

/1. ABSTRACT

THE FPP-12 DATA EXERCISER IS DESIGNED TO TEST THE FLOATING POINT PROCESSOR LOGIC AND DATA BREAK FACILITY AT A MAXIMUM RATE USING ALL FPP-12 INSTRUCTIONS IN FLOATING POINT, DOUBLE PRECISION AND EXTENDED FLOATING POINT PRECISION MODES ON RANDOM DATA PATTERNS. OPERATOR COMMUNICATION WITH THE FPP-12 EXERCISER IS PROVIDED VIA THE SWITCH REGISTER AND ASR-33 TTY OR EQUIVALENT.

/2. REQUIREMENTS

/2.1 EQUIPMENT

- A) A FPP-12 FLOATING POINT PROCESSOR
- B) A STANDARD PDP-8 OR PDP-12
- C) AN ASR-33 TELETYPE OR EQUIVALENT

/2.2 STORAGE

THIS PROGRAM IS DESIGNED TO RUN IN MEMORY FIELD 0 AND IT OCCUPIES VIRTUALLY ALL FIELD 0.

/2.3 PRELIMINARY PROGRAMS

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

IN ADDITION, IT IS RECOMMENDED THAT THE FOLLOWING FPP-12 DIAGNOSTICS BE RUN PRIOR TO THE FPP-12 DATA EXERCISER.

- A) FPPI2A OR FLOATING POINT INSTRUCTION TEST 2A
- B) FPPI2B OR FLOATING POINT INSTRUCTION TEST 2B
- C) FPPI2C OR FLOATING POINT INSTRUCTION TEST 2C
- D) FADDRS OR FLOATING POINT ADDRESS TEST

/3. LOADING PROCEDURE

/3.1 REFER TO BINARY LOADING PROCEDURES FOR THE PARTICULAR MACHINE BEING USED. THIS PROGRAM WILL DESTROY THE LAST PAGE OF FIELD 0.  
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/4. FPP-12 DESCRIPTION

THE FPP-12 IS A SELF CONTAINED COMPUTER CONNECTED TO THE I/O BUS OF A PDP-12 OR PDP-8. TWO RESTRICTIONS EXIST WHICH MAKE THE FPP-12 DIFFERENT FROM THE HOST COMPUTER TO WHICH IT IS ATTACHED:

- A) THE FPP-12 HAS NO CORE MEMORY OF ITS OWN. IT USES THE CORE MEMORY OF THE HOST COMPUTER VIA THE DATA BREAK FACILITY. THE FPP-12 MAY CYCLE-STEAL UP TO 50% OF THE HOST COMPUTER'S MEMORY CYCLES.
- B) THE FPP-12 CAN ONLY BE STARTED BY THE HOST COMPUTER. ONCE STARTED IT WILL CONTINUE TO EXECUTE FPP-12 CODE UNTIL IT COMPLETES THE SPECIFIED OPERATIONS, EXITS WITH AN ERROR CONDITION OR IS HALTED VIA A FPHLT IOT ISSUED BY THE HOST COMPUTER.

## PROGRAM DESCRIPTION

THE FPP-12 DATA EXERCISER DIAGNOSTIC CAN BE BROKEN DOWN INTO THREE SEPARATE PROGRAMS EACH DEPENDENT ON AND INTERACTING WITH THE OTHER TWO. THEY ARE:

- A) A UTILITY PROGRAM WRITTEN IN PDP-8 CODE WHICH:
- 1) SERVICES ALL INTERRUPTS.
  - 2) DOES ERROR VERIFICATION.
  - 3) OUTPUTS ALL ERROR MESSAGES.
  - 4) INTERROGATES THE SWITCH REGISTER UPON REENTRY TO THE FPP-12 PROGRAM AFTER ERROR VERIFICATION OR ERROR OCCURANCE.
- B) A CONTROL PROGRAM WRITTEN IN PDP-8 CODE WHICH RUNS IN PARALLEL WITH THE FPP-12 PROGRAM. ITS FUNCTIONS ARE:
- 1) STARTS THE FPP-12 COMPUTER FOR EACH SEQUENTIAL FPP-12 TEST.
  - 2) RUNS AS A BACKGROUND PROGRAM.
  - 3) GENERATES RANDOM NUMBERS FOR FPP-12 RANDOM NUMBER TABLES 1 AND 3.
  - 4) MONITORS THE SWITCH REGISTER.
  - 5) COMMUNICATES SWITCH REGISTER FUNCTIONS TO THE FPP-12 COMPUTER WITHOUT INTERRUPTING ITS OPERATION.
    - A) LOCKS ONTO FPP-12 TEST SELECTED IN SWITCH REGISTER SWITCHES 7-11 IF THEY ARE NON-ZERO.
    - B) LOCKS ONTO FPP-12 TEST SEGMENT BEING EXECUTED IF SWITCH 6 OF THE SWITCH REGISTER IS SET.
    - C) HALTS IF SWITCH 0 OF THE SWITCH REGISTER IS SET.
    - D) FLAGS THE FPP-12 WHEN THE RANDOM NUMBER TABLES ARE FULL.
    - E) PROVIDES A TIME OUT LOOP FOR FPP-12 TESTS.
  - 6) INTERROGATES THE USER VIA THE TTY AND SWITCH REGISTER TO DETERMINE IF THE USER HAS THE EXTENDED PRECISION OPTION
- C) THE FPP-12 DATA EXERCISER PROGRAM CONSISTS OF TWO SECTIONS. THE FIRST SECTION CONSISTS OF A SERIES OF FLOATING POINT AND DOUBLE PRECISION TESTS AND THEIR ERROR CHECKS (FPP1-FPP17). ODD NUMBERED FPP-12 TESTS ARE EXECUTED IN FLOATING POINT MODE USING RANDOM NUMBER TABLE 1 AND RESULTING ARGUMENT TABLE 2. EVEN NUMBERED FPP-12 TESTS ARE EXECUTED IN DOUBLE PRECISION MODE USING RANDOM NUMBER TABLE 3 AND RESULTING ARGUMENT TABLE 4. THE SECOND SECTION IS SIMILAR TO THE FIRST EXCEPT THAT THE FPP TESTS (FPP20-FPP24) ARE EXECUTED IN FLOATING POINT EXTENDED PRECISION MODE WITHOUT SPECIAL HANDLING OF RANDOM NUMBER TABLES.

/4.2 STARTING PROCEDURE FOR A PDP-12 COMPUTER

THIS PRELIMINARY SET UP PROCEDURE IS CRITICAL AND ANY OMISSION  
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WILL RESULT IN AN ERROR.  
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- A) SET THE RIGHT SWITCH REGISTER TO 0000 INITIALLY.
- B) SET THE MODE SWITCH TO 8-MODE
- C) DEPRESS I/O PRESET
- D) DEPRESS START 20

THE PROGRAM IS RUNNING AND OUTPUTS THE FOLLOWING SELF EXPLANATORY TTY MESSAGE.

DEPRESS RSW<SW> 5 IF  
YOU DO NOT HAVE  
EXTENDED PRECISION MODE  
HIT KEY CONTINUE

THIS INTEROGATION OCCURS ONLY WHEN THE PROGRAM IS INITIALLY STARTED  
AND KEY CONTINUE STARTS THE PROGRAM RUNNING

/4.3 STARTING PROCEDURE FOR PDP-8 FAMILY

THIS PRELIMINARY SET UP PROCEDURE IS CRITICAL AND ANY OMISSION  
-----

WILL RESULT IN AN ERROR.  
-----

- A) SET THE SWITCH REGISTER TO 0200 INITIALLY.
- B) DEPRESS THE LOAD ADDRESS KEY.
- C) SET THE SWITCH REGISTER TO 0000.
- D) DEPRESS THE START KEY.

THE PROGRAM IS RUNNING AND OUTPUTS THE TTY MESSAGE MENTIONED IN SECTION 4.2

/4.4 CONTROL SWITCH SETTINGS

RSW<SR> 0    = 1 THE FPP-12 PROGRAM WILL HALT.  
RSW<SW> 1    = 1 ERROR PRINT OUTS WILL BE SUPPRESSED.  
RSW<SW> 5    = 0 EXTENDED PRECISION OPTION  
RSW<SW> 5    = 1 NO EXTENDED PRECISION OPTION  
RSW<SW> 6    = 1 THE FPP-12 PROGRAM WILL LOCK ONTO A PARTICULAR TEST SEGMENT.  
RSW<SW> 7-11= 0 THE FPP-12 PROGRAM EXECUTES ALL TESTS SEQUENTIALLY.  
RSW<SW> 7-11= ? THE FPP-12 PROGRAM LOCKS ONTO THE PARTICULAR TEST  
                  SEQUENCE SELECTED (1-24 OCTAL) IN THE SWITCHES 7-11.

/4.5 RESTRICTIONS

THE FPP-12 DATA EXERCISER PROGRAM MUST BE RUN IN FIELD 0.

THE FPP-12 DATA EXERCISER WILL DESTROY THE LAST PAGE OF FIELD 0.  
THIS AREA IS USED AS A DATA BUFFER.

## MESSAGE FORMAT

THERE ARE TWO KINDS OF TELETYPE MESSAGES USED WITH THIS PROGRAM,  
THEY ARE:

- A) SELF-EXPLANATORY MESSAGES WHICH ALLOW THE USER TO MAKE A  
DECISION.
- B) ERROR INFORMATION TYPEOUTS, THESE ALL HAVE A STANDARD FORM  
AS FOLLOWS:

FPP ERROR  
TEST XX

RAN NUM ARG  
EXP MSW LSW LSW1 LSW2 LSW3  
XXXX XXXX XXXX XXXX XXXX XXXX

BAD RESULTING ARG  
EXP MSW LSW LSW1 LSW2 LSW3  
XXXX XXXX XXXX XXXX XXXX XXXX

APT TABLE  
FLD FPC IRO BASE OPA EXP MSW LSW LSW1 LSW2 LSW3  
XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX

FPP INDEX REG  
IRO IR1 IR2 IR3 IR4 IR5 IR6 IR7  
XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX

STATUS  
XXXX

CONTINUE WITH TEST OR  
SET RSW<SW> 6 TO RE-EX FAIL ARG

HIT KEY CONTINUE

/6. MAINTENANCE INSTRUCTIONS

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

/7. MISCELLANIOUS

PROVISIONS HAVE BEEN MADE TO INCLUDE THE FPP CODE CONTAINED IN THE FPP-12 DATA EXERCISER PROGRAM IN THE MAINTENANCE MODE SIMULATOR PROGRAM TEST TRACE. THIS WILL ENABLE THE USER UPON FINDING A MALFUNCTION TO RUN THE TRACE DIAGNOSTIC THUS ISOLATING THE PROBLEM TO A TIME STATE WITHIN A MAJOR STATE. THE USER WILL HAVE TO TRANSPOSE THE RANDOM NUMBER ARGUMENT WHICH CAUSED THE FAILURE TO THE MAINTENANCE MODE SIMULATOR PROGRAM TO SIMULATE THE FAILURE EXACTLY. THIS IS NECESSITATED BY THE FACT THAT THAT THE MAINTENANCE MODE TEST RUNS AT A FACTOR OF AT LEAST 400 TIMES SLOWER.

THE PROGRAM WILL RING THE TELETYPE BELL EVERY 100 OCTAL PASSES THROUGH THE PROGRAM. THIS WILL OCCURE APPROXIMATELY EVERY 2 MINUTES.

THE MAINTENANCE MODE SIMULATOR PROGRAM "TRACE" SHOULD ALSO BE RUN FOR A COMPLETE CHECKOUT OF THE FPP-12 PROSCCESSOR.



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1      /FLOATING POINT DATA EXERCISER
2      /RDP=8 CODE STARTING LOCATION 200
3      /
4      /FLOATING POINT SYMBOL TABLE
5      /
6      6551      FPINT=6551
7      6554      FPHLT=6554
8      6553      FPCOM=6553
9      6552      FPICL=6552
10     6555      FPST=6555
11     6556      FPRST=6556
12     6557      FPIST=6557
13     0000      PEXIT=0000
14     0002      FCLA=0002
15     0000      FLDA=0000
16     0003      FNEG=0003
17     0004      FNORM=0004
18     6000      FSTA=6000
19     1000      FADD=1000
20     5000      FADDM=5000
21     2000      FSUB=2000
22     0100      LDX=0100
23     1100      SETX=1100
24     2000      JXN=2000
25     1130      JSR=1130
26     1000      JEQ=1000
27     1030      JA=1030
28     1050      JLT=1050
29     1060      JGT=1060
30     1040      JNE=1040
31     0010      ALN=0010
32     0020      ATX=0020
33     0030      XTA=0030
34     0040      FNOP=0040
35     0005      STARTF=0005
36     0006      STARTD=0006
37     4000      FMUL=4000
38     7000      FMULM=7000
39     3000      PDIV=3000
40     0110      ADDX=0110
41     6567      LSHFT=6567
42     0050      STARTE=0050
43     6000      TABLE1=6000
44     6400      TABLE2=6400
45     7000      TABLE3=7000
46     7400      TABLE4=7400
47
48     PMODE
49
50     /
51     /8 MODE INTERRUPT POINT
52     /
53     0000      *0
54     0000      0
55     0001      5402      JMP I ,+1

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56 0002 0201      INT8
57
58      /PROGRAM CONSTANTS
59      /
60 0003 0000      ACSAVE, 0
61 0004 0000      LSAVE, 0
62 0005 0000      INTX8, 0
63 0006 0000      SAV, 0
64 0007 0000      NUM, 0
65
66      /PDP-8 INDEX REGISTERS
67      /
68      *10
69 0010 0000      0
70 0011 0000      0
71 0012 0000      0
72 0013 0000      0
73 0014 0000      0
74 0015 0000      0
75 0016 0000      0
76 0017 0000      0
77
78      /
79      /PROGRAM STARTS VIA LOC 20, 200, OR 400
80      /
81      *20
82 0020 3421      STARTS, JMP I ,+1      /JMP TO
83 0021 3520      START      /START OF PROGRAM
84
85      /PROGRAM CONSTANTS
86      /
87 0022 0000      INFLAG, 0
88 0023 0000      STATUS, 0
89 0024 0000      CNTR, 0
90
91      /FLOATING POINT ACTIVE PARAMETER TABLE
92      /
93      *25
94 0025 0000      APT, 0      /FIELD BITS
95 0026 4000      FPP1      /FPC POINTER
96 0027 0050      FPP1R      /IR POINTER
97 0030 5600      BASE      /BASE REG POINTER
98 0031 0000      0      /OPERAND ADDRESS
99 0032 0000      0      /FAC EXPONENT
100 0033 0000      0      /FAC MSW
101 0034 0000      0      /FAC LSW
102 0035 0000      0      /FAC LSW1
103 0036 0000      0      /FAC LSW2
104 0037 0000      0      /FAC LSW3
105 0040 0000      POINT, 0
106 0041 0000      POINTD, 0
107
108      /PROGRAM CONSTANTS
109      /
110 0042 1451      OF22FX, OF22FP

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111 0043 1462 OF22DX, OF22DP  
 112 0044 0316 CLLSW, CLLSWD  
 113 0045 0277 ALTEX, ALTEXP  
 114 0046 0023 STST, STATUS

115 /  
 116 /FLOATING POINT INDEX REGISTERS  
 117 /

118 0050 0050 FPPIR, 0 50  
 119 0050 0000 /IR0  
 120 0051 0000 0 /IR1  
 121 0052 0000 0 /IR2  
 122 0053 0000 0 /IR3  
 123 0054 0000 0 /IR4  
 124 0055 0000 0 /IR5  
 125 0056 0000 0 /IR6  
 126 0057 0000 0 /IR7

127 /  
 128 /CONSTANTS  
 129 /

130 0060 0400 FPCMD, 400  
 131 0061 0025 FPADRS, APT  
 132 0062 3400 PROG0, PROGBM  
 133 0063 5632 LOKTS, LOKTST  
 134 0064 5676 LOKSE, LOKSEG  
 135 0065 0000 FPPCUR, 0  
 136 0066 0426 FPPIN, FPPINT  
 137 0067 0271 REER, REERR  
 138 0070 1427 TSTHL, TSTHLT  
 139 0071 0235 REENT, REENTR  
 140 0072 1474 DPT, DPTR  
 141 0073 2255 PRINTR, PRINT  
 142 0074 2317 OCTALS, OCTA  
 143 0075 5734 UFLOW, UFLO  
 144 0076 5724 RESULT, RESULT  
 145 0077 0000 ERRFPP, 0  
 146 0100 0000 TST15, 0  
 147 0101 0000 TST16, 0  
 148 0102 0000 EPMOPT, 0  
 149 0103 2343 TYP, TYPE  
 150 0104 2352 CRL, CRLF  
 151 0105 0000 TBL1, 0  
 152 0106 0000 TBL3, 0  
 153 0107 0000 BELL, 0  
 154 0110 0001 K1, 1  
 155 0111 0002 K2, 2  
 156 0112 0003 K3, 3  
 157 0113 0004 K4, 4  
 158 0114 0005 K5, 5  
 159 0115 0006 K6, 6  
 160 0116 0007 K7, 7  
 161 0117 0010 K10, 10  
 162 0120 0011 K11, 11  
 163 0121 0012 K12, 12  
 164 0122 0013 K13, 13  
 165 0123 0014 K14, 14

/CURRENT STARTING ADDRESS OF FPP TEST BEING RUN

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166 0124 0015 K15, 15
167 0125 0016 K16, 16
168 0126 0017 K17, 17
169 0127 0020 K20, 20
170 0130 0021 K21, 21
171 0131 0022 K22, 22
172 0132 0023 K23, 23
173 0133 0024 K24, 24
174 0134 0037 K37, 37
175 0135 0040 K40, 40
176 0136 0077 K77, 77
177 0137 0100 K100, 100
178 0140 0207 K207, 207
179 0141 0212 K212, 212
180 0142 0215 K215, 215
181 0143 0240 K240, 240
182 0144 0400 K400, 400
183 0145 1000 K1000, 1000
184 0146 1200 K1200, 1200
185 0147 2000 K2000, 2000
186 0150 3740 K3740, 3740
187 0151 4000 K4000, 4000
188 0152 4100 K4100, 4100
189 0153 5772 K5772, 5772
190 0154 5775 K5775, 5775
191 0155 5777 K5777, 5777
192 0156 6777 K6777, 6777
193 0157 7400 K7400, 7400
194 0160 7700 K7700, 7700
195 0161 7775 M3, -3
196 0162 7777 M1, -1

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197 /
198 /ROUTINE TO
199 /START THE FPP

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200 /
201 FPPST: 0 /CONTAINS RET ADD
202 TAD APY+1 /AC=START OF NEXT FPP TST
203 DCA FPPCUR /STORE ADD OF FPP TST IN FPPCUR
204 FPICL /I=0 PRESET TO FPP
205 TAD FPCMD /AC=LOC FPCMD
206 FPCOM /LOAD FPP CMD REG
207 CLA CLL /AC=0
208 TAD FPADRS /AC=APT TABLE POINTER
209 FPST /LOAD ADRS REG AND START FPP
210 HLT /ERR = FPP RUN FLOW SET
211 CLA CLL /AC=0
212 JMP I FPPST /RETURN TO PROGRAM

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213 /
214 /GO TO LOC STARTS
215 *200
216 JMP STARTS /JUMP TO LOC 20

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217 /
218 /INTERRUPT SAVE AC ROUTINE
219 /
220 INT8: DCA ACSAVE /SAVE AC

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```

221 0202 1000 TAD 0 /AC=LOC 0
222 0203 3005 DCA INTX8 /SAVE LOC 0
223 0204 7010 RAR /ROTATE LINC INTO AC BIT 0
224 0205 3004 DCA LSAVE /SAVE LINC
225 0206 4220 JMS INSERV /GO TO INTERRUPT SERVICE ROUTINE
226 0207 7300 CLA CLL /AC=0
227 0210 1005 TAD INTX8 /AC=LOC INTX8
228 0211 3000 DCA 0 /RESTORE LOC 0
229 0212 1004 TAD LSAVE /AC=LOC LSAVE
230 0213 7004 RAL /RESTORE LINC
231 0214 1003 TAD ACSAVE /RESTORE AC
232 0215 6244 RMP /RESTORE MEMORY FIELD
233 0216 6001 ION /TURN INTERRUPTS ON
234 0217 5400 JMP I 0 /RETURN TO PROGRAM
235
236 /INTERRUPT SERVICE ROUTINE
237 /
238 0220 0000 INSERV, 0
239 0221 6551 FPINT /SKIP ON FPP INT
240 0222 7410 SKP /NO = SKIP
241 0223 4466 JMS I FPPIN /YES = GO TO FPPIN ROUTINE
242 0224 6041 TSP /SKIP ON TTY PRINTER INT
243 0225 7410 SKP /NO=SKIP
244 0226 5234 JMP TPTR /YES=GO TO TPTR ROUTINE
245 0227 6031 KSP /SKIP ON TTY KYBD INT
246 0230 7410 SKP /NO=SKIP
247 0231 5233 JMP KYBD /YES=GO TO KYBD ROUTINE
248 0232 5620 JMP I INSERV
249 0233 7402 KYBD, HLT /THIS PROGRAM DOES NOT INITIATE KYBD INT
250 0234 7402 TPTR, HLT /THIS PROGRAM DOES NOT INITIATE TPTR INT
251 /
252 /REENTER FPP ROUTINE AT NEXT SEQUENTIAL POINT AFTER FAILURE
253 /PRINT OUT ERRORS IF PRINT ENABLED AND ERROR OCCURRED
254 /
255 0235 7300 REENTR, CLA CLL /AC=0
256 0236 1050 TAD FPPIR /AC=FPP IR0
257 0237 1110 TAD K1 /INC BY 1
258 0240 7450 SNA /SKIP IF NOT LAST ARG IN FPP TST
259 0241 5261 JMP RESFPC /SET UP NEXT FPP TST
260 0242 3050 DCA FPPIR /UPDATE FPP IR0
261 0243 1065 REE, TAD FPPCUR /AC=ADD OF CURRENT FPP TST
262 0244 1111 TAD K2 /INC BY 2
263 0245 3026 DCA APT+1 /STORE RETURN FPC IN APT+1
264 0246 1051 RE, TAD FPPIR+1 /AC=FPP IR1
265 0247 3053 DCA FPPIR+3 /FPP IR3=IR1
266 0250 3022 DCA INFLAG /CLEAR FPP INTERRUPT FLAG
267 0251 6552 FPICL /IO PRESET TO FPP
268 0252 1060 TAD FPCMD /AC=LOC FPCMD
269 0253 6553 FPCOM /LOAD FPP CMD REG
270 0254 7300 CLA CLL /AC=0
271 0255 1061 TAD FPADRS /AC=APT TABLE POINTER
272 0256 6555 FPST /LOAD ADRS REG AND START FPP
273 0257 7402 HLT /ERR=FPP RUN FLOP SET
274 0260 5620 JMP I INSERV /RETURN TO PROGRAM
275 /

