/1. ABSTRACT

FPP-12 INSTRUCTION TEST 2A IS DESIGNED TO TEST ALL FPP IOTS, FORCE AND TEST ALL STATUS CONDITIONS, TEST ALL COMMAND REGISTER FUNCTIONS AND EXECUTE ALL NON-MEMORY ALTERING INSTRUCTIONS ON SELECTED DATA PATTERNS. THIS PROGRAM REQUIRES NO TELETYPE COMMUNICATIONS AS ERROR HALTS ARE USED EXCLUSIVELY. THE ASSUMPTION IS MADE THAT THE PDP-8 OR PDP-12 USED IN CONJUNCTION WITH THE FPP IS A SOLID, ERROR FREE MACHINE.

/2. REQUIREMENTS

/2.1 EQUIPMENT

1) A FPP-12 FLOATING POINT PROCESSOR
2) A STANDARD BASIC PDP-8 OR PDP-12
3) AN ASR-33 TELETYPE OR EQUIVALENT

/2.2 STORAGE

THIS PROGRAM IS DESIGNED TO RUN IN MEMORY BANK 0 AND IT OCCUPIES VIRTUALLY ALL BANK 0 NOT OCCUPIED BY THE BINARY AND RIM LOADERS.

/2.3 PRELIMINARY PROGRAMS

ALL PDP-8 AND/OR PDP-12 MODE BASIC INSTRUCTION DIAGNOSTICS AND EXERCISERS MUST HAVE BEEN SUCCESSFULLY RUN PRIOR TO RUNNING THE PROGRAM.

/3. LOADING PROCEDURE

/3.1 REFER TO LOADING PROCEDURES FOR PARTICULAR MACHINE BEING USED IF PDP-8I, 8L OR 8E.

/3.2 METHOD FOR PDP-12

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 OR DO NOTHING IF A HIGH SPEED READER IS BEING USED

B) OPEN THE TELETYPE READER AND INSERT THE PROGRAM TAPE SO THAT THE ARROWS ON THE TAPE ARE VISIBLE AND POINTING IN THE DIRECTION OF TAPE MOVEMENT.

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; 0000 FOR HIGH SPEED READER

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 THE SWITCH REGISTER TO 0001 IF FPP IS USED WITH A PDP-8I OTHERWISE SET EQUAL TO 0000.

2) SET THE MODE SWITCH TO 8-MODE

3) DEPRESS I/O PRESET

4) DEPRESS START 20

THE PROGRAM IS RUNNING.

/4.1 CONTROL SWITCH SETTINGS

ONE INITIAL SWITCH SETTING IS USED BY THE PROGRAM TO DETERMINE WHETHER OR NOT THE COMPUTER USED WITH THE FPP-12 IS A PDP-8I.

SR11=0 NOT A PDP-8I
SR11=1 PDP-8I

IF SR11=1 THE PROGRAM WILL SKIP TEST T17 (C.P. LOCKOUT TEST) WHICH FAILS ON A PDP-8I DUE TO DIFFERENCES IN THE DATA BREAK INTERFACE.

/5. MESSAGE FORMAT

1) THERE ARE NO ERROR TYPEOUTS IN THE PROGRAM. THE DIAGNOSTIC IS OF THE FORM OF A BASIC INSTRUCTION TEST AND ERROR HALTS HAVE BEEN USED EXCLUSIVELY WITH A WELL DOCUMENTED LISTING.

2) THE TELETYPE BELL RINGS AFTER EVERY 100 PASSES THROUGH THE PROGRAM.

/6. MAINTENANCE INSTRUCTIONS

FPP-12 MAINTENANCE INSTRUCTIONS ARE NOT USED IN THE PROGRAM.

