FPP12C

IDENTIFICATION

PRODUCT CODE:	MAINDEC-12-DAFPB-A-D REPLACES: MAINDEC-12-DØOB-D
PRODUCT NAME:	FPP-12 INSTRUCTION TEST 2C
DATE CREATED:	JULY 15, 1972
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	B. LAFLAMME/W. MANTER

NOTE: → 4167 ISNOT 7745 should be 7743

1. ABSTRACT

THIS PROGRAM CHECKS THE FOLLOWING INSTRUCTIONS IN THE FPP-12
(THE PDP-12 FLOATING POINT PROCESSOR OPTION).

LDX	LOAD INDEX REGISTER
ADDX	ADD TO INDEX REGISTER
FSTA	STORE FAC
ATX	ACCUMULATOR TO INDEX REGISTER
FADDM	ADD TO MEMORY
FMULM	MULTIPLY TO MEMORY
NOP	14 INSTRUCTIONS THAT PERFORM NO OPERATION

THIS PROGRAM HALTS ON ERRORS AND USES NO TTY COMMUNICATIONS.

THE WORD "FREE" IS DEFINED IN THE PROGRAM AS A NOP (7000). THIS INSTRUCTION WAS PUT IN SEVERAL LOCATIONS IN THE PROGRAM TO MAKE AVAILABLE MEMORY LOCATIONS FOR THE USER TO MODIFY THE PROGRAM FOR SCOPE OR TEST LOOPS AT HIS OPTION. IT IS ASSUMED THAT THE BASIC PDP-8 OR PDP-12 PROCESSOR AND MEMORY HAVE BEEN CHECKED AND ARE FULLY OPERATIONAL.

2. REQUIREMENTS

2.1 EQUIPMENT

1) AN FPP-12 FLOATING POINT PROCESSOR
2) A BASIC PDP-8 OR PDP-12 WITH 4K OF CORE MEMORY
3) AN INPUT DEVICE FOR LOADING THE PROGRAM

2.2 STORAGE

THIS PROGRAM OCCUPIES LOCATIONS 0000 THROUGH 6477 OF FIELD 0

2.3 PRELIMINARY PROGRAMS

ALL PDP-8 OR PDP-12 PROCESSOR AND MEMORY DIAGNOSTICS MUST HAVE BEEN RUN SUCCESSFULLY. FPP-12 INSTRUCTION TEST 2A MUST HAVE BEEN RUN SUCCESSFULLY.

3. LOADING PROCEDURE

LOAD THE PROGRAM WITH THE BIN LOADER, DIAL LOADER OR PS-8 LOADER

4. STARTING PROCEDURE

PDP-12 SET LEFT SWITCHES TO 0200
RIGHT SWITCHES = 0000 ← 8 mode
PRESS I/O PRESET
PRESS START LEFT SWITCHES

PDP-8I SET SWITCH REGISTER = 0200
PRESS LOAD ADDRESS
SET SWITCH REGISTER = 0000
PRESS START

PDP-8E SET SWITCH REGISTER = 0200
PRESS LOAD ADDRESS
SET SWITCH REGISTER = 0000
PRESS CLEAR
PRESS CONTINUE

5. OPERATING INSTRUCTONS

CAUTION***
IF THE PROGRAM IS STOPPED WHILE RUNNING TEST 9 THE RIM LOADER MAY BE DESTROYED. TEST 9 SAVES LOCATIONS 7770-7777 THEN USES THESE LOCATIONS AND RESTORES THEM WHEN FINISHED.

5.1 THE PROGRAM WILL RUN IN A CONTINUOUS LOOP UNTIL STOPPED

5.2 SWITCH SETTINGS

SR00=0 RUN CONTINUOUSLY
SR00=1 STOP AT END OF PASS

6. ERRORS

IF AN ERROR IS DETECTED THE PROGRAM WILL HALT. SEE LISTING FOR INFORMATION CONCERNING FAILURE.

THE COMMENTS AT THE BEGINNING OF EACH TEST TELL WHAT INSTRUCION IS BEING TESTED AND THE FPP INSTRUCTIONS AND TAGS USED IN THE TEST.

THE ACTUAL FPP INSTRUCTIONS BEING RUN ARE LOCATED STARTING AT 6000.

7. PROGRAM OPERATION

7.1 TST1-TST8

TESTS THE LDX INSTRUCTION ON EACH INDEX REGISTER INDIVIDUALLY. THE INDEX REGISTERS ARE LOCATED IN LOCATIONS 0030-0037. IN EACH TEST ONE INDEX REGISTER IS TESTED.

ALL 4096 COMBINATIONS OF DATA ARE LOADED INTO EACH INDEX REG ONE WORD AT A TIME BY THE FPP-12.

AFTER EACH WORD IS LOADED THE FPP-12 EXITS AND THE DATA IS CHECKED BY THE PDP.

7.2 TST9

ALL INDEX REGISTERS ARE LOADED BY THE FPP-12 EACH WITH DIFFERENT DATA THEN THE FPP-12 EXITS.

THE INDEX REGISTERS ARE IN LOCATIONS 7770-7777.

THE DATA IS THEN CHECKED BY THE PDP.

LOCATIONS 7770-7777 ARE THEN RESTORED.

7.3 TST10-TST17

TESTS THE ADDX INSTRUCTION ON EACH INDEX REGISTER INDIVIDUALLY. THE INDEX REGISTERS ARE LOCATED IN LOCATIONS 0030-0037.

EACH TEST CHECKS ONE INDEX REGISTER.

ALL POSSIBLE NUMBERS ARE ADD TO THE INDEX REGISTER ONE AT A TIME. THE FPP-12 EXITS AFTER EACH ADD AND THE PDP CHECKS THE RESULTS.

7.4 TST18

1 IS ADDED TO ALL INDEX REGISTERS 4096 TIMES AND THE CONTENTS OF THE INDEX REGISTERS ARE CHECKED TO BE ZERO.

7.5 TST20

TESTS THE JXN INSTRUCTION.

THE JXN IS DONE 4096 TIMES AND THE FPP-12 EXITS AFTER EACH JXN. THE PDP CHECKS THE INDEX REGISTER AND FPC FOR CORRECT DATA AFTER EACH JXN. THE JXN SHOULD JUMP 4095 TIMES AND SHOULD SKIP ONCE.

7.6 TST21

TESTS THE JXN AT FULL SPEED OPERATION.

WITH X0=0000 A JXN TO ITSELF IS PERFORMED.

IT SHOULD EXIT AFTER X0 COUNTS TO 7777 AND OVERFLOWS TO 0000. THE PDP HAS A TIMING LOOP OF A LITTLE OVER 200 MILLI SECS. THE FPP-12 SHOULD EXIT BEFORE THIS LOOP TIMES OUT.

7.7 TST22

TESTS THAT A JXN WITH BIT 5=0 WILL NOT INCREMENT THE INDEX REGISTER.

7.8 TST30-TST33

TESTS THE FSTA INSTRUCTION WITH ALL BUT ONE POSSIBLE ADDRESSING MODES. A FLDA IS USED TO LOAD THE FAC. IT IS ASSUMED TO BE OK BECAUSE IT IS CHECKED IN INSTRUCTION TEST 2A. ALL TESTS RUN IN THE FLOATING POINT MODE. ONE 36 BIT WORD IS LOADED AND STORED BY THE FPP-12 IN EACH TEST AND THE RESULTS ARE CHECKED BY THE PDP.

7.9 TST34-TST35

TESTS THE LAST ADDRESSING MODE.

BOTH TESTS RUN THE SAME FPP CODE BUT TST34 RUNS IN FLOATING POINT MODE AND TST35 RUNS IN DOUBLE PRECISION MODE.

THE FPP TRANSFERS A BLOCK OF DATA FROM BUF1 TO BUF2 AT FULL SPEED THEN EXITS.

THE PDP THEN COMPARES THE 2 BUFFERS.

7.10 TST40-TST41

TESTS THE ATX INSTRUCTION IN FLOATING POINT MODE AND DOUBLE PRECISION MODE RESPECTIVELY.

THE XTA INSTRUCTION IS USED TO LOAD THE FAC.

THE XTA INSTRUCTION IS TESTED IN INSTRUCTION TEST 2A. ALL COMBINATIONS OF DATA ARE LOADED INTO THE FAC FROM X0 THEN FIXED AND STORED INTO X7. THE PDP CHECKS THE RESULTS AFTER EACH ATX.

7.11 TST50-TST56

TESTS THE FADDM INSTRUCTION IN FLOATING POINT MODE. ALL 7 TESTS ARE THE SAME EXCEPT THAT IN EACH SUCCEEDING TEST THE INDEX REGISTER USED CONTAINS A NUMBER 1 HIGHER THAN THE PREVIOUS TEST AND THE BASE ADDRESS USED IS DECREMENTED BY 3. THUS THE RESULTS OF EACH ADD IS TO THE SAME LOCATION. FOUR SETS OF 36 BIT NUMBERS WITH KNOWN ANSWERS ARE ADDED TOGETHER IN EACH TEST. THE PDP CHECKS THE RESULTS AFTER EACH ADD.

7.12 TST57

TESTS THE FADDM INSTRUCTION IN DOUBLE PRECISION MODE. THE FAC IS ADDED TO THE 24 BIT WORD IN LOCATIONS 5252 AND 5253 AND THE FPP EXITS. THE PDP CHECKS THE RESULTS AGAINST A SIMULATED ANSWER. IF AN OVERFLOW OCCURRED WHILE SIMULATING THE ANSWER, THE PDP CHECKS THAT THE OPERANDS WERE NOT ALTERED. NEW OPERANDS ARE GENERATED BY PUTTING THE SIMULATED ANSWER IN THE FAC AND THE SIMULATED ANSWER SHIFTED RIGHT ONE BIT IN MEMORY. THIS OPERATION IS PERFORMED 1000 DECIMAL TIMES WITH NEW OPERANDS EACH TIME.

7.13 TST60

TESTS THE FMULM INSTRUCTION IN FLOATING POINT MODE. FOUR FLOATING POINT NUMBERS ARE MULTIPLIED BY FOUR OTHER FLOATING POINT NUMBERS AND THE FPP EXITS. THE RESULTS ARE CHECKED BY THE PDP.

