

DH MCA

IDENTIFICATION

PRODUCT CODE: MAINDEC-8E-D1HB-D
PRODUCT NAME: PDP8-E MEMORY EXTENSION
AND TIME SHARE CONTROL TEST
DATE CREATED: OCTOBER 8, 1971
MAINTAINER: DIAGNOSTIC PROGRAMMING GROUP
AUTHOR: J. VROBEL

M. C. N. REQUIRED
THIS PROGRAM REQUIRES MCN(S)
IN ORDER TO WORK PROPERLY

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 KM8-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

0907

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 KM8-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 INTERRUPT 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 CDF 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.

TEST 02

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

TEST 03

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

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.

TEST 05

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

TEST 06

TEST READ AND WRITE DATA IN ALL AVAILABLE EXTENDED FIELDS.

TEST 07

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

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.

TEST 09

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

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

/PDP8-E, MEMORY EXTENSION AND TIME SHARE CONTROL TEST.
/COPYRIGHT 1971, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
/STARTING ADDRESS IS 0200.
/CONSTANTS

6201 CDF=6201
6202 CIF=6202
6214 RIF=6214
6224 RIF=6224
6244 RMF=6244
6234 RIB=6234
6274 SUF=6274
6264 CUF=6264
6254 SINT=6254
6204 CINT=6204
6007 CAF=6007
6005 RTF=6005
6004 CTF=6004
6001 ION=6001
6002 IOF=6002
6000 SKON=6000
6003 SRQ=6003
6040 SPF=6040
6041 TSF=6041
6032 KCC=6032
6002 IOF=6002
6036 KRB=6036
6000 IOT=6000
7421 MQL=7421

0000
0000
0001 5001
0002 0002
0003 0003

0020

5400 JMP I 0
0021 ISE 0
0022 XTFLG, TFLG
0023 XSTKS, NSTKS
0024 XRMF, TRMF
0025 XTRANS, TRANS
0026 XAUTO, TAUTO
0027 LOOP, 0
0030 NDF, 0
0031 STKS, 0
0032 DAT, 0
0033 NOSTAK, 0
0034 NOFLD, 0
0035 KCAIM, CAI-1

0036	1133	KCAI,	CAI
0037	7482	KHLT,	HLT
0040	6201	KCDF,	6201
0041	6202	KCIF,	6202
0042	1316	XFD,	EXFD
0043	0001	K1,	1
0044	0007	K7,	7
0045	0010	K10,	10
0046	7777	K7777,	7777
0047	7000	K7000,	7000
0050	7707	K7707,	7707
0051	7767	K7767,	7767
0052	7757	K7757,	7757
0053	7747	K7747,	7747
0054	7737	K7737,	7737
0055	7727	K7727,	7727
0056	7717	K7717,	7717
0057	7776	K7776,	7776
0060	7775	K7775,	7775
0061	7774	K7774,	7774
0062	7773	K7773,	7773
0063	7772	K7772,	7772
0064	7771	K7771,	7771
0065	0067	POINT,	.02

