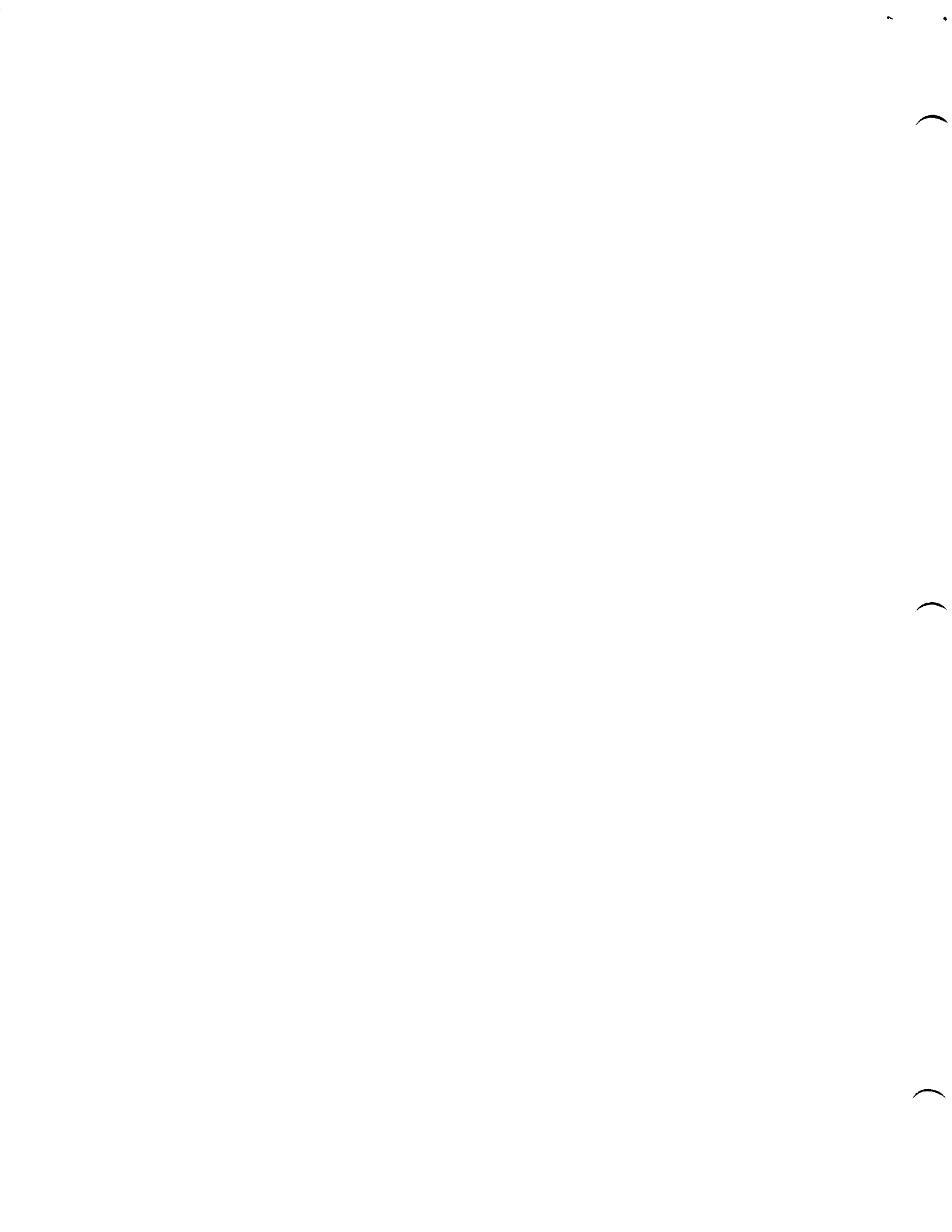


IDENTIFICATION  
-----

PRODUCT CODE: MAINDEC-8E-D0FC-D  
PRODUCT NAME: RANDOM ISZ TEST  
DATE CREATED: JUNE 11, 1971  
MAINTAINER: DIAGNOSTIC GROUP  
AUTHOR: BRUCE HANSEN

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1. ABSTRACT  
-----

THIS PROGRAM IS WRITTEN TO TEST THE ISZ INSTRUCTION OF THE PDP-8E. AN ISZ INSTRUCTION IS PLACED IN A FROM LOCATION, AND A TO LOCATION CONTAINS THE OPERAND. PART 1 OF THE PROGRAM SELECTS FROM, TO, AND OPERAND FROM A RANDOM NUMBER GENERATOR, WITH THE OPTION OF HOLDING ANY OR ALL CONSTANT. PART 2 USES A FIXED SET OF FROM, TO, AND OPERAND NUMBERS.

