

IDENTIFICATION

PRODUCT CODE: MAINDEC-8E-D0EB-D
PRODUCT NAME: RANDOM TAD TEST
DATE CREATED: JUNE 7, 1974
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: MICHAEL DAVIS

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1. ABSTRACT

THIS PROGRAM TESTS THE TAD INSTRUCTING OF THE PDP-8E, THE TAD 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 LOADED INTO LOCATIONS 6600 IHRU 7577,
THE TEST AREA IS 0000-6577, TEMPORARY STORAGE LOCATIONS
ARE LOCATED ON PAGE 0.

2.3 PRELIMINARY PROGRAMS

MAINDEC-8E-D0AA, D0BA, D0CA, D0DA

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
SR03=1, SUPPRESS END OF PASS TYPEOUT
SR09=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
- 6. ERRORS
- 6.1 ERROR HALT
- 6.2 ERROR RECOVERY

SAME AS 4.

IF THE RESULTS OF THE TAD INSTRUCTION ARE INCORRECT, THAT IS IF THE ACTUAL AND SIMULATED LINKS, OR THE ACTUAL AND SIMULATED SUMS DO NOT AGREE, THE PROGRAM WILL HALT AT 7407 WITH DATA1 IN THE AC.

DEPRESS CONTINUE TO DISPLAY DATA2 IN THE AC,
 DEPRESS CONTINUE TO DISPLAY TAD 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 TAD) IN AC,
 DEPRESS CONTINUE TO RESUME TEST

SEE 6.1

6.3

LOOPING

SET SR00=1 TO PREVENT HALT AFTER ERROR,
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 5 SECONDS. THE PROGRAM WILL TYPE "T" AFTER EACH 4096 RANDOM TESTS UNLESS SR03=1.

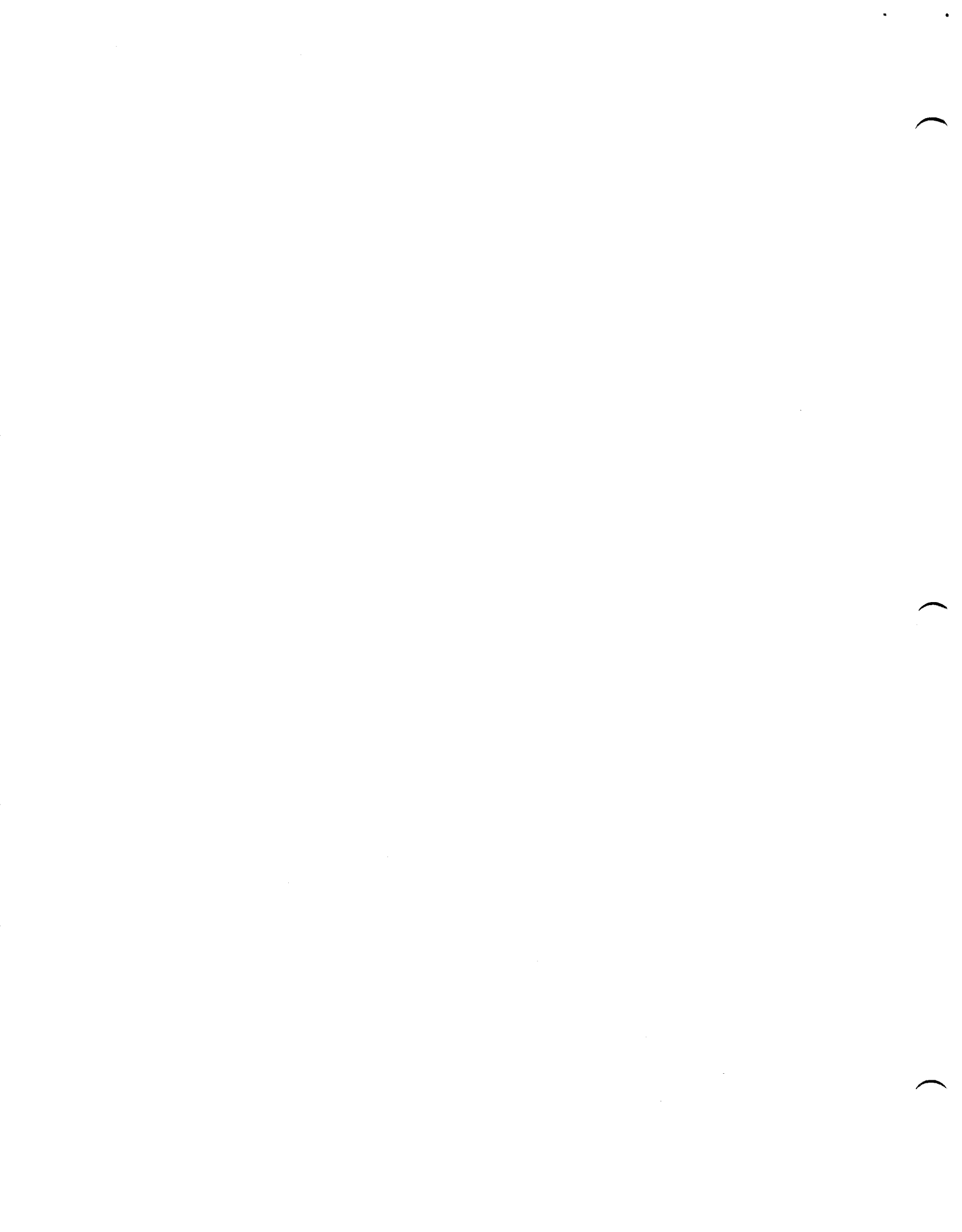
9.

