 DCA I   STACK+1 /SOTRE BACK IN LOC STACKK+1
     2103  6771                 RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
     2104  7402                 HLT             /ERR - RESTORE SKIPPED
     2105  7420         T34A,   SNL             /LINC = 1
     2106  7402                 HLT             /ERR
     2107  7440                 SZA             /AC = 0
     2110  7402                 HLT             /ERR
     2111  6774                 RSTK            /READ STACK ADDRESS REGISTER INTO AC
     2112  3002                 DCA     IMAGE   /IMAGE OF AC
     2113  1002                 TAD     IMAGE   /GET IMAGE
     2114  7041                 CIA             /COMPLIMENT AND INC
     2115  1116                 TAD     K2177   /IMAGE SHOULD = 2177
     2116  7440                 SZA             /AC = 0
     2117  7402                 HLT             /ERR
```

```

         2120  5721               JMP I    .+1       /JMP TO
         2121  22ØØ               T35                /TEST 35
                          /
                          /TEST MAINTENANCE IOT SIMULATION OF
                          /A LEVEL Ø INTERRUPT IN LINC MODE
                          /--FIRST TIME AN INTERRUPT HAS BEEN SIMULATED--
                          /
               22ØØ               *22ØØ
                                  PMODE
         22ØØ  44Ø7       T35,    JMS I    CLRSTK    /CLEAR STACK
         22Ø1  4422               JMS I    IOPRES    /GENERATE IO PRESET
         22Ø2  1142               TAD      K7ØØØ     /AC = 7ØØØ OR 8-MODE NOP
         22Ø3  3442               DCA I    TSTA      /ENABLE INTERRUPT
         22Ø4  1Ø53               TAD      K37       /AC = 37
         22Ø5  6772               SMLV               /SET MACHINE LEVEL = 17
         22Ø6  734Ø               CLA CLL  CMA       /AC = 7777
         22Ø7  3ØØØ               DCA      LOCØ      /LOC Ø = 7777
         221Ø  1135               TAD      K56ØØ     /AC = 56ØØ
         2211  6776               SSTK               /SET STACK ADDRESS REGISTER = 56ØØ
         2212  72ØØ               CLA                /AC = Ø
         2213  1137               TAD      K6ØØØ     /AC = 6ØØØ
         2214  6777               SVEC               /SET VECTOR ADDRESS REGISTER = 6ØØØ
         2215  6141               LINC               /LINC MODE
                                  LMODE
         2216  ØØ11               CLR                /CLEAR AC LINK AND MQ
         2217  1Ø2Ø               LDA I              /AC =
         222Ø  6237               6ØØØ!T35A+1        /JMP TO T35A+1
         2221  1Ø4Ø               STA                /STORE IN
         2222  14Ø2               14Ø2               /LOC 14Ø2 OF CURRENT INSTRUCTION FIELD
         2223  ØØ11               CLR                /CLEAR AC LINC AND MQ
         2224  Ø474               FLO I              /FLO = Ø
         2225  ØØØØ               HLT                /ERR-FLO NOT = Ø
         2226  Ø5ØØ               IOB                /EXECUTE 8-MODE IOT
         2227  ØØØ6               APION              /TURN API INTERRUPT SYS ON
         223Ø  1Ø2Ø               LDA I              /AC =
         2231  4ØØØ               4ØØØ               /4ØØØ
         2232  Ø5ØØ               IOB                /EXECUTE 8-MODE INST
         2233  ØØ51               MAIN1              /SIMULATE API INTERRUPT - LEV Ø
         2234  ØØ16               NOP                /EXECUTES ONE MORE INST BEFORE INTERRUPT
         2235  ØØØØ               HLT                /ERR
```

```

2236  74Ø2    T35A,   JMP     UT37     /RETURN FROM LEV Ø INTERRRUPT IN LINC MODE
2237  146Ø            SAE I            /AC =
224Ø  4ØØØ            4ØØØ             /4ØØØ
2241  ØØØØ            HLT              /ERR-AC NOT = 4ØØØ
2242  Ø452            LZE              /LINC = Ø
2243  ØØØØ            HLT              /ERR-LINC NOT = Ø
2244  ØØØ5            QAC              /MQ Ø-1Ø TO AC 1=11
2245  Ø261            ROL I   1        /ROTATE LEFT 1
2246  Ø475            QLZ I            /SKIP IF MQ 11 = 1
2247  6252            JMP     .+3      /MQ BIT 11 = Ø
225Ø  162Ø            BSE I            /SET AC BIT Ø
2251  ØØØ1            1                /TO 1
2252  146Ø            SAE I            /AC =
2253  ØØØØ            Ø                /Ø
2254  ØØØØ            HLT              /ERR-AC NOT = Ø THEREFORE MQ WAS NOT = Ø
2255  Ø474            FLO I            /FLO = Ø
2256  ØØØØ            HLT              /ERR-FLO NOT = Ø
2257  ØØØ2            PDP              /8-MODE
                      PMODE
226Ø  6774            RSTK             /READ STACK ADDRESS REGISTER INTO AC
2261  3ØØ2            DCA     IMAGE    /IMAGE OF AC
2262  1ØØ2            TAD     IMAGE    /GET IMAGE
2263  7Ø41            CIA              /COMPLIMENT AND INC
2264  1116            TAD     K2177    /IMAGE SHOULD = 2177
2265  744Ø            SZA              /AC = Ø
2266  74Ø2            HLT              /ERR
2267  6773            RMLV             /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
227Ø  3ØØ2            DCA     IMAGE    /IMAGE OF AC
2271  1ØØ2            TAD     IMAGE    /GET IMAGE
2272  7Ø41            CIA              /COMPLIMENT AND INC
2273  1155            TAD     K776Ø    /IMAGE SHOULD = 776Ø
2274  744Ø            SZA              /AC = Ø
2275  74Ø2            HLT              /ERR
```

```


                        /
                        /TEST NON EXECUTION OF MAINTENANCE IOTS
                        /WITH API OFF AND FOR NO INTERRUPT
                        /OCCURING WHEN MAINTENANCE IOTS ARE ISSUED
                        /WITH THE AC = Ø AND API ON
                        /
      2276  44Ø7        T36,    JMS I   CLRSTK  /CLEAR STACK
      2277  44Ø6                JMS I   SETUP   /SET UP API REGISTERS
      23ØØ  34Ø4                DCA I   UT16A   /LOC UT16A = Ø
      23Ø1  1Ø53                TAD     K37     /AC = 37
      23Ø2  6772                SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
      23Ø3  734Ø                CLA CLL CMA     /AC = 7777
      23Ø4  6Ø51                MAIN1           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL Ø WITH API OFF
      23Ø5  7ØØØ                NOP             /DELAY
      23Ø6  7ØØØ                NOP             /DELAY
      23Ø7  6Ø52                MAIN2           /TRY TO SIMULATE AN API INTERRUPT WITH API OFF
      231Ø  7ØØØ                NOP             /DELAY
      2311  7ØØØ                NOP             /DELAY
      2312  73ØØ                CLA CLL         /AC = Ø
      2313  6772                SMLV            /SET MACHINE LEVEL = Ø
      2314  734Ø                CLA CLL CMA     /AC = 7777
      2315  6ØØ6                APION           /TURN API INTERRUPT SYS ON
      2316  6Ø51                MAIN1           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL Ø
      2317  7ØØØ                NOP             /MACHINE LEVEL OF Ø SHOULD PREVENT IT
      232Ø  7ØØØ                NOP             /DELAY
      2321  6Ø52                MAIN2           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL 12
      2322  7ØØØ                NOP             /MACHINE LEVEL OF Ø SHOULD PREVENT IT
      2323  7ØØØ                NOP             /DELAY
      2324  73ØØ                CLA CLL         /AC = Ø
      2325  1Ø53                TAD     K37     /AC = 37
      2326  6772                SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
      2327  73ØØ                CLA CLL         /AC = Ø
      233Ø  6Ø51                MAIN1           /TRY TO SIMULATE AN API INTERRUPT
      2331  7ØØØ                NOP             /AC = Ø (NO INTERRUPT LEVEL SET) SHOULD PREVENT IT
      2332  7ØØØ                NOP             /DELAY
      2333  6Ø52                MAIN2           /TRY TO SIMULATE AN API INTERRUPT
      2334  7ØØØ                NOP             /AC = Ø (NO INTERRUPT LEVEL SET) SHOULD PREVENT IT
      2335  7ØØØ                NOP             /DELAY
      2336  5737                JMP I   .+1     /JMP TO
      2337  24ØØ                T37             /TEST T37
```

```

                     ////
                     /TEST INTERRUPTS TO EACH LEVEL
                     ////
                     /
                     /TEST MAINTENANCE MODE SIMULATION OF
                     /A LEVEL 0 INTERRUPT TO LOC 6100 WITH MACHINE LEVEL = 17
                     /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600-5604
                     /AFTER SERVICING INTERRUPT RESTOR IOT RETURNS
                     /PROGRAM SEQUENCE TO START OF T40 TEST
                     /
           2400              *2400
     2400  4407      T37,    JMS I   CLRSTK  /CLEAR STACK
     2401  3405              DCA I   UT37A   /LOC UT37A = 0
     2402  4406              JMS I   SETUP   /SET UP API REGISTERS
     2403  1053              TAD     K37     /AC = 37
     2404  6772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
     2405  7300              CLA CLL         /CLEAR AC AND LINC
     2406  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
     2407  3561              DCA I   VEC0    /ENABLE LEVEL 0 INTERRUPT TO LOC VECT0
     2410  6006              APION           /TURN API INTERRUPT SYSTEM ON
     2411  1125              TAD     K4000   /AC = 4000
     2412  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 0 INTERRUPT
     2413  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
     2414  7402              HLT             /ERR
                     /
                     /TEST MAINTENANCE MODE SIMULATION OF
                     /A LEVEL 1 INTERRUPT TO LOC 6102 WITH MACHINE LEVEL = 17
                     /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
                     /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                     /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T41 TEST
                     /
     2415  7000      T40,    NOP
     2416  4407              JMS I   CLRSTK  /CLEAR STACK
     2417  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
     2420  3562              DCA I   VEC1    /ENABLE LEVEL 1 INTERRUPT TO LOC VECT1
     2421  1076              TAD     K2000   /AC = 2000
     2422  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 1 INTERRUPT
     2423  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
     2424  7402              HLT             /ERR
                     /
                     /TEST MAINTENANCE MODE SIMULATION OF
                     /A LEVEL 2 INTERRUPT TO LOC 6104 WITH MACHINE LEVEL = 17
                     /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
                     /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                     /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T42 TEST
                     /
     2425  7000      T41,    NOP
     2426  4407              JMS I   CLRSTK  /CLEAR STACK
     2427  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
     2430  3563              DCA I   VEC2    /ENABLE LEVEL 2 INTERRUPT TO LOC VECT2
     2431  1071              TAD     K1000   /AC = 1000
     2432  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 2 INTERRUPT
     2433  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
     2434  7402              HLT             /ERR
```

```
                        /
                        /TEST MAINTENANCE MODE SIMULATION OF
                        /A LEVEL 3 INTERRUPT TO LOC 61Ø6 WITH MACHINE LEVEL = 17
                        /AND WITH THE MACHINE STATUS SAVED ON LOC 56ØØ-56Ø4
                        /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                        /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T43 TEST
                        /
        2435  7ØØØ      T42,    NOP
        2436  44Ø7              JMS I   CLRSTK  /CLEAR STACK
        2437  1142              TAD     K7ØØØ   /AC = 7ØØØ OR 8-MODE NOP
        244Ø  3564              DCA I   VEC3    /ENABLE LEVEL 3 INTERRUPT TO LOC VECT3
        2441  1Ø65              TAD     K4ØØ    /AC = 4ØØ
        2442  6Ø51              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 3 INTERRUPT
        2443  7ØØØ              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
        2444  74Ø2              HLT             /ERR
                        /
                        /TEST MAINTENANCE MODE SIMULATION OF
                        /A LEVEL 4 INTERRUPT TO LOC 611Ø WITH MACHINE LEVEL = 17
                        /AND WITH THE MACHINE STATUS SAVED ON LOC 56ØØ-56Ø4
                        /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                        /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T44 TEST
                        /
        2445  7ØØØ      T43,    NOP
        2446  44Ø7              JMS I   CLRSTK  /CLEAR STACK
        2447  1142              TAD     K7ØØØ   /AC = 7ØØØ OR 8-MODE NOP
        245Ø  3565              DCA I   VEC4    /ENABLE LEVEL 4 INTERRUPT TO LOC VECT4
        2451  1Ø61              TAD     K2ØØ    /AC = 2ØØ
        2452  6Ø51              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 4 INTERRUPT
        2453  7ØØØ              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
        2454  74Ø2              HLT             /ERR
                        /
                        /TEST MAINTENANCE MODE SIMULATION OF
                        /A LEVEL 5 INTERRUPT TO LOC 6112 WITH MACHINE LEVEL = 17
                        /AND WITH THE MACHINE STATUS SAVED ON LOC 56ØØ-56Ø4
                        /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                        /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T45 TEST
                        /
        2455  7ØØØ      T44,    NOP
        2456  44Ø7              JMS I   CLRSTK  /CLEAR STACK
        2457  1142              TAD     K7ØØØ   /AC = 7ØØØ OR 8-MODE NOP
        246Ø  3566              DCA I   VEC5    /ENABLE LEVEL 5 INTERRUPT TO LOC VECT5
        2461  1Ø57              TAD     K1ØØ    /AC = 1ØØ
        2462  6Ø51              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 5 INTERRUPT
        2463  7ØØØ              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
        2464  74Ø2              HLT             /ERR
```

```

                        /
                        /TEST MAINTENANCE MODE SIMULATION OF
                        /A LEVEL 6 INTERRUPT TO LOC 6114 WITH MACHINE LEVEL = 17
                        /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
                        /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                        /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T46 TEST
                        /
        2465  7000      T45,    NOP
        2466  4407              JMS I   CLRSTK  /CLEAR STACK
        2467  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
        2470  3567              DCA I   VEC6    /ENABLE LEVEL 6 INTERRUPT TO LOC VECT6
        2471  1054              TAD     K40     /AC = 40
        2472  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 6 INTERRUPT
        2473  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
        2474  7402              HLT             /ERR
                        /
                        /TEST MAINTENANCE MODE SIMULATION OF
                        /A LEVEL 7 INTERRUPT TO LOC 6116 WITH MACHINE LEVEL = 17
                        /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
                        /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                        /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T47 TEST
                        /
        2475  7000      T46,    NOP
        2476  4407              JMS I   CLRSTK  /CLEAR STACK
        2477  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
        2500  3570              DCA I   VEC7    /ENABLE LEVEL 7 INNTERRUPT TO LOC VECT7
        2501  1052              TAD     K20     /AC = 20
        2502  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 7 INTERRUPT
        2503  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
        2504  7402              HLT             /ERR
                        /
                        /TEST MAINTENANCE MODE SIMULATION OF
                        /A LEVEL 8 INTERRUPT TO LOC 6120 WITH MACHINE LEVEL = 17
                        /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600-5604
                        /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
                        /RESTOR IOT RETURNS PROGRAM SEQUENCE TO T50 TEST
                        /
        2505  7000      T47,    NOP
        2506  4407              JMS I   CLRSTK  /CLEAR STACK
        2507  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
        2510  3571              DCA I   VEC10   /ENABLE LEVEL 8 INTERRUPT TO LOC VECT10
        2511  1050              TAD     K10     /AC = 10
        2512  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 8 INTERRUPT
        2513  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
        2514  7402              HLT             /ERR
```

```

                    /
                    /TEST MAINTENANCE MODE SIMULATION OF
                    /A LEVEL 9 INTERRUPT TO LOC 6122 WITH MACHINE LEVEL = 17
                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
                    /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T51 TEST
                    /
      2515  7000    T50,    NOP
      2516  4407            JMS I   CLRSTK  /CLEAR STACK
      2517  1142            TAD     K7000   /AC=7000 OR 8-MODE NOP
      2520  3572            DCA I   VEC11   /ENABLE LEVEL 9 INTERRUPT TO LOC VECT11
      2521  1046            TAD     K4      /AC=4
      2522  6051            MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 9 INTERRUPT
      2523  7000            NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
      2524  7402            HLT             /ERR
                    /
                    /TEST MAINTENANCE MODE SIMULATION OF
                    /A LEVEL 10 INTERRUPT TO LOC 6124 WITH MACHINE LEVEL=17
                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
                    /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T52 TEST
                    /
      2525  7000    T51,    NOP
      2526  4407            JMS I   CLRSTK  /CLEAR STACK
      2527  1142            TAD     K7000   /AC=7000 OR 8-MODE NOP
      2530  3573            DCA I   VEC12   /ENABLE LEVEL 10 INTERRRUPT TO LOC VECT12
      2531  1044            TAD     K2      /AC=2
      2532  6051            MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 10 INTERRUPT
      2533  7000            NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
      2534  7402            HLT             /ERR
                    /
                    /TEST MAINTENANCE MODE SIMULATION OF
                    /A LEVEL 11 INTERRUPT TO LOC 6126 WITH MACHINE LEVEL=17
                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
                    /AFTER SERVICING THE INTERRUPT AND INC PC IN LOC STACKK+1
                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T53 TEST
                    /
      2535  7000    T52,    NOP
      2536  4407            JMS I   CLRSTK  /CLEAR STACK
      2537  1142            TAD     K7000   /AC=7000 OR 8-MODE NOP
      2540  3574            DCA I   VEC13   /ENABLE LEVEL 11 INTERRUPT TO LOC VECT13
      2541  1043            TAD     K1      /AC=1
      2542  6051            MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 11 INTERRUPT
      2543  7000            NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
      2544  7402            HLT             /ERR
```

