

IDENTIFICATION

PRODUCT CODE: MA1NDEC-8E-D1HA-D-(D)
PRODUCT NAME: PDP8-E MEMORY EXTENSION
AND TIME SHARE CONTROL TEST
DATE CREATED: NOVEMBER 1, 1970
MAINTAINER: DIAGNOSTIC PROGRAMMING GROUP
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1. ABSTRACT

THIS PROGRAM TESTS THE MEMORY EXTENSION AND TIME SHARE CONTROL LOGIC FOR PROPER OPERATION. THE PROGRAM EXERCISES AND TESTS ALL IOT'S ASSOCIATED WITH MEMORY EXTENSION AND TIME SHARE CONTROL.

ERRORS ENCOUNTERED DURING RUNNING WILL RESULT IN A PROGRAM "HALT" OR A "JUMP TO SELF"; WHICH MAY OCCUR IN ANY FIELD. DEPENDING ON THE PORTION OF THE TEST EXECUTED, ERRORS MAY BE IDENTIFIED BY REFERENCING THE PROGRAM LISTING.

2. REQUIREMENTS

2.1 EQUIPMENT

PDP8-E COMPUTER WITH THE KMB-E OPTION INSTALLED AND AT LEAST 4K OF EXTENDED MEMORY.

2.2 STORAGE

THE PROGRAM REQUIRES 4200(8) LOCATIONS OF CORE MEMORY AND MUST RESIDE IN FIELD 0 ONLY.

2.3 PRELIMINARY PROGRAMS

ALL THE PROGRAMS FOR THE BASIC PDP8-E MUST HAVE BEEN RUN SUCCESSFULLY.

3. LOADING PROCEDURE

3.1 METHOD

THE PROGRAM IS LOADED INTO "FIELD 0" USING THE STANDARD BINARY LOADER TECHNIQUE.

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS

SR 9, 10, AND 11 MUST CONTAIN AN OCTAL VALUE EQUAL TO THE NUMBER OF EXTENDED FIELDS AVAILABLE. NOTE THAT FIELD 0 IS NOT INCLUDED.

SR0=0 WILL RESULT IN COMPLETE PROGRAM EXECUTION OF THE MEMORY

EXTENSION AND TIME SHARE CONTROL.

SR0=1 WILL LOOP THE PROGRAM ON THE MEMORY EXTENSION PORTION AND TEST THAT THE TIME SHARE IS DISABLED.

SR1=1 WILL RESULT IN AN END OF TEST HALT AT LOCATION 1565(8).

4.2 STARTING ADDRESS

THE STARTING ADDRESS IS LOCATION 0200(8).

4.3 OPERATOR ACTION

4.3.1 MEMORY EXTENSION AND TIME SHARE CONTROL (TIME SHARE ENABLED)

WITH THE PROGRAM IN MEMORY; SET THE SWITCH REGISTER TO 0000.

PRESS EXTENDED ADDRESS LOAD.

SET THE REGISTER TO 0200 OCTAL.

PRESS ADDRESS LOAD.

PLACE THE OCTAL VALUE OF EXTENDED FIELDS AVAILABLE IN SR9-11.

PRESS CLEAR AND THEN CONTINUE.

THE PROGRAM SHOULD RUN UNTIL A FAILURE OCCURS OR UNTIL STOPPED BY THE OPERATOR WITH SR1=1. NOTE THAT THE PROGRAM SHOULD ALWAYS BE STOPPED WITH SR1=1.

THE TTY BELL WILL SIGNAL A SUCCESSFUL TEST AT THE COMPLETION OF EVERY PASS.

4.3.2 MEMORY EXTENSION PORTION (TIME SHARE DISABLED)

WITH THE PROGRAM IN MEMORY; SET THE SWITCH REGISTER TO 0000.

PRESS EXTENDED ADDRESS LOAD.

SET THE SWITCH REGISTER TO 0200 OCTAL.

PRESS ADDRESS LOAD.

PLACE THE OCTAL VALUE OF EXTENDED FIELDS AVAILABLE IN SR9-11.

PLACE SR0=1 TO EXECUTE MEMORY EXTENSION ONLY.

PRESS CLEAR AND THEN CONTINUE.

THE PROGRAM SHOULD HALT AT LOCATION 3651(8). THIS WILL

VERIFY THAT THE TIME SHARE IS DISABLED. ALL OTHER ERRORS
AT THIS TIME WILL BE CONSIDERED AS AN ILLEGAL CONDITION.

PRESS CONTINUE.

THE PROGRAM SHOULD LOOP UNTIL AN ERROR OCCURS OR UNTIL STOPPED
BY THE OPERATOR WITH SR1=1.

THE TTY BELL WILL SIGNAL A SUCCESSFULL TEST AT THE END
OF EVERY PASS.

5. OPERATING PROCEDURE

5.1 OPERATOR ACTION

5.1.1 MEMORY EXTENSION AND TIME SHARE CONTROL

VISUALLY VERIFY THAT THE TIME SHARE DISABLE JUMPER IS "OUT"
ON THE M837 MODULE AND FOLLOW THE OPERATOR ACTION IN 4.3.

5.1.2 MEMORY EXTENSION PORTION

VISUALLY VERIFY THAT THE TIME SHARE DISABLE JUMPER IS "IN"
ON THE M837 MODULE AND FOLLOW THE OPERATOR ACTION 4.3.

6. ERRORS

6.1 ERROR DESCRIPTION

BOTH "HALTS" AND "JUMP TO SELF" ARE USED TO INDICATE ERROR
CONDITIONS. IN EITHER CASE REFER TO THE PROGRAM LISTING
FOR MORE INFORMATION.

6.2 ERROR RECOVERY

ALL ERRORS ENCOUNTERED MUST BE CORRECTED BEFORE PROCEEDING
ON IN THE PROGRAM.

7. RESTRICTIONS

7.1 OPERATING RESTRICTIONS

PDP8-E ONLY WITH THE KMB-E OPTION INSTALLED AND AT LEAST 4K
OF EXTENDED MEMORY.

THE NUMBER OF EXTENDED AVAILABLE FIELDS MUST BE IN SR9=11.

IF MEMORY EXTENSION ONLY, THE TIME SHARE MUST BE DISABLED AND SR0=1.

IF MEMORY EXTENSION AND TIME SHARE CONTROL, THE TIME SHARE MUST BE ENABLED AND SR0=0.

IN ALL CASES SR1=1 MUST BE USED TO STOP PROGRAM.

THE PROGRAM MUST RESIDE IN FIELD 0 ONLY.

BOTH PORTIONS OF THE TEST MUST BE RUN, 4.3.1 AND 4.3.2, TO VERIFY THAT THE TIME SHARE CAN BE DISABLED AND ENABLED.

8. MISCELLANEOUS

8.1 EXECUTION TIME

EXECUTION TIME DEPENDS ON THE AMOUNT OF AVAILABLE EXTENDED FIELDS. EXECUTION TIME FOR 32K APPROXIMATIVELY 3.75 MINUTES.

9. PROGRAM DESCRIPTION

THE PROGRAM EXERCISES AND TESTS ALL IOT'S ASSOCIATED WITH THE MEMORY EXTENSION AND TIME SHARE CONTROL; THE ABILITY TO RUN WITH THE TIME SHARE DISABLED; THE ABILITY TO RUN "EXECUTIVE" AND "USER MODES" IN ALL AVAILABLE FIELDS WITH THE TIME SHARE ENABLED; THE ABILITY TO REFERENCE ALL MEMORY FIELDS FROM FIELD 0 AND VICE-VERSA; THE ABILITY TO READ AND WRITE DATA IN ALL AVAILABLE FIELDS AND THE ABILITY TO RUN PROGRAM INTERRUPTS AND IMMEDIATELY INHIBIT IN ALL FIELDS.

THE TIME SHARE OPTION DEVELOPES A NEW MODE OF OPERATION OR THE "USER MODE". ALL HLT, OSR, AND IOT INSTRUCTIONS ARE ILLEGAL IN USER MODE AND SHOULD "TRAP OUT". THE PROGRAM WILL THEN DETERMINE IF AN ERROR CONDITION DOES EXIST. IN SOME CASES, IN TIME SHARING, AN ERROR CONDITION CANNOT BE INDICATED WITH A "HLT" OR "TYPE OUT" BECAUSE THIS WOULD BE ILLEGAL. THEREFORE A "JUMP TO SELF" IS USED TO INDICATE ERRORS.

9.1 TEST_00

TEST ODF AND RDF FOR ALL COMBINATIONS 0 TO 7.

9.2 TEST_01

TEST INTERRUPT BUFFER BITS 9-11 WITH RIB, PI IS ENABLED AND TTY FLAG IS USED FOR INTERRUPTS, DO ALL COMBINATIONS 0 TO 7.

9.3 TEST_02

TEST DCA I AND TAD I TO ALL AVAILABLE FIELDS. EACH STACK
WILL CONTAIN ITS DF# IN LOCATION 7000.

9.4 TEST_03

TEST CIF INSTRUCTION. CHECKS THE ABILITY OF A CIF=ION=
NOP=JMP AND CIF=ION=NOP=JMS.

9.5 TEST_04

TEST GTF INSTRUCTION FOR TTY FLAG AND SAVE FIELD.
GET SAVE FIELD AFTER INTERRUPT AND CHECK INTERRUPT
INHIBIT. DO ALL COMBINATIONS 0 TO 7.

9.6 TEST_05

TEST ION AND LINK FROM RTF. TEST INTERRUPT INHIBIT BEFORE
PI. GET THE FLAGS WITH GTF.

9.7 TEST_06

TEST READ AND WRITE DATA IN ALL AVAILABLE EXTENDED FIELDS.

9.8 TEST_07

CONFIDENCE CHECK ON ALL EXISTENT FIELDS. MAKE SURE ALL
STACKS ARE ACCESSED CORRECTLY.

9.9 TEST_08

TEST DF AND IF FROM SAVE FIELD AFTER PI. USE RTF TO
SET THE FLAGS AND GTF TO GET THE FLAGS. CHECK INTERRUPT
INHIBIT. DO ALL SF COMBINATIONS 0 TO 77.

9.10 TEST_09

TEST PROGRAM INTERRUPT IN ALL AVAILABLE EXTENDED FIELDS.
USE RTF, GTF, RDF, AND RIF FOR CHECK.

9.11 TEST_10

TEST INTERRUPT INHIBIT IN ALL AVAILABLE EXTENDED FIELDS.
TEST CIF=ION=JMP COMBINATION.

9.12 TEST_11

TEST SAVE FIELD WITH RMF IOT.

9.13 TEST_12

TEST AUTO-INDEX IN ALL AVAILABLE EXTENDED FIELDS.

9.14 TEST_13

DYNAMIC RMF TEST, TEST ALL SF TO DF TRANSFERS AND SF
TO IB TRANSFERS.

9.15 TEST_14

TEST NON-EXISTENT FIELDS FOR ALL 0'S, IF 32K PRESENT
BY-PASS TEST.

9.16 TEST_15

TEST TIME SHARE IN FIELD 0.

9.17 TEST_16

TEST TIME SHARE IN ALL AVAILABLE EXTENDED FIELDS.

10. LISTING

```

1
2
3
4
5
6
7
8
9      6201
10     6202
11     6214
12     6224
13     6244
14     6234
15     6274
16     6264
17     6254
18     6204
19     6007
20     6005
21     6004
22     6001
23     6002
24     6000
25     6003
26     6040
27     6041
28     6032
29     6002
30     6004
31     6000
32
33
34     0004  0000
35     0001  0001
36     0042  0002
37     0003  0003
38
39     0020
40
41     0020  5400
42     0021  0000
43     0022  2445
44     0023  2445
45     0024  1000
46     0025  1321
47     0026  1432
48     0027  0000
49     0030  0000
50     0031  0000
51     0032  0000
52     0033  0000
53     0034  0000
54     0035  1132
55     0036  1133
    
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/PDP8-E, MEMORY EXTENSION AND TIME SHARE CONTROL TEST.
/
/COPYRIGHT 1970, DIGITAL EQUIPMENT CORP.,MAYNARD,MASS.
/
/STARTING ADDRESS IS 0200.
/
/CONSTANTS
/
CDF=6201
CIF=6202
RDF=6214
RIF=6224
RMF=6244
RIB=6234
SUF=6274
CUF=6264
SINT=6254
CINT=6204
CAF=6007
RTF=6005
GTF=6004
ION=6001
IOF=6002
SKON=6000
SR0=6003
SPF=6040
TSF=6041
KCC=6032
IOF=6002
KRB=6036
IOT=6000
/
*0
0000
5001
0002
0003
/
*20
/
JMPI0, JMP I 0
ISZ0, ISZ 0
XTFLG, TFLG
XSTKS, NSTKS
XRMF, TRMF
XRANS, TRANS
XAUTO, TAUTO
LOOP, 0
NDF, 0
STKS, 0
DAT, 0
NOSTAK, 0
NOFLD, 0
KCAIN, CAI-1
KCAI, CAI
    
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56	0037	7402	KHLT,	HLT
57	0040	6201	KCDF,	6201
58	0041	6202	KCIF,	6202
59	0042	1316	XFD,	EXFD
60	0043	0001	K1,	1
61	0044	0007	K7,	7
62	0045	0010	K10,	10
63	0046	7777	K7777,	7777
64	0047	7000	K7000,	7000
65	0050	7707	K7707,	7707
66	0051	7767	K7767,	7767
67	0052	7757	K7757,	7757
68	0053	7747	K7747,	7747
69	0054	7737	K7737,	7737
70	0055	7727	K7727,	7727
71	0056	7717	K7717,	7717
72	0057	7776	K7776,	7776
73	0060	7775	K7775,	7775
74	0061	7774	K7774,	7774
75	0062	7773	K7773,	7773
76	0063	7772	K7772,	7772
77	0064	7771	K7771,	7771
78	0065	0067	POINT,	.+2
79				
80				
81	0066	0067	K7S,	.+1
82	0067	7766	K7766,	7766
83	0070	7755		7755
84	0071	7744	K7744,	7744
85	0072	7733		7733
86	0073	7722		7722
87	0074	7711		7711
88	0075	7700		7700
89	0076	1127	XTDF,	STDF
90	0077	1130	XTDF1,	STDF+1
91	0100	1302	KXFLO,	EXFLD
92	0101	5402	KJMP,	JMP I 2
93	0102	1200	KNTR,	ENTER
94	0103	0020	K20,	20
95	0104	0005	JMP2,	JMP I KFLD0
96	0105	1427	KFLD0,	RTRN
97	0106	1422	KRTN,	CAG+2
98	0107	1410	XFIB,	SFIB
99	0110	7770	K7770,	7770
100	0111	0070	K0070,	0070
101	0112	0000	XSAV,	0000
102	0113	7770	XCOUNT,	7770
103	0114	0000	XTOR,	0000
104	0115	5200	K5200,	5200
105	0116	1200	K1200,	1200
106	0117	0077	K0077,	0077
107	0120	0011	K0011,	0011
108	0121	7700	K7700,	7700
109	0122	0002	K0002,	0002
110	0123	0004	K0004,	0004

