

/1. ABSTRACT

THE FPP-12 DATA EXERCISER IS DESIGNED TO TEST THE FLOATING POINT PROSCCESSOR 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) FPP12A OR FLOATING POINT INSTRUCTION TEST 2A
- B) FPP12B OR FLOATING POINT INSTRUCTION TEST 2B
- C) FPP12C 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.

/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. STARTING PROCEDURE FOR A PDP-12 COMPUTER

THIS PRELIMINARY SET UP PROCEDURE IS CRITICAL AND ANY OMISSION

WILL RESULT IN AN ERROR.

- 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 IR0 BASE OPA EXP MSW LSW LSW1 LSW2 LSW3
XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX XXXX

FPP INDEX REG
IR0 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

76. MAINTENANCE INSTRUCTIONS

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

77. 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.



```

1      /FLOATING POINT DATA EXERCISER
2      /PDP-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

```

```

56 0002 0201 INT8
57 /
58 /PROGRAM CONSTANTS
59 /
60 0003 0000 ACSAVE, 0
61 0004 0000 LSAVE, 0
62 0005 0000 INTXB, 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 0020 0020 *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 FPRIR /IR POINTER
97 0030 5600 BASE /BASE REG POINTER
98 0031 0000 /OPERAND ADDRESS
99 0032 0000 /FAC EXPONENT
100 0033 0000 /FAC MSW
101 0034 0000 /FAC LSW
102 0035 0000 /FAC LSW1
103 0036 0000 /FAC LSW2
104 0037 0000 /FAC LSW3
105 0040 0000 POINT, 0
106 0041 0000 POINTD, 0
107 /
108 /PROGRAM CONSTANTS
109 /
110 0042 1451 OF22FX, OF22FP

```


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		*50
119	0050	0000	FPPIR,	0
120	0051	0000		0
121	0052	0000		0
122	0053	0000		0
123	0054	0000		0
124	0055	0000		0
125	0056	0000		0
126	0057	0000		0
127			/	
128			/CONSTANTS	
129			/	
130	0060	0400	FPCMD,	400
131	0061	0025	FPADRS,	APT
132	0062	3400	PROGB,	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,	RESLT
145	0077	0000	ERRFPP,	0
146	0100	0000	TST15,	0
147	0101	0000	TST16,	0
148	0102	0000	EPHOPT,	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

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

/ROUTINE TO
 /START THE FPP

200
 201 0163 0000 FPPST, 0 /CONTAINS RET ADD
 202 0164 1026 TAD APT+1 /AC=START OF NEXT FPP YST
 203 0165 3065 DCA FPPCUR /STORE ADD OF FPP YST IN FPPCUR
 204 0166 6552 FPICL /I=0 PRESET TO FPP
 205 0167 1060 TAD FPCMD /AC=LOC FPCMD
 206 0170 6553 FPCOM /LOAD FPP CMD REG
 207 0171 7300 CLA CLL /AC=0
 208 0172 1061 TAD FPADRS /AC=APT TABLE POINTER
 209 0173 6555 FPST /LOAD ADRS REG AND START FPP
 210 0174 7402 HLT /ERR = FPP RUN FLOP SET
 211 0175 7300 CLA CLL /AC=0
 212 0176 5563 JMP I FPPST /RETURN TO PROGRAM

/GO TO LOC STARTS
 *200
 216 0200 5020 JMP STARTS /JUMP TO LOC 20

/INTERRUPT SAVE AC ROUTINE
 /INT8, DCA ACSAVE /SAVE AC

217
 218
 219
 220 0201 3003

```

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

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/INTERRUPT SERVICE ROUTINE

```

237 /
238 INSERV, 0
239 0220 0000 FPRINT /SKIP ON FPP INT
240 0221 6551 SKP /NO = SKIP
241 0222 7410 JMS I FPPIN /YES = GO TO FPPIN ROUTINE
242 0223 4466 TSP /SKIP ON TTY PRINTER INT
243 0224 6041 SKP /NO=SKIP
244 0225 7410 JMP TPTR /YES=GO TO TPTR ROUTINE
245 0226 5234 KSP /SKIP ON TTY KYBD INT
246 0227 6031 SKP /NO=SKIP
247 0230 7410 JMP KYBD /YES=GO TO KYBD ROUTINE
248 0231 5233 JMP I INSERV
249 0232 5620 KYBD, HLT /THIS PROGRAM DOES NOT INITIATE KYBD INT
250 0233 7402 TPTR, HLT /THIS PROGRAM DOES NOT INITIATE TPTR INT
251 0234 7402

```

(OK, WHY DID YOU TYPE A KEY OUTTY?)
 you aren't supposed to!
 restart

/REENTER FPP ROUTINE AT NEXT SEQUENTIAL POINT AFTER FAILURE
 /PRINT OUT ERRORS IF PRINT ENABLED AND ERROR OCCURRED

