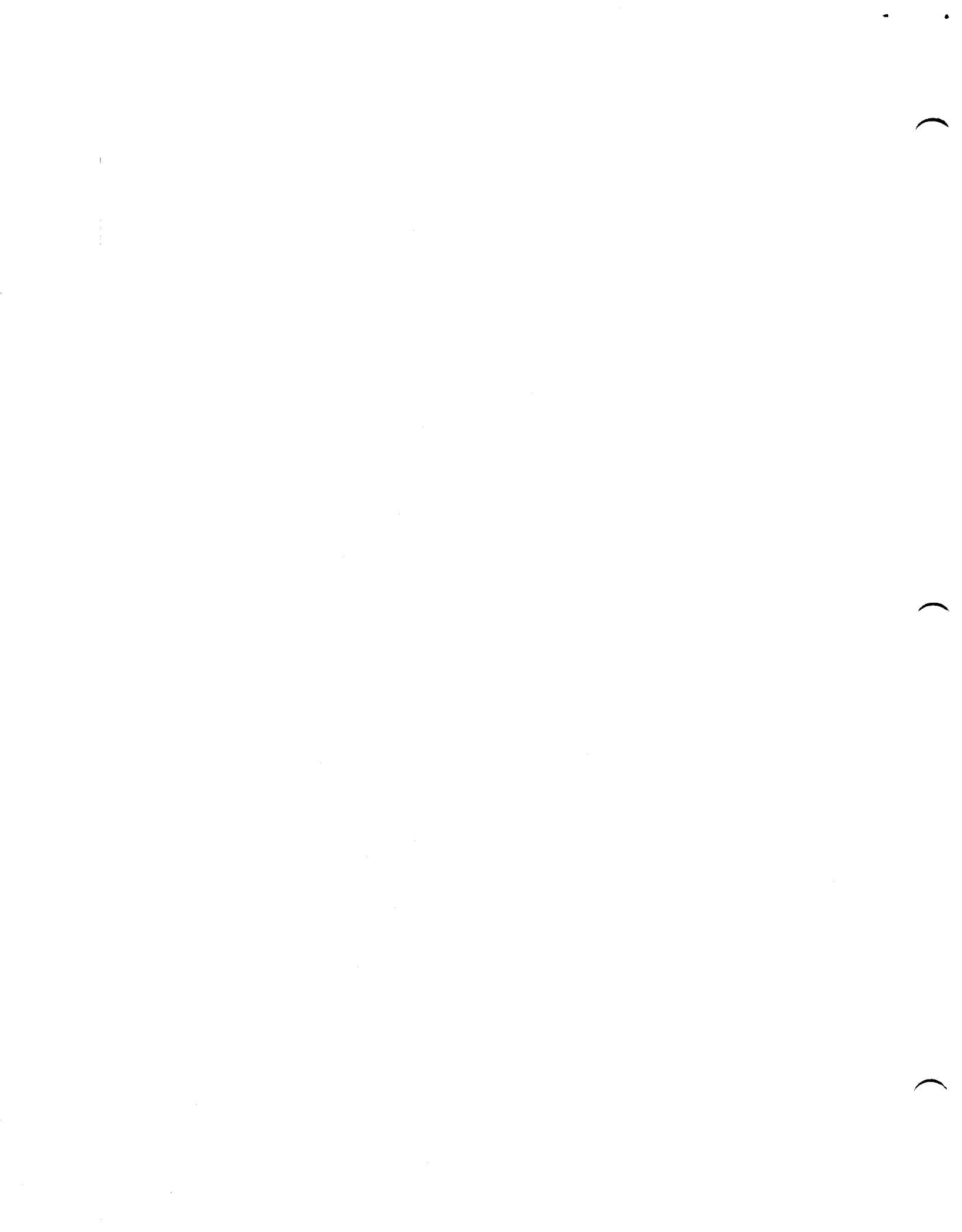


IDENTIFICATION

PRODUCT CODE: MAINDEC-8E-DØEB-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 THRU 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