```

111 0124 7402 K7402, 7402
112 0125 6000 K6000, 6000
113 0126 0100 K0100, 0100
114 0127 0203 PLACE, BEGIN
115 0130 1000 K1000, 1000
116 0131 2600 TIME, T1
117 0132 0017 K0017, 0017
118 0133 6001 K6001, 6001
119 0134 5535 JMP1R, JMP I XRET
120 0135 2511 XRET, RET
121 0136 0000 XDATA, 0000
122 0137 0000 K0000, 0000
123 0140 0003 K0003, 0003
124 0141 0001 K0001, 0001
125 0142 1100 K1100, 1100
126 0143 7745 SR00, 7745
127 0144 3577 K3577, 3577
128 0145 7745 K7745, 7745
129 0146 3033 XXSR0, XSR0
130 0147 1556 XELL, BELL+1
131 0150 1555 XBELL, BELL
132 0151 6546 TTR, TLS
133 0152 3645 XTRAP, TRAP
134 0153 5531 ATRAP, JMP I TIME
135 0154 0000 FCC, 0000
136 0155 2047 XDATER, DATER
137 0156 6211 K0DF1, CDF 10
138 0157 2525 KDATER, 2525
139
140
141
142
143 /TEST 00
144 /TEST CDF AND RDF, USE CDF TO SET THE DATA
145 /FIELD AND RDF TO READ THE DATA FIELD,
146 /DO ALL COMBINATIONS 0 TO 7,
147 /
148
149 *200
150 /
151 0200 7604 BEGIN1, LAS
152 0201 7510 SPA
153 0202 5552 JMP I XTRAP
154 0203 7300 BEGIN, CLA CLL
155 0204 6007 CAF
156 0205 6264 CUF
157 0206 1037 TAD KHLT /STORE A HLT IN LOC. 1 AND
158 0207 3001 DCA 1 /CHECK FOR STRAY INTERRUPT RGST.
159 0210 6001 ION
160 /
161 0211 6201 DF0, CDF 00 /DF 0
162 0212 6214 RDF
163 0213 7450 SNA /SHOULD NOT SKIP
164 0214 5220 JMP DF7
165 0215 7402 HLT /ERROR, CDF OR RDF FAILED
166 0216 7200 CLA

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166	0217	5211		JMP DF0	/REPEAT
167			/		
168	0220	1050	DF7,	TAD K7707	/7707
169	0221	6271		CDF 70	/DF 7
170	0222	6214		RDF	
171	0223	7040		CMA	/AC = 0
172	0224	7450		SNA	/SHOULD NOT SKIP
173	0225	5231		JMP OK1	
174	0226	7402		HLT	/CDF OR RDF FAILED
175	0227	7200		CLA	
176	0230	5220		JMP DF7	
177			/		
178	0231	2027	OK1,	ISZ LOOP	/CHECK DONE
179	0232	5211		JMP DF0	
180			/		
181	0233	7200		CLA	
182	0234	3027		DCA LOOP	/LOOP COUNTER
183			/		
184	0235	1051	DF1,	TAD K7767	/7767
185	0236	6211		CDF 10	/DF 10
186	0237	6214		RDF	
187	0240	7040		CMA	/AC=0
188	0241	7450		SNA	
189	0242	5246		JMP DF2	
190	0243	7402		HLT	/CDF1 OR RDF FAILED
191	0244	7200		CLA	
192	0245	5235		JMP DF1	
193			/		
194	0246	1052	DF2,	TAD K7757	/7757
195	0247	6021		CDF 20	/DF2
196	0250	6014		RDF	
197	0251	7040		CMA	/AC=0
198	0252	7450		SNA	
199	0253	5237		JMP OK2	
200					
201					
202	0254	7402		HLT	/CDF 2 OR RDF FAILED
203	0255	7200		CLA	
204	0256	5246		JMP DF2	
205			/		
206	0257	2027	OK2,	ISZ LOOP	/DONE IF SKP
207	0260	5235		JMP DF1	
208	0261	7200		CLA	
209	0262	3027		DCA LOOP	
210			/		
211	0263	1053	DF3,	TAD K7747	/7747
212	0264	6231		CDF 30	/DF 3
213	0265	6214		RDF	
214	0266	7040		CMA	/AC=0
215	0267	7450		SNA	
216	0270	5274		JMP DF4	
217	0271	7402		HLT	/CDF 3 OR RDF FAILED
218	0272	7200		CLA	
219	0273	5263		JMP DF3	
220			/		

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221 0274 1054 DF4, TAD K7737 /7737
222 0275 6241 CDF 40 /DF 4
223 0276 6214 RDF
224 0277 7040 CMA /AC=0
225 0300 7450 SNA
226 0301 5305 JMP OK3
227 0302 7402 HLT /CDF 4 OR RDF FAILED
228 0303 7200 CLA
229 0304 5274 JMP DF4
230
231 0305 2027 /OK3, ISZ LOOP /DONE IF SKP
232 0306 5263 JMP DF3
233
234 0307 7200 / CLA
235 0310 3027 DCA LOOP
236
237 0311 1055 DF5, TAD K7727 /7727
238 0312 6251 CDF 50 /DF5
239 0313 6214 RDF
240 0314 7040 CMA /AC=0
241 0315 7450 SNA
242 0316 5322 JMP DF6
243 0317 7402 HLT /CDF 5 OR RDF FAILED.
244 0320 7200 CLA
245 0321 5311 JMP DF5
246
247 0322 1056 DF6, TAD K7717 /7717
248 0323 6261 CDF 60 /DF 6
249 0324 6214 RDF
250 0325 7040 CMA /AC=0
251 0326 7450 SNA
252 0327 5333 JMP OK4
253
254 0330 7402 HLT /CDF 6 OR RDF FAILED
255 0331 7200 CLA
256 0332 5322 JMP DF6
257
258 0333 2027 /OK4, ISZ LOOP /DONE IF SKP
259 0334 5311 JMP DF5
260 0335 6000 SKON /SKP IF ION
261 0336 7402 HLT /IS ION STILL ON
262
263 /TEST 01
264 /NOW TEST INTERRUPT BUFFER (IB) BITS 9-11 WITH
265 /RIB. PI IS ENABLED, TELEPRINTER FLAG IS
266 /USED FOR INTERRUPT, DO ALL COMBINATIONS 0 TO 7.
267
268 0337 6201 CDF 00 /DF0
269 0340 1000 TAD JMP10 /JMP10=JMP I 0
270 0341 3001 DCA 1 /C(1)=JMP I 0
271 0342 3027 DCA LOOP
272 0343 6041 TSF /TEST TTY FLAG
273 0344 4422 JMS I XTFLG /SET FLAG
274
275 0345 6001 /IB0, ION /ENABLE PI

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276	0346	7200		CLĀ	
277	0347	6234		RIB	/READ SF
278	0350	7450		SNA	
279	0351	5354		JMP IB1	
280	0352	7402		HLT	/RIB FAILED
281	0353	5345		JMP IB0	
282			/		
283	0354	6211	IB1,	ODF 10	/DF 1
284	0355	6001		ION	
285	0356	7200		CLĀ	
286	0357	6214		RDF	/DF SHOULD BE 0 AFTER A PI
287	0360	7450		SNA	
288	0361	5364		JMP ,+3	
289	0362	7402		HLT	
290	0363	5354		JMP IB1	/DF NOT CLEARED, OR NO PI
291			/.		
292	0364	1057		TAD K7776	
293	0365	6234		RIB	/READ SF
294	0366	7040		CMA	/AC=0
295	0367	7450		SNA	
296	0370	5373		JMP OK5	
297	0371	7402		HLT	/RIB OR SF FAILED
298	0372	5354		JMP IB1	
299	0373	5027	OK5,	ISZ LOOP	/DONE IF SKP
300	0374	5345		JMP IB0	
301	0375	5776		JMP I ,+1	
302	0376	0400		IB2=2	
303					
304		0400	*400		
305	0400	7200		CLĀ	
306	0401	5027		DCĀ LOOP	
307					
308			/		
309	0402	6221	IB2,	ODF 20	/DF 2
310	0403	6001		ION	
311	0404	7200		CLĀ	
312	0405	6214		RDF	/SHOULD BE 0 AFTER PI
313	0406	7450		SNA	
314	0407	5012		JMP ,+3	
315	0410	7402		HLT	/DF NOT CLEARED, OR NO PI
316	0411	5202		JMP IB2	
317			/		
318	0412	1060		TAD K7775	
319	0413	6234		RIB	/AC=7777
320	0414	7040		CMA	/=0
321	0415	7450		SNA	
322	0416	5221		JMP IB3	
323	0417	7402		HLT	/RIB OR SF FAILED
324	0420	5202		JMP IB2	
325			/		
326	0421	6231	IB3,	ODF 30	/DF3
327	0422	6001		ION	
328	0423	7200		CLĀ	
329	0424	6214		RDF	/DF SHOULD BE CLEARED
330	0425	7450		SNA	