PROGRAM DESCRIPTION

THE PROGRAM IS LOADED INTO LOCATIONS 6600-7577, WITH TEMPORARY STORAGE LOCATIONS ON PAGE 0;

THE PROGRAM USES SEPARATE RANDOM NUMBER GENERATORS TO GENERATE THE TAD INSTRUCTION, INSTRUCTION AND DATA ADDRESSES, AND THE TWO ARGUMENTS TO BE "TADDED". 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 TAD INSTRUCTION IS COMPARED TO A SIMULATED TAD. THE SIMULATOR IS SIMILAR TO THE ONE USED IN MAINDEC-8E-00CA0D. NO TADS ARE USED IN THE PROGRAM ITSELF.

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



/RANDOM TAD TEST
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 /V 82 07552

/TEMPORARY STORAGE LOCATIONS

0000 RETURN, 0
 0001 INSTL, JMP
 0002 INADDL, 2
 0003 DATADL, 3
 0004 PADDL, 0
 0005 IFLAGL, 0

7501 MQA=7501
 7421 MQL=7421
 6007 CAF=6007

0200 *200 START, CAF
 0201 JMP I .+1
 0202 STARTL

/GENERATE TEST INSTRUCTION AND DATA

6600	STARTL,	CLA	CLL	CNTR1	/CLEAR PASS COUNTER
6601	3376	DCA			
6602	7604	LAS			
6603	0371	AND	SR11		/TEST SR11
6604	7640	AND	SR11=1		/IS SR11=1
6605	5224	SZA	CLA	TDAT1L	/SR11=1, DO NOT GENERATE INSTRUCTION
6606	4746	JMP	I	TGENL	/GENERATE INSTRUCTION
6607	3355	DCA		TIFLGL	/SAVE INDIRECT FLA
6610	7040	CMA			
6611	0001	AND		INSTL	/GET INSTRUCTION
6612	3353	DCA		TINSTL	/SAVE IT
6613	7040	CMA			
6614	0002	AND		INADDL	/GET INSTRUCTION ADDRESS
6615	3354	DCA		TINADDL	/SAVE IT
6616	7040	CMA			
6617	0003	AND		DATADL	/GET DATA ADDRESS
6620	3356	DCA		TDATAL	/SAVE IT
6621	7040	CMA			
6622	0004	AND		PADDL	/GET INDIRECT TO DATA
6623	3357	DCA		TPADDL	/SAVE IT
6624	7624	LAS			
6625	0372	AND	SR10		/TEST SR10

```

6626 7640 SZA CLA TDAT2L /IS SR10=1
6627 5234 JMP /SR10=1, DO NOT GENERATE DATA1
6630 7040 CMA /GENERATE RANDOM NUMBER
6631 0360 AND TDA1L
6632 4752 JMS I TRANDL
6633 3360 DCA TDA1L
6634 7624 LAS SR09
6635 0373 AND /TEST SR09
6636 7640 SZA CLA /IS SR09=1
6637 5244 JMP /SR09=1, DO NOT GENERATE DATA2
6640 7040 CMA /GENERATE RANDOM NUMBER
6641 0361 AND TDA2L
6642 4752 JMS I TRANDL
6643 3361 DCA TDA2L