0066	0067	K7S,	.01
0067	7766	K7766,	7766
0070	7755		7755
0071	7744	K7744,	7744
0072	7733		7733
0073	7722		7722
0074	7711		7711
0075	7700		7700
0076	1127	XTDF,	STDF
0077	1130	XTDF1,	STDF+1
0100	1302	KXFLD,	EXFLD
0101	5402	KJMP,	JMP I 2
0102	1200	KNTR,	ENTER
0103	0020	K20,	20
0104	5505	JMP2,	JMP I KFLD0
0105	1427	KFLD0,	RTRN
0106	1422	KRTN,	CAG+2
0107	1400	XFIB,	SFIB
0110	7770	K7770,	7770
0111	0070	K0070,	0070
0112	0000	XSAV,	0000
0113	7770	XCOUNT,	7770
0114	0000	XTOR,	0000
0115	5200	K5200,	5200
0116	1200	K1200,	1200
0117	0077	K0077,	0077
0120	0011	K0011,	0011
0121	7700	K7700,	7700
0122	0022	K0002,	0002

```

0123 0004 K0004, 0004
0124 7402 K7402, 7402
0125 0000 K6000, 6000
0126 0100 K0100, 0100
0127 0203 PLACE, BEGIN
0130 1000 K1000, 1000
0131 2600 TIME, T1
0132 0017 K0017, 0017
0133 6001 K6001, 6001
0134 5935 JMP I XRET
0135 2511 XRET, RET
0136 0000 XDATA, 0000
0137 0000 K0000, 0000
0140 0003 K0003, 0003
0141 0001 K0001, 0001
0142 1100 K1100, 1100
0143 7745 SRCO, 7745
0144 3577 K3577, 3577
0145 7745 K7745, 7745
0146 3633 XXSR0, XSR0
0147 1556 XELL, BELL+1
0150 1555 XBELL, BELL
0151 6046 TTB, TTB
0152 3643 XTRAP, TRAP
0153 5531 AYRAP, JMP I TIME
0154 0000 PCO, 0000
0155 2047 XDATE, DATER
0156 6211 KCOF1, COF 10
0157 2525 KDATE, 2525

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/TEST 00
/TEST CDF AND RDF, USE CDF TO SET THE DATA
/FIELD AND RDF TO READ THE DATA FIELD.
/DO ALL COMBINATIONS 0 TO 7.
/

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0200 *200
0201 BEGIN1, LAS
0202 SPA
0203 JMP I XTRAP
0204 CLA CLL
0205 CAF
0206 CUF
0207 TAD KHLT
0208 DCA 1
0209 ION
0210 /STORE A HLT IN LOC. 1 AND
/CHECK FOR STRAY INTERRUPT ROST.
0211 CDF 00 /DF 0
0212 RDF /SHOULD NOT SKIP
0213 SNA JMP DF7
0214 5220 /ERROR. CDF OR RDF FAILED
0215 7402 HLT

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0216	7200	CLA			
0217	5211	JMP DF0	/REPEAT		
0220	1050	TAD K7707	/7707		
0221	6271	CDF 70	/DF 7		
0222	6214	RDF			
0223	7040	CMA	/AC = 0		
0224	7450	SNA	/SHOULD NOT SKIP		
0225	5231	JMP OK1			
0226	7402	HLT	/CDF OR RDF FAILED		
0227	7200	CLA			
0230	5220	JMP DF7			
0231	2027	ISE LOOP	/CHECK DONE		
0232	5211	JMP DF0			
0233	7200	CLA			
0234	3027	DCA LOOP	/LOOP COUNTER		
0235	1051	TAD K7767	/7767		
0236	6211	CDF 10	/DF 10		
0237	6214	RDF	/AC=0		
0240	7040	CMA			
0241	7450	SNA			
0242	5246	JMP DF2	/CDF1 OR RDF FAILED		
0243	7402	HLT			
0244	7200	CLA			
0245	5235	JMP DF1			
0246	1052	TAD K7757	/7757		
0247	6221	CDF 20	/DF2		
0250	6214	RDF	/AC=0		
0251	7040	CMA			
0252	7450	SNA			
0253	5257	JMP OK2			
0254	7402	HLT	/CDF 2 OR RDF FAILED		
0255	7200	CLA			
0256	5246	JMP DF2			
0257	2027	ISE LOOP	/DONE IF SKP		
0260	5235	JMP DF1			
0261	7200	CLA			
0262	3027	DCA LOOP			
0263	1053	TAD K7747	/7747		
0264	6231	CDF 30	/DF 3		
0265	6214	RDF	/AC=0		
0266	7040	CMA			
0267	7450	SNA			
0270	5274	JMP DF4	/CDF 3 OR RDF FAILED		
0271	7402	HLT			
0272	7200	CLA			
0273	5263	JMP DF3			

0274 1054
0275 0241
0276 0214
0277 7040
0300 7450
0301 5305
0302 7402
0303 7200
0304 5274

TAD K7737
CDF 40
RDF
CMA
SNA
JMP OK3
HLT
CLA
JMP DF4

/7737
/DF 4
/AC=0

/CDF 4 OR RDF FAILED

0305 2027
0306 5263

ISE LOOP
JMP DF3

/DONE IF SKP

0307 7200
0310 3027

CLA
DCA LOOP

0311 1055
0312 0251
0313 0214
0314 7040
0315 7450
0316 5322
0317 7402
0320 7200
0321 5311

TAD K7727
CDF 50
RDF
CMA
SNA
JMP DF6
HLT
CLA
JMP DF5

/7727
/DF5
/AC=0

/CDF 5 OR RDF FAILED.

0322 1056
0323 0261
0324 0214
0325 7040
0326 7450
0327 5333

TAD K7717
CDF 60
RDF
CMA
SNA
JMP OK4

/7717
/DF 6
/AC=0

/CDF 6 OR RDF FAILED

0330 7402
0331 7200
0332 5322

HLT
CLA
JMP DF6

0333 2027
0334 5311
0335 0000
0336 7402

ISE LOOP
JMP DF5
SKON
HLT

/DONE IF SKP
/SKP IF ION
/IS ION STILL ON

/TEST 01
/NOW TEST INTERRUPT BUFFER (IB) BITS 9-11 WITH
/RIB. P1 IS ENABLED. TELEPRINTER FLAG IS
/USED FOR INTERRUPT. DO ALL COMBINATIONS 0 TO 7.

0337 6201
0340 1020
0341 3001
0342 3027
0343 6041
0344 4422

CDF 00
TAD JMP10
DCA 1
DCA LOOP
TSF
JMS I XTFLG

/DF0
/JMPI0=JMP I 0
/C(1)=JMP I 0
/TEST TTY FLAG
/SET FLAG

0345	6021	1B0,	ION	/ENABLE PI
0346	7200		CLA	
0347	6234		RIB	/READ SF
0350	7450		SNA	
0351	5354		JMP 1B1	/RIB FAILED
0352	7402		HLT	
0353	5345		JMP 1B0	
/				
0354	6211	1B1,	CDF 10	/DF 1
0355	6021		ION	
0356	7200		CLA	/DF SHOULD BE 0 AFTER A PI
0357	6214		RDF	
0360	7450		SNA	
0361	5364		JMP .+3	
0362	7402		HLT	/DF NOT CLEARED, OR NO PI
0363	5354		JMP 1B1	
/				
0364	1057		TAD K7776	
0365	6234		RIB	/READ SF
0366	7040		CMA	/AC=0
0367	7450		SNA	
0370	5373		JMP OK5	
0371	7402		HLT	/RIB OR SF FAILED
0372	5354		JMP 1B1	/DONE IF SKP
0373	2027	OK5,	ISE LOOP	
0374	5345		JMP 1B0	
0375	5776		JMP I .+1	
0376	0400		1B2-2	
/				
0400	0400	+400	CLA	
0400	7200		DCA LOOP	
0401	3027			
/				
0402	6221	1B2,	CDF 20	/DF 2
0403	6001		ION	
0404	7200		CLA	/SHOULD BE 0 AFTER PI
0405	6214		RDF	
0406	7450		SNA	
0407	5212		JMP .+3	/DF NOT CLEARED, OR NO PI
0410	7402		HLT	
0411	5202		JMP 1B2	
/				
0412	1060		TAD K7775	
0413	6234		RIB	/AC=7777
0414	7040		CMA	/=0
0415	7450		SNA	
0416	5221		JMP 1B3	/RIB OR SF FAILED
0417	7402		HLT	
0420	5202		JMP 1B2	
/				
0421	6231	1B3,	CDF 30	/DF3
0422	6021		ION	
0423	7200		CLA	/DF SHOULD BE CLEARED
0424	6214		RDF	

0425	7420	SNA		
0426	5231	JMP .+3		
0427	7402	HLT	/DF NOT CLEARED	
0430	5221	JMP 1B3		
/				
0431	1061	TAD K7774		
0432	6234	RIB	/AC=7777	
0433	7040	CMA	/AC=0	
0434	7420	SNA		
0435	5240	JMP OK6		
0436	7402	HLT	/RIB OR SF FAILED	
0437	5221	JMP 1B3		
/				
0440	2027	ISE LOOP	/DONE IF SKP	
0441	5202	JMP 1B2		
/				
0442	7200	CLA		
0443	3027	DCA LOOP		
/				
0444	6241	CDF 40	/DF 3	
0445	6021	ION		
0446	7200	CLA		
0447	6214	RDF		
0450	7420	SNA	/DF MUST BE 000 AFTER A PI	
0451	5254	JMP .+3	/ERROR IF SKIP	
/				
0452	7402	HLT	/DF NOT 0 AFTER PI	
0453	5244	JMP 1B4		
/				
0454	1062	TAD K7773		
0455	6234	RIB	/AC=7773	
0456	7040	CMA	/AC=7777	
0457	7420	SNA	/AC=0	
0460	5263	JMP 1B5		
0461	7402	HLT	/RIB OR SF FAILED	
0462	5244	JMP 1B4		
/				
0463	6251	CDF 50	/DF5	
0464	6001	ION		
0465	7200	CLA		
0466	6214	RDF	/DF SHOULD=000	
0467	7420	SNA		
0470	5273	JMP .+3		
0471	7402	HLT	/DF NOT 0 AFTER PI	
0472	5263	JMP 1B5		
/				
0473	1063	TAD K7772		
0474	6234	RIB	/AC = 7772	
0475	7040	CMA	/AC = 7777	
0476	7420	SNA	/AC = 0000	
0477	5302	JMP OK7		
0500	7402	HLT	/RIB OR SF FAILED	
0501	5263	JMP 1B5		

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0502 2027 OK7, ISZ LOOP /DONE IF 0 AND SKIP
0503 5244 JMP I84

0504 7200 CLA
0505 3027 DCA LOOP

0506 6261 CDF 60 /DF6
0507 6001 ION
0510 7200 CLA
0511 6214 RDP /DF MUST=0 AFTER PI
0512 7450 SNA
0513 5316 JMP ,+3
0514 7402 HLT /DF NOT 0 AFTER PI
0515 5306 JMP I86

0516 1064 TAD K7771 /7771
0517 6234 RIB /AC=7777
0520 7000 CMA
0521 7450 SNA
0522 5325 JMP I87
0523 7402 HLT /RIB OR SF FAILED
0524 5306 JMP I86

0525 6271 CDF 70 /DF 7
0526 6001 ION
0527 7200 CLA /DF MUST = 0 AFTER PI
0530 6214 RDP
0531 7450 SNA
0532 5335 JMP ,+3 /DF NOT 0
0533 7402 HLT
0534 5325 JMP I87

0535 1110 TAD K7770 /AC=7777
0536 6234 RIB
0537 7040 CMA
0540 7450 SNA
0541 5344 JMP OK8 /RIB OR SF FAILED
0542 7402 HLT
0543 5325 JMP I87

0544 2027 OK8, ISZ LOOP /DONE IF SKP
0545 5306 JMP I86
0546 5747 JMP I ,+1 /NEW PAGE
0547 0600 600

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*600
/TEST 02
/NOV TEST DCA I AND TAD I TO ALL STACKS, NUMBER OF
/EXTENDED STACKS SHOULD BE IN SR9 TO 11. EACH STACK WILL
/CONTAIN ITS DF# IN LOCATION 7000.

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0600 3027 DCA LOOP

0601	4423	DCAI,	JMS I XSTKS	/READ SR 9-11
0602	7001		IAC	
0603	3030		DCA NDF	/DF NUMBER = 1 TO START
0604	1040		TAD KCDF	/6201
0605	1045		TAD K10	
0606	3207		DCA .+1	/DF 001 TO START WITH
0607	6201		CDF 00	/WILL BE INCREMENTED
0610	1030	DFLD,	TAD NDF	/DF#
0611	3447		DCA I K7000	/PUT IN 7000 OF STACK
0612	2031		ISE STKS	/ALL STACKS WHEN 0
0613	7410		SKP	
0614	9222		JMP TADI	/TEST TAD I
0615	1045		TAD K10	
0616	1207		TAD DFLD	/INCR. CDF IOT
0617	3207		DCA DFLD	
0620	2030		ISE NDF	
0621	9207		JMP DFLD	
/				
0622	4423	TADI,	JMS I XSTKS	/SR9-11 AGAIN
0623	7001		IAC	
0624	3030		DCA NDF	/DF#=1 AGAIN
0625	1040		TAD KCDF	/6201
0626	1045		TAD K10	
0627	3230		DCA .+1	
0630	6201	TFLD,	CDF 00	/AC=DF CONTENTS NOW
0631	1417		TAD I K7000	/SAVE TEMP
0632	3032		DCA DAT	
0633	1032		TAD DAT	
0634	7041		CIA	/2'S COMP
0635	1030		TAD NDF	/BETTER BE EQUAL
0636	7640		SEA CLA	
0637	5252		JMP CAA-1	/ERROR PATH
0640	2031		ISE STKS	/ALL WHEN 0
0641	5245		JMP .+4	
0642	2027		ISE LOOP	/DONE WHEN 0
0643	9201		JMP DCAI	/NEXT TEST
0644	5256		JMP IBSF	
0645	1045		TAD K10	
0646	1230		TAD TFLD	/CDF IOT + 10
0647	3230		DCA TFLD	
0650	2030		ISE NDF	
0651	9230		JMP TFLD	
/				
0652	1032	CAA,	TAD DAT	/DATA AS READ
0653	7402		HLT	/AC=DATA READ
0654	7200		CLA	
0655	5230		JMP TFLD	
			/TEST 03	

/CIF TEST, CHECKS THE ABILITY OF A CIF-ION-NOP-JMP OF
 /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.
/5. INTERRUPT ENABLES IF TO SF TRANSFER.

0656	6201	/SET UP FOR CIF-ION-NOP-JMP CHECK.	
0657	1021	IBSF,	CDF 00
0660	3001	TAD	ISZ0
0661	1352	DCA	1
0662	3002	TAD	KNOP
0663	1020	DCA	2
0664	3003	TAD	JMPI0
		DCA	3
/NOW STORE HALTS IN LOC1, CIFJMP+1, /AND CIFJMS+1 OF ALL EXTENDED FIELDS.			
0665	4423	JMS I	XSTKS
0666	1040	TAD	KCDF
0667	1045	TAD	K10
0670	3271	DCA	.+1
0671	0211	CDF	10
0672	1037	TAD	KHLT
0673	3443	DCA I	K1
0674	1037	TAD	KHLT
0675	3754	DCA I	CAB
0676	1037	TAD	KHLT
0677	3755	DCA I	CAC
0700	2031	ISE	STKS
0701	7410	SKP	
0702	5305	JMP	.+3
0703	1271	TAD	HLTS
0704	5267	JMP	HLTS-2
0705	6201	CDF	00
0706	6041	TSP	
0707	4422	JMS I	XTFLG
0710	3027	DCA	LOOP
0711	1041	TAD	KCIF
0712	3323	DCA	CIFJMP
0713	3353	DCA	CIFCK
0714	4423	JMS I	XSTKS
0715	1323	TAD	CIFJMP
0716	1045	TAD	K10
0717	3323	DCA	CIFJMP
0720	1353	TAD	CIFCK
0721	1045	TAD	K10
0722	3353	DCA	CIFCK
0723	6202	CIFJMP, CIF	00
/ENSURE TIO FLAG SET.			
/SET COUNTER FOR 4096 PASSES.			
/INITIALIZE TO CIF 00.			
/INITIALIZE I.F. CHECK TO 0.			
/READ SR9-11.			
/MODIFIED TO CURRENT FIELD			
/UNDER TEST.			
0724	6001	ION	
0725	7000	NOP	
0726	5327	JMP	.+1
0727	7402	HLT	
0730	6234	RIB	
0731	7041	CIA	
/ERROR. NO PI OR INHIBIT PI.			

0732	1353	TAD	CIFCK
0733	7650	SNA	CLA
0734	5344	JMP	CAD+3
0735	1353	TAD	CIFCK
0736	7421	ACL	CLL
0737	7300	RIB	
0740	6234	HLT	
0741	7402	CLA	
0742	7200	JMP	
0743	5323		
CAD,			
0744	2031	ISE	STKS
0745	5315	JMP	CIFJPL
0746	2027	ISE	LOOP
0747	5311	JMP	AGAIN1
0750	5751	JMP I	.*1
0751	1000	IBSF1	
0752	7000	NOP	
0753	0000		
0754	0724	CIFJMP+1	
0755	1020	CIFJMS+1	
KNOP,			
CIFCK,			
CAB,			
CAC,			

/LOAD MQ

/ERROR. I.B. TO I.F. TRANSFER
/FAILED AFTER CIF-JMP, BAD
/I.F. IN AC, GOOD I.F. IN
/MQ. REPEAT UPON CONTINUE.
/DONE?
/NO, DO NEXT FIELD
/4096 TIMES?
/NO. DO TI ALL AGAIN.
/YES. GO TEST CIF-JMS.

1000	1000	CLA	
1001	7200	COF	00
1002	6041	TSP	
1003	4422	JMS I	XTFLG
1004	3027	DCA	LOOP
1005	1041	TAD	KCIF
1006	3217	DCA	CIFJMS
1007	3246	DCA	CIFCK1
1010	4423	JMS I	XSTKS
1011	1217	TAD	CIFJMS
1012	1045	TAD	K10
1013	3217	DCA	CIFJMS
1014	1246	TAD	CIFCK1
1015	1045	TAD	K10
1016	3246	DCA	CIFCK1
1017	6202	CIFJMS.	CIF
*1000			
IBSF1,			
AGAIN2,			
CIFJSL,			

/ENSURE TIO FLAG SET.

/SET UP FOR 4096 PASSES.
/INIT. TO CIF 00.

/INIT. I.F. CHECK TO 0.
/READ SR9-11.

/MODIFIED TO CURRENT FIELD
/UNDER TEST.

1020	6001	ION	
1021	7000	NOP	
1022	4223	JMS	.*1
1023	0000		
1024	7402	HLT	
1025	6234	RIB	
1026	7041	CIA	
1027	1246	TAD	CIFCK1
1030	7650	SNA	CLA
1031	5241	JMP	CAD+3
1032	1246	TAD	CIFCK1
1033	7110	CLL	RAR
1034	7012	RTR	

/ERROR. NO PI OR INHIBIT PI.