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.

```
/FPP-12 INSTRUCTION TEST 2A
/COPYRIGHT 1970, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
/MAINTAINER-DIAGNOSTIC GROOP
/AUTHOR-WALTER MANTER
/
/OCTOBER 1, 1971 REVISION
/
/THIS PROGRAM CONTAINS NO ERROR TYPEOUT MESSAGES
/ON AN ERROR OCCURRANCE THE PROGRAM HALTS
/THE LISTING OF THE PROGRAM MUST BE REFERENCED
/TO DETERMINE THE NATURE OF THE ERROR
/
/SCOPE LOOPS MAY BE INSERTED AT THE USERS DISCRETION
/TO LOOP ON ANY TEST OR TEST FAILURE
/
/DEPRESS SWITCH 11 IF PDP-8I
/STARTING LOCATION 20 OR 200 VIA LSW
/
/THE PROGRAM WILL RING THE TELETYPE BELL EVERY 100 OCTAL EXECUTIONS
/OR ABOUT EVERY 3 MINUTES
/
/CORE MAP
/8 CODE LOC 200 TO LOC 776
/FPP CODE LOC 777 TO LOC 1217
/8 CODE LOC 1220 TO LOC 1717
/SERVICE ROUTINES LOC 1720-1777
/8 CODE LOC 2000 TO LOC 2424
/FPP CODE LOC 2525
/8 CODE LOC 2526 TO 3777
/FPP ACTIVE PARAMETER TABLE LOC 4000 TO LOC 4007
/8 CODE LOC 4010 TO LOC 5251
/FPP CODE LOC 5252
/8 CODE LOC 5253 TO 5777
/FPP BASE REGISTER TABLE LOC 6000 TO LOC 6177
/8 CODE AREA LOC 6200 TO LOC 6777
/FPP INSTRUCTION REGISTERS LOC 7000 TO LOC 7007
/8 CODE ARE LOC 7010 TO LOC 7577
/UNUSED LOCATION 7600 TO LOC 7777
/
```

```
                /PAGE 0 CONTAINS SPECIAL REGISTERS AND CONSTANTS

                        PMODE

0000                    *0


                /FFP-12 INSTRUCTION TEST 2

                /IOT LIST

6551            FPINT=6551
6554            FPHLT=6554
6553            FPCOM=6553
6552            FPICL=6552
6555            FPST=6555
6556            FPRST=6556
6557            FPIST=6557
0000            FEXIT=0000
0002            FCLA=0002
0000            FLDA=0000
0003            FNEG=0003
0004            FNORM=0004
1000            FADD=1000
2000            FSUB=2000
4000            FMUL=4000
3000            FDIV=3000
0010            ALN=0010
1100            SETX=1100
0005            STARTF=0005
0006            STARTD=0006
1110            SETB=1110
0001            FPAUSE=0001
3000            TRAP1=3000
4000            TRAP2=4000
5000            TRAP3=5000
6000            TRAP4=6000
7000            TRAP5=7000
```

```
                    /FPP-12 INSTRUCTION TEST 2
                    /PAGE Ø CONTAINS SPECIAL REGISTERS AND CONSTANTS

                            PMODE

                    0000    *Ø

0000    0000                Ø
0001    4402                JMS I   .+1
0002    1727                INSERV          /LINC TO INTERRUPT SERVICE ROUTINE
0003    0000    CNTR,       Ø               /USED AS AN 8 MODE COUNTER
0004    0000    INFLAG,     Ø               /FLAG TO 8 PROGRAM INDICATING THAT FPP INTERRUPTED
0005    1742    LAPT,       LAPT1
                                            /LINC TO LOAD FIXED APT TABLE ROUTINE

                    /JMP TO START OF PROGRAM

                    0020    *20

0020    5421                JMP I   .+1
0021    0200                START           /STARTING LOCATION 200

0022    1762    CLIR,       CLIR1
                                            /LINC TO CLEAR FPP INDEX REGISTERS ROUTINE
```

```
                    /CONSTANTS

0023  0000    NUM,    0                   /HOLDING REGISTER FOR 8 PROG
0024  0000    STATUS, 0                   /USED TO STORE STATUS REGISTER IMAGE
0025  7700    BELL,   7700                /USED AS A COUNTER TO CAUSE BELL TO RING
0026  1177    ALTR,   1177
0027  1202    ALTR1,  1202
0030  0001    K1,     1
0031  0002    K2,     2
0032  0003    K3,     3
0033  0004    K4,     4
0034  0005    K5,     5
0035  0010    K10,    10
0036  0011    K11,    11
0037  0014    K14,    14
0040  0020    K20,    20
0041  0024    K24,    24
0042  0026    K26,    26
0043  0027    K27,    27
0044  0030    K30,    30
0045  0040    K40,    40
0046  0041    K41,    41
0047  0100    K100,   100
0050  0200    K200,   200
0051  0207    K207,   207
0052  0210    K210,   210
0053  0250    K250,   250
0054  0360    K360,   360
0055  0400    K400,   400
0056  0401    K401,   401
0057  0420    K420,   420
0060  0421    K421,   421
0061  0520    K520,   520
0062  0770    K770,   770
0063  0777    K777,   777
0064  1000    K1000,  1000
0065  1001    K1001,  1001
0066  1002    K1002,  1002
0067  1003    K1003,  1003
0070  1005    K1005,  1005
```

```
0071  1042    K1042,  1042
0072  1057    K1057,  1057
0073  1077    K1077,  1077
0074  1101    K1101,  1101
0075  1103    K1103,  1103
0076  1105    K1105,  1105
0077  1114    K1114,  1114
0100  1125    K1125,  1125
0101  1127    K1127,  1127
0102  1252    K1252,  1252
0103  1777    K1777,  1777
0104  2000    K2000,  2000
0105  2001    K2001,  2001
0106  2100    K2100,  2100
0107  2104    K2104,  2104
0110  2210    K2210,  2210
0111  2314    K2314,  2314
0112  2522    K2522,  2522
0113  2524    K2524,  2524
0114  2525    K2525,  2525
0115  2526    K2526,  2526
0116  2735    K2735,  2735
0117  3000    K3000,  3000
0120  3356    K3356,  3356
0121  3751    K3751,  3751
0122  3752    K3752,  3752
0123  3777    K3777,  3777
```

```
0124  4000     K4000,  4000
0125  4001     K4001,  4001
0126  4002     K4002,  4002
0127  4003     K4003,  4003
0130  4004     K4004,  4004
0131  4005     K4005,  4005
0132  4006     K4006,  4006
0133  4007     K4007,  4007
0134  4014     K4014,  4014
0135  4015     K4015,  4015
0136  4200     K4200,  4200
0137  4210     K4210,  4210
0140  4421     K4421,  4421
0141  4630     K4630,  4630
0142  4631     K4631,  4631
0143  4760     K4760,  4760
0144  5250     K5250,  5250
0145  5251     K5251,  5251
0146  5252     K5252,  5252
0147  5253     K5253,  5253
0150  5670     K5670,  5670
0151  5673     K5673,  5673
0152  6000     K6000,  6000
0153  6314     K6314,  6314
0154  6735     K6735,  6735
0155  7000     K7000,  7000
0156  7001     K7001,  7001
0157  7002     K7002,  7002
0160  7003     K7003,  7003
0161  7004     K7004,  7004
0162  7005     K7005,  7005
0163  7006     K7006,  7006
0164  7007     K7007,  7007
0165  7356     K7356,  7356
0166  7700     K7700,  7700
0167  7751     K7751,  7751
0170  7752     K7752,  7752
0171  7766     K7766,  7766
0172  7767     K7767,  7767
0173  7770     K7770,  7770
0174  7775     K7775,  7775
0175  7776     K7776,  7776
0176  7777     K7777,  7777
```

```
                0200            *200

0200  6552   START,  FPICL                   /ZERO THE FPP WORLD
0201  7300           CLA CLL
0202  6553           FPCOM                   /LOAD CMD REGISTER WITH ZERO'S
0203  6556           FPRST                   /READ FPP STATUS INTO AC
0204  7440           SZA                     /SKIP IF FPP STATUS IS ZERO
0205  7402           HLT                     /ERROR - INCORRECT STATUS IN AC

                /T1-TEST FPP INTERRUPT REQUEST FLAG RESET

0206  6551   T1,     FPINT                   /SKIP ON INTERRUPT REQUEST FLAG SET
0207  5211           JMP     .+2
0210  7402           HLT                     /ERROR-FLAG SHOULD NOT BE SET

                /T2-EXECUTE A FEXIT INSTRUCTION FROM LOC 1000

0211  6552   T2,     FPICL                   /ZERO THE FPP WORLD
0212  4405           JMS I   LAPT            /LOAD APT IMAGE AREA
0213  1176           TAD     K7777           /SET INFLAG EQUAL TO 7777
0214  3004           DCA     INFLAG          /TO TEST ZERO IF INTERRUPT OCCURS
0215  1173           TAD     K7770           /SET UP A DELAY LOOP
0216  3003           DCA     CNTR            /USING LOCATION CNTR
0217  1054           TAD     K360            /BITS 4-7 SET IN AC
0220  6553           FPCOM                   /LOAD CMD REGISTER FROM AC
0221  6001           ION                     /TURN INTERRUPTS ON
0222  7300           CLA CLL
0223  1124           TAD     K4000           /APT TABLE POINTER TO AC
0224  6555           FPST                    /LOAD ADRS REGISTER AND START FPP
0225  7402           HLT                     /ERROR-RUN FF SET OR FPP PWR OFF OR NO FPP UNIT
0226  2003           ISZ     CNTR            /DELAY TO ALLOW FPP TO INTERRUPT
0227  5226           JMP     .-1
0230  6002           IOF                     /TURN INTERRUPTS OFF

                /EXAMINE APT TABLE FOR CORRECT DATA

0231  7300           CLA CLL
0232  1533           TAD I   K4007           /READ LSW OF FAC FROM APT TABLE INTO AC
0233  7440           SZA                     /SKIP IF LSW OF FAC EQUALS ZERO
0234  7402           HLT                     /ERROR
0235  1532           TAD I   K4006           /READ MSW OF FAC FROM APT TABLE INTO AC
0236  7440           SZA                     /SKIP IF MSW OF FAC EQUALS ZERO
0237  7402           HLT                     /ERROR
0240  1531           TAD I   K4005           /READ EXPONENT OF FAC FROM APT TABLE INTO AC
0241  7440           SZA                     /SKIP IF EXPONENT OF FAC EQUALS ZERO
0242  7402           HLT                     /ERROR
0243  1530           TAD I   K4004           /READ OPERAND ADDRESS FROM APT TABLE INTO AC
0244  7440           SZA                     /SKIP IF OPERAND ADDRESS EQUALS ZERO
0245  7402           HLT                     /ERROR
```

```
0246  1527          TAD I   K4003          /READ P0 FROM APT TABLE INTO AC
0247  7041          CIA
0250  1152          TAD     K6000          /P0 EQUAL 6000
0251  7440          SZA                    /YES-SKIP
0252  7402          HLT                    /ERROR
0253  1526          TAD I   K4002          /READ X0 FROM APT TABLE INTO AC
0254  7041          CIA
0255  1155          TAD     K7000          /X0 EQUAL 7000
0256  7440          SZA                    /YES-SKIP
0257  7402          HLT                    /ERROR
0260  1525          TAD I   K4001          /READ FPC FROM APT TABLE INTO AC
0261  7041          CIA
0262  1065          TAD     K1001          /FPC EQUAL TO 1001
0263  7440          SZA                    /YES - SKIP
0264  7402          HLT                    /ERROR

              /EXAMINE LOCATION INFLAG TO DETERMINE THAT A FPP INTERRUPT TO THE CP DID NOT OCCURE

0265  1004          TAD     INFLAG         /WILL EQUAL ZERO IF AN INTERRUPT OCCURRED
0266  7040          CMA
0267  7440          SZA                    /YES - SKIP
0270  7402          HLT                    /ERROR - INTERRUPT OCCURRED

              /TEST THAT THE FPP INTERRUPT REQUEST FLAG IS SET AND FPINT DOES NOT RESET IT
              /AND THAT (IOT) FPICL WILL CLEAR THE FLAG

0271  6551    T3,     FPINT                  /SKIP ON FPP INTERRUPT REQUEST FLAG
0272  7402          HLT                    /ERROR-FLAG NOT SET
0273  6551          FPINT                  /SKIP ON FPP INTERRUPT REQUEST FLAG SET
0274  7402          HLT                    /ERROR-FLAG NOT SET
0275  6552          FPICL                  /ZERO THE FPP WORLD
0276  6551          FPINT                  /SKIP ON FPP INTERRUPT REQUEST FLAG
0277  5301          JMP     .+2
0300  7402          HLT                    /ERROR-FPP INTERRUPT REQUEST FLAG STILL SET

              /T4-START THE FPP AND EXECUTE A FEXIT INSTRUCTION
              /FROM LOCATION 5252

0301  6552    T4,     FPICL                  /ZERO THE FPP WORLD
0302  7300          CLA CLL
0303  4405          JMS I   LAPT           /LOAD APT TABLE
0304  3527          DCA I   K4003          /ZERO BASE REG POINTER
0305  3526          DCA I   K4002          /ZERO INDEX REG POINTER
0306  1146          TAD     K5252
0307  3525          DCA I   K4001          /FPC EQUAL TO 5252
0310  1144          TAD     K5250
0311  3524          DCA I   K4000          /FIELD BITS EQUAL TO 5250
0312  1176          TAD     K7777          /7777 TO AC
0313  3004          DCA     INFLAG         /AC TO LOC INFLAG - CP INTERRUPT TST
0314  1166          TAD     K7700          /7700 TO AC
0315  3003          DCA     CNTR           /AC TO LOC CNTR - SET UP OF DELAY LOOP
```

```
0316  1055          TAD     K400            /400 IN AC-ENABLE INTERRUPT
0317  6553          FPCOM                   /LOAD CMD REGISTER FROM AC
0320  6001          ION                     /CP INTERRUPTS ON
0321  7300          CLA CLL
0322  1124          TAD     K4000           /POINTER TO APT TABLE IN AC
0323  6555          FPST                    /AC TO ADRS REGISTER - START FPP
0324  7402          HLT                     /ERROR-FPP INTERRUPT FLAG SET
0325  2003          ISZ     CNTR
0326  5325          JMP     .-1             /DELAY TO ALLOW FPP TO FINISH
0327  6002          IOF                     /CP INTERRUPTS OFF

                /EXAMINE APT TABLE FOR CORRECT DATA

0330  7300          CLA CLL
0331  1533          TAD I   K4007           /READ LSW OF FAC FROM APT TABLE INTO AC
0332  7440          SZA                     /SKIP-IF LOC 4007 CONTAINS 0
0333  7402          HLT                     /ERROR-FAC LSW INCORRECT
0334  1532          TAD I   K4006           /READ MSW OF FAC FROM APT TABLE INTO AC
0335  7440          SZA                     /SKIP-IF LOC 4006 CONTAINS 0
0336  7402          HLT                     /ERROR-FAC MSW INCORRECT
0337  1531          TAD I   K4005           /READ FAC EXP FROM APT TABLE INTO AC
0340  7440          SZA                     /SKIP-IF LOC 4005 CONTAINS 0
0341  7402          HLT                     /ERROR-FAC EXP INCORRECT
0342  1530          TAD I   K4004           /READ OPERAND ADDRESS FROM APT TABLE INTO AC
0343  7041          CIA
0344  1146          TAD     K5252
0345  7440          SZA                     /SKIP-IF LOC 4004 CONTAINS 5252
0346  7402          HLT                     /ERROR-OPERAND INCORRECT
0347  1527          TAD I   K4003           /P0 FROM APT TABLE TO AC
0350  7440          SZA                     /SKIP IF LOC 4003 CONTAINS 0
0351  7402          HLT                     /ERROR-P0 IS INCORRECT
0352  1526          TAD I   K4002           /X0 FROM APT TABLE TO AC
0353  7440          SZA                     /SKIP IF LOC 4002 CONTAINS 0
0354  7402          HLT                     /ERROR
0355  1525          TAD I   K4001           /FPC FROM APT TABLE TO AC
0356  7041          CIA
0357  1147          TAD     K5253
0360  7440          SZA                     /SKIP IF LOC 4001 CONTAINS 5253
0361  7402          HLT                     /ERROR-FPC INCORRECT
0362  1524          TAD I   K4000           /FIELD BITS FROM APT TABLE TO AC
0363  7041          CIA
0364  1053          TAD     K250            /OPERAND FIELD BITS SHOULD BE RESET
0365  7440          SZA                     /SKIP-IF LOC 4000 CONTAINS 250
0366  7402          HLT                     /ERROR-FIELD BITS INCORRECT

                /EXAMINE LOC INFLAG TO DETERMINE IF INTERRUPT OCCURRED

0367  1004          TAD     INFLAG          /WILL EQUAL ZERO IF INTERRUPT OCCURRED
0370  7440          SZA                     /YES-SKIP
0371  7402          HLT                     /ERROR-FPP DID NOT INTERRUPT

0372  5773          JMP I   .+1
0373  0400          400
```

```
                    /T5-FPP INTERRUPT REQUEST FLAG IS SET
                    /TEST THAT (IOT'S) FPCOM AND FPST DO NOT EXECUTE WITH THE FLAG SET

          0400              *400
0400      7300      T5,     CLA CLL
0401      1124              TAD     K4000
0402      6553              FPCOM                   /LOAD CMD REGISTER
0403      5205              JMP     .+2
0404      7402              HLT                     /ERROR-FPCOM CAUSED A SKIP
0405      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
0406      5210              JMP     .+2
0407      7402              HLT                     /ERROR-FPST CAUSED A SKIP WITH INTERRUPT REQUEST FLAG SET
0410      7300              CLA CLL
0411      6556              FPRST                   /READ FPP STATUS REGISTER INTO AC
0412      7440              SZA                     /SHOULD BE ZERO
0413      7402              HLT                     /ERROR-EXAMINE STATUS IN AC NOT 000

                    /T6-TRY TO EXECUTE A FEXIT INSTRUCTION FROM LOC 5252 WITH
                    /THE FPP INTERRUPT REQUEST FLAG SET

0414      7300      T6,     CLA CLL
0415      1146              TAD     K5252
0416      3525              DCA I   K4001           /FPC POINTER EQUAL TO 5252
0417      1176              TAD     K7777
0420      3004              DCA     INFLAG          /AC TO LOC INFLAG - CP INTERRUPT TEST
0421      1166              TAD     K7700
0422      3003              DCA     CNTR            /AC TO LOC CNTR - SET UP DELAY LOOP
0423      1055              TAD     K400            /ENABLE INTERRUPT
0424      6553              FPCOM                   /LOAD CMD REGISTER
0425      6001              ION                     /INTERRUPTS ON
0426      7300              CLA CLL
0427      1124              TAD     K4000           /AC=4000
0430      6555              FPST                    /LOAD ADRS REGISTER AND TRY TO START THE FPP
0431      5233              JMP     .+2
0432      7402              HLT                     /ERROR-INTERRUPT REQUEST FLAG SHOULD PREVENT SKIP
0433      6002              IOF                     /INTERRUPTS OFF

                    /T7-TEST THAT THE FPP INTERRUPT REQUEST FLAG CAN BE CLEARED BY FPIST (IOT)

0434      6551      T7,     FPINT                   /SKIP ON THE FPP INTERRUPT REQUEST FLAG SET
0435      7402              HLT                     /ERROR-FLAG NOT SET
0436      6557              FPIST                   /SKIP ON FPP INTERRUPT REQUEST FLAG AND CLEAR IT
0437      7402              HLT                     /ERROR-IOT FPIST DID NOT SKIP ON FLAG
0440      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET
0441      5243              JMP     .+2
0442      7402              HLT                     /ERROR-IOT FPIST SKIPPED BUT DID NOT CLEAR FLAG
```

```
                    /T8-TEST A FEXIT INSTRUCTION FROM LOCATION  2525

0443  6552    T8,   FPICL                   /ZERO THE FPP WORLD
0444  7300          CLA CLL                 /LOAD THE APT TABLE
0445  1146          TAD     K5252
0446  3533          DCA I   K4007           /FAC LSW EQUALS 5252
0447  1146          TAD     K5252
0450  3532          DCA I   K4006           /FAC MSW EQUALS 5252
0451  1146          TAD     K5252
0452  3531          DCA I   K4005           /FAC EXPONENT EQUALS 5252
0453  3530          DCA I   K4004           /OPERAND ADDRESS EQUALS 0
0454  1146          TAD     K5252
0455  3527          DCA I   K4003           /BASE REG POINTER EQUALS 5252
0456  1146          TAD     K5252
0457  3526          DCA I   K4002           /INDEX REGISTER POINTER EQUALS 5252
0460  1114          TAD     K2525
0461  3525          DCA I   K4001           /FPC EQUALS 2525
0462  1061          TAD     K520
0463  3524          DCA I   K4000           /FIELD BITS EQUAL 520
0464  6553          FPCOM                   /LOAD CMD REGISTER IN FPP
0465  1124          TAD     K4000           /4000 TO AC
0466  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
0467  7402          HLT                     /ERROR FPP ALREADY RUNNING
0470  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST
0471  5270          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

0472  7300          CLA CLL
0473  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
0474  7041          CIA
0475  1146          TAD     K5252           /SHOULD EQUAL 5252
0476  7440          SZA                     /YES-SKIP
0477  7402          HLT                     /ERROR
0500  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
0501  7041          CIA
0502  1146          TAD     K5252           /SHOULD EQUAL 5252
0503  7440          SZA                     /YES-SKIP
0504  7402          HLT                     /ERROR
0505  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
0506  7041          CIA
0507  1146          TAD     K5252           /SHOULD EQUAL 5252
0510  7440          SZA                     /YES-SKIP
0511  7402          HLT                     /ERROR
0512  1530          TAD I   K4004           /READ OPERAND ADDRESS FROM APT TABLE INTO AC
0513  7041          CIA
0514  1114          TAD     K2525
0515  7440          SZA                     /SKIP IF EQUAL TO 2525
0516  7402          HLT                     /ERROR
```

```
0517  1527          TAD I   K4003          /READ BASE REGISTER POINTER FROM APT TABLE INTO AC
0520  7041          CIA
0521  1146          TAD     K5252
0522  7440          SZA                    /SKIP IF EQUAL TO 5252
0523  7402          HLT                    /ERROR
0524  1526          TAD I   K4002          /READ INDEX REGISTER POINTER FROM APT TABLE INTO AC
0525  7041          CIA
0526  1146          TAD     K5252
0527  7440          SZA                    /SKIP IF EQUAL TO 5252
0530  7402          HLT                    /ERROR
0531  1525          TAD I   K4001          /READ FPC FROM APT TABLE INTO AC
0532  7041          CIA
0533  1115          TAD     K2526
0534  7440          SZA                    /SKIP IF EQUAL TO 2526
0535  7402          HLT                    /ERROR
0536  1524          TAD I   K4000          /READ FIELD BITS FROM APT TABLE INTO AC
0537  7041          CIA
0540  1061          TAD     K520
0541  7440          SZA                    /SKIP IF EQUAL TO 520
0542  7402          HLT                    /ERROR

                /T9-EXECUTE A FEXIT INSTRUCTION FROM LOCATION 777
                /LOAD THE CMD REG WITH 400 AND SET UP THE APT TABLE
0543  6552    T9,   FPICL                  /ZERO THE FPP WORLD
0544  7300          CLA CLL
0545  1173          TAD     K7770
0546  3524          DCA I   K4000          /ALTER FIELD BITS
0547  1063          TAD     K777
0550  3525          DCA I   K4001          /ALTER FPC
0551  1176          TAD     K7777
0552  3526          DCA I   K4002          /ALTER INDEX REGISTER
0553  1176          TAD     K7777
0554  3527          DCA I   K4003          /ALTER BASE REGISTER
0555  1176          TAD     K7777
0556  3530          DCA I   K4004          /ALTER OPERAND ADDRESS REGISTER
0557  1176          TAD     K7777
0560  3531          DCA I   K4005          /ALTER FAC EXPONENT
0561  1176          TAD     K7777
0562  3532          DCA I   K4006          /ALTER MSW OF FAC
0563  1176          TAD     K7777
0564  3533          DCA I   K4007          /ALTER LSW OF FAC
0565  6553          FPCOM                  /LOAD FPP CMD REGISTER
0566  1124          TAD     K4000          /APT TABLE POINTER TO AC
0567  6555          FPST                   /LOAD ADRS REGISTER AND START FPP
0570  7402          HLT                    /ERROR FPP RUNNING
0571  6551          FPINT                  /SKIP ON FPP INTERRUPT REQUEST
0572  5371          JMP     .-1
0573  5774          JMP I   .+1
0574  0600          T9A
```

```
                    /EXAMINE APT TABLE FOR CORRECT DATA

      0600          *600
0600  7300  T9A,    CLA CLL
0601  1533          TAD I   K4007           /READ LSW OF FAC FROM APT TABLE INTO AC
0602  7040          CMA
0603  7440          SZA                     /SKIP IF LOC 4007 CONTAINS 7777
0604  7402          HLT                     /ERROR
0605  1532          TAD I   K4006           /READ MSW OF FAC FROM APT TABLE INTO AC
0606  7040          CMA
0607  7440          SZA                     /SKIP IF LOC 4006 CONTAINS 7777
0610  7402          HLT                     /ERROR
0611  1531          TAD I   K4005           /READ FAC EXPONENT FROM APT TABLE INTO AC
0612  7040          CMA
0613  7440          SZA                     /SKIP IF LOC 4005 CONTAINS 7777
0614  7402          HLT                     /ERROR
0615  1530          TAD I   K4004           /READ OPERAND ADDRESS FROM APT TABLE INTO AC
0616  7041          CIA
0617  1063          TAD     K777
0620  7440          SZA                     /SKIP IF LOC 4004 CONTAINS 777
0621  7402          HLT                     /ERROR
0622  1527          TAD I   K4003           /READ BASE REGISTER POINTER FROM APT TABLE INTO AC
0623  7040          CMA
0624  7440          SZA                     /SKIP IF LOC 4003 CONTAINS 7777
0625  7402          HLT                     /ERROR
0626  1526          TAD I   K4002           /READ INDEX REGISTER POINTER FROM APT TABLE INTO AC
0627  7040          CMA
0630  7440          SZA                     /SKIP IF LOC 4002 CONTAINS 7777
0631  7402          HLT                     /ERROR
0632  1525          TAD I   K4001           /READ FPC POINTER FROM APT TABLE TO AC
0633  7041          CIA
0634  1064          TAD     K1000           /FPC POINTER EQUAL 1000
0635  7440          SZA                     /YES - SKIP
0636  7402          HLT                     /ERROR
0637  1524          TAD I   K4000           /READ BACK FIELD BITS FROM APT TABLE TO AC
0640  7041          CIA
0641  1062          TAD     K770            /OPERAND FIELD BITS SHOULD BE RESET
0642  7440          SZA                     /SKIP IF FIELD BITS EQUAL 770
0643  7402          HLT                     /ERROR
```

```
                    /
                    /T10-TEST EXECUTION OF A FPAUSE AND A FEXIT INSTRUCTION
                    /FROM FPP CODE LOCATION 1077 WITH THE CMD REGISTER=0000
                    /THEN EXECUTE A FPAUSE AND A FEXIT INSTRUCTION
                    /FROM FPP CODE LOCATION 1077 WITH THE CMD REGISTER=0360
                    /
0644  4303  T10,    JMS      T10A          /SET UP FOR FPP OPERATION
0645  6553           FPCOM                  /LOAD CMD REGISTER
0646  4313           JMS      T10B          /START FPP-DELAY-TEST STATUS AND FPC
0647  4353           JMS      T10D          /SET FAC=7777 7777 7777
0650  4333           JMS      T10C          /START FPP AFTER PAUSE-AFTER EXIT TEST STATUS AND FPC
0651  4363           JMS      T10E          /TEST FOR FAC=0
0652  4303           JMS      T10A          /SET UP FOR FPP OPERATION
0653  4353           JMS      T10D          /SET FAC=7777 7777 7777
0654  1054           TAD      K360          /AC=360
0655  6553           FPCOM                  /LOAD CMD REGISTER
0656  7300           CLA CLL                /AC=0
0657  4313           JMS      T10B          /START FPP-DELAY-TEST STATUS AND FPC
0660  3526           DCA I    K4002         /CLEAR INDEX REGISTER POINTER IN APT TABLE
0661  3527           DCA I    K4003         /CLEAR BASE REGISTER POINTER IN APT TABLE
0662  3530           DCA I    K4004         /CLEAR OPERAND ADDRESS POINTER IN APT TABLE
0663  3531           DCA I    K4005         /CLEAR FAC EXP IN APT TABLE
0664  3532           DCA I    K4006         /CLEAR FAC MSW IN APT TABLE
0665  3533           DCA I    K4007         /CLEAR FAC LSW IN APT TABLE
0666  4333           JMS      T10C          /START FPP AFTER PAUSE-AFTER EXIT TEST STATUS AND FPC
0667  1526           TAD I    K4002         /READ FPP INDEX REGISTER POINTER FROM APT TABLE TO AC
0670  7440           SZA                    /SHOULD=0
0671  7402           HLT                    /ERR-EXAMINE AC
0672  1527           TAD I    K4003         /READ BASE REG POINTER FROM APT TABLE TO AC
0673  7440           SZA                    /SHOULD=0
0674  7402           HLT                    /ERR-EXAMINE AC
0675  1530           TAD I    K4004         /READ OPR ADD POINTER FROM APT TABLE TO AC
0676  7440           SZA                    /SHOULD=0
0677  7402           HLT                    /ERR-EXAMINE AC
0700  4363           JMS      T10E          /TEST FOR FAC=0
                    /
0701  5702           JMP I    .+1           /GO TO
0702  1220           T11                    /TEST T11
                    /
0703  0000  T10A,    0                      /CONTAINS RETURN JMP ADD TO TEST T10
0704  6552           FPICL                  /ZERO THE FPP WORD
0705  4405           JMS I    LAPT          /LOAD APT TABLE
0706  1073           TAD      K1077         /AC=1077
0707  3525           DCA I    K4001         /ALTER THE FPC
0710  1166           TAD      K7700         /AC=7700
0711  3003           DCA      CNTR          /SET UP A DELAY LOOP
0712  5703           JMP I    T10A          /RETURN TO TEST T10

0713  0000  T10B,    0                      /CONTAINS RETURN JMP ADD TO TEST T10
0714  1124           TAD      K4000         /AC=4000
0715  6555           FPST                   /LOAD ADRS REGISTER AND START FPP
0716  7402           HLT                    /ERR-FPP RUNNING
0717  2003           ISZ      CNTR          /INC LOC CNTR
0720  5317           JMP      .-1           /DELAY
```

```
0721  7300          CLA CLL              /CLEAR AC AND LINC
0722  6556          FPRST                /READ FPP STATUS REGISTER INTO AC
0723  3024          DCA     STATUS       /IMAGE OF STATUS
0724  1024          TAD     STATUS       /GET STATUS
0725  0032          AND     K3           /MASK OFF BITS 0-9
0726  7041          CIA                  /COMPLIMENT AND INC
0727  1032          TAD     K3           /LOC STATUS SHOULD=3-RUN AND PAUSE SET
0730  7440          SZA                  /SKIP IF AC=0
0731  7402          HLT                  /ERR-AC NOT=0
0732  5713          JMP I   T10B         /RETURN TO TEST T10
0733  0000  T10C,    0                    /CONTAINS RETURN JMP ADD TO TEST T10
0734  1124          TAD     K4000        /AC=4000
0735  6555          FPST                 /LOAD ADRS REG AND RESTART FPP
0736  7402          HLT                  /ERR-FPP WAS RUNNING
0737  6551          FPINT                /SKIP ON FPP INTERRUPT REQUEST
0740  5337          JMP     .-1          /NO-TRY AGAIN
0741  7300          CLA CLL              /CLEAR AC AND LINC
0742  6556          FPRST                /READ FPP STATUS REGISTER INTO AC
0743  7440          SZA                  /STATUS SHOULD=0
0744  7402          HLT                  /ERR-EXAMINE AC-SHOULD=0
0745  1525          TAD I   K4001        /READ FPP PC FROM APT TABLE TO AC
0746  7041          CIA                  /COMPLIMENT AND INC
0747  1074          TAD     K1101        /FPP PC LOC 4001 IN APT TABLE SHOULD=1101
0750  7440          SZA                  /AC=0
0751  7402          HLT                  /ERR-LOC 4001 IS NOT=1101
0752  5733          JMP I   T10C         /RETURN TO TEST T10

0753  0000  T10D,    0                    /CONTAINS RETURN JMP ADD TO TEST T10
0754  1176          TAD     K7777        /AC=7777
0755  3531          DCA I   K4005        /ALTER FAC EXP IN APT TABLE
0756  1176          TAD     K7777        /AC=7777
0757  3532          DCA I   K4006        /ALTER FAC MSW IN APT TABLE
0760  1176          TAD     K7777        /AC=7777
0761  3533          DCA I   K4007        /ALTER FAC LSW IN APT TABLE
0762  5753          JMP I   T10D         /RETURN TO TEST T10

0763  0000  T10E,    0                    /CONTAINS RET JMP ADD TO TEST T10
0764  1533          TAD I   K4007        /READ FAC LSW FROM APT TABLE TO AC
0765  7440          SZA                  /AC SHOULD=0
0766  7402          HLT                  /ERR-LOC 4007 NOT=0
0767  1532          TAD I   K4006        /READ FAC MSW FROM APT TABLE TO AC
0770  7440          SZA                  /AC SHOULD=0
0771  7402          HLT                  /ERR-LOC 4006 NOT=0
0772  1531          TAD I   K4005        /READ FAC LSW FROM APT TABLE TO AC
0773  7440          SZA                  /AC SHOULD=0
0774  7402          HLT                  /ERR-LOC 4007 NOT=0
0775  5763          JMP I   T10E         /RETURN TO TEST T10
```

```
          0777          *777

                /FLOATING POINT INSTRUCTION AREA

0777  0000           FEXIT
1000  0000           FEXIT
1001  0002           FCLA
1002  0000           FEXIT
1003  0003           FNEG
1004  0000           FEXIT
1005  0004           FNORM
1006  0000           FEXIT
1007  0200           FLDA!200
1010  0000           FEXIT
1011  0201           FLDA!1!200
1012  0000           FEXIT
1013  0236           FLDA!36!200
1014  0000           FEXIT
1015  0237           FLDA!37!200
1016  0000           FEXIT
1017  1201           FADD!1!200
1020  0000           FEXIT
1021  1241           FADD!41!200
1022  0000           FEXIT
1023  4245           FMUL!45!200
1024  0000           FEXIT
1025  4200           FMUL!0!200
1026  0000           FEXIT
1027  1207           FADD!7!200
1030  0000           FEXIT
1031  4247           FMUL 47 200
1032  0000           FEXIT
1033  3246           FDIV!46!200
1034  0000           FEXIT
1035  1212           FADD!12!200
1036  0000           FEXIT
1037  1213           FADD!13!200
1040  0000           FEXIT
1041  1214           FADD!14!200
1042  0000           FEXIT
1043  1215           FADD!15!200
1044  0000           FEXIT
1045  1216           FADD!16!200
1046  0000           FEXIT
1047  1217           FADD!17!200
1050  0000           FEXIT
1051  1220           FADD!20!200
1052  0000           FEXIT
1053  1221           FADD!21!200
1054  0000           FEXIT
1055  1222           FADD!22!200
1056  0000           FEXIT
```

```
1057  0010          ALN
1060  0000          FEXIT
1061  0011          ALN!1
1062  0000          FEXIT
1063  0012          ALN!2
1064  0000          FEXIT
1065  0013          ALN!3
1066  0000          FEXIT
1067  0014          ALN!4
1070  0000          FEXIT
1071  0015          ALN!5
1072  0000          FEXIT
1073  0016          ALN!6
1074  0000          FEXIT
1075  0017          ALN!7
1076  0000          FEXIT
1077  0001          FPAUSE
1100  0000          FEXIT
1101  0006          STARTD
1102  0000          FEXIT
1103  0005          STARTF
1104  0000          FEXIT
1105  1602          FADD!2!600
1106  0000          FEXIT
1107  3213          FDIV!13!200
1110  0000          FEXIT
1111  1400          FADD!400
1112  6140          6140
1113  0000          FEXIT
1114  4400          FMUL!400
1115  6032          6032
1116  0000          FEXIT
1117  1214          FADD!14!200
1120  0000          FEXIT
1121  1213          FADD!13!200
1122  0000          FEXIT
1123  1604          FADD!4!600
1124  0000          FEXIT
1125  3250          FDIV!50!200
1126  0000          FEXIT
1127  1400          FADD!400
1130  6045          6045
1131  0000          FEXIT
1132  3400          FDIV!400
1133  6071          6071
1134  0000          FEXIT
1135  2223          FSUB!23!200
1136  0000          FEXIT
1137  2224          FSUB!24!200
1140  0000          FEXIT
```

```
1141  2225          FSUB!25!200
1142  0000          FEXIT
1143  2226          FSUB!26!200
1144  0000          FEXIT
1145  2227          FSUB!27!200
1146  0000          FEXIT
1147  2230          FSUB!30!200
1150  0000          FEXIT
1151  2231          FSUB!31!200
1152  0000          FEXIT
1153  2232          FSUB!32!200
1154  0000          FEXIT
1155  2233          FSUB!33!200
1156  0000          FEXIT
1157  2234          FSUB!34!200
1160  0000          FEXIT
1161  2235          FSUB!35!200
1162  0000          FEXIT
1163  2642          FSUB!42!600
1164  0000          FEXIT
1165  2603          FSUB!3!600
1166  0000          FEXIT
1167  2221          FSUB!21!200
1170  0000          FEXIT
1171  2244          FSUB!44!200
1172  0000          FEXIT
1173  2400          FSUB!400
1174  6050          6050
1175  0000          FEXIT
1176  1100          SETX
1177  0000          0000                    /THIS LOC ALTERED BY PROGRAM
1200  0000          FEXIT
1201  1110          SETB
1202  0000          0000                    /THIS LOC ALTERED BY PROGRAM
1203  0000          FEXIT
1204  2400          FSUB!400
1205  6121          6121
1206  0000          FEXIT
1207  3201          FDIV!1!200
1210  0000          FEXIT
1211  3000          TRAP1
1212  4000          TRAP2
1213  5000          TRAP3
1214  6000          TRAP4
1215  7000          TRAP5
```

```
                /T11-TEST EXECUTION OF FPAUSE, FPHLT(IOT) AND FEXIT INSTRUCTIONS
                /FROM  FPP CODE LOCATION 1077
                /TEST THAT FPIST IOT READS BACK STATUS

      1220              *1220
1220  6552    T11,      FPICL                 /ZERO THE FPP WORLD
1221  4405              JMS I     LAPT        /LOAD APT TABLE
1222  1073              TAD       K1077
1223  3525              DCA I     K4001       /ALTER THE FPC
1224  1166              TAD       K7700
1225  3003              DCA       CNTR        /SET UP DELAY LOOP
1226  6553              FPCOM                 /LOAD CMD REGISTER
1227  1124              TAD       K4000
1230  6555              FPST                  /LOAD ADRS REGISTER AND START FPP
1231  7402              HLT                   /ERROR-FPP RUNNING
1232  2003              ISZ       CNTR
1233  5232              JMP       .-1         /DELAY
1234  7300              CLA CLL
1235  6556              FPRST                 /READ FPP STATUS REGISTER INTO AC
1236  3024              DCA       STATUS      /IMAGE OF FPP STATUS REGISTER
1237  1024              TAD       STATUS
1240  7041              CIA
1241  1032              TAD       K3
1242  7440              SZA                   /SKIP IF PAUSE (BIT 10) AND RUN (BIT 11) ARE SET
1243  7402              HLT                   /ERROR--EXAMINE LOC STATUS FOR STATUS ERROR
1244  1176              TAD       K7777
1245  3533              DCA I     K4007       /ALTER FAC LSW
1246  6554              FPHLT                 /CP FORCED IOT HALT = STORE ACTIVE REGISTERS IN CORE
1247  6551              FPINT                 /SKIP ON FPP INTERRUPT REQUEST FLAG SET
1250  5247              JMP       .-1
1251  6556              FPRST                 /FPP STATUS REGISTER TO AC
1252  3024              DCA       STATUS      /IMAGE OF FPP STATUS REGISTER
1253  1024              TAD       STATUS
1254  7041              CIA
1255  1064              TAD       K1000       /CP FOURCED EXIT (BIT 2) SHOULD BE SET
1256  7440              SZA                   /YES-SKIP
1257  7402              HLT                   /ERROR--CP FORCED EXIT STATUS BIT NOT SET
1260  6557              FPIST                 /SKIP ON FPP INTERRUPT REQUEST FLAG SET
1261  7402              HLT                   /ERROR-FLAG NOT SET
1262  3024              DCA       STATUS      /IMAGE OF STATUS REGISTER
1263  1024              TAD       STATUS
1264  7041              CIA
1265  1064              TAD       K1000       /STATUS EQUAL TO 1000
1266  7440              SZA                   /YES-SKIP
1267  7402              HLT                   /ERROR--STATUS NOT=TO 1000
1270  1533              TAD I     K4007       /FAC LSW FROM APT TABLE TO AC
1271  7440              SZA                   /SKIP IF ZERO
1272  7402              HLT                   /ERROR--FPP LSW INCORRECT