2. REQUIREMENTS  
-----

2.1 EQUIPMENT  
-----

ONE PDP-8E EQUIPPED WITH TELETYPE.

2.2 STORAGE  
-----

THIS PROGRAM USES LOCATIONS 0000-7600(8). THE BINARY LOADER MUST BE STORED IN THE LAST MEMORY PAGE.

2.3 PRELIMINARY PROGRAM  
-----

MAINDEC-0E-D0A(N), AND MAINDEC-8E-D0B(N) MUST HAVE RUN SUCCESSFULLY.

3. LOADING PROCEDURE  
-----

THE STANDARD BINARY LOADER IS USED.

4. STARTING PROCEDURE  
-----

4.1 SWITCH SETTINGS  
-----

SR0(0) = HALT ON ERROR  
SR1(1) = ELIMINATE ERROR PRINTOUTS  
SR3 = FIXED FROMS (1)  
      RANDOM FROMS (0)  
SR4 = FIXED TOS (1)  
      RANDOM TOS (0)  
SR5 = FIXED OPERAND (1)  
      RANDOM OPERAND (0)  
SR9(0) = DO ONE ISZ ONLY  
SR11(1) = DO TEST PART 2 SR3, 4, 5, MUST BE 0'S  
SR11(0) = DO TEST PART 1

4.2 STARTING ADDRESS  
-----

4.3 OPERATOR ACTION

- A. SET SR (SWITCH REGISTER) TO 0200 AND PRESS LOAD ADDRESS.
- B. SET SR TO DESIRED MODE OF OPERATION; FOR MOST RUNS, SR9=0  
ALLOWS THE MOST TESTING IN THE LEAST AMOUNT OF TIME.

FOR FIXED FROM, TO, OR OPERAND USAGE, THE FIXED NUMBER MAY BE SELECTED AND ENTERED INTO THE MEMORY LOCATIONS SHOWN BELOW:

FROM       =0002  
TO         =0021  
OPERAND    =0022

- C. PRESS, CLEAR AND THEN CONTINUE.

5. OPERATING PROCEDURE  
-----

SAME AS PARAGRAPH 4.

6. ERRORS  
-----

6.1 ERROR HALTS AND DESCRIPTION  
-----

C(PC)	CAUSE
0002	PERIPHERAL INTERRUPT
0254	HALT ON ERROR, SR0=0

6.2 ERROR PRINTOUTS  
-----

F	XXXX	T	YYYY				
0	ZZZZ	F	MMMM	R	NNNN	NS	

6.2.1 PRINTOUT EXPLANATION  
-----

(FROM)	F XXXX	-THE ISZ INSTRUCTION IN LOCATION XXXX FAILED.
(TO)	T YYYY	-THE OPERAND ADDRESS OF THE ISZ INSTRUCTION WAS YYYY.
(OPERAND)	0 ZZZZ	-THE STARTING COUNT IN THE ISZ LOOP WAS ZZZZ.
(FAILED)	F MMMM	-THE FAILURE OCCURRED TRYING TO ISZ THE NUMBER MMMM.
(RESULT)	R NNNN	-THE RESULT OF THIS ISZ WAS NNNN.
	NS	-NO SKIP OCCURRED
	S,	-INDICATES A SKIP.

6.2.2

EXAMPLES

A. THE FOLLOWING IS A TYPICAL ERROR PRINTOUT.

F 3003 T 5470  
0 3705 F 4777 R 5000 S

LINE 1 OF THE PRINTOUT IS A STATEMENT OF THE PROBLEM. IT SAYS THAT LOCATED AT 3003 IS AN ISZ INSTRUCTION INCREMENTING AN OPERAND STORED IN LOCATION 5470. LINE 2 OF THE PRINTOUT GIVES INFORMATION FOR ERROR ANALYSIS. 3705 WAS THE INITIAL OPERAND, 4777 WAS THE OPERAND BEING INCREMENTED WHEN THE ERROR OCCURRED, AND 5000 IS THE OPERAND FOLLOWING THE FAILING INCREMENT. THE S INDICATES THAT THE INCREMENT RESULTED IN A SKIP. THE ERROR HERE IS OBVIOUSLY THAT THE SKIP SHOULD NOT HAVE OCCURRED.