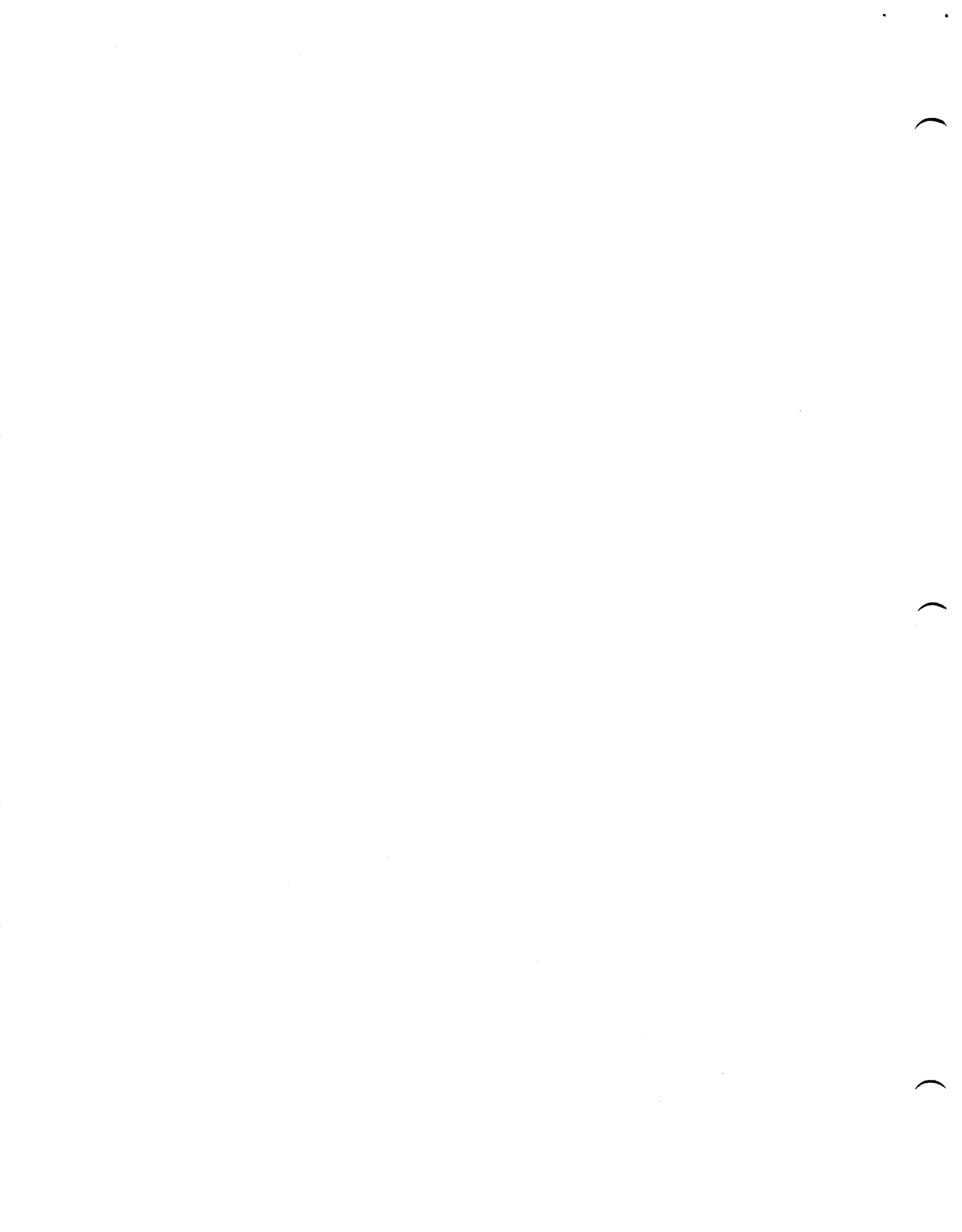
THE PROGRAM PERFORMS 4096 RANDOM TESTS IN APPROXIMATELY 5 SECONDS. THE PROGRAM WILL TYPE "T" AFTER EACH 4096 RANDOM TESTS UNLESS SR03=1.