331	0426	5231		JMP ,+3	
332	0427	7402		HLT	/DF NOT CLEARED
333	0430	5221		JMP IB3	
334			/		
335	0431	1061		TAD K7774	
336	0432	6234		RIB	/AC=7777
337	0433	7040		CMA	/AC=0
338	0434	7450		SNA	
339	0435	5240		JMP OK6	
340	0436	7402		HLT	/RIB OR SF FAILED
341	0437	5221		JMP IB3	
342			/		
343	0440	2027	OK6,	ISZ LOOP	/DONE IF SKP
344	0441	5202		JMP IB2	
345			/		
346	0442	7200		CLA	
347	0443	3027		DCA LOOP	
348			/		
349	0444	6241	IB4,	ODF 40	/DF 3
350	0445	6001		ION	
351	0446	7200		CLA	
352	0447	6214		RDF	/DF MUST BE 000 AFTER A PI
353	0450	7450		SNA	/ERROR IF SKIP
354	0401	5254		JMP ,+3	
355					
356					
357	0452	7402		HLT	/DF NOT 0 AFTER PI
358	0453	5244		JMP IB4	
359			/		
360	0454	1062		TAD K7773	/AC=7773
361	0455	6234		RIB	/AC=7777
362	0456	7040		CMA	/AC=0
363	0457	7450		SNA	
364	0460	5253		JMP IB5	
365	0461	7402		HLT	/RIB OR SF FAILED
366	0462	5244		JMP IB4	
367			/		
368	0463	6251	IB5,	ODF 50	/DF5
369	0464	6001		ION	
370	0465	7200		CLA	
371	0466	6214		RDF	/DF SHOULD=000
372	0467	7450		SNA	
373	0470	5273		JMP ,+3	
374	0471	7402		HLT	/DF NOT 0 AFTER PI
375	0472	5263		JMP IB5	
376			/		
377	0473	1063		TAD K7772	/AC = 7772
378	0474	6234		RIB	/AC = 7777
379	0475	7040		CMA	/AC = 0000
380	0476	7450		SNA	
381	0477	5302		JMP OK7	
382	0500	7402		HLT	/RIB OR SF FAILED
383	0501	5263		JMP IB5	
384			/		
385	0502	2027	OK7,	ISZ LOOP	/DONE IF 0 AND SKIP

```

386 0503 5244 JMP IB4
387
388 0504 7200 / CLA
389 0505 3027 DCA LOOP
390
391 0506 6261 IB6, CDF 60 /DF6
392 0507 6001 ION
393 0510 7200 CLA
394 0511 6214 RDF /DF MUST=0 AFTER PI
395 0512 7450 SNA
396 0513 5316 JMP ,+3
397 0514 7402 HLT /DF NOT 0 AFTER PI
398 0515 5306 JMP IB6
399
400
401 0516 1064 / TAD K7771 /7771
402 0517 6234 RIB /AC=7777
403 0520 7040 CMA
404 0521 7450 SNA
405 0522 5325 JMP IB7
406 0523 7402 HLT /RIB OR SF FAILED
407 0524 5306 JMP IB6
408
409 0525 6271 IB7, CDF 70 /DF 7
410 0526 6001 ION
411 0527 7200 CLA
412 0530 6214 RDF /DF MUST = 0 AFTER PI
413 0531 7450 SNA
414 0532 5335 JMP ,+3
415 0533 7402 HLT /DF NOT 0
416 0534 5325 JMP IB7
417
418 0535 1110 / TAD K7770
419 0536 6234 RIB /AC=7777
420 0537 7040 CMA
421 0540 7450 SNA
422 0541 5344 JMP OK8
423 0542 7402 HLT /RIB OR SF FAILED
424 0543 5325 JMP IB7
425
426
427 0544 2027 OK8, ISZ LOOP /DONE IF SKP
428 0545 5306 JMP IB6
429 0546 5747 JMP I ,+1 /NEW PAGE
430 0547 6000
431
432
433 0600 *600
434 /TEST 02
435 /NOW TEST DCA I AND TAD I TO ALL STACKS, NUMBER OF
436 /EXTENDED STACKS SHOULD BE IN SR9 TO 11, EACH STACK WILL
437 /CONTAIN ITS DF# IN LOCATION 7000,
438 /
439 0600 3027 DCA LOOP
440 0601 4423 DCAI, JMS I XSTKS /READ SR 9-11

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441 0602 7001 IAC
442 0603 3030 DCA NDF /DF NUMBER = 1 TO START
443 0604 1040 TAD KCDF /6201
444 0605 1045 TAD K10
445 0606 3207 DCA ,+1 /DF 001 TO START WITH
446 0607 6201 DFLD, CDF 00 /WILL BE INCREMENTED
447 0610 1030 TAD NDF /DF#
448 0611 3447 DCA I K7000 /PUT IN 7000 OF STACK
449 0612 2031 ISZ STKS /ALL STACKS WHEN 0
450 0613 7410 SKP
451 0614 5222 JMP TADI /TEST TAD I
452 0615 1045 TAD K10
453 0616 1207 TAD DFLD /INCR. CDF IOT
454 0617 3207 DCA DFLD
455 0620 2030 ISZ NDF
456 0621 5227 JMP DFLD
457
458 0622 4423 TADI, JMS I XSTKS /SR9-11 AGAIN
459 0623 7001 IAC
460 0624 3030 DCA NDF /DF#=1 AGAIN
461 0625 1040 TAD KCDF /6201
462 0626 1045 TAD K10
463 0627 3230 DCA ,+1
464 0630 6201 TFLD, CDF 00
465 0631 1047 TAD I K7000 /AC=DF CONTENTS NOW
466 0632 3032 DCA DAT /SAVE TEMP
467 0633 1032 TAD DAT
468 0634 7041 CIA /2'S COMP
469 0635 1030 TAD NDF /BETTER BE EQUAL
470 0636 7040 SZA CLA
471 0637 5200 JMP CAA-1 /ERROR PATH
472 0640 0001 ISZ STKS /ALL WHEN 0
473 0641 5045 JMP ,+4
474 0642 0007 ISZ LOOP /DONE WHEN 0
475 0643 5201 JMP DCA1
476 0644 5236 JMP IBSF /NEXT TEST
477 0645 1045 TAD K10
478 0646 1230 TAD TFLD /CDF IOT + 10
479 0647 3230 DCA TFLD
480 0650 2030 ISZ NDF
481 0651 5230 JMP TFLD
482
483 0652 1032 TAD DAT /DATA AS READ
484 0653 7002 CAA, HLT /AC=DATA READ
485 0654 7200 CLA
486 0655 5230 JMP TFLD
487
488
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492 /TEST 03
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/CIF TEST, CHECKS THE ABILITY OF A CIF=ION=NOP=JMP OR
/CIF=ION=NOP=JMS SEQUENCE TO DO THE FOLLOWING:
/1, CIF ENABLE MB TO IB TRANSFER,
/2, INHIBIT INTERRUPT TILL JMP OR JMS EXECUTED,
/3, INTERRUPT AFTER JMP OR JMS EXECUTED,
/4, JMP OR JMS ENABLES IB TO IF TRANSFER,

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495                                     /5, INTERRUPT ENABLES IF TO SF TRANSFER,
496
497
498 /SET UP FOR CIF=ION=NOP-JMP CHECK,
499 0656 6201 IBSF, CDF 00 /SET LOCS 1-2 TO ISZ 0,
500 0657 1021 TAD ISZ0 /JMP I 0 RESPECTIVELY,
501 0660 3001 DCA 1
502 0661 1352 TAD KNOP
503 0662 3002 DCA 2
504 0663 1020 TAD JMP10
505 0664 3003 DCA 3
506
507 /NOW STORE HALTS IN LOC1, CIFJMP+1,
508 /AND CIFJMS+1 OF ALL EXTENDED FIELDS,
509
510 0665 4423 JMS I XSTKS
511 0666 1040 TAD KCDF
512 0667 1045 TAD K10
513 0670 3271 DCA ,+1
514 0671 6211 HLTS, CDF 10
515 0672 1037 TAD KHLT
516 0673 3443 DCA I K1
517 0674 1037 TAD KHLT
518 0675 3754 DCA I CAB
519 0676 1037 TAD KHLT
520 0677 3755 DCA I CAC
521 0700 2031 ISZ STKS
522 0701 7410 SKP
523 0702 5305 JMP ,+3
524 0703 1071 TAD HLTS
525 0704 5007 JMP HLTS=2
526 0705 6001 CDF 00
527 0706 6001 TSF /ENSURE TIO FLAG SET,
528 0707 1002 JMS I XTFLG
529 0710 3027 DCA LOOP /SET COUNTER FOR 4096 PASSES,
530 0711 1041 AGAIN1, TAD KCIF /INITIALIZE TO CIF 00,
531 0712 3323 DCA CIFJMP
532 0713 3353 DCA CIFCK /INITIALIZE I.F. CHECK TO 0,
533 0714 4423 JMS I XSTKS /READ SR9-11,
534 0715 1323 CIFJPL, TAD CIFJMP
535 0716 1045 TAD K10
536 0717 3323 DCA CIFJMP
537 0720 1353 TAD CIFCK
538 0721 1045 TAD K10
539 0722 3353 DCA CIFCK
540 0723 6202 CIFJMP, CIF 00 /MODIFIED TO CURRENT FIELD
541 /UNDER TEST,
542
543
544 0724 6001 ION
545 0725 7000 NOP
546 0726 5327 JMP ,+1
547 0727 7402 HLT
548 0730 6234 RIB /ERROR, NO PI OR INHIBIT PI,
549 0731 7041 CIA
550 0732 1353 TAD CIFCK

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551	0733	7650		SNÄ CLA	
552	0734	5344		JMP CAD+3	
553	0735	1353		TAD CIFCK	
554	0736	7110		CLL RAR	
555	0737	7012		RTR	
556	0740	6234		RIB	
557	0741	7402	CAD,	HLT	/ERROR; I.F. TO I.F. TRANSFER
558	0742	7200		CLÄ	/FAILED AFTER CIF-JMP, BAD
559	0743	5323		JMP CIFJMP	/I.F. IN AC6-8, GOOD I.F. IN
560					/AC9-11, REPEAT UPON CONTINUE,
561	0744	2031		ISZ STKS	/DONE?
562	0745	5315		JMP CIFJPL	/NO, DO NEXT FIELD
563	0746	2027		ISZ LOOP	/4096 TIMES?
564	0747	5311		JMP AGAIN1	/NO, DO TI ALL AGAIN.
565	0750	5751		JMP I .+1	/YES, GO TEST CIF-JMS,
566	0751	1000		IBSF1	
567	0752	7000	KNOP,	NOP	
568	0753	0000	CIFCK,	0	
569	0754	0724	CAB,	CIFJMP+1	
570	0755	1020	CAC,	CIFJMS+1	
571					
572					
573					
574		1000	*1000		
575	1000	7200	IBSF1,	CLÄ	
576	1001	6201		COF 00	
577	1002	6041		TSF	
578	1003	4422		JMS I XTFLG	/ENSURE TTO FLAG SET.
579	1004	3007		DCÄ LOOP	/SET UP FOR 4096 PASSES.
580	1005	1001	AGAIN2,	TAD KCIF	/INIT. TO CIF 00.
581	1006	7217		DCÄ CIFJMS	
582	1007	5146		DCÄ CIFCK1	/INIT. I.F. CHECK TO 0.
583	1010	4023		JMS I XSTKS	/READ SR9-11.
584	1011	1017	CIFJSL,	TAD CIFJMS	
585	1012	1015		TAD K10	
586	1013	3217		DCÄ CIFJMS	
587	1014	1246		TAD CIFCK1	
588	1015	1045		TAD K10	
589	1016	3246		DCÄ CIFCK1	
590	1017	6202	CIFJMS,	CIF 00	/MODIFIED TO CURRENT FIELD
591					/UNDER TEST.
592	1020	6041		ION	
593	1021	7100		NOP	
594	1022	4223		JMS .+1	
595	1023	0000		0	
596	1024	7402		HLT	/ERROR; NO PI OR INHIBIT PI.
597	1025	6234		RIB	
598	1026	7041		CIA	
599	1027	1246		TAD CIFCK1	
600	1030	7650		SNÄ CLA	
601	1031	5241		JMP CAE+3	
602	1032	1246		TAD CIFCK1	
603	1033	7110		CLL RAR	
604	1034	7312		RTR	
605	1035	6234		RIB	

606	1036	7402	CAE,	HLT	/ERROR: I:B: TO I:F: TRANSFER
607	1037	7200		CLA	/FAILED AFTER CIF-JMS, BAD
608	1040	5217		JMP	CIFJMS
609					/I.F. IN AC6-8, GOOD I.F.
610	1041	2031		ISZ	STKS
611	1042	5211		JMP	CIFJSL
612	1043	2027		ISZ	LOOP
613	1044	5205		JMP	AGAIN2
614	1045	5647		JMP I	XGTF1
615	1046	0000	CIFCK1,0		/NO. DO NEXT FIELD.
616	1047	2271	XGTF1, GTF1		/4096 TIMES?
617					/NO. DO IT ALL AGAIN.
618					/YES. GO ON TO NEXT TEST

619 /
 620 /TEST 10
 621 /TEST INTERRUPT INHIBIT
 622 /FROM EACH FIELD, REFER TO HEADING TITLED "EXTENDED
 623 /FIELD TEST ROUTINE". THIS ROUTINE IS PLACED IN
 624 /EACH TESTED FIELD AT THE ADDRESSES SPECIFIED. THE
 625 /INDICATED ERROR HALTS WILL BE IN THE EXTENDED
 626 /FIELD. PRESS CONT. TO RECOVER. ONLY 1 FIELD WILL
 627 /CONTAIN THE ROUTINE AT ANY ONE TIME. OTHER FIELDS
 628 /WILL CONTAIN ALLOIS. THE ROUTINE IS REPLACED WITH
 629 /HALTS AFTER COMPLETION. THE PORTIONS OF THE FIELD
 630 /WHICH DO NOT CONTAIN THE ROUTINE ARE SET TO 0000
 631 /BEFOREHAND.
 632 /
 633 /SETUP FIELDS TO TEST, POINTERS, ETC.:
 634 /

635	1000	4423	TRMF,	JMS I XSTKS	/READ SR9-11
636	1001	1040		TAD KCDF	/6201
637	1002	2000		DCA	.*6
638	1003	1040		TAD	.*5
639	1004	1040		TAD K10	
640	1005	2000		DCA	.*3
641	1006	2010		CMA	
642	1007	3010		DCA	10
643	1008	6201		CDF	00
644	1041	2010		DCA I 10	/PLACE 0'S IN EACH FIELD FROM
645	1042	1010		TAD 10	/LOC. 0 TO 7777.
646	1043	2000		CMA	
647	1044	2010		SZA CLA	
648	1045	2001		JMP	.*4
649	1046	2031		ISZ	STKS
650	1047	5203		JMP	TRMF*3

651 /
 652 /
 653 /
 654 /NOW PUT A HLT IN EACH FIELD IN THE SAME
 655 /LOCATION AS CAI, BELOW.
 656 /

657	1070	4423		JMS I XSTKS	/READ SR 9-11
658	1071	1040		TAD KCDF	
659	1072	1045		TAD K10	
660	1073	3274		DCA	.*1

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661 1074 6201 CHDF, CDF 00
662 1075 1036 TAD KCAI /KCAI = ADDRESS OF CAI
663 1076 3027 DCA LOOP /SAVE TEMPORARILY
664 1077 1037 TAD KHLT /KHLT = 7402 (HLT)
665 1100 3427 DCA I LOOP
666 1101 2031 ISZ STKS /DONE ALL STACKS WHEN SKIP
667 1102 7410 SKP
668 1103 5306 JMP .+3