```

                  /
                  /TEST MAINTENANCE MODE SIMULATION OF
                  /A LEVEL 12 INTERRUPT TO LOC 6130 WITH MACHINE LEVEL=17
                  /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
                  /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
                  /RESTOR IOT RETURNS PROGRAM SEQUENCE TO JMP TO START OF T54 TEST
                  /
2545  7000        T53,    NOP
2546  4407                JMS I   CLRSTK  /CLEAR STACK
2547  1142                TAD     K7000   /AC=7000 OR 8-MODE NOP
2550  3575                DCA I   VEC14   /ENABLE LEVEL 12 INTERRUPT TO LOC VECT14
2551  1046                TAD     K4      /AC=4
2552  6052                MAIN2           /MAINTENANCE MODE SIMULATION OF LEVEL 12 INTERRUPT
2553  7000                NOP             /EXECUTES 1 MORE INST AFTER MAIN2 IOT
2554  7402                HLT             /ERR
2555  5756                JMP I   .+1     /JMP TO
2556  2600                T54             /TEST T54
                  /
                  /TEST MAINTENANCE MODE SIMULATION OF
                  /A LEVEL 13 INTERRUPT TO LOC 6132 WITH MACHINE LEVEL=17
                  /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
                  /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
                  /RESTOR IOT RETURNS PROGRAM SEQUENCE TO JMP TO START OF T54 TEST
                  /
      2600                *2600
2600  7000        T54,    NOP
2601  4407                JMS I   CLRSTK  /CLEAR STACK
2602  1142                TAD     K7000   /AC=7000 OR 8-MODE NOP
2603  3576                DCA I   VEC15   /ENABLE LEVEL 13 INTERRUPT TO LOC VECT15
2604  1044                TAD     K2      /AC=2
2605  6052                MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 13 INTERRUPT
2606  7000                NOP             /EXECUTES 1 MORE INST AFTER MAIN2 IOT
2607  7402                HLT             /ERR
                  /
                  /TEST MAINTENANCE MODE SIMULATION OF
                  /A LEVEL 14 INTERRUPT TO LOC 6134 WITH MACHINE LEVEL=17
                  /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
                  /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
                  /RESTOR IOT RETURNS PROGRAM SEQUENCE TO JMP TO START OF T56 TEST
                  /
2610  7000        T55,    NOP
2611  4407                JMS I   CLRSTK  /CLEAR STACK
2612  1142                TAD     K7000   /AC=7000 OR 8-MODE NOP
2613  3577                DCA I   VEC16   /ENABLE LEVEL 14 INTERRUPT TO LOC VECT16
2614  1043                TAD     K1      /AC=1
2615  6052                MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 14 INTERRUPT
2616  7000                NOP             /EXECUTES 1 MORE INST AFTER MAIN2 IOT
2617  7402                HLT             /ERR
```

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                        /
                        /MAINTENANCE MODE SIMULATION OF MULTIPLE LEVEL INTERRUPTS
                        /TESTS THAT HIGHEST PRIORITY INTERRUPT IS ACCEPTED
                        /VECTOR ADDRESS REGISTER IS SET TO 63ØØ
                        /A MAXIMUM OF 16 OCTAL LEVELS OF INTERRUPTS ARE SAVED ON THE STACK
                        /
262Ø  732Ø              T56,    CLA CLL         /AC=Ø
2621  1134                      TAD     K5577   /AC=5577
2622  3Ø1Ø                      DCA     1Ø      /LOC 1Ø=5577
2623  1152                      TAD     K76ØØ   /AC=76ØØ
2624  3Ø11                      DCA     11      /LOC11=76ØØ
2625  341Ø                      DCA I   1Ø      /CLEAR STACK STARTING WITH LOCATION 56ØØ
2626  2Ø11                      ISZ     11      /DONE 2ØØ TIMES
2627  5225                      JMP     .-2     /NO-DO IT AGAIN
263Ø  44Ø6                      JMS I   SETUP   /SET UP API REGISTERS
2631  1Ø53                      TAD     K37     /AC=37
2632  6772                      SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
2633  72ØØ                      CLA             /AC=Ø
2634  1141                      TAD     K63ØØ   /AC = 63ØØ
2635  6777                      SVEC            /SET VECTOR ADDRESS REGISTER=64ØØ
2636  73ØØ                      CLA CLL         /CLEAR AC AND LINC
2637  6775                      RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
264Ø  3ØØ2                      DCA     IMAGE   /IMAGE OF AC
2641  1ØØ2                      TAD     IMAGE
2642  7Ø41                      CIA             /COMPLIMENT AND INC
2643  1Ø72                      TAD     K1441   /IMAGE SHOULD = 1441
2644  744Ø                      SZA             /AC=Ø
2645  74Ø2                      HLT             /ERR
2646  1142                      TAD     K7ØØØ   /AC=7ØØØ OR 8-MODE NOP
2647  3671                      DCA I   MV16    /ENABLE LEVEL 16 INTERRUPT TO LOC MLV16
265Ø  1Ø43                      TAD     K1      /AC=1
2651  6ØØ6                      APION           /TURN API INTERRUPT SYSTEM ON
2652  6Ø52                      MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 14 INTERRUPT
2653  7ØØØ                      NOP             /EXECUTES 1 MORE INSTRUCTION AFTER MAIN2 IOT
2654  74Ø2                      HLT             /ERR
2655  73ØØ              T56A,   CLA CLL         /AC=Ø--RESTORE OCCURS TO HERE FROM MV16 ROUTINE
2656  6774                      RSTK            /READ STACK ADDRESS REGISTER INTO AC
2657  3ØØ2                      DCA     IMAGE   /IMAGE OF AC
266Ø  1ØØ2                      TAD     IMAGE
2661  7Ø41                      CIA             /COMPLIMENT AND INC
2662  1116                      TAD     K2177   /IMAGE SHOULD=2177
2663  744Ø                      SZA             /AC=Ø
2664  74Ø2                      HLT             /ERR
2665  115Ø                      TAD     K74Ø2   /AC=74Ø2 OR 8-MODE HLT
2666  3671                      DCA I   MV16    /DEPOSIT IN LOC MLV16
2667  567Ø                      JMP I   .+1     /JMP TO
267Ø  3ØØØ                      T57             /TEST T57
                        /
2671  642Ø              MV16,   MLV16
```

```



                    /
                    /TEST THAT DJR LIF AND CIF INSTRUCTIONS
                    /WHEN ISSUED WILL PREVENT API INTERRUPTS
                    /UNTIL A JMP INSTRUCTION IS EXECUTED
                    /
              3000          *3000
        3000  7300  T57,    CLA CLL         /CLEAR AC AND LINC
        3001  4427          JMS I   CLRSTK  /CLEAR STACK
        3002  4426          JMS I   SETUP   /SET UP API REGISTERS
        3003  1053          TAD     K37     /AC=37
        3004  6772          SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
        3005  7340          CLA CLL CMA     /AC=7777
        3006  6006          APION           /TURN API INTERRUPT SYSTEM ON
        3007  6141          LINC            /LINC MODE
                            LMODE
        3010  0006          DJR             /DISABLE JMP RETURN
        3011  0520          IOB             /TRY TO EXECUTE 8-MODE INST
        3012  0051          MAIN1           /TRY TO SIMULATE API INTERRUPT TO LEVEL 0
        3013  0016          NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
        3014  0016          NOP             /DJR SHOULD PREVENT INTERRUPT
        3015  0500          IOB             /EXECUTE 8-MODE INST
        3016  0052          MAIN2           /TRY TO SIMULATE API INTERRUPT TO LEVEL 12
        3017  0016          NOP             /EXECUTE 1 MORE INST AFTER MAIN2 IOT
        3020  0016          NOP             /DJR SHOULD PREVENT INTERRUPT
        3021  1020          LDA I           /AC=
        3022  7000          7000            /7000 OR 8-MODE NOP
        3023  1040          STA             /STORE IN LOC
        3024  6140          VECT0           /VECT0
        3025  7026          JMP     .+1     /ENABLE INTERRUPTS BY ISSUING A JMP INST
        3026  0016          NOP             /EXECUTE 1 INST THAN INTERRUPT TO LEVEL 0 (HIGHEST PRIORITY)
        3027  0000          HLT             /ERR-DID NOT INTERRUPT
        3030  0601          LIF     1       /SET INSTRUCTION FIELD 1==RETURN AFTER RESTORE IOT
        3031  1020          LDA I           /AC=
        3032  7777          7777            /7777
        3033  0500          IOB             /EXECUTE AN 8-MODE INST
        3034  0051          MAIN1           /TRY TO SIMULATE API INTERRUPT TO LEVEL 0
        3035  0016          NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
        3036  0016          NOP             /LIF INST SHOULD PREVENT INTERRUPT
        3037  0500          IOB             /EXECUTE AN 8-MODE INST
        3040  0052          MAIN2           /TRY TO SIMULATE API INTERRUPT TO LEVEL 12
        3041  0016          NOP             /EXECUTE 1 MORE INST AFTER MAIN2 IOT
        3042  0016          NOP             /LIF INST SHOULD PREVENT INTERRUPT
        3043  7044          JMP     .+1     /2 JMP INSTRUCTIONS ARE NECESSARY AFTER A LIF INST IN LINC MODE
        3044  0016          NOP             /TO ENABLE THE INTERRUPTS AGAIN
        3045  1020          LDA I           /AC=
        3046  7000          7000            /7000 OR AN 8-MODE NOP
```

```

3047 1Ø4Ø             STA                 /STORE IN LOC
3Ø5Ø 614Ø             VECTØ               /VECTØ
3Ø51 7Ø52             JMP       .+1       /ENABLE INTERRUPTS BY ISSUING A JMP INST
3Ø52 ØØØØ             HLT                 /ERR-DID NOT INTERRUPT IMEEDIATELY AFTER JMP
3Ø53 ØØØ2             PDP                 /8-MODE
                      PMODE
3Ø54 734Ø             CLA CLL CMA         /AC=7777
3Ø55 62Ø2             CIF                 /CHANGE INSTRUCTION FIELD
3Ø56 6Ø51             MAIN1               /TRY TO SIMULATE AN API INTERRUPT TO LEVEL Ø
3Ø57 7ØØØ             NOP                 /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3Ø6Ø 7ØØØ             NOP                 /CIF INST SHOULD PREVENT INTERRUPT
3Ø61 6Ø52             MAIN2               /TRY TO SIMULATE AN API INTERRUPT TO LEVEL 12
3Ø62 7ØØØ             NOP                 /EXECUTE 1 MORE INST AFTER MAIN2 IOT
3Ø63 7ØØØ             NOP                 /CIF INST SHOULD PREVENT INTERRUPT
3Ø64 1142             TAD       K7ØØØ     /AC=7ØØØ OR 8-MODE NOP
3Ø65 35Ø1             DCA I     VECØ      /STORE IN LOC VECTØ
3Ø66 5267             JMP       .+1       /ENABLE INTERRUPTS BY ISSUING A JMP INST
3Ø67 7ØØØ             NOP                 /EXECUTE 1 MORE INST THAN INTERRUPT TO LEVEL Ø (HIGHEST PRIORITY)
3Ø7Ø 74Ø2             HLT                 /ERR
```

```

                      /
                      /TEST THAT A DJR INSTRUCTION WHEN ISSUED AND
                      /NORMAL OPERATION IS REENABLED WITH A JMP INST
                      /WILL ALLOW A RESTORE IOT TO BE EXECUTED IMMEDIATELY
                      /
3071  7300            T60,    CLA CLL           /CLEAR AC AND LINC
3072  4427                    JMS I   CLRSTK    /CLEAR STACK
3073  4426                    JMS I   SETUP     /SET UP API REGISTERS
3074  1053                    TAD     K37       /AC=37
3075  6772                    SMLV              /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
3076  7200                    CLA               /AC=0
3077  6006                    APION             /TURN API INTERRUPT SYSTEM ON
3100  6141                    LINC              /LINC MODE
                              LMODE
3101  0500                    IOB               /EXECUTE 8-MODE INST
3102  0760                    PJAI0             /PUSH JUMP WITH FIELD BITS=0
3103  3112                    2000!T60A         /TO LOC T60A
3104  0000                    HLT               /ERR--RESTORE IOT RET PROG SEQ TO THIS LOC AFTER ALTERED TO A NOP
3105  0002                    PDP               /8-MODE
                              PMODE
3106  7200                    CLA               /AC = 0
3107  3304                    DCA     .-3       /CHANGE LOC .-3 BACK TO A LINC MODE HLT
3110  5711                    JMP I   .+1       /JMP TO
3111  3200                    T61               /TEST T61
                              LMODE
3112  0011            T60A,   CLR               /ARRIVE HERE FROM PUSH JUMP
3113  0002                    PDP               /8-MODE
                              PMODE
3114  1433                    TAD I   STACK+1 /GET PC STORED IN STACK+1
3115  7041                    CIA               /COMPLIMENT AND INC
3116  1333                    TAD     T60AM6  /PC STORED IN STACKK+1 SHOULD=T60A-6
3117  7440                    SZA               /AC=0
3120  7402                    HLT               /ERR
3121  6141                    LINC              /LINC MODE
                              LMODE
3122  0006                    DJR               /DISABLE JUMP RETURN
3123  1020                    LDA I             /AC=
3124  0016                    16                /16 OR A LINC MODE NOP
3125  1040                    STA               /STORE IN LOC
3126  1104                    T60A-6            /T60A-6
3127  7130                    JMP     .+1       /ENABLE RESTORE IOT BY ISSUING A JMP INST
3130  0500                    IOB               /EXECUTE 8-MODE INST
3131  0771                    RES               /RESTORE
3132  0000                    HLT               /ERR
                              PMODE
                      /
3133  3104            T60AM6, T60A-6
```

```

                        /
                        /TEST THAT A LIF INSTRUCTION WHEN ISSUED
                        /AND NORMAL OPERATION IS REENABLED WITH A JMP INST
                        /WILL ALLOW A RESTORE IOT TO BE EXECUTED IMMEDIATELY
                        /
        32ØØ                    *32ØØ
32ØØ    73ØØ            T61,    CLA CLL         /CLEAR AC AND LINC
32Ø1    44Ø7                    JMS I   CLRSTK  /CLEAR STACK
32Ø2    44Ø6                    JMS I   SETUP   /SET UP API REGISTERS
32Ø3    1Ø53                    TAD     K37     /AC=37
32Ø4    6772                    SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
32Ø5    72ØØ                    CLA             /AC=Ø
32Ø6    6ØØ6                    APION           /TURN API INTERRUPT SYSTEM ON
32Ø7    6141                    LINC            /LINC MODE
                                LMODE
321Ø    Ø5ØØ                    IOB             /EXECUTE 8-MODE INST
3211    Ø76Ø                    PJA!Ø           /PUSH JUMP WITH FIELD BITS=Ø
3212    322Ø                    2ØØØ!T61A       /TO LOC T61A
3213    ØØØØ                    HLT             /ERR--RESTORE IOT RET PROG SEQ TO THIS LOC AFTER ALTERED BY A NOP
3214    ØØØ2                    PDP             /8-MODE
                                PMODE
3215    72ØØ                    CLA             /AC = Ø
3216    3213                    DCA     .-3     /CHANGE LOC .-3 BACK TO A LINC MODE HLT
3217    5243                    JMP     T62     /EXECUTE TEST T62
                                LMODE
322Ø    ØØ11            T61A,   CLR             /ARRIVE HERE FROM PUSH JUMP
3221    ØØØ2                    PDP             /8-MODE
                                PMODE
3222    1433                    TAD I   STACK+1 /GET PC STORED IN LOC STACKK+1
3223    7Ø41                    CIA             /COMPLIMENT AND INC
3224    1275                    TAD     T61AM5  /PC STORED IN LOC STACKK+1 SHOULD=T61A-3
3225    744Ø                    SZA             /AC=Ø
3226    74Ø2                    HLT             /ERR
3227    6141                    LINC            /LINC MODE
                                LMODE
323Ø    Ø6Ø1                    LIF     1       /LOAD INSTRUCTION FIELD 1
3231    7232                    JMP     .+1     /2 JMP INSTRUCTIONS ARE NECESSARY AFTER A LIF INST IN LINC MODE
3232    ØØ16                    NOP             /TO ENABLE RESTORE IOT
3233    1Ø2Ø                    LDA I           /AC =
3234    ØØ16                    16              /16 OR A LINC MODE NOP
3235    1Ø4Ø                    STA             /STORE NOP IN LOC
3236    1213                    T61A-5          /T61A-5
3237    724Ø                    JMP     .+1     /ENABLE RESTOR IOT BY DOING A JMP INST
324Ø    Ø5ØØ                    IOB             /EXECUTE 8-MODE INST
3241    Ø771                    RES             /RESTORE
3242    ØØØØ                    HLT             /ERR
```

```

                /
                /TEST THAT A CIF INSTRUCTION WHEN ISSUED
                /AND NORMAL OPERATION IS REENABLED WITH A JMP INST
                /WILL ALLOW A RESTORE IOT TO BE EXECUTED IMMEDIATELY
                /
                        PMODE
3243  73ØØ      T62,    CLA CLL         /CLEAR AC AND LINC
3244  44Ø7              JMS I   CLRSTK  /CLEAR STACK
3245  44Ø6              JMS I   SETUP   /SET UP API REGISTERS
3246  1Ø53              TAD     K37     /AC=37
3247  6772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
325Ø  72ØØ              CLA             /AC=Ø
3251  6ØØ6              APION           /TURN API INTERRUPT SYSTEM ON
3252  676Ø              PJAIØ           /EXECUTE A PUSHJ IOT WITH FIELD BITS=Ø
3253  3262              T62A            /TO LOC T62A
3254  74Ø2              HLT             /ERR
3255  72ØØ              CLA             /RESTOR IOT RETURNS PROGRAM SEQUENCE TO THIS POINT
3256  115Ø              TAD     K74Ø2   /AC = 74Ø2 OR AN 8-MODE HLT
3257  3254              DCA     .-3     /STORE IN LOC .-3
326Ø  5661              JMP I   .+1     /CONTINUE WITH
3261  34Ø3              T63             /TEST T63
3262  73ØØ      T62A,   CLA CLL         /ARRIVE HERE FROM PUSHJ IOT
3263  1433              TAD I   STACK+1 /GET PC STORED IN LOC STACKK+1
3264  7Ø41              CIA             /COMPLIMENT AND INC
3265  1276              TAD     T62AM6  /PC STORED IN LOC STACKK+1 SHOULD=T62A-6
3266  62Ø2              CIF             /CHANGE INSTRUCTION FIELD
3267  73ØØ              CLA CLL         /AC=Ø
327Ø  1142              TAD     K7ØØØ   /AC = 7ØØØ OR AN 8-MODE NOP
3271  3254              DCA     T62A-6  /DEPOSIT IN LOC T62A-6
3272  5273              JMP     .+1     /ENABLE RESTORE IOT BY DOING A JMP INST
3273  6771              RES             /RESTORE
3274  74Ø2              HLT             /ERR
                /
3275  3213      T61AM5, T61A-5
3276  3254      T62AM6, T62A-6
                /
                /IF AN 8 MODE HALT WERE ENCOUNTERED IN
                /LINC MODE IT WOULD DECODE AS A JMP TO
                /LOC 14Ø2 OF THE CURRENT LINC INSTRUCTION FIELD
                /THUS TO HALT THE PROGRAM IN THIS EVENT
                /WE SET LOC 14Ø2 = Ø A LINC MODE HALT
                /
      34Ø2              *34Ø2
                        LMODE
34Ø2  ØØØØ      UT37,   Ø
                        PMODE

                        /
                        /TEST THAT STATUS OF SKIP FLIP FLOP IS SAVED
                        /WHEN AN INTERRUPT OCCURS AT THE SAME TIME AS A SKIP INSTRUCTION
                        /
              3403              *3403
      3403    7300      T63,    CLA CLL         /CLEAR AC AND LINC
      3404    4407              JMS I   CLRSTK  /CLEAR STACK
      3405    4406              JMS I   SETUP   /SET UP API REGISTERS
      3406    6006              APION           /TURN API INTERRUPT SYSTEM ON
      3407    1053              TAD     K37     /AC = 37
      3410    6772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
      3411    7200              CLA             /AC = 0
      3412    1142              TAD     K7000   /AC = 7000 OR AN 8-MODE NOP
      3413    3561              DCA I   VEC0    /ENABLE LEVEL 0 INTERRUPT TO LOC VECT0
      3414    1125              TAD     K4000   /AC = 4000
      3415    6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 0 INTERRUPT
      3416    7410              SKP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
      3417    7402              HLT
      3420    7402              HLT             /ERR-STATUS OF SKIP FLIP FLOP WAS NOT SAVED
```

```

                    /
                    /RUN RANDOM NUMBER PATTERN WITH MAIN1 AND MAIN2 IOTS
                    /TO TEST THAT INHIBIT OF INTERRUPTS BY THE SMLV IOT
                    /WORKS FOR A RANDOM SELECTION OF NUMBERS
                    /4ØØ RANDOM NUMBER COMBINATIONS WILL BE TESTED FOR
                    /EACH POSSIBLE SETTING OF THE MACHINE LEVEL REGISTER
                    /
3421  73ØØ          T64,    CLA CLL         /CLEAR AC AND LINC
3422  44Ø7                  JMS I   CLRSTK  /CLEAR STACK
3423  44Ø6                  JMS I   SETUP   /SET UP API REGISTERS
3424  6ØØ6                  APION           /TURN API INTERRUPT SYSTEM ON
3425  1123                  TAD     K35ØØ   /AC = 35ØØ
3426  6777                  SVEC            /SET VECTOR ADDRESS REGISTER = 35ØØ
3427  734Ø                  CLA CLL CMA     /AC = 7777
343Ø  3355                  DCA     MASK1   /MASK FOR RAN1
3431  1Ø47                  TAD     K7      /AC = 7
3432  3356                  DCA     MASK2   /MASK FOR RAN2
3433  3Ø1Ø                  DCA     1Ø      /LOC 1Ø = Ø
3434  73ØØ          MORE,   CLA CLL         /CLEAR AC AND LINC
3435  1147                  TAD     K74ØØ   /AC = 74ØØ
3436  3Ø11                  DCA     11      /LOC 11 = 74ØØ
3437  1Ø1Ø                  TAD     1Ø      /AC = LOC 1Ø
344Ø  6772                  SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = LOC 1Ø
3441  4424                  JMS I   RAN     /GENERATE RANDOM NUMBERS RAN1 AND RAN2
3442  1Ø25                  TAD     RAN1    /AC = RAN1
3443  Ø355                  AND     MASK1   /MASK
3444  6Ø51                  MAIN1           /TRY TO SIMULATE A MAINTENANCE MODE INTERRUPT
3445  7ØØØ                  NOP
3446  7ØØØ                  NOP
3447  72ØØ                  CLA             /AC = Ø
345Ø  1Ø26                  TAD     RAN2    /AC = RAN2
3451  Ø356                  AND     MASK2   /MASK
3452  6Ø52                  MAIN2           /TRY TO SIMULATE A MAINTENANCE MODE INTERRUPT
3453  7ØØØ                  NOP
3454  7ØØØ                  NOP
3455  2Ø11                  ISZ     11      /INC LOC 11--IF Ø DONE 4ØØ RANDOM COMBINATIONS ON PARTICULAR MACHINE LEVEL SETTING
3456  5241                  JMP     MORE+5  /NOT DONE
3457  73ØØ                  CLA CLL         /CLEAR AC AND LINC
346Ø  1355                  TAD     MASK1   /AC = MASK1
3461  7Ø1Ø                  RAR             /ROTATE AC RIGHT 1
3462  3355                  DCA     MASK1   /STORE BACK IN LOC MASK1
3463  743Ø                  SZL             /SKIP IF LINC = Ø
3464  5273                  JMP     .+7     /DO NOT ALTER MASK2 YET
3465  73ØØ                  CLA CLL         /CLEAR AC AND LINC
3466  1356                  TAD     MASK2   /AC = MASK2
3467  7Ø1Ø                  RAR             /ROTATE AC RIGHT 1
347Ø  3356                  DCA     MASK2   /STORE BACK IN LOC MASK2
3471  742Ø                  SNL             /SKIP IF LINC = 1
3472  5336                  JMP     T65     /DONE GO TO TEST T65
3473  73ØØ                  CLA CLL         /CLEAR AC AND LINC
3474  2Ø1Ø                  ISZ     1Ø      /INCREMENT LOC 1Ø
3475  5234                  JMP     MORE    /CHANGE MACHINE LEVEL AND DO AGAIN
3476  74Ø2                  HLT             /SHOULD NEVER GET HERE
```

```
                        /
                        /VECTOR ADDRESS POINTER TABLE
                        /USED WITH TEST T65
                        /SHOULD NEVER GET AN INTERRUPT
                        /
            35ØØ                *35ØØ
     35ØØ   74Ø2                HLT
     35Ø1   74Ø2                HLT
     35Ø2   74Ø2                HLT
     35Ø3   74Ø2                HLT
     35Ø4   74Ø2                HLT
     35Ø5   74Ø2                HLT
     35Ø6   74Ø2                HLT
     35Ø7   74Ø2                HLT
     351Ø   74Ø2                HLT
     3511   74Ø2                HLT
     3512   74Ø2                HLT
     3513   74Ø2                HLT
     3514   74Ø2                HLT
     3515   74Ø2                HLT
     3516   74Ø2                HLT
     3517   74Ø2                HLT
     352Ø   74Ø2                HLT
     3521   74Ø2                HLT
     3522   74Ø2                HLT
     3523   74Ø2                HLT
     3524   74Ø2                HLT
     3525   74Ø2                HLT
     3526   74Ø2                HLT
     3527   74Ø2                HLT
     353Ø   74Ø2                HLT
     3531   74Ø2                HLT
     3532   74Ø2                HLT
     3533   74Ø2                HLT
     3534   74Ø2                HLT
     3535   74Ø2                HLT
                        /
                        /UPPER MEMORY INTERRUPT AND PUSH JUMP-RESTORE TEST
                        /ONLY EXECUTES IF SNS SW Ø IS SET AND
                        /RSW BITS 9-11 NOT = Ø OR SET TO NUMBER OF SEQUENTIAL 4K SECTIONS TO BE TESTED
                        /
     3536   73ØØ        T65,    CLA CLL         /CLEAR AC AND LINC
     3537   6141                LINC            /LINC MODE
                                LMODE
     354Ø   Ø44Ø                SNS     Ø       /SENSE SWITCH Ø = 1
     3541   7545                JMP     T66     /NO-GO TO NEXT TEST
     3542   ØØØ2                PDP             /CHANGE TO 8-MODE
                                PMODE
     3543   4757                JMS I   EXTME   /GO TO EXTME (EXTENDED MEMORY TEST SECTION) ROUTINE
     3544   5345                JMP     T66     /GO TO TEST T66
```

```

                        /
                        /RETURN TO TEST TØ IF LOC 17 = Ø
                        /OTHERWISE RETURN TO TEST T1
                        /
        3545    ØØ02    T66,    PDP             /CHANGE TO 8-MODE
                                PMODE
        3546    73ØØ            CLA CLL         /CLEAR AC AND LINC
        3547    2Ø17            ISZ     17      /INCREMENT LOCATION 17
        355Ø    5353            JMP     .+3     /JMP .+3
        3551    5752            JMP I   .+1     /LOC 17 = Ø-RETURN TO
        3552    Ø4ØØ            TØ              /TEST TØ
        3553    5754            JMP I   .+1     /LOC 17 NOT = Ø-RETURN TO
        3554    Ø431            T1              /TEST T1
                        /
        3555    ØØØØ    MASK1,  Ø
        3556    ØØØØ    MASK2,  Ø
        3557    4ØØ1    EXTME,  EXTMEM          /EXTENDED MEMORY TEST
                        /
                        ///////////////////////////////////////
                        /--------END OF PROGRAM--------------/
                        ///////////////////////////////////////
                        /
                        /
```

```

                         /
                         //
                         ////
                         ////////
                         ////////////////////////////////////////
                         ////////
                         ////
                         //
                         /
                         /
                         /EXTENDED MEMORY TEST ROUTINE
                         /CONTROL PORTION OF EXTENDED MEMORY INTERRUPT TEST
                         /RIGHT SWITCHES 9-11 SHOULD BE SET = TO THE
                         /NUMBER OF ADDITIONAL SEQUENTIAL 4K FIELDS TO BE TESTED
                         /
          4001                 *4001
    4001  0000           EXTMEM, 0
    4002  6002                 IOF                     /TURN ALL INTERRUPT SYSTEMS OFF
    4003  6141                 LINC                    /LINC MODE
                               LMODE
    4004  0642                 LDF     2               /SET DATA FIELD 2
    4005  0011                 CLR                     /CLEAR AC LINC AND MQ
    4006  0002                 PDP                     /8-MODE
                               PMODE
    4007  7604                 LAS                     /AC=RIGHT SWITCHES
    4010  0047                 AND     K7              /MASK OFF AC BITS 0-8
    4011  7440                 SZA                     /SKIP IF AC = 0
    4012  5215                 JMP     .+3             /AC BITS 9-11 NOT = 0 - UPPER MEM SEL
    4013  7402                 HLT                     /AC BITS 9-11 = 0--UPPER MEMRY BANKS TO BE TESTED ARE NOT SELECTED
    4014  5207                 JMP     .-5             /SET SW REG BITS 0-11 AS DESIRED--THAN HIT KEY CONTINUE
    4015  7041                 CIA                     /COMPLIMENT AND INCREMENT
    4016  3365                 DCA     EXTCIA          /DEPOSIT IN LOC EXTCIA
    4017  1044                 TAD     K2              /AC=2
    4020  3772                 DCA I   EXXXI           /DEPOSIT IN LOC EXXX
    4021  1043                 TAD     K1              /AC=1
    4022  3774                 DCA I   EFLDI           /DEPOSIT IN LOC EFLD
    4023  1126                 TAD     K4400           /AC=4400
    4024  6777                 SVEC                    /SET VECTOR ADDRESS REGISTER=4400
    4025  7200                 CLA                     /AC=0
    4026  1376                 TAD     EXTST           /ADDRESS OF STACK STARTING LOC IN AC
    4027  6776                 SSTK                    /SET STACK ADDRESS REGISTER=EXTSTK
    4030  7200                 CLA                     /AC=0
    4031  1053                 TAD     K37             /AC=37
    4032  3370                 DCA     KMLV            /DEPOSIT IN LOC KMLV
    4033  1043                 TAD     K1              /AC=1
    4034  3366                 DCA     EXTCTR          /DEPOSIT IN LOC EXTCTR
    4035  7300           EXTGO, CLA CLL                /CLEAR AC AND LINC
    4036  6002                 IOF                     /TURN ALL INTERRUPT SYSTEMS OFF
    4037  1370                 TAD     KMLV            /AC=LOC KMLV
    4040  1363                 TAD     K1100           /INCREMENT STACK AND VECTOR FIELD BITS
    4041  6772                 SMLV                    /SET STACK AND VECTOR FIELD BITS AND ALSO MACHINE LEVEL=17
    4042  3370                 DCA     KMLV            /DEPOSIT IN LOC KMLV
```

```


4043  1775          TAD I   EALTPJ        /AC=LOC EALTPJ
4044  0156          AND     K7770         /MASK OFF BITS 9-11
4045  1366          TAD     EXTCTR        /ADD LOC EXTCTR
4046  3775          DCA I   EALTPJ        /DEPOSIT IN LOC EALTP
4047  1366          TAD     EXTCTR        /AC=LOC EXTCTR
4050  7006          RTL                   /ROTATE LEFT 2
4051  7004          RAL                   /ROTATE LEFT 1
4052  3773          DCA I   EIFI          /DEPOSIT IN LOC EIF
4053  1772          TAD I   EXXXI         /AC=LOC EXXX
4054  1061          TAD     K200          /ADD 200 TO AC
4055  3772          DCA I   EXXXI         /DEPOSIT IN LOC EXXX
4056  1774          TAD I   EFLDI         /AC=LOC EFLD
4057  1363          TAD     K1100         /ADD 1100 TO AC
4060  3774          DCA I   EFLDI         /DEPOSIT IN LOC EFLD
4061  1364          TAD     K4377         /AC=4377
4062  3010          DCA     10            /DEPOSIT IN LOC 10
4063  1364          TAD     K4377         /AC=4377
4064  3011          DCA     11            /DEPOSIT IN LOC 11
4065  1152          TAD     K7600         /AC=7600
4066  3012          DCA     12            /DEPOSIT IN LOC 12
4067  1364          TAD     K4377         /AC=4377
4070  3013          DCA     13            /DEPOSIT IN LOC 13
4071  1366          TAD     EXTCTR        /AC=LOC EXTCTR
4072  7006          RTL                   /ROTATE LEFT 2
4073  7004          RAL                   /ROTATE LEFT 1
4074  1371          TAD     KCDF          /ADD LOC KCDF TO AC
4075  3304          DCA     ALT0          /DEPOSIT CREATED CDF INST IN LOC ALT0
4076  1304          TAD     ALT0          /AC = LOC ALT0
4077  3340          DCA     ALT1          /DEPOSIT CREATED CDF INST IN LOC ALT1
4100  1304          TAD     ALT0          /AC = LOC ALT0
4101  3344          DCA     ALT2          /DEPOSIT CREATED CDF INST IN LOC ALT2
4102  7300          CLA CLL               /CLEAR AC AND LINC
4103  1410          TAD I   10            /AC = CONTENTS OF ADD SPECIFIED BY LOC 10
4104  0000  ALT0,   0000                  /CREATED CDF INST
4105  3411          DCA I   11            /DEPOSIT AC IN LOC SPECIFIED BY CONTENTS LOC 11 AND DATA FIELD SEL
4106  6201          CDF                   /SET DF = 0
4107  3413          DCA I   13            /DEPOSIT AC IN ADDRESS +1 SPECIFIED BY LOC 13
4110  2012          ISZ     12            /INCREMENT LOC 12 AND SKIP IF = 0
4111  5302          JMP     .-7           /LOC 12 NOT = 0--MOVE NEXT LOC TO FIELD TO BE TESTED
4112  6006          APION                 /TURN API INTERRUPT SYSTEM ON
4113  1125          TAD     K4000         /AC=4000
4114  6051          MAIN1                 /SIMULATE AN API INTERRUPT TO LEVEL 0
4115  7000          NOP                   /EXECUTE 1 MORE INST AFTER MAIN1 IOT
4116  7402          HLT                   /ERR-MAIN1 IOT DID NOT EXECUTE
```