7.14 TST70

TESTS ALL OPERATION CODES WHICH PERFORM NO OPERATION. THE FPP-12 EXECUTES ALL NOPS IN SEQUENCE THEN EXITS. THE PDP THEN CHECKS THE APT AND INDEX REGISTERS TO BE SURE THAT ONLY THE FPC CHANGED.

```
                /FPP INSTRUCTION TEST 2C


                / PROGRAM STARTS AT 0200 IN 8 MODE


                /THE INSTRUCTION "FREE" IS A NOP BUT SIGNIFIES
                /A LOCATION AVAILABLE TO THE USER FOR PROGRAM
                /MODIFICATION WHEN DESIRED

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```
                    PMODE


                    /IOT LIST

          6551      FPINT=6551
          6553      FPCOM=6553
          6552      FPICL=6552
          6554      FPHLT=6554
          6555      FPST=6555
          6557      FPIST=6557
          6556      FPRST=6556
          7000      FMULM=7000
          0000      FLDA=0000
          6000      FSTA=6000
          0100      LDX=0100
          5000      FADDM=5000
          0020      ATX=0020
          0030      XTA=0030
          0110      ADDX=0110
          1030      JA=1030
          1130      JSR=1130
          2100      JXN=2100
          1110      SETB=1110
          0000      FEXIT=0000
          0000      X0=00
          0010      X1=10
          0020      X2=20
          0030      X3=30
          0040      X4=40
          0050      X5=50
          0060      X6=60
          0070      X7=70
          7770      IR10=7770
          7771      IR11=7771
          7772      IR12=7772
          7773      IR13=7773
          7774      IR14=7774
          7775      IR15=7775
          7776      IR16=7776
          7777      IR17=7777
          7000      DATA=7000
          7000      FREE=7000


                    DEFINE  NPAGE   /AN INSTRUCTION TO JUMP TO NEXT MEMORY PAGE
                <   JMP I   (',+2008'7600           /JUMP TO NEXT MEMORY PAGE>
```

```
                0020    *20
0020    0000    APT,    0
0021    0000    FPC,    0
0022    0030    ADX,    IR0
0023    7000    BASE,   DATA
0024    0000    OPAD,   0
0025    0000    EFAC,   0
0026    0000    MFAC,   0
0027    0000    LFAC,   0

0030    0000    IR0,    0
0031    0000    IR1,    0
0032    0000    IR2,    0
0033    0000    IR3,    0
0034    0000    IR4,    0
0035    0000    IR5,    0
0036    0000    IR6,    0
0037    0000    IR7,    0
0040    0000            0
0041    0000            0
0042    0000            0
0043    0000            0
0044    0000            0
0045    0000            0
0046    0000            0
0047    0000            0

                0076    *76
0076    0000            0
0077    0000            0
0100    5000            BUF1
0101    0000            0
0102    0000            0
0103    5100            BUF2
0104    7777    LOOPCT, -1
0105    4200    ACLRX,  CLRX
0106    0000    LOOP,   0
0107    0000    T1,     0
0110    0000    T2,     0
0111    0000    T3,     0
0112    0000    T4,     0
0113    0000    T5,     0
0114    0000    T6,     0
0115    0000    T7,     0
0116    0000    T8,     0
0117    0000    T9,     0
0120    0000    SAVEL,  0

                0200            PAGE
```

```
                    /TEST LDX ON INDEX REGISTER 0

                    /*************************************************
                    /       FTSTA,  LDX     .
                    /               0
                    /               FEXIT
                    /*************************************************


0200  6552  TST1,   FPICL                   /CLEAR FPP
0201  7200          CLA
0202  1177          TAD     CIR0            /GET ADDRESS OF INDEX REG 0
0203  3022          DCA     ADX             /SET INDEX POINTER IN APT
0204  3777'         DCA     FTSTA+1         /ZERO DATA WORD
0205  7200  TST1A,  CLA
0206  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
0207  3106          DCA     LOOP            /THROUGH EACH DATA PATTERN
0210  4505  TST1B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
0211  7240          STA                     /AC=7777
0212  3030          DCA     IR0             /SET IR0 TO 7777
0213  1376          TAD     (FTSTA          /ADDRESS OF FPP INSTRUCTIONS
0214  3021          DCA     FPC
0215  6553          FPCOM                   /FPP COMMAND REGISTER=0000
0216  1176          TAD     CAPT            /GET ADDRESS OF APT
0217  6555          FPST                    /START FPP
0220  7402          HLT
0221  6557          FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
0222  5221          JMP     .-1
0223  7200          CLA
0224  1030          TAD     IR0             /GET NEW IR0 DATA
0225  7041          CIA
0226  1777'         TAD     FTSTA+1         /COMPARE WITH ORIGINAL DATA
0227  7640          SZA CLA                 /IS IR0 CORRECT?
0230  7402          HLT                     /NO, LDX0 FAILED
0231  7000          FREE                    /UNUSED LOCATION
0232  1031          TAD     IR1
0233  7640          SZA CLA                 /DID IR1 CHANGE?
0234  7402          HLT                     /YES
0235  7000          FREE                    /UNUSED LOCATION
0236  1032          TAD     IR2
0237  7640          SZA CLA                 /DID IR2 CHANGE
0240  7402          HLT                     /YES
0241  7000          FREE                    /UNSUED LOCATION
0242  1033          TAD     IR3
0243  7640          SZA CLA                 /DID IR3 CHANGE?
0244  7402          HLT                     /YES
0245  7000          FREE                    /UNUSED LOCATION
0246  1034          TAD     IR4
0247  7640          SZA CLA                 /DID IR4 CHANGE?
0250  7402          HLT                     /YES
0251  7000          FREE                    /UNUSED LOCATION
0252  1035          TAD     IR5
0253  7640          SZA CLA                 /DID IR5 CHANGE?
0254  7402          HLT                     /YES
```

```
  168    0255  7000          FREE                    /UNUSED LOCATION
  169    0256  1036          TAD     IR6
  170    0257  7640          SZA CLA                 /DID IR6 CHANGE?
  171    0260  7402          HLT                     /YES
  172    0261  7000          FREE                    /UNUSED LOCATION
  173    0262  1037          TAD     IR7
  174    0263  7640          SZA CLA                 /DID IR7 CHANGE
  175    0264  7402          HLT
  176    0265  7000          FREE
  177    0266  2106          ISZ     LOOP            /INCREMENT LOOP COUNTER
  178    0267  5210          JMP     TST1B           /USE SAME DATA 100 TIMES
  179    0270  2777'         ISZ     FTSTA+1         /INCREMENT DATA
  180    0271  5205          JMP     TST1A           /RESET LOOP COUNTER
  181
  182
  183
  184    0272  7000          FREE                    /UNUSED LOCATIONS
  185    0273  7000          FREE
```

```
                    /TEST LDX ON INDEX REGISTER 1
                    /
                    /************************************************
                    /       FTSTB,  LDX     1
                    /               0
                    /               FEXIT
                    /************************************************
                    
                    
0274  7200  TST2,   CLA
0275  1177          TAD     CIR0            /GET THE ADDRESS OF INDEX REG 0
0276  3022          DCA     ADX             /SET INDEX POINTER IN APT
0277  3775'         DCA     FTSTB+1         /ZERO DATA WORD
0300  7200  TST2A,  CLA
0301  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
0302  3106          DCA     LOOP            /THROUGH EACH DATA PATTERN
0303  4505  TST2B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
0304  7240          STA                     /AC=7777
0305  3031          DCA     IR1             /SET IR1 TO 7777
0306  1374          TAD     (FTSTB          /ADDRESS OF FPP INSTRUCTIONS
0307  3021          DCA     FPC             /SET FPC IN APT
0310  6553          FPCOM                   /FPP COMMAND REGISTER=0000
0311  1176          TAD     CAPT            /GET ADDRESS OF APT
0312  6555          FPST                    /START FPP
0313  7402          HLT
0314  6557          FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
0315  5314          JMP     .-1
0316  7200          CLA
0317  1031          TAD     IR1             /GET NEW IR1 DATA
0320  7041          CIA
0321  1775'         TAD     FTSTB+1         /COMPRE WITH ORIGINAL DATA
0322  7640          SZA CLA                 /IS IR1 CORRECT?
0323  7402          HLT                     /NO, LDX1 FAILED
0324  7000          FREE                    /UNUSED LOCATION
0325  1030          TAD     IR0
0326  7640          SZA CLA                 /DID IR0 CHANGE
0327  7402          HLT                     /YES
0330  7000          FREE                    /UNUSED LOCATION
0331  1032          TAD     IR2
0332  7640          SZA CLA                 /DID IR2 CHANGE?
0333  7402          HLT                     /YES
0334  7000          FREE                    /UNUSED LOCATION
0335  1033          TAD     IR3
0336  7640          SZA CLA                 /DID IR3 CHANGE?
0337  7402          HLT                     /YES
0340  7000          FREE                    /UNUSED LOCATION
0341  1034          TAD     IR4
0342  7640          SZA CLA                 /DID IR4 CHANGE?
0343  7402          HLT                     /YES
0344  7000          FREE                    /UNUSED LOCATION
0345  1035          TAD     IR5
0346  7640          SZA CLA                 /DID IR5 CHANGE?
0347  7000          FREE                    /UNUSED LOCATION
```

```
      0350  1036            TAD     IR6
      0351  7640            SZA CLA                 /DID IR6 CHANGE?
      0352  7402            HLT                     /YES
      0353  7000            FREE                    /UNUSED LOCATION
      0354  1037            TAD     IR7
      0355  7640            SZA CLA                 /DID IR7 CHANGE?
      0356  7402            HLT                     /YES
      0357  7000            FREE                    /UNUSED LOCATION
      0360  2106            ISZ     LOOP            /INCREMENT LOOP COUNTER
      0361  5303            JMP     TST2B           /USE SAME DATA 100 TIMES
      0362  2775'           ISZ     FTSTB+1         /INCREMENT DATA
      0363  5300            JMP     TST2A           /RESET LOOP COUNTER
      0364  7000            FREE                    /UNUSED LOCATIONS
      0365  7000            FREE



                            NPAGE                   /GO TO NEXT TEST
      0366  5773            JMP I   (.+200&7600             /JUMP TO NEXT MEMORY PAGE
      0373  0400
      0374  6005
      0375  6006
      0376  6000
      0377  6001
            0400            PAGE

                    /TEST LDX ON INDEX REGISTER 2

                    /**********************************************
                    /       FTSTC,  LDX     2
                    /               0
                    /               FEXIT
                    /**********************************************


      0400  7200    TST3,   CLA
      0401  1177            TAD     EIR0            /GET THE ADDRESS OF INDEX REG 0
      0402  3022            DCA     ADX             /SET INDEX POINTER IN APT
      0403  3777'           DCA     FTSTC+1         /ZERO DATA WORD
      0404  7200    TST3A,  CLA
      0405  1104            TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
      0406  3106            DCA     LOOP            /THROUGH EACH DATA PATTERN
      0407  4505    TST3B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
      0410  7240            STA                     /AC=7777
      0411  3032            DCA     IR2             /SET IR2 TO 7777
      0412  1376            TAD     (FTSTC          /ADDRESS OF FPP INSTRUCTIONS
      0413  3021            DCA     FPC             /SET FPC IN APT
      0414  6553            FPCOM                   /FPP COMMAND REGISTER=0000
      0415  1176            TAD     EAPT            /GET ADDRESS OF APT
      0416  6555            FPST                    /START FPP
      0417  7402            HLT
      0420  6557            FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
      0421  5220            JMP     .-1
      0422  7200            CLA
```

```
 294   0423  1032          TAD     IR2             /GET NEW IR2 DATA
 295   0424  7041          CIA
 296   0425  1777'         TAD     FTSTC+1         /COMPARE WITH ORIGINAL DATA
 297   0426  7640          SZA CLA                 /IS IR2 CORRECT?
 298   0427  7402          HLT                     /NO, LDX2 FAILED
 299   0430  7000          FREE                    /UNUSED LOCATION
 300   0431  1030          TAD     IR0
 301   0432  7640          SZA CLA                 /DID IR0 CHANGE
 302   0433  7402          HLT                     /YES
 303   0434  7000          FREE                    /UNUSED LOCATION
 304   0435  1031          TAD     IR1
 305   0436  7640          SZA CLA                 /DID IR1 CHANGE?
 306   0437  7402          HLT                     /YES
 307   0440  7000          FREE                    /UNUSED LOCATION
 308   0441  1033          TAD     IR3
 309   0442  7640          SZA CLA                 /DID IR3 CHANGE?
 310   0443  7402          HLT                     /YES
 311   0444  7000          FREE                    /UNUSED LOCATION
```

```
                                /TEST LDX ON INDEX REGISTER3
                                /
                                /**************************************************
                                /       FTSTD,  LDX     3
                                /               0
                                /               FEXIT
                                /**************************************************
0473  7200  TST4,   CLA
0474  1177          TAD     CIR0            /GET THE ADDRESS OF INDEX REG 0
0475  3022          DCA     ADX             /SET INDEX POINTER IN APT
0476  3775'         DCA     FTSTD+1         /ZERO DATA WORD
0477  7200  TST4A,  CLA
0500  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
0501  3106          DCA     LOOP            /THROUGH EACH DATA PATTERN
0502  4505  TST4B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
0503  7240          STA                     /AC=7777
0504  3033          DCA     IR3             /SET IR TO 7777
0505  1374          TAD     CFTSTD          /ADDRESS OF FPP INSTRUCTIONS
0506  3021          DCA     FPC             /SET FPC IN APT
0507  6553          FPCOM                   /FPP COMMAND REGISTER=0000
0510  1176          TAD     CAPT            /GET ADDRESS OF APT
0511  6555          FPST                    /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
0512  7402          HLT
0513  6557          FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
```

```
0445  1034          TAD     IR4
0446  7640          SZA CLA                 /DID IR4 CHANGE
0447  7402          HLT                     /YES
0450  7000          FREE                    /UNUSED LOCATION
0451  1035          TAD     IR5
0452  7640          SZA CLA                 /DID IR5 CHANGE?
0453  7402          HLT                     /YES
0454  7000          FREE                    /UNUSED LOCATION
0455  1036          TAD     IR6
0456  7640          SZA CLA                 /DID IR6 CHANGE?
0457  7402          HLT                     /YES
0460  7000          FREE                    /UNUSED LOCATION
0461  1037          TAD     IR7
0462  7640          SZA CLA                 /DID IR7 CHANGE?
0463  7402          HLT                     /YES
0464  7000          FREE                    /UNUSED LOCATION
0465  2106          ISZ     LOOP            /INCREMENT LOOP COUNTER
0466  5207          JMP     TST3B           /USE SAME DATA 100 TIMES
0467  2777'         ISZ     FTSTC+1         /INCREMENT DATA
0470  5204          JMP     TST3A           /RESET LOOP COUNTER
0471  7000          FREE                    /UNUSED LOCATIONS
0472  7000          FREE
```

```
   367   0514  5313          JMP     .-1
   368   0515  7200          CLA
   369   0516  1033          TAD     IR3             /GET NEW IR3 DATA
   370   0517  7041          CIA
   371   0520  1775'         TAD     FTSTD-1         /COMPARE WITH ORIGINAL DATA
```

```
372
373     0521  7640          SZA CLA                 /IS IR3 CORRECT?
374     0522  7402          HLT                     /NO, LDX3 FAILED
375     0523  7000          FREE                    /UNUSED LOCATION
376     0524  1032          TAD     IR3
377     0525  7640          SZA CLA                 /DID IR0 CHANGE
378     0526  7402          HLT                     /YES
379     0527  7000          FREE                    /UNUSED LOCATION
380     0530  1031          TAD     IR1
381     0531  7640          SZA CLA                 /DID IR1 CHANGE?
382     0532  7402          HLT                     /YES
383     0533  7000          FREE                    /UNUSED LOCATION
384     0534  1032          TAD     IR2
385     0535  7640          SZA CLA                 /DID IR2 CHANGE?
386     0536  7402          HLT                     /YES
387     0537  7000          FREE                    /UNUSED LOCATION
388     0540  1034          TAD     IR4
389     0541  7640          SZA CLA                 /DID IR4 CHANGE?
390     0542  7402          HLT                     /YES
391     0543  7000          FREE                    /UNUSED LOCATION
392     0544  1035          TAD     IR5
393     0545  7640          SZA CLA                 /DID IR5 CHANGE?
394     0546  7402          HLT                     /YES
395     0547  7000          FREE                    /UNUSED LOCATION
396     0550  1036          TAD     IR6
397     0551  7640          SZA CLA                 /DID IR6 CHANGE?
398     0552  7402          HLT                     /YES
399     0553  7000          FREE                    /UNUSED LOCATION
400     0554  1037          TAD     IR7
401     0555  7640          SZA CLA                 /DID IR7 CHANGE?
402     0556  7402          HLT                     /YES
403     0557  7000          FREE                    /UNUSED LOCATION
404     0560  2106          ISZ     LOOP            /INCREMENT LOOP COUNTER
405     0561  5302          JMP     TST4B           /USE SAME DATA 100 TIMES
406     0562  2775'         ISZ     FTSTD+1         /INCREMENT DATA
407     0563  5277          JMP     TST4A           /RESET LOOP COUNTER
408     0564  7000          FREE                    /UNUSED LOCATIONS
409     0565  7000          FREE
410
411
412
413
414                         NPAGE                   /GO TO NEXT TEST
415     0566  5773          JMP I   (',+20087600            /JUMP TO NEXT MEMORY PAGE
416     0573  0600
417     0574  6017
418     0575  6020
419     0576  6012
420     0577  6013
              2600          PAGE
```

```
                /TEST LDX ON INDEX REGISTER4
                /
                /**********************************************
                /       FTSTE,  LDX     4
                /               0
                /               FEXIT
                /**********************************************

0600  7200  TST5,   CLA
0601  1177          TAD     CIR0            /GET THE ADDRESS OF INDEX REG0
0602  3022          DCA     ADX             /SET INDEX POINTER IN APT
0603  3777'         DCA     FTSTE+1         /ZERO DATA WORD
0604  7200  TST5A,  CLA
0605  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
0606  3106          DCA     LOOP            /THROUGH EACH DATA PATTERN
0607  4505  TST5B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
0610  7240          STA                     /AC=7777
0611  3034          DCA     IR4             /SET IR TO 7777
0612  1376          TAD     CFTSTE          /ADDRESS OF FPP INSTRUCTIONS
0613  3021          DCA     FPC             /SET FPC IN APT
0614  6553          FPCOM                   /FPP COMMAND REGISTER=0000
0615  1176          TAD     CAPT            /GET ADDRESS OF APT
0616  6555          FPST                    /START FPP
0617  7402          HLT
0620  6557          FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
0621  5220          JMP     .-1
0622  7200          CLA
0623  1034          TAD     IR4             /GET NEW IR4 DATA
0624  7041          CIA
0625  1777'         TAD     FTSTE+1         /COMPARE WITH ORIGINAL DATA
0626  7640          SZA CLA                 /IS IR4 CORRECT?
0627  7402          HLT                     /NO, LDX4 FAILED
0630  7000          FREE                    /UNUSED LOCATION
0631  1030          TAD     IR0
0632  7640          SZA CLA                 /DID IR0 CHANGE
0633  7402          HLT                     /YES
0634  7000          FREE                    /UNUSED LOCATION
0635  1031          TAD     IR1
0636  7640          SZA CLA                 /DID IR1 CHANGE?
0637  7402          HLT                     /YES
0640  7000          FREE                    /UNUSED LOCATION
0641  1032          TAD     IR2
0642  7640          SZA CLA                 /DID IR2 CHANGE?
0643  7402          HLT                     /YES
0644  7000          FREE                    /UNUSED LOCATION
0645  1033          TAD     IR3
0646  7640          SZA CLA                 /DID IR3 CHANGE?
0647  7402          HLT                     /YES
0650  7000          FREE                    /UNUSED LOCATION
0651  1035          TAD     IR5
0652  7640          SZA CLA                 /DID IR5 CHANGE?
0653  7402          HLT                     /YES
0654  7000          FREE                    /UNUSED LOCATION
```

```
        0655  1036          TAD     IR6
        0656  7640          SZA CLA                 /DID IR6 CHANGE?
        0657  7402          HLT                     /YES
        0660  7000          FREE                    /UNUSED LOCATION
        0661  1037          TAD     IR7
        0662  7640          SZA CLA                 /DID IR7 CHANGE?
        0663  7402          HLT                     /YES
        0664  7000          FREE                    /UNUSED LOCATION
        0665  2106          ISZ     LOOP            /INCREMENT LOOP COUNTER
        0666  5207          JMP     TST5B           /USE SAME DATA 100 TIMES
        0667  2777'         ISZ     FTSTE+1         /INCREMENT DATA
        0670  5204          JMP     TST5A           /RESET LOOP COUNTER
        0671  7000          FREE                    /UNUSED LOCATIONS
        0672  7000          FREE





                    /TEST LDX ON INDEX REGISTER5

                    /************************************************
                    /       FTSTF,  LDX     5
                    /               0
                    /               FEXIT
                    /************************************************


        0673  7200  TST6,   CLA
        0674  1177          TAD     [IR0            /GET THE ADDRESS OF INDEX REG 0
        0675  3022          DCA     ADX             /SET INDEX POINTER IN APT
        0676  3775'         DCA     FTSTF+1         /ZERO DATA WORD
        0677  7200  TST6A,  CLA
        0700  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
        0701  3106          DCA     LOOP            /THROUGH EACH DATA PATTERN
        0702  4505  TST6B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
        0703  7240          STA                     /AC=7777
        0704  3035          DCA     IR5             /SET IR5 TO 7777
        0705  1374          TAD     (FTSTF          /ADDRESS OF FPP INSTRUCTIONS
        0706  3021          DCA     FPC             /SET FPC IN APT
        0707  6553          FPCOM                   /FPP COMMAND REGISTER=0000
        0710  1176          TAD     [APT            /GET ADDRESS OF APT
        0711  6555          FPST                    /START FPP
        0712  7402          HLT
        0713  6557          FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
        0714  5313          JMP     .-1
        0715  7200          CLA
        0716  1035          TAD     IR5             /GET NEW IR5 DATA
        0717  7041          CIA
        0720  1775'         TAD     FTSTF+1         /COMPARE WITH ORIGINAL DATA
        0721  7640          SZA CLA                 /IS IR5 CORRECT?
        0722  7402          HLT                     /NO, LDX5 FAILED
        0723  7000          FREE                    /UNUSED LOCATION
        0724  1030          TAD     IR0
```

```
 531   2725  7640          SZA CLA                 /DID IR0 CHANGE
 532   2726  7402          HLT                     /YES
 533   2727  7000          FREE                    /UNUSED LOCATION
 534   2730  1031          TAD     IR1
 535   2731  7640          SZA CLA                 /DID IR1 CHANGE?
 536   2732  7402          HLT                     /YES
```

```
537
538   0733  7000          FREE                    /UNUSED LOCATION
539   0734  1032          TAD     IR2
540   0735  7640          SZA CLA                 /DID IR2 CHANGE?
541   0736  7402          HLT                     /YES
542   0737  7000          FREE                    /UNUSED LOCATION
543   0740  1033          TAD     IR3
544   0741  7640          SZA CLA                 /DID IR3 CHANGE?
545   0742  7402          HLT                     /YES
546   0743  7000          FREE                    /UNUSED LOCATION
547   0744  1034          TAD     IR4
548   0745  7640          SZA CLA                 /DID IR4 CHANGE?
549   0746  7402          HLT                     /YES
550   0747  7000          FREE                    /UNUSED LOCATION
551   0750  1036          TAD     IR6
552   0751  7640          SZA CLA                 /DID IR6 CHANGE?
553   0752  7402          HLT                     /YES
554   0753  7000          FREE                    /UNUSED LOCATION
555   0754  1037          TAD     IR7
556   0755  7640          SZA CLA                 /DID IR7 CHANGE?
557   0756  7402          HLT                     /YES
558   0757  7000          FREE                    /UNUSED LOCATION
559   0760  2106          ISZ     LOOP            /INCREMENT LOOP COUNTER
560   0761  5302          JMP     TST6B           /USE SAME DATA 100 TIMES
561   0762  2775'         ISZ     FTSTF+1         /INCREMENT DATA
562   0763  5277          JMP     TST6A           /RESET LOOP COUNTER
563   0764  7000          FREE                    /UNUSED LOCATIONS
564   0765  7000          FREE
565
566
567
568
569                       NPAGE                   /GO TO NEXT TEST
570   0766  5773          JMP I   (;+200&7600             /JUMP TO NEXT MEMORY PAGE
571   0773  1000
572   0774  6031
573   0775  6032
574   0776  6024
575   0777  6025
            1000          PAGE
```

```
                        /TEST LDX ON INDEX REGISTER6
                        /*************************************************
                        /       FTSTG,  LDX     6
                        /               0
                        /               FEXIT
                        /*************************************************

1000  7200  TST7,   CLA
1001  1177          TAD     CIR0            /GET THE ADDRESS OF INDEX REG0
1002  3022          DCA     ADX             /SET INDEX POINTER IN APT
1003  3777'         DCA     FTSTG+1         /ZERO DATA WORD
1004  7200  TST7A,  CLA
1005  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1006  3106          DCA     LOOP            /THROUGH EACH DATA PATTERN
1007  4505  TST7B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
1010  7240          STA                     /AC=7777
1011  3036          DCA     IR6             /SET IR6 TO 7777
1012  1376          TAD     (FTSTG          /ADDRESS OF FPP INSTRUCTIONS
1013  3021          DCA     FPC             /SET FPC IN APT
1014  6553          FPCOM                   /FPP COMMAND REGISTER=0000
1015  1176          TAD     CAPT            /GET ADDRESS OF APT
1016  6555          FPST                    /START FPP
1017  7402          HLT
1020  6557          FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
1021  5220          JMP     .-1
1022  7200          CLA
1023  1036          TAD     IR6             /GET NEW IR6 DATA
1024  7041          CIA
1025  1777'         TAD     FTSTG+1         /COMPARE WITH ORIGINAL DATA
1026  7640          SZA CLA                 /IS IR6 CORRECT?
1027  7402          HLT                     /NO, LDX6 FAILED
1030  7000          FREE                    /UNUSED LOCATION
1031  1030          TAD     IR0
1032  7640          SZA CLA                 /DID IR0 CHANGE
1033  7402          HLT                     /YES
1034  7000          FREE                    /UNUSED LOCATION
1035  1031          TAD     IR1
1036  7640          SZA CLA                 /DID IR1 CHANGE?
1037  7402          HLT                     /YES
1040  7000          FREE                    /UNUSED LOCATION
1041  1032          TAD     IR2
1042  7640          SZA CLA                 /DID IR2 CHANGE?
1043  7402          HLT                     /YES
1044  7000          FREE                    /UNUSED LOCATION
1045  1033          TAD     IR3
1046  7640          SZA CLA                 /DID IR3 CHANGE?
1047  7402          HLT                     /YES
1050  7000          FREE                    /UNUSED LOCATION
1051  1034          TAD     IR4
1052  7640          SZA CLA                 /DID IR4 CHANGE?
1053  7402          HLT                     /YES
1054  7000          FREE                    /UNUSED LOCATION
```

```
1255  1035          TAD     IR5
1256  7640          SZA CLA                 /DID IR5 CHANGE?