```

254 /
255 REENTR, CLA CLL /AC=0
256 0235 7300 TAD FPPIR /AC=FPP IR0
257 0236 1050 TAD K1 /INC BY 1
258 0237 1110 SNA /SKIP IF NOT LAST ARG IN FPP TST
259 0240 7450 JMP RESFPC /SET UP NEXT FPP TST
260 0241 5261 DCA FPPIR /UPDATE FPP IR0
261 0242 3050 REE, TAD FPPCUR /AC=ADD OF CURRENT FPP TST
262 0243 1065 TAD K2 /INC BY 2
263 0244 1111 DCA APT+1 /STORE RETURN FPC IN APT+1
264 0245 3026 RE, TAD FPPIR+1 /AC=FPP IR1
265 0246 1051 DCA FPPIR+3 /FPP IR3=IR1
266 0247 3053 DCA INFLAG /CLEAR FPP INTERRUPT FLAG
267 0250 3022 FPICL /IO PRESET TO FPP
268 0251 6552 TAD FPCMD /AC=LOC FPCMD
269 0252 1060 FPCOM /LOAD FPP CMD REG
270 0253 6553 CLA CLL /AC=0
271 0254 7300 TAD FPADRS /AC=APT TABLE POINTER
272 0255 1061 FPST /LOAD ADRS REG AND START FPP
273 0256 6555 HLT /ERR=FPP RUN FLOP SET
274 0257 7402 JMP I INSERV /RETURN TO PROGRAM
275 0260 5620

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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 0261 7300 RESFPC, CLA CLL
280 0262 1007 TAD NUM /AC=NUMBER OF FPP TST
281 0263 1144 TAD K400 /ADD 400 TO NUMBER OF FPP TST
282 0264 3012 DCA 12 /AC TO LOC 12
283 0265 1412 TAD I 12 /AC=ADD OF NEXT FPP TST
284 0266 1333 TAD K7971 /ADD =7
285 0267 3026 DCA APT+1 /STORE RETURN FPC IN APT+1
286 0270 5246 JMP RE /RE=ENTER FPP TEST
287 /
288 /RE=ENTER FPP ROUTINE RE=EXECUTING
289 /SAME RANDOM DATA ARGS AS BEFORE
290 /
291 0271 7340 REERR, CLA CLL CMA
292 0272 3464 DCA I LOKSE
293 0273 1051 TAD FPPIR+1 /AC=FPP IR1
294 0274 1162 TAD M1 /DECREMENT BY 1
295 0275 3051 DCA FPPIR+1 /STORE BACK IN FPP IR1
296 0276 5243 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 0277 0000 ALTEXP, 0 /CONTAINS RETURN ADDRESS
304 0300 1332 TAD K7653
305 0301 3017 DCA 17 /LOC 17 = 7653
306 0302 1155 TAD K5977
307 0303 3014 DCA 14 /LOC 14 = 5777
308 0304 1414 TAD I 14
309 0305 3041 DCA POINTD /POINTD = FIRST NUMBER IN TABLE 1
310 0306 5311 JMP ,+3 /SKIP 21 LOCATIONS
311 0307 1041 TAD POINTD /AC = CONTENTS LOC TABLE 1
312 0310 3414 DCA I 14 /SET ALL OTHER EXPONENTS UP SAME
313 0311 2014 ISZ 14 /INC LOC 14
314 0312 2014 ISZ 14 /INC LOC 14
315 0313 2017 ISZ 17 /INC LOC 17 = IS IT ZERO
316 0314 5307 JMP ,=3 /NO = DO AGAIN
317 0315 5677 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 0316 0000 CLLSWD, 0 /CONTAINS RET ADD
324 0317 1331 TAD K7600 /AC=7600
325 0320 3024 DCA CNTR /LOC CNTR = 7600
326 0321 1156 TAD K6777 /AC = 6777
327 0322 3011 DCA 11 /LOC 11 = 6777
328 0323 7300 AG, CLA CLL /AC = 0
329 0324 2011 ISZ 11 /INC LOC 11
330 0325 3411 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 WAS INTERRUPTED
382 0431 6557 FPIST /READ FPP STATUS AND SKIP IF INT REQ FLAG SET
383 0432 7402 WLT /==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	K480	/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	/HAS 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	TSYEX	/DATA ERROR
403	0456	1023	TAD	STATUS	
404	0457	0336	AND	K3933	/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 =FPM 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	CRL	
440	0523	5470	JMP I	TSYHL	/GO TO TSYHL ROUTINE