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4117 73ØØ    EXTRET, CLA CLL                 /CLEAR AC AND LINC--RESTORE FROM EXTENDED FIELD OCCURS TO HERE
4120 6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
4121 3ØØ2            DCA     IMAGE           /IMAGE OF AC
4122 1ØØ2            TAD     IMAGE           /GET IMAGE
4123 7ØØ1            IAC                     /INCREMENT
4124 1367            TAD     EXTX            /STACK ADDRESS SHOULD=EXTX
4125 744Ø            SZA                     /AC=Ø
4126 74Ø2            HLT                     /ERR-STACK ADDRESS REG NOT=3236
4127 1364            TAD     K4377           /AC=4377
413Ø 3Ø1Ø            DCA     1Ø              /LOC 1Ø = 4377
4131 1364            TAD     K4377           /AC = 4377
4132 3Ø11            DCA     11              /LOC 11=4377
4133 1152            TAD     K76ØØ           /AC=76ØØ
4134 3Ø12            DCA     12              /LOC 1Ø=76ØØ
4135 1364            TAD     K4377           /AC=4377
4136 3Ø13            DCA     13              /LOC 13=4377
4137 73ØØ            CLA CLL                 /CLEAR AC AND LINC
414Ø ØØØØ    ALT1,   ØØØØ                    /CHANGE DATA FIELD TO EXTENDED MEMORY FIELD JUST TESTED
4141 141Ø            TAD I   1Ø              /LOAD AC WITH LOC OF SEGMENT OF PROGRAM TO FIELD JUST TESTED
4142 62Ø1            CDF                     /CHANGE TO DATA FIELD Ø
4143 3411            DCA I   11              /DEPOSIT AC IN ADDRESS+1 SPECIFIED BY LOC 11
4144 ØØØØ    ALT2,   ØØØØ                    /CHANGE DATA FIELD TO EXTENDED MEMORY FIELD JUST TESTED
4145 3413            DCA I   13              /CLEAR EXTENDED MEMORY LOC+1 SPECIFIED BY LOC 13
4146 62Ø1            CDF                     /CHANGE TO DATA FIELD Ø
4147 2Ø12            ISZ     12              /INC LOC 12 AND SKIP IF = Ø
415Ø 534Ø            JMP     ALT1            /LOC 12 NOT = Ø-DO AGAIN
4151 1366            TAD     EXTCTR          /AC = LOC EXTCTR
4152 7ØØ1            IAC                     /INCREMENT
4153 3366            DCA     EXTCTR          /DEPOSIT IN LOC EXTCTR
4154 2365            ISZ     EXTCIA          /INCREMENT LOC EXTCIA AND SKIP IF = Ø
4155 5235            JMP     EXTGO           /LOC EXTCIA NOT = Ø--TEST ANOTHER MEMORY FIELD
4156 6141            LINC                    /LINC MODE
                     LMODE
4157 Ø643            LDF     3               /SET DATA FIELD = 3
416Ø ØØØ2            PDP                     /8-MODE
                     PMODE
4161 4777            JMS I   FLD1PT
4162 56Ø1            JMP I   EXTMEM          /RETURN TO MAIN PROGRAM IN TEST T65
             /
4163 11ØØ    K11ØØ,  11ØØ
4164 4377    K4377,  4377
4165 ØØØØ    EXTCIA, Ø
4166 ØØØØ    EXTCTR, Ø
4167 4542    EXTX,   EXTSTK
417Ø ØØØØ    KMLV,   Ø
4171 62Ø1    KCDF,   62Ø1
4172 4571    EXXXI,  EXXX
4173 4574    EIFI,   EIF
4174 4572    EFLDI,  EFLD
4175 45Ø2    EALTPJ, EALTP
4176 4542    EXTST,  EXTSTK
4177 42ØØ    FLD1PT, FLD1P
```

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              /
              /TEST STACK INCREMENTING THROUGH ALL 4Ø96 LOC
              /OF MEMORY FIELD 1
              /THE STACK ADDRESS REGISTER IS INITIALLY SET TO ØØØØ
              /WITH THE STACK FIELD BITS SET TO 1
              /AFTER EACH PUSH JUMP IN FIELD Ø THE MACHINE STATUS
              /SAVED ON THE STACK IS VERIFIED
              /
      42ØØ            *42ØØ
42ØØ  ØØØØ    FLD1P,  Ø                       /CONTAINS RETURN JMP ADD TO EXTMEM ROUTINE
42Ø1  73ØØ            CLA CLL                 /CLEAR AC AND LINC
42Ø2  6ØØ2            IOF                     /TURN ALL INTERRUPT SYSTEMS OFF
42Ø3  1361            TAD     K1Ø2Ø           /AC=1Ø2Ø
42Ø4  6772            SMLV                    /SET STACK FIELD BITS = 1
42Ø5  72ØØ            CLA                     /AC = Ø
42Ø6  6776            SSTK                    /SET STACK ADDRESS REGISTER = Ø
42Ø7  1137            TAD     K6ØØØ           /AC = 6ØØØ
421Ø  6777            SVEC                    /SET VECTOR ADDRESS REGISTER = 6ØØØ
4211  724Ø            CLA CMA                 /AC = 7777
4212  3Ø1Ø            DCA     1Ø              /LOC 1Ø = 7777
4213  3Ø11            DCA     11              /LOC 11 = ØØØØ
4214  6141            LINC                    /LINC MODE
                      LMODE
4215  ØØ11            CLR                     /CLEAR AC LINC AND MQ
4216  ØØØ2            PDP                     /8-MODE
                      PMODE
4217  73ØØ    DO,     CLA CLL                 /CLEAR AC AND LINC
422Ø  1Ø11            TAD     11              /AC = CONTENTS OF LOC 11
4221  1357            TAD     K5              /ADD 5
4222  3Ø11            DCA     11              /DEPOSIT BACK IN LOC 11
4223  676Ø            PJAIØ                   /PUSH JUMP IN FIELD Ø
4224  43Ø2            ESTKT                   /TO LOC ESTKT
4225  744Ø    ERES,   SZA                     /AC = Ø--RESTORES OCCURE TO HERE--
4226  74Ø2            HLT                     /ERR-AC NOT = Ø
4227  743Ø            SZL                     /LINC = Ø
423Ø  74Ø2            HLT                     /ERR-LINC NOT = Ø
4231  6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
4232  3ØØ2            DCA     IMAGE           /AC TO LOC IMAGE
4233  1ØØ2            TAD     IMAGE           /GET IMAGE
4234  1Ø43            TAD     K1              /ADD 1
4235  1Ø11            TAD     11              /STACK ADD SHOULD = CONTENTS LOC 11
4236  744Ø            SZA                     /AC = Ø
4237  74Ø2            HLT                     /ERR-STACK ADD NOT = CONTENTS LOC 11
424Ø  71ØØ            CLL                     /CLEAR LINC
4241  6141            LINC                    /LINC MODE
                      LMODE
4242  Ø474            FLO I                   /FLO = Ø
4243  ØØØØ            HLT                     /ERR-FLO NOT = Ø
4244  ØØØ5            QAC                     /MQ Ø-1Ø TO AC 1-11
4245  Ø261            ROL I   1               /ROTATE LEFT 1
4246  Ø475            QLZ I                   /SKIP IF MQ 11 = 1
4247  6252            JMP     .+3             /CONTINUE-AC = MQ
425Ø  162Ø            BSE I                   /SET AC BIT Ø
4251  ØØØ1            1                       /TO 1
```

```
        4252  1460                SAE I                  /SKIP IF AC
        4253  0000                0                      /= 0
        4254  0000                HLT                    /ERR-MQ RESTORED FROM STACK NOT = 0
        4255  0500                IOB                    /EXECUTE 8-MODE INST
        4256  0224                RIF                    /READ INSTRUCTION FIELD
        4257  1460                SAE I                  /AC =
        4260  0004                4                      /4
        4261  0000                HLT                    /ERR-INSTRUCTION FIELD 2 NOT SET
        4262  0011                CLR                    /CLEAR AC LINC AND MQ
        4263  0500                IOB                    /EXECUTE 8-MODE INST
        4264  0214                RDF                    /READ DATA FIELD
        4265  1460                SAE I                  /AC=
        4266  0006                6                      /6
        4267  0000                HLT                    /ERR-DATA FIELD 0 NOT SET
        4270  0011                CLR                    /CLEAR AC LINC AND MQ
        4271  0002                PDP                    /8-MODE
                                  PMODE
        4272  6774                RSTK                   /READ STACK ADDRESS REG INTO AC
        4273  3002                DCA     IMAGE          /IMAGE OF AC
        4274  1002                TAD     IMAGE          /GET IMAGE
        4275  1043                TAD     K1             /ADD 1
        4276  1011                TAD     11             /CONTENTS OF LOC 11 SHOULD=STACK ADD
        4277  7440                SZA                    /AC=0
        4300  7402                HLT                    /ERR-STACK ADD NOT = CONTENTS LOC 11
        4301  5347                JMP     EREST          /RESTOR ANOTHER LEVEL OF STATUS ON STACK
        4302  6774        ESTKT,  RSTK                   /READ STACK ADDRESS REGISTER INTO AC
        4303  3002                DCA     IMAGE          /IMAGE OF AC
        4304  1002                TAD     IMAGE          /GET IMAGE
        4305  1043                TAD     K1             /ADD 1
        4306  1011                TAD     11             /CONTENTS OF LOC 11 SHOULD = STACK ADD
        4307  7440                SZA                    /AC = 0
        4310  7402                HLT                    /ERR-STACK ADD NOT = CONTENTS LOC 11
        4311  6211                CDF     10             /CHANGE DATA FIELD TO 1
        4312  1410                TAD I   10             /AC FROM STACK TO AC
        4313  7440                SZA                    /AC = 0
        4314  7402                HLT                    /ERR-AC STORED ON STACK NOT = 0
        4315  1410                TAD I   10             /PC FROM STACK TO AC
        4316  3002                DCA     IMAGE          /IMAGE OF AC
        4317  1002                TAD     IMAGE          /GET IMAGE
        4320  7041                CIA                    /COMPLIMENT AND INCREMENT
        4321  1363                TAD     ERE            /ADDRESS OF RET PC ON STACK SHOULD = ERES
        4322  7440                SZA                    /AC = 0
        4323  7402                HLT                    /ERR-RETURN PC ON STACK NOT = ADD ERES
        4324  1410                TAD I   10             /MODE FLO LINC AND MACH LEVEL FROM STACK TO AC
        4325  7440                SZA                    /AC = 0
        4326  7402 HUNG UP HERE w/AC=0  HLT              /ERR-EXAMINE AC
                   16 SEPT '74
        4327  1410                TAD I   10             /MQ FROM STACK TO AC
        4330  7440                SZA                    /AC = 0
        4331  7402                HLT                    /ERR-MQ STORED ON STACK NOT = 0
        4332  1410                TAD I   10             /UF IF AND DF FROM STACK TO AC
        4333  3002                DCA     IMAGE          /IMAGE OF AC
        4334  1002                TAD     IMAGE          /GET IMAGE
        4335  7041                CIA                    /COMPLIMENT AND INC
        4336  1360                TAD     K103           /LOC IMAGE SHOULD = 103
        4337  7440                SZA                    /AC = 0
```

