

IDENTIFICATION

PRODUCT CODE: MAINDEC-8E-DDDB-D
PRODUCT NAME: RANDOM AND TEST
DATE CREATED: JUNE 7, 1971
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: MICHAEL DAVIS

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1. ABSTRACT

THIS PROGRAM TESTS THE AND INSTRUCTING OF THE PDP-8E, THE AND INSTRUCTION, INSTRUCTION ADDRESS, OPERAND ADDRESS AND BOTH OPERANDS ARE PRODUCED BY RANDOM NUMBER GENERATORS,

2. REQUIREMENTS

2.1 EQUIPMENT

PDP-8E EQUIPPED WITH AT LEAST 4K OF MEMORY,

TELETYPE,

2.2 STORAGE

THE PROGRAM IS INITIALLY LOADED INTO LOCATIONS 0000 THRU 1177. THE INITIAL TEST AREA IS 1200-7777. WHEN THE PROGRAM RELOCATES, IT OCCUPIES 6600-7777, THE TEST AREA IS THEN 0000-6577.

2.3 PRELIMINARY PROGRAMS

MAINDEC-8E-DBAA, DBBA, DBCA

3. LOADING PROCEDURE

THE STANDARD PROCEDURE FOR LOADING BINARY TAPES IS TO BE USED.

4. STARTING PROCEDURE

4.1 STARTING ADDRESS

0200

4.2 CONTROL SWITCH SETTINGS

SR00#1, SUPPRESS HALT ON ERROR
SR01#1, HALT AT END OF PASS, RESTORE LOADERS
SR02#1, SUPPRESS PROGRAM RELOCATION
SR03#1, SUPPRESS END OF PASS TYPEOUT
SR08#1, HOLD DATA 1 CONSTANT
SR10#1, HOLD DATA 2 CONSTANT
SR11#1, HOLD INSTRUCTION CONSTANT

4.3 OPERATOR ACTION

4.3.1 SET SR TO 0200

4.3.2 PRESS LOAD ADDRESS SWITCH

4.3.3 SET SR TO 0000

4.3.4 PRESS CLEAR AND CONTINUE SWITCHES

5. OPERATING PROCEDURE

SAME AS 4.

6. ERRORS

6.1 RELOCATION ERROR

IF AN ERROR OCCURS DURING PROGRAM RELOCATION, THE PROGRAM WILL HALT AT 234 OR 6634, DEPENDING UPON WHETHER THE PROGRAM IS LOCATED LOW OR HIGH.

6.2 DATA ERRORS

IF THE LINK IS SET AFTER COMPLETION OF THE AND INSTRUCTION, OR IF THE RESULTS OF THE AND INSTRUCTION ARE INCORRECT, THE PROGRAM WILL HALT AT 731(7331) WITH DATA1 IN THE AC.

DEPRESS CONTINUE TO DISPLAY DATA2 IN THE AC.
DEPRESS CONTINUE TO DISPLAY AND INSTRUCTION IN AC.
DEPRESS CONTINUE TO DISPLAY INSTRUCTION ADDRESS IN AC.
DEPRESS CONTINUE TO DISPLAY DATA2 ADDRESS IN AC.
DEPRESS CONTINUE TO DISPLAY INDIRECT POINTER (USED BY INDIRECT AND) IN AC.
DEPRESS CONTINUE TO RESUME TEST

6.3 ERROR RECOVERY

6.3.1 RELOCATION ERROR

RELOAD PROGRAM

6.3.2 DATA ERROR

SEE 6.2

6.4 LOOPING

SET SR00=1 TO PREVENT HALT AFTER ERROR,

SET SR02=1 TO PREVENT RELOCATION,

SET SR03=1 TO SUPPRESS END OF PASS TYPEOUT,

SET SR09-SR11=1 TO HOLD INSTRUCTION AND DATA CONSTANT,

7. RESTRICTIONS

NONE

8. EXECUTION TIME

THE PROGRAM PERFORMS 4096 RANDOM TESTS IN APPROXIMATELY 2 SECONDS AND THEN RELOCATES. THE PROGRAM WILL TYPE "A" AFTER EACH 4096 RANDOM TESTS UNLESS SR03=1.