669 1104 1274 TAD CHDF
670 1105 5272 JMP CHDF+2
671 /
672 1106 6201 CHDF 00
673 1107 6041 STRMF, ISZ /CHECK TTY FLAG
674 1110 4422 JMS I XTFLG /GO SET IT
675 1111 1050 TAD K7707
676 1112 3027 DCA LOOP
677 1113 1065 TAD POINT
678 1114 3066 DCA K7S /POINTER FOR K7700 TO K7766
679 1115 4423 JMS I XSTKS /READ SR 9-11
680 1116 1040 TAD KCDF /6201
681 1117 1045 TAD K10 /10
682 1120 3327 DCA STDF
683 1121 1041 TAD KCIF /6202
684 1122 1045 TAD K10 /10
685 1123 3330 DCA STDF+1
686 1124 1330 TAD STDF+1
687 1125 3442 DCA I XFD
688 1126 4425 JMS I XRANS /PUT TEST ROUTINE INTO FIELD X
689 /
690 1127 0211 STDF, CDF 10 /FIELD 1 TO START WITH
691 1130 0212 CIF 10
692 1131 5330 JMP .+1 /SHOULD ENTER EXTENDED FIELD
693 / /AFTER THIS JMP, HLT IF NOT
694 1132 7410 NOP
695 1133 7402 CAI, HLT /ERROR, PI FAILED
696 / /C(AC) = C(I.B.)
697 1134 5327 JMP STDF /REPEAT SAME TEST
698 /
699 /
700 /
701 /ENTER HERE AFTER PI FROM EXTENDED BANK
702 1200 *1200
703 /
704 1200 6214 ENTER, RDF /DF SHOULD BE 000
705 1201 7450 SNA /ERROR IF SKIP
706 1202 5206 JMP .+4 /CHECK C(SF)
707 1203 7402 HLT /AC=C(DF)
708 1204 7200 CLA
709 1205 5476 JMP I XTDF /REPEAT TEST
710 1206 6212 CIF 10 /SET I.B. TO FIELD 1
711 1207 6244 RMF /I.B. NOW EQUAL TO SF
712 1210 6234 RIB /READ IB
713 1211 6202 CIF 00
714 1212 6201 CDF 00
715 1213 1466 TAD I K7S

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716	1214	7240	CMA	
717	1215	7650	SNÄ CLA	/ERROR IF SKIP
718	1216	5226	JMP CKPC	
719	1217	6244	RMF	
720	1220	6234	RIS	
721	1221	7402	HLT	/ERROR RMF AND PI WORKED, BUT
722				/I.B. NOT CORRECT AFTER RMF.
723	1222	7200	CLÄ	/AC=C(1B)
724	1223	6201	CDF 00	
725	1224	6202	CIF 00	
726	1225	5476	JMP I XTDF	/BACKUP A PAGE AND REPEAT
727				
728	1226	1036	CKPC. TAD KCAI	/KCAI=ADDRESS OF CAI
729	1227	7001	IAC	/MAKE CAI+1
730	1230	7041	CIÄ	
731	1231	1000	TAD 0	/COMPARE TO C(0)
732	1232	7650	SNÄ CLA	/SHOULD NOT SKIP
733	1233	5243	JMP ,+5	/ALL OK SETUP FOR NEXT FIELD
734	1234	1000	TAD 0	
735	1235	7402	HLT	/ERROR, ALL WORKED, BUT
736				/C(PC) WAS NOT=TO CAI+1
737				/AFTER PI IN EXTENDED
738				/FIELD, C(AC)=C(0),F0.
739				/CHECK FOR PI NOT INHIBITED.
740				/OR AUTO-INDEX REG.
741				/12 FAILING IN THE EXTENDED FIELD.
742	1236	7200	CLÄ	
743	1237	5476	JMP I XTDF	/BACKUP AND REPEAT
744				
745				/SETUP FOR NEXT FIELD
746				
747	1240	2001	ISZ STKS	/DONE ALL IF SKIP
748	1241	5266	JMP ,+5	
749	1242	2027	ISZ LOOP	/DONE LOOPING IF SKIP
750	1243	5048	JMP I ,+2	/REPEAT ALL AGAIN
751	1244	5007	JMP I XFIB	/EXIT TO NEXT TEST
752	1245	1113	STRMF+4	/BACK TO LAST PAGE
753				
754				
755				
756				/SET LAST TESTED FIELD TO ALL 0'S AND PUT A
757				/HLT IN RESPECTIVE ADDRESS OF CAI
758				
759	1246	7240	CLÄ CMA	
760	1247	3010	DCÄ 10	
761	1250	1476	TAD I XTDF	/CDF X0 AT STDF
762	1251	3252	DCÄ ,+1	
763	1252	6211	CDF 10	/F1 TO START WITH
764	1253	5410	DCÄ I 10	
765	1254	1010	TAD 10	
766	1255	7040	CMA	
767	1256	7640	SZA CLA	/CLEARD IF SKIP
768	1257	5253	JMP ,+4	
769	1260	6201	CDF 00	
770	1261	1476	TAD I XTDF	/CDF X0 AT STDF

771	1262	3263	DCA ,+1	
772	1263	6211	CDF 00	
773	1264	1037	TAD KHLT	/=7402 (HLT)
774	1265	3436	DCA I KCAI	/KCAI=ADDRESS OF CAI
775	1266	6201	CDF 00	/RESTORE DF
776			/	
777			/INCREMENT CDF AND CIF TOT'S AT STDF; STDF+1	
778			/TO NEXT FIELD;	
779			/	
780	1267	1476	TAD I XTDF	/CDF X0 AT STDF
781	1270	1045	TAD K10	
782	1271	3476	DCA I XTDF	
783	1272	1477	TAD I XTDF1	/CIF X0 AT STDF
784	1273	1045	TAD K10	
785	1274	3477	DCA I XTDF1	
786	1275	1477	TAD I XTDF1	
787	1276	3316	DCA EXFD	
788	1277	2066	ISZ K7S	
789	1300	4321	JMS TRANS	/PUT ROUTINE IN NEW FIELD
790	1331	5476	JMP I XTDF	/TEST NEW FIELD
791				
792			/EXTENDED FIELD TEST ROUTINE	
793			/	
794				
795			/THE FOLLOWING INSTRUCTIONS ARE PLACED IN	
796			/EACH EXTENDED FIELD TESTED. THE NUMBERS IN THE	
797			/COMMENTS FIELD CORRESPOND TO THE	
798			/MEMORY LOCATIONS IN THE TESTED FIELD. LOCATIONS	
799			/0 THRU 11 ARE USED FOR AN ERROR ROUTINE	
800			/IN CASE FIELD 0 IS NOT ENTERED AFTER AN	
801			/INTERRUPT, THE EXTENDED FIELD SHOULD BE	
802			/ENTERED AT LOCATION CAI-1 WHICH CORRESPONDS	
803			/TO CAI-1 IN FIELD 0.	
804			/	
805			/EXTENDED FIELD INSTRUCTIONS:	
806			/	
807	1302	0000	EXFLD, 0	/0
808	1303	1000	TAD 0	/1
809	1304	2450	SNA	/IF LOC: 0 NOT =0 PI DIDN'T
810				/ENTER FIELD 0
811	1305	5312	JMP ,+5	/3
812	1306	2402	HLT	/4, INTERRUPTED TO THIS FIELD
813				/INSTEAD OF FIELD 0, C(AC)=C(0)
814				/WHICH SHOULD BE CAI+1
815				/IF NOT, CHECK LOC: 7777, IT
816				/MUST = 5412 (JMP I 12).
817	1307	7200	CLA	/5
818	1310	3000	DCA 0	/6
819	1311	5420	JMP I 20	/7, C(20) =CAI
820	1312	2402	HLT	/10, THE JMP I 12 AT LOC:
821				/7777 WAS NOT EXECUTED,
822				/OR INTERRUPT FAILED. IF
823				/NO INTERRUPT, LOCATION 12
824				/NOW CONTAINS 0 INSTEAD
825				/OF ADDRESS CAI.

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826 1313 5307 JMP I=4 /11, REPEAT IN THIS FIELD
827 1314 1133 CAI /12, AUTO-INDEXS TO CAI+1
828 /IN F 0 IF THE JMP I 12
829 /WORKS,
830 /LOCS. 13 TO 17 ARE ALL 0'S
831 /
832 1315 1133 CAI /20, EQUALS CAI IN F0,
833 /
834 /LOCS. 21 TO CAI=2 ARE ALL 0'S
835 /
836 1316 6212 EXFD, CIF 10 /FIELD 1 TO START WITH
837 1317 6001 ION /LOC. CAI, SEE SYMBOL TABLE
838 /FOR CAI,
839 /LOCS. CAI+1 TO 7776 ARE ALL 0'S
840 /
841 1320 5412 JMP I 12 /7777, PI SHOULD OCCUR,
842 /AFTER THIS INSTRUCTION,
843 /TO FIELD 0.
844
845
846
847 /ROUTINE TO TRANSFER TEST ROUTINE TO PROPER FIELD
848 /
849 1321 0000 TRANS, 0
850 1322 1101 TAD KJMP /KJMP=JMP I 2
851 1323 3001 DCA 1 /IN FIELD 0
852 1324 1102 TAD KNTR /KNTR = LOC, ENTER
853 1325 3002 DCA 2 /OF FIELD 0
854 1326 1100 TAD KXFLD /KXFLD = LOC, EXFLD
855 1327 3010 DCA 10
856 1328 3011 DCA 11
857 1331 0007 TAD K7766 /1-10 DECIMAL
858 1332 3000 DCA 0 /SAVE
859 1333 1475 TAD I XTDF /CDF X0 IN STDF
860 1334 3337 DCA ,+3
861 1335 6201 CDF 00
862 1336 1410 TAD I 10
863 1337 6211 TRFLD, CDF 10 /F1 TO START WITH
864 1340 3411 DCA I 11 /PUT IN EXTENDED FIELD
865 1341 0000 ISZ 0 /DONE LOCS 1 TO 12 IF SKIP
866 1342 3335 JMP , -5
867 1343 1337 TAD TRFLD
868 1344 3347 DCA ,+3
869 1345 6001 CDF 00
870 1346 1410 TAD I 10
871 1347 6211 CDF 10
872 1350 3200 DCA I K20 /PUT 500 IN LOC, 20
873 1351 6201 CDF 00
874 1352 1337 TAD TRFLD
875 1353 3355 DCA ,+2
876 1354 1410 TAD I 10
877 1355 6211 CDF 10
878 1356 3435 DCA I KCAIM /PUT CIF X0 IN CAI=1
879 1357 6201 CDF 00
880 1360 1337 TAD TRFLD

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1040 1522 7440 SEA
1041 1523 7442 HLT /ERROR, INDEX REG, 10 FAILED
1042 1524 1411 TAD I 11
1043 1525 7440 SEA
1044 1526 7442 HLT /INDEX REG, 11 FAILED
1045 1527 1412 TAD I 12
1046 1528 7440 SEA
1047 1529 7442 HLT /12 FAILED
1048 1530 1413 TAD I 13
1049 1531 7440 SEA
1050 1532 7442 HLT /13 FAILED
1051 1533 1414 TAD I 14
1052 1534 7440 SEA
1053 1535 7442 HLT /14 FAILED
1054 1536 1415 TAD I 15
1055 1537 7440 SEA
1056 1538 7442 HLT /15 FAILED
1057 1539 1416 TAD I 16
1058 1540 7440 SEA
1059 1541 7442 HLT /16 FAILED
1060 1542 1417 TAD I 17
1061 1543 7440 SEA
1062 1544 7442 HLT /17 FAILED
1063 1545 1418 TAD I 18
1064 1546 7440 SEA
1065 1547 7442 HLT /18 FAILED
1066 1548 6201 CDF 00 /SET DF TO FIELD 0
1067 1549 6202 CIF 00 /SET I,B, TO FIELD 0
1068 1550 5310 JMP GOTO0 /EXIT TO FIELD 0
1069 1551 5310 /END OF TEST ROUTINE
1070 1552 5310 /
1071 1553 5310 /
1072 1554 5310 /RING BELL AT THE COMPLETION OF TEST
1073 1555 5310 /CHECK SRI=1 FOR HLT AT END OF TEST
1074 1556 5310 /
1075 1557 5310 BELL, AND 7
1076 1558 5310 TAD I,-1
1077 1559 5310 TLS /RING BELL
1078 1560 5310 TSF
1079 1561 5310 JMP I,-1
1080 1562 5310 LAS
1081 1563 5310 RAL
1082 1564 5310 SMA
1083 1565 5310 JMP I PLACE /START TEST OVER
1084 1566 5310 HLT /END OF TEST
1085 1567 5310 JMP I PLACE /HIT CONTINUE TO START TEST OVER
1086 1568 5310 /
1087 1569 5310 /TEST 13
1088 1570 5310 /DYNAMIC RMF TEST,
1089 1571 5310 /TESTS ALL SF TO DF TRANSFERS AND THOSE SF TO IB TRANSFERS
1090 1572 5310 /AS APPLICABLE TO THE NUMBER OF EXTENDED FIELDS PRESENT,
1091 1573 5310 /THE GENERAL METHOD IS TO INTERRUPT FROM EACH EXTENDED FIELD
1092 1574 5310 /WITH THE DF=FROM 0 THROUGH 7, AN RMF INSTRUCTION IS THEN ISSUED
1093 1575 5310 /AND CONTROL TRANSFERRED TO AN EXTENDED FIELD, THE RMFDY ROUTINE
1094 1576 5310 /IN THAT FIELD THEN CHECKS THAT THE IF AND DF ARE CORRECT, IF NOT,
1095 1577 5310
1096 1578 5310
1097 1579 5310
1098 1580 5310
1099 1581 5310
1100 1582 5310

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1101 /THE FAILING IF OR DF IS IN THE IF OR DF REG, AND THE CORRECT FIELD
1102 /NUMBER IS IN AC BITS 0 THRU 8,
1103 /
1104 /
1105 /
1106 1600 *1600
1107 /
1108 /
1109
1110 1603 7094 RMFTSI, LAS /CHECK HOW MANY EXTENDED FIELDS
1110 1601 7044 AND K7 /ARE PRESENT
1111 1602 7041 CIA /NEGATE AND SAVE,
1112 1603 3205 DCA IFCN
1113 1604 4700 JMS I XFERP /TRANSFER RMFDY ROUTINE TO ALL
1114 1605 0900 IFCN, 0 /EXTENDED FIELDS,
1115 1606 7744 -34
1116 1607 1702 RMFDY-1
1117 1610 3275 DCA LBTSTC /SET RMFTST COUNTER FOR 4096 PASSES
1118 1611 1802 TAD JMP14 /SET INTERRUPT LINK,
1119 1612 3001 DCA 1
1120 1613 1274 TAD INTEP
1121 1614 3094 DCA 4
1122 1615 6201 RMFL3, CDF 00 /INITIALIZE IF TO 0,
1123 1616 3641 DCA KIFSHB
1124 1617 1205 TAD IFCN /INITIALIZE TEST COUNTER
1125 1620 3275 DCA RMFCN1
1126 1621 1641 RMFL2, TAD KIFSHB /UPDATE CURRENT IF,
1127 1622 1045 TAD K10
1128 1623 3641 DCA KIFSHB
1129 1624 1641 TAD KIFSHB
1130 1625 7041 CIA
1131 1626 3002 DCA MIFSHB
1132 1627 1110 TAD K7770 /INITIALIZE DF COUNTER TO -10,
1133 1630 3077 DCA DFCN
1134 1631 1110 TAD K7770 /INITIALIZE DF TO -10,
1135 1632 3637 DCA KDFSHB
1136 1633 1637 RMFL1, TAD KDFSHB /UPDATE DF,
1137 1634 1045 TAD K10
1138 1635 3337 DCA KDFSHB
1139 1636 1637 TAD KDFSHB
1140 1637 7041 CIA
1141 1640 3000 DCA MDFSHB
1142 1641 1205 TAD IFCN /TRANSFER DF AND IF INFORMATION
