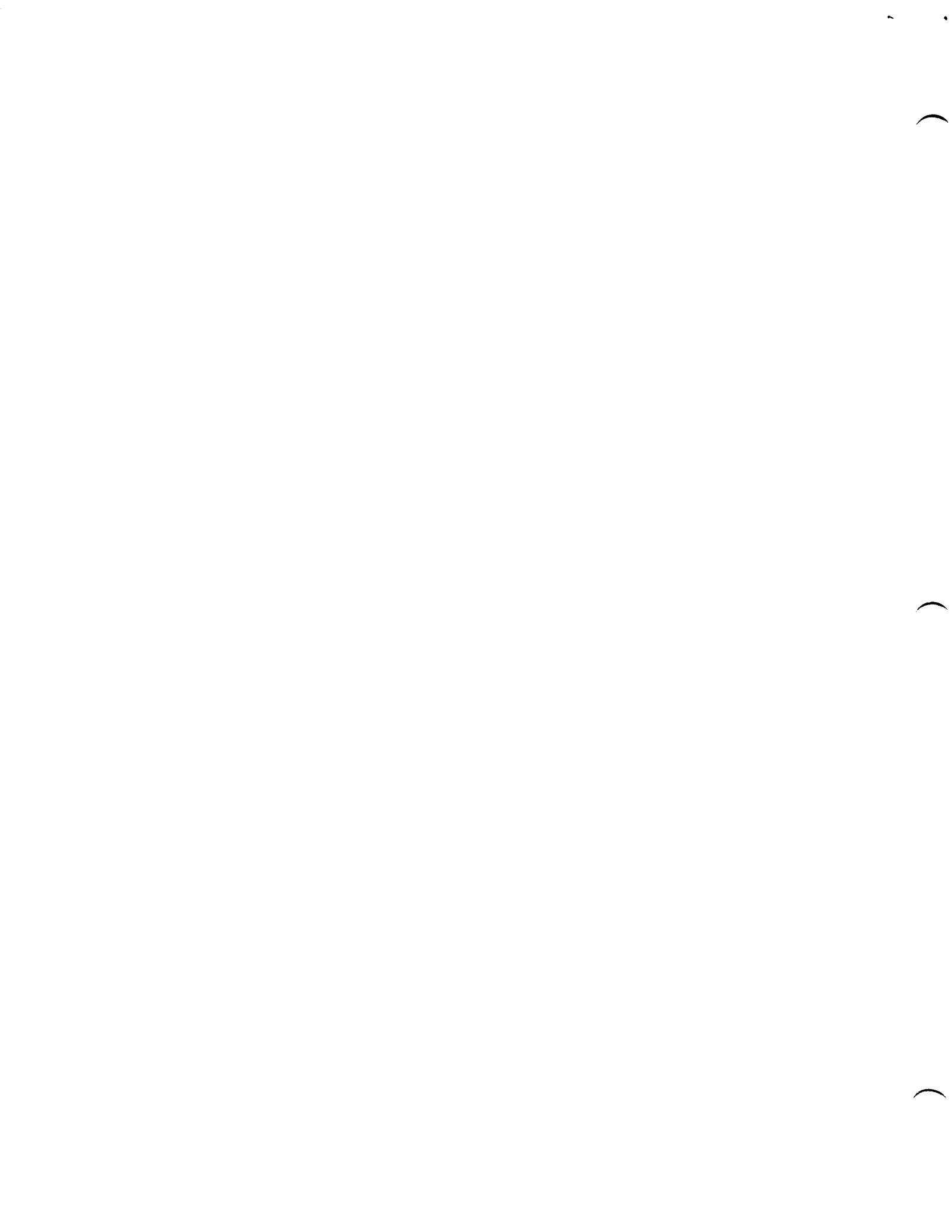


IDENTIFICATION

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 POP-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 POP-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-8E-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	MMMM	R	NNNN	NS
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
Ø 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
Ø 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 SRØ=Ø. 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 Ø.

NOTE! BY SETTING SRØ TO A Ø, 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 Ø 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.