```

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```

6644 7340 SETTL, CLA CLL CMA /SET UP INSTRUCTION AND DATA AT TEST ADDRESS
6645 0353 AND TINSTL /GET INSTRUCTION
6646 3754 DCA I TINADL /STORE IN TEST LOCATION
6647 7040 CMA /GENERATE RANDOM NUMBER
6650 0355 AND TIFLGL /GET INDIRECT FLAG
6651 7650 SNA CLA /IS INSTRUCTION INDIRECT
6652 5302 JMP DURL /NO, GET DATA
6653 7040 CMA /ADDRESS IS INDIRECT
6654 0356 AND TDATAL /IS ADDRESS AUTO-INDEX REGISTER
6655 0367 AND T7760 /NO
6656 7640 SZA CLA NOTAUT
6657 5276 JMP /NO
6660 7040 CMA
6661 0356 AND TDATAL
6662 0375 AND K10
6663 7650 SNA CLA NOTAUT
6664 5276 JMP /NO
6665 7040 CMA
6666 0357 AND TPADDL
6667 7041 CIA
6670 7040 CMA I TDATAL
6671 3756 DCA I /ADDRESS IS AUTO-INDEX REGISTER
6672 7040 CMA /DECREMENT POINTER TO DATA
6673 0360 AND /STORE IN TEST LOCATION
6674 3757 DCA I TDATAL /GET DATA
6675 5305 JMP TPADDL /STORE IN TEST LOCATION
6676 7040 CMA DOTSTL
6677 0357 AND TPADDL
6700 3756 DCA I TDATAL
6701 5272 JMP .-7
6702 7040 CMA TDAIL
6703 0360 AND TDATAL /GET DATA
6704 3756 DCA I /STORE IN TEST LOCATION

```

/SIMULATE "TAD"

DOTSTL, CLA CLL CMA

7340


```

706 0360 /GET /A1
6707 7421 /SAVE IN MO
6710 7040 /GET DATA2
6711 0361 /DO SIMULATION
6712 4751 /SAVE ANSWER
6713 3363 /SAVE LINK
6714 7010
6715 3362

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/GO TO TEST
/
DOANDL, CMA
6716 7040
6717 0347
6720 3000 /GET RETURN ADDRESS
6721 7040 /SAVE
6722 0354 /GET INSTRUCTION ADDRESS
6723 7001 /INCREMENT
6724 7450 /IS IT 0
6725 5202 /YES, GENERATE NEW INFORMATION
6726 3345 /NO, SAVE
6727 7040
6730 0366 /GET RETURN INSTRUCTION
6731 3745 /PUT IN TEST LOCATION
6732 7140
6733 0361 /GET DATA2
6734 5754 /EXECUTE "TAD"

```