```

1035 6234      CAE,      RIB
1036 7402      HLT
1037 7200      CLA
1040 5217      JMP      CIFJMS
1041 2031      ISZ
1042 5211      JMP      CIFJSL
1043 2027      ISZ      LOOP
1044 5205      JMP      AGAIN2
1045 5647      JMP      I  XGTF1
1046 0000
1047 2271      CIFCK1,0
                XGTF1,  GTF1

```

```

/ERROR. I.B. TO I.F. TRANSFER
/FAILED AFTER CIF-JMS, BAD
/I.F. IN AC6-8, GOOD I.F.
/IN AC9-11. REPEAT UPON CONTINUE
/DONE?
/NO. DO NEXT FIELD,
/4096 TIMES?
/NO. DO IT ALL AGAIN,
/YES. GO ON TO NEXT TEST

```

```

/TEST 10
/TEST INTERRUPT INHIBIT
/FROM EACH FIELD, REFER TO HEADING TITLED "EXTENDED
/FIELD TEST ROUTINE". THIS ROUTINE IS PLACED IN
/EAACH TESTED FIELD AT THE ADDRESSES SPECIFIED. THE
/INDICATED ERROR HALTS WILL BE IN THE EXTENDED
/FIELD. PRESS CONT. TO RECOVER. ONLY 1 FIELD WILL
/CONTAIN THE ROUTINE AT ANY ONE TIME. OTHER FIELDS
/WILL CONTAIN ALLO'S. THE ROUTINE IS REPLACED WITH
/HALTS AFTER COMPLETION. THE PORTIONS OF THE FIELD
/WHICH DO NOT CONTAIN THE ROUTINE ARE SET TO 0000
/BEFOREHAND.

```

/SETUP FIELDS TO TEST, POINTERS, ETC..

```

1050 4423      TRMF,      JMS I XSTKS      /READ SR9-11
1051 1040      TAD KCDF      /6201
1052 3200      DCA .+6
1053 1200      TAD .+5
1054 1045      TAD K10
1055 3200      DCA .+3
1056 7040      CMA
1057 3010      DCA 10
1060 6201      CDF 00
1061 3410      DCA I 10
1062 1010      TAD 10
1063 7040      CMA
1064 7640      SZA CLA
1065 9261      JMP .-4
1066 2031      ISZ STKS
1067 5253      JMP TRMF+3

```

```

/PLACE 0'S IN EACH FIELD FROM
/LOC. 0 TO 7777.

```

```

/NOV PUT A HLT IN EACH FIELD IN THE SAME
/LOCATION AS CAI, BELOW.

```

```

1070 4423      JMS I XSTKS      /READ SR 9-11
1071 1040      TAD KCDF
1072 1045      TAD K10

```

1073	3274	DCA ,*1			
1074	6201	CDP 00			
1075	1036	TAD KCAI		/KCAI = ADDRESS OF CAI.	
1076	3027	DCA LOOP		/SAVE TEMPORARILY	
1077	1037	TAD KHLT		/KHLT = 7402 (HLT)	
1100	3427	DCA I LOOP			
1101	2031	ISE STKS		/DONE ALL STACKS WHEN SKIP	
1102	7410	SKP			
1103	5306	JMP ,*3			
1104	1274	TAD CHDF			
1105	5272	JMP CHDF-2			
1106	6201	CDP 00			
1107	6041	TSP		/CHECK TTY FLAG	
1110	4422	JMS I XTFLG		/GO SET IT	
1111	1030	TAD K7707			
1112	3027	DCA LOOP			
1113	1065	TAD POINT			
1114	3066	DCA K7S		/POINTER FOR K7700 TO K7766	
1115	4423	JMS I XSTKS		/READ SR 9-11	
1116	1040	TAD KCDF		/6201	
1117	1045	TAD K10		/10	
1120	3327	DCA STDF			
1121	1041	TAD KCIF		/6202	
1122	1045	TAD K10		/10	
1123	3330	DCA STDF+1			
1124	1330	TAD STDF+1		/PUT TEST ROUTINE INTO FIELD X	
1125	3442	DCA I XFD			
1126	4425	JMS I XTRANS			
1127	6211	CDP 10		/FIELD 1 TO START WITH	
1130	6212	CIF 10			
1131	5332	JMP ,*1		/SHOULD ENTER EXTENDED FIELD	
1132	7000	NOP		/AFTER THIS JMP. HLT IF NOT	
1133	7402	HLT		/ERROR, PI FAILED	
1134	5327	JMP STDF		/C(AC) = C(I.B.)	
		CAI,		/REPEAT SAME TEST.	
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			
		JMP ,*1			
		NOP			
		HLT			
		JMP STDF			
		CAI,			
		/			
		STDF,			
		CDP 10			
		CIF 10			

```

1213 1466      TAD I K7S
1214 7040      CMA
1215 7690      SNA CLA
1216 5226      JMP CKPC
1217 6244      RMF
1220 6234      RIB
1221 7402      HLT

1222 7200      CLA
1223 6201      CDF 00
1224 6202      CIF 00
1225 5476      JMP I XTDF

          /CKPC,
1226 1036      TAD KCAI
1227 7001      IAC
1230 7041      CIA
1231 1000      TAD 0
1232 7650      SNA CLA
1233 5240      JMP .+5
1234 1000      TAD 0
1235 7402      HLT

          /ERROR. ALL WORKED, BUT
          /C(PC) WAS NOT=TO CAI+1
          /AFTER PI IN EXTENDED
          /FIELD, C(AC)=C(0),F0.
          /CHECK FOR PI NOT INHIBITED,
          /OR AUTO-INDEX REG.
          /12 FAILING IN THE EXTENDED FIELD.

1236 7200      CLA
1237 5476      JMP I XTDF

          /SETUP FOR NEXT FIELD

1240 2031      ISZ STKS
1241 5240      JMP .+5
1242 2027      ISZ LOOP
1243 5645      JMP I .+2
1244 5507      JMP I XFIB
1245 1113      STRMF+4

          /DONE ALL IF SKIP
          /DONE LOOPING IF SKIP
          /REPEAT ALL AGAIN
          /EXIT TO NEXT TEST
          /BACK TO LAST PAGE

          /SET LAST TESTED FIELD TO ALL 0'S AND PUT A
          /HLT IN RESPECTIVE ADDRESS OF CAI

1246 7240      CLA CMA
1247 3010      DCA 10
1250 1476      TAD I XTDF
1251 3252      DCA .+1
1252 6211      CDF 10
1253 3410      DCA I 10
1254 1010      TAD 10
1255 7040      CMA
1256 7640      SZA CLA
1257 5253      JMP .-4
1260 6201      CDF 00

          /CDEF X0 AT STDF
          /F1 TO START WITH
          /CLEARD IF SKIP

```



```

1426 5447      JMP I K7000      /IF SHOULD=FIELD0
      /
1427 2027      RTRN,
1430 5216      /WORKED OK
1431 5232      JMP CAG-2
      /LOOP
      /DONE, GO TO NEXT TEST
      /

/TEST 12
/TEST ALL AUTO-INDEX REGISTERS IN EACH EXTENDED FIELD.
/IDENTICAL TEST ROUTINES ARE PERFORMED FROM EACH FIELD.
/AND ERROR HALTS OCCUR IN THE FIELD CURRENTLY RUNNING
/THE ROUTINE. PRESS CONT. TO RESUME TESTING. EACH
/FIELD CONTAINS ALL 0'S EXCEPT FOR THE AREA OCCUPIED
/BY THE TEST ROUTINE. FIELD 0 IS RE-ENTERED
/AFTER EACH TEST, AND THE NEXT SEQUENTIAL FIELD
/IS THEN ENTERED. REFER TO THE HEADING "AUTO-
/INDEX TEST" FOR THE SEQUENCE OF OPERATIONS.
/

TAUTO,      CDF 00
      TAD K7707
      DCA LOOP
      JMS I XSTKS
      TAD KCDF
      DCA DFN
      TAD DFN
      TAD K10
      DCA DFN
      /INCREMENT DF
      /

NEWDF,
      /

/CLEAR ONE FIELD TO 0
/

GMA
DCA 10
DCA 0
CDF 10
DCA I 10
ISZ 0
JMP .-2
CDF 00

DFN,
      /USE LOC. 0 FOR A COUNTER
      /FIELD 1 TO START WITH
      /

/NOV PUT TEST ROUTINE IN THE EXTENDED FIELD
/

TAD 00AUTO
DCA 10
TAD K7744
DCA 0
TAD 00AUTO
DCA 11
TAD DFN
DCA .+3
CDF 00
TAD I 10
CDF 10
DCA I 11

MOVE,
      /FIELD 1 TO START
      /

```

1467 2000
1470 5263

ISE 0
JMP MOVE
/MOVE WHEN SKIP

/NOW SET AUTO-I REGS 10 TO 17 TO 7777.
/

1471 1110
1472 3000
1473 1044
1474 3010
1475 7030
1476 3410
1477 2000
1500 5275
1501 7040
1502 3446
1503 6214
1504 1041
1505 3306
1506 6212
1507 4716

TAD K7770 /-8 DECIMAL
DCA 0 /7
TAD K7 /7777
DCA 10
CMA
DCA I 10
ISE 0
JMP -3
CMA
DCA I K7777
RDP
TAD KCIF
DCA +1
CIF 10
JMS I FILD
/PUT 7777 IN LOC. 7777 OF EXTENDED FIELD
/READ D.F.
/6202
/FIELD 1 TO START
/ENTER EXTENDED FIELD
/515 OCTAL LOCS. BEFORE THE
/TAD I 10 INSTRUCTION.
/THIS IS A TEST OF THE
/DEFER BIT. 500 US DELAY

/ENTER FIELD 0 FROM EXTENDED FIELD HERE.
/

1510 2031
1511 5240
1512 2027
1513 5235
1514 5715
1515 1600
1516 1002

GOTO0, ISE STKS /DONE ALL WHEN SKIP
JMP NEWDF /SETUP FOR NEXT
ISE LOOP /ALL DONE IF SKIP
JMP NEWDF-3 /REPEAT ALL
JMP I LBTP
LBTP. RMFTST

FILD, DOAUTO-515

AUTO-INDEX TEST

/THE ROUTINE WILL BE PLACED IN THE SAME RESPECTIVE
/LOCATIONS IN EACH EXTENDED FIELD. ANY ERROR
/HALTS WILL OCCUR IN THE EXTENDED FIELD. PRESS
/CONTINUE TO PROCEED WITH TESTING. THE INDEX
/REGISTERS 10 TO 17 INITIALLY CONTAIN 7777, AND
/ARE AUTO-INDEXED TO 0000 BY A TAD I INSTRUCTION.
/A HALT OCCURS IF THE REG. IS NOT INCREMENTED TO 0.
/THE TAD I WOULD HAVE THEN REFERENCED LOC. 7777,
/WHICH CONTAINS 7777.

1517 1517
1520 7200

DOAUTO, . /THIS LOC. IS NOT MOVED TO
CLA /THE EXTENDED FIELD.