9. PROGRAM DESCRIPTION

THE PROGRAM IS INITIALLY LOADED INTO LOCATIONS 0288-1177, WITH TEMPORARY STORAGE LOCATIONS ON PAGE 0. AFTER INITIAL KEYSTART, THE PROGRAM WILL SAVE R1M AND 01N LOADERS IN PAGE 0 AND WILL THEN PROCEED TO USE LOCATIONS 1200-7777 AS A TEST AREA.

THE PROGRAM USES SEPARATE RANDOM NUMBER GENERATORS TO GENERATE THE AND INSTRUCTION, INSTRUCTION AND DATA ADDRESSES, AND THE TWO ARGUMENTS TO BE "AND'ED". THE INSTRUCTIONS AND DATA ARE STORED IN THEIR PREVIOUSLY GENERATED ADDRESSES. THE PROGRAM TRANSFERS TO THE LOCATION OF THE INSTRUCTION AND EXECUTES IT. THE PROGRAM THEN TRANSFERS TO A COMPARISON ROUTINE WHERE THE ACTUAL RESULT OF THE AND INSTRUCTION IS COMPARED TO A SIMULATED AND.

AFTER 4096 TESTS, THE PROGRAM TYPES "A", RELOCATES, AND CONTINUES TESTING.

/RANDOM AND TEST
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 /V 82 07552
 /
 /TEMPORARY TRANSFER LOCATIONS ON PAGE 0
 /

```

0000 0000 TTANDL, 0 /STORAGE FOR AND INSTRUCTION
0001 5001 INSTL, JMP /STORAGE FOR AND INSTRUCTION ADDRESS
0002 0002 INADDL, 2 /STORAGE FOR DATA ADDRESS
0003 0003 DATADL, 3 /STORAGE FOR INSTRUCTION INDIRECT FLAG
0004 0003 IFLAGL, 3 /STORAGE FOR DATA INDIRECT ADDRESS
0005 0000 PADDL, 0
0006 0000 LIML, 0
0007 0000 PAGL, 0
0010 0010 *10 PNTRL, 0
6007 6007 CAF=6007
7501 7501 MGA=7501
7421 7421 MGL=7421
0266 0266 CNTRL=LOHIL
0020 0000 *20 TEMP3L, 0
  
```

/INITIALIZATION AND CONTROL ROUTINES
 /

```

0200 0200 *200 STARTL, CAF /SAVE RIM AND BIN IN PAGE 0
0201 6007 TAD /ONLY AT INITIAL KEYSTART
0202 1204 DCA /201 BECOMES JMP SETLKL
0203 3201 JMS SAVBNL /FOR ALL FUTURE PASSES
0204 4205 JMP SETLKL
0204 5274 /TRANSFER RIM AND BIN LOADERS TO PAGE 0
  
```

```

0205 0000 SAVBNL, 0 /SET AC=-200, NUMBER OF
0206 1374 TAD /LOCATIONS TO BE TRANSFERRED
0207 3266 DCA CNTRL /FIRST "FROM"
0210 1374 TAD C7600L /LOCATION=7600
0211 3202 DCA PNTRL /FIRST "TO" LOCATION=0
0212 3203 DCA PNTRL /PERFORM TRANSFER
0213 4225 JMS RELOL /EXIT
0214 5625 JMP I SAVBNL
  