1143 1642 3244 DCA ,+2 /TO EXTENDED FIELDS,
1144 1643 4700 JMS I XFERP
1145 1644 0900 0
1146 1645 7774 -4
1147 1646 1736 KDFSHB-1
1148 1647 6201 CDF 00
1149
1150
1151 1650 1040 TAD KCDF /UPDATE CDF INST,
1152 1651 1637 TAD KDFSHB
1153 1652 3260 DCA RMI1
1154 1653 1041 TAD KCIF /UPDAT CIF INST,
1155 1654 1641 TAD KIFSHB

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1211 1730 6202          CIF      00
1212 1731 5732          JMP I      ,+1
1213 1732 1665          RMFE1
1214 1733 6201 REPEAT, CDF      00          /GO BACK AND REPEAT FAILING
1215 1734 6202          CIF      00          /TEST,
1216 1735 5736          JMP I      ,+1
1217 1736 1656          RMFE2
1218 1737 0500 KDFSHB, 0          /DATA FIELD SHOULD BE
1219 1740 0500 HQFSHB, 0          /TWO'S COMPLEMENT OF ABOVE,
1220 1741 0500 KIFSHB, 0          /INSTRUCTION FIELD SHOULD BE
1221 1742 0500 MIFSHB, 0          /TWO'S COMPLEMENT OF ABOVE
1222 /
1223 /
1224 /
1225 /
1226 /
1227 /
1228 /ROUTINE TO TRANSFER N1 WORDS STARTING AT P IN FIELD 0 TO P IN THE
1229 /NEXT N2 EXTENDED FIELDS,
1230 /THE CALLING SEQUENCE IS:
1231 /JMS I XFERP
1232 /-N2
1233 /-N1
1234 /P-1
1235
1236
1237
1238 /
1239 2000 *2000
1240 /
1241 2002 0003 XFER, 0
1242 2001 0100 CLA
1243 2002 0200 TAD I XFER          /GET -N2
1244 2003 0242 DCA N2
1245 2004 0200 ISZ XFER          /GET -N1
1246 2005 0500 TAD I XFER
1247 2006 0243 DCA N1
1248 2007 0200 ISZ XFER          /GET P-1
1249 2010 0500 TAD I XFER
1250 2011 0244 DCA P
1251 2012 0200 ISZ XFER          /UPDATE TO RETURN ADDRESS,
1252 2013 0140 TAD KCDF          /INITIALIZE CDF INST,
1253 2014 0242 DCA XFERIN
1254 2015 0242 TAD N2
1255 2016 0245 DCA XFERC2
1256 2017 1244 XFERL2, TAD P          /PUT POINTER IN AUTO 10 AND 11,
1257 2020 0210 DCA 10
1258 2021 1244 TAD P
1259 2022 0011 DCA 11
1260 2023 1243 TAD N1          /SET COUNTER 1 TO -N1
1261 2024 0246 DCA XFERC1
1262 2025 1232 TAD XFERIN          /UPDATE CDF INST,
1263 2026 0145 TAD K10
1264 2027 0232 DCA XFERIN
1265 2030 6201 XFERL1, CDF 00          /TRANSFER

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1266 2031 1410 TAD I 10
1267 2032 6201 XFERIN, CDF
1268 2033 3411 DCA I 11
1269 2034 2246 ISZ XFERC1 /DONE WITH CURRENT FIELD?
1270 2035 5230 JMP XFERL1 /NO, CONTINUE.
1271 2036 2245 ISZ XFERC2 /DONE WITH ALL FIELDS?
1272 2037 5217 JMP XFERL2 /NO, DO NEXT FIELD
1273 2040 6201 CDF 00 /ALL DONE, SET DF=0,
1274 2041 5000 JMP I XFER /EXIT;
1275 2042 0000 N2, 0
1276 2043 0000 N1, 0
1277 2044 0000 P, 0
1278 2045 0000 XFERC2, 0
1279 2046 0000 XFERC1, 0
1280 /
1281 /TEST 06
1282 /NOW DO A READ AND WRITE DATA TEST IN
1283 /ALL AVAILABLE EXTENDED FIELDS,
1284 /IF A FAILURE OCCURS CHECK LOC, 10
1285 /FOR BAD ADDRESS AREA AND LOC, RANA
1286 /FOR THE MOST RECENT FIELD CHANGE,
1287 /LOC, KDATA CONTAINS DATA PATTERN USED,
1288 /
1289 2047 0000 DATER, 0000
1290 2050 7000 CLA CLL
1291 2051 4423 JMS I XSTKS
1292 2052 1040 TAD KCDF
1293 2053 1045 TAD K10
1294 2054 5007 DCA RANA /MODIFIED UNDER TEST
1295 2055 7000 CLA CLL CMA
1296 2056 5000 DCA 10 /SET AUTO REGISTER
1297 2057 0001 RANA, CDF
1298 2060 0275 JMS FILL /LOAD UP FIELD WITH DATA
1299 2061 7000 CLA CMA CLL
1300 2062 5000 DCA 10
1301 2063 4012 JMS CHECK /CHECK DATA IN FIELD
1302 2064 7000 CLA CLL
1303 2065 2001 ISZ STKS
1304 2066 7410 SKP
1305 2067 5274 JMP ,*5
1306 2070 1007 TAD RANA
1307 2071 1045 TAD K10
1308 2072 3207 DCA RANA /CHECK NEXT FIELD
1309 2073 0205 JMP RANA =2
1310 2074 6201 CDF
1311 2075 5047 JMP I DATER
1312 /
1313 /ROUTINE TO FILL FIELD WITH DATA
1314 /
1315 2076 0000 FILL, 0000
1316 2077 7000 CLA CLL
1317 2100 1157 TAD KDATA
1318 2101 3410 DCA I 10
1319 2102 1157 TAD KDATA
1320 2103 7040 CMA

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1321	2104	3410	DCA I 10	
1322	2105	1010	TAD 10	
1323	2106	7001	IAC	
1324	2107	7040	SZA CLA	
1325	2110	5277	JMP FILL +1	
1326	2111	5076	JMP I FILL	
1327				
1328				/ROUTINE TO CHECK DATA IN FIELD
1329				/
1330	2112	0000	CHECK, 0000	
1331	2113	7000	CLA CLL	
1332	2114	1410	TAD I 10	
1333	2115	7001	IAC	
1334	2116	1410	TAD I 10	
1335	2117	7440	SZA	/IAC CONTAINS BAD BITS
1336	2120	7002	HLT	/MEMORY CONTROL WORKED BUT
1337	2121	7000	CLA CLL	/DATA PATTERN FAILURE IN
1338	2122	1010	TAD 10	/EXTENDED MEMORY.
1339	2123	7001	IAC	
1340	2124	7040	SZA CLA	/IS CHECK DONE
1341	2125	5013	JMP CHECK +1	
1342	2126	5712	JMP I CHECK	
1343				/
1344				/
1345				
1346				
1347				
1348				
1349				/
1350	2200		*2200	
1351				/
1352				/TEST 14
1353				/REFERENCE ALL 4K FIELDS NOT PRESENT.
1354				/IF 32K IS PRESENT, THE TEST IS BY-PASSED.
1355				/EACH FIELD NOT PRESENT IS REFERENCED
1356				/BY THE PROGRAM WITH JMP, DCA AND TAD.
1357				/THE PROGRAM MUST CONTINUE IN SEQUENCE
1358				/BELL WILL SIGNAL A SUCCESSFUL TEST
1359				/
1360	2200	7200	NOMEM, CLA	
1361	2201	1110	TAD K7770	
1362	2202	3007	DCA LOOP	/TEST LOOP COUNTER
1363	2203	7004	LAS	/READ SR9-11
1364	2204	0044	AND K7	
1365	2205	7041	CIA	
1366	2206	1044	TAD K7	/SUBTRACT MAX, POSSIBLE
1367	2207	7050	SNA	
1368	2210	5046	JMP I XXSR0	/32K PRESENT, CAN'T TEST
1369	2211	3033	DCA NOSTAK	/SAVE NO, MISSING
1370	2212	3047	DCA I XELL	/CLEAR THE TLS IOT AT
1371				/BELL+1 TO PROHIBIT
1372				/FALSE INDICATION, TLS
1373				/IS RESTORED LATER WRONG
1374				/ENTRY FROM NON-EXISTENT
1375				/MEMORY MAY CAUSE A

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1376
1377 2213 7604 LAS /HANG-UP AT BELL+2 AND +3,
1378 2214 0044 AND K7 /# OF FIELDS PRESENT
1379 2215 7001 IAC /+1 TO GET 1ST MISSING
1380 2216 7100 CLL
1381 2217 7006 RTL /POSITION TO AC 6-8,
1382 2220 7004 RAL
1383 2221 3034 DCA NOFLD /1ST MISSING
1384 2222 1033 TAD NOSTAK /# STACKS NOT HERE
1385 2223 7041 CIA
1386 2224 3033 DCA NOSTAK /USED AS COUNTER
1387
1388
1389 /
1390 /
1391 2225 1040 TAD KCDF /6201
1392 2226 1034 TAD NOFLD /MISSING STACK
1393 2227 3245 DCA CDF0S
1394
1395 /
1396 /NOW READ ALL 0'S FROM ALL NON-EXISTENT FIELDS
1397 /IF CONTROL PORTION ONLY, RING BELL,
1398 /IF NOT PROCEED TO TIME SHARE.
1399 /
1400 2230 4244 JMS ALL0 /READ ALL 0 FROM 1ST
1401 2231 2033 CNSTK, ISZ NOSTAK /DONE ALL MISSING IF SKIP
1402 2232 5237 JMP POS
1403 2233 2027 ISZ LOOP /DONE LOOPING IF SKIP
1404 2234 5636 JMP I XNOM /REPEAT
1405 2235 5546 JMP I XXSR0
1406
1407 /
1408 XNOM, NOMEM+3
1409 /
1410 POS, TAD CDF0S
1411 2237 1240 /DF PLUS 1
1412 2240 1045 TAD K10
1413 2241 3245 DCA CDF0S
1414 2242 4244 JMS ALL0 /READ ALL 0'S
1415 2243 5231 JMP CNSTK /CHECK DONE
1416
1417
1418 /
1419 /ROUTINE TO READ ALL 0'S.
1420 /
1421 2244 0000 ALL0, 0
1422 2245 6201 CDF0S, CDF 00 /SET DF TO 1ST MISSING
1423 2246 7200 CLA CMA
1424 2247 3210 DCA 10 /10 AND 11 USED FOR ADDRESS
1425 2250 7040 CMA
1426 2251 3011 DCA 11
1427 2252 3002 DCA 2 /USE AS COUNTER
1428 2253 7040 CMA
1429 2254 3410 DCA I 10 /WRITE 1'S INTO NON-EXIS-
1430 2255 2002 ISZ 2 /TENT FIELD,
1431 2256 5253 JMP ,+3

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1431 2257 1411 TAD I 11 /READ NON-EXIST, FIELD
1432 2260 7650 SNA CLA /SHOULD = 0000
1433 2261 5264 JMP ,+3
1434 2262 1011 TAD 11
1435 2263 7402 CAX, HLT /ERROR, AN EXISTING FIELD
1436 / /WAS REFERENCED, C(AC)=
1437 / /ADDRESS REFERENCED
1438 2264 2002 ISZ 2
1439 2265 5257 JMP CAX-4 /READ NEXT
1440 /
1441 2266 6201 DONE0, CDF 00
1442 2267 6202 CIF 00
1443 2270 5644 JMP I ALL0 /EXIT
1444 /
1445 /
1446 /
1447 /TEST 04
1448 /
1449 /TEST GTF FOR FLAG AND SAVE FIELDS
1450 /GET SAVE FIELDS AFTER INTERRUPT
1451 /CHECK INTERRUPT INHIBIT, DO ALL
1452 /COMBINATIONS 0 TO 7,
1453 /
1454 2271 7300 GTF1, CLA CLL
1455 2272 1020 TAD JMP10 /SET FOR RETURN
1456 2273 3001 DCA 1
1457 2274 1040 TAD KCDF
1458 2275 3004 DCA XSDF
1459 2276 1004 MGTF, TAD XSDF /GET FIRST FIELD
1460 2277 1011 AND K0070
1461 2300 7110 STL
1462 2301 7010 RAR
1463 2302 7010 RTR
1464 2303 8112 DCA XSAV
1465 2304 4001 XSDF, CDF 00
1466 2305 5001 TSF /IS TTY FLAG SET
1467 2306 4022 JMS I XTFLG /GET THE FLAG
1468 2307 6001 ION
1469 2310 7040 CLA CLL CMA /CHECK FOR JAM ON GTF
1470 2311 6004 GTF /GET THE FLAGS
1471 2312 7041 CIA
1472 2313 1112 TAD XSAV /TTY * CURRENT FIELD
1473 2314 7040 SZA
1474 2315 7002 HLT /FLAG * FIELD
1475 2316 2027 ISZ LOOP /4096 TIMES
1476 2317 5276 JMP MGTF
1477 2320 1045 TAD K10
1478 2321 1004 TAD XSDF
1479 2322 3004 DCA XSDF
1480 2323 2113 ISZ XCOUNT /MORE FIELDS TO CHECK
1481 2324 5276 JMP MGTF
1482 2325 1110 TAD K7770
1483 2326 3113 DCA XCOUNT
1484 2327 5730 JMP I XION1 /YES, GO TO NEXT TEST
1485 2330 2031 XION1, ION1

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1486 /
1487 /TEST 05
1488 /TEST ION AND LINK FROM RTF
1489 /TEST INTERRUPT INHIBIT BEFORE PI
1490 /GET THE FLAGS WITH GTF,
1491 /
1492 ION1, CLA CLL
1493 2331 7300 TAD ISZ0
1494 2332 1021 DCA 1
1495 2333 3001 TAD JMP10
1496 2334 1020 DCA 2
1497 2335 3002 RTF
1498 2336 6005 JMP ,+1
1499 2337 5340 HLT /WAS INT, INH,
1500 2340 7402 CLA CLL
1501 2341 7300 TAD K0200
1502 2342 1115 RTF
1503 2343 6005 CLA CMA /CHECK FOR JAM ON GTF
1504 2344 7240 GTF /GET LINK,ION,TTY FLAG
1505 2345 6004 CIA
1506 2346 7041 TAD K0200 /EXPECTED BITS
1507 2347 1115 SZA
1508 2350 7440 HLT /WAS LINK,ION,TTY FLAG SET
1509 2351 7402 CLA CLL
1510 2352 7300 RTF /REPLACE ION,INT INH
1511 2353 6005 CLA CLL
1512 2354 7300 GTF
1513 2355 6004 CIA
1514 2356 7041 TAD K1200
1515 2357 1115 SZA
1516 2360 7440 HLT /TTY FLAG,ION,NO LINK
1517 2361 7402 JMP ,+1
1518 2362 3003 HLT /WAS INT INH
1519 2363 7300 CLA CLL
1520 2364 7300 ISZ LOOP /4096 TIMES
1521 2365 2027 JMP ION1
1522 2366 5001 JMS I XDATER /GO TO NEXT TEST
1523 2367 4005 JMS I XCON1 /GO TO NEXT TEST
1524 2370 4773 JMS I XRTF1 /GO TO NEXT TEST
1525 2371 5772 XRTF1, RTF1
1526 2372 2000 XCON1, CON1
1527 /
1528 /TEST 08
1529 /TEST DF00 + IF00 FROM SAVE FIELD AFTER PI