```

1654 1341 TAD KIFSHB
1655 3261 DCA RMF12
1656 0041 RMF2, JMS I
1657 4422 JMS I XTFLG
1660 6201 CDF
1661 6202 CIP
1662 5303 JMP RMFDY
1663 6244 JMP RMFDY1
1664 5310 JMP DFCN
1665 2277 JMP RMFL1
1666 5233 JMP RMFCN1
1667 2276 JMP RMFL2
1670 5221 JMP LBTSTC
1671 2279 JMP RMFL3
1672 5215 JMP XMEM
1673 5701 JMP I
1674 1663 INTE
1675 0000 LBTSTC, 0
1676 0000 RMFCN1, 0
1677 0000 DFCN, 0
1700 2000 XFERP, XFER
1701 2000 XMEM, NOMEH
1702 5404 JMP I 4

```

```

/ENSURE TIO FLAG SET.
/SET DF AND IF TO CURRENT FIELD.
/GO TO RMFDY IN CURRENT IF.
/ENTER FROM INTERRUPT FROM EX. FLD.
/GO BACK TO EXTENDED FIELD.
/ALL DF'S USED WITH CURRENT IF.
/NO. DO NEXT DF.
/ONE PASS OF RMFTST COMPLETE?
/NO. DO NEXT IF.
/RMFTST DONE?
/NO. DO AGAIN.
/YES. GO TO NEXT TEST

```

```

/ROUTINE TO CHECK CORRECT TRANSFERS FOR SAVE FIELD TO DATA FIELD AND
/SAVE FIELD TO INST. BUFFER TO INSTRUCTION FIELD AFTER
/RMF.
/STORED IN ALL EXTENDED FIELDS.

```

```

1703 6001 RMFDY, ION
1704 7000 NOP
1705 6002 IOF
1706 7402 HLT
1707 5333 JMP REPEAT
1710 7200 RMFDY1, CLA
1711 6214 ROP
1712 1340 TAD CLA
1713 7650 SNA CLA
1714 5320 JMP
1715 1337 TAD
1716 7402 HLT
1717 5333 JMP
1720 6224 RIF
1721 1342 TAD CLA
1722 7650 SNA CLA
1723 5327 JMP
1724 1341 TAD
1725 7402 HLT
1726 5333 JMP

```

```

/THIS IS NOT TRANSFERRED.
/INTERRUPT FAILURE.
/CHECK FOR CORRECT DATA FIELD
/DATA FIELD INCORRECT
/SF TO DF TRANSFER FAILED AFTER RMF.
/REPEAT THIS TEST.
/CHECK FOR CORRECT INSTRUCTION FIELD.
/INSTRUCTION FIELD INCORRECT.
/SF TO IB TRANSFER FAILED AFTER RMF
/REPEAT THIS TEST.

```

```

1727 6201 CDF 00
1730 6202 CIF 00
1731 5732 JMP I .+1
1732 1605 RMPE1
1733 6201 REPEAT, CDF 00
1734 6202 CIF 00
1735 5736 JMP I .+1
1736 1656 RMPE2
1737 0000 KDFSHB, 0
1740 0000 MDFSHB, 0
1741 0000 KIFSHB, 0
1742 0000 MIFSHB, 0
        /

```

2000	*2000	0	CLA	XFER	/GET -N2
2001	0000	0	TAD	N2	
2002	7200	0	DCA	XFER	/GET -N1
2003	1600	0	ISZ	XFER	
2004	3242	0	TAD	N1	/GET P-1
2005	2200	0	DCA	XFER	
2006	1600	0	ISZ	XFER	
2007	3243	0	TAD	P	
2008	2200	0	DCA	XFER	/UPDATE TO RETURN ADDRESS.
2009	1600	0	ISZ	KCDF	/INITIALIZE CDF INST.
2010	3244	0	TAD	XFERIN	
2011	2200	0	DCA	N2	
2012	1040	0	TAD	XFERC2	
2013	3232	0	DCA	P	/PUT POINTER IN AUTO 10 AND 11.
2014	1242	0	TAD	10	
2015	3245	0	DCA	P	
2016	1244	0	TAD	11	
2017	3010	0	DCA	N1	/SET COUNTER 1 TO -N1
2018	1244	0	TAD	XFERC1	
2019	3011	0	DCA	XFERIN	/UPDATE CDF INST.
2020	1243	0	TAD	K10	
2021	3246	0	DCA	XFERIN	
2022	1232	0	TAD	K10	
2023	1045	0	DCA	XFERIN	
2024	3232	0	TAD	XFERIN	
2025	1045	0	DCA	XFERIN	
2026	3232	0	TAD	XFERIN	
2027	1045	0	DCA	XFERIN	

```

2030 6201 XFERL1, CDF 00 /TRANSFER
2031 1410 TAD I 10
2032 6201 XFERIN, CDF
2033 3411 DCA I 11
2034 2246 ISZ XFERC1 /DONE WITH CURRENT FIELD?
2035 5230 JMP XFERL1 /NO, CONTINUE.
2036 2245 ISZ XFERC2 /DONE WITH ALL FIELDS?
2037 5217 JMP XFERL2 /NO, DO NEXT FIELD
2040 6201 CDF 00 /ALL DONE, SET DF=0.
2041 5600 JMP I XFER /EXIT.
2042 0000
2043 0000
2044 0000
2045 0000
2046 0000

```

```

/TEST 06
/NOV DO A READ AND WRITE DATA TEST IN
/ALL AVAILABLE EXTENDED FIELDS.
/IF A FAILURE OCCURS CHECK LOC. 10
/FOR BAD ADDRESS AREA AND LOC. RANA
/FOR THE MOST RECENT FIELD CHANGE.
/LOC. KDATA CONTAINS DATA PATTERN USED.

```

```

2047 0000 DATER, 0000
2048 7300 CLA CLL
2049 4423 JMS I XSTKS
2050 1040 TAD KCDF
2051 1045 TAD K10
2052 3257 DCA RANA
2053 7340 CLA CLL CMA
2054 3010 DCA 10
2055 6201 CDF
2056 4276 JMS FILL
2057 7340 CLA CMA CLL
2058 3010 DCA 10
2059 4312 JMS CHECK
2060 7300 CLA CLL
2061 2031 ISZ STKS
2062 7410 SKP
2063 9274 JMP .+5
2064 1257 TAD RANA
2065 1045 TAD K10
2066 3257 DCA RANA
2067 5255 JMP RANA -2
2068 6201 CDF
2069 5647 JMP I DATER

```

```

/ROUTINE TO FILL FIELD WITH DATA
/
FILL, 0000
2076 0000 CLA CLL
2077 7300 TAD KDATA
2100 1157 DCA I 10
2101 3410 TAD KDATA
2102 1157

```



```

2103 7040 CMA
2104 3410 DCA I 10
2105 1010 TAD 10
2106 7001 IAC
2107 7640 SZA CLA
2110 5277 JMP FILL +1
2111 5676 JMP I FILL

/ROUTINE TO CHECK DATA IN FIELD
/
CHECK, 0000
2112 0000 CLA CLL
2113 7300 TAD I 10
2114 1410 IAC
2115 7001 TAD I 10
2116 1410 SZA
2117 7440 HLT
2120 7402 CLA CLL
2121 7300 TAD 10
2122 1010 IAC
2123 7001 SZA CLA
2124 7640 JMP CHECK +1
2125 5313 JMP I CHECK
2126 5712

/AC CONTAINS BAD BITS
/MEMORY CONTROL WORKED BUT
/ DATA PATTERN FAILURE IN
/EXTENDED MEMORY.
/IS CHECK DONE

```

```

2200
*2200
/TEST 14
/REFERENCE ALL 4K FIELDS NOT PRESENT.
/IF 32K IS PRESENT, THE TEST IS BY-PASSED.
/EACH FIELD NOT PRESENT IS REFERENCED
/ BY THE PROGRAM WITH JMP, DCA AND TAD.
/ THE PROGRAM MUST CONTINUE IN SEQUENCE
/ BELL WILL SIGNAL A SUCCESSFUL TEST
/
NOMEM, CLA
2200 7200 TAD K7770
2201 1110 DCA LOOP
2202 3027 LAB
2203 7604 AND K7
2204 0044 CIA
2205 7041 TAD K7
2206 1044 SNA
2207 7450 JMP I XXSR0
2210 5546 DCA NOSTAK
2211 3033 DCA I XELL
2212 3547

/TEST LOOP COUNTER
/READ SR9-11
/SUBTRACT MAX. POSSIBLE
/32K PRESENT. CAN'T TEST
/SAVE NO. MISSING
/CLEAR THE TLS IOT AT
/BELL+1 TO PROHIBIT
/FALSE INDICATION. TLS
/IS RESTORED LATER WRONG
/ENTRY FROM NON-EXISTENT

```

```

2213 7624 /MEMORY MAY CAUSE A
2214 0044 /HANG-UP AT BELL+2 AND +3.
2215 7001 /# OF FIELDS PRESENT
2216 7100 /*1 TO GET 1ST MISSING
2217 7006 /POSITION TO AC 6-8.
2220 7004 /1ST MISSING
2221 3034 /* STACKS NOT HERE
2222 1033 /USED AS COUNTER
2223 7041
2224 3033

```

```

/
/
2225 1040 /6201
2226 1034 /MISSING STACK
2227 3245

```

```

/
/
/ NOW READ ALL 0'S FROM ALL NON-EXISTENT FIELDS
/ IF CONTROL PORTION ONLY, RING BELL.
/ IF NOT PROCEED TO TIME SHARE.

```

```

2230 4244 JMS ALL0 /READ ALL 0 FROM 1ST
2231 2033 ISZ NOSTAK /DONE ALL MISSING IF SKIP
2232 5237 JMP POS
2233 2027 ISZ LOOP /DONE LOOPING IF SKIP
2234 5636 JMP I XNOM /REPEAT
2235 5546 JMP I XXSR0

```

```

/
XNOM, NOMEM+3
/
POS. TAD CDF0S /DF PLUS 1
TAD K10 /READ ALL 0'S
DCA CDF0S /CHECK DONE
JMS ALL0
JMP CNSTK

```

```

/ ROUTINE TO READ ALL 0'S.
/
ALL0, CDF 00 /SET DF TO 1ST MISSING
CDF0S, CLA CMA /10 AND 11 USED FOR ADDRESS
DCA 10 CMA /USE AS COUNTER
DCA 11 DCA 2 /WRITE 1'S INTO NON-EXIS-
CMA DCA : 10 /TENT FIELD.
ISZ 2
2244 0000
2245 6201
2246 7240
2247 3010
2250 7040
2251 3011
2252 3002
2253 7040
2254 3410
2255 2022

```

```

2256 5253      JMP .-3
2257 1411      TAD I 11
2260 7650      SNA CLA
2261 5264      JMP .+3
2262 1011      TAD 11
2263 7402      CAX, HLT

2264 2002      ISZ 2
2265 5257      JMP CAX-4

2266 6201      DONE0, CDF 00
2267 6202      CIF 00
2270 5644      JMP I ALL0

/TEST 04
/TEST GTF FOR FLAG AND SAVE FIELDS
/GET SAVE FIELDS AFTER INTERRUPT
/CHECK INTERRUPT INHIBIT, DO ALL
/COMBINATIONS 0 TO 7.