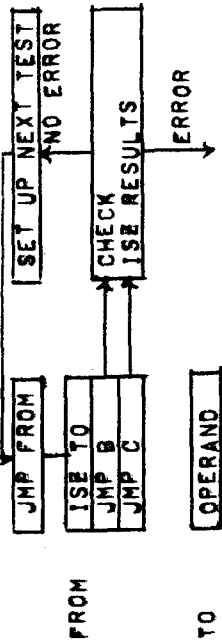
8. MISCELLANEOUS

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 ISZ IS CHECKED BY DUPLICATING ISZ 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 ISZ IS PERFORMED ON EACH OPERAND ONLY ONCE INSTEAD OF INCREMENTING IT UNTIL THE ISZ 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 ISZ 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
LIMHI, -7576 /HIGH LIMIT TEST AREA
ASUC, SUC
MSK7, 0007 /OCTAL CONVERSION MASK
WORK, 0 /IR0
WORK1, 0 /IR1
M377, -377
NUM, 3607
THREE, 3 /THE RANDOM NUMBER LOCATION

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

ISZ1, ISZ I TOLOC /MOVING ISZ
JMP1, JMP BACK /TEST INSTRUCTION
JMP2, JMP BAKBRN /GROUP,
TOLOC, 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
K0200, 0200
K0100, 0100
NOTE, 0
PRINT, INF1-1 /7'S=ERROR WITH NO SKIP
AERR1, ERR1 /0'S=ERROR WITH SKIP
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) = DO ONE ISZ ONLY
/SR11(1) = DO TEST PART 2

0040 4441
0041 0614
0042 0015

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

0043 7640
 0044 5426
 0045 1036
 0046 3165
 0047 7604
 0050 0030
 0091 7440
 0052 5055

SEA CLA /SKIP IF PART 1
 JMP I K0400 /GO TO PART 2
 TAD ITADNH
 DCA RANUM+1
 /CHECK FOR FIXED PATTERN
 LAS
 AND K0100
 SEA
 JMP CHEK2

CHEK1,

0053 4164
 0054 3022

/SELECT THE PATTERN
 JMS RANUM
 DCA PATRN

SELPAT,

0055 7604
 0056 0027
 0057 7640
 0060 5065

/CHECK FOR FIXED TO
 LAS
 AND K0200
 SEA CLA
 JMP CHEK3

CHEK2,

0061 4164
 0062 3021
 0063 1021
 0064 4151

/SELECT THE TO LOCATION
 JMS RANUM
 DCA TOLOC
 TAD TOLOC
 JMS LIMTST

SELTO,

0065 7604
 0066 0026
 0067 7640
 0070 5075

/CHECK FOR FIXED FROM
 LAS
 AND K0400
 SEA CLA
 JMP PLCINT

CHEK3,

0071 4164
 0072 3002
 0073 1002
 0074 4151

/SELECT THE FROM LOCATION
 JMS RANUM
 DCA FRMLOC
 TAD FRMLOC
 JMS LIMTST

SELFRM,

0075 7240
 0076 1002
 0077 3011
 0100 1010
 0101 3411
 0102 1017
 0103 3411
 0104 1020
 0105 3411

/PLACE FROM INSTRUCTIONS
 CLA CMA
 TAD FRMLOC
 DCA WORK
 TAD ISZ1
 DCA I WORK
 TAD JMP1
 DCA I WORK
 TAD JMP2
 DCA I WORK

PLCINT,

0106 1022
 0107 3421

/DEPOSIT PATTERN IN TO LOCATION
 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

BACK,  /RETURN FOR NO SKIP CONDITION
0116 7604 LAS
0117 7004 RAL
0120 7710 SPA CLA
0121 5132 JMP LAS1
0122 1421 TAD I TOLOC
0123 7041 CIA
0124 1024 TAD AFTER
0125 7640 SEA CLA
0126 5433 JMP I AERR1
0127 1421 TAD I TOLOC
0130 7650 SNA CLA
0131 5433 JMP I AERR1
0132 7604 LAS
0133 0025 AND K4
0134 7650 SNA CLA
0135 5047 JMP CHEK1
0136 7001 IAC
0137 1023 TAD BEFOR
0140 5111 JMP LUP1-1