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276 /HAVE TESTED LAST SET OF ARG
277 /SET APT+1 EQUAL TO START OF NEXT FPP TEST=7
278 /
279 RESFPC, CLA CLL
280 TAD NUM /AC=NUMBER OF FPP TST
281 TAD K400 /ADD 400 TO NUMBER OF FPP TST
282 DCA 12 /AC TO LOC 12
283 TAD I 12 /AC=ADD OF NEXT FPP TST
284 TAD K7771 /ADD =7
285 DCA APT+1 /STORE RETURN FPC IN APT+1
286 JMP RE /RE=ENTER FPP TEST
287 /
288 /RE=ENTER FPP ROUTINE RE=EXECUTING
289 /SAME RANDOM DATA ARGS AS BEFORE
290 /
291 REERR, CLA CLL CMA
292 DCA I LOKSE
293 TAD FPPIR+1 /AC=FPP IR1
294 TAD M1 /DECREMENT BY 1
295 DCA FPPIR+1 /STORE BACK IN FPP IR1
296 JMP REE /GO TO RE=ENTER ROUTINE
297 /
298 /THIS ROUTINE IS USED BY TEST 15
299 /TO ALTER RANDOM NUMBER EXPONENTS IN TABLE 1
300 /EVERY THIRD LOCATION IN TABLE 1 IS
301 /SET EQUAL TO LOC TABLE 1
302 /
303 ALTEXP, 0 /CONTAINS RETURN ADDRESS
304 TAD K7653
305 DCA 17 /LOC 17 = 7653
306 TAD K5777
307 DCA 14 /LOC 14 = 5777
308 TAD I 14
309 DCA POINTD /POINTD = FIRST NUMBER IN TABLE 1
310 JMP ,+3 /SKIP 21 LOCATIONS
311 TAD POINTD /AC = CONTENTS LOC TABLE 1
312 DCA I 14 /SET ALL OTHER EXPONENTS UP SAME
313 ISZ 14 /INC LOC 14
314 ISZ 14 /INC LOC 14
315 ISZ 17 /INC LOC 17 = IS IT ZERO
316 JMP ,=5 /NO = DO AGAIN
317 JMP I ALTEXP /RETURN TO T15 ROUTINE
318 /
319 /
320 /ROUTINE USED IN DOUBLE PRECISION MODE
321 /TO CLEAR OUT LSW OF MANTISSA
322 /
323 CLLSWD, 0 /CONTAINS RET ADD
324 TAD K7600 /AC=7600
325 DCA CNTR /LOC CNTR = 7600
326 TAD K6777 /AC = 6777
327 DCA 11 /LOC 11 = 6777
328 AG, CLA CLL /AC = 0
329 ISZ 11 /INC LOC 11
330 DCA I 11 /CLEAR LOC IN TABLE 3

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331 0326 2024 ISZ CNTR /ARE WE DONE
332 0327 5323 JMP AG /NO = DO IT AGAIN
333 0330 5716 JMP I CLLSWD /RETURN
334 /
335 0331 7600 K7600, 7600
336 0332 7653 K7653, 7653
337 0333 7771 K7771, 7771
338 /
339 /GO TO LOC STARTS
340 /
341 0400 *400
342 0400 5020 JMP STARTS
343 //
344 /SERVICE OF ALL FPP INTERRUPTS
345 /HANDLED IN THE SUCCEEDING SECTIONS
346 //
347 /
348 /FPP TEST EXECUTION LIST
349 /EXPECTED EXIT POINTS
350 /TYPICALLY == COMPLETION OF A PARTICULAR
351 /FPP TEST WITH NO ERRORS LEAVES
352 /THE FPC POINTER IN THE APT TABLE POINTING
353 /TO THE START OF THE NEXT FPP TEST
354 /
355 0402 *402
356 0402 4020 FPP2
357 0403 4040 FPP3
358 0404 4064 FPP4
359 0405 4110 FPP5
360 0406 4136 FPP6
361 0407 4163 FPP7
362 0410 4222 FPP10
363 0411 4252 FPP11
364 0412 4302 FPP12
365 0413 4332 FPP13
366 0414 4364 FPP14
367 0415 4414 FPP15
368 0416 4446 FPP16
369 0417 4476 FPP17
370 0420 4526 FPP20
371 0421 4546 FPP21
372 0422 4601 FPP22
373 0423 4642 FPP23
374 0424 4666 FPP24
375 0425 4713 FSET
376 /
377 /FPP INTERRUPT TO CP
378 /
379 0426 0000 FPPINT, 0 /CONTAINS RET ADD
380 0427 7340 CLA CLL CMA /AC=7777
381 0430 3022 DCA INFLAG /FLAG PROGRAM THAT FPP HAS INTERRUPTED
382 0431 6557 FPIST /READ FPP STATUS AND SKIP IF INT REQ FLAG SET
383 0432 7402 HLT /**FPP IOT MALFUNCTION**=IOT FPRST RESET FPP INT REQ FLAG
384 0433 3023 DCA STATUS /DEPOSIT IN LOC STATUS
385 0434 1007 TAD NUM /GET THE ROUTINE NUMBER BEING EXECUTED

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386	0435	1144	TAD	K400	/ADD 400=TOP OF EXPECTED EXIT TABLE
387	0436	3012	DCA	12	/DEPOSIT IN LOC 12
388	0437	1412	TAD I	12	/GET EXPECTED EXIT ADDRESS FOR PARTICULAR ROUTINE
389	0440	7041	CMA IAC		
390	0441	1026	TAD	APT+1	/COMPARE WITH FPP EXIT POINT CONTAINED IN APT TABLE
391	0442	7650	SNA CLA		
392	0443	5626	JMP I	FPPINT	/WAS AN EXPECTED EXIT CONTINUE WITH PROGRAM
393	0444	7604	LAS		/SW REG TO AC
394	0445	0335	AND	K2040	/MASK BITS 1 AND 6
395	0446	7041	CIA		/COMPLIMENT AND INC
396	0447	1335	TAD	K2040	/ADD 2040
397	0450	7650	SNA CLA		/IF AC = 0 REENTER=NO TYPEOUTS=LOCKED ONTO SEGMENT
398	0451	5467	JMP I	REER	/RETURN TO TEST
399	0452	4733	JMS I	TE	/ARE WE EXECUTING TEST NUM 15 OR 16
400	0453	1023	TAD	STATUS	/GET STATUS
401	0454	7650	SNA CLA		/IF ZERO=PROBABLE DATA ERROR
402	0455	5732	JMP I	TSTEX	/DATA ERROR
403	0456	1023	TAD	STATUS	
404	0457	0336	AND	K3733	/MASK OUT DP EPM AND UNDERFLOW BITS
405	0460	7640	SZA CLA		/IF NON-ZERO EXAMINE STATUS
406	0461	5265	JMP	,+4	
407	0462	1475	TAD I	UFLOW	/DID FPP PROGRAM SET UNDERFLOW FLAG
408	0463	7640	SZA CLA		
409	0464	5255	JMP	,+7	/NO=DATA ERROR
410	0465	1023	TAD	STATUS	/EXAMINE STATUS WORD
411	0466	0135	AND	K40	/BIT 6=FPP EXPONENT UNDERFLOW
412	0467	7440	SZA		/IS IT SET
413	0470	4727	JMS I	EXPUND	/YES=GO TO EXPUND ROUTINE
414	0471	1023	TAD	STATUS	/EXAMINE STATUS WORD
415	0472	0137	AND	K100	/BIT 5=FPP EXPONENT OVERFLOW
416	0473	7440	SZA		/IS IT SET
417	0474	4730	JMS I	EXPOVR	/YES=GO TO EXPOVR ROUTINE
418	0475	1023	TAD	STATUS	/EXAMINE STATUS WORD
419	0476	0334	AND	K200	/BIT 4=FPP FRACTION OVERFLOW
420	0477	7440	SZA		/IS IT SET
421	0500	4731	JMS I	FRAOVR	/YES=GO TO FRAOVR ROUTINE
422	0501	1077	TAD	ERRFPP	/ERROR FLAG
423	0502	7650	SNA CLA		/IS IT SET
424	0503	5471	JMP I	REENT	/NO = RETURN
425	0504	4473	JMS I	PRINTR	/YES = PRINT
426	0505	2400	TX12		/FPP ERROR
427	0506	1007	TAD	NUM	
428	0507	0127	AND	K20	/ALL TESTS ABOVE 20 ARE EPM TESTS
429	0510	7640	SZA CLA		/IS IT AN EPM TEST
430	0511	5320	JMP	,+7	/YES
431	0512	1007	TAD	NUM	/NO
432	0513	7010	RAR		/IT IS A DOUBLE PRECISION TEST
433	0514	7630	SZL CLA		/IF THE LINC = 0
434	0515	5320	JMP	,+3	/NO =FPP TEST
435	0516	4724	JMS I	DPOCT	/YES = DOUBLE PRECISION
436	0517	5321	JMP	,+2	
437	0520	4725	JMS I	FPOCT	/FLOATING POINT MODE TEST
438	0521	4726	JMS I	APTIRO	/PRINT APT IR, AND STATUS INFO
439	0522	4504	JMS I	CRU	
440	0523	5470	JMP I	TSTHL	/GO TO TSTHLT ROUTINE

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441
442 0524 2057 /
443 0525 2000 DPOCT, DPOCTT
444 0526 2200 FPOCT, FPOCTT
445 0527 0600 APTIRO, APTIR
446 0530 0612 EXPUND, EXPUN
447 0531 0624 EXPQVR, EXPQV
448 0532 1243 FRAQVR, FRAQV
449 0533 1056 TSTEX, TSTEXI
450 0534 0200 TE, TES
451 0535 2040 K200, 200
452 0536 3733 K2040, 2040
453 /
454 /
455 /PPP EXPONENT UNDERFLOW STATUS FLAG SET
456 /
457 0600 0600 *600
458 0600 0000 EXPUN, 0 /CONTAINS RET ADD
459 0601 4663 JMS I FPPT /STORE ADD OF RAN DATA ARG IN LOC POINT
460 0602 1475 TAD I UFLOW /AC=LOC UFLOW
461 0603 7640 SZA CLA /SKIP IF FPP RESET LOC UFLOW
462 0604 5600 JMP I EXPUN /NO=EXPONENT UNDERFLOW WAS EXPECTED
463 0605 7340 CLA CLL CMA /AC=7777
464 0606 3475 DCA I UFLOW /SET UP UFLOW FLAG
465 0607 7340 CLA CLL CMA /AC=7777
466 0610 3077 DCA ERRFPP /SET ERRFPP FLAG
467 0611 5600 JMP I EXPUN /RET TO PROGRAM
468
469
470 /PPP EXPONENT OVERFLOW STATUS FLAG SET
471 /
472 0612 0000 EXPQV, 0 /CONTAINS RET ADD
473 0613 4663 JMS I FPPT /STORE ADD OF RAN DATA ARG IN LOC POINT
474 0614 1440 TAD I POINT /AC=EXP OF RAN DATA ARG
475 0615 1147 TAD K2000 /INC BY 2000
476 0616 7004 RAL /BIT 0 OF AC TO LINK
477 0617 7630 SEL CLA /SKIP IF BIT 00
478 0620 5612 JMP I EXPQV /NO=EXPONENT OVERFLOW WAS EXPECTED
479 0621 7340 CLA CLL CMA /AC=7777
480 0622 3077 DCA ERRFPP /SET ERRFPP FLAG
481 0623 5612 JMP I EXPQV /RET TO PROGRAM
482
483
484 /PPP FRACTION OVERFLOW STATUS FLAG
485 /
486 0624 0000 FRAQV, 0 /CONTAINS RET ADD
487 0625 4472 JMS I DPT /STORE ADDRESS OF RAN DATA ARG IN LOC POINT
488 0626 1440 TAD I POINT
489 0627 3041 DCA POINTD /MOST SIGNIFICANT PART OF DATA ARG
490 0630 1101 TAD TST16 /AC = CONTENTS LOC TST16
491 0631 7640 SZA CLA /SKIP IF NOT TEST 16
492 0632 5664 JMP I FR016 /DETERMINE IF A LEGITAMATE FRACTION OVERFLOW OCCURED
493 0633 1007 TAD NUM /AC=FPP TST NUM
494 0634 7041 CIA /COMP AND INC
495 0635 1113 TAD K4 /ADD 4

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496 0636 7650 SNA CLA /SKIP IF IT IS NOT FPP TST 4
497 0637 5245 JMP I,+6 /NO=WAS FPP TST 4
498 0640 1007 TAD NUM /AC=FPP TST NUM
499 0641 7041 CIA /COMP AND LINC
500 0642 1121 TAD K12 /ADD 12
501 0643 7640 SZA CLA /SKIP IF IT IS FPP TST 12
502 0644 5260 JMP FOV /NO=IT IS NOT FPP TST 12=ERR
503 0645 1041 TAD POINTD /AC=MSW OF DATA REG
504 0646 7004 RAL /ROTATE AC BIT 0 INTO LINC
505 0647 7430 SEL /SKIP IF LINC=0
506 0650 5255 JMP I,+5 /NO
507 0651 7004 RAL /ROTATE AC BIT 0 INTO LINC
508 0652 7630 SEL CLA /SKIP IF LINC=0
509 0653 5624 JMP I FRAOV /NO=EXPECTED OVERFLOW=RET TO PROG
510 0654 5260 JMP FOV /YES=ERROR
511 0655 7004 RAL /ROTATE BIT 0 INTO LINC
512 0656 7620 SNL CLA /SKIP IF LINC NOT=0
513 0657 5624 JMP I FRAOV /RET TO PROGRAM
514 0660 7340 FOV, CLA CLL CMA /AC=7777
515 0661 3077 DCA ERRFPP /SET ERRFPP FLAG
516 0662 5624 JMP I FRAOV /RET TO PROGRAM
517 /
518 0663 1503 FPPT, FPPTR
519 0664 1000 FRO16, FROV16
520 /
521 /THIS ROUTINE IS USED WHEN A
522 /FRACTION OVERFLOW OR UNDERFLOW OCCURS IN
523 /TEST 16 TO DETERMINE IF ACCEPTABLE
524 /
525 1000 *1000
526 /
527 1000 1040 FROV16, TAD POINT /AC = CONTENTS LOG POINT
528 1001 3014 DCA 14 /LOG 14 POINTS TO RANDOM ARGUMENT=1
529 1002 1414 TAD I 14
530 1003 3344 DCA SAV2 /LOG SAV2 = SECOND ARGUMENT
531 1004 1414 TAD I 14
532 1005 3345 DCA SAV3 /LOG SAV3 = THIRD ARGUMENT
533 1006 1414 TAD I 14
534 1007 3346 DCA SAV4 /LOG SAV4 = FOURTH ARGUMENT
535 1010 1041 TAD POINTD /AC = FIRST ARGUMENT
536 1011 7004 RAL
537 1012 7630 SEL CLA
538 1013 7340 CLA CLL CMA
539 1014 3343 DCA MLINC /SET SIGN INDICATOR
540 1015 1345 TAD SAV3
541 1016 7004 RAL
542 1017 7620 SNL CLA
543 1020 5237 JMP POSNST /POSITIVE NUMBER
544 1021 1343 TAD MLINC
545 1022 7650 SNA CLA
546 1023 5742 JMP I FO /+, = NUMS=ERROR
547 1024 7300 CLA CLL /=, = NUMS
548 1025 1344 TAD SAV2 /DETERMINE IF UNDERFLOW IS LEGAL
549 1026 1346 TAD SAV4
550 1027 7630 SEL CLA

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551 1030 1110 TAD K1
552 1031 1041 TAD POINTD
553 1032 1345 TAD SAV3
554 1033 7004 RAL
555 1034 7630 SZL CLA /ERR IF LINC = 1
556 1035 5742 JMP I FO /ERROR
557 1036 5254 JMP OK
558 1037 1343 POSNST, TAD MLINC
559 1040 7640 SEA CLA
560 1041 5742 JMP I FO /*,+ NUMS==ERROR
561 1042 7300 CLA CLL /*,+ NUMS
562 1043 1344 TAD SAV2 /DETERMINE IF OVERFLOW IS LEGAL
563 1044 1346 TAD SAV4
564 1045 7630 SZL CLA
565 1046 1110 TAD K1
566 1047 1041 TAD POINTD
567 1050 1345 TAD SAV3
568 1051 7004 RAL
569 1052 7620 SNL CLA /ERR IF LINC = 0
570 1053 5742 JMP I FO /ERROR
571 1054 5655 OK, JMP I ,+1 /A FRACTION OVERFLOW WAS EXPECTED
572 1055 0657 FOV=1 /RETURN
573 /
574 /THIS ROUTINE IS USED ON AN ERROR
575 /TO DETERMINE IF IT ORIGINATED
576 /IN TEST 15 OR 16
577 /
578 1056 0000 TES, 0 /RETURN ADDRESS
579 1057 1007 TAD NUM /AC = NUM OF TEST BEING EXECUTED
580 1060 7041 CIA
581 1061 1124 TAD K15
582 1062 7650 SNA CLA /SKIP IF NOT TEST 15
583 1063 7340 CLA CLL CMA
584 1064 3100 DCA TS#15 /LOC TST 15 = CONTENTS OF AC
585 1065 1007 TAD NUM /AC = NUM OF TEST BEING EXECUTED
586 1066 7041 CIA
587 1067 1125 TAD K16
588 1070 7650 SNA CLA /SKIP IF NOT TEST 16
589 1071 7340 CLA CLL CMA
590 1072 3101 DCA TS#16 /LOC TST 16 = CONTENTS OF AC
591 1073 5656 JMP I TES /RETURN
592 /
593 /THIS ROUTINE REQUIRES OPERATOR INTERVENTION
594 /ONCE AT THE BEGINNING OF THE PROGRAM TO COMMUNICATE TO THE
595 /PROGRAM IF AN EPM FPP=12 IS BEING TESTED
596 /
597 1074 0000 STMS, 0 /RETURN ADDRESS
598 1075 4473 JMS I PRINTR /PRINT
599 1076 3111 TX53 /DEPRESS RSW <SW> 5 IF
600 1077 4473 0LT JMS I PRINTR /PRINT
601 1100 3124 TX54 /YOU DO NOT HAVE
602 1101 4473 JMS I PRINTR /PRINT
603 1102 3075 TX52 /EXTENDED PRECISION MODE
604 1103 4473 JMS I PRINTR /PRINT
605 1104 3031 TX45 /HIT KEY CONTINUE

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006 1105 4504 JMS I CRL
007 1106 4504 JMS I CRL
008 1107 7402 HLT /SET RSW<SW>IF NO EPM AND HIT KEY CONT
009 1110 7604 LAS /READ SW REG
010 1111 0137 AND K100 /MASK
011 1112 3102 DCA EPMOPT /SET OR CLEAR EPM FLAG
012 1113 1102 TAD EPMOPT
013 1114 7640 SZA CLA /SKIP IF EXTENDED PRECISION FPP=12
014 1115 5337 JMP FPPMOD /NO
015 1116 6552 FPICL /ZERO THE FPP WORLD
016 1117 6553 FPCOM /LOAD FPP COMAND REGISTER
017 1120 1151 TAD K4000 /WITH 4000
018 1121 6567 LSHFT /SET EPM MODE
019 1122 7300 CLA CLL
020 1123 6556 FPRST /READ FPP STATUS REGISTER INTO AC
021 1124 0113 AND K4 /MASK
022 1125 7640 SZA CLA /IS FPP EPM STATUS BIT SET
023 1126 5337 JMP FPPMOD /YES
024 1127 4473 JMS I PRINTR /PRINT
025 1130 2732 TX37 /EPM STATUS BIT NOT SET
026 1131 4473 JMS I PRINTR /PRINT
027 1132 2773 TX40 /KEY CONT TO RESTART TEST
028 1133 4504 JMS I CRL
029 1134 4504 JMS I CRL
030 1135 7402 HLT /HLT FOR OPERATOR INTERVENTION
031 1136 5020 JMP STARTS /RESTART
032 1137 6552 FPPMOD, FPICL /ZERO FPP WORLD
033 1140 7300 CLA CLL
034 1141 5674 JMP I STMES /RETURN
035 /
036 1142 0660 FO, FOV
037 1143 0000 MLINC, 0
038 1144 0000 SAV2, 0
039 1145 0000 SAV3, 0
040 1146 0000 SAV4, 0
041 /
042 ///////////////
043 /DATA ERROR HANDLER
044 /ENTERED FROM FPPINT ROUTINE
045 ///////////////
046 /
047 /
048 /EXPECTED DATA ERROR EXITS
049 /TYPICALLY==THE FPC IN THE APT TABLE
050 /POINTS TO THE EXIT POINT+1
051 /THE FOLLOWING IS A LIST OF SAME
052 /
053 1201 *1201
054 1201 4267 G011
055 1202 4317 G012
056 1203 4351 G013
057 1204 4401 G014
058 1205 5026 RET
059 1206 5052 FCPAS1
060 1207 5072 FCPMPD

```

661	1210	5133	FZMD
662	1211	5143	FCP17
663	1212	5156	DPSET
664	1213	5275	DPCPR1
665	1214	5302	EPSET
666	1215	5335	EQPR1
667	1216	5344	EQPRAS
668	1217	5377	EQPRMD
669	1220	5471	EZMD
670	1221	5472	END

/

/THIS TABLE CONTAINS A LIST OF THE  
 /ADDRESSES OF DATA ERROR HANDLING SUBROUTINE  
 /TYPICALLY EACH DATA ERROR EXIT POINT  
 /HAS ITS ASSOCIATED ERROR ROUTINE

676			
677	1222	1270	FPADM
678	1223	1304	DPADM
679	1224	1320	FPMLM
680	1225	1334	DPMLM
681	1226	1350	FPCPR
682	1227	1350	FPCPR
683	1230	1350	FPCPR
684	1231	1350	FPCPR
685	1232	1355	FEMMT
686	1233	1350	FPCPR
687	1234	1400	DPQR
688	1235	1400	DPQR
689	1236	1350	FPCPR
690	1237	1350	FPCPR
691	1240	1405	EPCPA
692	1241	1405	EPCPA
693	1242	1412	PTRT, EZMDC

/

/THIS ROUTINE TESTS FOR EXPECTED DATA ERROR EXITS  
 /LISTED IN THE TABLE STARTING AT LOC 1001

694			
695			
696			
697			
698			
699	1243	0000	TSTEXI, 0 /CONTAINS RET ADD
700	1244	1146	TAD K1200 /AC=1200
701	1245	3012	DCA 12 /LOC 12=1200 = START OF FPP EXPECTED ERR EXITS
702	1246	1364	TAD M21 /AC=7757
703	1247	3365	DCA CT /LOC CT=7757
704	1250	1412	GO, TAD I 12 /AC=ADD OF EXPECTED FPP ERR EXIT
705	1251	7041	CIA /COMPLIMENT AND INC
706	1252	1026	TAD APT+1 /ADD FPC EXIT IN APT TABLE
707	1253	7650	SNA CLA /SKIP IF AC NON=ZERO = CLR AC
708	1254	5260	JMP DTER /DETERMINES CORRECT ERROR ROUTINE
709	1255	2365	ISZ CT /INC LOC CT AND SKIP IF ALL ERROR EXITS TESTED
710	1256	5250	JMP GO /TST NEXT EXPECTED ERR EXIT POINT
711	1257	7402	HLT /NOT AN EXPECTED EXIT OF ANY TYPE

/

/FOUND AN EXPECTED ERROR EXIT  
 /THIS ROUTINE LINKS THE ERROR WITH ITS  
 /APPROPRIATE ERROR SUBROUTINE

715