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-D0CA-D. NO TADS ARE USED IN THE PROGRAM ITSELF.

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



```

/
/RANDOM TAD TEST
/COPYRIGHT 1970, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754
/V 82 07552
/
/
/TEMPORARY STORAGE LOCATIONS
/

```

```

0000 0000 RETURN, 0
0001 5001 INSTL, JMP
0002 0002 INADDL, 2
0003 0003 DATADL, 3
0004 0000 PADDL, 0
0005 0000 IFLAGL, 0

```

```

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

```

```

0200 *200 START, CAF
0201 5602 JMP I .+1
0202 6600 STARTL

```

```

/GENERATE TEST INSTRUCTION AND DATA
/
6600 6600 CLA CLL
6601 7300 DCA CNTR1 /CLEAR PASS COUNTER
6602 3376 DCA LAS
6603 7604 LAS SR11 /TEST SR11
6604 0371 AND SZA CLA /IS SR11=1
6605 5224 JMP TDAT1L /SR11=1, DO NOT GENERATE INSTRUCTION
6606 4746 JMS 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 TINADL /SAVE IT
6616 7040 CMA
6617 0003 AND DATADL /GET DATA ADDRESS
6620 3356 DCA TDATA /SAVE IT
6621 7040 CMA
6622 0004 AND PADDL /GET INDIRECT TO DATA
6623 3357 DCA TPADDL /SAVE IT
6624 7604 LAS TDAT1L, LAS
6625 0372 AND SR10 /TEST SR10

```

```

6626 7640 SZA CLA /IS SR10=1
6627 5234 JMP TDA2L /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 TDA2L, LAS
6635 0373 AND SR09
6636 7640 SZA CLA /TEST SR09
6637 5244 JMP SETTLE /IS SR09=1
6640 7040 CMA /SR09=1, DO NOT GENERATE DATA2
6641 0361 AND TDA2L /GENERATE RANDOM NUMBER
6642 4752 JMS I TRANDL
6643 3361 DCA TDA2L