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4340  7402              HLT                     /ERR-EXAMINE LOC IMAGE
4341  6201              CDF                     /CHANGE TO DATA FIELD Ø
4342  7300              CLA CLL                 /CLEAR AC AND LINC
4343  1010              TAD     1Ø              /CONTENTS OF LOC 1Ø TO AC
4344  1357              TAD     K5              /ADD 5
4345  7420              SNL                     /SKIP IF LINC SET
4346  5217              JMP     DO              /DO AGAIN-HAVE NOT FILLED FIELD 1
4347  7300      EREST,  CLA CLL                 /CLEAR AC AND LINC
435Ø  1011              TAD     11              /CONTENTS OF LOC 11 TO AC
4351  1362              TAD     M5              /SUBTRACT 5
4352  7440              SZA                     /IF AC = Ø
4353  5600              JMP I   FLD1P           /RETURN TO EXTMEM ROUTINE
4354  3011              DCA     11              /DEPOSIT BACK IN LOC 11
4355  6771              RES                     /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
4356  7402              HLT                     /ERR-RES IOT DID NOT EXECUTE
                /
4357  ØØØ5      K5,     5
436Ø  Ø1Ø3      K1Ø3,   1Ø3
4361  1Ø2Ø      K1Ø2Ø,  1Ø2Ø
4362  7773      M5,     -5
4363  4225      ERE,    ERES
                /
                /EXTENDED MEMORY TEST
                /RELOCATEABLE PORTION OF TEST T65
                /
      44ØØ              *44ØØ
44ØØ  73ØØ      VTØ,    CLA CLL                 /LEVEL Ø INTERRUPT
44Ø1  5236              JMP     EXTTST          /JMP TO SUBROUTINE
44Ø2  74Ø2              HLT                     /LEVEL 1 INTERRUPT
44Ø3  74Ø2              HLT
44Ø4  74Ø2              HLT                     /LEVEL 2 INTERRUPT
44Ø5  74Ø2              HLT
44Ø6  74Ø2              HLT                     /LEVEL 3 INTERRUPT
44Ø7  74Ø2              HLT
441Ø  74Ø2              HLT                     /LEVEL 4 INTERRUPT
4411  74Ø2              HLT
4412  74Ø2              HLT                     /LEVEL 5 INTERRUPT
4413  74Ø2              HLT
4414  74Ø2              HLT                     /LEVEL 6 INTERRUPT
4415  74Ø2              HLT
4416  74Ø2              HLT                     /LEVEL 7 INTERRUPT
4417  74Ø2              HLT
442Ø  74Ø2              HLT                     /LEVEL 8 INTERRUPT
4421  74Ø2              HLT
4422  74Ø2              HLT                     /LEVEL 9 INTERRUPT
4423  74Ø2              HLT
4424  74Ø2              HLT                     /LEVEL 1Ø INTERRUPT
4425  74Ø2              HLT
4426  74Ø2              HLT                     /LEVEL 11 INTERRUPT
4427  74Ø2              HLT
443Ø  74Ø2              HLT                     /LEVEL 12 INTERRUPT
4431  74Ø2              HLT
4432  74Ø2              HLT                     /LEVEL 13 INTERRUPT
4433  74Ø2              HLT
4434  74Ø2              HLT                     /LEVEL 14 INTERRUPT
```

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4435  7402            HLT
4436  6224  EXTTST,   RIF                    /READ INSTRUCTION FIELD INTO AC
4437  7041            CIA                    /COMPLIMENT AND INC
444Ø  1374            TAD      EIF           /INSTRUCTION FIELD SHOULD=LOC EIF
4441  744Ø            SZA                    /AC=Ø
4442  7402            HLT                    /ERR - INSTRUCTION FIELD NOT=Ø
4443  6214            RDF                    /READ DATA FIELD INTO AC
4444  744Ø            SZA                    /AC=Ø
4445  7402            HLT                    /ERR - DATA FIELD NOT=Ø
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4446 6773              RMLV                     /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
4447 1372              TAD     EFLD             /LOC EFLD SHOULD = 2'S COMPLIMENT OF AC
445Ø 744Ø              SZA                      /AC=Ø
4451 74Ø2              HLT                      /ERR -
4452 4354              JMS     STKTST           /ROUTINE TO TEST STACK ADDRESS REGISTER
4453 1342              TAD     EXTSTK           /AC=CONTENTS OF LOC EXTSTK
4454 7Ø41              CIA                      /COMPLIMENT AND INC
4455 137Ø              TAD     E4ØØØ            /LOC EXTSTK SHOULD=4ØØØ
4456 744Ø              SZA                      /AC=Ø
4457 74Ø2              HLT                      /ERR-LOC EXTSTK NOT=4ØØØ
446Ø 1343              TAD     EXTSTK+1         /AC=CONTENTS OF LOC EXTSTK+1
4461 7Ø41              CIA                      /COMPLIMENT AND INC
4462 1375              TAD     EXTRM1           /LOC EXTSTK+1 SHOULD=CONTENTS OF LOC EXTRM1
4463 744Ø              SZA                      /AC=Ø
4464 74Ø2              HLT                      /ERR-LOC EXTSTK+1 NOT=CONTENTS OF LOC EXTRM1
4465 1344              TAD     EXTSTK+2         /AC=CONTENTS OF LOC EXTSTK+2
4466 7Ø41              CIA                      /COMPLIMENT AND INC
4467 1366              TAD     E17              /LOC EXTSTK+2 SHOULD = 17
447Ø 744Ø              SZA                      /AC=Ø
4471 74Ø2              HLT                      /ERR-LOC EXTSTK+2 NOT = 17
4472 1345              TAD     EXTSTK+3         /AC=CONTENTS OF LOC EXTSTK+3
4473 744Ø              SZA                      /AC=Ø
4474 74Ø2              HLT                      /ERR-LOC EXTSTK+3 NOT = Ø
4475 1346              TAD     EXTSTK+4         /AC=CONTENTS OF LOC EXTSTK+4
4476 7Ø41              CIA                      /COMPLIMENT AND INC
4477 1367              TAD     E1Ø2             /LOC EXTSTK+4 SHOULD = 1Ø2
45ØØ 744Ø              SZA                      /AC=Ø
45Ø1 74Ø2              HLT                      /ERR-LOC EXTSTK+4 NOT = 1Ø2
45Ø2 676Ø      EALTP,  PJAIØ                    /ALTERED INST---PUSH JUMP WITHIN CURRENT FIELD
45Ø3 4513              EXTPJ                    /TO LOC EXTPJ
45Ø4 74Ø2              HLT                      /ERR-PJA IOT DID NOT EXECUTE
45Ø5 4354              JMS     STKTST           /TEST STACK ADDRESS REGISTER
45Ø6 1343              TAD     EXTSTK+1         /AC = CONTENTS OF LOC EXTSTK+1
45Ø7 7ØØ1              IAC                      /INC
451Ø 3343              DCA     EXTSTK+1         /DEPOSIT BACK IN LOC EXTSTK+1
4511 6771              RES                      /RESTORE MACHINE TO LAST LEVEL SAVED ON STACK
4512 74Ø2              HLT                      /ERR-RESTORE IOT DID NOT EXECUTE
4513 744Ø      EXTPJ,  SZA                      /AC SHOULD = Ø
4514 74Ø2              HLT                      /ERR-AC NOT = Ø
4515 1347              TAD     EXTSTK+5         /AC SAVED ON STACK AT LOC EXTSTK+5 = Ø
4516 744Ø              SZA                      /SKIP IF = Ø
4517 74Ø2              HLT                      /ERR--AC SAVED ON STACK NOT = Ø
452Ø 135Ø              TAD     EXTSTK+6         /AC=CONTENTS OF LOC EXTSTK+6
4521 7Ø41              CIA                      /COMPLIMENT AND INC
4522 1376              TAD     EXTPM7           /LOC EXTSTK+6 SHOULD=ADDRESS EXTPJ-7
4523 744Ø              SZA                      /AC=Ø
4524 74Ø2              HLT                      /ERR-
4525 1351              TAD     EXTSTK+7         /AC=CONTENTS OF LOC EXTSTK+7
4526 744Ø              SZA                      /AC=Ø
4527 74Ø2              HLT                      /ERR-CONTENTS OF LOC EXTSTK+7 NOT=Ø
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4530 1353             TAD    EXTSTK+11         /AC=CONTENTS OF LOC EXTSTK+11
4531 7041             CIA                      /COMPLIMENT AND INC
4532 1371             TAD    EXXX              /LOC EXTSTK+11 SHOULD = CONTENTS OF LOC EXXX
4533 744Ø             SZA                      /AC=Ø
4534 74Ø2             HLT                      /ERR-CONTENTS OF LOC EXTSTK+11 NOT=LOC CONTENTS OF EXXX
4535 135Ø             TAD    EXTSTK+6          /AC=CONTENTS OF LOC EXTSTK+6
4536 7ØØ1             IAC                      /INC
4537 335Ø             DCA    EXTSTK+6          /DEPOSIT BACK IN LOC EXTSTK+6
454Ø 6771             RES                      /RESTORE MACHINE TO LAST LEVEL SAVED ON STACK
4541 74Ø2             HLT                      /ERR-RES IOT DID NOT EXECUTE
                /
                /STACK AREA USED WITH EXTENDED MEMORY INTERRUPT TEST
                /
4542 ØØØØ       EXTSTK, Ø
4543 ØØØØ               Ø
4544 ØØØØ               Ø
4545 ØØØØ               Ø
4546 ØØØØ               Ø
4547 ØØØØ               Ø
455Ø ØØØØ               Ø
4551 ØØØØ               Ø
4552 ØØØØ               Ø
4553 ØØØØ               Ø
                /
                /COMMON ROUTINE USED 2 TIMES IN EXTENDED MEM BANK INTERRUPT TEST
                /TESTS FOR CORRECT CONTENTS IN THE STACK ADDRESS REGISTER
                /
4554 ØØØØ       STKTST, Ø                      /CONTAINS RETURN JMP ADDRESS TO EXTTST ROUTINE
4555 73ØØ               CLA CLL                /CLEAR AC AND LINC
4556 6774               RSTK                   /READ STACK ADDRESS REGISTER INTO AC
4557 3373               DCA    EXIM            /DEPOSIT IN EXIM
456Ø 1373               TAD    EXIM            /GET EXIM
4561 1377               TAD    EXTKP5          /STACK ADDRESS SHOULD=COMPLIMENT OF ADD EXTSTK+5
4562 704Ø               CMA                    /COMPLIMENT THE AC
4563 744Ø               SZA                    /AC=Ø
4564 74Ø2               HLT                    /ERR - LOC EXIM NOT = ADDRESS EXTSTK+5
4565 5754               JMP I  STKTST          /RETURN TO EXTTST ROUTINE
                /
4566 ØØ17       E17,    17
4567 Ø1Ø2       E1Ø2,   1Ø2
457Ø 4ØØØ       E4ØØØ,  4ØØØ
4571 ØØØØ       EXXX,   Ø
4572 ØØØØ       EFLD,   Ø
4573 ØØØØ       EXIM,   Ø
4574 ØØØØ       EIF,    Ø
4575 4116       EXTRM1, EXTRET-1
4576 45Ø4       EXTPM7, EXTPJ-7
4577 4547       EXTKP5, EXTSTK+5
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                     /
                     /STACK ADDRESS TABLE
                     /LOCATION 56ØØ TO 5777
                     /
           56ØØ              *56ØØ
                     /
                     /FIRST LEVEL SAVED ON STACK
                     /
     560Ø  ØØØØ      STACKK, Ø                 /AC
     5601  ØØØØ              Ø                 /PC
     56Ø2  ØØØØ              Ø                 /MODE FLO LINC MACHINE LEVEL
     56Ø3  ØØØØ              Ø                 /MQ
     56Ø4  ØØØØ              Ø                 /UF IF DF
                     /
                     /SECOND LEVEL SAVED ON STACK
                     /
     56Ø5  ØØØØ              Ø                 /AC
     56Ø6  ØØØØ      STK1P,  Ø                 /PC
     56Ø7  ØØØØ              Ø                 /MODE FLO LINC MACHINE LEVEL
     561Ø  ØØØØ              Ø                 /MQ
     5611  ØØØØ              Ø                 /UF IF DF
                     /
                     /THIRD LEVEL SAVED ON STACK
                     /
     5612  ØØØØ              Ø                 /AC
     5613  ØØØØ      STK2P,  Ø                 /PC
     5614  ØØØØ              Ø                 /MODE FLO LINC MACHINE LEVEL
     5615  ØØØØ              Ø                 /MQ
     5616  ØØØØ              Ø                 /UF IF DF
                     /
                     /FOURTH LEVEL SAVED ON STACK
                     /
     5617  ØØØØ              Ø                 /AC
     562Ø  ØØØØ      STK3P,  Ø                 /PC
     5621  ØØØØ              Ø                 /MODE FLO LINC MACHINE LEVEL
     5622  ØØØØ              Ø                 /MQ
     5623  ØØØØ              Ø                 /UF IF DF
                     /
                     /FIFTH LEVEL SAVED ON STACK
                     /
     5624  ØØØØ              Ø                 /AC
     5625  ØØØØ      STK4P,  Ø                 /PC
     5626  ØØØØ              Ø                 /MODE FLO LINC MACHINE LEVEL
     5627  ØØØØ              Ø                 /MQ
     563Ø  ØØØØ              Ø                 /UF IF DF
```

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                        /
                        /SIXTH LEVEL SAVED ON STACK
                        /
        5631  0000              0               /AC
        5632  0000      STK5P,  0               /PC
        5633  0000              0               /MODE FLO LINC MACHINE LEVEL
        5634  0000              0               /MQ
        5635  0000              0               /UF IF DF
                        /
                        /SEVENTH LEVEL SAVED ON STACK
                        /
        5636  0000              0               /AC
        5637  0000      STK6P,  0               /PC
        5640  0000              0               /MODE FLO LINC MACHINE LEVEL
        5641  0000              0               /MQ
        5642  0000              0               /UF IF DF
                        /
                        /EIGHTH LEVEL SAVED ON STACK
                        /
        5643  0000              0               /AC
        5644  0000      STK7P,  0               /PC
        5645  0000              0               /MODE FLO LINC MACHINE LEVEL
        5646  0000              0               /MQ
        5647  0000              0               /UF IF DF
                        /
                        /NINTH LEVEL SAVED ON STACK
                        /
        5650  0000              0               /AC
        5651  0000      STK10P, 0               /PC
        5652  0000              0               /MODE FLO LINC MACHINE LEVEL
        5653  0000              0               /MQ
        5654  0000              0               /UF IF DF
                        /
                        /TENTH LEVEL SAVED ON STACK
                        /
        5655  0000              0               /AC
        5656  0000      STK11P, 0               /PC
        5657  0000              0               /MODE FLO LINC MACHINE LEVEL
        5660  0000              0               /MQ
        5661  0000              0               /UF IF DF
                        /
                        /ELEVENTH LEVEL SAVED ON STACK
                        /
        5662  0000              0               /AC
        5663  0000      STK12P, 0               /PC
        5664  0000              0               /MODE FLO LINC MACHINE LEVEL
        5665  0000              0               /MQ
        5666  0000              0               /UF IF DF
```

```
                        /
                        /TWELVETH LEVEL SAVED ON STACK
                        /
    5667  ØØØØ                  Ø               /AC
    567Ø  ØØØØ          STK13P, Ø               /PC
    5671  ØØØØ                  Ø               /MODE FLO LINC MACHINE LEVEL
    5672  ØØØØ                  Ø               /MQ
    5673  ØØØØ                  Ø               /UF IF DF
                        /
                        /THIRTEENTH LEVEL SAVED ON STACK
                        /
    5674  ØØØØ                  Ø               /AC
    5675  ØØØØ          STK14P, Ø               /PC
    5676  ØØØØ                  Ø               /MODE FLO LINC MACHINE LEVEL
    5677  ØØØØ                  Ø               /MQ
    57ØØ  ØØØØ                  Ø               /UF IF DF
                        /
                        /FOURTEENTH LEVEL SAVED ON STACK
                        /
    57Ø1  ØØØØ                  Ø               /AC
    57Ø2  ØØØØ          STK15P, Ø               /PC
    57Ø3  ØØØØ                  Ø               /MODE FLO LINC MACHINE LEVEL
    57Ø4  ØØØØ                  Ø               /MQ
    57Ø5  ØØØØ                  Ø               /UF IF DF
                        /
                        /FIFTEENTH LEVEL SAVED ON STACK
                        /
    57Ø6  ØØØØ                  Ø               /AC
    57Ø7  ØØØØ          STK16P, Ø               /PC
    571Ø  ØØØØ                  Ø               /MODE FLO LINC MACHINE LEVEL
    5711  ØØØØ                  Ø               /MQ
    5712  ØØØØ                  Ø               /UF IF DF
                        /
                        /THE LENGTH OF THE STACK IS ONLY
                        /LIMITED BY CORE -- THIS DIAGNOSTIC
                        /USES ONLY FIFTEEN LEVELS ON STACK
                        /
                        /
                        /ENTERED FROM T35 TEST
                        /FIRST EXECUTION OF SIMULATED INTERRUPT
                        /TO LEVEL 0 ONLY
                        /
        6000                    *6000
6000    0000                    AND     LOC0    /LEVEL 0 INTERRUPT
6001    5236                    JMP     TST     /JMP TO SUBROUTINE
6002    7402                    HLT             /LEVEL 1 INTERRUPT
6003    7402                    HLT
6004    7402                    HLT             /LEVEL 2 INTERRUPT
6005    7402                    HLT
6006    7402                    HLT             /LEVEL 3 INTERRUPT
6007    7402                    HLT
6010    7402                    HLT             /LEVEL 4 INTERRUPT
6011    7402                    HLT
6012    7402                    HLT             /LEVEL 5 INTERRUPT
6013    7402                    HLT
6014    7402                    HLT             /LEVEL 6 INTERRUPT
6015    7402                    HLT
6016    7402                    HLT             /LEVEL 7 INTERRUPT
6017    7402                    HLT
6020    7402                    HLT             /LEVEL 8 INTERRUPT
6021    7402                    HLT
6022    7402                    HLT             /LEVEL 9 INTERRUPT
6023    7402                    HLT
6024    7402                    HLT             /LEVEL 10 INTERRUPT
6025    7402                    HLT
6026    7402                    HLT             /LEVEL 11 INTERRUPT
6027    7402                    HLT
6030    7402                    HLT             /LEVEL 12 INTERRUPT
6031    7402                    HLT
6032    7402                    HLT             /LEVEL 13 INTERRUPT
6033    7402                    HLT
6034    7402                    HLT             /LEVEL 14 INTERRUPT
6035    7402                    HLT
```