```

/RETURN HERE AFTER EXECUTION
/
TRETUL, DCA TAC /SAVE AC
6735 3364
6736 7010 RAR
6737 3365 DCA TLINK /SAVE LINK
6740 4774 JMS I TCOMAD /COMPARE REAL AND SIMULATED ADDITIONS
6741 2376 ISZ CNTR1
6742 5202 JMP I TEST1L
6743 4750 JMS I TEPASL /END OF PASS, 4096 TEST COMPLETE
6744 5202 JMP TEST1L

```

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```

/
/
/
TEMP2L, 0
6745 0000 TGENL, GENL
6746 7000 TRETTL, TRETUL
6747 6735 TERROR,
6750 7442 TEPASL, EPASL
6751 7220 TSIMAD, RSIMAD
6752 7430 TRANDL, RANDL
6753 0000 TINSTL, 0
6754 0000 TINADL, 0
6755 0000 TIFLGL, 0
6756 0000 TDATA, 0
6757 0000 TPADDL, 0

```

6760 0021 TDA1L, 21
 6761 0037 TDA2L, 37
 6762 0000 TSIML, 0
 6763 0000 TSIMAC, 0
 6764 0000 TAC, 0
 6765 0000 TLINK, 0
 6766 5400 T5400L, 5420
 6767 7160 T7762, 7762
 6770 7170 T7770, 7770
 6771 0001 SR11, 1
 6772 0002 SR10, 2
 6773 0004 SR09, 4
 6774 7313 TCOMAD, COMAD
 6775 0010 K10, 10
 6776 0000 CNTR1, 0

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/GENERATE INSTRUCTIONS AND ADDRESSES
 /

PAGE 7000
 GENL. 0000

/GENERATE "AND" INSTRUCTION
 /

GANDL, 7001 CMA
 7002 0350 AND
 7003 4762 JMS I R1L
 7004 3350 DCA SRANDL
 7005 7040 CMA R1L
 7006 0350 AND R1L
 7007 7421 MQL
 7010 7040 CMA
 7011 0365 AND K1000
 7012 7501 MQA K1777
 7013 0352 AND INSTL
 7014 3001 DCA
 7015 7040 CMA
 7016 0001 AND INSTL
 7017 0355 AND K0177L
 7020 3361 DCA TEMP3L

/GENERATE ADDRESS FOR INSTRUCTION
 /

GANADL, 7021 CMA
 7022 0353 AND R2L
 7023 4762 JMS I SRANDL
 7024 3353 DCA R2L
 7025 7040 CMA
 7026 0353 AND R2L
 7027 4777 JMS LIMIT
 7030 5221 JMP GANADL
 7031 7040 CMA
 7032 0353 AND R2L
 7033 0354 AND P0L
 7034 7640 SZA CLA
 7035 5244 JMP PAGADL
 7040 7040 CMA

/IS ADDRESS ON PAGE 0
 /NO

037 0353
7040 4776
7041 7700
7042 5221
7043 5255

AND R2L
JMS ABS
SMA CLA GANADL
JMP PAL
JMP PAL

/GET PAGE ADDRESS OF INSTRUCTION
/GET DIFFERENCE BETWEEN PAGE ADDRESSES
/IS DIFFERENCE >2
/NO

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7044 7040
7045 0001
7046 0357
7047 7650
7050 5255
7051 7040
7052 0353
7053 0355
7054 5240
7055 7040
7056 0361
7057 7650
7060 5201
7061 7040
7062 0353
7063 3002

PAGADL, CMA
AND INSTL
AND K200L
SNA CLA PAL
JMP PAL
CMA
AND R2L
AND K0177L
JMP PAGAL
CMA TEMP3L
AND
SNA CLA GANDL
JMP
CMA R2L
AND INACDL
DCA

/GET INSTRUCTION
/IS PAGE BIT SET
/NO, USE ADDRESS AS IS
/PAGE BIT SET, EXTRACT PAGE ADDRESS FOR INSTRUCTION
/TEST FOR INTERFERENCE
/MAKE SURE DATA WILL
/NOT BE STORED IN LOCATION 0
/LOCATION ZERO, TRY AGAIN
/USE ADDRESS AS IS

