KF12B

IDENTIFICATION

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

/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 4000,

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 0000. 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 0 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 0 SET AND RSW=0000 THE PROGRAM HALTS).

3. SET THE MODE SWITCH TO 8-MODE.

4. DEPRESS I/O PRESET

5. DEPRESS START 20

THE PROGRAM IS RUNNING.

About 1 min / pass

Bell rings every 46 seconds when testing only field 0,
every 50 seconds when testing fields 0 & 1

/4.1 CONTROL SWITCH SETTINGS

SENSE SWITCH 0 ALLOWS THE PROGRAM TO TEST SEQUENTIALLY AS MANY EXTENDED 4K MEMORY BANKS AS ARE SPECIFIED BY THE RIGHT SWITCH REGISTER BITS 9-11.
/
FOR EXAMPLE WITH SNS 0=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 0=1 AND RSW=XXX0 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 'S OF THE FORM OF A BASIC INSTRUCTION TEST AND ERROP HALTS AVE BEEN USED EXCLUSIVELY WITH A WELL DOCUMENTED I ING.

ITENANCE INSTRUCTIONS

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

1. MAIN1=6051

   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=0000 AND MAIN1 IOT--NO INTERRUPT
   AC=4XXX AND MAIN1 IOT--LEV0 INTERRUPT
   AC=7XXX AND MAIN1 IOT--LEV0 INTERRUPT
   AC=3XXX AND MAIN1 IOT--LEV1 INTERRUPT
   AC=1XXX AND MAIN1 IOT--LEV2 INTERRUPT
   ETC
   AC=0001 AND MAIN1 IOT--LEV11 INTERRUPT

2. MAIN2=6052

   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=XXX0 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 ADDRESS	OCTAL CONTENT	TAG	INSTRUCTION I Z	COMMENTS
7756	6032	BEG,	KCC	/CLEAR AC AND FLAG
7757	6031		KSF	/SKIP IF FLAG = 1
7760	5357		JMP-1	/LOOKING FOR CHARACTER
7761,	6036		KRB	/READ BUFFER
7762,	7106		CLL RTL	
7763,	7006		RTL	/CHANNEL 8 IN AC0
7764,	7510		SPA	/CHECKING FOR LEADER
7765,	5357		JMP BEG+1	/FOUND LEADER
7766,	7006		RTL	/OK, CHANNEL 7 IN LINK
7767	6031		KSF	
7770,	5367		JMP-1	
7771,	6034		KRS	/READ, DO NOT CLEAR
7772,	7420		SNL	/CHECKING FOR ADDRESS
7773,	3776		DCA 1 TEMP	/STORE CONTENT
7774,	3376		DCA TEMP	/STORE ADDRESS
7775,	5356		JMP BEG	/NEXT WORD
7776,	0	TEMP,	0	/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 (6032) IN THE RIGHT SWITCHES.
C. PRESS THE FILL SWITCH.
D. PRESS THE FILL STEP SWITCH
E. SET THE NEXT INSTRUCTION (6031) IN THE RIGHT SWITCHES.
F. PRESS THE FILL STEP SWITCH.
G. REPEAT STEPS D AND E UNTIL ALL 16 INSTRUCTIONS HAVE BEEN DEPOSITED.

TO LOAD 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
                        /
          6006                  APION=6006
          6760                  PJA=6760
          6771                  RES=6771
          6772                  SMLV=6772
          6773                  RMLV=6773
          6774                  RSTK=6774
          6775                  RVEC=6775
          6776                  SSTK=6776
          6777                  SVEC=6777
          6051                  MAIN1=6051
          6052                  MAIN2=6052
          6001                  ION=6001
          6002                  IOF=6002
          6224                  RIF=6224
          6214                  RDF=6214
                        /
                                PMODE
                        /
                        /PAGE 0
                        /CONSTANTS, TEMPORARY STORAGE AND FLAGS
                        /
          0000                  *0
0000      0000        LOC0,     0                   /SHOULD NOT GET AN 8 MODE INTERRUPT VIA LOC 0
0001      7402                  HLT                 /EXCEPT IN TEST T0 WHERE LOC 1 = JMP .-1
0002      0000        IMAGE,    0
0003      0266        INC,      INCC
0004      1402        UT16A,    UT16
0005      3402        UT37A,    UT37
0006      0213        SETUP,    SETUPP
0007      0230        CLRSTK,   CLRST
                        /
          0020                  *20
0020      3421                  JMP I   .+1         /JMP TO
0021      0400                  T0                  /START OF PROG
0022      0202        IOPRES,   IOPRE
0023      1122        COUNT,    CNT-1
0024      0275        RAN,      RANN
0025      4731        RAN1,     4731
0026      5074        RAN2,     5074
0027      1212        PJPC,     TSTPJ-4
0030      1421        PJPC1,    TSTPJ1-4
0031      2047        PJPC2,    TSTPJ2-4
```

```
                                
0032  5600    STACK,  STACKK
0033  5601            STACKK+1
0034  5602            STACKK+2
0035  5603            STACKK+3
0036  5604            STACKK+4
0037  5605            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
```

```
107
108     0116  2177    K2177,  2177
109     0117  2500    K2500,  2500
110     0120  2501    K2501,  2501
111     0121  2525    K2525,  2525
112     0122  2777    K2777,  2777
113     0123  3500    K3500,  3500
114     0124  3777    K3777,  3777
115     0125  4000    K4000,  4000
116     0126  4400    K4400,  4400
117     0127  5020    K5020,  5020
118     0130  5240    K5240,  5240
119     0131  5241    K5241,  5241
120     0132  5252    K5252,  5252
121     0133  5400    K5400,  5400
122     0134  5577    K5577,  5577
123     0135  5600    K5600,  5600
124     0136  5777    K5777,  5777
125     0137  6000    K6000,  6000
126     0140  6100    K6100,  6100
127     0141  6300    K6300,  6300
128     0142  7000    K7000,  7000
129     0143  7017    K7017,  7017
130     0144  7020    K7020,  7020
131     0145  7077    K7077,  7077
132     0146  7277    K7277,  7277
133     0147  7400    K7400,  7400
134     0150  7402    K7402,  7402
135     0151  7577    K7577,  7577
136     0152  7600    K7600,  7600
137     0153  7740    K7740,  7740
138     0154  7741    K7741,  7741
139     0155  7760    K7760,  7760
140     0156  7770    K7770,  7770
141     0157  7772    M6,     -6
142     0160  7762    M16,    -16
143     0161  6140    VEC0,   VECT0
144     0162  6145    VEC1,   VECT1
145     0163  6152    VEC2,   VECT2
146     0164  6157    VEC3,   VECT3
147     0165  6164    VEC4,   VECT4
148     0166  6200    VEC5,   VECT5
149     0167  6205    VEC6,   VECT6
150     0170  6212    VEC7,   VECT7
151     0171  6217    VEC10,  VECT10
152     0172  6224    VEC11,  VECT11
153     0173  6231    VEC12,  VECT12
154     0174  6236    VEC13,  VECT13
155     0175  6244    VEC14,  VECT14
156     0176  6251    VEC15,  VECT15
157     0177  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      1092          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 5600 TO LOCATION 5610
                    /ENTERED IN 8-MODE
                    /
0230  0000          CLRST,  0                  /CONTAINS RETURN JUMP ADDRESS
0231  7300                  CLA CLL            /CLEAR AC AND LINK
0232  1134                  TAD     K5577      /AC = 5777 --> /AC 5577
0233  3010                  DCA     10         /LOC 10 = 5777 --> /LOC 10=5577
0234  1156                  TAD     K7770      /AC = 7770
0235  3011                  DCA     11         /LOC 11 = 7770
0236  7300                  CLA CLL            /CLEAR AC AND LINK
0237  3410                  DCA I   10         /CLEAR STACK ADDRESS IN LOC 10
0240  2011                  ISZ     11         /DONE IF LOC 11 = 0
0241  5237                  JMP     .-2        /NO-DO IT AGAIN
0242  5630                  JMP I   CLRST      /RETURN TO MAIN PROGRAM
                    /
                    /LINC MODE SUBROUTINE
                    /TO MOVE MQ REGISTER INTO AC
                    /
                            LMODE
0243  0006          XACMQ,  DJR                /DISABLE JUMP RETURN
0244  0005                  QAC                /MQ 0-10 TO AC 1-11
0245  0261                  ROL I   1          /ROTATE LEFT 1
0246  0475                  QLZ I              /SKIP IF MQ 11 = 1
0247  6253                  JMP     .+4        /JMP 4 LOC (ENABLE JMP 0)
0250  1620                  BSE I              /SET AC BIT 0
0251  0001                  1                  /TO 1
0252  6253                  JMP     .+1        /ENABLE JMP 0
0253  6000                  JMP     0          /RETURN TO MAIN PROG
                    /
                    /LINC MODE SUBROUTINE
                    /TO SET AC AND MQ = 7777
                    /ALSO SET LINC AND FLO FLIP FLOPS
                    /
0254  1020          SACMQL, LDA I              /AC =
0255  7777                  7777               /7777
0256  0334                  ROR I   14         /MQ = 7777 AND LINC = 1
0257  1020                  LDA I              /AC =
0260  3777                  3777               /3777
0261  1120                  ADA I              /ADD
0262  0001                  1                  /1 SETTING FLO = 1
0263  1020                  LDA I              /AC =
0264  7777                  7777               /7777
0265  6000                  JMP     0          /RETURN TO MAIN PROG
```

(0134) = 5577
(0136) = 5777
(0356) = [illegible]

```
                        /
                        /8-MODE SUBROUTINE
                        /TO INCREMENT RETURN PC STORED IN LOC STACKK+1
                        /AS A RESULT OF A PUSH JUMP IOT OR AN INTERRUPT
                        /
                                PMODE
0266  0000     INCC,    0                  /RETURN JUMP ADDRESS TO MAIN PROGRAM
0267  7300              CLA CLL            /CLEAR AC AND LINC
0270  1433              TAD I    STACK+1   /GET PC STORED IN LOC STACKK+1
0271  1043              TAD      K1        /INCREMENT
0272  3433              DCA I    STACK+1   /STORE BACK IN LOC STACKK+1
0273  1150              TAD      K7402     /AC = 7402 OR AN 8-MODE HLT
0274  5666              JMP I    INCC      /RETURN TO MAIN PROGRAM
                        /
                        /RANDOM NUMBER GENERATOR
                        /USED IN TEST T65
                        /
0275  0000     RANN,    0                  /CONTAINS RETURN JUMP ADDRESS
0276  7300              CLA CLL            /CLEAR AC AND LINC
0277  1025              TAD      RAN1      /AC = RAN1
0300  7006              RTL                 /ROTATE 2 LEFT
0301  7001              IAC                 /INCREMENT
0302  1026              TAD      RAN2      /ADD RAN2
0303  3026              DCA      RAN2      /STORE IN RAN2
0304  1026              TAD      RAN2      /GET RAN2
0305  7006              RTL                 /ROTATE 2 LEFT
0306  7006              RTL                 /ROTATE 2 LEFT
0307  7001              IAC                 /INCREMENT
0310  3025              DCA      RAN1      /STORE IN RAN1
0311  7300              CLA CLL            /CLEAR LINC
0312  5675              JMP I    RANN      /RETURN TO MAIN PROGRAM
```

```
                        /
                        ////////
                        /AUTOMATIC PRIORITY INTERRUPT
                        /DIAGNOSTIC TESTS
                        ////////
                        /
                        /TEST NORMAL INTERRUPT SYSTEM VIA TELETYPE
                        /BY OUTPUTTING 207 (BELL) TO TTY
                        /AND WAITING FOR AN INTERRUPT TO OCCURE
                        /A TIME OUT LOOP IS USED TO DETECT
                        /AN INTERRUPT NOT OCCURRING WITHIN 120 MS
                        /
          0400                  *400
0400    6002    T0,     IOF             /INTERRUPTS OFF
0401    7300            CLA CLL         /CLEAR AC AND LINK
0402    1133            TAD     K5400   /AC = 5400
0403    3001            DCA     1       /LOC 1 = 5400 OR A JMP .-1
0404    6001            ION             /INTERRUPTS ON
0405    1062            TAD     K207    /AC = 207
0406    6046            TLS             /AC TO TTY, PRINT AND CLEAR FLAG
0407    7300            CLA CLL         /CLEAR AC AND LINK
0410    1157            TAD     M6      /AC = 7772
0411    3015            DCA     15      /LOC 15 = 7776
0412    3016            DCA     16      /LOC 16 = 0
0413    1152            TAD     K7600   /AC = 7600
0414    3017            DCA     17      /LOC 17 = 7600
0415    6041            TSF             /SKIP ON TTY FLAG SET
0416    5220            JMP     .+2     /NOT SET
0417    5225            JMP     .+6     /SET-GO TO TEST ONE
0420    2016            ISZ     16      /INCREMENT TIME OUT LOOP
0421    5215            JMP     .-4     /TEST TTY FLAG AGAIN
0422    2015            ISZ     15      /INC LOC 15 AND SKIP IF = 0
0423    5215            JMP     .-6     /NO-DO IT AGAIN
0424    7402            HLT             /ERROR-TTY DID NOT INTERRUPT
0425    6042            TCF             /CLEAR FLAG
0426    1147            TAD     K7400   /AC = 7402
0427    3001            DCA     1       /LOC 1 = 7402 OR AN 8-MODE HLT
0430    6244            RMF             /RESTORE MEMORY FIELDS
                        /
                        /SET STACK ADDRESS REGISTER TO ZERO
                        /READ STACK POINTER REGISTER INTO CLEARED AC
                        /IT COMES BACK IN COMPLIMENT FORM
                        /
                        /
0431    6002    T1,     IOF             /INTERRUPTS OFF
0432    7300            CLA CLL         /CLEAR AC AND LINK
0433    6776            SSTK            /SET BTS 3-14 OF STK ADD TO AC BTS 0-11
0434    7200            CLA             /CLEAR AC
0435    6774            RSTK            /READ STK ADD BITS 3-14 INTO AC BTS 0-11
0436    7040            CMA             /COMPLIMENT AC
0437    7440            SZA             /SHOULD BE 0
0440    7402            HLT             /ERR-EXAMINE AC
```

```
329
330                     /
331                     /SET MACHINE LEVEL AND THE STACK AND VECTOR FIELD BITS ALL TO ZERO
332                     /READ THEM BACK INTO CLEARED AC
333                     /BITS 6 AND 7 ALWAYS COME BACK IN THE 1 STATE
334                     /THE MACHINE LEVEL AND THE STACK AND VECTOR FIELD BITS COME BACK IN COMPLIMENT FORM
335                     /
336  0441  7300  T2,      CLA CLL             /CLEAR AC AND LINC
337  0442  1052          TAD     K20         /AC = 20
338  0443  6772          SMLV                /SET STACK AND VECTOR FIELD BITS AND MACHINE LEVEL = 0
339  0444  7200          CLA                 /CLEAR AC
340  0445  6773          RMLV                /READ STK FLD INTO AC BTS 0-2 AND VCT FLD INTO AC BTS 3-5
341  0446  3002          DCA     IMAGE       /IMAGE OF AC
342  0447  1002          TAD     IMAGE       /GET IMAGE
343  0450  7040          CMA                 /COMPLIMENT AC
344  0451  7440          SZA                 /AC = 0
345  0452  7402          HLT                 /ERR-EXAMINE AC
346                     /
347                     /SET STACK ADDRESS REGISTER TO ZERO
348                     /GENERATE AN IO PRESET
349                     /READ STACK REGISTER INTO CLEARED AC
350                     /IO PRESET SHOULD HAVE SET STACK POINTER REGISTER TO ALL ONES
351                     /READ BACK IN COMPLIMENT FORM
352                     /
353  0453  7300  T3,      CLA CLL             /CLEAR AC AND LINC
354  0454  6776          SSTK                /SET BTS 3-14 OF STK ADD TO AC BTS 0-11
355  0455  7200          CLA                 /CLEAR AC
356  0456  6774          RSTK                /READ STK BTS 3-14 INTO AC BTS 0-11
357  0457  7040          CMA                 /COMPLIMENT AC
358  0460  7440          SZA                 /SHOULD BE 0
359  0461  7402          HLT                 /ERR-EXAMINE AC
360  0462  4422          JMS I   IOPRES      /LINC MODE IO PRESET
361  0463  6774          RSTK                /READ STACK ADD BTS 3-14 INTO AC BTS 0-11
362  0464  7440          SZA                 /AC SHOULD = 0
363  0465  7402          HLT                 /ERR AC NOT = 0
364                     /
365                     /SET STACK ADDRESS REGISTER TO 7777 IN LINC MODE
366                     /READ STACK POINTER REGISTER INTO CLEARED AC
367                     /IT COMES BACK IN COMPLIMENT FORM
368                     /
369  0466  7340  T4,      CLA CLL CMA         /AC = 7777
370  0467  6141          LINC                /LINC MODE
371                     LMODE
372  0470  0500          IOB                 /EXEC 8MODE INST
373  0471  0776          SSTK                /SET BITS 3-14 OF STACK ADD TO AC BITS 0-11
374  0472  0011          CLR                 /CLEAR AC LINC AND MQ
375  0473  0500          IOB                 /EXEC 8MODE INST
376  0474  0774          RSTK                /READ STACK ADD BITS 3-14 TO AC BITS 0-11
377  0475  1460          SAE I               /SKIP IF AC
378  0476  0000          0                   /EQUALS 0
379  0477  0000          HLT                 /ERR-AC NOT = 7777
380  0500  0002          PDP                 /8MODE
381                     PMODE
```

```
                                /
                                /TEST STACK REGISTER ADDRESS POINTER
                                /IN 8-MODE
                                /
0501  7340    T5,     CLA CLL CMA     /AC = 7777
0502  6776            SSTK            /SET BTS 3-14 OF STACK ADD TO AC BTS 0-11
0503  7200            CLA             /CLEAR AC
0504  1144            TAD     K7020   /AC=7020
0505  6772            SMLV            /SET STK FLD TO AC BTS 0-2
0506  7200            CLA             /CLEAR AC
0507  6773            RMLV            /READ STACK FIELD BTS 0-2 INTO AC BTS 0-2
0510  3002            DCA     IMAGE   /IMAGE OF RESULT
0511  1002            TAD     IMAGE   /GET IMAGE
0512  7041            CIA             /COMPLIMENT AND INCRIMENT
0513  1070            TAD     K777    /IMAGE SHOULD = 777
0514  7440            SZA             /SHOULD BE 0
0515  7402            HLT             /ERR-EXAMINE LOC IMAGE
0516  4422            JMS I   IOPRES  /LINC MODE IO PRESET
0517  6773            RMLV            /READ STACK FIELD BTS 0-2 INTO AC BTS 0-2
0520  3002            DCA     IMAGE   /IMAGE OF AC
0521  1002            TAD     IMAGE   /GET IMAGE
0522  7041            CIA             /COMPLIMENT AND INC
0523  1055            TAD     K60     /IMAGE SHOULD = 60
0524  7440            SZA             /AC SHOULD  =  0
0525  7402            HLT             /ERR
                                /
                                /TEST STACK REGISTER ADDRESS POINTER
                                /IN 8-MODE
                                /
0526  7300    T6,     CLA CLL         /CLEAR AC AND LINC
0527  1127            TAD     K5020   /AC=5020
0530  6772            SMLV            /SET STK FLD TO AC BTS 0-2
0531  7200            CLA             /CLEAR AC
0532  1121            TAD     K2525   /AC=2525
0533  6776            SSTK            /SET BTS 3-14 OF STK ADD TO AC BTS 0-11
0534  7200            CLA             /CLEAR AC
0535  6773            RMLV            /READ STK FLD BTS 0-2 INTO AC BTS 0-2 ALSO GET VCT FLD BTS 3-5
0536  3002            DCA     IMAGE   /IMAGE OF RESULT
0537  1002            TAD     IMAGE   /GET IMAGE
0540  7041            CIA             /COMPLIMENT AND INCREMENT
0541  1122            TAD     K2777   /IMAGE SHOULD = 2777
0542  7440            SZA             /AC SHOULD = 0
0543  7402            HLT             /ERR-EXAMINE LOC IMAGE
0544  6774            RSTK            /READ STACK ADD BTS 3-14 INTO AC BTS 0-11
0545  3002            DCA     IMAGE   /IMAGE OF RESULT
0546  1002            TAD     IMAGE   /GET IMAGE
0547  7041            CIA             /COMPLIMENT AND INCREMENT
0550  1132            TAD     K5252   /IMAGE SHOULD = 5252
0551  7440            SZA             /AC SHOULD = 0
0552  7402            HLT             /ERR-EXAMINE LOC IMAGE
0553  5754            JMP I   .+1     /JMP TO
0554  0600            T7              /TEST T7
```

```
                                /
                                /TEST STACK REGISTER ADDRESS POINTER
                                /IN 8-MODE
                                /
                0600            *600
0600    7300    T7,     CLA CLL         /CLEAR AC AND LINC
0601    1077            TAD     K2020   /AC=2020
0602    6772            SMLV            /SET STK FLD BTS 0-2 TO AC BTS 0-2 ALSO SET VCT BTS = 0
0603    7200            CLA             /CLEAR AC
0604    1132            TAD     K5252   /AC=5252
0605    6776            SSTK            /SET BTS 3-14 OF STK ADD EQUAL TO AC BTS 0-11
0606    7200            CLA             /CLEAR AC
0607    6773            RMLV            /READ STK FLD BTS 0-2 INTO AC BTS 0-2
0610    3002            DCA     IMAGE   /IMAGE OF RESULT
0611    1002            TAD     IMAGE   /GET IMAGE
0612    7041            CIA             /COMPLIMENT AND INCRIMENT
0613    1136            TAD     K5777   /IMAGE SHOULD = 5777
0614    7440            SZA             /AC SHOULD = 0
0615    7402            HLT             /ERR-EXAMINE LOC IMAGE
0616    6774            RSTK            /READ STACK ADD BTS 3-14 INTO AC BTS 0-11
0617    3002            DCA     IMAGE   /IMAGE OF RESULT
0620    1002            TAD     IMAGE   /GET IMAGE
0621    7041            CIA             /COMPLIMENT AND INCREMENT
0622    1121            TAD     K2525   /IMAGE SHOULD = 2525
0623    7440            SZA             /AC = 0
0624    7402            HLT             /ERR-EXAMINE LOC IMAGE
                                /
                                /TEST VECTOR REGISTER ADDRESS POINTER
                                /IN 8-MODE
                                /
0625    7300    T10,    CLA CLL         /CLEAR AC AND LINC
0626    6777            SVEC            /SET VECTOR ADD BTS 3-9 TO AC BTS 0-6
0627    7200            CLA             /CLEAR AC
0630    6775            RVEC            /READ VECTOR ADD BTS 3-14 INTO AC BTS 0-11
0631    3002            DCA     IMAGE   /IMAGE OF AC
0632    1002            TAD     IMAGE   /GET IMAGE
0633    7041            CIA             /COMPLIMENT AND INCREMENT
0634    1154            TAD     K7741   /IMAGE SHOULD = 7741
0635    7440            SZA             /AC = 0
0636    7402            HLT             /ERR-EXAMINE AC
```

```
                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN 8-MODE
                        /
0637  7300    T11,      CLA CLL             /CLEAR AC AND LINC
0640  1153              TAD       K7740     /AC=7740
0641  6777              SVEC                /SET VECTOR ADD BTS 3-9 TO AC BTS 0-6
0642  7200              CLA                 /CLEAR AC
0643  6775              RVEC                /READ VECTOR ADD BTS 3-14 INTO AC BTS 0-11
0644  3002              DCA       IMAGE     /IMAGE OF AC
0645  1002              TAD       IMAGE     /GET IMAGE
0646  7041              CIA                 /COMPLIMENT AND INC
0647  1043              TAD       K1        /IMAGE SHOULD = 1
0650  7440              SZA                 /AC = 0
0651  7402              HLT                 /ERR-EXAMINE AC
0652  4422              JMS I     IOPRES    /LINC MODE IO PRESET
0653  6775              RVEC                /READ VECTOR ADDRESS BITS 3-14 INTO AC BITS 0-11
0654  3002              DCA       IMAGE     /IMAGE OF AC
0655  1002              TAD       IMAGE     /GET IMAGE
0656  7041              CIA                 /COMPLIMENT AND INC
0657  1043              TAD       K1        /IMAGE SHOULD = 1
0660  7440              SZA                 /AC = 0
0661  7402              HLT                 /ERR-IO PRESET DID NOT CLEAR VECTOR ADD BTS 3-14
                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN 8-MODE
                        /
0662  7300    T12,      CLA CLL             /CLEAR AC AND LINK
0663  6141              LINC                /LINC MODE
                        LMODE
0664  1020              LOA I               /LOAD AC WITH
0665  7740              7740                /OPERAND = 7740
0666  0500              IOB                 /EXEC 8MODE INST
0667  0777              SVEC                /SET VECTOR BITS 3-9 TO AC BITS 0-6
0670  0011              CLR                 /CLEAR AC MQ LINK
0671  0500              IOB                 /EXEC 8MODE INST
0672  0775              RVEC                /READ VECTOR ADD BITS 3-14 INTO AC BITS 0-11
0673  1460              SAE I               /AC =
0674  0001              1                   /1
0675  0000              HLT                 /ERR-AC NOT = 7740
0676  0002              PDP                 /8 MODE
                        PMODE
0677  4422              JMS I     IOPRES    /LINK MODE PROG IO PRESET
```