1273  1525              TAD I     K4001       /FPC FROM APT TABLE TO AC
1274  7041              CIA
1275  1073              TAD       K1077       /SHOULD EQUAL 1077
```

```
1276  7440          SZA                     /YES-SKIP
1277  7402          HLT                     /ERROR--FPP FPC INCORRECT
1300  1166          TAD     K7700
1301  3003          DCA     CNTR            /SET UP DELAY LOOP TO ALLOW FPP TIME TO FINISH
1302  1124          TAD     K4000
1303  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1304  7402          HLT                     /ERROR
1305  2003          ISZ     CNTR            /DELAY
1306  5305          JMP     .-1
1307  7300          CLA CLL
1310  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
1311  3024          DCA     STATUS          /IMAGE OF FPP STATUS REGISTER
1312  1024          TAD     STATUS
1313  7041          CIA
1314  1032          TAD     K3              /RUN (BIT 11) AND PAUSE (BIT 10) SHOULD BE SET
1315  7440          SZA                     /YES-SKIP
1316  7402          HLT                     /ERROR--EXAMINE LOC STATUS FOR STATUS ERROR
1317  1124          TAD     K4000
1320  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1321  7402          HLT                     /ERROR FPP RUNNING
1322  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET
1323  5322          JMP     .-1
1324  7300          CLA CLL
1325  1525          TAD I   K4001           /FPC FROM APT TABLE TO AC
1326  7041          CIA
1327  1074          TAD     K1101           /SHOULD EQUAL 1101
1330  7440          SZA                     /YES-SKIP
1331  7402          HLT                     /ERROR--FPP PC IN LOC 4001 NOT=1101

                /T12-TEST SETTING OF DOUBLE PRECISION MODE BY
                /EXECUTING A FPAUSE AND A FEXIT INSTRUCTION
                /STARTING AT FPP CODE LOCATION 1077

1332  6552    T12,    FPICL                   /ZERO THE FPP WORLD
1333  7300            CLA CLL
1334  1073            TAD     K1077
1335  3525            DCA I   K4001           /ALTER FPC
1336  1143            TAD     K4760
1337  6553            FPCOM                   /LOAD CMD REGISTER
1340  7300            CLA CLL
1341  1124            TAD     K4000
1342  6555            FPST                    /LOAD ADRS REGISTER AND START FPP
1343  7402            HLT                     /ERROR-FPP RUNNING
1344  7000            NOP                     /DELAY
1345  7000            NOP                     /DELAY
1346  7000            NOP                     /DELAY
1347  7000            NOP                     /DELAY
1350  7000            NOP                     /DELAY
1351  7000            NOP                     /DELAY
1352  7000            NOP                     /DELAY
1353  7000            NOP                     /DELAY
```

```
1354  7300          CLA CLL
1355  6556          FPRST                   /FPP STATUS REGISTER TO AC
1356  0124          AND     K4000           /SHOULD EQUAL 4000 DOUBLE PRECISION (BIT 0) SET
1357  7450          SNA                     /YES-SKIP
1360  7402          HLT                     /ERROR--FPP ALREADY RUNNING--DOUBLE PRECISION NOT SET
1361  7300          CLA CLL
1362  1124          TAD     K4000
1363  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1364  7402          HLT                     /ERROR
1365  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST SET
1366  5365          JMP     .-1
1367  7300          CLA CLL
1370  1525          TAD I   K4001           /FPC FROM APT TABLE TO AC
1371  7041          CIA
1372  1074          TAD     K1101           /SHOULD EQUAL 1101
1373  7440          SZA                     /YES-SKIP
1374  7402          HLT                     /ERROR--FPP FPC INCORRECT

1375  5776          JMP I   .+1
1376  1400          1400

                /T13-TEST EXECUTION OF A STARTD AND A FEXIT INSTRUCTION
                /FROM FPP CODE LOCATION 1101

      1400        *1400
1400  6552  T13,   FPICL                   /ZERO THE FPP WORLD
1401  7300          CLA CLL
1402  1074          TAD     K1101
1403  3525          DCA I   K4001           /ALTER FPC IN APT TABLE LOCATION 4001
1404  6553          FPCOM                   /LOAD CMD REGISTER
1405  1124          TAD     K4000
1406  6555          FPST                    /LOAD ADRS REGISTER AND START THE FPP
1407  7402          HLT                     /ERROR-FPP ALREADY RUNNING
1410  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET
1411  5210          JMP     .-1
1412  7300          CLA CLL
1413  1525          TAD I   K4001           /FPC FROM APT TABLE TO AC
1414  7041          CIA
1415  1075          TAD     K1103           /SHOULD EQUAL 1103
1416  7440          SZA                     /YES-SKIP
1417  7402          HLT                     /ERROR-FPP PC IN LOC 4001 NOT=1103
1420  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
1421  3024          DCA     STATUS          /IMAGE OF FPP STATUS REGISTER
1422  1024          TAD     STATUS
1423  0124          AND     K4000
1424  7450          SNA                     /SKIP IF STATUS REGISTER BIT 0 IS SET (D.P. MODE)
1425  7402          HLT                     /ERROR-DOUBLE PRECISION MODE NOT SET
```

```
                    /T14-TEST EXECUTION OF A STARTF AND A FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1103

1426  6552  T14,    FPICL                   /ZERO THE FPP WORLD
1427  7300          CLA CLL
1430  1075          TAD     K1103
1431  3525          DCA I   K4001           /ALTER FPC IN APT TABLE LOCATION 4001
1432  1124          TAD     K4000
1433  6553          FPCOM                   /LOAD ADRS REGISTER <SET D.P. MODE>
1434  7300          CLA CLL
1435  1124          TAD      K4000
1436  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1437  7402          HLT                     /ERROR-FPP RUNNING
1440  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET
1441  5240          JMP     .-1
1442  7300          CLA CLL
1443  1525          TAD I   K4001           /FPC FROM APT TABLE TO AC
1444  7041          CIA
1445  1076          TAD     K1105           /SHOULD EQUAL 1105
1446  7440          SZA                     /YES-SKIP
1447  7402          HLT                     /ERROR-FPP PC IN LOC 4001 NOT*TO 1105
1450  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
1451  3024          DCA     STATUS          /IMAGE OF FPP STATUS REGISTER
1452  1024          TAD     STATUS
1453  0124          AND     K4000
1454  7440          SZA                     /SKIP IF DOUBLE PRECISION MODE IS NOT SET
1455  7402          HLT                     /ERROR-DOUBLE PRECISION MODE (BIT 0) SET

                    /T15-TEST SETX INSTRUCTION
                    /USING LOWER 4096 COMBINATIONS

1456  6552  T15,    FPICL                   /ZERO THE FPP WORLD
1457  7300          CLA CLL
1460  3003          DCA     CNTR            /CLEAR LOCATION CNTR
1461  1003  T15A,   TAD     CNTR
1462  3426          DCA I   ALTR            /ALTER SECOND WORD OS SETX INSTRUCTION (LOC 1177)
1463  1371          TAD     K1176
1464  3525          DCA I   K4001           /SET FPC POINTER IN APT TABLE TO 1176
1465  1367          TAD     K260
1466  6553          FPCOM                   /LOAD CMD REGISTER
1467  7300          CLA CLL
1470  1124          TAD     K4000
1471  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1472  7402          HLT                     /ERROR-FPP RUNNING
1473  6557          FPIST                   /SKIP ON FPP INTERRUPT REQUEST FLAG AND RESET IT
1474  5273          JMP     .-1
1475  7300          CLA CLL
1476  1526          TAD I   K4002           /INDEX REGISTER POINTER FROM APT TABLE TO AC
1477  7041          CIA
1500  1003          TAD     CNTR            /SHOULD EQUAL CONTENTS OF LOCATION CNTR
1501  7440          SZA                     /YES-SKIP
1502  7402          HLT                     /ERROR-LOC CNTR=EXPECTED RESULT, LOC 4002 BAD RESULT
1503  2003          ISZ     CNTR            /DONE ALL 4096 COMBINATIONS
1504  5261          JMP     T15A            /NO-DO IT AGAIN
```

```
                    /T16-TEST SETB INSTRUCTION
                    /USING LOWER 4096 COMBINATIONS

1505  6552  T16,    FPICL                   /ZERO THE FPP WORLD
1506  7300          CLA CLL
1507  3003          DCA     CNTR            /CLEAR LOCATION CNTR
1510  1003  T16A,   TAD     CNTR
1511  3427          DCA I   ALTR1           /ALTER SECOND WORD OF SETB INSTRUCTION (LOC 1202)
1512  1372          TAD     K1201
1513  3525          DCA I   K4001           /SET FPC POINTER IN APT TABLE TO 1201
1514  1370          TAD     K320
1515  6553          FPCOM                   /LOAD CMD REGISTER
1516  7300          CLA CLL
1517  1124          TAD     K4000
1520  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1521  7402          HLT                     /ERROR FPP RUNNING
1522  6557          FPIST                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET AND RESET IT
1523  5322          JMP     .-1
1524  7300          CLA CLL
1525  1527          TAD I   K4003           /BASE REGISTER POINTER FROM APT TABLE TO AC
1526  7041          CIA
1527  1003          TAD     CNTR            /SHOULD EQUAL LOCATION CNTR
1530  7440          SZA                     /YES-SKIP
1531  7402          HLT                     /ERROR-LOC CNTR=EXPECTED RESULT, LOC 4003=BAD RESULT
1532  2003          ISZ     CNTR            /DONE ALL 4096 COMBINATIONS
1533  5310          JMP     T16A            /NO - DO IT AGAIN

                    /T17-TEST CP LOCKOUT VIA BIT 8 OF THE CMD REGISTER

1534  7604  T17,    LAS                     /READ SW REG
1535  0030          AND     K1              /MASK BITS 0-10
1536  7440          SZA                     /SW 11 SET IF COMPUTER IS A PDP-8I
1537  5365          JMP     SKPTST          /SKIP T17 TEST
1540  6552          FPICL                   /ZERO THE FPP WORLD
1541  7300          CLA CLL
1542  1004          TAD     K1000
1543  3525          DCA I   K4001           /SET FPC POINTER IN APT TABLE TO 1000
1544  3003          DCA     CNTR            /CLEAR LOCATION CNTR
1545  1035          TAD     K10
1546  6553          FPCOM                   /LOAD CMD REGISTER (BIT 8 SET)
1547  7300          CLA CLL
1550  1124          TAD     K4000
1551  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1552  7402          HLT
1553  2003          ISZ     CNTR            /COUNT
1554  5356          JMP     .+2
1555  7402          HLT                     /ERROR-CP NOT LOCKED OUT AND FPP HUNG
1556  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET
1557  5353          JMP     .-4             /FLAG NOT SET-INCREMENT CNTR AND TRY AGAIN
1560  7300          CLA CLL
1561  1003          TAD     CNTR            /EXAMINE LOCATION CNTR
1562  0175          AND     K7776           /SHOULD CONTAIN A COUNT OF 1
1563  7440          SZA                     /SKIP IF BITS 0-10 ARE ZERO
1564  7402          HLT                     /ERROR-CP NOT LOCKED OUT
```

```
1565  5766    SKPTST, JMP I   .+1
1566  1600            1600

1567  0260    K260,   260
1570  0320    K320,   320
1571  1176    K1176,  1176
1572  1201    K1201,  1201

              /T18-TEST TRAPPED INSTRUCTIONS

      1600            *1600
1600  6552    T18,    FPICL                   /ZERO THE FPP WORLD
1601  7300            CLA CLL
1602  1376            TAD     K7773
1603  3003            DCA     CNTR            /SET UP LOCATION CNTR FOR 5 EXECUTIONS
1604  1375            TAD     K1211
1605  3023            DCA     NUM             /ADDRESS OF INSTRUCTION
1606  1023    T18A,   TAD     NUM
1607  3525            DCA I   K4001           /ALTER FPC POINTER IN APT TABLE
1610  6553            FPCOM                   /LOAD CMD REGISTER
1611  1124            TAD     K4000
1612  6555            FPST                    /LOAD ADRS REGISTER AND START FPP
1613  7402            HLT                     /ERROR-FPP ALREADY RUNNING
1614  6551            FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
1615  5214            JMP     .-1
1616  7300            CLA CLL
1617  2023            ISZ     NUM             /INC LOC NUM TO POINT TO NEXT INSTRUCTION
1620  1525            TAD I   K4001           /FPC POINTER FROM APT TABLE TO AC
1621  7041            CIA
1622  1023            TAD     NUM             /SHOULD EQUAL CONTENTS OF LOCATION NUM+1
1623  7001            IAC
1624  7440            SZA                     /YES-SKIP
1625  7402            HLT                     /ERROR-FPP DID NOT RECOGNIZE TRAP
1626  6556            FPRST                   /READ FPP STATUS REGISTER INTO AC
1627  3024            DCA     STATUS          /STORE STATUS REGISTER IMAGE
1630  1024            TAD     STATUS
1631  7041            CIA
1632  1124            TAD     K2000           /SHOULD EQUAL 2000-INSTRUCTION TRAP (BIT 2) SET
1633  7440            SZA                     /YES-SKIP
1634  7402            HLT                     /ERROR-LOC STATUS NOT=TO 2000
1635  6552            FPICL                   /ZERO THE FPP WORLD
1636  6556            FPRST                   /READ FPP STATUS REG INTO AC
1637  7440            SZA                     /AC=0
1640  7402            HLT                     /ERR-FPP STATUS IN AC NOT=0
1641  2003            ISZ     CNTR            /DONE 5 TIMES
1642  5206            JMP     T18A            /NO-DO IT AGAIN
```

```
                    /T19-TEST EXECUTION OF FEXIT AND FPHLT (IOT) INSTRUCTIONS
                    /FROM LOCATION 1000-STATUS BIT SHOULD NOT SET

1643  6552  T19,    FPICL                   /ZERO THE FPP WORLD
1644  7300          CLA CLL
1645  1064          TAD     K1000
1646  3525          DCA I   K4001           /SET FPC POINTER IN APT TABLE TO 1000
1647  6553          FPCOM                   /LOAD CMD REGISTER
1650  1124          TAD     K4000
1651  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1652  7402          HLT                     /ERROR-FPP ALREADY RUNNING
1653  6554          FPHLT                   /CP FORCED IOT HALT
1654  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
1655  5254          JMP     .-1
1656  7300          CLA CLL
1657  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
1660  7440          SZA                     /SKIP IF ZERO
1661  7402          HLT                     /ERROR-INCORRECT STATUS IN AC
1662  1525          TAD I   K4001           /FPC POINTER FROM APT TABLE TO AC
1663  7041          CIA
1664  1065          TAD     K1001           /SHOULD EQUAL 1001
1665  7440          SZA                     /YES-SKIP
1666  7402          HLT                     /ERROR-EXAMINE LOC 4001 FOR BAD FPC VALUE

                    /T20-TEST FPST AND FPCOM IOT'S
                    /FOR NON-EXECUTION WHEN RUN IS SET

1667  6552  T20,    FPICL                   /ZERO THE FPP WORLD
1670  7300          CLA CLL
1671  1064          TAD     K1000
1672  3525          DCA I   K4001           /SET FPC POINTER TO 1000
1673  6553          FPCOM                   /LOAD CMD REGISTER
1674  1124          TAD     K4000
1675  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
1676  7402          HLT                     /ERROR-FPP RUNNING
1677  1123          TAD     K3777
1700  6555          FPST                    /TRY TO LOAD ADRS REGISTER AND START FPP
1701  5303          JMP     .+2
1702  7402          HLT                     /ERROR-SHOULD NOT HAVE SKIPPED AS RUN WAS SET
1703  6553          FPCOM                   /TRY TO LOAD CMD REGISTER
1704  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST
1705  5304          JMP     .-1
1706  7300          CLA CLL
1707  1525          TAD I   K4001           /FPC POINTER FROM APT TABLE TO AC
1710  7041          CIA
1711  1065          TAD     K1001           /SHOULD EQUAL 1001
1712  7440          SZA                     /YES-SKIP
1713  7402          HLT                     /ERROR-EXAMINE LOCATION 4001 FOR INCORRECT VALUE
1714  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
1715  7440          SZA                     /SKIP IF ZERO
1716  7402          HLT                     /ERROR-EXAMINE AC FOR INCORRECT STATUS
1717  5720          JMP I   .+1
1720  2000          2000
```

```
                    /SERVICE ROUTINES

                    /INTERRUPT SERVICE ROUTINE

          1727              *1727
1727      0000      INSERV, 0
1730      6002              IOF                     /TURN INTERRUPTS OFF
1731      6031              KSF                     /SKIP IF FLAG SET
1732      5335              JMP     INS
1733      6032              KCC                     /CLEAR AC AND FLAG
1734      7402              HLT
1735      6551      INS,    FPINT                   /SKIP ON FPP INTERRUPT REQUEST
1736      7402              HLT                     /INTERRUPT OTHER THAN FPP
1737      7300              CLA CLL
1740      3004              DCA     INFLAG          /CLEAR INTERRUPT OCCURRED LOC FOR CP INTERRUPT INDICATION
1741      5400              JMP I   0

                    /LOAD APT TABLE

1742      0000      LAPT1,  0
1743      7300              CLA CLL
1744      1123              TAD     K3777           /STARTING ADDRESS OF APT TABLE-1
1745      3010              DCA     10
1746      3410              DCA I   10              /ZERO FIELD BITS
1747      1064              TAD     K1000
1750      3410              DCA I   10              /SET FPC POINTER EQUAL TO 1000
1751      1155              TAD     K7000
1752      3410              DCA I   10              /SET INDEX REGISTER POINTER EQUAL TO 7000
1753      1152              TAD     K6000
1754      3410              DCA I   10              /SET BASE REGISTER POINTER EQUAL TO 6000
1755      3410              DCA I   10              /ZERO OPERAND POINTER
1756      3410              DCA I   10              /ZERO FAC EXPONENT
1757      3410              DCA I   10              /ZERO FAC MSW
1760      3410              DCA I   10              /ZERO FAC LSW
1761      5742              JMP I   LAPT1           /RETURN TO MAIN PROGRAM

                    /CLEAR INDEX REGISTERS

1762      0000      CLIR1,  0
1763      7300              CLA CLL
1764      3555              DCA I   K7000           /ZERO IR 0
1765      3556              DCA I   K7001           /ZERO IR 1
1766      3557              DCA I   K7002           /ZERO IR 2
1767      3560              DCA I   K7003           /ZERO IR 3
1770      3561              DCA I   K7004           /ZERO IR 4
1771      3562              DCA I   K7005           /ZERO IR 5
1772      3563              DCA I   K7006           /ZERO IR 6
1773      3564              DCA I   K7007           /ZERO IR 7
1774      5762              JMP I   CLIR1           /RETURN TO MAIN PROGRAM
                    /
1775      1211      K1211,  1211
1776      7773      K7773,  7773
```

```
                    /T21-TEST FCLA AND FEXIT INSTRUCTIONS
                    /STARTING AT LOCATION 1001

          2000              *2000
2000      6552      T21,    FPICL                   /ZERO THE FPP WORLD
2001      4405              JMS I   LAPT            /LOAD APT TABLE
2002      1176              TAD     K7777
2003      3533              DCA I   K4007           /FAC LSW EQUALS 7777
2004      1176              TAD     K7777
2005      3532              DCA I   K4006           /FAC MSW EQUALS 7777
2006      1176              TAD     K7777
2007      3531              DCA I   K4005           /FAC EXPONENT EQUALS 7777
2010      1065              TAD     K1001
2011      3525              DCA I   K4001           /FPC EQUALS 1001
2012      6553              FPCOM                   /LOAD CMD REGISTER
2013      1124              TAD     K4000           /APT TABLE POINTER
2014      6555              FPST                    /LOAD ADRS REGISTER AND START THE FPP
2015      7402              HLT                     /ERROR-FPP ALREADY RUNNING
2016      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2017      5216              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

2020      7300              CLA CLL
2021      1533              TAD I   K4007           /LSW OF FAC FROM APT TABLE TO AC
2022      7440              SZA                     /SKIP IF LSW OF FAC EQUALS ZERO
2023      7402              HLT                     /ERROR - EXAMINE AC
2024      1532              TAD I   K4006           /MSW OF FAC FROM APT TABLE TO AC
2025      7440              SZA                     /SKIP IF MSW OF FAC EQUALS ZERO
2026      7402              HLT                     /ERROR - EXAMINE AC
2027      1531              TAD I   K4005           /EXPONENT OF FAC FROM APT TABLE TO AC
2030      7440              SZA                     /SKIP IF EXPONENT OF FAC EQUALS ZERO
2031      7402              HLT                     /ERROR - EXAMINE AC
2032      1530              TAD I   K4004           /OPERAND ADDRESS FROM APT TABLE TO AC
2033      7041              CIA
2034      1065              TAD     K1001           /SHOULD EQUAL 1001
2035      7440              SZA
2036      7402              HLT                     /ERROR - FPP OPERAND INCORRECT
2037      1525              TAD I   K4001           /FPC POINTER FROM APT TABLE TO AC
2040      7041              CIA
2041      1067              TAD     K1003
2042      7440              SZA                     /SKIP IF LOC 4001 CONTAINS 1003
2043      7402              HLT                     /ERROR - FPP FPC INCORRECT
```

```
                    /T22-TEST EXECUTION OF IOT FPHLT
                    /WHILE A FCLA IS BEING EXECUTED

2044  6552  T22,    FPICL                 /ZERO THE FPP WORLD
2045  7300          CLA CLL
2046  1065          TAD     K1001
2047  3525          DCA I   K4001         /SET FPC POINTER EQUAL TO 1001
2050  1176          TAD     K7777
2051  3533          DCA I   K4007         /FAC LSW=7777
2052  1176          TAD     K7777
2053  3532          DCA I   K4006         /FAC MSW=7777
2054  1176          TAD     K7777
2055  3531          DCA I   K4005         /FAC EXP=7777
2056  6553          FPCOM                 /LOAD CMD REGISTER IN FPP
2057  1124          TAD     K4000
2060  6555          FPST                  /LOAD ADRS REGISTER AND START FPP
2061  7402          HLT                   /ERROR - FPP WAS ALREADY RUNNING
2062  6554          FPHLT                 /IOT FPHLT - EXECUTE CURRENT INSTRUCTION AND EXIT
2063  6551          FPINT                 /SKIP ON FPP INTERRUPT REQUEST FLAG SET
2064  5263          JMP     .-1
2065  7300          CLA CLL
2066  6556          FPRST                 /READ FPP STATUS REGISTER INTO AC
2067  3023          DCA     NUM           /STORE IMAGE OF STATUS IN LOCATION NUM
2070  1023          TAD     NUM
2071  7041          CIA
2072  1064          TAD     K1000         /SHOULD EQUAL 1000 = CP FORCED EXIT
2073  7440          SZA                   /YES - SKIP
2074  7402          HLT                   /ERROR - EXAMINE LOC NUM FOR INCORRECT STATUS VALUE
2075  1525          TAD I   K4001         /FPC POINTER FROM APT TABLE TO AC
2076  7041          CIA
2077  1066          TAD     K1002         /SHOULD EQUAL 1002
2100  7440          SZA                   /YES - SKIP
2101  7402          HLT                   /ERROR - EXAMINE LOCATION 4001 FOR INCORRECT FPC POINTER VALUE
2102  1533          TAD I   K4007         /LSW OF FAC FROM APT TABLE TO AC
2103  7440          SZA                   /SKIP IF ZERO
2104  7402          HLT                   /ERROR
2105  1532          TAD I   K4006         /MSW OF FAC FROM APT TABLE TO AC
2106  7440          SZA                   /SKIP IF ZERO
2107  7402          HLT                   /ERROR
2110  1531          TAD I   K4005         /FAC EXPONENT FROM APT TABLE TO AC
2111  7440          SZA                   /SKIP IF ZERO
2112  7402          HLT                   /ERROR
```

```
                /T23-TEST EXECUTION OF FNEG AND FEXIT INSTRUCTION
                /STARTING AT LOCATION 1003

2113  6552  T23,  FPICL                    /ZERO THE FPP WORLD
2114  4405        JMS I   LAPT             /LOAD APT TABLE
2115  1114        TAD     K2525
2116  3533        DCA I   K4007            /ALTER FAC LSW
2117  1114        TAD     K2525
2120  3532        DCA I   K4006            /ALTER FAC MSW
2121  1114        TAD     K2525
2122  3531        DCA I   K4005            /ALTER FAC EXPONENT
2123  1067        TAD     K1003
2124  3525        DCA I   K4001            /ALTER FPC
2125  6553        FPCOM                    /LOAD CMD REGISTER FROM AC
2126  1164        TAD     K4000            /4000 TO AC
2127  6555        FPST                     /LOAD ADRS REGISTER AND START THE FPP
2130  7402        HLT                      /ERROR
2131  6551        FPINT                    /SKIP ON FPP INTERRUPT REQUEST
2132  5331        JMP     .-1

                /EXAMINE APT TABLE TO DETERMINE IF FAC DATA IS CORRECT

2133  7300        CLA CLL
2134  1533        TAD I   K4007            /FAC LSW FROM APT TABLE TO AC
2135  7041        CIA
2136  1147        TAD     K5253            /FAC LSW EQUAL 5253
2137  7440        SZA                      /YES - SKIP
2140  7402        HLT                      /NO - ERROR
2141  1532        TAD I   K4006            /FAC MSW FROM APT TABLE TO AC
2142  7041        CIA
2143  1146        TAD     K5252            /FAC MSW EQUAL 5252
2144  7440        SZA                      /YES - SKIP
2145  7402        HLT                      /NO - ERROR
2146  1531        TAD I   K4005            /FAC EXPONENT FROM APT TABLE TO AC
2147  7041        CIA
2150  1114        TAD     K2525            /FAC EXPONENT EQUAL 2525
2151  7440        SZA                      /YES - SKIP
2152  7402        HLT                      /NO - ERROR

2153  5754        JMP I   .+1
2154  2200        2200
```

```
                /T24 - TEST EXECUTION OF FNEG AND FEXIT INSTRUCTION
                /STARTING AT LOCATION 1003

        2200            *2200
2200    6552    T24,    FPICL                   /ZERO THE FPP WORLD
2201    4405            JMS I   LAPT            /LOAD APT TABLE
2202    1146            TAD     K5252           /AC=5252
2203    3533            DCA I   K4007           /ALTER FAC LSW
2204    1146            TAD     K5252           /AC=5252
2205    3532            DCA I   K4006           /ALTER FAC MSW
2206    1067            TAD     K1003           /AC=1003
2207    3525            DCA I   K4001           /ALTER FPC
2210    6553            FPCOM                   /LOAD CMD REGISTER
2211    1124            TAD     K4000           /4000 TO AC
2212    6555            FPST                    /LOAD ADRS REGISTER AND START FPP
2213    7402            HLT                     /ERROR-FPP ALREADY RUNNING
2214    6551            FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2215    5214            JMP     .-1

                /EXAMINE APT TABLE TO DETERMINE IF APT DATA IS CORRECT.

2216    7300            CLA CLL
2217    1533            TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2220    7041            CIA
2221    1115            TAD     K2526           /FAC LSW EQUAL 2526
2222    7440            SZA                     /YES - SKIP
2223    7402            HLT                     /ERROR
2224    1532            TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2225    7041            CIA
2226    1114            TAD     K2525           /FAC MSW EQUAL 2525
2227    7440            SZA                     /YES - SKIP
2230    7402            HLT                     /NO - ERROR
```

```
                    /T25 - TEST EXECUTION OF FNEG AND FEXIT INSTRUCTIONS
                    /STARTING AT LOCATION 1003

2231  6552  T25,    FPICL                    /ZERO THE FPP WORLD
2232  4405          JMS I   LAPT             /LOAD APT TABLE
2233  1124          TAD     K4000            /AC=4000
2234  3532          DCA I   K4006            /ALTER FAC MSW
2235  1067          TAD     K1003            /AC=1003
2236  3525          DCA I   K4001            /ALTER FPC
2237  6553          FPCOM                    /AC TO CMD REG.
2240  1124          TAD     K4000            /4000 TO AC
2241  6555          FPST                     /LOAD ADRS REGISTER AND START THE FPP
2242  7402          HLT                      /ERR-FPP WAS RUNNING
2243  6551          FPINT                    /SKIP ON FPP INTERRUPT REQUEST
2244  5243          JMP     .-1

                    /EXAMINE APT TABLE TO DETERMINE IF FAC DATA IS CORRECT

2245  7300          CLA CLL
2246  1533          TAD I   K4007            /FAC LSW FROM APT TABLE TO AC
2247  7440          SZA                      /SKIP IF FAC LSW EQUALS 0
2250  7402          HLT                      /ERROR
2251  1532          TAD I   K4006            /FAC MSW FROM APT TABLE TO AC
2252  7041          CIA                      /COMPLIMENT AND INC
2253  1124          TAD     K4000            /LOC 4006 SHOULD=4000
2254  7440          SZA                      /AC=0
2255  7402          HLT                      /ERROR
2256  1531          TAD I   K4005            /FAC EXPONENT FROM APT TABLE TO AC
2257  7440          SZA                      /SKIP IF EQUAL TO ZERO
2260  7402          HLT                      /ERROR
```

```
                    /T26 - TEST EXECUTION OF FNEG AND FEXIT INSTRUCTIONS
                    /STARTING AT LOCATION 1003

2261  6552  T26,    FPICL                   /ZERO THE FPP WORLD
2262  4405          JMS I   LAPT            /LOAD APT TABLE
2263  1176          TAD     K7777
2264  3533          DCA I   K4007           /ALTER FAC LSW
2265  1176          TAD     K7777
2266  3532          DCA I   K4006           /ALTER FAC MSW
2267  1067          TAD     K1003
2270  3525          DCA I   K4001           /ALTER FPC
2271  6553          FPCOM                   /INTERRUPTS ON
2272  1124          TAD     K4000           /4000 TO AC
2273  6555          FPST                    /LOAD ADRS REGISTER AND START THE FPP
2274  7402          HLT
2275  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2276  5275          JMP     .-1

                    /EXAMINE APT TABLE TO DETERMINE IF FAC DATA IS CORRECT

2277  7300          CLA CLL
2300  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2301  7041          CIA
2302  1030          TAD     K1              /LOC 4007 CONTAIN 1
2303  7440          SZA                     /YES - SKIP
2304  7402          HLT                     /ERROR
2305  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2306  7440          SZA                     /SKIP IF FAC MSW EQUALS 0
2307  7402          HLT                     /ERROR
2310  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2311  7440          SZA                     /SKIP IF EQUAL TO ZERO
2312  7402          HLT                     /ERROR
```

```
                    /T27-EXECUTE A FNORM AND FEXIT INSTRUCTION
                    /STARTING AT LOCATION 1005

2313  6552  T27,    FPICL                   /ZERO THE FPP WORLD
2314  7300          CLA CLL
2315  3533          DCA I   K4007           /SET UP FAC LSW
2316  3532          DCA I   K4006           /SET UP FAC MSW
2317  1123          TAD     K3777
2320  3531          DCA I   K4005           /SET UP FAC EXPONENT
2321  1070          TAD     K1005
2322  3525          DCA I   K4001           /SET UP FPC
2323  6553          FPCOM                   /LOAD FPP CMD REGISTER
2324  1124          TAD     K4000
2325  6555          FPST                    /LOAD FPP ADRS REGISTER AND START THE FPP
2326  7402          HLT                     /ERROR-FPP RUNNING
2327  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
2330  5327          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

2331  7300          CLA CLL
2332  1533          TAD I   K4007           /FAC MSW FROM APT TABLE TO AC
2333  7440          SZA                     /SKIP IF ZERO
2334  7402          HLT                     /ERROR
2335  1532          TAD I   K4006           /FAC LSW FROM APT TABLE TO AC
2336  7440          SZA                     /SKIP IF EQUAL TO ZERO
2337  7402          HLT                     /ERROR
2340  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2341  7440          SZA                     /SKIP IF EQUAL ZERO
2342  7402          HLT                     /ERROR

2343  5744          JMP I   .+1
2344  2400          2400
```

```
                    /T28-EXECUTE A FNORM AND FEXIT INSTRUCTION
                    /STARTING AT LOCATION 1005

      2400          *2400
2400  6552  T28,    FPICL                   /ZERO THE FPP WORLD
2401  7330          CLA CLL CML RAR         /AC=4000
2402  3533          DCA I   K4007           /SET UP FAC LSW
2403  1064          TAD     K1000
2404  3532          DCA I   K4006           /SET UP FAC MSW
2405  3531          DCA I   K4005           /SET UP FAC EXPONENT
2406  1070          TAD     K1005
2407  3525          DCA I   K4001           /SET UP FPC
2410  6553          FPCOM                   /LOAD FPP CMD REGISTER
2411  1124          TAD     K4000
2412  6555          FPST                    /LOAD FPP ADRS REGISTER AND START FPP
2413  7402          HLT                     /ERROR-FPP RUNNING
2414  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
2415  5214          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

2416  7300          CLA CLL
2417  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2420  7440          SZA                     /YES-SKIP
2421  7402          HLT                     /ERROR
2422  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2423  7041          CIA
2424  1105          TAD     K2001           /SHOULD EQUAL 2001
2425  7440          SZA                     /YES-SKIP
2426  7402          HLT                     /ERROR
2427  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2430  7040          CMA
2431  7440          SZA                     /YES-SKIP
2432  7402          HLT                     /ERROR
```

```
                    /T29-EXECUTE A FNORM AND FEXIT INSTRUCTION
                    /STARTING AT LOCATION 1005

2433  6552  T29,    FPICL                   /ZERO THE FPP WORLD
2434  7301          CLA CLL IAC             /AC=1
2435  3533          DCA I   K4007           /SET UP FAC LSW
2436  3532          DCA I   K4006           /SET UP FAC MSW
2437  1037          TAD     K14
2440  3531          DCA I   K4005           /SET UP FAC EXPONENT
2441  1070          TAD     K1005
2442  3525          DCA I   K4001
2443  6553          FPCOM                   /LOAD FPP CMD REGISTER
2444  1124          TAD     K4000
2445  6555          FPST                    /LOAD FPP ADRS REGISTER AND START FPP
2446  7402          HLT                     /ERROR-FPP RUNNING
2447  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2450  5247          JMP .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

2451  7300          CLA CLL
2452  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2453  7440          SZA                     /SKIP IF ZERO
2454  7402          HLT                     /ERROR
2455  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2456  7041          CIA
2457  1104          TAD     K2000           /SHOULD EQUAL 2000
2460  7440          SZA                     /YES-SKIP
2461  7402          HLT                     /ERROR
2462  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2463  7041          CIA
2464  1171          TAD     K7766           /SHOULD EQUAL 7766
2465  7440          SZA                     /YES-SKIP
2466  7402          HLT                     /ERROR
```

```
                    /T30-EXECUTE A FNORM AND FEXIT INSTRUCTION
                    /STARTING AT LOCATION 1005

2467  6552  T30,    FPICL                   /ZERO THE FPP WORLD
2470  7300          CLA CLL
2471  1114          TAD     K2525
2472  3533          DCA I   K4007           /SET UP FAC LSW
2473  3532          DCA I   K4006           /SET UP FAC MSW
2474  1146          TAD     K5252
2475  3531          DCA I   K4005           /SET UP FAC EXPONENT
2476  1070          TAD     K1005
2477  3525          DCA I   K4001           /SET UP FPC
2500  6553          FPCOM                   /LOAD FPP CMD REGISTER
2501  1124          TAD     K4000
2502  6555          FPST                    /LOAD FPP ADRS REGISTER AND START FPP
2503  7402          HLT                     /ERROR FPP RUNNING
2504  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2505  5304          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

2506  7300          CLA CLL
2507  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2510  7440          SZA                     /SKIP IF EQUAL TO ZERO
2511  7402          HLT                     /ERROR
2512  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2513  7041          CIA
2514  1114          TAD     K2525           /SHOULD EQUAL 2525
2515  7440          SZA                     /YES-SKIP
2516  7402          HLT                     /ERROR
2517  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2520  7041          CIA
2521  1361          TAD     K5236           /SHOULD EQUAL 5236
2522  7440          SZA                     /YES-SKIP
2523  7402          HLT                     /ERROR
2524  5326          JMP     T31

      2525          *2525
2525  0000          FEXIT
```

```
                    /T31-EXECUTE A FNORM AND FEXIT
                    /STARTING AT LOCATION 1005

          2526              *2526
2526      6552    T31,      FPICL                   /ZERO THE FPP WORLD
2527      7340              CLA CLL CMA             /AC=7777
2530      3533              DCA I   K4007           /SET UP FAC LSW
2531      1176              TAD     K7777
2532      3532              DCA I   K4006           /SET UP FAC MSW
2533      1124              TAD     K4000
2534      3531              DCA I   K4005           /SET UP FAC EXPONENT
2535      1070              TAD     K1005
2536      3525              DCA I   K4001           /SET UP FPC
2537      6553              FPCOM                   /LOAD FPP CMD REGISTER
2540      1124              TAD     K4000
2541      6555              FPST                    /LOAD FPP ADRS REGISTER AND START FPP
2542      7402              HLT                     /ERROR-FPP RUNNING