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/GENERATE ADDRESS FOR DATA

7064 7040
7065 0001
7066 0357
7067 7650
7070 5307
7071 7040
7072 0002
7073 0354
7074 7421
7075 7040
7076 0361
7077 7501
7100 3003
7101 7040
7102 0001
7103 0356
7104 7640
7105 5313
7106 5600
7107 7040
7110 0361
7111 3003
7112 5301

DAADL, CMA
AND INSTL
AND K200L
SNA CLA P0AL
JMP P0AL
CMA INACDL
AND P0L
AND
MQL
CMA TEMP3L
AND
MQA
DCA DATADL
CMA
AND INSTL
AND K400L
SZA CLA PADL
JMP I GENL
JMP I
CMA TEMP3L
AND DATADL
DCA INDIRL
JMP INDIRL
P0AL, CMA
AND
DCA
JMP

/GET INSTRUCTION
/IS PAGE BIT OF INSTRUCTION SET
/NO, USE PAGE ADDRESS BITS OF INSTRUCTION FOR DATA ADDRESS
/EXTRACT PAGE OF INSTRUCTION ADDRESS
/OR" TOGETHER TO GET
/DATA ADDRESS
/IS INSTRUCTION INDIRECT
/YES, INSTRUCTION IS INDIRECT
/EXIT
/USE PAGE ADDRESS OF INSTRUCTION
/AS DAT ADDRESS

/GENERATE INDIRECT ADDRESS FOR DATA

```

7113 7040 PADD, CMA /GENERATE RANDOM NUMBER
7114 0360 AND R3L /IS ADDRESS WITHIN LIMITS
7115 4762 JMS I SRANDL /NO, TRY AGAIN
7116 3360 DCA R3L /GET INSTRUCTION ADDRESS
7117 7040 CMA AND INADDL /GENERATE DIFFERENCE BETWEEN ADDRESSES
7120 0360 AND R3L LIMIT /DO INSTRUCTION AND ADDRESS INTERFERE
7121 4777 JMS JMP PADL /YES
7122 5313 CMA AND INADDL /NO, TEST DATA ADDRESS AS ABOVE
7123 7040 AND AND ABSLI
7124 0002 JMS SMA CLA /ADD INSTRUCTION ADDRESS
7125 4775 SMA CLA /GENERATE DIFFERENCE BETWEEN ADDRESSES
7126 7700 JMP PADL /DO INSTRUCTION AND ADDRESS INTERFERE
7127 5313 CMA AND INADDL /YES
7130 7040 AND AND ABSLI /NO, TEST DATA ADDRESS AS ABOVE
7131 0003 JMS SMA CLA /ADD INSTRUCTION ADDRESS
7132 4775 SMA CLA /GENERATE DIFFERENCE BETWEEN ADDRESSES
7133 7700 JMP PADL /DO INSTRUCTION AND ADDRESS INTERFERE
7134 5313 CMA AND INADDL /YES
7135 7040 AND AND ABSLI /NO, TEST DATA ADDRESS AS ABOVE
7136 0360 AND R3L /ADD INSTRUCTION ADDRESS
7137 7041 CIA /GENERATE DIFFERENCE BETWEEN ADDRESSES
7140 7040 CMA SNA CLA /DO INSTRUCTION AND ADDRESS INTERFERE
7141 7650 /YES
/ /NO, TEST DATA ADDRESS AS ABOVE

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7142 5313 JMP PADL /YES, GENERATE NEW POINTER
7143 7040 CMA AND R3L /IS ADDRESS WITHIN LIMITS
7144 0360 DCA PADDL /NO, TRY AGAIN
7145 3004 CMA AND INADDL /GET INSTRUCTION ADDRESS
7146 7040 JMP I GENL /GENERATE DIFFERENCE BETWEEN ADDRESSES
7147 5600 /DO INSTRUCTION AND ADDRESS INTERFERE
/ /YES
/ /NO, TEST DATA ADDRESS AS ABOVE