```

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```

/SET UP INSTRUCTION AND DATA AT TEST ADDRESS
/ALONG WITH RETURN TO THIS ROUTINE
/
SETTL, CLA CLL CMA /GET INSTRUCTION
AND TINSTL /STORE IN TEST LOCATION
DCA I TINADL
CMA
AND TIFLGL /GET INDIRECT FLAG
SNA CLA /IS INSTRUCTION INDIRECT
JMP DIRL /NO, GET DATA
CMA
AND TDATA1 /ADDRESS IS INDIRECT
AND T7760 /IS ADDRESS AUTO-INDEX REGISTER
SZA CLA /NO
JMP NOTAUT
CMA
AND TDATA1
AND K10
SNA CLA NOTAUT
JMP TPADDL /ADDRESS IS AUTO-INDEX REGISTER
CMA /DECREMENT POINTER TO DATA
CIA /STORE IN TEST LOCATION
CMA TDATA1
DCA I TDA1L /GET DATA
CMA TPADDL /STORE IN TEST LOCATION
AND TPADDL
DCA I TDATA1
JMP DOTSTL
CMA NOTAUT, CMA
AND TPADDL
DCA I TDATA1
JMP .-7
CMA DIRL, CMA
AND TDA1L /GET DATA
DCA I TDATA1 /STORE IN TEST LOCATION
/
DOTSTL, CLA CLL CMA /SIMULATE "TAD"
7340

```


706 0360	AND	TDA1L	/GET /A1
6707 7421	MQL		/SAVE IN MQ
6710 7040	CMA		
6711 0361	AND	TDA2L	/GET DATA2
6712 4751	JMS I	TSIMAD	/DO SIMULATION
6713 3363	DCA	TSIMAC	/SAVE ANSWER
6714 7010	RAR		
6715 3362	DCA	TSIML	/SAVE LINK
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/			
6716 7040	DOANDL,		
6717 0347	AND	TRETTL	/GET RETURN ADDRESS
6720 3000	DCA	RETURN	/SAVE
6721 7040	CMA		
6722 0354	AND	TINADL	/GET INSTRUCTION ADDRESS
6723 7001	IAC		/INCREMENT
6724 7450	SNA		/IS IT 0
6725 5202	JMP	TESTIL	/YES, GENERATE NEW INFORMATION
6726 3345	DCA	TEMP2L	/NO, SAVE
6727 7040	CMA		
6730 0366	AND	T5400L	/GET RETURN INSTRUCTION
6731 3745	DCA I	TEMP2L	/PUT IN TEST LOCATION
6732 7140	CLL CMA		
6733 0361	AND	TDA2L	/GET DATA2
6734 5754	JMP I	TINADL	/EXECUTE "TAD"
/RETURN HERE AFTER EXECUTION			
6735 3364	TRETUL,	TAC	/SAVE AC
6736 7010	RAR		
6737 3365	DCA	TLINK	/SAVE LINK
6740 4774	JMS I	TCOMAD	/COMPARE REAL AND SIMULATED ADDITIONS
6741 2376	ISZ	CNTRI	
6742 5202	JMP	TEST1L	
6743 4750	JMS I	TEPASL	/END OF PASS, 4096 TEST COMPLETE
6744 5202	JMP	TEST1L	
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/			
6745 0000	TEMP2L,		
6746 7000	TGENL,	GENL	
6747 6735	TRETTL,	TRETUL	
	TERROR,		
6750 7442	TEPASL,	EPASL	
6751 7200	TSIMAD,	RSIMAD	
6752 7430	TRANDL,	RANDL	
6753 0000	TINSTL,		
6754 0000	TINADL,		
6755 0000	TIFLGL,		
6756 0000	TDATAL,		
6757 0000	TPADDL,		

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 7760 T7760, 7760
 6770 7770 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 7040 CMA
7002 0350 AND
7003 4762 R1L
7004 3350 JMS I SRANDL /GENERATE RANDOM NUMBER
7005 7040 DCA R1L /SAVE NUMBER
7006 0350 CMA
7007 7421 AND R1L /GENERATE OP CODE
7010 7040 MQL
7011 0365 CMA
7012 7501 AND K1000
7013 0352 AND K1777
7014 3001 DCA INSTL /SAVE INSTRUCTION
7015 7040 CMA
7016 0001 AND INSTL /GET INSTRUCTION
7017 0355 AND K0177L /EXTRACT PAGE ADDRESS OF INSTRUCTION
7020 3361 DCA TEMP3L /SAVE PAGE ADDRESS OF INSTRUCTION

/GENERATE ADDRESS FOR INSTRUCTION
/
GANADL,
7021 7040 CMA
7022 0353 AND
7023 4762 R2L
7024 3353 JMS I SRANDL /GENERATE RANDOM NUMBER
7025 7040 DCA R2L /SAVE NUMBER
7026 0353 CMA
7027 4777 AND R2L
7030 5221 JMS LIMIT /IS ADDRESS WITHIN LIMITS
7031 7040 JMP GANADL /NO, GENERATE NEW ADDRESS
7032 0353 AND R2L
7033 0354 AND P0L
7034 7640 SEA CLA /IS ADDRESS ON PAGE 0
7035 5244 JMP PAGADL /NO
7040 7040 CMA
  
```

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

AND R2L
 JMS ABS-
 SMA CLA
 JMP GANADL
 JMP PAL

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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
 JMP PAL
 CMA
 AND R2L
 AND K0177L
 AND PAGAL
 JMP
 CMA
 AND TEMP3L
 SNA CLA
 JMP GANDL
 CMA
 AND R2L
 DCA INADDL