LAS1,  /ERROR IN ISZ SKIP DETECTION
        /ERROR IN ISZ OPERATION
        /SKIP IF NOT ONE ISZ (SR9)

BAKBRN, /RETURN FOR SKIP CONDITION
0141 7604 LAS
0142 7004 RAL
0143 7710 SPA CLA
0144 5047 JMP CHEK1
0145 1421 TAD I TOLOC
0146 7640 SEA CLA
0147 5434 JMP I AERR2
0150 5047 JMP CHEK1

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

```

/SKIP IF TO LOCATION OK
/ERROR IN ISZ LOCATION

```

0164 0000 /RANDOM NUMBER GENERATOR
0165 1014 TAD NUM
0166 7104 RAL CLL
0167 7430 SEL
0170 1015 TAD THREE
0171 3014 DCA NUM
0172 1014 TAD NUM
0173 5564 JMP I RANUM /AC=NEW RANDOM NUMBER

0174 1000 K1000, 1000
0175 0000 KP, 0

0200 *200 JMP START
/ERROR ROUTINE 1
0201 1340 TAD SKPDAT+6
0202 3332 DCA SKPDAT
0203 7040 CMA
0204 3031 DCA NOTE
0205 9210 JMP KPGO

0206 1331 /ERROR ROUTINE 2
0207 3332 TAD SKPDAT-1
0210 1002 DCA SKPDAT
0211 3011 TAD FRMLC
0212 1370 DCA WORK
0213 4342 TAD A3
JMS SETUP

0214 1021 TAD TOLOC
0215 3011 DCA WORK
0216 1371 TAD A4
0217 4342 JMS SETUP

0220 1022 TAD PATRN
0221 3011 DCA WORK
0222 1372 TAD A5
0223 4342 JMS SETUP
0224 1023 TAD BEFOR
0225 3011 DCA WORK
0226 1373 TAD A6
0227 4342 JMS SETUP

0230 1421 TAD I TOLOC
0231 3011 DCA WORK
0232 1374 TAD A7
0233 4342 JMS SETUP

TTY, /TTY PRINT ROUTINE
0234 6002 IOF
0235 1032 TAD PRINT
0236 3011 DCA WORK
0237 1411 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

/HALT AFTER ERROR (SR0)

0253 1031
 0254 7650
 0255 5047
 0256 3031
 0257 5132

/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

INFL,	INDATA,	ONDATA,	ERROR PRINT OUT LINE 1	FROM (INSTRUCTION LOCATION)
0260	0306	0274	/F	
0261	0240	0275	/SPACE	
0262	0000	0276	/X	
0263	0000	0277	/X	
0264	0000	0300	/X	
0265	0000	0301	/X	
0266	0240		/SPACE	
0267	0240		/SPACE	
0270	0324		/T	TO (OPERAND ADDRESS)
0271	0240		/SPACE	
0272	0000		/X	ADDRESS
0273	0000		/X	
0274	0000		/X	
0275	0000		/X	
0276	0215		/CR	
0277	0212		/LF	
0300	0215		/CR	
0301	0215		/CR	

STDATA,	FLDATA,	ERROR PRINTOUT LINE 2	OPERAND (STARTING COUNT)	PATTERN	FAILING COUNT	PATTERN BEFORE FAILING ISZ
0302	0317	/F				
0303	0240	/SPACE				
0304	0000	/X				
0305	0000	/X				
0306	0000	/X				
0307	0000	/X				
0310	0240	/SPACE				
0311	0240	/SPACE				
0312	0306	/F				
0313	0240	/SPACE				
0314	0000	/X				
0315	0000	/X				
0316	0000	/X				
0317	0000	/X				
0320	0240	/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
RTR JMS MORSU
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,
A4,
A5,
A6,
A7,
TW6,
/PAGE 1 CONSTANTS
INDATA-1
ONDATA-1
STDATA-1
FLDATA-1
RSDATA-1
0260