```

716 /VIA TABLE STARTING AT LOC 1222
717 /
718 1260 1365 DTER, TAD CT /AC=LOC CT
719 1261 7001 IAC /INC
720 1262 1366 TAD KTTT /ADD KTTT = POINTS TO BOTTOM OF ERR SUB LIST
721 1263 3267 DCA ,+4 /DEPOSIT IN ,+4
722 1264 1667 TAD I ,+3 /GET ADD OF ERR SUB OUT OF LIST
723 1265 3267 DCA ,+2 /DEPOSIT IN ,+2
724 1266 5667 JMP I ,+1 /GO TO ERR SUB
725 1267 0000 @ /CONTAINS ADD OF ERROR SERVICE ROUTINE
726 /
727 /
728 /DATA ERROR SERVICE ROUTINES
729 /
730 /
731 /FPP11 TEST DATA ERROR
732 /FADD AND FADD RESULTS DIFFER
733 /IN FLOATING POINT MODE
734 /THEY SHOULD BE EQUAL
735 /
736 1270 4473 FPADM, JMS I PRINTR /PRINT
737 1271 2400 TX12 /FPP ERROR
738 1272 4767 JMS I FPOCT1 /ROUTINE OUTPUTS ERR INFO
739 1273 4473 JMS I PRINTR /PRINT
740 1274 2666 TX31 /FADD RESULT
741 1275 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
742 1276 4442 JMS I OF22FX /ROUTINE PRINTS OFFSET 22 OF BASE REG
743 1277 4473 JMS I PRINTR /PRINT
744 1300 2707 TX33 /FADD RESULT
745 1301 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
746 1302 4771 JMS I APPIR1 /ROUTINE PRINTS CONTEXTS OF FPP APT TABLE AND IR REGS
747 1303 5470 JMP I TSTHL /ROUTINE TSTS SW REG
748 /
749 /FPP12 TEST DATA ERROR
750 /FADD AND FADD RESULTS DIFFER
751 /IN DOUBLE PRECISION MODE
752 /THEY SHOULD BE EQUAL
753 /
754 1304 4473 DPAQM, JMS I PRINTR /PRINT
755 1305 2400 TX12 /FPP ERROR
756 1306 4770 JMS I DPOCT1 /ROUTINE OUTPUTS ERROR INFO
757 1307 4473 JMS I PRINTR /PRINT
758 1310 2666 TX31 /FADD RESULT
759 1311 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
760 1312 4443 JMS I OF22DX /ROUTINE PRINTS OFFSET 22 OF BASE REG
761 1313 4473 JMS I PRINTR /PRINT
762 1314 2707 TX33 /FADD RESULT
763 1315 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
764 1316 4771 JMS I APPIR1 /ROUTINE PRINTS CONTENTS OF FPP APT TABLE AND IR REGS
765 1317 5470 JMP I TSTHL /ROUTINE TSTS SW REG
766 /
767 /FPP13 TEST DATA ERROR
768 /FMULM AND FMUL RESULTS DIFFER
769 /IN FLOATING POINT MODE
770 /THEY SHOULD BE EQUAL

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771
772 1320 4473 / FPLM, JMS I PRINTR /PRINT
773 1321 2400 TX12 /FPP ERROR
774 1322 4767 JMS I FPCT1 /ROUTINE OUTPUTS ERR INFO
775 1323 4473 JMS I PRINTR /PRINT
776 1324 2715 TX35 /FMULM RESULT
777 1325 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
778 1326 4442 JMS I OF22FX /ROUTINE PRINTS OFFSET 22 OF BASE REG
779 1327 4473 JMS I PRINTR /PRINT
780 1330 2724 TX36 /FMUL RESULT
781 1331 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
782 1332 4771 JMS I AP↑IR1 /ROUTINE PRINTS CONTENTS OF FPP APT TABLE AND IR REGS
783 1333 5470 JMP I TS↑HL /ROUTINE TSTS SW REG
784
785 /
786 /FPP14 TEST DATA ERROR
787 /FMULM AND FMUL RESULTS DIFFER
788 /IN DOUBLE PRECISION MODE
789 /THEY SHOULD BE EQUAL
790
790 1334 4473 DPMLM, JMS I PRINTR /PRINT
791 1335 2400 TX12 /FPP ERROR
792 1336 4770 JMS I DPCT1 /ROUTINE OUTPUTS ERROR INFO
793 1337 4473 JMS I PRINTR /PRINT
794 1340 2715 TX35 /FMULM RESULT
795 1341 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
796 1342 4443 JMS I OF22DX /ROUTINE PRINTS OFFSET 22 OF BASE REG
797 1343 4473 JMS I PRINTR /PRINT
798 1344 2724 TX36 /FMUL RESULT
799 1345 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
800 1346 4771 JMS I AP↑IR1 /ROUTINE PRINTS CONTENTS OF FPP APT TABLE AND IR REGS
801 1347 5470 JMP I TS↑HL /ROUTINE TSTS SW REG
802
803 /
804 /DATA ERR IN FLOATING POINT MODE
805 /RAN NUM ARG IN TABLE1 NOT = RESULT IN TABLE2
806 /THEY SHOULD BE EQUAL
807
807 1350 4473 FPCPR, JMS I PRINTR /PRINT
808 1351 2400 TX12 /FPP ERROR
809 1352 4767 JMS I FPCT1 /ROUTINE OUTPUTS ERR INFO
810 1353 4771 JMS I AP↑IR1 /ROUTINE PRINTS CONTENTS OF FPP APT TABLE AND IR REGS
811 1354 5470 JMP I TS↑HL /ROUTINE TSTS SW REG
812
813 /
814 /EXPONENT UNDERFLOW IN TEST 17
815 /PRINT ERROR INFORMATION
816
816 1355 4473 FZMMI, JMS I PRINTR /PRINT
817 1356 2400 TX12 /FPP ERROR
818 1357 4473 JMS I PRINTR /PRINT
819 1360 3062 TX51 /ILLEGAL FPP EXP UPLO
820 1361 4767 JMS I FPCT1 /ROUTINE OUTPUTS ERROR INFO
821 1362 4771 JMS I AP↑IR1 /ROUTINE PRINTS APT TABLE, FPP IR AND STATUS DATA
822 1363 5470 JMP I TS↑HL /ROUTINE TESTS SW REG
823
824 1364 7757 /
825 1365 0000 M21, =21
CT, 0

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826 1366 1242 KTTY, PTTY
827 1367 2000 FPOCT1, FPOCTT
828 1370 2057 DPOCT1, DPOCTT
829 1371 2200 APTIR1, APTIR
830 /
831 /DATA ERR IN DOUBLE PRECISION ADD=SUB OR MUL=DIV TEST
832 /RAN NUM ARG IN TABLE3 NOT = RESULT IN TABLE4
833 /THEY SHOULD BE EQUAL
834 /
835 1400 *1400
836 1400 4473 DPCR, JMS I PRINTR /PRINT
837 1401 2400 TX12 /FPP ERROR
838 1402 4733 JMS I DPOCT2 /ROUTINE OUTPUTS ERR INFO
839 1403 4734 JMS I APTIR2 /ROUTINE PRINTS CONTENTS OF FPP APT TABLE AND IR REGS
840 1404 4227 JMS TSTHLT /ROUTINE TSTS SW REG
841 /
842 /DATA ERROR IN EXTENDED PRECISION MODE
843 /RAN NUM ARG NOT = RESULTING ARG
844 /THEY SHOULD BE EQUAL
845 /
846 1405 4473 EPCPA, JMS I PRINTR /PRINT
847 1406 2400 TX12 /FPP ERROR
848 1407 4732 JMS I FPOCT2 /ROUTINE OUTPUTS ERR INFO
849 1410 4734 JMS I APTIR2 /ROUTINE PRINTS CONTENTS OF FPP APT TABLE AND IR REG
850 1411 5227 JMP TSTHLT /ROUTINE TESTS SW REG
851 /
852 /EXPONENT OVERFLOW OR UNDERFLOW IN EPM MUL/DIV TEST
853 /TEST TO DETERMINE IF LEGITIMATE
854 /
855 1412 4303 EZMDC, JMS FPTR /COMPUTE ADDRESS OF RANDOM DATA ARG
856 1413 7300 CLA CLL
857 1414 1440 TAD I POINT /AC = RAN EXP
858 1415 7510 SPA /SKIP IF AC POSITIVE
859 1416 5223 JMP *5
860 1417 1440 TAD I POINT /AC = RAN EXP + RAN EXP
861 1420 7510 SPA /SKIP IF AC POSITIVE
862 1421 5471 JMP I REENT /LEGITIMATE OVERFLOW
863 1422 5205 JMP EPCPA /ERROR
864 1423 1440 TAD I POINT /AC = RAN EXP * RAN EXP
865 1424 7700 SMA CLA /SKIP IF AC NEGATIVE
866 1425 5471 JMP I REENT /LEGITIMATE UNDERFLOW
867 1426 5205 JMP EPCPA /ERROR
868 /
869 /TEST SWITCH REGISTER TO DETERMINE
870 /IF ERROR IS TO BE IGNORED
871 /OTHERWISE HALT
872 /
873 1427 4504 TSTHLT, JMS I CRL /CARRIAGE RET AND LINE FEED
874 1430 4473 JMS I PRINTR /PRINT
875 1431 3040 TX47 /CONTINUE WITH TEST OR
876 1432 4473 JMS I PRINTR /PRINT
877 1433 3012 TX44 /TO RE-EXECUTE FAILING ARG MUST DEPRESS SW 7 IN SW REG
878 1434 4504 JMS I CRL
879 1435 4473 JMS I PRINTR /PRINT
880 1436 3031 TX45 /HIT KEY CONTINUE

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881 1437 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
882 1440 7402 HLT /WAIT FOR OPERATOR INTERVENTION
883 1441 7604 LAS /SW REG TO AC
884 1442 0135 AND K43 /MASK BIT 6
885 1443 7650 SNA CLA /SKIP IF NON=ZERO
886 1444 5471 JMP I REENT /CONTINUE WITH FPP TST
887 1445 3077 DCA ERRFPP
888 1446 7340 CLA CLL CMA /AC=7777
889 1447 3464 DCA I LOKSE /FLAG TO FPP = LOCK ONTO TST SEGMENT
890 1450 5467 JMP I REER /REENTER FPP TST

```

```

891 /
892 /THIS ROUTINE PRINTS THE CONTENTS OF
893 /OFFSET 22 OF BASE REG TABLE IN F P MODE
894 /
895 1451 0000 OF22FP, 0 /CONTAINS RET ADD
896 1452 4473 JMS I PRINTR /PRINT
897 1453 2675 TX32 /OFFSET 22 BASE REG
898 1454 4473 JMS I PRINTR /PRINT
899 1455 2431 TX17 /EXP MSW LSW
900 1456 1076 TAD RESULT /AC=POINTER TO OFFSET 22
901 1457 4731 JMS I OCWD1
902 1460 7775 =3
903 1461 5651 JMP I OF22FP /RET TO PROGRAM

```

```

904 /
905 /THIS ROUTINE PRINTS THE CONTENTS OF
906 /OFFSET 22 OF BASE REGISTER IN D P MODE
907 /
908 1462 0000 OF22DP, 0 /CONTAINS RET ADD
909 1463 4473 JMS I PRINTR /PRINT
910 1464 2675 TX32 /OFFSET 22 BASE REG
911 1465 4473 JMS I PRINTR /PRINT
912 1466 2450 TX20 /MSW LSW
913 1467 1076 TAD RESULT /AC=POINTER TO OFFSET 22
914 1470 7001 IAC /INC AC
915 1471 4731 JMS I OCWD1
916 1472 7776 =2
917 1473 5662 JMP I OF22DP /RET TO PROGRAM

```

```

918 /
919 /USED IN DOUBLE PRECISION MODE
920 /COMPUTES ADD OF RAN NUM DATA ARG
921 /AND STORES IN LOC POINT
922 /
923 1474 0000 DPTR, 0 /CONTAINS RET ADD
924 1475 7300 CLA CLL
925 1476 1051 TAD FPPR*1 /IR1=NUM OF 2 WORD ACCESSES MADE
926 1477 1051 TAD FPPR*1 /IR1 + IR1
927 1500 1330 TAD K6776 /ADD START OF TABLE3 =2
928 1501 3040 DCA POINT /POINTER TO FPP RAN DATA ARG
929 1502 5674 JMP I DPTR /RET TO PROGRAM

```

```

930 /
931 /USED IN FLOATING POINT AND EXTENDED PRECISION MODES
932 /COMPUTES DIRECT ADDRESS OF RANDOM DATA ARGUMENT
933 /AND STORES IN LOCATION POINT
934 /
935 1503 0000 FPPTR, 0 /CONTAINS RET ADD

```

```

936 1504 7300 CLA CLL
937 1505 1007 TAD NUM
938 1506 0127 AND K20
939 1507 7650 SNA CLA /SKIP IF EPM TEST
940 1510 5322 JMP HERE /NOT EPM TEST
941 1511 1007 TAD NUM
942 1512 0110 AND K1
943 1513 7650 SNA CLA /SKIP IF EPM TEST USES TABLE 1
944 1514 1145 TAD K1000 /ADD 1000 TO UPDATE POINTER TO TABLES
945 1515 1153 TAD K5772 /POINTS TO TABLE 1-6
946 1516 1051 TAD FPP1R+1 /INC UP THROUGH TABLE TO ARGUMENT
947 1517 1051 TAD FPP1R+1 /ETC
948 1520 1051 TAD FPP1R+1
949 1521 5323 JMP ,+2 /EPM TEST = DO 3 MORE
950 1522 1154 HERE, TAD K5775
951 1523 1051 TAD FPP1R+1 /INC UP THROUGH TABLE TO ARGUMENT
952 1524 1051 TAD FPP1R+1 /ETC
953 1525 1051 TAD FPP1R+1
954 1526 3040 DCA POINT /POINTER TO FPP RAN DATA ARG
955 1527 5703 JMP I FPPTR /RETURN
956
957 1530 6776 K6776, 6776
958 1531 2241 OCWD1, OCWDS
959 1532 2000 FPOCT2, FPOCTY
960 1533 2057 DPOCT2, DPOCTY
961 1534 2200 APTIR2, APTIR
962
963 /THIS ROUTINE USED IN FLOATING POINT MODE AND EPM
964 /PRINTS THE TEST NUMBER WHICH FAILED
965 /THE RANDOM NUMBER ARGUMENT OR ARGUMENTS USED
966 /AND THE INCORRECT RESULTING ARGUMENT
967
968 2000 *2000
969 2000 0000 FPOCT, 0 /CONTAINS RET ADD
970 2001 4327 JMS OC /ROUTINE ALTERS TEXT STATEMENT 13
971 2002 4473 JMS I PRINTR /PRINT
972 2003 2405 TX13 /TEST XX
973 2004 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
974 2005 4473 JMS I PRINTR /PRINT
975 2006 2412 TX15 /RANDOM NUM ARG
976 2007 4473 JMS I PRINTR /PRINT
977 2010 2431 TX17 /EXP MSW LSW
978 2011 4751 JMS I FPP1 /STORE ADD OF RAN DATA ARG IN LOC POINT
979 2012 1007 TAD NUM
980 2013 0127 AND K20
981 2014 7640 SEA CLA /SKIP IF NOT AN EPM TEST
982 2015 1161 TAD M3
983 2016 1161 TAD M3
984 2017 3224 DCA FP1 /LOC FP1 = CONTENTS OF AC
985 2020 1224 TAD FP1
986 2021 3254 DCA FP2 /LOC FP2 = CONTENTS OF AC
987 2022 1040 TAD POINT /AC=POINT = ADD OF DATA ARG IN TABLE 1
988 2023 4752 JMS I OCWD2 /PRINT
989 2024 0000 FP1, 0 /OCTAL WORDS
990 2025 4504 JMS I CRL

```



```

991 2026 4504 JMS I CRL
992 2027 1100 TAD TSF15
993 2030 7650 SNA CLA /SKIP IF EXECUTING TEST 15
994 2031 5244 JMP SKIP
995 2032 4473 JMS I PRINTR /PRINT
996 2033 3053 TX50 /RAN NUM ARG 2
997 2034 4473 JMS I PRINTR /PRINT
998 2035 2431 TX17 /EXP MSW LSW LSW1 LSW2 LSW3
999 2036 1112 TAD K3
1000 2037 1040 TAD POINT
1001 2040 4752 JMS I OCWD2 /PRINT
1002 2041 7775 =3 /3 OCTAL WORDS
1003 2042 4504 JMS I CRL
1004 2043 4504 JMS I CRL
1005 2044 4473 SKIP, JMS I PRINTR /PRINT
1006 2045 2420 TX16 /INCORRECT RESULTING ARG
1007 2046 4473 JMS I PRINTR /PRINT
1008 2047 2431 TX17 /EXP MSW LSW
1009 2050 7300 CLA CLL /AC=0
1010 2051 1040 TAD POINT /AC=ADD OF DATA ARG IN TABLE 1
1011 2052 1144 TAD K400 /ADD 400 = AC=ADD OF INCORRECT RESULT IN TABLE 2
1012 2053 4752 JMS I OCWD2 /PRINT
1013 2054 0000 FP2, 0 /OCTAL WORDS
1014 2055 4504 JMS I CRL
1015 2056 5600 JMP I FPOCTT /RET TO PROGRAM
1016 /
1017 /THIS ROUTINE USED IN DOUBLE PRECISION MODE
1018 /PRINTS THE TEST NUMBER WHICH FAILED
1019 /THE RANDOM NUMBER ARGUMENT USED AND
1020 /THE INCORRECT RESULTING ARGUMENT
1021 /
1022 DPOCTT, 0 /CONTAINS RET ADD
1023 JMS OC /ROUTINE ALTERS TEXT STATEMENT 13
1024 JMS I PRINTR /PRINT
1025 TX13 /TEST XX
1026 JMS I CRL /CARRIAGE RET AND LINE FEED
1027 TAD NUM
1028 RAR
1029 SEL CLA /SKIP IF NOT A DOUBLE PRECISION TEST
1030 JMP I DPOCTT
1031 JMS I PRINTR /PRINT
1032 TX15 /RANDOM NUM ARG
1033 JMS I PRINTR /PRINT
1034 TX20 /MSW LSW
1035 JMS I DPT /STORE ADD OF DATA ARG IN LOC POINT
1036 TAD POINT /AC=ADD OF DATA ARG IN TABLE 3
1037 JMS I OCWD2
1038 =2
1039 JMS I CRL /CARRIAGE RET AND LINE FEED
1040 TAD TSF16
1041 SNA CLA /SKIP IF EXECUTING TEST 16
1042 JMP ,+11
1043 JMS I PRINTR /PRINT
1044 TX50 /RAN NUM ARG
1045 JMS I PRINTR /PRINT

```

```

1046 2107 2450 TX20 /MSW LSW
1047 2110 1111 TAD K2
1048 2111 1040 TAD POINT
1049 2112 4752 JMS I OCWD2 /PRINT
1050 2113 7776 =2 /2 OCTAL WORDS
1051 2114 4504 JMS I CRL
1052 2115 4473 JMS I PRINTR /PRINT
1053 2116 2420 TX16 /INCORRECT RESULTING ARG
1054 2117 4473 JMS I PRINTR /PRINT
1055 2120 2450 TX20 /MSW LSW
1056 2121 7300 CLA CLL /AC=0
1057 2122 1040 TAD POINT /AC=ADD OF DATA ARG IN TABLE 3
1058 2123 1144 TAD K400 /ADD 400=AC=ADD OF INCORRECT RESULT IN TABLE 4
1059 2124 4752 JMS I OCWD2
1060 2125 7776 =2
1061 2126 5657 JMP I DPOCT /RET TO PROGRAM

```

/
/THIS ROUTINE ALTERS TEXT STATEMENT 13
/SO THAT THE TEST NUMBER IS CORRECT
/