1257  7402          HLT                     /YES
1260  7000          FREE                    /UNUSED LOCATION
1261  1037          TAD     IR7
1262  7640          SZA CLA                 /DID IR7 CHANGE?
1263  7402          HLT                     /YES
1264  7000          FREE                    /UNUSED LOCATION
1265  2106          ISZ     LOOP            /INCREMENT LOOP COUNTER
1266  5207          JMP     TST7B           /USE SAME DATA 100 TIMES
1267  2777'         ISZ     FTSTG+1         /INCREMENT DATA
1270  5204          JMP     TST7A           /RESET LOOP COUNTER
1271  7000          FREE                    /UNUSED LOCATIONS
1272  7000          FREE


                    /TEST LDX ON INDEX REGISTER7

                    /**************************************************
                    /       FTSTH,  LDX     7
                    /               0
                    /               FEXIT
                    /**************************************************


1273  7200    TST8,   CLA
1274  1177            TAD     CIR0            /GET THE ADDRESS OF INDEX REG0
1275  3022            DCA     ADX             /SET INDEX POINTER IN APT
1276  3775'           DCA     FTSTH+1         /ZERO DATA WORD
1277  7200    TST8A,  CLA
1300  1104            TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1301  3106            DCA     LOOP            /THROUGH EACH DATA PATTERN
1302  4505    TST8B,  JMS I   ACLRX           /ZERO INDEX REGISTERS
1303  7240            STA                     /AC=7777
1304  3037            DCA     IR7             /SET IR7 TO 7777
1305  1374            TAD     (FTSTH          /ADDRESS OF FPP INSTRUCTIONS
1306  3021            DCA     FPC             /SET FPC IN APT
1307  6553            FPCOM                   /FPP COMMAND REGISTER=0000
1310  1176            TAD     CAPT            /GET ADDRESS OF APT
1311  6555            FPST                    /START FPP
1312  7402            HLT
1313  6557            FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
1314  5313            JMP     .-1
1315  7200            CLA
1316  1037            TAD     IR7             /GET NEW IR7 DATA
1317  7041            CIA
1320  1775'           TAD     FTSTH+1         /COMPARE WITH ORIGINAL DATA
1321  7640            SZA CLA                 /IS IR7 CORRECT?
1322  7402            HLT                     /NO, LDX FAILED
1323  7000            FREE                    /UNUSED LOCATION
1324  1030            TAD     IR0
```

```
   686    1125  7640          SZA CLA                 /DID IR0 CHANGE
   687    1126  7402          HLT                     /YES
   688    1127  7000          FREE                    /UNUSED LOCATION
   689    1130  1231          TAD     IR1
   690    1131  7640          SZA CLA                 /DID IR1 CHANGE?
   691    1132  7402          HLT                     /YES
   692    1133  7000          FREE                    /UNUSED LOCATION
```

```
693
694    1134  1032          TAD     IR2
695    1135  7640          SZA CLA                 /DID IR2 CHANGE?
696    1136  7402          HLT                     /YES
697    1137  7000          FREE                    /UNUSED LOCATION
698    1140  1033          TAD     IR3
699    1141  7640          SZA CLA                 /DID IR3 CHANGE?
700    1142  7402          HLT                     /YES
701    1143  7000          FREE                    /UNUSED LOCATION
702    1144  1034          TAD     IR4
703    1145  7640          SZA CLA                 /DID IR4 CHANGE?
704    1146  7402          HLT                     /YES
705    1147  7000          FREE                    /UNUSED LOCATION
706    1150  1035          TAD     IR5
707    1151  7640          SZA CLA                 /DID IR5 CHANGE?
708    1152  7402          HLT                     /YES
709    1153  7000          FREE                    /UNUSED LOCATION
710    1154  1036          TAD     IR6
711    1155  7640          SZA CLA                 /DID IR6 CHANGE?
712    1156  7402          HLT                     /YES
713    1157  7000          FREE                    /UNUSED LOCATION
714    1160  2106          ISZ     LOOP            /INCREMENT LOOP COUNTER
715    1161  5302          JMP     TST8B           /USE SAME DATA 100 TIMES
716    1162  2775'         ISZ     FTSTH+1         /INCREMENT DATA
717    1163  5277          JMP     TST8A           /RESET LOOP COUNTER
718    1164  7000          FREE                    /UNUSED LOCATIONS
719    1165  7000          FREE
720
721
722
723
724                        NPAGE                   /GO TO NEXT TEST
725    1166  5773          JMP I   (',+200&7600            /JUMP TO NEXT MEMORY PAGE
726    1173  1200
727    1174  6043
728    1175  6044
729    1176  6036
730    1177  6037
             1200          PAGE
```

```
                    /TEST LDX ON ALL INDEX REGISTERS
                    /
                    /**************************************************
                    /       FTSTJ,  LDX     7
                    /       FTSTJ0, 1234
                    /               LDX     1
                    /       FTSTJ1, 2345
                    /               LDX     2
                    /       FTSTJ2, 3456
                    /               LDX     3
                    /       FTSTJ3, 4567
                    /               LDX     4
                    /       FTSTJ4, 4321
                    /               LDX     5
                    /       FTSTJ5, 5432
                    /               LDX     6
                    /       FTSTJ6, 6543
                    /               LDX     7
                    /       FTSTJ7,7654
                    /               FEXIT
                    /**************************************************

1200  7200  TST9,   CLA
1201  1377          TAD     (7770           /GET ADDRESS OF INDEX REG 0
1202  3022          DCA     ADX             /SET INDEX POINTER IN APT
1203  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1204  3106          DCA     LOOP            /THROUGH THE TEST
1205  4776'         JMS     SAVBIN          /SAVE BINARY LOADER
1206  7201  TST9A,  CLA IAC
1207  4505          JMS I   ACLRX           /ZERO INDEX REGISTERS (7770-7777)
1210  1375          TAD     (FTSTJ          /GET ADDRESS OF FPP INSTRUCTIONS
1211  3021          DCA     FPC             /SET FPC IN APT
1212  6553          FPCOM                   /FPP COMMAND REGISTER = 0000
1213  1176          TAD     [APT            /GET ADDRESS OF APT
1214  6555          FPST                    /START FPP
1215  7402          HLT
1216  6557          FPIST                   /WAIT FOR FPP TO COMPLETE INSTRUCTIONS
1217  5216          JMP     .-1
1220  7200          CLA
1221  1774'         TAD     FTSTJ0          /GET FIRST DATA WORD
1222  7041          CIA
1223  1777'         TAD     IR10            /COMPARE WITH INDEX REG 0
1224  7640          SZA CLA                 /IS IR0 CORRECT?
1225  7402          HLT                     /NO
1226  7000          FREE                    /NOT USED
1227  1773'         TAD     FTSTJ1          /GET DATA SECOND DATA WORD
1230  7041          CIA
1231  1772'         TAD     IR11            /COMPARE WITH IR1
1232  7640          SZA CLA                 /IS IR1 CORRECT?
1233  7402          HLT                     /NO
1234  7000          FREE                    /NOT USED
1235  1771'         TAD     FTSTJ2          /GET THIRD DATA WORD
1236  7041          CIA
1237  1770'         TAD     IR12            /COMPARE WITH IR2
```

```
   786   1240  7640          SZA CLA                 /IS IR2 CORRECT?
   787   1241  7402          HLT                     /NO
   788   1242  7000          FREE                    /NOT USED
   789   1243  1767'         TAD     FTSTJ3          /GET FOURTH DATA WORD
   792   1244  7041          CIA
   791   1245  1766'         TAD     IR13            /COMPARE WITH IR3
   792   1246  7640          SZA CLA                 /IS IR3 CORRECT?
   793   1247  7402          HLT                     /NO
   794   1250  7000          FREE                    /NOT USED
   795   1251  1765'         TAD     FTSTJ4          /GET FIFTH DATA WORD
   796   1252  7041          CIA
   797   1253  1764'         TAD     IR14            /COMPARE WITH IR4
   798   1254  7640          SZA CLA                 /IS IR4 CORRECT?
   799   1255  7402          HLT                     /NO
```

```
800   1256  7000          FREE                    /NOT USED
801   1257  1763'         TAD     FTSTJ5          /GET SIXTH DATA WORD
802   1260  7041          CIA
803   1261  1762'         TAD     IR15            /COMPARE WITH IR5
804   1262  7640          SZA CLA                 /IS IR5 CORRECT?
805   1263  7402          HLT                     /NO
806   1264  7000          FREE                    /NOT USED
807   1265  1761'         TAD     FTSTJ6          /GET SEVENTH DATA WORD
808   1266  7041          CIA
809   1267  1760'         TAD     IR16            /COMPARE WITH IR6
810   1270  7640          SZA CLA                 /IS IR6 CORRECT?
811   1271  7402          HLT                     /NO
812   1272  7000          FREE                    /NOT USED
813   1273  1757'         TAD     FTSTJ7          /GET EIGHTH DATA WORD
814   1274  7041          CIA
815   1275  1756'         TAD     IR17            /COMPARE WITH IR7
816   1276  7640          SZA CLA                 /IS IR7 CORRECT?
817   1277  7402          HLT                     /NO
818   1300  7000          FREE                    /NOT USED
819   1301  2106          ISZ     LOOP            /100 PASSES?
820   1302  5206          JMP     TST9A           /NO, RETURN
821   1303  4755'         JMS     RESBIN          /RESTORE BINARY LOADER
822   1304  7000          FREE                    /UNUSED LOCATIONS
823   1305  7000          FREE
824
825
826
827                       NPAGE                   /GO TO NEXT TEST
828   1306  5754          JMP I   .+20087600              /JUMP TO NEXT MEMORY PAGE
829   1354  1400
830   1355  4240
831   1356  7777
832   1357  6067
833   1360  7776
834   1361  6065
835   1362  7775
836   1363  6063
837   1364  7774
838   1365  6061
839   1366  7773
840   1367  6057
841   1370  7772
842   1371  6055
843   1372  7771
844   1373  6053
845   1374  6051
846   1375  6050
847   1376  4227
848   1377  7770
            1400          PAGE
849
```

```
0850
0851
0852                    /TEST ADDX ON INDEX REGISTER 0
0853
0854                    /**************************************************
0855                    /       TADX0,  ADDX    0
0856                    /               0
0857                    /               FEXIT
0858                    /**************************************************
0859
0860
0861
0862    1400  7300    TST10,  CLA CLL
0863    1401  1177            TAD     CIR0            /GET ADDRESS OF IR0
0864    1402  3022            DCA     ADX             /SET INDEX POINTER IN APT
0865    1403  3777'           DCA     TADX0+1         /ZERO DATA WORD
0866    1404  4505            JMS I   ACLRX           /CLEAR INDEX REGISTERS
0867    1405  3110            DCA     T2              /CLEAR SIMULATED INDEX REGISTER
0868    1406  7200    TST10A, CLA
0869    1407  1104            TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
0870    1410  3106            DCA     LOOP            /THROUGH EACH DATA PATTERN
0871    1411  7300    TST10B, CLA CLL
0872    1412  1376            TAD     CTADX0          /GET TEST ADDRESS
0873    1413  3021            DCA     FPC             /SET FPC COMMAND REGISTER = 0000
0874    1414  1176            TAD     CAPT            /GET ADDRESS OF APT
0875    1415  6555            FPST                    /START FPP
0876    1416  7402            HLT
0877    1417  7300            CLA CLL
0878    1420  1777'           TAD     TADX0+1         /GET DATA WORD
0879    1421  1110            TAD     T2              /ADD TO SIMULATED INDEX REGISTER
0880    1422  3110            DCA     T2              /SAVE SIMULATED INDEX REGISTER
0881    1423  6557            FPIST                   /WAIT FOR FPP TO COMPLETE
0882    1424  5223            JMP     .+1             /TEST PROGRAM
0883    1425  7300            CLA CLL
0884    1426  1110            TAD     T2              /GET SIMULATED INDEX REGISTER
0885    1427  7041            CIA
0886    1430  1030            TAD     IR0             /COMPARE WITH IR0
0887    1431  7440            SZA                     /IS IR0 CORRECT?
0888    1432  7402            HLT                     /NO
0889    1433  7000            FREE                    /UNUSED LOCATION
0890    1434  2106            ISZ     LOOP            /DONE 100 TIMES?
0891    1435  5211            JMP     TST10B          /NO, SAME DATA AGAIN
0892    1436  2777'           ISZ     TADX0+1         /YES, INCREMENT DATA
0893    1437  5206            JMP     TST10A          /TEST NOT FINISHED
0894    1440  7000            FREE                    /UNUSED LOCATIONS
0895    1441  7000            FREE
0896
0897
0898
```

```
899
900                     /TEST ADDX ON INDEX REGISTER 1
901
902                     /*************************************************
903                     /       TADX1,  ADDX    1
904                     /               ?
905                     /               FEXIT
906                     /*************************************************
907
908
909
910     1442  7300    TST11,  CLA CLL
911     1443  1177            TAD     [IR0            /GET ADDRESS OF IR0
912     1444  3022            DCA     ADX             /SET INDEX POINTER IN APT
913     1445  3775'           DCA     TADX1+1         /ZERO DATA WORD
914     1446  4505            JMS I   ACLRX           /CLEAR INDEX REGISTERS
915     1447  3110            DCA     T2              /CLEAR SIMULATED INDEX REGISTER
916     1450  7200    TST11A, CLA
917     1451  1104            TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
918     1452  3106            DCA     LOOP            /THROUGH EACH DATA PATTERN
919     1453  7300    TST11B, CLA CLL
920     1454  1374            TAD     (TADX1          /GET TEST ADDRESS
921     1455  3021            DCA     FPC             /SET FPC IN APT
922     1456  6553            FPCOM                   /FPP COMMAND REGISTER = 0000
923     1457  1176            TAD     [APT            /GET ADDRESS OF APT
924     1460  6555            FPST                    /START FPP
925     1461  7402            HLT
926     1462  7300            CLA CLL
927     1463  1775'           TAD     TADX1+1         /GET DATA WORD
928     1464  1110            TAD     T2              /ADDTO SIMULATED INDEX REGISTER
929     1465  3110            DCA     T2              /SAVE SIMULATED INDEX REGISTER
930     1466  6557            FPIST                   /WAIT FOR FPP TO COMPLETE
931     1467  5266            JMP     .+1             /TEST PROGRAM
932     1470  7300            CLA CLL
933     1471  1110            TAD     T2              /GET SIMULATED INDEX REGISTER
934     1472  7041            CIA
935     1473  1031            TAD     IR1             /COMPARE WITH IR1
936     1474  7440            SZA                     /IS IR1 CORRECT?
937     1475  7402            HLT                     /NO
938     1476  7000            FREE                    /UNUSED LOCATION
939     1477  2106            ISZ     LOOP            /DONE 100 TIMES?
940     1500  5253            JMP     TST11B          /NO, SAME DATA AGAIN
941     1501  2775'           ISZ     TADX1+1         /YES, INCREMENT DATA
942     1502  5250            JMP     TST11A          /TEST NOT FINISHED
943     1503  7000            FREE                    /UNUSED LOCATIONS
944     1504  7000            FREE
945
946
947
```

```
                        /TEST ADDX ON INDEX REGISTER 2

                        /***********************************************
                        /       TADX2,  ADDX    ?
                        /               ?
                        /               FEXIT
                        /***********************************************


1505  7300  TST12,  CLA CLL
1506  1177           TAD     [IR0            /GET ADDRESS OF IR0
1507  3022           DCA     ADX             /SET INDEX POINTER IN APT
1510  3773'          DCA     TADX2+1         /ZERO DATA WORD
1511  4505           JMS I   ACLRX           /CLEAR INDEX REGISTERS
1512  3110           DCA     T2              /CLEAR SIMULATED INDEX REGISTER
1513  7200  TST12A, CLA
1514  1104           TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1515  3106           DCA     LOOP            /THROUGH EACH DATA PATTERN
1516  7300  TST12B, CLA CLL
1517  1372           TAD     (TADX2          /GET TEST ADDRESS
1520  3021           DCA     FPC             /SET FPC IN APT
1521  6553           FPCOM                   /FPP COMMAND REGISTER = 0000
1522  1176           TAD     [APT            /GET ADDRESS OF APT
1523  6555           FPST                    /START FPP
1524  7402           HLT
1525  7300           CLA CLL
1526  1773'          TAD     TADX2+1         /GET DATA WORD
1527  1110           TAD     T2              /ADD TO SIMULATED INDEX REGIATER
1530  3110           DCA     T2              /SAVE SIMULATED INDEX REGISTER
1531  6557           FPIST                   /WAIT FOR FPP TO COMPLETE
1532  5331           JMP     .-1             /TEST PROGRAM
1533  7300           CLA CLL
1534  1110           TAD     T2              /GET SIMULATED INDEX REGISTER
1535  7041           CIA
1536  1032           TAD     IR2             /COMPARE WITH IR2
1537  7440           SZA                     /IS IR2 CORRECT?
1540  7402           HLT                     /NO
1541  7000           FREE                    /UNUSED LOCATION
1542  2106           ISZ     LOOP            /DONE 100 TIMES?
1543  5316           JMP     TST12B          /NO,SAME DATA AGAIN
1544  2773'          ISZ     TADX2+1         /YES, INCREMENT DATA
1545  5313           JMP     TST12A          /TEST NOT FINISHED
1546  7000           FREE                    /UNUSED LOCATIONS
1547  7000           FREE


                        NPAGE                   /GO TO NEXT TEST
1550  5771           JMP I   (.+22007600             /JUMP TO NEXT MEMORY PAGE
1571  1600
1572  6105
1573  6106
```

```
1003    1574  6100
1004    1575  6101
1005    1576  6073
1006    1577  6074
              1600          PAGE
```

```
1007
1008                    /TEST ADDX ON INDEX REGISTER 3
1009
1010                    /*************************************************
1011                    /       TADX3,  ADDX    3
1012                    /               0
1013                    /               FEXIT
1014                    /*************************************************
1015
1016
1017
1018
1019    1600  7300    TST13,  CLA CLL
1020    1601  1177            TAD     CIR0            /GET ADDRESS OF IR0
1021    1602  3022            DCA     ADX             /SET INDEX POINTER IN APT
1022    1603  3777'           DCA     TADX3+1         /ZERO DATA WORD
1023    1604  4505            JMS I   ACLRX           /CLEAR INDEX REGISTERS
1024    1605  3110            DCA     T2              /CLEAR SIMULATED INDEX REGISTER
1025    1606  7200    TST13A, CLA
1026    1607  1104            TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1027    1610  3106            DCA     LOOP            /THROUGH EACH DATA PATTERN
1028    1611  7300    TST13B, CLA CLL
1029    1612  1376            TAD     CTADX3          /GET TEST ADDRESS
1030    1613  3021            DCA     FPC             /SET FPC IN APT
1031    1614  6553            FPCOM                   /FPP COMMAND REGISTER = 0000
1032    1615  1176            TAD     CAPT            /GET ADDRESS OF APT
1033    1616  6555            FPST                    /START FPP
1034    1617  7402            HLT
1035    1620  7300            CLA CLL
1036    1621  1777'           TAD     TADX3+1         /GET DATA WORD
1037    1622  1110            TAD     T2              /ADD TO SIMULATED INDEX REGISTER
1038    1623  3110            DCA     T2              /SAVE SIMULATED INDEX REGISTER
1039    1624  6557            FPIST                   /WAIT FOR FPP TO COMPLETE
1040    1625  5224            JMP     .+1             /TEST PROGRAM
1041    1626  7300            CLA CLL
1042    1627  1110            TAD     T2              /GET SIMULATED INDEX REGISTER
1043    1630  7041            CIA
1044    1631  1033            TAD     IR3             /COMPARE WITH IR3
1045    1632  7440            SZA                     /IS IR3 CORRECT?
1046    1633  7402            HLT                     /NO
1047    1634  7000            FREE                    /UNUSED LOCATION
1048    1635  2106            ISZ     LOOP            /DONE 100 TIMES?
1049    1636  5211            JMP     TST13B          /NO, SAME DATA AGAIN
1050    1637  2777'           ISZ     TADX3+1         /YES, INCREMENT DATA
1051    1640  5206            JMP     TST13A          /TEST NOT FINISHED
1052    1641  7000            FREE                    /UNUSED LOCATIONS
1053    1642  7000            FREE
1054
1055
1056
```

```
1057
1058                    /TEST ADDX ON INDEX REGISTER 4
1059                    /*************************************************
1060                    /       TADX4,  ADDX    4
1061                    /               ?
1062                    /               FEXIT
1063                    /*************************************************
1064
1065
1066
1067    1643  7300    TST14,  CLA CLL
1068    1644  1177            TAD     CIR0            /GET ADDRESS OF IR0
1069    1645  3022            DCA     ADX             /SET INDEX POINTER IN APT
1070    1646  3775'           DCA     TADX4+1         /ZERO DATA WORD
1071    1647  4505            JMS I   ACLRX           /CLEAR INDEX REGISTERS
1072    1650  3110            DCA     T2              /CLEAR SIMULATED INDED REGISTER
1073    1651  7200    TST14A, CLA
1074    1652  1104            TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1075    1653  3106            DCA     LOOP            /THROUGH EACH DATA PATTERN
1076    1654  7300    TST14B, CLA CLL
1077    1655  1374            TAD     (TADX4          /GET TEST ADDRESS
1078    1656  3021            DCA     FPC             /SET FPC IN APT
1079    1657  6553            FPCOM                   /FPP COMMAND REGISTER = 0000
1080    1660  1176            TAD     CAPT            /GET ADDRESS OF APT
1081    1661  6555            FPST                    /START FPP
1082    1662  7402            HLT
1083    1663  7300            CLA CLL
1084    1664  1775'           TAD     TADX4+1         /GET DATA WORD
1085    1665  1110            TAD     T2              /ADD TO SIMULATED INDEX REGISTER
1086    1666  3110            DCA     T2              /SAVE SIMULATED INDEX REGISTER
1087    1667  6557            FPIST                   /WAIT FOR FPP TO COMPLETE
1088    1670  5267            JMP     .+1             /TEST PROGRAM
1089    1671  7300            CLA CLL
1090    1672  1110            TAD     T2              /GET SIMULATED INDEX REGISTER
1091    1673  7041            CIA
1092    1674  1034            TAD     IR4             /COMPARE WITH IR4
1093    1675  7440            SZA                     /IS IR4 CORRECT?
1094    1676  7402            HLT                     /NO
1095    1677  7000            FREE                    /UNUSED LOCATION
1096    1700  2106            ISZ     LOOP            /DONE 100 TIMES?
1097    1701  5254            JMP     TST14B          /NO, SAME DATA AGAIN
1098    1702  2775'           ISZ     TADX4+1         /YES, INCREMENT DATA
1099    1703  5251            JMP     TST14A          /TEST NOT FINISHED
1100    1704  7000            FREE                    /UNUSED LOCATIONS
1101    1705  7000            FREE
1102
1103
1104
1105
```

```
1106
1107                    /TEST ADDX ON INDEX REGISTER 5
1108
1109                    /*************************************************
1110                    /       TADX5,  ADDX    5
1111                    /               3
1112                    /               FEXIT
1113                    /*************************************************
1114
1115
1116
1117    1706  7300      TST15,  CLA CLL
1118    1707  1177              TAD     CIR0            /GET ADDRESS OF IR0
1119    1710  3022              DCA     ADX             /SET INDEX POINTER IN APT
1120    1711  3773'             DCA     TADX5+1         /ZERO DATA WORD
1121    1712  4505              JMS I   ACLRX           /CLEAR INDEX REGISTERS
1122    1713  3110              DCA     T2              /CLEAR SIMULATED INDEX REGISTER
1123    1714  7200      TST15A, CLA
1124    1715  1104              TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1125    1716  3106              DCA     LOOP            /THROUGH EACH DATA PATTERN
```

```
1126
1127    1717  7300    TST15B, CLA CLL
1128    1720  1372            TAD     (TADX5          /GET TEST ADDRESS
1129    1721  3021            DCA     FPC             /SET FPC IN APT
1130    1722  6553            FPCOM                   /FPP COMMAND REGISTER=0020
1131    1723  1176            TAD     [APT            /GET ADDRESS OF APT
1132    1724  6555            FPST                    /START FPP
1133    1725  7402            HLT
1134    1726  7300            CLA CLL
1135    1727  1773'           TAD     TADX5+1         /GET DATA WORD
1136    1730  1110            TAD     T2              /ADD TO SIMULATED INDEX REGISTER
1137    1731  3110            DCA     T2              /SAVE SIMULATED INDEX REGISTER
1138    1732  6557            FPIST                   /WAIT FOR FPP TO COMPLETE
1139    1733  5332            JMP     .+1             /TEST PROGRAM
1140    1734  7300            CLA CLL
1141    1735  1110            TAD     T2              /GET SIMULATED INDEX REGISTER
1142    1736  7041            CIA
1143    1737  1035            TAD     IR5             /COMPARE WITH IR5
1144    1740  7440            SZA                     /IS IR5 CORRECT?
1145    1741  7402            HLT                     /NO
1146    1742  7000            FREE                    /UNUSED LOCATION
1147    1743  2106            ISZ     LOOP            /DONE 100 TIMES?
1148    1744  5317            JMP     TST15B          /NO, SAME DATA AGAIN
1149    1745  2773'           ISZ     TADX5+1         /YES, INCREMENT DATA
1150    1746  5314            JMP     TST15A          /TEST NOT FINISHED
1151    1747  7000            FREE                    /UNUSED LOCATIONS
1152    1750  7000            FREE
1153
1154
1155                          NPAGE                   /GO TO NEXT TEST
1156    1751  5771            JMP I   (.+20087600             /JUMP TO NEXT MEMORY PAGE
1157    1771  2000
1158    1772  6123
1159    1773  6124
1160    1774  6116
1161    1775  6117
1162    1776  6112
1163    1777  6113
              2000            PAGE
```

```
1164
1165                    /TEST ADDX ON INDEX REGISTER 6
1166
1167                    /**************************************************
1168                    /       TADX6,  ADDX    6
1169                    /               2
1170                    /               FEXIT
1171                    /**************************************************
1172
1173
1174
1175    2000  7300  TST16,  CLA CLL
1176    2001  1177          TAD     CIR0            /GET ADDRESS OF IR0
1177    2002  3022          DCA     ADX             /SET INDEX POINTER IN APT
1178    2003  3777'         DCA     TADX6+1         /ZERO DATA WORD
1179    2004  4505          JMS I   ACLRX           /CLEAR INDEX REGISTERS
1180    2005  3110          DCA     T2              /CLEAR SIMULATED INDEX REGISTER
1181    2006  7200  TST16A, CLA
1182    2007  1104          TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1183    2010  3106          DCA     LOOP            /THROUGH EACH DATA PATTERN
1184    2011  7300  TST16B, CLA CLL
1185    2012  1376          TAD     CTADX6          /GET TEST ADDRESS
1186    2013  3021          DCA     FPC             /SET FPC IN APT
1187    2014  6553          FPCOM                   /FPP COMMAND REGISTER=0000
1188    2015  1176          TAD     CAPT            /GET ADDRESS OF APT
1189    2016  6555          FPST                    /START FPP
1190    2017  7402          HLT
1191    2020  7300          CLA CLL
1192    2021  1777'         TAD     TADX6+1         /GET DATA WORD
1193    2022  1110          TAD     T2              /ADD TO SIMULATED INDEX REGISTER
1194    2023  3110          DCA     T2              /SAVE SIMULATED INDEX REGISTER
1195    2024  6557          FPIST                   /WAIT FOR FPP TO COMPLETE
1196    2025  5224          JMP     .+1             /TEST PROGRAM
1197    2026  7300          CLA CLL
1198    2027  1110          TAD     T2              /GET SIMULATED INDEX REGISTER
1199    2030  7041          CIA
1200    2031  1036          TAD     IR6             /COMPARE WITH IR6
1201    2032  7440          SZA                     /IS IR6 CORRECT?
1202    2033  7402          HLT                     /NO
1203    2034  7000          FREE                    /UNUSED LOCATION
1204    2035  2106          ISZ     LOOP            /DONE 100 TIMES?
1205    2036  5211          JMP     TST16B          /NO, SAME DATA AGAIN
1206    2037  2777'         ISZ     TADX6+1         /YES INCREMENT DATA
1207    2040  5206          JMP     TST16A          /TEST NOT FINISHED
1208    2041  7000          FREE                    /UNUSED LOCATIONS