1530 /USE RTF TO SET THE FLAGS AND GTF TO GET THE FLAGS
1531 /CHECK INTERRUPT INHIBIT, DO ALL SAVE
1532 /FIELD COMBINATIONS 0 TO 77.
1533 /
1534 2400 *2400
1535 /
1536 2400 7300 RTF1, CLA CLL
1537 2401 4422 JMS I XTFLG /SET TTY FLAG
1538 2402 1021 TAD ISZ0
1539 2403 3001 DCA 1
1540 2404 1020 TAD JMP10

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1541	2405	3002	DCA 2	
1542	2406	3114	DCA XTOR	
1543	2407	1114	XSRTF, TAD XTOR	
1544	2410	6005	RTF	/MAKE OF 00 + IF 00
1545	2411	5212	JMP ,+1	
1546	2412	7402	HLT	/WAS INT INH
1547	2413	7300	CLA CLL	
1548	2414	6004	GTF	/GET THE FLAGS
1549	2415	0117	AND K0077	
1550	2416	7041	CIA	
1551	2417	1114	TAD XTOR	/EXPECTED BITS
1552	2420	7440	SZA	
1553	2421	7402	HLT	/WAS DF + IF SET
1554	2422	2027	ISZ LOOP	/4096 TIMES
1555	2423	5207	JMP XSRTF	
1556	2424	1114	TAD XTOR	
1557	2425	1120	TAD K0011	
1558	2426	3114	DCA XTOR	
1559	2427	2113	ISZ XCOUNT	
1560	2430	5207	JMP XSRTF	/DO THE REST OF 00 + IF 00
1561	2431	1110	TAD K7770	
1562	2432	3113	DCA XCOUNT	
1563	2433	5034	JMP I XRIG1	
1564	2434	2452	XRIG1, RIG1	
1565	2435	0000	NSTKS, 0	
1566			/	
1567	2436	7004	LAS	/READ SR 9-11
1568	2437	0044	AND K7	
1569	2440	7001	CIA	
1570	2441	3001	DCA STKS	
1571	2442	0000	JMP I NSTKS	
1572			/	
1573			/SET ITY FLAG	
1574			/	
1575	2443	0000	TFLG, 0	
1576	2444	7000	CLA	
1577	2445	6040	SPF	
1578	2446	6041	TSF	
1579	2447	5246	JMP ,+1	
1580	2450	7000	CLA	
1581	2451	5043	JMP I TFLG	/EXIT
1582			/	
1583			/TEST 09	
1584			/TEST PROGRAM INTERRUPT IN EXISTING FIELDS	
1585			/USE RTF, GTF, RDF AND RIF FOR CHECK	
1586			/CHECK PC, AC, SF AND FLAGS AFTER PI	
1587			/IF FAILURE OCCURS CHECK XDATA FOR AC DATA,	
1588			/LOC, 0 FIELD 0 FOR CORRECT PC AFTER PI,	
1589			/AND IFDF FOR CORRECT DF XX + IF XX,	
1590			/PROGRAM SHOULD INTERRUPT INHIBIT TILL JMP I ADRS	
1591			/IF PI FAILS TO INTERRUPT HLT IN THAT FIELD	
1592			/	
1593	2452	7300	RIG1, CLA CLL	
1594	2453	4423	JMS I XSTKS	
1595	2454	1120	TAD K0011	

1596	2455	3260	DCA IFDF	
1597	2456	1132	TAD K0017	
1598	2457	3010	DCA 0010	
1599	2460	0000	IFDF, 0000	/SET IO CURRENT FIELD UNDER TEST
1600	2461	7300	CLA CLL	
1601	2462	1260	TAD IFDF	
1602	2463	6005	RTF	/SET FIELDS AND TURN ION
1603	2464	6022	IOF	
1604	2465	7300	CLA CLL	
1605	2466	2537	ISZ I K0000	
1606	2467	7000	NOP	
1607	2470	1537	TAD I K0000	
1608	2471	3136	DCA XDATA	
1609	2472	1124	TAD K7402	
1610	2473	3541	DCA I K0001	/STORE A HLT IN LOC 1 OF THAT FIELD
1611	2474	1133	TAD K0001	
1612	2475	3410	DCA I 0010	/ION FOR THAT FIELD
1613	2476	1130	TAD K1000	
1614	2477	3410	DCA I 0010	/TAD FOR THAT FIELD
1615	2500	1124	TAD K7402	
1616	2501	3410	DCA I 0010	/HLT FOR FAILURE
1617	2502	1010	TAD 10	
1618	2503	1057	TAD K7776	
1619	2504	3310	DCA ADRS	
1620	2505	1134	TAD JMPIR	
1621	2506	3001	DCA 0001	/SET LOC 1 FOR RETURN AFTER PI
1622	2507	5710	JMP I 1.*1	/GO TO THAT FIELD
1623	2510	0000	ADRS, 0000	
1624	2511	7041	RET, CIA	
1625	2512	1136	TAD XDATA	
1626	2515	7040	SZA	
1627	2514	7042	HLT	/AQ DATA FAILED DURING PI
1628	2515	1010	TAD 0000	
1629	2516	7041	CIA	
1630	2517	1010	TAD 0010	
1631	2520	7040	SZA	
1632	2521	7042	HLT	/PC FAILED DURING PI
1633	2522	6214	RDF	
1634	2523	6224	RIF	
1635	2524	7040	SZA CLA	
1636	2525	7042	HLT	/SHOULD BE 0 AFTER PI
1637	2526	6004	GTF	
1638	2527	0117	AND K0077	
1639	2530	7041	CIA	
1640	2531	1260	TAD IFDF	
1641	2532	7440	SZA	
1642	2533	7042	HLT	/GTF OR RTF OR SF FAILED
1643	2534	1010	TAD 0010	
1644	2535	7001	IAC	
1645	2536	7040	SZA CLA	
1646	2537	5201	JMP IFDF+1	
1647	2540	2031	ISZ STKS	
1648	2541	7010	SKP	
1649	2542	5750	JMP I XTRMF	
1650	2543	7300	CLA CLL	

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1651 2544 1120 TAD K0011
1652 2545 1260 TAD IFDF
1653 2546 3260 DCA IFDF /SET FOR NEXT FIELD
1654 2547 5256 JMP IFDF =2
1655 2550 1950 XTRMF, TRMF
1656 /
1657 /
1658 /
1659 /TEST 15
1660 /TEST TIME SHARE IN FIELD 0,
1661 /ALL HLT, OSR, AND IOT INSTRUCTIONS
1662 /SHOULD TRAP IN USER MODE.
1663 /
1664 2600 *2600
1665 /
1666 2600 7300 T1, CLA CLL
1667 2601 6027 CAF
1668 2602 6264 CUF
1669 2603 6204 CINT
1670 2604 1021 TAD ISZ0
1671 2605 3001 DCA 1
1672 2606 1020 TAD JMP10
1673 2607 3002 DCA 2
1674 2610 6007 CAF
1675 2611 7410 SKP
1676 2612 5212 JMP , /CAF TRAPED
1677 2613 6001 ION
1678 2614 7410 SKP
1679 2615 5215 JMP , /ION TRAPED
1680 2616 6002 KCC
1681 2617 7410 SKP
1682 2618 5220 JMP , /KCC TRAPED
1683 2621 6002 IOF
1684 2620 7410 SKP
1685 2623 5203 JMP , /IOF TRAPED
1686 2624 6004 GTF
1687 2625 7410 SKP
1688 2626 5226 JMP , /GTF TRAPED
1689 /THESE INSTRUCTIONS SHOULD TRAP
1690 2627 6001 T2, ION
1691 2630 6274 CUF+10 /USER MODE
1692 2631 5232 JMP ,+1
1693 2632 7410 HLT
1694 2633 5233 JMP , /HLT DID NOT TRAP
1695 /EXECUTIVE MODE
1696 2634 6254 SINT /SKIP ON TRAP FLAG
1697 2635 5235 JMP , /FLAG NOT UP
1698 2636 6204 CINT /CLEAR TRAP FLAG
1699 2637 6254 SINT /SKIP ON TRAP FLAG
1700 2640 7410 SKP
1701 2641 5241 JMP , /TRAP FLAG STILL SET
1702 2642 7004 LAS /SHOULD NOT TRAP
1703 2643 7410 SKP
1704 2644 5244 JMP , /LAS TRAPED IN EXECUTIVE MODE
1705 2645 6244 RMF /RESTORE USER

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1706 2646 6001 ION
1707 2647 5250 JMP ,+1 /GO TO USER
1708 /USER MODE
1709 2650 7404 OSR /SHOULD TRAP ON OSR
1710 2651 5251 JMP , /DID NOT TRAP
1711 /EXECUTIVE MODE
1712 2652 6254 SINT /SKIP ON TRAP FLAG
1713 2653 5253 JMP , /DID NOT SKIP
1714 2654 6107 CAF /CLEAR TRAP FLAG
1715 2655 6254 SINT /TEST IF CLEARED
1716 2656 7410 SKP
1717 2657 7402 HLT /TRAP FLAG NOT CLEARED
1718 2660 7404 OSR /SHOULD NOT TRAP
1719 2661 7410 SKP
1720 2662 5252 JMP , /ORS TRAPED IN EXECUTIVE MODE
1721 2663 6244 RMF /RESTORE MODE
1722 2664 6001 ION
1723 2665 5265 JMP ,+1 /GO TO USER
1724
1725 /USER MODE
1726 2666 6025 RTF /MAKE THE FLAGS
1727 2667 5267 JMP , /RTF FAILED TO TRAP
1728 /EXECUTIVE MODE
1729 2670 6254 SINT
1730 2671 5271 JMP , /TRAP FLAG NOT SET
1731 2672 6264 CINT /CLEAR TRAP FLAG
1732 2673 6254 SINT /TEST IF CLEARED
1733 2674 7410 SKP
1734 2675 7402 HLT /TRAP FLAG NOT CLEARED
1735 2676 6264 GTF /SHOULD NOT TRAP
1736 2677 7410 SKP
1737 2700 5252 JMP , /TRAPED IN EXECUTIVE MODE
1738 2701 6244 RMF /RESTORE MODE
1739 2702 6001 ION
1740 2723 5304 JMP ,+1 /GO TO USER
1741 /USER MODE
1742
1743 2704 6001 ION
1744 2705 5305 JMP , /ION DID NOT TRAP
1745
1746 /EXECUTIVE MODE
1747 2706 6254 SINT /SKIP ON TRAP FLAG
1748 2707 5307 JMP , /TRAP FLAG NOT SET
1749 2710 7000 CLA CLL
1750 2711 6004 GTF
1751 2712 6126 AND K0100
1752 2713 7452 SNA
1753 2714 7402 HLT /SUF NOT SET
1754 2715 6204 CINT /CLEAR TRAP FLAG
1755 2716 6254 SINT /TEST IF CLEARED
1756 2717 7410 SKP
1757 2720 7402 HLT /FLAG NOT CLEARED
1758 2721 6002 IOF /SHOULD NOT TRAP
1759 2722 7410 SKP
1760 2723 5323 JMP , /IOF TRAPED IN EXECUTIVE MODE

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1761	2724	6244	RMF	/RESTORE MODE
1762	2725	6001	ION	
1763	2726	5327	JMP ,+1	/GO TO USER
1764			/USER MODE	
1765			/TEST CUF AND CUF+10	
1766	2727	7604	LAS	
1767	2730	5330	JMP ,	/DID NOT TRAP
1768			/EXECUTIVE MODE	
1769	2731	6204	CINT	
1770	2732	6244	RMF	
1771	2733	6264	CUF	/STAY IN EXECUTIVE MODE
1772	2734	6001	ION	
1773	2735	5336	JMP ,+1	
1774	2736	7404	OSR	
1775	2737	7410	SKP	
1776	2740	5340	JMP ,	/CUF DID NOT WORK
1777			/TEST THAT INSTRUCTION ARE INHIBITED WHILE IN USER MODE	
1778	2741	6204	CINT	
1779	2742	6274	CUF+10	/SET USER
1780	2743	6001	ION	
1781	2744	5345	JMP ,+1	/GO TO USER
1782			/USER MODE	
1783	2745	7240	CMA CLA	/AC=7777
1784	2746	7604	LAS	/SHOULD CLEAR AC
1785	2747	5347	JMP ,	/DID LAS TRAP
1786			/EXECUTIVE MODE	
1787	2750	7440	SZA	
1788	2751	7402	HLT	/LAS CHANGED AC
1789	2752	6204	CINT	
1790	2753	6204	RMF	
1791	2754	6204	ION	
1792	2755	5350	JMP ,+1	
1793			/USER MODE	
1794	2756	7200	CLA	
1795	2757	7404	OSR	/SHOULD NOT READ SR
1796	2760	5360	JMP ,	
1797			/EXECUTIVE MODE	
1798	2761	7440	SZA	
1799	2762	7402	HLT	/OSR CHANGED AC
1800	2763	6204	CINT	
1801	2764	6244	RMF	
1802	2765	6001	ION	
1803	2766	5367	JMP ,+1	
1804				
1805			/USER MODE	
1806	2767	7240	CLA CMA	
1807	2770	7602	HLT CLA	/SHOULD CLA
1808	2771	5371	JMP ,	/DID HLT TRAP
1809			/EXECUTIVE MODE	
1810	2772	7440	SZA	
1811	2773	7402	HLT	/(HLT CLA) DID NOT CLEAR
1812	2774	6204	CINT	
1813	2775	6003	SRQ	
1814	2776	7410	SKP	
1815	2777	7402	HLT	/INTERRUPT REQUEST

1816	3000	7300	CLA CLL	
1817	3001	1126	TAD K0100	
1818	3002	6005	RTF	/ENABLE USER
1819				
1820	3003	6001	ION	
1821	3004	7000	NOP	
1822	3005	5206	JMP ,+1	
1823			/USER MODE	
1824	3006	6032	KCC	
1825	3007	5207	JMP ,	/DID KCC TRAP
1826			/EXECUTIVE MODE	
1827	3010	6003	SRQ	/IS USER FLAG SET
1828				
1829	3011	5210	JMP , -1	
1830	3012	6204	CINT	
1831	3013	7300	CLA CLL	
1832	3014	1126	TAD K0100	
1833	3015	6005	RTF	
1834	3016	7300	CLA CLL	
1835	3017	6001	ION	
1836	3020	5221	JMP ,+1	/ENTER USER
1837			/USER MODE	
1838	3021	6204	GTF	
1839	3022	5222	JMP ,	/DID GTF TRAP
1840			/EXECUTIVE MODE	
1841	3023	0126	AND K0100	
1842	3024	7000	SEA	/DID GTF GET USER
1843	3025	7002	HLT	
1844	3026	6003	SRQ	/IS USER FLAG SET
1845	3027	5220	JMP , -1	
1846	3030	6003	CINT	
1847	3031	6014	RMF	
1848	3032	4001	ION	
1849	3033	5234	JMP ,+1	
1850			/USER MODE	
1851	3034	6004	GTF	
1852	3035	5235	JMP ,	/GTF DID NOT TRAP
1853			/EXECUTIVE MODE	
1854	3036	6254	SINT	/SKIP ON TRAP FLAG
1855	3037	5237	JMP ,	/FLAG NOT UP
1856	3040	6204	CINT	/CLEAR TRAP FLAG
1857	3041	5254	SINT	/SKIP ON TRAP FLAG
1858	3042	7410	SKP	
1859	3043	5243	JMP ,	/TRAP FLAG STILL SET
1860	3044	6001	ION	
1861	3045	7010	SKP	
1862	3046	5246	JMP ,	/ION TRAPED IN EXECUTIVE MODE
1863	3047	6244	RMF	/RESTORE USER
1864	3050	5251	JMP ,+1	/GO TO USER
1865			/USER MODE	
1866	3051	6202	CIF	/SHOULD TRAP ON CIF
1867	3052	5252	JMP ,	/DID NOT TRAP
1868			/EXECUTIVE MODE	
1869	3053	6254	SINT	/SKIP ON TRAP FLAG
1870	3054	5254	JMP ,	/DID NOT SKIP

1871	3055	6204	CINT	/CLEAR TRAP FLAG