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441 /
442 0524 2057 DPOCT, DPOCTT
443 0525 2000 FPOCT, FPOCTT
444 0526 2200 APTIRO, APTIR
445 0527 0600 EXPUND, EXPUN
446 0530 0612 EXPOVR, EXPOV
447 0531 0624 FRAQVR, FRAOV
448 0532 1243 TSTEX, TSTEXI
449 0533 1056 TE, TES
450 0534 0200 K200, 200
451 0535 2040 K2040, 2040
452 0536 3733 K3733, 3733
453 /
454 /
455 /FPP EXPONENT UNDERFLOW STATUS FLAG SET
456 /
457
458 0600 0000 EXPUN, 0 *600 /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 ERFFPP /SET ERFFPP FLAG
467 0611 5600 JMP I EXPUN /RET TO PROGRAM
468
469 /
470 /FPP EXPONENT OVERFLOW STATUS FLAG SET
471 /
472 0612 0000 EXPOV, 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 =0
478 0620 5612 JMP I EXPOV /NO=EXPONENT OVERFLOW WAS EXPECTED
479 0621 7340 CLA CLL CMA /AC=7777
480 0622 3077 DCA ERFFPP /SET ERFFPP FLAG
481 0623 5612 JMP I EXPOV /RET TO PROGRAM
482
483 /
484 /FPP FRACTION OVERFLOW STATUS FLAG
485 /
486 0624 0000 FRAOV, 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 FRO16 /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 ,+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 SZL /SKIP IF LINC=0
506 0650 5255 JMP ,+5 /NO
507 0651 7004 RAL /ROTATE AC BIT 0 INTO LINC
508 0652 7630 SZL 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 LOC POINT
528 1001 3014 DCA 14 /LOC 14 POINTS TO RANDOM ARGUMENT=1
529 1002 1414 TAD I 14
530 1003 3344 DCA SAV2 /LOC SAV2 = SECOND ARGUMENT
531 1004 1414 TAD I 14
532 1005 3345 DCA SAV3 /LOC SAV3 = THIRD ARGUMENT
533 1006 1414 TAD I 14
534 1007 3346 DCA SAV4 /LOC SAV4 = FOURTH ARGUMENT
535 1010 1041 TAD POINTD /AC = FIRST ARGUMENT
536 1011 7004 RAL
537 1012 7630 SZL 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 SZL 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 SZA 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
000 1077 4473 OLT JMS I PRINTR /PRINT
001 1100 3124 TX54 /YOU DO NOT HAVE
002 1101 4473 JMS I PRINTR /PRINT
003 1102 3075 TX52 /EXTENDED PRECISION MODE
004 1103 4473 JMS I PRINTR /PRINT
005 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 EPMOFT /SET OR CLEAR EPM FLAG
012 1113 1102 TAD EPMOFT
013 1114 7640 SEA 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 COMMAND 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 SEA 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 STMS /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 FCMPMD

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661	1210	5133	FZMD
662	1211	5143	FCP17
663	1212	5156	DPSET
664	1213	5275	DPCPR1
665	1214	5302	EPSET
666	1215	5335	ECPR1
667	1216	5344	ECPRAS
668	1217	5377	ECPRMD
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

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	FZMMT
686	1233	1350	FPCPR
687	1234	1400	DPQR
688	1235	1400	DPQR
689	1236	1350	FPCPR
690	1237	1350	FPCPR
691	1240	1405	ERCPA
692	1241	1405	ERCPA
693	1242	1412	PITTT, 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

