

IDENTIFICATION

PRODUCT CODE: MAINDEC-08-DHMCA-A1-D
PRODUCT NAME: PDP8-E MEMORY EXTENSION
AND TIME SHARE CONTROL TEST
DATE CREATED: JUNE 16, 1972
MAINTAINER: DIAGNOSTIC PROGRAMMING GROUP
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M.C.O. DATE: JUNE 27, 1975

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MAIN DEC CHANGE NOTICE
MAY BE REQUIRED FOR
PROGRAM TO OPERATE

17 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 K88-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.

SR=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(B).

4.2 STARTING ADDRESS

THE STARTING ADDRESS IS LOCATION 0200(B).

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(B), 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 SUCCESSFUL TEST AT THE END OF EVERY PASS.

5. OPERATING PROCEDURE

5.1 OPERATOR ACTION

5.1.1 MEMORY EXTENSION AND TIME SHARE CONTROL
-----7-----

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 K8-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.

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 ITY 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 DE TRANSFERS AND SF
TO IB TRANSFERS.
- 9.15 TEST 14

TEST NON-EXISTENT FIELDS FOR ALL DIS. 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

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/PDP8-E, MEMORY EXTENSION AND TIME SHARE CONTROL TEST.
/
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS.
/STARTING ADDRESS IS 0200.
/CONSTANTS
6201 CDF=6201
6202 CIF=6202
6214 RDF=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 GTF=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 *0
0001 5001 5001
0002 0002 0002
0003 0003 0003
/
0020 *20
/
0020 5400 JMPID, JMP I 0
0021 2000 ISZ0, ISZ 0
0022 2443 XTFLG, TFLG
0023 2435 XSTKS, NSTKS
0024 1050 XRMF, TRMF
0025 1321 XRANS, TRANS
0026 1432 XAUTO, TAUTO
0027 0000 LOOP, 0
0030 0000 NDF, 0
0031 0000 STKS, 0
0032 0000 DAT, 0
0033 0000 NOSTAK, 0
0034 0000 NOFLD, 0
0035 1132 KCAIM, CAI-1
    
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```

0036 1133 KCAI, CAI
0037 7402 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, .+2

0066 0067 K7S, .+1
0067 7766 K7766, 7766
0070 7755 K7755, 7755
0071 7744 K7744, 7744
0072 7733 K7733, 7733
0073 7722 K7722, 7722
0074 7711 K7711, 7711
0075 7700 K7700, 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 KFLDB
0105 1427 KFLDB, RTRN
0106 1422 KRTRN, 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 0002 K0002, 0002
    
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0123 0004 K0004, 0004
0124 7402 K7402, 7402
0125 6000 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 5535 JMP I R, 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 SROO, 7745
0144 3577 K3577, 3577
0145 7745 K7745, 7745
0146 3633 XSR0, XSR0
0147 1556 XELL, BELL+1
0150 1555 XBELL, BELL
0151 6046 TTB, TTB
0152 3643 XTRAP, TRAP
0153 5531 ATRAP, JMP I TIME
0154 0000 FCO, 0000
0155 2047 XDATA, DATER
0156 6211 KCDF1, CDF 10
0157 2525 KDATA, 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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/
*200
/
0200 7604 BEGIN1, LAR
0201 7510 SPA
0202 5552 JMP I XTRAP
0203 7300 BEGIN, CLA GLL
0204 6007 CAP
0205 6264 CUP
0206 1037 TAD KHLT /STORE A HLT IN LOC. 1 AND
0207 3001 DCA 1 /CHECK FOR STRAY INTERRUPT REQST.
0210 6001 ION
/
0211 6201 DF0, CDF 00 /DF 0
0212 6214 RDF
0213 7450 SNA /SHOULD NOT SKIP
0214 5220 JMP DF7
0215 7402 HLT /ERROR, CDF OR RDF FAILED
    
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0216 7200 CLA
0217 5211 JMP DF0 /REPEAT
/
0220 1050 DF7, 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 OK1, ISR LOOP /CHECK DONE
0232 5211 JMP DF0
/
0233 7200 CLA
0234 3027 DCA LOOP /LOOP COUNTER
/
0235 1051 DF1, TAD K7767 /7767
0236 6211 CDF 10 /DF 10
0237 6214 RDF
0240 7040 CMA /AC=0
0241 7450 SNA
0242 5246 JMP DF2
0243 7402 HLT /CDF 1 OR RDF FAILED
0244 7200 CLA
0245 5235 JMP DF1
/
0246 1052 DF2, TAD K7757 /7757
0247 6221 CDF 20 /DF 20
0250 6214 RDF
0251 7040 CMA /AC=0
0252 7450 SNA
0253 5257 JMP OK2
/
0254 7402 HLT /CDF 2 OR RDF FAILED
0255 7200 CLA
0256 5246 JMP DF2
/
0257 2027 OK2, ISR LOOP /DONE IF SKP
0260 5235 JMP DF1
0261 7200 CLA
0262 3027 DCA LOOP
/
0263 1053 DF3, TAD K7747 /7747
0264 6231 CDF 30 /DF 30
0265 6214 RDF
0266 7040 CMA /AC=0
0267 7450 SNA
0270 5274 JMP DF4
0271 7402 HLT /CDF 3 OR RDF FAILED
0272 7200 CLA
0273 5263 JMP DF3
    
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0274 1854 / DF4, TAD K7737 /7737
0275 6241 CDF 4B /DF 4
0276 6214 RDP
0277 7848 CMA /AC#8
0300 7458 SNA
0301 5385 JMP OK3
0302 7482 HLT /CDF 4 OR RDP FAILED
0303 7288 CLA
0304 5274 JMP DF4

0305 2827 / OK3, ISE LOOP /DONE IF SKP
0306 5263 JMP DF3

0307 7288 / CLA
0310 3827 DCA LOOP

0311 1855 / DF5, TAD K7727 /7727
0312 6251 CDF 5B /DF5
0313 6214 RDP
0314 7848 CMA /AC#8
0315 7458 SNA
0316 5322 JMP DF6
0317 7482 HLT /CDF 5 OR RDP FAILED
0320 7288 CLA
0321 5311 JMP DF5

0322 1856 / DF6, TAD K7717 /7717
0323 6241 CDF 6B /DF 6
0324 6214 RDP
0325 7848 CMA /AC#8
0326 7458 SNA
0327 5333 JMP OK4

0330 7482 HLT /CDF 6 OR RDP FAILED
0331 7288 CLA
0332 5322 JMP DF6

0333 2827 / OK4, ISE LOOP /DONE IF SKP
0334 5311 JMP DF5
0335 6888 SKON /SKP IF ION
0336 7482 HLT /IS ION STILL ON

```

/TEST #1
 /NOW TEST INTERRUPT BUFFER (IB) BITS 9-11 WITH
 /RIB, PI IS ENABLED. TELEPRINTER FLAG IS
 /USED FOR INTERRUPT. DO ALL COMBINATIONS 8 TO 7.

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0337 6281 / CDF 8B /DF8
0340 1828 TAD JMP18 /JMP18=JMP I 8
0341 3881 DCA 1 /C(1)=JMP I 8
0342 3827 DCA LOOP
0343 6841 TSP /TEST TTY FLAG
0344 4422 JMP I XTFLG /SET FLAG

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0345 6881 188, ION /ENABLE PI
0346 7288 CLA
0347 6234 RIB /READ SF
0350 7458 SNA
0351 5354 JMP I81
0352 7482 HLT /RIB FAILED
0353 5345 JMP I88

0354 6211 / I81, CDF 1B /DF 1
0355 6881 ION
0356 7288 CLA
0357 6214 RDP /DF SHOULD BE 8 AFTER A PI
0360 7458 SNA
0361 5364 JMP ,+3
0362 7482 HLT
0363 5354 JMP I81 /DF NOT CLEARED, OR NO PI

0364 1857 / TAD K7776
0365 6234 RIB /READ SF
0366 7848 CMA /AC#8
0367 7458 SNA
0370 5373 JMP OK5
0371 7482 HLT
0372 5354 JMP I81 /RIB OR SF FAILED
0373 2827 OK5, ISE LOOP /DONE IF SKP
0374 5345 JMP I88
0375 5776 JMP I ,+1
0376 8488 I82-2

0488 8488 *488
0489 7288 CLA
0491 3827 DCA LOOP

0482 6221 / I82, CDF 2B /DF 2
0483 6881 ION
0484 7288 CLA
0485 6214 RDP /SHOULD BE 8 AFTER PI
0486 7458 SNA
0487 5212 JMP ,+3
0410 7482 HLT /DF NOT CLEARED, OR NO PI
0411 5282 JMP I82

0412 1868 / TAD K7775
0413 6234 RIB /AC=7775
0414 7848 CMA /#8
0415 7458 SNA
0416 5221 JMP I83
0417 7482 HLT /RIB OR SF FAILED
0420 5282 JMP I82

0421 6231 / I83, CDF 3B /DF3
0422 6881 ION
0423 7288 CLA
0424 6214 RDP /DF SHOULD BE CLEARED

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0425 7450      SNA
0426 5231      JMP ,+3
0427 7402      HLT          /DF NOT CLEARED
0430 5221      JMP IB3

/
0431 1061      TAD K7774
0432 6234      RIB          /AC=7777
0433 7040      CMA          /AC=0
0434 7450      SNA
0435 5240      JMP OK6
0436 7402      HLT          /RIB OR SF FAILED
0437 5221      JMP IB3

/
0440 2027      OK6,  ISR LOOP  /DONE IF SKP
0441 5202      JMP IB2

/
0442 7200      CLA
0443 3027      DCA LOOP

/
0444 6241      IB4,  CDF 40    /DF 3
0445 6001      ION
0446 7200      CLA
0447 6214      RDF          /DF MUST BE 000 AFTER A PI
0450 7450      SNA          /ERROR IF SKIP
0451 5254      JMP ,+3

/
0452 7402      HLT          /DF NOT 0 AFTER PI
0453 5244      JMP IB4

/
0454 1062      TAD K7773
0455 6234      RIB          /AC=7773
0456 7040      CMA          /AC=7777
0457 7450      SNA          /AC=0
0460 5263      JMP IB5
0461 7402      HLT          /RIB OR SF FAILED
0462 5244      JMP IB4

/
0463 6251      IB5,  CDF 50    /DF5
0464 6001      ION
0465 7200      CLA
0466 6214      RDF          /DF SHOULD=000
0467 7450      SNA
0470 5273      JMP ,+3
0471 7402      HLT          /DF NOT 0 AFTER PI
0472 5263      JMP IB5

/
0473 1063      TAD K7772
0474 6234      RIB          /AC = 7772
0475 7040      CMA          /AC = 7777
0476 7450      SNA          /AC = 0000
0477 5302      JMP OK7
0500 7402      HLT          /RIB OR SF FAILED
0501 5263      JMP IB5
    
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0502 2027      OK7,  ISR LOOP  /DONE IF 0 AND SKIP
0503 5244      JMP IB4

/
0504 7200      CLA
0505 3027      DCA LOOP

/
0506 6261      IB6,  CDF 60    /DF6
0507 6001      ION
0510 7200      CLA
0511 6214      RDF          /DF MUST=0 AFTER PI
0512 7450      SNA
0513 5316      JMP ,+3
0514 7402      HLT          /DF NOT 0 AFTER PI
0515 5306      JMP IB6

/
0516 1064      TAD K7771
0517 6234      RIB          /7771
0520 7040      CMA          /AC=7777
0521 7450      SNA
0522 5325      JMP IB7
0523 7402      HLT          /RIB OR SF FAILED
0524 5306      JMP IB6

/
0525 6271      IB7,  CDF 70    /DF 7
0526 6001      ION
0527 7200      CLA
0530 6214      RDF          /DF MUST = 0 AFTER PI
0531 7450      SNA
0532 5335      JMP ,+3
0533 7402      HLT          /DF NOT 0
0534 5325      JMP IB7

/
0535 1110      TAD K7770
0536 6234      RIB          /AC=7777
0537 7040      CMA
0540 7450      SNA
0541 5344      JMP OK8
0542 7402      HLT          /RIB OR SF FAILED
0543 5325      JMP IB7

/
0544 2027      OK8,  ISR LOOP  /DONE IF SKP
0545 5306      JMP IB6
0546 5747      JMP I ,+1    /NEW PAGE
0547 0600      600
    
```

