

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

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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

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ONE PDP-8E EQUIPPED WITH TELETYPE.

2.2 STORAGE

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

2.3 PRELIMINARY PROGRAM

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

3. LOADING PROCEDURE

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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



6.2.2 EXAMPLES  
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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.

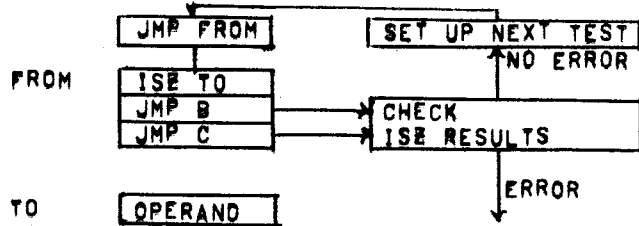
8.     MISCELLANEOUS

8.1    EXECUTION TIME

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

## 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 TO 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.

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/PDP-8E ISZ TEST  
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 /

/CONSTANTS AND VARIABLES

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*0
0000 0000
0000 0000
0001 5001          JMP 1          /PERIPHERAL INTERRUPT
0002 0002          FRMLOC, 2       /ISZ TEST INSTRUCTION LOCATION
0003 0003          LIMLO, 3        /LOW LIMIT TEST AREA
0004 0000          0
0005 0000          0
0006 0202          LIMHI, -7576    /HIGH LIMIT TEST AREA
0007 0547          ASUC, SUC
0010 0007          MSK7, 0007      /OCTAL CONVERSION MASK
0011 0000          WORK, 0        /IR0
0012 0000          WORK1, 0       /IR1
0013 7401          M377, -377
0014 3607          NUM, 3607      /THE RANDOM NUMBER LOCATION
0015 0003          THREE, 3

0016 2421          ISZ1, ISZ I TOLOC /MOVING ISZ
0017 5116          JMP1, JMP BACK   /TEST INSTRUCTION
0020 5141          JMP2, JMP BAKBRN  /GROUP.
0021 0000          TOLOC, 0        /LOCATION TO BE ISZ'D
0022 0000          PATRN, 0       /STARTING ISZ PATTERN
0023 0000          BEFOR, 0       /FAILING PATTERN BEFORE FAILING ISZ
0024 0000          AFTER, 0      /PREDICTED RESULTS OF EACH ISZ
0025 0004          K4, 4         /SWITCH REGISTER MASKS
0026 0400          K0400, 0400
0027 0200          K0200, 0200
0030 0100          K0100, 0100
0031 0000          NOTE, 0       /7'S=ERROR WITH NO SKIP
0032 0257          PRINT, INF1-1  /0'S=ERROR WITH SKIP
0033 0201          AERR1, ERR1
0034 0206          AERR2, ERR2
0035 0413          APDR, PDR
0036 1014          ITADNM, TAD NUM
0037 0600          ATFCLF, TFCLF

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/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