1209    2042  7000          FREE
1210
1211
```

```
1212
1213
1214                    /TEST ADDX ON INDEX REGISTER 7
1215
1216                    /*************************************************
1217                    /       TADX7,  ADDX    7
1218                    /               0
1219                    /               FEXIT
1220                    /*************************************************
1221
1222
1223
1224    2043  7300    TST17,  CLA CLL
1225    2044  1177            TAD     CIR0            /GET ADDRESS OF IR0
1226    2045  3022            DCA     ADX             /SET INDEX POINTER IN APT
1227    2046  3775'           DCA     TADX7+1         /ZERO DATA WORD
1228    2047  4505            JMS I   ACLRX           /CLEAR INDEX REGISTERS
1229    2050  3110            DCA     T2              /CLEAR SIMULATED INDEX REGISTER
1230    2051  7200    TST17A, CLA
1231    2052  1104            TAD     LOOPCT          /SET LOOP COUNT FOR 100 PASSES
1232    2053  3106            DCA     LOOP            /THROUGH EACH DATA PATTERN
1233
1234    2054  7300    TST17B, CLA CLL
1235    2055  1374            TAD     (TADX7          /GET TEST ADDRESS
1236    2056  3021            DCA     FPC             /SET FPC IN APT
1237    2057  6553            FPCOM                   /FPP COMMAND REGISTER=0000
1238    2060  1176            TAD     CAPT            /GET ADDRESS OF APT
1239    2061  6555            FPST                    /START FPP
1240    2062  7402            HLT
1241    2063  7300            CLA CLL
1242    2064  1775'           TAD     TADX7+1         /GET DATA WORD
1243    2065  1110            TAD     T2              /ADD TO SIMULATED INDEX REGISTER
1244    2066  3110            DCA     T2              /SAVE SIMULATED INDEX REGISTER
1245    2067  6557            FPIST                   /WAIT FOR FPP TO COMPLETE
1246    2070  5267            JMP     .+1             /TEST PROGRAM
1247    2071  7300            CLA CLL
1248    2072  1110            TAD     T2              /GET SIMULATED INDEX REGISTER
1249    2073  7041            CIA
1250    2074  1037            TAD     IR7             /COMPARE WITH IR7
1251    2075  7640            SZA CLA                 /IS IR7 CORRECT?
1252    2076  7402            HLT                     /NO
1253    2077  7000            FREE                    /UNUSED LOCATION
1254    2100  2106            ISZ     LOOP            /DONE 100 TIMES?
1255    2101  5254            JMP     TST17B          /NO, SAME DATA AGAIN
1256    2102  2775'           ISZ     TADX7+1         /YES, INCREMENT DATA
1257    2103  5251            JMP     TST17A          /TEST NOT FINISHED
1258    2104  7000            FREE                    /UNUSED LOCATIONS
1259    2105  7000            FREE
```

```
1260
1261
1262                    /ADD 1 TO ALL INDEX REGISTERS 4096 TIMES
1263                    /AND CHECK ANSWERS
1264
1265                    /************************************************
1266                    /       TADX8,  ADDX    ?
1267                    /               1
1268                    /               ADDX    1
1269                    /               1
1270                    /               ADDX    2
1271                    /               1
1272                    /               ADDX    3
1273                    /               1
1274                    /               ADDX    4
1275                    /               1
1276                    /               ADDX    5
1277                    /               1
1278                    /               ADDX    6
1279                    /               1
1280                    /               ADDX    7
1281                    /               1
1282                    /               FEXIT
1283                    /************************************************
1284
1285
1286
1287    2106  7300      TST18,  CLA CLL
1288    2107  1177              TAD     [IR0            /GET ADDRESS OF IR0
1289    2110  3022              DCA     ADX             /SET INDEX POINTER IN APT
1290    2111  4505              JMS I   ACLRX           /ZERO INDEX REGISTERS
1291    2112  3110              DCA     T2              /ZERO COUNTER
1292    2113  7300      TST18A, CLA CLL
1293    2114  1373              TAD     (TADX8          /GET TEST ADDRESS
1294    2115  3021              DCA     FPC             /SET FPC IN APT
1295    2116  6553              FPCOM                   /FPP COMMAND REGISTER=0000
1296    2117  1176              TAD     [APT            /GET ADDRESS OF APT
1297    2120  6555              FPST                    /START FPP
1298    2121  7402              HLT
1299    2122  6557              FPIST                   /WAIT FOR FPP TO FINISH
1300    2123  5322              JMP     .+1
1301    2124  2110              ISZ     T2              /CHECK FOR END OF TEST
1302    2125  5313              JMP     TST18A          /RUN TEST 4096 TIMES
1303    2126  7200              CLA
1304    2127  1030              TAD     IR0
1305    2130  7640              SZA CLA                 /IS IR0=000?
1306    2131  7402              HLT                     /NO - ERROR
1307    2132  7000              FREE                    /UNUSED LOCATION
1308    2133  1031              TAD     IR1
1309    2134  7640              SZA CLA                 /IS IR1=0000?
```

```
1310    2135  7402          HLT                     /NO - ERROR
1311    2136  7000          FREE                    /UNUSED LOCATION
1312
1313    2137  1032          TAD     IR2
1314    2140  7640          SZA CLA                 /IS IR2=0000?
1315    2141  7402          HLT                     /NO - ERROR
1316    2142  7000          FREE                    /UNUSED LOCATION
1317    2143  1033          TAD     IR3
1318    2144  7640          SZA CLA                 /IS IR3=0000?
1319    2145  7402          HLT                     /NO - ERROR
1320    2146  7000          FREE                    /UNUSED LOCATION
1321    2147  1034          TAD     IR4
1322    2150  7640          SZA CLA                 /IS IR4=0000?
1323    2151  7402          HLT                     /NO - ERROR
1324    2152  7000          FREE                    /UNUSED LOCATION
1325    2153  1035          TAD     IR5
1326    2154  7640          SZA CLA                 /IS IR5=0000?
1327    2155  7402          HLT                     /NO - ERROR
1328    2156  7000          FREE
1329    2157  1036          TAD     IR6
1330    2160  7640          SZA CLA                 /IS IR6=0000?
1331    2161  7402          HLT                     /NO - ERROR
1332    2162  7000          FREE
1333    2163  1037          TAD     IR7
1334    2164  7640          SZA CLA                 /IS IR7=0000?
1335    2165  7402          HLT                     /NO - ERROR
1336    2166  7000          FREE                    /UNUSED LOCATIONS
1337
1338
1339
1340                        NPAGE                   /GO TO NEXT TEST
1341    2167  5772          JMP I   (,+200&7600             /JUMP TO NEXT MEMORY PAGE
1342    2172  2200
1343    2173  6142
1344    2174  6135
1345    2175  6136
1346    2176  6130
1347    2177  6131
              2200          PAGE
```

```
1348
1349                    /TEST THE JXN INSTRUCTION
1350
1351                    /************************************************
1352                    /       TJXN1,  JXN     XZ
1353                    /               ,+4
1354                    /               FEXIT
1355                    /               JA              SCOPE LOOP
1356                    /               TJXN1           JMP-NORMALLY NOT USED
1357                    /************************************************
1358
1359
1360
1361
1362    2200  7300      TST20,  CLA CLL
1363    2201  4505              JMS I   ACLRX           /ZERO THE INDEX REGISTERS
1364    2202  3110              DCA     T2              /CLEAR COUNTER
1365    2203  7200              CLA
1366    2204  1177              TAD     CIR0            /GET ADDRESS OF IR0
1367    2205  3022              DCA     ADX             /SET IR POINTER IN APT
1368    2206  7200      TST20A, CLA
1369    2207  1377              TAD     (TJXN1          /GET TEST ADDRESS
1370    2210  3021              DCA     FPC             /SET FPC TO TEST ADDRESS
1371    2211  1176              TAD     CAPT            /GET ADDRESS OF APT
1372    2212  6555              FPST                    /START FPP
1373    2213  7402              HLT
1374    2214  6557              FPIST                   /WAIT FOR FPP TO FINISH
1375    2215  5214              JMP     .-1
1376    2216  2110              ISZ     T2              /INCREMENT COUNTER
1377    2217  7410              SKP
1378    2220  5237              JMP     TST20B          /X0 OVERFLOWED
1379    2221  7200              CLA
1380    2222  1110              TAD     T2
1381    2223  7041              CIA
1382    2224  1030              TAD     IR0             /CHECK THAT IR0 INCREMENTED
1383    2225  7640              SZA CLA                 /IS IR0 CORRECT?
1384    2226  7402              HLT                     /NO
1385    2227  7000              FREE                    /UNUSED LOCATION
1386    2230  1376              TAD     (TJXN1+6        /GET EXIT ADDRESS
1387    2231  7041              CIA
1388    2232  1021              TAD     FPC             /CHECK THAT JXN DID NOT SKIP
1389    2233  7640              SZA CLA                 /IS FPC CORRECT?
1390    2234  7402              HLT                     /NO
1391    2235  7000              FREE                    /UNUSED LOCATION
1392    2236  5206              JMP     TST20A          /DO IT AGAIN
1393    2237  7200      TST20B, CLA
1394    2240  1030              TAD     IR0
1395    2241  7640              SZA CLA                 /DOES IR0=0000
1396    2242  7402              HLT                     /NO
1397    2243  7000              FREE                    /UNUSED LOCATION
1398    2244  1375              TAD     (TJXN1+3        /CHECK THAT JXN SKIPPED
1399    2245  7041              CIA
1400    2246  1021              TAD     FPC
1401    2247  7640              SZA CLA                 /IS FPC CORRECT?
1402    2250  7402              HLT                     /NO
```

```
1473    2251  7000        FREE                    /UNUSED LOCATIONS
1474    2252  7000        FREE
1475
```

```
1406                    /TEST JXN 4096 TIMES
1407
1408                    /*************************************************
1409                    /       TJXN2,  JXN     X0
1410                    /               ;-1
1411                    /               FEXIT
1412                    /*************************************************
1413
1414
1415
1416    2253    7200    TST21,  CLA
1417    2254    3110            DCA     T2              /CLEAR COUNTER 1
1418    2255    1374            TAD     (-5
1419    2256    3111            DCA     T3              /SET COUNTER 2
1420    2257    4505            JMS I   ACLRX           /ZERO INDEX REGISTERS
1421    2260    7200            CLA
1422    2261    1177            TAD     [IR0            /GET THE ADDRESS OF IR0
1423    2262    3022            DCA     ADX             /SET INDEX POINTER IN APT
1424    2263    1373            TAD     (TJXN2          /GET TEST ADDRESS
1425    2264    3021            DCA     FPC             /SET FPC IN APT
1426    2265    6553            FPCOM                   /FPP COMMAND REGISTER=0000
1427    2266    1176            TAD     [APT            /GET ADDRESS OF APT
1428    2267    6555            FPST                    /START THE FPP
1429    2270    7402            HLT
1430    2271    6557            FPIST                   /WAIT FOR FPP TO FINISH
1431    2272    7410            SKP
1432    2273    5301            JMP     .+6
1433    2274    2110            ISZ     T2              /TIMING LOOP
1434    2275    5271            JMP     .-4
1435    2276    2111            ISZ     T3
1436    2277    5271            JMP     .-6
1437    2300    7402            HLT                     /FPP DID NOT FINISH ON TIME
1438    2301    7000            FREE                    /UNUSED LOCATION
1439    2302    7200            CLA
1440    2303    1030            TAD     IR0             /CHECK IR0 FOR 0
1441    2304    7640            SZA CLA                 /IS IR0 CORRECT?
1442    2305    7402            HLT                     /NO
1443    2306    7000            FREE                    /UNUSED LOCATION
1444    2307    1372            TAD     (TJXN2+3        /GET CORRECT FPC ADDRESS
1445    2310    7041            CIA
1446    2311    1021            TAD     FPC             /CHECK FPC
1447    2312    7640            SZA CLA                 /IS FPC CORRECT?
1448    2313    7402            HLT                     /NO
1449    2314    7000            FREE                    /UNUSED LOCATIONS
1450    2315    7000            FREE
1451
```

```
1452
1453
1454                    /TEST JXN WITH NO INCREMENT
1455
1456                    /**********************************************
1457                    /       TJXN3,  2000            JXN X0 NO INC
1458                    /               .+2
1459                    /               FEXIT
1460                    /               JXN     X1      JXN X1 INC
1461                    /               TJXN3           X1=-144
1462                    /**********************************************
1463
1464
1465
1466
1467    2316  7200      TST22,  CLA
1468    2317  4505              JMS I   ACLRX           /ZERO INDEX REGISTERS
1469    2320  7200              CLA
1470    2321  1177              TAD     CIR0            /GET ADDRESS OF IR0
1471    2322  3022              DCA     ADX             /SET INDEX POINTER IN APT
1472    2323  1371              TAD     (TJXN3          /GET TEST ADDRESS
1473    2324  3021              DCA     FPC             /SET FPC IN APT
1474    2325  7040              CMA                     /AC=-1
1475    2326  3030              DCA     IR0             /IR0=-1
1476    2327  1370              TAD     (-144           /AC=-100(10)
1477    2330  3031              DCA     IR1             /IR1=-100(10)
1478    2331  6553              FPCOM                   /COMMAND REC=0000
1479    2332  1176              TAD     CAPT            /GET ADDRESS OF APT
1480    2333  6555              FPST                    /START FPP
1481    2334  7402              HLT
1482    2335  6557              FPIST                   /WAIT FOR FPP TO FINISH
1483    2336  5335              JMP     .-1
1484    2337  7200              CLA
1485    2340  1030              TAD     IR0             /CHECK IR0
1486    2341  7040              CMA
1487    2342  7640              SZA CLA
1488    2343  7402              HLT                     /IR0 CHANGED
1489    2344  7000              FREE
1490    2345  1367              TAD     (TJXN3+6        /CHECK FPC
1491    2346  7041              CIA
1492    2347  1021              TAD     FPC
1493    2350  7640              SZA CLA                 /IS FPC CORRECT
1494    2351  7402              HLT                     /NO
1495    2352  7000              FREE                    /UNUSED LOCATIONS
1496    2353  7000              FREE
1497
1498
```

```
1499
1500
1501                        NPAGE                   /GO TO NEXT TEST
1502    2354  5766          JMP I   (,+2007600      /JUMP TO NEXT MEMORY PAGE
1503    2366  2400
1504    2367  6210
1505    2370  7634
1506    2371  6202
1507    2372  6200
1508    2373  6175
1509    2374  7773
1510    2375  6170
1511    2376  6173
1512    2377  6165
              2400          PAGE
1513
1514                /TEST FSTA INSTRUCTION
1515                /DOUBLE WORD NO INDEX
1516
1517                /*************************************************
1518                /       TSTA1,  FLDA    400
1519                /               BUF1
1520                /               FSTA    400
1521                /               BUF2
1522                /               FEXIT
1523                /*************************************************
1524
1525
1526
1527    2400  7200    TST30,  CLA
1528    2401  4505            JMS I   ACLRX           /ZERO INDEX REGISTERS
1529    2402  4777'           JMS     CLRBUF          /ZERO OUTPUT BUFFER
1530    2403  7200            CLA
1531    2404  1376            TAD     (TSTA1          /GET TEST ADDRESS
1532    2405  3021            DCA     FPC             /SET FPC IN APT
1533    2406  6553            FPCOM                   /ZERO COMMAND REGISTER
1534    2407  1176            TAD     CAPT            /GET ADDRESS OF APT
1535    2410  6555            FPST                    /START FPP
1536    2411  7402            HLT
1537    2412  6557            FPIST                   /WAIT FOR FPP TO FINISH
1538    2413  5212            JMP     .-1
1539    2414  7200            CLA
1540    2415  1375            TAD     (-3             /GET WORD COUNT
1541    2416  4774'           JMS     COMPF           /COMPARE DATA BUFFERS
1542    2417  7402            HLT                     /DATA DID NOT COMPARE
1543    2420  7000            FREE                    /UNUSED LOCATIONS
1544    2421  7000            FREE
1545
```

```
1546
1547
1548                    /SINGLE WORD DIRECT
1549
1550                    /*************************************************
1551                    /       TSTA2,  FLDA    200     BASE=BUF1
1552                    /               SETB            SET BASE REG
1553                    /               BUF2            TO BUF2
1554                    /               FSTA    200     DATA TO BUF2
1555                    /               FEXIT
1556                    /*************************************************
1557
1558
1559    2422  7200      TST31,  CLA
1560    2423  4505              JMS I   ACLRX           /ZERO INDEX REGISTERS
1561    2424  4777'             JMS     CLRBUF          /ZERO OUTPUT DATA BUFFER
1562    2425  4773'             JMS     CLAPT           /ZERO APT
1563    2426  7200              CLA
1564    2427  1372              TAD     (TSTA2          /GET TEST ADDRESS
1565    2430  3021              DCA     FPC             /SET FPC IN APT
1566    2431  1371              TAD     (BUF1           /GET ADDRESS OF DATA BUFFER
1567    2432  3023              DCA     BASE            /SET BASE REGISTER IN APT
1568    2433  6553              FPCOM                   /ZERO COMMAND REGISTER
1569    2434  1176              TAD     CAPT            /GET ADDRESS OF APT
1570    2435  6555              FPST                    /START FPP
1571    2436  7402              HLT
1572    2437  6557              FPIST                   /WAIT FOR FPP TO FINISH
1573    2440  5237              JMP     .-1
1574    2441  7200              CLA
1575    2442  1375              TAD     (-3             /GET WORD COUNT
1576    2443  4774'             JMS     COMPF           /COMPARE DATA BUFFERS
1577    2444  7402              HLT                     /DATA DID NOT COMPARE
1578                                                    /ADDRESS OF BAD DATA IS
1579                                                    /IN LOCATION 11
1580    2445  7000              FREE                    /UNUSED LOCATIONS
1581    2446  7000              FREE
1582
```

```
1583
1584
1585                    /DOUBLE WORD INDEXED
1586
1587                    /***********************************************
1588                    /       TSTA3,  FLDA X3 500     X3=-1
1589                    /               BUF1
1590                    /               FSTA X4 500     X4=0
1591                    /               BUF2-3
1592                    /               FEXIT
1593                    /***********************************************
1594
1595
1596
1597    2447  7200      TST32,  CLA
1598    2450  4505              JMS I   ACLRX           /ZERO INDEX REGISTERS
1599    2451  4777'             JMS     CLRBUF          /ZERO OUTPUT DATA BUFFER
1600    2452  4773'             JMS     CLAPT           /ZERO APT
1601    2453  7200              CLA
1602    2454  1370              TAD     (TSTA3          /GET TEST ADDRESS
1603    2455  3021              DCA     FPC             /SET FPC IN APT
1604    2456  1177              TAD     [IR0
1605    2457  3022              DCA     ADX             /SET INDEX POINTER IN APT
1606    2460  7040              CMA
1607    2461  3033              DCA     IR3             /IR3=-1
1608    2462  6553              FPCOM                   /ZERO COMMAND REGISTER
1609
1610    2463  1176              TAD     [APT            /GET ADDRESS OF APT
1611    2464  6555              FPST                    /START FPP
1612    2465  7402              HLT
1613    2466  6557              FPIST                   /WAIT FOR FPP TO FINISH
1614    2467  5266              JMP     .-1
1615    2470  7200              CLA
1616    2471  1375              TAD     (-3             /GET WORD COUNT
1617    2472  4774'             JMS     COMPF           /COMPARE DATA BUFFERS
1618    2473  7402              HLT                     /DATA DID NOT COMPARE
1619    2474  7000              FREE                    /UNUSED LOCATION
1620    2475  7200              CLA
1621    2476  1033              TAD     IR3
1622    2477  7640              SZA CLA                 /DID IR3 INCREMENT?
1623    2500  7402              HLT                     /NO
1624    2501  7000              FREE                    /UNUSED LOCATION
1625    2502  7240              CLA CMA                 /AC=-1
1626    2503  1034              TAD     IR4
1627    2504  7640              SZA CLA                 /DID IR4 INCREMENT?
1628    2505  7402              HLT                     /NO
1629    2506  7000              FREE                    /UNUSED LOCATIONS
1630    2507  7000              FREE
1631
1632
```

```
1633
1634
1635                    /SINGLE WORD INDIRECT INDEXED
1636
1637                    /*********************************************
1638                    /       TSTA4,  FLDA X1 700     NO OFFSET
1639                    /               FSTA X2 701     OFFSET OF 1
1640                    /               FEXIT
1641                    /                               BASE=ADDR
1642                    /                               ADDR=0
1643                    /                               0
1644                    /                               BUF1
1645                    /                               0
1646                    /                               0
1647                    /                               BUF2
1648                    /*********************************************
1649
1650
1651
1652    2510  7200      TST33,  CLA
1653    2511  4505              JMS I   ACLRX           /ZERO INDEX REGISTERS
1654    2512  4773'             JMS     CLAPT           /ZERO APT
1655    2513  4777'             JMS     CLRBUF          /ZERO OUTPUT BUFFER
1656    2514  7200              CLA
1657    2515  1367              TAD     (TSTA4          /GET TEST ADDRESS
1658    2516  3021              DCA     FPC             /SET FPC IN APT
1659    2517  7240              STA                     /AC=-1
1660    2520  3031              DCA     IR1             /IR1=-1
1661    2521  7240              STA
1662    2522  3032              DCA     IR2             /IR2=-1
1663    2523  1366              TAD     (76             /GET BASE ADDRESS
1664    2524  3023              DCA     BASE
1665    2525  6553              FPCOM                   /ZERO COMMAND REGISTER
1666    2526  1177              TAD     [IR0            /GET ADDRESS OF IR0
1667    2527  3022              DCA     ADX             /SET INDEX POINTER IN APT
1668    2530  1176              TAD     [APT            /GET ADDRESS OF APT
1669    2531  6555              FPST                    /START FPP
1670    2532  7402              HLT
1671    2533  6557              FPIST                   /WAIT FOR FPP TO FINISH
1672    2534  5333              JMP     .-1
1673    2535  7200              CLA
1674    2536  1375              TAD     (-3
1675    2537  4774'             JMS     COMPF           /COMPARE DATA BUFFERS
1676    2540  7402              HLT                     /DATA DID NOT COMPARE
1677    2541  7000              FREE                    /UNUSED LOCATION
1678    2542  7200              CLA
1679    2543  1031              TAD     IR1
1680    2544  7640              SZA CLA                 /DID IR1 INCREMENT?
1681    2545  7402              HLT                     /NO
1682    2546  7000              FREE                    /UNUSED LOCATION
1683    2547  1032              TAD     IR2
1684    2550  7640              SZA CLA                 /DID IR2 INCREMENT?
1685    2551  7402              HLT                     /NO
1686    2552  7000              FREE                    /UNUSED LOCATIONS
1687    2553  7000              FREE
```

```
1688
1689                                NPAGE                   /GO TO NEXT TEST
1690    2554  5765                  JMP !   (,+20087600             /JUMP TO NEXT MEMORY PAGE
1691
1692    2565  2600
1693    2566  0076
1694    2567  6243
1695    2570  6234
1696    2571  5000
1697    2572  6225
1698    2573  4215
1699    2574  4312
1700    2575  7775
1701    2576  6216
1702    2577  4332
              2600              PAGE
```

```
1703
1704                    /MOVE A BUFFER - DOUBLE WORD INDEXED
1705                    /FLOATING POINT MODE
1706                    /*********************************************
1707                    /       TSTA5,  FLDA X5 500     X5=-1
1708                    /               BUF1
1709                    /               FSTA X6 500     X6=-1
1710                    /               BUF2
1711
1712                    /               JXN     X0      X0=-25
1713                    /               TSTA5
1714                    /               FEXIT
1715                    /*********************************************
1716
1717
1718
1719    2600  7200      TST34,  CLA
1720    2601  4505              JMS I   ACLRX           /ZERO INDEX REGISTERS
1721    2602  4777'             JMS     CLAPT           /ZERO APT
1722    2603  4776'             JMS     CLRBUF          /ZERO OUTPUT BUFFER
1723    2604  7200              CLA
1724    2605  1375              TAD     (TSTA5          /GET TEST ADDRESS
1725    2606  3021              DCA     FPC             /SET FPC IN APT
1726    2607  7240              STA                     /AC=-1
1727    2610  3035              DCA     IR5             /IR5=-1
1728    2611  7240              STA
1729    2612  3036              DCA     IR6             /IR6=-1
1730    2613  1374              TAD     (-25
1731    2614  3030              DCA     IR0             /SET IR0 FOR JXN COUNT
1732    2615  6553              FPCOM                   /COMMAND REGISTER=0000
1733    2616  1177              TAD     CIR0            /GET ADDRESS OF IR0
1734    2617  3022              DCA     ADX             /SET INDEX POINTER IN APT
1735    2620  1176              TAD     CAPT            /GET ADDRESS OF APT
1736    2621  6555              FPST                    /START FPP
1737    2622  7402              HLT
1738    2623  6557              FPIST                   /WAIT FOR FPP TO FINISH
1739    2624  5223              JMP     .-1
1740    2625  7200              CLA
1741    2626  1373              TAD     (-77            /GET WORD COUNT
1742    2627  4772'             JMS     COMPF           /COMPARE BUFFERS
1743    2630  7402              HLT                     /COMPARE FAILED
1744    2631  7000              FREE                    /UNUSED LOCATIONS
1745    2632  7000              FREE
1746
1747
```

```
1748
1749
1750
1751                    /MOVE A BUFFER - DOUBLE WORD INDEXED
1752                    /DOUBLE PRECISION MODE
1753                    /*********************************************
1754                    /       TSTA5,  FLDA X5 500     X5=-1
1755                    /               BUF1
1756                    /               FSTA X6 500     X6=-1
1757                    /               BUF2
1758
1759                    /               JXN     X0      X0 = -40
1760                    /               TSTA5
1761                    /               FEXIT
1762                    /*********************************************
1763
1764
1765    2633  7200      TST35,  CLA
1766    2634  4505              JMS I   ACLRX           /ZERO INDEX REGISTERS
1767    2635  4777'             JMS     CLAPT           /ZERO APT
1768    2636  4776'             JMS     CLRBUF          /ZERO OUTPUT BUFFER
1769    2637  7200              CLA
1770    2640  1375              TAD     (TSTA5          /GET TEST ADDRESS
1771    2641  3021              DCA     FPC             /SET FPC IN APT
1772    2642  7240              STA                     /AC=-1
1773    2643  3035              DCA     IR5             /IR5=-1
1774    2644  7240              STA
1775    2645  3036              DCA     IR6             /IR6=-1
1776    2646  1371              TAD     (-40
1777    2647  3030              DCA     IR0             /SET IR0 FOR JXN COUNT
1778    2650  7130              STL RAR                 /SET AC BIT 0 FOR DOUBLE PRECISION
1779    2651  6553              FPCOM                   /SET COMMAND REGISTER TO 4000
1780    2652  7200              CLA
1781    2653  1177              TAD     [IR0            /GET ADDRESS OF IR0
1782    2654  3022              DCA     ADX             /SET INDEX POINTER IN APT