```
520
521                     /
522                     /TEST VECTOR REGISTER ADDRESS POINTER
523                     /IN 8-MODE
524                     /
525     0700  7300      T13,    CLA CLL         /CLEAR AC
526     0701  1153              TAD     K7740   /AC = 7740
527     0702  6777              SVEC            /SET VECTOR ADD BTS 3-9 TO AC BTS 0-6
528     0703  7200              CLA             /CLEAR AC
529     0704  1067              TAD     K720    /AC=0720
530     0705  6772              SMLV            /SET VECTOR FLD BTS 0-2 TO AC BTS 3-5
531     0706  7200              CLA             /CLEAR AC
532     0707  6773              RMLV            /READ VECTOR FLD BTS 0-2 INTO AC BTS 3-5 ALSO GET STK FLD BTS 0-2
533     0710  3002              DCA     IMAGE   /IMAGE OF RESULT
534     0711  1002              TAD     IMAGE   /GET IMAGE
535     0712  7041              CIA             /COMPLIMENT AND INC
536     0713  1145              TAD     K7077   /IMAGE SHOULD = 7077
537     0714  7440              SZA             /AC = 0
538     0715  7402              HLT             /ERR-EXAMINE LOC IMAGE
539     0716  4422              JMS I   IOPRES  /LINC MODE IO PRESET
540     0717  6773              RMLV            /READ VECTOR FIELD BITS INTO AC
541     0720  3002              DCA     IMAGE   /IMAGE OF AC
542     0721  1002              TAD     IMAGE   /GET IMAGE
543     0722  7041              CIA             /COMPLIMENT AND INC
544     0723  1055              TAD     K60     /IMAGE SHOULD = 60
545     0724  7440              SZA             /AC = 0
546     0725  7402              HLT             /ERR-AC NOT = 0
547                     /
548                     /TEST VECTOR REGISTER ADDRESS POINTER
549                     /IN LINC MODE
550                     /
551     0726  7300      T14,    CLA CLL         /CLEAR AC AND LINC
552     0727  6141              LINC            /LINC MODE
553                             LMODE
554     0730  1020              LDA I           /LOAD AC WITH
555     0731  7720              7720            /OPERAND = 7720
556     0732  0500              IOB             /EXEC 8MODE INST
557     0733  0772              SMLV            /SET STACK AND VECTOR FIELD BITS
558     0734  0011              CLR             /CLEAR AC MQ LINK
559     0735  0500              IOB             /EXEC 8MODE INST
560     0736  0773              RMLV            /READ STACK AND VECTOR FIELD BITS TO AC BITS 0-5
561     0737  1460              SAE I           /AC =
562     0740  0077              77              /77
563     0741  0000              HLT             /ERR-AC NOT = 77
564     0742  0002              PDP             /8MODE
565                             PMODE
566     0743  4422              JMS I   IOPRES  /LINK MODE PROG IO PRESET
```

```
                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN 8-MODE
                        /
0744  7300    T15,      CLA CLL             /CLEAR AC AND LINC
0745  1066              TAD       K520      /AC=0520
0746  6772              SMLV                /SET VECTOR FLD BTS 0-2 TO AC BTS 3-5
0747  7200              CLA                 /CLEAR AC
0750  1117              TAD       K2500     /AC=2500
0751  6777              SVEC                /SET VECTOR ADD BTS 3-9 EQUAL TO AC BTS 0-6
0752  7200              CLA                 /CLEAR AC
0753  6773              RMLV                /READ VECTOR FLD BTS 0-2 INTO AC BTS 3-5
0754  3002              DCA       IMAGE     /IMAGE OF AC
0755  1002              TAD       IMAGE     /GET IMAGE
0756  7041              CIA                 /COMPLIMENT AND INCREMENT
0757  1146              TAD       K7277     /IMAGE SHOULD = 7277
0760  7440              SZA                 /AC SHOULD = 0
0761  7402              HLT                 /ERR-EXAMINE LOC IMAGE
0762  7200              CLA                 /CLEAR AC
0763  6775              RVEC                /READ VECTOR ADD BTS 3-14 INTO AC BTS 0-11
0764  3002              DCA       IMAGE     /IMAGE OF RESULT
0765  1002              TAD       IMAGE     /GET RESULT
0766  7041              CIA                 /COMPLIMENT AND INCRIMENT
0767  1131              TAD       K5241     /IMAGE SHOULD = 5241
0770  7440              SZA                 /AC SHOULD = 0
0771  7402              HLT                 /ERR-EXAMINE LOC IMAGE
0772  5773              JMP I     .+1       /JMP TO
0773  1000              T16                 /TEST T16
                        /
                        /TEST VECTOR REGISTER ADDRESS POINTER
                        /IN 8-MODE
                        /
      1000              *1000
1000  7300    T16,      CLA CLL             /CLEAR AC AND LINC
1001  1063              TAD       K220      /AC=0220
1002  6772              SMLV                /SET VECTOR ADD BTS 0-2 TO AC BTS 3-5
1003  7200              CLA                 /CLEAR AC
1004  1130              TAD       K5240     /AC = 5240
1005  6777              SVEC                /SET VECTOR ADD BTS 3-9 TO AC BTS 0-6
1006  7200              CLA                 /CLEAR AC
1007  6773              RMLV                /READ VECTOR FLD BTS 0-2 INTO AC BTS 3-5
1010  3002              DCA       IMAGE     /IMAGE OF AC
1011  1002              TAD       IMAGE     /GET IMAGE
1012  7041              CIA                 /COMPLIMENT AND INCREMENT
1013  1151              TAD       K7577     /IMAGE SHOULD = 7577
1014  7440              SZA                 /AC SHOULD = 0
1015  7402              HLT                 /ERR-EXAMINE LOC IMAGE
1016  6775              RVEC                /READ VECTOR ADD BTS 3-14 INTO AC BTS 0-11
1017  3002              DCA       IMAGE     /IMAGE OF AC
1020  1002              TAD       IMAGE     /GET IMAGE
1021  7041              CIA                 /COMPLIMENT AND INC
1022  1120              TAD       K2501     /IMAGE SHOULD = 2501
1023  7440              SZA                 /AC = 0
1024  7402              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  7300      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
```

```
                        /
                        /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
                        /
          1200          *1200
1200  4407  T22,       JMS I   CLRSTK  /CLEAR STACK
1201  4406              JMS I   SETUP   /SETUP API REGISTERS
1202  6141              LINC            /LINC MODE
                        LMODE
1203  0474              FLO I           /SKIP IF FLO = 0
1204  0000              HLT             /ERR-FLO SET
1205  0002              PDP             /8-MODE
                        PMODE
1206  7340              CLA CLL CMA     /AC = 7777
1207  3000              DCA     LOC0    /LOC 0 = 7777
1210  6760              PJA|0           /PUSH JUMP WITH FIELD BITS = 0
1211  1216              TSTPJ           /TO LOC TSTPJ
1212  7402              HLT             /ERR--PUSH JUMP DID NOT EXECUTE

1213  7402              HLT
1214  0000              AND     LOC0    /DECODES AS A HLT IF RESTORE NOT TO 8-MODE
1215  5276              JMP     T22A    /CONTINUE WITH TEST
1216  0000  TSTPJ,      AND     LOC0    /ARRIVE FROM PUSH JUMP IN 8-MODE (DECODES HLT IN LINC MODE)
1217  7440              SZA             /AC = 0
1220  7402              HLT             /ERR-AC NOT = 0
1221  7430              SZL             /LINC = 0
1222  7402              HLT             /ERR-LINC NOT = 0
1223  6141              LINC            /LINC MODE
                        LMODE
1224  0474              FLO I           /FLO = 0
1225  0000              HLT             /ERROR
1226  6243              JMP     XACMQ   /EXCHANGE AC AND MQ
1227  0002              PDP             /8-MODE
                        PMODE
1230  7440              SZA             /AC = 0
1231  7402              HLT             /ERR-AC NOT = 0 THEREFORE MQ WAS NOT = 0
1232  6774              RSTK            /READ STACK REGISTER POINTER INTO AC
1233  3002              DCA     IMAGE   /IMAGE OF AC
1234  1002              TAD     IMAGE   /GET IMAGE
1235  7041              CIA             /COMPLIMENT AND INCREMENT
1236  1115              TAD     K2172   /IMAGE SHOULD = 2172
1237  7440              SZA             /AC = 0
1240  7402              HLT             /ERR
1241  1432              TAD I   STACK   /GET AC STORED ON STACK BY PUSH JUMP
1242  7440              SZA             /AC = 0
1243  7402              HLT             /ERR
```

```
772
773    1244  1433          TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP
774    1245  7041          CIA             /COMPLIMENT
775    1246  1027          TAD     PJPC    /SHOULD EQUAL TSTPJ-4
776    1247  7440          SZA             /AC SHOULD = 0
777    1250  7402          HLT             /ERR
778    1251  1434          TAD I   STACK+2 /GET MODE FLO LINK AND MACH LEV STORED ON STACK BY PUSH JUMP
779    1252  7440          SZA             /AC = 0
780    1253  7402          HLT             /ERR
781    1254  1435          TAD I   STACK+3 /GET MQ STORED ON STACK BY PUSH JUMP
782    1255  7440          SZA             /AC SHOULD = 0
783    1256  7402          HLT             /ERR
784    1257  1436          TAD I   STACK+4 /GET UF IF AND DF STORED ON STACK BY PUSH JUMP
785    1260  7041          CIA             /COMPLIMENT AND INC
786    1261  1045          TAD     K3      /LOC STACKK+4 SHOULD = 3
787    1262  7440          SZA             /AC = 0
788    1263  7402 FAILED 4 JUL 83 HLT      /ERR  DF WAS 0 NOT 3
789    1264  1433          TAD I   STACK+1 /GET PC STORED IN LOC STACK+1
790    1265  1044          TAD     K2      /INCREMENT BY 2
791    1266  3433          DCA I   STACK+1 /STORE BACK IN LOC STACK+1
792    1267  6141          LINC            /LINC MODE
793                        LMODE
794    1270  6254          JMP     SACMQL  /SET AC LINC MQ AND FLO
795    1271  1040          STA             /SET LOC 0
796    1272  0000          0               /TO 7777
797    1273  0500          IOB             /EXECUTE 8-MODE INST
798    1274  0771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
799    1275  0000          HLT             /ERR-RESTORE IOT DID NOT EXECUTE
800                        PMODE
801    1276  7440  T22A,   SZA             /AC = 0
802    1277  7402          HLT             /ERR-AC NOT = 0
803    1300  7430          SZL             /LINC = 0
804    1301  7402          HLT             /ERR-LINC NOT = 0
805    1302  6141          LINC            /LINC MODE
806                        LMODE
807    1303  0474          FLO I           /FLO = 0
808    1304  0000          HLT             /ERR-FLO NOT = 0
809    1305  6243          JMP     XACMQ   /MQ TO AC
810    1306  1460          SAE I           /AC =
811    1307  0000          0               /0
812    1310  0000          HLT             /ERR-AC NOT = 0 THEREFORE MQ WAS NOT = 0
813    1311  0500          IOB             /EXECUTE 8-MODE INST
814    1312  0224          RIF             /READ INSTRUCTION FIELD
815    1313  1460          SAE I           /AC =
816    1314  0000          0               /0
817    1315  0000          HLT             /ERR-AC NOT = 0
```

```
     1316  0011          CLR              /CLEAR AC LINC AND MQ
     1317  0522          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            PJA10           /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            LZE I           /LINC BIT =1
1427    0000            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
```

HANG UP THUR 16 MAY 74

```
911
912    1451  0500          IOB             /EXECUTE 8 MODE INST
913    1452  0774          RSTK            /READ STACK POINTER REGISTER INTO AC
914    1453  1460          SAE I           /AC =
915    1454  2172          2172            /2172
916    1455  0000          HLT             /ERR
917
918
919    1456  0011          CLR             /CLEAR AC LINC AND MQ
920    1457  0002          PDP             /8 - MODE
921                        PMODE
922    1460  1432          TAD I   STACK   /GET AC STORED ON STACK BY PUSH JUMP
923    1461  7040          CMA             /COMPLIMENT
924    1462  7440          SZA             /AC = 0
925    1463  7402          HLT             /ERR
926    1464  1433          TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP
927    1465  7041          CIA             /COMPLIMENT AND INC
928    1466  1030          TAD     PJPC1   /SHOULD EQUAL TSTPJ1-4
929    1467  7440          SZA             /AC = 0
930    1470  7402          HLT             /ERR
931    1471  1434          TAD I   STACK+2 /GET MODE FLO LINC AND MACHINE LEVEL STORED ON STACK BY PUSH JUMP
932    1472  7041          CIA             /COMPLIMENT AND INC
933    1473  1143          TAD     K7017   /LOCATION STACK+2 SHOULD=7017
934    1474  7440          SZA             /AC = 0
935    1475  7402          HLT             /ERR
936    1476  1435          TAD I   STACK+3 /GET MQ STORED ON STACK BY PUSH JUMP
937    1477  7040          CMA             /COMPLIMENT AC
938    1500  7440          SZA             /AC SHOULD = 0
939    1501  7402          HLT             /ERR
940    1502  1436          TAD I   STACK+4 /GET UF IF AND DF STORED ON STACK BY PUSH JUMP
941    1503  7041          CIA             /COMPLIMENT AND INC
942    1504  1045          TAD     K3      /STACK+4 SHOULD = 3
943    1505  7440          SZA             /AC SHOULD = 0
944    1506  7402          HLT             /ERR
945    1507  1433          TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP
946    1510  1044          TAD     K2      /INCREMENT BY 2
947    1511  3433          DCA I   STACK+1 /STORE BACK IN STACK+1
948    1512  6141          LINC            /LINC MODE
949                        LMODE
950    1513  1020          LDA I           /AC =
951    1514  7424          6000!TSTPJ1-1   /JMP TO LOC TSTPJ1-1
952    1515  1040          STA             /STORE AC
953    1516  1402          1402            /IN LOC 1402 OF FIELD 0 (DECODES AS HLT IN 8-MODE)
954    1517  0011          CLR             /CLEAR AC LINC AND MQ
955    1520  1120          ADA I           /ADD
956    1521  0000          0               /0 TO AC
957    1522  0474          FLO I           /TO INSURE FLO = 0
958    1523  0000          HLT             /ERR-FLO NOT = 0
959    1524  0002          PDP             /8 - MODE
960                        PMODE
961    1525  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
962    1526  7402          HLT             /ERR - RESTORE SKIPPED
```

```
963
964                             LMODE
965     1527    1460    T24A,   SAE I           /AC =
966     1530    7777            7777            /7777
967     1531    0000            HLT             /ERR-AC NOT = 7777
968     1532    0472            LSE I           /LINC = 1
969     1533    0000            HLT             /ERR-LINC NOT = 1
970     1534    0454            FLO             /FLO = 1
971     1535    0000            HLT             /ERR-FLO NOT = 1
972     1536    6243            JMP     XACMQ   /MQ TO AC
973     1537    1460            SAE I           /AC =
974     1540    7777            7777            /7777
975     1541    0000            HLT             /ERR-AC NOT = 7777 THEREFORE MQ WAS NOT = 7777
976     1542    0011            CLR             /CLEAR AC LINC AND MQ
977     1543    0500            IOB             /EXECUTE 8-MODE INST
978     1544    0224            RIF             /READ INST FIELD
979     1545    1460            SAE I           /AC =
980     1546    0000            0               /0
981     1547    0000            HLT             /ERR-IF IN AC NOT = 0
982     1550    0011            CLR             /CLEAR AC LINC AND MQ
983     1551    0500            IOB             /EXECUTE 8-MODE INST
984     1552    0214            RDF             /READ DATA FIELD
985     1553    1460            SAE I           /AC =
986     1554    0006            6               /6
987     1555    0000            HLT             /ERR-DF IN AC NOT = 76
988     1556    0643            LDF     3       /LOAD DATA FIELD 3
989     1557    0011            CLR             /CLEAR AC LINC AND MQ
990     1560    0500            IOB             /EXECUTE 8-MODE INST
991     1561    0774            RSTK            /READ STACK POINTER REGISTER INTO AC
992     1562    1460            SAE I           /AC =
993     1563    2177            2177            /2177
994     1564    0000            HLT             /ERR
995     1565    0002            PDP             /8-MODE
996                             PMODE
997     1566    5767            JMP I   .+1     /JMP TO
998     1567    1600            T26             /TEST 26
```

```
 999
1000
1001                    /
1002                    /TURN ON API ---FIRST TIME---
1003                    /TEST THAT STACK AND VECTOR FIELD BITS
1004                    /CANNOT BE ALTERED IN BMODE WITH API ON
1005                    /TURN API OFF WITH IOF ---FIRST TIME---
1006                    /TEST THAT STACK AND VECTOR FIELD BITS CAN BE ALTERED
1007                    /
1008          1600              *1600
1009    1600  4407    T26,      JMS I   CLRSTK  /CLEAR STACK
1010    1601  4422              JMS I   IOPRES  /GENERATE IO PRESET
1011    1602  6141              LINC            /LINC MODE
1012                            LMODE
1013    1603  0011              CLR             /CLEAR AC LINC AND MQ
1014    1604  0002              PDP             /8-MODE
1015                            PMODE
1016    1605  6006              APION           /TURN API INTERRUPT SYS ON
1017    1606  1052              TAD     K20     /AC = 20
1018    1607  6772              SMLV            /SET MACHINE LEVEL = 0
1019    1610  7200              CLA             /CLEAR AC
1020    1611  6773              RMLV            /READ STACK AND VECTOR FIELD BITS - MACHINE LEVEL INTO AC
1021    1612  3002              DCA     IMAGE   /IMAGE OF AC
1022    1613  1002              TAD     IMAGE   /GET IMAGE
1023    1614  7041              CIA             /COMPLIMENT AND INC
1024    1615  1056              TAD     K77     /IMAGE SHOULD = 77
1025    1616  7440              SZA             /AC = 0
1026    1617  7402              HLT             /ERR
1027    1620  6002              IOF             /TURN API INTERRUPT SYS OFF
1028    1621  1052              TAD     K20     /AC = 20
1029    1622  6772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS - SET MACHINE LEVEL = 0
1030    1623  7200              CLA             /CLEAR AC
1031    1624  6773              RMLV            /READ STACK AND VECTOR FIELD BITS - MACHINE LEVEL INTO AC
1032    1625  3002              DCA     IMAGE   /IMAGE OF AC
1033    1626  1002              TAD     IMAGE   /GET IMAGE
1034    1627  7040              CMA             /COMPLIMENT AC
1035    1630  7440              SZA             /AC = 0
1036    1631  7402              HLT             /ERR
```

```
1037
1038
1039                    /
1040                    /TURN API ON
1041                    /TEST THAT STACK AND VECTOR FIELD BITS
1042                    /CANNOT BE ALTERED IN LINC MODE WITH API ON
1043                    /TURN API OFF WITH IOF
1044                    /TEST THAT STACK AND VECTOR FIELD BITS CAN BE ALTERED
1045                    /
1046    1632  4422      T27,    JMS I   IOPRES  /GENERATE IO PRESET
1047    1633  6141              LINC            /LINC MODE
1048                            LMODE
1049    1634  0500              IOB             /EXECUTE 8-MODE INST
1050    1635  0006              APION           /TURN API INTERRUPT SYSTEM ON
1051    1636  1020              LDA I           /AC =
1052    1637  0020              20              /20
1053    1640  0500              IOB             /EXECUTE 8-MODE INST
1054    1641  0772              SMLV            /SET MACHINE LEVEL = 0
1055    1642  0011              CLR             /CLEAR AC LINC AND MQ
1056    1643  0500              IOB             /EXECUTE 8-MODE INST
1057    1644  0773              RMLV            /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
1058    1645  1460              SAE I           /AC =
1059    1646  0077              77              /77
1060    1647  0000              HLT             /ERR
1061    1650  0500              IOB             /EXECUTE 8-MODE INST
1062    1651  0002              IOF             /TURN API INTERRUPT SYS OFF
1063    1652  1020              LDA I           /AC =
1064    1653  0020              20              /20
1065    1654  0500              IOB             /EXECUTE 8-MODE INST
1066    1655  0772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL =0
1067    1656  0011              CLR             /CLEAR AC LINK AND MQ
1068    1657  0500              IOB             /EXECUTE 8-MODE INST
1069    1660  0773              RMLV            /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
1070    1661  1460              SAE I           /AC =
1071    1662  7777              7777            /7777
1072    1663  0000              HLT             /ERR
1073    1664  0002              PDP             /8-MODE
1074                            PMODE
```

```
1075
1076                    /
1077                    /TURN API ON
1078                    /TEST THAT BITS 3-14 OF THE STACK ADDRESS
1079                    /CANNOT BE ALTERED IN 8MODE WITH API ON
1080                    /TURN API OFF
1081                    /TEST THAT STACK ADD CAN BE ALTERED
1082                    /
1083    1665  4422      T30,    JMS I   IOPRES  /GENERATE IO PRESET
1084    1666  6006              APION           /TURN AP INTERRUPT SYS ON
1085    1667  6776              SSTK            /TRY TO SET STACK ADDRESS REGISTER = 0
1086    1670  7200              CLA             /CLEAR AC
1087    1671  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
1088    1672  7440              SZA             /AC = 0
1089    1673  7402              HLT             /ERR
1090    1674  6002              IOF             /TURN API INTERRUPT SYS OFF
1091    1675  7300              CLA CLL         /CLEAR AC AND LINC
1092    1676  6776              SSTK            /SET STACK ADDRESS REGISTER = 0
1093    1677  7200              CLA             /CLEAR AC
1094    1700  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
1095    1701  7040              CMA             /COMPILMENT AC
1096    1702  7440              SZA             /AC = 0
1097    1703  7402              HLT             /ERR
```

```
1098
1099                    /
1100                    /TURN API ON
1101                    /TEST THAT STACK ADDRESS BITS 3-14
1102                    /CANNOT BE ALTERED IN LINC MODE WITH API ON
1103                    /TURN API OFF
1104                    /TEST THAT STACK ADDRESS CAN BE ALTERED
1105                    /
1106    1704  4422      T31,    JMS I   IOPRES  /GENERATE IO PRESET
1107    1705  6776              SSTK            /SET STACK ADDRESS REGISTER = 0
1108    1706  6141              LINC            /LINC MODE
1109                            LMODE
1110    1707  0500              IOB             /EXECUTE 8-MODE INST
1111    1710  0006              APION           /TURN API INTERRUPT SYS ON
1112    1711  1020              LDA I           /AC =
1113    1712  7777              7777            /7777
1114    1713  0500              IOB             /EXECUTE 8-MODE INST
1115    1714  0776              SSTK            /TRY TO SET STACK ADDRESS REG = 7777
1116    1715  0011              CLR             /CLEAR AC LINC AND MQ
1117    1716  0500              IOB             /EXECUTE 8-MODE INST
1118    1717  0774              RSTK            /READ STACK ADDRESS REG INTO AC
1119    1720  1460              SAE I           /AC =
1120    1721  7777              7777            /7777
1121    1722  0000              HLT             /ERR
1122    1723  0500              IOB             /EXECUTE 8-MODE INST
1123    1724  0001              ION             /TURN API OFF BY TURNING NORMAL INTERRUPT SYS ON
1124    1725  1020              LDA I           /AC =
1125    1726  7777              7777            /7777
1126    1727  0500              IOB             /EXECUTE 8-MODE INST
1127    1730  0776              SSTK            /SET STACK ADDRESS REGISTER = 7777
1128    1731  0011              CLR             /CLEAR AC LINC AND MQ
1129    1732  0500              IOB             /EXECUTE 8-MODE INST
1130    1733  0774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
1131    1734  1460              SAE I           /AC =
1132    1735  0000              0               /0
1133    1736  0000              HLT             /ERR
1134    1737  0002              POP             /8-MODE
1135                            PMODE
1136    1740  6002              IOP             /TURN NORMAL INTERRUPT SYS OFF
```