```

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7150 0001 R1L, K0177L, 177
7151 0003 K3L, K400L, 400
7152 1777 K1777, 1777
7153 0005 R2L, P0L, 7600
7154 7600 P0L, K0177L, 177
7155 0177 K0177L, 177
7156 0400 K400L, 400
7157 0200 K200L, 200
7160 0015 R3L, 15
7161 0000 TEMP3L, 0
7162 7430 SRANDL, RANDL
7163 7200 SRIMAD, RSIMAD
7164 1201 LIML, 1201
7165 1000 K1000, 1000

```

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/SIMULATED ADDITION

7474
7303
7200
0000
3344
7501
7501
3343

PAGE
RSIMAD.

ARG2
ARG1

/SAVE ARGUMENTS

/SIMULATE ADDITION BY SIMULATED GENERATEION OF SUM
/AND CARRY BITS

/FORM OR OF ARG1 WITH ARG2

7204
7205
7206
7207
7210
7211
7212

CLA CLL CMA
AND ARG1
MQL
CMA
AND ARG2
MGA
DCA A10RA2

/LOAD AC WITH ARG1
/PLACE IN MQ
/LOAD AC WITH ARG2
/FORM ARG1 OR ARG2
/SAVE ARG1 OR ARG2

/FORM XOR(EXCLUSIVE OR) OF ARG1 WITH ARG2
/BY A XOR B=(A AND NOTB)OR(NOTA AND B)

7213
7214
7215
7216
7217
7220
7221
7222
7223
7224
7225

MGA
CMA
AND ARG2
MQL
CMA
AND ARG2
CMA
AND ARG1
MGA
DCA
SIMAC
SIMLNK

/GET ARG1 FROM MQ
/FORM NOTARG1
/AND WITH ARG2 TO GET ARG2 AND NOTARG1
/SAVE IN MQ
/LOAD AC WITH ARG2
/FORM NOTARG2
/AND WITH ARG1 TO GET ARG1 AND NOTARG2
/OR WITH ARG2 AND NOTARG1
/TO GET ARG1 XOR ARG2

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/AND ARG1 WITH ARG2
/TEST FOR CARRIES
/IF THERE ARE NO BITS IN COMMON BETWEEN ARG1 AND ARG2
/THERE WILL BE NO CARRIES GENERATED

7226
7227
7230
7231
7232

CMA
AND ARG1
AND ARG2
SNA
JMP ENDSIM

/LOAD AC WITH ARG1
/AND WITH ARG2
/ARE THERE ANY CARRIES
/NO, TERMINATE SIMULATION

/GENERATE CARRIES

7233
7234
7235
7236

MQL
MGA MQL
AND A10RA2
SNA

/SAVE FIRST CARRIES
/GET CARRIES FROM MQ
/AND WITH A10RA2 TO SEE IF MORE CARRIES ARE GENERATED
/ARE THERE ANY MORE CARRIES

```

7237 5244 JMP ENCARG
7240 7104 CLL RAL
7241 7521 MQA MQL
7242 7501 MQA
7243 5234 JMP NXTCAR
/TEST FOR CARRY INTO LINK
/NO, END SIMULATION OF CARRIES
/PROPAGATE CARRIES
/GET PREVIOUS CARRIES FROM MQ, SAVE NEW CARRIES
/OR NEW CARRIES WITH PREVIOUS CARRIES
/CONTINUE

```