B. THE FOLLOWING IS ANOTHER TYPICAL ERROR PRINTOUT.

F 3003 T 5470  
0 3705 F 4777 R 5020 NS

THIS IS IDENTICAL TO EXAMPLE (A) EXCEPT THAT A DIFFERENT TYPE OF ERROR HAS OCCURRED. THE RESULT OF INCREMENTING 4777 SHOULD BE 5000, NOT 5020.

6.3 ERROR RECOVERY

THE PROGRAM CONTINUES ON, FOLLOWING AN ERROR PRINTOUT UNLESS SR0=0. AFTER A HALT ON ERROR, PUSH CONTINUE TO RESUME TESTING. WHEN ERRORS EXIST, A FAILING CONDITION CHOSEN FROM THOSE TYPED OUT MUST BE USED WITH THE SCOPE MODE. FOR THE SCOPE MODE, PERFORM THE FOLLOWING STEPS:

- A. STOP THE PROGRAM.
- B. INSERT CHOSEN FROM INTO LOCATION 0002.
- C. INSERT CHOSEN TO INTO LOCATION 0021.
- D. INSERT CHOSEN FAILING OPERAND INTO LOCATION 0022
- E. RESTART PROGRAM WITH CONTROL SWITCHES 1,3,4,5. SET TO 1 AND 9 SET TO A 0.

NOTE: BY SETTING SR0 TO A 0, THE PROGRAM HALTS FOLLOWING THE ERROR PRINTOUT. THE OPERATOR MAY AT THIS TIME SET SWITCHES 1, 3, 4, 5, TO A 1 AND 9 TO A 0 AND PUSH CONTINUE. THE PROGRAM ENTERS A SCOPE MODE USING THE FAILING CONDITIONS JUST PRINTED.

7. RESTRICTIONS  
-----

7.1 STARTING RESTRICTIONS  
-----

NONE.

7.2 OPERATING RESTRICTIONS  
-----

THE INTERRUPT IS ENABLED DURING PROGRAM OPERATION. ANY ATTACHED  
DEVICE WHICH MIGHT CAUSE SPURIOUS INTERRUPTS, MUST BE DISABLED.

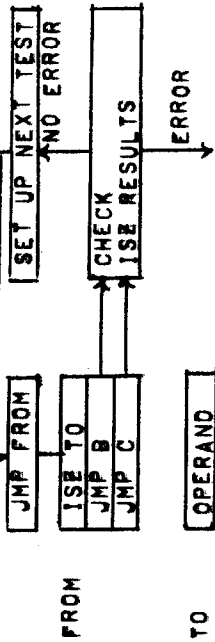
8. MISCELLANEOUS  
-----

8.1 EXECUTION TIME  
-----

SR9 = 1. 11,000 ISZ OPERATIONS/SECOND.  
SR9 = 0. 3,500 ISZ OPERATIONS/SECOND.

9. PROGRAM DESCRIPTION

THE TEST LOOP IS SHOWN BELOW:



PART 1 OF THE PROGRAM USES A RANDOM NUMBER GENERATOR TO SELECT THE FROM, TO, AND OPERAND NUMBERS. ONCE SELECTED, THE OPERAND IS INCREMENTED UNTIL IT REACHES ZERO. EACH ISE IS CHECKED BY DUPLICATING ISE WITH TAD, IAC, DCA. EACH ITERATION IS ALSO CHECKED FOR THE PROPER SKIP OR NO-SKIP CONDITION.

PART 2 OF THE PROGRAM IS ACTUALLY PART 1, WITH THE RANDOM NUMBER GENERATED REPLACED BY A FIXED NUMBER GENERATOR. SEQUENCING OF EVENTS IS AS FOLLOWS:

(NOTE: 621(8) < MEMORY TEST AREA < 7600(8)):

- A. FROM = 621 TO = 624 TEST A SET OF 24 SELECTED OPERANDS. TO SAVE TIME IT IS SUGGESTED THAT SR9 = 0, SO THAT THE ISE IS PERFORMED ON EACH OPERAND ONLY ONCE INSTEAD OF INCREMENTING IT UNTIL THE ISE INSTRUCTION SKIPS.
- B. FROM = 621 TO = 625 REPEAT THE SET OF OPERANDS USED IN (A) ABOVE.