2543      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
2544      5343              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

2545      7300              CLA CLL
2546      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2547      7440              SZA                     /SKIP IF EQUAL TO ZERO
2550      7402              HLT                     /ERROR
2551      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2552      7440              SZA                     /SKIP IF EQUAL TO ZERO
2553      7402              HLT                     /ERROR
2554      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2555      7440              SZA                     /SKIP IF EQUAL TO ZERO
2556      7402              HLT                     /ERROR

2557      5760              JMP I   .+1
2560      2600              2600

2561      5236    K5236,    5236
```

```
                    /T32-EXECUTE A FNORM AND FEXIT INSTRUCTION
                    /STARTING AT LOCATION 1005

          2600      T32,    *2600
2600      6552              FPICL                   /ZERO THE FPP WORLD
2601      7344              CLA CMA CLL RAL         /AC=7776
2602      3533              DCA I   K4007           /SET UP FAC LSW
2603      1176              TAD     K7777
2604      3532              DCA I   K4006           /SET UP FAC MSW
2605      1123              TAD     K3777
2606      3531              DCA I   K4005           /SET UP FAC EXPONENT
2607      1070              TAD     K1005
2610      3525              DCA I   K4001           /SET UP FPC
2611      6553              FPCOM                   /LOAD CMD REGISTER
2612      1124              TAD     K4000
2613      6555              FPST                    /LOAD FPP ADRS REGISTER AND START FPP
2614      7402              HLT                     /ERROR-FPP RUNNING
2615      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST
2616      5215              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

2617      7300              CLA CLL
2620      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2621      7440              SZA                     /SKIP IF EQUAL TO ZERO
2622      7402              HLT                     /ERROR
2623      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2624      7041              CIA
2625      1152              TAD     K6000
2626      7440              SZA                     /SKIP IF EQUAL TO 6000
2627      7402              HLT                     /ERROR
2630      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2631      7041              CIA
2632      1122              TAD     K3752           /SHOULD EQUAL 3752
2633      7440              SZA                     /YES-SKIP
2634      7402              HLT                     /ERROR
```

```
                    /T33-EXECUTE A FNORM AND A FEXIT INSTRUCTION
                    /STARTING AT LOCATION 1005
                    /TEST SIGN CHANGE OF FAC EXPONENT
                    /

2635  6552  T33,    FPICL                   /ZERO THE FPP WORLD
2636  7344          CLA CMA CLL RAL         /AC=7776
2637  3533          DCA I   K4007           /SET UP FAC LSW
2640  1176          TAD     K7777
2641  3532          DCA I   K4006           /SET UP FAC MSW
2642  1041          TAD     K24
2643  3531          DCA I   K4005           /SET UP FAC EXPONENT
2644  1070          TAD     K1005
2645  3525          DCA I   K4001           /SET UP FPC
2646  6553          FPCOM                   /LOAD CMD REGISTER
2647  1124          TAD     K4000
2650  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
2651  7402          HLT                     /ERROR-FPP RUNNING
2652  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
2653  5252          JMP     .-1

                    /
                    /EXAMINE APT TABLE FOR CORRECT DATA
                    /

2654  7300          CLA CLL
2655  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2656  7440          SZA                     /SKIP IF EQUAL TO ZERO
2657  7402          HLT                     /ERROR
2660  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2661  7041          CIA
2662  1152          TAD     K6000           /SHOULD EQUAL 6000
2663  7440          SZA                     /YES-SKIP
2664  7402          HLT                     /ERROR
2665  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2666  7041          CIA
2667  1176          TAD     K7777           /SHOULD EQUAL 7777
2670  7440          SZA                     /YES-SKIP
2671  7402          HLT                     /ERROR
```

```
                    /T34-EXECUTE A FNORM AND FEXIT INSTRUCTION
                    /STARTING AT LOCATION 1005
                    /NUMBERS USED SHOULD CAUSE AN EXPONENT UNDERFLOW
                    /
2672  6552  T34,    FPICL                   /ZERO THE FPP WORLD
2673  3533          DCA I   K4007           /SET UP FAC LSW
2674  1064          TAD     K1000
2675  3532          DCA I   K4006           /SET UP FAC MSW
2676  1124          TAD     K4000
2677  3531          DCA I   K4005           /SET UP FAC EXPONENT
2700  1070          TAD     K1005
2701  3525          DCA I   K4001           /SET UP FPC
2702  6553          FPCOM                   /LOAD FPP CMD REGISTER
2703  1124          TAD     K4000
2704  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
2705  7402          HLT                     /ERROR
2706  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
2707  5306          JMP     .-1

                    /
                    /EXAMINE APT TABLE FOR CORRECT DATA
                    /

2710  7300          CLA CLL
2711  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO ACC
2712  7440          SZA                     /SKIP IF ZERO
2713  7402          HLT                     /ERROR
2714  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2715  7440          SZA                     /SKIP IF EQUAL TO ZERO
2716  7402          HLT                     /ERROR
2717  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2720  7440          SZA                     /SKIP IF EQUAL TO ZERO
2721  7402          HLT                     /ERROR

                    /
                    /EXPONENT UNDERFLOW STATUS BIT SHOULD BE SET
                    /
2722  6556          FPRST                   /READ FLOATING POINT STATUS REG INTO AC
2723  3024          DCA     STATUS          /IMAGE OF FPP STATUS REG
2724  1024          TAD     STATUS          /GET IMAGE
2725  7041          CIA                     /COMPLIMENT AND INC
2726  1045          TAD     K40             /LOC STATUS SHOULD=40
2727  7440          SZA                     /AC=0
2730  7402          HLT                     /ERR-EXPONENT UNDERFLOW STATUS NOT SET

                    /
                    /WILL FPICL IOT CLEAR EXPONENT UNDERFLOW FLAG
                    /
2731  6552          FPICL                   /ZERO THE FPP WORLD
2732  6556          FPRST                   /READ FPP STATUS REG INTO AC
2733  7440          SZA                     /SHOULD=0
2734  7402          HLT                     /ERR-FPP STATUS IN AC NOT=0
```

```
                    /T40-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1057
                    /WITH THE INDEX REGISTER BITS EQUAL TO 0
                    /
2735  6552  T40,    FPICL                   /ZERO THE FPP WORLD
2736  4422          JMS I   CLIR
2737  1146          TAD     K5252
2740  3533          DCA I   K4007           /ALTER FAC LSW
2741  1146          TAD     K5252
2742  3532          DCA I   K4006           /ALTER FAC MSW
2743  1043          TAD     K27
2744  3531          DCA I   K4005           /ALTER FAC EXPONENT
2745  1072          TAD     K1057
2746  3525          DCA I   K4001           /ALTER FPC
2747  6553          FPCOM                   /LOAD CMD REGISTER
2750  1124          TAD     K4000
2751  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
2752  7402          HLT                     /ERROR
2753  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
2754  5353          JMP     .-1

                    /
                    /EXAMINE APT TABLE FOR CORRECT DATA
                    /

2755  7300          CLA CLL
2756  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
2757  7041          CIA
2760  1146          TAD     K5252           /SHOULD EQUAL 5252
2761  7440          SZA                     /YES-SKIP
2762  7402          HLT                     /ERROR
2763  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
2764  7041          CIA
2765  1146          TAD     K5252           /SHOULD EQUAL 5252
2766  7440          SZA                     /YES-SKIP
2767  7402          HLT                     /ERROR
2770  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
2771  7041          CIA
2772  1043          TAD     K27             /SHOULD EQUAL 27
2773  7440          SZA                     /YES-SKIP
2774  7402          HLT                     /ERROR
                    /
2775  5776          JMP I   .+1
2776  3000          3000
```

```
                    /T41-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1057
                    /WITH THE INDEX REGISTER BITS EQUAL TO 0

          3000      T41,    *3000
3000      6552              FPICL                   /ZERO THE FPP WORLD
3001      7300              CLA CLL
3002      1146              TAD     K5252
3003      3533              DCA I   K4007           /ALTER FAC LSW
3004      1146              TAD     K5252
3005      3532              DCA I   K4006           /ALTER FAC MSW
3006      1042              TAD     K26
3007      3531              DCA I   K4005           /ALTER FAC EXPONENT
3010      1072              TAD     K1057
3011      3525              DCA I   K4001           /ALTER FPC
3012      6553              FPCOM                   /LOAD CMD REGISTER
3013      1124              TAD     K4000
3014      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
3015      7402              HLT                     /ERROR
3016      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3017      5216              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3020      7300              CLA CLL
3021      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3022      7041              CIA
3023      1114              TAD     K2525           /SHOULD EQUAL 2525
3024      7440              SZA                     /YES-SKIP
3025      7402              HLT                     /ERROR
3026      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3027      7041              CIA
3030      1375              TAD     K6525           /SHOULD EQUAL 6525
3031      7440              SZA                     /YES-SKIP
3032      7402              HLT                     /ERROR
3033      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3034      7041              CIA
3035      1043              TAD     K27             /SHOULD EQUAL 27
3036      7440              SZA                     /YES-SKIP
3037      7402              HLT                     /ERROR
```

```
                    /T42-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1057
                    /WITH INDEX REGISTER BITS EQUAL TO 0

3040  6552  T42,    FPICL                   /ZERO THE FPP WORLD
3041  7300          CLA CLL
3042  1146          TAD     K5252
3043  3533          DCA I   K4007           /ALTER FAC LSW
3044  1102          TAD     K1252
3045  3532          DCA I   K4006           /ALTER FAC MSW
3046  1044          TAD     K30
3047  3531          DCA I   K4005           /ALTER FAC EXPONENT
3050  1072          TAD     K1057
3051  3525          DCA I   K4001           /ALTER FPC
3052  6553          FPCOM                   /LOAD CMD REGISTER
3053  1124          TAD     K4000
3054  6555          FPST                    /LOAD REGISTER AND START FPP
3055  7402          HLT                     /ERROR
3056  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3057  5256          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3060  7300          CLA CLL
3061  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3062  7041          CIA
3063  1113          TAD     K2524           /SHOULD EQUAL 2524
3064  7440          SZA                     /YES-SKIP
3065  7402          HLT                     /ERROR
3066  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3067  7041          CIA
3070  1114          TAD     K2525           /SHOULD EQUAL 2525
3071  7440          SZA                     /YES-SKIP
3072  7402          HLT                     /ERROR
3073  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3074  7041          CIA
3075  1043          TAD     K27             /SHOULD EQUAL 27
3076  7440          SZA                     /YES-SKIP
3077  7402          HLT                     /ERROR
```

```
                    /T43-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1257
                    /WITH INDEX REGISTER BITS EQUAL TO 0

3100  6552  T43,    FPICL                   /ZERO THE FPP WORLD
3101  7300          CLA CLL
3102  3533          DCA I   K4007           /ALTER FAC LSW
3103  1104          TAD     K2000
3104  3532          DCA I   K4006           /ALTER FAC MSW
3105  1030          TAD     K1
3106  3531          DCA I   K4005           /ALTER FAC EXPONENT
3107  1072          TAD     K1057
3110  3525          DCA I   K4001           /ALTER FPC
3111  6553          FPCOM                   /LOAD CMD REGISTER
3112  1124          TAD     K4000
3113  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
3114  7402          HLT                     /ERROR
3115  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3116  5315          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3117  7300          CLA CLL
3120  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3121  7041          CIA
3122  1030          TAD     K1              /SHOULD EQUAL 1
3123  7440          SZA                     /YES-SKIP
3124  7402          HLT                     /ERROR
3125  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3126  7440          SZA                     /SKIP IF ZERO
3127  7402          HLT                     /ERROR
3130  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3131  7041          CIA
3132  1043          TAD     K27             /SHOULD EQUAL 27
3133  7440          SZA                     /YES-SKIP
3134  7402          HLT                     /ERROR
```

```
                    /T44-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1057
                    /WITH INDEX REGISTER BITS EQUAL TO 0

3135  6552  T44,    FPICL                   /ZERO THE FPP WORLD
3136  7300          CLA CLL
3137  1030          TAD     K1
3140  3533          DCA I   K4007           /ALTER FAC LSW
3141  3532          DCA I   K4006           /ALTER FAC MSW
3142  1374          TAD     K55
3143  3531          DCA I   K4005           /ALTER FAC EXPONENT
3144  1072          TAD     K1057
3145  3525          DCA I   K4001           /ALTER FPC
3146  6553          FPCOM                   /LOAD CMD REGISTER
3147  1124          TAD     K4000
3150  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
3151  7402          HLT                     /ERROR
3152  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3153  5352          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3154  7300          CLA CLL
3155  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3156  7440          SZA                     /SKIP IF ZERO
3157  7402          HLT                     /ERROR
3160  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3161  7041          CIA
3162  1104          TAD     K2000           /SHOULD EQUAL 2000
3163  7440          SZA                     /YES-SKIP
3164  7402          HLT                     /ERROR
3165  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3166  7041          CIA
3167  1043          TAD     K27             /SHOULD EQUAL 27
3170  7440          SZA                     /YES-SKIP
3171  7402          HLT                     /ERROR

3172  5773          JMP I   .+1
3173  3200          3200

3174  0055  K55,    55
3175  6525  K6525,  6525
```

```
                /T45-EXECUTE A ALN AND FEXIT INSTRUCTION
                /FROM LOCATION 1061
                /WITH THE INDEX REGISTER BITS EQUAL TO 1

        3200            *3200
3200    6552    T45,    FPICL
3201    4422            JMS I   CLIR            /CLEAR THE INDEX REGISTERS (7000-7007)
3202    4405            JMS I   LAPT            /LOAD THE APT TABLE
3203    1176            TAD     K7777
3204    3533            DCA I   K4007           /ALTER FAC LSW
3205    1123            TAD     K3777
3206    3532            DCA I   K4006           /ALTER FAC MSW
3207    1114            TAD     K2525
3210    3531            DCA I   K4005           /ALTER FAC EXPONENT
3211    1345            TAD     K1061
3212    3525            DCA I   K4001           /ALTER FPC
3213    1114            TAD     K2525
3214    3536            DCA I   K7001           /ALTER INDEX REGISTER LOC 7001
3215    6553            FPCOM                   /LOAD CMD REGISTER
3216    1124            TAD     K4000
3217    6555            FPST                    /LOAD ADRS REGISTER AND START FPP
3220    7402            HLT
3221    6551            FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3222    5221            JMP     .-1

                /EXAMINE APT TABLE FOR CORRECT DATA

3223    7300            CLA CLL
3224    1533            TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3225    7040            CMA                     /SHOULD=7777
3226    7440            SZA                     /SKIP IF AC=0
3227    7402            HLT                     /ERROR
3230    1532            TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3231    7041            CIA
3232    1123            TAD     K3777           /SHOULD EQUAL 3777
3233    7440            SZA                     /YES-SKIP
3234    7402            HLT                     /ERROR
3235    1531            TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3236    7041            CIA
3237    1114            TAD     K2525           /SHOULD EQUAL 2525
3240    7440            SZA                     /YES-SKIP
3241    7402            HLT                     /ERROR
```

```
                /T46-EXECUTE A ALN AND FEXIT INSTRUCTION
                /FROM LOCATION 1063
                /WITH THE INDEX REGISTER BITS EQUAL TO 2

3242  6552      T46,    FPICL
3243  4422              JMS I   CLIR            /CLEAR THE INDEX REGISTERS (7000-7007)
3244  4405              JMS I   LAPT            /LOAD THE APT TABLE
3245  1350              TAD     K7774
3246  3533              DCA I   K4007           /ALTER FAC LSW
3247  1176              TAD     K7777
3250  3532              DCA I   K4006           /ALTER FAC MSW
3251  1176              TAD     K7777
3252  3531              DCA I   K4005           /ALTER FAC EXPONENT
3253  1346              TAD     K1063
3254  3525              DCA I   K4001           /ALTER FPC
3255  1030              TAD     K1
3256  3557              DCA I   K7002           /ALTER INDEX REGISTER LOC. 7002
3257  6553              FPCOM                   /LOAD CMD REGISTER
3260  1124              TAD     K4000
3261  6555              FPST                    /LOAD ADRS REGISTER AND START FPP
3262  7402              HLT
3263  6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3264  5263              JMP     .-1

                /EXAMINE APT TABLE FOR CORRECT DATA

3265  7300              CLA CLL
3266  1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3267  7040              CMA                     /SHOULD=7777
3270  7440              SZA                     /SKIP IF AC=0
3271  7402              HLT                     /ERROR
3272  1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3273  7040              CMA                     /SHOULD=7777
3274  7440              SZA                     /SKIP IF AC=0
3275  7402              HLT                     /ERROR
3276  1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3277  7041              CIA
3300  1030              TAD     K1              /SHOULD EQUAL 1
3301  7440              SZA                     /YES-SKIP
3302  7402              HLT                     /ERROR
```

```
                    /T47-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1065
                    /WITH THE INDEX REGISTER BITS EQUAL TO 3

3303  6552  T47,    FPICL
3304  4422          JMS I   CLIR            /CLEAR THE INDEX REGISTERS (7000-7007)
3305  4405          JMS I   LAPT            /LOAD THE APT TABLE
3306  1114          TAD     K2525
3307  3533          DCA I   K4007           /ALTER FAC LSW
3310  3532          DCA I   K4006           /ALTER FAC MSW
3311  1134          TAD     K4014
3312  3531          DCA I   K4005           /ALTER FAC EXPONENT
3313  1347          TAD     K1065
3314  3525          DCA I   K4001           /ALTER FPC
3315  1124          TAD     K4000
3316  3560          DCA I   K7003           /ALTER INDEX REGISTER LOC. 7003
3317  6553          FPCOM                   /LOAD CMD REGISTER
3320  1124          TAD     K4000
3321  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
3322  7402          HLT
3323  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3324  5323          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3325  7300          CLA CLL
3326  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3327  7440          SZA                     /SKIP IF EQUAL TO ZERO
3330  7402          HLT                     /ERROR
3331  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3332  7041          CIA
3333  1114          TAD     K2525           /SHOULD EQUAL 2525
3334  7440          SZA                     /YES-SKIP
3335  7402          HLT                     /ERROR
3336  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3337  7041          CIA
3340  1124          TAD     K4000           /SHOULD EQUAL 4000
3341  7440          SZA                     /YES-SKIP
3342  7402          HLT                     /ERROR
3343  5744          JMP I   .+1
3344  3400          3400

3345  1061  K1061,  1061
3346  1063  K1063,  1063
3347  1065  K1065,  1065
3350  7774  K7774,  7774
```

```
                    /T48-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1067
                    /WITH THE INDEX REGISTER BITS EQUAL TO 4

          3400              *3400
3400      6552      T48,    FPICL
3401      4422              JMS I   CLIR            /CLEAR THE INDEX REGISTERS (7000-7007)
3402      4405              JMS I   LAPT            /LOAD THE APT TABLE
3403      3533              DCA I   K4007           /ALTER FAC LSW
3404      1114              TAD     K2525
3405      3532              DCA I   K4006           /ALTER FAC MSW
3406      1346              TAD     K3763
3407      3531              DCA I   K4005           /ALTER FAC EXPONENT
3410      1343              TAD     K1067
3411      3525              DCA I   K4001           /ALTER FPC
3412      1123              TAD     K3777
3413      3561              DCA I   K7004           /ALTER INDEX REGISTER LOC. 7004
3414      6553              FPCOM                   /LOAD CMD REGISTER
3415      1124              TAD     K4000
3416      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
3417      7402              HLT
3420      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3421      5220              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3422      7300              CLA CLL
3423      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3424      7041              CIA
3425      1114              TAD     K2525           /SHOULD EQUAL 2525
3426      7440              SZA                     /YES-SKIP
3427      7402              HLT                     /ERROR
3430      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3431      7440              SZA                     /SKIP IF ZERO
3432      7402              HLT                     /ERROR
3433      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3434      7041              CIA
3435      1123              TAD     K3777           /SHOULD EQUAL 3777
3436      7440              SZA                     /YES-SKIP
3437      7402              HLT                     /ERROR
```

```
                    /T49-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1071
                    /WITH THE INDEX REGISTER BITS EQUAL TO 5

3440  6552  T49,    FPICL
3441  4422          JMS I   CLIR            /CLEAR THE INDEX REGISTERS (7000-7007)
3442  4405          JMS I   LAPT            /LOAD THE APT TABLE
3443  1030          TAD     K1
3444  3533          DCA I   K4007           /ALTER FAC LSW
3445  1124          TAD     K4000
3446  3532          DCA I   K4006           /ALTER FAC MSW
3447  1037          TAD     K14
3450  3531          DCA I   K4005           /ALTER FAC EXPONENT
3451  1344          TAD     K1071
3452  3525          DCA I   K4001           /ALTER FPC
3453  1171          TAD     K7766
3454  3562          DCA I   K7005           /ALTER INDEX REGISTER LOC. 7005
3455  6553          FPCOM                   /LOAD CMD REGISTER
3456  1124          TAD     K4000
3457  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
3460  7402          HLT
3461  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3462  5261          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3463  7300          CLA CLL
3464  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3465  7440          SZA                     /SKIP IF ZERO
3466  7402          HLT                     /ERROR
3467  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3470  7041          CIA
3471  1104          TAD     K2000           /SHOULD EQUAL 2000
3472  7440          SZA                     /YES-SKIP
3473  7402          HLT                     /ERROR
3474  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3475  7041          CIA
3476  1171          TAD     K7766           /SHOULD EQUAL 7766
3477  7440          SZA                     /YES-SKIP
3500  7402          HLT                     /ERROR
```

```
                    /T50-EXECUTE A ALN AND FEXIT INSTRUCTION
                    /FROM LOCATION 1073 IN DOUBLE PRECISION MODE
                    /WITH THE INDEX REGISTER BITS EQUAL TO 6

3501  6552  T50,    FPICL
3502  4422           JMS I   CLIR          /CLEAR THE INDEX REGISTERS (7000-7007)
3503  4405           JMS I   LAPT          /LOAD THE APT TABLE
3504  1030           TAD     K1
3505  3533           DCA I   K4007         /ALTER FAC LSW
3506  3532           DCA I   K4006         /ALTER FAC MSW
3507  1146           TAD     K5252
3510  3531           DCA I   K4005         /ALTER FAC EXPONENT
3511  1345           TAD     K1073
3512  3525           DCA I   K4001         /ALTER FPC
3513  1170           TAD     K7752
3514  3563           DCA I   K7006         /ALTER INDEX REGISTER LOC. 7006
3515  1124           TAD     K4000
3516  6553           FPCOM                 /LOAD CMD REGISTER
3517  6555           FPST                  /LOAD ADRS REGISTER AND START FPP
3520  7402           HLT
3521  6551           FPINT                 /SKIP ON FPP INTERRUPT REQUEST FLAG
3522  5321           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3523  7300           CLA CLL
3524  1533           TAD I   K4007         /FAC LSW FROM APT TABLE TO AC
3525  7440           SZA                   /SKIP IF ZERO
3526  7402           HLT                   /ERROR
3527  1532           TAD I   K4006         /FAC MSW FROM APT TABLE TO AC
3530  7041           CIA
3531  1104           TAD     K2000
3532  7440           SZA                   /SKIP IF ZERO
3533  7402           HLT                   /ERROR
3534  1531           TAD I   K4005         /FAC EXPONENT FROM APT TABLE TO AC
3535  7041           CIA
3536  1146           TAD     K5252         /SHOULD EQUAL 5252
3537  7440           SZA                   /YES-SKIP
3540  7402           HLT                   /ERROR

3541  5742           JMP I   .+1
3542  3600           3600

3543  1067  K1067,   1067
3544  1071  K1071,   1071
3545  1073  K1073,   1073
3546  3763  K3763,   3763
```

```
                /T51-EXECUTE A ALN AND FEXIT INSTRUCTION
                /FROM LOCATION 1075 IN DOUBLE PRECISION MODE
                /WITH THE INDEX REGISTER BITS EQUAL TO 7

        3600            *3600
3600    6552    T51,    FPICL
3601    4422            JMS I   CLIR            /CLEAR THE INDEX REGISTERS (7000-7007)
3602    4405            JMS I   LAPT            /LOAD THE APT TABLE
3603    3533            DCA I   K4007           /ALTER FAC LSW
3604    1104            TAD     K2000
3605    3532            DCA I   K4006           /ALTER FAC MSW
3606    1114            TAD     K2525
3607    3531            DCA I   K4005           /ALTER FAC EXPONENT
3610    1366            TAD     K1075
3611    3525            DCA I   K4001           /ALTER FPC
3612    1042            TAD     K26
3613    3564            DCA I   K7007           /ALTER INDEX REGISTER LOC. 7007
3614    1124            TAD     K4000
3615    6553            FPCOM                   /LOAD CMD REGISTER
3616    6555            FPST                    /LOAD ADRS REGISTER AND START FPP
3617    7402            HLT
3620    6551            FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
3621    5220            JMP     .-1

                /EXAMINE APT TABLE FOR CORRECT DATA

3622    7300            CLA CLL
3623    1533            TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3624    7041            CIA
3625    1030            TAD     K1
3626    7440            SZA                     /SKIP IF EQUAL TO ZERO
3627    7402            HLT                     /ERROR
3630    1532            TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3631    7440            SZA                     /SKIP IF EQUAL TO 0
3632    7402            HLT                     /ERROR
3633    1531            TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3634    7041            CIA
3635    1114            TAD     K2525           /SHOULD EQUAL 2525
3636    7440            SZA                     /YES-SKIP
3637    7402            HLT                     /ERROR
```

```
                    /T52 - TEST EXECUTION OF FLDA AND FEXIT INSTRUCTIONS
                    /STARTING FROM LOCATION 1007

3640  6552  T52,    FPICL                   /ZERO THE FPP WORLD
3641  4405          JMS I   LAPT            /LOAD APT TABLE
3642  1363          TAD     K1007
3643  3525          DCA I   K4001           /ALTER FPC
3644  6553          FPCOM                   /AC TO CMD REGISTER
3645  1124          TAD     K4000           /4000 TO AC
3646  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
3647  7402          HLT                     /ERROR - FPP ALREADY RUNNING
3650  6551          FPINT
3651  5250          JMP     .-1             /DELAY TO ALLOW FPP TIME TO FINISH

                    /EXAMINE APT TABLE TO DETERMINE IF FAC DATA IS CORRECT

3652  7300          CLA CLL
3653  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3654  7040          CMA
3655  7440          SZA                     /SKIP IF EQUAL TO 7777
3656  7402          HLT                     /ERROR
3657  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3660  7040          CMA
3661  7440          SZA                     /SKIP IF EQUAL TO 7777
3662  7402          HLT                     /ERROR
3663  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3664  7040          CMA
3665  7440          SZA                     /SKIP IF EQUAL TO 7777
3666  7402          HLT                     /ERROR
```

```
                    /T53 - TEST EXECUTION OF FLDA AND FEXIT INSTRUCTIONS
                    /STARTING FROM LOCATION 1011

3667  6552  T53,    FPICL                   /ZERO THE FPP WORLD
3670  4405          JMS I   LAPT            /LOAD APT TABLE
3671  1176          TAD     K7777
3672  3533          DCA I   K4007           /ALTER FAC LSW
3673  1176          TAD     K7777
3674  3532          DCA I   K4006           /ALTER FAC MSW
3675  1176          TAD     K7777
3676  3531          DCA I   K4005           /ALTER FAC EXPONENT
3677  1364          TAD     K1011
3700  3525          DCA I   K4001           /ALTER FPC
3701  6553          FPCOM                   /LOAD FPP CMD REGISTER
3702  1124          TAD     K4000           /4000 TO AC
3703  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
3704  7402          HLT                     /ERROR - FPP ALREADY RUNNING
3705  6551          FPINT
3706  5305          JMP     .-1             /DELAY TO ALLOW FPP TIME TO FINISH

                    /EXAMINE APT TABLE TO DETERMINE IF FAC DATA IS CORRECT

3707  7300          CLA CLL
3710  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
3711  7440          SZA                     /SKIP IF AC EQUALS ZERO
3712  7402          HLT                     /ERROR
3713  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
3714  7440          SZA                     /SKIP IF AC EQUALS ZERO
3715  7402          HLT                     /ERROR
3716  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
3717  7440          SZA                     /SKIP IF AC EQUALS ZERO
3720  7402          HLT                     /ERROR
```

```
                    /T54 - EXECUTE FLDA AND FEXIT INSTRUCTIONS
                    /STARTING AT LOCATION 1013

3721  6552  T54,    FPICL                   /ZERO THE FPP WORLD
3722  4405          JMS I   LAPT            /LOAD APT TABLE
3723  1146          TAD     K5252
3724  3533          DCA I   K4007           /ALTER FAC MSW
3725  1146          TAD     K5252
3726  3532          DCA I   K4006           /ALTER FAC LSW
3727  1146          TAD     K5252
3730  3531          DCA I   K4005           /ALTER FAC EXPONENT
3731  1365          TAD     K1013
3732  3525          DCA I   K4001           /FPC POINTER EQUALS 1013
3733  6553          FPCOM                   /AC TO CMD REGISTER
3734  1124          TAD     K4000           /APT TABLE POINTER TO AC
3735  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
3736  7402          HLT                     /ERROR-FPP ALREADY RUNNING
3737  6551          FPINT
3740  5337          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

3741  7300          CLA CLL
3742  1533          TAD I   K4007           /LSW OF FAC FROM APT TABLE TO AC
3743  7041          CIA
3744  1114          TAD     K2525
3745  7440          SZA                     /LSW OF FAC EQUAL 2525
3746  7402          HLT                     /NO - ERROR
3747  1532          TAD I   K4006           /MSW OF FAC FROM APT TABLE TO AC
3750  7041          CIA
3751  1114          TAD     K2525
3752  7440          SZA                     /MSW OF FAC EQUAL 2525
3753  7402          HLT                     /NO - ERROR
3754  1531          TAD I   K4005           /EXPONENT OF FAC FROM APT TABLE TO AC
3755  7041          CIA
3756  1114          TAD     K2525
3757  7440          SZA                     /EXPONENT OF FAC EQUAL 2525
3760  7402          HLT                     /NO - ERROR

3761  5762          JMP I   .+1
3762  4010          4010

3763  1007  K1007,  1007
3764  1011  K1011,  1011
3765  1013  K1013,  1013
3766  1075  K1075,  1075
```

```
                    /APT TABLE LOCATIONS 4000 TO 4007

          4000              *4000
4000      0000    APT,      0000                    /FIELD BITS
4001      0000              0000                    /LOWER 12 BITS OF FPC
4002      0000              0000                    /LOWER 12 BITS OF I R Ø LOCATION
4003      0000              0000                    /LOWER 12 BITS OF BASE REG
4004      0000              0000                    /LOWER 12 BITS OF OPERAND ADDRESS
4005      0000              0000                    /EXPONENT OF FAC
4006      0000              0000                    /MSW OF FAC
4007      0000              0000                    /LSW OF FAC

                    /T55 - EXECUTE FLDA AND FEXIT INSTRUCTIONS
                    /STARTING AT LOCATION 1015

          4010              *4010
4010      6552    T55,      FPICL                   /ZERO THE FPP WORLD
4011      4405              JMS I     LAPT          /LOAD APT TABLE
4012      1114              TAD       K2525
4013      3533              DCA I     K4007         /ALTER FAC LSW
4014      1114              TAD       K2525
4015      3532              DCA I     K4006         /ALTER FAC MSW
4016      1114              TAD       K2525
4017      3531              DCA I     K4005         /ALTER FAC EXPONENT
4020      1360              TAD       K1015
4021      3525              DCA I     K4001         /FPC POINTER EQUALS 1015
4022      6553              FPCOM                   /AC TO CMD REGISTER
4023      1124              TAD       K4000         /APT TABLE POINTER
4024      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
4025      7402              HLT                     /ERROR FPP ALREADY RUNNING
4026      6551              FPINT
4027      5226              JMP       .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4030      7300              CLA CLL
4031      1533              TAD I     K4007         /LSW OF FAC FROM APT TABLE TO AC
4032      7041              CIA
4033      1146              TAD       K5252
4034      7440              SZA                     /LSW OF FAC EQUAL 5252
4035      7402              HLT                     /NO - ERROR
4036      1532              TAD I     K4006         /MSW OF FAC FROM APT TABLE TO AC
4037      7041              CIA
4040      1146              TAD       K5252
4041      7440              SZA                     /MSW OF FAC EQUAL 5252
4042      7402              HLT                     /NO - ERROR
4043      1531              TAD I     K4005         /EXPONENT OF FAC FROM APT TABLE TO AC
4044      7041              CIA
4045      1146              TAD       K5252
4046      7440              SZA                     /EXPONENT OF FAC EQUAL 5252
4047      7402              HLT                     /NO - ERROR
```