```
1137
1138
1139                    /
1140                    /TURN API ON
1141                    /TEST THAT VECTOR ADDRESS
1142                    /CANNOT BE ALTERED IN 8MODE WITH API ON
1143                    /TURN API OFF
1144                    /TEST THAT VECTOR ADDRESS CAN BE ALTERED
1145                    /
1146    1741  4406      T32,    JMS I   SETUP   /SETUP API REGISTERS
1147    1742  6777              SVEC            /SET VECTOR ADDRESS REGISTER = 0
1148    1743  6006              APION           /TURN API INTERRUPT SYS ON
1149    1744  1153              TAD     K7740   /AC = 7740
1150    1745  6777              SVEC            /TRY TO SET VECTOR ADDRESS REG = 7740
1151    1746  7200              CLA             /AC = 0
1152    1747  6775              RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
1153    1750  3002              DCA     IMAGE   /IMAGE OF AC
1154    1751  1002              TAD     IMAGE   /GET IMAGE
1155    1752  7041              CIA             /COMPLIMENT AND INC
1156    1753  1154              TAD     K7741   /IMAGE SHOULD = 7741
1157    1754  7440              SZA             /AC = 0
1158    1755  7402              HLT             /ERR
1159    1756  6002              IOF             /TURN API INTERRUPT SYS OFF
1160    1757  1153              TAD     K7740   /AC = 7740
1161    1760  6777              SVEC            /SET VECTOR ADDRESS = 7740
1162    1761  7200              CLA             /AC = 0
1163    1762  6775              RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
1164    1763  3002              DCA     IMAGE   /IMAGE OF AC
1165    1764  1002              TAD     IMAGE   /GET IMAGE
1166    1765  7041              CIA             /COMPLIMENT AND INC
1167    1766  1043              TAD     K1      /IMAGE SHOULD = 1
1168    1767  7440              SZA             /AC = 0
1169    1770  7402              HLT             /ERR
1170    1771  5772              JMP I   .+1     /JMP TO
1171    1772  2001              T33             /TEST T33
```

```
1172
1173
1174                    /
1175                    /TURN API ON
1176                    /TEST THAT VECTOR ADDRESS
1177                    /CANNOT BE ALTERED IN LINC MODE WITH API ON
1178                    /TURN API OFF
1179                    /TEST THAT VECTOR ADDRESS CAN BE ALTERED
1180                    /
1181            2001            *2001
1182    2001    7300    T33,    CLA CLL             /CLEAR AC AND LINC
1183    2002    4406            JMS I   SETUP       /SETUP API REGISTERS
1184    2003    6777            SVEC                /SET VECTOR ADDRESS REG = 0
1185    2004    6141            LINC                /LINC MODE
1186                            LMODE
1187    2005    0500            IOB                 /EXECUTE 8-MODE INST
1188    2006    0006            APION               /TURN API INTERRUPT SYS ON
1189    2007    1020            LDA I               /AC =
1190    2010    7740            7740                /7740
1191    2011    0500            IOB                 /EXECUTE 8-MODE INST
1192    2012    0777            SVEC                /TRY TO SET VECTOR ADDRESS REG = 7740
1193    2013    0011            CLR                 /CLEAR AC LINC AND MQ
1194    2014    0500            IOB                 /EXECUTE 8-MODE INST
1195    2015    0775            RVEC                /READ VECTOR ADDRESS REGISTER INTO AC
1196    2016    1460            SAE I               /AC =
1197    2017    7741            7741                /7741
1198    2020    0000            HLT                 /ERR
1199    2021    0500            IOB                 /EXECUTE 8-MODE INST
1200    2022    0002            IOF                 /TURN API INTERRUPT SYS OFF
1201    2023    0011            CLR                 /CLEAR AC LINC AND MQ
1202    2024    1020            LDA I               /AC =
1203    2025    7740            7740                /7740
1204    2026    0500            IOB                 /EXECUTE 8-MODE INST
1205    2027    0777            SVEC                /SET VECTOR ADDRESS REGISTER = 7740
1206    2030    0011            CLR                 /CLEAR AC LINC AND MQ
1207    2031    0500            IOB                 /EXECUTE 8-MODE INST
1208    2032    0775            RVEC                /READ VECTOR ADDRESS REGISTER INTO AC
1209    2033    1460            SAE I               /AC =
1210    2034    0001            1                   /1
1211    2035    0000            HLT                 /ERR
1212    2036    0002            PDP                 /8-MODE
1213                            PMODE
```

```
1214
1215
1216                    /
1217                    /EXECUTE IN 8 MODE
1218                    /TEST PUSHJ AND RES IOTS WITH API ON
1219                    /
1220    2037  4407      T34,    JMS I   CLRSTK  /CLEAR STACK
1221    2040  4406            JMS I   SETUP   /SET UP API REGISTERS
1222    2041  7060            CML CMA         /SET LINC = 1 AND AC = 7777
1223    2042  3000            DCA     LOC0    /LOC 0 = 7777
1224    2043  3405            DCA I   UT37A   /LOC UT37A = 0
1225    2044  6006            APION           /TURN API INTERRUPT SYS ON
1226    2045  6760            PJA!0           /PUSH JUMP WITH FIELD BITS = 0
1227    2046  2053            TSTPJ2          /TO LOC TSTPJ2
1228    2047  7402            HLT             /ERR - PUSHJ SKIPPED
1229    2050  7402            HLT
1230    2051  0000            AND     LOC0    /RETURN FROM RESTORE IOT (DECODES AS HLT IN LINC MODE)
1231    2052  5305            JMP     T34A    /CONTINUE WITH TEST
1232    2053  0000    TSTPJ2, AND     LOC0    /TEST THAT ARRIVAL FROM PUSHJ IOT WAS IN 8-MODE
1233    2054  7440            SZA             /AC = 0
1234    2055  7402            HLT             /ERR
1235    2056  6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
1236    2057  3002            DCA     IMAGE   /IMAGE OF AC
1237    2060  1002            TAD     IMAGE
1238    2061  7041            CIA             /COMPLIMENT AND INC
1239    2062  1115            TAD     K2172   /IMAGE SHOULD = 2172
1240    2063  7440            SZA             /AC = 0
1241    2064  7402            HLT             /ERR
1242    2065  1436            TAD I   STACK+4 /GET UF IF AND DF STORED ON STACK BY PUSH JUMP IOT
1243    2066  7041            CIA             /COMPLIMENT AND INC
1244    2067  1045            TAD     K3      /STACK+4 SHOULD = 3
1245    2070  7440            SZA             /AC = 0
1246    2071  7402            HLT             /ERR
1247    2072  7300            CLA CLL         /CLEAR AC AND LINC
1248    2073  1433            TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP IOT
1249    2074  7041            CIA             /COMPLIMENT AND INC
1250    2075  1031            TAD     PJPC2   /STACKK+1 SHOULD = PJPC2
1251    2076  7440            SZA             /AC = 0
1252    2077  7402            HLT             /ERR
1253    2100  1433            TAD I   STACK+1 /GET PC STORED ON STACK BY PUSH JUMP IOT
1254    2101  1044            TAD     K2      /INCREMENT BY 2
1255    2102  3433            DCA I   STACK+1 /SOTRE BACK IN LOC STACKK+1
1256    2103  6771            RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
1257    2104  7402            HLT             /ERR - RESTORE SKIPPED
1258    2105  7420    T34A,   SNL             /LINC = 1
1259    2106  7402            HLT             /ERR
1260    2107  7440            SZA             /AC = 0
1261    2110  7402            HLT             /ERR
1262    2111  6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
1263    2112  3002            DCA     IMAGE   /IMAGE OF AC
1264    2113  1002            TAD     IMAGE   /GET IMAGE
1265    2114  7041            CIA             /COMPLIMENT AND INC
1266    2115  1116            TAD     K2177   /IMAGE SHOULD = 2177
1267    2116  7440            SZA             /AC = 0
1268    2117  7402            HLT             /ERR
```

```
1269
1270    2120  5721            JMP I   .+1      /JMP TO
1271    2121  2220            T35              /TEST 35
1272                  /
1273                  /TEST MAINTENANCE IOT SIMULATION OF
1274                  /A LEVEL 0 INTERRUPT IN LINC MODE
1275                  /--FIRST TIME AN INTERRUPT HAS BEEN SIMULATED--
1276                  /
1277          2200            *2200
1278                          PMODE
1279    2200  4427    T35,    JMS I   CLRSTK   /CLEAR STACK
1280    2201  4422            JMS I   IOPRES   /GENERATE IO PRESET
1281    2202  1142            TAD     K7000    /AC = 7000 OR 8-MODE NOP
1282    2203  3442            DCA I   TSTA     /ENABLE INTERRUPT
1283    2204  1053            TAD     K37      /AC = 37
1284    2205  6772            SMLV             /SET MACHINE LEVEL = 17
1285    2206  7340            CLA CLL CMA      /AC = 7777
1286    2207  3000            DCA     LOC0     /LOC 0 = 7777
1287    2210  1135            TAD     K5600    /AC = 5600
1288    2211  6776            SSTK             /SET STACK ADDRESS REGISTER = 5600
1289    2212  7200            CLA              /AC = 0
1290    2213  1137            TAD     K6000    /AC = 6000
1291    2214  6777            SVEC             /SET VECTOR ADDRESS REGISTER = 6000
1292    2215  6141            LINC             /LINC MODE
1293                          LMODE
1294    2216  0011            CLR              /CLEAR AC LINK AND MQ
1295    2217  1020            LDA I            /AC =
1296    2220  6237            6000!T35A+1      /JMP TO T35A+1
1297    2221  1040            STA              /STORE IN
1298    2222  1402            1402             /LOC 1402 OF CURRENT INSTRUCTION FIELD
1299    2223  0011            CLR              /CLEAR AC LINC AND MQ
1300    2224  0474            FLO I            /FLO = 0
1301    2225  0000            HLT              /ERR-FLO NOT = 0
1302    2226  0500            IOB              /EXECUTE 8-MODE IOT
1303    2227  0006            APION            /TURN API INTERRUPT SYS ON
1304    2230  1020            LDA I            /AC =
1305    2231  4000            4000             /4000
1306    2232  0500            IOB              /EXECUTE 8-MODE INST
1307    2233  0051            MAIN1            /SIMULATE API INTERRUPT - LEV 0
1308    2234  0016            NOP              /EXECUTES ONE MORE INST BEFORE INTERRUPT
1309    2235  0000            HLT              /ERR
```

```
1310
1311    2236  7402    T35A,   JMP      UT37     /RETURN FROM LEV 0 INTERRRUPT IN LINC MODE
1312    2237  1460            SAE I             /AC =
1313    2240  4000            4000              /4000
1314    2241  0000            HLT               /ERR-AC NOT = 4000
1315    2242  0452            LZE               /LINC = 0
1316    2243  0000            HLT               /ERR-LINC NOT = 0
1317    2244  0005            QAC               /MQ 0-10 TO AC 1-11
1318    2245  0261            ROL I   1         /ROTATE LEFT 1
1319    2246  0475            QLZ I             /SKIP IF MQ 11 = 1
1320    2247  6252            JMP     .+3       /MQ BIT 11 = 0
1321    2250  1620            BSE I             /SET AC BIT 0
1322    2251  0001            1                 /TO 1
1323    2252  1460            SAE I             /AC =
1324    2253  0000            0                 /0
1325    2254  0000            HLT               /ERR-AC NOT = 0 THEREFORE MQ WAS NOT = 0
1326    2255  0474            FLO I             /FLO = 0
1327    2256  0000            HLT               /ERR-FLO NOT = 0
1328    2257  0002            PDP               /8-MODE
1329                          PMODE
1330    2260  6774            RSTK              /READ STACK ADDRESS REGISTER INTO AC
1331    2261  3002            DCA     IMAGE     /IMAGE OF AC
1332    2262  1002            TAD     IMAGE     /GET IMAGE
1333    2263  7041            CIA               /COMPLIMENT AND INC
1334    2264  1116            TAD     K2177     /IMAGE SHOULD = 2177
1335    2265  7440            SZA               /AC = 0
1336    2266  7402            HLT               /ERR
1337    2267  6773            RMLV              /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
1338    2270  3002            DCA     IMAGE     /IMAGE OF AC
1339    2271  1002            TAD     IMAGE     /GET IMAGE
1340    2272  7041            CIA               /COMPLIMENT AND INC
1341    2273  1155            TAD     K7760     /IMAGE SHOULD = 7760
1342    2274  7440            SZA               /AC = 0
1343    2275  7402            HLT               /ERR
```

```
1344
1345                    /
1346                    /TEST NON EXECUTION OF MAINTENANCE IOTS
1347                    /WITH API OFF AND FOR NO INTERRUPT
1348                    /OCCURING WHEN MAINTENANCE IOTS ARE ISSUED
1349                    /WITH THE AC = 0 AND API ON
1350                    /
1351    2276  4407      T36,    JMS I   CLRSTK  /CLEAR STACK
1352    2277  4406              JMS I   SETUP   /SET UP API REGISTERS
1353    2300  3404              DCA I   UT16A   /LOC UT16A = 0
1354    2301  1053              TAD     K37     /AC = 37
1355    2302  6772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
1356    2303  7340              CLA CLL CMA     /AC = 7777
1357    2304  6051              MAIN1           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL 0 WITH API OFF
1358    2305  7000              NOP             /DELAY
1359    2306  7000              NOP             /DELAY
1360    2307  6052              MAIN2           /TRY TO SIMULATE AN API INTERRUPT WITH API OFF
1361    2310  7000              NOP             /DELAY
1362    2311  7000              NOP             /DELAY
1363    2312  7300              CLA CLL         /AC = 0
1364    2313  6772              SMLV            /SET MACHINE LEVEL = 0
1365    2314  7340              CLA CLL CMA     /AC = 7777
1366    2315  6006              APION           /TURN API INTERRUPT SYS ON
1367    2316  6051              MAIN1           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL 0
1368    2317  7000              NOP             /MACHINE LEVEL OF 0 SHOULD PREVENT IT
1369    2320  7000              NOP             /DELAY
1370    2321  6052              MAIN2           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL 12
1371    2322  7000              NOP             /MACHINE LEVEL OF 0 SHOULD PREVENT IT
1372    2323  7000              NOP             /DELAY
1373    2324  7300              CLA CLL         /AC = 0
1374    2325  1053              TAD     K37     /AC = 37
1375    2326  6772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
1376    2327  7300              CLA CLL         /AC = 0
1377    2330  6051              MAIN1           /TRY TO SIMULATE AN API INTERRUPT
1378    2331  7000              NOP             /AC = 0 (NO INTERRUPT LEVEL SET) SHOULD PREVENT IT
1379    2332  7000              NOP             /DELAY
1380    2333  6052              MAIN2           /TRY TO SIMULATE AN API INTERRUPT
1381    2334  7000              NOP             /AC = 0 (NO INTERRUPT LEVEL SET) SHOULD PREVENT IT
1382    2335  7000              NOP             /DELAY
1383    2336  5737              JMP I   .+1     /JMP TO
1384    2337  2400              T37             /TEST T37
```

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1385
1386                    ////
1387                    /TEST INTERRUPTS TO EACH LEVEL
1388                    ////
1389                    /
1390                    /TEST MAINTENANCE MODE SIMULATION OF
1391                    /A LEVEL 0 INTERRUPT TO LOC 6100 WITH MACHINE LEVEL = 17
1392                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600-5604
1393                    /AFTER SERVICING INTERRUPT RESTOR IOT RETURNS
1394                    /PROGRAM SEQUENCE TO START OF T40 TEST
1395                    /
1396          2400              *2400
1397    2400  4407    T37,      JMS I   CLRSTK  /CLEAR STACK
1398    2401  3405              DCA I   UT37A   /LOC UT37A = 0
1399    2402  4406              JMS I   SETUP   /SET UP API REGISTERS
1400    2403  1053              TAD     K37     /AC = 37
1401    2404  6772              SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
1402    2405  7300              CLA CLL         /CLEAR AC AND LINC
1403    2406  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1404    2407  3561              DCA I   VEC0    /ENABLE LEVEL 0 INTERRUPT TO LOC VECT0
1405    2410  6006              APION           /TURN API INTERRUPT SYSTEM ON
1406    2411  1125              TAD     K4000   /AC = 4000
1407    2412  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 0 INTERRUPT
1408    2413  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1409    2414  7402              HLT             /ERR
1410                    /
1411                    /TEST MAINTENANCE MODE SIMULATION OF
1412                    /A LEVEL 1 INTERRUPT TO LOC 6102 WITH MACHINE LEVEL = 17
1413                    /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
1414                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1415                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T41 TEST
1416                    /
1417    2415  7000    T40,      NOP
1418    2416  4407              JMS I   CLRSTK  /CLEAR STACK
1419    2417  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1420    2420  3562              DCA I   VEC1    /ENABLE LEVEL 1 INTERRUPT TO LOC VECT1
1421    2421  1076              TAD     K2000   /AC = 2000
1422    2422  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 1 INTERRUPT
1423    2423  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1424    2424  7402              HLT             /ERR
1425                    /
1426                    /TEST MAINTENANCE MODE SIMULATION OF
1427                    /A LEVEL 2 INTERRUPT TO LOC 6104 WITH MACHINE LEVEL = 17
1428                    /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
1429                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1430                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T42 TEST
1431                    /
1432    2425  7000    T41,      NOP
1433    2426  4407              JMS I   CLRSTK  /CLEAR STACK
1434    2427  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1435    2430  3563              DCA I   VEC2    /ENABLE LEVEL 2 INTERRUPT TO LOC VECT2
1436    2431  1071              TAD     K1000   /AC = 1000
1437    2432  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 2 INTERRUPT
1438    2433  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1439    2434  7402              HLT             /ERR
```