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0600 *600
      /TEST 02
      /NOW TEST DCA I AND TAD I TO ALL STACKS, NUMBER OF
      /EXTENDED STACKS SHOULD BE IN BR9 TO 11, EACH STACK WILL
      /CONTAIN ITS DF# IN LOCATION 7000.
0600 3027      DCA LOOP
    
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4

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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 DFLD, CDF 00 /WILL BE INCREMENTED
0610 1030 TAD NDF /DF#
0611 3447 DCA I K7000 /PUT IN 7000 OF STACK
0612 2031 ISB STKS /ALL STACKS WHEN 0
0613 7410 SKP
0614 5222 JMP TADI /TEST TAD I
0615 1045 TAD K10
0616 1207 TAD DFLD /INCR. CDF IOI
0617 3207 DCA DFLD
0620 2030 ISB NDF
0621 5207 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
0631 1447 TAD I K7000 /AC=DF CONTENTS NOW
0632 3032 DCA DAT /SAVE TEMP
0633 1032 TAD DAT
0634 7041 CIA /2'S COMP
0635 1030 TAD NDF /BETTER BE EQUAL
0636 7040 SEA GLA
0637 5252 JMP CAA-1 /ERROR PATH
0640 2031 ISB STKS /ALL WHEN 0
0641 2245 JMP ,+4
0642 2027 ISB LOOP /DONE WHEN 0
0643 5201 JMP DCAI
0644 5256 JMP ISBF /NEXT TEST
0645 1045 TAD K10
0646 1230 TAD TFLD /CDF IOI + 10
0647 3230 DCA TFLD
0650 2030 ISB NDF
0651 5230 JMP TFLD

/
0652 1032 TAD DAT /DATA AS READ
0653 7402 CAA, HLT /AC=DATA READ
0654 7200 CLA
0655 5230 JMP TFLD

/TEST B3

```

/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,  

/5. INTERRUPT ENABLES IF TO SF TRANSFER.

/SET UP FOR CIF-ION-NOP-JMP CHECK.
0656 0201 ISBF, CDF 00 /SET LOCS 1-2 TO ISB 0,  

0657 1021 TAD IS00 /JMP I 0 RESPECTIVELY.
0660 3001 DCA 1
0661 1352 TAD KNOP
0662 3002 DCA 2
0663 1020 TAD JMP10
0664 3003 DCA 3

/
/NOV 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 HLTS, 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 ISB STKS
0701 7410 SKP
0702 5305 JMP ,+3
0703 1271 TAD HLTS
0704 5267 JMP HLTS-2
0705 0201 CDF 00
0706 0041 TSP /ENSURE T10 FLAG SET,
0707 4422 JMS I XTCLG /SET COUNTER FOR 4096 PASSES.
0710 3027 DCA LOOP /INITIALIZE TO CIF 00.
0711 1041 AGAIN1, TAD KCDF
0712 3323 DCA CIFJMP
0713 3353 DCA CIFCK /INITIALIZE I.F. CHECK TO 0.
0714 4423 JMS I XSTKS /READ SR9-11.
0715 1323 CIFJPL, 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 /MODIFIED TO CURRENT FIELD  

/UNDER TEST.

0724 6001 ION
0725 7000 NOP
0726 5327 JMP ,+1
0727 7402 HLT /ERROR. NO PI OR INHIBIT PI.
0730 6234 R10
0731 7041 CIA

```

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0732 1353 TAD CIECK
0733 7650 SNA CLA
0734 9344 JMP CAD+3
0735 1353 TAD CIECK
0736 7421 MQL /LOAD MQ
0737 7300 CLA CLL
0740 6234 RIB
0741 7402 CAD, HLT /ERROR. I,B, TO I,F, TRANSFER
0742 7200 CLA /FAILED AFTER CIF-JMP. BAD
0743 9323 JMP CIEJMP /I,F, IN AC, GOOD I,F, IN
/MQ, REPEAT UPON CONTINUE.
0744 2031 ISE STKS /DONE?
0745 9315 JMP CIEJPL /NO, DO NEXT FIELD
0746 2027 ISE LOOP /4096 TIMES?
0747 9311 JMP AGAIN1 /NO, DO IT ALL AGAIN.
0750 9751 JMP I .+1 /YES. GO TEST CIF-JMS,
0751 1000 IBSF1
0752 7000 KNOP, NOP
0753 0000 CIECK, 0
0754 0724 CAB, CIEJMP+1
0755 1020 CAC, CIEJMS+1

```

```

1000 1000 *1000
1000 7200 IBSF1, CLA
1001 6201 CDF 00
1002 6041 TSF /ENSURE T10 FLAG SET,
1003 4422 JMS I XTFLG
1004 3027 DCA LOOP /SET UP FOR 4096 PASSES,
1005 1041 AGAIN2, TAD KCIF /INIT, TO CIE 00,
1006 3217 DCA CIEJMS
1007 3246 DCA CIECK1 /INIT, I,F, CHECK TO 0,
1010 4423 JMS I XSTKS /READ SR9-11,
1011 1217 CIEJSL, TAD CIEJMS
1012 1045 TAD K10
1013 3217 DCA CIEJMS
1014 1246 TAD CIECK1
1015 1045 TAD K10
1016 3246 DCA CIECK1
1017 6202 CIEJMS, CIE 00 /MODIFIED TO CURRENT FIELD
/UNDER TEST.
1020 6001 ION
1021 7000 NOP
1022 4223 JMS .+1
1023 0000 0
1024 7402 HLT /ERROR. NO PI OR INHIBIT PI.
1025 6234 RIB
1026 7041 CIA
1027 1246 TAD CIECK1
1030 7650 SNA CLA
1031 9241 JMP CAD+3
1032 1246 TAD CIECK1
1033 7110 CLL RAR
1034 7012 RTR

```

```

1035 6234 CAE, RIB
1036 7402 HLT /ERROR. I,B, TO I,F, TRANSFER
1037 7200 CLA /FAILED AFTER CIE-JMS. BAD
1040 9217 JMP CIEJMS /I,F, IN AC=8, GOOD I,F,
/IN AC9-11. REPEAT UPON CONTINUE
1041 2031 ISE STKS /DONE?
1042 9211 JMP CIEJSL /NO, DO NEXT FIELD,
1043 2027 ISE LOOP /4096 TIMES?
1044 9205 JMP AGAIN2 /NO, DO IT ALL AGAIN.
1045 9647 JMP I XGTF1 /YES. GO ON TO NEXT TEST
1046 0000 CIECK1,0
1047 2271 XGTF1, GTF1

```

```

/
/TEST 10
/TEST INTERRUPT INHIBIT
/FROM EACH FIELD, REFER TO HEADING TITLED "EXTENDED
/FIELD TEST ROUTINE", THIS ROUTINE IS PLACED IN
/EACH 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 ALLOIS, 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 3260 DCA .+6
1053 1260 TAD .+5
1054 1045 TAD K10
1055 3260 DCA .+3
1056 7040 CMA
1057 3010 DCA 10
1060 6201 CDF 00
1061 3410 DCA I 10 /PLACE 0'S IN EACH FIELD FROM
1062 1010 TAD 10 /LOC, 0 TO 777,
1063 7040 CMA
1064 7640 SZA CLA
1065 9261 JMP ,-4
1066 2031 ISE STKS
1067 9253 JMP TRMF+3

```

```

/
/NOW PUT A HLT IN EACH FIELD IN THE SAME
/LOCATION AS CAL. BELOW.
/

```

```

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

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```

1073 3274          DCA ,+1
1074 0201 CHDF,   CDF 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          ISB STKS    /DONE ALL STACKS WHEN SKIP
1102 7410          SKP
1103 5306          JMP ,+3
1104 1274          TAD CHDF
1105 5272          JMP CHDF-2
/
1106 0201          CDF 00
1107 0041 STRMF,  TSF          /CHECK TTY FLAG
1110 4422          JMS I XTFLG   /GO SET IT
1111 1050          TAD K7707
1112 3027          DCA LOOP
1113 1065          TAD POINT
1114 3066          DCA K7S      /POINTER FOR K7700 TO K7706
1115 4423          JMS I XSTKS   /READ SR 9-11
1116 1040          TAD KCDF    /0201
1117 1045          TAD K10     /10
1120 3327          DCA STDF
1121 1041          TAD KCIF    /0202
1122 1045          TAD K10     /10
1123 3330          DCA STDF+1
1124 1330          TAD STDF-1
1125 3442          DCA I XFD
1126 4425          JMS I XTRANS /PUT TEST ROUTINE INTO FIELD X
/
1127 0211          STDF,   CDF 10   /FIELD 1 TO START WITH
1130 0212          CIF 10
1131 5332          JMP ,+1     /SHOULD ENTER EXTENDED FIELD
                               /AFTER THIS JMP. HLT IF NOT
/
1132 7000          NOP
1133 7402          CAI,     HLT     /ERROR, PI FAILED
                               /C(AC) = C(I,0.)
1134 5327          JMP STDF   /REPEAT SAME TEST.
/
/ENTER HERE AFTER PI FROM EXTENDED BANK
1200 *1200
/
1200 0214          ENTER,  RDF     /DF SHOULD BE 000
1201 7450          SNA      /ERROR IF SKIP
1202 5206          JMP ,+4     /CHECK C(SF)
1203 7402          HLT      /AC=C(DF)
1204 7200          CLA
1205 5476          JMP I XTDF  /REPEAT TEST
1206 0212          CIF 10     /SET I,0. TO FIELD 1
1207 0244          RMF      /I,0. NOW EQUAL TO SF
1210 0234          RIB      /READ 10
1211 0202          CIF 00
1212 0201          CDF 00

```

```

1213 1466          TAD I K7S
1214 7040          CHA
1215 7650          SNA CLA    /ERROR IF SKIP
1216 5226          JMP OKPC
1217 0244          RMF
1220 0234          RIB
1221 7402          HLT      /ERROR RMF AND PI WORKED, BUT
                               /I,0. NOT CORRECT AFTER RMF,
                               /AC=C(10)
/
1222 7200          CLA
1223 0201          CDF 00
1224 0202          CIF 00
1225 5476          JMP I XTDF  /BACKUP A PAGE AND REPEAT
/
1226 1036          CKPC,   TAD KCAI /KCAI=ADDRESS OF CAI
1227 7001          IAC      /HARE CAI+1
1230 7041          CIA
1231 1000          TAD 0
1232 7650          SNA CLA    /COMPARE TO C(0)
1233 5240          JMP ,+5     /SHOULD NOT SKIP
1234 1000          TAD 0
1235 7402          HLT      /ALL OK SETUP FOR NEXT FIELD
                               /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  /BACKUP AND REPEAT
/
/SETUP FOR NEXT FIELD
/
1240 2031          ISB STKS    /DONE ALL IF SKIP
1241 5246          JMP ,+3
1242 2027          ISB LOOP    /DONE LOOPING IF SKIP
1243 5645          JMP I ,+2   /REPEAT ALL AGAIN
1244 5507          JMP I XFI0   /EXIT TO NEXT TEST
1245 1113          STRMF+4    /BACK TO LAST PAGE
/
/SET LAST TESTED FIELD TO ALL 0'S AND PUT A
/HLT IN RESPECTIVE ADDRESS OF CAI
/
1246 7240          CLA CHA
1247 3010          DCA 10
1250 1476          TAD I XTDF  /CDF X0 AT STDF
1251 3252          DCA ,+1
1252 0211          CDF 10     /F1 TO START WITH
1253 3410          DCA I 10
1254 1010          TAD 10
1255 7040          CHA
1256 7640          SEA CLA    /CLEAR0 IF SKIP
1257 5253          JMP ,+4
1260 0201          CDF 00