/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,
 INSTL
 K200L
 SNA CLA
 JMP P0AL
 CMA
 AND INADDL
 AND P0L
 MQL
 CMA
 AND TEMP3L
 MGA
 DCA DATADL
 CMA
 AND INSTL
 AND K400L
 SZA CLA
 JMP PADL
 JMP I
 GENL
 CMA
 AND TEMP3L
 AND DATADL
 DCA
 JMP INDIRL
 P0AL,
 INSTL
 K400L
 SZA CLA
 JMP PADL
 JMP I
 GENL
 CMA
 AND TEMP3L
 AND DATADL
 DCA
 JMP INDIRL

/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 CMA PADL,
7114 0360 AND R3L
7115 4762 JMS I SRANDL
7116 3360 DCA R3L
7117 7040 CMA
7120 0360 AND R3L
7121 4777 JMS LIMIT
7122 5313 JMP PADL
7123 7040 CMA
7124 0022 AND INADDL
7125 4775 JMS ABSL1
7126 7700 SMA CLA
7127 5313 JMP PADL
7130 7040 CMA
7131 0023 AND DATADL
7132 4775 JMS ABSL1
7133 7700 SMA CLA
7134 5313 JMP PADL
7135 7040 CMA
7136 0360 AND R3L
7137 7041 CIA
7140 7040 CMA
7141 7650 SNA CLA

```

```

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```

```

7142 5313 JMP PADL
7143 7040 CMA
7144 0360 AND R3L
7145 3004 DCA PADDL
7146 7040 CMA
7147 5600 JMP I GENL

```

```

/ / / / /
/ YES, GENERATE NEW POINTER
/ EXIT

```

```

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

```

```

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```

```

/ / / / /
/ SIMULATED ADDITION

```

176 7474
7177 7303
7200
7201 0000
7202 3344
7203 7501
7203 3343

PAGE
RSIMAD,

0 ARG2 /SAVE ARGUMENTS
DCA ARG1
MQA
DCA
/
/
/SIMULATE ADDITION BY SIMULATED GENERATEION OF SUM
/AND CARRY BITS
/
/
/FORM OR OF ARG1 WITH ARG2

7204 7340
7205 0343
7206 7421
7207 7040
7210 0344
7211 7501
7212 3345

SIMAD,

CLA CLL CMA
AND ARG1 /LOAD AC WITH ARG1
MQL /PLACE IN MQ
CMA
AND ARG2 /LOAD AC WITH ARG2
MQA /FORM ARG1 OR ARG2
DCA A10RA2 /SAVE ARG1 OR ARG2

7213 7501
7214 7040
7215 0344
7216 7421
7217 7040
7220 0344
7221 7040
7222 0343
7223 7501
7224 3346
7225 3347

/FORM XOR(EXCLUSIVE OR) OF ARG1 WITH ARG2
/BY A XOR B=(A AND NOTB)OR(NOTA AND B)
/
MQA /GET ARG1 FROM MQ
CMA /FORM NOTARG1
AND ARG2 /AND WITH ARG2 TO GET ARG2 AND NOTARG1
MQL /SAVE IN MQ
CMA
AND ARG2 /LOAD AC WITH ARG2
CMA /FORM NOTARG2
AND ARG1 /AND WITH ARG1 TO GET ARG1 AND NOTARG2
MQA /OR WITH ARG2 AND NOTARG1
DCA SIMAC /TO GET ARG1 XOR ARG2
DCA SIMLNK

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7226 7040
7227 0343
7230 0344
7231 7450
7232 5274

/AND ARG1 WITH ARG2
/TEST FOR CARRIES
/IF THERE ARE NO BITS IN COMMON BETWEEN ARG1 AND ARG2
/THERE WILL BE NO CARRIES GENERATED
/
CMA
AND ARG1 /LOAD AC WITH ARG1
AND ARG2 /AND WITH ARG2
SNA /ARE THERE ANY CARRIES
JMP ENDSIM /NO, TERMINATE SIMULATION
/
/GENERATE CARRIES

7233 7421
7234 7521
7235 0345
7236 7450

NXTCAR, MQL MQL A10RA2
AND AND
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 ENCAR /NO, END SIMULATION OF CARRIES
7240 7124 CLL RAL /PROPIGATE CARRIES
7241 7521 MGA MQL /GET PREVIOUS CARRIES FROM MQ, SAVE NEW CARRIES
7242 7501 MGA /OR NEW CARRIES WITH PREVIOUS CARRIES
7243 5234 JMP NXTCAR /CONTINUE
/
/TEST FOR CARRY INTO LINK
/
ENCAR, MGA /GET CARRIES
AND A10RA2 /AND WITH A10RA2
AND K4000 /TEST BIT 00
SNA /IS BIT 00 1
JMP ENCAR1 /NO, CARRIES DID NOT PROPAGATE INTO LINK
DCA SIMLNK /YES, SAVE CARRY INTO LINK
JMP XORALL /COMPLETE SIMULATION
ENCAR1, CLL CML RAR /SET AC=4000
AND ARG1 /AND WITH ARG1
AND ARG2 /AND WITH ARG2
SZA /NUMBERS GENERATED CARRY INTO LINK
DCA SIMLNK /SAVE SIMULATED LINK