```

                        /
                        /TEST API REGISTERS AND PC STORED IN LOC STACK+1
                        /INCREMENT PC IN LOC STACK+1 AND ISSUE RESTOR IOT
                        /
      6236  74Ø2        TST,    HLT                     /LEVEL Ø INTERRUPT FROM LOC 6ØØ1 (LOC CHANGED TO NOP)
      6237  73ØØ                CLA CLL                 /AC=Ø
      624Ø  115Ø                TAD     K74Ø2           /AC = 74Ø2 OR AN 8-MODE HLT
      6241  3236                DCA     TST             /LOC TST = HLT
      6242  6775                RVEC                    /READ VECTOR ADDRESS REGISTER INTO AC
      6243  3ØØ2                DCA     IMAGE           /IMAGE OF AC
      6244  1ØØ2                TAD     IMAGE
      6245  7Ø41                CIA                     /COMPLIMENT AND INC
      6246  1Ø74                TAD     K1741           /IMAGE SHOULD = 1741
      6247  744Ø                SZA                     /AC = Ø
      6Ø5Ø  74Ø2                HLT                     /ERR
      6Ø51  6774                RSTK                    /READ STACK ADDRESS REGISTER INTO AC
      6Ø52  3ØØ2                DCA     IMAGE           /IMAGE OF AC
      6Ø53  1ØØ2                TAD     IMAGE
      6Ø54  7Ø41                CIA                     /COMPLIMENT AND INC
      6Ø55  1115                TAD     K2172           /IMAGE SHOULD = 2172
      6Ø56  744Ø                SZA                     /AC = Ø
      6Ø57  74Ø2                HLT                     /ERR
      6Ø6Ø  6773                RMLV                    /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
      6Ø61  3ØØ2                DCA     IMAGE           /IMAGE OF AC
      6Ø62  1ØØ2                TAD     IMAGE
      6Ø63  7Ø4Ø                CMA                     /IMAGE SHOULD = 7777
      6Ø64  744Ø                SZA                     /AC = Ø
      6Ø65  74Ø2                HLT                     /ERR
      6Ø66  1433                TAD I   STACK+1 /GET PC STORED IN LOC STACK+1
      6Ø67  7Ø41                CIA                     /COMPLIMENT AND INC
      6Ø7Ø  1276                TAD     T35AM1  /PC STORED IN STACK+1 SHOULD = TST35A-1
      6Ø71  744Ø                SZA                     /AC = Ø
      6Ø72  74Ø2                HLT                     /ERR
      6Ø73  44Ø3                JMS I   INC             /INC PC STORED IN LOC STACKK+1
      6Ø74  6771                RES                     /RESTORE MACHINE TO PREVIOUS STATUS STORED ON STACK
      6Ø75  74Ø2                HLT                     /ERR
                        /
      6Ø76  2235        T35AM1, T35A-1
```

```

                        /
                        /VECTOR ADDRESS POINTER TABLE
                        /LOCATION 6100 TO 6135
                        /USED TO TEST A SINGLE INTERRUPT AND THEN RESTORE
                        /
              6100              *6100
        6100  0000              AND     LOC0    /LEVEL 0 INTERRUPT
        6101  5561              JMP I   VEC0    /JMP TO SERVICE ROUTINE
        6102  0000              AND     LOC0    /LEVEL 1 INTERRUPT
        6103  5562              JMP I   VEC1    /JMP TO SERVICE ROUTINE
        6104  0000              AND     LOC0    /LEVEL 2 INTERRUPT
        6105  5563              JMP I   VEC2    /JMP TO SERVICE ROUTINE
        6106  0000              AND     LOC0    /LEVEL 3 INTERRUPT
        6107  5564              JMP I   VEC3    /JMP TO SERVICE ROUTINE
        6110  0000              AND     LOC0    /LEVEL 4 INTERRUPT
        6111  5565              JMP I   VEC4    /JMP TO SERVICE ROUTINE
        6112  0000              AND     LOC0    /LEVEL 5 INTERRUPT
        6113  5566              JMP I   VEC5    /JMP TO SERVICE ROUTINE
        6114  0000              AND     LOC0    /LEVEL 6 INTERRUPT
        6115  5567              JMP I   VEC6    /JMP TO SERVICE ROUTINE
        6116  0000              AND     LOC0    /LEVEL 7 INTERRUPT
        6117  5570              JMP I   VEC7    /JMP TO SERVICE ROUTINE
        6120  0000              AND     LOC0    /LEVEL 8 INTERRUPT
        6121  5571              JMP I   VEC10   /JMP TO SERVICE ROUTINE
        6122  0000              AND     LOC0    /LEVEL 9 INTERRUPT
        6123  5572              JMP I   VEC11   /JMP TO SERVICE ROUTINE
        6124  0000              AND     LOC0    /LEVEL 10 INTERRUPT
        6125  5573              JMP I   VEC12   /JMP TO SERVICE ROUTINE
        6126  0000              AND     LOC0    /LEVEL 11 INTERRUPT
        6127  5574              JMP I   VEC13   /JMP TO SERVICE ROUTINE
        6130  0000              AND     LOC0    /LEVEL 12 INTERRUPT
        6131  5575              JMP I   VEC14   /JMP TO SERVICE ROUTINE
        6132  0000              AND     LOC0    /LEVEL 13 INTERRUPT
        6133  5576              JMP I   VEC15   /JMP TO SERVICE ROUTINE
        6134  0000              AND     LOC0    /LEVEL 14 INTERRUPT
        6135  5577              JMP I   VEC16   /JMP TO SERVICE ROUTINE
```

```

                        /
                        /VECTOR INTERRUPT SERVICE ROUTINES
                        /FIRST INSTRUCTION EXECUTED IN THE
                        /EXPECTED SERVICE ROUTINE WAS CHANGED
                        /FROM A HLT TO A NOP
                        /ALL OTHER ROUTINES HAVE A HLT
                        /
                        /LEVEL 0 INTERRUPT FROM LOCATION 6101
                        /
              6140              *6140
        6140  7402      VECT0,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 0 INTERRUPT
        6141  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6142  3340              DCA     VECT0   /DEPOSIT 8-MODE HLT IN LOC VECT0
        6143  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6144  7402              HLT             /ERR
                        /
                        /LEVEL 1 INTERRUPT FROM LOCATION 6103
                        /
        6145  7402      VECT1,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 1 INTERRUPT
        6146  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6147  3345              DCA     VECT1   /DEPOSIT 8-MODE HLT IN LOC VECT1
        6150  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6151  7402              HLT             /ERR
                        /
                        /LEVEL 2 INTERRUPT FROM LOCATION 6105
                        /
        6152  7402      VECT2,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 2 INTERRUPT
        6153  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6154  3352              DCA     VECT2   /DEPOSIT 8-MODE HLT IN LOC VECT2
        6155  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6156  7402              HLT             /ERR
                        /
                        /LEVEL 3 INTERRUPT FROM LOCATION 6107
                        /
        6157  7402      VECT3,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 3 INTERRUPT
        6160  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6161  3357              DCA     VECT3   /DEPOSIT 8-MODE HLT IN LOC VECT3
        6162  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6163  7402              HLT             /ERR
                        /
                        /LEVEL 4 INTERRUPT FROM LOCATION 6111
                        /
        6164  7402      VECT4,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 4 INTERRUPT
        6165  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6166  3364              DCA     VECT4   /DEPOSIT 8-MODE HLT IN LOC VECT4
        6167  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6170  7402              HLT             /ERR
```

```

                   /
                   /LEVEL 5 INTERRUPT FROM LOCATION 6113
                   /
         62ØØ              *62ØØ
62ØØ     74Ø2      VECT5,  HLT                /CHANGED FROM HLT TO NOP FOR LEVEL 5 INTERRUPT
62Ø1     44Ø3              JMS I    INC       /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 74Ø2
62Ø2     32ØØ              DCA      VECT5     /DEPOSIT 8-MODE HLT IN LOC VECT5
62Ø3     6771              RES                /RESTORE MACHINE TO LAST STATUS STORED ON STACK
62Ø4     74Ø2              HLT                /ERR
                   /
                   /LEVEL 6 INTERRUPT FROM LOCATION 6115
                   /
62Ø5     74Ø2      VECT6,  HLT                /CHANGED FROM HLT TO NOP FOR LEVEL 6 INTERRUPT
62Ø6     44Ø3              JMS I    INC       /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 74Ø2
62Ø7     32Ø5              DCA      VECT6     /DEPOSIT 8-MODE HLT IN LOC VECT6
621Ø     6771              RES                /RESTORE MACHINE TO LAST STATUS STORED ON STACK
6211     74Ø2              HLT                /ERR
                   /
                   /LEVEL 7 INTERRUPT FROM LOCATION 6117
                   /
6212     74Ø2      VECT7,  HLT                /CHANGED FROM HLT TO NOP FOR LEVEL 7 INTERRUPT
6213     44Ø3              JMS I    INC       /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 74Ø2
6214     3212              DCA      VECT7     /DEPOSIT 8-MODE HLT IN LOC VECT7
6215     6771              RES                /RESTORE MACHINE TO LAST STATUS STORED ON STACK
6216     74Ø2              HLT                /ERR
                   /
                   /LEVEL 8 INTERRUPT FROM LOCATION 6121
                   /
6217     74Ø2      VECT1Ø, HLT                /CHANGED FROM HLT TO NOP FOR LEVEL 8 INTERRUPT
622Ø     44Ø3              JMS I    INC       /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 74Ø2
6221     3217              DCA      VECT1Ø    /DEPOSIT 8-MODE HLT IN LOC VECT1Ø
6222     6771              RES                /RESTORE MACHINE TO LAST STATUS STORED ON STACK
6223     74Ø2              HLT                /ERR
                   /
                   /LEVEL 9 INTERRUPT FROM LOCATION 6123
                   /
6224     74Ø2      VECT11, HLT                /CHANGED FROM HLT TO NOP FOR LEVEL 9 INTERRUPT
6225     44Ø3              JMS I    INC       /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 74Ø2
6226     3224              DCA      VECT11    /DEPOSIT 8-MODE HLT IN LOC VECT11
6227     6771              RES                /RESTORE MACHINE TO LAST STATUS STORED ON STACK
623Ø     74Ø2              HLT                /ERR
                   /
                   /LEVEL 1Ø INTERRUPT FROM LOCATION 6125
                   /
6231     74Ø2      VECT12, HLT                /CHANGED FROM HLT TO NOP FOR LEVEL 1Ø INTERRUPT
6232     44Ø3              JMS I    INC       /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 74Ø2
6233     3231              DCA      VECT12    /DEPOSIT 8-MODE HLT IN LOC VECT12
6234     6771              RES                /RESTORE MACHINE TO LAST STATUS STORED ON STACK
6235     74Ø2              HLT                /ERR
```

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                        /
                        /LEVEL 11 INTERRUPT FROM LOCATION 6127
                        /
        6236  7402      VECT13, HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 11 INTERRUPT
        6237  4403              JMS I   INC             /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6240  3236              DCA     VECT13          /DEPOSIT 8-MODE HLT IN LOC VECT13
        6241  3236              DCA     VECT13          /DEPOSIT 8-MODE HLT IN LOC VECT13
        6242  6771              RES                     /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6243  7402              HLT                     /ERR
                        /
                        /LEVEL 12 INTERRUPT FROM LOCATION 6131
                        /
        6244  7402      VECT14, HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 12 INTERRUPT
        6245  4403              JMS I   INC             /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6246  3244              DCA     VECT14          /DEPOSIT 8-MODE HLT IN LOC VECT14
        6247  6771              RES                     /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6250  7402              HLT                     /ERR
                        /
                        /LEVEL 13 INTERRUPT FROM LOCATION 6133
                        /
        6251  7402      VECT15, HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 13 INTERRUPT
        6252  4403              JMS I   INC             /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6253  3251              DCA     VECT15          /DEPOSIT 8-MODE HLT IN LOC VECT15
        6254  6771              RES                     /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6255  7402              HLT                     /ERR
                        /
                        /LEVEL 14 INTERRUPT FROM LOCATION 6135
                        /
        6256  7402      VECT16, HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 14 INTERRUPT
        6257  4403              JMS I   INC             /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
        6260  3256              DCA     VECT16          /DEPOSIT 8-MODE HLT IN LOC VECT16
        6261  6771              RES                     /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        6262  7402              HLT                     /ERR
```

```

                               /
                               /VECTOR ADDRESS POINTER TABLE
                               /LOCATION 63ØØ TO 6335
                               /USED IN MULTIPLE LEVEL INTERRUPT TESTS
                               /
              63ØØ                     *63ØØ
       63ØØ   ØØØØ                     AND      LOCØ     /LEVEL Ø INTERRUPT
       63Ø1   5736                     JMP I    MLVØA    /JMP TO MLVØ SUBROUTINE
       63Ø2   ØØØØ                     AND      LOCØ     /LEVEL 1 INTERRUPT
       63Ø3   5737                     JMP I    MLV1A    /JMP TO MLV1 SUBROUTINE
       63Ø4   ØØØØ                     AND      LOCØ     /LEVEL 2 INTERRUPT
       63Ø5   574Ø                     JMP I    MLV2A    /JMP TO MLV2 SUBROUTINE
       63Ø6   ØØØØ                     AND      LOCØ     /LEVEL 3 INTERRUPT
       63Ø7   5741                     JMP I    MLV3A    /JMP TO MLV3 SUBROUTINE
       631Ø   ØØØØ                     AND      LOCØ     /LEVEL 4 INTERRUPT
       6311   5742                     JMP I    MLV4A    /JMP TO MLV4 SUBROUTINE
       6312   ØØØØ                     AND      LOCØ     /LEVEL 5 INTERRUPT
       6313   5743                     JMP I    MLV5A    /JMP TO MLV5 SUBROUTINE
       6314   ØØØØ                     AND      LOCØ     /LEVEL 6 INTERRUPT
       6315   5744                     JMP I    MLV6A    /JMP TO MLV6 SUBROUTINE
       6316   ØØØØ                     AND      LOCØ     /LEVEL 7 INTERRUPT
       6317   5745                     JMP I    MLV7A    /JMP TO MLV7 SUBROUTINE
       632Ø   ØØØØ                     AND      LOCØ     /LEVEL 8 INTERRUPT
       6321   5746                     JMP I    MLV1ØA   /JMP TO MLV1Ø SUBROUTINE
       6322   ØØØØ                     AND      LOCØ     /LEVEL 9 INTERRUPT
       6323   5747                     JMP I    MLV11A   /JMP TO MLV11 SUBROUTINE
       6324   ØØØØ                     AND      LOCØ     /LEVEL 1Ø INTERRUPT
       6325   575Ø                     JMP I    MLV12A   /JMP TO MLV12 SUBROUTINE
       6326   ØØØØ                     AND      LOCØ     /LEVEL 11 INTERRUPT
       6327   5751                     JMP I    MLV13A   /JMP TO MLV13 SUBROUTINE
       633Ø   ØØØØ                     AND      LOCØ     /LEVEL 12 INTERRUPT
       6331   5752                     JMP I    MLV14A   /JMP TO MLV14 SUBROUTINE
       6332   ØØØØ                     AND      LOCØ     /LEVEL 13 INTERRUPT
       6333   5753                     JMP I    MLV15A   /JMP TO MLV15 SUBROUTINE
       6334   ØØØØ                     AND      LOCØ     /LEVEL 14 INTERRUPT
       6335   5754                     JMP I    MLV16A   /JMP TO MLV16 SUBROUTINE
                               /
       6336   7512             MLVØA,  MLVØ
       6337   7445             MLV1A,  MLV1
       634Ø   74ØØ             MLV2A,  MLV2
       6341   7312             MLV3A,  MLV3
       6342   7245             MLV4A,  MLV4
       6343   72ØØ             MLV5A,  MLV5
       6344   7112             MLV6A,  MLV6
       6345   7Ø45             MLV7A,  MLV7
       6346   7ØØØ             MLV1ØA, MLV1Ø
       6347   6712             MLV11A, MLV11
       635Ø   6645             MLV12A, MLV12
       6351   66ØØ             MLV13A, MLV13
       6352   6512             MLV14A, MLV14
       6353   6445             MLV15A, MLV15
       6354   64ØØ             MLV16A, MLV16
```

```
                        /
                        /MULTIPLE LEVEL INTERRUPT-LEVEL 14
                        /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
                        /
              6400              *6400
        6400  7402      MLV16,  HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 14 INTERRUPT
        6401  7300              CLA CLL                 /CLEAR AC AND LINC
        6402  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
        6403  3200              DCA     MLV16   /DEPOSIT IN LOC MLV16
        6404  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
        6405  3245              DCA     MLV15   /ENABLE LEVEL 13 INTERRUPT BY SETTING LOC MLV15 = NOP
        6406  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
        6407  3002              DCA     IMAGE   /IMAGE OF AC
        6410  1002              TAD     IMAGE
        6411  7041              CIA             /COMPLIMENT AND INC
        6412  1115              TAD     K2172   /IMAGE SHOULD = 2172
        6413  7440              SZA             /AC = 0
        6414  7402              HLT             /ERR
        6415  1433              TAD I   STACK+1 /GET PC STORED IN LOC STACKK+1
        6416  7041              CIA             /COMPLIMENT AND INC
        6417  1221              TAD     .+2     /PC STORED IN STACKK+1 SHOULD = T56A-1
        6420  5222              JMP     .+2
        6421  2654              T56A-1
        6422  7440              SZA             /AC = 0
        6423  7402              HLT             /ERR
        6424  1433              TAD I   STACK+1 /GET PC STORED IN LOC STACKK+1
        6425  7001              IAC             /INCREMENT
        6426  3433              DCA I   STACK+1 /STORE BACK IN LOC STACKK+1
        6427  1045              TAD     K3      /AC = 3
        6430  6032              MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 13 INTERRUPT
        6431  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN2 IOT
        6432  7402      MLV16B, HLT
        6433  7300              CLA CLL         /AC = 0--RESTORE OCCURES TO HERE FROM MLV15 ROUTINE
        6434  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
        6435  3002              DCA     IMAGE   /IMAGE OF AC
        6436  1002              TAD     IMAGE
        6437  7041              CIA             /COMPLIMENT AND INC
        6440  1115              TAD     K2172   /IMAGE SHOULD = 2172
        6441  7440              SZA             /AC = 0
        6442  7402              HLT             /ERR
        6443  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
        6444  7402              HLT             /ERR
```

```

                  /
                  /MULTIPLE LEVEL INTERRUPT-LEVEL 13
                  /PREVIOUS STATUS SAVED ON STACK LOC 56Ø5 TO 5611
                  /
6445  74Ø2        MLV15,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 13 INTERRUPT
6446  73ØØ                CLA CLL         /CLEAR AC AND LINC
6447  115Ø                TAD     K74Ø2   /AC = 74Ø2 OR 8-MODE HLT
645Ø  3245                DCA     MLV15   /DEPOSIT IN LOC MLV15
6451  1142                TAD     K7ØØØ   /AC = 7ØØØ OR 8-MODE NOP
6452  3312                DCA     MLV14   /ENABLE LEVEL 12 INTERRUPT BY SETTING LOC MLV14 = NOP
6453  6774                RSTK            /READ STACK ADDRESS REGISTER INTO AC
6454  3ØØ2                DCA     IMAGE   /IMAGE OF AC
6455  1ØØ2                TAD     IMAGE
6456  7Ø41                CIA             /COMPLIMENT AND INC
6457  1114                TAD     K2165   /IMAGE SHOULD = 2165
646Ø  744Ø                SZA             /AC = Ø
6461  74Ø2                HLT             /ERR
6462  176Ø                TAD I   STK1    /GET PC STORED IN LOC STK1P
6463  7Ø41                CIA             /COMPLIMENT AND INC
6464  1266                TAD     .+2     /PC STORED IN LOC STK1P SHOULD = MLV16B
6465  5267                JMP     .+2
6466  6432                MLV16B
6467  744Ø                SZA             /AC = Ø
647Ø  74Ø2                HLT             /ERR
6471  176Ø                TAD I   STK1    /GET PC STORED IN LOC STK1P
6472  7ØØ1                IAC             /INCREMENT
6473  376Ø                DCA I   STK1    /STORE BACK IN LOC STK1P
6474  1Ø47                TAD     K7      /AC = 7
6475  6Ø52                MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 12 INTERRUPT
6476  7ØØØ                NOP             /EXECUTE 1 MORE INST AFTER MAIN2 IOT
6477  74Ø2        MLV15B, HLT
65ØØ  73ØØ                CLA CLL         /AC = Ø--RESTORE OCCURES TO HERE FROM MLV14 ROUTINE
65Ø1  6774                RSTK            /READ STACK ADDRESS REGISTER INTO AC
65Ø2  3ØØ2                DCA     IMAGE   /IMAGE OF AC
65Ø3  1ØØ2                TAD     IMAGE
65Ø4  7Ø41                CIA             /COMPLIMENT AND INC
65Ø5  1114                TAD     K2165   /IMAGE SHOULD = 2165
65Ø6  744Ø                SZA             /AC = Ø
65Ø7  74Ø2                HLT             /ERR
651Ø  6771                RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
6511  74Ø2                HLT             /ERR
```

```
                           /
                           /MULTIPLE LEVEL INTERRUPT - LEVEL 12
                           /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5612 TO 5616
                           /
          6512  74Ø2       MLV14,  HLT                  /CHANGED FROM HLT TO NOP FOR LEVEL 12 INTERRUPT
          6513  73ØØ               CLA CLL              /CLEAR AC AND LINC
          6514  115Ø               TAD     K74Ø2        /AC = 74Ø2 OR 8-MODE HLT
          6515  3312               DCA     MLV14        /DEPOSIT IN LOC MLV14
          6516  1142               TAD     K7ØØØ        /AC = 7ØØØ OR 8-MODE NOP
          6517  3757               DCA I   MLV13I       /ENABLE LEVEL 11 INTERRUPT BY SETTING LOC MLV13=NOP
          652Ø  6774               RSTK                 /READ STACK ADDRESS REGISTER INTO AC
          6521  3ØØ2               DCA     IMAGE        /IMAGE OF AC
          6522  1ØØ2               TAD     IMAGE
          6523  7Ø41               CIA                  /COMPLIMENT AND INC
          6524  1113               TAD     K216Ø        /IMAGE SHOULD = 216Ø
          6525  744Ø               SZA                  /AC = Ø
          6526  74Ø2               HLT                  /ERR
          6527  1761               TAD I   STK2         /GET PC STORED IN LOC STK2P
          653Ø  7Ø41               CIA                  /COMPLIMENT AND INC
          6531  1333               TAD     .+2          /PC STORED IN LOC STK2P SHOULD = MLV15B
          6532  5334               JMP     .+2
          6533  6477               MLV15B
          6534  744Ø               SZA                  /AC = Ø
          6535  74Ø2               HLT                  /ERR
          6536  1761               TAD I   STK2         /GET PC STORED IN LOC STK2P
          6537  7ØØ1               IAC                  /INCREMENT
          654Ø  3761               DCA I   STK2         /STORE BACK IN LOC STK2P
          6541  1Ø43               TAD     K1           /AC = 1
          6542  6Ø51               MAIN1                /MAINTENANCE MODE SIMULATION OF A LEVEL 11 INTERRUPT
          6543  7ØØØ               NOP                  /EXECUTE 1 MORE TEST INST AFTER MAIN1 IOT
          6544  74Ø2       MLV14B, HLT
          6545  73ØØ               CLA CLL              /AC = Ø--RESTOR OCCURS TO HERE FROM MLV13 ROUTINE
          6546  6774               RSTK                 /READ STACK ADDRESS REGISTER INTO AC
          6547  3ØØ2               DCA     IMAGE        /IMAGE OF AC
          655Ø  1ØØ2               TAD     IMAGE
          6551  7Ø41               CIA                  /COMPLIMENT AND INC
          6552  1113               TAD     K216Ø        /IMAGE SHOULD = 216Ø
          6553  744Ø               SZA                  /AC = Ø
          6554  74Ø2               HLT                  /ERR
          6555  6771               RES                  /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
          6556  74Ø2               HLT                  /ERR
                           /
          6557  66ØØ       MLV13I, MLV13
          656Ø  56Ø6       STK1,   STK1P
          6561  5613       STK2,   STK2P
```

```
                        /
                        /MULTIPLE LEVEL INTERRUPT - LEVEL 11
                        /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5617 TO 5623
                        /
              6600              *6600
        6600  7402      MLV13,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 11 INTERRUPT
        6601  7300              CLA CLL         /CLEAR AC AND LINC
        6602  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
        6603  3200              DCA     MLV13   /DEPOSIT IN LOC MLV13
        6604  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
        6605  3245              DCA     MLV12   /ENABLE LEVEL 10 INTERRUPT BY SETTING LOC MLV12 = NOP
        6606  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
        6607  3002              DCA     IMAGE   /IMAGE OF AC
        6610  1002              TAD     IMAGE
        6611  7041              CIA             /COMPLIMENT AND INC
        6612  1112              TAD     K2153   /IMAGE SHOULD = 2153
        6613  7440              SZA             /AC = 0
        6614  7402              HLT             /ERR
        6615  1760              TAD I   STK3    /GET PC STORED IN LOC STK3P
        6616  7041              CIA             /COMPLIMENT AND INC
        6617  1221              TAD     .+2     /PC STORED IN LOC STK3P SHOULD = MLV14B
        6620  5222              JMP     .+2
        6621  6544              MLV14B
        6622  7440              SZA             /AC = 0
        6623  7402              HLT             /ERR
        6624  1760              TAD I   STK3    /GET PC STORED IN LOC STK3P
        6625  7001              IAC             /INCREMENT
        6626  3760              DCA I   STK3    /STORE BACK IN LOC STK3P
        6627  1045              TAD     K3      /AC = 3
        6630  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF LEVEL 10 INTERRUPT
        6631  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
        6632  7402      MLV13B, HLT
        6633  7300              CLA CLL         /AC = 0--RESTORE OCCURS TO HERE FROM MLV12 ROUTINE
        6634  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
        6635  3002              DCA     IMAGE   /IMAGE OF AC
        6636  1002              TAD     IMAGE
        6637  7041              CIA             /COMPLIMENT AND INC
        6640  1112              TAD     K2153   /IMAGE SHOULD = 2153
        6641  7440              SZA             /AC = 0
        6642  7402              HLT             /ERR
        6643  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
        6644  7402              HLT             /ERR
```

```

                        /
                        /MULTIPLE LEVEL INTERRUPT - LEVEL 10
                        /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5624 TO 5630
                        /
        6645  7402      MLV12,  HLT                 /CHANGED FROM HLT TO NOP FOR LEVEL 10 INTERRUPT
        6646  7300              CLA CLL             /CLEAR AC AND LINC
        6647  1150              TAD     K7402       /AC = 7402 OR 8-MODE HLT
        6650  3245              DCA     MLV12       /DEPOSIT IN LOC MLV12
        6651  1142              TAD     K7000       /AC = 7000 OR 8-MODE
        6652  3312              DCA     MLV11       /ENABLE LEVEL 9 INTERRUPT BY SETTING LOC MLV11 = NOP
        6653  6774              RSTK                /READ STACK ADDRESS REGISTER INTO AC
        6654  3002              DCA     IMAGE       /IMAGE OF AC
        6655  1002              TAD     IMAGE
        6656  7041              CIA                 /COMPLIMENT AND INC
        6657  1111              TAD     K2146       /IMAGE SHOULD = 2146
        6660  7440              SZA                 /AC = 0
        6661  7402              HLT                 /ERR
        6662  1761              TAD I   STK4        /GET PC STORED IN LOC STK4P
        6663  7041              CIA                 /COMPLIMENT AND INC
        6664  1266              TAD     .+2         /PC STORED IN LOC STK3P SHOULD = MLV13B
        6665  5267              JMP     .+2
        6666  6632              MLV13B
        6667  7440              SZA                 /AC = 0
        6670  7402              HLT                 /ERR
        6671  1761              TAD I   STK4        /GET PC STORED IN LOC STK4P
        6672  7001              IAC                 /INCREMENT
        6673  3761              DCA I   STK4        /STORE BACK IN LOC STK4P
        6674  1047              TAD     K7          /AC = 7
        6675  6051              MAIN1               /MAINTENANCE MODE SIMULATION OF A LEVEL 9 INTERRUPT
        6676  7000              NOP                 /EXECUTE 1 MORE INST AFTER MAIN1 IOT
        6677  7402      MLV12B, HLT
        6700  7300              CLA CLL             /AC = 0--RESTORE OCCURS TO HERE FROM MLV11 ROUTINE
        6701  6774              RSTK                /READ STACK ADDRESS REGISTER INTO AC
        6702  3002              DCA     IMAGE       /IMAGE OF AC
        6703  1002              TAD     IMAGE
        6704  7041              CIA                 /COMPLIMENT AND INC
        6705  1111              TAD     K2146       /IMAGE SHOULD = 2146
        6706  7440              SZA                 /AC = 0
        6707  7402              HLT                 /ERR
        6710  6771              RES                 /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
        6711  7402              HLT                 /ERR
```