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1440
1441                    /
1442                    /TEST MAINTENANCE MODE SIMULATION OF
1443                    /A LEVEL 3 INTERRUPT TO LOC 6106 WITH MACHINE LEVEL = 17
1444                    /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
1445                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1446                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T43 TEST
1447                    /
1448    2435  7000      T42,    NOP
1449    2436  4407              JMS I   CLRSTK  /CLEAR STACK
1450    2437  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1451    2440  3564              DCA I   VEC3    /ENABLE LEVEL 3 INTERRUPT TO LOC VECT3
1452    2441  1065              TAD     K400    /AC = 400
1453    2442  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 3 INTERRUPT
1454    2443  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1455    2444  7402              HLT             /ERR
1456                    /
1457                    /TEST MAINTENANCE MODE SIMULATION OF
1458                    /A LEVEL 4 INTERRUPT TO LOC 6110 WITH MACHINE LEVEL = 17
1459                    /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
1460                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1461                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T44 TEST
1462                    /
1463    2445  7000      T43,    NOP
1464    2446  4407              JMS I   CLRSTK  /CLEAR STACK
1465    2447  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1466    2450  3565              DCA I   VEC4    /ENABLE LEVEL 4 INTERRUPT TO LOC VECT4
1467    2451  1061              TAD     K200    /AC = 200
1468    2452  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 4 INTERRUPT
1469    2453  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1470    2454  7402              HLT             /ERR
1471                    /
1472                    /TEST MAINTENANCE MODE SIMULATION OF
1473                    /A LEVEL 5 INTERRUPT TO LOC 6112 WITH MACHINE LEVEL = 17
1474                    /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
1475                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1476                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T45 TEST
1477                    /
1478    2455  7000      T44,    NOP
1479    2456  4407              JMS I   CLRSTK  /CLEAR STACK
1480    2457  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1481    2460  3566              DCA I   VEC5    /ENABLE LEVEL 5 INTERRUPT TO LOC VECT5
1482    2461  1057              TAD     K100    /AC = 100
1483    2462  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 5 INTERRUPT
1484    2463  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1485    2464  7402              HLT             /ERR
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1486
1487                    /
1488                    /TEST MAINTENANCE MODE SIMULATION OF
1489                    /A LEVEL 6 INTERRUPT TO LOC 6114 WITH MACHINE LEVEL = 17
1490                    /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
1491                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1492                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T46 TEST
1493                    /
1494    2465  7000      T45,    NOP
1495    2466  4407              JMS I   CLRSTK  /CLEAR STACK
1496    2467  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1497    2470  3567              DCA I   VEC6    /ENABLE LEVEL 6 INTERRUPT TO LOC VECT6
1498    2471  1054              TAD     K40     /AC = 40
1499    2472  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 6 INTERRUPT
1500    2473  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1501    2474  7402              HLT             /ERR
1502                    /
1503                    /TEST MAINTENANCE MODE SIMULATION OF
1504                    /A LEVEL 7 INTERRUPT TO LOC 6116 WITH MACHINE LEVEL = 17
1505                    /AND WITH THE MACHINE STATUS SAVED ON LOC 5600-5604
1506                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1507                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T47 TEST
1508                    /
1509    2475  7000      T46,    NOP
1510    2476  4407              JMS I   CLRSTK  /CLEAR STACK
1511    2477  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1512    2500  3570              DCA I   VEC7    /ENABLE LEVEL 7 INNTERRUPT TO LOC VECT7
1513    2501  1052              TAD     K20     /AC = 20
1514    2502  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 7 INTERRUPT
1515    2503  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1516    2504  7402              HLT             /ERR
1517                    /
1518                    /TEST MAINTENANCE MODE SIMULATION OF
1519                    /A LEVEL 8 INTERRUPT TO LOC 6120 WITH MACHINE LEVEL = 17
1520                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600-5604
1521                    /AFTER SERVICING INTERRUPT AND INC PC IN LOC STACKK+1
1522                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO T50 TEST
1523                    /
1524    2505  7000      T47,    NOP
1525    2506  4407              JMS I   CLRSTK  /CLEAR STACK
1526    2507  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
1527    2510  3571              DCA I   VEC10   /ENABLE LEVEL 8 INTERRUPT TO LOC VECT10
1528    2511  1050              TAD     K10     /AC = 10
1529    2512  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 8 INTERRUPT
1530    2513  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1531    2514  7402              HLT             /ERR
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1532
1533                    /
1534                    /TEST MAINTENANCE MODE SIMULATION OF
1535                    /A LEVEL 9 INTERRUPT TO LOC 6122 WITH MACHINE LEVEL = 17
1536                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
1537                    /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
1538                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T51 TEST
1539                    /
1540    2515  7000      T50,    NOP
1541    2516  6407              JMS I   CLRSTK  /CLEAR STACK
1542    2517  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
1543    2520  3572              DCA I   VEC11   /ENABLE LEVEL 9 INTERRUPT TO LOC VECT11
1544    2521  1046              TAD     K4      /AC=4
1545    2522  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 9 INTERRUPT
1546    2523  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1547    2524  7402              HLT             /ERR
1548                    /
1549                    /TEST MAINTENANCE MODE SIMULATION OF
1550                    /A LEVEL 10 INTERRUPT TO LOC 6124 WITH MACHINE LEVEL=17
1551                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
1552                    /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
1553                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T52 TEST
1554                    /
1555    2525  7000      T51,    NOP
1556    2526  6407              JMS I   CLRSTK  /CLEAR STACK
1557    2527  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
1558    2530  3573              DCA I   VEC12   /ENABLE LEVEL 10 INTERRRUPT TO LOC VECT12
1559    2531  1044              TAD     K2      /AC=2
1560    2532  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 10 INTERRUPT
1561    2533  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1562    2534  7402              HLT             /ERR
1563                    /
1564                    /TEST MAINTENANCE MODE SIMULATION OF
1565                    /A LEVEL 11 INTERRUPT TO LOC 6126 WITH MACHINE LEVEL=17
1566                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
1567                    /AFTER SERVICING THE INTERRUPT AND INC PC IN LOC STACKK+1
1568                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO START OF T53 TEST
1569                    /
1570    2535  7000      T52,    NOP
1571    2536  6407              JMS I   CLRSTK  /CLEAR STACK
1572    2537  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
1573    2540  3574              DCA I   VEC13   /ENABLE LEVEL 11 INTERRUPT TO LOC VECT13
1574    2541  1043              TAD     K1      /AC=1
1575    2542  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 11 INTERRUPT
1576    2543  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN1 IOT
1577    2544  7402              HLT             /ERR
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1578
1579                    /
1580                    /TEST MAINTENANCE MODE SIMULATION OF
1581                    /A LEVEL 12 INTERRUPT TO LOC 6130 WITH MACHINE LEVEL=17
1582                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
1583                    /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
1584                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO JMP TO START OF T54 TEST
1585                    /
1586    2545  7000      T53,    NOP
1587    2546  4407              JMS I   CLRSTK  /CLEAR STACK
1588    2547  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
1589    2550  3575              DCA I   VEC14   /ENABLE LEVEL 12 INTERRUPT TO LOC VECT14
1590    2551  1046              TAD     K4      /AC=4
1591    2552  6052              MAIN2           /MAINTENANCE MODE SIMULATION OF LEVEL 12 INTERRUPT
1592    2553  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN2 IOT
1593    2554  7402              HLT             /ERR
1594    2555  5756              JMP I   .+1     /JMP TO
1595    2556  2600              T54             /TEST T54
1596                    /
1597                    /TEST MAINTENANCE MODE SIMULATION OF
1598                    /A LEVEL 13 INTERRUPT TO LOC 6132 WITH MACHINE LEVEL=17
1599                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
1600                    /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
1601                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO JMP TO START OF T54 TEST
1602                    /
1603          2600              *2600
1604    2600  7000      T54,    NOP
1605    2601  4407              JMS I   CLRSTK  /CLEAR STACK
1606    2602  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
1607    2603  3576              DCA I   VEC15   /ENABLE LEVEL 13 INTERRUPT TO LOC VECT15
1608    2604  1044              TAD     K2      /AC=2
1609    2605  6052              MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 13 INTERRUPT
1610    2606  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN2 IOT
1611    2607  7402              HLT             /ERR
1612                    /
1613                    /TEST MAINTENANCE MODE SIMULATION OF
1614                    /A LEVEL 14 INTERRUPT TO LOC 6134 WITH MACHINE LEVEL=17
1615                    /AND WITH THE MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
1616                    /AFTER SERVICING THE INTERRUPT AND INC THE PC IN LOC STACKK+1
1617                    /RESTOR IOT RETURNS PROGRAM SEQUENCE TO JMP TO START OF T56 TEST
1618                    /
1619    2610  7000      T55,    NOP
1620    2611  4407              JMS I   CLRSTK  /CLEAR STACK
1621    2612  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
1622    2613  3577              DCA I   VEC16   /ENABLE LEVEL 14 INTERRUPT TO LOC VECT16
1623    2614  1043              TAD     K1      /AC=1
1624    2615  6052              MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 14 INTERRUPT
1625    2616  7000              NOP             /EXECUTES 1 MORE INST AFTER MAIN2 IOT
1626    2617  7402              HLT             /ERR
```

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1627
1628                    /
1629                    /MAINTENANCE MODE SIMULATION OF MULTIPLE LEVEL INTERRUPTS
1630                    /TESTS THAT HIGHEST PRIORITY INTERRUPT IS ACCEPTED
1631                    /VECTOR ADDRESS REGISTER IS SET TO 6300
1632                    /A MAXIMUM OF 16 OCTAL LEVELS OF INTERRUPTS ARE SAVED ON THE STACK
1633                    /
1634    2620  7300      T56,    CLA CLL             /AC=0
1635    2621  1134              TAD     K5577       /AC=5577
1636    2622  3010              DCA     10          /LOC 10=5577
1637    2623  1152              TAD     K7600       /AC=7600
1638    2624  3011              DCA     11          /LOC11=7600
1639    2625  3410              DCA I   10          /CLEAR STACK STARTING WITH LOCATION 5600
1640    2626  2011              ISZ     11          /DONE 200 TIMES
1641    2627  5225              JMP     .-2         /NO-DO IT AGAIN
1642    2630  4406              JMS I   SETUP       /SET UP API REGISTERS
1643    2631  1053              TAD     K37         /AC=37
1644    2632  6772              SMLV                /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
1645    2633  7200              CLA                 /AC=0
1646    2634  1141              TAD     K6300       /AC = 6300
1647    2635  6777              SVEC                /SET VECTOR ADDRESS REGISTER=6400
1648    2636  7300              CLA CLL             /CLEAR AC AND LINC
1649    2637  6775              RVEC                /READ VECTOR ADDRESS REGISTER INTO AC
1650    2640  3002              DCA     IMAGE       /IMAGE OF AC
1651    2641  1002              TAD     IMAGE
1652    2642  7041              CIA                 /COMPLIMENT AND INC
1653    2643  1072              TAD     K1441       /IMAGE SHOULD = 1441
1654    2644  7440              SZA                 /AC=0
1655    2645  7402              HLT                 /ERR
1656    2646  1142              TAD     K7000       /AC=7000 OR 8-MODE NOP
1657    2647  3671              DCA I   MV16        /ENABLE LEVEL 16 INTERRUPT TO LOC MLV16
1658    2650  1043              TAD     K1          /AC=1
1659    2651  6006              APION               /TURN API INTERRUPT SYSTEM ON
1660    2652  6052              MAIN2               /MAINTENANCE MODE SIMULATION OF A LEVEL 14 INTERRUPT
1661    2653  7000              NOP                 /EXECUTES 1 MORE INSTRUCTION AFTER MAIN2 IOT
1662    2654  7402              HLT                 /ERR
1663    2655  7300      T56A,   CLA CLL             /AC=0--RESTORE OCCURS TO HERE FROM MV16 ROUTINE
1664    2656  6774              RSTK                /READ STACK ADDRESS REGISTER INTO AC
1665    2657  3002              DCA     IMAGE       /IMAGE OF AC
1666    2660  1002              TAD     IMAGE
1667    2661  7041              CIA                 /COMPLIMENT AND INC
1668    2662  1116              TAD     K2177       /IMAGE SHOULD=2177
1669    2663  7440              SZA                 /AC=0
1670    2664  7402              HLT                 /ERR
1671    2665  1150              TAD     K7402       /AC=7402 OR 8-MODE HLT
1672    2666  3671              DCA I   MV16        /DEPOSIT IN LOC MLV16
1673    2667  5670              JMP I   .+1         /JMP TO
1674    2670  3000              T57                 /TEST T57
1675                    /
1676    2671  6400      MV16,   MLV16
```

```
1677
1678                    /
1679                    /TEST THAT DJR LIF AND CIF INSTRUCTIONS
1680                    /WHEN ISSUED WILL PREVENT API INTERRUPTS
1681                    /UNTIL A JMP INSTRUCTION IS EXECUTED
1682                    /
1683            3000            *3000
1684    3000    7300    T57,    CLA CLL                 /CLEAR AC AND LINC
1685    3001    4407            JMS I   CLRSTK          /CLEAR STACK
1686    3002    4406            JMS I   SETUP           /SET UP API REGISTERS
1687    3003    1053            TAD     K37             /AC=37
1688    3004    6772            SMLV                    /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
1689    3005    7340            CLA CLL CMA             /AC=7777
1690    3006    6006            APION                   /TURN API INTERRUPT SYSTEM ON
1691    3007    6141            LINC                    /LINC MODE
1692                            LMODE
1693    3010    0006            DJR                     /DISABLE JMP RETURN
1694    3011    0500            IOB                     /TRY TO EXECUTE 8-MODE INST
1695    3012    0051            MAIN1                   /TRY TO SIMULATE API INTERRUPT TO LEVEL 0
1696    3013    0016            NOP                     /EXECUTE 1 MORE INST AFTER MAIN1 IOT
1697    3014    0016            NOP                     /DJR SHOULD PREVENT INTERRUPT
1698    3015    0500            IOB                     /EXECUTE 8-MODE INST
1699    3016    0052            MAIN2                   /TRY TO SIMULATE API INTERRUPT TO LEVEL 12
1700    3017    0016            NOP                     /EXECUTE 1 MORE INST AFTER MAIN2 IOT
1701    3020    0016            NOP                     /DJR SHOULD PREVENT INTERRUPT
1702    3021    1020            LDA I                   /AC=
1703    3022    7000            7000                    /7000 OR 8-MODE NOP
1704    3023    1040            STA                     /STORE IN LOC
1705    3024    6140            VECT0                   /VECT0
1706    3025    7026            JMP     .+1             /ENABLE INTERRUPTS BY ISSUING A JMP INST
1707    3026    0016            NOP                     /EXECUTE 1 INST THAN INTERRUPT TO LEVEL 0 (HIGHEST PRIORITY)
1708    3027    0000            HLT                     /ERR-DID NOT INTERRUPT
1709    3030    0601            LIF     1               /SET INSTRUCTION FIELD 1--RETURN AFTER RESTORE IOT
1710    3031    1020            LDA I                   /AC=
1711    3032    7777            7777                    /7777
1712    3033    0500            IOB                     /EXECUTE AN 8-MODE INST
1713    3034    0051            MAIN1                   /TRY TO SIMULATE API INTERRUPT TO LEVEL 0
1714    3035    0016            NOP                     /EXECUTE 1 MORE INST AFTER MAIN1 IOT
1715    3036    0016            NOP                     /LIF INST SHOULD PREVENT INTERRUPT
1716    3037    0500            IOB                     /EXECUTE AN 8-MODE INST
1717    3040    0052            MAIN2                   /TRY TO SIMULATE API INTERRUPT TO LEVEL 12
1718    3041    0016            NOP                     /EXECUTE 1 MORE INST AFTER MAIN2 IOT
1719    3042    0016            NOP                     /LIF INST SHOULD PREVENT INTERRUPT
1720    3043    7044            JMP     .+1             /2 JMP INSTRUCTIONS ARE NECESSARY AFTER A LIF INST IN LINC MODE
1721    3044    0016            NOP                     /TO ENABLE THE INTERRUPTS AGAIN
1722    3045    1020            LDA I                   /AC=
1723    3046    7000            7000                    /7000 OR AN 8-MODE NOP
```

```
1724
1725    3047  1040          STA             /STORE IN LOC
1726    3050  6140          VECT0           /VECT0
1727    3051  7052          JMP     .+1     /ENABLE INTERRUPTS BY ISSUING A JMP INST
1728    3052  0000          HLT             /ERR-DID NOT INTERRUPT IMEEDIATELY AFTER JMP
1729    3053  0002          PDP             /8-MODE
1730                        PMODE
1731    3054  7340          CLA CLL CMA     /AC=7777
1732    3055  6202          CIF             /CHANGE INSTRUCTION FIELD
1733    3056  6051          MAIN1           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL 0
1734    3057  7000          NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
1735    3060  7000          NOP             /CIF INST SHOULD PREVENT INTERRUPT
1736    3061  6052          MAIN2           /TRY TO SIMULATE AN API INTERRUPT TO LEVEL 12
1737    3062  7000          NOP             /EXECUTE 1 MORE INST AFTER MAIN2 IOT
1738    3063  7000          NOP             /CIF INST SHOULD PREVENT INTERRUPT
1739    3064  1142          TAD     K7000   /AC=7000 OR 8-MODE NOP
1740    3065  3501          DCA I   VEC0    /STORE IN LOC VECT0
1741    3066  5267          JMP     .+1     /ENABLE INTERRUPTS BY ISSUING A JMP INST
1742    3067  7000          NOP             /EXECUTE 1 MORE INST THAN INTERRUPT TO LEVEL 0 (HIGHEST PRIORITY)
1743    3070  7402          HLT             /ERR
```

```
1744
1745                    /
1746                    /TEST THAT A DJR INSTRUCTION WHEN ISSUED AND
1747                    /NORMAL OPERATION IS REENABLED WITH A JMP INST
1748                    /WILL ALLOW A RESTORE IOT TO BE EXECUTED IMMEDIATELY
1749                    /
1750    3071  7300      T60,    CLA CLL             /CLEAR AC AND LINC
1751    3072  4427              JMS I   CLRSTK      /CLEAR STACK
1752    3073  4426              JMS I   SETUP       /SET UP API REGISTERS
1753    3074  1053              TAD     K37         /AC=37
1754    3075  6772              SMLV                /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
1755    3076  7200              CLA                 /AC=0
1756    3077  6006              APION               /TURN API INTERRUPT SYSTEM ON
1757    3100  6141              LINC                /LINC MODE
1758                            LMODE
1759    3101  0500              IOB                 /EXECUTE 8-MODE INST
1760    3102  0760              PJA!0               /PUSH JUMP WITH FIELD BITS=0
1761    3103  3112              2000!T60A           /TO LOC T60A
1762    3104  0000              HLT                 /ERR--RESTORE IOT RET PROC SEQ TO THIS LOC AFTER ALTERED TO A NOP
1763    3105  0002              PDP                 /8-MODE
1764                            PMODE
1765    3106  7200              CLA                 /AC = 0
1766    3107  3304              DCA     .-3         /CHANGE LOC .-3 BACK TO A LINC MODE HLT
1767    3110  5711              JMP I   .+1         /JMP TO
1768    3111  3200              T61                 /TEST T61
1769                            LMODE
1770    3112  0011      T60A,   CLR                 /ARRIVE HERE FROM PUSH JUMP
1771    3113  0002              PDP                 /8-MODE
1772                            PMODE
1773    3114  1433              TAD I   STACK+1     /GET PC STORED IN STACK+1
1774    3115  7041              CIA                 /COMPLIMENT AND INC
1775    3116  1333              TAD     T60AM6      /PC STORED IN STACKK+1 SHOULD=T60A-6
1776    3117  7440              SZA                 /AC=0
1777    3120  7402              HLT                 /ERR
1778    3121  6141              LINC                /LINC MODE
1779                            LMODE
1780    3122  0006              DJR                 /DISABLE JUMP RETURN
1781    3123  1020              LDA I               /AC=
1782    3124  0016              16                  /16 OR A LINC MODE NOP
1783    3125  1040              STA                 /STORE IN LOC
1784    3126  1104              T60A-6              /T60A-6
1785    3127  7130              JMP     .+1         /ENABLE RESTORE IOT BY ISSUING A JMP INST
1786    3130  0500              IOB                 /EXECUTE 8-MODE INST
1787    3131  0771              RES                 /RESTORE
1788    3132  0000              HLT                 /ERR
1789                            PMODE
1790                    /
1791    3133  3104      T60AM6, T60A-6
```

```
1792
1793                    /
1794                    /TEST THAT A LIF INSTRUCTION WHEN ISSUED
1795                    /AND NORMAL OPERATION IS REENABLED WITH A JMP INST
1796                    /WILL ALLOW A RESTORE IOT TO BE EXECUTED IMMEDIATELY
1797                    /
1798            3200            *3200
1799    3200    7300    T61,    CLA CLL             /CLEAR AC AND LINC
1800    3201    4407            JMS I   CLRSTK      /CLEAR STACK
1801    3202    4406            JMS I   SETUP       /SET UP API REGISTERS
1802    3203    1053            TAD     K37         /AC=37
1803    3204    6772            SMLV                /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
1804    3205    7200            CLA                 /AC=0
1805    3206    6006            APION               /TURN API INTERRUPT SYSTEM ON
1806    3207    6141            LINC                /LINC MODE
1807                            LMODE
1808    3210    0500            IOB                 /EXECUTE 8-MODE INST
1809    3211    0760            PJA!0               /PUSH JUMP WITH FIELD BITS=0
1810    3212    3220            2000!T61A           /TO LOC T61A
1811    3213    0000            HLT                 /ERR--RESTORE IOT RET PROG SEQ TO THIS LOC AFTER ALTERED BY A NOP
1812    3214    0002            PDP                 /8-MODE
1813                            PMODE
1814    3215    7200            CLA                 /AC = 0
1815    3216    3213            DCA     .-3         /CHANGE LOC .-3 BACK TO A LINC MODE HLT
1816    3217    5243            JMP     T62         /EXECUTE TEST T62
1817                            LMODE
1818    3220    0011    T61A,   CLR                 /ARRIVE HERE FROM PUSH JUMP
1819    3221    0002            PDP                 /8-MODE
1820                            PMODE
1821    3222    1433            TAD I   STACK+1     /GET PC STORED IN LOC STACKK+1
1822    3223    7041            CIA                 /COMPLIMENT AND INC
1823    3224    1275            TAD     T61AM5      /PC STORED IN LOC STACKK+1 SHOULD=T61A-3
1824    3225    7440            SZA                 /AC=0
1825    3226    7402            HLT                 /ERR
1826    3227    6141            LINC                /LINC MODE
1827                            LMODE
1828    3230    0601            LIF     1           /LOAD INSTRUCTION FIELD 1
1829    3231    7232            JMP     .+1         /2 JMP INSTRUCTIONS ARE NECESSARY AFTER A LIF INST IN LINC MODE
1830    3232    0016            NOP                 /TO ENABLE RESTORE IOT
1831    3233    1020            LDA I               /AC =
1832    3234    0016            16                  /16 OR A LINC MODE NOP
1833    3235    1040            STA                 /STORE NOP IN LOC
1834    3236    1213            T61A-5              /T61A-5
1835    3237    7240            JMP     .+1         /ENABLE RESTOR IOT BY DOING A JMP INST
1836    3240    0500            IOB                 /EXECUTE 8-MODE INST
1837    3241    0771            RES                 /RESTORE
1838    3242    0000            HLT                 /ERR
```

```
1839
1840                    /
1841                    /TEST THAT A CIF INSTRUCTION WHEN ISSUED
1842                    /AND NORMAL OPERATION IS REENABLED WITH A JMP INST
1843                    /WILL ALLOW A RESTORE IOT TO BE EXECUTED IMMEDIATELY
1844                    /
1845                            PMODE
1846    3243  7300      T62,    CLA CLL             /CLEAR AC AND LINC
1847    3244  4407              JMS I   CLRSTK      /CLEAR STACK
1848    3245  4406              JMS I   SETUP       /SET UP API REGISTERS
1849    3246  1053              TAD     K37         /AC=37
1850    3247  6772              SMLV                /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL=17
1851    3250  7200              CLA                 /AC=0
1852    3251  6006              APION               /TURN API INTERRUPT SYSTEM ON
1853    3252  6760              PJA10               /EXECUTE A PUSHJ IOT WITH FIELD BITS=0
1854    3253  3262              T62A                /TO LOC T62A
1855    3254  7402              HLT                 /ERR
1856    3255  7200              CLA                 /RESTOR IOT RETURNS PROGRAM SEQUENCE TO THIS POINT
1857    3256  1150              TAD     K7402       /AC = 7402 OR AN 8-MODE HLT
1858    3257  3254              DCA     .-3         /STORE IN LOC .-3
1859    3260  5661              JMP I   .+1         /CONTINUE WITH
1860    3261  3403              T63                 /TEST T63
1861    3262  7300      T62A,   CLA CLL             /ARRIVE HERE FROM PUSHJ IOT
1862    3263  1433              TAD I   STACK+1     /GET PC STORED IN LOC STACKK+1
1863    3264  7041              CIA                 /COMPLIMENT AND INC
1864    3265  1276              TAD     T62AM6      /PC STORED IN LOC STACKK+1 SHOULD=T62A-6
1865    3266  6202              CIF                 /CHANGE INSTRUCTION FIELD
1866    3267  7300              CLA CLL             /AC=0
1867    3270  1142              TAD     K7000       /AC = 7000 OR AN 8-MODE NOP
1868    3271  3254              DCA     T62A-6      /DEPOSIT IN LOC T62A-6
1869    3272  5273              JMP     .+1         /ENABLE RESTORE IOT BY DOING A JMP INST
1870    3273  6771              RES                 /RESTORE
1871    3274  7402              HLT                 /ERR
1872                    /
1873    3275  3213      T61AM5, T61A-5
1874    3276  3254      T62AM6, T62A-6
1875                    /
1876                    /IF AN 8 MODE HALT WERE ENCOUNTERED IN
1877                    /LINC MODE IT WOULD DECODE AS A JMP TO
1878                    /LOC 1402 OF THE CURRENT LINC INSTRUCTION FIELD
1879                    /THUS TO HALT THE PROGRAM IN THIS EVENT
1880                    /WE SET LOC 1402 = 0 A LINC MODE HALT
1881                    /
1882            3402            *3402
1883                            LMODE
1884    3402  0000      UT37,   0
1885                            PMODE
```

```
1886
1887                    /
1888                    /TEST THAT STATUS OF SKIP FLIP FLOP IS SAVED
1889                    /WHEN AN INTERRUPT OCCURS AT THE SAME TIME AS A SKIP INSTRUCTION
1890                    /
1891            3403            *3403
1892    3403    7300    T63,    CLA CLL                 /CLEAR AC AND LINC
1893    3404    4407            JMS I   CLRSTK  /CLEAR STACK
1894    3405    4406            JMS I   SETUP   /SET UP API REGISTERS
1895    3406    6006            APION           /TURN API INTERRUPT SYSTEM ON
1896    3407    1053            TAD     K37     /AC = 37
1897    3410    6772            SMLV            /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = 17
1898    3411    7200            CLA             /AC = 0
1899    3412    1142            TAD     K7000   /AC = 7000 OR AN 8-MODE NOP
1900    3413    3561            DCA I   VEC0    /ENABLE LEVEL 0 INTERRUPT TO LOC VEC0
1901    3414    1125            TAD     K4000   /AC = 4000
1902    3415    6051            MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 0 INTERRUPT
1903    3416    7410            SKP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
1904    3417    7402            HLT
1905    3420    7402            HLT             /ERR-STATUS OF SKIP FLIP FLOP WAS NOT SAVED
```

```
1906
1907                    /
1908                    /RUN RANDOM NUMBER PATTERN WITH MAIN1 AND MAIN2 IOTS
1909                    /TO TEST THAT INHIBIT OF INTERRUPTS BY THE SMLV IOT
1910                    /WORKS FOR A RANDOM SELECTION OF NUMBERS
1911                    /400 RANDOM NUMBER COMBINATIONS WILL BE TESTED FOR
1912                    /EACH POSSIBLE SETTING OF THE MACHINE LEVEL REGISTER
1913                    /
1914    3421  7300      T64,    CLA CLL             /CLEAR AC AND LINC
1915    3422  4407              JMS I   CLRSTK      /CLEAR STACK
1916    3423  4406              JMS I   SETUP       /SET UP API REGISTERS
1917    3424  6006              APION               /TURN API INTERRUPT SYSTEM ON
1918    3425  1123              TAD     K3500       /AC = 3500
1919    3426  6777              SVEC                /SET VECTOR ADDRESS REGISTER = 3500
1920    3427  7340              CLA CLL CMA         /AC = 7777
1921    3430  3355              DCA     MASK1       /MASK FOR RAN1
1922    3431  1047              TAD     K7          /AC = 7
1923    3432  3356              DCA     MASK2       /MASK FOR RAN2
1924    3433  3010              DCA     10          /LOC 10 = 0
1925    3434  7300      MORE,   CLA CLL             /CLEAR AC AND LINC
1926    3435  1147              TAD     K7400       /AC = 7400
1927    3436  3011              DCA     11          /LOC 11 = 7400
1928    3437  1010              TAD     10          /AC = LOC 10
1929    3440  6772              SMLV                /CLEAR STACK AND VECTOR FIELD BITS AND SET MACHINE LEVEL = LOC 10
1930    3441  4424              JMS I   RAN         /GENERATE RANDOM NUMBERS RAN1 AND RAN2
1931    3442  1025              TAD     RAN1        /AC = RAN1
1932    3443  0355              AND     MASK1       /MASK
1933    3444  6051              MAIN1               /TRY TO SIMULATE A MAINTENANCE MODE INTERRUPT
1934    3445  7000              NOP
1935    3446  7000              NOP
1936    3447  7200              CLA                 /AC = 0
1937    3450  1026              TAD     RAN2        /AC = RAN2
1938    3451  0356              AND     MASK2       /MASK
1939    3452  6052              MAIN2               /TRY TO SIMULATE A MAINTENANCE MODE INTERRUPT
1940    3453  7000              NOP
1941    3454  7000              NOP
1942    3455  2011              ISZ     11          /INC LOC 11--IF 0 DONE 400 RANDOM COMBINATIONS ON PARTICULAR MACHINE LEVEL SETTING
1943    3456  5241              JMP     MORE+5      /NOT DONE
1944    3457  7300              CLA CLL             /CLEAR AC AND LINC
1945    3460  1355              TAD     MASK1       /AC = MASK1
1946    3461  7010              RAR                 /ROTATE AC RIGHT 1
1947    3462  3355              DCA     MASK1       /STORE BACK IN LOC MASK1
1948    3463  7430              SZL                 /SKIP IF LINC = 0
1949    3464  5273              JMP     .+7         /DO NOT ALTER MASK2 YET
1950    3465  7300              CLA CLL             /CLEAR AC AND LINC
1951    3466  1356              TAD     MASK2       /AC = MASK2
1952    3467  7010              RAR                 /ROTATE AC RIGHT 1
1953    3470  3356              DCA     MASK2       /STORE BACK IN LOC MASK2
1954    3471  7420              SNL                 /SKIP IF LINC = 1
1955    3472  5336              JMP     T65         /DONE GO TO TEST T65
1956    3473  7300              CLA CLL             /CLEAR AC AND LINC
1957    3474  2010              ISZ     10          /INCREMENT LOC 10
1958    3475  5234              JMP     MORE        /CHANGE MACHINE LEVEL AND DO AGAIN
1959    3476  7402              HLT                 /SHOULD NEVER GET HERE
```

```
1960
1961                    /
1962                    /VECTOR ADDRESS POINTER TABLE
1963                    /USED WITH TEST T65
1964                    /SHOULD NEVER GET AN INTERRUPT
1965                    /
1966            3500            *3500
1967    3500    7402            HLT
1968    3501    7402            HLT
1969    3502    7402            HLT
1970    3503    7402            HLT
1971    3504    7402            HLT
1972    3505    7402            HLT
1973    3506    7402            HLT
1974    3507    7402            HLT
1975    3510    7402            HLT
1976    3511    7402            HLT
1977    3512    7402            HLT
1978    3513    7402            HLT
1979    3514    7402            HLT
1980    3515    7402            HLT
1981    3516    7402            HLT
1982    3517    7402            HLT
1983    3520    7402            HLT
1984    3521    7402            HLT
1985    3522    7402            HLT
1986    3523    7402            HLT
1987    3524    7402            HLT
1988    3525    7402            HLT
1989    3526    7402            HLT
1990    3527    7402            HLT
1991    3530    7402            HLT
1992    3531    7402            HLT
1993    3532    7402            HLT
1994    3533    7402            HLT
1995    3534    7402            HLT
1996    3535    7402            HLT
1997                    /
1998                    /UPPER MEMORY INTERRUPT AND PUSH JUMP-RESTORE TEST
1999                    /ONLY EXECUTES IF SNS SW 0 IS SET AND
2000                    /RSW BITS 9-11 NOT = 0 OR SET TO NUMBER OF SEQUENTIAL 4K SECTIONS TO BE TESTED
2001                    /
2002    3536    7300    T65,    CLA CLL         /CLEAR AC AND LINC
2003    3537    6141            LINC            /LINC MODE
2004                            LMODE
2005    3540    0440            SNS     0       /SENSE SWITCH 0 = 1
2006    3541    7545            JMP     T66     /NO-GO TO NEXT TEST
2007    3542    0002            PDP             /CHANGE TO 8-MODE
2008                            PMODE
2009    3543    4757            JMS I   EXTME   /GO TO EXTME (EXTENDED MEMORY TEST SECTION) ROUTINE
2010    3544    5345            JMP     T66     /GO TO TEST T66
```

```
2011
2012                    /
2013                    /RETURN TO TEST T0 IF LOC 17 = 0
2014                    /OTHERWISE RETURN TO TEST T1
2015                    /
2016    3545  0002      T66,    PDP             /CHANGE TO 8-MODE
2017                          PMODE
2018    3546  7300            CLA CLL         /CLEAR AC AND LINC
2019    3547  2017            ISZ     17      /INCREMENT LOCATION 17
2020    3550  5353            JMP     .+3     /JMP .+3
2021    3551  5752            JMP I   .+1     /LOC 17 = 0-RETURN TO
2022    3552  0400            T0              /TEST T0
2023    3553  5754            JMP I   .+1     /LOC 17 NOT = 0-RETURN TO
2024    3554  0431            T1              /TEST T1
2025                    /
2026    3555  0000      MASK1,  0
2027    3556  0000      MASK2,  0
2028    3557  4001      EXTME,  EXTMEM          /EXTENDED MEMORY TEST
2029                    /
2030                    ////////////////////////////////////
2031                    /-------END OF PROGRAM-------------/
2032                    ////////////////////////////////////
2033                    /
2034                    /
```

```
2035
2036                    /
2037                    //
2038                    ////
2039                    ////////
2040                    ////////////////////////////////////////
2041                    ////////
2042                    ////
2043                    //
2044                    /
2045                    /
2046                    /EXTENDED MEMORY TEST ROUTINE
2047                    /CONTROL PORTION OF EXTENDED MEMORY INTERRUPT TEST
2048                    /RIGHT SWITCHES 9-11 SHOULD BE SET = TO THE
2049                    /NUMBER OF ADDITIONAL SEQUENTIAL 4K FIELDS TO BE TESTED
2050                    /
2051            4001            *4001
2052    4001    0000    EXTMEM, 0
2053    4002    6002            IOF                     /TURN ALL INTERRUPT SYSTEMS OFF
2054    4003    6141            LINC                    /LINC MODE
2055                            LMODE
2056    4004    0642            LDF     2               /SET DATA FIELD 2
2057    4005    0011            CLR                     /CLEAR AC LINC AND MQ
2058    4006    0002            PDP                     /8-MODE
2059                            PMODE
2060    4007    7604            LAS                     /AC=RIGHT SWITCHES
2061    4010    0047            AND     K7              /MASK OFF AC BITS 0-8
2062    4011    7440            SZA                     /SKIP IF AC = 0
2063    4012    5215            JMP     .+3             /AC BITS 9-11 NOT = 0 - UPPER MEM SEL
2064    4013    7402            HLT                     /AC BITS 9-11 = 0--UPPER MEMRY BANKS TO BE TESTED ARE NOT SELECTED
2065    4014    5207            JMP     .-5             /SET SW REG BITS 9-11 AS DESIRED--THAN HIT KEY CONTINUE
2066    4015    7041            CIA                     /COMPLIMENT AND INCREMENT
2067    4016    3365            DCA     EXTCIA          /DEPOSIT IN LOC EXTCIA
2068    4017    1044            TAD     K2              /AC=2
2069    4020    3772            DCA I   EXXXI           /DEPOSIT IN LOC EXXX
2070    4021    1043            TAD     K1              /AC=1
2071    4022    3774            DCA I   EFLDI           /DEPOSIT IN LOC EFLD
2072    4023    1126            TAD     K4400           /AC=4400
2073    4024    6777            SVEC                    /SET VECTOR ADDRESS REGISTER=4400
2074    4025    7200            CLA                     /AC=0
2075    4026    1376            TAD     EXTST           /ADDRESS OF STACK STARTING LOC IN AC
2076    4027    6776            SSTK                    /SET STACK ADDRESS REGISTER=EXTSTK
2077    4030    7200            CLA                     /AC=0
2078    4031    1053            TAD     K37             /AC=37
2079    4032    3370            DCA     KMLV            /DEPOSIT IN LOC KMLV
2080    4033    1043            TAD     K1              /AC=1
2081    4034    3366            DCA     EXTCTR          /DEPOSIT IN LOC EXTCTR
2082    4035    7300    EXTGO,  CLA CLL                 /CLEAR AC AND LINC
2083    4036    6002            IOF                     /TURN ALL INTERRUPT SYSTEMS OFF
2084    4037    1370            TAD     KMLV            /AC=LOC KMLV
2085    4040    1363            TAD     K1100           /INCREMENT STACK AND VECTOR FIELD BITS
2086    4041    6772            SMLV                    /SET STACK AND VECTOR FIELD BITS AND ALSO MACHINE LEVEL=17
2087    4042    3370            DCA     KMLV            /DEPOSIT IN LOC KMLV
```