```

ENCARG,
7244 7501 /GET CARRIES
7245 0345 /AND WITH A10RA2
7246 0350 /TEST BIT 00
7247 7450 /IS BIT 00 1
7250 5253 ENCARG1 /NO, CARRIES DID NOT PROPAGATE INTO LINK
7251 3347 SIMLNK /YES, SAVE CARRY INTO LINK
7252 5260 XORALL /COMPLETE SIMULATION
7253 7130 CLL CML RAR /SET AC=4000
7254 0343 AND ARG1 /AND WITH ARG1
7255 0344 AND ARG2 /AND WITH ARG2 TO SEE IF ORIGINAL
7256 7440 SZA /NUMBERS GENERATED CARRY INTO LINK
7257 3347 DCA SIMLNK /SAVE SIMULATED LINK

```

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/FORM XOR OF ARG1, ARG2, AND CARRIES
/TO GET FINAL SIMULATED SUM
/SAVE SIMULATED CARRIES
XORALL,
7260 7501 MQA CARRY
7261 3351 DCA
7262 7501 MQA
7263 7040 CMA
7264 0346 AND SIMAC
7265 7421 MQL
7266 7040 CMA
7267 0346 AND SIMAC
7270 7040 CMA
7271 0351 AND CARRY
7272 7501 MQA
7273 3346 DCA CLA CMA
7274 7340 CLA CLL SIMLNK
7275 0347 SZA CLA
7276 7640 CML
7277 7020 CMA
7300 7040 CMA
7301 0346 AND SIMAC
7302 5600 JMP I RSIMAD
/TEST ADDRESS
/
LIMIT,
0
MQL
CMA
AND
LIML
JMS RSIMAD
SNL CLA
ISZ LIMIT
JMP I LIMIT

```

```

/FORM A10RA2 AND NOTCARRY
/SAVE IN MQ
/FORM CARRY AND NOTA10RA2
/OR WITH CONTENTS OF MQ
/TO GET FINAL SIMULATED SUM
/SAVE ARGUMENT IN MQ
/LOAD AC WITH LIMIT
/DO ADDITION
/LINK SET IF NUMBER TO LARGE
/NUMBER OK

```

```

7313 0000 /COMPARE SIMULATED AND REAL RESULT
7314 7340 /
7315 0776' CLA CLL CMA /GET SIMULATED RESULTANT LINK
7316 7640 SZA CLA
7317 7020 CML
7320 7040 CMA /COMPARE TO REAL LINK
7321 0775' AND TLINK
7322 7640 SZA CLA
7323 7020 CML
7324 7430 SZL
7325 5341 JMP ERROR1 /IF SAME, LINK=0
7326 7340 CLA CLL CMA /NOT THE SAME, ERROR
7327 0774' AND TAC /GET ADDITION RESULT
7330 7040 CMA
7331 0773' AND TSIMAC /COMPARE TO COMPLEMENT OF SIMULATION RESULT

```

```

7332 7440 SZA
7333 5341 JMP ERROR1 /NOT 0, ERROR
7334 7040 CMA
7335 0773' AND TSIMAC /GET SIMULATION RESULT
7336 7040 CMA
7337 0774' AND TAC /COMPARE TO COMPLEMENT OF REAL ADDITION
7340 7640 SZA CLA
7341 4752 JMS I ERRORS
7342 5713 JMP I COMAD
7343 0000 ARG1, 0
7344 0000 ARG2, 0
7345 0000 A10RA2, 0
7346 0000 SIMAC, 0
7347 0000 SIMLNK, 0
7350 4000 K4000, 4000
7351 0000 CARRY, 0
7352 7400 ERRORS, ERROR

```

/ERROR HANDLER

```

7373 6/63 PAGE
7374 6764 ERROR, 0
7375 6/65 LAS
7376 6/62 AND SR00
7377 7164 SZA CLA
7400 0000 JMP I ERROR
7401 7604 CLA CMA
7402 0267 /TEST SR00
7403 7640 /IS SR00=1
7404 5600 /YES, DO NOT HALT
7405 7240