```

1062
1063
1064
1065
1066 2127 0000 OC, 0 /CONTAINS RET ADD
1067 2130 7300 CLA CLL /AC=0
1068 2131 1007 TAD NUM /AC=NUM OF FPP TST
1069 2132 0116 AND K7 /MASK LS OCTAL CHAR
1070 2133 1354 TAD K60 /CONVERT TO ASCII
1071 2134 3006 DCA SAV /SAVE IT
1072 2135 1007 TAD NUM /AC=NUM OF FPP TST
1073 2136 7012 RTR /ROTATE 2 RIGHTS
1074 2137 7010 RAR /ROTATE 1 RIGHT
1075 2140 0116 AND K7 /MASK MS OCTAL CHAR
1076 2141 1354 TAD K60 /CONVERT TO ASCII
1077 2142 7100 CLL /CLEAR LINC
1078 2143 7006 RTL /ROTATE 2 LEFT
1079 2144 7006 RTL /ROTATE 2 LEFT
1080 2145 7006 RTL /ROTATE 2 LEFT
1081 2146 1006 TAD SAV /COMBINE
1082 2147 3753 DCA I TX13A /ALTER TEXT STATEMENT 13
1083 2150 5727 JMP I OC /RET TO PROGRAM

```

```

1084
1085 2151 1503 FPPT1, FPPTR
1086 2152 2241 OCWD2, OCWDS
1087 2153 2410 TX13A, TX13+3
1088 2154 0060 K60, 60

```

/
/THIS ROUTINE IS USED BY BOTH DP AND FP MODES
/TO OUTPUT THE CONTENTS OF THE ACTIVE
/PARAMETER AND INDEX REGISTER TABLES
/

```

1094 2200 *2200
1095 2200 0000 APTIR, 0 /CONTAINS RET ADD
1096 2201 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
1097 2202 4473 JMS I PRINTR /PRINT
1098 2203 2455 TX21 /APT TABLE
1099 2204 4473 JMS I PRINTR /PRINT
1100 2205 2462 TX22 /FORMAT FOR APT TABLE DATA

```

```

1101 2206 1007 TAD NUM
1102 2207 0127 AND K20
1103 2210 7640 SZA CLA /SKIP IF NOT AN EPM TEST
1104 2211 1161 TAD M3
1105 2212 1370 TAD M10
1106 2213 3216 DCA AP1 /SET UP NUMBER OF GENERAL WORDS OF OUTPUT
1107 2214 1061 TAD FPADRS /AC=ADD OF APT TABLE
1108 2215 4241 JMS OCWDS /PRINT
1109 2216 0000 API, 0 /OCTAL WORDS
1110 2217 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
1111 2220 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
1112 2221 4473 JMS I PRINTR /PRINT
1113 2222 2516 TX23 /FPP INDEX REGISTERS
1114 2223 4473 JMS I PRINTR /PRINT
1115 2224 2525 TX24 /FORMAT FOR FPP INDEX REGISTER DATA
1116 2225 1365 TAD K50 /AC=SA OF FPP INDEX REGISTERS
1117 2226 4241 JMS OCWDS
1118 2227 7770 =10
1119 2230 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
1120 2231 4504 JMS I CRL
1121 2232 4473 JMS I PRINTR /PRINT
1122 2233 2662 TX30 /STATUS
1123 2234 1046 TAD STST /AC=ADDRESS OF LOC STATUS
1124 2235 4241 JMS OCWDS /PRINT
1125 2236 7777 =1 /OCTAL STATUS WORD
1126 2237 4504 JMS I CRL
1127 2240 5600 JMP I APTIR /RET TO PROGRAM
1128
1129 /THIS ROUTINE IS USED TO OUTPUT
1130 /CONTINUOUS MEMORY LOCATIONS IN OCTAL
1131
1132 2241 0000 OCWDS, 0 /CONTAINS RET ADD
1133 2242 1162 TAD M1 /SUBTRACT 1 FROM AC
1134 2243 3014 DCA 14 /LOC 14=ADD=1 OF DATA
1135 2244 1641 TAD I OCWDS
1136 2245 3015 DCA 15 /LOC 15=-10
1137 2246 7300 CLA CLL
1138 2247 1414 TAD I 14 /AC=DATA ARG
1139 2250 4474 JMS I OCTALS /OUTPUT
1140 2251 2015 ISZ 15 /SKIP IF DONE 8 WORDS
1141 2252 5246 JMP ,=4 /NO=AGAIN
1142 2253 2241 ISZ OCWDS
1143 2254 5641 JMP I OCWDS /RET TO PROGRAM
1144
1145 /ROUTINE TO PRINT OUT CONTENTS OF A PARTICULAR TEXT TABLE
1146
1147 2255 0000 PRINT, 0 /CONTAINS RETURN JMP ADDRESS TO POINT OF ENTRY
1148 2256 7300 CLA CLL
1149 2257 1655 TAD I PRINT /GET TEXT POINTER
1150 2260 3006 DCA SAV
1151 2261 2255 ISZ PRINT /INC RETURN JMP ADDRESS POINTER
1152 2262 1406 TAD I SAV /GET WORD FROM TEXT TABLE
1153 2263 0160 AND K7700 /MASK BITS 0=5
1154 2264 7440 SZA /AC=0
1155 2265 5270 JMP ,+3 /YES=WE ARE DONE

```

```

1156 2266 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
1157 2267 5655 JMP I PRINT /RET TO PROGRAM
1158 2270 7500 SMA /SKIP ON NEGATIVE AC
1159 2271 7020 CML /NO-COMPLIMENT LINC
1160 2272 7001 IAC /INC AC
1161 2273 7012 RTR /ROTATE 2 RIGHT
1162 2274 7012 RTR /ROTATE 2 RIGHT
1163 2275 7012 RTR /ROTATE 2 RIGHT
1164 2276 4343 JMS TYPE /TYPE
1165 2277 7300 CLA CLL /AC=0
1166 2300 1406 TAD I SAV /GET WORD FROM TEXT TABLE
1167 2301 0136 AND K77 /MASK BITS 6=11
1168 2302 7440 SEA /AC=0
1169 2303 5306 JMP ,+3 /YES=WE ARE DONE
1170 2304 4504 JMS I CRL /CARRIAGE RET AND LINE FEED
1171 2305 5655 JMP I PRINT /RET TO PROGRAM
1172 2306 1150 TAD K3740 /ADD 3740 TO AC
1173 2307 7500 SMA /SKIP ON NEGATIVE AC
1174 2310 1152 TAD K4100 /NO=ADD 4100 TO AC
1175 2311 1143 TAD K240 /ADD 240 TO AC
1176 2312 4343 JMS TYPE /TYPE
1177 2313 7300 CLA CLL /AC=0
1178 2314 2006 ISE SAV /INC LOC SAV TO POINT TO NEXT ARG IN TEXT TABLE
1179 2315 5262 JMP PRINT*5 /OUTPUT NEXT WORD FROM TEXT TABLE
1180 2316 7402 HLT /SHOULD NEVER GET HERE

```

/ THIS ROUTINE OUTPUTS CONTENTS OF AC  
/ IN OCTAL

```

1181
1182
1183
1184
1185 2317 0000 OCTA: 0 /CONTAINS RET ADD
1186 2320 7006 RTL /ROTATE 2 LEFT
1187 2321 7006 RTL /ROTATE 2 LEFT
1188 2322 3006 DCA SAV /SAVE AC OUTPUT
1189 2323 1367 TAD M4 /AC=-4
1190 2324 3364 DCA COUNT /LOC COUNT=-4
1191 2325 1006 TAD SAV /AC=OUTPUT
1192 2326 0116 AND K7 /MASK BITS 9=11
1193 2327 1366 TAD K260 /CONVERT TO ASCII
1194 2330 4343 JMS TYPE /OUTPUT ON TTY
1195 2331 1006 TAD SAV /AC=OUTPUT
1196 2332 7006 RTL /ROTATE 2 LEFT
1197 2333 7004 RAL /ROTATE 1 LEFT
1198 2334 3006 DCA SAV /SAVE AC OUTPUT
1199 2335 2364 ISE COUNT /DONE
1200 2336 5325 JMP ,=11 /NO=DO ANOTHER CHARACTER
1201 2337 7300 CLA CLL /YES=AC=0
1202 2340 1143 TAD K240 /AC=240
1203 2341 4343 JMS TYPE /OUTPUT A SPACE TO TTY
1204 2342 5717 JMP I OCTA /RET TO PROGRAM

```

/ THIS ROUTINE TYPES ONE CHARACTER

```

1205
1206
1207
1208 2343 0000 TYPE: 0 /CONTAINS RET ADD
1209 2344 6046 TLS /AC TO PRINTER=CLR FLAG
1210 2345 7200 CLA /AC=0

```