```

```

RESBNL, 0
0215 0000 /
0216 1374 /SET AC=-200, NUMBER OF
0217 3266 /LOCATIONS TO BE TRANSFERRED
0220 3202 /FIRST "FROM" ADDRESS=0
0221 1374 /FIRST "TO"
0222 3203 /ADDRESS=7600
0223 4225 /PERFORM TRANSFER
0224 5615 /EXIT
/
C7600L
CNTR1L
PNTR1L
C7600L
PNTR2L
RELOL
RESBNL
/
DATA TRANSFER ROUTINE
/

```

```

RELOL, 0
0225 0000 /GET DATA
0226 1602 /TRANSFER
0227 3603 /GET DATA
0230 1602 /COMPARE
0231 7041 /TRANSFER ERROR
0232 1603 /NEXT "FROM" LOCATION
0233 7640 /NEXT "TO" LOCATION
0234 7402
0235 2202
0236 7000
0237 2203
0240 7000
0241 2266
0242 5226
0243 5625
/TRANSFER PROGRAM TO UPPER MEMORY
/

```

```

REHL, 4215 /TRANSFER RIM AND BIN LOADERS
0245 1373 /SET AC=-1000, NUMBER OF
0246 3266 /LOCATIONS TO BE TRANSFERRED
0247 1365 /FIRST "FROM"
0250 3202 /ADDRESS=200
0251 1372 /FIRST "TO"
0252 3203 /ADDRESS=6600
0253 4225 /PERFORM TRANSFER
0254 5772 /GO TO PROGRAM START
/TRANSFER PROGRAM TO LOWER MEMORY
/

```

```

RELL, 4205 /TRANSFER RIM AND BIN LOADERS
0255 4205 /SET AC=-1000, NUMBER OF
0256 1373 /LOCATIONS TO BE TRANSFERRED
0257 3266 /FIRST "FROM"
0260 1372 /ADDRESS=6600
0261 3202 /FIRST "TO"
0262 1365 /ADDRESS=200
0263 3203
/ PAL-10 17-JUN-71 7:23 PAGE 2-1
/
0264 4225 /TRANSFER PROGRAM TO LOWER MEMORY
0265 5765 /PERFORM TRANSFER
/ PAL-10 17-JUN-71 7:23 PAGE 3
/

```

```

/ DETERMINE IF PROGRAM IS IN LOWER OR UPPER MEMORY
/
LOHIL, 0000 /PC
0266 0000 /SET AC=4000
0267 7330 /ADD PC
0270 1266 /IS LINK=0
0271 7630 /NO, HIGH CORE
0272 1371 /RETURN
0273 5666
/ TRANSFER TO LINKAGE GENERATION
/
SETLKL, 0274 7300 /CLEAR PASS COUNTER
0275 3202 /DETERMINE IF PROGRAM IS HIGH OR LOW
0276 4266 /GO TO TEST WITH ADDRESS MODIFIER IN AC
0277 5377
/ SIMULATE LOGICAL AND WITH A AND B=NOT((NOTA)OR(NOTB))
/
SANDL, 0300 0000 /NOTA
0301 7040 /SAVE NOTA
0302 3204 /GET B
0303 7501 /NOTB
0304 7040 /SAVE NOTB
0305 7421 /GET NOTA
0306 1204 /OR WITH NOTB
0307 7501 /COMPLEMENT
0310 7040 /EXIT WITH RESULT IN AC
0311 5700
/ TEST SWITCHES
/
SWITCL, 0312 0000 /SAVE TEST BIT
0313 7421 /GET SWITCHES
0314 7604 /AND SWITCHES WITH TEST BIT
0315 4300 /IS SWITCH 0
0316 7650 /NO SKIP INSTRUCTION AFTER RETURN
0317 2312
0320 5712
PAL10 V141 17-JUN-71 7:23 PAGE 4
/ END OF PASS
/
EPASL, 0321 0000 /END OF PASS ?
0322 2202 /NO, RETURN
0323 5721 /SET AC=4000
0324 7332 /TEST SR03
0325 7012 /SUPPRESS END OF PASS TYPEOUT
0326 4312 /TYPE CARRIAGE RETURN
0327 5336 /TYPE LINEFEED
0330 1366 /TYPE
0331 4337
0332 1367
0333 4337
0334 1370
0335 4337