```

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```

/FORM XOR OF ARG1, ARG2, AND CARRIES
/TO GET FINAL SIMULATED SUM
/
MGA CARRY /SAVE SIMULATED CARRIES
DCA
MGA
CMA
AND
MQL
CMA
AND
CMA
AND
CMA
AND
MGA
DCA
CLA CLL CMA
AND SIMLNK
SEA CLA
CML
CMA
AND
JMP I RSIMAD /TO GET FINAL SIMULATED SUM
/TEST ADDRESS
/
LIMIT,
0
MQL
CMA
AND
JMS
SNL CLA
ISZ
JMP I

```

```

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

```

```

7303 0000 LIMIT,
7304 7421 0
7305 7040 MQL
7306 2777 CMA
7307 4200 AND
7310 7620 JMS
7311 2303 SNL CLA
7312 5703 ISZ
JMP I

```

```

/SAVE ARGUMENT IN MQ
/LOAD AC WITH LIMIT
/DO ADDITION
/LINK SET IF NUMBER TO LARGE
/NUMBER OK

```

```

7313 0000 COMAD,
7314 7340
7315 0776'
7316 7640
7317 7020
7320 7040
7321 0775'
7322 7640
7323 7020
7324 7430
7325 5341
7326 7340
7327 0774'
7330 7040
7331 0773'

7332 7440
7333 5341
7334 7040
7335 0773'
7336 7040
7337 0774'
7340 7640
7341 4752
7342 5713
7343 0000
7344 0000
7345 0000
7346 0000
7347 0000
7350 4000
7351 0000
7352 7400

/COMPARE SIMULATED AND REAL RESULT
/
0
CLA CLL CMA
AND TSIML
SZA CLA
CML
CMA
AND TLINK
SZA CLA
CML
SZL
JMP ERROR1
CLA CLL CMA
AND TAC
CMA
AND TSIMAC

SZA
JMP ERROR1
CMA
AND TSIMAC
CMA
AND TAC
SZA CLA
JMS I ERRORS
JMP I COMAD
0
0
ARG1,
ARG2,
A1ORA2, 0
SIMAC, 0
SIMLNK, 0
K4000, 4000
CARRY, 0
ERRORS, ERROR

/COMPARE TO COMPLEMENT OF REAL ADDITION
/NOT 0, ERROR
/GET SIMULATION RESULT
/COMPARE TO COMPLEMENT OF REAL ADDITION

```

```

7373 6763
7374 6764
7375 6765
7376 6762
7377 7164
7400 0000
7401 7604
7402 0267
7403 7640
7404 5600
7405 7240