```

1211 2346 6041 TSF /SKIP IF FLAG SET
1212 2347 5346 JMP ,=1 /WAIT
1213 2350 6042 TCF /CLEAR FLAG
1214 2351 5743 JMP I TYPE /RET TO PROGRAM
1215 /
1216 /THIS ROUTINE ISSUES 3 CARRIAGE RETURNS
1217 /AND A LINE FEED
1218 /
1219 2352 0000 CRLF, 0 /CONTAINS RET ADD
1220 2353 7300 CLA CLL /AC=0
1221 2354 1142 TAD K215 /AC=215 = CARRIAGE RET
1222 2355 4343 JMS TYPE /OUTPUT
1223 2356 1142 TAD K215 /AC=215 = CARRIAGE RET
1224 2357 4343 JMS TYPE /OUTPUT
1225 2360 1141 TAD K212 /AC=212 = LINE FEED
1226 2361 4343 JMS TYPE /OUTPUT
1227 2362 6042 TCF /CLEAR FLAG
1228 2363 5752 JMP I CRLF /RET TO PROGRAM
1229 /
1230 /
1231 /
1232 2364 0000 COUNT, 0
1233 2365 0050 K50, 50
1234 2366 0260 K260, 260
1235 2367 7774 M4, -4
1236 2370 7770 M10, -10
1237 /
1238 /PRINT TEXT STATEMENTS
1239 /
1240 2400 *2400
1241 2400 0620 TX12, TEXT ?FPP ERROR?
2401 2040
2402 0522
2403 2217
2404 2200
1242 2405 2405 TX13, TEXT ?TEST XX ?
2406 2324
2407 4040
2410 3030
2411 4000
1243 2412 2201 TX15, TEXT ?RAN NUM ARG?
2413 1640
2414 1625
2415 1540
2416 0122
2417 0700
1244 2420 0201 TX16, TEXT ?BAD RESULTING ARG?
2421 0440
2422 2205
2423 2325
2424 1424
2425 1116
2426 0740
2427 0122
2430 0700

```





2607 1440  
2610 1116  
2611 1124  
2612 1101  
2613 2405  
2614 4001  
2615 4003  
2616 2025  
2617 4006  
2620 1722  
2621 0305  
2622 0440  
2623 0530  
2624 1124  
2625 4000  
2626 0620  
2627 2040  
2630 1025  
2631 1607  
2632 5555  
2633 0620  
2634 1014  
2635 2440  
2636 1117  
2637 2440  
2640 0411  
2641 0440  
2642 1617  
2643 2440  
2644 1116  
2645 1124  
2646 1101  
2647 2405  
2650 4001  
2651 4003  
2652 2025  
2653 4006  
2654 1722  
2655 0305  
2656 0440  
2657 0530  
2660 1124  
2661 4000  
2662 2324  
2663 0124  
2664 2523  
2665 4000  
2666 0601  
2667 0404  
2670 1540  
2671 2205  
2672 2325  
2673 1424  
2674 4000  
2675 1706

1253

TX27, TEXT ?FPP HUNG==FPHLT IOT DID NOT INITIATE A CPU FORCED EXIT ?

1254

TX30, TEXT ?STATUS ?

1255

TX31, TEXT ?FADDM RESULT ?

1256

TX32, TEXT ?OFFSET 22 BASE REG ?



	2676	2623			
	2677	0524			
	2700	4062			
	2701	6240			
	2702	7201			
	2703	2305			
	2704	4022			
	2705	0507			
1257	2706	4000			
	2707	0601	TX33,	TEXT	?FADD RESULT?
	2710	0404			
	2711	4022			
	2712	0523			
	2713	2514			
1258	2714	2400			
	2715	0615	TX35,	TEXT	?FMULM RESULT ?
	2716	2514			
	2717	1540			
	2720	2205			
	2721	2325			
	2722	1424			
1259	2723	4000			
	2724	0615	TX36,	TEXT	?FMUL RESULT?
	2725	2514			
	2726	4022			
	2727	0523			
	2730	2514			
1260	2731	2400			
	2732	0511	TX37,	TEXT	?EITHER YOU DO NOT HAVE THE EPM OPTION OR A STATUS ERROR OCCURRED ?
	2733	2410			
	2734	0522			
	2735	4031			
	2736	1725			
	2737	4004			
	2740	1740			
	2741	1617			
	2742	2440			
	2743	1001			
	2744	2605			
	2745	4024			
	2746	1005			
	2747	4005			
	2750	2015			
	2751	4017			
	2752	2024			
	2753	1117			
	2754	1640			
	2755	1722			
	2756	4001			
	2757	4023			
	2760	2401			
	2761	2425			
	2762	2340			
	2763	0522			
	2764	2217			

	2765	2240			
	2766	1703			
	2767	0325			
	2770	2222			
	2771	0504			
	2772	4000			
1261	2773	1011	TX40,	TEXT	?HIT KEY CONT TO RESTART TEST ?
	2774	2440			
	2775	1305			
	2776	3140			
	2777	0317			
	3000	1624			
	3001	4024			
	3002	1740			
	3003	2205			
	3004	2324			
	3005	0122			
	3006	2440			
	3007	2405			
	3010	2324			
1262	3011	4000	TX44,	TEXT	?SET RSW<SW> 6 RE=EX FAIL ARG ?
	3012	2305			
	3013	2440			
	3014	2223			
	3015	2774			
	3016	2327			
	3017	7640			
	3020	6640			
	3021	2205			
	3022	5505			
	3023	3040			
	3024	0601			
	3025	1114			
	3026	4001			
	3027	2207			
1263	3030	4000	TX45,	TEXT	?HIT KEY CONT ?
	3031	1011			
	3032	2440			
	3033	1305			
	3034	3140			
	3035	0317			
	3036	1624			
1264	3037	4000	TX47,	TEXT	?CONTINUE WITH TEST OR?
	3040	0317			
	3041	1624			
	3042	1116			
	3043	2505			
	3044	4027			
	3045	1124			
	3046	1040			
	3047	2405			
	3050	2324			
	3051	4017			
1265	3052	2200	TX50,	TEXT	?RAN NUM ARG 2?
	3053	2201			

1266 3054 1640  
 3055 1625  
 3056 1540  
 3057 0122  
 3060 0740  
 3061 6200  
 3062 1114 TX51, TEXT ?ILLEGAL FPP EXP UFLO ?  
 3063 1405  
 3064 0701  
 3065 1440  
 3066 0620  
 3067 2040  
 3070 0530  
 3071 2040  
 3072 2506  
 3073 1417

1267 3074 4000  
 3075 0530 TX52, TEXT ?EXTENDED PRECISION MODE?  
 3076 2405  
 3077 1604  
 3100 0504  
 3101 4020  
 3102 2205  
 3103 0311  
 3104 2311  
 3105 1716  
 3106 4015  
 3107 1704

1268 3110 0500  
 3111 0405 TX53, TEXT ?DEPRESS RSW<SW> 5 IF ?  
 3112 2022  
 3113 0523  
 3114 2340  
 3115 2223  
 3116 2774  
 3117 2327  
 3120 7640  
 3121 6540  
 3122 1106

1269 3123 4000  
 3124 3117 TX54, TEXT ?YOU DO NOT HAVE?  
 3125 2540  
 3126 0417  
 3127 4016  
 3130 1724  
 3131 4010  
 3132 0126  
 3133 0500

1270 /  
 1271 /8 MODE PROGRAM RUNNING CONCURRENTLY WITH FPP PROGRAM  
 1272 /  
 1273 3400 \*3400  
 1274 3400 0000 PROGRAM, 0 /CONTAINS RETURN TO 8 MODE PROGRAM INITIALIZING FPP TESTS  
 1275 3401 3010 DCA 10 /INITIALLY CLEAR LOC 10  
 1276 3402 7604 WAIT, LAS /READ SWITCHES

1277	3403	0135		AND	K40	/MASK OFF BITS 0-6 AND 8-11
1278	3404	7650		SNA	CLA	/IF BIT 7 IS SET LOCK ON TO TEST SEGMENT
1279	3405	5212		JMP	,+5	/NO = DO NOT LOCK ON TO TEST SEGMENT
1280	3406	7340		CLA	CLL CMA	/AC=7777
1281	3407	3464		DCA	I LOKSE	/FLAG FPP TO LOCK ON TO A PARTICULAR TEST SEGMENT
1282	3410	3010		DCA	I 10	/CLEAR LOC 10 SO FPP PROG WILL NOT TIME OUT
1283	3411	5213		JMP	,+2	
1284	3412	3464		DCA	I LOKSE	/CLEAR FLAG
1285	3413	7604		LAS		/READ SWITCHES
1286	3414	0134		AND	K37	/MASK OFF BITS 0-6
1287	3415	7450		SNA		/SKIP IF AC IS NON-ZERO
1288	3416	5227		JMP	NLK	/SW REG BITS 8-11 = 0 DONT LOCK ON TO ANY TEST
1289	3417	7041		CMA	IAC	/LOCK ON TO TEST SET INTO SW REG BITS 8-11
1290	3420	1007		TAD	NUM	/ARE WE PRESENTLY EXECUTING THIS TEST
1291	3421	7440		SZA		/SKIP IF AC=0
1292	3422	5227		JMP	NLK	/NO=DONT LOCK ON
1293	3423	7340		CLA	CLL CMA	/YES=LOCK ON
1294	3424	3463		DCA	I LOKTS	/FLAG FPP TO LOCK ON TO PARTICULAR TEST SEQUENCE
1295	3425	3010		DCA	I 10	/CLEAR LOC 10 TO PREVENT FPP TIME OUT
1296	3426	5231		JMP	,+3	
1297	3427	7300	NLK,	CLA	CLL	/DO NOT LOCK ON TO PRESENT FPP TEST SEQUENCE
1298	3430	3463		DCA	I LOKTS	/CLEAR FLAG
1299	3431	1105		TAD	TBL1	/FILL TABLE1 IF TBL1 FLAG IS RESET
1300	3432	7640		SZA	CLA	/SKIP IF AC ZERO
1301	3433	5237		JMP	,+4	
1302	3434	7340		CLA	CLL CMA	/AC=7777=TABLE1 FLAG IS RESET
1303	3435	3105		DCA	TBL1	/SET TBL1 FLAG TO PREVENT ALTERING OF TABLE1
1304	3436	5247		JMP	RAN	/GO TO RANDOM NUMBER ROUTINE
1305	3437	1106		TAD	TBL3	/FILL TABLES IF TBL3 FLAG IS RESET
1306	3440	7640		SZA	CLA	/SKIP IF AC=0
1307	3441	5267		JMP	CONT	/BOTH RANDOM NUMBER TABLES HAVE BEEN FILLED
1308	3442	7340		CLA	CLL CMA	/AC=7777
1309	3443	3106		DCA	TBL3	/SET TBL3 FLAG TO PREVENT ALTERING TABLE3
1310	3444	1156		TAD	K6777	/LOAD 6777=SA FOR TABLES
1311	3445	3011		DCA	11	
1312	3446	5252		JMP	,+4	
1313	3447	7300	RAN,	CLA	CLL	
1314	3450	1155		TAD	K5777	/LOAD 5777=SA OF TABLE1
1315	3451	3011		DCA	11	/INTO LOC 11
1316	3452	1157		TAD	K7400	/LOAD =400
1317	3453	3013		DCA	13	/INTO LOC 13
1318	3454	1316	RA,	TAD	RANA	/RANDOM NUMBER GENERATOR
1319	3455	7027		CML	IAC RTL	/COMPLIMENT LINC, INC AC AND ROTATE AC 2 LEFT
1320	3456	3317		DCA	RANB	/AC TO RANB
1321	3457	1316		TAD	RANA	/AC=RANA
1322	3460	1317		TAD	RANB	/ADD RANB
1323	3461	7025		CML	IAC RAL	/COMPLIMENT LINC, INC AC AND ROTATE AC 1 LEFT
1324	3462	3316		DCA	RANA	/AC TO RANA
1325	3463	1316		TAD	RANA	/AC=RANA
1326	3464	3411		DCA	I 11	/DEPOSIT IN SPECIFIED TABLE
1327	3465	2013		ISZ	13	/DONE 400 TIMES
1328	3466	5254		JMP	RA	/NO=DO IT AGAIN
1329	3467	1022	CONT,	TAD	INFLAG	/LOC INFLAG TELLS PROGRAM IF FPP INTERRUPTED
1330	3470	7640		SZA	CLA	
1331	3471	5314		JMP	TDONE	/YES=START NEXT FPP TEST

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1332 3472 2010 ISZ 10 /INC TIME OUT LOOP
1333 3473 5202 JMP WAIT /LOOP THROUGH PROGRAM AGAIN
1334 3474 4473 JMS I PRINTR /PRINT /MESSAGE
1335 3475 2551 TX25 /LOC 10 TIMED OUT
1336 3476 4473 JMS I PRINTR /PRINT /MESSAGE
1337 3477 2577 TX26 /KEY CONTINUE WILL ISSUE FPHLT
1338 3500 7402 HLT /WAIT FOR OPERATOR INTERVENTION
1339 3501 1160 TAD K7700 /LOAD =100
1340 3502 3010 DCA 10 /PUT IN LOC 10
1341 3503 6554 FPHLT /IOT=CPU FORCED EXIT
1342 3504 2010 ISZ 10 /INCREMENT LOC 10
1343 3505 5304 JMP ,+1 /100 OCTAL TIMES
1344 3506 1022 TAD INFLAG /HAS THE FPP INTERRUPTED
1345 3507 7640 SZA CLA
1346 3510 5202 JMP WAIT /YES=CHECK SW SETTINGS
1347 3511 4473 JMS I PRINTR /PRINT /MESSAGE
1348 3512 2626 TX27 /FPP HUNG
1349 3513 7402 HLT /---UNRECOVERABLE HALT---FPP HUNG---
1350 3514 3022 TDONE, DCA INFLAG /CLEAR INTERRUPT FLAG
1351 3515 5600 JMP I PROGRAM /START NEXT FPP TEST
1352 /
1353 3516 0000 RANA, 0 /RANDOM NUMBER A
1354 3517 0000 RANB, 0 /RANDOM NUMBER B
1355 /
1356 /PDP-8 PROGRAM SETTING UP AND INITIATING FPP OPERATIONS
1357 /
1358 3520 7300 START, CLA CLL
1359 3521 1160 TAD K7700 /AC=7700
1360 3522 3107 DCA BELL /SET UP BELL CNTR
1361 3523 4726 JMS I STMESS /DO WE HAVE AN EPM FPP=12
1362 3524 5725 JMP I ,+1
1363 3525 3600 STAR
1364 /
1365 3526 1074 STMESS, STMES
1366 /
1367 3600 *3600
1368 3600 7340 STAR, CLA CLL CMA /AC=7777
1369 3601 3022 DCA INFLAG /SET INFLAG TO ALLOW PROGS TO INITIALLY START FPP
1370 3602 4462 JMS I PROGB /8MODE CONTROL
1371 3603 7604 LAS /READ SW REG
1372 3604 0151 AND K4000 /MASK
1373 3605 7640 SZA CLA /IF AC IS NON=ZERO HALT AT END OF PASS
1374 3606 7402 HLT /KEY CONTINUE TO KEEP GOING
1375 /
1376 /SET UP AND START FPP1 TEST
1377 /TO BE EXECUTED IN FLOATING POINT MODE
1378 /
1379 3607 2107 T1, ISZ BELL /DONE 100 OCTAL PASSES
1380 3610 5216 JMP ,+6 /NO=CONTINUE
1381 3611 6002 IOF /TURN INTERRUPTS OFF
1382 3612 1140 TAD K207 /YES
1383 3613 4503 JMS I TYP /RING TTY BELL
1384 3614 1160 TAD K7700 /SET LOC
1385 3615 3107 DCA BELL /BELL=7700
1386 3616 6001 ION /TURN INTERRUPTS ON

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1387 3617 1110 TAD K1 /LOAD TEST NUMBER 1
1388 3620 3007 DCA NUM /INTO LOC NUM
1389 3621 3025 DCA APT /CLEAR FIELD BITS IN APT TABLE ON PAGE 0
1390 3622 1151 TAD K4000 /LOAD 4000=START OF FPP CODE
1391 3623 3026 DCA APT+1 /STORE INTO FPC POINTER IN APT TABLE ON PAGE 0
1392 3624 4163 JMS FPPST /START FPP
1393 3625 4462 JMS I PROGB /8MODE CONTROL
1394 3626 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1395 /
1396 /SET UP AND START FPP2 TEST
1397 /TO BE EXECUTED IN DOUBLE PRECISION MODE
1398 /
1399 3627 1111 T2: TAD K2 /LOAD TEST NUMBER 2
1400 3630 3007 DCA NUM /INTO LOC NUM
1401 3631 4163 JMS FPPST /START FPP
1402 3632 4462 JMS I PROGB /8MODE CONTROL
1403 3633 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1404 /
1405 /SET UP AND START FPP3 TEST
1406 /TO BE EXECUTED IN FLOATING POINT MODE
1407 /
1408 3634 1112 T3: TAD K3 /LOAD TEST NUMBER 3
1409 3635 3007 DCA NUM /INTO LOC NUM
1410 3636 4163 JMS FPPST /START FPP
1411 3637 4462 JMS I PROGB /8MODE CONTROL
1412 3640 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1413 /
1414 /SET UP AND START FPP4 TEST
1415 /TO BE EXECUTED IN DOUBLE PRECISION MODE
1416 /
1417 3641 1113 T4: TAD K4 /LOAD TEST NUMBER 4
1418 3642 3007 DCA NUM /INTO LOC NUM
1419 3643 4163 JMS FPPST /START FPP
1420 3644 4462 JMS I PROGB /8MODE CONTROL
1421 3645 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1422 /
1423 /SET UP AND START FPP5 TEST
1424 /TO BE EXECUTED IN FLOATING POINT MODE
1425 /
1426 3646 1114 T5: TAD K5 /LOAD TEST NUMBER 5
1427 3647 3007 DCA NUM /INTO LOC NUM
1428 3650 4163 JMS FPPST /START FPP
1429 3651 4462 JMS I PROGB /8MODE CONTROL
1430 3652 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1431 /
1432 /SET UP AND START FPP6 TEST
1433 /TO BE EXECUTED IN DOUBLE PRECISION MODE
1434 /
1435 3653 1115 T6: TAD K6 /LOAD TEST NUMBER 6
1436 3654 3007 DCA NUM /INTO LOC NUM
1437 3655 4444 JMS I CLLSW /CLEAR LEAST SIGNIFICANT WORD OF DP ARGS
1438 3656 4163 JMS FPPST /START FPP
1439 3657 4462 JMS I PROGB /8MODE CONTROL
1440 3660 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1441 /

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1442 /SET UP AND START FPP7 TEST
1443 /TO BE EXECUTED IN FLOATING POINT MODE
1444 /
1445 3661 1116 T7, TAD K7 /LOAD TEST NUMBER 7
1446 3662 3007 DCA NUM /INTO LOC NUM
1447 3663 4163 JMS FPPST /START FPP
1448 3664 4462 JMS I PROGB /8MODE CONTROL
1449 3665 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1450 /
1451 /SET UP AND START FPP10 TEST
1452 /TO BE EXECUTED IN DOUBLE PRECISION MODE
1453 /
1454 3666 1117 T10, TAD K10 /LOAD TEST NUMBER 10
1455 3667 3007 DCA NUM /INTO LOC NUM
1456 3670 4444 JMS I CLLSW /CLEAR LEAST SIGNIFICANT WORD OF DP ARGS
1457 3671 4163 JMS FPPST /START FPP
1458 3672 4462 JMS I PROGB /8MODE CONTROL
1459 3673 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1460 /
1461 /SET UP AND START FPP11 TEST
1462 /TO BE EXECUTED IN FLOATING POINT MODE
1463 /
1464 3674 1120 T11, TAD K11 /LOAD TEST NUMBER 11
1465 3675 3007 DCA NUM /INTO LOC NUM
1466 3676 4163 JMS FPPST /START FPP
1467 3677 4462 JMS I PROGB /8MODE CONTROL
1468 3700 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1469 /
1470 /SET UP AND START FPP12 TEST
1471 /TO BE EXECUTED IN DOUBLE PRECISION MODE
1472 /
1473 3701 1121 T12, TAD K12 /LOAD TEST NUMBER 12
1474 3702 3007 DCA NUM /INTO LOC NUM
1475 3703 4163 JMS FPPST /START FPP
1476 3704 4462 JMS I PROGB /8MODE CONTROL
1477 3705 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1478 /
1479 /SET UP AND START FPP13 TEST
1480 /TO BE EXECUTED IN FLOATING POINT MODE
1481 /
1482 3706 1122 T13, TAD K13 /LOAD TEST NUMBER 13
1483 3707 3007 DCA NUM /INTO LOC NUM
1484 3710 4163 JMS FPPST /START FPP
1485 3711 4462 JMS I PROGB /8MODE CONTROL
1486 3712 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1487 /
1488 /SET UP AND START FPP14 TEST
1489 /TO BE EXECUTED IN DOUBLE PRECISION MODE
1490 /
1491 3713 1123 T14, TAD K14 /LOAD TEST NUMBER 14
1492 3714 3007 DCA NUM /INTO LOC NUM
1493 3715 4444 JMS I CLLSW /CLEAR LSW OF RAN ARG IN TABLE3
1494 3716 4163 JMS FPPST /START FPP
1495 3717 4462 JMS I PROGB /8MODE CONTROL
1496 3720 3106 DCA TBL3 /CLEAR TABLE3 FLAG

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1497
1498 /SET UP AND START FPP15 TEST
1499 /TO BE EXECUTED IN FLOATING POINT MODE
1500 /
1501 3721 1124 T15, TAD K15 /LOAD TEST NUMBER 15
1502 3722 3007 DCA NUM /INTO LOC NUM
1503 3723 4445 JMS I ALTEX /ALTER RAN NUM EXP IN TABLE1
1504 3724 4163 JMS FPPST /START FPP
1505 3725 4462 JMS I PROGB /8MODE CONTROL
1506 3726 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1507 /
1508 /SET UP AND START FPP16 TEST
1509 /TO BE EXECUTED IN DOUBLE PRECISION PRINT MODE
1510 /
1511 3727 1125 T16, TAD K16 /LOAD TEST NUMBER 16
1512 3730 3007 DCA NUM /INTO LOC NUM
1513 3731 4163 JMS FPPST /START FPP
1514 3732 4462 JMS I PROGB /8MODE CONTROL
1515 3733 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1516 /
1517 /SET UP AND START FPP17 TEST
1518 /TO BE EXECUTED IN FLOATING POINT MODE
1519 /
1520 3734 1126 T17, TAD K17 /LOAD TEST NUMBER 17
1521 3735 3007 DCA NUM /INTO LOC NUM
1522 3736 4163 JMS FPPST /START FPP
1523 3737 4462 JMS I PROGB /8MODE CONTROL
1524 3740 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1525 3741 1102 TAD EPMOPT /READ EPM FLAG
1526 3742 7640 SEA CLA /SKIP IF EPM OPTION
1527 3743 5200 JMP STAR /RE-START TESTS
1528 /
1529 /SET UP AND START FPP20 TEST
1530 /TO BE EXECUTED IN EXTENDED PRECISION MODE
1531 /
1532 3744 1127 T20, TAD K20 /LOAD TEST NUMBER 20
1533 3745 3007 DCA NUM /INTO LOC NUM
1534 3746 4163 JMS FPPST /START FPP
1535 3747 4462 JMS I PROGB /8MODE CONTROL
1536 3750 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1537 /
1538 /SET UP AND START FPP21 TEST
1539 /TO BE EXECUTED IN EXTENDED PRECISION MODE
1540 /
1541 3751 1130 T21, TAD K21 /LOAD TEST NUMBER 21
1542 3752 3007 DCA NUM /INTO LOC NUM
1543 3753 4163 JMS FPPST /START FPP
1544 3754 4462 JMS I PROGB /8MODE CONTROL
1545 3755 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1546 /
1547 /SET UP AND START FPP22 TEST
1548 /TO BE EXECUTED IN EXTENDED PRECISION MODE
1549 /
1550 3756 1131 T22, TAD K22 /LOAD TEST NUMBER 22
1551 3757 3007 DCA NUM /INTO LOC NUM

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1552 3760 4163 JMS FPPST /START FPP
1553 3761 4462 JMS I PROGB /8MODE CONTROL
1554 3762 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1555 /
1556 /SET UP AND START FPP23 TEST
1557 /TO BE EXECUTED IN PRECISION MODE
1558 /
1559 3763 1132 T23, TAD K23 /LOAD TEST NUMBER 23
1560 3764 3007 DCA NUM /INTO LOC NUM
1561 3765 4163 JMS FPPST /START FPP
1562 3766 4462 JMS I PROGB /8MODE CONTROL
1563 3767 3105 DCA TBL1 /CLEAR TABLE1 FLAG
1564 /
1565 /SET UP AND START FPP24 TEST
1566 /TO BE EXECUTED IN EXTENDED PRECISION MODE
1567 /
1568 3770 1133 T24, TAD K24 /LOAD TEST NUMBER 24
1569 3771 3007 DCA NUM /INTO LOC NUM
1570 3772 4163 JMS FPPST /START FPP
1571 3773 4462 JMS I PROGB /8MODE CONTROL
1572 3774 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1573 3775 5200 JMP STAR /RE-START TEST5
1574 /
1575 /
1576 /
1577 /
1578 /
1579 //
1580 /FLOATING POINT CODE AREA
1581 //
1582 /
1583 /THIS FIRST SECTION <FPP1-FPP17> OF THE FPP ARITHMETIC
1584 /TEST OPERATES ON RANDOM NUMBER ARGUMENTS
1585 /IN TABLE1 IF FLOATING POINT MODE
1586 /OR TABLE3 IF DOUBLE PRECISION MODE
1587 /THE OPERATIONS ARE OF THE FORM A+A=A
1588 /OR A+A/A WHERE THE RESULT EXPECTED IS
1589 /THE RANDOM NUMBER ARGUMENT ITSELF
1590 /THE RESULTS ARE STORED IN
1591 /TABLE2 IF FLOATING POINT MODE
1592 /OR TABLE4 IF DOUBLE PRECISION MODE
1593 /THESE TABLES ARE 400 OCTAL LOCATIONS
1594 /IN LENGTH AND ARE LOCATED IN NUMERICAL SEQUENCE
1595 /STARTING AT LOCATION 6000 OF LOWER 4K
1596 /AND ENDING AT LOCATION 7777 OF LOWER 4K
1597 /
1598 /THE SECOND SECTION <FPP20-FPP24> OF THE ARITHMETIC
1599 /TEST OPERATES IN THE SAME WAY AS THE PREVIOUS SECTION
1600 /EXCEPT THAT THE EXTENDED MODE OF OPERATION IS TESTED
1601 /THIS EXTENDED PRECISION MODE OF OPERATION <EPM>
1602 /USES THE SAME TABLES AS THE PREVIOUS SECTION BUT ALL
1603 /IN THE SAME FLOATING POINT MODE
1604 /
1605 /EXECUTE IN FLOATING POINT MODE
1606 /MOVE RANDOM ARG TABLE1 TO TABLE2

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1607
1608          4000          *4000
1609      4000  1130      FPP1,  JSR
1610      4001  4713      FSET          /SETUP FOR TST
1611      4002  2005      STARTF
1612      4003  0510      FLDA!510      /LOAD FROM TABLE1
1613      4004  5775      TABLE1=3
1614      4005  6530      FSTA!530      /STORE IN TABLE 2
1615      4006  6375      TABLE2=3
1616      4007  1130      JSR          /COMPARE TABLE1 WITH TABLE2
1617      4010  5017      FCMPR
1618      4011  2100      JXN!100      /COMPLETED BLOCK
1619      4012  4003      FPP1+3
1620      4013  0002      FCLA          /YES
1621      4014  1210      FADD!210      /LOCK ONTO TST
1622      4015  1040      JNE          /IF OFFSET 10 IS NON-ZERO
1623      4016  4000      FPP1
1624      4017  0000      FEXIT          /NO-EXIT
1625
1626          /EXECUTE IN DOUBLE PRECISION MODE
1627          /MOVE RANDOM ARG TABLES TO TABLE4
1628
1629      4020  1130      FPP2,  JSR
1630      4021  5156      DPSET          /SETUP FOR TST
1631      4022  0006      STARTO
1632      4023  0510      FLDA!510      /LOAD RANDOM ARG
1633      4024  6776      TABLE3=2      /FROM TABLE3
1634      4025  6530      FSTA!530      /STORE SAME
1635      4026  7376      TABLE4=2      /IN TABLE4
1636      4027  1130      JSR          /JMP=SAVE RETURN
1637      4030  5266      DPCMPR      /TO COMPARE SUB
1638      4031  2100      JXN!100      /COMPLETED BLOCK
1639      4032  4023      FPP2+3
1640      4033  0002      FCLA          /YES
1641      4034  1210      FADD!210      /LOCK ONTO TST
1642      4035  1040      JNE          /IF OFFSET 10 IS NON-ZERO
1643      4036  4020      FPP2
1644      4037  0000      FEXIT          /NO-EXIT
1645
1646          /EXECUTE IN FLOATING POINT MODE
1647          /ADD SUBTRACT TEST
1648
1649      4040  1130      FPP3,  JSR          /JMP=SAVE RETURN
1650      4041  4713      FSET          /SETUP SUB
1651      4042  0005      STARTF
1652      4043  0510      FLDA!510      /LOAD RANDOM ARG
1653      4044  5775      TABLE1=3      /FROM TABLE1
1654      4045  1410      FADD!410      /A+A
1655      4046  5775      TABLE1=3
1656      4047  2410      FSUB!410      /A+A=A
1657      4050  5775      TABLE1=3
1658      4051  6530      FSTA!530      /STORE IN TABLE2
1659      4052  6375      TABLE2=3
1660      4053  1130      JSR          /JMP=SAVE RETURN
1661      4054  5041      FCMPAS      /COMPARE SUB

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1662	4055	2100	JXN1100	/COMPLETED BLOCK
1663	4056	4043	FPP3+3	
1664	4057	0002	FCLA	/YES
1665	4060	1210	FADD1210	/LOCK ONTO TST
1666	4061	1040	JNE	/IF OFFSET 10 IS NON-ZERO
1667	4062	4040	FPP3	
1668	4063	0000	FEXIT	/NO=EXIT
1669				
1670			/EXECUTE IN DOUBLE PRECISION MODE	
1671			/ADD=SUBTRACT TEST	
1672				
1673	4064	1130	FPP4, JSR	/JMP=SAVE RETURN
1674	4065	5156	DPSET	/SETUP SUB
1675	4066	0006	STARTD	
1676	4067	0510	FLDA:510	/LOAD RANDOM ARG
1677	4070	6776	TABLE3=2	/FROM TABLE3
1678	4071	1410	FADD1410	/A+A
1679	4072	6776	TABLE3=2	
1680	4073	2410	FSUB1410	/A+A=A
1681	4074	6776	TABLE3=2	
1682	4075	6530	FSTA:530	/STORE RESULT
1683	4076	7376	TABLE4=2	/IN TABLE4
1684	4077	1130	JSR	/JMP=SAVE RETURN
1685	4100	5266	DPCMPR	/COMPARE SUB
1686	4101	2100	JXN1100	/COMPLETED BLOCK
1687	4102	4067	FPP4+3	
1688	4103	0002	FCLA	/YES
1689	4104	1210	FADD1210	/LOCK ONTO TEST
1690	4105	1040	JNE	/IF OFFSET 10 IS NON-ZERO
1691	4106	4064	FPP4	
1692	4107	0000	FEXIT	/NO=EXIT
1693				
1694			/EXECUTE IN FLOATING POINT MODE	
1695			/MULTIPLY=DIVIDE TEST	
1696				
1697	4110	1130	FPP5, JSR	/JMP=SAVE RETURN
1698	4111	4713	FSET	/SETUP SUB
1699	4112	0005	STARTF	
1700	4113	0510	FLDA:510	/LOAD RANDOM ARG
1701	4114	5775	TABLE1=3	/FROM TABLE1
1702	4115	0004	FNORM	/NORMALIZE
1703	4116	6212	FSTA:212	/STORE IN OFFSET 12
1704	4117	4410	FMUL1410	/A*A
1705	4120	5775	TABLE1=3	
1706	4121	6214	FSTA:214	/STORE IN OFFSET 14
1707	4122	3212	FDIV1212	/A*A/A
1708	4123	6530	FSTA:530	/STORE RESULT
1709	4124	6375	TABLE2=3	/IN TABLE2
1710	4125	1130	JSR	/JMP=SAVE RETURN
1711	4126	5072	FCMPMD	/COMPARE SUB
1712	4127	2100	JXN:100	/COMPLETED BLOCK
1713	4130	4113	FPP5+3	
1714	4131	0002	FCLA	/YES
1715	4132	1210	FADD1210	/LOCK ONTO TST
1716	4133	1040	JNE	/IF OFFSET 10 IS NON-ZERO

1717	4134	4110	FPP5	
1718	4135	0000	FEXIT	/NO-EXIT
1719				
1720			/EXECUTE IN DOUBLE PRECISION MODE	
1721			/MULTIPLY-DIVIDE TEST	
1722			/	
1723	4136	1130	FPP6, JSR	/JMP=SAVE RETURN
1724	4137	5156	DPSET	/SETUP ROUTINE
1725	4140	0000	STARTD	
1726	4141	0510	FLDA:510	/LOAD RANDOM ARG
1727	4142	6776	TABLE3=2	/FROM TABLE3
1728	4143	4410	FMUL:410	/A*A
1729	4144	6776	TABLE3=2	
1730	4145	6214	FSTA:214	/STORE IN OFFSET 14
1731	4146	3410	FDIV:410	/A/A/A
1732	4147	6776	TABLE3=2	
1733	4150	6530	FSTA:530	/STORE RESULT
1734	4151	7376	TABLE4=2	/IN TABLE4
1735	4152	1130	JSR	/JMP=SAVE RETURN
1736	4153	5266	DPCMPR	/COMPARE SUB
1737	4154	2100	JXN:100	/COMPLETED BLOCK
1738	4155	4141	FPP6=3	
1739	4156	0002	FCLA	/YES
1740	4157	1210	FADD:210	/LOCK ONTO TST
1741	4160	1040	JNE	/IF OFFSET 10 IS NON-ZERO
1742	4161	4136	FPP6	
1743	4162	0000	FEXIT	/NO-EXIT
1744				
1745			/EXECUTED IN FLOATING POINT MODE	
1746			/NORMALIZE=ALIGN TEST	
1747			/	
1748	4163	1130	FPP7, JSR	/JMP=SAVE RETURN
1749	4164	4713	FSET	/SETUP SUB
1750	4165	0005	STARTF	
1751	4166	0410	FLDA:410	/LOAD RANDOM ARG
1752	4167	5776	TABLE1=2	/FROM TABLE1
1753	4170	0006	STARTD	
1754	4171	0022	ATX:2	/STORE IN IR 2
1755	4172	0005	STARTF	
1756	4173	0510	FLDA:510	/LOAD RANDOM ARG
1757	4174	5775	TABLE1=3	/FROM TABLE1
1758	4175	0004	FNORM	/NORMALIZE
1759	4176	0012	ALN:2	/ALIGN ON IR 2
1760	4177	0004	FNORM	/ETC
1761	4200	0012	ALN:2	
1762	4201	0004	FNORM	
1763	4202	0012	ALN:2	
1764	4203	0004	FNORM	
1765	4204	0012	ALN:2	
1766	4205	0004	FNORM	
1767	4206	0012	ALN:2	
1768	4207	6530	FSTA:530	/STORE RESULT
1769	4210	6375	TABLE2=3	/IN TABLE2
1770	4211	1130	JSR	/JMP=SAVE RETURN
1771	4212	5017	FCMPR	/COMPARE SUB

1772	4213	2100	JXN1100	/COMPLED BLOCK
1773	4214	4166	FPP7*3	
1774	4215	0002	FCLA	/YES
1775	4216	1210	FADD1210	/LOCK ONTO TST
1776	4217	1040	JNE	/IF OFFSET 10 IS NONZERO
1777	4220	4163	FPP7	
1778	4221	0000	FEXIT	/NO-EXIT
1779			/	
1780			/EXECUTE IN DOUBLE PRECISION MODE	
1781			/TESTS SHIFTING OF THE FAC VIA ALN INST	
1782			/INDEX REG 4 CONTAINS NUM RIGHT SHIFTS	
1783			/INDEX REG 5 CONTAINS NUM LEFT SHIFTS	
1784			/	
1785	4222	1130	FPP10, JSR	/JMP=SAVE RETURN
1786	4223	5167	DPSET1	/SETUP SUB
1787	4224	0006	STARTD	
1788	4225	0712	FLDA!712	/LOAD RAN ARG FROM TABLE 3
1789	4226	0014	ALN!4	/SHIFT VIA IR 4
1790	4227	0015	ALN!5	/SHIFT VIA IR 5
1791	4230	0014	ALN!4	/ETC
1792	4231	0015	ALN!5	
1793	4232	0014	ALN!4	
1794	4233	0015	ALN!5	
1795	4234	0014	ALN!4	
1796	4235	0015	ALN!5	
1797	4236	0014	ALN!4	
1798	4237	0015	ALN!5	
1799	4240	6731	FSTA!731	/STORE RESULT IN TABLE4
1800	4241	1130	JSR	/JMP=SAVE RETURN
1801	4242	5275	DPCPR1	/COMPARE ROUTINE
1802	4243	2100	JXN1100	/COMPLETED BLOCK
1803	4244	4225	FPP10*3	
1804	4245	0002	FCLA	/YES
1805	4246	1210	FADD1210	/LOCK ONTO TST
1806	4247	1040	JNE	/IF OFFSET 10 IS NONZERO
1807	4250	4222	FPP10	
1808	4251	0000	FEXIT	/NO-EXIT
1809			/	
1810			/EXECUTED IN FLOATING POINT MODE	
1811			/ADD TO MEMORY*SUBTRACT TEST	
1812			/PRELIMINARY COMPARE OF FADDM AND FADD RESULTS MADE	
1813			/THEY SHOULD BE EQUAL	
1814			/	
1815	4252	1130	FPP11, JSR	/JMP=SAVE RETURN
1816	4253	4741	FSET1	/SETUP SUB
1817	4254	0005	STARTF	
1818	4255	0713	FLDA!713	/LOAD RAN ARG FROM TABLE1
1819	4256	1734	FADD!734	/A+A
1820	4257	6234	FSTA!234	/STORE IN OFFSET 34
1821	4260	0613	FLDA!613	/LOAD RAN ARG FROM TABLE1
1822	4261	5634	FADDM!634	/A+A TO MEMORY
1823	4262	0634	FLDA!634	/LOAD A+A
1824	4263	2234	FSUB!234	/SUBTRACT OFFSET 34
1825	4264	1000	JEQ	/SHOULD EQUAL ZERO
1826	4265	4267	G011	/YES

1827	4266	0000	FEXIT	/FADDM AND FADD RESULTS DIFFER
1828	4267	0613	G011, FLDA:613	/LOAD ARG IN TABLE1
1829	4270	6634	FSTA:634	/STORE BACK IN TABLE2
1830	4271	1130	JSR	/JMP=SAVE RETURN
1831	4272	5017	FCMPR	/COMPARE
1832	4273	2100	JXN:100	/COMPLETED BLOCK
1833	4274	4255	FPP:103	
1834	4275	0002	FCLA	/YES
1835	4276	1210	FADD:210	/LOCK ONTO TST
1836	4277	1040	JNE	/IF OFFSET 10 IS NON=ZERO
1837	4300	4252	FPP:11	
1838	4301	0000	FEXIT	/NO=EXIT
1839			/	
1840			/EXECUTED IN DOUBLE PRECISION MODE	
1841			/ADD TO MEMORY=SUBTRACT TEST	
1842			/PRELIMINARY COMPARE OF FADDM AND FADD RESULTS ARE MADE	
1843			/THEY SHOULD BE EQUAL	
1844			/	
1845	4302	1130	FPP:12, JSR	/JMP=SAVE RETURN
1846	4303	5212	DPSET2	/SETUP SUB
1847	4304	0006	START0	
1848	4305	0712	FLDA:712	/LOAD RAN ARG FROM TABLE3
1849	4306	1731	FADD:731	/A+A
1850	4307	6234	FSTA:234	/STORE IN OFFSET 34
1851	4310	0612	FLDA:612	/LOAD RAN ARG FROM TABLE3
1852	4311	5631	FADDM:631	/A+A TO MEMORY
1853	4312	0631	FLDA:631	/LOAD RESULT A+A
1854	4313	2234	FSUB:234	/SUBTRACT OFFSET 34
1855	4314	1000	JEQ	/SHOULD EQUAL ZERO
1856	4315	4317	G012	/YES
1857	4316	0000	FEXIT	/FADDM AND FADD RESULTS DIFFER
1858	4317	0612	G012, FLDA:612	/LOAD ARG IN TABLE3
1859	4320	6631	FSTA:631	/STORE BACK IN TABLE4
1860	4321	1130	JSR	/JMP=SAVE RETURN
1861	4322	5266	DCMPR	/COMPARE SUB
1862	4323	2100	JXN:100	/COMPLETED BLOCK
1863	4324	4305	FPP:1203	
1864	4325	0002	FCLA	/YES
1865	4326	1210	FADD:210	/LOCK ONTO TST
1866	4327	1040	JNE	/IF OFFSET 10 IS NON=ZERO
1867	4330	4302	FPP:12	
1868	4331	0000	FEXIT	/NO=EXIT
1869			/	
1870			/EXECUTED IN FLOATING POINT MODE	
1871			/MULTIPLY TO MEMORY DIVIDE TEST	
1872			/PRELIMINARY COMPARE OF FMULM AND FMUL RESULTS ARE MADE	
1873			/THEY SHOULD BE EQUAL	
1874			/	
1875	4332	1130	FPP:13, JSR	/JMP=SAVE RETURN
1876	4333	4741	FSET1	/SETUP SUB
1877	4334	0005	STARTF	
1878	4335	0713	FLDA:713	/LOAD RAN ARG FROM TABLE1
1879	4336	0004	FNORM	/NORMALIZE
1880	4337	6212	FSTA:212	/STORE IN OFFSET 12
1881	4340	4734	FMUL:734	/A+A

1882	4341	0234	FSTA!234	/STORE IN OFFSET 34
1883	4342	0212	FLDA!212	/LOAD OFFSET 12
1884	4343	7634	FMULM!634	/A*A TO MEMORY
1885	4344	0634	FLDA!634	/LOAD RESULT A*A
1886	4345	2234	FSUB!234	/SUBTRACT OFFSET 34
1887	4346	1000	JEQ	/SHOULD EQUAL ZERO
1888	4347	4351	G013	/YES
1889	4350	0000	FEXIT	/FMULM AND FMUL RESULTS DIFFER
1890	4351	0613	G013, FLDA!613	/GET ARG IN TABLE1
1891	4352	6634	FSTA!634	/STORE BACK IN TABLE2
1892	4353	1130	JSR	/JMP=SAVE RETURN
1893	4354	5017	FCMPR	/COMPARE
1894	4355	2100	JXN!100	/COMPLETED BLOCK
1895	4356	4335	FPP13*3	
1896	4357	0002	FCLA	/YES
1897	4360	1210	FADD!210	/LOCK ONTO TST
1898	4361	1040	JNE	/IF OFFSET 10 IS NON=ZERO
1899	4362	4332	FPP13	
1900	4363	0000	FEXIT	/NO=EXIT
1901			/	
1902			/EXECUTED IN DOUBLE PRECISION MODE	
1903			/MULTIPLY TO MEMORY=DIVIDE TEST	
1904			/PRELIMINARY COMPARE OF FMULM AND FMUL RESULTS ARE MADE	
1905			/THEY SHOULD BE EQUAL	
1906			/	
1907	4364	1130	FPP14, JSR	/JMP=SAVE RETURN
1908	4365	5212	DPSET2	/SETUP SUB
1909	4366	0006	START0	
1910	4367	0712	FLDA!712	/LOAD RAN ARG FROM TABLE3
1911	4370	4731	FMUL!731	/A*A
1912	4371	6234	FSTA!234	/STORE IN OFFSET 34
1913	4372	0612	FLDA!612	/LOAD RAN ARG FROM TABLE3
1914	4373	7631	FMULM!631	/A*A TO MEMORY
1915	4374	0631	FLDA!631	/LOAD RESULT A*A
1916	4375	2234	FSUB!234	/SUBTRACT OFFSET 34
1917	4376	1000	JEQ	/SHOULD EQUAL ZERO
1918	4377	4401	G014	/YES
1919	4400	0000	FEXIT	/FMULM AND FMUL RESULT DIFFERS
1920	4401	0612	G014, FLDA!612	/LOAD ARG IN TABLE3
1921	4402	6631	FSTA!631	/PUT BACK IN TABLE4
1922	4403	1130	JSR	/JMP=SAVE RETURN
1923	4404	5266	DPCMPR	/COMPARE SUB
1924	4405	2100	JXN!100	/COMPLETED BLOCK
1925	4406	4367	FPP14*3	
1926	4407	0002	FCLA	/YES
1927	4410	1210	FADD!210	/LOCK ONTO TST
1928	4411	1040	JNE	/IF OFFSET 10 IS NONZERO
1929	4412	4364	FPP14	
1930	4413	0000	FEXIT	/NO=EXIT
1931			/	
1932			/EXECUTED IN FLOATING POINT MODE	
1933			/ADD SUBSTRACT TEST USING RAN MANTISSA'S	
1934			/COMPARE RESULTS = THEY SHOULD BE EQUAL	
1935			/	
1936	4414	1130	FPP15, JSR	/JMP = SAVE RETURN