APT TABLE

```
                    /T60-EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP LOCATION 1017
                    /
                    /       FAC    OPR 1    FAC
                    /EXP    0000    0000    0000
                    /MSW    0000  + 0000  = 0000
                    /LSW    0000    0000    0000

4050  6552  T60,    FPICL
4051  4405          JMS I   LAPT            /LOAD APT TABLE
4052  1361          TAD     K1017
4053  3525          DCA I   K4001           /ALTER FPC
4054  6553          FPCOM                   /LOAD FPP CMD REGISTER
4055  1164          TAD     K4000
4056  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
4057  7402          HLT
4060  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
4061  5260          JMP     .-1

                    /TEST APT TABLE FOR CORRECT DATA

4062  7300          CLA CLL
4063  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4064  7440          SZA                     /SKIP IF EQUAL TO 0
4065  7402          HLT                     /ERROR
4066  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4067  7440          SZA                     /SKIP IF EQUAL TO ZERO
4070  7402          HLT                     /ERROR
4071  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4072  7440          SZA                     /SKIP IF ZERO
4073  7402          HLT                     /ERROR
```

```
                    /T61 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP LOCATION 1021
                    /
                    /       FAC    OPR 4    FAC
                    /EXP    0000    0000    0001
                    /MSW    2000  + 2000  = 2000
                    /LSW    0000    0000    0000

4074  6552          T61,    FPICL
4075  4405                  JMS I   LAPT            /LOAD APT TABLE
4076  1104                  TAD     K2000
4077  3532                  DCA I   K4006           /ALTER FAC MSW
4100  1362                  TAD     K1021
4101  3525                  DCA I   K4001           /ALTER FPC
4102  6553                  FPCOM                   /LOAD FPP CMD REGISTER
4103  1124                  TAD     K4000
4104  6555                  FPST                    /LOAD ADRS REGISTER AND START FPP
4105  7402                  HLT
4106  6551                  FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET
4107  5306                  JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4110  7300                  CLA CLL
4111  1533                  TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4112  7440                  SZA                     /SKIP IF ZERO
4113  7402                  HLT                     /ERROR
4114  1532                  TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4115  7041                  CIA
4116  1104                  TAD     K2000           /SHOULD EQUAL 2000
4117  7440                  SZA                     /YES - SKIP
4120  7402                  HLT                     /ERROR
4121  1531                  TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4122  7041                  CIA
4123  1030                  TAD     K1              /SHOULD EQUAL 1
4124  7440                  SZA                     /YES - SKIP
4125  7402                  HLT                     /ERROR
```

```
                    /T62 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1021
                    /
                    /       FAC  OPR 41  FAC
                    /EXP    0000   0000   0000
                    /MSW    6000 + 2000 = 0000
                    /LSW    0000   0000   0000

4126  6552      T62,    FPICL                   /ZERO THE FPP WORLD
4127  7300              CLA CLL
4130  3533              DCA I   K4007           /ALTER FAC LSW
4131  1152              TAD     K6000
4132  3532              DCA I   K4006           /ALTER FAC MSW
4133  3531              DCA I   K4005           /ALTER FAC EXPONENT
4134  1362              TAD     K1021
4135  3525              DCA I   K4001           /ALTER FPC
4136  6553              FPCOM                   /LOAD CMD REGISTER
4137  1124              TAD     K4000
4140  6555              FPST                    /LOAD ADRS REGISTER AND START FPP
4141  7402              HLT                     /ERROR
4142  6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
4143  5342              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4144  7300              CLA CLL
4145  1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4146  7440              SZA                     /SKIP IF ZERO
4147  7402              HLT                     /ERROR
4150  1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4151  7440              SZA                     /SKIP  IF ZERO
4152  7402              HLT                     /ERROR
4153  1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4154  7440              SZA                     /SKIP IF ZERO
4155  7402              HLT                     /ERROR

4156  5757              JMP I   .+1
4157  4200              4200

4160  1015      K1015,  1015
4161  1017      K1017,  1017
4162  1021      K1021,  1021
```

```
                    /T63 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1027
                    /
                    /       FAC     OPR 7    FAC
                    /EXP    0005     0001    0002
                    /MSW    0100  +  2000  =  2000
                    /LSW    0000     0000    0000

          4200              *4200
4200      6552      T63,    FPICL
4201      7300              CLA CLL
4202      3533              DCA I   K4007           /ALTER FAC LSW
4203      1047              TAD     K100
4204      3532              DCA I   K4006           /ALTER FAC MSW
4205      1034              TAD     K5
4206      3531              DCA I   K4005           /ALTER FAC EXPONENT
4207      1373              TAD     K1027
4210      3525              DCA I   K4001           /ALTER FPC
4211      6553              FPCOM                   /LOAD CMD REGISTER
4212      1124              TAD     K4000
4213      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
4214      7402              HLT                     /ERROR
4215      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG SET
4216      5215              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4217      7300              CLA CLL
4220      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4221      7440              SZA                     /SKIP IF ZERO
4222      7402              HLT                     /ERROR
4223      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4224      7041              CIA
4225      1104              TAD     K2000           /SHOULD EQUAL 2000
4226      7440              SZA                     /YES - SKIP
4227      7402              HLT                     /ERROR
4230      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4231      7041              CIA
4232      1031              TAD     K2              /SHOULD EQUAL 2
4233      7440              SZA                     /YES - SKIP
4234      7402              HLT                     /ERROR
```

```
                    /T64 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING WITH FPP CODE LOCATION 1035
                    /
                    /       FAC    OPR 12   FAC
                    /EXP    1252     1252   1252
                    /MSW    1252  +  2525 = 3777
                    /LSW    5252     2525   7777

4235  6552      T64,    FPICL                   /ZERO THE FPP WORLD
4236  7300              CLA CLL
4237  1146              TAD     K5252
4240  3533              DCA I   K4007           /ALTER FAC LSW
4241  1102              TAD     K1252
4242  3532              DCA I   K4006           /ALTER FAC MSW
4243  1102              TAD     K1252
4244  3531              DCA I   K4005           /ALTER FAC EXPONENT
4245  1374              TAD     K1035
4246  3525              DCA I   K4001           /ALTER FPC
4247  6553              FPCOM                   /LOAD CMD REGISTER
4250  1124              TAD     K4000
4251  6555              FPST                    /LOAD ADRS REGISTER AND START FPP
4252  7402              HLT                     /ERROR
4253  6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
4254  5253              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4255  7300              CLA CLL
4256  1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4257  7040              CMA                     /SHOULD=7777
4260  7440              SZA                     /SKIP IF AC=0
4261  7402              HLT                     /ERROR
4262  1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4263  7041              CIA
4264  1123              TAD     K3777           /SHOULD EQUAL 3777
4265  7440              SZA                     /YES - SKIP
4266  7402              HLT                     /ERROR
4267  1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4270  7041              CIA
4271  1102              TAD     K1252           /SHOULD EQUAL 1252
4272  7440              SZA                     /YES - SKIP
4273  7402              HLT                     /ERROR
```

```
                    /T65 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1037
                    /
                    /       FAC    OPR 13  FAC
                    /EXP    7777    0000    0001
                    /MSW    0000  + 3777  = 2000
                    /LSW    0001    7777    0000

4274  6552      T65,  FPICL                       /ZERO THE FPP WORLD
4275  7300            CLA CLL
4276  1030            TAD     K1
4277  3533            DCA I   K4007               /ALTER FAC LSW
4300  3532            DCA I   K4006               /ALTER FAC MSW
4301  1176            TAD     K7777
4302  3531            DCA I   K4005               /ALTER FAC EXPONENT
4303  1375            TAD     K1037
4304  3525            DCA I   K4001               /ALTER FPC
4305  6553            FPCOM                       /LOAD CMD REGISTER
4306  1124            TAD     K4000
4307  6555            FPST                        /LOAD ADRS REGISTER AND START FPP
4310  7402            HLT                         /ERROR
4311  6551            FPINT                       /SKIP ON FPP INTERRUPT REQUEST FLAG
4312  5311            JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4313  7300            CLA CLL
4314  1533            TAD I   K4007               /FAC LSW FROM APT TABLE TO AC
4315  7440            SZA                         /SKIP IF ZERO
4316  7402            HLT                         /ERROR
4317  1532            TAD I   K4006               /FAC MSW FROM APT TABLE TO AC
4320  7041            CIA
4321  1104            TAD     K2000               /SHOULD EQUAL 2000
4322  7440            SZA                         /YES - SKIP
4323  7402            HLT                         /ERROR
4324  1531            TAD I   K4005               /FAC EXPONENT FROM APT TABLE TO AC
4325  7041            CIA
4326  1030            TAD     K1                  /SHOULD EQUAL 1
4327  7440            SZA                         /SKIP IF EQUAL TO ZERO
4330  7402            HLT                         /ERROR
```

```
                    /T66 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1041
                    /
                    /       FAC    OPR 14  FAC
                    /EXP    0004    0004   0002
                    /MSW    0210 + 0210 = 2104
                    /LSW    4210    4210   2100

4331  6552  T66,    FPICL                  /ZERO THE FPP WORLD
4332  7300           CLA CLL
4333  1137           TAD     K4210
4334  3533           DCA I   K4007          /ALTER FAC LSW
4335  1052           TAD     K210
4336  3532           DCA I   K4006          /ALTER FAC MSW
4337  1033           TAD     K4
4340  3531           DCA I   K4005          /ALTER FAC EXPONENT
4341  1376           TAD     K1041
4342  3525           DCA I   K4001          /ALTER FPC
4343  6553           FPCOM                  /LOAD CMD REGISTER
4344  1124           TAD     K4000
4345  6555           FPST                   /LOAD ADRS REGISTER AND START FPP
4346  7402           HLT                    /ERROR
4347  6551           FPINT                  /SKIP ON FPP INTERRUPT REQUEST FLAG
4350  5347           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4351  7300           CLA CLL
4352  1533           TAD I   K4007          /FAC LSW FROM APT TABLE TO AC
4353  7041           CIA
4354  1106           TAD     K2100          /SHOULD EQUAL 2100
4355  7440           SZA                    /YES - SKIP
4356  7402           HLT                    /ERROR
4357  1532           TAD I   K4006          /FAC MSW FROM APT TABLE TO AC
4360  7041           CIA
4361  1107           TAD     K2104          /SHOULD EQUAL 2104
4362  7440           SZA                    /YES - SKIP
4363  7402           HLT                    /ERROR
4364  1531           TAD I   K4005          /FAC EXPONENT FROM APT TABLE TO AC
4365  7041           CIA
4366  1031           TAD     K2             /SHOULD EQUAL 2
4367  7440           SZA                    /YES - SKIP
4370  7402           HLT                    /ERROR

4371  5772           JMP I   .+1
4372  4400           4400

4373  1027  K1027,   1027
4374  1035  K1035,   1035
4375  1037  K1037,   1037
4376  1041  K1041,   1041
```

```
                    /T67 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1043
                    /
                    /       FAC    OPR 15   FAC
                    /EXP    0012    2010    0011
                    /MSW    2314  + 2104  = 2210
                    /LSW    6314    2104    4210

          4400                *4400
4400      6552      T67,      FPICL                   /ZERO THE FPP WORLD
4401      7300                CLA CLL
4402      1153                TAD     K6314
4403      3533                DCA I   K4007           /ALTER FAC LSW
4404      1111                TAD     K2314
4405      3532                DCA I   K4006           /ALTER FAC MSW
4406      1035                TAD     K10
4407      3531                DCA I   K4005           /ALTER FAC EXPONENT
4410      1343                TAD     K1043
4411      3525                DCA I   K4001           /ALTER FPC
4412      6553                FPCOM                   /LOAD CMD REGISTER
4413      1124                TAD     K4000
4414      6555                FPST                    /LOAD ADRS REGISTER AND START FPP
4415      7402                HLT                     /ERROR
4416      6551                FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
4417      5216                JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4420      7300                CLA CLL
4421      1533                TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4422      7041                CIA
4423      1137                TAD     K4210           /SHOULD EQUAL 4210
4424      7440                SZA                     /YES - SKIP
4425      7402                HLT                     /ERROR
4426      1532                TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4427      7041                CIA
4430      1110                TAD     K2210           /SHOULD EQUAL 2210
4431      7440                SZA                     /YES - SKIP
4432      7402                HLT                     /ERROR
4433      1531                TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4434      7041                CIA
4435      1036                TAD     K11             /SHOULD EQUAL 11
4436      7440                SZA                     /YES - SKIP
4437      7402                HLT                     /ERROR
```

```
                    /T68 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1045
                    /
                    /       FAC    OPR 16   FAC
                    /EXP    0020    0020    0021
                    /MSW    2104  + 2314  = 2210
                    /LSW    2104    6314    4210

4440  6552  T68,    FPICL                   /ZERO THE FPP WORLD
4441  7300          CLA CLL
4442  1107          TAD     K2104
4443  3533          DCA I   K4007           /ALTER FAC LSW
4444  1107          TAD     K2104
4445  3532          DCA I   K4006           /ALTER FAC MSW
4446  1040          TAD     K20
4447  3531          DCA I   K4005           /ALTER FAC EXPONENT
4450  1344          TAD     K1045
4451  3525          DCA I   K4001           /ALTER FPC
4452  6553          FPCOM                   /LOAD CMD REGISTER
4453  1124          TAD     K4000
4454  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
4455  7402          HLT                     /ERROR
4456  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
4457  5256          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4460  7300          CLA CLL
4461  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4462  7041          CIA
4463  1137          TAD     K4210           /SHOULD EQUAL 4210
4464  7440          SZA                     /YES - SKIP
4465  7402          HLT                     /ERROR
4466  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4467  7041          CIA
4470  1110          TAD     K2210           /SHOULD EQUAL 2210
4471  7440          SZA                     /YES - SKIP
4472  7402          HLT                     /ERROR
4473  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4474  7041          CIA
4475  1342          TAD     K21             /SHOULD EQUAL 21
4476  7440          SZA                     /YES - SKIP
4477  7402          HLT                     /ERROR
```

```
                    /T69 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1047
                    /
                    /       FAC    OPR 17  FAC
                    /EXP    0040    0040   0041
                    /MSW    3356 + 1042 = 2210
                    /LSW    7356    1042   4210

4500  6552      T69,    FPICL                       /ZERO THE FPP WORLD
4501  7300              CLA CLL
4502  1165              TAD     K7356
4503  3533              DCA I   K4007               /ALTER FAC LSW
4504  1120              TAD     K3356
4505  3532              DCA I   K4006               /ALTER FAC MSW
4506  1045              TAD     K40
4507  3531              DCA I   K4005               /ALTER FAC EXPONENT
4510  1345              TAD     K1047
4511  3525              DCA I   K4001               /ALTER FPC
4512  6553              FPCOM                       /LOAD CMD REGISTER
4513  1124              TAD     K4000
4514  6555              FPST                        /LOAD ADRS REGISTER AND START FPP
4515  7402              HLT                         /ERROR
4516  6551              FPINT                       /SKIP ON FPP INTERRUPT REQUEST FLAG
4517  5316              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4520  7300              CLA CLL
4521  1533              TAD I   K4007               /FAC LSW FROM APT TABLE TO AC
4522  7041              CIA
4523  1137              TAD     K4210               /SHOULD EQUAL 4210
4524  7440              SZA                         /YES - SKIP
4525  7402              HLT                         /ERROR
4526  1532              TAD I   K4006               /FAC MSW FROM APT TABLE TO AC
4527  7041              CIA
4530  1110              TAD     K2210               /SHOULD EQUAL 2210
4531  7440              SZA                         /YES - SKIP
4532  7402              HLT                         /ERROR
4533  1531              TAD I   K4005               /FAC EXPONENT FROM APT TABLE TO AC
4534  7041              CIA
4535  1046              TAD     K41                 /SHOULD EQUAL 41
4536  7440              SZA                         /YES - SKIP
4537  7402              HLT                         /ERROR

4540  5741              JMP I   .+1
4541  4600              4600

4542  0021      K21,    21
4543  1043      K1043,  1043
4544  1045      K1045,  1045
4545  1047      K1047,  1047
```

```
                    /T70 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1051
                    /
                    /       FAC    OPR 20   FAC
                    /EXP    0100    0100    0101
                    /MSW    1252  + 3146  = 2210
                    /LSW    5252    3146    4210

          4600                *4600
    4600  6552      T70,      FPICL                   /ZERO THE FPP WORLD
    4601  7300                CLA CLL
    4602  1146                TAD     K5252
    4603  3533                DCA I   K4007           /ALTER FAC LSW
    4604  1102                TAD     K1252
    4605  3532                DCA I   K4006           /ALTER FAC MSW
    4606  1047                TAD     K100
    4607  3531                DCA I   K4005           /ALTER FAC EXPONENT
    4610  1344                TAD     K1051
    4611  3525                DCA I   K4001           /ALTER FPC
    4612  6553                FPCOM                   /LOAD CMD REGISTER
    4613  1144                TAD     K4000
    4614  6555                FPST                    /LOAD ADRS REGISTER AND START FPP
    4615  7402                HLT                     /ERROR
    4616  6551                FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
    4617  5216                JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

    4620  7300                CLA CLL
    4621  1533                TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
    4622  7041                CIA
    4623  1137                TAD     K4210           /SHOULD EQUAL 4210
    4624  7440                SZA                     /YES - SKIP
    4625  7402                HLT                     /ERROR
    4626  1532                TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
    4627  7041                CIA
    4630  1110                TAD     K2210           /SHOULD EQUAL 2210
    4631  7440                SZA                     /YES - SKIP
    4632  7402                HLT                     /ERROR
    4633  1531                TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
    4634  7041                CIA
    4635  1342                TAD     K101            /SHOULD EQUAL 101
    4636  7440                SZA                     /YES - SKIP
    4637  7402                HLT                     /ERROR
```

```
                    /T71 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1053
                    /
                    /       FAC    OPR 21   FAC
                    /EXP    0200    2200    0201
                    /MSW    3777  + 0421  = 2210
                    /LSW    7777    0421    4210

4640  6552  T71,    FPICL                   /ZERO THE FPP WORLD
4641  7300          CLA CLL
4642  1176          TAD     K7777
4643  3533          DCA I   K4007           /ALTER FAC LSW
4644  1173          TAD     K3777
4645  3532          DCA I   K4006           /ALTER FAC MSW
4646  1050          TAD     K200
4647  3531          DCA I   K4005           /ALTER FAC EXPONENT
4650  1345          TAD     K1053
4651  3525          DCA I   K4001           /ALTER FPC
4652  6553          FPCOM                   /LOAD CMD REGISTER
4653  1124          TAD     K4000
4654  6555          FPST                    /ERROR
4655  7402          HLT
4656  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
4657  5256          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4660  7300          CLA CLL
4661  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
4662  7041          CIA
4663  1137          TAD     K4210           /SHOULD EQUAL 4210
4664  7440          SZA                     /YES - SKIP
4665  7402          HLT                     /ERROR
4666  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
4667  7041          CIA
4670  1110          TAD     K2210           /SHOULD EQUAL 2210
4671  7440          SZA                     /YES - SKIP
4672  7402          HLT                     /ERROR
4673  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
4674  7041          CIA
4675  1343          TAD     K201            /SHOULD EQUAL 201
4676  7440          SZA                     /YES - SKIP
4677  7402          HLT                     /ERROR
```

```
                    /T72 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1055
                    /
                    /       FAC    OPR 22  FAC
                    /EXP    0400    0400   0401
                    /MSW    2735  + 1463 = 2210
                    /LSW    6735    1463   4210

4700  6552  T72,    FPICL                  /ZERO THE FPP WORLD
4701  7300           CLA CLL
4702  1154           TAD     K6735
4703  3533           DCA I   K4007          /ALTER FAC LSW
4704  1116           TAD     K2735
4705  3532           DCA I   K4006          /ALTER FAC MSW
4706  1055           TAD     K400
4707  3531           DCA I   K4005          /ALTER FAC EXPONENT
4710  1346           TAD     K1055
4711  3525           DCA I   K4001          /ALTER FPC
4712  6553           FPCOM                  /LOAD CMD REGISTER
4713  1124           TAD     K4000
4714  6555           FPST                   /LOAD ADRS REGISTER AND START FPP
4715  7402           HLT                    /ERROR
4716  6551           FPINT                  /SKIP ON FPP INTERRUPT REQUEST FLAG
4717  5316           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

4720  7300           CLA CLL
4721  1533           TAD I   K4007          /FAC LSW FROM APT TABLE TO AC
4722  7041           CIA
4723  1137           TAD     K4210          /SHOULD EQUAL 4210
4724  7440           SZA                    /YES - SKIP
4725  7402           HLT                    /ERROR
4726  1532           TAD I   K4006          /FAC MSW FROM APT TABLE TO AC
4727  7041           CIA
4730  1110           TAD     K2210          /SHOULD EQUAL 2210
4731  7440           SZA                    /YES - SKIP
4732  7402           HLT                    /ERROR
4733  1531           TAD I   K4005          /FAC EXPONENT FORM APT TABLE TO AC
4734  7041           CIA
4735  1056           TAD     K401           /SHOULD EQUAL 401
4736  7440           SZA                    /YES - SKIP
4737  7402           HLT                    /ERROR

4740  5741           JMP I   .+1
4741  5000           5000

4742  0101  K101,    101
4743  0201  K201,    201
4744  1051  K1051,   1051
4745  1053  K1053,   1053
4746  1055  K1055,   1055
```

```
                    /T73 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /USING SINGLE WORD INDIRECT ADDRESSING FORMAT WITH IR BITS = 2
                    /FROM FPP CODE LOCATION 1105
                    /
                    /       FAC    OPR 2    FAC
                    /EXP    4001    4001    4002
                    /MSW    2002  + 2000  = 2000
                    /LSW    0002    0000    0000

          5000              *5000
5000      6552    T73,      FPICL                   /ZERO THE FPP WORD
5001      7300              CLA CLL
5002      3533              DCA I   K4007           /ALTER FAC LSW
5003      1104              TAD     K2000
5004      3532              DCA I   K4006           /ALTER FAC MSW
5005      1125              TAD     K4001
5006      3531              DCA I   K4005           /ALTER FAC EXPONENT
5007      1076              TAD     K1105
5010      3525              DCA I   K4001           /ALTER FPC
5011      6553              FPCOM                   /LOAD CMD REGISTER
5012      1124              TAD     K4000
5013      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
5014      7402              HLT                     /ERROR
5015      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5016      5215              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5017      7300              CLA CLL
5020      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
5021      7440              SZA                     /SKIP IF ZERO
5022      7402              HLT                     /ERROR
5023      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
5024      7041              CIA
5025      1104              TAD     K2000           /SHOULD EQUAL 2000
5026      7440              SZA                     /YES - SKIP
5027      7402              HLT                     /ERROR
5030      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
5031      7041              CIA
5032      1126              TAD     K4002           /SHOULD EQUAL 4002
5033      7440              SZA                     /YES - SKIP
5034      7402              HLT                     /ERROR
```

```
                    /T74 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /USING DOUBLE WORD FORMAT WITH IR BITS = 0
                    /
                    /       FAC    OPR 40   FAC
                    /EXP    2525     2525    2525
                    /MSW    2525  +  1252  = 3777
                    /LSW    2525     5252    7777

5035  6552      T74,    FPICL                   /ZERO THE FPP WORD
5036  7300              CLA CLL
5037  1114              TAD     K2525
5040  3533              DCA I   K4007           /ALTER FAC LSW
5041  1114              TAD     K2525
5042  3532              DCA I   K4006           /ALTER FAC MSW
5043  1114              TAD     K2525
5044  3531              DCA I   K4005           /ALTER FAC EXPONENT
5045  1371              TAD     K1111
5046  3525              DCA I   K4001           /ALTER FPC
5047  6553              FPCOM                   /LOAD CMD REGISTER
5050  1124              TAD     K4000
5051  6555              FPST                    /LOAD ADRS REGISTER AND START FPP
5052  7402              HLT                     /ERROR
5053  6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5054  5253              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5055  7300              CLA CLL
5056  1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
5057  7040              CMA                     /SHOULD=7777
5060  7440              SZA                     /SKIP IF AC=0
5061  7402              HLT                     /ERROR
5062  1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
5063  7041              CIA
5064  1123              TAD     K3777           /SHOULD EQUAL 3777
5065  7440              SZA                     /YES -SKIP
5066  7402              HLT                     /ERROR
5067  1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
5070  7041              CIA
5071  1114              TAD     K2525           /SHOULD EQUAL 2525
5072  7440              SZA                     /YES - SKIP
5073  7402              HLT                     /ERROR
```

```
                    /T75 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /IN FIXED POINT MODE - FROM LOCATION 1117
                    /USING SINGLE WORD DIRECT ADDRESSING FORMAT
                    /
                    /       FAC    OPR 14    FAC
                    /EXP    7777     ----    7777
                    /MSW    2525  +  0210  =  2735
                    /LSW    2525     4210    6735

5074  6552      T75,    FPICL                       /ZERO THE FPP WORLD
5075  7300              CLA CLL
5076  1114              TAD     K2525
5077  3533              DCA I   K4007               /ALTER FAC LSW
5100  1114              TAD     K2525
5101  3532              DCA I   K4006               /ALTER FAC MSW
5102  1176              TAD     K7777
5103  3531              DCA I   K4005               /ALTER FAC EXPONENT
5104  1372              TAD     K1117
5105  3525              DCA I   K4001               /ALTER FPC
5106  1124              TAD     K4000               /DP MODE
5107  6553              FPCOM                       /LOAD CMD REGISTER
5110  6555              FPST                        /LOAD ADRS REGISTER AND START FPP
5111  7402              HLT                         /ERROR
5112  6551              FPINT                       /SKIP ON FPP INTERRUPT REQUEST FLAG
5113  5312              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5114  7300              CLA CLL
5115  1533              TAD I   K4007               /FAC LSW FROM APT TABLE TO AC
5116  7041              CIA
5117  1154              TAD     K6735               /SHOULD EQUAL 6735
5120  7440              SZA                         /YES-SKIP
5121  7402              HLT                         /ERROR
5122  1532              TAD I   K4006               /FAC MSW FROM APT TABLE TO AC
5123  7041              CIA
5124  1116              TAD     K2735               /SHOULD EQUAL 2735
5125  7440              SZA                         /YES - SKIP
5126  7402              HLT                         /ERROR
5127  1531              TAD I   K4005               /FAC EXPONENT FROM APT TABLE TO AC
5130  7040              CMA                         /SHOULD=7777
5131  7440              SZA                         /SKIP IF AC=0
5132  7402              HLT                         /ERROR
```

```
                    /T76 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /IN FIXED POINT MODE FROM LOCATION 1121 FORCING OVERFLOW CONDITION
                    /USING SINGLE WORD DIRECT ADDRESSING FORMAT
                    /
                    /       FAC    OPR 13    FAC
                    /EXP    7777     ----    7777
                    /MSW    0000  +  3777  =  0000
                    /LSW    0001     7777    0001

5133  6552    T76,  FPICL                     /ZERO THE FPP WORD
5134  7300          CLA CLL
5135  1030          TAD     K1
5136  3533          DCA I   K4007             /ALTER FAC LSW
5137  3532          DCA I   K4006             /ALTER FAC MSW
5140  1176          TAD     K7777
5141  3531          DCA I   K4005             /ALTER FAC EXPONENT
5142  1373          TAD     K1121
5143  3525          DCA I   K4001             /ALTER FPC
5144  1124          TAD     K4000             /DP MODE
5145  6553          FPCOM                     /LOAD CMD REGISTER
5146  6555          FPST                      /LOAD ADRS REGISTER AND START FPP
5147  7402          HLT                       /ERROR
5150  6551          FPINT                     /SKIP ON FPP INTERRUPT REQUEST FLAG
5151  5350          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5152  7300          CLA CLL
5153  1533          TAD I   K4007             /FAC LSW FROM APT TABLE TO AC
5154  7041          CIA
5155  1030          TAD     K1                /SHOULD EQUAL 1
5156  7440          SZA                       /YES-SKIP
5157  7402          HLT                       /ERROR
5160  1532          TAD I   K4006             /FAC MSW FROM APT TABLE TO AC
5161  7440          SZA                       /SKIP IF ZERO
5162  7402          HLT                       /ERROR
5163  1531          TAD I   K4005             /FAC EXPONENT FROM APT TABLE TO AC
5164  7040          CMA                       /SHOULD=7777
5165  7440          SZA                       /SKIP IF AC=0
5166  7402          HLT                       /ERROR

5167  5770          JMP I   .+1
5170  5200          5200

5171  1111    K1111,  1111
5172  1117    K1117,  1117
5173  1121    K1121,  1121

                    /EXAMINE STATUS REGISTER

      5200          *5200
5200  6556          FPRST                     /READ FPP STATUS REGISTER INTO AC
5201  3024          DCA     STATUS            /IMAGE OF STATUS STORED IN LOCATION STATUS
```

```
5202  1024          TAD     STATUS
5203  7041          CIA
5204  1136          TAD     K4200   /STATUS SHOULD = 4200
5205  7440          SZA                     /YES - SKIP
5206  7402          HLT                     /ERROR - EXAMINE LOCATION STATUS FOR INCORRECT STATUS

                /TEST FPICL CLEAR OF STATUS REGISTER BIT 4 (FIXED POINT OVERFLOW)

5207  6552          FPICL                   /ZERO THE FPP WORLD
5210  7300          CLA CLL
5211  6556          FPRST                   /READ FPP STATUS REGISTER INTO THE AC
5212  3024          DCA     STATUS          /STATUS REGISTER IMAGE IN LOC STATUS
5213  1024          TAD     STATUS          /STATUS REGISTER SHOULD=4000
5214  7041          CIA
5215  1124          TAD     K4000
5216  7440          SZA                     /SKIP IF AC=0
5217  7402          HLT                     /ERROR FPICL DID NOT CLEAR STATUS BIT 4

                /T77 - EXECUTE A FADD AND FEXIT INSTRUCTION
                /IN FIXED POINT MODE FROM LOCATION 1123
                /USING SINGLE WORD INDIRECT REFERENCE FORMAT WITH X=0
                /
                /       FAC   OPR 36  FAC
                /EXP    0000   ----   0000
                /MSW    1252 + 2525 = 3777
                /LSW    5252   2525   7777

5220  6552    T77,    FPICL                   /ZERO THE FPP WORD
5221  7300          CLA CLL
5222  1146          TAD     K5252
5223  3533          DCA I   K4007           /ALTER FAC LSW
5224  1102          TAD     K1252
5225  3532          DCA I   K4006           /ALTER FAC MSW
5226  3531          DCA I   K4005           /ALTER FAC EXPONENT
5227  1354          TAD     K1123
5230  3525          DCA I   K4001           /ALTER FPC
5231  1124          TAD     K4000           /DP MODE
5232  6553          FPCOM                   /LOAD CMD REGISTER
5233  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
5234  7402          HLT                     /ERROR
5235  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5236  5235          JMP     .-1

                /EXAMINE APT TABLE FOR CORRECT DATA
5237  7300          CLA CLL
5240  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
5241  7040          CMA                     /SHOULD=7777
5242  7440          SZA                     /SKIP IF AC=0
5243  7402          HLT                     /ERROR
5244  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
5245  7041          CIA
5246  1123          TAD     K3777           /SHOULD EQUAL 3777
5247  5650          JMP I   .+1
5250  5253          5253
```

```
                    /LOCATION 5252 CONTAINS FPP FEXIT INSTRUCTION
      5252          *5252
5252  0000          FEXIT

      5253          *5253
5253  7440          SZA                         /YES - SKIP
5254  7402          HLT                         /ERROR
5255  1531          TAD I   K4005               /FAC EXPONENT FROM APT TABLE TO AC
5256  7440          SZA                         /SKIP IF ZERO
5257  7402          HLT                         /ERROR

                    /T78 - EXECUTE A FADD AND FEXIT INSTRUCTION
                    /IN FIXED POINT MODE FROM FPP CODE LOCATION 1127
                    /USING DOUBLE WORD DATA REFERENCE FORMAT WITH X=0
                    /
                    /       FAC   OPR 14  FAC
                    /EXP    0000   ----   0000
                    /MSW    0210 + 0210 = 0421
                    /LSW    4210   4210   0420

5260  6552  T78,    FPICL                       /ZERO THE FPP WORLD
5261  7300          CLA CLL
5262  1137          TAD     K4210
5263  3533          DCA I   K4007               /ALTER FAC LSW
5264  1052          TAD     K210
5265  3532          DCA I   K4006               /ALTER FAC MSW
5266  3531          DCA I   K4005               /ALTER FAC EXPONENT
5267  1101          TAD     K1127
5270  3525          DCA I   K4001               /ALTER FPC
5271  1124          TAD     K4000
5272  6553          FPCOM                       /LOAD CMD REGISTER
5273  6555          FPST                        /LOAD ADRS REGISTER AND START FPP
5274  7402          HLT                         /ERROR
5275  6551          FPINT                       /SKIP ON FPP INTERRUPT REQUEST FLAG
5276  5275          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5277  7300          CLA CLL
5300  1533          TAD I   K4007               /FAC LSW FROM APT TABLE TO AC
5301  7041          CIA
5302  1057          TAD     K420                /SHOULD EQUAL 420
5303  7440          SZA                         /YES - SKIP
5304  7402          HLT                         /ERROR
5305  1532          TAD I   K4006               /FAC MSW FROM APT TABLE TO AC
5306  7041          CIA
5307  1060          TAD     K421                /SHOULD EQUAL 421
5310  7440          SZA                         /YES - SKIP
5311  7402          HLT                         /ERROR
5312  1531          TAD I   K4005               /FAC EXPONENT FROM APT TABLE TO AC
5313  7440          SZA                         /SKIP IS ZERO
5314  7402          HLT                         /ERROR
```

```
                    /T80 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM LOCATION 1135
                    /
                    /       FAC    OPR 23   FAC
                    /EXP    0001    0001    0001
                    /MSW    3000  - 1000  = 2000
                    /LSW    0000    0000    0000

5315  6552      T80,    FPICL                   /ZERO THE FPP WORLD
5316  7300              CLA CLL
5317  3533              DCA I   K4007           /ALTER FAC LSW
5320  1117              TAD     K3000
5321  3532              DCA I   K4006           /ALTER FAC MSW
5322  1030              TAD     K1
5323  3531              DCA I   K4005           /ALTER FAC EXPONENT
5324  1355              TAD     K1135
5325  3525              DCA I   K4001           /ALTER FPC
5326  6553              FPCOM                   /LOAD CMD REGISTER
5327  1124              TAD     K4000
5330  6555              FPST                    /LOAD ADRS REGISTER AND START FPP
5331  7402              HLT                     /ERROR
5332  6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5333  5332              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5334  7300              CLA CLL
5335  1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
5336  7440              SZA                     /SKIP IF ZERO
5337  7402              HLT                     /ERROR
5340  1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
5341  7041              CIA
5342  1124              TAD     K2000           /SHOULD EQUAL 2000
5343  7440              SZA                     /YES - SKIP
5344  7402              HLT                     /ERROR
5345  1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
5346  7041              CIA
5347  1030              TAD     K1              /SHOULD EQUAL 1
5350  7440              SZA                     /YES - SKIP
5351  7402              HLT                     /ERROR

5352  5753              JMP I   .+1
5353  5400              5400

5354  1123      K1123,  1123
5355  1135      K1135,  1135
```

```
                    /T81 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM LOCATION 1137
                    /
                    /       FAC    OPR 24   FAC
                    /EXP    7777     0001    0000
                    /MSW    0400  -  2000  =  4200
                    /LSW    0000     0000    0000

          5400              *5400
5400      6552    T81,      FPICL                   /ZERO THE FPP WORLD
5401      7300              CLA CLL
5402      3533              DCA I   K4007           /ALTER FAC LSW
5403      1055              TAD     K400
5404      3532              DCA I   K4006           /ALTER FAC MSW
5405      1176              TAD     K7777
5406      3531              DCA I   K4005           /ALTER FAC EXPONENT
5407      1370              TAD     K1137
5410      3525              DCA I   K4001           /ALTER FPC
5411      6553              FPCOM                   /LOAD CMD REGISTER
5412      1124              TAD     K4000
5413      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
5414      7402              HLT                     /ERROR
5415      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5416      5215              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5417      7300              CLA CLL
5420      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
5421      7440              SZA                     /SKIP IF ZERO
5422      7402              HLT                     /ERROR
5423      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
5424      7041              CIA
5425      1136              TAD     K4200           /SHOULD EQUAL 4200
5426      7440              SZA                     /YES-SKIP
5427      7402              HLT                     /ERROR
5430      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
5431      7440              SZA                     /SKIP IF ZERO
5432      7402              HLT                     /ERROR
```

```
                    /T82 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1141
                    /
                    /       FAC    OPR 25   FAC
                    /EXP    3777    3777    3751
                    /MSW    0000  - 0000  = 2000
                    /LSW    0002    0001    0000

5433  6552  T82,    FPICL                   /ZERO THE FPP WORLD
5434  7300           CLA CLL
5435  1031           TAD     K2
5436  3533           DCA I   K4007          /ALTER FAC LSW
5437  3532           DCA I   K4006          /ALTER FAC MSW
5440  1123           TAD     K3777
5441  3531           DCA I   K4005          /ALTER FAC EXPONENT
5442  1371           TAD     K1141
5443  3525           DCA I   K4001          /ALTER FPC
5444  6553           FPCOM                   /LOAD CMD REGISTER
5445  1124           TAD     K4000
5446  6555           FPST                    /LOAD ADRS REGISTER AND START FPP
5447  7402           HLT                     /ERROR
5450  6551           FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5451  5250           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5452  7300           CLA CLL
5453  1533           TAD I   K4007          /FAC LSW FROM APT TABLE TO AC
5454  7440           SZA                     /SKIP IF ZERO
5455  7402           HLT                     /ERROR
5456  1532           TAD I   K4006          /FAC MSW FROM APT TABLE TO AC
5457  7041           CIA
5460  1104           TAD     K2000          /SHOULD EQUAL 2000
5461  7440           SZA                     /YES - SKIP
5462  7402           HLT                     /ERROR
5463  1531           TAD I   K4005          /FAC EXPONENT FROM APT TABLE TO AC
5464  7041           CIA
5465  1121           TAD     K3751          /SHOULD EQUAL 3751
5466  7440           SZA                     /YES - SKIP
5467  7402           HLT                     /ERROR
```

```
                    /T83 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1143
                    /
                    /       FAC OPR 26  FAC
                    /EXP    4014    4015    4015
                    /MSW    4000  - 4000  = 2000
                    /LSW    4000    2000    0000

5470  6552  T83,    FPICL                   /ZERO THE FPP WORLD
5471  7300           CLA CLL
5472  1124           TAD     K4000
5473  3533           DCA I   K4007          /ALTER FAC LSW
5474  1124           TAD     K4000
5475  3532           DCA I   K4006          /ALTER FAC MSW
5476  1134           TAD     K4014
5477  3531           DCA I   K4005          /ALTER FAC EXPONENT
5500  1372           TAD     K1143
5501  3525           DCA I   K4001          /ALTER FPC
5502  6553           FPCOM                   /LOAD CMD REGISTER
5503  1124           TAD     K4000
5504  6555           FPST                    /LOAD ADRS REGISTER AND START FPP
5505  7402           HLT                     /ERROR
5506  6551           FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5507  5306           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5510  7300           CLA CLL
5511  1533           TAD I   K4007          /FAC LSW FROM APT TABLE TO AC
5512  7440           SZA                    /SKIP IF ZERO
5513  7402           HLT                    /ERROR
5514  1532           TAD I   K4006          /FAC MSW FROM APT TABLE TO AC
5515  7041           CIA
5516  1124           TAD     K2000          /SHOULD EQUAL 2000
5517  7440           SZA                    /YES - SKIP
5520  7402           HLT                    /ERROR
5521  1531           TAD I   K4005          /FAC EXPONENT FROM APT TABLE TO AC
5522  7041           CIA
5523  1135           TAD     K4015          /SHOULD EQUAL 4015
5524  7440           SZA                    /YES - SKIP
5525  7402           HLT                    /ERROR
```

```
                    /T84 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1145
                    /
                    /       FAC    OPR 27  FAC
                    /EXP    2525    2525   2522
                    /MSW    4421  - 4210 = 2104
                    /LSW    0420    4210   2100

5526  6552  T84,    FPICL                    /ZERO THE FPP WORLD
5527  7300           CLA CLL
5530  1057           TAD     K420
5531  3533           DCA I   K4007            /ALTER FAC LSW
5532  1140           TAD     K4421
5533  3532           DCA I   K4006            /ALTER FAC MSW
5534  1114           TAD     K2525
5535  3531           DCA I   K4005            /ALTER FAC EXPONENT
5536  1373           TAD     K1145
5537  3525           DCA I   K4001            /ALTER FPC
5540  6553           FPCOM                    /LOAD CMD REGISTER
5541  1124           TAD     K4000
5542  6555           FPST                     /LOAD ADRS REGISTER AND START FPP
5543  7402           HLT                      /ERROR
5544  6551           FPINT                    /SKIP ON FPP INTERRUPT REQUEST FLAG
5545  5344           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5546  7300           CLA CLL
5547  1533           TAD I   K4007            /FAC LSW FROM APT TABLE TO AC
5550  7041           CIA
5551  1106           TAD     K2100            /SHOULD EQUAL 2100
5552  7440           SZA                      /YES - SKIP
5553  7402           HLT                      /ERROR
5554  1532           TAD I   K4006            /FAC MSW FROM APT TABLE TO AC
5555  7041           CIA
5556  1107           TAD     K2104            /SHOULD EQUAL 2104
5557  7440           SZA                      /YES - SKIP
5560  7402           HLT                      /ERROR
5561  1531           TAD I   K4005            /FAC EXPONENT FROM APT TABLE TO AC
5562  7041           CIA
5563  1112           TAD     K2522            /SHOULD EQUAL 2522
5564  7440           SZA                      /YES - SKIP
5565  7402           HLT                      /ERROR

5566  5767           JMP I   .+1
5567  5600           5600

5570  1137  K1137,   1137
5571  1141  K1141,   1141
5572  1143  K1143,   1143
5573  1145  K1145,   1145
```

```
                    /T85 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1147
                    /
                    /       FAC    OPR 30   FAC
                    /EXP    5252     5252   5251
                    /MSW    0421   - 2104 = 4631
                    /LSW    0420     2104   4630

          5600                *5600
5600      6552      T85,      FPICL                    /ZERO THE FPP WORLD
5601      7300                CLA CLL
5602      1057                TAD     K420
5603      3533                DCA I   K4007            /ALTER FAC LSW
5604      1060                TAD     K421
5605      3532                DCA I   K4006            /ALTER FAC MSW
5606      1146                TAD     K5252
5607      3531                DCA I   K4005            /ALTER FAC EXPONENT
5610      1342                TAD     K1147
5611      3525                DCA I   K4001            /ALTER FPC
5612      6553                FPCOM                    /LOAD CMD REGISTER
5613      1124                TAD     K4000
5614      6555                FPST                     /LOAD ADRS REGISTER AND START FPP
5615      7402                HLT                      /ERROR
5616      6551                FPINT                    /SKIP ON FPP INTERRUPT REQUEST FLAG
5617      5216                JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5620      7300                CLA CLL
5621      1533                TAD I   K4007            /FAC LSW FROM APT TABLE TO AC
5622      7041                CIA
5623      1141                TAD     K4630            /SHOULD EQUAL 4630
5624      7440                SZA                      /YES - SKIP
5625      7402                HLT                      /ERROR
5626      1532                TAD I   K4006            /FAC MSW FROM APT TABLE TO AC
5627      7041                CIA
5630      1142                TAD     K4631            /SHOULD EQUAL 4631
5631      7440                SZA                      /YES - SKIP
5632      7402                HLT                      /ERROR
5633      1531                TAD I   K4005            /FAC EXPONENT FROM APT TABLE TO AC
5634      7041                CIA
5635      1145                TAD     K5251            /SHOULD EQUAL 5251
5636      7440                SZA                      /YES - SKIP
5637      7402                HLT                      /ERROR
```

```
                    /T86 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1151
                    /
                    /       FAC    OPR 31  FAC
                    /EXP    7777    7777   7775
                    /MSW    0421  - 1042 = 5673
                    /LSW    0420    1042   5670

5640  6552  T86,    FPICL                    /ZERO THE FPP WORLD
5641  7300           CLA CLL
5642  1057           TAD     K420
5643  3533           DCA I   K4007            /ALTER FAC LSW
5644  1060           TAD     K421
5645  3532           DCA I   K4006            /ALTER FAC MSW
5646  1176           TAD     K7777
5647  3531           DCA I   K4005            /ALTER FAC EXPONENT
5650  1343           TAD     K1151
5651  3525           DCA I   K4001            /ALTER FPC
5652  6553           FPCOM                    /LOAD CMD REGISTER
5653  1124           TAD     K4000
5654  6555           FPST                     /LOAD ADRS REGISTER AND START FPP
5655  7402           HLT                      /ERROR
5656  6551           FPINT                    /SKIP ON FPP INTERRUPT REQUEST FLAG
5657  5256           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5660  7300           CLA CLL
5661  1533           TAD I   K4007            /FAC LSW FROM APT TABLE TO AC
5662  7041           CIA
5663  1150           TAD     K5670            /SHOULD EQUAL 5670
5664  7440           SZA                      /YES - SKIP
5665  7402           HLT                      /ERROR
5666  1532           TAD I   K4006            /FAC MSW FROM APT TABLE TO AC
5667  7041           CIA