/PART 2 INITIALIZATION ROUTINE

0400 0400
1003 1003

*400
TAD LIMLO

```

0401 7041 CIA
0402 3310 DCA FROM
0403 1003 TAD LIMLO
0404 7040 CMA
0405 3311 DCA TO
0406 1346 TAD A0
0407 3313 DCA PATCYC
0410 1314 TAD INST1
0411 3165 DCA RANUM+1
0412 5047 JMP CHEK1
                                /GO TO PAGE 0 START

/PATH DECISION ROUTINE
PDR,
0413 1164 TAD RANUM
0414 7041 CIA
0415 1305 TAD GFROM
0416 7650 SNA CLA
0417 5303 JMP FRUT
                                /SKIP IF NOT REQUESTING FROM
                                /GO TO FROM ADDRESS ROUTINE

0420 1164 TAD RANUM
0421 7041 CIA
0422 1306 TAD GTO
0423 7650 SNA CLA
0424 5301 JMP TORUT
0425 5226 JMP PRUT
                                /SKIP IF NOT REQUESTING TO
                                /GO TO TO ADDRESS ROUTINE
                                /GO TO PATTERN ROUTINE

/SELECT PATTERN AND OTHER THINGS
PRUT,
0426 1713 TAD I PATCYC
0427 3312 DCA PATT
0430 1312 TAD PATT
0431 7450 SNA
0432 5240 JMP .+6
0433 7201 CLA IAC
0434 1313 TAD PATCYC
0435 3313 DCA PATCYC
0436 1312 TAD PATT
0437 5564 JMP I RANUM
                                /RETURN, AC=NEW PATTERN

0440 1345 TAD AK7776
0441 3313 DCA PATCYC
0442 7001 IAC
0443 1311 TAD TO
0444 3311 DCA TO
0445 1311 TAD TO
0446 7041 CIA
0447 1310 TAD FROM
0450 7640 SZA CLA
0451 5255 JMP .+4
0452 1311 TAD TO
0453 1015 TAD THREE
0454 3311 DCA TO
0455 1311 TAD TO
0456 7500 SMA
0457 5276 JMP GOUT
                                /RESTOR START ADDRESS OF PATT. TABLE
                                /INCREMENT TO
                                /SKIP IF TO = FROM
                                /SKIP AROUND FROM

```

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 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

FROM, 0
 TO, 0
 PATT, 0
 PATCYC, 0
 INST1, JMP I APDR
 K7776, 7776
 7775
 7773
 7767
 7757
 7737
 7677
 7577
 7377
 6777
 5777
 3777
 0001
 0003
 0007
 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,
 3777
 0
 AK7776, K7776
 A0. K3777+1

0547 1375
 0550 7001
 0551 3375
 0552 1375
 0553 7640
 0554 5437
 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
 567
 CT,
 INF2,

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 FRMLOC
 SNA
 JMP CHEK2
 IAC
 SNA
 JMP CHEK2
 IAC
 SNA CLA
 JMP CHEK2

```

0613 5402      JMP I FRMLDC
0614 0000      DCA 0
0615 3000      TAD X
0616 1232      DCA 1
0617 3001      TAD X1
0620 1233      DCA 2
0621 3002      TAD X2
0622 1234      DCA 3
0623 3003      TAD X3
0624 1235      DCA START
0625 3040      TAD X4
0626 1236      DCA START+1
0627 3041      ION
0630 6001      JMP I PATCH
0631 5614

0632 7402      X,
0633 0000      X1,
0634 7157      X2,
0635 6001      X3,
0636 7604      X4,

7602          *7602
7602 1411      TAD I WORK
7603 6046      TLS
7604 6041      TSF
7605 5204      JMP .-1
7606 1013      TAD M377
7607 7640      SEA CLA
7610 5202      JMP .-6
7611 5217      JMP OVR

7617          *7617
7617 6042      OVR,
7620 6001
7621 5437

```

/RESTORE THEN GO AWAY

S

JMP I ATFCFLF