1783    2655  1176              TAD     [APT            /GET ADDRESS OF APT
1784    2656  6555              FPST                    /START FPP
1785    2657  7402              HLT
1786    2660  6557              FPIST                   /WAIT FOR FPP TO FINISH
1787    2661  5260              JMP     .-1
1788    2662  7200              CLA
1789    2663  1370              TAD     (-100           /GET WORD COUNT
1790    2664  4772'             JMS     COMPF           /COMPARE BUFFERS IN DOUBLE PRECISION
1791    2665  7402              HLT                     /COMPARE FAILED
1792
1793
1794
1795    2666  7200              CLA
1796
```

```
1797
1798                    /TEST ATX INSTRUCTION IN FLOATING POINT MODE
1799
1800                    /************************************************
1801                    /       TATX1,  XTA     X0      X0=0000-7777
1802                    /               ATX     X7
1803                    /               FEXIT
1804                    /************************************************
1805
1806
1807
1808    2667  7200      TST40,  CLA
1809    2670  4767'             JMS     CLRX            /ZERO INDEX REGISTERS
1810    2671  4777'             JMS     CLAPT           /ZERO APT
1811    2672  1177              TAD     [IR0            /GET ADDRESS OF IR0
1812    2673  3022              DCA     ADX             /SET INDEX POINTER IN APT
1813    2674  7200              CLA
1814    2675  1366              TAD     (TATX1          /GET ADDRESS OF TEST
1815    2676  3021              DCA     FPC             /SET FPC IN APT
1816    2677  6553              FPCOM                   /COMMAND REG=0000
1817    2700  1176              TAD     [APT            /GET ADDRESS OF APT
1818    2701  6555              FPST                    /START FPP
1819    2702  7402              HLT
1820    2703  6557              FPIST                   /WAIT FOR FPP TO FINISH
1821    2704  5303              JMP     .-1
1822    2705  7200              CLA                     /COMPARE IR0 TO IR7
1823    2706  1030              TAD     IR0             /GET IR0
1824    2707  7041              CIA
1825    2710  1037              TAD     IR7             /SUBTRACT FROM IR7
1826    2711  7640              SZA CLA                 /IS IR7 CORRECT?
1827    2712  7402              HLT                     /NO
1828    2713  7000              FREE                    /UNUSED LOCATION
1829    2714  2030              ISZ     IR0             /INCREMENT DATA
1830    2715  5271              JMP     TST40+2         /TEST NOT FINISHED
1831    2716  7000              FREE                    /TEST FINISHED OK
1832    2717  7000              FREE                    /UNUSED LOCATIONS
1833
1834                    /TEST ATX IN DOUBLE PRECISION MODE
1835
1836
1837                    /************************************************
1838                    /       TATX1,  XTA     X0      X0=0000-7777
1839                    /               ATX     X7
1840                    /               FEXIT
1841                    /************************************************
1842
1843
1844    2720  7200      TST41,  CLA
1845    2721  4767'             JMS     CLRX            /ZERO INDEX REGISTERS
1846    2722  4777'             JMS     CLAPT           /ZERO APT
1847    2723  1177              TAD     [IR0            /GET ADDRESS OF IR0
1848    2724  3022              DCA     ADX             /SET INDEX POINTER IN APT
1849    2725  7200              CLA
1850    2726  1366              TAD     (TATX1          /GET TEST ADDRESS
1851    2727  3021              DCA     FPC             /SET FPC IN APT
```

```
1852  2730  7130          STL RAR                 /AC=4000
1853  2731  6553          FPCOM                   /COMMAND REGISTER=4000
1854  2732  7200          CLA
1855  2733  1176          TAD     [APT            /GET ADDRESS OF APT
1856  2734  6555          FPST                    /START FPP
1857  2735  7402          HLT
1858  2736  6557          FPIST                   /WAIT FOR FPP TO FINISH
1859  2737  5336          JMP     .-1
1860  2740  7200          CLA
1861  2741  1030          TAD     IR0             /GET IR0
1862  2742  7041          CIA
1863  2743  1037          TAD     IR7             /SUBTRACT FROM IR7
1864  2744  7640          SZA CLA                 /IS IR7 CORRECT?
1865  2745  7402          HLT                     /NO
1866  2746  7000          FREE                    /UNUSED HOCATION
1867  2747  2030          ISZ     IR0             /INCREMENT DATA
1868  2750  5322          JMP     TST41+2         /TEST NOT FINISHED
1869  2751  7000          FREE                    /TEST FINISHED OK
1870  2752  7000          FREE                    /UNUSED LOCATIONS
1871
1872
1873                      NPAGE
1874  2753  5765          JMP I   ('.+200&7600            /JUMP TO NEXT MEMORY PAGE
1875  2754  3000
1876  2755  6267
1877  2756  4200
1878  2757  7700
1879  2760  7740
1880  2761  4312
1881  2762  7701
1882  2763  7753
1883  2764  6250
1884  2765  4332
1885  2766  4215
            3000          PAGE
```

```
1886
1887                    /TEST FADDM IN FLOATING POINT MODE
1888
1889                    /1)  27,3777,7777 + 00,3777,7777 = 30,2000,0000
1890                    /2)  27,2000,0000 + 00,3777,7777 = 00,3777,7777
1891                    /3)  27,2525,2525 + 26,2525,2525 = 30,2000,0000
1892                    /4)  00,7777,7777 + -1,2525,2525 = -1,2525,2523
1893
1894                    /FADDM WITH X1 = 0
1895
1896                    /************************************************
1897                    /       TADM0,  FADDM X1 500
1898                    /               DATA1-3
1899                    /               FEXIT
1900                    /************************************************
1901
1902
1903
1904    3000  7200    TST50,  CLA
1905    3001  4777'            JMS     SETP50          /SETUP ADDRESSES
1906    3002  4776'            JMS     CLRX            /ZERO INDEX REGISTERS
1907    3003  4775'            JMS     CLAPT           /ZERO APT
1908    3004  7200            CLA
1909    3005  1177            TAD     [IR0            /GET ADDRESS OF IR0
1910    3006  3022            DCA     ADX             /SET INDEX POINTER IN APT
1911    3007  3031            DCA     IR1             /IR = 0
1912    3010  4774'            JMS     MOVE50          /MOVE DATA INTO REGISTERS
1913    3011  7200            CLA
1914    3012  1373            TAD     (TADM0          /GET FPP TEST ADDRESS
1915    3013  3021            DCA     FPC             /SET FPC IN APT
1916    3014  6553            FPCOM                   /ZERO COMMAND REGISTER
1917    3015  1176            TAD     [APT            /GET ADDRESS OF APT
1918    3016  6555            FPST                    /START FPP
1919    3017  7402            HLT
1920    3020  6557            FPIST                   /WAIT FOR FPP TO FINISH
1921    3021  5220            JMP     .-1
1922    3022  4772'            JMS     COMP50          /COMPARE ANSWERS
1923    3023  7402            HLT                     /COMPARE FAILED
1924                                                  /AC=1 EXPONENT IS WRONG
1925                                                  /AC=2 MSW IS WRONG
1926                                                  /AC=3 LSW IS WRONG
1927    3024  7000            FREE                    /UNUSED LOCATION
1928    3025  7200            CLA
1929    3026  2110            ISZ     T2              /TEST COMPLETE?
1930    3027  5202            JMP     TST50+2         /NO-RETURN
1931    3030  7000            FREE                    /UNUSED LOCATION
1932    3031  7000            FREE                    /UNUSED LOCATION
1933
```

```
1934
1935                    /FADDM WITH X2 = 1
1936
1937                    /*************************************************
1938                    /       TADM1,  FADDM X2 500
1939                    /               DATA1-6
1940                    /               FEXIT
1941                    /*************************************************
1942
1943
1944    3032  7200    TST51,  CLA
1945    3033  4777'            JMS     SET50           /SETUP ADDRESSES
1946    3034  4776'            JMS     CLRX            /ZERO INDEX REGISTERS
1947    3035  4775'            JMS     CLAPT           /ZERO APT
1948    3036  7200            CLA
1949    3037  1177            TAD     [IR0            /GET ADDRESS OF IR0
1950    3040  3022            DCA     ADX             /SET INDEX POINTER IN APT
1951    3041  7301            CLA CLL IAC             /AC = 1
1952    3042  3032            DCA     IR2             /IR2 = 1
1953    3043  4774'           JMS     MOVE50          /MOVE DATA INTO REGISTERS
1954    3044  7200            CLA
1955    3045  1371            TAD     (TADM1          /GET FPP TEST ADDRESS
1956    3046  3021            DCA     FPC             /SET FPC IN APT
1957    3047  6553            FPCOM                   /ZERO COMMAND REGISTER
1958    3050  1176            TAD     [APT            /GET ADDRESS OF APT
1959    3051  6555            FPST                    /START FPP
1960    3052  7402            HLT
1961    3053  6557            FPIST                   /WAIT FOR FPP TO FINISH
1962    3054  5253            JMP     .-1
1963    3055  4772'           JMS     COMP50          /COMPARE ANSWERS
1964    3056  7402            HLT                     /COMPARE FAILED
1965                                                  /AC-1 EXPONENT IS WRONG
1966                                                  /AC-2 MSW IS WRONG
1967                                                  /AC-3 LSW IS WRONG
1968    3057  7000            FREE                    /UNUSED LOCATION
1969    3060  7200            CLA
1970    3061  2110            ISZ     T2              /TEST COMPLETE?
1971    3062  5234            JMP     TST51+2         /NO-RETURN
1972    3063  7000            FREE                    /UNUSED LOCATION
1973    3064  7000            FREE                    /UNUSED LOCATION
1974
```

```
1975
1976                    /FADDM WITH X3 = 2
1977
1978                    /*************************************************
1979                    /       TADM2,  FADDM X3 500
1980                    /               DATA1-11
1981                    /               FEXIT
1982                    /*************************************************
1983
1984
1985    3065  7200      TST52,  CLA
1986    3066  4777'              JMS     SET50           /SETUP ADDRESS
1987    3067  4776'              JMS     CLRX            /ZERO INDEX REGISTERS
1988    3070  4775'              JMS     CLAPT           /ZERO APT
1989    3071  7200              CLA
1990    3072  1177              TAD     [IR0            /GET ADDRESS OF IR0
1991    3073. 3022              DCA     ADX             /SET INDEX POINTER IN APT
1992    3074  1370              TAD     (2
1993    3075  3033              DCA     IR3             /IR3 = 2
1994    3076  4774'             JMS     MOVE50          /MOVE DATA INTO REGISTERS
1995    3077  7200              CLA
1996    3100  1367              TAD     (TADM2          /GET FPP TEST ADDRESS
1997    3101  3021              DCA     FPC             /SET FPC IN APT
1998    3102  6553              FPCOM                   /ZERO COMMAND REGISTER
1999    3103  1176              TAD     [APT            /GET ADDRESS OF APT
2000    3104  6555              FPST                    /START FPP
2001    3105  7402              HLT
2002    3106  6557              FPIST                   /WAIT FOR FPP TO FINISH
2003    3107  5306              JMP     .-1
2004    3110  4772'             JMS     COMP50          /COMPARE ANSWERS
2005    3111  7402              HLT                     /COMPARE FAILED
```

```
2006
2007                                        /AC=1 EXPONENT IS WRONG
2008                                        /AC=2 MSW IS WRONG
2009                                        /AC=3 LSW IS WRONG
2010    3112  7000          FREE            /UNUSED LOCATION
2011    3113  7200          CLA
2012    3114  2110          ISZ     T2      /TEST COMPLETE?
2013    3115  5267          JMP     TST52+2 /NO-RETURN
2014    3116  7000          FREE            /UNUSED LOCATION
2015    3117  7000          FREE            /UNUSED LOCATION
2016
2017
2018                        NPAGE
2019    3120  5766          JMP I   (,+200&7600         /JUMP TO NEXT MEMORY PAGE
2020    3166  3200
2021    3167  6312
2022    3170  0002
2023    3171  6303
2024    3172  4400
2025    3173  6274
2026    3174  4436
2027    3175  4215
2028    3176  4200
2029    3177  4423
              3200          PAGE
```

```
2030
2031                    /FADDM WITH X4 = 3
2032
2033                    /*************************************************
2034                    /       TADM3,  FADDM X4 500
2035                    /               DATA1-14
2036                    /               FEXIT
2037                    /*************************************************
2038
2039
2040    3200  7200  TST53,  CLA
2041    3201  4777'         JMS     SET50           /SETUP ADDRESSES
2042    3202  4776'         JMS     CLRX            /ZERO INDEX REGISTERS
2043    3203  4775'         JMS     CLAPT           /ZERO APT
2044    3204  7200          CLA
2045    3205  1177          TAD     CIR0            /GET ADDRESS OF IR0
2046    3206  3022          DCA     ADX             /SET INDEX POINTER IN APT
2047    3207  1374          TAD     C3
2048    3210  3034          DCA     IR4             /IR4 = 3
2049    3211  4773'         JMS     MOVE50          /MOVE DATA INTO REGISTERS
2050    3212  7200          CLA
2051    3213  1372          TAD     CTADM3          /GET FPP TEST ADDRESS
2052    3214  3021          DCA     FPC             /SET FPC IN APT
2053    3215  6553          FPCOM                   /ZERO COMMAND REGISTER
2054    3216  1176          TAD     CAPT            /GET ADDRESS OF APT
2055    3217  6555          FPST                    /START FPP
2056    3220  7402          HLT
2057    3221  6557          FPIST                   /WAIT FOR FPP TO FINISH
2058    3222  5221          JMP     .-1
2059    3223  4771'         JMS     COMP50          /COMPARE ANSWERS
2060    3224  7402          HLT                     /COMPARE FAILED
2061                                                /AC=1 EXPONENT IS WRONG
2062                                                /AC=2 MSW IS WRONG
2063                                                /AC=3 LSW IS WRONG
2064    3225  7000          FREE                    /UNUSED LOCATION
2065    3226  7200          CLA
2066    3227  2110          ISZ     T2              /TEST COMPLETE?
2067    3230  5202          JMP     TST53+2         /NO-RETURN
2068    3231  7000          FREE                    /UNUSED LOCATION
2069    3232  7000          FREE                    /UNUSED LOCATION
2070
```

```
2071
2072                    /FADDM WITH X5 = 4
2073
2074                    /*************************************************
2075                    /       TADM4,  FADDM X5 500
2076                    /               DATA1-17
2077                    /               FEXIT
2078                    /*************************************************
2079
2080
2081    3233  7200    TST54,  CLA
2082    3234  4777'            JMS     SET50           /SETUP ADDRESSES
2083    3235  4776'            JMS     CLRX            /ZERO INDEX REGISTERS
2084    3236  4775'            JMS     CLAPT           /ZERO APT
2085    3237  7200            CLA
2086    3240  1177            TAD     [IR0            /GET ADDRESS OF IR0
2087    3241  3022            DCA     ADX             /SET INDEX POINTER IN APT
2088    3242  1370            TAD     (4
2089    3243  3035            DCA     IR5             /IR5 = 4
2090    3244  4773'           JMS     MOVE50          /MOVE DATA INTO REGISTERS
2091    3245  7200            CLA
2092    3246  1367            TAD     (TADM4          /GET FPP TEST ADDRESS
2093    3247  3021            DCA     FPC             /SET FPC IN APT
2094    3250  6553            FPCOM                   /ZERO COMMAND REGISTER
2095    3251  1176            TAD     [APT            /GET ADDRESS OF APT
2096    3252  6555            FPST                    /START FPP
2097    3253  7402            HLT
2098    3254  6557            FPIST                   /WAIT FOR FPP TO FINISH
2099    3255  5254            JMP     .-1
2100    3256  4771'           JMS     COMP50          /COMPARE ANSWERS
2101    3257  7402            HLT                     /COMPARE FAILED
2102                                                  /AC=1 EXPONENT IS WRONG
2103                                                  /AC=2 MSW IS WRONG
2104                                                  /AC=3 LSW IS WRONG
2105    3260  7000            FREE                    /UNUSED LOCATION
2106    3261  7200            CLA
2107    3262  2110            ISZ     T2              /TEST COMPLETE?
2108    3263  5235            JMP     TST54+2         /NO-RETURN
2109    3264  7000            FREE                    /UNUSED LOCATION
2110    3265  7000            FREE                    /UNUSED LOCATION
2111
```

```
2112
2113                    /FADDM WITH X6 = 5
2114
2115                    /*************************************************
2116                    /       TADM5,  FADDM X6 500
2117                    /               DATA1-22
2118                    /               FEXIT
2119                    /*************************************************
2120
2121
2122    3266  7200      TST55,  CLA
2123    3267  4777'              JMS     SET50           /SETUP ADDRESSES
2124    3270  4775'              JMS     CLAPT           /ZERO APT
2125    3271  7200              CLA
2126    3272  1177              TAD     CIR0            /GET ADDRESS OF IR0
2127    3273  3022              DCA     ADX             /SET INDEX POINTER IN APT
2128    3274  1366              TAD     (5
2129    3275  3036              DCA     IR6             /IR6 = 5
2130    3276  4773'             JMS     MOVE50          /MOVE DATA INTO REGISTERS
2131    3277  7200              CLA
2132    3300  1365              TAD     (TADM5          /GET FPP TEST ADDRESS
2133    3301  3021              DCA     FPC             /SET FPC IN APT
2134    3302  6553              FPCOM                   /ZERO COMMAND REGISTER
2135    3303  1176              TAD     CAPT            /GET ADDRESS OF APT
2136    3304  6555              FPST                    /START FPP
2137    3305  7402              HLT
2138    3306  6557              FPIST                   /WAIT FOR FPP TO FINISH
2139    3307  5306              JMP     .-1
2140    3310  4771'             JMS     COMP50          /COMPARE ANSWERS
2141    3311  7402              HLT                     /COMARE FAILED
2142                                                    /AC=1 EXPONENT IS WRONG
2143                                                    /AC=2 MSW IS WRONG
2144                                                    /AC=3 LSW IS WRONG
2145    3312  7000              FREE                    /UNUSED LOCATION
2146    3313  7200              CLA
2147    3314  2110              ISZ     T2              /TEST COMPLETE?
2148    3315  5270              JMP     TST55+2         /NO-RETURN
2149    3316  7000              FREE                    /UNUSED LOCATION
2150    3317  7000              FREE                    /UNUSED LOCATION
2151
2152
2153                    NPAGE
2154    3320  5764              JMP I   (.+2008-7600            /JUMP TO NEXT MEMORY PAGE
2155    3364  3400
2156    3365  6337
2157    3366  0005
2158    3367  6330
2159    3370  0004
2160    3371  4400
2161    3372  6321
2162    3373  4436
2163    3374  0003
2164    3375  4215
2165    3376  4200
2166    3377  4423
```

```
2167
2168                    /FADDM WITH X7 = 6
2169
2170                    /*************************************************
2171                    /       TADM6,  FADDM X7 500
2172                    /               DATA1-25
2173                    /               FEXIT
2174                    /*************************************************
2175
2176
2177    3400  7200      TST56,  CLA
2178    3401  4777'              JMS     SET50           /SETUP ADDRESSES
2179    3402  4776'              JMS     CLRX            /ZERO INDEX REGISTERS
2180    3403  4775'              JMS     CLAPT           /ZERO APT
2181    3404  7200               CLA
2182    3405  1177               TAD     CIR0            /GET ADDRESS OF IR0
2183    3406  3022               DCA     ADX             /SET INDEX POINTER IN APT
2184    3407  1374               TAD     (6
2185    3410  3037               DCA     IR7             /IR7 = 6
2186    3411  4773'              JMS     MOVE50          /MOVE DATA INTO REGISTERS
2187    3412  7200               CLA
2188    3413  1372               TAD     (TADM6          /GET FPP TEST ADDRESS
2189    3414  3021               DCA     FPC             /SET FPC IN APT
2190    3415  6553               FPCOM                   /ZERO COMMAND REGISTER
2191    3416  1176               TAD     CAPT            /GET ADDRESS OF APT
2192    3417  6555               FPST                    /START FPP
2193    3420  7402               HLT
2194    3421  6557               FPIST                   /WAIT FOR FPP TO FINISH
2195
2196    3422  5221               JMP     .-1
2197    3423  4771'              JMS     COMP50          /COMPARE ANSWERS
2198    3424  7402               HLT                     /COMPARE FAILED
2199                                                     /AC=1 EXPONENT IS WRONG
2200                                                     /AC=2 MSW IS WRONG
2201                                                     /AC=3 LSW IS WRONG
2202    3425  7000               FREE                    /UNUSED LOCATION
2203    3426  7200               CLA
2204    3427  2110               ISZ     T2              /TEST COMPLETE?
2205    3430  5202               JMP     TST56+2         /NO-RETURN
2206    3431  7000               FREE                    /UNUSED LOCATION
2207    3432  7000               FREE                    /UNUSED LOCATION
2208
2209
2210                            NPAGE
2211    3433  5770               JMP I   (.+20087600             /JUMP TO NEXT MEMORY PAGE
2212    3570  3600
2213    3571  4400
2214    3572  6346
2215    3573  4436
2216    3574  0006
2217    3575  4215
2218    3576  4200
2219    3577  4423
              3600              PAGE
```

```
2220
2221                    /TEST FADDM IN DOUBLE PRECISION MODE
2222
2223                    /***********************************************
2224                    /       TADM7,  FADDM X1 500    X1=0
2225                    /               5252
2226                    /               FEXIT
2227                    /***********************************************
2228
2229
2230    3600    7200    TST57,  CLA
2231    3601    4777'           JMS     CLRX            /ZERO INDEX REGISTERS
2232    3602    4776'           JMS     CLAPT           /ZERO APT
2233    3603    7300            CLA CLL
2234    3604    3112            DCA     T4              /ZERO ANSWERS AND DATA
2235    3605    3113            DCA     T5
2236    3606    3775'           DCA     5252            /ZERO FPP ANSWERS
2237    3607    7005            IAC RAL                 /AC=0002
2238    3610    3774'           DCA     5253            /
2239    3611    1373            TAD     (-1750          /DO 1000 DECIMAL ADDDS
2240    3612    3110            DCA     T2              /ADD X+(X/2)
2241    3613    7200    TST57A, CLA                     /SAVE OPERAND
2242    3614    1026            TAD     MFAC            /FOR OVERFLOW COMPARE
2243    3615    3114            DCA     T6
2244    3616    1027            TAD     LFAC
2245    3617    3115            DCA     T7
2246    3620    4772'           JMS     DADD            /SIMULATE DOUBLE PRECISION FADDM
2247    3621    7300            CLA CLL
2248    3622    3031            DCA     IR1             /IR1 = 0
2249    3623    1177            TAD     [IR0            /GET ADDRESS OF IR0
2250    3624    3022            DCA     ADX             /SET INDEX POINTER IN APT
2251    3625    1371            TAD     (TADM7          /GET FPP TEST ADDRESS
2252    3626    3021            DCA     FPC             /SET FPC IN APT
2253    3627    7130            STL RAR                 /AC=4000
2254    3630    6553            FPCOM                   /COMMAND REG = DOUBLE PRECISION MODE
2255    3631    7200            CLA
2256    3632    1176            TAD     [APT            /GET ADDRESS OF APT
2257    3633    6555            FPST                    /START FPP
2258    3634    7402            HLT
2259    3635    6557            FPIST                   /WAIT FOR FPP TO FINISH
2260    3636    5235            JMP     .-1
2261    3637    7106            CLL RTL                 /GET OVERFLOW BIT IN AC0
2262    3640    7106            CLL RTL
2263    3641    1120            TAD     SAVEL           /ADD SIMULATED OVERFLOW BIT
2264    3642    7710            SPA CLA                 /IS FPP OVERFLOW BIT CORRECT?
2265    3643    7402            HLT                     /NO
2266    3644    7000            FREE                    /UNUSED LOCATION
2267    3645    7650            SZL CLA                 /WAS THERE AN OVERFLOW
2268    3646    5264            JMP     TST57B          /YES-COMPARE THAT DATA HAS NOT CHANGED
2269    3647    1112            TAD     T4              /GET MSW OF SIMULATED ANSWER
2270    3650    7041            CIA
2271    3651    1775'           TAD     5252            /COMPARE WITH MSW OF FPP ANSWER
2272    3652    7640            SZA CLA                 /IS MSW CORRECT?
2273    3653    7402            HLT                     /NO
2274    3654    7000            FREE                    /UNUSED LOCATION
```

```
2275    3655  1113          TAD     T5              /GET LSW OF SIMULATED ANSWER
2276    3656  7041          CIA
2277    3657  1774'         TAD     5253            /COMPARE WITH LSW OF FPP ANSWER
2278    3660  7640          SZA CLA                 /IS LSW CORRECT?
2279    3661  7402          HLT                     /NO
2280    3662  7000          FREE                    /UNUSED LOCATION
2281    3663  5300          JMP     TST57C          /SETUP NEW DATA
```

```
2282
2283    3664  1116    TST57B, TAD     T8              /GET MSW OF OLD DATA
2284    3665  7041            CIA
2285    3666  1775'           TAD     5252            /COMPARE TO MSW OF ANSWER
2286    3667  7640            SZA CLA                 /DID DATA CHANGE WITH OVERFLOW?
2287    3670  7402            HLT                     /YES-MSW CHANGED
2288    3671  7000            FREE                    /UNUSED LOCATION
2289    3672  1117            TAD     T9              /GET LSW OF OLD DATA
2290    3673  7041            CIA
2291    3674  1774'           TAD     5253            /COMPARE WITH LSW OF ANSWER
2292    3675  7640            SZA CLA                 /DID ANSWER CHANGE WITH OVERFLOW?
2293    3676  7402            HLT                     /YES-LSW CHANGED
2294    3677  7000            FREE                    /UNUSED LOCATION
2295    3700  1114    TST57C, TAD     T6              /GET MSW OF STORED FAC
2296    3701  7041            CIA
2297    3702  1026            TAD     MFAC            /COMPARE WITH MSW OF FAC IN APT
2298    3703  7640            SZA CLA                 /DID FAC CHANGE?
2299    3704  7402            HLT                     /YES-MSW CHANGED
2300    3705  7000            FREE                    /UNUSED LOCATION
2301    3706  1115            TAD     T7              /GET LSW OF STORED FAC
2302    3707  7041            CIA
2303    3710  1027            TAD     LFAC            /COMPARE WITH LSW OF FAC IN APT
2304    3711  7640            SZA CLA                 /DID FAC CHANGE?
2305    3712  7402            HLT                     /YES-LSW CHANGED
2306    3713  7000            FREE                    /UNUSED LOCATION
2307    3714  1112            TAD     T4              /MOVE SIMULATED ANSWER TO FAC
2308    3715  3026            DCA     MFAC
2309    3716  1113            TAD     T5
2310    3717  3027            DCA     LFAC
2311    3720  7300            CLA CLL                 /GENERATE NEW OPERAND BY
2312    3721  1112            TAD     T4              /DIVIDING SIMULATED ANSWER
2313    3722  7010            RAR                     /BY 2 WITH A DOUBLE PRECISION
2314    3723  3775'           DCA     5252            /RIGHT SHIFT
2315    3724  1113            TAD     T5
2316    3725  7010            RAR
2317    3726  3774'           DCA     5253
2318    3727  1775'           TAD     5252            /SAVE OPERAND IN CASE OF OVERFLOW
2319    3730  3116            DCA     T8
2320    3731  1774'           TAD     5253
2321    3732  3117            DCA     T9
2322    3733  2110            ISZ     T2              /FINSIHED 1000 ADDS?
2323    3734  5213            JMP     TST57A          /NO-RETURN
2324    3735  7000            FREE                    /UNUSED LOCATIONS
2325    3736  7000            FREE
2326
2327
2328                          NPAGE
2329    3737  5770            JMP I   ('.+20@7600             /JUMP TO NEXT MEMORY PAGE
2330
2331    3770  4000
2332    3771  6355
2333    3772  4455
2334    3773  6030
2335    3774  5253
2336    3775  5252
```