THIS SEQUENCE CONTINUES UNTIL IT REACHES THE UPPER LIMIT OF THE MEMORY TEST AREA. FROM IS THEN INCREMENTED BY 1 AND THE PROCESS IS REPEATED. WHEN FROM REACHES THE UPPER LIMIT OF THE MEMORY TEST AREA, THE TEST IS COMPLETE.

IDEALLY, IT IS DESIRABLE TO ISE EVERY LOCATION FROM EVERY OTHER LOCATION IN THE TEST AREA AND, IN DOING SO, USE ALL 24 OF THE SELECTED WORST CASE OPERANDS FOR EACH SET OF ADDRESSES. THIS IS WHAT PART 2 DOES, BUT IT TAKES MANY DAYS TO COMPLETE THE TEST. IT IS FOR THIS REASON THAT THE PROGRAM USES THE RANDOM NUMBER GENERATOR SYSTEM OF PART 1. PART 2 IS AN ADDITIONAL FEATURE OF THE PROGRAM WITH VERY LIMITED USE.

A FC IS PRINTED AFTER EACH GROUP OF 32,000 TESTS.





/PDP-8E ISZ TEST  
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/CONSTANTS AND VARIABLES

0000  
0000  
0001 5001  
0002 0002  
0003 0003  
0004 0000  
0005 0000  
0006 0202  
0007 0547  
0010 0007  
0011 0000  
0012 0000  
0013 7401  
0014 3607  
0015 0003

0  
JMP 1 /PERIPHERAL INTERRUPT  
FRMLC, 2 /ISZ TEST INSTRUCTION LOCATION  
LIMLO, 3 /LOW LIMIT TEST AREA  
0  
0  
LIMHI, -7576 /HIGH LIMIT TEST AREA  
ASUC, SUC /OCTAL CONVERSION MASK  
MSK7, 0007 /IR0  
WORK, 0 /IR1  
WORK1, 0  
M377, -377  
NUM, 3607 /THE RANDOM NUMBER LOCATION  
THREE, 3

0016 2421  
0017 5116  
0020 5141  
0021 0000  
0022 0000  
0023 0000  
0024 0000  
0025 0004  
0026 0400  
0027 0200  
0030 0100  
0031 0000  
0032 0257  
0033 0201  
0034 0206  
0035 0413  
0036 1014  
0037 0600

ISZ I TOLOC /MOVING ISZ  
JMP I, JMP BACK /TEST INSTRUCTION  
JMP2, JMP BAKBRN /GROUP,  
TOLC, 0 /LOCATION TO BE ISZ'D  
PATRN, 0 /STARTING ISZ PATTERN  
BEFOR, 0 /FAILING PATTERN BEFORE FAILING ISZ  
AFTER, 0 /PREDICTED RESULTS OF EACH ISZ  
K4, 4 /SWITCH REGISTER MASKS  
K0400, 0400 /7'S=ERROR WITH NO SKIP  
K0200, 0200 /0'S=ERROR WITH SKIP  
K0100, 0100  
NOTE, 0  
PRINT, INF1-1  
AERR1, ERR1  
AERR2, ERR2  
APDR, PDR  
ITADNM, TAD NUM  
ATFCLF, TFCLF

/SR0(0)=HALT AFTER ERROR PRINTOUT  
/SR1(1)=NO PRINTOUTS  
/SR3(1) = HOLD FROM CONSTANT  
/SR4(1) = HOLD TO CONSTANT  
/SR5(1) = HOLD PATTERN CONSTANT  
/SR9(0) = 00 ONE ISZ ONLY  
/SR11(1) = 00 TEST PART 2  
/

/PROGRAM START  
START, JMS I ,+1 /ION  
PATCH /LAS  
AND THREE

0040 4441  
0041 0614  
0042 0015

0043 7640 SZA CLA /SKIP IF PART 1  
 0044 5426 JMP I K0400 /GO TO PART 2  
 0045 1036 TAD ITADNM  
 0046 3165 DCA RANUM+1  
 /CHECK FOR FIXED PATTERN  
 0047 7604 LAS  
 0050 0030 AND K0100  
 0051 7440 SZA  
 0052 5055 JMP CHEK2  
 CHEK1,