```



```

0336 5345 JMP HALT /TEST FOR HALT, RELOCATION
/
/OUTPUT CHARACTER
0337 0000 TYPEL, 0
0340 6046 TLS
0341 6041 TSF
0342 5341 JMP *-1
0343 7200 CLA
0344 5737 JMP I TYPEL

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0345 7332 HALT, /CHECK FOR HALT
0346 4312 CLA CLL CML RTR /SET AC=2000
0347 7410 JMS RAR /TEST SR01
0350 5355 SKP SWITCH /SR01=1, HALT
0351 4266 JMP RRELL /CHECK FOR RELOCATION
0352 7650 JMS LOHIL /DETERMINE IF PROGRAM IS HIGH OR LOW
0353 4215 SNA CLA RESBNL /AC=0, PROGRAM LOW
0354 7402 HLT /PROGRAM LOW, RESTORE LOADERS

/CHECK FOR RELOCATION
0355 7332 RRELL, /CHECK FOR RELOCATION
0356 7010 CLA CLL CML RTR
0357 4312 RAR SWITCH /SET AC=1000
0360 5721 JMS I EPASL /TEST SR02
0361 4266 JMS LOHIL /SR02=1, DO NOT RELOCATE PROGRAM
0362 7650 SNA CLA REHL /DETERMINE IF PROGRAM IS HIGH OR LOW
0363 5244 JMP RELL /AC=0, PROGRAM LOW
0364 5255 JMP RELL /PROGRAM HIGH, RELOCATE TO LOW CORE
0366 0215 C200L, 200
0367 0212 C215L, 215
0370 0301 C212L, 212
0371 6400 A, 301
0372 6600 C6400L, 6400
0373 7000 C6600L, 6600
0374 7600 C7000L, 7000
C7600L, 7600

0377 0377 *377
0377 7000 GOSETL, NOP

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0400 0400 *400 /SET UP ADDRESS POINTERS AND CONSTANTS AND TRANSFER TO NEXT PAGE
0401 3237 SETAL, DCA /SAVE ADDRESS MODIFIER
0401 1242 TAD TAD /GET POINTER FOR TRANSFER
0402 1257 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE

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0403 3010 DCA PNTRL /SET UP AUTO-INDEX REGISTER
0404 1243 LGENL /GET POINTER TO INSTRUCTION GENERATION
0405 1237 TEMPL /MODIFY FOR LOW OR HIGH CORE
0406 3410 DCA I /TRANSFER TO NEXT PAGE
0407 1245 TAD /GET POINTER TO AND SIMULATER
0410 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0411 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0412 1246 TAD LRETUL /GET POINTER FOR EXECUTION RETURN
0413 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0414 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0415 1247 TAD LSWITL /GET POINTER TO SWITCH SENSING
0416 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0417 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0420 1244 TAD LEPASL /GET POINTER TO END OF PASS
0421 1237 TAD TEMPL /MODIFY FOR LOW OR HIGH CORE
0422 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0423 1237 TAD TEMPL /GET ADDRESS MODIFIER
0424 7640 SZA CLA /IS TEST IN LOW CORE
0425 5233 JMP LHICOL /NO,SET UP FOR HIGH CORE
0426 1240 TAD L200L /SET PAGE 0 EXCLUSION BIT
0427 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0430 1250 TAD L6600L /GET LOW CORE ADDRESS LIMIT
0431 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0432 5377 JMP GOTSTL /GO TO TEST
0433 3410 DCA I PNTRL /CLERA PAGE 0 EXCLUSION BIT
0434 1251 TAD L1201L /GET HIGH CORE ADDRESS LIMIT
0435 3410 DCA I PNTRL /TRANSFER TO NEXT PAGE
0436 5377 JMP GOTSTL /GO TO TEST