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2337    3776  4215
2338    3777  4200
              4020          PAGE
```

```
2339
2340
2341                    /TEST FMULM IN FLOATING POINT MODE
2342
2343                    /       0100 2525 2525 X 0070 2010 1111 = 0160 2555 5520
2344                    /       0077 0707 0707 X 0700 2000 0700 = 0774 3434 3434
2345                    /       0707 3636 3636 X 0070 0000 0002 = 0751 3600 0000
2346                    /       4444 3333 1111 X 0333 0002 2222 = 4765 3725 6400
2347
2348                    /*********************************************
2349                    /       TMULM1, FLDA X1 500     X1=1
2350                    /               DATA2B
2351                    /               FMULM X2 500    X2=-1
2352                    /               BUF2
2353                    /               JXN X3          X3=-4
2354                    /               TMULM1
2355                    /               FEXIT
2356                    /*********************************************
2357
2358
2359    4000  4777'    TST60,  JMS     CLAPT
2360    4001  1376            TAD     (DATA2A-1       /GET ADDRESS OF OPERAND TABLE
2361    4002  3010            DCA     10
2362    4003  1375            TAD     (BUF2-1         /GET ADDRESS OF WORKING BUFFER
2363    4004  3011            DCA     11
2364    4005  1374            TAD     (-14            /GET WORD COUNT
2365    4006  3107            DCA     T1
2366    4007  1410            TAD I   10              /MOVE DATA INTO BUFFER
2367    4010  3411            DCA I   11
2368    4011  2107            ISZ     T1
2369    4012  5207            JMP     .-3
2370    4013  1177            TAD     [IR0            /GET ADDRESS OF IR0
2371    4014  3022            DCA     ADX             /SET INDEX POINTER IN APT
2372    4015  1373            TAD     (TMULM1         /GET TEST ADDRESS
2373    4016  3021            DCA     FPC             /SET FPC IN APT
2374    4017  7040            CMA
2375    4020  3031            DCA     IR1             /IR1=-1
2376    4021  7040            CMA
2377    4022  3032            DCA     IR2             /IR2=-1
2378    4023  1372            TAD     (-4
2379    4024  3033            DCA     IR3             /IR3=-4
2380    4025  6553            FPCOM                   /FPP COMMAND REG=0000
2381    4026  1176            TAD     [APT            /GET ADDRESS OF APT
2382    4027  6555            FPST                    /START FPP
2383    4030  7402            HLT
2384    4031  6557            FPIST                   /WAIT FOR FPP TO FINISH
2385    4032  5231            JMP     .-1
2386    4033  7200            CLA                     /CHECK ANSWERS
2387    4034  1374            TAD     (-14            /GET WORD COUNT
2388    4035  3107            DCA     T1
2389    4036  1375            TAD     (BUF2-1         /GET ADDRESS OF FPP ANSWERS
2390    4037  3010            DCA     10
2391    4040  1371            TAD     (ANS2-1         /GET ADDRESS OF ANSWER TABLE
2392    4041  3011            DCA     11
2393    4042  1410            TAD I   10              /GET FPP ANSWER
```