1872	3056	6254	SINT	/TEST IF CLEARED
1873	3057	7410	SKP	
1874	3060	7402	HLT	/TRAP FLAG NOT CLEARED
1875	3061	6202	CIF	/SHOULD NOT TRAP
1876	3062	7410	SKP	
1877	3063	5263	JMP ,	/CIF TRAPED IN EXECUTIVE MODE
1878	3064	6244	RMF	/RESTORE MODE
1879	3065	6001	ION	
1880	3066	5267	JMP ,+1	/GO TO USER
1881				
1882				
1883				/USER MODE
1884	3067	6214	RDF	/READ DATA FIELD
1885	3070	5270	JMP ,	/DID R0F TRAP
1886				/EXECUTIVE MODE
1887	3071	6254	SINT	
1888	3072	5272	JMP ,	/TRAP FLAG NOT SET
1889	3073	6204	CINT	/CLEAR TRAP FLAG
1890				
1891	3074	6254	SINT	/TEST IF CLEARED
1892	3075	7410	SKP	
1893	3076	7402	HLT	/TRAP FLAG NOT CLEARED
1894	3077	6214	RDF	/SHOULD NOT TRAP
1895	3100	7410	SKP	
1896	3101	5001	JMP ,	/TRAPED IN EXECUTIVE MODE
1897				/EXECUTIVE MODE
1898	3102	6040	SPF	/FLAG SHOULD WORK
1899				
1900	3103	6041	TSF	
1901	3104	5003	JMP ,+1	/SHOULD SKP
1902	3105	5003	SRQ	
1903	3106	5003	JMP ,+1	/SHOULD SKP
1904	3107	6001	ION	
1905	3110	7000	CLA CLL	
1906	3111	5011	JMP ,	/DID PI WORK
1907	3112	1126	TAD K0100	
1908	3113	6005	RTF	
1909	3114	6007	CAF	
1910	3115	6001	ION	
1911	3116	5017	JMP ,+1	
1912				/USER MODE
1913	3117	6007	CAF	
1914	3120	5020	JMP ,	/DID CAF TRAP
1915				/EXECUTIVE MODE
1916	3121	6003	SRQ	
1917	3122	7402	HLT	/USER FLAG UP
1918	3123	6007	CAF	
1919	3124	6254	SINT	
1920	3125	7410	SKP	
1921	3126	7402	HLT	/FLAG CLEARED
1922				/TEST THAT TTI DOES NOT CHANGE AC
1923	3127	7240	CLA CMA	/AC=7777
1924	3130	7120	STL	/LINK=1
1925	3131	6274	CUF+10	

1926	3132	6001	ION	
1927	3133	5334	JMP ,+1	
1928			/USER MODE	
1929	3134	6036	KRB	/SHOULD NOT ZERO LINK OR SHIFT AC
1930	3135	5335	JMP ,	
1931			/EXECUTIVE MODE	
1932	3136	7040	CMA	
1933	3137	7440	SZA	/AC SHOULD=0000
1934	3140	5340	JMP ,	/AC WAS CHANGED
1935	3141	7420	SNL	/LINK SHOULD EQUAL 1
1936	3142	5342	JMP ,	/LINK WAS CHANGE
1937	3143	6254	SINT	/SKIP ON TRAP FLAG
1938	3144	5344	JMP ,	/TRAP FLAG NOT SET
1939	3145	6224	CINT	
1940	3146	6244	RMF	
1941	3147	6001	ION	
1942	3150	5351	JMP ,+1	
1943			/USER MODE	
1944	3151	6040	SPF	/FLAG
1945	3152	5352	JMP ,	/DID SPF TRAP
1946			/EXECUTIVE MODE	
1947	3153	6041	TSF	
1948	3154	7410	SKP	
1949	3155	7402	HLT	/TIY FLAG
1950	3156	6254	SINT	
1951	3157	5357	JMP ,	/TRAP FLAG NOT SET
1952	3160	6204	CINT	/CLEAR TRAP FLAG
1953	3161	6244	RMF	
1954	3162	6001	ION	
1955	3163	5704	JMP I ,+1	/GO TO USER
1956	3164	3200	, 177+1	
1957				
1958		3200	*, 177+1	
1959				
1960			/USER MODE	
1961				
1962	3200	6001	ION	
1963	3201	5201	JMP ,	/ION DID NOT TRAP
1964			/EXECUTIVE MODE	
1965	3202	6254	SINT	/SKIP ON TRAP FLAG
1966	3203	5203	JMP ,	/TRAP FLAG NOT SET
1967	3204	6204	CINT	/CLEAR TRAP FLAG
1968	3205	6254	SINT	/TEST IF CLEARED
1969	3206	7410	SKP	
1970	3207	7402	HLT	/FLAG NOT CLEARED
1971	3210	6002	IOF	/SHOULD NOT TRAP
1972	3211	7410	SKP	
1973	3212	5212	JMP ,	/IOF TRAPED IN EXECUTIVE MODE
1974	3213	6244	RMF	/RESTORE MODE
1975	3214	6001	ION	
1976	3215	5216	JMP ,+1	/GO TO USER
1977			/USER MODE	
1978			/TEST CUF AND CUF+10	
1979	3216	6224	RIF	
1980	3217	5217	JMP ,	/DID NOT TRAP

1981			/EXECUTIVE MODE	
1982	3220	6204	CINT	
1983	3221	6244	RMF	
1984	3222	6264	CUF	/STAY IN EXECUTIVE MODE
1985	3223	5224	JMP ,+1	
1986	3224	7404	OSR	
1987	3225	7410	SKP	
1988	3226	5226	JMP ,	/CUF DID NOT WORK
1989			/EXECUTIVE MODE	
1990	3227	7240	CLA CMA	
1991	3230	6274	CUF +10	/SET UP USER
1992	3231	6001	ION	
1993	3232	5233	JMP ,+1	
1994			/USER MODE	
1995	3233	7402	HLT	/SHOULD TRAP
1996	3234	5234	JMP ,	/DID HLT TRAP
1997			/EXECUTIVE MODE	
1998	3235	6203	CUF CIF	
1999	3236	6264	CUF	/SETUP FOR EXECUTIVE
2000	3237	6204	CINT	/CLEAR INTERRUPT
2001	3240	6001	ION	
2002	3241	5242	JMP ,+1	
2003	3242	7604	LAS	/SHOULD NOT TRAP
2004	3243	7410	SKP	
2005	3244	5244	JMP ,	
2006	3245	7450	SNA	/SR AND AQ SHOULD NOT EQUAL ZERO
2007	3246	5246	JMP ,	/LAS WAS INHIBITED
2008				
2009			/TEST HLT AND SKIP	
2010	3247	6274	CUF+10	/USER SETUP
2011	3250	6001	ION	
2012	3251	5252	JMP ,+1	/GO TO USER
2013			/USER MODE	
2014	3252	7412	SKP HLT	/SHOULD TRAP
2015	3253	5253	JMP ,	/DID NOT TRAP
2016	3254	5254	JMP ,	/SKP DID NOT INDEX PC,
2017			/EXECUTIVE MODE	
2018	3255	6254	SINT	/SKP ON TRAP FLAG
2019	3256	5256	JMP ,	
2020	3257	6200	CINT	/CLEAR FLAG
2021	3260	6254	SINT	/IS IT CLEAR
2022	3261	7410	SKP	/YES
2023	3262	5262	JMP ,	/NO-FLAG NO CLEAR
2024				
2025			/LOOP PROGRAM	
2026	3263	2266	ISZ ,+3	/DO FIRST SECTION 4096
2027	3264	5231	JMP I TIME	
2028	3265	7410	SKP	
2029	3266	0000	0	/COUNT FOR LOOP
2030	3267	5670	JMP I ,+1	
2031	3270	5800	, 177*1	
2032				
2033				
2034	3400		*, 177*1	
2035				

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2036 /TEST THAT ALL IOTS TRAP IN USER MODE
2037 3400 7200 CLA
2038 3401 1125 TAD K0000 /BASIC IOT
2039 3402 3207 DCA INST /SET UP
2040 3403 6274 IOTST, CUF+10 /SET FOR USER
2041 3404 6204 CINT /CLEAR FLAG
2042 3405 6001 ION
2043 3406 5207 JMP ,+1 /GO TO USER MODE
2044 /USER MODE
2045 3407 6000 INST, 6000 /IOT THAT FAILED
2046 3410 5210 JMP /IOT DID NOT TRAP
2047 /EXECUTIVE MODE
2048 3411 6254 SINT /SKIP ON TRAP FLAG
2049 3412 5212 JMP /TRAP FLAG NOT SET
2050 3413 6204 CINT /CLEAR FLAG
2051 3414 6254 SINT
2052 3415 7610 SKP CLA
2053 3416 7502 HLT /FLAG DID NOT CLEAR
2054 3417 2207 ISZ INST /CREATE NEW INSTRUCTION
2055 3420 1207 TAD INST /TESTED ALL IOT?
2056 3421 1130 AND K1000
2057 3422 7650 SNA CLA
2058 3423 5203 JMP IOTST /NO -- TEST THE REST
2059
2060 /TEST THAT ALL (HLT AND OSR) TRAP IN USER MODE
2061 3424 1124 TAD K7402 /BASIC HALT INST
2062 3425 3232 DCA INSTA /SET UP
2063 3426 6274 HALTA, CUF+10 /SET FOR USER
2064 3427 6204 CINT /CLEAR FLAG
2065 3430 6001 ION
2066 3431 5232 JMP ,+1 /GO TO USER MODE
2067 /USER MODE
2068 3432 7506 INSTA, HLT OSR /OPERATE TRAP INST
2069 3433 5233 JMP /DID NOT TRAP
2070 /EXECUTIVE MODE
2071 3434 7000 NOP /FOR (HLT,SKP)(OSR,SKP)
2072 3435 6254 SINT /SKIP ON TRAP FLAG
2073 3436 5236 JMP /TRAP FLAG NOT SET
2074 3437 6204 CINT /CLEAR FLAG
2075 3440 6254 SINT
2076 3441 7610 SKP CLA
2077 3442 7502 HLT /FLAG DID NOT CLEAR
2078 3443 1232 TAD INSTA
2079 3444 1123 TAD K0004 /GENERATE ALL GROUPS OF
2080 3445 3232 DCA INSTA /HALTS AND OSR
2081 3446 1232 TAD INSTA
2082 3447 1122 TAD K0002
2083 3450 7600 SEA CLA /GENERATED ALL
2084 3451 5226 JMP HALTA /NO = TEST THE REST
2085 3452 6244 RMF
2086 3453 6264 CUF
2087 3454 6001 ION
2088 3455 5256 JMP ,+1
2089 3456 6002 IOF /SHOULD NOT TRAP
2090 3457 6254 SINT

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2091 3460 7410 SKP
2092 3461 7402 HLT /TRAP FLAG SET
2093 3462 6040 SPF
2094 3463 6041 TSF /SHOULD SKP
2095 3464 5263 JMP , -1
2096 3465 6001 ION
2097 3466 7410 SKP
2098 3467 7402 HLT /DID PI INTERRUPT
2099 3470 7402 HLT /DID PC INCR,
2100
2101 3471 7300 CLA CLL
2102 3472 6004 GTF
2103 3473 0126 AND K0100
2104 3474 7440 SZA
2105 3475 7402 HLT /SUF SET
2106 3476 7300 CLA CLL
2107 3477 6007 CAF
2108 3500 6264 CUF
2109 3501 7200 NOP
2110 /
2111 /TEST 16
2112 /TEST TIME SHARE IN EXTENDED MEMORY
2113 /NOW TEST USER MODE TRAP IN ALL EXTENDED FIELDS
2114 /IF TRAP ERROR OCCURS HLT IN THAT FIELD
2115 /USE RTF TO SET USER MODE AND GTF TO GET THE FLAGS
2116 /TEST ALL IOTIS FOR TRAP AND RETURN
2117 /
2118 3502 7300 RIG2, CLA CLL
2119 3503 6007 CAF
2120 3504 4003 JMS I XSTKS /CHECK NO. OF FIELDS PRESENT
2121 3505 1000 TAD KCDF
2122 3506 1005 TAD K10
2123 3507 0005 DCA SR0 /SET OF FOR FIRST FIELD
2124 3510 1001 TAD KCIF
2125 3511 1005 TAD K10
2126 3512 0047 DCA SRI /SET IF FOR FIRST FIELD
2127 3513 1014 STAN, TAD K5577 /GET START OF PROGRAM -1
2128 3514 3010 DCA 10
2129 3515 1145 TAD K7745 /NO. OF INSTRUCTIONS TO TRANSFER
2130 3516 0143 DCA SR00
2131 3517 7040 CMA
2132 3520 0111 DCA 11 /START AT 0000
2133
2134 3521 1035 TAD SR0 /MAKE FLAGS FOR RETURN CHECK
2135 3522 0111 AND K0070
2136 3523 7010 RAR
2137 3524 7012 RTR
2138 3525 3112 DCA XSAV
2139 3526 1047 TAD SRI
2140 3527 0111 AND K0070
2141 3530 1112 TAD XSAV
2142 3531 1142 TAD K1100
2143 3532 3776 DCA I XPDCON
2144 3533 6201 CDF 00
2145 3534 1010 TAD I 10

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2146 3535 6201 SRD,   CDF 00
2147 3536 3411      DCA I 11      /STORE INSTRUCTIONS
2148 3537 2143      ISZ SRCO
2149 3540 5633      JMP SRD-2
2150 3541 1021      TAD ISZ0
2151 3542 3001      DCA 1          /SET FIELD 0 FOR RETURN
2152 3543 1347      TAD SRI
2153 3544 3002      DCA 2
2154 3545 1020      TAD JMP10
2155 3546 3003      DCA 3
2156 3547 6292 SRD,   CIF 00
2157 3550 5002      JMP 2          /GO TO FIELD UNDER TEST
2158 3551 7300 SRRET, CLA CLL
2159 3552 2031      ISZ STKS
2160 3553 7410      SKP          /MORE FIELDS
2161 3554 5364      JMP EXITT     /GO TO CONTROL
2162 3555 1035      TAD SRD      /SET UP FOR NEXT FIELD
2163 3556 1045      TAD K10
2164 3557 3635      DCA SRD
2165 3558 1347      TAD SRI
2166 3561 1045      TAD K10
2167 3562 3647      DCA SRI
2168 3563 5313      JMP STAN     /TEST THIS FIELD
2169 3564 7300 EXITT, CLA CLL   /TEST DONE GO TO BEGIN
2170 3565 6047      CAF
2171 3566 6264      CUF
2172 3567 1131      TAD TTB
2173 3570 3547      DCA I XELL
2174 3571 7004      LAS
2175 3572 7700      SMA CLA
2176 3573 5500      JMP I XBELL
2177 3574 7002      HLT          /TIME SHARE ENABLED
2178 3575 5502      JMP I XTRAP  /AN ERROR CONDITION EXISTS,
2179 3576 3632 XFDCON, FDCON /HIT CONTINUE TRY AGAIN
2180
2181 /
2182 /INSTRUCTIONS TO BE TRANSFERED TO FIELDS
2183 /
2184 3600
2185 /
2186 3600 7402      HLT          /SHOULD NOT HLT HERE
2187 3601 7402      HLT          /SHOULD NOT TRAP HERE
2188 3602 7400 FDGO,  CLA CLL
2189 3603 1232      TAD FDCON
2190 3604 6045      RTF          /GET USER BIT
2191 3605 5206      JMP ,+1      /SET FOR USER
2192 /USER MODE
2193 3606 6000      IOTX,  IOT
2194 3607 5207      JMP ,          /DID IOT TRAP
2195 /EXECUTIVE MODE
2196 3610 7300      CLA CLL