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1261 1476      TAD I XTDF      /CDF X0 AT STDF
1262 3263      DCA ,*1
1263 6211      CDF 10
1264 1037      TAD KHLT      /#7402 (HLT)
1265 3436      DCA I KCAI    /KCAI=ADDRESS OF CAI
1266 6201      CDF 00      /RESTORE DF
/
/INCREMENT CDF AND CIF IOT'S AT STDF, STDF+1
/TO NEXT FIELD.
/
1267 1476      TAD I XTDF      /CDF X0 AT STDF
1270 1045      TAD K10
1271 3476      DCA I XTDF
1272 1477      TAD I XTDF1    /CIF X0 AT STDF
1273 1045      TAD K10
1274 3477      DCA I XTDF1
1275 1477      TAD I XTDF1
1276 3316      DCA EXFD
1277 2066      ISE K7S
1300 4321      JMB TRANS    /PUT ROUTINE IN NEW FIELD
1301 3476      JMP I XTDF    /TEST NEW FIELD
/
/EXTENDED FIELD TEST ROUTINE
/
/THE FOLLOWING INSTRUCTIONS ARE PLACED IN
/EACH EXTENDED FIELD TESTED. THE NUMBERS IN THE
/COMMENTS FIELD CORRESPOND TO THE
/MEMORY LOCATIONS IN THE TESTED FIELD. LOCATIONS
/0 THRU 11 ARE USED FOR AN ERROR ROUTINE
/IN CASE FIELD 0 IS NOT ENTERED AFTER AN
/INTERRUPT, THE EXTENDED FIELD SHOULD BE
/ENTERED AT LOCATION CAI-1 WHICH CORRESPONDS
/TO CAI-1 IN FIELD 0.
/
/EXTENDED FIELD INSTRUCTIONS:
/
1302 0000      EXFLD, 0      /0
1303 1000      TAD 0      /1
1304 7450      SNA      /IF LOC. 0 NOT #0 PI DIDN'T
/ENTER FIELD 0
1305 5010      JMP 10     /3
1306 7402      HLT      /4. INTERRUPTED TO THIS FIELD
/INSTEAD OF FIELD 0.C(AC)#C(0)
/WHICH SHOULD BE CAI+1
/IF NOT, CHECK LOC. 7777.IT
/MUST = 3412 (JMP I 12).
1307 7200      CLA      /5
1310 3000      DCA 0      /6
1311 5420      JMP I 20    /7. C(20) #CAI
1312 7402      HLT      /10. THE JMP I 12 AT LOC.
/7777 WAS NOT EXECUTED,
/DR INTERRUPT FAILED, IF
/NO INTERRUPT, LOCATION 12
/NOW CONTAINS 0 INSTEAD

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1313 5005      JMP 5      /OF ADDRESS CAI,
/11. REPEAT IN THIS FIELD
1314 1133      CAI      /12. AUTO-INDEX TO CAI+1
/IN P 0 IF THE JMP I 12
/WORKS.
/LOCS, 13 TO 17 ARE ALL 0'S
/
1315 1133      CAI      /20. EQUALS CAI IN F0.
/
/LOCS, 21 TO CAI-2 ARE ALL 0'S
/
1316 6212      EXFD, CIF 10 /FIELD 1 TO START WITH
1317 6001      ION      /LOC. CAI. SEE SYMBOL TABLE
/FOR CAI.
/LOCS, CAI+1 TO 7776 ARE ALL 0'S
/
1320 5412      JMP I 12    /7777. PI SHOULD OCCUR,
/AFTR THIS INSTRUCTION,
/TO FIELD 0.
/
/ROUTINE TO TRANSFER TEST ROUTINE TO PROPER FIELD
/
1321 0000      TRANS, 0
1322 1101      TAD KJMP    /KJMP=JMP I 2
1323 3001      DCA 1      /IN FIELD 0
1324 1102      TAD KNTR    /KNTR = LOC. ENTER
1325 3002      DCA 2      /OF FIELD 0
1326 1100      TAD KXFLD   /KXFLD = LOC. EXFLD
1327 3010      DCA 10
1328 3011      DCA 11
1329 1067      TAD K7766   /1-10 DECIMAL
1330 3000      DCA 0      /SAVE
1331 1476      TAD I XTDF    /CDF X0 IN STDF
1332 3337      DCA ,*3
1333 6201      CDF 00
1334 1410      TAD I 10
1335 6211      TRFLD, CDF 10 /F1 TO START WITH
1336 3411      DCA I 11 /PUT IN EXTENDED FIELD
1337 2000      ISE 0      /DONE LOCS 1 TO 12 IF SKIP
1338 5355      JMP ,=5
1339 1337      TAD TRFLD
1340 3347      DCA ,*3
1341 6201      CDF 00
1342 1410      TAD I 10
1343 6211      CDF 10
1344 3503      DCA I K20    /PUT E40 IN LOC. 20
1345 6201      CDF 00
1346 1337      TAD TRFLD
1347 3355      DCA ,*2
1348 1410      TAD I 10
1349 6211      CDF 10
1350 3435      DCA I KCAIM  /PUT CIF X0 IN CAI-1
1351 6201      CDF 00
1352 1337
1353 3355
1354 1410
1355 6211
1356 3435
1357 6201

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1360 1337      TAD TRFLD
1361 3363      DCA ,+2
1362 1410      TAD I 10
1363 0211      CDF 10
1364 3436      DCA I KCA1      /ION TO LOC. CA1
1365 0201      CDF 00
1366 1337      TAD TRFLD
1367 3371      DCA ,+2
1370 1410      TAD I 10
1371 0211      CDF 10
1372 3446      DCA I K7777      /PUT JMP I 12 IN 7777
1373 0201      CDF 00
1374 5721      JMP I TRANS      /EXIT

1400          *1400
/
/TEST 11
/TEST SF WITH AN RMF IOT. AN INTERRUPT IN FIELD 0 IS CREATED. AFTER
/WHICH, THE OF AND IB REGISTERS ARE SET TO FIELD 1.
/THE SF SHOULD CONTAIN FIELD 0. THE TEST
/THEN MAKES SURE THE IB IS CLEARED, THEN SET BY ISSUING AN RMF.
/FOLLOWED BY A JMP I K7000, IF THE IB IS CLEARED, THE JMP GOES TO 7000 IN FIELD 0,
/IF THE IB AND SF ARE INCLUSIVE OR'D, THE JMP GOES TO 7000 IN FIELD 1, AND
/A HALT OCCURS THERE, RESTART FROM 1400 AFTER AN ERROR, THE TEST IS LOOPED
/512 TIMES.

1400 6041      SFIB,   TSF           /SEE IF FLAG IS SET.
1401 4422      JMS I XTFLG      /SET IT
1402 1047      TAD K7000      /7000
1403 3027      DCA LOOP
1404 0211      CDF 10           /DF=FIELD 1
1405 1037      TAD KHLT       /HLT
1406 3447      DCA I K7000      /7000, FIELD 1=HLT
1407 0201      CDF 00           /DF=0
1410 1104      TAD JMP2        /JMP2=JMP I KFLD0
1411 3447      DCA I K7000      /7000, FIELD 0=JMP I KFLD0
                               /KFLD0=LOC. RTRN
                               /KJMP=JMP I 2

1412 1101      TAD KJMP
1413 3001      DCA 1
1414 1106      TAD KRTN      /KRTN=LOC. CAG+2
1415 3002      DCA 2

/
/BEGIN TEST
/
1416 6001      ION           /ENABLE PI
1417 7000      NOP
1420 7402      CAG,   HLT       /ERROR NO PI
1421 5200      JMP SFIB      /REPEAT TEST

/
/RETURN HERE AFTER PI
/
1422 7200      CLA
1423 0211      CDF 10           /DF=FIELD1
1424 0212      CIF 10           /IB=FIELD1
1425 0244      RMF           /IB SHOULD=FIELD0

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1426 5447      JMP I K7000      /IF SHOULD=FIELD0

/
1427 2027      RTRN,   ISE LOOP      /WORKED OK
1430 5216      JMP CAG-2      /LOOP
1431 5232      JMP TAUTO      /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.

1432 0201      TAUTO,   CDF 00
1433 1050      TAD K7707
1434 3027      DCA LOOP      /LOOP COUNTER
1435 4423      JMS I XSTKS      /READ SR 9-11
1436 1040      TAD KCDF       /0201
1437 3246      DCA DFN
1440 1246      NEWDF,   TAD DFN
1441 1045      TAD K10        /INCREMENT DF
1442 3246      DCA DFN

/
/CLEAR ONE FIELD TO 0
/
1443 7040      CMA
1444 3010      DCA 10
1445 3000      DCA 0           /USE LOC. 0 FOR A COUNTER
1446 0211      OFN,   CDF 10      /FIELD 1 TO START WITH
1447 3410      DCA I 10
1450 2000      ISE 0
1451 5247      JMP , -2
1452 0201      CDF 00

/
/NOW PUT TEST ROUTINE IN THE EXTENDED FIELD
/
1453 1317      TAD DQAUTO      /1ST LOC. OF ROUTINE MINUS 1
1454 3010      DCA 10           /SOURCE
1455 1071      TAD K7744      /-20 DECIMAL
1456 3000      DCA 0           /USE LOC. 0 AS COUNTER
1457 1317      TAD DQAUTO
1460 3011      DCA 11           /DESTINATION
1461 1246      TAD OFN
1462 3265      DCA ,+3
1463 0201      MOVE,   CDF 00
1464 1410      TAD I 10
1465 0211      CDF 10           /FIELD 1 TO START
1466 3411      DCA I 11

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1467 2808      ISB 0      /MOVE WHEN SKIP
1478 2263      JMP MOVE

/
/ NOW SET AUTO-I REGS 10 TO 17 TO 7777.
/
1471 1118      TAD K7770      /-8 DECIMAL
1472 3088      DCA 0
1473 1044      TAD K7          /7
1474 3018      DCA 10
1475 7048      CMA          /7777
1476 3418      DCA I 10
1477 2808      ISB 0          /10 TO 17 = 7777 WHEN SKIP
1500 2275      JMP ,=3
1501 7048      CMA
1502 3446      DCA I K7777      /PUT 7777 IN LOC. 7777 OF EXTENDED FIELD
1503 0214      RDP          /READ D.F.
1504 1041      TAD KCIF          /6202
1505 3306      DCA ,=1
1506 0212      CIP 10
1507 4716      JMS I FILDX      /FIELD 3 TO START
                          /ENTER EXTENDED FIELD
                          /510 OCTAL LOGS, BEFORE THE
                          /TAD I 10 INSTRUCTION.
                          /THIS IS A TEST OF THE
                          /DEFER BIT, 900 US DELAY