```
2394    4043  7041          CIA                     /NEGATE
2395    4044  1411          TAD I   11              /COMPARE WITH ANSWER TABLE
2396    4045  7640          SZA CLA                 /IS FPP ANSWER CORRECT?
2397    4046  7402          HLT                     /NO
2398    4047  7000          FREE                    /UNUSED LOCATION
2399    4050  2107          ISZ     T1              /FINISHED?
2400    4051  5242          JMP     .-7             /NO
2401    4052  7000          FREE
2402    4053  7000          FREE
2403
2404
```

```
2405
2406
2407                    /TEST ALL NOPS
2408
2409                    /*************************************************
2410                    /SEE TNOP1 FOR FPP CODE
2411                    /*************************************************
2412
2413    4054  7240    TST70,  STA
2414    4055  3023            DCA     BASE            /BASE=-1
2415    4056  7040            CMA
2416    4057  3024            DCA     OPAD            /OPAD=-1
2417    4060  7040            CMA
2418    4061  3025            DCA     EFAC            /FAC XPONENT=-1
2419    4062  7040            CMA
2420    4063  3026            DCA     MFAC            /FAC MSW=-1
2421    4064  7040            CMA
2422    4065  3027            DCA     LFAC            /FAC LSW=-1
2423    4066  3020            DCA     APT             /FIELD BITS=0
2424    4067  1370            TAD     (TNOP1          /GET TEST ADDRESS
2425    4070  3021            DCA     FPC             /SET FPC IN APT
2426    4071  4505            JMS I   ACLRX           /ZERO INDEX REGISTERS
2427    4072  1367            TAD     (-33
2428    4073  3107            DCA     T1              /SET BREAK COUNTER
2429    4074  7200            CLA
2430    4075  6553            FPCOM                   /FPP COMMAND REG=0000
2431    4076  1170            TAD     [APT            /GET ADDRESS OF APT
2432    4077  6555            FPST                    /START FPP
2433    4100  7402            HLT
2434    4101  2107            ISZ     T1              /COUNT DATA BREAKS
2435    4102  5301            JMP     .-1
2436    4103  6557            FPIST                   /IS FPP FINISHED?
2437    4104  7410            SKP                     /NO=ERROR
2438    4105  5311            JMP     TST70A          /YES=CHECK APT FOR NO CHANGE
2439    4106  6554            FPHLT                   /STOP THE FPP
2440    4107  7402            HLT                     /ERROR=FPP SHOULD HAVE FINISHED
2441    4110  7000            FREE                    /UNUSED LOCATION
2442    4111  7200    TST70A, CLA                     /CHECK APT
2443    4112  1366            TAD     (TNOPE          /GET ADDRESS OF END OF TEST
2444    4113  7041            CIA
2445    4114  1021            TAD     FPC             /COMPARE WITH FPC
2446    4115  7640            SZA CLA                 /IS FPC CORRECT?
2447    4116  7402            HLT                     /NO
2448    4117  7000            FREE                    /UNUSED LOCATION
2449    4120  1020            TAD     APT
2450    4121  7640            SZA CLA                 /DID FIELD BITS CHANGE?
2451    4122  7402            HLT                     /YES
2452    4123  7000            FREE                    /UNUSED
2453    4124  1365            TAD     (OPAD           /SETUP FOR APT CHECK
2454    4125  3010            DCA     10
2455    4126  1364            TAD     (-3
2456    4127  3107            DCA     T1
2457    4130  7200    TST70C, CLA
2458    4131  1410            TAD I   10              /GET WORD FROM APT
2459    4132  7040            CMA
```

Ah-ha! go read the list pg for the patch first.

```
2460  4133  7440            SZA                     /DID WORD CHANGE?
2461  4134  7402            HLT                     /YES
2462  4135  7000            FREE                    /UNUSED LOCATION
2463  4136  2107            ISZ     T1              /APT FINISHED?
2464  4137  5330            JMP     TST70C          /NO
2465  4140  7200            CLA
2466  4141  1363            TAD     (-10            /SETUP TO CHECK INDEX REGS
2467  4142  3107            DCA     T1
2468  4143  7200  TST70D,   CLA
2469  4144  1410            TAD I   10              /GET INDEX REGISTER
2470  4145  7440            SZA                     /DID IT CHANGE?
2471  4146  7402            HLT                     /YES
2472  4147  7000            FREE                    /UNUSED LOCATION
2473  4150  2107            ISZ     T1              /INDEX REGISTERS FINISHED?
2474  4151  5343            JMP     TST70D          /NO
2475  4152  7000            FREE                    /UNUSED LOCATIONS
2476  4153  7000            FREE
2477  4154  7604            LAS                     /SR00=1
2478  4155  7710            SPA CLA                 /STOP AT END OF PASS?
2479  4156  7402            HLT                     /YES
2480  4157  5762'           JMP     TST1            /CONTINUE TO LOOP
2481  4160  0200
2482  4161  7770
2483  4162  7775
2484  4163  0024
2485  4164  6471
2486  4165  7745  7743
2487  4166  6425
2488  4167  5673
2489  4170  7774
2490  4171  6372
2491  4172  7764
2492  4173  5077
2493  4174  5643
2494  4175  4215
      4176  4200            PAGE
```

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2495
2496    4200  0000    CLRX,   0
2497    4201  1377            TAD     (AXR            /GET ADDRESS OF INDEX REG
2498    4202  3107            DCA     T1
2499    4203  1507            TAD I   T1              /ADDRESS OF IR0-1
2500    4204  3010            DCA     10
2501    4205  1376            TAD     (-10            /GET COUNT
2502    4206  3107            DCA     T1
2503    4207  3410            DCA I   10
2504    4210  2107            ISZ     T1
2505    4211  5207            JMP     .-2
2506    4212  5600            JMP I   CLRX
2507    4213  0027    AXR,    IR0-1                   /X0 IN PAGE 0
2508    4214  7767            7767                    /X0 IN LAST PAGE
2509    4215  0000    CLAPT,  0
2510    4216  7200            CLA
2511    4217  1375            TAD     (APT-1
2512    4220  3010            DCA     10
2513    4221  1376            TAD     (-10
2514    4222  3107            DCA     T1
2515    4223  3410            DCA I   10
2516    4224  2107            ISZ     T1
2517    4225  5223            JMP     .-2
2518    4226  5615            JMP I   CLAPT
2519    4227  0000    SAVBIN, 0                       /SAVE LAST 8 LOCATIONS OF
2520    4230  7200            CLA                     /BINARY LOADER SO THAT 7770-7777
2521    4231  1374            TAD     (7767           /CAN BE USED FOR INDEX REGISTERS
2522    4232  3010            DCA     10
2523    4233  1373            TAD     (7577
2524    4234  3011            DCA     11
2525    4235  1376            TAD     (-10
2526    4236  4251            JMS     MOVE
2527    4237  5627            JMP I   SAVBIN
2528    4240  0000    RESBIN, 0                       /RESTORE BINARY LOADER
2529    4241  7200            CLA
2530    4242  1373            TAD     (7577
2531    4243  3010            DCA     10
2532    4244  1374            TAD     (7767
2533    4245  3011            DCA     11
2534    4246  1376            TAD     (-10
2535    4247  4251            JMS     MOVE
2536    4250  5640            JMP I   RESBIN
2537    4251  0000    MOVE,   0
2538    4252  3260            DCA     MOVECT          /SAVE COUNT
2539    4253  1410            TAD I   10
2540    4254  3411            DCA I   11
2541    4255  2260            ISZ     MOVECT
2542    4256  5253            JMP     .-3
2543    4257  5651            JMP I   MOVE
2544    4260  0000    MOVECT, 0
```

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2545
2546  4261  0000  COMPD, 0                        /COMPARE BUFFERS IN DOUBLE PRECISION
2547  4262  3107        DCA     T1
2548  4263  1372        TAD     (BUF1-1
2549  4264  3010        DCA     10
2550  4265  1371        TAD     (BUF2-1
2551  4266  3011        DCA     11
2552  4267  7200  COMPD1, CLA
2553  4270  1411        TAD I   11
2554  4271  7640        SZA CLA
2555  4272  5311        JMP     .+17                /EXPONENT NOT 0
2556  4273  2010        ISZ     10
2557  4274  1411        TAD I   11
2558  4275  7041        CIA
2559  4276  1410        TAD I   10
2560  4277  7640        SZA CLA
2561  4300  5311        JMP     .+11                /MSW NOT CORRECT
2562  4301  1411        TAD I   11
2563  4302  7041        CIA
2564  4303  1410        TAD I   10
2565  4304  7640        SZA CLA
2566  4305  5311        JMP     .+4                 /LSW NOT CORRECT
2567  4306  2107        ISZ     T1
2568  4307  5267        JMP     COMPD1
2569  4310  2261        ISZ     COMPD
2570  4311  5661        JMP I   COMPD
2571  4312  0000  COMPF, 0                        /COMPARE BUFFERS IN FLOATING POINT
2572  4313  3107        DCA     T1
2573  4314  1372        TAD     (BUF1-1
2574  4315  3010        DCA     10
2575  4316  1371        TAD     (BUF2-1
2576  4317  3011        DCA     11
2577  4320  7200        CLA
2578  4321  1410        TAD I   10
2579  4322  7041        CIA
2580  4323  1411        TAD I   11
2581  4324  7440        SZA
2582  4325  5331        JMP     .+4
2583  4326  2107        ISZ     T1
2584  4327  5320        JMP     .-7
2585  4330  2312        ISZ     COMPF
2586  4331  5712        JMP I   COMPF
2587  4332  0000  CLRBUF, 0
2588  4333  7240        CLA CMA
2589  4334  1370        TAD     (BUF2
2590  4335  3010        DCA     10
2591  4336  1367        TAD     (-100
2592  4337  3107        DCA     T1
2593  4340  3410        DCA I   10
2594  4341  2107        ISZ     T1
2595  4342  5340        JMP     .-2
2596  4343  5732        JMP I   CLRBUF
2597
2598
2599  4367  7700
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2600    4370  5100
2601    4371  5077
2602    4372  4777
2603    4373  7577
2604    4374  7767
2605    4375  0017
2606    4376  7770
2607    4377  4213
              4400    PAGE
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2008
2009    4400  0000    COMP50, 0
2010    4401  7200            CLA
2011    4402  1377            TAD     (5251           /GET DATA ADDRESS
2012    4403  3016            DCA     16
2013    4404  1376            TAD     (-3             /GET WORD COUNT
2014    4405  3107            DCA     T1
2015    4406  3111            DCA     T3              /ZERO ERROR POINTER
2016    4407  1416            TAD I   16              /GET DATA
2017    4410  7041            CIA
2018    4411  1412            TAD I   12              /COMPARE WITH CORRECT ANSWER
2019    4412  2111            ISZ     T3              /INCREMENT ERROR POINTER
2020    4413  7640            SZA CLA
2021    4414  5221            JMP     .+5
2022    4415  2107            ISZ     T1              /INCREMENT WORD COUNT
2023    4416  5207            JMP     .-7
2024    4417  2200            ISZ     COMP50          /INCREMENT RETURN
2025    4420  7410            SKP
2026    4421  1111            TAD     T3              /GAT ERROR POINTER
2027    4422  5600            JMP I   COMP50          /RETURN
2028    4423  0000    SET50,  0
2029    4424  7200            CLA
2030    4425  1375            TAD     (DAT1A-1        /GET ADDRESS OF A DATA
2031    4426  3013            DCA     13
2032    4427  1374            TAD     (DAT1B-1        /GET ADDRESS OF B DATA
2033    4430  3011            DCA     11
2034    4431  1373            TAD     (ANS1-1         /GET ADDRESS OF A*B ANSWERS
2035    4432  3012            DCA     12
2036    4433  1372            TAD     (-4             /GET DATA WORD COUNT
2037    4434  3110            DCA     T2              /SET LOOP COUNTER FOR END OF DATA
2038    4435  5623            JMP I   SET50           /RETURN
2039    4436  0000    MOVE50, 0
2040    4437  7200            CLA
2041    4440  1376            TAD     (-3
2042    4441  3107            DCA     T1              /SET WORD COUNT
2043    4442  1371            TAD     (EFAC-1         /GET ADDRESS OF FAC IN APT
2044    4443  3016            DCA     16
2045    4444  1377            TAD     (5251           /GET DATA ADDRESS
2046    4445  3017            DCA     17
2047    4446  1413            TAD I   13
2048    4447  3416            DCA I   16
2049    4450  1411            TAD I   11
2050    4451  3417            DCA I   17
2051    4452  2107            ISZ     T1
2052    4453  5246            JMP     .-5
2053    4454  5636            JMP I   MOVE50
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2654
2655    4455  0000    DADD,   0
2656    4456  7320            CLA STL                 /SIMULATE DOUBHE PRECISION FADDM
2657    4457  1770'           TAD     5252            /CHECK FOR OVERFLOW
2658    4460  7710            SPA CLA                 /IS A OPERAND POSITIVE?
2659    4461  7100            CLL                     /NO
2660    4462  1112            TAD     T4
2661    4463  7710            SPA CLA                 /IS B OPERAND POSITIVE?
2662    4464  7100            CLL                     /NO
2663    4465  7010            RAR
2664    4466  3120            DCA     SAVEL           /SAVE LINK
2665    4467  7300            CLA CLL
2666    4470  1113            TAD     T5              /GET A LSW
2667    4471  1767'           TAD     5253            /ADD B LSW
2668    4472  3113            DCA     T5              /SAVE LSW
2669    4473  1112            TAD     T4              /GET A MSW
2670    4474  7430            SZL                     /LSW OVERFLOW?
2671    4475  7001            IAC                     /YES-ADD TO MSW
2672    4476  1770'           TAD     5252            /ADD B MSW
2673    4477  3112            DCA     T4              /SAVE MSW
2674    4500  7300            CLA CLL
2675    4501  1112            TAD     T4
2676    4502  1120            TAD     SAVEL           /ADD LINK TO GENERATE
2677    4503  7200            CLA                     /FRACTION OVERFLOW BIT
2678    4504  7010            RAR                     /OVERFLOW BIT TO AC0
2679    4505  3120            DCA     SAVEL           /SAVE FRACTION OVERFLOW BIT
2680    4506  5655            JMP I   DADD            /RETURN
2681    4507  0000    END,    0
2682
2683    4567  5253
2684    4570  5252
2685    4571  0024
2686    4572  7774
2687    4573  5627
2688    4574  5613
2689    4575  5577
2690    4576  7775
2691    4577  5251
              6000    *6000
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2692
2693    6000  0100    FTSTA,  LDX     0
2694    6001  7000            0
2695    6002  7000            FEXIT           /REPLACE WITH 2040 (NOP) FOR SCOPE LOOP
2696    6003  1030            JA              /SCOPE LOOP
2697    6004  6000            FTSTA
2698
2699    6005  0101    FTSTB,  LDX     1
2700    6006  0000            0
2701    6007  7000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2702    6010  1030            JA              /SCOPE LOOP
2703    6011  6005            FTSTB
2704
2705    6012  0102    FTSTC,  LDX     2
2706    6013  0000            0
2707    6014  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2708    6015  1030            JA              /SCOPE LOOP
2709    6016  6012            FTSTC
2710
2711    6017  0103    FTSTD,  LDX     3
2712    6020  0000            0
2713    6021  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2714    6022  1030            JA              /SCOPE LOOP
2715    6023  6017            FTSTD
2716
2717    6024  0104    FTSTE,  LDX     4
2718    6025  0000            0
2719    6026  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2720    6027  1030            JA              /SCOPE LOOP
2721    6030  6024            FTSTE
2722
2723    6031  0105    FTSTF,  LDX     5
2724    6032  0000            0
2725    6033  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2726    6034  1030            JA              /SCOPE LOOP
2727    6035  6031            FTSTF
2728
2729    6036  0106    FTSTG,  LDX     6
2730    6037  0000            0
2731    6040  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2732    6041  1030            JA              /SCOPE LOOP
2733    6042  6036            FTSTG
2734
2735    6043  0107    FTSTH,  LDX     7
2736    6044  0000            0
2737    6045  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2738    6046  1030            JA              /SCOPE LOOP
2739    6047  6043            FTSTH
2740
2741
2742    6050  0100    FTSTJ,  LDX     0
2743    6051  1234    FTSTJ0, 1234
2744    6052  0101            LDX     1
2745    6053  2345    FTSTJ1, 2345
2746    6054  0102            LDX     2
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2747    6055  3456    FTSTJ2, 3456
2748    6056  0103            LDX     3
2749    6057  4567    FTSTJ3, 4567
2750    6060  0104            LDX     4
2751    6061  4321    FTSTJ4, 4321
2752    6062  0105            LDX     5
2753    6063  5432    FTSTJ5, 5432
2754    6064  0106            LDX     6
2755    6065  6543    FTSTJ6, 6543
2756    6066  0107            LDX     7
2757    6067  7654    FTSTJ7, 7654
2758    6070  2000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2759    6071  1030            JA              /SCOPE LOOP
2760    6072  6050            FTSTJ
2761
2762
2763    6073  0110    TADX0,  ADDX    0
2764    6074  0000            0
2765    6075  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2766    6076  1030            JA              /SCOPE LOOP
2767    6077  6073            TADX0
2768
2769    6100  0111    TADX1,  ADDX    1
2770    6101  0000            0
2771    6102  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2772    6103  1030            JA              /SCOPE LOOP
2773    6104  6100            TADX1
2774
2775    6105  0112    TADX2,  ADDX    2
2776    6106  0000            0
2777    6107  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2778    6110  1030            JA              /SCOPE LOOP
2779    6111  6105            TADX2
2780
2781    6112  0113    TADX3,  ADDX    3
2782    6113  0000            0
2783    6114  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2784    6115  1030            JA              /SCOPE LOOP
2785
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2786
2787    6116  0114    TADX4,  ADDX    4
2788    6117  0000            0
2789    6120  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2790    6121  1030            JA              /SCOPE LOOP
2791    6122  6116            TADX4
2792
2793    6123  0115    TADX5,  ADDX    5
2794    6124  0000            0
2795    6125  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2796    6126  1030            JA              /SCOPE LOOP
2797    6127  6123            TADX5
2798
2799    6130  0116    TADX6,  ADDX    6
2800    6131  0000            0
2801    6132  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2802    6133  1030            JA              /SCOPE LOOP
2803    6134  6130            TADX6
2804
2805    6135  0117    TADX7,  ADDX    7
2806    6136  0000            0
2807    6137  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2808    6140  1030            JA              /SCOPE LOOP
2809    6141  6135            TADX7
2810
2811    6142  0110    TADX8,  ADDX    0
2812    6143  0001            1
2813    6144  0111            ADDX    1
2814    6145  0001            1
2815    6146  0112            ADDX    2
2816    6147  0001            1
2817    6150  0113            ADDX    3
2818    6151  0001            1
2819    6152  0114            ADDX    4
2820    6153  0001            1
2821    6154  0115            ADDX    5
2822    6155  0001            1
2823    6156  0116            ADDX    6
2824    6157  0001            1
2825    6160  0117            ADDX    7
2826    6161  0001            1
2827    6162  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2828    6163  1030            JA              /SCOPE LOOP
2829    6164  6142            TADX8
2830
2831    6165  2100    TJXN1,  JXN
2832    6166  6172            .+4
2833    6167  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2834    6170  1030            JA              /SCOPE LOOP  FOR OVERFLOW
2835    6171  6165            TJXN1
2836    6172  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2837    6173  1030            JA              /SCOPE LOOP IF NO OVERFLOW
2838    6174  6165            TJXN1
2839
2840    6175  2100    TJXN2,  JXN
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2841  6176  6175          .=1
2842  6177  0000          FEXIT          /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2843  6200  1030          JA             /SCOPE LOOP
2844  6201  6175          TJXN2
2845  6202  2000  TJXN3,  2000           /JXN 0 WITH NO INCREMENT X?=-1
2846  6203  6205          .+2
2847  6204  0000          FEXIT
2848  6205  2110          JXN    X1      /JXN WITH INCREMENT X1=-144
2849  6206  6202          TJXN3
2850  6207  0000          FEXIT          /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2851  6210  0100          LDX    0       /RESET INDEX REGISTERS
2852  6211  7777          -1
2853  6212  0101          LDX    1
2854  6213  7634          -144
2855  6214  1030          JA             /SCOPE LOOP
2856  6215  6202          TJXN3
2857
2858  6216  0400  TSTA1,  FLDA   400
2859  6217  5000          BUF1
2860  6220  6400          FSTA   400
2861  6221  5100          BUF2
2862  6222  0000          FEXIT          /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2863  6223  1030          JA             /SCOPE LOOP
2864  6224  6216          TSTA1
2865
2866  6225  0200  TSTA2,  FLDA   200
2867  6226  1110          SETB
2868  6227  5100          BUF2
2869  6230  6200          FSTA   200
2870  6231  0000          FEXIT          /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2871  6232  1030          JA             /SCOPE LOOP
2872  6233  6225          TSTA2
2873
2874  6234  0530  TSTA3,  FLDA X3 500
2875  6235  5000          BUF1
2876  6236  6540          FSTA X4 500
2877  6237  5075          BUF2-3
2878  6240  0000          FEXIT          /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2879  6241  1030          JA             /SCOPE LOOP
2880  6242  6234          TSTA3
2881
2882  6243  0710  TSTA4,  FLDA X1 700
2883  6244  6721          FSTA X2 701
2884  6245  0000          FEXIT          /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2885  6246  1030          JA             /SCOPE LOOP
2886  6247  6243          TSTA4
2887
2888  6250  0550  TSTA5,  FLDA X5 500
2889  6251  5000          BUF1
2890  6252  6560          FSTA X6 500
2891  6253  5100          BUF2
2892  6254  2100          JXN X0
2893  6255  6250          TSTA5
2894  6256  0000          FEXIT          /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2895  6257  0105          LDX    5       /SCOPE LOOP
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2896    6260  7777          -1
2897    6261  0106          LDX     6
2898    6262  7777          -1
2899    6263  0100          LDX     0
2900    6264  7753          -25
2901    6265  1030          JA
2902    6266  6250          TSTA5
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```
2903  6267  0030  TATX1,  XTA     0
2904  6270  0027          ATX     7
2905  6271  0000          FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2906  6272  1030          JA              /SCOPE LOOP
2907  6273  6267          TATX1
2908
2909  6274  5510  TADM0,  FADDM X1 500           /X1 = 0
2910  6275  5247          DATA1=3
2911  6276  0000          FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2912  6277  0101          LDX     1       /SCOPE LOOP
2913  6300  0000          0
2914  6301  1030          JA
2915  6302  6274          TADM0
2916
2917  6303  5520  TADM1,  FADDM X2 500           /X2 = 1
2918  6304  5244          DATA1=6
2919  6305  0000          FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2920  6306  0102          LDX     2       /SCOPE LOOP
2921  6307  0001          1
2922  6310  1030          JA
2923  6311  6303          TADM1
2924
2925  6312  5530  TADM2,  FADDM X3 500           /X3 = 2
2926  6313  5241          DATA1=11
2927  6314  0000          FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2928  6315  0103          LDX     3       /SCOPE LOOP
2929  6316  0002          2
2930  6317  1030          JA
2931  6320  6312          TADM2
2932
2933  6321  5540  TADM3,  FADDM X4 500           /X4 = 3
2934  6322  5236          DATA1=14
2935  6323  0000          FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2936  6324  0104          LDX     4       /SCOPE LOOP
2937  6325  0003          3
2938  6326  1030          JA
2939  6327  6321          TADM3
2940
2941  6330  5550  TADM4,  FADDM X5 500           /X5 = 4
2942  6331  5233          DATA1=17
2943  6332  0000          FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2944  6333  0105          LDX     5       /SCOPE LOOP
2945  6334  0004          4
2946  6335  1030          JA
2947  6336  6330          TADM4
2948
2949  6337  5560  TADM5,  FADDM X6 500           /X6 = 5
2950  6340  5230          DATA1=22
2951  6341  0000          FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2952  6342  0106          LDX     6       /SCOPE LOOP
2953  6343  0005          5
2954  6344  1030          JA
2955  6345  6337          TADM5
2956
2957  6346  5570  TADM6,  FADDM X7 500           /X7 = 6
```