PAGE
ERROR,
0
LAS
AND SR00
SZA CLA
JMP I ERROR
CLA CMA

/ERROR HANDLER
/
/TEST SR00
/IS SR00=1
/YES, DO NOT HALT

```

```

7406 0777' /HALT WITH DATA1 IN AC
7407 7402 HLT TDA1L
7410 7240 CLA CMA TDA2L
7411 0776' /HALT WITH DATA2 IN AC
7412 7402 HLT
7413 7240 CLA CMA TINSTL
7414 0775' /HALT WITH INSTRUCTION IN AC
7415 7402 HLT
7416 7240 CLA CMA TINADL
7417 0774' /HALT WITH INSTRUCTION ADDRESS IN AC
7420 7402 HLT
7421 7240 CLA CMA TDATA1
7422 0773' /HALT WITH DATA ADDRESS IN AC
7423 7402 HLT
7424 7240 CLA CMA TPADDL
7425 0772' /HALT WITH INDIRECT IN AC
7426 7402 HLT
7427 5600 JMP I ERROR

```

/RANDOM NUMBER GENERATOR

```

7430 0000 RANDL,
7431 7104 CLL RAL
7432 7420 SNL
7433 5240 JMP ENRAN
7434 7421 MQL
7435 7040 CMA
7436 0241 AND K3
7437 4771' JMS RSIMAD
7440 5630 JMP I RANDL
7441 0003 K3,

```

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/END OF PASS

```

7442 0000 EPASL,
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

```

```

7461 0000 TYPE,
7462 6046 TLS
7463 6041 TSF

```


7464 5263
7465 7200
7466 5661

JMP .-1
CLA
JMP I TYPE
/

7467 4000
7470 0400
7471 0215
7472 0212
7473 0324

SR00,
SR03,
C215,
C212,
C324,
/

/TEST FOR PROPER DIFFERENCE

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

ABSL.
CIA
MQL
CMA
AND
TEMP3L
RSIMAD
JMS
SMA
CIA
IAC
IAC
JMP I ABSL

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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
R3L
RSIMAD
JMS
SMA
CIA
IAC
IAC
JMP I ABSL1
\$

PAL10

V141

17-JUN-71

7:23

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DATA	0023	SR03	7470
DIRL	6702	SR09	6773
DOANDL	6716	SR10	6772
DOTSTL	6705	SR11	6771
ENCAR	7244	SRANDL	7162
ENCARI	7253	SRIMAD	7163
ENDSIM	7274	STARTL	0200
ENRAN	7440	STARTL	6600
EPASL	7442	T5400L	6766
ERROR	7400	T7760	6767
ERROR1	7341	T7770	6770
ERRORS	7352	TAC	6764
GANADL	7021	TCOMAD	6774
GANDL	7001	TDA1L	6760
GENL	7000	TDA2L	6761
IFLAGL	0005	TDAT1L	6624
INADDL	0002	TDAT2L	6634
INDIRL	7101	TDATAL	6756
INSTL	0001	TEMP2L	6745
K0177L	7155	TEMP3L	7161
K10	6775	TEPASL	6750
K1000	7165	TERROR	6750
K1777	7152	TESTIL	6602
K200L	7157	TGENL	6746
K3	7441	TIFLGL	6755
K3L	7151	TINADL	6754
K4000	7350	TINSTL	6753
K400L	7156	TLINK	6765
LIMIT	7303	TPADDL	6757
LIML	7164	TRANDL	6752
MGA	7501	TRETTL	6747
MQL	7421	TRETUL	6735
NOTAUT	6676	TSIMAC	6763
NXTCAR	7234	TSIMAD	6751
P0AL	7107	TSIML	6762
P0L	7154	TYPE	7461
PADDL	0004	XORALL	7260
PADL	7113		
PAGADL	7044		

ERRORS DETECTED: 0

LINKS GENERATED: 23

RUN-TIME: 5 SECONDS

2K CORE USED