/
/ ENTER FIELD 0 FROM EXTENDED FIELD HERE.
1510 2031      GOTO0, IS2 8TKS      /DONE ALL WHEN SKIP
1511 2240      JMP NEWDF      /SETUP FOR NEXT
1512 2027      IS2 LOOP      /ALL DONE IF SKIP
1513 2235      JMP NEWDF-3    /REPEAT ALL
1514 2715      JMP I LBTP
1515 1600      LBTP, RMP1ST

/
1516 1002      FILDX, 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      DOAUTO, .      /THIS LOC. IS NOT MOVED TO
                          /THE EXTENDED FIELD.
1520 7200      CLA
    
```

```

1521 1410      TAD I 10
1522 7440      SEA
1523 7402      HLT          /ERROR, INDEX REG. 10 FAILED
1524 1411      TAD I 11
1525 7440      SEA
1526 7402      HLT          /INDEX REG. 11 FAILED
1527 1412      TAD I 12
1530 7440      SEA
1531 7402      HLT          /12 FAILED
1532 1413      TAD I 13
1533 7440      SEA
1534 7402      HLT          /13 FAILED
1535 1414      TAD I 14
1536 7440      SEA
1537 7402      HLT          /14 FAILED
1540 1415      TAD I 15
1541 7440      SEA
1542 7402      HLT          /15 FAILED
1543 1416      TAD I 16
1544 7440      SEA
1545 7402      HLT          /16 FAILED
1546 1417      TAD I 17
1547 7440      SEA
1550 7402      HLT          /17 FAILED
1551 6201      CDF 00      /SET DF TO FIELD 0
1552 6202      CIP 00      /SET I.B. TO FIELD 0
1553 5310      JMP GOTO0    /EXIT TO FIELD 0

/ END OF TEST ROUTINE
/
/
/ RING BELL AT THE COMPLETION OF TEST
/ CHECK SR1=1 FOR HLT AT END OF TEST
/
1554 0007      AND 7
1555 1354      BELL, TAD ,=-1
1556 0046      TLR          /RING BELL
1557 0041      TSP
1560 5357      JMP ,=-1
1561 7004      LAB
1562 7004      RAL
1563 7500      SHA
1564 5527      JMP I PLACE      /START TEST OVER
1565 7402      HLT          /END OF TEST
1566 5527      JMP I PLACE      /HIT CONTINUE TO START TEST OVER

/
/ TEST 13
/ DYNAMIC RMF TEST.
/ TESTS ALL SF TO DF TRANSFERS AND THOSE SF TO IB TRANSFERS
/ AS APPLICABLE TO THE NUMBER OF EXTENDED FIELDS PRESENT
/ THE GENERAL METHOD IS TO INTERRUPT FROM EACH EXTENDED FIELD
/ WITH THE DF=FROM 0 THROUGH 7, AN RMF INSTRUCTION IS THEN ISSUED
/ AND CONTROL TRANSFERRED TO AN EXTENDED FIELD. THE RMPDY ROUTINE
    
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```

/IN THAT FIELD THEN CHECKS THAT THE IF AND DF ARE CORRECT, IF NOT,
/IF THE FAILING IF OR DF IS IN THE IF OR DF REG, AND THE CORRECT FIELD
/NUMBER IS IN AC BITS 6 THRU 8.
/
/
1600 *1600
/
1600 7604 RMFTST, LAS /CHECK HOW MANY EXTENDED FIELDS
1601 8044 AND K7 /ARE PRESENT
1602 7041 CIA /NEGATE AND SAVE.
1603 3205 DCA IFCN /TRANSFER RMPDY ROUTINE TO ALL
1604 4700 JMS I XFERP /EXTENDED FIELDS.
1605 8000 IFCN, 0
1606 7744 -34
1607 1702 RMPDY-1
1610 3275 DCA LBTSTC /SET RMFTST COUNTER FOR 4096 PASSES
1611 1302 TAD JMP14 /SET INTERRUPT LINK.
1612 3001 DCA 1
1613 1274 TAD INIEP
1614 3004 DCA 4
1615 6201 RMPL3, CDF 00 /INITIALIZE IF TO 0.
1616 3341 DCA KIFSHB
1617 1205 TAD IFCN /INITIALIZE TEST COUNTER
1620 3276 DCA RMFCN1
1621 1341 RMPL2, TAD KIFSHB /UPDATE CURRENT IF.
1622 1045 TAD K10
1623 3341 DCA KIFSHB
1624 1341 TAD KIFSHB
1625 7041 CIA
1626 3342 DCA MIFSHB
1627 1110 TAD K7770 /INITIALIZE DF COUNTER TO -10.
1630 3277 DCA DFCN
1631 1110 TAD K7770 /INITIALIZE DF TO -10.
1632 3337 DCA KDFSHB
1633 1337 RMPL1, TAD KDFSHB /UPDATE DF.
1634 1045 TAD K10
1635 3337 DCA KDFSHB
1636 1337 TAD KDFSHB
1637 7041 CIA
1640 3340 DCA MDFSHB
1641 1205 TAD IFCN /TRANSFER OF AND IF INFORMATION
1642 3244 DCA .+2 /TO EXTENDED FIELDS.
1643 4700 JMS I XFERP
1644 8000 0
1645 7774 -4
1646 1736 KDFSHB-1
1647 6201 CDF 00

1650 1040 TAD KCDF /UPDATE CDF INST.
1651 1337 TAD KDFSHB
1652 3260 DCA RMF11
1653 1041 TAD KCIF /UPDAT CIF INST.

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1654 1341 TAD KIFSHB
1655 3261 DCA RMF12
1656 6041 RMFE2, TSF
1657 4422 JMS I XTELG /ENSURE T10 FLAG SET.
1660 6201 RMF1, CDF /SET DF AND IF TO CURRENT FIELD.
1661 6202 RMF12, CIF
1662 5303 JMP RMPDY
1663 6244 INTE, RMF /GO TO RMPDY IN CURRENT IF.
1664 5310 JMP RMPDY1 /ENTER FROM INTERRUPT FROM EX. FLD.
1665 2277 RMFE1, ISB /GO BACK TO EXTENDED FIELD.
1666 5233 JMP RMFL1 /ALL DF'S USED WITH CURRENT IF.
1667 2276 ISB RMFCN1 /NO. DO NEXT DF.
1668 5221 JMP RMFL2 /ONE PASS OF RMFTST COMPLETE?
1671 2275 ISB LBTSTC /NO. DO NEXT IF.
1672 5215 JMP RMFL3 /RMFTST DONE?
1673 5701 JMP I XHEM /NO. DO AGAIN.
1674 1663 INTEP, INTE /YES. GO TO NEXT TEST
1675 8000 LBTSTC, 0
1676 8000 RMFCN1, 0
1677 8000 DFCN, 0
1700 2000 XFERP, XFER
1701 2200 XHEM, NOHEM
1702 5404 JMP I 4
/
/
/
/
/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 RMPDY, ION /THIS IS NOT TRANSFERRED.
1704 7000 NOP
1705 6002 IOF
1706 7402 HLT /INTERRUPT FAILURE.
1707 5333 JMP REPEAT
1710 7200 RMPDY1, CLA
1711 6214 ROP /CHECK FOR CORRECT DATA FIELD
1712 1340 TAD MDFSHB
1713 7650 SNA CLA
1714 5320 JMP .+4
1715 1337 TAD KDFSHB /DATA FIELD INCORRECT
1716 7402 HLT /SF TO DF TRANSFER FAILED AFTER RMF.
1717 5333 JMP REPEAT /REPEAT THIS TEST.
1720 6224 RIF /CHECK FOR CORRECT INSTRUCTION FIELD.
1721 1342 TAD MIFSHB
1722 7650 SNA CLA
1723 5327 JMP .+4
1724 1341 TAD KIFSHB /INSTRUCTION FIELD INCORRECT.
1725 7402 HLT /SF TO IB TRANSFER FAILED AFTER RMF
1726 5333 JMP REPEAT /REPEAT THIS TEST.

```

```

1727 6201 CDF 00 /GO BACK AND RUN NEXT TEST.
1730 6202 CIF 00
1731 5732 JMP I .+1
1732 1665 RMFE1
1733 6201 REPEAT, CDF 00 /GO BACK AND REPEAT FAILING
1734 6202 CIF 00 /TEST.
1735 5736 JMP I .+1
1736 1656 RMFE2
1737 0000 KDFSHB, 0 /DATA FIELD SHOULD BE
1740 0000 MDFSHB, 0 /TWO'S COMPLEMENT OF ABOVE.
1741 0000 KIFSHB, 0 /INSTRUCTION FIELD SHOULD BE
1742 0000 MIFSHB, 0 /TWO'S COMPLEMENT OF ABOVE
/
/
/
/
/ROUTINE TO TRANSFER N1 WORDS STARTING AT P IN FIELD 0 TO P IN THE
/NEXT N2 EXTENDED FIELDS.
/THE CALLING SEQUENCE IS:
/JMS I XFERP
/-N2
/-N1
/P=1
/
2000 *2000
/
2000 0000 XFER, 0
2001 7200 CLA
2002 1600 TAD I XFER /GET -N2
2003 3242 DCA N2
2004 2200 ISB XFER /GET -N1
2005 1600 TAD I XFER
2006 3243 DCA N1
2007 2200 ISB XFER /GET P-1
2010 1600 TAD I XFER
2011 3244 DCA P
2012 2200 ISB XFER /UPDATE TO RETURN ADDRESS,
2013 1040 TAD KCDF /INITIALIZE CDF INST,
2014 3232 DCA XFERIN
2015 1242 TAD N2
2016 3245 DCA XFERC2
2017 1244 XFERL2, TAD P /PUT POINTER IN AUTO 10 AND 11.
2020 3050 DCA 10
2021 1244 TAD P
2022 3011 DCA 11
2023 1243 TAD N1 /SET COUNTER 1 TO -N1
2024 3246 DCA XFERC1
2025 1232 TAD XFERIN /UPDATE CDF INST,
2026 1045 TAD K10
2027 3232 DCA XFERIN

```

```

2030 6201 XFERL1, CDF 00 /TRANSFER
2031 1410 TAD I 10
2032 6201 XFERIN, CDF
2033 3411 DCA I 11
2034 2246 ISB XFERC1 /DONE WITH CURRENT FIELD?
2035 5230 JMP XFERL1 /NO, CONTINUE.
2036 2245 ISB 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 N2, 0
2043 0000 N1, 0
2044 0000 P, 0
2045 0000 XFERC2, 0
2046 0000 XFERC1, 0
/
/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 ABEA AND LOC, RANA
/FOR THE MOST RECENT FIELD CHANGE.
/LOC, KOATER CONTAINS DATA PATTERN USED.
/
2047 0000 DATER, 0000
2050 7300 CLA CLL
2051 4423 JMS I XSTKS
2052 1040 TAD KCDF
2053 1045 TAD K10
2054 3257 DCA RANA /MODIFIED UNDER TEST
2055 7340 CLA CLL CMA
2056 3010 DCA 10 /SET AUTO REGISTER
2057 6201 RANA, CDF
2060 4276 JMS FILL /LOAD UP FIELD WITH DATA
2061 7340 CLA CMA CLL
2062 3010 DCA 10
2063 4312 JMS CHECK /CHECK DATA IN FIELD
2064 7300 CLA CLL
2065 2031 ISB STKS
2066 7410 SKP
2067 5274 JMP .+5
2070 1257 TAD RANA
2071 1045 TAD K10
2072 3257 DCA RANA /CHECK NEXT FIELD
2073 5255 JMP RANA -2
2074 6201 CDF
2075 5647 JMP I DATER
/
/ROUTINE TO FILL FIELD WITH DATA
/
2076 0000 FILL, 0000
2077 7300 CLA CLL
2100 1157 TAD KOATER
2101 3410 DCA I 10
2102 1157 TAD KOATER

```