5670  1151           TAD     K5673            /SHOULD EQUAL 5673
5671  7440           SZA                      /YES - SKIP
5672  7402           HLT                      /ERROR
5673  1531           TAD I   K4005            /FAC EXPONENT FROM APT TABLE TO AC
5674  7041           CIA
5675  1174           TAD     K7775            /SHOULD EQUAL 7775
5676  7440           SZA                      /YES - SKIP
5677  7402           HLT                      /ERROR
```

```
                    /T87 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1153
                    /
                    /       FAC    OPR 32  FAC
                    /EXP    7770    7770   7767
                    /MSW    4631  - 6314 = 4631
                    /LSW    4630    6314   4630

5700  6552    T87,    FPICL                   /ZERO THE FPP WORLD
5701  7300            CLA CLL
5702  1141            TAD     K4630
5703  3533            DCA I   K4007           /ALTER FAC LSW
5704  1142            TAD     K4631
5705  3532            DCA I   K4006           /ALTER FAC MSW
5706  1173            TAD     K7770
5707  3531            DCA I   K4005           /ALTER FAC EXPONENT
5710  1344            TAD     K1153
5711  3525            DCA I   K4001           /ALTER FPC
5712  6553            FPCOM                   /LOAD CMD REGISTER
5713  1124            TAD     K4000
5714  6555            FPST                    /LOAD ADRS REGISTER AND START FPP
5715  7402            HLT                     /ERROR
5716  6551            FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
5717  5316            JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

5720  7300            CLA CLL
5721  1533            TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
5722  7041            CIA
5723  1141            TAD     K4630           /SHOULD EQUAL 4630
5724  7440            SZA                     /YES - SKIP
5725  7402            HLT                     /ERROR
5726  1532            TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
5727  7041            CIA
5730  1142            TAD     K4631           /SHOULD EQUAL 4631
5731  7440            SZA                     /YES - SKIP
5732  7402            HLT                     /ERROR
5733  1531            TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
5734  7041            CIA
5735  1172            TAD     K7767           /SHOULD EQUAL 7767
5736  7440            SZA                     /YES - SKIP
5737  7402            HLT                     /ERROR

5740  5741            JMP I   .+1
5741  6200            6200

5742  1147    K1147,  1147
5743  1151    K1151,  1151
5744  1153    K1153,  1153
```

```
                    /BASE REGISTER TABLE
          6000      *6000
6000      7777      7777                /OPERAND WITH OFFSET OF 2
6001      7777      7777
6002      7777      7777
6003      0000      0000                /OPERAND WITH OFFSET OF 1
6004      0000      0000
6005      0000      0000
6006      0000      0000                /OPERAND WITH OFFSET OF 2
6007      0000      0000
6010      6022      6022
6011      0000      0000                /OPERAND WITH OFFSET OF 3
6012      0000      0000
6013      6025      6025
6014      7777      7777                /OPERAND WITH OFFSET OF 4
6015      7770      7770
6016      6133      6133
6017      0000      0000                /OPERAND WITH OFFSET OF 5
6020      6000      6000
6021      0000      0000
6022      4001      4001                /OPERAND WITH OFFSET OF 6
6023      2000      2000
6024      0000      0000
6025      0001      0001                /OPERAND WITH OFFSET OF 7
6026      2000      2000
6027      0000      0000
6030      7777      7777                /OPERAND WITH OFFSET OF 10
6031      0400      0400
6032      0000      0000
6033      0525      0525                /OPERAND WITH OFFSET OF 11
6034      1252      1252
6035      5252      5252
6036      1252      1252                /OPERAND WITH OFFSET OF 12
6037      2525      2525
6040      2525      2525
6041      0000      0000                /OPERAND WITH OFFSET OF 13
6042      3777      3777
6043      7777      7777
6044      0004      0004                /OPERAND WITH OFFSET OF 14
6045      0210      0210
6046      4210      4210
6047      0010      0010                /OPERAND WITH OFFSET OF 15
6050      2104      2104
6051      2104      2104
6052      0020      0020                /OPERAND WITH OFFSET OF 16
6053      2314      2314
6054      6314      6314
```

```
6055  0040  0040                /OPERAND WITH OFFSET OF 17
6056  1042  1242
6057  1042  1242
6060  0100  0100                /OPERAND WITH OFFSET OF 20
6061  3146  3146
6062  3146  3146
6063  0200  0200                /OPERAND WITH OFFSET OF 21
6064  0421  0421
6065  0421  0421
6066  0400  0400                /OPERAND WITH OFFSET OF 22
6067  1463  1463
6070  1463  1463
6071  0001  0001                /OPERAND WITH OFFSET OF 23
6072  1000  1000
6073  0000  0000
6074  0001  0001                /OPERAND WITH OFFSET OF 24
6075  2000  2000
6076  0000  0000
6077  3777  3777                /OPERAND WITH OFFSET OF 25
6100  0000  0000
6101  0001  0001
6102  4015  4015                /OPERAND WITH OFFSET OF 26
6103  4000  4000
6104  2000  2000
6105  2525  2525                /OPERAND WITH OFFSET OF 27
6106  4210  4210
6107  4210  4210
6110  5252  5252                /OPERAND WITH OFFSET OF 30
6111  2104  2104
6112  2104  2104
6113  7777  7777                /OPERAND WITH OFFSET OF 31
6114  1042  1042
6115  1042  1042
6116  7770  7770                /OPERAND WITH OFFSET OF 32
6117  6314  6314
6120  6314  6314
6121  0000  0000                /OPERAND WITH OFFSET OF 33
6122  3146  3146
6123  3146  3146
6124  7777  7777                /OPERAND WITH OFFSET OF 34
6125  0421  0421
6126  0421  0421
6127  0000  0000                /OPERAND WITH OFFSET OF 35
6130  1042  1042
6131  1043  1043
6132  2525  2525                /OPERAND WITH OFFSET OF 36
6133  2525  2525
6134  2525  2525
6135  5252  5252                /OPERAND WITH OFFSET OF 37
6136  5252  5252
6137  5252  5252
```

```
6140  2525          2525                    /OPERAND WITH OFFSET OF 40
6141  1252          1252
6142  5252          5252
6143  0000          0000                    /OPERAND WITH OFFSET OF 41
6144  2000          2000
6145  0000          0000
6146  0000          0000                    /OPERAND WITH OFFSET OF 42
6147  7770          7770
6150  6002          6002
6151  0000          0000                    /OPERAND WITH OFFSET OF 43
6152  7770          7770
6153  6053          6053
6154  7777          7777                    /OPERAND WITH OFFSET OF 44
6155  7777          7777
6156  7776          7776
6157  1777          1777                    /OPERAND WITH OFFSET OF 45
6160  2000          2000
6161  0000          0000
6162  3777          3777                    /OPERAND WITH OFFSET OF 46
6163  1000          1000
6164  0000          0000
6165  0001          0001                    /OPERAND WITH OFFSET OF 47
6166  3000          3000
6167  0000          0000
6170  0002          0002                    /OPERAND WITH OFFSET OF 50
6171  2000          2000
6172  0000          0000
```

```
                    /T88 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1155
                    /
                    /       FAC    OPR 33  FAC
                    /EXP    0000    0000   7776
                    /MSW    2525  - 3146 = 5673
                    /LSW    2524    3146   5670

          6200                *6200
6200      6552      T88,      FPICL                   /ZERO THE FPP WORLD
6201      7300                CLA CLL
6202      1113                TAD     K2524
6203      3533                DCA I   K4007           /ALTER FAC LSW
6204      1114                TAD     K2525
6205      3532                DCA I   K4006           /ALTER FAC MSW
6206      3531                DCA I   K4005           /ALTER FAC EXPONENT
6207      1334                TAD     K1155
6210      3525                DCA I   K4001           /ALTER FPC
6211      6553                FPCOM                   /LOAD CMD REGISTER
6212      1124                TAD     K4000
6213      6555                FPST                    /LOAD ADRS REGISTER AND START FPP
6214      7402                HLT                     /ERROR
6215      6551                FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6216      5215                JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6217      7300                CLA CLL
6220      1533                TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
6221      7041                CIA
6222      1150                TAD     K5670           /SHOULD EQUAL 5670
6223      7440                SZA                     /YES - SKIP
6224      7402                HLT                     /ERROR
6225      1532                TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
6226      7041                CIA
6227      1151                TAD     K5673           /SHOULD EQUAL 5673
6230      7440                SZA                     /YES - SKIP
6231      7402                HLT                     /ERROR
6232      1531                TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
6233      7041                CIA
6234      1175                TAD     K7776           /SHOULD EQUAL 7776
6235      7440                SZA                     /YES - SKIP
6236      7402                HLT                     /ERROR
```

```
                    /T89 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1157
                    /
                    /       FAC    OPR 34   FAC
                    /EXP    7777    7777    7751
                    /MSW    0421  - 0421  = 6000
                    /LSW    0420    0421    0000

6237  6552  T89,    FPICL                   /ZERO THE FPP WORLD
6240  7300           CLA CLL
6241  1057           TAD     K420
6242  3533           DCA I   K4007          /ALTER FAC LSW
6243  1060           TAD     K421
6244  3532           DCA I   K4006          /ALTER FAC MSW
6245  1176           TAD     K7777
6246  3531           DCA I   K4005          /ALTER FAC EXPONENT
6247  1335           TAD     K1157
6250  3525           DCA I   K4001          /ALTER FPC
6251  6553           FPCOM                   /LOAD CMD REGISTER
6252  1124           TAD     K4000
6253  6555           FPST                    /LOAD ADRS REGISTER AND START FPP
6254  7402           HLT                     /ERROR
6255  6551           FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6256  5255           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6257  7300           CLA CLL
6260  1533           TAD I   K4007          /FAC LSW FROM APT TABLE TO AC
6261  7440           SZA                    /SKIP IF ZERO
6262  7402           HLT                    /ERROR
6263  1532           TAD I   K4006          /FAC MSW FROM APT TABLE TO AC
6264  7041           CIA
6265  1152           TAD     K6000          /SHOULD EQUAL 6000
6266  7440           SZA                    /YES - SKIP
6267  7402           HLT                    /ERROR
6270  1531           TAD I   K4005          /FAC EXPONENT FROM APT TABLE TO AC
6271  7041           CIA
6272  1167           TAD     K7751          /SHOULD EQUAL 7751
6273  7440           SZA                    /YES - SKIP
6274  7402           HLT                    /ERROR
```

```
                    /T90 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP LOCATION 1161
                    /
                    /       FAC    OPR 35  FAC
                    /EXP    0000    0000   7752
                    /MSW    1042  - 1042 = 6000
                    /LSW    1042    1043   0000

6275  6552    T90,    FPICL                   /ZERO THE FPP WORLD
6276  7300            CLA CLL
6277  1071            TAD     K1042
6300  3533            DCA I   K4007           /ALTER FAC LSW
6301  1071            TAD     K1042
6302  3532            DCA I   K4006           /ALTER FAC MSW
6303  3531            DCA I   K4005           /ALTER FAC EXPONENT
6304  1336            TAD     K1161
6305  3525            DCA I   K4001           /ALTER FPC
6306  6553            FPCOM                   /LOAD CMD REGISTER
6307  1124            TAD     K4000
6310  6555            FPST                    /LOAD ADRS REGISTER AND START FPP
6311  7402            HLT                     /ERROR
6312  6551            FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6313  5312            JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6314  7300            CLA CLL
6315  1533            TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
6316  7440            SZA                     /SKIP IF ZERO
6317  7402            HLT                     /ERROR
6320  1532            TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
6321  7041            CIA
6322  1152            TAD     K6000           /SHOULD EQUAL 6000
6323  7440            SZA                     /YES - SKIP
6324  7402            HLT                     /ERROR
6325  1531            TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
6326  7041            CIA
6327  1170            TAD     K7752           /SHOULD EQUAL 7752
6330  7440            SZA                     /YES-SKIP
6331  7402            HLT                     /ERROR

6332  5733            JMP I   .+1
6333  6400            6400

6334  1155    K1155,  1155
6335  1157    K1157,  1157
6336  1161    K1161,  1161
```

```
                    /T91 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP CODE LOCATION 1163
                    /USING SINGLE WORD INDIRECT REFERENCE FORMAT WITH X=0
                    /
                    /       FAC    OPR 42  FAC
                    /EXP    2314    7777   2301
                    /MSW    0000  - 0000 = 2000
                    /LSW    4000    0200   0000

          6400              *6400
6400      6552    T91,      FPICL                   /ZERO THE FPP WORLD
6401      7300              CLA CLL
6402      1124              TAD     K4000
6403      3533              DCA I   K4007           /ALTER FAC LSW
6404      3532              DCA I   K4006           /ALTER FAC MSW
6405      1111              TAD     K2314
6406      3531              DCA I   K4005           /ALTER FAC EXPONENT
6407      1137              TAD     K1163
6410      3525              DCA I   K4001           /ALTER FPC
6411      3555              DCA I   K7000           /SET INDEX REGISTER 0 EQUAL TO ZERO
6412      6553              FPCOM                   /LOAD CMD REGISTER
6413      1124              TAD     K4000
6414      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
6415      7402              HLT                     /ERROR
6416      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6417      5216              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6420      7300              CLA CLL
6421      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
6422      7440              SZA                     /SKIP IF ZERO
6423      7402              HLT                     /ERROR
6424      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
6425      7041              CIA
6426      1104              TAD     K2000           /SHOULD EQUAL 2000
6427      7440              SZA                     /YES - SKIP
6430      7402              HLT                     /ERROR
6431      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
6432      7041              CIA
6433      1340              TAD     K2301           /SHOULD EQUAL 2301
6434      7440              SZA                     /YES - SKIP
6435      7402              HLT                     /ERROR

                    /EXAMINE INDEX REGISTER 0

6436      1555              TAD I   K7000           /X0 FROM LOC 7000 TO AC
6437      7440              SZA                     /SKIP IF ZERO
6440      7402              HLT                     /ERROR-X0 NOT EQUAL TO ZERO
```

```
                    /T92 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM FPP CODE LOCATION 1165 IN FIXED POINT MODE
                    /USING SINGLE WORD INDIRECT REFERENCE FORMAT WITH X=0
                    /
                    /       FAC    OPR 03  FAC
                    /EXP    0001    ----    0001
                    /MSW    7777  - 0001  = 7775
                    /LSW    0000    2000    6000

6441  6552  T92,    FPICL                   /ZERO THE FPP WORLD
6442  7300           CLA CLL
6443  3533           DCA I   K4007           /ALTER FAC LSW
6444  1176           TAD     K7777
6445  3532           DCA I   K4006           /ALTER FAC MSW
6446  1030           TAD     K1
6447  3531           DCA I   K4005           /ALTER FAC EXPONENT
6450  1341           TAD     K1165
6451  3525           DCA I   K4001           /ALTER FPC
6452  1124           TAD     K4000
6453  6553           FPCOM                   /LOAD CMD REGISTER
6454  6555           FPST                    /LOAD ADRS REGISTER AND START FPP
6455  7402           HLT                     /ERROR
6456  6551           FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6457  5256           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6460  7300           CLA CLL
6461  1533           TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
6462  7041           CIA
6463  1152           TAD     K6000           /SHOULD EQUAL 6000
6464  7440           SZA                     /SKIP IF 6000
6465  7402           HLT                     /ERROR
6466  1532           TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
6467  7041           CIA
6470  1174           TAD     K7775           /SHOULD EQUAL 7775
6471  7440           SZA                     /YES-SKIP
6472  7402           HLT                     /ERROR
6473  1531           TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
6474  7041           CIA
6475  1030           TAD     K1              /SHOULD EQUAL 1
6476  7440           SZA                     /YES-SKIP
6477  7402           HLT                     /ERROR
```

```
                    /T93 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /IN FIXED POINT MODE FROM LOCATION 1167
                    /USING SINGLE WORD DIRECT ADDRESSING FORMAT
                    /
                    /       FAC    OPR 21   FAC
                    /EXP    0000    ----    0000
                    /MSW    0421  - 0421  = 7777
                    /LSW    0420    0421    7777

6500  6552  T93,    FPICL                   /ZERO THE FPP WORLD
6501  7300           CLA CLL
6502  1057           TAD     K420
6503  3533           DCA I   K4007           /ALTER FAC LSW
6504  1060           TAD     K421
6505  3532           DCA I   K4006           /ALTER FAC MSW
6506  3531           DCA I   K4005           /ALTER FAC EXPONENT
6507  1342           TAD     K1167
6510  3525           DCA I   K4001           /ALTER FPC
6511  1124           TAD     K4000
6512  6553           FPCOM                   /LOAD CMD REGISTER
6513  6555           FPST                    /LOAD ADRS REGISTER AND START FPP
6514  7402           HLT                     /ERROR
6515  6551           FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6516  5315           JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6517  7300           CLA CLL
6520  1533           TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
6521  7041           CIA
6522  1176           TAD     K7777
6523  7440           SZA                     /SKIP IF 7777
6524  7402           HLT                     /ERROR
6525  1532           TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
6526  7041           CIA
6527  1176           TAD     K7777
6530  7440           SZA                     /SKIP IF 7777
6531  7402           HLT                     /ERROR
6532  1531           TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
6533  7440           SZA                     /SKIP IF ZERO
6534  7402           HLT                     /ERROR


6535  5736           JMP I   .+1
6536  6600           6600

6537  1163  K1163,   1163
6540  2301  K2301,   2301
6541  1165  K1165,   1165
6542  1167  K1167,   1167
```

```
                    /T94 - EXECUTE A FSUB AND FEXIT INSTRUCTION FROM LOCATION 1171
                    /IN FIXED POINT MODE FROM FPP CODE LOCATION 1171
                    /USING SINGLE WORD DIRECT ADDRESS FORMAT AND FORCING OVERFLOW
                    /
                    /       FAC    OPR 44   FAC
                    /EXP    7777    ----    7777
                    /MSW    3777  - 7777  = 3777
                    /LSW    7777    7776    7777

      6600                  *6600
6600  6552    T94,    FPICL                   /ZERO THE FPP WORLD
6601  7300            CLA CLL
6602  1176            TAD     K7777
6603  3533            DCA I   K4007           /ALTER FAC LSW
6604  1123            TAD     K3777
6605  3532            DCA I   K4006           /ALTER FAC MSW
6606  1176            TAD     K7777
6607  3531            DCA I   K4005           /ALTER FAC EXPONENT
6610  1350            TAD     K1171
6611  3525            DCA I   K4001           /ALTER FPC
6612  1124            TAD     K4000
6613  6553            FPCOM                   /LOAD CMD REGISTER
6614  6555            FPST                    /LOAD ADRS REGISTER AND START FPP
6615  7402            HLT                     /ERROR
6616  6551            FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6617  5216            JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6620  7300            CLA CLL
6621  1533            TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
6622  7040            CMA                     /SHOULD=7777
6623  7440            SZA                     /SKIP IF AC=0
6624  7402            HLT                     /ERROR
6625  1532            TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
6626  7041            CIA
6627  1123            TAD     K3777           /SHOULD EQUAL 3777
6630  7440            SZA                     /SKIP IF 3777
6631  7402            HLT                     /ERROR
6632  1531            TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
6633  7040            CMA                     /SHOULD=7777
6634  7440            SZA                     /SKIP IF AC=0
6635  7402            HLT                     /ERROR

                    /EXAMINE FPP STATUS REGISTER

6636  6556            FPRST                   /FPP STATUS REGISTER TO AC
6637  3024            DCA     STATUS          /STORE STATUS IMAGE IN LOC STATUS
6640  1024            TAD     STATUS
6641  7041            CIA
6642  1136            TAD     K4200           /DP (BIT 0) AND FRAC OVFLO (BIT 4) SHOULD BE SET
6643  7440            SZA                     /YES - SKIP
6644  7402            HLT                     /ERROR - EXAMINE LOC STATUS FOR INCORRECT STATUS
```

```
                    /T95 - EXECUTE A FSUB AND FEXIT INSTRUCTION FROM LOCATION 1173
                    /IN FIXED POINT MODE
                    /USING A DOUBLE WORD DATA REFERENCE FORMAT WITH X=0
                    /
                    /       FAC    OPR 15  FAC
                    /EXP    0001    ----    0001
                    /MSW    0421  - 2104  = 6314
                    /LSW    0420    2104    6314

6645  6552      T95,    FPICL                   /ZERO THE FPP WORLD
6646  7300              CLA CLL
6647  1057              TAD     K420
6650  3533              DCA I   K4007           /ALTER FAC LSW
6651  1060              TAD     K421
6652  3532              DCA I   K4006           /ALTER FAC MSW
6653  1030              TAD     K1
6654  3531              DCA I   K4005           /ALTER FAC EXPONENT
6655  1347              TAD     K1173
6656  3525              DCA I   K4001           /ALTER FPC
6657  1124              TAD     K4000           /DP MODE
6660  6553              FPCOM                   /LOAD CMD REGISTER
6661  6555              FPST                    /LOAD ADRS REGISTER AND START FPP
6662  7402              HLT                     /ERROR
6663  6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
6664  5263              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6665  7300              CLA CLL
6666  1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
6667  7041              CIA
6670  1153              TAD     K6314           /SHOULD EQUAL 6314
6671  7440              SZA                     /YES - SKIP
6672  7402              HLT                     /ERROR
6673  1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
6674  7041              CIA
6675  1153              TAD     K6314           /SHOULD EQUAL 6314
6676  7440              SZA                     /YES - SKIP
6677  7402              HLT                     /ERROR
6700  1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
6701  7041              CIA
6702  1030              TAD     K1              /SHOULD EQUAL 1
6703  7440              SZA                     /YES - SKIP
6704  7402              HLT                     /ERROR
```

```
                    /T96 - EXECUTE A FSUB AND FEXIT INSTRUCTION
                    /FROM LOCATION 1204 IN FLOATING POINT MODE
                    /USING A DOUBLE WORD DATA REFERENCE FORMAT WITH X=0
                    /
                    /       FAC    OPR 33   FAC
                    /EXP    0000    0000    7776
                    /MSW    2525  - 3146  = 5673
                    /LSW    2524    3146    5670

6705  6552      T96,    FPICL
6706  7300              CLA CLL
6707  1113              TAD     K2524
6710  3533              DCA I   K4007          /ALTER FAC LSW
6711  1114              TAD     K2525
6712  3532              DCA I   K4006          /ALTER FAC MSW
6713  3531              DCA I   K4005          /ALTER FAC EXPONENT
6714  1346              TAD     K1204
6715  3525              DCA I   K4001          /ALTER FPC
6716  6553              FPCOM                  /LOAD CMD REGISTER
6717  1124              TAD     K4000
6720  6555              FPST                   /LOAD ADRS REGISTER AND START FPP
6721  7402              HLT                    /ERROR
6722  6551              FPINT                  /SKIP ON FPP INTERRUPT REQUEST FLAG
6723  5322              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

6724  7300              CLA CLL
6725  1533              TAD I   K4007          /FAC LSW FROM APT TABLE TO AC
6726  7041              CIA
6727  1150              TAD     K5670          /SHOULD EQUAL 5670
6730  7440              SZA                    /YES - SKIP
6731  7402              HLT                    /ERROR
6732  1532              TAD I   K4006          /FAC MSW FROM APT TABLE TO AC
6733  7041              CIA
6734  1151              TAD     K5673          /SHOULD EQUAL 5673
6735  7440              SZA                    /YES - SKIP
6736  7402              HLT                    /ERROR
6737  1531              TAD I   K4005          /FAC EXPONENT FROM APT TABLE TO AC
6740  7041              CIA
6741  1175              TAD     K7776          /SHOULD EQUAL 7776
6742  7440              SZA                    /YES - SKIP
6743  7402              HLT                    /ERROR

6744  5745              JMP I   .+1
6745  7010              7010

6746  1204      K1204,  1204
6747  1173      K1173,  1173
6750  1171      K1171,  1171
```

```
                    /FLOATING POINT INDEX REGISTERS LOCATIONS 7000 TO 7007

          7000              *7000
7000      0000    IR,       0000                    /I R 0
7001      0000              0000                    /I R 1
7002      0000              0000                    /I R 2
7003      0000              0000                    /I R 3
7004      0000              0000                    /I R 4
7005      0000              0000                    /I R 5
7006      0000              0000                    /I R 6
7007      0000              0000                    /I R 7

                    /T100 - EXECUTE A FMUL AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1023
                    /
                    /       FAC    OPR 45  FAC
                    /EXP    1777    1777   3775
                    /MSW    2000 X 2000 = 2000
                    /LSW    0000    0000   0000

          7010              *7010
7010      6552    T100,     FPICL                   /ZERO THE FPP WORLD
7011      7300              CLA CLL
7012      3533              DCA I   K4007           /ALTER FAC LSW
7013      1104              TAD     K2000
7014      3532              DCA I   K4006           /ALTER FAC MSW
7015      1103              TAD     K1777
7016      3531              DCA I   K4005           /ALTER FAC EXPONENT
7017      1354              TAD     K1023
7020      3525              DCA I   K4001           /ALTER FPC
7021      6553              FPCOM                   /LOAD CMD REGISTER
7022      1124              TAD     K4000
7023      6555              FPST                    /LOAD ADRS REGISTER AND START FPP
7024      7402              HLT                     /ERROR
7025      6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7026      5225              JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7027      7300              CLA CLL
7030      1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
7031      7440              SZA                     /YES - SKIP
7032      7402              HLT                     /ERROR
7033      1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
7034      7041              CIA
7035      1104              TAD     K2000           /SHOULD EQUAL 2000
7036      7440              SZA                     /YES - SKIP
7037      7402              HLT                     /ERROR
7040      1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
7041      7041              CIA
7042      1357              TAD     K3775           /SHOULD EQUAL 3775
7043      7440              SZA                     /YES - SKIP
7044      7402              HLT                     /ERROR
```

```
                    /T101 - EXECUTE A FMUL AND FEXIT INSTRUCTION
                    /STARTING AT FPP CODE LOCATION 1025
                    /
                    /       FAC    OPR 00  FAC
                    /EXP    0001    7777   0000
                    /MSW    7777 X 7777 = 0000
                    /LSW    7777    7777   0000

7045  6552  T101, FPICL                    /ZERO THE FPP WORLD
7046  7300        CLA CLL
7047  1176        TAD     K7777
7050  3533        DCA I   K4007           /ALTER FAC LSW
7051  1176        TAD     K7777
7052  3532        DCA I   K4006           /ALTER FAC MSW
7053  1030        TAD     K1
7054  3531        DCA I   K4005           /ALTER FAC EXPONENT
7055  1355        TAD     K1025
7056  3525        DCA I   K4001           /ALTER FPC
7057  6553        FPCOM                   /LOAD CMD REGISTER
7060  1124        TAD     K4000
7061  6555        FPST                    /LOAD ADRS REGISTER AND START FPP
7062  7402        HLT                     /ERROR
7063  6551        FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7064  5263        JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7065  7300        CLA CLL
7066  1533        TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
7067  7440        SZA                     /SKIP IF ZERO
7070  7402        HLT                     /ERROR
7071  1532        TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
7072  7440        SZA                     /SKIP IF ZERO
7073  7402        HLT                     /ERROR
7074  1531        TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
7075  7440        SZA                     /SKIP IF ZERO
7076  7402        HLT                     /ERROR
```

```
                    /T102 - EXECUTE A FMUL AND FEXIT INSTRUCTION
                    /FROM LOCATION 1031 FORCING AN EXPONENT OVERFLOW CONDITION
                    /
                    /       FAC    OPR 47   FAC
                    /EXP    3777    0001    4000
                    /MSW    3777 X 3000 = 2777
                    /LSW    7777    0000    7777

7077  6552  T102,   FPICL                      /ZERO THE FPP WORLD
7100  7300          CLA CLL
7101  1176          TAD     K7777
7102  3533          DCA I   K4007              /ALTER FAC LSW
7103  1173          TAD     K3777
7104  3532          DCA I   K4006              /ALTER FAC MSW
7105  1173          TAD     K3777
7106  3531          DCA I   K4005              /ALTER FAC EXPONENT
7107  1356          TAD     K1031
7110  3525          DCA I   K4001              /ALTER FPC
7111  6553          FPCOM                      /LOAD CMD REGISTER
7112  1174          TAD     K4000
7113  6555          FPST                       /LOAD ADRS REGISTER AND START FPP
7114  7402          HLT                        /ERROR
7115  6551          FPINT                      /SKIP ON FPP INTERRUPT REQUEST FLAG
7116  5315          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7117  7300          CLA CLL
7120  1533          TAD I   K4007              /FAC LSW FROM APT TABLE TO AC
7121  7040          CMA
7122  7440          SZA                        /SKIP IF 7777
7123  7402          HLT                        /ERROR
7124  1532          TAD I   K4006              /FAC MSW FROM APT TABLE TO AC
7125  7041          CIA
7126  1360          TAD     K2777              /SHOULD EQUAL 2777
7127  7440          SZA                        /YES - SKIP
7130  7402          HLT                        /ERROR
7131  1531          TAD I   K4005              /FAC EXP FROM APT TABLE TO AC
7132  7041          CIA
7133  1174          TAD     K4000              /SHOULD EQUAL 4000
7134  7440          SZA                        /YES-SKIP
7135  7402          HLT                        /ERROR
7136  7300          CLA CLL
7137  6556          FPRST                      /FPP STATUS REGISTER TO AC
7140  3024          DCA     STATUS             /IMAGE OF FPP STATUS STORED IN LOC STATUS
7141  1024          TAD     STATUS
7142  7041          CIA
7143  1047          TAD     K100               /EXPONENT OVERFLOW (BIT 5) SHOULD BE SET
7144  7440          SZA                        /YES - SKIP
7145  7402          HLT                        /EXAMINE LOC STATUS FOR INCORRECT STATUS
7146  6552          FPICL                      /ZERO THE FPP WORLD
```

```
7147  6556          FPRST                   /READ FPP STATUS INTO AC
7150  7440          SZA                     /SHOULD BE ZERO
7151  7402          HLT                     /ERROR - FPICL DID NOT CLEAR EXP OVERFLOW STATUS
7152  5753          JMP I   .+1
7153  7200          7200

7154  1023  K1023,  1023
7155  1025  K1025,  1025
7156  1031  K1031,  1031
7157  3775  K3775,  3775
7160  2777  K2777,  2777
            /
            /T103 - EXECUTE A FMUL AND FEXIT INSTRUCTION
            /FROM LOCATION 1114 IN FIXED POINT MODE
            /
            /       FAC   OPR XX  FAC
            /EXP    0000   ----   0000
            /MSW    0000 X 0000 = 0000
            /LSW    2000   0525   0000

      7200          *7200
7200  6552  T103,   FPICL                   /ZERO THE FPP WORLD
7201  7332          CLA CLL CML RTR         /AC = 2000
7202  3533          DCA I   K4007           /ALTER FAC LSW
7203  3532          DCA I   K4006           /ALTER FAC MSW
7204  3531          DCA I   K4005           /ALTER FAC EXPONENT
7205  1077          TAD     K1114
7206  3525          DCA I   K4001           /ALTER FPC
7207  1124          TAD     K4000           /DP MODE
7210  6553          FPCOM                   /LOAD CMD REGISTER
7211  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
7212  7402          HLT                     /ERROR
7213  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7214  5213          JMP     .-1

            /EXAMINE APT TABLE FOR CORRECT DATA

7215  7300          CLA CLL
7216  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
7217  7440          SZA                     /SKIP IF ZERO
7220  7402          HLT                     /ERROR

            /EXAMINE FAC MSW

7221  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
7222  7440          SZA                     /SKIP IF ZERO
7223  7402          HLT                     /ERROR

            /EXAMINE FAC EXPONENT

7224  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
7225  7440          SZA                     /SKIP IF ZERO
7226  7402          HLT                     /ERROR
```

```
                    /T110 - EXECUTE A FDIV AND FEXIT INSTRUCTION
                    /FROM LOCATION 1033
                    /
                    /       FAC    OPR 46   FAC
                    /EXP    3777    3777    0002
                    /MSW    2000  / 1000  = 2000
                    /LSW    0000    0000    0000

7227  6552          T110,   FPICL                    /ZERO THE FPP WORLD
7230  7300                  CLA CLL
7231  3533                  DCA I   K4007           /ALTER FAC LSW
7232  1104                  TAD     K2000
7233  3532                  DCA I   K4006           /ALTER FAC MSW
7234  1123                  TAD     K3777
7235  3531                  DCA I   K4005           /ALTER FAC EXPONENT
7236  1366                  TAD     K1033
7237  3525                  DCA I   K4001           /ALTER FPC
7240  6553                  FPCOM                   /LOAD CMD REGISTER
7241  1104                  TAD     K4000
7242  6555                  FPST                    /LOAD ADRS REGISTER AND START FPP
7243  7402                  HLT                     /ERROR
7244  6551                  FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7245  5244                  JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7246  7300                  CLA CLL
7247  1533                  TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
7250  7440                  SZA                     /SKIP IF ZERO
7251  7402                  HLT                     /ERROR
7252  1532                  TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
7253  7041                  CIA
7254  1104                  TAD     K2000           /SHOULD EQUAL 2000
7255  7440                  SZA                     /YES - SKIP
7256  7402                  HLT                     /ERROR
7257  1531                  TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
7260  7041                  CIA
7261  1031                  TAD     K2              /SHOULD EQUAL 2
7262  7440                  SZA                     /YES - SKIP
7263  7402                  HLT                     /ERROR
```

```
                    /T111 - EXECUTE A FDIV AND FEXIT INSTRUCTION
                    /FROM LOCATION 1107
                    /
                    /       FAC    OPR 13   FAC
                    /EXP    0014     0000    0000
                    /MSW    0000   / 3777 = 2735
                    /LSW    2735     7777    0000

7264  6552  T111,   FPICL                    /ZERO THE FPP WORLD
7265  7300          CLA CLL
7266  1116          TAD     K2735
7267  3533          DCA I   K4007           /ALTER FAC LSW
7270  3532          DCA I   K4006           /ALTER FAC MSW
7271  1037          TAD     K14
7272  3531          DCA I   K4005           /ALTER FAC EXPONENT
7273  1367          TAD     K1107
7274  3525          DCA I   K4001           /ALTER FPC
7275  6553          FPCOM                   /LOAD CMD REGISTER
7276  1124          TAD     K4000
7277  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
7300  7402          HLT                     /ERROR
7301  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7302  5301          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7303  7300          CLA CLL
7304  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
7305  7440          SZA                     /SKIP IF ZERO
7306  7402          HLT                     /ERROR
7307  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
7310  7041          CIA
7311  1116          TAD     K2735           /SHOULD EQUAL 2735
7312  7440          SZA                     /SKIP IF 2735
7313  7402          HLT                     /ERROR
7314  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
7315  7440          SZA                     /SKIP IF ZERO
7316  7402          HLT                     /ERROR
```

```
                    /T112 - EXECUTE A FDIV AND FEXIT INSTRUCTION
                    /FROM LOCATION 1125 FORCING AN EXPONENT UNDERFLOW CONDITION
                    /AND NOT TRAPPING FOR IT
                    /
                    /       FAC    OPR 50   FAC
                    /EXP    4001     0002    0000
                    /MSW    1000   / 2000  = 0000
                    /LSW    0000     0000    0000

7317  6552      T112,   FPICL                    /ZERO THE FPP WORLD
7320  7300              CLA CLL
7321  3533              DCA I   K4007           /ALTER FAC LSW IN APT TABLE
7322  1064              TAD     K1000
7323  3532              DCA I   K4006           /ALTER FAC MSW IN APT TABLE
7324  1125              TAD     K4001
7325  3531              DCA I   K4005           /ALTER FAC EXPONENT IN APT TABLE
7326  1100              TAD     K1125
7327  3525              DCA I   K4001           /ALTER FPC POINTER IN APT TABLE
7330  6553              FPCOM                   /LOAD CMD REGISTER IN FPP
7331  1124              TAD     K4000
7332  6555              FPST                    /LOAD ADRS REGISTER AND START FPP
7333  7402              HLT                     /ERROR - FPP ALREADY RUNNING
7334  6551              FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7335  5334              JMP     .-1
7336  7300              CLA CLL
7337  1533              TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
7340  7440              SZA                     /SKIP IF ZERO
7341  7402              HLT                     /ERROR
7342  1532              TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
7343  7440              SZA                     /SKIP IF ZERO
7344  7402              HLT                     /ERROR
7345  1531              TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
7346  7440              SZA                     /SKIP IF ZERO
7347  7402              HLT                     /ERROR
7350  6556              FPRST                   /READ FPP STATUS REGISTER INTO AC
7351  3024              DCA     STATUS          /IMAGE OF STATUS REGISTER
7352  1024              TAD     STATUS
7353  7041              CIA
7354  1045              TAD     K40
7355  7440              SZA                     /SKIP IF 40
7356  7402              HLT                     /ERROR - INCORRECT STATUS
7357  1525              TAD I   K4001           /FPC POINTER FROM APT TABLE TO AC
7360  7041              CIA
7361  1101              TAD     K1127           /SHOULD EQUAL 1127
7362  7440              SZA                     /YES - SKIP
7363  7402              HLT                     /ERROR - FPC POINTER VALUE

7364  5765              JMP I   .+1
7365  7400              7400

7366  1033      K1033,  1033
7367  1107      K1107,  1107
```

```
                    /T113 - EXECUTE A FDIV AND FEXIT INSTRUCTION
                    /FROM LOCATION 1125 FORCING EXPONENT UNDERFLOW CONDITION AND TRAPPING FOR IT
                    /
                    /       FAC    OPR 50   FAC
                    /EXP    4001     0002    3777
                    /MSW    1000  /  2000  =  3000
                    /LSW    0000     0000    0000

          7400                *7400
7400      6552      T113,     FPICL                   /ZERO THE FPP WORLD
7401      7300                CLA CLL
7402      3533                DCA I   K4007          /ALTER FAC LSW
7403      1117                TAD     K3000
7404      3532                DCA I   K4006          /ALTER FAC MSW
7405      1124                TAD     K4000
7406      3531                DCA I   K4005          /ALTER FAC EXPONENT
7407      1100                TAD     K1125
7410      3525                DCA I   K4001          /ALTER FPC
7411      1104                TAD     K2000
7412      6553                FPCOM                   /LOAD CMD REGISTER
7413      7300                CLA CLL
7414      1124                TAD     K4000
7415      6555                FPST                    /LOAD ADRS REGISTER AND START FPP
7416      7402                HLT                     /ERROR
7417      6551                FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7420      5217                JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7421      7300                CLA CLL
7422      1533                TAD I   K4007          /FAC LSW FROM APT TABLE TO AC
7423      7440                SZA                     /SKIP IF ZERO
7424      7402                HLT                     /ERROR
7425      1532                TAD I   K4006          /FAC MSW FROM APT TABLE TO AC
7426      7041                CIA
7427      1117                TAD     K3000          /SHOULD EQUAL 3000
7430      7440                SZA                     /YES - SKIP
7431      7402                HLT                     /ERROR
7432      1531                TAD I   K4005          /FAC EXPONENT FROM APT TABLE TO AC
7433      7041                CIA
7434      1123                TAD     K3777          /SHOULD EQUAL 3777
7435      7440                SZA                     /YES - SKIP
7436      7402                HLT                     /ERROR
```

```
                    /EXAMINE STATUS REGISTER FOR EXPONENT UNDERFLOW CONDITION

7437  6556          FPRST                     /READ FPP STATUS REGISTER INTO AC
7440  3024          DCA     STATUS            /STORE STATUS IMAGE IN LOCATION STATUS
7441  1024          TAD     STATUS
7442  7041          CIA
7443  1045          TAD     K40               /SHOULD EQUAL 40 = EXPONENT UNDERFLOW(BIT 6) SET
7444  7440          SZA                       /YES - SKIP
7445  7402          HLT                       /ERROR - INCORRECT STATUS EXAMINE LOC STATUS
7446  1525          TAD I   K4001             /FPC POINTER FROM APT TABLE TO AC
7447  7041          CIA
7450  1370          TAD     K1126             /SHOULD EQUAL 1126
7451  7440          SZA                       /YES - SKIP
7452  7402          HLT                       /ERROR - FPC POINTER NOT EQUAL 1126


                    /T114 - EXECUTE A FDIV AND FEXIT INSTRUCTION
                    /FROM LOCATION 1132 IN FIXED POINT MODE
                    /
                    /       FAC    OPR XX  FAC
                    /EXP    0000    ----   0000
                    /MSW    2000 / 1000 = 2000
                    /LSW    0000   0000   0000

7453  6552    T114, FPICL                     /ZERO THE FPP WORLD
7454  7300          CLA CLL
7455  3533          DCA I   K4007            /ALTER FAC LSW
7456  1104          TAD     K2000
7457  3532          DCA I   K4006            /ALTER FAC MSW
7460  3531          DCA I   K4005            /ALTER FAC EXPONENT
7461  1367          TAD     K1132
7462  3525          DCA I   K4001            /ALTER FPC
7463  1124          TAD     K4000
7464  6553          FPCOM                    /LOAD CMD REGISTER
7465  6555          FPST                     /LOAD ADRS REGISTER AND START FPP
7466  7402          HLT                      /ERROR
7467  6551          FPINT                    /SKIP ON FPP INTERRUPT REQUEST FLAG
7470  5267          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7471  7300          CLA CLL
7472  1533          TAD I   K4007            /FAC LSW FROM APT TABLE TO AC
7473  7440          SZA                      /SKIP IF ZERO
7474  7402          HLT                      /ERROR
7475  1532          TAD I   K4006            /FAC MSW FROM APT TABLE TO AC
7476  7041          CIA
7477  1104          TAD     K2000            /SHOULD EQUAL 2000
7500  7440          SZA                      /YES - SKIP
7501  7402          HLT                      /ERROR
7502  1531          TAD I   K4005            /FAC EXPONENT FROM APT TABLE TO AC
7503  7440          SZA                      /SKIP IF ZERO
7504  7402          HLT                      /ERROR
```

```
                    /T115 - EXECUTE A FDIV AND FEXIT INSTRUCTION
                    /FROM LOCATION 1207 FORCING A DIVIDE BY ZERO CONDITION
                    /
                    /       FAC    OPR 01   FAC
                    /EXP    0000    0000    0000

                    /MSW    2000 / 0000 = 2000
                    /LSW    0000    0000    0000

7505  6552  T115,   FPICL                   /ZERO THE FPP WORLD
7506  7300          CLA CLL
7507  3533          DCA I   K4007           /ALTER FAC LSW
7510  1104          TAD     K2000
7511  3532          DCA I   K4006           /ALTER FAC MSW
7512  3531          DCA I   K4005           /ALTER FAC EXPONENT
7513  1371          TAD     K1207
7514  3525          DCA I   K4001           /ALTER FPC
7515  6553          FPCOM                   /LOAD CMD REGISTER
7516  1124          TAD     K4000
7517  6555          FPST                    /LOAD ADRS REGISTER AND START FPP
7520  7402          HLT                     /ERROR
7521  6551          FPINT                   /SKIP ON FPP INTERRUPT REQUEST FLAG
7522  5321          JMP     .-1

                    /EXAMINE APT TABLE FOR CORRECT DATA

7523  7300          CLA CLL
7524  1533          TAD I   K4007           /FAC LSW FROM APT TABLE TO AC
7525  7440          SZA                     /SKIP IF ZERO
7526  7402          HLT                     /ERROR
7527  1532          TAD I   K4006           /FAC MSW FROM APT TABLE TO AC
7530  7041          CIA
7531  1104          TAD     K2000           /SHOULD EQUAL 2000
7532  7440          SZA                     /YES - SKIP
7533  7402          HLT                     /ERROR
7534  1531          TAD I   K4005           /FAC EXPONENT FROM APT TABLE TO AC
7535  7440          SZA                     /SKIP IF ZERO
7536  7402          HLT                     /ERROR

                    /EXAMINE STATUS REGISTER - DIVIDE BY ZERO STATUS SHOULD BE SET

7537  6556          FPRST                   /READ FPP STATUS REGISTER INTO AC
7540  3024          DCA     STATUS          /STORE STATUS IMAGE IN LOCATION STATUS
7541  1024          TAD     STATUS
7542  7041          CIA
7543  1055          TAD     K400            /SHOULD EQUAL 400 - DIVIDE BY ZERO STATUS(BIT 3) SET
7544  7440          SZA                     /YES - SKIP
7545  7402          HLT                     /ERROR - EXAMINE LOCATION STATUS FOR INCORRECT STATUS
7546  6552          FPICL                   /ZERO THE FPP WORLD
7547  6556          FPRST                   /READ FPP STATUS INTO AC
7550  7440          SZA                     /SHOULD BE ZERO
7551  7402          HLT                     /ERROR - FPICL IOT DID NOT CLEAR DIVIDE BY ZERO FLAG
```

```
7552  2025          ISZ     BELL          /RING BELL EVERY 100 PASSES
7553  5365          JMP     ST            /NO
7554  7300          CLA CLL
7555  1051          TAD     K207          /AC=207 OR BELL CODE
7556  6046          TLS                   /RING IT
7557  7300          CLA CLL
7560  1166          TAD     K7700         /AC = -100
7561  3025          DCA     BELL          /SET BELL COUNTER = -100
7562  6041          TSF                   /FLAG SET
7563  5362          JMP     .-1           /NO
7564  6042          TCF                   /CLEAR FLAG
7565  5766    ST,   JMP I   .+1
7566  0200          200                   /RETURN TO BEGINNING OF PROGRAM

7567  1132    K1132, 1132
7570  1126    K1126, 1126
7571  1207    K1207, 1207
```

```
0000  11111100  00000000  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000

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

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111101


1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1200  11111111  11111100  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100000

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  10000001  11111111  11111111  11111111  11111111  11111110


2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111000  00000000  00000000

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111000  00000000  00000000  00000000

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11000000  00000000

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110


3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111100

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  11111111  11111111  11111111  10000000  00000000  00000000

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

3600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3700  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00000000
```

```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  11100000  00000000

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111110

4400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4500  11111111  11111111  11111111  11111111  11111100  00000000  00000000  00000000

4600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4700  11111111  11111111  11111111  11111111  11111110  00000000  00000000  00000000


5000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000

5200  11111111  11111111  11111111  11111111  11111111  10111111  11111111  11111111
5300  11111111  11111111  11111111  11111111  11111111  11111100  00000000  00000000

5400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000

5600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5700  11111111  11111111  11111111  11111111  11111000  00000000  00000000  00000000


6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11100000

6200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6300  11111111  11111111  11111111  11111110  00000000  00000000  00000000  00000000

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6500  11111111  11111111  11111111  11111111  11100000  00000000  00000000  00000000

6600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6700  11111111  11111111  11111111  11111111  11111111  10000000  00000000  00000000


7000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7100  11111111  11111111  11111111  11111111  11111111  11111111  10000000  00000000

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

7400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
7500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11000000

7600
7700
```