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                /
                /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 9
                /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5631 TO 5635
                /
6712  7402      MLV11,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 9 INTERRUPT
6713  73ØØ              CLA CLL         /CLEAR AC AND LINC
6714  115Ø              TAD     K74Ø2   /AC = 74Ø2 OR 8-MODE HLT
6715  3312              DCA     MLV11   /DEPOSIT IN LOC MLV11
6716  1142              TAD     K7ØØØ   /AC = 7ØØØ OR 8-MODE HLT
6717  3757              DCA I   MLV1ØI  /ENABLE LEVEL 8 INTERRUPT BY SETTING LOC MLV1Ø = NOP
672Ø  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
6721  3ØØ2              DCA     IMAGE   /IMAGE OF AC
6722  1ØØ2              TAD     IMAGE
6723  7Ø41              CIA             /COMPLIMENT AND INC
6724  111Ø              TAD     K2141   /IMAGE SHOULD = 2141
6725  744Ø              SZA             /AC = Ø
6726  74Ø2              HLT             /ERR
6727  1762              TAD I   STK5    /GET PC STORED IN LOC STK5P
673Ø  7Ø41              CIA             /COMPLIMENT AND INC
6731  1333              TAD     .+2     /PC STORED IN LOC STK5P
6732  5334              JMP     .+2
6733  6677              MLV12B
6734  744Ø              SZA             /AC = Ø
6735  74Ø2              HLT             /ERR
6736  1762              TAD I   STK5    /GET PC STORED IN LOC STK5P
6737  7ØØ1              IAC             /INCREMENT
674Ø  3762              DCA I   STK5    /STORE BACK IN LOC STK5P
6741  1Ø51              TAD     K17     /AC = 17
6742  6Ø51              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 8 INTERRUPT
6743  7ØØØ              NOP             /EXECUTE 1 MORE TEST AFTER MAIN1 IOT
6744  74Ø2      MLV11B, HLT
6745  73ØØ              CLA CLL         /AC = Ø--RESTORE OCCURS HERE FROM MLV1Ø ROUTINE
6746  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
6747  3ØØ2              DCA     IMAGE   /IMAGE OF AC
675Ø  1ØØ2              TAD     IMAGE
6751  7Ø41              CIA             /COMPLIMENT AND INC
6752  111Ø              TAD     K2141   /IMAGE SHOULD = 2141
6753  744Ø              SZA             /AC = Ø
6754  74Ø2              HLT             /ERR
6755  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
6756  74Ø2              HLT             /ERR
                /
6757  7ØØØ      MLV1ØI, MLV1Ø
676Ø  562Ø      STK3,   STK3P
6761  5625      STK4,   STK4P
6762  5632      STK5,   STK5P
```

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                       /
                       /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 8
                       /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5636 TO 5642
                       /
            7ØØØ               *7ØØØ
      7ØØØ  74Ø2       MLV1Ø,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 8 INTERRUPT
      7ØØ1  73ØØ               CLA CLL         /CLEAR AC AND LINC
      7ØØ2  115Ø               TAD     K74Ø2   /AC=74Ø2 OR 8-MODE HLT
      7ØØ3  32ØØ               DCA     MLV1Ø   /DEPOSIT IN LOC MLV1Ø
      7ØØ4  1142               TAD     K7ØØØ   /AC=7ØØØ OR 8-MODE NOP
      7ØØ5  3245               DCA     MLV7    /ENABLE LEVEL 7 INTERRUPT BY SETTING LOC MLV7=NOP
      7ØØ6  6774               RSTK            /READ STACK ADDRESS REGISTER INTO AC
      7ØØ7  3ØØ2               DCA     IMAGE   /IMAGE OF AC
      7Ø1Ø  1ØØ2               TAD     IMAGE
      7Ø11  7Ø41               CIA             /COMPLIMENT AND INC
      7Ø12  11Ø7               TAD     K2134   /IMAGE SHOULD = 2134
      7Ø13  744Ø               SZA             /AC = Ø
      7Ø14  74Ø2               HLT             /ERR
      7Ø15  176Ø               TAD I   STK6    /GET PC STORED IN LOC STK6P
      7Ø16  7Ø41               CIA             /COMPLIMENT AND INC
      7Ø17  1221               TAD     .+2     /PC STORED IN LOC STK6P SHOULD=MLV11B
      7Ø2Ø  5222               JMP     .+2
      7Ø21  6744               MLV11B
      7Ø22  744Ø               SZA             /AC = Ø
      7Ø23  74Ø2               HLT             /ERR
      7Ø24  176Ø               TAD I   STK6    /GET PC STORED IN LOC STK6P
      7Ø25  7ØØ1               IAC             /INCREMENT
      7Ø26  376Ø               DCA I   STK6    /STORE BACK IN LOC STK6P
      7Ø27  1Ø53               TAD     K37     /AC = 37
      7Ø3Ø  6Ø51               MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 7 INTERRUPT
      7Ø31  7ØØØ               NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
      7Ø32  74Ø2       MLV1ØB, HLT

      7Ø33  73ØØ               CLA CLL         /AC = Ø--RESTORE OCCURS TO HERE FROM MLV7 ROUTINE
      7Ø34  6774               RSTK            /READ STACK ADDRESS REGISTER INTO AC
      7Ø35  3ØØ2               DCA     IMAGE   /IMAGE OF AC
      7Ø36  1ØØ2               TAD     IMAGE
      7Ø37  7Ø41               CIA             /COMPLIMENT AND INC
      7Ø4Ø  11Ø7               TAD     K2134   /IMAGE SHOULD = 2134
      7Ø41  744Ø               SZA             /AC = Ø
      7Ø42  74Ø2               HLT             /ERR
      7Ø43  6771               RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
      7Ø44  74Ø2               HLT             /ERR
```

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                          /
                          /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 7
                          /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5643 TO 5647
                          /
        7045  7402        MLV7,   HLT                 /CHANGED FROM HLT TO NOP FOR LEVEL 7 INTERRUPT
        7046  7300                CLA CLL             /CLEAR AC AND LINC
        7047  1150                TAD     K7402       /AC = 7402 OR 8-MODE HLT
        7050  3245                DCA     MLV7        /DEPOSIT IN LOC MLV7
        7051  1142                TAD     K7000       /AC = 7000 OR 8-MODE NOP
        7052  3312                DCA     MLV6        /ENABLE LEVEL 6 INTERRUPT BY SETTING LOC MLV6 = NOP
        7053  6774                RSTK                /READ STACK ADDRESS REGISTER INTO AC
        7054  3002                DCA     IMAGE       /IMAGE OF AC
        7055  1002                TAD     IMAGE
        7056  7041                CIA                 /COMPLIMENT AND INC
        7057  1106                TAD     K2127       /IMAGE SHOULD = 2127
        7060  7440                SZA                 /AC = 0
        7061  7402                HLT                 /ERR
        7062  1761                TAD I   STK7        /GET PC STORED IN LOC STK7P
        7063  7041                CIA                 /COMPLIMENT AND INC
        7064  1266                TAD     .+2         /PC STORED IN LOC STK7P SHOULD = MLV10B
        7065  5267                JMP     .+2
        7066  7032                MLV10B
        7067  7440                SZA                 /AC = 0
        7070  7402                HLT                 /ERR
        7071  1761                TAD I   STK7        /GET PC STORED IN LOC STK7P
        7072  7001                IAC                 /INCREMENT
        7073  3761                DCA I   STK7        /STORE BACK IN LOC STK7P
        7074  1056                TAD     K77         /AC = 77
        7075  6051                MAIN1               /MAINTENANCE MODE SIMULATION OF A LEVEL 6 INTERRUPT
        7076  7000                NOP                 /EXECUTE 1 MORE INST AFTER MAIN1 IOT
        7077  7402        MLV7B,  HLT
        7100  7300                CLA CLL             /AC = 0--RESTORE OCCURS TO HERE FROM MLV6 ROUTINE
        7101  6774                RSTK                /READ STACK ADDRESS REGISTER INTO AC
        7102  3002                DCA     IMAGE       /IMAGE OF AC
        7103  1002                TAD     IMAGE
        7104  7041                CIA                 /COMPLIMENT AND INC
        7105  1106                TAD     K2127       /IMAGE SHOULD = 2127
        7106  7440                SZA                 /AC = 0
        7107  7402                HLT                 /ERR
        7110  6771                RES                 /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
        7111  7402                HLT                 /ERR
```

```
                  /
                  /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 6
                  /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 565Ø TO 5654
                  /
7112  74Ø2        MLV6,   HLT               /CHANGED FROM HLT TO NOP FOR LEVEL 6 INTERRUPT
7113  73ØØ                CLA CLL           /CLEAR AC AND LINC
7114  115Ø                TAD     K74Ø2     /AC = 74Ø2 OR 8-MODE HLT
7115  3312                DCA     MLV6      /DEPOSIT IN LOC MLV6
7116  1142                TAD     K7ØØØ     /AC = 7ØØØ OR 8-MODE NOP
7117  3757                DCA I   MLV5I     /ENABLE LEVEL 5 INTERRUPT BY SETTING LOC MLV5 = NOP
712Ø  6774                RSTK              /READ STACK ADDRESS REGISTER INTO AC
7121  3ØØ2                DCA     IMAGE     /IMAGE OF AC
7122  1ØØ2                TAD     IMAGE
7123  7Ø41                CIA               /COMPLIMENT AND INCREMENT
7124  11Ø5                TAD     K2122     /IMAGE SHOULD = 2122
7125  744Ø                SZA               /AC = Ø
7126  74Ø2                HLT               /ERR
7127  1762                TAD I   STK1Ø     /GET PC STORED IN LOC STK1ØP
713Ø  7Ø41                CIA               /COMPLIMENT AND INC
7131  1333                TAD     .+2       /PC STORED IN LOC STK1ØP SHOULD = MLV7B
7132  5334                JMP     .+2
7133  7Ø77                MLV7B
7134  744Ø                SZA               /AC = Ø
7135  74Ø2                HLT               /ERR
7136  1762                TAD I   STK1Ø     /GET PC STORED IN LOC STK1ØP
7137  7ØØ1                IAC               /INCREMENT
714Ø  3762                DCA I   STK1Ø     /STORE BACK IN LOC STK1ØP
7141  1Ø6Ø                TAD     K177      /AC = 177
7142  6Ø51                MAIN1             /MAINTENANCE MODE SIMULATION OF A LEVEL 5 INTERRUPT
7143  7ØØØ                NOP               /EXECUTE 1 MORE INST AFTER MAIN1 IOT
7144  74Ø2        MLV6B,  HLT
7145  73ØØ                CLA CLL           /AC = Ø--RESTORE OCCURS TO HERE FROM MLV5 ROUTINE
7146  6774                RSTK              /READ STACK ADDRESS REGISTER INTO AC
7147  3ØØ2                DCA     IMAGE     /IMAGE OF AC
715Ø  1ØØ2                TAD     IMAGE
7151  7Ø41                CIA               /COMPLIMENT AND INC
7152  11Ø5                TAD     K2122     /IMAGE SHOULD = 2122
7153  744Ø                SZA               /AC = Ø
7154  74Ø2                HLT               /ERR
7155  6771                RES               /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
7156  74Ø2                HLT               /ERR
                  /
7157  72ØØ        MLV5I,  MLV5
716Ø  5637        STK6,   STK6P
7161  5644        STK7,   STK7P
7162  5651        STK1Ø,  STK1ØP
```

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                             /
                             /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 5
                             /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5655 TO 5661
                             /
              72ØØ                     *72ØØ
      72ØØ    74Ø2           MLV5,     HLT                 /CHANGED FROM HLT TO NOP FOR LEVEL 5 INTERRUPT
      72Ø1    73ØØ                     CLA CLL             /CLEAR AC AND LINC
      72Ø2    115Ø                     TAD       K74Ø2     /AC=74Ø2 OR 8 MODE HLT
      72Ø3    32ØØ                     DCA       MLV5      /DEPOSIT IN LOC MLV5
      72Ø4    1142                     TAD       K7ØØØ     /AC=7ØØØ OR 8-MODE NOP
      72Ø5    3245                     DCA       MLV4      /ENABLE LEVEL 4 INTERRUPT BY SETTING LOC MLV4=NOP
      72Ø6    6774                     RSTK                /READ STACK ADDRESS REGISTER INTO AC
      72Ø7    3ØØ2                     DCA       IMAGE     /IMAGE OF AC
      721Ø    1ØØ2                     TAD       IMAGE
      7211    7Ø41                     CIA                 /COMPLIMENT AND INC
      7212    11Ø4                     TAD       K2115     /IMAGE SHOULD = 2115
      7213    744Ø                     SZA                 /AC=Ø
      7214    74Ø2                     HLT                 /ERR
      7215    176Ø                     TAD I     STK11     /GET PC STORED IN LOC STK11P
      7216    7Ø41                     CIA                 /COMPLIMENT AND INC
      7217    1221                     TAD       .+2       /PC STORED IN LOC STK11P SHOULD = MLV6B
      722Ø    5222                     JMP       .+2
      7221    7144                     MLV6B
      7222    744Ø                     SZA                 /AC=Ø
      7223    74Ø2                     HLT                 /ERR
      7224    176Ø                     TAD I     STK11     /GET PC STORED IN LOC STK11P
      7225    7ØØ1                     IAC                 /INCREMENT
      7226    376Ø                     DCA I     STK11     /STORE BACK IN LOC STK11P
      7227    1Ø64                     TAD       K377      /AC=377
      723Ø    6Ø51                     MAIN1               /MAINTENANCE MODE SIMULATION OF A LEVEL 4 INTERRUPT
      7231    7ØØØ                     NOP                 /EXECUTE 1 MORE INST AFTER MAIN1 IOT
      7232    74Ø2           MLV5B,    HLT
      7233    73ØØ                     CLA CLL             /AC=Ø--RESTORE OCCURS TO HERE FROM MLV4 ROUTINE
      7234    6774                     RSTK                /READ STACK ADDRESS REGISTER INTO AC
      7235    3ØØ2                     DCA       IMAGE     /IMAGE OF AC
      7236    1ØØ2                     TAD       IMAGE
      7237    7Ø41                     CIA                 /COMPLIMENT AND INC
      724Ø    11Ø4                     TAD       K2115     /IMAGE SHOULD = 2115
      7241    744Ø                     SZA                 /AC=Ø
      7242    74Ø2                     HLT                 /ERR
      7243    6771                     RES                 /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
      7244    74Ø2                     HLT                 /ERR
```