```

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```

0437 0000 /
0440 0200 TEMPL, 0
0441 7000 L200L, 200
0442 0753 L7000L, 7000
0443 1000 LISTL, TGENL-1
0444 0321 LGENL, GENL
0445 0300 LEPASL, EPASL
0446 0712 LSANGL, SANDL
0447 0312 LRETUL, TRETUL
0450 6600 LSWITL, SWITCL
0451 1201 L6600L, 6600
0577 0577 L1201L, 1201
0577 7000 *577
GOTSTL, NOP

```

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/GENERATE TEST INSTRUCTION AND DATA

```

0600 0600 TESTIL, CLA CLL
0601 7300 TAD TANDL /GET POINTER TO SIMULATED AND
0602 1355 DCA TTANDL /PLACE IN TRANSFER LOCATION
0603 3000 IAC /SET
0604 7001 JMS I TSWITL /TEST
0604 4757

```

```

0605 5224 JMP TDAT1L
0606 1362 TAD TLIML
0607 3026 DCA LIML
0610 1361 TAD TPAGBL
0611 3027 DCA PAGL
0612 4754 JMS I TGENL
0613 3365 DCA TIFLGL
0614 1001 TAD INSTL
0615 3363 DCA TINSTL
0616 1002 TAD INADDL
0617 3364 DCA TINADL
0620 1003 TAD DATADL
0621 3366 DCA TDATAL
0622 1005 TAD PADDL
0623 3367 DCA TPADDL
0624 7105 TADAT1L, CLL IAC RAL
0625 4757 JMS I TSWITL
0626 5234 JMP TDAT2L
0627 1370 TAD TDA1L
0630 7104 CLL RAL
0631 7430 SZL
0632 1374 TAD
0633 3370 DCA
0634 7307 TADAT2L, CLA CLL IAC RTL
0635 4757 JMS I TSWITL
0636 5244 JMP SETTL
0637 1371 TAD TDA2L
0640 7104 CLL RAL
0641 7430 SEL
0642 1374 TAD
0643 3371 DCA

```

```

/SR, DO NOT GENERATE INSTRUCTION
/NO T ADDRESS LIMIT
/SAVE
/GET PAGE EXCLUSION BIT
/GENERATE INSTRUCTION
/SAVE INDIRECT FLA
/GET INSTRUCTION
/SAVE IT
/GET INSTRUCTION ADDRESS
/SAVE IT
/GET DATA ADDRESS
/SAVE IT
/GET INDIRECT TO DATA
/SAVE IT
/SET AC=2
/TEST SR10
/SR10=1, DO NOT GENERATE DATA1
/GENERATE RANDOM NUMBER

```

```

/SET AC=4
/TEST SR09
/SR09=1, DO NOT GENERATE DATA2
/GENERATE RANDOM NUMBER

```

PAL10 V141 17-JUN-71 7:23 PAGE 9

```

0644 7300 SETTL, CLA CLL
0645 1363 TAD TINSTL
0646 3764 DCA I TINADL
0647 1365 TAD TIFLGL
0650 7650 SNA CLA
0651 5267 JMP DURL
0652 1366 TAD TDATAL
0653 1375 TAD T7760
0654 7630 SEL CLA
0655 5262 JMP .+5
0656 1366 TAD TDATAL
0657 1376 TAD T7770
0660 7630 SEL CLA
0661 7040 CMA
0662 1367 TAD TPADDL
0663 3766 DCA I TDATAL
0664 1370 TAD TDA1L
0665 3767 DCA I TPADDL
0666 5271 JMP DOTSTL
0667 1370 TAD TDA1L

```

```

/SET UP INSTRUCTION AND DATA AT TEST ADDRESS
/ALONG WITH RETURN TO THIS ROUTINE

```

```

/GET INSTRUCTION
/STORE IN TEST LOCATION
/GET INDIRECT FLAG
/IS INSTRUCTION INDIRECT
/NO, GET DATA
/INDIRECT, IS ADDRESS
/AUTO-INDEX REGISTER
/NO, USE POINTER AS IS

```