712
 713
 714
 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 0 /CONTAINS ADD OF ERROR SERVICE ROUTINE
726 /
727 /
728 /DATA ERROR SERVICE ROUTINES
729 /
730 /
731 /FPP11 TEST DATA ERROR
732 /FADDM 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 /FADDM 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 APTIR1 /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 /FADDM AND FADD RESULTS DIFFER
751 /IN DOUBLE PRECISION MODE
752 /THEY SHOULD BE EQUAL
753 /
754 1304 4473 DPADM, 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 /FADDM 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 APTIR1 /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 / FPM LM, JMS I PRINTR /PRINT
773 1321 2400 TX12 /FPP ERROR
774 1322 4767 JMS I FPOCT1 /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 /FPP14 TEST DATA ERROR
786 /FMULM AND FMUL RESULTS DIFFER
787 /IN DOUBLE PRECISION MODE
788 /THEY SHOULD BE EQUAL
789
790 1334 4473 DPMLM, JMS I PRINTR /PRINT
791 1335 2400 TX12 /FPP ERROR
792 1336 4770 JMS I DPOCT1 /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 /DATA ERR IN FLOATING POINT MODE
804 /RAN NUM ARG IN TABLE1 NOT = RESULT IN TABLE2
805 /THEY SHOULD BE EQUAL
806
807 1350 4473 FPCPR, JMS I PRINTR /PRINT
808 1351 2400 TX12 /FPP ERROR
809 1352 4767 JMS I FPOCT1 /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 /EXPONENT UNDERFLOW IN TEST 17
814 /PRINT ERROR INFORMATION
815
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 FPOCT1 /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 KTTT, PTTT
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 MULT/DIV TEST
853 /TEST TO DETERMINE IF LEGITIMATE
854 /
855 1412 4303 EEMDC, 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

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```

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 2430 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

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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 FPPIR*1 /IR1=NUM OF 2 WORD ACCESSES MADE
926 1477 1051 TAD FPPIR*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 FPTR: 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 FPP1R /RETURN
956
957 1530 6776 K6776, 6776
958 1531 2241 OCWD1, OCWDS
959 1532 2000 FPOCT2, FPOCTT
960 1533 2057 DPOCT2, DPOCTT
961 1534 2200 APT1R2, APT1R
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 FPOCTT, 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 FPP1T1 /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 TST15
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 SZL 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 TST16
1041 SNA CLA /SKIP IF EXECUTING TST 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 DPOCTT /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

```

1089
1090
1091
1092
1093
1094 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 AP1, 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 LINE
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 SZA /AC=0
1169 2303 5306 JMP I=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