0053 4164 /SELECT THE PATTERN  
 0054 3022 JMS RANUM  
 DCA PATRN  
 SELPAT,

0055 7604 /CHECK FOR FIXED TO  
 0056 0027 LAS  
 0057 7640 AND K0200  
 0060 5065 SZA CLA  
 JMP CHEK3  
 CHEK2,

0061 4164 /SELECT THE TO LOCATION  
 0062 3021 JMS RANUM  
 0063 1021 DCA TOLOC  
 0064 4151 TAD TOLOC  
 JMS LIMTST  
 SELTO,

0065 7604 /CHECK FOR FIXED FROM  
 0066 0026 LAS  
 0067 7640 AND K0400  
 0070 5075 SZA CLA  
 JMP PLCINT  
 CHEK3,

0071 4164 /SELECT THE FROM LOCATION  
 0072 3002 JMS RANUM  
 0073 1002 DCA FRMLOC  
 0074 4151 TAD FRMLOC  
 JMS LIMTST  
 SELFRM,

0075 7240 /PLACE FROM INSTRUCTIONS  
 0076 1002 CLA GMA  
 0077 3011 TAD FRMLOC  
 0100 1016 DCA WORK  
 0101 3411 TAD ISZ1  
 0102 1017 DCA I WORK  
 0103 3411 TAD JMP1  
 0104 1020 DCA I WORK  
 0105 3411 TAD JMP2  
 DCA I WORK  
 PLCINT,

0106 1022 /DEPOSIT PATTERN IN TO LOCATION  
 0107 3421 TAD PATRN  
 DCA I TOLOC

```

0110 1022 /STORE PREDICTED ISZ RESULT
0111 3023 TAD PATRN
0112 1023 DCA BEFOR
0113 7001 TAD BEFOR
0114 3024 IAC
0115 5407 DCA AFTER
          JMP I ASUC

          /RETURN FOR NO SKIP CONDITION
BACK,   LAS 7604
        RAL 7004
        SPA CLA
        JMP LAS1
        TAD I TOLOC
        CIA
        TAD AFTER
        SEA CLA
        JMP I AERR1
        TAD I TOLOC
        SNA CLA
        JMP I AERR1
        LAS
        AND K4
        SNA CLA
        JMP CHEK1
        IAC
        TAD BEFOR
        JMP LUPI-1
          /ERROR IN ISZ OPERATION
          /ERROR IN ISZ SKIP DETECTION
          /SKIP IF NOT ONE ISZ (SR9)

          /RETURN FOR SKIP CONDITION
BAKBRN, LAS 7604
        RAL 7004
        SPA CLA
        JMP CHEK1
        TAD I TOLOC
        SEA CLA
        JMP I AERR2
        JMP CHEK1
          /SKIP IF TO LOCATION OK
          /ERROR IN ISZ LOCATION

          /TEST HIGH-LOW LIMITS
LIMITST, 0
        SPA
        JMP +5
        TAD LIMLO
        SMA CLA
        JMP I LIMITST
        JMP RANUM+1
        TAD LIMHI
        SMA CLA
        JMP RANUM+1
        JMP I LIMITST
0151 0000
0152 7510
0153 5160
0154 1003
0155 7700
0156 5551
0157 5165
0160 1006
0161 7700
0162 5165
0163 5551

```

```

0164 0000
0165 1014
0166 7104
0167 7430
0170 1015
0171 3014
0172 1014
0173 5564

0174 1000
0175 0000

RANUM,
/RANDOM NUMBER GENERATOR
0
TAD NUM
RAL CLL
SEL
TAD THREE
DCA NUM
TAD NUM
JMP I RANUM
/AC=NEW RANDOM NUMBER

0200 0200
0201 1340
0202 3332
0203 7040
0204 3031
0205 5210

0206 1331
0207 3332
0210 1002
0211 3011
0212 1370
0213 4342

0214 1021
0215 3011
0216 1371
0217 4342

0220 1022
0221 3011
0222 1372
0223 4342
0224 1023
0225 3011
0226 1373
0227 4342

0230 1421
0231 3011
0232 1374
0233 4342

0234 6002
0235 1032
0236 3011
0237 1411

RANUM,
/RANDOM NUMBER GENERATOR
0
TAD NUM
RAL CLL
SEL
TAD THREE
DCA NUM
TAD NUM
JMP I RANUM
/AC=NEW RANDOM NUMBER

K1000,
KP,
0

*200
JMP START
/ERROR ROUTINE 1
TAD SKPDAT+6
DCA SKPDAT
CMA
DCA NOTE
JMP KPGO

ERR1,
/ERROR ROUTINE 1
TAD SKPDAT-1
DCA SKPDAT
TAD FRMLC
DCA WORK
TAD A3
JMS SETUP

ERR2,
/ERROR ROUTINE 2
TAD SKPDAT-1
DCA SKPDAT
TAD FRMLC
DCA WORK
TAD A3
JMS SETUP

KPGO,
/ERROR ROUTINE 2
TAD SKPDAT-1
DCA SKPDAT
TAD FRMLC
DCA WORK
TAD A3
JMS SETUP

JMS SETUP
TAD PATRN
DCA WORK
TAD A5
JMS SETUP
TAD BEFOR
DCA WORK
TAD A6
JMS SETUP

TTY,
/TTY PRINT ROUTINE
IOF
TAD PRINT
DCA WORK
TAD I WORK