```

/ADDRESS IS AUTO-INDEX REGISTER
/GET INDIRECT ADDRESS
/STORE IN TEST LOCATION
/GET DATA
/STORE IN TEST LOCATION
/GET DATA

```

```

0670 3/66 DCA I TDATA1 /STORE IN TEST LOCATION
/
/SIMULATE "AND"
DOTSTL, CLA CLL /GET DATA1
TAD TDA1L /SAVE IN MQ
MQL /GET DATA2
TAD TDA2L /DO SIMULATION
JMS I TANDL /SAVE ANSWER
DCA /
/GO TO TEST
DOANDL, TAD TRETLL /GET RETURN ADDRESS
DCA TTANDL /SAVE
TAD TINADL /GET INSTRUCTION ADDRESS
IAC /INCREMENT
SNA /IS IT 0
JMP TEST1L /YES, GENERATE NEW INFORMATION
DCA TEMP2L /NO, SAVE
TAD T5400L /GET RETURN INSTRUCTION
DCA I TEMP2L /PUT IN TEST LOCATION
TAD TDA2L /GET DATA2
JMP I TINADL /EXECUTE "AND"
PAL10 V141 17-JUN-71 7:23 PAGE 10

```

```

/RETURN HERE AFTER EXECUTION
TRETUL, DCA TRACL /SAVE AC
SEL /IS LINK=1
JMS ERROR /LINK=1, ERROR
TAD TSIML /GET SIMULATION RESULT
CIA /ADD REAL RESULT
TAD TDA1L /ARE THEY THE SAME
SEA CLA /NO, ERROR
JMS I TEPASL /END OF PASS
JMP TEST1L
/ERROR HANDLER
ERROR, 0
CLA CLL CML RAR /SET AC=4000
JMS I TSWITL /TEST SR00
JMP TEXTITL /SR00=1, DO NOT HALT ON ERROR
TAD TDA1L /DISPLAY DATA1 IN AC
HLT /
CLA TDA2L /DISPLAY DATA2 IN AC
TAD HLT
CLA HLT
TAD INSTL /DISPLAY INSTRUCTION IN AC
HLT /
CLA TINADL /DISPL INSTRUCTION ADDRESS IN AC
TAD 41

```

0742 7422 HLT /DSI... DATA ADDRESS IN AC
 0743 7200 CLA /DSI... DATA ADDRESS IN AC
 0744 1366 TAD /DSI... DATA ADDRESS IN AC
 0745 7422 HLT /DSI... DATA ADDRESS IN AC
 0746 7200 CLA /DSI... DATA ADDRESS IN AC
 0747 1367 TAD /DSI... DATA ADDRESS IN AC
 0750 7422 HLT /DSI... DATA ADDRESS IN AC
 0751 7322 CLA CLL /DSI... DATA ADDRESS IN AC
 0752 5724 JMP I ERROR /DSI... DATA ADDRESS IN AC

0753 0020 TEMP2L, 0
 0754 0020 TGENL, 0
 0755 0000 TANCL, 0
 0756 0000 TRETTL, 0
 0757 0000 TSWITL, 0
 0760 0000 TEPASL, 0
 0761 0000 TPAGBL, 0
 0762 0000 TLIML, 0
 0763 0000 TINSTL, 0
 0764 0000 TINADL, 0
 0765 0000 TIFLGL, 0

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 0766 0000 TDATA, 0
 0767 0000 TPADDL, 0
 0770 0021 TDA1L, 21
 0771 0037 TDA2L, 37
 0772 0000 TSIML, 0
 0773 5400 T5400L, 5400
 0774 0003 T3L, 3
 0775 7760 T7760, 7760
 0776 7770 T7770, 7770
 0777 0000 TRACL, 0

PAL10 V141 17-JUN-71 7123 PAGE 11
 1000 1000 *1000
 0000 0000 GENL, 0

GANDL, 0
 1001 1367 TAD RIL /GENERATE INSTRUCTIONS AND ADDRESSES
 1002 4340 JMS RANDL /GENERATE RANDOM NUMBER
 1003 3367 DCA RIL /SAVE NUMBER
 1004 1367 TAD RIL /SAVE NUMBER
 1005 7421 MQL RIL /OR RANDOM NUMBER WITH EXCLUSION BIT
 1006 1007 TAD PAGL /OR RANDOM NUMBER WITH EXCLUSION BIT
 1007 7501 MQA /OR RANDOM NUMBER WITH EXCLUSION BIT
 1010 7421 MQL /OR RANDOM NUMBER WITH EXCLUSION BIT
 1011 1371 TAD K0777 /MASK OFF 3MSB
 1012 4400 JMS I TTANDL /TO GET "0" OP CODE
 1013 3001 DCA INSTL /SAVE INSTRUCTION
 1014 1001 TAD INSTL /GET INSTRUCTION