```

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

/Routine TO CHECK DATA IN FIELD

2112 0000 CHECK, 0000
2113 7300 CLA CLL
2114 1410 TAD I 10
2115 7001 IAC
2116 1410 TAD I 10
2117 7440 SRA /AC CONTAINS BAD BITS
2120 7402 HLT /MEMORY CONTROL WORKED BUT
2121 7300 CLA CLL /DATA PATTERN FAILURE IN
2122 1010 TAD 10 /EXTENDED MEMORY.
2123 7001 IAC
2124 7640 SRA CLA /IS CHECK DONE
2125 5313 JMP CHECK +1
2126 5712 JMP I CHECK
    
```

```

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

2200 7200 NOMEM, CLA
2201 1110 TAD K7770
2202 3027 DCA LOOP /TEST LOOP COUNTER
2203 7604 LAS /READ SR9-11
2204 0044 AND K7
2205 7041 CIA
2206 1044 TAD K7 /SUBTRACT MAX. POSSIBLE
2207 7450 SNA
2210 5546 JMP I XXSR0 /32K PRESENT, CAN'T TEST
2211 3033 DCA NOSTAK /SAVE NO. MISSING
2212 3547 DCA I XELL /CLEAR THE TLB IOT AT
/BELL+1 TO PROHIBIT
/FALSE INDICATION, TLS
/IS RESTORED LATER WRONG
/ENTRY FROM NON-EXISTENT
    
```

```

2213 7604 LAS /MEMORY MAY CAUSE A
2214 0044 AND K7 /HANG-UP AT BELL+2 AND +3.
2215 7001 IAC /# OF FIELDS PRESENT
2216 7100 CLL /+1 TO GET 1ST MISSING
2217 7006 RTL /POSITION TO AC 6-8.
2220 7004 RAL
2221 3034 DCA NOFLD /1ST MISSING
2222 1033 TAD NOSTAK /# STACKS NOT HERE
2223 7041 CIA
2224 3033 DCA NOSTAK /USED AS COUNTER
    
```

```

2225 1040 TAD K0FD /6201
2226 1034 TAD NOFLD /MISSING STACK
2227 3245 DCA CDF0S

/ 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 CNSTK, ISE NOSTAK /DONE ALL MISSING IF SKIP
2232 5237 JMP POS
2233 2027 ISE LOOP /DONE LOOPING IF SKIP
2234 5636 JMP I XNOM /REPEAT
2235 5546 JMP I XXSR0

2236 2203 XNOM, NOMEM+3

2237 1245 POS, TAD CDF0S /DF PLUS 1
2240 1045 TAD K10
2241 3245 DCA CDF0S
2242 4244 JMS ALL0 /READ ALL 0'S
2243 5231 JMP CNSTK /CHECK DONE
    
```

```

/Routine TO READ ALL 0'S:

2244 0000 ALL0, 0
2245 0201 CDF0S, CDF 00 /SET DF TO 1ST MISSING
2246 7240 CLA CMA
2247 3010 DCA 10 /10 AND 11 USED FOR ADDRESS
2250 7040 CMA
2251 3011 DCA 11
2252 3002 DCA 2 /USE AS COUNTER
2253 7040 CMA
2254 3410 DCA I 10 /WRITE 1'S INTO NON-EXIS-
/TENT FIELD.
2255 2002 ISE 2
    
```

```

2256 5253      JMP , -3
2257 1411      TAD I 11      /READ NON-EXIST, FIELD
2260 7650      SNA CLA      /SHOULD = 0000
2261 5264      JMP , +3
2262 1011      TAD I 11
2263 7402      CAX,   HLT      /ERROR, AN EXISTING FIELD
                               /WAS REFERENCED, C(AC)*
                               /ADDRESS REFERENCED

2264 2002      ISB 2
2265 5257      JMP CAX-4      /READ NEXT

2266 6201      DONE0, CDF 00
2267 6202      CIP 00
2270 5644      JMP I ALL0      /EXIT

/
/
/TEST 04

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

2271 7300      GTF1,   CLA CLL
2272 1020      TAD JMP10      /SET FOR RETURN
2273 3001      DCA 1
2274 1040      TAD KCDF
2275 3304      DCA XSDF
2276 1304      MGTf,   TAD XSDF      /GET FIRST FIELD
2277 0111      AND K0070
2300 7120      STL
2301 7010      RAR
2302 7012      RTR
2303 3112      DCA XSAV
2304 6201      XSDF,   CDF 00
2305 6041      TSF      /IS TTY FLAG SET
2306 4422      JMS I XTFLG      /GET THE FLAG
2307 6001      ION
2310 7340      CLA CLL CMA      /CHECK FOR JAM ON GTF
2311 6004      GTF      /GET THE FLAGS
2312 7041      CIA
2313 1112      TAD XSAV      /TTY + CURRENT FIELD
2314 7440      SEA
2315 7402      HLT      /FLAG + FIELD
2316 2027      ISB LOOP      /4096 TIMES
2317 5276      JMP MGTf
2320 1045      TAD K10
2321 1304      TAD XSDF
2322 3304      DCA XSDF
2323 2113      ISB XCOUNT      /MORE FIELDS TO CHECK
2324 5276      JMP MGTf
2325 1110      TAD K7770
2326 3113      DCA XCOUNT
2327 5730      JMP I XION1      /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.
/

2331 7300      ION1,   CLA CLL
2332 1021      TAD ISZ0
2333 3001      DCA 1
2334 1020      TAD JMP10
2335 3002      DCA 2
2336 6005      RTF
2337 5340      JMP , +1
2340 7402      HLT      /WAS INT, INH.
2341 7300      CLA CLL
2342 1115      TAD K5200
2343 6005      RTF
2344 7240      CLA CMA      /CHECK FOR JAM ON GTF
2345 6004      GTF      /GET LINK, ION, TTY FLAG
2346 7041      CIA
2347 1115      TAD K5200      /EXPECTED BITS
2350 7440      SEA
2351 7402      HLT      /WAS LINK, ION, TTY FLAG SET
2352 7300      CLA CLL
2353 6005      RTF      /REPLACE ION, INT INH
2354 7300      CLA CLL
2355 6004      GTF
2356 7041      CIA
2357 1116      TAD K1200
2360 7440      SEA
2361 7402      HLT      /TTY FLAG, ION, NO LINK
2362 5363      JMP , +1
2363 7402      HLT      /WAS INT INH
2364 7300      CLA CLL
2365 2027      ISB LOOP      /4096 TIMES
2366 5331      JMP ION1
2367 4555      JMS I XDATAER      /GO TO NEXT TEST
2370 4773      JMS I XCON1      /GO TO NEXT TEST
2371 5772      JMP I XRTF1      /GO TO NEXT TEST
2372 2400      XRTF1,   RTF1
2373 4000      XCON1,   CON1
/
/TEST 06
/TEST DF00 + IF00 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 0 TO 77,
/

2400          *2400
/

2400 7300      RTP1,   CLA CLL
2401 4422      JMS I XTFLG      /SET TTY FLAG
2402 1021      TAD ISZ0
2403 3001      DCA 1
    
```

```

2404 1020 TAD JMP10
2405 3002 DCA 2
2406 3114 DCA XTOR
2407 1114 XSRTF, TAD XTOR
2410 0005 RTF /MAKE DF 00 + IF 00
2411 5212 JMP ,+1
2412 7402 HLT /WAS INT INH
2413 7300 CLA CLL
2414 0004 GTF /GET THE FLAGS
2415 0117 AND K0077
2416 7041 CIA
2417 1114 TAD XTOR /EXPECTED BITS
2420 7440 SEA
2421 7402 HLT /WAS DF + IF GET
2422 2027 ISB LOOP /4096 TIMES
2423 5207 JMP XSRTF
2424 1114 TAD XTOR
2425 1120 TAD K0011
2426 3114 DCA XTOR
2427 2113 ISB XCOUNT
2430 5207 JMP XSRTF /DO THE REST OF 00 + IF 00
2431 1110 TAD K7770
2432 3113 DCA XCOUNT
2433 5634 JMP I XRG1
2434 2452 XRG1, R10,
NSTK5, 0
/
2436 7604 LAG /READ SR 9-11
2437 0044 AND K7
2440 7041 CIA
2441 3031 DCA STKS
2442 5635 JMP I NSTK5
/
/SET TTY FLAG
/
2443 0000 TFLG, 0
2444 7200 CLA
2445 0040 SPF
2446 0041 TSP
2447 5246 JMP ,+1
2450 7200 CLA
2451 5643 JMP I TFLG /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 IPDF FOR CORRECT DF XX + IF XX,
/PROGRAM SHOULD INTERRUPT INHIBIT TILL JMP I ADRS
/IF PI FAILS TO INTERRUPT HLT IN THAT FIELD
/
2452 7300 R10, CLA CLL
2453 4423 JMS I XSTKS

```

```

2454 1120 TAD K0011
2455 3260 DCA IPDF
2456 1132 TAD K0017
2457 3010 DCA 0010
2460 0000 IFDF, 0000 /SET IO CURRENT FIELD UNDER TEST
2461 7300 CLA CLL
2462 1260 TAD IPDF
2463 0005 RTF /SET FIELDS AND TURN ION
2464 0002 IOF
2465 7300 CLA CLL
2466 2537 ISB I K0000
2467 7000 NOP
2470 1537 TAD I K0000
2471 3136 DCA XDATA
2472 1124 TAD K7402
2473 3841 DCA I K0001 /STORE A HLT IN LOC 1 OF THAT FIELD
2474 1133 TAD K0001
2475 3410 DCA I 0010 /ION FOR THAT FIELD
2476 1130 TAD K1000
2477 3410 DCA I 0010 /TAD FOR THAT FIELD
2500 1124 TAD K7402
2501 3410 DCA I 0010 /HLT FOR FAILURE
2502 1010 TAD 10
2503 1057 TAD K7776
2504 3310 DCA ADRS
2505 1134 TAD JMP10
2506 3001 DCA 0001 /SET LOC 1 FOR RETURN AFTER PI
2507 5710 JMP I ,+1 /GO TO THAT FIELD
2510 0000 ADRS, 0000
RET, CIA
2511 7041 CIA
2512 1136 TAD XDATA
2513 7440 SEA
2514 7402 HLT /AC DATA FAILED DURING PI
2515 1000 TAD 0000
2516 7041 CIA
2517 1010 TAD 0010
2520 7440 SEA
2521 7402 HLT /PC FAILED DURING PI
2522 0214 RDF
2523 0224 RIF
2524 7640 SEA CLA /SHOULD BE 0 AFTER PI
2525 7402 HLT
2526 0004 GTF
2527 0117 AND K0077
2530 7041 CIA
2531 1260 TAD IPDF
2532 7440 SEA
2533 7402 HLT /GTF OR RTF OR SF FAILED
2534 1010 TAD 0010
2535 7001 IAC
2536 7640 SEA CLA
2537 5261 JMP IPDF-1
2540 2031 ISB STKS
2541 7410 SKP
2542 5750 JMP I XTRMF

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```

2543 7300          CLA CLL
2544 1120          TAD K0011
2545 1240          TAD IFDF
2546 3240          DCA IFDF          /SET FOR NEXT FIELD
2547 5256          JMP IFDF -2
2550 1050          XTRMF, TRMF
/

```