GTF1, CLA CLL
TAD JMP10
DCA 1
TAD KCDF
DCA XSDF
TAD XSDF
AND K0070
STL
RAR
RTR
DCA XSAV
CDF 00
TSF
JMS I XTFLG
ION
CLA CLL CMA
GTF
CIA
TAD XSAV
SZA
HLT
ISZ LOOP
JMP MGTF
TAD K10
TAD XSDF
DCA XSDF
ISZ XCOUNT
JMP MGTF
TAD K770
DCA XCOUNT
JMP I XION1

MGTF, MGTF,
XSDf, XSDf,

/IS TTY FLAG SET
/GET THE FLAG
/CHECK FOR JAM ON GTF
/GET THE FLAGS
/TTY + CURRENT FIELD
/FLAG + FIELD
/4096 TIMES

/MORE FIELDS TO CHECK
/YES GO TO NEXT TEST

```

```
2330 2331 XION1, ION1
/
/TEST 05
/TEST ION AND LINK FROM RTF
/TEST INTERRUPT INHIBIT BEFORE PI
/GET THE FLAGS WITH GTF.
/
ION1, CLA CLL
TAD ISZ0
DCA 1
TAD JMP10
DCA 2
RTF
JMP .+1
HLT
CLA CLL
TAD K5200
RTF
CLA CMA
GTF
CIA
TAD K5200
SZA
HLT
CLA CLL
RTF
CIA
CIA
TAD K1200
SZA
HLT
JMP .+1
HLT
CLA CLL
ISZ LOOP
JMP ION1
JMS I XDATER
JMS I XCON1
JMP I XRTF1
XRTF1, RTF1
XCON1, CON1
/
/TEST 08
/TEST DF00 + IF20 FROM SAVE FIELD AFTER PI
/USE RTF TO SET THE FLAGS AND GTF TO GET THE FLAGS
/CHECK INTERRUPT INHIBIT. DO ALL SAVE
/FIELD COMBINATIONS 2 TO 77.
/
*2400
/
RTF1, CLA CLL
JMS I XTFLG
TAD ISZ7
DCA 1
2400 7300
2401 4422
2402 1021
2403 3021
```

/WAS INT, INH.

/CHECK FOR JAM ON GTF

/GET LINK, ION, TTY FLAG

/EXPECTED BITS

/WAS LINK, ION, TTY FLAG SET

/REPLACE ION, INT INH

/TTY FLAG, ION, NO LINK

/WAS INT INH

/4096 TIMES

/GO TO NEXT TEST

/GO TO NEXT TEST

/GO TO NEXT TEST

```

2404 1020      TAD JMP10
2405 3002      DCA 2
2406 3114      DCA XTOR
2407 1114      TAD XTOR
2410 6009      RTF
2411 5212      JMP .+1
2412 7402      HLT
2413 7300      CLA CLL
2414 6004      GTF
2415 0117      AND K0077
2416 7041      CIA
2417 1114      TAD XTOR
2420 7440      SZA
2421 7402      HLT
2422 2027      ISE LOOP
2423 5207      JMP XSRTF
2424 1114      TAD XTOR
2425 1120      TAD K0011
2426 3114      DCA XTOR
2427 2113      ISE XCOUNT
2430 5207      JMP XSRTF
2431 1110      TAD K7770
2432 3113      DCA XCOUNT
2433 5634      JMP I XRG1
2434 2452      RIG1
2435 0000      NSTKS, 0
                /
2436 7604      LAR
2437 0044      AND K7
2440 7041      CIA
2441 3031      DCA STKS
2442 5635      JMP I NSTKS
                /
                /SET TTY FLAG
                /
TFLG, 0
2443 0000      CLA
2444 7200      SPF
2445 6040      TSF
2446 6041      JMP .-1
2447 5246      CLA
2450 7200      JMP I TFLG
2451 5643      /EXIT
                /
                /TEST 09
                /TEST PROGRAM INTERRUPT IN EXISTING FIELDS
                /USE RTF, GTF, RDF AND RIF FOR CHECK
                /CHECK PC, AC, SF AND FLAGS AFTER PI
                /IF FAILURE OCCURS CHECK XDATA FOR AC DATA,
                /LOC. 0 FIELD 0 FOR CORRECT PC AFTER PI,
                /AND IFDF FOR CORRECT DF XX + IF XX,
                /PROGRAM SHOULD INTERRUPT INHIBIT TILL JMP I ADPS
                /IF PI FAILS TO INTERRUPT HLT IN THAT FIELD
                /
RIG1, 2452 7300      CLA CLL
2453 4423      JMS I XSTKS

```

/DO THE REST DF 00 + IF 00

/READ SR 9-11

```
2454 1120 TAD K0011
2455 3260 DCA IFDF
2456 1132 TAD K0017
2457 3010 DCA 0010
2460 0000 IFDF,
2461 7300 CLA CLL
2462 1260 TAD IFDF
2463 6005 RTF
2464 6002 IOF
2465 7300 CLA CLL
2466 2537 ISE I K0000
2467 7000 NOP
2470 1537 TAD I K0000
2471 3136 DCA XDATA
2472 1124 TAD K7402
2473 3541 DCA I K0001
2474 1133 TAD K6001
2475 3410 DCA I 0010
2476 1130 TAD K1000
2477 3410 DCA I 0010
2500 1124 TAD K7402
2501 3410 DCA I 0010
2502 1010 TAD 10
2503 1057 TAD K7776
2504 3310 DCA ADRS
2505 1134 TAD JMPIR
2506 3001 DCA 0001
2507 5710 JMP I .+1
2510 0000 ADRS,
2511 7041 RET,
2512 1136 TAD XDATA
2513 7440 SEA
2514 7402 HLT
2515 1000 TAD 0000
2516 7041 CIA
2517 1010 TAD 0010
2520 7440 SEA
2521 7402 HLT
2522 6214 RDF
2523 6224 RIF
2524 7640 SEA CLA
2525 7402 HLT
2526 6004 GTF
2527 0117 AND K0077
2530 7041 CIA
2531 1260 TAD IFDF
2532 7440 SEA
2533 7402 HLT
2534 1010 TAD 0010
2535 7001 IAC
2536 7640 SEA CLA
2537 5261 JMP IFDF+1
2540 2031 ISE STKS
2541 7410 SKP
2542 5750 JMP I XTRMF
```

/SET TO CURRENT FIELD UNDER TEST

/SET FIELDS AND TURN ION

/STORE A HLT IN LOC 1 OF THAT FIELD

/ION FOR THAT FIELD

/TAD FOR THAT FIELD

/HLT FOR FAILURE

/SET LOC 1 FOR RETURN AFTER PI

/GO TO THAT FIELD

/AC DATA FAILED DURING PI

/PC FAILED DURING PI

/SHOULD BE 0 AFTER PI

/GTF OR RTF OR SF FAILED

2543 7300 CLA CLL
 2544 1120 TAD K0011
 2545 1260 TAD IFDF
 2546 3200 DCA IFDF
 2547 5256 JMP IFDF -2
 2550 1050 XTRMF, TRMF

/SET FOR NEXT FIELD

/TEST 15
 /TEST TIME SHARE IN FIELD 0.
 /ALL HLT, OSR, AND IOT INSTRUCTIONS
 /SHOULD TRAP IN USER MODE.

*2600

T1,
 2600 7300 CLA CLL
 2601 6007 CAF Clear all flags
 2602 6264 CUF Clear user flag
 2603 6204 CINT Clear user int.
 2604 1021 --TAD 1520 2000(152)
 2605 3001 DCA 1
 2606 1020 --TAD JMP10 5400 (addr. given in p000)
 2607 3002 DCA 2
 2610 6007 CAF Clear all flags.
 2611 7410 SKP
 2612 5212 JMP . /CAF TRAPED
 2613 6001 ION
 2614 7410 SKP
 2615 5215 JMP . /ION TRAPED
 2616 6032 KCC
 2617 7410 SKP
 2620 5220 JMP . /KCC TRAPED
 2621 6002 IOF
 2622 7410 SKP
 2623 5223 JMP . /IOF TRAPED
 2624 6004 GTF
 2625 7410 SKP
 2626 5226 JMP . /GTF TRAPED

Exec mode
 none should trap.

/THESE INSTRUCTIONS SHOULD TRAP
 T2, ION Turn Interrupt enable on
 CUF+10 = SUF /USER MODE Set user flag
 JMP .+1 allow user interrupt to go to 0000, 0001, 0002, return to 6254
 HLT Trap and interrupt, go to 0000, 0001, 0002, return to 6254
 JMP . /HLT DID NOT TRAP

/EXECUTIVE MODE
 SINT
 JMP . /SKIP ON TRAP FLAG Skip on user interrupt.
 CINT /FLAG NOT UP
 SINT /CLEAR TRAP FLAG clear user interrupt
 SKP /SKIP ON TRAP FLAG Skip on user interrupt.
 JMP . /TRAP FLAG STILL SET
 LAS /SHOULD NOT TRAP
 SKP
 JMP . /LAS TRAPED IN EXECUTIVE MODE

*Restore user mode, as saved during interrupt.
enable interrupt when jmp. (no int until then)*

*INT is trap flag
BUS*

Trap & Cause interrupt

*INT
BUS*

should clear

RMF
ION
JMP .+1
/USER MODE
OSR
JMP
/EXECUTIVE MODE
SINT
JMP .
CAF
SINT
SKP
HLT
OSR
SKP
JMP .
RMF
ION
JMP .+1

/USER MODE
RTF
JMP
/EXECUTIVE MODE
SINT
JMP .
CINT
SINT
SKP
HLT
GTF
SKP
JMP .
RMF
ION
JMP .+1
/USER MODE

/EXECUTIVE MODE
SINT
JMP .
CLA CLL
GTF
AND K0120
SNA
HLT
CINT
SINT
SKP
HLT
IOF
SKP

2644
2645
2646
2647
2650
2651
2652
2653
2654
2655
2656
2657
2658
2659
2660
2661
2662
2663
2664
2665

6005
6006
6007
6008
6009
6010
6011
6012
6013
6014
6015
6016
6017
6018
6019
6020
6021
6022
6023
6024
6025

2704
2705
2706
2707
2710
2711
2712
2713
2714
2715
2716
2717
2720
2721
2722

*No Int
No Int, I ON*

ION, UM

*Interrupt
(INT, ION)
(BUS
INT)
(BUS)*

no traps

*doesn't
clear
flag up but
this works*

)

)

)

2723 5323 JMP .
 2724 6244 RMF
 2725 6021 ION
 2726 5327 JMP .+1
 /USER MODE
 /TEST CUF AND CUF+10
 LAS
 JMP .
 /EXECUTIVE MODE
 CINT
 RMF
 CUF
 ION
 JMP .+1
 OSR
 SKP
 JMP .
 /TEST THAT INSTRUCTION ARE INHIBITED WHILE IN USER MODE
 CINT
 CUF+10
 ION
 JMP .+1
 /USER MODE
 CMA CLA
 LAS
 JMP .
 /EXECUTIVE MODE
 SZA
 HLT
 CINT
 RMF
 ION
 JMP .+1
 /USER MODE
 CLA
 OSR
 JMP .
 /EXECUTIVE MODE
 SZA
 HLT
 CINT
 RMF
 ION
 JMP .+1
 /USER MODE
 CLA CMA
 HLT CLA
 JMP .
 /EXECUTIVE MODE
 SZA
 HLT
 CINT
 SRC
 SKP

2727 7624
 2730 5330
 2731 6204
 2732 6244
 2733 6264
 2734 6021
 2735 5336
 2736 7424
 2737 7410
 2740 5340

2741 6204
 2742 6274
 2743 6021
 2744 5345

2745 7240
 2746 7624
 2747 5347

2750 7440
 2751 7402
 2752 6204
 2753 6244
 2754 6021
 2755 5356

2756 7200
 2757 7424
 2760 5360

2761 7440
 2762 7402
 2763 6204
 2764 6244
 2765 6021
 2766 5367

2767 7240
 2770 7622
 2771 5371

2772 7440
 2773 7402
 2774 6204
 2775 6023
 2776 7410

2777 7410

2778 7410

2779 7410

2780 7410

2781 7410

2782 7410

2783 7410

2784 7410

2785 7410

/IOF TRAPED IN EXECUTIVE MODE
 /RESTORE MODE *Restore memory field (if used above)*
 enable interrupt
 /GO TO USER
 Restore user mode as saved for
 user buffer during interrupt

/DID NOT TRAP
 /STAY IN EXECUTIVE MODE

/CUF DID NOT WORK
 /TEST THAT INSTRUCTION ARE INHIBITED WHILE IN USER MODE
 /SET USER
 /GO TO USER
 /AC=7777
 /SHOULD CLEAR AC
 /DID LAS TRAP

/LAS CHANGED AC

/SHOULD NOT READ SR

/OSR CHANGED AC

/SHOULD CLA
 /DID HLT TRAP

/(HLT CLA) DID NOT CLEAR