```

0240 6046  
 0241 6041  
 0242 5241  
 0243 1013  
 0244 7640  
 0245 5237  
 0246 6042  
 0247 6001  
 0250 7604  
 0251 7700  
 0252 7402

0253 1031  
 0254 7650  
 0255 9047  
 0256 3031  
 0257 5132

/HALT AFTER ERROR (SR0)

/RETURN TO NO SKIP ROUTINE

TLS  
 TSF  
 JMP -1  
 TAD M377  
 SZA CLA  
 JMP TTY+3  
 TCF  
 ION  
 LAS  
 SMA CLA  
 HLT

TAD NOTE  
 SNA CLA  
 JMP CHEK1  
 DCA NOTE  
 JMP LAS1

```

/ERROR PRINTOUT LINE 1
INF1, 0306 /F FROM (INSTRUCTION LOCATION)
      240 /SPACE
INDATA, 0 /X LOCATION
      0 /X
      0 /X
      0 /X
      0 /SPACE
      240 /SPACE
      240 /SPACE
      324 /T TO (OPERAND ADDRESS)
      240 /SPACE
ONDATA, 0 /X ADDRESS
      0 /X
      0 /X
      0 /X
      0 /X
      215 /CR
      212 /LF
      215 /CR
      215 /CR
  
```

```

/ERROR PRINTOUT LINE 2
STDATA, 0317 /O OPERAND (STARTING COUNT)
      240 /SPACE
      0 /X PATTERN
      0 /X
      0 /X
      0 /X
      240 /SPACE
      240 /SPACE
      306 /F FAILING COUNT
      240 /SPACE
FLDATA, 0 /X PATTERN BEFORE FAILING ISZ
      0 /X
      0 /X
      0 /X
      240 /SPACE
  
```

0321 0240  
0322 0322  
0323 0240

240 /SPACE  
322 /R  
240 /SPACE

RESULT AFTER FAILURE

0324 0000  
0325 0000  
0326 0000  
0327 0000  
0330 0240  
0331 0240  
0332 0316  
0333 0323  
0334 0215  
0335 0212  
0336 0212  
0337 0377  
0340 0316  
0341 0323

RSDATA, 0 /X  
0 /X  
0 /X  
0 /X  
240 /SPACE  
240 /SPACE  
SKPDAT, 316 /N  
323 /S  
215 /CR  
212 /LF  
212 /LF  
377 /RUBOUT  
316 /N  
323 /S

PATTERN AFTER FAILING ISZ

NO  
SKIP

0342 0000  
0343 3012  
0344 1011  
0345 7006  
0346 7006  
0347 4362  
0350 7012  
0351 7012  
0352 7012  
0353 4362  
0354 7012  
0355 7010  
0356 4362  
0357 4362  
0360 7200  
0361 5742  
0362 0000  
0363 0010  
0364 1375  
0365 3412  
0366 1011  
0367 5762

SETUP, 0  
DCA WORK1  
TAD WORK  
RTL  
RTL JMS MORSU  
RTR  
RTR  
RTR JMS MORSU  
RTR  
RAR  
JMS MORSU  
JMS MORSU  
CLA  
JMP I SETUP  
MORSU, 0  
AND MSK7  
TAD TW6  
DCA I WORK1  
TAD WORK  
JMP I MORSU