```

1015 4354
1016 3020
/
JMS AND17L /EXTRACT PAGE ADDRESS OF INSTRUCTION
DCA TEMP3L /SAVE PAGE ADDRESS OF INSTRUCTION
/
/GENERATE ADDRESS FOR INSTRUCTION
/
GANADL, R2L /GENERATE RANDOM NUMBER
JMS RANDL /SAVE NUMBER
DCA R2L /SET UP TO TEST ADDRESS LIMITS
JMS CLIML
TAD R2L
SNL CLA /IS ADDRESS WITHIN LIMITS
JMP GANADL /NO, GENERATE NEW ADDRESS
TAD R2L
PØL
SNL CLA /IS ADDRESS ON PAGE 0
JMP PAGADL /NO
TAD TEMP3L /GET PAGE ADDRESS OF INSTRUCTION
CIA
TAD R2L /SUBTRACT ADDRESS
JMS ABSL /IS DIFFERENCE >2
JMP GANADL /NO
TAD TEMP3L /GET PAGE ADDRESS OF INSTRUCTION
SNA CLA /DOES INSTRUCTION REFERENCE LOCATION 0
JMP GANDL /YES, GENERATE NEW INSTRUCTION
DCA INADDL /YES, USE ADDRESS
JMP DAADL /GENERATE ADDRESS FOR DATA
TAD INSTL /GET INSTRUCTION
MQL
TAD K2ØØL /MASK CURRENT PAGE BIT
JMS I TTANDL /IS PAGE BIT SET
SNA CLA /NO, USE ADDRESS AS IS
JMP PAL
/
V141 17-JUN-71 7:23 PAGE 11-1
PAL1Ø
/
1054 1372
1055 4354
1056 7041
1057 1020
1060 5235
/
/GENERATE ADDRESS FOR DATA
/
DAADL, TAD INSTL /GET INSTRUCTION
MQL
TAD K2ØØL
JMS I TTANDL /DOES INSTRUCTION REFERENCE PAGE 0
SNA CLA /YES
JMP PØAL
TAD INADDL
MQL
TAD PØL
/
V141 17-JUN-71 7:23 PAGE 12
PAL1Ø
/
1061 1001
1062 7421
1063 1376
1064 4400
1066 5306
1067 1002
1070 7421
1071 1373

```

```

1072 4400 JMS I TTANDL /EXT PAGE OF ADDRESS
1073 7421 MQL TAD TEMP3L /"OR" TOGETHER TO GET
1074 1020 TAD MQA /DATA ADDRESS
1075 7501 MQA DCA DATADL
1076 3003 DCA INSTL
1077 1021 TAD K400L
1100 7421 MQL TAD TTANDL
1101 1375 TAD JMS I
1102 4400 SZA CLA
1103 7640 JMP I PADL
1104 5311 JMP I GENL
1105 5600 TAD TEMP3L
1106 1020 DCA DATADL
1107 3003 JMP INDIRL
1110 5277 /