```

2777 7402      HLT      /INTERRUPT REQUEST
3000 7300      CLA CLL
3001 1146      TAD K0100
3002 6005      RTF      /ENABLE USER

3003 6001      ION
3004 7000      NOP
3005 5206      JMP .+1
                /USER MODE
3006 6032      KCC
3007 5207      JMP      /DID KCC TRAP
                /EXECUTIVE MODE
3010 6003      SRQ      /IS USER FLAG SET

3011 5210      JMP .-1
3012 6204      CINT
3013 7300      CLA CLL
3014 1146      TAD K0100
3015 6005      RTF
3016 7300      CLA CLL
3017 6001      ION
3020 5221      JMP .+1
                /ENTER USER
                /USER MODE
3021 6004      GTF
3022 5222      JMP      /DID GTF TRAP
                /EXECUTIVE MODE
3023 0146      AND K0100
3024 7440      SZA
3025 7402      HLT
3026 6003      SRQ
3027 5226      JMP .-1
3030 6204      CINT
3031 6244      RMF
3032 6001      ION
3033 5234      JMP .+1
                /GO TO USER
                /USER MODE
3034 6004      GTF
3035 5235      JMP      /GTF DID NOT TRAP
                /EXECUTIVE MODE
3036 6254      SINT
3037 5237      JMP .
3040 6204      CINT
3041 6254      SINT
3042 7410      SKP
3043 5243      JMP .
3044 6001      ION
3045 7410      SKP
3046 5246      JMP .
3047 6244      RMF
3050 5251      JMP .+1
                /ION TRAPED IN EXECUTIVE MODE
                /RESTORE USER
                /GO TO USER
                /USER MODE
3051 6202      CIF
3052 5252      JMP      /SHOULD TRAP ON CIF
                /EXECUTIVE MODE
3053 6254      SINT
                /DID NOT TRAP
                /SKIP ON TRAP FLAG

```

```

3054 5254 JMP .
3055 6224 CINT
3056 6254 SINT
3057 7410 SKP
3060 7422 HLT
3061 6202 CIF
3062 7410 SKP
3063 5263 JMP .
3064 6244 RMF
3065 6021 ION
3066 5267 JMP .+1
    /DID NOT SKIP
    /CLEAR TRAP FLAG
    /TEST IF CLEARED
    /TRAP FLAG NOT CLEARED
    /SHOULD NOT TRAP
    /CIF TRAPED IN EXECUTIVE MODE
    /RESTORE MODE
    /GO TO USER

```

```

3067 6214 /USER MODE
3070 5270 RDF
    JMP .
    /EXECUTIVE MODE
3071 6254 SINT
3072 5272 JMP .
3073 6204 CINT
    /TRAP FLAG NOT SET
    /CLEAR TRAP FLAG
    /TEST IF CLEARED
    /TRAP FLAG NOT CLEARED
    /SHOULD NOT TRAP
    /TRAPED IN EXECUTIVE MODE
    /FLAG SHOULD WORK
3074 6254 SINT
3075 7410 SKP
3076 7402 HLT
3077 6214 RDF
3100 7410 SKP
3101 5301 JMP .
    /EXECUTIVE MODE
3102 6040 SPF

```

```

3103 6041 TSF
3104 5303 JMP .-1
3105 6023 SRG
3106 5305 JMP .-1
3107 6021 ION
3110 7300 CLA CLL
3111 5311 JMP .
3112 1126 TAD K0100
3113 6025 RTF
3114 6027 CAF
3115 6021 ION
3116 5317 JMP .+1
    /USER MODE
3117 6027 CAF
3120 5320 JMP .
    /EXECUTIVE MODE
3121 6023 SRG
3122 7402 HLT
3123 6027 CAF
3124 6254 SINT
3125 7410 SKP
3126 7402 HLT
    /TEST THAT TTI DOES NOT
    /CHANGE AC
    /AC=7777
    /LINK=1
    /FLAG CLEARED
    /USER FLAG UP
    /DID CAF TRAP
    /SHOULD SKP
    /SHOULD SKP
    /DID PI WORK

```

```

3127 7240 /TEST THAT TTI DOES NOT
3130 7120 /CHANGE AC
    /AC=7777
    /LINK=1
    /FLAG CLEARED
    /USER FLAG UP
    /DID CAF TRAP
    /SHOULD SKP
    /SHOULD SKP
    /DID PI WORK

```

```

3131 6274      CUF+10
3132 6021      ION
3133 5334      JMP .+1
           /USER MODE
3134 6036      KRB
3135 5335      JMP .
           /EXECUTIVE MODE
3136 7040      CMA
3137 7440      SZA
3140 5340      JMP .
3141 7420      SNL
3142 5342      JMP .
3143 6254      SINT
3144 5344      JMP .
3145 6224      CINT
3146 6244      RMF
3147 6021      ION
3150 5351      JMP .+1
           /USER MODE
3151 6040      SPF
3152 5352      JMP .
           /EXECUTIVE MODE
3153 6041      TSF
3154 7410      SKP
3155 7422      HLT
3156 6254      SINT
3157 5357      JMP .
3160 6224      CINT
3161 6244      RMF
3162 6021      ION
3163 5764      JMP I ,+1
3164 3220      . 177+1
           *. 177+1
           /USER MODE
3200 6021      ION
3201 5221      JMP .
           /EXECUTIVE MODE
3202 6254      SINT
3203 5223      JMP .
3204 6224      CINT
3205 6254      SINT
3206 7410      SKP
3207 7422      HLT
3210 6022      IOF
3211 7410      SKP
3212 5212      JMP .
3213 6244      RMF
3214 6021      ION
3215 5216      JMP .+1
           /USER MODE
           /TEST CUF AND CUF+10
           RIF
3216 6224

```

/SHOULD NOT ZERO LINK OR SHIFT AC
 /AC SHOULD=0000
 /AC WAS CHANGED
 /LINK SHOULD EQUAL 1
 /LINK WAS CHANGE
 /SKIP ON TRAP FLAG
 /TRAP FLAG NOT SET
 /FLAG
 /DID SPF TRAP
 /TTY FLAG
 /TRAP FLAG NOT SET
 /CLEAR TRAP FLAG
 /GO TO USER
 /ION DID NOT TRAP
 /SKIP ON TRAP FLAG
 /TRAP FLAG NOT SET
 /CLEAR TRAP FLAG
 /TEST IF CLEARED
 /FLAG NOT CLEARED
 /SHOULD NOT TRAP
 /IOF TRAPED IN EXECUTIVE MODE
 /RESTORE MODE
 /GO TO USER

```

3217 5217 JMP .
/EXECUTIVE MODE
3220 6224 CINT
3221 6244 RMF
3222 6264 CUF
3223 5224 JMP .+1
3224 7424 OSR
3225 7410 SKP
3226 5226 JMP .
/EXECUTIVE MODE
3227 7240 CLA CMA
3230 6274 CUF +10
3231 6021 ION
3232 5233 JMP .+1
/USER MODE
3233 7422 HLT
3234 5234 JMP .
/EXECUTIVE MODE
3235 6223 GDF CIF
3236 6264 CUF
3237 6204 CINT
3240 6021 ION
3241 5242 JMP .+1
3242 7624 LAS
3243 7410 SKP
3244 5244 JMP .
3245 7450 SNA
3246 5246 JMP .

/TEST HLT AND SKIP
3247 6274 CUF+10
3250 6021 ION
3251 5252 JMP .+1
/USER MODE
3252 7412 SKP HLT
3253 5253 JMP .
3254 5254 JMP .
/EXECUTIVE MODE
3255 6254 SINT
3256 5256 JMP .
3257 6224 CINT
3260 6254 SINT
3261 7410 SKP
3262 5262 JMP .