```

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 I=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

```

1207 /
1208 2343 0000 TYPE: 0 /CONTAINS RET ADD
1209 2344 6046 TLR /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                /
1217                /THIS ROUTINE ISSUES 3 CARRIAGE RETURNS
1218                /AND A LINE FEED
1219                /
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                /
1239                /PRINT TEXT STATEMENTS
1240                /
1240 2400 2400      *2400
1241 2400 0620      TX12, TEXT      ?PPP ERROR?
1241 2401 2040
1241 2402 0522
1241 2403 2217
1241 2404 2200
1242 2405 2405      TX13, TEXT      ?TEST XX ?
1242 2406 2324
1242 2407 4040
1242 2410 3030
1242 2411 4000
1243 2412 2201      TX15, TEXT      ?RAN NUM ARG?
1243 2413 1640
1243 2414 1625
1243 2415 1540
1243 2416 0122
1243 2417 0700
1244 2420 0201      TX16, TEXT      ?BAD RESULTING ARG?
1244 2421 0440
1244 2422 2205
1244 2423 2325
1244 2424 1424
1244 2425 1116
1244 2426 0740
1244 2427 0122
1244 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			
1253	2625	4000	TX27,	TEXT	?FPP HUNG=FPHLT IOT DID NOT INITIATE A CPU FORCED EXIT ?
	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			
1254	2661	4000	TX30,	TEXT	?STATUS ?
	2662	2324			
	2663	0124			
	2664	2523			
1255	2665	4000	TX31,	TEXT	?FADDM RESULT ?
	2666	0601			
	2667	0404			
	2670	1540			
	2671	2205			
	2672	2325			
	2673	1424			
1256	2674	4000	TX32,	TEXT	?OFFSET 22 BASE REG ?
	2675	1706			

	2676	2623			
	2677	2524			
	2700	4062			
	2701	6240			
	2702	2201			
	2703	2305			
	2704	4022			
	2705	0507			
	2706	4000			
1257	2707	0601	TX33,	TEXT	?FADD RESULT?
	2710	0404			
	2711	4022			
	2712	0523			
	2713	2514			
	2714	2400			
1258	2715	0615	TX35,	TEXT	?FMULM RESULT ?
	2716	2514			
	2717	1540			
	2720	2205			
	2721	2325			
	2722	1424			
	2723	4000			
1259	2724	0615	TX36,	TEXT	?FMUL RESULT?
	2725	2514			
	2726	4022			
	2727	0523			
	2730	2514			
	2731	2400			
1260	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			
	3011	4000			
1262	3012	2305	TX44:	TEXT	?SET RSW<SW> 6 RE=EX FAIL ARG ?
	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			
	3030	4000			
1263	3031	1011	TX45:	TEXT	?HIT KEY CONT ?
	3032	2440			
	3033	1305			
	3034	3140			
	3035	0317			
	3036	1624			
	3037	4000			
1264	3040	0317	TX47:	TEXT	?CONTINUE WITH TEST OR?
	3041	1624			
	3042	1116			
	3043	2505			
	3044	4027			
	3045	1124			
	3046	1040			
	3047	2405			
	3050	2324			
	3051	4017			
	3052	2200			
1265	3053	2201	TX50:	TEXT	?RAN NUM ARG 2?

	3054	1640			
	3055	1625			
	3056	1540			
	3057	0122			
	3060	0740			
1266	3061	6200			
	3062	1114	TX51,	TEXT	?ILLEGAL FPP EXP UFLO ?
	3063	1405			
	3064	2701			
	3065	1440			
	3066	0620			
	3067	2040			
	3070	0530			
	3071	2040			
	3072	2506			
	3073	1417			
	3074	4000			
1267	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			
	3110	0500			
1268	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			
	3123	4000			
1269	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	PROGM,	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	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 0=11 = 0 DONT LOCK ON TO ANY TEST
1289	3417	7041	CMA	IAC	/LOCK ON TO TEST SET INTO SW REG BITS 0=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	10	/CLEAR LOC 10 TO PREVENT FPP TIME OUT
1296	3426	5231	JMP	,+3	
1297	3427	7300	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	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	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	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 PROG8 TO INITIALLY START FPP
1370 3602 4462 JMS I PROG8 /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 EPHOPT /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 PROG8 /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 PROG8 /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 PROG8 /8MODE CONTROL
1572 3774 3106 DCA TBL3 /CLEAR TABLE3 FLAG
1573 3775 5200 JMP STAR /RE-START TESTS
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
1609      4000 1130      FPP1,      *4000
1610      4001 4713      JSR
1611      4002 0005      FSET          /SETUP FOR TST
1612      4003 0510      STARTF
1613      4004 5775      FLDA!510      /LOAD FROM TABLE1
1614      4005 6530      TABLE1=3
1615      4006 6375      FSTA!530      /STORE IN TABLE 2
1616      4007 1130      TABLE2=3
1617      4010 5017      JSR          /COMPARE TABLE1 WITH TABLE2
1618      4011 2100      FCMPR
1619      4012 4003      JXN!100      /COMPLETED BLOCK
1620      4013 0002      FPP1+3
1621      4014 1210      FCLA          /YES
1622      4015 1040      FADD!210     /LOCK ONTO TST
1623      4016 4000      JNE          /IF OFFSET 10 IS NON-ZERO
1624      4017 0000      FPP1
1625                          FEXIT          /NO-EXIT
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      STARTD
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          /EXECUTE IN FLOATING POINT MODE
1646          /ADD SUBTRACT TEST
1647          /
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	FSTA1530	/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	FSTA1212	/STORE IN OFFSET 12
1704	4117	4410	FMUL1410	/A*A
1705	4120	5775	TABLE1=3	
1706	4121	6214	FSTA1214	/STORE IN OFFSET 14
1707	4122	3212	FDIV1212	/A*A/A
1708	4123	6530	FSTA1530	/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	JXN1100	/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

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1717 4134 4110      PPP5