ALN	0010	K1042	0071	K14	0037	K41	2046
ALTR	0026	K1043	4543	K1777	0103	K420	0057
ALTR1	0027	K1045	4544	K2	0031	K4200	0136
APT	4000	K1047	4545	K20	0040	K421	0060
BELL	0025	K1051	4744	K200	0050	K4210	0137
CLIR	0022	K1053	4745	K2000	0104	K4421	0140
CLIR1	1762	K1055	4746	K2001	0105	K4630	0141
CNTR	0003	K1057	0072	K201	4743	K4631	0142
FADD	1000	K1061	3345	K207	0051	K4760	0143
FCLA	0002	K1063	3346	K21	4542	K5	0034
FDIV	3000	K1065	3347	K210	0052	K520	0061
FEXIT	0000	K1067	3543	K2100	0106	K5236	2561
FLDA	0000	K1071	3544	K2104	0107	K5250	0144
FMUL	4000	K1073	3545	K2210	0110	K5251	0145
FNEG	0003	K1075	3766	K2301	6540	K5252	0146
FNORM	0004	K1077	0073	K2314	0111	K5253	0147
FPAUSE	0001	K11	0036	K24	0041	K55	3174
FPCOM	6553	K1101	0074	K250	0053	K5670	0150
FPHLT	6554	K1103	0075	K2522	0112	K5673	0151
FPICL	6552	K1105	0076	K2524	0113	K6000	0152
FPINT	6551	K1107	7367	K2525	0114	K6314	0153
FPIST	6557	K1111	5171	K2526	0115	K6525	3175
FPRST	6556	K1114	0077	K26	0042	K6735	0154
FPST	6555	K1117	5172	K260	1567	K7000	0155
FSUB	2000	K1121	5173	K27	0043	K7001	0156
INFLAG	0004	K1123	5354	K2735	0116	K7002	0157
INS	1735	K1125	0100	K2777	7160	K7003	0160
INSERV	1727	K1126	7570	K3	0032	K7004	0161
IR	7000	K1127	0101	K30	0044	K7005	0162
K1	0030	K1132	7567	K3000	0117	K7006	0163
K10	0035	K1135	5355	K320	1570	K7007	0164
K100	0047	K1137	5570	K3356	0120	K7356	0165
K1000	0064	K1141	5571	K360	0054	K770	0062
K1001	0065	K1143	5572	K3751	0121	K7700	0166
K1002	0066	K1145	5573	K3752	0122	K7751	0167
K1003	0067	K1147	5742	K3763	3546	K7752	0170
K1005	0070	K1151	5743	K3775	7157	K7766	0171
K1007	3763	K1153	5744	K3777	0123	K7767	0172
K101	4742	K1155	6334	K4	0033	K777	0063
K1011	3764	K1157	6335	K40	0045	K7770	0173
K1013	3765	K1161	6336	K400	0055	K7773	1776
K1015	4160	K1163	6537	K4000	0124	K7774	3350
K1017	4161	K1165	6541	K4001	0125	K7775	0174
K1021	4162	K1167	6542	K4002	0126	K7776	0175
K1023	7154	K1171	6750	K4003	0127	K7777	0176
K1025	7155	K1173	6747	K4004	0130	LAPT	0005
K1027	4373	K1176	1571	K4005	0131	LAPT1	1742
K1031	7156	K1201	1572	K4006	0132	NUM	0023
K1033	7366	K1204	6746	K4007	0133	SETB	1110
K1035	4374	K1207	7571	K401	0056	SETX	1100
K1037	4375	K1211	1775	K4014	0134	SKPTST	1565
K1041	4376	K1252	0102	K4015	0135	ST	7565