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                         /
                         /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 4
                         /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5662 TO 5666
                         /
      7245  74Ø2         MLV4,   HLT                 /CHANGED FROM HLT TO NOP FOR LEVEL 4 INTERRUPT
      7246  73ØØ                 CLA CLL             /CLEAR AC AND LINC
      7247  115Ø                 TAD     K74Ø2       /AC=74Ø2 OR 8-MODE HLT
      725Ø  3245                 DCA     MLV4        /DEPOSIT IN LOC MLV4
      7251  1142                 TAD     K7ØØØ       /AC=7ØØØ OR 8-MODE NOP
      7252  3312                 DCA     MLV3        /ENABLE LEVEL 3 INTERRUPT BY SETTING LOC MLV3=NOP
      7253  6774                 RSTK                /READ STACK ADDRESS REGISTER INTO AC
      7254  3ØØ2                 DCA     IMAGE       /IMAGE OF AC
      7255  1ØØ2                 TAD     IMAGE
      7256  7Ø41                 CIA                 /COMPLIMENT AND INC
      7257  11Ø3                 TAD     K211Ø       /IMAGE SHOULD = 211Ø
      726Ø  744Ø                 SZA                 /AC=Ø
      7261  74Ø2                 HLT                 /ERR
      7262  1761                 TAD I   STK12       /GET PC STORED IN LOC STK12P
      7263  7Ø41                 CIA                 /COMPLIMENT AND INC
      7264  1266                 TAD     .+2         /PC STORED IN LOC STK12P SHOULD = MLV5B
      7265  5267                 JMP     .+2
      7266  7232                 MLV5B
      7267  744Ø                 SZA                 /AC=Ø
      727Ø  74Ø2                 HLT                 /ERR
      7271  1761                 TAD I   STK12       /GET PC STORED IN LOC STK12P
      7272  7ØØ1                 IAC                 /INCREMENT
      7273  3761                 DCA I   STK12       /STORE BACK IN LOC STK12P
      7274  1Ø7Ø                 TAD     K777        /AC=777
      7275  6Ø51                 MAIN1               /MAINTENANCE MODE SIMULATION OF A LEVEL 3 INTERRUPT
      7276  7ØØØ                 NOP                 /EXECUTE 1 MORE INST AFTER MAIN1 IOT
      7277  74Ø2         MLV4B,  HLT
      73ØØ  73ØØ                 CLA CLL             /AC=Ø--RESTORE OCCURS TO HERE FROM MLV3 ROUTINE
      73Ø1  6774                 RSTK                /READ STACK ADDRESS REGISTER INTO AC
      73Ø2  3ØØ2                 DCA     IMAGE       /IMAGE OF AC
      73Ø3  1ØØ2                 TAD     IMAGE
      73Ø4  7Ø41                 CIA                 /COMPLIMENT AND INC
      73Ø5  11Ø3                 TAD     K211Ø       /IMAGE SHOULD=211Ø
      73Ø6  744Ø                 SZA                 /AC=Ø
      73Ø7  74Ø2                 HLT                 /ERR
      731Ø  6771                 RES                 /RESTORE MACHINE TO LAST STATUS STORED ON STACK
      7311  74Ø2                 HLT                 /ERR
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                        /
                        /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 3
                        /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5667 TO 5673
                        /
        7312  7402      MLV3,   HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 3 INTERRUPT
        7313  7300              CLA CLL                 /CLEAR AC AND LINC
        7314  1150              TAD     K7402           /AC=7402 OR 8-MODE HLT
        7315  3312              DCA     MLV3            /DEPOSIT IN LOC MLV3
        7316  1142              TAD     K7000           /AC=7000 OR 8-MODE NOP
        7317  3757              DCA I   MLV2I           /ENABLE LEVEL 2 INTERRUPT BY SETTING LOC MLV2=NOP
        7320  6774              RSTK                    /READ STACK ADDRESS REGISTER INTO AC
        7321  3002              DCA     IMAGE           /IMAGE OF AC
        7322  1002              TAD     IMAGE
        7323  7041              CIA                     /COMPLEMENT AND INC
        7324  1102              TAD     K2103           /IMAGE SHOULD =2103
        7325  7440              SZA                     /AC=0
        7326  7402              HLT                     /ERR
        7327  1762              TAD I   STK13           /GET PC STORED IN LOC STK13P
        7330  7041              CIA                     /COMPLIMENT AND INC
        7331  1333              TAD     .+2             /PC STORED IN LOC STK13P SHOULD = MLV4B
        7332  5334              JMP     .+2
        7333  7277              MLV4B
        7334  7440              SZA                     /AC=0
        7335  7402              HLT                     /ERR
        7336  1762              TAD I   STK13           /GET PC STORED IN LOC STK13P
        7337  7001              IAC                     /INCREMENT
        7340  3762              DCA I   STK13           /STORE BACK IN LOC STK13P
        7341  1075              TAD     K1777           /AC=1777
        7342  6051              MAIN1                   /MAINTENANCE MODE SIMULATION OF A LEVEL 2 INTERRRUPT
        7343  7000              NOP                     /EXECUTE 1 MORE INST AFTER MAIN1 IOT
        7344  7402      MLV3B,  HLT
        7345  7300              CLA CLL                 /AC=0--RESTORE OCCURS TO HERE FROM MLV2 ROUTINE
        7346  6774              RSTK                    /READ STACK ADDRESS REGISTER INTO AC
        7347  3002              DCA     IMAGE           /IMAGE OF AC
        7350  1002              TAD     IMAGE
        7351  7041              CIA                     /COMPLIMENT AND INC
        7352  1102              TAD     K2103           /IMAGE SHOULD=2103
        7353  7440              SZA                     /AC=0
        7354  7402              HLT                     /ERR
        7355  6771              RES                     /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        7356  7402              HLT                     /ERR
                        /
        7357  7400      MLV2I,  MLV2
        7360  5656      STK11,  STK11P
        7361  5663      STK12,  STK12P
        7362  5670      STK13,  STK13P
```

```

                        /
                        /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 2
                        /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5674 TO 57ØØ
                        /
        74ØØ                    *74ØØ
74ØØ    74Ø2    MLV2,   HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 2 INTERRUPT
74Ø1    73ØØ            CLA CLL                 /CLEAR AC AND LINC
74Ø2    115Ø            TAD     K74Ø2           /AC=74Ø2 OR 8-MODE HLT
74Ø3    32ØØ            DCA     MLV2            /DEPOSIT IN LOC MLV2
74Ø4    1142            TAD     K7ØØØ           /AC=7ØØØ OR 8-MODE NOP
74Ø5    3245            DCA     MLV1            /ENABLE LEVEL 1 INTERRUPT BY SETTING LOC MLV1=NOP
74Ø6    6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
74Ø7    3ØØ2            DCA     IMAGE           /IMAGE OF AC
741Ø    1ØØ2            TAD     IMAGE
7411    7Ø41            CIA                     /COMPLIMENT AND INC
7412    11Ø1            TAD     K2Ø76           /IMAGE SHOULD = 2Ø76
7413    744Ø            SZA                     /AC=Ø
7414    74Ø2            HLT                     /ERR
7415    1742            TAD I   STK14           /GET PC STORED IN LOC STK14P
7416    7Ø41            CIA                     /COMPLIMENT AND INC
7417    1221            TAD     .+2             /PC STORED IN LOC STK14P SHOULD = MLV3B
742Ø    5222            JMP     .+2
7421    7344            MLV3B
7422    744Ø            SZA                     /AC=Ø
7423    74Ø2            HLT                     /ERR
7424    1742            TAD I   STK14           /GET PC STORED IN LOC STK14P
7425    7ØØ1            IAC                     /INCREMENT
7426    3742            DCA I   STK14           /STORE BACK IN LOC STK14P
7427    1124            TAD     K3777           /AC=3777
743Ø    6Ø51            MAIN1                   /MAINTENANCE MODE SIMULATION OF A LEVEL 1 INTERRUPT
7431    7ØØØ            NOP                     /EXECUTE 1 MORE INST AFTER MAIN1 IOT
7432    74Ø2    MLV2B,  HLT
7433    73ØØ            CLA CLL                 /AC=Ø--RESTORE OCCURS TO HERE FROM MLV1 ROUTINE
7434    6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
7435    3ØØ2            DCA     IMAGE           /IMAGE OF AC
7436    1ØØ2            TAD     IMAGE
7437    7Ø41            CIA                     /COMPLIMENT AND INC
744Ø    11Ø1            TAD     K2Ø76           /IMAGE SHOULD = 2Ø76
7441    744Ø            SZA                     /AC=Ø
7442    74Ø2            HLT                     /ERR
7443    6771            RES                     /RESTORE MACHINE TO LAST STATUS STORED ON STACK
7444    74Ø2            HLT                     /ERR
```

```
                          /
                          /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 1
                          /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 57ØØ TO 57Ø4
                          /
      7445  74Ø2          MLV1,   HLT                 /CHANGED FROM HLT TO NOP FOR LEVEL 1 INTERRUPT
      7446  73ØØ                  CLA CLL             /CLEAR AC AND LINC
      7447  115Ø                  TAD     K74Ø2       /AC=74Ø2 OR 8-MODE HLT
      745Ø  3245                  DCA     MLV1        /DEPOSIT IN LOC MLV1
      7451  1142                  TAD     K7ØØØ       /AC=7ØØØ OR 8-MODE NOP
      7452  3312                  DCA     MLVØ        /ENABLE LEVEL Ø INTERRUPT BY SETTING LOC MLVØ=NOP
      7453  6774                  RSTK                /READ STACK ADDRESS REGISTER INTO AC
      7454  3ØØ2                  DCA     IMAGE       /IMAGE OF AC
      7455  1ØØ2                  TAD     IMAGE
      7456  7Ø41                  CIA                 /COMPLIMENT AND INC
      7457  11ØØ                  TAD     K2Ø71       /IMAGE SHOULD = 2Ø71
      746Ø  744Ø                  SZA                 /AC=Ø
      7461  74Ø2                  HLT                 /ERR
      7462  1743                  TAD I   STK15       /GET PC STORED IN LOC STK15P
      7463  7Ø41                  CIA                 /COMPLIMENT AND INC
      7464  1266                  TAD     .+2         /PC STORED IN LOC STK15P SHOULD = MLV2Ø
      7465  5267                  JMP     .+2
      7466  7432                  MLV2Ø
      7467  744Ø                  SZA                 /AC=Ø
      747Ø  74Ø2                  HLT                 /ERR
      7471  1743                  TAD I   STK15       /GET PC STORED IN LOC STK15P
      7472  7ØØ1                  IAC                 /INCREMENT
      7473  3743                  DCA I   STK15       /STORE BACK IN LOC STK15P
      7474  734Ø                  CLA CLL CMA         /AC=7777
      7475  6Ø51                  MAIN1               /MAINTENANCE MODE SIMULATION OF A LEVEL Ø INTERRUPT
      7476  7ØØØ                  NOP                 /EXECUTE 1 MORE INST AFTER MAIN1 IOT
      7477  74Ø2          MLV1Ø,  HLT
      75ØØ  73ØØ                  CLA CLL             /AC=Ø -- RESTORE OCCURS TO HERE FROM MLV1 ROUTINE
      75Ø1  6774                  RSTK                /READ STACK ADDRESS REGISTER INTO AC
      75Ø2  3ØØ2                  DCA     IMAGE       /IMAGE OF AC
      75Ø3  1ØØ2                  TAD     IMAGE
      75Ø4  7Ø41                  CIA                 /COMPLIMENT AND INC
      75Ø5  11ØØ                  TAD     K2Ø71       /IMAGE SHOULD = 2Ø71
      75Ø6  744Ø                  SZA                 /AC=Ø
      75Ø7  74Ø2                  HLT                 /ERR
      751Ø  6771                  RES                 /RESTORE MACHINE TO LAST STATUS STORED ON STACK
      7511  74Ø2                  HLT                 /ERR
```

```


                        /
                        /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 0
                        /PREVIOUS MACHINE STATUS
                        /
        7512  7402      MLV0,   HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 0 INTERRUPT
        7513  7300              CLA CLL         /CLEAR AC AND LINC
        7514  1150              TAD     K7402   /AC=7402 OR 8-MODE HLT
        7515  3312              DCA     MLV0    /DEPOSIT IN LOC MLV0
        7516  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
        7517  3002              DCA     IMAGE   /IMAGE OF AC
        7520  1002              TAD     IMAGE
        7521  7041              CIA             /COMPLIMENT AND INC
        7522  1341              TAD     K2064   /IMAGE SHOULD = 2064
        7523  7440              SZA             /AC=0
        7524  7402              HLT             /ERR
        7525  1744              TAD I   STK16   /GET PC STORED IN LOC STK16P
        7526  7041              CIA             /COMPLIMENT AND INC
        7527  1331              TAD     .+2     /PC STORED IN LOC STK16P SHOULD = MLV1B
        7530  5332              JMP     .+2
        7531  7477              MLV1B
        7532  7440              SZA             /AC=0
        7533  7402              HLT             /ERR
        7534  1744              TAD I   STK16   /GET PC STORED IN LOC STK16P
        7535  7001              IAC             /INCREMENT
        7536  3744              DCA I   STK16   /STORE BACK IN LOC STK16P
        7537  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
        7540  7402              HLT             /ERR
                        /
        7541  2064      K2064,  2064
        7542  5675      STK14,  STK14P
        7543  5702      STK15,  STK15P
        7544  5707      STK16,  STK16P

                        $
```

```
ØØØØ  11111111  ØØØØØØØØ  11111111  11111111  11111111  11111111  11111111  11111111
Ø1ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

Ø2ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
Ø3ØØ  11111111  111ØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ

Ø4ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
Ø5ØØ  11111111  11111111  11111111  11111111  11111111  11111ØØØ  ØØØØØØØØ  ØØØØØØØØ

Ø6ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
Ø7ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  1111ØØØØ


1ØØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
11ØØ  11111111  11111111  11111111  11111111  111ØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ

12ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
13ØØ  11111111  11111111  11111111  11111111  11111111  1111ØØØØ  ØØØØØØØØ  ØØØØØØØØ

14ØØ  ØØ111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
15ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  ØØØØØØØØ

16ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
17ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  111ØØØØØ


2ØØØ  Ø1111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
21ØØ  11111111  11111111  11ØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ

22ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
23ØØ  11111111  11111111  11111111  11111111  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ

24ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
25ØØ  11111111  11111111  11111111  11111111  11111111  1111111Ø  ØØØØØØØØ  ØØØØØØØØ

26ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11ØØØØØØ
27ØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ


3ØØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
31ØØ  11111111  11111111  11111111  1111ØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ

32ØØ  11111111  11111111  11111111  11111111  11111111  11111111  11111111  1111111Ø
33ØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ  ØØØØØØØØ

34ØØ  ØØ111111  11111111  11111111  11111111  11111111  11111111  11111111  1111111Ø
35ØØ  11111111  11111111  11111111  11111111  11111111  11111111  ØØØØØØØØ  ØØØØØØØØ

36ØØ
37ØØ
```

```
4000  01111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11111111  11111111  11110000  00000000

4400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

4600
4700


5000
5100

5200
5300

5400
5500

5600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5700  11111111  11100000  00000000  00000000  00000000  00000000  00000000  00000000


6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110
6100  11111111  11111111  11111111  11111100  11111111  11111111  11111111  10000000

6200  11111111  11111111  11111111  11111111  11111111  11111111  11100000  00000000
6300  11111111  11111111  11111111  11111111  11111111  11111000  00000000  00000000

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6500  11111111  11111111  11111111  11111111  11111111  11111111  11000000  00000000

6600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6700  11111111  11111111  11111111  11111111  11111111  11111111  11100000  00000000


7000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7100  11111111  11111111  11111111  11111111  11111111  11111111  11100000  00000000

7200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7300  11111111  11111111  11111111  11111111  11111111  11111111  11100000  00000000

7400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7500  11111111  11111111  11111111  11111111  11111000  00000000  00000000  00000000

7600
7700
```

```
AGAIN   1074        K1000   0071        K5241   0131        MLV13B  6632
ALT0    4104        K1020   4361        K5252   0132        MLV13I  6557
ALT1    4140        K103    4360        K5400   0133        MLV14   6512
ALT2    4144        K1100   4163        K5577   0134        MLV14A  6352
APION   6006        K1441   0072        K5600   0135        MLV14B  6544
CLRST   0230        K1641   0073        K5777   0136        MLV15   6445
CLRSTK  0007        K17     0051        K60     0055        MLV15A  6353
CNT     1123        K1741   0074        K6000   0137        MLV15B  6477
COUNT   0023        K177    0060        K6100   0140        MLV16   6400
DO      4217        K1777   0075        K6300   0141        MLV16A  6354
E102    4567        K2      0044        K7      0047        MLV16B  6432
E17     4566        K20     0052        K7000   0142        MLV1A   6337
E4000   4570        K200    0061        K7017   0143        MLV1B   7477
EALTP   4502        K2000   0076        K7020   0144        MLV2    7400
EALTPJ  4175        K2020   0077        K7077   0145        MLV2A   6340
EFLD    4572        K2064   7541        K720    0067        MLV2B   7432
EFLDI   4174        K207    0062        K7277   0146        MLV2I   7357
EIF     4574        K2071   0100        K7400   0147        MLV3    7312
EIFI    4173        K2076   0101        K7402   0150        MLV3A   6341
ERE     4363        K2103   0102        K7577   0151        MLV3B   7344
ERES    4225        K2110   0103        K7600   0152        MLV4    7245
EREST   4347        K2115   0104        K77     0056        MLV4A   6342
ESTKT   4302        K2122   0105        K7740   0153        MLV4B   7277
EXIM    4573        K2127   0106        K7741   0154        MLV5    7200
EXTCIA  4165        K2134   0107        K7760   0155        MLV5A   6343
EXTCTR  4166        K2141   0110        K777    0070        MLV5B   7232
EXTGO   4035        K2146   0111        K7770   0156        MLV5I   7157
EXTKP5  4577        K2153   0112        KCDF    4171        MLV6    7112
EXTME   3557        K2160   0113        KMLV    4170        MLV6A   6344
EXTMEM  4001        K2165   0114        LOC0    0000        MLV6B   7144
EXTPJ   4513        K2172   0115        M16     0160        MLV7    7045
EXTPM7  4576        K2177   0116        M5      4362        MLV7A   6345
EXTRET  4117        K220    0063        M6      0157        MLV7B   7077
EXTRM1  4575        K2500   0117        MAIN1   6051        MORE    3434
EXTST   4176        K2501   0120        MAIN2   6052        MV16    2671
EXTSTK  4542        K2525   0121        MASK1   3555        PJA     6760
EXTTST  4436        K2777   0122        MASK2   3556        PJPC    0027
EXTX    4167        K3      0045        MLV0    7512        PJPC1   0030
EXXX    4571        K3500   0123        MLV0A   6336        PJPC2   0031
EXXXI   4172        K37     0053        MLV1    7445        RAN     0024
FLD1P   4200        K377    0064        MLV10   7000        RAN1    0025
FLD1PT  4177        K3777   0124        MLV10A  6346        RAN2    0026
IMAGE   0002        K4      0046        MLV10B  7032        RANN    0275
INC     0003        K40     0054        MLV10I  6757        RDF     6214
INCC    0266        K400    0065        MLV11   6712        RES     6771
IOF     6002        K4000   0125        MLV11A  6347        RIF     6224
ION     6001        K4377   4164        MLV11B  6744        RMLV    6773
IOPRE   0202        K4400   0126        MLV12   6645        RSTK    6774
IOPRES  0022        K5      4357        MLV12A  6350        RVEC    6775
K1      0043        K5020   0127        MLV12B  6677        SACMQL  0254
K10     0050        K520    0066        MLV13   6600        SETUP   0006
K100    0057        K5240   0130        MLV13A  6351        SETUPP  0213
```