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 0006      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

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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	START0	
1788	4225	0712	FLDA1712	/LOAD RAN ARG FROM TABLE 3
1789	4226	0014	ALN14	/SHIFT VIA IR 4
1790	4227	0015	ALN15	/SHIFT VIA IR 5
1791	4230	0014	ALN14	/ETC
1792	4231	0015	ALN15	
1793	4232	0014	ALN14	
1794	4233	0015	ALN15	
1795	4234	0014	ALN14	
1796	4235	0015	ALN15	
1797	4236	0014	ALN14	
1798	4237	0015	ALN15	
1799	4240	6731	FSTA1731	/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 NON=ZERO
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	FLDA1713	/LOAD RAN ARG FROM TABLE1
1819	4256	1734	FADD1734	/A+A
1820	4257	6234	FSTA1234	/STORE IN OFFSET 34
1821	4260	0613	FLDA1613	/LOAD RAN ARG FROM TABLE1
1822	4261	5634	FADDM1634	/A+A TO MEMORY
1823	4262	0634	FLDA1634	/LOAD A+A
1824	4263	2234	FSUB1234	/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	FQMPR	/COMPARE
1832	4273	2100	JXN:100	/COMPLETED BLOCK
1833	4274	4255	FPP11+3	
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	FPP11	
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	FPP12, 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	DPCMPR	/COMPARE SUB
1862	4323	2100	JXN:100	/COMPLETED BLOCK
1863	4324	4305	FPP12+3	
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	FPP12	
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	FPP13, 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	6234	FSTA1234	/STORE IN OFFSET 34
1883	4342	0212	FLDA1212	/LOAD OFFSET 12
1884	4343	7634	FMULM1634	/A*A TO MEMORY
1885	4344	0634	FLDA1634	/LOAD RESULT A*A
1886	4345	2234	FSUB1234	/SUBTRACT OFFSET 34
1887	4346	1000	JEQ	/SHOULD EQUAL ZERO
1888	4347	4351	GO13	/YES
1889	4350	0000	FEXIT	/FMULM AND FMUL RESULTS DIFFER
1890	4351	0613	GO13, FLDA1613	/GET ARG IN TABLE1
1891	4352	6634	FSTA1634	/STORE BACK IN TABLE2
1892	4353	1130	JSR	/JMP=SAVE RETURN
1893	4354	5017	FCMPR	/COMPARE
1894	4355	2100	JXN1100	/COMPLETED BLOCK
1895	4356	4335	FPP13*3	
1896	4357	0002	FCLA	/YES
1897	4360	1210	FADD1210	/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	FLDA1712	/LOAD RAN ARG FROM TABLES
1911	4370	4731	FMUL1731	/A*A
1912	4371	6234	FSTA1234	/STORE IN OFFSET 34
1913	4372	0612	FLDA1612	/LOAD RAN ARG FROM TABLES
1914	4373	7631	FMULM1631	/A*A TO MEMORY
1915	4374	0631	FLDA1631	/LOAD RESULT A*A
1916	4375	2234	FSUB1234	/SUBTRACT OFFSET 34
1917	4376	1000	JEQ	/SHOULD EQUAL ZERO
1918	4377	4401	GO14	/YES
1919	4400	0000	FEXIT	/FMULM AND FMUL RESULT DIFFERS
1920	4401	0612	GO14, FLDA1612	/LOAD ARG IN TABLE3
1921	4402	6631	FSTA1631	/PUT BACK IN TABLE4
1922	4403	1130	JSR	/JMP=SAVE RETURN
1923	4404	5266	DPCMPR	/COMPARE SUB
1924	4405	2100	JXN1100	/COMPLETED BLOCK
1925	4406	4367	FPP14*3	
1926	4407	0002	FCLA	/YES
1927	4410	1210	FADD1210	/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	FLDA!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
1962			/	
1963			/EXECUTED IN DOUBLE PRECISION MODE	
1964			/ADD = SUBTRACT TEST USING RAN NUMS	
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	FLDA!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	DPCMPR	/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
1990			/	
1991			/EXECUTED IN FLOATING POINT MODE	


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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 /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 /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

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2047	4530	0050	STARTE	/SET EXTENDED PRECISION MODE
2048	4531	0510	FLDA:510	/LOAD RAN NUM ARG
2049	4532	5772	TABLE1=6	/FROM TABLE 1
2050	4533	0004	FNORM	/NORMALIZE
2051	4534	0003	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	EQPR1	/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:210	/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:410	/ADD RAN NUM ARG
2121	4650	5772	TABLE1=6	/TABLE1
2122	4651	2410	FSUB:410	/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:210	/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	ECPAMD	/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	PPP24	
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	5601	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	

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2212 4763 0540 MORE, FLDA!540 /LOAD RAN ARG
2213 4764 5775 TABLE1#3 /IN TABLE1
2214 4765 6550 FSTA!550 /STORE RAN ARG
2215 4766 6375 TABLE2#3 /IN TABLE2
2216 4767 2120 JXN!120 /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 LDX!0 /LOAD IR 0
2227 4776 7654 7654 /WITH #124
2228 4777 0101 LDX!1 /LOAD IR 1
2229 5000 0000 0 /WITH 0
2230 5001 0102 LDX!2 /ETC
2231 5002 0001 1
2232 5003 0103 LDX!3
2233 5004 0000 0
2234 5005 0104 LDX!4
2235 5006 0000 0
2236 5007 0105 LDX!5
2237 5010 0000 0
2238 5011 0106 LDX!6
2239 5012 0000 0
2240 5013 0107 LDX!7
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, FLDA!410 /LOAD RAN ARG
2258 5020 5775 TABLE1#3 /IN TABLE1
2259 5021 2430 FSUB!430 /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, FLDA!224 /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 5601 BASE+1 /OFFSET OF 0 IN BASE REG
2275 /
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, FLDA1410 /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 /FLOATING POINT ADD=SUB FAILED
2291 /
2292 5051 0000 FASCK, FEXIT /DATA ERROR EXIT
2293 /
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, FLDA1410 /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 /POSSIBLE ERROR = GO TO PDP-8 MODE TEST
2318 /
2319 5071 0000 FASCK1, FEXIT
2320 /
2321 /