/LOOP PROGRAM
3263 2266 ISZ .+3
3264 5531 JMP I TIME
3265 7410 SKP
3266 0020 0
3267 5670 JMP I .+1
3270 3420 . 177+1

```

```

3400 7200 /TEST THAT ALL IOTS TRAP IN USER MODE
3401 1125 CLA
3402 3227 TAD K0000
3403 6274 DCA INST
3404 6224 CUF+10
3405 6021 CINT
3406 5207 ION
3407 6000 JMP .+1
3408 6000 /USER MODE
3409 5210 INST, 6000
3410 6254 JMP .
3411 5212 /EXECUTIVE MODE
3412 6224 SINT
3413 6254 JMP .
3414 6254 CINT
3415 7610 SINT
3416 7402 SKP CLA
3417 2207 HLT
3420 1207 ISZ INST
3421 0130 TAD INST
3422 7650 AND K1000
3423 5203 SNA CLA
3424 1124 JMP IOTST

3424 1124 /TEST THAT ALL (HLT AND OSR) TRAP IN USER MODE
3425 3232 TAD K7402
3426 6274 DCA INSTA
3427 6204 CUF+10
3430 6001 CINT
3431 5232 ION
3432 7406 JMP .+1
3433 5233 /USER MODE
3434 7000 INSTA, HLT OSR
3435 6254 JMP .
3436 5236 /EXECUTIVE MODE
3437 6204 NOP
3440 6254 SINT
3441 7610 SKP CLA
3442 7402 HLT
3443 1232 TAD INSTA
3444 1123 TAD K0004
3445 3232 DCA INSTA
3446 1232 TAD INSTA
3447 1122 TAD K0002
3450 7640 SZA CLA
3451 5226 JMP HALTA
3452 6244 RMF
3453 6264 CUF
3454 6001 ION
3455 5236 JMP .+1
3456 6002 IOF

3400 7200 /TEST THAT ALL IOTS TRAP IN USER MODE
3401 1125 /BASIC IOT
3402 3227 /SET UP
3403 6274 /SET FOR USER
3404 6224 /CLEAR FLAG
3405 6021 ION
3406 5207 /GO TO USER MODE
3407 6000 /USER MODE
3408 6000 /IOT THAT FAILED
3409 5210 /IOT DID NOT TRAP
3410 6254 /EXECUTIVE MODE
3411 5212 SINT
3412 6224 JMP .
3413 6254 CINT
3414 6254 SINT
3415 7610 SKP CLA
3416 7402 HLT
3417 2207 /FLAG DID NOT CLEAR
3420 1207 /CREATE NEW INSTRUCTION
3421 0130 /TESTED ALL IOT?
3422 7650 SNA CLA
3423 5203 JMP IOTST

3424 1124 /TEST THAT ALL (HLT AND OSR) TRAP IN USER MODE
3425 3232 /BASIC HALT INST
3426 6274 /SET UP
3427 6204 /SET FOR USER
3430 6001 /CLEAR FLAG
3431 5232 /GO TO USER MODE
3432 7406 /OPERATE TRAP INST
3433 5233 /DID NOT TRAP
3434 7000 /FOR (HLT,SKP)(OSR,SKP)
3435 6254 /SKIP ON TRAP FLAG
3436 5236 /TRAP FLAG NOT SET
3437 6204 /CLEAR FLAG
3440 6254 SINT
3441 7610 SKP CLA
3442 7402 /FLAG DID NOT CLEAR
3443 1232 TAD INSTA
3444 1123 TAD K0004
3445 3232 DCA INSTA
3446 1232 TAD INSTA
3447 1122 TAD K0002
3450 7640 SZA CLA
3451 5226 JMP HALTA
3452 6244 RMF
3453 6264 CUF
3454 6001 ION
3455 5236 JMP .+1
3456 6002 IOF

```

3457 6254
3460 7410
3461 7402
3462 6040
3463 6041
3464 5263
3465 6001
3466 7410
3467 7402
3470 7402

3471 7300
3472 6004
3473 0126
3474 7440
3475 7402
3476 7300
3477 6007
3500 6264
3501 7000

/TRAP FLAG SET

/SHOULD SKP

/DID PI INTERRUPT
/DID PC INCR.

/SUF SET

/
/TEST 16
/TEST TIME SHARE IN EXTENDED MEMORY
/NOW TEST USER MODE TRAP IN ALL EXTENDED FIELDS
/IF TRAP ERROR OCCURS HLT IN THAT FIELD
/USE RTF TO SET USER MODE AND GTF TO GET THE FLAGS
/TEST ALL IOT'S FOR TRAP AND RETURN
/

3502 7300
3503 6007
3504 4423
3505 1040
3506 1045
3507 3335
3510 1041
3511 1045
3512 3347
3513 1144
3514 3010
3515 1145
3516 3143
3517 7040
3520 3011

3521 1335
3522 0111
3523 7010
3524 7012
3525 3112
3526 1347
3527 0111
3530 1112
3531 1142
3532 3776
3533 6201

RIG2.
CLA CLL
CAF
JMS I XSTKS
TAD KCDF
TAD K10
DCA SRD
TAD KCIF
TAD K10
DCA SRI
TAD K3577
DCA 10
TAD K7745
DCA SRCO
CMA
DCA 11

/CHECK NO. OF FIELDS PRESENT

/SET OF FOR FIRST FIELD

/SET IF FOR FIRST FIELD
/GET START OF PROGRAM -1

/NO. OF INSTRUCTIONS TO TRANSFER

/START AT 0000

/MAKE FLAGS FOR RETURN CHECK

TAD SRD
AND K0070
RAR
RTR
DCA XSAV
TAD SRI
AND K0070
TAD XSAV
TAD K1100
DCA I XFDCCN
CAF 02

```
3534 1410 TAD I 12
3535 6201 CDF 00
3536 3411 DCA I 11
3537 2143 ISZ SRC0
3540 5333 JMP SRD-2
3541 1021 TAD ISZ0
3542 3001 DCA 1
3543 1347 TAD SRI
3544 3002 DCA 2
3545 1020 TAD JMP10
3546 3003 DCA 3
3547 6202 CDF 00
3550 5002 JMP 2
3551 7300 CLA CLL
3552 2031 ISZ STKS
3553 7410 SKP EXITT
3554 5364 JMP EXITT
3555 1335 TAD SRD
3556 1045 TAD K10
3557 3335 DCA SRD
3560 1347 TAD SRI
3561 1045 TAD K10
3562 3347 DCA SRI
3563 5313 JMP STAN
3564 7300 CLA CLL
3565 6007 CAF
3566 6264 CUF
3567 1151 TAD TTb
3570 3547 DCA I XELL
3571 7604 LAS
3572 7700 SMA CLA
3573 5550 JMP I XBELL
3574 7402 HLT

3575 5552 JMP I XTRAP
3576 3632 XFDCON, FDCON

/INSTRUCTIONS TO BE TRANSFERRED TO FIELDS
/
*3600
/
3600 7402 HLT
3601 7402 HLT
3602 7300 CLA CLL
3603 1232 TAD FDCON
3604 6005 RTF
3605 5206 JMP .+1
/USER MODE
IOTX, IOT
JMP .
/EXECUTIVE MODE
3610 7300 CLA CLL
3611 6004 GTF
3612 7041 CIA
3613 1232 TAD FDCON

/SHOULD NOT HLT HERE
/SHOULD NOT TRAP HERE
/GET USER BIT
/SET FOR USER
/GO TO USER
/DID IOT TRAP
/GET THE FLAGS
/FLAGS THAT SHOULD BE PRESENT
```



```

3614 7640 SZA CLA /CHECK THE FLAGS
3615 7402 HLT
3616 6023 SRG
3617 5216 JMP .-1 /IS TRAP FLAG SET
3620 6204 CINT
3621 2206 ISZ IOTX
3622 1206 TAD IOTX
3623 1251 TAD F1030
3624 7640 SZA CLA
3625 5202 JMP F0G0
3626 6202 CIF
3627 5630 JMP I FRET /TEST DONE GO TO FIELD 2
3630 3551 SRRET
3631 1000 F1000, 1000
3632 0000 F0CON, 0000
/
/ CHECK SR0=1 FOR MEMORY EXTENSION ONLY
XSR0, CLA CLL
LAS
SMA CLA
JMP I TIME
CAF
TAD TTB
DCA I XELL
JMP I XBELL
/
TRAP, CLA CLL
TAD ATRAP
DCA 1
SUF
ION
JMP .+1
HLT
SINT
SKP
HLT
CUF
CAF
JMP I PLACE /GO TO BEGIN
/
/TEST 07
/CONFIDENCE CHECK ON ALL EXISTENT FIELDS.
/MAKE SURE DCA 1 AND TAD I ARE TO CORRECT STACK.
/MAKE SURE JUMP IS TO CORRECT STACK.
/CHECK ALL COMBINATIONS.
/FIELDS WILL CONTAIN THEIR DF NUMBER IN LOC.2
*4000
/
CON1, 0000 /FIRST FILL CORE, ALL STACKS
CLA CLL /DCA 1 FOR 32K
DCA F0NUM
DCA NUMX
TAD X0DF
4000 0000
4001 7300
4002 3523
4003 3524
4004 1040

```

```
4005 3252 DCA CONX
4006 1110 TAD K7770
4007 3327 DCA MSTKS
4010 1110 TAD K7770
4011 3031 DCA STKS
4012 1040 TAD KCDF
4013 3214 DCA .+1
4014 6201 CDF
4015 4307 JMS FILCOR
4016 2031 ISZ STKS
4017 5222 JMP .+3
4020 4252 JMS CONCHK
4021 5227 JMP CON2
4022 1045 TAD K10
4023 1214 TAD FWORD
4024 3214 DCA FWORD
4025 2324 ISZ NUMX
4026 5214 JMP FWORD

FWORD,
4027 7300 CLA CLL
4028 1323 TAD FDNUM
4029 3324 DCA NUMX
4031 6201 CDF
4032 4307 JMS FILCOR
4033 6203 CDF CIF
4034 4252 JMS CONCHK
4035 7300 CLA CLL
4036 1252 TAD CONX
4037 1045 TAD K10
4040 3232 DCA CONX
4041 2323 ISZ FDNUM
4042 2327 ISZ MSTKS
4043 5227 JMP CON2
4044 6203 CDF CIF
4045 6007 CAF
4046 2027 ISZ LOOP
4047 5201 JMP CON1.+1
4050 5600 JMP I CON1
4051

CONCHK, 0000
4052 7300 CLA CLL
4053 3324 DCA NUMX
4054 7624 LAS
4055 0044 AND K7
4056 7040 CMA
4057 3031 DCA STKS
4058 1041 TAD KCIF
4059 3263 DCA .+1
4060 6202 CIF
4061 5541 JMP I K0001
4062 7041 CIA
4063 1324 TAD NUMX
4064 7450 SNA
4065 5276 JMP .+6
4066 3112 DCA XSAV