2197 3611 6004      GTF          /GET THE FLAGS
2198 3612 7041      CIA
2199 3613 1232      TAD FDCON   /FLAGS THAT SHOULD BE PRESENT
2200 3614 7640      SZA CLA

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2201 3615 7402 HLT /CHECK THE FLAGS
2202 3616 6203 SRQ
2203 3617 5216 JMP ,+1 /IS TRAP FLAG SET
2204 3620 6204 CINT
2205 3621 2206 ISZ IOTX
2206 3622 1206 TAD IOTX
2207 3623 1231 TAD F1000
2208 3624 7640 SZA CLA
2209 3625 5202 JMP F0G0
2210 3626 6202 CIF
2211 3627 5030 JMP I FRET /TEST DONE GO TO FIELD 0
2212 3630 3551 FRET, SRRET
2213 3631 1000 F1000, 1000
2214 3632 0000 FDCON, 0000
2215 /
2216 /CHECK SR0=1 FOR MEMORY EXTENSION ONLY
2217 /
2218 3633 7300 XSR0, CLA CLL
2219 3634 7504 LAS
2220 3635 7700 SMA CLA
2221 3636 5531 JMP I TIME
2222 3637 6007 CAF
2223 3640 1151 TAD TTB
2224 3641 3547 DCA I XBELL
2225 3642 5050 JMP I XBELL
2226 /
2227 3643 7300 TRAP, CLA CLL
2228 3644 1153 TAD ATRAP
2229 3645 5001 DCA 1 /SET FOR RETURN
2230 3646 6076 SUF /SET FOR USER
2231 3647 6001 ION
2232 3648 5001 JMP ,+1 /GO TO USER
2233 3651 7302 HLT /TIME SHARE DISABLED, HIT
2234 3652 6001 SINT /MAKE SURE JUMP IS TO CORRECT STACK,
2235 3653 7310 SKP /CONTINUE TO LOOP ON CONTROL,
2236 3654 7402 HLT /ERROR, TRAP INT, RQST, UP
2237 3655 6204 CUF
2238 3656 6007 CAF
2239 3657 5527 JMP I PLACE /GO TO BEGIN
2240 /
2241 /TEST 07
2242 /CONFIDENCE CHECK ON ALL EXISTENT FIELDS,
2243 /MAKE SURE DCA I AND TAD I ARE TO CORRECT STACK,
2244 /MAKE SURE JUMP IS TO CORRECT STACK,
2245 /CHECK ALL COMBINATIONS,
2246 /FIELDS WILL CONTAIN THEIR DF NUMBER IN LOC.0
2247 /
2248 4000 *4000
2249 /
2250 4000 0000 CON1, 0000 /FIRST FILL CORE, ALL STACKS
2251 4001 7300 CLA CLL /DCA I FOR 32K
2252 4002 3323 DCA FNUM
2253 4003 3324 DCA NUMX
2254 4004 1040 TAD KCDF
2255 4005 3232 DCA CONX

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2256 4006 1110 TAD K7770
2257 4007 3527 DCA MSTKS /SET FOR MAX, 32K
2258 4010 1110 TAD K7770
2259 4011 3031 DCA STKS
2260 4012 1040 TAD KCDF
2261 4013 3214 DCA ,+1
2262 4014 6201 FDWRD, CDF /MODIFIED UNDER TEST
2263 4015 4307 JMS FILCOR
2264 4016 2031 ISZ STKS /ARE ALL STACKS DONE
2265 4017 5222 JMP ,+3
2266 4020 4252 JMS CONCHK /CHECK RESULTS
2267 4021 5227 JMP CON2
2268 4022 1045 TAD K10
2269 4023 1214 TAD FDWRD
2270 4024 3214 DCA FDWRD /UPDATE FIELD CHANGE
2271 4025 2324 ISZ NUMX
2272 4026 5214 JMP FDWRD
2273
2274 4027 7300 /
CON2, CLA CLL /DO ONE AT A TIME
2275 4030 1323 TAD FONUM
2276 4031 3524 DCA NUMX
2277 4032 6201 CONX, CDF
2278 4033 4307 JMS FILCOR
2279 4034 6203 CDF CIF
2280 4035 4252 JMS CONCHK
2281 4036 7500 CLA CLL
2282 4037 1232 TAD CONX
2283 4040 1045 TAD K10
2284 4041 3232 DCA CONX /UPDATE FIELD CHANGE
2285 4042 2020 ISZ FONUM
2286 4043 2427 ISZ MSTKS /ARE ALL STACKS DONE
2287 4044 5227 JMP CON2
2288 4045 6203 CDF CIF
2289 4046 6007 CAF
2290 4047 2027 ISZ LOOP /DO 4096 TIMES
2291 4050 5201 JMP CON1 +1
2292 4051 5200 JMP I CON1 /TEST COMPLETE
2293
2294 4052 6000 /
CONCHK, 0000 /CHECK ALL AVAILABLE STACKS
2295 4053 7500 CLA CLL
2296 4054 3524 DCA NUMX
2297 4055 7504 LAS
2298 4056 1044 AND K7
2299 4057 7040 CMA
2300 4060 3031 DCA STKS /STACKS PRESENT
2301 4061 1041 TAD KCIF
2302 4062 3253 DCA ,+1 /START WITH FIELD 0
2303 4063 6202 CONCH, CIF /MODIFIED UNDER TEST
2304 4064 5541 JMP I K0001
2305 4065 7041 RETADD, CIA /RETURN HERE FROM FIELDS
2306 4066 1324 TAD NUMX
2307 4067 7550 SNA
2308 4070 5276 JMP ,+6 /GOOD FIELD
2309 4071 3112 DCA XSAV
2310 4072 1263 TAD CONCH

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2311	4073	0111	AND K0070	
2312	4074	1112	TAD XSAV	/INCORRECT STACK REFERENCED,
2313	4075	7402	HLT	/AC BITS 6-8 GOOD FIELD,
2314	4076	7300	CLA CLL	/AC BITS 9-11 BAD FIELD,
2315	4077	2031	ISZ STKS	
2316	4100	7410	SKP	/CHECK ALL AVAILABLE STACKS,
2317	4101	5552	JMP I CONCHK	
2318	4102	1263	TAD CONCH	
2319	4103	1045	TAD K10	
2320	4104	3263	DCA CONCH	/UPDATE FIELD CHANGE
2321	4105	2324	ISZ NUMX	
2322	4106	5263	JMP CONCH	
2323				
2324	4107	0000	FILCOR, 0000	/INSTRUCTIONS FOR FIELDS
2325	4110	1324	TAD NUMX	/MODIFIED TO DF#
2326	4111	3537	DCA I K0000	
2327	4112	1130	TAD K1000	
2328	4113	3241	DCA I K0001	
2329	4114	1041	TAD KCIF	
2330	4115	3522	DCA I K0002	
2331	4116	1326	TAD JMPRET	
2332	4117	3540	DCA I K0003	
2333	4120	1525	TAD XRETAD	
2334	4121	3523	DCA I K0004	
2335	4122	5757	JMP I FILCOR	
2336				
2337	4123	0000	FDNUM, 0000	
2338	4124	0000	NUMX, 0000	
2339	4125	4045	XRETAD, RETADD	
2340	4126	5004	JMPREI, JMP I 4	
2341	4127	0000	MSTKS, 0000	
2342			S	

4000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
4100 11111111 11111111 11111111 00000000 00000000 00000000 00000000 00000000

4200
4300

4400
4500

4600
4700

5000
5100

5200
5300

5400
5500

5600
5700

6000
6100

6200
6300

6400
6500

6600
6700

7000
7100

7200
7300

7400
7500

7600
7700

ADRS	2510	DONE0	2266	K0004	0123	KNTR	0102
AGAIN1	0711	ENTER	1200	K0011	0120	KRB	6036
AGAIN2	1005	EXFD	1316	K0017	0132	KRTN	0106
ALLO	2244	EXFLD	1302	K0070	0111	KXFLD	0100
ATRAP	0153	EXITT	3564	K0077	0117	LBTP	1515
BEGIN	0203	F1000	3631	K0100	0126	LBTSTC	1675
BEGIN1	0200	FCO	0154	K1	0043	LOOP	0027
BELL	1555	FDCON	3632	K10	0045	MUFSHB	1740
CAA	0053	FDGO	3602	K1000	0130	MGTG	2276
CAB	0754	FDNUM	4123	K1100	0142	MIFSHB	1742
CAC	0755	FDWRD	4014	K1200	0116	MCVE	1463
CAD	0741	FILCOR	4107	K20	0103	MSTKS	4127
CAE	1036	FILDX	1516	K3577	0144	N1	2043
CAF	6007	FILL	2076	K5200	0115	N2	2042
CAG	1020	FRET	3530	K6000	0125	NDF	0030
CAI	1133	GOTO0	1510	K6001	0133	NEWDF	1440
CAX	2263	GTF	6004	K7	0044	NOFLD	0034
CAF	6201	GTF1	2271	K7000	0047	NOMEM	2200
CDF0S	2245	HALTA	3426	K7402	0124	NOSTAK	0033
CHDF	1074	HLTS	0671	K7700	0121	NSTKS	2435
CHECK	2112	IB0	0345	K7707	0050	NUMX	4124
CIF	6202	IB1	0354	K7717	0056	OK1	0231
CIFCK	0753	IB2	0402	K7727	0055	OK2	0257
CIFCK1	1046	IB3	0421	K7737	0054	OK3	0305
CIFJMP	0723	IB4	0444	K7744	0071	OK4	0333
CIFJMS	1017	IB5	0463	K7745	0145	OK5	0373
CIFJPL	0715	IB6	0506	K7747	0053	OK6	0440
CIFJSL	1011	IB7	0525	K7757	0052	OK7	0502
CINT	6204	IBSF	0656	K7766	0067	OK8	0544
CK00	1005	IBSF1	1000	K7767	0051	P	2044
CNSTK	2001	IFCN	1605	K7770	0110	PLACE	0127
CON1	0000	IFDF	2460	K7771	0064	POINT	0065
CON2	0007	INST	3407	K7772	0063	POS	2237
CONCH	4063	INSTA	3432	K7773	0062	RANA	2057
CONCHK	4002	INTE	1663	K7774	0061	RUF	6214
CONX	4032	INTEP	1674	K7775	0060	REPEAT	1733
CUF	6264	IOF	6002	K7776	0057	RET	2511
DAT	0032	ION	6001	K7777	0046	RETADD	4065
DATER	2047	ION1	2331	K7S	0066	RIB	6234
DCAI	0501	IOT	6000	KCAI	0036	RIF	6224
DEF0	0211	IOTST	3403	KCAIM	0035	RIG1	2452
DF1	0230	IOTX	3606	KCC	6032	RIG2	3502
DF2	0246	ISZ0	0021	KCDF	0040	RMF	6244
DF3	0263	JMP2	0104	KCDF1	0156	RMFCN1	1676
DF4	0274	JMPI0	0020	KCIF	0041	RMFDY	1703
DF5	0011	JMPI4	1702	KDATER	0157	RMFDY1	1710
DF6	0322	JMPIR	0134	KDFSHB	1737	RMFE1	1665
DF7	0220	JMPRET	4126	KFLD0	0105	RMFE2	1656
DFCN	1077	K0000	0137	KHLT	0037	RMFI1	1660
DFLD	0007	K0001	0141	KIFSHB	1741	RMFI2	1661
DFN	1446	K0002	0122	KJMP	0101	RMFL1	1633
DCAUTO	1517	K0003	0140	KNOP	0752	RMFL2	1621

RMFL3	1615	XNOM	2236
RMFTST	1600	XRANS	0025
RTF	6005	XRET	0135
RTF1	2400	XRETAD	4125
RTRN	1427	XRIG1	2434
SF19	1400	XRMF	0024
SINT	6254	XRTF1	2372
SKON	6000	XSAV	0112
SFF	6040	XSDF	2304
SR00	0143	XSR0	3633
SRD	3535	XSRTF	2407
SRI	3547	XSTKS	0023
SRQ	6003	XTDF	0076
SRRET	3551	XTDF1	0077
STAN	3513	XTFLG	0022
STDF	1127	XTOR	0114
STKS	0031	XTRAP	0152
STRMF	1107	XTRMF	2550
SUF	6274	XXSR0	0146
T1	2600		
T2	2627		
TADI	1622		
TAUTO	1632		
TFLD	0630		
TFLC	2043		
TINE	0151		
TRANS	1621		
TRAP	3643		
TRELD	1637		
TRNF	1600		
TDF	0011		
YTR	1601		
XAUTO	0026		
XBLL	1600		
XCON1	2073		
XCOURT	0113		
XDATA	0106		
XDATER	0105		
XELL	0147		
XFD	0042		
XFDCON	3076		
XFER	2000		
XFERC1	2046		
XFERC2	2045		
XFERIN	2032		
XFERL1	2030		
XFERL2	2017		
XFERP	1700		
XFIB	0107		
XGTF1	1047		
XION1	2030		
XMEM	1701		

0 ERRORS DETECTED: 0

0 LINKS GENERATED: 0

0 RUN-TIME: 20 SECONDS

0 3K CORE USED

KCDF	57#	443	461	511	636	658	680	759	1151	1252	1292	1391	1487	2121
KCDF1	2254	2260												
KCIF	137#													
KCIF	58#	530	580	683	1008	1154	2124	2301	2329					
KCIATER	138#	1317	1319											
KDFSHB	1135	1136	1138	1139	1147	1152	1200	1218#						
KFLD	95	96#												
KMLT	56#	156	515	517	519	664	773	911						
KIFSHB	1123	1126	1128	1129	1155	1207	1220#							
KJMP	92#	850	917											
KNOP	502	567#												
KNTR	93#	852												
KRB	30#	1929												
KRTN	97#	919												
KXFLD	91#	854												
LBTP	1023	1024#												
LBTSTC	1117	1168	1172#											
LOOP	48#	178	182	206	209	231	235	258	271	299	306	343	347	385
	389	427	439	474	529	563	579	612	663	665	676	749	909	937
	957	1021	1362	1402	1475	1520	1554	2290						
MDFSHB	1141	1197	1219#											
MGTF	1459#	1476	1481											
MIFSHB	1131	1244	1221#											
MOVE	986#	991												
MSTKS	2257	2286	2341#											
N1	1247	1260	1278#											
N2	1244	1254	1275#											
NOF	49#	442	447	455	460	469	480							
NEWDF	961#	1020	1022											
NOFLD	53#	1386	1392											
NOHEM	1176	1360#	1400											
NOSTAK	57#	1319	1386	1386	1400									
NSTKS	51	1565#	1571											
NUMX	2293	2271	2279	2296	2306	2321	2327	2338#						
OK1	173	170#												
OK2	199	236#												
OK3	226	231#												
OK4	252	256#												
OK5	296	299#												
OK6	339	343#												
OK7	381	385#												
OK8	422	427#												
P	1250	1256	1258	1277#										
PLACE	114#	1088	1090	2239										
POINT	78#	677												
POS	1401	1405#												
PANA	1294	1297#	1306	1308	1309									
RDF	11#	161	170	186	196	213	223	239	249	286	312	329	352	371
	394	412	704	1007	1196	1633	1884	1894						
REPEAT	1194	1222	1209	1214#										
RET	120	1624#												
RETADD	2305#	2339												
RIB	14#	277	295	319	336	361	378	402	419	548	556	597	605	712