```
SMLV     6772              T27      1632              UT16     14Ø2
SSTK     6776              T3       Ø453              UT16A    ØØØ4
STACK    ØØ32              T3Ø      1665              UT37     34Ø2
STACKK   56ØØ              T31      17Ø4              UT37A    ØØØ5
STK1     656Ø              T32      1741              VECØ     Ø161
STK1Ø    7162              T33      2ØØ1              VEC1     Ø162
STK1ØP   5651              T34      2Ø37              VEC1Ø    Ø171
STK11    736Ø              T34A     21Ø5              VEC11    Ø172
STK11P   5656              T35      22ØØ              VEC12    Ø173
STK12    7361              T35A     2236              VEC13    Ø174
STK12P   5663              T35AM1   6Ø76              VEC14    Ø175
STK13    7362              T36      2276              VEC15    Ø176
STK13P   567Ø              T37      24ØØ              VEC16    Ø177
STK14    7542              T4       Ø466              VEC2     Ø163
STK14P   5675              T4Ø      2415              VEC3     Ø164
STK15    7543              T41      2425              VEC4     Ø165
STK15P   57Ø2              T42      2435              VEC5     Ø166
STK16    7544              T43      2445              VEC6     Ø167
STK16P   57Ø7              T44      2455              VEC7     Ø17Ø
STK1P    56Ø6              T45      2465              VECTØ    614Ø
STK2     6561              T46      2475              VECT1    6145
STK2P    5613              T47      25Ø5              VECT1Ø   6217
STK3     676Ø              T5       Ø5Ø1              VECT11   6224
STK3P    562Ø              T5Ø      2515              VECT12   6231
STK4     6761              T51      2525              VECT13   6236
STK4P    5625              T52      2535              VECT14   6244
STK5     6762              T53      2545              VECT15   6251
STK5P    5632              T54      26ØØ              VECT16   6256
STK6     716Ø              T55      261Ø              VECT2    6152
STK6P    5637              T56      262Ø              VECT3    6157
STK7     7161              T56A     2655              VECT4    6164
STK7P    5644              T57      3ØØØ              VECT5    62ØØ
STKTST   4554              T6       Ø526              VECT6    62Ø5
SVEC     6777              T6Ø      3Ø71              VECT7    6212
TØ       Ø4ØØ              T6ØA     3112              VTØ      44ØØ
T1       Ø431              T6ØAM6   3133              XACMQ    Ø243
T1Ø      Ø625              T61      32ØØ
T11      Ø637              T61A     322Ø
T12      Ø662              T61AM5   3275
T13      Ø7ØØ              T62      3243
T14      Ø726              T62A     3262
T15      Ø744              T62AM6   3276
T16      1ØØØ              T63      34Ø3
T17      1Ø25              T64      3421
T2       Ø441              T65      3536
T2Ø      1Ø47              T66      3545
T21      1Ø66              T7       Ø6ØØ
T22      12ØØ              TST      6Ø36
T22A     1276              TSTA     ØØ42
T24      14Ø3              TSTPJ    1216
T24A     1527              TSTPJ1   1425
T26      16ØØ              TSTPJ2   2Ø53
```

```
ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME:  45 SECONDS

3K CORE USED
```

```
AGAIN       679#   699
ALTØ       2116   2117    2119    2123#
ALT1       2118   2153#   2161
ALT2       212Ø   2157#
APION        1Ø#  1Ø16    1Ø5Ø    1Ø84    1111    1148    1188    1225    13Ø3    1366    14Ø5    1659    169Ø    1756
           18Ø5   1852    1895    1917    2129
CLRST        39    2Ø4#    214
CLRSTK       39#   731     871    1ØØ9    122Ø    1279    1351    1397    1418    1433    1449    1464    1479    1495
           151Ø   1525    1541    1556    1571    1587    16Ø5    162Ø    1685    1751    18ØØ    1847    1893    1915
CNT          45    7Ø5#
COUNT        45#   677
DO         2215#  23Ø4
E1Ø2       2388   2453#
E17        238Ø   2452#
E4ØØØ      237Ø   2454#
EALTP      2185   2391#
EALTPJ     2Ø9Ø   2Ø93    2185#
EFLD       2184   2364    2456#
EFLDI      2Ø71   21Ø1    21Ø3    2184#
EIF        2183   2356    2458#
EIFI       2Ø97   2183#
ERE        2283   2318#
ERES       2221#  2318
EREST      2267   23Ø5#
ESTKT      222Ø   2268#
EXIM       2444   2445    2457#
EXTCIA     2Ø67   2165    2177#
EXTCTR     2Ø81   2Ø92    2Ø94    2112    2162    2164    2178#
EXTGO      2Ø82#  2166
EXTKP5     2446   2461#
EXTME      2ØØ9   2Ø28#
EXTMEM     2Ø28   2Ø52#   2173
EXTPJ      2392   24ØØ#   246Ø
EXTPM7     24Ø7   246Ø#
EXTRET     2136#  2459
EXTRM1     2375   2459#
EXTST      2Ø75   2186#
EXTSTK     2179   2186    2368    2373    2378    2383    2386    2395    2397    24Ø2    24Ø5    241Ø    2414    2419
           2421   2427#   2461
EXTTST     2325   2354#
EXTX       2141   2179#
EXXX       2182   2416    2455#
EXXXI      2Ø69   2Ø98    21ØØ    2182#
FLD1P      2187   2198#   23Ø9
FLD1PT     2172   2187#
IMAGE        34#   341     342     394     395     4Ø2     4Ø3     42Ø     421     427     428     449     45Ø     456
            457    47Ø     471     486     487     494     495     533     534     541     542     58Ø     581     588
            589    6Ø9     61Ø     616     617     633     634     64Ø     641     684     685     763     764     83Ø
            831    836     837     843     844    1Ø21    1Ø22    1Ø32    1Ø33    1153    1154    1164    1165    1236
           1237   1263    1264    1331    1332    1338    1339    165Ø    1651    1665    1666    2138    2139    2226
           2227   2261    2262    2269    227Ø    228Ø    2281    2293    2294    2642    2643    2649    265Ø    2656
           2657   29Ø6    29Ø7    2928    2929    2948    2949    297Ø    2971    299Ø    2991    3Ø12    3Ø13    3Ø37
           3Ø38   3Ø59    3Ø6Ø    3Ø79    3Ø8Ø    31Ø1    31Ø2    3121    3122    3143    3144    3169    317Ø    3192
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            3193    3212    3213    3234    3235    3254    3255    3276    3277    3302    3303    3324    3325    3344
            3345    3366    3367    3386    3387    3408    3409    3434    3435    3456    3457    3476    3477    3498
            3499    3516    3517
INC          35#    2666    2720    2728    2736    2744    2752    2762    2770    2778    2786    2794    2802    2811
            2820    2828    2836
INCC         35      251#    257
IOF          22#     290     321    1027    1062    1090    1136    1159    1200    2053    2083    2200
ION          21#     294    1123
IOPRE        44      169#    179     187
IOPRES       44#     360     400     492     519     539     566     638     666     690    1010    1046    1083    1106
            1280
K1           64#     254     489     497    1167    1574    1623    1658    2070    2080    2228    2263    2271    3006
K10          69#    1528
K100         76#    1482
K1000        86#    1436
K1020       2201    2316#
K103        2296    2315#
K1100       2085    2102    2175#
K1441        87#    1653
K1641        88#     846
K17          70#     692    3137
K1741        89#    2645
K177         77#    3270
K1777        90#    3402
K2           65#     790     946    1254    1559    1608    2068
K20          71#     194     337     629    1017    1028    1513
K200         78#    1467    2099
K2000        91#    1421
K2020        92#     442
K2064       3519    3535#
K207         79#     295
K2071        93#    3479    3501
K2076        94#    3437    3459
K2103        95#    3389    3411
K2110        96#    3347    3369
K2115        97#    3305    3327
K2122        98#    3257    3279
K2127        99#    3215    3237
K2134       100#    3172    3195
K2141       101#    3124    3146
K2146       102#    3082    3104
K2153       103#    3040    3062
K2160       104#    2993    3015
K2165       105#    2951    2973
K2172       106#     766    1239    2652    2909    2931
K2177       108#     839    1266    1334    1668
K220         80#     602
K2500       109#     576
K2501       110#     619
K2525       111#     416     459
K2777       112#     423
K3           66#     786     942    1244    2922    3053
K3500       113#    1918
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K37         72#   873   1283   1354   1374   14ØØ   1643   1687   1753   18Ø2   1849   1896   2Ø78   3185
K377        81#  3318
K3777      114#  345Ø
K4          67#  1544   159Ø
K4Ø         73#  1498
K4ØØ        82#  1452
K4ØØØ      115#  14Ø6   19Ø1   213Ø
K4377     21Ø4   21Ø6   211Ø   2144   2146   215Ø   2176#
K44ØØ      116#  2Ø72
K5        2217   23Ø2   2314#
K5Ø2Ø      117#   413
K52Ø        83#   573
K524Ø      118#   6Ø5
K5241      119#   591
K5252      12Ø#   43Ø    445
K54ØØ      121#   292
K5577      122#   2Ø6   1635
K56ØØ      123#   188   1287
K5777      124#   452
K6Ø         74#   4Ø5    544    643
K6ØØØ      125#  129Ø   22Ø5
K61ØØ      126#   191
K63ØØ      127#  1646
K7          68#  1922   2Ø61   2964   3Ø95
K7ØØØ      128#  1281   14Ø3   1419   1434   145Ø   1465   148Ø   1496   1511   1526   1542   1557   1572
          1588   16Ø6   1621   1656   1739   1867   1899   29Ø3   2945   2987   3Ø34   3Ø76   3118   3166
          32Ø9   3251   3299   3341   3383   3431   3473
K7Ø17      129#   933
K7Ø2Ø      13Ø#   39Ø
K7Ø77      131#   536
K72Ø        84#   529
K7277      132#   583
K74ØØ      133#   312   1926
K74Ø2      134#   256   1671   1857   2639   29Ø1   2943   2985   3Ø32   3Ø74   3116   3164   32Ø7   3249
          3297   3339   3381   3429   3471   3513
K7577      135#   612
K76ØØ      136#   3Ø1   1637   21Ø8   2148
K77         75#  1Ø24   3228
K774Ø      137#   482    526   1149   116Ø
K7741      138#   473   1156
K776Ø      139#  1341
K777        85#   397   336Ø
K777Ø      14Ø#   2Ø8   2Ø91
KCDF      2115   2181#
KMLV      2Ø79   2Ø84   2Ø87   218Ø#
LOCØ        32#   74Ø    746    748   1223   123Ø   1232   1286   26Ø2   2678   268Ø   2682   2684   2686
          2688   269Ø   2692   2694   2696   2698   27ØØ   27Ø2   27Ø4   27Ø6   2847   2849   2851   2853
          2855   2857   2859   2861   2863   2865   2867   2869   2871   2873   2875
M16        142#   675
M5        23Ø7   2317#
M6         141#   298
MAIN1       19#  13Ø7   1357   1367   1377   14Ø7   1422   1437   1453   1468   1483   1499   1514   1529
          1545   156Ø   1575   1695   1713   1733   19Ø2   1933   2131   3ØØ7   3Ø54   3Ø96   3138   3186
          3229    3271    3319    3361    3403    3451    3493
MAIN2       20#   1360    1370    1380    1591    1609    1624    1660    1699    1717    1736    1939    2923    2965
MASK1     1921    1932    1945    1947    2026#
MASK2     1923    1938    1951    1953    2027#
MLVØ      2878    3474    3511#   3514
MLVØA     2848    2878#
MLV1      2879    3432    3469#   3472
MLV1Ø     2886    3152    3162#   3165
MLV1ØA    2864    2886#
MLV1ØB    3188#   3222
MLV1ØI    3119    3152#
MLV11     2887    3Ø77    3114#   3117
MLV11A    2866    2887#
MLV11B    314Ø#   3179
MLV12     2888    3Ø35    3Ø72#   3Ø75
MLV12A    2868    2888#
MLV12B    3Ø98#   3131
MLV13     2889    3Ø21    3Ø3Ø#   3Ø33
MLV13A    287Ø    2889#
MLV13B    3Ø56#   3Ø89
MLV13I    2988    3Ø21#
MLV14     289Ø    2946    2983#   2986
MLV14A    2872    289Ø#
MLV14B    3ØØ9#   3Ø47
MLV15     2891    29Ø4    2941#   2944
MLV15A    2874    2891#
MLV15B    2967#   3ØØØ
MLV16     1676    2892    2899#   29Ø2
MLV16A    2876    2892#
MLV16B    2925#   2958
MLV1A     285Ø    2879#
MLV1B     3495#   3526
MLV2      288Ø    3417    3427#   343Ø
MLV2A     2852    288Ø#
MLV2B     3453#   3486
MLV2I     3384    3417#
MLV3      2881    3342    3379#   3382
MLV3A     2854    2881#
MLV3B     34Ø5#   3444
MLV4      2882    33ØØ    3337#   334Ø
MLV4A     2856    2882#
MLV4B     3363#   3396
MLV5      2883    3285    3295#   3298
MLV5A     2858    2883#
MLV5B     3321#   3354
MLV5I     3252    3285#
MLV6      2884    321Ø    3247#   325Ø
MLV6A     286Ø    2884#
MLV6B     3273#   3312
MLV7      2885    3167    32Ø5#   32Ø8
MLV7A     2862    2885#
MLV7B     3231#   3264
MORE      1925#   1943    1958
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MV16       1657    1672    1676#
PJA          11#    741     884    1226    1760    1809    1853    2219    2391
PJPC         49#    775
PJPC1        50#    928
PJPC2        51#   1250
RAN          46#   1930
RAN1         47#    264     273    1931
RAN2         48#    267     268     269    1937
RANN         46     262#    275
RDF          24#    822     905     984    2253    2359
RES          12#    798     961    1256    1787    1837    1870    2311    2398    2422    2667    2722    2730    2738
           2746    2754    2764    2772    2780    2788    2796    2804    2814    2822    2830    2838    2934    2976
           3018    3065    3107    3149    3198    3240    3282    3330    3372    3414    3462    3504    3532
RIF          23#    814     978    2247    2354
RMLV         14#    340     393     401     419     448     532     540     560     579     608     632     639     659
            683     691     829    1020    1031    1057    1069    1337    2363    2655
RSTK         15#    325     356     361     376     426     455     762     835     913     991    1087    1094    1118
           1130    1235    1262    1330    1664    2137    2225    2260    2268    2443    2648    2905    2927    2947
           2969    2989    3011    3036    3058    3078    3100    3120    3142    3168    3191    3211    3233    3253
           3275    3301    3323    3343    3365    3385    3407    3433    3455    3475    3497    3515
RVEC         16#    469     485     493     513     587     615     842    1152    1163    1195    1208    1649    2641
SACMQL      234#    794     882
SETUP        38#    732     872    1146    1183    1221    1352    1399    1642    1686    1752    1801    1848    1894
           1916
SETUPP       38     185#    197
SMLV         13#    195     338     391     414     443     530     557     574     603     630     656     681     874
           1018    1029    1054    1066    1284    1355    1364    1375    1401    1644    1688    1754    1803    1850
           1897    1929    2086    2202
SSTK         17#    189     323     354     373     388     417     446    1085    1092    1107    1115    1127    1288
           2076    2204
STACK        53#    253     255     769     773     778     781     784     789     791     922     926     931     936
            940     945     947    1242    1248    1253    1255    1773    1821    1862    2661    2912    2919    2921
STACKK       53      54      55      56      57      58    2471#
STK1       2954    2961    2963    3022#
STK10      3260    3267    3269    3288#
STK10P     2537#   3288
STK11      3308    3315    3317    3418#
STK11P     2545#   3418
STK12      3350    3357    3359    3419#
STK12P     2553#   3419
STK13      3392    3399    3401    3420#
STK13P     2562#   3420
STK14      3440    3447    3449    3536#
STK14P     2570#   3536
STK15      3482    3489    3491    3537#
STK15P     2578#   3537
STK16      3522    3529    3531    3538#
STK16P     2586#   3538
STK1P      2480#   3022
STK2       2996    3003    3005    3023#
STK2P      2488#   3023
STK3       3043    3050    3052    3153#
STK3P      2496#   3153
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STK4      3Ø85    3Ø92    3Ø94    3154#
STK4P     25Ø4#   3154
STK5      3127    3134    3136    3155#
STK5P     2513#   3155
STK6      3175    3182    3184    3286#
STK6P     2521#   3286
STK7      3218    3225    3227    3287#
STK7P     2529#   3287
STKTST    2367    2394    2441#   245Ø
SVEC        18#    192     467     483     51Ø     527     577     6Ø6    1147    115Ø    1161    1184    1192    12Ø5
          1291    1647    1919    2Ø73    22Ø6
TØ          43     163     29Ø#   2Ø22
T1         321#   2Ø24
T1Ø        466#
T11        481#
T12        5Ø4#
T13        525#
T14        551#
T15        572#
T16        595     6Ø1#
T17        628#
T2         336#
T2Ø        65Ø#
T21        673#
T22        7Ø1     731#
T22A       747     8Ø1#
T24        85Ø     871#
T24A       889     965#
T26        998    1ØØ9#
T27       1Ø46#
T3         353#
T3Ø       1Ø83#
T31       11Ø6#
T32       1146#
T33       1171    1182#
T34       122Ø#
T34A      1231    1258#
T35       1271    1279#
T35A      1296    1311#   267Ø
T35AM1    2663    267Ø#
T36       1351#
T37       1384    1397#
T4         369#
T4Ø       1417#
T41       1432#
T42       1448#
T43       1463#
T44       1478#
T45       1494#
T46       15Ø9#
T47       1524#
T5         387#
T5Ø       154Ø#
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T51        1555#
T52        157Ø#
T53        1586#
T54        1595     16Ø4#
T55        1619#
T56        1634#
T56A       1663#    2916
T57        1674     1684#
T6          412#
T6Ø        175Ø#
T6ØA       1761     177Ø#    1784     1791
T6ØAM6     1775     1791#
T61        1768     1799#
T61A       181Ø     1818#    1834     1873
T61AM5     1823     1873#
T62        1816     1846#
T62A       1854     1861#    1868     1874
T62AM6     1864     1874#
T63        186Ø     1892#
T64        1914#
T65        1955     2ØØ2#
T66        2ØØ6     2Ø1Ø     2Ø16#
T7          434      441#
TST          63     26Ø3     2637#    264Ø
TSTA         63#    1282
TSTPJ        49      742      748#
TSTPJ1       5Ø      878      885      891#     951
TSTPJ2       51     1227     1232#
UT16         36      858#     888      891
UT16A        36#    1353
UT37         37     1311     1884#
UT37A        37#    1224     1398
VECØ        143#    14Ø4     174Ø     19ØØ     2679
VEC1        144#    142Ø     2681
VEC1Ø       151#    1527     2695
VEC11       152#    1543     2697
VEC12       153#    1558     2699
VEC13       154#    1573     27Ø1
VEC14       155#    1589     27Ø3
VEC15       156#    16Ø7     27Ø5
VEC16       157#    1622     27Ø7
VEC2        145#    1435     2683
VEC3        146#    1451     2685
VEC4        147#    1466     2687
VEC5        148#    1481     2689
VEC6        149#    1497     2691
VEC7        15Ø#    1512     2693
VECTØ       143     17Ø5     1726     2719#    2721
VECT1       144     2727#    2729
VECT1Ø      151     2785#    2787
VECT11      152     2793#    2795
VECT12      153     28Ø1#    28Ø3
VECT13      154     281Ø#    2812     2813
```

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VECT14     155    2819#    2821
VECT15     156    2827#    2829
VECT16     157    2835#    2837
VECT2      145    2735#    2737
VECT3      146    2743#    2745
VECT4      147    2751#    2753
VECT5      148    2761#    2763
VECT6      149    2769#    2771
VECT7      150    2777#    2779
VTØ       2324#
XACMQ      22Ø#    757      8Ø9      899      972
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