/

/

/PROGRAM START

```

0040 4441          START, JMS I ,+1      /ION
0041 0614          PATCH          /LAS
0042 0015          AND THREE

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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	CHEK1,	LAS	
0050	0030		AND K0100	
0051	7440		SZA	
0052	5055		JMP CHEK2	
			/SELECT THE PATTERN	
0053	4164	SELPAT,	JMS RANUM	
0054	3022		DCA PATRN	
			/CHECK FOR FIXED TO	
0055	7604	CHEK2,	LAS	
0056	0027		AND K0200	
0057	7640		SZA CLA	
0060	5065		JMP CHEK3	
			/SELECT THE TO LOCATION	
0061	4164	SELTO,	JMS RANUM	
0062	3021		DCA TOLOC	
0063	1021		TAD TOLOC	
0064	4151		JMS LIMTST	
			/CHECK FOR FIXED FROM	
0065	7604	CHEK3,	LAS	
0066	0026		AND K0400	
0067	7640		SZA CLA	
0070	5075		JMP PLCINT	
			/SELECT THE FROM LOCATION	
0071	4164	SELFRM,	JMS RANUM	
0072	3002		DCA FRMLOC	
0073	1002		TAD FRMLOC	
0074	4151		JMS LIMTST	
			/PLACE FROM INSTRUCTIONS	
0075	7240	PLCINT,	CLA CMA	
0076	1002		TAD FRMLOC	
0077	3011		DCA WORK	
0100	1016		TAD ISZ1	
0101	3411		DCA I WORK	
0102	1017		TAD JMP1	
0103	3411		DCA I WORK	
0104	1020		TAD JMP2	
0105	3411		DCA I WORK	
			/DEPOSIT PATTERN IN TO LOCATION	
0106	1022		TAD PATRN	
0107	3421		DCA I TOLOC	

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                                /STORE PREDICTED ISZ RESULT
0110 1022                      TAD PATRN
0111 3023                      DCA BEFOR
                                LUP1, TAD BEFOR
0112 1023                      IAC
0113 7001                      DCA AFTER
0114 3024                      JMP I ASUC
0115 5407

                                /RETURN FOR NO SKIP CONDITION
0116 7604                      BACK, 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                      SZA CLA
0126 5433                      JMP I AERR1          /ERROR IN ISZ OPERATION
0127 1421                      TAD I TOLOC
0130 7650                      SNA CLA
0131 5433                      JMP I AERR1          /ERROR IN ISZ SKIP DETECTION
0132 7604                      LAS1, LAS
0133 0025                      AND K4
0134 7650                      SNA CLA          /SKIP IF NOT ONE ISZ (SR9)
0135 5047                      JMP CHEK1
0136 7001                      IAC
0137 1023                      TAD BEFOR
0140 5111                      JMP LUP1-1

                                /RETURN FOR SKIP CONDITION
0141 7604                      BAKBRN, LAS
0142 7004                      RAL
0143 7710                      SPA CLA
0144 5047                      JMP CHEK1
0145 1421                      TAD I TOLOC
0146 7640                      SZA CLA          /SKIP IF TO LOCATION OK
0147 5434                      JMP I AERR2          /ERROR IN ISZ LOCATION
0150 5047                      JMP CHEK1

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

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

0174 1000
0175 0000

0200 0200
0200 5040

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

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

K1000, 1000
KP, 0

*200
JMP START
/ERROR ROUTINE 1
ERR1, TAD SKPDAT+6
DCA SKPDAT
CMA
DCA NOTE
JMP KPGO

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

TAD TOLOC
DCA WORK
TAD A4
JMS SETUP

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

TAD I TOLOC
DCA WORK
TAD A7
JMS SETUP

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

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0240	6046	TLS	
0241	6041	TSF	
0242	5241	JMP .-1	
0243	1013	TAD M377	
0244	7640	SZA CLA	
0245	5237	JMP TTY+3	
0246	6042	TCF	
0247	6001	ION	
0250	7604	LAS	
0251	7700	SMA CLA	
0252	7402	HLT	/HALT AFTER ERROR (SR0)
0253	1031	TAD NOTE	
0254	7650	SNA CLA	
0255	9047	JMP CHEK1	
0256	3031	DCA NOTE	
0257	5132	JMP LAS1	/RETURN TO NO SKIP ROUTINE
/ERROR PRINT OUT LINE 1			
0260	0306	INF1, 306	/F FROM (INSTRUCTION LOCATION)
0261	0240	240	/SPACE
0262	0000	INDATA, 0	/X LOCATION
0263	0000	0	/X
0264	0000	0	/X
0265	0000	0	/X
0266	0240	240	/SPACE
0267	0240	240	/SPACE
0270	0324	324	/T TO (OPERAND ADDRESS)
0271	0240	240	/SPACE
0272	0000	ONDATA, 0	/X ADDRESS
0273	0000	0	/X
0274	0000	0	/X
0275	0000	0	/X
0276	0215	215	/CR
0277	0212	212	/LF
0300	0215	215	/CR
0301	0215	215	/CR
/ERROR PRINTOUT LINE 2			
0302	0317	317	/O OPERAND (STARTING COUNT)