```

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

```

```

2600          *2600
/
2600 7300          T1, CLA CLL
2601 6007          CAF
2602 6264          CUP
2603 6204          CINT
2604 1021          TAD 1820
2605 3001          DCA 1
2606 1020          TAD JMP10
2607 3002          DCA 2
2610 6007          CAF
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
/
/THESE INSTRUCTIONS SHOULD TRAP
2627 6001          T2, ION
2630 6274          CUP*10          /USER MODE
2631 5232          JMP ,+1
2632 7402          HLT
2633 5233          JMP ,          /HLT DID NOT TRAP
/EXECUTIVE MODE
2634 6254          SINT
2635 5235          JMP ,          /SKIP ON TRAP FLAG
2636 6204          CINT
2637 6254          SINT
2640 7410          SKP
2641 5241          JMP ,          /TRAP FLAG STILL SET
2642 7604          LAS
2643 7410          SKP
2644 5244          JMP ,          /LAS TRAPED IN EXECUTIVE MODE

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```

2645 6244          RMF          /RESTORE USER
2646 6001          ION
2647 5250          JMP ,+1          /GO TO USER
/USER MODE
2650 7404          OSR          /SHOULD TRAP ON OSR
2651 5251          JMP ,          /DID NOT TRAP
/EXECUTIVE MODE
2652 6254          SINT
2653 5253          JMP ,          /SKIP ON TRAP FLAG
2654 6007          CAF          /DID NOT SKIP
2655 6254          SINT          /CLEAR TRAP FLAG
2656 7410          SKP          /TEST IF CLEARED
2657 7402          HLT          /TRAP FLAG NOT CLEARED
2660 7404          OSR          /SHOULD NOT TRAP
2661 7410          SKP
2662 5262          JMP ,          /ORS TRAPED IN EXECUTIVE MODE
2663 6244          RMF          /RESTORE MODE
2664 6001          ION
2665 5266          JMP ,+1          /GO TO USER
/USER MODE
2666 6005          RTF          /MAKE THE FLAGS
2667 5267          JMP ,          /RTF FAILED TO TRAP
/EXECUTIVE MODE
2670 6254          SINT
2671 5271          JMP ,          /TRAP FLAG NOT SET
2672 6204          CINT          /CLEAR TRAP FLAG
2673 6254          SINT          /TEST IF CLEARED
2674 7410          SKP
2675 7402          HLT          /TRAP FLAG NOT CLEARED
2676 6004          GTF          /SHOULD NOT TRAP
2677 7410          SKP
2700 5300          JMP ,          /TRAPED IN EXECUTIVE MODE
2701 6244          RMF          /RESTORE MODE
2702 6001          ION
2703 5304          JMP ,+1          /GO TO USER
/USER MODE
2704 6001          ION
2705 5305          JMP ,          /ION DID NOT TRAP
/EXECUTIVE MODE
2706 6254          SINT
2707 5307          JMP ,          /SKIP ON TRAP FLAG
2710 7300          CLA CLL          /TRAP FLAG NOT SET
2711 6004          GTF
2712 0126          AND K0100
2713 7450          SNA
2714 7402          HLT          /SUF NOT SET
2715 6204          CINT          /CLEAR TRAP FLAG
2716 6254          SINT          /TEST IF CLEARED
2717 7410          SKP
2720 7402          HLT          /FLAG NOT CLEARED
2721 6002          IOF          /SHOULD NOT TRAP
2722 7410          SKP

```



```

2723 5323      JMP ,           /IOP TRAPED IN EXECUTIVE MODE
2724 6244      RMF ,           /RESTORE MODE
2725 6001      ION ,           /GO TO USER
2726 5327      JMP ,+1
                /USER MODE
                /TEST CUF AND CUF+10
2727 7604      LAB ,           /DID NOT TRAP
2730 5330      JMP ,
                /EXECUTIVE MODE
2731 6204      CINT ,
2732 6244      RMF ,
2733 6264      CUF ,           /STAY IN EXECUTIVE MODE
2734 6001      ION ,
2735 5336      JMP ,+1
2736 7404      OSR ,
2737 7410      SKP ,
2740 5340      JMP ,           /CUF DID NOT WORK
                /TEST THAT INSTRUCTION ARE INHIBITED WHILE IN USER MODE
2741 6204      CINT ,
2742 6274      CUF+10
2743 6001      ION ,           /SET USER
2744 5345      JMP ,+1
                /GO TO USER
                /USER MODE
2745 7240      CMA CLA
2746 7604      LAS ,           /AC#7777
2747 5347      JMP ,           /SHOULD CLEAR AC
                /DID LAS TRAP
                /EXECUTIVE MODE
2750 7440      SEA ,
2751 7402      HLT ,           /LAS CHANGED AC
2752 6204      CINT ,
2753 6244      RMF ,
2754 6001      ION ,
2755 5356      JMP ,+1
                /USER MODE
2756 7200      CLA ,
2757 7404      OSR ,           /SHOULD NOT READ SR
2760 5360      JMP ,
                /EXECUTIVE MODE
2761 7440      SEA ,
2762 7402      HLT ,           /OSR CHANGED AC
2763 6204      CINT ,
2764 6244      RMF ,
2765 6001      ION ,
2766 5367      JMP ,+1
                /USER MODE
2767 7240      CLA CMA
2770 7602      HLT CLA
2771 5371      JMP ,           /SHOULD CLA
                /DID HLT TRAP
                /EXECUTIVE MODE
2772 7440      SEA ,
2773 7402      HLT ,           /(HLT CLA) DID NOT CLEAR
2774 6204      CINT ,
2775 6003      SRQ ,
2776 7410      SKP ,

```

```

2777 7402      HLT ,           /INTERRUPT REQUEST
3000 7300      CLA GLL
3001 1126      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 GLL
3014 1126      TAD K0100
3015 6005      RTF ,
3016 7300      CLA GLL
3017 6001      ION ,
3020 5221      JMP ,+1
                /ENTER USER
                /USER MODE
3021 6004      GTF ,
3022 5222      JMP ,           /DID GTF TRAP
                /EXECUTIVE MODE
3023 0126      AND K0100
3024 7440      SEA ,           /DID GTF GET USER
3025 7402      HLT ,
3026 6003      SRQ ,           /IS USER FLAG SET
3027 5226      JMP ,=-1
3030 6204      CINT ,
3031 6244      RMF ,
3032 6001      ION ,
3033 5234      JMP ,+1
                /USER MODE
3034 6004      GTF ,
3035 5235      JMP ,           /GTF DID NOT TRAP
                /EXECUTIVE MODE
3036 6254      SINI ,
3037 5237      JMP ,           /SKIP ON TRAP FLAG
3040 6204      CINT ,           /FLAG NOT UP
3041 6254      SINI ,           /CLEAR TRAP FLAG
3042 7410      SKP ,           /SKIP ON TRAP FLAG
3043 5243      JMP ,           /TRAP FLAG STILL SET
3044 6001      ION ,
3045 7410      SKP ,
3046 5246      JMP ,           /ION TRAPED IN EXECUTIVE MODE
3047 6244      RMF ,           /RESTORE USER
3050 5251      JMP ,+1
                /GO TO USER
                /USER MODE
3051 6202      CIF ,
3052 5252      JMP ,           /SHOULD TRAP ON CIF
                /DID NOT TRAP
                /EXECUTIVE MODE
3053 6254      SINI ,           /SKIP ON TRAP FLAG