/PAGE 1 CONSTANTS

0370 0261  
0371 0271  
0372 0303  
0373 0313  
0374 0323  
0375 0260

A3, /PAGE 1 CONSTANTS  
A4, INDATA-1  
A5, ONDATA-1  
A6, STDATA-1  
A7, FLDATA-1  
TW6, RSDATA-1  
0260

0400 1003  
0400 1003

/PART 2 INITIALIZATION ROUTINE

\*400  
TAD LIMLO

0401 7041  
 0402 3310  
 0403 1003  
 0404 7040  
 0405 3311  
 0406 1346  
 0407 3313  
 0410 1314  
 0411 3165

CIA FROM  
 TAD LIMLO  
 CMA  
 DCA TO  
 TAD AD  
 DCA PATCYC  
 TAD INST1  
 DCA RANUM+1

/LOW LIMIT TO FROM

0412 5047

JMP CHEK1

/GO TO PAGE 0 START

0413 1164  
 0414 7041  
 0415 1305  
 0416 7650  
 0417 5303  
 0420 1164  
 0421 7041  
 0422 1306  
 0423 7650  
 0424 5301  
 0425 5226

/PATH DECISION ROUTINE

TAD RANUM  
 CIA  
 TAD GFROM  
 SNA CLA  
 JMP FRUT

/SKIP IF NOT REQUESTING FROM  
 /GO TO FROM ADDRESS ROUTINE

PDR,

/SKIP IF NOT REQUESTING TO  
 /GO TO TO ADDRESS ROUTINE  
 /GO TO PATTERN ROUTINE

0426 1713  
 0427 3312  
 0430 1312  
 0431 7450  
 0432 5240  
 0433 7201  
 0434 1313  
 0435 3313  
 0436 1312  
 0437 5564

/SELECT PATTERN AND OTHER THINGS

TAD I PATCYC  
 DCA PATT  
 TAD PATT  
 SNA .+6  
 CLA IAC  
 TAD PATCYC  
 DCA PATCYC  
 TAD PATT  
 JMP I RANUM

/NO SKIP IF END OF PATTERN TABLE  
 /END PATTERN TABLE LOOK AROUND

/RETURN, AC=NEW PATTERN

0440 1345  
 0441 3313  
 0442 7001  
 0443 1311  
 0444 3311  
 0445 1311  
 0446 7041  
 0447 1310  
 0450 7640  
 0451 5255  
 0452 1311  
 0453 1015  
 0454 3311  
 0455 1311  
 0456 7500  
 0457 5276

/RESTOR START ADDRESS OF PATT, TABLE

/INCREMENT TO

/SKIP IF TO = FROM

/SKIP AROUND FROM

PRUT,

TAD AK776  
 DCA PATCYC  
 IAC  
 TAD TO  
 DCA TO  
 TAD TO  
 CIA  
 TAD FROM  
 SZA CLA  
 JMP .+4  
 TAD TO  
 TAD THREE  
 DCA TO  
 TAD TO  
 SMA  
 JMP GOUT

0460 1006  
 0461 7710  
 0462 5276  
 0463 7201  
 0464 1310  
 0465 3310  
 0466 1003  
 0467 7041  
 0470 3311  
 0471 1310  
 0472 1006  
 0473 7710  
 0474 5276  
 0475 5200  
 0476 7200  
 0477 1312  
 0500 5564

TAD LIMHI  
 SPA CLA  
 JMP GOUT  
 CLA IAC  
 TAD FROM  
 DCA FROM  
 TAD LIMLO  
 CIA TO  
 DCA TO  
 TAD FROM  
 TAD LIMHI  
 SPA CLA  
 JMP GOUT  
 JMP 400  
 CLA  
 TAD PATT  
 JMP I RANUM

/SKIP IF END TEST AREA  
 /ADVANCE FROM  
 /RESET TO ADDRESS

GOUT,

/SELECT TO ROUTINE  
 TAD TO  
 JMP I RANUM

TORUT,

0501 1311  
 0502 5564

/SELECT FROM ROUTINE  
 TAD FROM  
 JMP I RANUM

FRUT,

0503 1310  
 0504 5564

/PAGE 3 CONSTANTS  
 SELFRM+1

GFROM,

0505 0072

SELTO+1

GTO,

0506 0062

SELPAT+1

GPAT,

0507 0054

0  
 0  
 0  
 0

FROM,

0510 0000

0  
 0  
 0

TO,

0511 0000

0  
 0

PATT,

0512 0000

0  
 0

PATCYC,

0513 0000

JMP I APDR

INST1,

0514 5435

7776  
 7775  
 7773  
 7767  
 7757  
 7737  
 7677  
 7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