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2088
2089
2090    4043  1775          TAD I   EALTPJ          /AC=LOC EALTPJ
2091    4044  0156          AND     K7770           /MASK OFF BITS 9-11
2092    4045  1366          TAD     EXTCTR          /ADD LOC EXTCTR
2093    4046  3775          DCA I   EALTPJ          /DEPOSIT IN LOC EALTP
2094    4047  1366          TAD     EXTCTR          /AC=LOC EXTCTR
2095    4050  7006          RTL                     /ROTATE LEFT 2
2096    4051  7004          RAL                     /ROTATE LEFT 1
2097    4052  3773          DCA I   EIFI            /DEPOSIT IN LOC EIF
2098    4053  1772          TAD I   EXXXI           /AC=LOC EXXX
2099    4054  1061          TAD     K200            /ADD 200 TO AC
2100    4055  3772          DCA I   EXXXI           /DEPOSIT IN LOC EXXX
2101    4056  1774          TAD I   EFLDI           /AC=LOC EFLD
2102    4057  1363          TAD     K1100           /ADD 1100 TO AC
2103    4060  3774          DCA I   EFLDI           /DEPOSIT IN LOC EFLD
2104    4061  1364          TAD     K4377           /AC=4377
2105    4062  3010          DCA     10              /DEPOSIT IN LOC 10
2106    4063  1364          TAD     K4377           /AC=4377
2107    4064  3011          DCA     11              /DEPOSIT IN LOC 11
2108    4065  1152          TAD     K7600           /AC=7600
2109    4066  3012          DCA     12              /DEPOSIT IN LOC 12
2110    4067  1364          TAD     K4377           /AC=4377
2111    4070  3013          DCA     13              /DEPOSIT IN LOC 13
2112    4071  1366          TAD     EXTCTR          /AC=LOC EXTCTR
2113    4072  7006          RTL                     /ROTATE LEFT 2
2114    4073  7004          RAL                     /ROTATE LEFT 1
2115    4074  1371          TAD     KCDF            /ADD LOC KCDF TO AC
2116    4075  3304          DCA     ALT0            /DEPOSIT CREATED CDF INST IN LOC ALT0
2117    4076  1304          TAD     ALT0            /AC = LOC ALT0
2118    4077  3340          DCA     ALT1            /DEPOSIT CREATED CDF INST IN LOC ALT1
2119    4100  1304          TAD     ALT0            /AC = LOC ALT0
2120    4101  3344          DCA     ALT2            /DEPOSIT CREATED CDF INST IN LOC ALT2
2121    4102  7300          CLA CLL                 /CLEAR AC AND LINC
2122    4103  1410          TAD I   10              /AC = CONTENTS OF ADD SPECIFIED BY LOC 10
2123    4104  0000  ALT0,   0000                    /CREATED CDF INST
2124    4105  3411          DCA I   11              /DEPOSIT AC IN LOC SPECIFIED BY CONTENTS LOC 11 AND DATA FIELD SEL
2125    4106  6201          CDF                     /SET DF = 0
2126    4107  3413          DCA I   13              /DEPOSIT AC IN ADDRESS +1 SPECIFIED BY LOC 13
2127    4110  2012          ISZ     12              /INCREMENT LOC 12 AND SKIP IF = 0
2128    4111  5302          JMP     .-7             /LOC 12 NOT = 0--MOVE NEXT LOC TO FIELD TO BE TESTED
2129    4112  6006          APION                   /TURN API INTERRUPT SYSTEM ON
2130    4113  1125          TAD     K4000           /AC=4000
2131    4114  6051          MAIN1                   /SIMULATE AN API INTERRUPT TO LEVEL 0
2132    4115  7000          NOP                     /EXECUTE 1 MORE INST AFTER MAIN1 IOT
2133    4116  7402          HLT                     /ERR-MAIN1 IOT DID NOT EXECUTE
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2134
2135
2136   4117  7300   EXTRET, CLA CLL                 /CLEAR AC AND LINC--RESTORE FROM EXTENDED FIELD OCCURS TO HERE
2137   4120  6774           RSTK                    /READ STACK ADDRESS REGISTER INTO AC
2138   4121  3002           DCA     IMAGE           /IMAGE OF AC
2139   4122  1002           TAD     IMAGE           /GET IMAGE
2140   4123  7001           IAC                     /INCREMENT
2141   4124  1367           TAD     EXTX            /STACK ADDRESS SHOULD=EXTX
2142   4125  7440           SZA                     /AC=0
2143   4126  7402           HLT                     /ERR-STACK ADDRESS REG NOT=3236
2144   4127  1364           TAD     K4377           /AC=4377
2145   4130  3010           DCA     10              /LOC 10 = 4377
2146   4131  1364           TAD     K4377           /AC = 4377
2147   4132  3011           DCA     11              /LOC 11=4377
2148   4133  1152           TAD     K7600           /AC=7600
2149   4134  3012           DCA     12              /LOC 10=7600
2150   4135  1364           TAD     K4377           /AC=4377
2151   4136  3013           DCA     13              /LOC 13=4377
2152   4137  7300           CLA CLL                 /CLEAR AC AND LINC
2153   4140  0000   ALT1,   0000                    /CHANGE DATA FIELD TO EXTENDED MEMORY FIELD JUST TESTED
2154   4141  1410           TAD I   10              /LOAD AC WITH LOC OF SEGMENT OF PROGRAM TO FIELD JUST TESTED
2155   4142  6201           CDF                     /CHANGE TO DATA FIELD 0
2156   4143  3411           DCA I   11              /DEPOSIT AC IN ADDRESS+1 SPECIFIED BY LOC 11
2157   4144  0000   ALT2,   0000                    /CHANGE DATA FIELD TO EXTENDED MEMORY FIELD JUST TESTED
2158   4145  3413           DCA I   13              /CLEAR EXTENDED MEMORY LOC+1 SPECIFIED BY LOC 13
2159   4146  6201           CDF                     /CHANGE TO DATA FIELD 0
2160   4147  2012           ISZ     12              /INC LOC 12 AND SKIP IF = 0
2161   4150  5340           JMP     ALT1            /LOC 12 NOT = 0-DO AGAIN
2162   4151  1366           TAD     EXTCTR          /AC = LOC EXTCTR
2163   4152  7001           IAC                     /INCREMENT
2164   4153  3366           DCA     EXTCTR          /DEPOSIT IN LOC EXTCTR
2165   4154  2365           ISZ     EXTCIA          /INCREMENT LOC EXTCIA AND SKIP IF = 0
2166   4155  5235           JMP     EXTGO           /LOC EXTCIA NOT = 0--TEST ANOTHER MEMORY FIELD
2167   4156  6141           LINC                    /LINC MODE
2168                        LMODE
2169   4157  0643           LDF     3               /SET DATA FIELD = 3
2170   4160  0002           PDP                     /0-MODE
2171                        PMODE
2172   4161  4777           JMS I   FLD1PT
2173   4162  5601           JMP I   EXTMEM          /RETURN TO MAIN PROGRAM IN TEST T65
2174                 /
2175   4163  1100   K1100,  1100
2176   4164  4377   K4377,  4377
2177   4165  0000   EXTCIA, 0
2178   4166  0000   EXTCTR, 0
2179   4167  4542   EXTX,   EXTSTK
2180   4170  0000   KMLV,   0
2181   4171  6201   KCDF,   6201
2182   4172  4571   EXXX1,  EXXX
2183   4173  4574   EIFI,   EIF
2184   4174  4572   EFLDI,  EFLD
2185   4175  4502   EALTPJ, EALTP
2186   4176  4542   EXTST,  EXTSTK
2187   4177  4200   FLD1PT, FLD1P
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2188
2189                    /
2190                    /TEST STACK INCREMENTING THROUGH ALL 4096 LOC
2191                    /OF MEMORY FIELD 1
2192                    /THE STACK ADDRESS REGISTER IS INITIALLY SET TO 0000
2193                    /WITH THE STACK FIELD BITS SET TO 1
2194                    /AFTER EACH PUSH JUMP IN FIELD 0 THE MACHINE STATUS
2195                    /SAVED ON THE STACK IS VERIFIED
2196                    /
2197            4200            *4200
2198    4200    0000    FLD1P,  0                       /CONTAINS RETURN JMP ADD TO EXTMEM ROUTINE
2199    4201    7300            CLA CLL                 /CLEAR AC AND LINC
2200    4202    6002            IOF                     /TURN ALL INTERRUPT SYSTEMS OFF
2201    4203    1361            TAD     K1020           /AC=1020
2202    4204    6772            SMLV                    /SET STACK FIELD BITS = 1
2203    4205    7200            CLA                     /AC = 0
2204    4206    6776            SSTK                    /SET STACK ADDRESS REGISTER = 0
2205    4207    1137            TAD     K6000           /AC = 6000
2206    4210    6777            SVEC                    /SET VECTOR ADDRESS REGISTER = 6000
2207    4211    7240            CLA CMA                 /AC = 7777
2208    4212    3010            DCA     10              /LOC 10 = 7777
2209    4213    3011            DCA     11              /LOC 11 = 0000
2210    4214    6141            LINC                    /LINC MODE
2211                            LMODE
2212    4215    0011            CLR                     /CLEAR AC LINC AND MQ
2213    4216    0002            PDP                     /8-MODE
2214                            PMODE
2215    4217    7300    DO,     CLA CLL                 /CLEAR AC AND LINC
2216    4220    1011            TAD     11              /AC = CONTENTS OF LOC 11
2217    4221    1357            TAD     K5              /ADD 5
2218    4222    3011            DCA     11              /DEPOSIT BACK IN LOC 11
2219    4223    6760            PJA!0                   /PUSH JUMP IN FIELD 0
2220    4224    4302            ESTKT                   /TO LOC ESTKT
2221    4225    7440    ERES,   SZA                     /AC = 0--RESTORES OCCURE TO HERE--
2222    4226    7402            HLT                     /ERR-AC NOT = 0
2223    4227    7430            SZL                     /LINC = 0
2224    4230    7402            HLT                     /ERR-LINC NOT = 0
2225    4231    6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
2226    4232    3002            DCA     IMAGE           /AC TO LOC IMAGE
2227    4233    1002            TAD     IMAGE           /GET IMAGE
2228    4234    1043            TAD     K1              /ADD 1
2229    4235    1011            TAD     11              /STACK ADD SHOULD = CONTENTS LOC 11
2230    4236    7440            SZA                     /AC = 0
2231    4237    7402            HLT                     /ERR-STACK ADD NOT = CONTENTS LOC 11
2232    4240    7100            CLL                     /CLEAR LINC
2233    4241    6141            LINC                    /LINC MODE
2234                            LMODE
2235    4242    0474            FLD I                   /FLD = 0
2236    4243    0000            HLT                     /ERR-FLD NOT = 0
2237    4244    0005            GAC                     /MQ 0-10 TO AC 1-11
2238    4245    0261            ROL I   1               /ROTATE LEFT 1
2239    4246    0475            QLE I                   /SKIP IF MQ 11 = 1
2240    4247    6252            JMP     .+3             /CONTINUE-AC = MQ
2241    4250    1620            BSE I                   /SET AC BIT 0
2242    4251    0001            1                       /TO 1
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2243  4252  1460          SAE I                   /SKIP IF AC
2244  4253  0000          0                       /= 0
2245  4254  0000          HLT                     /ERR-MQ RESTORED FROM STACK NOT = 0
2246  4255  0500          IOB                     /EXECUTE 8-MODE INST
2247  4256  0224          RIF                     /READ INSTRUCTION FIELD
2248  4257  1460          SAE I                   /AC =
2249  4260  0004          4                       /4
2250  4261  0000          HLT                     /ERR-INSTRUCTION FIELD 2 NOT SET
2251  4262  0011          CLR                     /CLEAR AC LINC AND MQ
2252  4263  0500          IOB                     /EXECUTE 8-MODE INST
2253  4264  0214          RDF                     /READ DATA FIELD
2254  4265  1460          SAE I                   /AC=
2255  4266  0006          6                       /6
2256  4267  0000          HLT                     /ERR-DATA FIELD 0 NOT SET
2257  4270  0011          CLR                     /CLEAR AC LINC AND MQ
2258  4271  0002          PDP                     /8-MODE
2259                      PMODE
2260  4272  6774          RSTK                    /READ STACK ADDRESS REG INTO AC
2261  4273  3002          DCA     IMAGE           /IMAGE OF AC
2262  4274  1002          TAD     IMAGE           /GET IMAGE
2263  4275  1043          TAD     K1              /ADD 1
2264  4276  1011          TAD     11              /CONTENTS OF LOC 11 SHOULD=STACK ADD
2265  4277  7440          SZA                     /AC=0
2266  4300  7402          HLT                     /ERR-STACK ADD NOT = CONTENTS LOC 11
2267  4301  5347          JMP     EREST           /RESTOR ANOTHER LEVEL OF STATUS ON STACK
2268  4302  6774  ESTKT,  RSTK                    /READ STACK ADDRESS REGISTER INTO AC
2269  4303  3002          DCA     IMAGE           /IMAGE OF AC
2270  4304  1002          TAD     IMAGE           /GET IMAGE
2271  4305  1043          TAD     K1              /ADD 1
2272  4306  1011          TAD     11              /CONTENTS OF LOC 11 SHOULD = STACK ADD
2273  4307  7440          SZA                     /AC = 0
2274  4310  7402          HLT                     /ERR-STACK ADD NOT = CONTENTS LOC 11
2275  4311  6211          CDF     10              /CHANGE DATA FIELD TO 1
2276  4312  1410          TAD I   10              /AC FROM STACK TO AC
2277  4313  7440          SZA                     /AC = 0
2278  4314  7402          HLT                     /ERR-AC STORED ON STACK NOT = 0
2279  4315  1410          TAD I   10              /PC FROM STACK TO AC
2280  4316  3002          DCA     IMAGE           /IMAGE OF AC
2281  4317  1002          TAD     IMAGE           /GET IMAGE
2282  4320  7041          CIA                     /COMPLIMENT AND INCREMENT
2283  4321  1363          TAD     ERE             /ADDRESS OF RET PC ON STACK SHOULD = ERES
2284  4322  7440          SZA                     /AC = 0
2285  4323  7402          HLT                     /ERR-RETURN PC ON STACK NOT = ADD ERES
2286  4324  1410          TAD I   10              /MODE FLD LINC AND MACH LEVEL FROM STACK TO AC
2287  4325  7440          SZA                     /AC = 0
2288  4326  7402          HLT                     /ERR-EXAMINE AC
2289  4327  1410          TAD I   10              /MQ FROM STACK TO AC
2290  4330  7440          SZA                     /AC = 0
2291  4331  7402          HLT                     /ERR-MQ STORED ON STACK NOT = 0
2292  4332  1410          TAD I   10              /UF IF AND DF FROM STACK TO AC
2293  4333  3002          DCA     IMAGE           /IMAGE OF AC
2294  4334  1002          TAD     IMAGE           /GET IMAGE
2295  4335  7041          CIA                     /COMPLIMENT AND INC
2296  4336  1360          TAD     K103            /LOC IMAGE SHOULD = 103
2297  4337  7440          SZA                     /AC = 0
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2298    4340  7402          HLT                     /ERR-EXAMINE LOC IMAGE
2299    4341  6201          CDF                     /CHANGE TO DATA FIELD 0
2300    4342  7300          CLA CLL                 /CLEAR AC AND LINC
2301    4343  1010          TAD     10              /CONTENTS OF LOC 10 TO AC
2302    4344  1357          TAD     K5              /ADD 5
2303    4345  7420          SNL                     /SKIP IF LINC SET
2304    4346  5217          JMP     DO              /DO AGAIN-HAVE NOT FILLED FIELD 1
2305    4347  7300  EREST,  CLA CLL                 /CLEAR AC AND LINC
2306    4350  1011          TAD     11              /CONTENTS OF LOC 11 TO AC
2307    4351  1362          TAD     M5              /SUBTRACT 5
2308    4352  7440          SZA                     /IF AC = 0
2309    4353  5600          JMP I   FLD1P           /RETURN TO EXTMEM ROUTINE
2310    4354  3011          DCA     11              /DEPOSIT BACK IN LOC 11
2311    4355  6771          RES                     /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
2312    4356  7402          HLT                     /ERR-RES IOT DID NOT EXECUTE
2313                  /
2314    4357  0005  K5,     5
2315    4360  0103  K103,   103
2316    4361  1020  K1020,  1020
2317    4362  7773  M5,     -5
2318    4363  4225  ERE,    ERES
2319                  /
2320                  /EXTENDED MEMORY TEST
2321                  /RELOCATEABLE PORTION OF TEST T65
2322                  /
2323          4400            *4400
2324    4400  7300  VT0,    CLA CLL                 /LEVEL 0 INTERRUPT
2325    4401  5236          JMP     EXTTST          /JMP TO SUBROUTINE
2326    4402  7402          HLT                     /LEVEL 1 INTERRUPT
2327    4403  7402          HLT
2328    4404  7402          HLT                     /LEVEL 2 INTERRUPT
2329    4405  7402          HLT
2330    4406  7402          HLT                     /LEVEL 3 INTERRUPT
2331    4407  7402          HLT
2332    4410  7402          HLT                     /LEVEL 4 INTERRUPT
2333    4411  7402          HLT
2334    4412  7402          HLT                     /LEVEL 5 INTERRUPT
2335    4413  7402          HLT
2336    4414  7402          HLT                     /LEVEL 6 INTERRUPT
2337    4415  7402          HLT
2338    4416  7402          HLT                     /LEVEL 7 INTERRUPT
2339    4417  7402          HLT
2340    4420  7402          HLT                     /LEVEL 8 INTERRUPT
2341    4421  7402          HLT
2342    4422  7402          HLT                     /LEVEL 9 INTERRUPT
2343    4423  7402          HLT
2344    4424  7402          HLT                     /LEVEL 10 INTERRUPT
2345    4425  7402          HLT
2346    4426  7402          HLT                     /LEVEL 11 INTERRUPT
2347    4427  7402          HLT
2348    4430  7402          HLT                     /LEVEL 12 INTERRUPT
2349    4431  7402          HLT
2350    4432  7402          HLT                     /LEVEL 13 INTERRUPT
2351    4433  7402          HLT
2352    4434  7402          HLT                     /LEVEL 14 INTERRUPT
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2353  4435  7402          HLT
2354  4436  6224  EXTTST, RIF                 /READ INSTRUCTION FIELD INTO AC
2355  4437  7041          CIA                 /COMPLIMENT AND INC
2356  4440  1374          TAD   EIF           /INSTRUCTION FIELD SHOULD=LOC EIF
2357  4441  7440          SZA                 /AC=0
2358  4442  7402          HLT                 /ERR - INSTRUCTION FIELD NOT=0
2359  4443  6214          RDF                 /READ DATA FIELD INTO AC
2360  4444  7440          SZA                 /AC=0
2361  4445  7402          HLT                 /ERR - DATA FIELD NOT=0
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2362
2363    4446  6773          RMLV                /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
2364    4447  1372          TAD     EFLD        /LOC EFLD SHOULD = 2'S COMPLIMENT OF AC
2365    4450  7440          SZA                 /AC=0
2366    4451  7402          HLT                 /ERR -
2367    4452  4354          JMS     STKTST      /ROUTINE TO TEST STACK ADDRESS REGISTER
2368    4453  1342          TAD     EXTSTK      /AC=CONTENTS OF LOC EXTSTK
2369    4454  7041          CIA                 /COMPLIMENT AND INC
2370    4455  1370          TAD     E4000       /LOC EXTSTK SHOULD=4000
2371    4456  7440          SZA                 /AC=0
2372    4457  7402          HLT                 /ERR-LOC EXTSTK NOT=4000
2373    4460  1343          TAD     EXTSTK+1    /AC=CONTENTS OF LOC EXTSTK+1
2374    4461  7041          CIA                 /COMPLIMENT AND INC
2375    4462  1375          TAD     EXTRM1      /LOC EXTSTK+1 SHOULD=CONTENTS OF LOC EXTRM1
2376    4463  7440          SZA                 /AC=0
2377    4464  7402          HLT                 /ERR-LOC EXTSTK+1 NOT=CONTENTS OF LOC EXTRM1
2378    4465  1344          TAD     EXTSTK+2    /AC=CONTENTS OF LOC EXTSTK+2
2379    4466  7041          CIA                 /COMPLIMENT AND INC
2380    4467  1366          TAD     E17         /LOC EXTSTK+2 SHOULD = 17
2381    4470  7440          SZA                 /AC=0
2382    4471  7402          HLT                 /ERR-LOC EXTSTK+2 NOT = 17
2383    4472  1345          TAD     EXTSTK+3    /AC=CONTENTS OF LOC EXTSTK+3
2384    4473  7440          SZA                 /AC=0
2385    4474  7402          HLT                 /ERR-LOC EXTSTK+3 NOT = 0
2386    4475  1346          TAD     EXTSTK+4    /AC=CONTENTS OF LOC EXTSTK+4
2387    4476  7041          CIA                 /COMPLIMENT AND INC
2388    4477  1367          TAD     E102        /LOC EXTSTK+4 SHOULD = 102
2389    4500  7440          SZA                 /AC=0
2390    4501  7402          HLT                 /ERR-LOC EXTSTK+4 NOT = 102
2391    4502  6760  EALTP,  PJA10               /ALTERED INST---PUSH JUMP WITHIN CURRENT FIELD
2392    4503  4513          EXTPJ               /TO LOC EXTPJ
2393    4504  7402          HLT                 /ERR-PJA IOT DID NOT EXECUTE
2394    4505  4354          JMS     STKTST      /TEST STACK ADDRESS REGISTER
2395    4506  1343          TAD     EXTSTK+1    /AC = CONTENTS OF LOC EXTSTK+1
2396    4507  7001          IAC                 /INC
2397    4510  3343          DCA     EXTSTK+1    /DEPOSIT BACK IN LOC EXTSTK+1
2398    4511  6771          RES                 /RESTORE MACHINE TO LAST LEVEL SAVED ON STACK
2399    4512  7402          HLT                 /ERR-RESTORE IOT DID NOT EXECUTE
2400    4513  7440  EXTPJ,  SZA                 /AC SHOULD = 0
2401    4514  7402          HLT                 /ERR-AC NOT = 0
2402    4515  1347          TAD     EXTSTK+5    /AC SAVED ON STACK AT LOC EXTSTK+5 = 0
2403    4516  7440          SZA                 /SKIP IF = 0
2404    4517  7402          HLT                 /ERR--AC SAVED ON STACK NOT = 0
2405    4520  1350          TAD     EXTSTK+6    /AC=CONTENTS OF LOC EXTSTK+6
2406    4521  7041          CIA                 /COMPLIMENT AND INC
2407    4522  1376          TAD     EXTPM7      /LOC EXTSTK+6 SHOULD=ADDRESS EXTPJ-7
2408    4523  7440          SZA                 /AC=0
2409    4524  7402          HLT                 /ERR-
2410    4525  1351          TAD     EXTSTK+7    /AC=CONTENTS OF LOC EXTSTK+7
2411    4526  7440          SZA                 /AC=0
2412    4527  7402          HLT                 /ERR-CONTENTS OF LOC EXTSTK+7 NOT=0
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2413
2414  4530  1353          TAD     EXTSTK+11       /AC=CONTENTS OF LOC EXTSTK+11
2415  4531  7041          CIA                     /COMPLIMENT AND INC
2416  4532  1371          TAD     EXXX            /LOC EXTSTK+11 SHOULD = CONTENTS OF LOC EXXX
2417  4533  7440          SZA                     /AC=0
2418  4534  7402          HLT                     /ERR-CONTENTS OF LOC EXTSTK+11 NOT=LOC CONTENTS OF EXXX
2419  4535  1350          TAD     EXTSTK+6        /AC=CONTENTS OF LOC EXTSTK+6
2420  4536  7001          IAC                     /INC
2421  4537  3350          DCA     EXTSTK+6        /DEPOSIT BACK IN LOC EXTSTK+6
2422  4540  6771          RES                     /RESTORE MACHINE TO LAST LEVEL SAVED ON STACK
2423  4541  7402          HLT                     /ERR-RES IOT DID NOT EXECUTE
2424                /
2425                /STACK AREA USED WITH EXTENDED MEMORY INTERRUPT TEST
2426                /
2427  4542  0000    EXTSTK, 0
2428  4543  0000          0
2429  4544  0000          0
2430  4545  0000          0
2431  4546  0000          0
2432  4547  0000          0
2433  4550  0000          0
2434  4551  0000          0
2435  4552  0000          0
2436  4553  0000          0
2437                /
2438                /COMMON ROUTINE USED 2 TIMES IN EXTENDED MEM BANK INTERRUPT TEST
2439                /TESTS FOR CORRECT CONTENTS IN THE STACK ADDRESS REGISTER
2440                /
2441  4554  0000    STKTST, 0                       /CONTAINS RETURN JMP ADDRESS TO EXTTST ROUTINE
2442  4555  7300          CLA CLL                 /CLEAR AC AND LINC
2443  4556  6774          RSTK                    /READ STACK ADDRESS REGISTER INTO AC
2444  4557  3373          DCA     EXIM            /DEPOSIT IN EXIM
2445  4560  1373          TAD     EXIM            /GET EXIM
2446  4561  1377          TAD     EXTKP5          /STACK ADDRESS SHOULD=COMPLIMENT OF ADD EXTSTK+5
2447  4562  7040          CMA                     /COMPLIMENT THE AC
2448  4563  7440          SZA                     /AC=0
2449  4564  7402          HLT                     /ERR - LOC EXIM NOT = ADDRESS EXTSTK+5
2450  4565  5754          JMP I   STKTST          /RETURN TO EXTTST ROUTINE
2451                /
2452  4566  0017    E17,    17
2453  4567  0102    E102,   102
2454  4570  4000    E4000,  4000
2455  4571  0000    EXXX,   0
2456  4572  0000    EFLD,   0
2457  4573  0000    EXIM,   0
2458  4574  0000    EIF,    0
2459  4575  4116    EXTRM1, EXTRET-1
2460  4576  4504    EXTPM7, EXTPJ-7
2461  4577  4547    EXTKP5, EXTSTK+5
```