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3054 5254      JMP ,           /DID NOT SKIP
3055 6204      CINT          /CLEAR TRAP FLAG
3056 6254      SINT          /TEST IF CLEARED
3057 7410      SKP           /
3060 7402      HLT           /TRAP FLAG NOT CLEARED
3061 6202      CIF          /SHOULD NOT TRAP
3062 7410      SKP           /
3063 5263      JMP ,           /CIF TRAPED IN EXECUTIVE MODE
3064 6244      RMF          /RESTORE MODE
3065 6001      ION          /
3066 5267      JMP ,+1       /GO TO USER

```

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3067 6214      /USER MODE
3067 6214      RDF          /READ DATA FIELD
3070 5270      JMP ,           /DID RDF TRAP
3071 6254      /EXECUTIVE MODE
3071 6254      SINT          /
3072 5272      JMP ,           /TRAP FLAG NOT SET
3073 6204      CINT          /CLEAR TRAP FLAG
3074 6254      SINT          /TEST IF CLEARED
3075 7410      SKP           /
3076 7402      HLT           /TRAP FLAG NOT CLEARED
3077 6214      RDF          /SHOULD NOT TRAP
3100 7410      SKP           /
3101 5301      JMP ,           /TRAPED IN EXECUTIVE MODE
3102 6040      /EXECUTIVE MODE
3102 6040      SPP          /FLAG SHOULD WORK
3103 6041      TSP          /
3104 5303      JMP , -1       /SHOULD SKP
3105 6003      SRQ          /
3106 5305      JMP , -1       /SHOULD SKP
3107 6001      ION          /
3110 7300      CLA OLL       /
3111 5311      JMP ,           /DID PI WORK
3112 1126      TAD K0100     /
3113 6005      RTF          /
3114 6007      CAF          /
3115 6001      ION          /
3116 5317      JMP ,+1       /USER MODE
3117 6007      CAF          /
3120 5320      JMP ,           /DID CAF TRAP
3121 6003      /EXECUTIVE MODE
3121 6003      SRQ          /
3122 7402      HLT           /USER FLAG UP
3123 6007      CAF          /
3124 6254      SINT          /
3125 7410      SKP          /
3126 7402      HLT          /FLAG CLEARED
3127 7240      /TEST THAT TTI DOES NOT CHANGE AC
3127 7240      CLA CHA      /AC=7777
3130 7120      STL          /LINK=1

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3131 6274      CUF+10
3132 6001      ION
3133 5334      JMP ,+1
3134 6036      /USER MODE
3134 6036      KRB          /SHOULD NOT ZERO LINK OR SHIFT AC
3135 5335      JMP ,
3136 7040      /EXECUTIVE MODE
3136 7040      CHA          /
3137 7440      SEA          /AC SHOULD=0000
3140 5340      JMP ,           /AC WAS CHANGED
3141 7420      SNL          /LINK SHOULD EQUAL 1
3142 5342      JMP ,           /LINK WAS CHANGE
3143 6254      SINT          /SKIP ON TRAP FLAG
3144 5344      JMP ,           /TRAP FLAG NOT SET
3145 6204      CINT          /
3146 6244      RMF          /
3147 6001      ION          /
3150 5351      JMP ,+1       /USER MODE
3151 6040      SPP          /FLAG
3152 5352      JMP ,           /DID SPP TRAP
3153 6041      /EXECUTIVE MODE
3153 6041      TSP          /
3154 7410      SKP          /
3155 7402      HLT          /TTY FLAG
3156 6254      SINT          /
3157 5357      JMP ,           /TRAP FLAG NOT SET
3160 6204      CINT          /CLEAR TRAP FLAG
3161 6244      RMF          /
3162 6001      ION          /
3163 5764      JMP I ,+1      /GO TO USER
3164 3200      . 177+1
3200          *. 177+1
3200          /USER MODE
3200 6001      ION          /
3201 5201      JMP ,           /ION DID NOT TRAP
3202 6254      /EXECUTIVE MODE
3202 6254      SINT          /SKIP ON TRAP FLAG
3203 5203      JMP ,           /TRAP FLAG NOT SET
3204 6204      CINT          /CLEAR TRAP FLAG
3205 6254      SINT          /TEST IF CLEARED
3206 7410      SKP          /
3207 7402      HLT          /FLAG NOT CLEARED
3210 6002      IOF          /SHOULD NOT TRAP
3211 7410      SKP          /
3212 5212      JMP ,           /IOF THAPED IN EXECUTIVE MODE
3213 6244      RMF          /RESTORE MODE
3214 6001      ION          /
3215 5216      JMP ,+1       /GO TO USER
3216 6224      /USER MODE
3216 6224      /TEST CUF AND CUF+10
3216 6224      RIF

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3217 5217      JMP , /DID NOT TRAP
           /EXECUTIVE MODE
3220 6204      CINT
3221 6244      RHF
3222 6264      CUF /STAY IN EXECUTIVE MODE
3223 5224      JMP ,+1
3224 7404      OSR
3225 7410      SKP
3226 5226      JMP , /CUF DID NOT WORK
           /EXECUTIVE MODE
3227 7240      CLA CMA
3230 6274      CUF *10 /SET UP USER
3231 6001      ION
3232 5233      JMP ,+1
           /USER MODE
3233 7402      HLT /SHOULD TRAP
3234 5234      JMP , /DID NOT TRAP
           /EXECUTIVE MODE
3235 6203      CDF GIF /SETUP FOR EXECUTIVE
3236 6264      CUF /CLEAR INTERRUPT
3237 6204      CINT
3240 6001      ION
3241 5242      JMP ,+1
3242 7604      LAS /SHOULD NOT TRAP
3243 7410      SKP
3244 5244      JMP ,
3245 7450      SNA /SR AND AC SHOULD NOT EQUAL ZERO
3246 5246      JMP , /LAS WAS INHIBITED

           /TEST HLT AND SKIP
3247 6274      CUF*10 /USER SETUP
3250 6001      ION
3251 5252      JMP ,+1 /GO TO USER
           /USER MODE
3252 7412      SKP HLT /SHOULD TRAP
3253 5253      JMP , /DID NOT TRAP
3254 5254      JMP , /SKP DID NOT INDEX PC.
           /EXECUTIVE MODE
3255 6254      SINT /SKP ON TRAP FLAG
3256 5256      JMP ,
3257 6204      CINT /CLEAR FLAG
3260 6254      SINT /IS IT CLEAR
3261 7410      SKP /YES
3262 5262      JMP , /NO-FLAG NO CLEAR

           /LOOP PROGRAM
3263 2266      ISE ,+3 /DO FIRST SECTION 4096
3264 5531      JMP I TIME
3265 7410      SKP
3266 0000      0 /COUNT FOR LOOP
3267 5670      JMP I ,+1
3270 3400      , 177*1

3400 * , 177*1
    
```

```

           /TEST THAT ALL IOTS TRAP IN USER MODE
3400 7200      CLA
3401 1125      TAD K6000 /BASIC IOT
3402 3207      DCA INST /SET UP
3403 6274      IOTST, CUF*10 /SET FOR USER
3404 6204      CINT /CLEAR FLAG
3405 6001      ION
3406 5207      JMP ,+1 /GO TO USER MODE
           /USER MODE
3407 6000      INST, 6000 /IOT THAT FAILED
3410 5210      JMP , /IOT DID NOT TRAP
           /EXECUTIVE MODE
3411 6254      SINT /SKIP ON TRAP FLAG
3412 5212      JMP , /TRAP FLAG NOT SET
3413 6204      CINT /CLEAR FLAG
3414 6254      SINT
3415 7610      SKP CLA
3416 7402      HLT /FLAG DID NOT CLEAR
3417 2207      ISE INST /CREATE NEW INSTRUCTION
3420 1207      TAD INST /TESTED ALL IOT?
3421 0130      AND K1000
3422 7650      SNA CLA
3423 5203      JMP IOTST /NO -- TEST THE REST

           /TEST THAT ALL (HLT AND OSR) TRAP IN USER MODE
3424 1124      TAD K7402 /BASIC HALT INST
3425 3232      DCA INSTA /SET UP
3426 6274      HALTA, CUF*10 /SET FOR USER
3427 6204      CINT /CLEAR FLAG
3430 6001      ION
3431 5232      JMP ,+1 /GO TO USER MODE
           /USER MODE
3432 7406      INSTA, HLT OSR /OPERATE TRAP INST
3433 5233      JMP , /DID NOT TRAP
           /EXECUTIVE MODE
3434 7000      NOP /FOR (HLT,SKP)(OSR,SKP)
3435 6254      SINT /SKIP ON TRAP FLAG
3436 5236      JMP , /TRAP FLAG NOT SET
3437 6204      CINT /CLEAR FLAG
3440 6254      SINT
3441 7610      SKP CLA
3442 7402      HLT /FLAG DID NOT CLEAR
3443 1232      TAD INSTA
3444 1123      TAD K0004 /GENERATE ALL GROUPS OF
3445 3232      DCA INSTA /HALT AND OSR
3446 1232      TAD INSTA
3447 1122      TAD K0002
3450 7640      SEA CLA /GENERATED ALL
3451 5226      JMP HALTA /NO - TEST THE REST
3452 6244      RHF
3453 6264      CUF
3454 6001      ION
3455 5256      JMP ,+1
3456 6002      IOF /SHOULD NOT TRAP
    
```

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3457 6254      SINT
3460 7410      SKP
3461 7402      HLT      /TRAP FLAG SET
3462 6040      SPF
3463 6041      TSF      /SHOULD SKP
3464 5263      JMP , -1
3465 6001      ION
3466 7410      SKP
3467 7402      HLT      /DID PI INTERRUPT
3470 7402      HLT      /DID PC INCR.

3471 7300      CLA CLL
3472 6004      GTF
3473 0126      AND K0100
3474 7440      SRA
3475 7402      HLT      /SUP SET
3476 7300      CLA CLL
3477 6007      CAF
3500 6264      CUF
3501 7000      NOP

/
/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      RIG2, CLA CLL
3503 6007      CAF
3504 4423      JMS I XSTKS /CHECK NO. OF FIELDS PRESENT
3505 1040      TAD KCDF
3506 1045      TAD K10
3507 3335      DCA SRD      /SET OF FOR FIRST FIELD
3510 1041      TAD KCIF
3511 1045      TAD K10
3512 3347      DCA SRI      /SET IF FOR FIRST FIELD
3513 1144      STAN, TAD K3577 /GET START OF PROGRAM -1
3514 3010      DCA 10
3515 1145      TAD K7745 /NO. OF INSTRUCTIONS TO TRANSFER
3516 3143      DCA SRCO
3517 7040      CHA
3520 3011      DCA 11      /START AT 0000

3521 1335      TAD SRD      /MAKE FLAGS FOR RETURN CHECK
3522 0111      AND K0070
3523 7010      RAR
3524 7012      RTR
3525 3112      DCA XBAV
3526 1347      TAD SRI
3527 0111      AND K0070
3530 1112      TAD XBAV
3531 1142      TAD K1100
3532 3776      DCA I XFDCON
3533 6201      CDF 00
    
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3534 1410      TAD I 10
3535 6201      SRD, CDF 00
3536 3411      DCA I 11      /STORE INSTRUCTIONS
3537 2143      ISB SRCO
3540 5333      JMP SRD-2
3541 1021      TAD ISE0
3542 3001      DCA 1      /SET FIELD 0 FOR RETURN
3543 1347      TAD SRI
3544 3002      DCA 2
3545 1020      TAD JMP10
3546 3003      DCA 3
3547 6202      SRI, CDF 00
3550 5002      JMP 2      /GO TO FIELD UNDER TEST
3551 7300      SRRET, CLA CLL
3552 2031      ISB STKS
3553 7410      SKP
3554 5344      JMP EXITT /MORE FIELDS
3555 1335      TAD SRD /GO TO CONTROL
3556 1045      TAD K10 /SET UP FOR NEXT FIELD
3557 3335      DCA SRD
3560 1347      TAD SRI
3561 1045      TAD K10
3562 3347      DCA SRI
3563 5313      JMP STAN /TEST THIS FIELD
3564 7300      EXITT, CLA CLL /TEST DONE GO TO BEGIN
3565 6007      CAF
3566 6264      CUF
3567 1151      TAD TTB
3570 3547      DCA I XELL
3571 7604      LAB
3572 7700      SMA CLA
3573 5550      JMP I XBELL
3574 7402      HLT /TIME SHARE ENABLED
/AN ERROR CONDITION EXISTS.
/HIT CONTINUE TRY AGAIN

3575 5552      JMP I XTRAP
3576 3632      XFDCON, FDCON

/
/INSTRUCTIONS TO BE TRANSFERRED TO FIELDS
/
*3600
/

3600 7402      HLT /SHOULD NOT HLT HERE
3601 7402      HLT /SHOULD NOT TRAP HERE
3602 7300      FDOO, CLA CLL
3603 1232      TAD FDCON /GET USER BIT
3604 6005      RTF /SET FOR USER
3605 5206      JMP , *1 /GO TO USER

/USER MODE
IOTX, IOT
3606 6000      JMP /DID IOT TRAP
3607 5207 /EXECUTIVE MODE

3610 7300      CLA CLL
3611 6004      GTF /GET TIME FLAGS
3612 7041      CIA
3613 1232      TAD FDCON /FLAGS THAT SHOULD BE PRESENT
    
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3014 7640          SEA CLA
3015 7402          HLT /CHECK THE FLAGS
3016 0003          SRQ
3017 9216          JMP , -1 /IS TRAP FLAG SET
3020 0204          CINT
3021 2206          ISZ IOTX
3022 1206          TAD IOTX
3023 1231          TAD F1000
3024 7640          SEA CLA
3025 9202          JMP F000
3026 0202          CIF
3027 9630          JMP I FRET /TEST DONE GO TO FIELD 0
3030 3551          FRET, SRRET
3031 1000          F1000, 1000
3032 0000          FDCON, 0000
/
/CHECK SR0=1 FOR MEMORY EXTENSION ONLY
/
3033 7300          XSR0, CLA GLL
3034 7604          LAS
3035 7700          SMA CLA
3036 9931          JMP I TIME
3037 0007          CAF
3040 1151          TAD TTB
3041 3547          DCA I XELL
3042 9590          JMP I XBELL
/
3043 7300          TRAP, CLA GLL
3044 1153          TAD ATRAP
3045 3001          DCA 1 /SET FOR RETURN
3046 0274          SUF /SET FOR USER
3047 0001          ION
3050 9251          JMP , +1 /GO TO USER
3051 7402          HLT /TIME SHARE DISABLED, HIT
3052 0254          SINT /CONTINUE TO LOOP ON CONTROL,
3053 7410          SKP
3054 7402          HLT /ERROR, TRAP INT. RQST, UP
3055 0264          CUF
3056 0007          CAF
3057 9527          JMP I PLACE /GO TO BEGIN
/
/TEST 07
/CONFIDENCE CHECK ON ALL EXISTENT FIELDS.
/MAKE SURE DCA I 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.0
/
4000
+4000
/
4000 0000          CON1, 0000 /FIRST FILL CORE, ALL STACKS
4001 7300          CLA GLL /DCA I FOR 32K
4002 3323          DCA F0NUM
4003 3324          DCA NUMX
4004 1040          TAD KCDF