CONCH,
4067 0000
4068 7300 CLA CLL
4069 3324 DCA NUMX
4070 7624 LAS
4071 0044 AND K7
4072 7040 CMA
4073 3031 DCA STKS
4074 1041 TAD KCIF
4075 3263 DCA .+1
4076 6202 CIF
4077 5541 JMP I K0001
4078 7041 CIA
4079 1324 TAD NUMX
4080 7450 SNA
4081 5276 JMP .+6
4082 3112 DCA XSAV

/SET FOR MAX. 32K

/DO ONE AT A TIME

/UPDATE FIELD CHANGE

/ARE ALL STACKS DONE

/DO 4096 TIMES

/TEST COMPLETE

/CHECK ALL AVAILABLE STACKS

/STACKS PRESENT

/START WITH FIELD 0
/MODIFIED UNDER TEST

/RETURN HERE FROM FIELDS

/GOOD FIELD
```

4072	1263	TAD CONCH	
4073	0111	AND K0070	
4074	1112	TAD XSAV	/INCORRECT STACK REFERENCED.
4075	7402	HLT	/AC BITS 6-8 GOOD FIELD.
4076	7300	CLA CLL	/AC BITS 9-11 BAD FIELD.
4077	2031	ISZ STKS	
4100	7410	SKP	/CHECK ALL AVAILABLE STACKS.
4101	5652	JMP I CONCHK	
4102	1263	TAD CONCH	
4103	1045	TAD K10	
4104	3263	DCA CONCH	/UPDATE FIELD CHANGE
4105	2324	ISZ NUMX	
4106	5263	JMP CONCH	
/FILCOR, 0000			
4107	0000	TAD NUMX	/INSTRUCTIONS FOR FIELDS
4110	1324	DCA I K0000	/MODIFIED TO DF#
4111	3537	TAD K1000	
4112	1130	DCA I K0001	
4113	3541	TAD KCIF	
4114	1041	DCA I K0002	
4115	3522	TAD JMPRET	
4116	1326	DCA I K0003	
4117	3540	TAD XRETAD	
4120	1325	DCA I K0004	
4121	3523	JMP I FILCOR	
4122	5707		
/FDNUM, 0000			
4123	0000	NUMX,	
4124	0000	XRETAD, RETADD	
4125	4065	JMPRET, JMP I 4	
4126	5404	MSTKS, 0000	
4127	0000		S

4000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
4100 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

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7100

7200
7300

7400
7500

7600
7700

ADRS	2510	DONE0	2266	K0004	V141	15:46
AGAIN1	0711	ENTER	1200	K0011	KNTR	2102
AGAIN2	1025	EXPD	1316	K0017	KRR	6036
ALL0	2244	EXFLD	1302	K0070	KRTN	0106
ATRAP	0153	EXITT	3564	K0077	KXFLD	0100
BEGIN	0203	F1000	3631	K0100	LBT	1515
BEGIN1	0200	FCO	0154	K1	LBTSTC	1675
BELL	1555	FDCON	3632	K10	LOOP	0027
CAA	0653	FDGO	3602	K1000	MDFSHB	1740
CAB	0754	FDNUM	4123	K1100	MGT	2276
CAC	0755	FDWRD	4014	K1200	MIFSHB	1742
CAD	0741	FILCOR	4107	K20	MOVE	1463
CAE	1056	FILDX	1516	K3577	MQL	7421
CAF	0007	FILL	2076	K5200	MSTKS	4127
CAG	1420	FRET	3630	K6000	N1	2043
CAI	1133	GOTO0	1510	K6001	N2	2042
CAX	2263	GTF	6004	K7	NDF	0030
CDP	0201	GTF1	2271	K7000	NEWDF	1440
CDP05	2245	HALTA	3426	K7402	NOFLD	0034
CHDF	1074	HLTS	0671	K7700	NOMEM	2200
CHECK	2112	IB0	0345	K7707	NOSTAK	0033
CIF	6202	IB1	0354	K7717	NSTKS	2435
CIFCK	0753	IB2	0402	K7727	NUMX	4124
CIFCK1	1046	IB3	0421	K7737	OK1	0231
CIFJMP	0723	IB4	0444	K7744	OK2	0257
CIFJMS	1017	IB5	0463	K7745	OK3	0305
CIFJPL	0715	IB6	0506	K7747	OK4	0333
CIFJSL	1011	IB7	0525	K7757	OK5	0373
CINT	6204	IBSF	0636	K7766	OK6	0440
CKPC	1226	IBSF1	1000	K7767	OK7	0502
CNSTK	2231	IFCN	1605	K7770	OK8	0544
CON1	4000	IPDF	2400	K7771	P	2044
CON2	4027	INST	3407	K7772	PLACE	0127
CONCH	4003	INSTA	1432	K7773	POINT	0065
CONCHK	4052	INTE	1663	K7774	POS	2237
CONX	4032	INTER	1674	K7775	RANA	2057
GUF	6204	IOF	6002	K7776	RDF	6214
DAT	0032	ION	6001	K7777	REPEAT	1733
DATER	2047	ION1	2331	K7S	RET	2511
DCAI	0601	IOY	6000	KCAI	RETADD	4065
DPO	0211	IOYST	3403	KCAIM	RIB	6234
DF1	0230	IOYX	3606	KCC	RIF	6224
DF2	0240	ISE0	0021	KCDF	RIG1	2452
DF3	0263	JMP2	0104	KCDF1	RIG2	3502
DF4	0274	JMPI0	0020	KCIF	RMF	6244
DF5	0311	JMPI4	1702	KCI	RMFCM1	1676
DF6	0322	JMPIR	0134	KDATER	RMEDY	1703
DF7	0220	JMPRET	4126	KDFSHB	RMEDY1	1710
DFCN	1677	K0000	0137	KFLD0	RMFE1	1665
DFLD	0607	K0001	0141	KHLT	RMFE2	1656
DFN	1446	K0002	0122	KIFSHB	RMFI1	1660
DCAUTO	1517	K0003	0140	KJMP	RMFI2	1661
				KNOP	RMFL1	1633

4000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
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ADRS	DONE0	2266	K0004	V141	15:46
AGAIN1	ENTER	1200	K0011	0123	KNTR
AGAIN2	EXFD	1316	K0017	0120	KRR
ALL0	EXFLD	1302	K0070	0132	KRTN
ATRAP	EXITT	3564	K0077	0111	KXFLD
BEGIN1	F1000	3631	K0100	0117	L8TP
BELL	FCO	0154	K1	0126	L8TSTC
CAA	FDCON	3632	K10	0043	LOOP
CAB	FDGO	3602	K1000	0045	MDFSHB
CAC	FDNUM	4123	K1100	0130	MGTF
CAD	FDWRD	4014	K1200	0142	MIFSHB
CAE	FILCOR	4107	K20	0116	MOVE
CAF	FILDX	1516	K3577	0103	MQL
CAG	FILL	2076	K5200	0144	MSTKS
CAI	FRET	3630	K6000	0115	N1
CAX	GOTO0	1510	K6001	0125	N2
CDP08	GTF	6004	K7	0133	NDF
CHDF	GTF1	2271	K7000	0047	NEWDF
CHECK	HALTA	3426	K7402	0044	NOFLD
CIF	HLTS	0671	K7700	0124	NOMEM
CIFCK	I80	0345	K7707	0121	NOSTAK
CIFCK1	I81	0354	K7717	0050	NSTKS
CIFJMP	I82	0402	K7727	0056	NUMX
CIFJMS	I83	0421	K7737	0055	OK1
CIFJPL	I84	0444	K7744	0054	OK2
CIFJSL	I85	0463	K7745	0071	OK3
CINT	I86	0506	K7747	0145	OK4
CKPC	I87	0525	K7757	0053	OK5
CNSTK	I8SF	0656	K7766	0052	OK6
CON1	I8SF1	1000	K7767	0067	OK7
CON2	IFCN	1605	K7770	0051	OK8
CONCH	IFDF	2400	K7771	0110	P
CONCHK	INST	3487	K7772	0064	PLACE
CONX	INTE	1663	K7773	0063	POINT
CUF	INTER	1674	K7774	0062	POS
DAT	IOF	6002	K7775	0061	RANA
DATER	ION	6001	K7776	0060	RDF
DGAI	ION1	2331	K7777	0057	REPEAT
DPI	IOY	6000	K7S	0046	RET
DF1	IOYST	3403	KCAI	0066	RETADD
DF2	IOYX	3606	KCAIM	0036	RIB
DF3	IS00	0021	KCC	0035	RIF
DF4	JMP2	0104	KCDF	6032	RIG1
DF5	JMP10	0020	KCDF1	0040	RIG2
DF6	JMPI4	1702	KCIF	0156	RMF
DF7	JMPIR	0134	KCIFF	0041	RMFCN1
DFCN	JMPRET	4126	KCIFF1	0157	RMFDY
DFLD	K0000	0137	KCIFF2	1737	RMFOY1
DFN	K0001	0141	KCIFF3	0105	RMFE1
DCAUTO	K0002	0122	KCIFF4	0037	RMFE2
	K0003	0140	KCIFF5	1741	RMFI1
			KCIFF6	0101	RMFI2
			KCIFF7	0752	RMFL1
			KCIFF8		
			KCIFF9		
			KCIFF10		
			KCIFF11		
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			KCIFF98		
			KCIFF99		
			KCIFF100		

RMFL2	1621	XMEM	1701
RMFL3	1615	XNOM	2236
RMFTST	1600	XRANS	0025
RTF	6005	XRET	0135
RTF1	2400	XRETAD	4125
RTRN	1427	XRIC1	2434
SFIB	1400	XRMF	0024
SINT	6254	XRTF1	2372
SKON	6000	XSAV	0112
SPF	6040	XSDF	2304
SRCO	0143	XSR0	3633
SRO	3535	XSRTF	2407
SRI	3547	XSTKS	0023
SRO	0003	XTDF	0076
SRRET	3551	XTDF1	0077
STAN	3513	XTFLG	0022
STDF	1127	XTOR	0114
STKS	0031	XTRAP	0152
STRMF	1107	XTRMF	2590
SUF	6274	XXSR0	0146
T1	2600		
T2	2627		
TADI	0022		
TAUTO	1432		
TFLO	0030		
TFLG	2443		
TIME	0131		
TRANS	1321		
TRAP	3643		
TRFLD	1337		
TRMF	1050		
TSF	0041		
TYB	0151		
XAVTO	0020		
XBELL	0150		
XCON1	2373		
XCOUNT	0113		
XDATA	0136		
XDAYR	0150		
XELL	0147		
XFO	0042		
XFOGON	0070		
XFER	2000		
XFER01	2046		
XFER02	2049		
XFERIN	2032		
XFERL1	2030		
XFERL2	2017		
XFERP	1700		
XFIB	0107		
XGTF1	1047		
XION1	2330		

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 17 SECONDS

2K CORE USED