```
2462
2463                    /
2464                    /STACK ADDRESS TABLE
2465                    /LOCATION 5600 TO 5777
2466                    /
2467            5600            *5600
2468                    /
2469                    /FIRST LEVEL SAVED ON STACK
2470                    /
2471    5600    0000    STACKK, 0               /AC
2472    5601    0000            0               /PC
2473    5602    0000            0               /MODE FLO LINC MACHINE LEVEL
2474    5603    0000            0               /MQ
2475    5604    0000            0               /UF IF DF
2476                    /
2477                    /SECOND LEVEL SAVED ON STACK
2478                    /
2479    5605    0000            0               /AC
2480    5606    0000    STK1P,  0               /PC
2481    5607    0000            0               /MODE FLO LINC MACHINE LEVEL
2482    5610    0000            0               /MQ
2483    5611    0000            0               /UF IF DF
2484                    /
2485                    /THIRD LEVEL SAVED ON STACK
2486                    /
2487    5612    0000            0               /AC
2488    5613    0000    STK2P,  0               /PC
2489    5614    0000            0               /MODE FLO LINC MACHINE LEVEL
2490    5615    0000            0               /MQ
2491    5616    0000            0               /UF IF DF
2492                    /
2493                    /FOURTH LEVEL SAVED ON STACK
2494                    /
2495    5617    0000            0               /AC
2496    5620    0000    STK3P,  0               /PC
2497    5621    0000            0               /MODE FLO LINC MACHINE LEVEL
2498    5622    0000            0               /MQ
2499    5623    0000            0               /UF IF DF
2500                    /
2501                    /FIFTH LEVEL SAVED ON STACK
2502                    /
2503    5624    0000            0               /AC
2504    5625    0000    STK4P,  0               /PC
2505    5626    0000            0               /MODE FLO LINC MACHINE LEVEL
2506    5627    0000            0               /MQ
2507    5630    0000            0               /UF IF DF
```

```
2508
2509                    /
2510                    /SIXTH LEVEL SAVED ON STACK
2511                    /
2512    5631  0000              0               /AC
2513    5632  0000    STK5P,    0               /PC
2514    5633  0000              0               /MODE FLO LINC MACHINE LEVEL
2515    5634  0000              0               /MQ
2516    5635  0000              0               /UF IF DF
2517                    /
2518                    /SEVENTH LEVEL SAVED ON STACK
2519                    /
2520    5636  0000              0               /AC
2521    5637  0000    STK6P,    0               /PC
2522    5640  0000              0               /MODE FLO LINC MACHINE LEVEL
2523    5641  0000              0               /MQ
2524    5642  0000              0               /UF IF DF
2525                    /
2526                    /EIGHTH LEVEL SAVED ON STACK
2527                    /
2528    5643  0000              0               /AC
2529    5644  0000    STK7P,    0               /PC
2530    5645  0000              0               /MODE FLO LINC MACHINE LEVEL
2531    5646  0000              0               /MQ
2532    5647  0000              0               /UF IF DF
2533                    /
2534                    /NINTH LEVEL SAVED ON STACK
2535                    /
2536    5650  0000              0               /AC
2537    5651  0000    STK10P,   0               /PC
2538    5652  0000              0               /MODE FLO LINC MACHINE LEVEL
2539    5653  0000              0               /MQ
2540    5654  0000              0               /UF IF DF
2541                    /
2542                    /TENTH LEVEL SAVED ON STACK
2543                    /
2544    5655  0000              0               /AC
2545    5656  0000    STK11P,   0               /PC
2546    5657  0000              0               /MODE FLO LINC MACHINE LEVEL
2547    5660  0000              0               /MQ
2548    5661  0000              0               /UF IF DF
2549                    /
2550                    /ELEVENTH LEVEL SAVED ON STACK
2551                    /
2552    5662  0000              0               /AC
2553    5663  0000    STK12P,   0               /PC
2554    5664  0000              0               /MODE FLO LINC MACHINE LEVEL
2555    5665  0000              0               /MQ
2556    5666  0000              0               /UF IF DF
```

```
2557
2558                    /
2559                    /TWELVETH LEVEL SAVED ON STACK
2560                    /
2561    5667  0000              0               /AC
2562    5670  0000      STK13P, 0               /PC
2563    5671  0000              0               /MODE FLO LINC MACHINE LEVEL
2564    5672  0000              0               /MQ
2565    5673  0000              0               /UF IF DF
2566                    /
2567                    /THIRTEENTH LEVEL SAVED ON STACK
2568                    /
2569    5674  0000              0               /AC
2570    5675  0000      STK14P, 0               /PC
2571    5676  0000              0               /MODE FLO LINC MACHINE LEVEL
2572    5677  0000              0               /MQ
2573    5700  0000              0               /UF IF DF
2574                    /
2575                    /FOURTEENTH LEVEL SAVED ON STACK
2576                    /
2577    5701  0000              0               /AC
2578    5702  0000      STK15P, 0               /PC
2579    5703  0000              0               /MODE FLO LINC MACHINE LEVEL
2580    5704  0000              0               /MQ
2581    5705  0000              0               /UF IF DF
2582                    /
2583                    /FIFTEENTH LEVEL SAVED ON STACK
2584                    /
2585    5706  0000              0               /AC
2586    5707  0000      STK16P, 0               /PC
2587    5710  0000              0               /MODE FLO LINC MACHINE LEVEL
2588    5711  0000              0               /MQ
2589    5712  0000              0               /UF IF DF
2590                    /
2591                    /THE LENGTH OF THE STACK IS ONLY
2592                    /LIMITED BY CORE -- THIS DIAGNOSTIC
2593                    /USES ONLY FIFTEEN LEVELS ON STACK
2594                    /
```

```
2595
2596                    /
2597                    /ENTERED FROM T35 TEST
2598                    /FIRST EXECUTION OF SIMULATED INTERRUPT
2599                    /TO LEVEL 0 ONLY
2600                    /
2601            6000            *6000
2602    6000    0000            AND     LOC0    /LEVEL 0 INTERRUPT
2603    6001    5236            JMP     TST     /JMP TO SUBROUTINE
2604    6002    7402            HLT             /LEVEL 1 INTERRUPT
2605    6003    7402            HLT
2606    6004    7402            HLT             /LEVEL 2 INTERRUPT
2607    6005    7402            HLT
2608    6006    7402            HLT             /LEVEL 3 INTERRUPT
2609    6007    7402            HLT
2610    6010    7402            HLT             /LEVEL 4 INTERRUPT
2611    6011    7402            HLT
2612    6012    7402            HLT             /LEVEL 5 INTERRUPT
2613    6013    7402            HLT
2614    6014    7402            HLT             /LEVEL 6 INTERRUPT
2615    6015    7402            HLT
2616    6016    7402            HLT             /LEVEL 7 INTERRUPT
2617    6017    7402            HLT
2618    6020    7402            HLT             /LEVEL 8 INTERRUPT
2619    6021    7402            HLT
2620    6022    7402            HLT             /LEVEL 9 INTERRUPT
2621    6023    7402            HLT
2622    6024    7402            HLT             /LEVEL 10 INTERRUPT
2623    6025    7402            HLT
2624    6026    7402            HLT             /LEVEL 11 INTERRUPT
2625    6027    7402            HLT
2626    6030    7402            HLT             /LEVEL 12 INTERRUPT
2627    6031    7402            HLT
2628    6032    7402            HLT             /LEVEL 13 INTERRUPT
2629    6033    7402            HLT
2630    6034    7402            HLT             /LEVEL 14 INTERRUPT
2631    6035    7402            HLT
```

```
2632
2633                    /
2634                    /TEST API REGISTERS AND PC STORED IN LOC STACK+1
2635                    /INCREMENT PC IN LOC STACK+1 AND ISSUE RESTOR IOT
2636                    /
2637    6236  7402      TST,    HLT             /LEVEL 0 INTERRUPT FROM LOC 6001 (LOC CHANGED TO NOP)
2638    6237  7300              CLA CLL         /AC=0
2639    6240  1150              TAD     K7402   /AC = 7402 OR AN 8-MODE HLT
2640    6241  3236              DCA     TST     /LOC TST = HLT
2641    6242  6775              RVEC            /READ VECTOR ADDRESS REGISTER INTO AC
2642    6243  3002              DCA     IMAGE   /IMAGE OF AC
2643    6244  1002              TAD     IMAGE
2644    6245  7041              CIA             /COMPLIMENT AND INC
2645    6246  1074              TAD     K1741   /IMAGE SHOULD = 1741
2646    6247  7440              SZA             /AC = 0
2647    6250  7402              HLT             /ERR
2648    6251  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
2649    6252  3002              DCA     IMAGE   /IMAGE OF AC
2650    6253  1002              TAD     IMAGE
2651    6254  7041              CIA             /COMPLIMENT AND INC
2652    6255  1115              TAD     K2172   /IMAGE SHOULD = 2172
2653    6256  7440              SZA             /AC = 0
2654    6257  7402              HLT             /ERR
2655    6260  6773              RMLV            /READ STACK AND VECTOR FIELD BITS AND MACHINE LEVEL INTO AC
2656    6261  3002              DCA     IMAGE   /IMAGE OF AC
2657    6262  1002              TAD     IMAGE
2658    6263  7040              CMA             /IMAGE SHOULD = 7777
2659    6264  7440              SZA             /AC = 0
2660    6265  7402              HLT             /ERR
2661    6266  1433              TAD I   STACK+1 /GET PC STORED IN LOC STACK+1
2662    6267  7041              CIA             /COMPLIMENT AND INC
2663    6270  1276              TAD     T35AM1  /PC STORED IN STACK+1 SHOULD = TST35A-1
2664    6271  7440              SZA             /AC = 0
2665    6272  7402              HLT             /ERR
2666    6273  4403              JMS I   INC     /INC PC STORED IN LOC STACKK+1
2667    6274  6771              RES             /RESTORE MACHINE TO PREVIOUS STATUS STORED ON STACK
2668    6275  7402              HLT             /ERR
2669                    /
2670    6276  2235    T35AM1, T35A-1
```

```
2671
2672                    /
2673                    /VECTOR ADDRESS POINTER TABLE
2674                    /LOCATION 6100 TO 6135
2675                    /USED TO TEST A SINGLE INTERRUPT AND THEN RESTORE
2676                    /
2677            6100            *6100
2678    6100    0000            AND     LOC0    /LEVEL 0 INTERRUPT
2679    6101    5561            JMP I   VEC0    /JMP TO SERVICE ROUTINE
2680    6102    0000            AND     LOC0    /LEVEL 1 INTERRUPT
2681    6103    5562            JMP I   VEC1    /JMP TO SERVICE ROUTINE
2682    6104    0000            AND     LOC0    /LEVEL 2 INTERRUPT
2683    6105    5563            JMP I   VEC2    /JMP TO SERVICE ROUTINE
2684    6106    0000            AND     LOC0    /LEVEL 3 INTERRUPT
2685    6107    5564            JMP I   VEC3    /JMP TO SERVICE ROUTINE
2686    6110    0000            AND     LOC0    /LEVEL 4 INTERRUPT
2687    6111    5565            JMP I   VEC4    /JMP TO SERVICE ROUTINE
2688    6112    0000            AND     LOC0    /LEVEL 5 INTERRUPT
2689    6113    5566            JMP I   VEC5    /JMP TO SERVICE ROUTINE
2690    6114    0000            AND     LOC0    /LEVEL 6 INTERRUPT
2691    6115    5567            JMP I   VEC6    /JMP TO SERVICE ROUTINE
2692    6116    0000            AND     LOC0    /LEVEL 7 INTERRUPT
2693    6117    5570            JMP I   VEC7    /JMP TO SERVICE ROUTINE
2694    6120    0000            AND     LOC0    /LEVEL 8 INTERRUPT
2695    6121    5571            JMP I   VEC10   /JMP TO SERVICE ROUTINE
2696    6122    0000            AND     LOC0    /LEVEL 9 INTERRUPT
2697    6123    5572            JMP I   VEC11   /JMP TO SERVICE ROUTINE
2698    6124    0000            AND     LOC0    /LEVEL 10 INTERRUPT
2699    6125    5573            JMP I   VEC12   /JMP TO SERVICE ROUTINE
2700    6126    0000            AND     LOC0    /LEVEL 11 INTERRUPT
2701    6127    5574            JMP I   VEC13   /JMP TO SERVICE ROUTINE
2702    6130    0000            AND     LOC0    /LEVEL 12 INTERRUPT
2703    6131    5575            JMP I   VEC14   /JMP TO SERVICE ROUTINE
2704    6132    0000            AND     LOC0    /LEVEL 13 INTERRUPT
2705    6133    5576            JMP I   VEC15   /JMP TO SERVICE ROUTINE
2706    6134    0000            AND     LOC0    /LEVEL 14 INTERRUPT
2707    6135    5577            JMP I   VEC16   /JMP TO SERVICE ROUTINE
```

```
2708
2709                    /
2710                    /VECTOR INTERRUPT SERVICE ROUTINES
2711                    /FIRST INSTRUCTION EXECUTED IN THE
2712                    /EXPECTED SERVICE ROUTINE WAS CHANGED
2713                    /FROM A HLT TO A NOP
2714                    /ALL OTHER ROUTINES WAVE A HLT
2715                    /
2716                    /LEVEL 0 INTERRUPT FROM LOCATION 6101
2717                    /
2718            6140            *6140
2719    6140    7402    VECT0,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 0 INTERRUPT
2720    6141    4403            JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2721    6142    3340            DCA     VECT0   /DEPOSIT 8-MODE HLT IN LOC VECT0
2722    6143    6771            RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2723    6144    7402            HLT             /ERR
2724                    /
2725                    /LEVEL 1 INTERRUPT FROM LOCATION 6103
2726                    /
2727    6145    7402    VECT1,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 1 INTERRUPT
2728    6146    4403            JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2729    6147    3345            DCA     VECT1   /DEPOSIT 8-MODE HLT IN LOC VECT1
2730    6150    6771            RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2731    6151    7402            HLT             /ERR
2732                    /
2733                    /LEVEL 2 INTERRUPT FROM LOCATION 6105
2734                    /
2735    6152    7402    VECT2,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 2 INTERRUPT
2736    6153    4403            JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2737    6154    3352            DCA     VECT2   /DEPOSIT 8-MODE HLT IN LOC VECT2
2738    6155    6771            RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2739    6156    7402            HLT             /ERR
2740                    /
2741                    /LEVEL 3 INTERRUPT FROM LOCATION 6107
2742                    /
2743    6157    7402    VECT3,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 3 INTERRUPT
2744    6160    4403            JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2745    6161    3357            DCA     VECT3   /DEPOSIT 8-MODE HLT IN LOC VECT3
2746    6162    6771            RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2747    6163    7402            HLT             /ERR
2748                    /
2749                    /LEVEL 4 INTERRUPT FROM LOCATION 6111
2750                    /
2751    6164    7402    VECT4,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 4 INTERRUPT
2752    6165    4403            JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2753    6166    3364            DCA     VECT4   /DEPOSIT 8-MODE HLT IN LOC VECT4
2754    6167    6771            RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2755    6170    7402            HLT             /ERR
```

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2756
2757                    /
2758                    /LEVEL 5 INTERRUPT FROM LOCATION 6113
2759                    /
2760    6200            *6200
2761    6200  7402  VECT5,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 5 INTERRUPT
2762    6201  4403          JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2763    6202  3200          DCA     VECT5   /DEPOSIT 8-MODE HLT IN LOC VECT5
2764    6203  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2765    6204  7402          HLT             /ERR
2766                    /
2767                    /LEVEL 6 INTERRUPT FROM LOCATION 6115
2768                    /
2769    6205  7402  VECT6,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 6 INTERRUPT
2770    6206  4403          JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2771    6207  3205          DCA     VECT6   /DEPOSIT 8-MODE HLT IN LOC VECT6
2772    6210  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2773    6211  7402          HLT             /ERR
2774                    /
2775                    /LEVEL 7 INTERRUPT FROM LOCATION 6117
2776                    /
2777    6212  7402  VECT7,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 7 INTERRUPT
2778    6213  4403          JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2779    6214  3212          DCA     VECT7   /DEPOSIT 8-MODE HLT IN LOC VECT7
2780    6215  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2781    6216  7402          HLT             /ERR
2782                    /
2783                    /LEVEL 8 INTERRUPT FROM LOCATION 6121
2784                    /
2785    6217  7402  VECT10, HLT            /CHANGED FROM HLT TO NOP FOR LEVEL 8 INTERRUPT
2786    6220  4403          JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2787    6221  3217          DCA     VECT10  /DEPOSIT 8-MODE HLT IN LOC VECT10
2788    6222  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2789    6223  7402          HLT             /ERR
2790                    /
2791                    /LEVEL 9 INTERRUPT FROM LOCATION 6123
2792                    /
2793    6224  7402  VECT11, HLT            /CHANGED FROM HLT TO NOP FOR LEVEL 9 INTERRUPT
2794    6225  4403          JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2795    6226  3224          DCA     VECT11  /DEPOSIT 8-MODE HLT IN LOC VECT11
2796    6227  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2797    6230  7402          HLT             /ERR
2798                    /
2799                    /LEVEL 10 INTERRUPT FROM LOCATION 6125
2800                    /
2801    6231  7402  VECT12, HLT            /CHANGED FROM HLT TO NOP FOR LEVEL 10 INTERRUPT
2802    6232  4403          JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2803    6233  3231          DCA     VECT12  /DEPOSIT 8-MODE HLT IN LOC VECT12
2804    6234  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2805    6235  7402          HLT             /ERR
```