```

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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 FCMPMD, FLOA1410 /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 FCMPMD 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, FLOA1430 /LOAD RESULT
2343 5103 6375 TABLE2=3 /FROM TABLE2
2344 5104 1000 JEQ /JMP IF FAC=0 TO
2345 5105 5133 FZMD /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 FLOA1222 /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 FLOA1430 /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 FLOA1232 /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 REENTER 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 FZMD, FLOA1410 /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, FLOA1410	/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	5156	0006	DPSET, STARTD	/SET DOUBLE PRECISION MODE
2401	5157	0100	LXI0	/LOAD IR 0
2402	5160	7600	7600	/WITH =200
2403	5161	0101	LXI1	/LOAD IR 1
2404	5162	0000	0	/WITH 0
2405	5163	0103	LXI3	/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			/SET UP OF FPP INDEX REGISTERS ON PAGE 0	
2411			/FOR OPERATION IN DOUBLE PRECISION MODE	
2412			/ENTERED FROM FPP10 TEST	
2413			/	
2414	5167	0006	DPSET1, STARTD	
2415	5170	0100	LXI0	/LOAD IR 0
2416	5171	7600	7600	/WITH =200
2417	5172	0101	LXI1	/LOAD IR 1
2418	5173	0000	0	/WITH 0
2419	5174	0102	LXI2	/LOAD IR 2
2420	5175	0000	0	/WITH 0
2421	5176	0103	LXI3	/LOAD IR 3
2422	5177	0000	0	/WITH 0
2423	5200	0104	LXI4	/LOAD IR 4
2424	5201	0014	14	/WITH 14
2425	5202	0105	LXI5	/LOAD IR 5
2426	5203	7764	7764	/WITH =14
2427	5204	0106	LXI6	/LOAD IR 6
2428	5205	0000	0	/WITH 0
2429	5206	0107	LXI7	/LOAD IR 7
2430	5207	0000	0	/WITH 0
2431	5210	1030	JA	/JMP ALWAYS