/GENERATE INDIRECT ADDRESS FOR DATA
PADL, /
R3L /GENERATE RANDOM NUMBER
RANDL
R3L
CLIML
R3L
SNL CLA
JMP PADL /IS ADDRESS WITHIN LIMITS
TAD INADDL /NO, TRY AGAIN
CIA /GET INSTRUCTION ADDRESS
TAD R3L /SUBSTRACT INDIRECT
JMS ABSL /GENERATE -ABSOLUTE VALUE
SMA CLA JMP PADL /DO INSTRUCTION AND ADDRESS INTERFERE
JMP DATADL /YES
CIA R3L
TAD ABSL
JMS ABSL
SMA CLA JMP PADL /NO
TAD R3L PADDL
DCA PADDL
CMA

/ 1137 5600 JMP I GENL /EXIT
PAGE 12-1

/ 1140 0000 RANDL, 0
1141 7104 CLL RAL
1142 7430 SZL
1143 1370 TAD K3L
1144 5740 JMP I RANDL

/
/
/ 0
1145 0000 CLLM,
1146 1007 TAD PAGL
1147 7100 CLL
PAGE 13

```


1400
1500
1600
1700

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

4000
4100

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

	PAL10	V141	17-JUN-71	7:23	PAGE 13-3	
/						
A	0370		PADDL	0005	TSIML	0772
ABSL	1161		PADL	1111	TSWITL	0757
ANDI7L	1154		PAGAOL	1046	TTANDL	0000
C200L	0365		PAGAL	1035	TYPEL	0337
C212L	0367		PAGL	0007		
C215L	0366		PAL	1040		
C6400L	0371		PNTR1L	0202		
C6600L	0372		PNTR2L	0203		
C7000L	0373		PNTRL	0010		
C7600L	0374		R1L	1167		
CAF	6007		R2L	1172		
CLIML	1145		R3L	1177		
CNTR1L	0266		RANDL	1140		
DAADL	1061		REHL	0244		
DATADL	0003		RELL	0255		
DIRL	0667		RELOL	0225		
DOANDL	0677		RESBNL	0215		
DOTSTL	0671		RRELL	0355		
EPASL	0321		SANDL	0300		
ERROR	0724		SAVBNL	0205		
GANADL	1017		SETL	0400		
GENL	1001		SETLKL	0274		
GOSETL	1000		SETTL	0644		
GOTSTL	0377		STARTL	0200		
HALTL	0577		SWITCL	0312		
IFLAGL	0345		T3L	0774		
INADDL	0004		T5400L	0773		
INDIRL	0002		T7760	0775		
INSTL	1077		T7770	0776		
77L	0001		TANDL	0755		
77	1174		TDA1L	0770		
	1171		TDA2L	0771		

KF 1176
KL 1170
K400L 1175
L1201L 0451
L200L 0440
L6600L 0450
L7000L 0441
LEPASL 0444
LGENL 0443
LHICOL 0433
LIML 0006
LISTL 0442
LOHIL 0266
LRETUL 0446
LSANDL 0445
LSWITL 0447
MGA 7501
MQL 7421
P0AL 1106
P0L 1173

TDAT1L 0624
TDAT2L 0634
TDATAL 0766
TEMP1L 0204
TEMP2L 0753
TEMP3L 0020
TEMPL 0437
TEPASL 0760
TEST1L 0600
TEXT1L 0751
TGENL 0754
TIFLGL 0765
TINADL 0764
TINSTL 0763
TLIML 0762
TPADDL 0767
TPAGBL 0761
TRACL 0777
TRETTL 0756
TRETUL 0712

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ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 5 SECONDS

2K CORE USED