```

```

7406 0777' /HALT WITH DATA1 IN AC
7407 7402 HLT TDA1L
7410 7240 CLA CMA /HALT WITH DATA2 IN AC
7411 0776' AND TDA2L
7412 7402 HLT
7413 7240 CLA CMA /HALT WITH INSTRUCTION IN AC
7414 0775' AND TINSTL
7415 7402 HLT
7416 7240 CLA CMA /HALT WITH INSTRUCTION ADDRESS IN AC
7417 0774' AND TINADL
7420 7402 HLT
7421 7240 CLA CMA /HALT WITH DATA ADDRESS IN AC
7422 0773' AND TDATA
7423 7402 HLT
7424 7240 CLA CMA /HALT WITH INDIRECT IN AC
7425 0772' AND TPADDL
7426 7402 HLT
7427 5600 JMP I ERROR
/
/RANDOM NUMBER GENERATOR
0
RANDL,
7430 0000
7431 7104 CLL RAL
7432 7420 SNL
7433 5240 JMP ENRAN
7434 7421 MGL
7435 7040 CMA
7436 0241 AND K3
7437 4771' JMS RSIMAD
7440 5630 ENRAN, JMP I RANDL
7441 0003 K3, 3
/
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/END OF PASS
/
0
EPASL,
7442 0000
7443 7604 LAS
7444 0270 AND SR03
7445 7640 SZA CLA
7446 5642 JMP I EPASL
7447 7040 CMA
7450 0271 AND C215
7451 4261 JMS TYPE
7452 7040 CMA
7453 0272 AND C212
7454 4261 JMS TYPE
7455 7040 CMA
7456 0273 AND C324
7457 4261 JMS TYPE
7460 5642 JMP I EPASL
/
/
0
TYPE,
7461 0000
7462 6046 TLS
7463 6041 TSF

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464 5263
7465 7200
7466 5661

7467 4000
7470 0400
7471 0215
7472 0212
7473 0324

7474 0000
7475 7041
7476 7421
7477 7040
7500 0770
7501 4771
7502 7500
7503 7041
7504 7001
7505 7001
7506 5674

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/TEST FOR PROPER DIFFERENCE

7507 0000
7510 7041
7511 7421
7512 7040
7513 0767
7514 4771
7515 7500
7516 7041
7517 7001
7520 7001
7521 5707

ABSL1.
CIA
MQL
CMA
AND
JMS
SMA
CIA
IAC
IAC
JMP I
ABSL1

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0000 11111100 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000
0100 00000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000
0200 11100000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000
0300 00000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000 0000000000

0400
0500
0600
0700

1000
1100
1200
1300
1400
1500
1600
1700

2000
2100
2200
2300
2400
2500
2600
2700

3000
3100
3200
3300
3400
3500
3600
3700

4000
4100
4200
4300

)

)

)

DATADL	0023	7470
DIRL	6702	6773
00ANDL	6716	6772
DOTSTL	6705	6771
ENCAR	7244	7162
ENCAR1	7253	7163
ENDSIM	7274	0200
ENRAN	7440	6600
EPASL	7442	6766
ERROR	7400	6767
ERROR1	7341	6770
ERRORS	7352	6764
GANADL	7021	6774
GANDL	7001	6760
GENL	7000	6761
IFLAGL	0005	6624
INADDL	0002	6634
INDIRL	7101	6756
INSTL	0001	6745
K0177L	7155	7161
K10	6775	6750
K1000	7165	6750
K1777	7152	6602
K200L	7157	6746
K3	7441	6755
K3L	7151	6754
K4000	7350	6753
K400L	7156	6765
LIMIT	7303	6757
LIML	7164	6752
MQA	7501	6747
SQL	7421	6735
NOTAUT	6676	6763
NXTCAR	7234	6751
P0AL	7107	6762
P0L	7154	7461
PADDL	0004	
PADL	7113	
PAGADL	7044	7260
SR03		
SR09		
SR10		
SR11		
SRANL		
SRIMAD		
START		
STARTL		
T5400L		
T7760		
T7770		
TAC		
TCOMAD		
TDA1L		
TDA2L		
TDA11L		
TDA21L		
TDA1AL		
TEMP2L		
TEMP3L		
TEPASL		
TERROR		
TEST1L		
TGENL		
TIFLGL		
TINADL		
TINSTL		
TLINK		
TPADDL		
TRANL		
TRETTL		
TRETUL		
TSIMAC		
TSIMAD		
TSIML		
TYPE		
XORALL		

ERRORS DETECTED: 0
 LINKS GENERATED: 23
 RUN-TIME: 5 SECONDS
 2K CORE USED