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2806
2807                    /
2808                    /LEVEL 11 INTERRUPT FROM LOCATION 6127
2809                    /
2810    6236  7402      VECT13, HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 11 INTERRUPT
2811    6237  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2812    6240  3236              DCA     VECT13  /DEPOSIT 8-MODE HLT IN LOC VECT13
2813    6241  3236              DCA     VECT13  /DEPOSIT 8-MODE HLT IN LOC VECT13
2814    6242  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2815    6243  7402              HLT             /ERR
2816                    /
2817                    /LEVEL 12 INTERRUPT FROM LOCATION 6131
2818                    /
2819    6244  7402      VECT14, HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 12 INTERRUPT
2820    6245  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2821    6246  3244              DCA     VECT14  /DEPOSIT 8-MODE HLT IN LOC VECT14
2822    6247  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2823    6250  7402              HLT             /ERR
2824                    /
2825                    /LEVEL 13 INTERRUPT FROM LOCATION 6133
2826                    /
2827    6251  7402      VECT15, HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 13 INTERRUPT
2828    6252  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2829    6253  3251              DCA     VECT15  /DEPOSIT 8-MODE HLT IN LOC VECT15
2830    6254  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2831    6255  7402              HLT             /ERR
2832                    /
2833                    /LEVEL 14 INTERRUPT FROM LOCATION 6135
2834                    /
2835    6256  7402      VECT16, HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 14 INTERRUPT
2836    6257  4403              JMS I   INC     /INC PC IN LOC STACKK+1 AND RETURN WITH AC = 7402
2837    6260  3256              DCA     VECT16  /DEPOSIT 8-MODE HLT IN LOC VECT16
2838    6261  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
2839    6262  7402              HLT             /ERR
```

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2840
2841                    /
2842                    /VECTOR ADDRESS POINTER TABLE
2843                    /LOCATION 6300 TO 6335
2844                    /USED IN MULTIPLE LEVEL INTERRUPT TESTS
2845                    /
2846            6300            *6300
2847    6300    0000            AND     LOC0    /LEVEL 0 INTERRUPT
2848    6301    5736            JMP I   MLV0A   /JMP TO MLV0 SUBROUTINE
2849    6302    0000            AND     LOC0    /LEVEL 1 INTERRUPT
2850    6303    5737            JMP I   MLV1A   /JMP TO MLV1 SUBROUTINE
2851    6304    0000            AND     LOC0    /LEVEL 2 INTERRUPT
2852    6305    5740            JMP I   MLV2A   /JMP TO MLV2 SUBROUTINE
2853    6306    0000            AND     LOC0    /LEVEL 3 INTERRUPT
2854    6307    5741            JMP I   MLV3A   /JMP TO MLV3 SUBROUTINE
2855    6310    0000            AND     LOC0    /LEVEL 4 INTERRUPT
2856    6311    5742            JMP I   MLV4A   /JMP TO MLV4 SUBROUTINE
2857    6312    0000            AND     LOC0    /LEVEL 5 INTERRUPT
2858    6313    5743            JMP I   MLV5A   /JMP TO MLV5 SUBROUTINE
2859    6314    0000            AND     LOC0    /LEVEL 6 INTERRUPT
2860    6315    5744            JMP I   MLV6A   /JMP TO MLV6 SUBROUTINE
2861    6316    0000            AND     LOC0    /LEVEL 7 INTERRUPT
2862    6317    5745            JMP I   MLV7A   /JMP TO MLV7 SUBROUTINE
2863    6320    0000            AND     LOC0    /LEVEL 8 INTERRUPT
2864    6321    5746            JMP I   MLV10A  /JMP TO MLV10 SUBROUTINE
2865    6322    0000            AND     LOC0    /LEVEL 9 INTERRUPT
2866    6323    5747            JMP I   MLV11A  /JMP TO MLV11 SUBROUTINE
2867    6324    0000            AND     LOC0    /LEVEL 10 INTERRUPT
2868    6325    5750            JMP I   MLV12A  /JMP TO MLV12 SUBROUTINE
2869    6326    0000            AND     LOC0    /LEVEL 11 INTERRUPT
2870    6327    5751            JMP I   MLV13A  /JMP TO MLV13 SUBROUTINE
2871    6330    0000            AND     LOC0    /LEVEL 12 INTERRUPT
2872    6331    5752            JMP I   MLV14A  /JMP TO MLV14 SUBROUTINE
2873    6332    0000            AND     LOC0    /LEVEL 13 INTERRUPT
2874    6333    5753            JMP I   MLV15A  /JMP TO MLV15 SUBROUTINE
2875    6334    0000            AND     LOC0    /LEVEL 14 INTERRUPT
2876    6335    5754            JMP I   MLV16A  /JMP TO MLV16 SUBROUTINE
2877                    /
2878    6336    7512    MLV0A,  MLV0
2879    6337    7445    MLV1A,  MLV1
2880    6340    7400    MLV2A,  MLV2
2881    6341    7312    MLV3A,  MLV3
2882    6342    7245    MLV4A,  MLV4
2883    6343    7200    MLV5A,  MLV5
2884    6344    7112    MLV6A,  MLV6
2885    6345    7045    MLV7A,  MLV7
2886    6346    7000    MLV10A, MLV10
2887    6347    6712    MLV11A, MLV11
2888    6350    6645    MLV12A, MLV12
2889    6351    6600    MLV13A, MLV13
2890    6352    6512    MLV14A, MLV14
2891    6353    6445    MLV15A, MLV15
2892    6354    6400    MLV16A, MLV16
```

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2893
2894                    /
2895                    /MULTIPLE LEVEL INTERRUPT-LEVEL 14
2896                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5600 TO 5604
2897                    /
2898            6400            *6400
2899    6400    7402    MLV16,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 14 INTERRUPT
2900    6401    7300            CLA CLL         /CLEAR AC AND LINC
2901    6402    1150            TAD     K7402   /AC = 7402 OR 8-MODE HLT
2902    6403    3200            DCA     MLV16   /DEPOSIT IN LOC MLV16
2903    6404    1142            TAD     K7000   /AC = 7000 OR 8-MODE NOP
2904    6405    3245            DCA     MLV15   /ENABLE LEVEL 13 INTERRUPT BY SETTING LOC MLV15 = NOP
2905    6406    6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
2906    6407    3002            DCA     IMAGE   /IMAGE OF AC
2907    6410    1002            TAD     IMAGE
2908    6411    7041            CIA             /COMPLIMENT AND INC
2909    6412    1115            TAD     K2172   /IMAGE SHOULD = 2172
2910    6413    7440            SZA             /AC = 0
2911    6414    7402            HLT             /ERR
2912    6415    1433            TAD I   STACK+1 /GET PC STORED IN LOC STACKK+1
2913    6416    7041            CIA             /COMPLIMENT AND INC
2914    6417    1221            TAD     .+2     /PC STORED IN STACKK+1 SHOULD = T56A-1
2915    6420    5222            JMP     .+2
2916    6421    2654            T56A-1
2917    6422    7440            SZA             /AC = 0
2918    6423    7402            HLT             /ERR
2919    6424    1433            TAD I   STACK+1 /GET PC STORED IN LOC STACKK+1
2920    6425    7001            IAC             /INCREMENT
2921    6426    3433            DCA I   STACK+1 /STORE BACK IN LOC STACKK+1
2922    6427    1045            TAD     K3      /AC = 3
2923    6430    6052            MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 13 INTERRUPT
2924    6431    7000            NOP             /EXECUTE 1 MORE INST AFTER MAIN2 IOT
2925    6432    7402    MLV16B, HLT
2926    6433    7300            CLA CLL         /AC = 0--RESTORE OCCURES TO HERE FROM MLV15 ROUTINE
2927    6434    6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
2928    6435    3002            DCA     IMAGE   /IMAGE OF AC
2929    6436    1002            TAD     IMAGE
2930    6437    7041            CIA             /COMPLIMENT AND INC
2931    6440    1115            TAD     K2172   /IMAGE SHOULD = 2172
2932    6441    7440            SZA             /AC = 0
2933    6442    7402            HLT             /ERR
2934    6443    6771            RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
2935    6444    7402            HLT             /ERR
```

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2936
2937                    /
2938                    /MULTIPLE LEVEL INTERRUPT-LEVEL 13
2939                    /PREVIOUS STATUS SAVED ON STACK LOC 5605 TO 5611
2940                    /
2941    6445  7402      MLV15,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 13 INTERRUPT
2942    6446  7300              CLA CLL         /CLEAR AC AND LINC
2943    6447  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
2944    6450  3245              DCA     MLV15   /DEPOSIT IN LOC MLV15
2945    6451  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
2946    6452  3312              DCA     MLV14   /ENABLE LEVEL 12 INTERRUPT BY SETTING LOC MLV14 = NOP
2947    6453  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
2948    6454  3002              DCA     IMAGE   /IMAGE OF AC
2949    6455  1002              TAD     IMAGE
2950    6456  7041              CIA             /COMPLIMENT AND INC
2951    6457  1114              TAD     K2165   /IMAGE SHOULD = 2165
2952    6460  7440              SZA             /AC = 0
2953    6461  7402              HLT             /ERR
2954    6462  1760              TAD I   STK1    /GET PC STORED IN LOC STK1P
2955    6463  7041              CIA             /COMPLIMENT AND INC
2956    6464  1266              TAD     .+2     /PC STORED IN LOC STK1P SHOULD = MLV16B
2957    6465  5267              JMP     .+2
2958    6466  6432              MLV16B
2959    6467  7440              SZA             /AC = 0
2960    6470  7402              HLT             /ERR
2961    6471  1760              TAD I   STK1    /GET PC STORED IN LOC STK1P
2962    6472  7001              IAC             /INCREMENT
2963    6473  3760              DCA I   STK1    /STORE BACK IN LOC STK1P
2964    6474  1047              TAD     K7      /AC = 7
2965    6475  6052              MAIN2           /MAINTENANCE MODE SIMULATION OF A LEVEL 12 INTERRUPT
2966    6476  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN2 IOT
2967    6477  7402    MLV15B, HLT
2968    6500  7300              CLA CLL         /AC = 0--RESTORE OCCURES TO HERE FROM MLV14 ROUTINE
2969    6501  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
2970    6502  3002              DCA     IMAGE   /IMAGE OF AC
2971    6503  1002              TAD     IMAGE
2972    6504  7041              CIA             /COMPLIMENT AND INC
2973    6505  1114              TAD     K2165   /IMAGE SHOULD = 2165
2974    6506  7440              SZA             /AC = 0
2975    6507  7402              HLT             /ERR
2976    6510  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
2977    6511  7402              HLT             /ERR
```

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2978
2979                    /
2980                    /MULTIPLE LEVEL INTERRUPT - LEVEL 12
2981                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5612 TO 5616
2982                    /
2983    6512  7402      MLV14,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 12 INTERRUPT
2984    6513  7300              CLA CLL         /CLEAR AC AND LINC
2985    6514  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
2986    6515  3312              DCA     MLV14   /DEPOSIT IN LOC MLV14
2987    6516  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
2988    6517  3757              DCA I   MLV13I  /ENABLE LEVEL 11 INTERRUPT BY SETTING LOC MLV13=NOP
2989    6520  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
2990    6521  3002              DCA     IMAGE   /IMAGE OF AC
2991    6522  1002              TAD     IMAGE
2992    6523  7041              CIA             /COMPLIMENT AND INC
2993    6524  1113              TAD     K2160   /IMAGE SHOULD = 2160
2994    6525  7440              SZA             /AC = 0
2995    6526  7402              HLT             /ERR
2996    6527  1761              TAD I   STK2    /GET PC STORED IN LOC STK2P
2997    6530  7041              CIA             /COMPLIMENT AND INC
2998    6531  1333              TAD     .+2     /PC STORED IN LOC STK2P SHOULD = MLV15B
2999    6532  5334              JMP     .+2
3000    6533  6477              MLV15B
3001    6534  7440              SZA             /AC = 0
3002    6535  7402              HLT             /ERR
3003    6536  1761              TAD I   STK2    /GET PC STORED IN LOC STK2P
3004    6537  7001              IAC             /INCREMENT
3005    6540  3761              DCA I   STK2    /STORE BACK IN LOC STK2P
3006    6541  1043              TAD     K1      /AC = 1
3007    6542  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 11 INTERRUPT
3008    6543  7000              NOP             /EXECUTE 1 MORE TEST INST AFTER MAIN1 IOT
3009    6544  7402      MLV14B, HLT
3010    6545  7300              CLA CLL         /AC = 0--RESTOR OCCURS TO HERE FROM MLV13 ROUTINE
3011    6546  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3012    6547  3002              DCA     IMAGE   /IMAGE OF AC
3013    6550  1002              TAD     IMAGE
3014    6551  7041              CIA             /COMPLIMENT AND INC
3015    6552  1113              TAD     K2160   /IMAGE SHOULD = 2160
3016    6553  7440              SZA             /AC = 0
3017    6554  7402              HLT             /ERR
3018    6555  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3019    6556  7402              HLT             /ERR
3020                    /
3021    6557  6600      MLV13I, MLV13
3022    6560  5606      STK1,   STK1P
3023    6561  5613      STK2,   STK2P
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3024
3025                    /
3026                    /MULTIPLE LEVEL INTERRUPT - LEVEL 11
3027                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5617 TO 5623
3028                    /
3029            6600            *6600
3030    6600    7402    MLV13,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 11 INTERRUPT
3031    6601    7300            CLA CLL         /CLEAR AC AND LINC
3032    6602    1150            TAD     K7402   /AC = 7402 OR 8-MODE HLT
3033    6603    3200            DCA     MLV13   /DEPOSIT IN LOC MLV13
3034    6604    1142            TAD     K7000   /AC = 7000 OR 8-MODE NOP
3035    6605    3245            DCA     MLV12   /ENABLE LEVEL 10 INTERRUPT BY SETTING LOC MLV12 = NOP
3036    6606    6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
3037    6607    3002            DCA     IMAGE   /IMAGE OF AC
3038    6610    1002            TAD     IMAGE
3039    6611    7041            CIA             /COMPLIMENT AND INC
3040    6612    1112            TAD     K2153   /IMAGE SHOULD = 2153
3041    6613    7440            SZA             /AC = 0
3042    6614    7402            HLT             /ERR
3043    6615    1760            TAD I   STK3    /GET PC STORED IN LOC STK3P
3044    6616    7041            CIA             /COMPLIMENT AND INC
3045    6617    1221            TAD     .+2     /PC STORED IN LOC STK3P SHOULD = MLV14B
3046    6620    5222            JMP     .+2
3047    6621    6544            MLV14B
3048    6622    7440            SZA             /AC = 0
3049    6623    7402            HLT             /ERR
3050    6624    1760            TAD I   STK3    /GET PC STORED IN LOC STK3P
3051    6625    7001            IAC             /INCREMENT
3052    6626    3760            DCA I   STK3    /STORE BACK IN LOC STK3P
3053    6627    1045            TAD     K3      /AC = 3
3054    6630    6051            MAIN1           /MAINTENANCE MODE SIMULATION OF LEVEL 10 INTERRUPT
3055    6631    7000            NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3056    6632    7402    MLV13B, HLT
3057    6633    7300            CLA CLL         /AC = 0--RESTORE OCCURS TO HERE FROM MLV12 ROUTINE
3058    6634    6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
3059    6635    3002            DCA     IMAGE   /IMAGE OF AC
3060    6636    1002            TAD     IMAGE
3061    6637    7041            CIA             /COMPLIMENT AND INC
3062    6640    1112            TAD     K2153   /IMAGE SHOULD = 2153
3063    6641    7440            SZA             /AC = 0
3064    6642    7402            HLT             /ERR
3065    6643    6771            RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3066    6644    7402            HLT             /ERR
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3067
3068                    /
3069                    /MULTIPLE LEVEL INTERRUPT - LEVEL 10
3070                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5624 TO 5630
3071                    /
3072    6645  7402      MLV12,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 10 INTERRUPT
3073    6646  7320              CLA CLL         /CLEAR AC AND LINC
3074    6647  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
3075    6650  3245              DCA     MLV12   /DEPOSIT IN LOC MLV12
3076    6651  1142              TAD     K7000   /AC = 7000 OR 8-MODE
3077    6652  3312              DCA     MLV11   /ENABLE LEVEL 9 INTERRUPT BY SETTING LOC MLV11 = NOP
3078    6653  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3079    6654  3002              DCA     IMAGE   /IMAGE OF AC
3080    6655  1002              TAD     IMAGE
3081    6656  7041              CIA             /COMPLIMENT AND INC
3082    6657  1111              TAD     K2146   /IMAGE SHOULD = 2146
3083    6660  7440              SZA             /AC = 0
3084    6661  7402              HLT             /ERR
3085    6662  1761              TAD I   STK4    /GET PC STORED IN LOC STK4P
3086    6663  7041              CIA             /COMPLIMENT AND INC
3087    6664  1266              TAD     .+2     /PC STORED IN LOC STK3P SHOULD = MLV13B
3088    6665  5267              JMP     .+2
3089    6666  6632              MLV13B
3090    6667  7440              SZA             /AC = 0
3091    6670  7402              HLT             /ERR
3092    6671  1761              TAD I   STK4    /GET PC STORED IN LOC STK4P
3093    6672  7001              IAC             /INCREMENT
3094    6673  3761              DCA I   STK4    /STORE BACK IN LOC STK4P
3095    6674  1047              TAD     K7      /AC = 7
3096    6675  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 9 INTERRUPT
3097    6676  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3098    6677  7402      MLV12B, HLT
3099    6700  7300              CLA CLL         /AC = 0--RESTORE OCCURS TO HERE FROM MLV11 ROUTINE
3100    6701  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3101    6702  3002              DCA     IMAGE   /IMAGE OF AC
3102    6703  1002              TAD     IMAGE
3103    6704  7041              CIA             /COMPLIMENT AND INC
3104    6705  1111              TAD     K2146   /IMAGE SHOULD = 2146
3105    6706  7440              SZA             /AC = 0
3106    6707  7402              HLT             /ERR
3107    6710  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3108    6711  7402              HLT             /ERR
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3109
3110                    /
3111                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 9
3112                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5631 TO 5635
3113                    /
3114    6712  7402      MLV11,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 9 INTERRUPT
3115    6713  7300              CLA CLL         /CLEAR AC AND LINC
3116    6714  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
3117    6715  3312              DCA     MLV11   /DEPOSIT IN LOC MLV11
3118    6716  1142              TAD     K7000   /AC = 7000 OR 8-MODE HLT
3119    6717  3757              DCA I   MLV10I  /ENABLE LEVEL 8 INTERRUPT BY SETTING LOC MLV10 = NOP
3120    6720  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3121    6721  3002              DCA     IMAGE   /IMAGE OF AC
3122    6722  1002              TAD     IMAGE
3123    6723  7041              CIA             /COMPLIMENT AND INC
3124    6724  1110              TAD     K2141   /IMAGE SHOULD = 2141
3125    6725  7440              SZA             /AC = 0
3126    6726  7402              HLT             /ERR
3127    6727  1762              TAD I   STK5    /GET PC STORED IN LOC STK5P
3128    6730  7041              CIA             /COMPLIMENT AND INC
3129    6731  1333              TAD     .+2     /PC STORED IN LOC STK5P
3130    6732  5334              JMP     .+2
3131    6733  6677              MLV12B
3132    6734  7440              SZA             /AC = 0
3133    6735  7402              HLT             /ERR
3134    6736  1762              TAD I   STK5    /GET PC STORED IN LOC STK5P
3135    6737  7001              IAC             /INCREMENT
3136    6740  3762              DCA I   STK5    /STORE BACK IN LOC STK5P
3137    6741  1051              TAD     K17     /AC = 17
3138    6742  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 8 INTERRUPT
3139    6743  7000              NOP             /EXECUTE 1 MORE TEST AFTER MAIN1 IOT
3140    6744  7402    MLV11B, HLT
3141    6745  7300              CLA CLL         /AC = 0--RESTORE OCCURS HERE FROM MLV10 ROUTINE
3142    6746  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3143    6747  3002              DCA     IMAGE   /IMAGE OF AC
3144    6750  1002              TAD     IMAGE
3145    6751  7041              CIA             /COMPLIMENT AND INC
3146    6752  1110              TAD     K2141   /IMAGE SHOULD = 2141
3147    6753  7440              SZA             /AC = 0
3148    6754  7402              HLT             /ERR
3149    6755  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3150    6756  7402              HLT             /ERR
3151                    /
3152    6757  7000    MLV10I, MLV10
3153    6760  5620    STK3,   STK3P
3154    6761  5625    STK4,   STK4P
3155    6762  5632    STK5,   STK5P
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3156
3157                    /
3158                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 8
3159                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5636 TO 5642
3160                    /
3161            7000            *7000
3162    7000    7402    MLV10,  HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 8 INTERRUPT
3163    7001    7300            CLA CLL         /CLEAR AC AND LINC
3164    7002    1150            TAD     K7402   /AC=7402 OR 8-MODE HLT
3165    7003    3200            DCA     MLV10   /DEPOSIT IN LOC MLV10
3166    7004    1142            TAD     K7000   /AC=7000 OR 8-MODE NOP
3167    7005    3245            DCA     MLV7    /ENABLE LEVEL 7 INTERRUPT BY SETTING LOC MLV7=NOP
3168    7006    6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
3169    7007    3002            DCA     IMAGE   /IMAGE OF AC
3170    7010    1002            TAD     IMAGE
3171    7011    7041            CIA             /COMPLIMENT AND INC
3172    7012    1107            TAD     K2134   /IMAGE SHOULD = 2134
3173    7013    7440            SZA             /AC = 0
3174    7014    7402            HLT             /ERR
3175    7015    1760            TAD I   STK6    /GET PC STORED IN LOC STK6P
3176    7016    7041            CIA             /COMPLIMENT AND INC
3177    7017    1221            TAD     .+2     /PC STORED IN LOC STK6P SHOULD=MLV11B
3178    7020    5222            JMP     .+2
3179    7021    6744            MLV11B
3180    7022    7440            SZA             /AC = 0
3181    7023    7402            HLT             /ERR
3182    7024    1760            TAD I   STK6    /GET PC STORED IN LOC STK6P
3183    7025    7001            IAC             /INCREMENT
3184    7026    3760            DCA I   STK6    /STORE BACK IN LOC STK6P
3185    7027    1053            TAD     K37     /AC = 37
3186    7030    6051            MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 7 INTERRUPT
3187    7031    7000            NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3188    7032    7402    MLV10B, HLT
3189
3190    7033    7300            CLA CLL         /AC = 0--RESTORE OCCURS TO HERE FROM MLV7 ROUTINE
3191    7034    6774            RSTK            /READ STACK ADDRESS REGISTER INTO AC
3192    7035    3002            DCA     IMAGE   /IMAGE OF AC
3193    7036    1002            TAD     IMAGE
3194    7037    7041            CIA             /COMPLIMENT AND INC
3195    7040    1107            TAD     K2134   /IMAGE SHOULD = 2134
3196    7041    7440            SZA             /AC = 0
3197    7042    7402            HLT             /ERR
3198    7043    6771            RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3199    7044    7402            HLT             /ERR
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3200
3201                    /
3202                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 7
3203                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5643 TO 5647
3204                    /
3205    7045  7402      MLV7,   HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 7 INTERRUPT
3206    7046  7300              CLA CLL         /CLEAR AC AND LINC
3207    7047  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
3208    7050  3245              DCA     MLV7    /DEPOSIT IN LOC MLV7
3209    7051  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
3210    7052  3312              DCA     MLV6    /ENABLE LEVEL 6 INTERRUPT BY SETTING LOC MLV6 = NOP
3211    7053  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3212    7054  3002              DCA     IMAGE   /IMAGE OF AC
3213    7055  1002              TAD     IMAGE
3214    7056  7041              CIA             /COMPLIMENT AND INC
3215    7057  1106              TAD     K2127   /IMAGE SHOULD = 2127
3216    7060  7440              SZA             /AC = 0
3217    7061  7402              HLT             /ERR
3218    7062  1761              TAD I   STK7    /GET PC STORED IN LOC STK7P
3219    7063  7041              CIA             /COMPLIMENT AND INC
3220    7064  1266              TAD     .+2     /PC STORED IN LOC STK7P SHOULD = MLV10B
3221    7065  5267              JMP     .+2
3222    7066  7032              MLV10B
3223    7067  7440              SZA             /AC = 0
3224    7070  7402              HLT             /ERR
3225    7071  1761              TAD I   STK7    /GET PC STORED IN LOC STK7P
3226    7072  7001              IAC             /INCREMENT
3227    7073  3761              DCA I   STK7    /STORE BACK IN LOC STK7P
3228    7074  1056              TAD     K77     /AC = 77
3229    7075  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 6 INTERRUPT
3230    7076  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3231    7077  7402    MLV7B,    HLT
3232    7100  7300              CLA CLL         /AC = 0--RESTORE OCCURS TO HERE FROM MLV6 ROUTINE
3233    7101  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3234    7102  3002              DCA     IMAGE   /IMAGE OF AC
3235    7103  1002              TAD     IMAGE
3236    7104  7041              CIA             /COMPLIMENT AND INC
3237    7105  1106              TAD     K2127   /IMAGE SHOULD = 2127
3238    7106  7440              SZA             /AC = 0
3239    7107  7402              HLT             /ERR
3240    7110  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3241    7111  7402              HLT             /ERR
```