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2432 5211 5601          BASE+1          /OFFSET 0 IN BASE REG TABLE
2433
2434                    /
2435                    /SET UP OF FPP INDEX REGISTERS ON PAGE 0
2436                    /DUPLICATION OF TABLE3 INTO TABLE4
2437                    /
2437 5212 0006          DPSET2, 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          PSTA1550 /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                    /
2464                    /SET UP FPP INDEX REGISTERS ON PAGE 0
2465                    /FOR USE IN DOUBLE PRECISION MODE
2466                    /
2466 5243 0006          DPSET3, 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                    /

```

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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 FCLA /CLEAR FAC
2514 5304 0100 LDX10 /LOAD IR 0
2515 5305 7726 /WITH 7726
2516 5306 0101 LDX11 /LOAD IR 1
2517 5307 0000 0 /WITH 0
2518 5310 0102 LDX12 /ETC
2519 5311 0000 0
2520 5312 0103 LDX13
2521 5313 0000 0
2522 5314 0104 LDX14
2523 5315 0000 0
2524 5316 0105 LDX15
2525 5317 0000 0
2526 5320 0106 LDX16
2527 5321 0000 0
2528 5322 0107 LDX17
2529 5323 0000 0
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 6772 TABLE3=6 /FROM TABLE3
2539 5330 2430 FSUB1430 /SUBTRACT RESULT
2540 5331 7372 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 ECPR1, 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 FPP1R /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 ECPRMD, 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	0050	FPP!R	/TO LOC FPP IR
2625	5431	0050	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

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2652 5464 1242 FADD:242 /ADD OFFSET 42 EFFECTIVELY ADDING 1 TO FAC
2653 5465 1242 FADD:242 /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 LOKTST: 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

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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	/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	LOKSEG,
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	/OFFSET OF 34
2757	5725	0000	0	RESLT,
2758	5726	0000	0	
2759	5727	0000	0	
2760	5730	0000	0	
2761	5731	0000	0	

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	0000	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
2775	5747	0000	0	/OFFSET OF 42
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	FPP27	4526	K1000	0145
ALN	0010	EXPUN	0600	FPP21	4546	K11	0120
ALTEX	0045	EXPUND	0527	FPP22	4621	K12	0121
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
APTIRO	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	FPPIR	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
CQUNT	2364	FLDA	0000	FPPT1	2151	K215	0142
CPAS1	5062	FMDC	5102	FPPTR	1503	K22	0131
CRL	0104	FMUL	4000	FPRST	6556	K23	0132
CRLF	2352	FMULM	7000	FRST	6555	K24	0133
CT	1365	FNEG	0003	FRAOV	0624	K240	0143
CPADM	1304	FNOP	0040	FRAOVR	0531	K260	2366
CPCMPR	5266	FNORM	0004	FR016	0664	K3	0112
CPCPR1	5275	FO	1142	FR0V16	1000	K37	0134
CPCR	1400	FOV	0660	FROV16	4713	K3733	0536
CPMLM	1334	FP1	2024	FSET1	4741	K3740	0150
CPOCT	0524	FP2	2054	FSET2	4773	K4	0113
CPOCT1	1370	FPADM	1270	FSTA	6000	K40	0135
CPOCT2	1533	FPADRS	0061	FSUB	2000	K400	0144
CPOCTT	2057	FPCMD	0060	FZMD	5133	K4000	0151
CPSET	5156	FPCOM	6553	FZMMT	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	FPIST	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	FPOCTT	2000	INTXB	0005	K7	0116
EZMDC	5407	FPP1	4000	JA	1030	K7400	0157
END	5472	FPP10	4222	JEQ	1000	K7600	0331
EPCPA	1405	FPP11	4252	JGT	1060	K7653	0332
EPCPR	5326	FPP12	4302	JLT	1050	K77	0136
EPMOPT	0102	FPP13	4332	JNE	1040	K7700	0160
EPSET	5302	FPP14	4364	JSR	1130	K7771	0333
ERRFPP	0077	FPP15	4414	JXN	2000	K777	1366
FX	5660	FPP16	4446	K1	0110	KYRD	0233

L0X	0100	SAV2	1144	TX13	2405
L0KSE	2064	SAV3	1145	TX13A	2153
L0KSEG	5676	SAV4	1146	TX15	2412
L0KTS	0063	SETX	1100	TX16	2420
L0KTST	5632	SKIP	2044	TX17	2431
L0SAVE	0004	STAR	3600	TX20	2450
L0SHFT	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
MLINC	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
CC	2127	T11	3674	TX35	2715
CCYA	2317	T12	3701	TX36	2724
CCYALS	0074	T13	3706	TX37	2732
CCWD1	1531	T14	3713	TX40	2773
CCWD2	2152	T15	3721	TX44	3012
CCWDS	2241	T16	3727	TX45	3031
CF22DP	1462	T17	3734	TX47	3040
CF22DX	0043	T2	3627	TX50	3053
CF22FP	1451	T20	3744	TX51	3062
CF22FX	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
PROGB	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		
REYINC	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											
CT	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#												
DPOCTT	442	828	960	1022#	1030	1061								
DPSET	663	1630	1674	1724	2400#									
DPSET1	1786	2414#												
DPSET2	1846	1908	2437#											
DPSET3	1967	2466#												
DPY	140#	487	1035											
DPTR	140	923#	929											
DIER	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#											
EPMOPT	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					

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