```

1937 4415 4773 FSET2 /SETUP ROUTINE
1938 4416 0005 STARTF /SET FLOATING POINT MODE
1939 4417 0006 STARTD /SET DOUBLE PRECISION MODE
1940 4420 0031 XTA!1 /LOAD IR1
1941 4421 0022 ATX!2 /STORE IN IR2
1942 4422 0112 ADDX!2 /ADD
1943 4423 0001 1 /1 TO IR2
1944 4424 0005 STARTF /SET FLOATING POINT MODE
1945 4425 0510 FLOA!510 /LOAD RAN NUM ARG
1946 4426 5775 TABLE1#3 /FROM TABLE1
1947 4427 1520 FADD!520 /ADD RAN NUM ARG 2
1948 4430 5775 TABLE1#3 /FROM TABLE1
1949 4431 2420 FSUB!420 /SUBTRACT RAN NUM ARG 2
1950 4432 5775 TABLE1#3 /IN TABLE1
1951 4433 6530 FSTA!530 /STORE RESULT IN
1952 4434 6375 TABLE2#3 /TABLE2
1953 4435 1130 JSR /JMP = SAVE RETURN
1954 4436 5052 FCPAS1 /COMPARE SUB
1955 4437 2100 JXN!100 /COMPLETED BLOCK
1956 4440 4417 FPP15#3
1957 4441 0002 FCLA /YES
1958 4442 1210 FADD!210 /LOCK ONTO TEST
1959 4443 1040 JNE /IF OFFSET 10 IS NON=ZERO
1960 4444 4414 FPP15
1961 4445 0000 FEXIT /NO = EXIT

```

/
/EXECUTED IN DOUBLE PRECISION MODE
/ADD = SUBTRACT TEST USING RAN NUMS
/

```

1962
1963
1964
1965
1966 4446 1130 FPP16, JSR /JMP = SAVE RETURN
1967 4447 5243 DPSET3 /SETUP ROUTINE
1968 4450 0006 STARTD /START DP MODE
1969 4451 0031 XTA!1 /LOAD IR1
1970 4452 0022 ATX!2 /STORE IN IR2
1971 4453 0112 ADDX!2 /ADD
1972 4454 0001 1 /1 TO IR2
1973 4455 0510 FLOA!510 /LOAD RAN NUM ARG
1974 4456 6776 TABLE3#2 /FROM TABLE 3
1975 4457 1520 FADD!520 /ADD RAN NUM ARG 2
1976 4460 6776 TABLE3#2 /FROM TABLE 3
1977 4461 2420 FSUB!420 /SUBFORMAT RAN NUM ARG 2
1978 4462 6776 TABLE3#2 /IN TABLE 3
1979 4463 6530 FSTA!530 /STORE RESULT IN
1980 4464 7376 TABLE4#2 /TABLE 4
1981 4465 1130 JSR /JMP = SAVE RETURN
1982 4466 5266 OPCMPR /COMPARE SUBROUTINE
1983 4467 2100 JXN!100 /COMPLETED BLOCK
1984 4470 4451 FPP16#3
1985 4471 0002 FCLA /YES
1986 4472 1210 FADD!210 /LOCK ONTO TEST
1987 4473 1040 JNE /IF OFFSET 10 IS NON=ZERO
1988 4474 4446 FPP16
1989 4475 0000 FEXIT /NO = EXIT

```

/
/EXECUTED IN FLOATING POINT MODE

1990
1991



```

1992 /NEGATION TEST ON RAN NUMS
1993 /CHECK RESULTS
1994 /
1995 4476 1130 FPP17; JSR /JMP = SAVE RETURN
1996 4477 4713 FSET /SETUP ROUTINE
1997 4500 0005 STARTF /START FLOATING POINT MODE
1998 4501 0510 FLDA:510 /LOAD RAN NUM ARG
1999 4502 5775 TABLE1=3 /FROM TABLE 1
2000 4503 0004 FNORM /NEGATE
2001 4504 0003 FNEG /ETC
2002 4505 0003 FNEG
2003 4506 0003 FNEG
2004 4507 0040 FNOP
2005 4510 0003 FNEG
2006 4511 0003 FNEG
2007 4512 0003 FNEG
2008 4513 6530 FSTA:530 /STORE RESULT IN
2009 4514 6375 TABLE2=3 /TABLE 2
2010 4515 1130 JSR /JMP = SAVE RETURN
2011 4516 5143 FCP17 /COMPARE ROUTINE
2012 4517 2100 JXN:100 /COMPLETED BLOCK
2013 4520 4501 FPP17=3
2014 4521 0002 FCLA /YES
2015 4522 1210 FADD:210 /LOCK ONTO TEST
2016 4523 1040 JNE /IF OFFSET 10 IS NON-ZERO
2017 4524 4476 FPP17
2018 4525 0000 FEXIT /NO = EXIT
2019 /
2020 /EXECUTED IN EXTENDED PRECISION MODE
2021 /MOVE RAN NUM ARG FROM TABLE 3 TO TABLE 4
2022 /CHECK RESULT
2023 /
2024 4526 1130 FPP20; JSR /JMP = SAVE RETURN
2025 4527 5302 EPSET /SETUP ROUTINE
2026 4530 0050 STARTE /SET EXTENDED PRECISION MODE
2027 4531 0510 FLDA:510 /LOAD RAN NUM ARG
2028 4532 6772 TABLE3=6 /FROM TABLE 3
2029 4533 6530 FSTA:530 /STORE ARG
2030 4534 7372 TABLE4=6 /IN TABLE 4
2031 4535 1130 JSR /JMP = SAVE RETURN
2032 4536 5326 EPCPR /COMPARE ROUTINE
2033 4537 2100 JXN:100 /COMPLETED BLOCK
2034 4540 4531 FPP20=3
2035 4541 0002 FCLA /YES
2036 4542 1210 FADD:210 /LOCK ONTO TEST
2037 4543 1040 JNE /IF OFFSET 10 IS NON-ZERO
2038 4544 4526 FPP20
2039 4545 0000 FEXIT /NO = EXIT
2040 /
2041 /EXECUTED IN EXTENDED PRECISION MODE
2042 /NEGATION TEST ON RAN NUMS
2043 /CHECK RESULTS
2044 /
2045 4546 1130 FPP21; JSR /JMP = SAVE RETURN
2046 4547 5302 EPSET /SETUP ROUTINE

```

2047	4550	0050	STARTE	/SET EXTENDED PRECISION MODE
2048	4551	0510	FLDA:510	/LOAD RAN NUM ARG
2049	4552	5772	TABLE1=6	/FROM TABLE 1
2050	4553	0004	FNORM	/NORMALIZE
2051	4554	2003	FNEG	/NEGATE
2052	4555	0003	FNEG	/ETC
2053	4556	0040	FNOP	
2054	4557	0003	FNEG	
2055	4560	0003	FNEG	
2056	4561	0003	FNEG	
2057	4562	0040	FNOP	
2058	4563	0003	FNEG	
2059	4564	0003	FNEG	
2060	4565	0003	FNEG	
2061	4566	6530	FSTA:530	/STORE RESULT
2062	4567	6372	TABLE2=6	/IN TABLE 2
2063	4570	1130	JSR	/JMP = SAVE RETURN
2064	4571	5335	ECPR1	/COMPARE ROUTINE
2065	4572	2100	JXN:100	/COMPLETED BLOCK
2066	4573	4551	FPP21+3	
2067	4574	0002	FCLA	/YES
2068	4575	1210	FADD:210	/LOCK ONTO TEST
2069	4576	1040	JNE	/IF OFFSET 10 IS NONZERO
2070	4577	4546	FPP21	
2071	4600	0000	FEXIT	/NO = EXIT
2072			/	
2073			/EXECUTED IN EXTENDED PRECISION MODE	
2074			/ALIGN = NORMALIZE TEST ON RAN NUMS	
2075			/CHECK RESULTS	
2076			/	
2077	4601	1130	FPP22, JSR	/JMP = SAVE RETURN
2078	4602	5302	EPSET	/SETUP ROUTINE
2079	4603	0050	STARTE	/START EXTENDED PRECISION MODE
2080	4604	0410	FLDA:410	/LOAD RAN NUM ARG
2081	4605	6776	TABLE3=2	/FROM TABLE 3
2082	4606	0006	STARTD	/SET DOUBLE PRECISION MODE
2083	4607	0022	ATX:2	/STORE TO IR2
2084	4610	0050	STARTE	/SET EXTENDED PRECISION MODE
2085	4611	0510	FLDA:510	/LOAD RAN NUM ARG
2086	4612	6772	TABLE3=6	/FROM TABLE 3
2087	4613	0004	FNORM	/NORMALIZE
2088	4614	0012	ALN:2	/ALIGN TO IR2
2089	4615	0004	FNORM	/NORMALIZE
2090	4616	0012	ALN:2	/ALIGN TO IR2
2091	4617	0012	ALN:2	/ETC
2092	4620	0004	FNORM	
2093	4621	0012	ALN:2	
2094	4622	0004	FNORM	
2095	4623	0004	FNORM	
2096	4624	0012	ALN:2	
2097	4625	0004	FNORM	
2098	4626	0012	ALN:2	
2099	4627	6530	FSTA:530	/STORE RESULT
2100	4630	7372	TABLE4=6	/IN TABLE 4
2101	4631	1130	JSR	/JMP = SAVE RETURN

```

2102 4632 5326 EPCPR /COMPARE ROUTINE
2103 4633 2100 JXN:100 /COMPLETED BLOCK
2104 4634 4604 FPP22*3
2105 4635 0002 FCLA /YES
2106 4636 1210 FADD:1210 /LOCK ONTO TEST
2107 4637 1040 JNE /IF OFFSET 10 IS NON-ZERO
2108 4640 4601 FPP22
2109 4641 0000 FEXIT /NO = EXIT
2110
2111 /EXECUTED IN EXTENDED PRECISION MODE
2112 /ADD = SUBTRACT TEST ON RAN NUMS
2113 /CHECK RESULTS
2114
2115 4642 1130 FPP23, JSR /JMP = SAVE RETURN
2116 4643 5302 EPSET /SETUP ROUTINE
2117 4644 0050 STARTE /SET EXTENDED PRECISION MODE
2118 4645 0510 FLDA:510 /LOAD RAN NUM ARG
2119 4646 5772 TABLE1*6 /FROM TABLE1
2120 4647 1410 FADD:1410 /ADD RAN NUM ARG
2121 4650 5772 TABLE1*6 /TABLE1
2122 4651 2410 FSUB:1410 /SUBTRACT RAN NUM ARG
2123 4652 5772 TABLE1*6 /TABLE1
2124 4653 6530 FSTA:530 /STORE RESULT
2125 4654 6372 TABLE2*6 /IN TABLE2
2126 4655 1130 JSR /JMP = SAVE RETURN
2127 4656 5344 ECPRAS /COMPARE ROUTINE
2128 4657 2100 JXN:100 /COMPLETED BLOCK
2129 4660 4645 FPP23*3
2130 4661 0002 FCLA /YES
2131 4662 1210 FADD:1210 /LOCK ONTO TEST
2132 4663 1040 JNE /IF OFFSET 10 IS NON-ZERO
2133 4664 4642 FPP23
2134 4665 0000 FEXIT /NO = EXIT
2135
2136 /EXECUTED IN EXTENDED PRECISION MODE
2137 /MULTIPLY = DIVIDE TEST ON RAN NUMS
2138 /CHECK RESULTS
2139
2140 4666 1130 FPP24, JSR /JMP = SAVE RETURN
2141 4667 5302 EPSET /SETUP ROUTINE
2142 4670 0050 STARTE /SET EXTENDED PRECISION MODE
2143 4671 0510 FLDA:510 /LOAD RAN NUM ARG
2144 4672 6772 TABLE3*6 /FROM TABLE3
2145 4673 0004 FNORM /NORMALIZE
2146 4674 6212 FSTA:212 /STORE IN OFFSET 12
2147 4675 4212 FMUL:212 /MULTIPLY BY OFFSET 12
2148 4676 6214 FSTA:214 /STORE IN OFFSET 14
2149 4677 3212 FDIV:212 /DIVIDE WITH OFFSET 12
2150 4700 6530 FSTA:530 /STORE RESULT
2151 4701 7372 TABLE4*6 /IN TABLE4
2152 4702 1130 JSR /JMP = SAVE RETURN
2153 4703 5377 ECPRMD /COMPARE ROUTINE
2154 4704 2100 JXN:100 /COMPLETED BLOCK
2155 4705 4671 FPP24*3
2156 4706 0002 FCLA /YES

```