```
2958    6347  5225            DATA1-25
2959    6350  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2960    6351  0107            LDX     7       /SCOPE LOOP
2961    6352  0006            6
2962    6353  1030            JA
2963    6354  6346            TADM6
2964
2965    6355  5510    TADM7,  FADDM X1 500            /X1 = 0
2966    6356  5250            5250
2967    6357  0000            FEXIT           /REPLACE WITH 0040 (NOP) FOR SCOPE LOOP
2968    6360  0101            LDX     1       /SCOPE LOOP
2969    6361  0000            0
2970    6362  0400            FLDA    400
2971    6363  0116            T8
2972    6364  6400            FSTA    400     /RESTORE OPERANT
2973    6365  5252            5252
2974    6366  0400            FLDA    400     /RESTORE FAC
2975    6367  0114            T6
2976    6370  1030            JA
2977    6371  6355            TADM7
2978
```

```
2979
2980    6372  0510    TMULM1, FLDA X1 500     /X1=-1
2981    6373  5660            DATA2B
2982    6374  7520            FMULM X2 500    /X2=-1
2983    6375  5100            BUF2
2984    6376  2130            JXN     X3      /X3=-4
2985    6377  6372            TMULM1
2986    6400  0000            FEXIT
2987    6401  0101            LDX     1
2988    6402  7777            -1
2989    6403  0102            LDX     2
2990    6404  7777            -1
2991    6405  0103            LDX     3
2992    6406  7774            -4
2993    6407  0104            LDX     4
2994    6410  7777            -1
2995    6411  0105            LDX     5
2996    6412  7777            -1
2997    6413  0106            LDX     6
2998    6414  7774            -4
2999    6415  0540            FLDA X4 500
3000    6416  5660            DATA2B
3001    6417  6550            FSTA X5 500
3002    6420  5100            BUF2
3003    6421  2106            JXN     6
3004    6422  6415            .-5
3005    6423  1030            JA
3006    6424  6372            TMULM1
3007    6425  0040    TNOP1,  0040
3008    6426  0040            0040
3009    6427  0050            0050
3010    6430  0040            0040
3011    6431  0060            0060
3012    6432  0040            0040
3013    6433  0070            0070
3014    6434  0040            0040
3015    6435  0120            0120
3016    6436  0040            0040
3017    6437  0130            0130
3018    6440  0040            0040
3019    6441  0140            0140
3020    6442  0040            0040
3021    6443  0150            0150
3022    6444  0040            0040
3023    6445  0160            0160
3024    6446  0040            0040
3025    6447  0170            0170
3026    6450  0040            0040
3027    6451  1140            1140
3028    6452  0040            0040
3029    6453  1150            1150
3030    6454  0040            0040
3031    6455  1160            1160
3032    6456  0040            0040
3033    6457  1170            1170
```

```
3034    6460  0040          0040
3035    6461  0041          0041
3036    6462  0042          0042
3037    6463  0043          0043
3038    6464  0044          0044
3039    6465  0045          0045
3040    6466  0046          0046
3041    6467  0047          0047
3042    6470  0000          FEXIT          /REPLACE WITH 0040 FOR SCOPE LOOP
3043    6471  1030  TNOPE,  JA             /SCOPE LOOP
3044    6472  6425          TNOP1
3045    6473  0000  FEND,   0
```

```
3046
3047            5000    *5000
3048    5000    7777    BUF1,   7777
3049    5001    0000            0000
3050    5002    7777            7777
3051    5003    0000            0000
3052    5004    5252            5252
3053    5005    2525            2525
3054    5006    5252            5252
3055    5007    2525            2525
3056    5010    0707            0707
3057    5011    7070            7070
3058    5012    0707            0707
3059    5013    7070            7070
3060    5014    1111            1111
3061    5015    2222            2222
3062    5016    4444            4444
3063    5017    3333            3333
3064    5020    6666            6666
3065    5021    3333            3333
3066    5022    1111            1111
3067    5023    1111            1111
3068    5024    1111            1111
3069    5025    2222            2222
3070    5026    2222            2222
3071    5027    2222            2222
3072    5030    3333            3333
3073    5031    3333            3333
3074    5032    3333            3333
3075    5033    4444            4444
3076    5034    4444            4444
3077    5035    4444            4444
3078    5036    5555            5555
3079    5037    5555            5555
3080    5040    5555            5555
3081    5041    6666            6666
3082    5042    6666            6666
3083    5043    6666            6666
3084    5044    7777            7777
3085    5045    7777            7777
3086    5046    7777            7777
3087    5047    7776            7776
3088    5050    7775            7775
3089    5051    7773            7773
3090    5052    7767            7767
3091    5053    7757            7757
3092    5054    7737            7737
3093    5055    7677            7677
3094    5056    7577            7577
3095    5057    7377            7377
3096    5060    6777            6777
3097    5061    5777            5777
3098    5062    3777            3777
3099    5063    0001            0001
3100    5064    0002            0002
```

```
3101    5065  0004            0004
3102    5066  0010            0010
3103    5067  0020            0020
3104    5070  0040            0040
3105    5071  0100            0100
3106    5072  0200            0200
3107    5073  0400            0400
3108    5074  1000            1000
3109    5075  2000            2000
3110    5076  4000            4000
3111    5077  0000            0000
3112    5100  0000    BUF2,   0
```

```
3113
3114
3115            5252    *5252
3116    5252    0000    DATA1,  0
3117    5253    0000            0
3118    5254    0000            0
3119    5255    0000            0
3120    5256    0000            0
3121    5257    0000            0
3122    5260    0000            0
3123    5261    0000            0
3124    5262    0000            0
3125    5263    0000            0
3126    5264    0000            0
3127    5265    0000            0
3128    5266    0000            0
3129    5267    0000            0
3130    5270    0000            0
3131    5271    0000            0
3132    5272    0000            0
3133    5273    0000            0
3134    5274    0000            0
3135    5275    0000            0
3136    5276    0000            0
3137    5277    0000            0
3138            5600    *5600
3139    5600    0027    DATA1A, 0027
3140    5601    3777            3777
3141    5602    7777            7777
3142
3143    5603    0027            0027
3144    5604    0000            0000
3145    5605    0000            0000
3146
3147    5606    0027            0027
3148    5607    2525            2525
3149    5610    2525            2525
3150
3151    5611    0000            0000
3152    5612    7777            7777
3153    5613    7777    END1A,  7777
3154
3155    5614    0000    DATA1B, 0000
3156    5615    3777            3777
3157    5616    7777            7777
3158
3159    5617    0000            0000
3160    5620    3777            3777
3161    5621    7777            7777
3162
3163    5622    0026            0026
3164    5623    2525            2525
3165    5624    2525            2525
3166
3167    5625    7777            7777
```

```
3168    5626  2525            2525
3169    5627  2525    END1B,  2525
```

```
3170
3171    5630  0030    ANS1,   0030
3172    5631  2000            2000
3173    5632  0000            0000
3174
3175    5633  0000            0000
3176    5634  3777            3777
3177    5635  7777            7777
3178
3179    5636  0030            0030
3180    5637  2000            2000
3181    5640  0000            0000
3182
3183    5641  7777            7777
3184    5642  2525            2525
3185    5643  2523    EANS1,  2523
3186    5644  0100    DATA2A, 0100
3187    5645  2525            2525
3188    5646  2525            2525
3189
3190    5647  0077            0077
3191    5650  0707            0707
3192    5651  0707            0707
3193
3194    5652  0707            0707
3195    5653  3636            3636
3196    5654  3636            3636
3197
3198    5655  4444            4444
3199    5656  3333            3333
3200    5657  1111            1111
3201
3202    5660  0070    DATA2B, 0070
3203    5661  0010            0010
3204    5662  1111            1111
3205
3206    5663  0700            0700
3207    5664  2000            2000
3208    5665  0000            0000
3209
3210    5666  0070            0070
3211    5667  0000            0000
3212    5670  0002            0002
3213
3214    5671  0333            0333
3215    5672  0002            0002
3216    5673  2222            2222
```

```
3217
3218    5674  0160    ANS2,   0160
3219    5675  2555            2555
3220    5676  5520            5520
3221    5677  0774            0774
3222    5700  3434            3434
3223    5701  3434            3434
3224    5702  0751            0751
3225    5703  3600            3600
3226    5704  0000            0000
3227    5705  4765            4765
3228    5706  3725            3725
3229    5707  6400            6400
3230
3231                    .
3232    0176  0020
3233    0177  0030
```

```
0000  00000000  00000000  11111111  11111111  11111111  00000000  00000000  00000011
0100  11111111  11111111  10000000  00000000  00000000  00000000  00000000  00000011

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00011111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00011111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00011111

1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111110  00011111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111110  00000000  00000000  00000000  00000000  00001111  11111111  11111111

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  10000000  00000000  01111111

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11000000  00000000  01111111

2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  00111111

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111000  00000011  11111111

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111000  00000111  11111111

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111111  11110000  00000111  11111111

3000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3100  11111111  11111111  10000000  00000000  00000000  00000000  00000011  11111111

3200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
3300  11111111  11111111  10000000  00000000  00000000  00000000  00001111  11111111

3400  11111111  11111111  11111111  11110000  00000000  00000000  00000000  00000000
3500  00000000  00000000  00000000  00000000  00000000  00000000  00000000  11111111

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

```
4000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4100  11111111  11111111  11111111  11111111  11111111  11111111  00111111  11111111

4200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4300  11111111  11111111  11111111  11111111  11110000  00000000  00000001  11111111

4400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
4500  11111111  00000000  00000000  00000000  00000000  00000000  00000001  11111111

4600
4700


5000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
5100  10000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

5200  00000000  00000000  00000000  00000000  00000000  00111111  11111111  11111111
5300  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

5400
5500

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


6000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

6200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
6300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

6400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11110000
6500  00000000  00000000  00000000  00000000  00000000  00000000  00000000  00000000

6600
6700


7000
7100

7200
7300

7400
7500

7600
7700
```

```
ACLRX   0105        FTSTH   6043        TADM0   6274        TST1B   0210
ADDX    0110        FTSTJ   6050        TADM1   6303        TST2    0274
ADX     0022        FTSTJ0  6051        TADM2   6312        TST20   2200
ANS1    5630        FTSTJ1  6053        TADM3   6321        TST20A  2206
ANS2    5674        FTSTJ2  6055        TADM4   6330        TST20B  2237
APT     0020        FTSTJ3  6057        TADM5   6337        TST21   2253
ATX     0020        FTSTJ4  6061        TADM6   6346        TST22   2316
AXR     4213        FTSTJ5  6063        TADM7   6355        TST2A   0300
BASE    0023        FTSTJ6  6065        TADX0   6093        TST2B   0303
BUF1    5000        FTSTJ7  6067        TADX1   6100        TST3    0400
BUF2    5100        IR0     0030        TADX2   6105        TST30   2400
CLAPT   4215        IR1     0031        TADX3   6112        TST31   2422
CLRBUF  4332        IR10    7770        TADX4   6116        TST32   2447
CLRX    4200        IR11    7771        TADX5   6123        TST33   2510
COMP50  4400        IR12    7772        TADX6   6130        TST34   2600
COMPD   4261        IR13    7773        TADX7   6135        TST35   2633
COMPD1  4267        IR14    7774        TADX8   6142        TST3A   0404
COMPP   4312        IR15    7775        TATX1   6267        TST3B   0407
DADD    4455        IR16    7776        TJXN1   6145        TST4    0473
DAT1A   5600        IR17    7777        TJXN2   6175        TST40   2667
DAT1B   5614        IR2     0032        TJXN3   6202        TST41   2720
DATA    7000        IR3     0033        TMULM1  6372        TST4A   0477
DATA1   5252        IR4     0034        TNOP1   6425        TST4B   0502
DATA2A  5644        IR5     0035        TNOPE   6471        TST5    0600
DATA2B  5660        IR6     0036        TST1    0200        TST50   3000
DANS1   5643        IR7     0037        TST10   1400        TST51   3032
DFAC    0025        JA      1030        TST10A  1406        TST52   3065
END     4507        JSR     1130        TST10B  1411        TST53   3200
END1A   5613        JXN     2100        TST11   1442        TST54   3233
END1B   5627        LDX     0100        TST11A  1450        TST55   3266
FADDM   5000        LFAC    0027        TST11B  1453        TST56   3400
FEND    6473        LOOP    0106        TST12   1505        TST57   3600
FEXIT   0000        LOOPCT  0104        TST12A  1513        TST57A  3613
FLDA    0000        MFAC    0026        TST12B  1516        TST57B  3664
FMULM   7000        MOVE    4231        TST13   1600        TST57C  3700
FPC     0021        MOVE50  4436        TST13A  1606        TST5A   0604
FPCOM   6553        MOVECT  4260        TST13B  1611        TST5B   0607
FPHLT   6554        OPAD    0024        TST14   1643        TST6    0673
FPICL   6552        RESBIN  4240        TST14A  1651        TST60   4000
FPINT   6551        SAVBIN  4227        TST14B  1654        TST6A   0677
FPIST   6557        SAVEL   0120        TST15   1706        TST6B   0702
FPRST   6556        SET50   4423        TST15A  1714        TST7    1000
FPST    6555        SETB    1110        TST15B  1717        TST70   4054
FREE    7000        T1      0107        TST16   2000        TST70A  4111
FSTA    6000        T2      0110        TST16A  2006        TST70C  4130
FTSTA   6000        T3      0111        TST16B  2011        TST70D  4143
FTSTB   6005        T4      0112        TST17   2043        TST7A   1004
FTSTC   6012        T5      0113        TST17A  2051        TST7B   1007
FTSTD   6017        T6      0114        TST17B  2054        TST8    1073
FTSTE   6024        T7      0115        TST18   2106        TST8A   1077
FTSTF   6031        T8      0116        TST18A  2113        TST8B   1102
FTSTG   6036        T9      0117        TST1A   0205        TST9    1200
```

```
        ↑ST9A   1206
        ↑STA1   6216
        ↑STA2   6225
        ↑STA3   6234
        ↑STA4   6243
        ↑STA5   6250
        X0      0000
        X1      0010
        X2      0020
        X3      0030
        X4      0040
        X5      0050
        X6      0060
        X7      0070
        XTA     0030

ERRORS DETECTED: 0

LINKS GENERATED: 139

RUN-TIME:  22 SECONDS

3K CORE USED
```

```
TST20      1362#
TST20A     1368#    1392
TST20B     1378     1393#
TST21      1416#
TST22      1467#
TST2A       200#     252
TST2B       203#     250
TST3        275#
TST30      1527#
TST31      1559#
TST32      1597#
TST33      1652#
TST34      1719#
TST35      1765#
TST3A       279#     332
TST3B       282#     330
TST4        350#
TST40      1808#    1830
TST41      1844#    1868
TST4A       354#     407
TST4B       357#     405
TST5        431#
TST50      1904#    1930
TST51      1944#    1971
TST52      1985#    2013
TST53      2040#    2067
TST54      2081#    2108
TST55      2122#    2148
TST56      2177#    2205
TST57      2230#
TST57A     2241#    2323
TST57B     2268     2283#
TST57C     2281     2295#
TST5A       435#     488
TST5B       438#     486
TST6        505#
TST60      2359#
TST6A       509#     562
TST6B       512#     560
TST7        586#
TST70      2413#
TST70A     2438     2442#
TST70C     2457#    2464
TST70D     2468#    2474
TST7A       590#     643
TST7B       593#     641
TST8        660#
TST8A       664#     717
TST8B       667#     715
TST9        754#
TST9A       760#     820
TSTA1      1531     2858#    2864
TSTA2      1564     2866#    2872
```

```
TSTA3    1672    2874#   2880
TSTA4    1657    2882#   2886
TSTA5    1724    1770    2888#   2893    2902
X0         41#   2892
X1         42#   2848    2882    2909    2965    2980
X2         43#   2883    2917    2982
X3         44#   2874    2925    2984
X4         45#   2876    2933    2999
X5         46#   2888    2941    3001
X6         47#   2890    2949
X7         48#   2957
XTA        34#   2903
.L0176     137     209     288     363     444     518     599     673     765     874     923     972    1032    1080
          1131    1188    1238    1296    1371    1427    1479    1534    1569    1610    1668    1735    1783    1817
          1855    1917    1958    1999    2054    2095    2135    2191    2256    2381    2431    3232#
.L0177     125     197     276     351     432     506     587     661     863     911     960    1020    1068    1118
          1176    1225    1288    1366    1422    1470    1604    1666    1733    1781    1811    1847    1909    1949
          1990    2045    2086    2126    2182    2249    2370    3233#
.L0373     259     260#
.L0374     276     261#
.L0375     199     217     251     262#
.L0376     134     263#
.L0377     127     145     179     264#
.L0573     415     416#
.L0574     360     417#
.L0575     353     371     406     418#
.L0576     285     419#
.L0577     278     296     331     420#
.L0773     570     571#
.L0774     515     572#
.L0775     508     526     561     573#
.L0776     441     574#
.L0777     434     452     487     575#
.L1173     725     726#
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