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4005 3232          DCA CONX
4006 1110          TAD K7770
4007 3327          DCA MSTKS /SET FOR MAX. 32K
4010 1110          TAD K7770
4011 3031          DCA STKS
4012 1040          TAD KCDF
4013 3214          DCA , +1
4014 0201          CDF /MODIFIED UNDER TEST
4015 4307          JMS FILCOR
4016 2031          ISZ STKS /ARE ALL STACKS DONE
4017 5222          JMP , +3
4020 4252          JMS CONCHK /CHECK RESULTS
4021 5227          JMP CON2
4022 1045          TAD K10
4023 1214          TAD F0WRD
4024 3214          DCA F0WRD /UPDATE FIELD CHANGE
4025 2324          ISZ NUMX
4026 9214          JMP F0WRD
/
4027 7300          CON2, CLA GLL /DO ONE AT A TIME
4030 1323          TAD F0NUM
4031 3324          DCA NUMX
4032 0201          CDF
4033 4307          JMS FILCOR
4034 0203          CDF CIF
4035 4252          JMS CONCHK
4036 7300          CLA GLL
4037 1232          TAD CONX
4040 1045          TAD K10
4041 3232          DCA CONX /UPDATE FIELD CHANGE
4042 2323          ISZ F0NUM
4043 2327          ISZ MSTKS /ARE ALL STACKS DONE
4044 5227          JMP CON2
4045 0203          CDF CIF
4046 0007          CAF
4047 2027          ISZ LOOP /DO 4096 TIMES
4050 9201          JMP CON1 +1
4051 9600          JMP I CON1 /TEST COMPLETE
/
4052 0000          CONCHK, 0000 /CHECK ALL AVAILABLE STACKS
4053 7300          CLA GLL
4054 3324          DCA NUMX
4055 7604          LAS
4056 0044          AND K7
4057 7040          CMA
4060 3031          DCA STKS /STACKS PRESENT
4061 1041          TAD KCIF
4062 3263          DCA , +1 /START WITH FIELD 0
4063 0202          CIF /MODIFIED UNDER TEST
4064 9541          JMP I K0001
4065 7041          RETADD, CIA /RETURN HERE FROM FIELDS
4066 1324          TAD NUMX
4067 7450          SNA
4070 9276          JMP , +6 /GOOD FIELD
4071 3112          DCA XSAV

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```

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 ISR 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 ISR NUMX
4106 5263 JMP CONCH

4107 0000 /FILCOR, 0000 /INSTRUCTIONS FOR FIELDS
4110 1324 TAD NUMX /MODIFIED TO DF#
4111 3537 DCA I K0000
4112 1130 TAD K1000
4113 3541 DCA I K0001
4114 1041 TAD KCIF
4115 3522 DCA I K0002
4116 1326 TAD JMPRET
4117 3540 DCA I K0003
4120 1325 TAD XRETAD
4121 3523 DCA I K0004
4122 5707 JMP I FILCOR

4123 0000 FDNUM, 0000
4124 0000 NUMX, 0000
4125 4065 XRETAD, RETADD
4126 5404 JMPRET, JMP I 4
4127 0000 MSTKS, 0000
S

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```

0000 11110000 00000000 11111111 11111111 11111111 11111111 11111111 11111111
0100 11111111 11111111 11111111 11111111 11111111 11111111 00000000 00000000

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

0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11111111 11111111 00000000 00000000 00000000

0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0700 11111111 11111111 11111111 11111111 11111111 11111110 00000000 00000000

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1100 11111111 11111111 11111111 11111111 00000000 00000000 00000000 00000000

1200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11110000

1400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1500 11111111 11111111 11111111 11111111 11111111 11111111 11111110 00000000

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

2000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2100 11111111 11111111 11111110 00000000 00000000 00000000 00000000 00000000

2200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11110000

2400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2500 11111111 11111111 11111111 11111111 11111111 10000000 00000000 00000000

2600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
2700 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

3000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3100 11111111 11111111 11111111 11111111 11111111 11111111 11111000 00000000

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

3400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
3500 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111110

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

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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	2206	K0004	0123	KNTR	0102
AGAIN1	0711	ENTER	1200	K0011	0120	KRB	0036
AGAIN2	1005	EXFD	1316	K0017	0132	KRTN	0100
ALL0	2244	EXFLD	1302	K0070	0111	KXFLO	0100
ATRAP	0153	EXITT	3504	K0077	0117	LBTPT	1515
BEGIN	0203	F1000	3631	K0100	0126	LBTSTC	1675
BEGIN1	0200	FCO	0154	K1	0043	LOOP	0027
BELL	1555	FDCON	3632	K10	0045	MDFSWB	1740
CAA	0653	FDGO	3602	K1000	0130	MGTF	2276
CAB	0754	FDNUM	4123	K1100	0142	MIFSWB	1742
CAC	0755	FDWRD	4014	K1200	0116	MOVE	1463
CAD	0741	FILCOR	4107	K20	0103	ML	7421
CAE	1036	FILDIX	1516	K3577	0144	MSTK3	4127
CAF	0007	FILL	2076	K5200	0115	N1	2043
CAG	1420	FRET	3630	K6000	0125	N2	2042
CAI	1133	GOTO0	1510	K6001	0133	NDF	0030
CAX	2263	GTF	6004	K7	0044	NEWDF	1440
CDF	0201	GTF1	2271	K7000	0047	NOFLO	0034
CDP0S	2245	HALTA	3426	K7402	0124	NOMEM	2200
CHDF	1074	HLTS	0671	K7700	0121	NOSTAK	0033
CHECK	2112	IB0	0345	K7707	0050	NSTK3	2435
CIF	0202	IB1	0354	K7717	0056	NUMX	4124
CIFCK	0753	IB2	0402	K7727	0055	OK1	0231
CIFCK1	1046	IB3	0421	K7737	0054	OK2	0257
CIFJMP	0723	IB4	0444	K7744	0071	OK3	0305
CIFJMS	1017	IB5	0463	K7745	0145	OK4	0333
CIFJPL	0715	IB6	0506	K7747	0053	OK5	0373
CIFJSL	1011	IB7	0525	K7757	0052	OK6	0440
CINT	0204	IBSF	0656	K7766	0067	OK7	0502
CKPC	1226	IBSF1	1000	K7767	0051	OK8	0544
CNBTK	2231	IFCN	1605	K7770	0110	P	2044
CON1	4000	IFDF	2400	K7771	0064	PLACE	0127
CON2	4027	INBT	3407	K7772	0063	POINT	0069
CONCH	4063	INSTA	3432	K7773	0062	POS	2237
CONCHK	4052	INTE	1603	K7774	0061	RANA	2057
CONX	4032	INTEP	1674	K7775	0060	RDF	6214
CUF	0204	IOP	6002	K7776	0057	REPEAT	1733
DAT	0032	ION	6001	K7777	0046	RET	2511
DATER	2047	ION1	2331	K78	0066	RETADD	4060
DCAI	0601	IOT	6000	KCAI	0036	RIB	6234
DF0	0211	IOTST	3403	KCAIM	0035	RIF	0224
DF1	0235	IOTX	3606	KCC	0032	RIG1	2452
DF2	0246	IS00	0021	KCDF	0040	RIG2	3502
DF3	0263	JMP2	0104	KCDF1	0156	RMF	6244
DF4	0274	JMPI0	0020	KCIF	0041	RMFGN1	1676
DF5	0311	JMPI4	1702	KDATER	0157	RMFDY	1703
DF6	0322	JMPIR	0134	KDFSWB	1737	RMFDY1	1710
DF7	0220	JMPRET	4126	KFLD0	0105	RMFE1	1665
DFCN	1677	K0000	0107	KHLT	0037	RMFE2	1656
DFLD	0607	K0001	0151	KIFSWB	1741	RMF11	1660
DFN	1446	K0002	0122	KJMP	0101	RMF12	1661
DOAUTO	1317	K0003	0120	KNOP	0752	RMFL1	1633

RMFL2	1621	XMEM	1781
RMFL3	1615	XNOM	2236
RMFTST	1600	XRAM	0025
RTF	6005	XRET	0135
RTP1	2400	XRETAD	4125
RTRN	1427	XRIG1	2484
SFIB	1400	XRMF	0024
SINT	6254	XRTF1	2372
SKON	6000	XSAV	0112
SPP	6040	XSDF	2304
SRCO	0143	XSR0	3633
SRD	3535	XSTF	2407
SRI	3547	XSTKB	0023
SRQ	6003	XTDF	0076
SRRET	3551	XTDF1	0077
STAN	3513	XTFLG	0022
STDF	1127	XTOR	0114
STKS	0031	XTRAP	0102
STRMF	1107	XTRMF	2550
SUP	6274	XXSR0	0146
T1	2600		
T2	2627		
TADI	0622		
TAUTO	1432		
TFLD	0630		
TFLG	2443		
TIME	0131		
TRANS	1321		
TRAP	3643		
TRPLD	1337		
TRMF	1050		
TSP	6041		
TTB	0151		
XAUTO	0026		
XBELL	0150		
XCON1	2373		
XCOUNT	0113		
XDATA	0136		
XDATER	0155		
XELL	0147		
XFD	0042		
XFDCON	3576		
XFER	2000		
XFERC1	2046		
XFERC2	2045		
XFERIN	2032		
XFERL1	2030		
XFERL2	2017		
XFERP	1700		
XFIB	0107		
XGTF1	1047		
XION1	2330		

digital

MAINDEC 08-DHMCA-A
CHANGE ORDER

ORIGINATOR Bill Heavey
TEL EXT 3621 DATE 6/23/75
DISC PROJ NO. V1806806
COST CENTER NO. 301

MC 1032

MCO NO. 08-DHMCA-00000
SHEET _____ OF _____
DATE RECEIVED 6-24-75
FIRST ISSUE 6-26-75
FINAL ISSUE 6-27-75

PROBLEM Inclusion of statements in restriction section (7.) of document to indicate to operator to remove any ROM's that may be present in system before running PDP-8E memory extension and time share control test.

PGM TO BE CHANGED
MAINDEC-08-DHMCA-A

DISP CODE
OPTIONS AFFECTED

CORRECTION UNDER RESTRICTIONS (7.) include the following:

Memory available must be sequential 4K memory banks.

All ROM's should be removed prior to running this diagnostic.

KM8-E

BREAK-IN/EFFECTIVITY

PRODUCT LINES AFFECTED

ITEM NO.	DOCUMENT/PART NO.	OLD REV	NEW REV	DISP CODE	DESCRIPTION OF CHANGE
1	MAINDEC-08-DHMCA	A			DOCUMENTATION CHANGE; refer to correction.

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DOCUMENTATION AFFECTED

- DIAGNOSTICS
- TECH MANUAL
- TESTER
- TEST PROG
- ENG SPEC
- PURCH SPEC

FIELD SERVICE AFFECTED

- YES NO
- Customer Charge
- Product Line Charge
- PL _____
- Contact Software Distribution Center for price.
- Information Only

DISPOSITION CODES

- 00 - (DELETED)
- 01 - (DELETED)
- 02 - USE PRESENT STOCK UNTIL NEW STOCK AVAILABLE (PHASE IN)
- 03 - REWORK IMMEDIATELY (RETROFIT)
- 04 - (DELETED)
- 05 - (DELETED)
- 06 - DOCUMENT CORRECTION
- 07 - NEW ITEM (THIS ASSEMBLY)
- 08 - (DELETED)
- 09 - SCRAP IMMEDIATELY

*Doc 8/E
DFS 8 FAM
2850
AKK
6-24-75*

APPROVAL SIGNATURES

	Typewritten	Hand Signature
DIAGNOSTIC ENGR.	William Heavey	<i>William Heavey</i>
MFG, ENGR.	Bill Kochman	<i>Bill Kochman</i>
FIELD SERVICE	Carl Cline	<i>Carl Cline</i>
PRODUCT ENGR.	John Kirk	<i>John Kirk</i>