START	0200	T41	3000	T93	6500		
STARTD	0006	T42	3040	T94	6600		
STARTF	0005	T43	3100	T95	6645		
STATUS	0024	T44	3135	T96	6705		
T1	0206	T45	3200	T9A	0600		
T10	0644	T46	3242	TRAP1	3000		
T100	7010	T47	3303	TRAP2	4000		
T101	7045	T48	3400	TRAP3	5000		
T102	7077	T49	3440	TRAP4	6000		
T103	7200	T5	0400	TRAP5	7000		
T10A	0703	T50	3501				
T10B	0713	T51	3600				
T10C	0733	T52	3640				
T10D	0753	T53	3667				
T10E	0763	T54	3721				
T11	1220	T55	4010				
T110	7227	T6	0414				
T111	7264	T60	4050				
T112	7317	T61	4074				
T113	7400	T62	4126				
T114	7453	T63	4200				
T115	7505	T64	4235				
T12	1332	T65	4274				
T13	1400	T66	4331				
T14	1426	T67	4400				
T15	1456	T68	4440				
T15A	1461	T69	4500				
T16	1505	T7	0434				
T16A	1510	T70	4600				
T17	1534	T71	4640				
T18	1600	T72	4700				
T18A	1606	T73	5000				
T19	1643	T74	5035				
T2	0211	T75	5074				
T20	1667	T76	5133				
T21	2000	T77	5220				
T22	2044	T78	5260				
T23	2113	T8	0443				
T24	2200	T80	5315				
T25	2231	T81	5400				
T26	2261	T82	5433				
T27	2313	T83	5470				
T28	2400	T84	5526				
T29	2433	T85	5600				
T3	0271	T86	5640				
T30	2467	T87	5700				
T31	2526	T88	6200				
T32	2600	T89	6237				
T33	2635	T9	0543				
T34	2672	T90	6275				
T4	0301	T91	6400				
T40	2735	T92	6441				

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 52 SECONDS

3K CORE USED