```

2157 4707 1210 FADD1210 /LOCK ONTO TEST
2158 4710 1040 JNE /IF OFFSET 10 IS NON-ZERO
2159 4711 4666 FPP24
2160 4712 0000 FEXIT /NO = EXIT
2161 /
2162 /
2163 /
2164 /ENTERED ONLY IN FLOATING POINT MODE
2165 /SET UP OF FPP INDEX REGISTERS
2166 /
2167 4713 0005 FSET, STARTF
2168 4714 0002 FCLA /CLEAR THE FAC
2169 4715 0100 LDX10 /LOAD IR 0
2170 4716 7653 7653 /WITH =125
2171 4717 0101 LDX11 /LOAD IR 1
2172 4720 0000 0 /WITH 0
2173 4721 0102 LDX12 /LOAD IR 2
2174 4722 0000 0 /WITH 0
2175 4723 0103 LDX13 /LOAD IR 3
2176 4724 0000 0 /WITH 0
2177 4725 0103 LDX13 /ETC
2178 4726 0000 0
2179 4727 0104 LDX14
2180 4730 0000 0
2181 4731 0105 LDX15
2182 4732 0000 0
2183 4733 0106 LDX16
2184 4734 0000 0
2185 4735 0107 LDX17
2186 4736 0000 0
2187 4737 1030 JA /JMP ALWAYS
2188 4740 5001 BASE+1 /OFFSET 0 IN BASE REG TABLE
2189 /
2190 /ENTERED ONLY IN FLOATING POINT MODE
2191 /SETS UP FPP INDEX REGISTERS
2192 /DUPLICATES TABLE1 INTO TABLE2
2193 /
2194 4741 0005 FSET1, STARTF /SET FLOATING POINT MODE
2195 4742 0002 FCLA /CLEAR THE FAC
2196 4743 0100 LDX10 /LOAD IR 0
2197 4744 7653 7653 /WITH =125
2198 4745 0101 LDX11 /LOAD IR 1
2199 4746 0000 0 /WITH 0
2200 4747 0102 LDX12 /LOAD IR 2
2201 4750 7653 7653 /WITH =125
2202 4751 0103 LDX13 /LOAD IR 3
2203 4752 0000 0 /WITH 0
2204 4753 0104 LDX14 /LOAD IR 4
2205 4754 0000 0 /WITH 0
2206 4755 0105 LDX15 /LOAD IR 5
2207 4756 0000 0 /WITH 0
2208 4757 0106 LDX16 /ETC
2209 4760 0000 0
2210 4761 0107 LDX17
2211 4762 0000 0

```

```

2212 4763 0540 MORE, FLDA1540 /LOAD RAN ARG
2213 4764 5775 TABLE1#3 /IN TABLE1
2214 4765 6550 FSTA1550 /STORE RAN ARG
2215 4766 6375 TABLE2#3 /IN TABLE2
2216 4767 2120 JXN1120 /DONE 125 TIMES
2217 4770 4763 MORE /NO=DO IT AGAIN
2218 4771 1030 JA /JMP ALWAYS
2219 4772 5601 BASE#1 /OFFSET 0 IN BASE REG TABLE
2220 /
2221 /ENTERED ONLY IN FLOATING POINT MODE
2222 /SETS UP FPP INDEX REGISTERS
2223 /
2224 4773 0005 FSET2, STARTF /SET FLOATING POINT MODE
2225 4774 0002 FCLA /CLEAR THE FAC
2226 4775 0100 LDX10 /LOAD IR 0
2227 4776 7654 7654 /WITH =124
2228 4777 0101 LDX11 /LOAD IR 1
2229 5000 0000 0 /WITH 0
2230 5001 0102 LDX12 /ETC
2231 5002 0001 1
2232 5003 0103 LDX13
2233 5004 0000 0
2234 5005 0104 LDX14
2235 5006 0000 0
2236 5007 0105 LDX15
2237 5010 0000 0
2238 5011 0106 LDX16
2239 5012 0000 0
2240 5013 0107 LDX17
2241 5014 0000 0
2242 5015 1030 JA /JMP ALWAYS
2243 5016 5601 BASE#1 /OFFSET 0 IN BASE REG TABLE
2244 /
2245 /
2246 /ENTER ONLY IN FLOATING POINT MODE
2247 /COMPARE TABLE1 WITH TABLE2
2248 /THEY SHOULD BE EQUAL
2249 /TEST OFFSET 16 IN BASE REG TABLE
2250 /IF NOT ZERO
2251 /DECREMENT INDEX REGISTERS AND
2252 /EXECUTE SAME ARGUMENT IN TABLE1 AGAIN
2253 /THE RET PORTION OF THIS ROUTINE
2254 /IS USED BY ALL OTHER COMPARE ROUTINES
2255 /IN BOTH FLOATING POINT AND DOUBLE PRECISION MODE
2256 /
2257 5017 0410 FCMPR, FLDA1410 /LOAD RAN ARG
2258 5020 5775 TABLE1#3 /IN TABLE1
2259 5021 2430 FSUB1430 /SUBTRACT RESULT
2260 5022 6375 TABLE2#3 /IN TABLE2
2261 5023 1000 JEQ /JMP IF FAC=0
2262 5024 5026 RET /RET ROUTINE TO REENTER MAIN FPP PROG
2263 5025 0000 FEXIT /DATA ERROR EXIT
2264 5026 0224 RET, FLDA1224 /LOAD OFFSET 16 IN BASE REG TABLE
2265 5027 1000 JEQ /JMP IF FAC=0=IF, DONT LOCK ONTO TEST SEQ
2266 5030 5037 RETINC /RETURN TO MAIN FPP PROG

```

```

2267 5031 0110          ADDX10          /ADD TO IR 0
2268 5032 7777          7777           /=1
2269 5033 0111          ADDX11          /ADD TO IR 1
2270 5034 7777          7777           /=1
2271 5035 0113          ADDX13          /ADD TO IR 3
2272 5036 7777          7777           /=1
2273 5037 1030          RETING, JA      /JMP ALWAYS
2274 5040 5001          BASE+1        /OFFSET OF 0 IN BASE REG
2275
2276                    /
2276                    /ENTER ONLY IN FLOATING POINT MODE
2277                    /FROM AN ADDITION=SUBTRACTION TEST
2278                    /COMPARE TABLE1 WITH TABLE2
2279                    /THEY SHOULD BE EQUAL
2280                    /
2281 5041 0410          FCPAS, FLOA1410 /LOAD RAN ARG
2282 5042 5775          TABLE1=3     /IN TABLE1
2283 5043 2430          FSUB1430      /SUBTRACT RESULT
2284 5044 6375          TABLE2=3     /IN TABLE2
2285 5045 1040          JNE           /JMP IF FAC NOT 0
2286 5046 5051          FASCK        /ADD=SUBTRACT DATA ERROR
2287 5047 1030          JA          /JMP ALWAYS
2288 5050 5026          RET         /RET ROUTINE TO REENTER MAIN FPP PROG
2289
2290                    /
2290                    /FLOATING POINT ADD=SUB FAILED
2291                    /
2292 5051 0000          FASCK, FEXIT  /DATA ERROR EXIT
2293
2294                    /
2294                    /ENTER ONLY IN FLOATING POINT MODE
2295                    /FROM FPP15 TEST
2296                    /FPP15 IS A ADD=SUB TEST
2297                    /USING RANDOM MANTISSAS
2298                    /COMPARE ARG IN TABLE1 WITH RESULT IN TABLE2
2299                    /THEY SHOULD BE EQUAL
2300                    /
2301 5052 0410          FCPAS1, FLOA1410 /LOAD RAN ARG
2302 5053 5775          TABLE1=3     /IN TABLE1
2303 5054 2430          FSUB1430      /SUBTRACT RESULT
2304 5055 6375          TABLE2=3     /IN TABLE2
2305 5056 1040          JNE           /JMP IF FAC NOT 0
2306 5057 5062          CPAS1        /TO CPAS1 ROUTINE
2307 5060 1030          JA          /JMP ALWAYS
2308 5061 5026          RET         /RET ROUTINE TO REENTER MAIN FPP PROG
2309 5062 0006          CPAS1, STARTD /SET DOUBLE PRECISION MODE
2310 5063 1240          FADD1240      /ADD OFFSET 40 OF BASE REG,
2311 5064 0005          STARTF     /SET FLOATING POINT MODE
2312 5065 1040          JNE           /JMP IF FAC NOT 0
2313 5066 5071          FASCK1       /TO FASCK1 ROUTINE
2314 5067 1030          JA          /JMP ALWAYS
2315 5070 5026          RET         /RET ROUTINE TO REENTER MAIN FPP PROG
2316
2317                    /
2317                    /POSSIBLE ERROR = GO TO PDP-8 MODE TEST
2318                    /
2319 5071 0000          FASCK1, FEXIT
2320
2321

```

```

2322 /ENTERED ONLY IN FLOATING POINT MODE
2323 /FROM ROUTINE DOING A MULTIPLY-DIVIDE TEST
2324 /THIS ROUTINE COMPARES TABLE1 WITH TABLE2
2325 /THEY SHOULD BE EQUAL
2326 /
2327 5072 0410 FCMPO, FLDA1410 /LOAD RAN ARG
2328 5073 5775 TABLE1=3 /IN TABLE1
2329 5074 2430 FSUB1430 /SUBTRACT RESULT
2330 5075 6375 TABLE2=3 /IN TABLE2
2331 5076 1040 JNE /JMP IF FAC NOT 0 TO FMDCK
2332 5077 5102 FMDCK /CHECK FOR LEGAL UNDERFLOW OR ROUNDING ERR
2333 5100 1030 JA /JMP ALWAYS
2334 5101 5026 RET /RET ROUTINE TO REENTER MAIN FPP PROG
2335 /
2336 /ENTERED ONLY IN FLOATING POINT MODE
2337 /FROM FCMPO ROUTINE
2338 /WHEN RANDOM ARG DIFFERS FROM RESULT
2339 /BY PLUS OR MINUS 1 DUE TO ROUNDING
2340 /ROUTINE TESTS FOR THIS OCCURANCE
2341 /
2342 5102 0430 FMDCK, FLDA1430 /LOAD RESULT
2343 5103 6375 TABLE2=3 /FROM TABLE2
2344 5104 1000 JEQ /JMP IF FAC=0 TO
2345 5105 5133 FMD /ROUTINE TO TEST FOR LEGAL UNDERFLOW
2346 5106 0006 STARTD
2347 5107 1220 FADD1220 /SUBTRACT 1 CONTAINED IN OFFSET 20 OF BASE REG
2348 5110 0005 STARTF
2349 5111 6222 FSTA1222 /STORE IN OFFSET 22 OF BASE REG
2350 5112 0222 FLDA1222 /LOAD OFFSET 22 IN BASE REG
2351 5113 2410 FSUB1410 /SUBTRACT RAN ARG
2352 5114 5775 TABLE1=3 /IN TABLE1
2353 5115 1000 JEQ /JMP IF FAC=0
2354 5116 5026 RET /RET ROUTINE TO REENTER MAIN FPP PROG
2355 5117 0430 FLDA1430 /LOAD WITH RESULT
2356 5120 6375 TABLE2=3 /IN TABLE2
2357 5121 0006 STARTD
2358 5122 1226 FADD1226 /ADD 1 CONTAINED IN OFFSET 26 OF BASE REG
2359 5123 0005 STARTF
2360 5124 6232 FSTA1232 /STORE IN OFFSET 32 BASE REG
2361 5125 0232 FLDA1232 /LOAD OFFSET 32 IN BASE REG
2362 5126 2410 FSUB1410 /SUBTRACT RAN ARG
2363 5127 5775 TABLE1=3 /IN TABLE1
2364 5130 1000 JEQ /JMP IF FAC=0
2365 5131 5026 RET /RET ROUTINE TO RE-ENTER MAIN FPP PROG
2366 5132 0000 FEXIT /DATA ERROR EXIT
2367 /
2368 /ENTERED ONLY IN FLOATING POINT MODE
2369 /WHEN RESULT HAS ZERO MANTISSA
2370 /ROUTINE TESTS FOR A LEGAL UNDERFLOW
2371 /
2372 5133 0410 FMDO, FLDA1410 /LOAD RANDOM ARG
2373 5134 5775 TABLE1=3 /FROM TABLE1
2374 5135 4216 FMUL1216 /MULTIPLY BY CONSTANT IN OFFSET 16 OF BASE REG
2375 5136 1000 JEQ /JMP IF FAC=0
2376 5137 5026 RET /RET ROUTINE TO MAIN FPP PROG

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2377 5140 0002          FCLA          /CLEAR FAC
2378 5141 6236          FSTA1236      /FLAG 8 UNDERFLOW NOT LEGAL
2379 5142 0000          FEXIT        /DATA ERROR EXIT
2380
2381          /ENTERED ONLY IN FLOATING POINT MODE
2382          /FROM FPP17 TEST
2383          /COMPARES RESULT IN TABLE2 WITH RAN NUM IN TABLE1
2384
2385 5143 0410          /FCP17, FLDA1410      /LOAD RAN ARG
2386 5144 5775          TABLE1=3      /FROM TABLE1
2387 5145 2430          FSUB1430      /SUBTRACT RESULT
2388 5146 6375          TABLE2=3      /IN TABLE2
2389 5147 1060          JGT          /JMP IF FAC GREATER THAN 0
2390 5150 5155          ,+5          /ERROR
2391 5151 1050          JLT          /JMP IF FAC LESS THAN 0
2392 5152 5155          ,+3          /ERROR
2393 5153 1030          JA          /JMP ALWAYS
2394 5154 5026          RET          /RETURN ROUTINE TO REENTER FPP PROG
2395 5155 0000          FEXIT        /DATA ERROR EXIT
2396
2397          /SET UP OF FPP INDEX REGISTERS
2398          /FOR OPERATION IN DOUBLE PRECISION MODE
2399
2400          /
2400 5156 0006          DPSET1, STARTD      /SET DOUBLE PRECISION MODE
2401 5157 0100          LDX10      /LOAD IR 0
2402 5160 7600          7600      /WITH =200
2403 5161 0101          LDX11      /LOAD IR 1
2404 5162 0000          0          /WITH 0
2405 5163 0103          LDX13      /LOAD IR 3
2406 5164 0000          0          /WITH 0
2407 5165 1030          JA          /JMP ALWAYS
2408 5166 5601          BASE+1      /OFFSET 0 IN BASE REG TABLE
2409
2410          /
2410          /SET UP OF FPP INDEX REGISTERS ON PAGE 0
2411          /FOR OPERATION IN DOUBLE PRECISION MODE
2412          /ENTERED FROM FPP10 TEST
2413          /
2413 5167 0006          DPSET1, STARTD
2414 5170 0100          LDX10      /LOAD IR 0
2415 5171 7600          7600      /WITH =200
2416 5172 0101          LDX11      /LOAD IR 1
2417 5173 0000          0          /WITH 0
2418 5174 0102          LDX12      /LOAD IR 2
2419 5175 0000          0          /WITH 0
2420 5176 0103          LDX13      /LOAD IR 3
2421 5177 0000          0          /WITH 0
2422 5200 0104          LDX14      /LOAD IR 4
2423 5201 0014          14         /WITH 14
2424 5202 0105          LDX15      /LOAD IR 5
2425 5203 7764          7764      /WITH =14
2426 5204 0106          LDX16      /LOAD IR 6
2427 5205 0000          0          /WITH 0
2428 5206 0107          LDX17      /LOAD IR 7
2429 5207 0000          0          /WITH 0
2430 5210 1030          JA          /JMP ALWAYS
2431

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```

2432 5211 5601          BASE+1          /OFFSET 0 IN BASE REG TABLE
2433
2434          /SET UP OF FPP INDEX REGISTERS ON PAGE 0
2435          /DUPLICATION OF TABLE3 INTO TABLE4
2436          /
2437 5212 0006          OPSET2, STARTD
2438 5213 0100          LDX10          /LOAD IR 0
2439 5214 7600          7600          /WITH =200
2440 5215 0101          LDX11          /LOAD IR 1
2441 5216 0000          0          /WITH 0
2442 5217 0102          LDX12          /LOAD IR 2
2443 5220 7600          7600          /WITH =200
2444 5221 0103          LDX13          /LOAD IR 3
2445 5222 0000          0          /WITH 0
2446 5223 0104          LDX14          /LOAD IR 4
2447 5224 0000          0          /WITH 0
2448 5225 0105          LDX15          /LOAD IR 5
2449 5226 0000          0          /WITH 0
2450 5227 0106          LDX16          /LOAD IR 6
2451 5230 0000          0          /WITH 0
2452 5231 0107          LDX17          /LOAD IR 7
2453 5232 0000          0          /WITH 0
2454 5233 0540          MOR,          FLDA1540          /LOAD RAN ARG
2455 5234 6776          TABLE3=2          /FROM TABLE3
2456 5235 6550          FSTA1550          /STORE IT
2457 5236 7376          TABLE4=2          /IN TABLE4
2458 5237 2120          JXN1120          /DONE 200 TIMES
2459 5240 5233          MOR          /NO=DO IT AGAIN
2460 5241 1030          JA          /JMP ALWAYS
2461 5242 5601          BASE+1          /OFFSET 0 IN BASE REG TABLE
2462          /
2463          /SET UP FPP INDEX REGISTERS ON PAGE 0
2464          /FOR USE IN DOUBLE PRECISION MODE
2465          /
2466 5243 0006          OPSET3, STARTD          /SET DOUBLE PRECISION MODE
2467 5244 0100          LDX10          /LOAD IR 0
2468 5245 7601          7601          /WITH =177
2469 5246 0101          LDX11          /LOAD IR 1
2470 5247 0000          0          /WITH 0
2471 5250 0102          LDX12          /LOAD IR 2
2472 5251 0001          1          /WITH 1
2473 5252 0103          LDX13          /LOAD IR 3
2474 5253 0000          0          /WITH 0
2475 5254 0104          LDX14          /ETC
2476 5255 0000          0
2477 5256 0105          LDX15
2478 5257 0000          0
2479 5260 0106          LDX16
2480 5261 0000          0
2481 5262 0107          LDX17
2482 5263 0000          0
2483 5264 1030          JA          /JUMP ALWAYS
2484 5265 5601          BASE+1          /OFFSET 0 IN BASE REG; TABLE
2485          /
2486          /

```

```

2487 /COMPARES DOUBLE PRECISION NUMBERS
2488 /TABLE3 WITH TABLE4
2489 /USING DOUBLE WORD DIRECT REFERENCE INSTRUCTIONS
2490 /
2491 5266 0410 DPCMPR, FLDA1410 /LOAD RANDOM ARG
2492 5267 6776 TABLE3=2 /FROM TABLE3
2493 5270 2430 FSUB1430 /SUBTRACT RESULT
2494 5271 7376 TABLE4=2 /FROM TABLE4
2495 5272 1000 JEQ /JMP IF FAC=0
2496 5273 5026 RET /TO RET
2497 5274 0000 FEXIT /DATA ERROR EXIT
2498 /
2499 /COMPARES DOUBLE PRECISION NUMBERS
2500 /TABLE3 WITH TABLE4
2501 /USING SINGLE WORD INDIRECT REFERENCE INSTRUCTIONS
2502 /
2503 5275 0631 DPCPR1, FLDA1631 /LOAD RESULT FROM TABLE4
2504 5276 2612 FSUB1612 /SUBTRACT RAN ARG FROM TABLE3
2505 5277 1000 JEQ /JMP IF FAC=0
2506 5300 5026 RET /TO RET
2507 5301 0000 FEXIT /DATA ERROR EXIT
2508 /
2509 /SET UP FPP INDEX REGISTERS ON PAGE 0
2510 /FOR USE IN EXTENDED PRECISION MODE
2511 /
2512 5302 0050 EPSET, STARTE /SET EXTENDED PRECISION MODE
2513 5303 0002 FCLEAR /CLEAR FAC
2514 5304 0100 LDX10 /LOAD IR 0
2515 5305 7726 /WITH 7726
2516 5306 0101 LDX11 /LOAD IR 1
2517 5307 0000 /WITH 0
2518 5310 0102 LDX12 /ETC
2519 5311 0000 /
2520 5312 0103 LDX13
2521 5313 0000 /
2522 5314 0104 LDX14
2523 5315 0000 /
2524 5316 0105 LDX15
2525 5317 0000 /
2526 5320 0106 LDX16
2527 5321 0000 /
2528 5322 0107 LDX17
2529 5323 0000 /
2530 5324 1030 JA /JMP ALWAYS
2531 5325 5601 BASE+1 /OFFSET 0 IN BASE REG TABLE
2532 /
2533 /COMPARES EXTEND PRECISION NUMBERS
2534 /TABLE3 WITH TABLE4
2535 /USING DOUBLE WORD DIRECT REFERENCE INSTRUCTIONS
2536 /
2537 5326 0410 EPCPR, FLDA1410 /LOAD RAN ARG
2538 5327 6776 TABLE3=6 /FROM TABLE3
2539 5330 2430 FSUB1430 /SUBTRACT RESULT
2540 5331 7376 TABLE4=6 /IN TABLE4
2541 5332 1000 JEQ /JMP IF FAC=0

```