```
3242
3243                    /
3244                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 6
3245                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5650 TO 5654
3246                    /
3247    7112  7402      MLV6,   HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 6 INTERRUPT
3248    7113  7300              CLA CLL         /CLEAR AC AND LINC
3249    7114  1150              TAD     K7402   /AC = 7402 OR 8-MODE HLT
3250    7115  3312              DCA     MLV6    /DEPOSIT IN LOC MLV6
3251    7116  1142              TAD     K7000   /AC = 7000 OR 8-MODE NOP
3252    7117  3757              DCA I   MLV5I   /ENABLE LEVEL 5 INTERRUPT BY SETTING LOC MLV5 = NOP
3253    7120  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3254    7121  3002              DCA     IMAGE   /IMAGE OF AC
3255    7122  1002              TAD     IMAGE
3256    7123  7041              CIA             /COMPLIMENT AND INCREMENT
3257    7124  1105              TAD     K2122   /IMAGE SHOULD = 2122
3258    7125  7440              SZA             /AC = 0
3259    7126  7402              HLT             /ERR
3260    7127  1762              TAD I   STK10   /GET PC STORED IN LOC STK10P
3261    7130  7041              CIA             /COMPLIMENT AND INC
3262    7131  1333              TAD     .+2     /PC STORED IN LOC STK10P SHOULD = MLV7B
3263    7132  5334              JMP     .+2
3264    7133  7077              MLV7B
3265    7134  7440              SZA             /AC = 0
3266    7135  7402              HLT             /ERR
3267    7136  1762              TAD I   STK10   /GET PC STORED IN LOC STK10P
3268    7137  7001              IAC             /INCREMENT
3269    7140  3762              DCA I   STK10   /STORE BACK IN LOC STK10P
3270    7141  1060              TAD     K177    /AC = 177
3271    7142  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 5 INTERRUPT
3272    7143  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3273    7144  7402      MLV6B,  HLT
3274    7145  7300              CLA CLL         /AC = 0--RESTORE OCCURS TO HERE FROM MLV5 ROUTINE
3275    7146  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3276    7147  3002              DCA     IMAGE   /IMAGE OF AC
3277    7150  1002              TAD     IMAGE
3278    7151  7041              CIA             /COMPLIMENT AND INC
3279    7152  1105              TAD     K2122   /IMAGE SHOULD = 2122
3280    7153  7440              SZA             /AC = 0
3281    7154  7402              HLT             /ERR
3282    7155  6771              RES             /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3283    7156  7402              HLT             /ERR
3284                    /
3285    7157  7200      MLV5I,  MLV5
3286    7160  5637      STK6,   STK6P
3287    7161  5644      STK7,   STK7P
3288    7162  5651      STK10,  STK10P
```

```
3289
3290                    /
3291                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 5
3292                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5655 TO 5661
3293                    /
3294            7200            *7200
3295    7200    7402    MLV5,   HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 5 INTERRUPT
3296    7201    7300            CLA CLL                 /CLEAR AC AND LINC
3297    7202    1150            TAD     K7402           /AC=7402 OR 8 MODE HLT
3298    7203    3200            DCA     MLV5            /DEPOSIT IN LOC MLV5
3299    7204    1142            TAD     K7000           /AC=7000 OR 8-MODE NOP
3300    7205    3245            DCA     MLV4            /ENABLE LEVEL 4 INTERRUPT BY SETTING LOC MLV4=NOP
3301    7206    6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
3302    7207    3002            DCA     IMAGE           /IMAGE OF AC
3303    7210    1002            TAD     IMAGE
3304    7211    7041            CIA                     /COMPLIMENT AND INC
3305    7212    1104            TAD     K2115           /IMAGE SHOULD = 2115
3306    7213    7440            SZA                     /AC=0
3307    7214    7402            HLT                     /ERR
3308    7215    1760            TAD I   STK11           /GET PC STORED IN LOC STK11P
3309    7216    7041            CIA                     /COMPLIMENT AND INC
3310    7217    1221            TAD     .+2             /PC STORED IN LOC STK11P SHOULD = MLV6B
3311    7220    5222            JMP     .+2
3312    7221    7144            MLV6B
3313    7222    7440            SZA                     /AC=0
3314    7223    7402            HLT                     /ERR
3315    7224    1760            TAD I   STK11           /GET PC STORED IN LOC STK11P
3316    7225    7001            IAC                     /INCREMENT
3317    7226    3760            DCA I   STK11           /STORE BACK IN LOC STK11P
3318    7227    1064            TAD     K377            /AC=377
3319    7230    6051            MAIN1                   /MAINTENANCE MODE SIMULATION OF A LEVEL 4 INTERRUPT
3320    7231    7000            NOP                     /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3321    7232    7402    MLV5B,  HLT
3322    7233    7300            CLA CLL                 /AC=0--RESTORE OCCURS TO HERE FROM MLV4 ROUTINE
3323    7234    6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
3324    7235    3002            DCA     IMAGE           /IMAGE OF AC
3325    7236    1002            TAD     IMAGE
3326    7237    7041            CIA                     /COMPLIMENT AND INC
3327    7240    1104            TAD     K2115           /IMAGE SHOULD = 2115
3328    7241    7440            SZA                     /AC=0
3329    7242    7402            HLT                     /ERR
3330    7243    6771            RES                     /RESTORE MACHINE TO LAST STATUS SAVED ON STACK
3331    7244    7402            HLT                     /ERR
```

```
3332
3333                    /
3334                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 4
3335                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5662 TO 5666
3336                    /
3337    7245  7402  MLV4,   HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 4 INTERRUPT
3338    7246  7300          CLA CLL         /CLEAR AC AND LINC
3339    7247  1150          TAD     K7402   /AC=7402 OR 8-MODE HLT
3340    7250  3245          DCA     MLV4    /DEPOSIT IN LOC MLV4
3341    7251  1142          TAD     K7000   /AC=7000 OR 8-MODE NOP
3342    7252  3312          DCA     MLV3    /ENABLE LEVEL 3 INTERRUPT BY SETTING LOC MLV3=NOP
3343    7253  6774          RSTK            /READ STACK ADDRESS REGISTER INTO AC
3344    7254  3002          DCA     IMAGE   /IMAGE OF AC
3345    7255  1002          TAD     IMAGE
3346    7256  7041          CIA             /COMPLIMENT AND INC
3347    7257  1103          TAD     K2110   /IMAGE SHOULD = 2110
3348    7260  7440          SZA             /AC=0
3349    7261  7402          HLT             /ERR
3350    7262  1761          TAD I   STK12   /GET PC STORED IN LOC STK12P
3351    7263  7041          CIA             /COMPLIMENT AND INC
3352    7264  1266          TAD     .+2     /PC STORED IN LOC STK12P SHOULD = MLV5B
3353    7265  5267          JMP     .+2
3354    7266  7232          MLV5B
3355    7267  7440          SZA             /AC=0
3356    7270  7402          HLT             /ERR
3357    7271  1761          TAD I   STK12   /GET PC STORED IN LOC STK12P
3358    7272  7001          IAC             /INCREMENT
3359    7273  3761          DCA I   STK12   /STORE BACK IN LOC STK12P
3360    7274  1070          TAD     K777    /AC=777
3361    7275  6051          MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 3 INTERRUPT
3362    7276  7000          NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3363    7277  7402  MLV4B,  HLT
3364    7300  7300          CLA CLL         /AC=0--RESTORE OCCURS TO HERE FROM MLV3 ROUTINE
3365    7301  6774          RSTK            /READ STACK ADDRESS REGISTER INTO AC
3366    7302  3002          DCA     IMAGE   /IMAGE OF AC
3367    7303  1002          TAD     IMAGE
3368    7304  7041          CIA             /COMPLIMENT AND INC
3369    7305  1103          TAD     K2110   /IMAGE SHOULD=2110
3370    7306  7440          SZA             /AC=0
3371    7307  7402          HLT             /ERR
3372    7310  6771          RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
3373    7311  7402          HLT             /ERR
```

```
3374
3375                    /
3376                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 3
3377                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5667 TO 5673
3378                    /
3379    7312  7402      MLV3,   HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 3 INTERRUPT
3380    7313  7300              CLA CLL         /CLEAR AC AND LINC
3381    7314  1150              TAD     K7402   /AC=7402 OR 8-MODE HLT
3382    7315  3312              DCA     MLV3    /DEPOSIT IN LOC MLV3
3383    7316  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
3384    7317  3757              DCA I   MLV2I   /ENABLE LEVEL 2 INTERRUPT BY SETTING LOC MLV2=NOP
3385    7320  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3386    7321  3002              DCA     IMAGE   /IMAGE OF AC
3387    7322  1002              TAD     IMAGE
3388    7323  7041              CIA             /COMPLEMENT AND INC
3389    7324  1102              TAD     K2103   /IMAGE SHOULD =2103
3390    7325  7440              SZA             /AC=0
3391    7326  7402              HLT             /ERR
3392    7327  1762              TAD I   STK13   /GET PC STORED IN LOC STK13P
3393    7330  7041              CIA             /COMPLIMENT AND INC
3394    7331  1333              TAD     .+2     /PC STORED IN LOC STK13P SHOULD = MLV4B
3395    7332  5334              JMP     .+2
3396    7333  7277              MLV4B
3397    7334  7440              SZA             /AC=0
3398    7335  7402              HLT             /ERR
3399    7336  1762              TAD I   STK13   /GET PC STORED IN LOC STK13P
3400    7337  7001              IAC             /INCREMENT
3401    7340  3762              DCA I   STK13   /STORE BACK IN LOC STK13P
3402    7341  1075              TAD     K1777   /AC=1777
3403    7342  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 2 INTERRRUPT
3404    7343  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3405    7344  7402    MLV3B,    HLT
3406    7345  7300              CLA CLL         /AC=0--RESTORE OCCURS TO HERE FROM MLV2 ROUTINE
3407    7346  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3408    7347  3002              DCA     IMAGE   /IMAGE OF AC
3409    7350  1002              TAD     IMAGE
3410    7351  7041              CIA             /COMPLIMENT AND INC
3411    7352  1102              TAD     K2103   /IMAGE SHOULD=2103
3412    7353  7440              SZA             /AC=0
3413    7354  7402              HLT             /ERR
3414    7355  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
3415    7356  7402              HLT             /ERR
3416                    /
3417    7357  7400    MLV2I,    MLV2
3418    7360  5656    STK11,    STK11P
3419    7361  5663    STK12,    STK12P
3420    7362  5670    STK13,    STK13P
```

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3421
3422                    /
3423                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 2
3424                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5674 TO 5700
3425                    /
3426            7400            *7400
3427    7400    7402    MLV2,   HLT                     /CHANGED FROM HLT TO NOP FOR LEVEL 2 INTERRUPT
3428    7401    7300            CLA CLL                 /CLEAR AC AND LINC
3429    7402    1150            TAD     K7402           /AC=7402 OR 8-MODE HLT
3430    7403    3200            DCA     MLV2            /DEPOSIT IN LOC MLV2
3431    7404    1142            TAD     K7000           /AC=7000 OR 8-MODE NOP
3432    7405    3245            DCA     MLV1            /ENABLE LEVEL 1 INTERRUPT BY SETTING LOC MLV1=NOP
3433    7406    6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
3434    7407    3002            DCA     IMAGE           /IMAGE OF AC
3435    7410    1002            TAD     IMAGE
3436    7411    7041            CIA                     /COMPLIMENT AND INC
3437    7412    1101            TAD     K2076           /IMAGE SHOULD = 2076
3438    7413    7440            SZA                     /AC=0
3439    7414    7402            HLT                     /ERR
3440    7415    1742            TAD I   STK14           /GET PC STORED IN LOC STK14P
3441    7416    7041            CIA                     /COMPLIMENT AND INC
3442    7417    1221            TAD     .+2             /PC STORED IN LOC STK14P SHOULD = MLV3B
3443    7420    5222            JMP     .+2
3444    7421    7344            MLV3B
3445    7422    7440            SZA                     /AC=0
3446    7423    7402            HLT                     /ERR
3447    7424    1742            TAD I   STK14           /GET PC STORED IN LOC STK14P
3448    7425    7001            IAC                     /INCREMENT
3449    7426    3742            DCA I   STK14           /STORE BACK IN LOC STK14P
3450    7427    1124            TAD     K3777           /AC=3777
3451    7430    6051            MAIN1                   /MAINTENANCE MODE SIMULATION OF A LEVEL 1 INTERRUPT
3452    7431    7000            NOP                     /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3453    7432    7402    MLV2B,  HLT
3454    7433    7300            CLA CLL                 /AC=0--RESTORE OCCURS TO HERE FROM MLV1 ROUTINE
3455    7434    6774            RSTK                    /READ STACK ADDRESS REGISTER INTO AC
3456    7435    3002            DCA     IMAGE           /IMAGE OF AC
3457    7436    1002            TAD     IMAGE
3458    7437    7041            CIA                     /COMPLIMENT AND INC
3459    7440    1101            TAD     K2076           /IMAGE SHOULD = 2076
3460    7441    7440            SZA                     /AC=0
3461    7442    7402            HLT                     /ERR
3462    7443    6771            RES                     /RESTORE MACHINE TO LAST STATUS STORED ON STACK
3463    7444    7402            HLT                     /ERR
```

```
3464
3465                    /
3466                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 1
3467                    /PREVIOUS MACHINE STATUS SAVED ON STACK LOC 5700 TO 5704
3468                    /
3469    7445  7402      MLV1,   HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 1 INTERRUPT
3470    7446  7300              CLA CLL         /CLEAR AC AND LINC
3471    7447  1150              TAD     K7402   /AC=7402 OR 8-MODE HLT
3472    7450  3245              DCA     MLV1    /DEPOSIT IN LOC MLV1
3473    7451  1142              TAD     K7000   /AC=7000 OR 8-MODE NOP
3474    7452  3312              DCA     MLV0    /ENABLE LEVEL 0 INTERRUPT BY SETTING LOC MLV0=NOP
3475    7453  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3476    7454  3002              DCA     IMAGE   /IMAGE OF AC
3477    7455  1002              TAD     IMAGE
3478    7456  7041              CIA             /COMPLIMENT AND INC
3479    7457  1100              TAD     K2071   /IMAGE SHOULD = 2071
3480    7460  7440              SZA             /AC=0
3481    7461  7402              HLT             /ERR
3482    7462  1743              TAD I   STK15   /GET PC STORED IN LOC STK15P
3483    7463  7041              CIA             /COMPLIMENT AND INC
3484    7464  1266              TAD     .+2     /PC STORED IN LOC STK15P SHOULD = MLV2B
3485    7465  5267              JMP     .+2
3486    7466  7432              MLV2B
3487    7467  7440              SZA             /AC=0
3488    7470  7402              HLT             /ERR
3489    7471  1743              TAD I   STK15   /GET PC STORED IN LOC STK15P
3490    7472  7001              IAC             /INCREMENT
3491    7473  3743              DCA I   STK15   /STORE BACK IN LOC STK15P
3492    7474  7340              CLA CLL CMA     /AC=7777
3493    7475  6051              MAIN1           /MAINTENANCE MODE SIMULATION OF A LEVEL 0 INTERRUPT
3494    7476  7000              NOP             /EXECUTE 1 MORE INST AFTER MAIN1 IOT
3495    7477  7402    MLV1B,    HLT
3496    7500  7300              CLA CLL         /AC=0 -- RESTORE OCCURS TO HERE FROM MLV1 ROUTINE
3497    7501  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3498    7502  3002              DCA     IMAGE   /IMAGE OF AC
3499    7503  1002              TAD     IMAGE
3500    7504  7041              CIA             /COMPLIMENT AND INC
3501    7505  1100              TAD     K2071   /IMAGE SHOULD = 2071
3502    7506  7440              SZA             /AC=0
3503    7507  7402              HLT             /ERR
3504    7510  6771              RES             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
3505    7511  7402              HLT             /ERR
```

```
3506
3507                    /
3508                    /MULTIPLE LEVEL INTERRUPT TEST - LEVEL 0
3509                    /PREVIOUS MACHINE STATUS
3510                    /
3511    7512  7402      MLV0,   HLT             /CHANGED FROM HLT TO NOP FOR LEVEL 0 INTERRUPT
3512    7513  7300              CLA CLL         /CLEAR AC AND LINC
3513    7514  1150              TAD     K7402   /AC=7402 OR 8-MODE HLT
3514    7515  3312              DCA     MLV0    /DEPOSIT IN LOC MLV0
3515    7516  6774              RSTK            /READ STACK ADDRESS REGISTER INTO AC
3516    7517  3002              DCA     IMAGE   /IMAGE OF AC
3517    7520  1002              TAD     IMAGE
3518    7521  7041              CIA             /COMPLIMENT AND INC
3519    7522  1341              TAD     K2064   /IMAGE SHOULD = 2064
3520    7523  7440              SZA             /AC=0
3521    7524  7402              HLT             /ERR
3522    7525  1744              TAD I   STK16   /GET PC STORED IN LOC STK16P
3523    7526  7041              CIA             /COMPLIMENT AND INC
3524    7527  1331              TAD     .+2     /PC STORED IN LOC STK16P SHOULD = MLV1B
3525    7530  5332              JMP     .+2
3526    7531  7477              MLV1B
3527    7532  7440              SZA             /AC=0
3528    7533  7402              HLT             /ERR
3529    7534  1744              TAD I   STK16   /GET PC STORED IN LOC STK16P
3530    7535  7001              IAC             /INCREMENT
3531    7536  3744              DCA I   STK16   /STORE BACK IN LOC STK16P
3532    7537  6771              REB             /RESTORE MACHINE TO LAST STATUS STORED ON STACK
3533    7540  7402              HLT             /ERR
3534                    /
3535    7541  2064      K2064,  2064
3536    7542  0675      STK14,  STK14P
3537    7543  0702      STK15,  STK15P
3538    7544  5707      STK16,  STK16P
3539
3540                    $
```

```
0000  11111111  00000000  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11100000  00000000  00000000  00000000  00000000  00000000  00000000

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111000  00000000  00000000

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000


1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11100000  00000000  00000000  00000000

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11110000  00000000  00000000

1400  00111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  00000000

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100000


2000  01111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11000000  00000000  00000000  00000000  00000000  00000000

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  00000000  00000000  00000000  00000000

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111110  00000000  00000000

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11000000
2700  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000


3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  11111111  11110000  00000000  00000000  00000000  00000000

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110
3300  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

3400  00111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110
3500  11111111  11111111  11111111  11111111  11111111  11111111  00000000  00000000

3600
3700
```

```
4200  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	M8	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	K3000	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	1402
SSTK	6776	T3	0453	UT16A	0004
STACK	0032	T30	1665	UT37	3402
STACKK	5600	T31	1704	UT37A	0005
STK1	6560	T32	1741	VEC0	0161
STK10	7162	T33	2001	VEC1	0162
STK10P	5651	T34	2037	VEC10	0171
STK11	7360	T34A	2105	VEC11	0172
STK11P	5656	T35	2200	VEC12	0173
STK12	7361	T35A	2236	VEC13	0174
STK12P	5663	T35AM1	6076	VEC14	0175
STK13	7362	T36	2276	VEC15	0176
STK13P	5670	T37	2400	VEC16	0177
STK14	7542	T4	0466	VEC2	0163
STK14P	5675	T40	2415	VEC3	0164
STK15	7543	T41	2425	VEC4	0165
STK15P	5702	T42	2435	VEC5	0166
STK16	7544	T43	2445	VEC6	0167
STK16P	5707	T44	2455	VEC7	0170
STK1P	5606	T45	2465	VECT0	6140
STK2	6561	T46	2475	VECT1	6145
STK2P	5613	T47	2505	VECT10	6217
STK3	6760	T5	0501	VECT11	6224
STK3P	5620	T50	2515	VECT12	6231
STK4	6761	T51	2525	VECT13	6236
STK4P	5625	T52	2535	VECT14	6244
STK5	6762	T53	2545	VECT15	6251
STK5P	5632	T54	2600	VECT16	6256
STK6	7160	T55	2610	VECT2	6152
STK6P	5637	T56	2620	VECT3	6157
STK7	7161	T56A	2655	VECT4	6164
STK7P	5644	T57	3000	VECT5	6200
STKTST	4534	T6	0526	VECT6	6205
SVEC	6777	T60	3071	VECT7	6212
T0	0400	T60A	3112	VT0	4400
T1	0431	T60AM6	3133	XACMQ	0243
T10	0625	T61	3200		
T11	0637	T61A	3220		
T12	0642	T61AM5	3275		
T13	0700	T62	3243		
T14	0726	T62A	3262		
T15	0744	T62AM6	3276		
T16	1000	T63	3403		
T17	1025	T64	3421		
T2	0441	T65	3536		
T20	1047	T66	3545		
T21	1066	T7	0600		
T22	1200	TST	6036		
T22A	1276	TSTA	0042		
T24	1403	TSTPJ	1216		
T24A	1527	TSTPJ1	1425		
T26	1600	TSTPJ2	2053		

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 45 SECONDS

3K CORE USED

```
T51        1555#
T52        1570#
T53        1586#
T54        1595    1604#
T55        1619#
T56        1634#
T56A       1663#   2916
T57        1674    1684#
T6          412#
T60        1750#
T60A       1761    1770#   1784    1791
T60AM6     1775    1791#
T61        1768    1799#
T61A       1810    1818#   1834    1873
T61AM5     1823    1873#
T62        1816    1846#
T62A       1854    1861#   1868    1874
T62AM6     1864    1874#
T63        1860    1892#
T64        1914#
T65        1955    2002#
T66        2006    2010    2016#
T7          434     441#
TST          63    2603    2637#   2640
TSTA         63#   1282
TSTPJ        49     742     748#
TSTPJ1       50     878     885     891#    951
TSTPJ2       51    1227    1232#
UT16         36     858#    888     891
UT16A        36#   1353
UT37         37    1311    1884#
UT37A        37#   1224    1398
VEC0       143#    1404    1740    1900    2679
VEC1       144#    1420    2681
VEC10      151#    1527    2695
VEC11      152#    1543    2697
VEC12      153#    1558    2699
VEC13      154#    1573    2701
VEC14      155#    1589    2703
VEC15      156#    1607    2705
VEC16      157#    1622    2707
VEC2       145#    1435    2683
VEC3       146#    1451    2685
VEC4       147#    1466    2687
VEC5       148#    1481    2689
VEC6       149#    1497    2691
VEC7       150#    1512    2693
VECT0      143     1705    1726    2719#   2721
VECT1      144     2727#   2729
VECT10     151     2785#   2787
VECT11     152     2793#   2795
VECT12     153     2801#   2803
VECT13     154     2810#   2812    2813
```

```
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       220#     757      809      899      972
```