K7776,

0515 7776

7775  
 7773  
 7767  
 7757  
 7737  
 7677  
 7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0516 7775

7773  
 7767  
 7757  
 7737  
 7677  
 7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0517 7773

7767  
 7757  
 7737  
 7677  
 7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0520 7767

7757  
 7737  
 7677  
 7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0521 7757

7737  
 7677  
 7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0522 7737

7677  
 7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0523 7677

7577  
 7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0524 7577

7377  
 6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0525 7377

6777  
 5777  
 3777  
 0001  
 0003  
 0007  
 0017

0526 6777

5777  
 3777  
 0001  
 0003  
 0007  
 0017

0527 5777

3777  
 0001  
 0003  
 0007  
 0017

0530 3777

0001  
 0003  
 0007  
 0017

0531 0001

0003  
 0007  
 0017

0532 0003

0007  
 0017

0533 0007

0017

0534 0017

/STORED RETURN ADDRESS WHEN  
 /RANDOM FROM IS REQUESTED  
 /STORED RETURN ADDRESS WHEN  
 /RANDOM TO IS REQUESTED  
 /STORED RETURN ADDRESS WHEN  
 /RANDOM PATTERN IS REQUESTED  
 /CURRENT FROM ADDRESS  
 /CURRENT TO ADDRESS  
 /CURRENT PATTERN  
 /CURRENT PATTERN ADDRESS



0535 0037  
 0536 0077  
 0537 0177  
 0540 0377  
 0541 0777  
 0542 1777  
 0543 3777  
 0544 0000  
 0545 0515  
 0546 0544

K3777,  
 K3777,  
 0  
 AK7776, K7776  
 A0, K3777+1

0547 1375  
 0550 7001  
 0551 3375  
 0552 1375  
 0553 7640  
 0554 9437  
 0555 1175  
 0556 1174  
 0557 3175  
 0560 1175  
 0561 7640  
 0562 5437  
 0563 6002  
 0564 1376  
 0565 3011  
 0566 5767  
 0567 7602  
 0570 0215  
 0571 0212  
 0572 0306  
 0573 0303  
 0574 0377  
 0575 0000  
 0576 0567

SUC,  
 TAD CT  
 IAC  
 DCA CT  
 TAD CT  
 SZA CLA  
 JMP I ATFCLF  
 TAD KP  
 TAD K1000  
 DCA KP  
 TAD KP  
 SZA CLA  
 JMP I ATFCLF  
 IOF  
 TAD INF2  
 DCA WORK  
 JMP I .+1  
 7602  
 215  
 212  
 306  
 303  
 377  
 0  
 CT,  
 INF2, 567

0600 \*600

/CHECK FOR TO=FROM CONFLICT

0600 1021  
 0601 7041  
 0602 1002  
 0603 7450  
 0604 5055  
 0605 7001  
 0606 7450  
 0607 5055  
 0610 7001  
 0611 7650  
 0612 5055

TFCLF, TAD TOLOC  
 CIA  
 TAD FRMLC  
 SNA  
 JMP CHEK2  
 IAC  
 SNA  
 JMP CHEK2  
 IAC  
 SNA CLA  
 JMP CHEK2

0613 5402

JMP I FRMLOC

0614 0000

PATCH,

0

/RESTORE THEN GO AWAY

0615 3000

DCA 0

0616 1232

TAD X

0617 3001

DCA 1

0620 1233

TAD X1

0621 3002

DCA 2

0622 1234

TAD X2

0623 3003

DCA 3

0624 1235

TAD X3

0625 3040

DCA START

0626 1236

TAD X4

0627 3041

DCA START+1

0630 6001

ION

0631 5614

JMP I PATCH

X,  
X1,  
X2,  
X3,  
X4,

7402  
0  
7157  
ION  
LAS

7602

\*7602

7602 1411

TAD I WORK

7603 6046

TLS

7604 6041

TSF

7605 5204

JMP --1

7606 1013

TAD M377

7607 7640

SZA CLA

7610 5202

JMP --6

7611 5217

JMP OVR

\*7617  
OVR,

7617 7617

TCF

7617 6042

ION

7620 6001

JMP I ATFLF

7621 5437

S