```

2542 5333 5026 RET /TO RET
2543 5334 0000 FEXIT /DATA ERROR EXIT
2544 /
2545 /COMPARE EXTENDED PRECISION NUMBERS
2546 /TABLE1 WITH TABLE2
2547 /USING DOUBLE WORD DIRECT REFERENCE INSTRUCTIONS
2548 /
2549 5335 0410 ECPRI, FLDA1410 /LOAD RAN ARG
2550 5336 5772 TABLE1=6 /FROM TABLE1
2551 5337 2430 FSUB1430 /SUBTRACT RESULT
2552 5340 6372 TABLE2=6 /IN TABLE2
2553 5341 1000 JEQ /JMP IF FAC=0
2554 5342 5026 RET /TO RET
2555 5343 0000 FEXIT /DATA ERROR EXIT
2556 /
2557 /COMPARE EXTENDED PRECISION NUMBERS
2558 /TABLE1 WITH TABLE2
2559 /ROUTINE ENTERED FROM EPM ADD=SUBTRACT TEST FPP23
2560 /
2561 5344 0410 ECPRAS, FLDA1410 /LOAD RAN NUM ARG
2562 5345 5772 TABLE1=6 /FROM TABLE1
2563 5346 2430 FSUB1430 /SUBTRACT RESULT
2564 5347 6372 TABLE2=6 /IN TABLE2
2565 5350 1040 JNE /JMP IF FAC NOT=0
2566 5351 5354 EASCK /TO EASCK ROUTINE
2567 5352 1030 JA /JMP ALWAYS
2568 5353 5026 RET /TO RET
2569 /
2570 /POSSIBLE ADD=SUBTRACT ERROR IN FPP23 TEST
2571 /
2572 5354 0430 EASCK, FLDA1430 /LOAD RESULTING ARG
2573 5355 6372 TABLE2=6 /FROM TABLE2
2574 5356 6222 FSTA1222 /STORE IN OFFSET 22 OF BASE REG
2575 5357 0002 FCLA /CLEAR FAC
2576 5360 0006 STARTD /SET DOUBLE PRECISION MODE
2577 5361 1100 SETX /SET FPP IR POINTER
2578 5362 5660 EX /TO LOC EX
2579 5363 0036 XTA16 /EXPONENT OF OFFSET 22 TO FAC
2580 5364 0020 ATX10 /SET EXPONENT OF OFFSET 20 TO EQUAL THAT OF OFFSET 22
2581 5365 1100 SETX /SET FPP IR POINTER
2582 5366 0050 FPPIR /TO LOC FPP IR
2583 5367 0050 STARTE /SET EXTENDED PRECISION MODE
2584 5370 0222 FLDA1222 /OFFSET 22 TO FAC
2585 5371 1220 FADD1220 /ADD OFFSET 20 TO SUBTRACT ONE
2586 5372 2410 FSUB1410 /SUBTRACT RAN NUM ARG
2587 5373 5772 TABLE1=6 /IN TABLE1
2588 5374 1000 JEQ /JMP IF FAC=0
2589 5375 5026 RET /TO RET ROUTINE
2590 5376 0000 FEXIT /DATA ERROR EXIT
2591 /
2592 /COMPARE EXTENDED PRECISION NUMBERS
2593 /TABLE3 WITH TABLE4
2594 /ROUTINE ENTERED FROM EPM MULT=DIV TEST FPP24
2595 /
2596 5377 0410 ECPAMD, FLDA1410 /LOAD RAN NUM ARG

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2597	5400	6772	TABLE3=6	/FROM TABLE3
2598	5401	2430	FSUB!430	/SUBTRACT RESULT
2599	5402	7372	TABLE4=6	/IN TABLE4
2600	5403	1040	JNE	/JMP IF FAC NOT=0
2601	5404	5407	EMDCK	/TO EMDCK ROUTINE
2602	5405	1030	JA	/JMP ALWAYS
2603	5406	5026	RET	/TO RET
2604				
2605				/POSSIBLE MULT=DIV ERROR IN FPP24 TEST
2606				/
2607	5407	0430	EMDCK, FLDA!430	/LOAD RESULTING ARG
2608	5410	7372	TABLE4=6	/FROM TABLE4
2609	5411	1000	JEQ	/JMP IF FAC=0
2610	5412	5471	EZMD	/TO EZMD ROUTINE
2611	5413	0410	FLDA!410	/LOAD RAN NUM ARG
2612	5414	6772	TABLE3=6	/FROM TABLE3
2613	5415	6222	FSTA!222	/STORE IN OFFSET 22
2614	5416	0002	FCLA	/CLEAR FAC
2615	5417	0006	STARTD	/SET DOUBLE PRECISION MODE
2616	5420	1100	SETX	/SET FPP IR POINTER
2617	5421	5660	EX	/TO LOC EX
2618	5422	0036	XTA!6	/EXPONENT OF OFFSET 22 TO FAC
2619	5423	0020	ATX!0	/SET EXPONENT OF OFFSET 20 EQUAL TO THAT OF OFFSET 22
2620	5424	1100	SETX	/SET FPP IR POINTER
2621	5425	5746	EX1	/TO LOC EX1
2622	5426	0020	ATX!0	/SET EXPONENT OF OFFSET 22
2623	5427	1100	SETX	/SET FPP IR POINTER
2624	5430	0030	FPP!R	/TO LOC FPP IR
2625	5431	0030	STARTE	/SET EXTENDED PRECISION MODE
2626	5432	0430	FLDA!430	/LOAD PRECISION ARG
2627	5433	7372	TABLE4=6	/IN TABLE4
2628	5434	6222	FSTA!222	/STORE IN OFFSET 22
2629	5435	0002	FCLA	/CLEAR THE FAC
2630	5436	0222	FLDA!222	/LOAD OFFSET 22
2631	5437	2410	FSUB!410	/SUBTRACT RAN NUM ARG
2632	5440	6772	TABLE3=6	/IN TABLE3
2633	5441	1220	FADD!220	/ADD OFFSET 20 EFFECTIVELY SUBTRACTING 1
2634	5442	1000	JEQ	/JMP IF FAC=0
2635	5443	5026	RET	/TO RET
2636	5444	0222	FLDA!222	/LOAD OFFSET 22
2637	5445	2410	FSUB!410	/SUBTRACT RAN NUM ARG
2638	5446	6772	TABLE3=6	/IN TABLE3
2639	5447	1242	FADD!242	/ADD OFFSET 42 EFFECTIVELY ADDING 1 TO FAC
2640	5450	1000	JEQ	/JMP IF FAC=0
2641	5451	5026	RET	/TO RET
2642	5452	0222	FLDA!222	/LOAD OFFSET 22
2643	5453	2410	FSUB!410	/SUBTRACT RAN NUM ARG
2644	5454	6772	TABLE3=6	/IN TABLE3
2645	5455	1220	FADD!220	/ADD OFFSET 20 EFFECTIVELY SUBTRACTING 1 FROM FAC
2646	5456	1220	FADD!220	/ADD OFFSET 20 EFFECTIVELY SUBTRACTING 1 FROM FAC
2647	5457	1000	JEQ	/JMP IF FAC=0
2648	5460	5026	RET	/TO RET
2649	5461	0222	FLDA!222	/LOAD FAC WITH OFFSET 22
2650	5462	2410	FSUB!410	/SUBTRACT RAN NUM ARG
2651	5463	6772	TABLE3=6	/IN TABLE3

2652	5464	1242	FADD1242	/ADD OFFSET 42 EFFECTIVELY ADDING 1 TO FAC
2653	5465	1242	FADD1242	/ADD OFFSET 42 EFFECTIVELY ADDING 1 TO FAC
2654	5466	1000	JEQ	/JMP IF FAC=0
2655	5467	5026	RET	/TO RET
2656	5470	0000	FEXIT	
2657			/	
2658			/POSSIBLE DATA ERROR - CHECK WITH 8 MODE	
2659			/	
2660	5471	0000	EZMD, FEXIT	/EXIT
2661			/	
2662			/NOT USED - FLAGS LAST FEXIT - (INSTRUCTION EXIT POINT) FOR 8 MODE USE	
2663			/	
2664	5472	0000	END, 0	
2665			/	
2666			/	
2667			/BASE REGISTER TABLE	
2668			/CONTAINS CONSTANTS-FLAGS-TEMPORARY STORAGE	
2669			/BASE+1 AND BASE+2 CONTAIN RETURN JMP FROM SUBROUTINE	
2670			/	
2671		5600		*5600
2672	5600	0000	BASE, 0	/OFFSET OF 0
2673	5601	0000	0	
2674	5602	0000	0	
2675	5603	0000	0	/OFFSET OF 1
2676	5604	0000	0	
2677	5605	7376	7376	
2678	5606	0000	0	/OFFSET OF 2
2679	5607	0000	0	
2680	5610	6776	6776	
2681	5611	0000	0	/OFFSET OF 3
2682	5612	0000	0	
2683	5613	5775	5775	
2684	5614	0000	0	/OFFSET OF 4
2685	5615	0000	0	
2686	5616	6375	6375	
2687	5617	0000	0	/OFFSET OF 5
2688	5620	0000	0	
2689	5621	0000	0	
2690	5622	0000	0	/OFFSET OF 6
2691	5623	0000	0	
2692	5624	0000	0	
2693	5625	0000	0	/OFFSET OF 7
2694	5626	0000	0	
2695	5627	0000	0	
2696	5630	0000	0	/OFFSET OF 10
2697	5631	0000	0	
2698	5632	0000	LOKST, 0	
2699	5633	0000	0	
2700	5634	0000	0	
2701	5635	0000	0	
2702	5636	0000	0	/OFFSET OF 12
2703	5637	0000	0	
2704	5640	0000	0	
2705	5641	0000	0	
2706	5642	0000	0	

2707	5643	0000	0	
2708	5644	0000	0	/OFFSET OF 14
2709	5645	0000	0	
2710	5646	0000	0	
2711	5647	0000	0	
2712	5650	0000	0	
2713	5651	0000	0	
2714	5652	6000	6000	/OFFSET OF 16
2715	5653	3777	3777	
2716	5654	7777	7777	
2717	5655	7777	7777	
2718	5656	7777	7777	
2719	5657	7777	7777	
2720	5660	0000	0000	EX, /OFFSET OF 20
2721	5661	7777	7777	
2722	5662	7777	7777	
2723	5663	7777	7777	
2724	5664	7777	7777	
2725	5665	7777	7777	
2726	5666	0000	0	/OFFSET OF 22
2727	5667	0000	0	
2728	5670	0000	0	
2729	5671	0000	0	
2730	5672	0000	0	
2731	5673	0000	0	
2732	5674	0000	0	/OFFSET OF 24
2733	5675	0000	0	
2734	5676	0000	0	LKSEG,
2735	5677	0000	0	
2736	5700	0000	0	
2737	5701	0000	0	
2738	5702	0000	0	/OFFSET OF 26
2739	5703	0000	0	
2740	5704	0001	1	
2741	5705	0000	0	
2742	5706	0000	0	
2743	5707	0000	0	
2744	5710	0000	0	/OFFSET OF 30
2745	5711	0000	0	
2746	5712	0000	0	
2747	5713	0000	0	
2748	5714	0000	0	
2749	5715	0000	0	
2750	5716	0000	0	/OFFSET OF 32
2751	5717	0000	0	
2752	5720	0000	0	
2753	5721	0000	0	
2754	5722	0000	0	
2755	5723	0000	0	
2756	5724	0000	0	RESLT, /OFFSET OF 34
2757	5725	0000	0	
2758	5726	0000	0	
2759	5727	0000	0	
2760	5730	0000	0	
2761	5731	0000	0	

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2762 5732 0000 0 /OFFSET OF 36
2763 5733 0000 0
2764 5734 7777 UFLO, 7777
2765 5735 0000 0
2766 5736 0000 0
2767 5737 0000 0
2768 5740 2000 0 /OFFSET OF 40
2769 5741 2000 2000
2770 5742 0000 0
2771 5743 0000 0
2772 5744 0000 0
2773 5745 0000 0
2774 5746 0000 EX1, 0 /OFFSET OF 42
2775 5747 0000 0
2776 5750 0000 0
2777 5751 0000 0
2778 5752 0000 0
2779 5753 0001 1
2780 /
2781 /
2782 /
2783 /FLOATING POINT MODE
2784 /RANDOM DATA TABLE 1
2785 /400 OCTAL LOCATIONS LONG
2786 /
2787 6000 *6000
2788 6000 0000 TABLE1, 0
2789 /
2790 /
2791 /FLOATING POINT MODE
2792 /RESULTING ARG TABLE 2
2793 /USED IN ASSOCIATION WITH TABLE 1
2794 /400 OCTAL LOCATIONS LONG
2795 /
2796 6400 *6400
2797 6400 0000 TABLE2, 0
2798 /
2799 /
2800 /DOUBLE PRECISION MODE
2801 /RANDOM DATA TABLE 3
2802 /400 OCTAL LOCATIONS LONG
2803 /
2804 7000 *7000
2805 7000 0000 TABLE3, 0
2806 /
2807 /
2808 /DOUBLE PRECISION MODE
2809 /RESULTING ARGUMENT TABLE 4
2810 /USED IN ASSOCIATION WITH TABLE 3
2811 /400 OCTAL LOCATIONS LONG
2812 /
2813 7400 *7400
2814 7400 0000 TABLE4, 0
2815 /
2816 /

```









ACSAVE	0003	EX1	5746	FPP17	4496	K10	0117
ADDX	0110	EXPOV	0612	FPP2	4020	K100	0137
AG	0323	EXPOVR	0530	FPP20	4526	K1000	0145
ALN	0010	EXPUN	0600	FPP21	4546	K11	0120
ALTEX	0045	EXPUND	0527	FPP22	4621	K12	2121
ALTEXP	0277	EZMD	5471	FPP23	4642	K1200	0146
AP1	2216	EZMDC	1412	FPP24	4666	K13	0122
APT	0025	FADD	1000	FPP3	4040	K14	0123
APTIR	2200	FADDM	5000	FPP4	4064	K15	0124
APTIR1	1371	FASCK	5051	FPP5	4110	K16	0125
APTIR2	1534	FASCK1	5071	FPP6	4136	K17	0126
APTIR0	0526	FCLA	0002	FPP7	4163	K2	0111
ATX	0020	FCMPAS	5041	FPPCUR	0065	K20	0127
BASE	5600	FCMPMD	5072	FPPIN	0066	K200	0534
BELL	0107	FCMPR	5017	FPPINT	0426	K2000	0147
CLLSW	0044	FCP17	5143	FPP1R	0050	K2040	0535
CLLSWD	0316	FCPAS1	5052	FPPMOD	1137	K207	0140
CNTR	0024	FDIV	3000	FPPST	0163	K21	0130
CQNT	3467	FEXIT	0000	FPPT	0663	K212	0141
COUNT	2364	FLDA	0000	FPPT1	2151	K215	0142
CPAS1	5062	FMDCK	5102	FPPTR	1503	K22	0131
CRL	0104	FMUL	4000	FPRST	6556	K23	0132
CRLF	2352	FMULM	7000	FPST	6555	K24	0133
CT	1365	FNEG	0003	FRAOV	0624	K240	0143
CPADM	1304	FNOP	0040	FRAOVR	0531	K260	2366
CPCMPR	5266	FNORM	0004	FRO16	0664	K3	0112
CP CPR1	5275	FO	1142	FROV16	1000	K37	0134
CP CR	1400	FOV	0660	FSET	4713	K3733	0536
CPMLM	1334	FP1	2024	FSET1	4741	K3740	0150
CP OCT	0524	FP2	2054	FSET2	4793	K4	0113
CP OCT1	1370	FPADM	1270	FSTA	6000	K40	0135
CP OCT2	1533	FPADRS	0061	FSUB	2000	K400	0144
CP OCTY	2057	FPCMD	0060	FZMD	5133	K4000	0151
CPSET	5156	FPCOM	6553	FZMHT	1355	K4100	0152
CPSET1	5167	FPCPR	1350	GO	1250	K5	0114
CPSET2	5212	FPHLT	6554	GO11	4267	K50	2365
CPSET3	5243	FPICL	6552	GO12	4317	K5772	0153
CPT	0072	FPINT	6551	GO13	4351	K5775	0154
CPTR	1474	FP1ST	6557	GO14	4401	K5777	0155
CTER	1260	FPMLM	1320	HERE	1522	K6	0115
EASCK	5354	FPOCT	0525	INFLAG	0022	K60	2154
ECPR1	5335	FPOCT1	1367	INSERV	0220	K6776	1530
ECPRAS	5344	FPOCT2	1532	INT8	0201	K6777	0156
ECPRMD	5377	FPOCTY	2000	INTX8	0005	K7	0116
EMDCK	5407	FPP1	4000	JA	1030	K7400	0157
END	5472	FPP10	4222	JEQ	1000	K7600	0331
EP CPA	1405	FPP11	4252	JGT	1060	K7653	0332
EP CR	5326	FPP12	4302	JLT	1050	K77	0136
EPMDPT	0102	FPP13	4332	JNE	1040	K7700	0160
EPSET	5302	FPP14	4364	JSR	1130	K7771	0333
ERRFPP	0077	FPP15	4414	JXN	2000	KTTT	1366
EX	5660	FPP16	4446	K1	0110	KYRD	0233

LDX	0100	SAV2	1144	TX13	2405
LOKSE	0064	SAV3	1145	TX13A	2153
LOKSEG	5676	SAV4	1146	TX15	2412
LOKTS	0063	SETX	1100	TX16	2420
LOKTST	5632	SKIP	2044	TX17	2431
LSAVE	0004	STAR	3600	TX20	2450
LSHFT	6567	START	3520	TX21	2455
M1	0162	STARTD	0006	TX22	2462
M10	2370	STARTE	0050	TX23	2516
M21	1364	STARTF	0005	TX24	2525
M3	0161	STARTS	0020	TX25	2551
M4	2367	STATUS	0023	TX26	2597
MLINE	1143	STMES	1074	TX27	2626
MOR	5233	STMESS	3526	TX30	2662
MORE	4763	STST	0046	TX31	2666
MLK	3427	T1	3607	TX32	2695
NUM	0007	T10	3666	TX33	2707
EC	2127	T11	3674	TX35	2715
ECTA	2317	T12	3701	TX36	2724
ECTALS	0074	T13	3706	TX37	2732
ECWD1	1531	T14	3713	TX40	2773
ECWD2	2152	T15	3721	TX44	3012
ECWDS	2241	T16	3727	TX45	3031
EF22DP	1462	T17	3734	TX47	3040
EF22DX	0043	T2	3627	TX50	3053
EF22FP	1451	T20	3744	TX51	3062
EF22FX	0042	T21	3751	TX52	3075
CK	1054	T22	3756	TX53	3111
POINT	0040	T23	3763	TX54	3124
POINTD	0041	T24	3770	TYP	0103
POSNST	1037	T3	3634	TYPE	2343
PRINT	2255	T4	3641	UFLO	5734
PRINTR	0073	T5	3646	UFLOW	0075
PROG0	0062	T6	3653	WAIT	3402
PROGBM	3400	T7	3661	XTA	0030
PTTT	1242	TABLE1	6000		
RA	3454	TABLE2	6400		
RAN	3447	TABLE3	7000		
RANA	3516	TABLE4	7400		
RANB	3517	TBL1	0105		
RE	0246	TBL3	0106		
REE	0243	TDONE	3514		
REENT	0071	TE	0533		
REENTR	0235	TES	1056		
REER	0067	TPTR	0234		
REERR	0271	TST15	0100		
RESFPC	0261	TST16	0101		
RESLT	5724	TSTEX	0532		
RESULT	0076	TSTEX1	1243		
RET	5026	TSTHL	0070		
RETING	5037	TSTHLT	1427		
SAV	0006	TX12	2400		

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 23 SECONDS

3K CORE USED

ACSAVE	60#	220	231											
ADDX	40#	1942	1971	2267	2269	2271								
AG	328#	332												
ALN	31#	1759	1761	1763	1765	1767	1789	1790	1791	1792	1793	1794	1795	1796
	1797	1798	2088	2090	2091	2093	2096	2098						
ALTEX	113#	1503												
ALTEXP	113	303#	317											
AP1	1106	1109#												
APT	94#	131	202	263	285	390	706	1389	1391					
APTIR	444	829	961	1095#	1127									
APTIR1	746	764	782	800	810	821	829#							
APTIR2	839	849	961#											
APTIRQ	438	444#												
ATX	32#	1754	1941	1970	2083	2580	2619	2622						
BASE	97	2188	2219	2243	2274	2408	2432	2461	2484	2531	2672#			
BELL	153#	1360	1379	1385										
CLLSW	112#	1437	1456	1493										
CLLSWD	112	323#	333											
CNTR	89#	325	331											
CONT	1307	1329#												
COUNT	1190	1199	1232#											
CPAS1	2306	2309#												
CRL	150#	439	606	607	628	629	741	745	759	763	777	781	795	799
	873	878	881	973	990	991	1003	1004	1014	1026	1039	1051	1096	1110
	1111	1119	1120	1126	1156	1170								
CRLF	150	1219#	1228											
CI	703	709	718	825#										
DPADM	678	754#												
DPCMPR	1637	1685	1736	1861	1923	1982	2491#							
DPCPR1	664	1801	2503#											
DPCR	687	688	836#											
DPMLM	680	790#												
DPOCT	435	442#												
DPOCT1	756	792	828#											
DPOCT2	838	960#												
DPOCTI	442	828	960	1022#	1030	1061								
DPSET	663	1630	1674	1724	2400#									
DPSET1	1786	2414#												
DPSET2	1846	1908	2437#											
DPSET3	1967	2466#												
DPT	140#	487	1035											
DPTR	140	923#	929											
DIEN	708	718#												
EASCK	2566	2572#												
EQPR1	666	2064	2549#											
EQPRAS	667	2127	2561#											
EQPRMD	668	2153	2596#											
EMDCK	2601	2607#												
END	670	2664#												
EPCPA	691	692	846#	863	867									
EPCPR	2032	2102	2537#											
EPHOPT	148#	611	612	1525										
EPSET	665	2025	2046	2078	2116	2141	2512#							















TX31	740	758	1255#							
TX32	897	910	1256#							
TX33	744	762	1257#							
TX35	776	794	1258#							
TX36	780	798	1259#							
TX37	625	1260#								
TX40	627	1261#								
TX44	877	1262#								
TX45	605	880	1263#							
TX47	875	1264#								
TX50	996	1044	1265#							
TX51	819	1266#								
TX52	603	1267#								
TX53	599	1268#								
TX54	601	1269#								
TYP	149#	1383								
TYPE	149	1164	1176	1194	1203	1208#	1214	1222	1224	1226
UFLO	143	2764#								
UFLOW	143#	407	460	464						
WAIT	1276#	1333	1346							
XIA	33#	1940	1969	2579	2618					