0303	0240	240	/SPACE
0304	0000	STDATA, 0	/X PATTERN
0305	0000	0	/X
0306	0000	0	/X
0307	0000	0	/X
0310	0240	240	/SPACE
0311	0240	240	/SPACE
0312	0306	306	/F FAILING COUNT
0313	0240	240	/SPACE
0314	0000	FLDATA, 0	/X PATTERN BEFORE FAILING ISZ
0315	0000	0	/X
0316	0000	0	/X
0317	0000	0	/X
0320	0240	240	/SPACE

0321 0240  
0322 0322  
0323 0240

240  
322  
240

/SPACE  
/R  
/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  
0  
0  
0  
240  
240  
SKPDAT, 316  
323  
215  
212  
212  
377  
316  
323

/X  
/X  
/X  
/X  
/SPACE  
/SPACE  
/N  
/S  
/CR  
/LF  
/LF  
/RUBOUT  
/N  
/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, INDATA-1  
A4, ONDATA-1  
A5, STDATA-1  
A6, FLDATA-1  
A7, RSDATA-1  
TW6, 0260

/PART 2 INITIALIZATION ROUTINE

\*400

0400 0400  
1003

TAD LIMLO

0401	7041		CIA	
0402	3310		DCA FROM	/LOW LIMIT TO 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	
0413	1164	PDR,	TAD RANUM	
0414	7041		CIA	
0415	1305		TAD GFROM	
0416	7650		SNA CLA	/SKIP IF NOT REQUESTING FROM
0417	5303		JMP FRUT	/GO TO FROM ADDRESS ROUTINE
0420	1164		TAD RANUM	
0421	7041		CIA	
0422	1306		TAD GTO	
0423	7650		SNA CLA	/SKIP IF NOT REQUESTING TO
0424	5301		JMP TORUT	/GO TO TO ADDRESS ROUTINE
0425	5226		JMP PRUT	/GO TO PATTERN ROUTINE
			/SELECT PATTERN AND OTHER THINGS	
0426	1713	PRUT,	TAD I PATCYC	
0427	3312		DCA PATT	
0430	1312		TAD PATT	
0431	7450		SNA	/NO SKIP IF END OF PATTERN TABLE
0432	5240		JMP .+6	/END PATTERN TABLE LOOK AROUND
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	/RESTOR START ADDRESS OF PATT. TABLE
0442	7001		IAC	
0443	1311		TAD TO	
0444	3311		DCA TO	/INCREMENT TO
0445	1311		TAD TO	
0446	7041		CIA	
0447	1310		TAD FROM	
0450	7640		SZA CLA	/SKIP IF TO = FROM
0451	5255		JMP .+4	
0452	1311		TAD TO	
0453	1015		TAD THREE	
0454	3311		DCA TO	/SKIP AROUND FROM
0455	1311		TAD TO	
0456	7500		SMA	
0457	5276		JMP GOUT	

0460	1006		TAD LIMHI	
0461	7710		SPA CLA	/SKIP IF END TEST AREA
0462	5276		JMP GOUT	
0463	7201		CLA IAC	
0464	1310		TAD FROM	
0465	3310		DCA FROM	/ADVANCE FROM
0466	1003		TAD LIMLO	
0467	7041		CIA	
0470	3311		DCA TO	/RESET TO ADDRESS
0471	1310		TAD FROM	
0472	1006		TAD LIMHI	
0473	7710		SPA CLA	
0474	5276		JMP GOUT	
0475	5200		JMP 400	
0476	7200	GOUT,	CLA	
0477	1312		TAD PATT	
0500	5564		JMP I RANUM	
				/SELECT TO ROUTINE
0501	1311	TORUT,	TAD TO	
0502	5564		JMP I RANUM	
				/SELECT FROM ROUTINE
0503	1310	FRUT,	TAD FROM	
0504	5564		JMP I RANUM	
				/PAGE 3 CONSTANTS
0505	0072	GFROM,	SELFRM+1	/STORED RETURN ADDRESS WHEN
				/RANDOM FROM IS REQUESTED
0506	0062	GTO,	SELTO+1	/STORED RETURN ADDRESS WHEN
				/RANDOM TO IS REQUESTED
0507	0054	GPAT,	SELPAT+1	/STORED RETURN ADDRESS WHEN
				/RANDOM PATTERN IS REQUESTED
0510	0000	FROM,	0	/CURRENT FROM ADDRESS
0511	0000	TO,	0	/CURRENT TO ADDRESS
0512	0000	PATT,	0	/CURRENT PATTERN
0513	0000	PATCYC,	0	/CURRENT PATTERN ADDRESS
0514	5435	INST1,	JMP I APDR	
0515	7776	K7776,	7776	
0516	7775		7775	
0517	7773		7773	
0520	7767		7767	
0521	7757		7757	
0522	7737		7737	
0523	7677		7677	
0524	7577		7577	
0525	7377		7377	
0526	6777		6777	
0527	5777		5777	
0530	3777		3777	
0531	0001		0001	
0532	0003		0003	
0533	0007		0007	
0534	0017		0017	

0535	0037		0037
0536	0077		0077
0537	0177		0177
0540	0377		0377
0541	0777		0777
0542	1777		1777
0543	3777	K3777,	3777
0544	0000		0
0545	0515	AK7776,	K7776
0546	0544	A0,	K3777+1

0547	1375	SUC,	TAD CT
0550	7001		IAC
0551	3375		DCA CT
0552	1375		TAD CT
0553	7640		SZA CLA
0554	5437		JMP I ATFCLF
0555	1175		TAD KP
0556	1174		TAD K1000
0557	3175		DCA KP
0560	1175		TAD KP
0561	7640		SZA CLA
0562	5437		JMP I ATFCLF
0563	6002		IOF
0564	1376		TAD INF2
0565	3011		DCA WORK
0566	5767		JMP I .+1
0567	7602		7602
0570	0215		215
0571	0212		212
0572	0306		306
0573	0303		303
0574	0377		377
0575	0000	CT,	0
0576	0567	INF2,	567

0600 \*600

/CHECK FOR TO=FROM CONFLICT

0600	1021	TFCLF,	TAD TOLOC
0601	7041		CIA
0602	1002		TAD FRMLOC
0603	7450		SNA
0604	5055		JMP CHEK2
0605	7001		IAC
0606	7450		SNA
0607	5055		JMP CHEK2
0610	7001		IAC
0611	7650		SNA CLA
0612	5055		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

0632 7402

X, 7402

0633 0000

X1, 0

0634 7157

X2, 7157

0635 6001

X3, ION

0636 7604

X4, 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

\*7617

7617 6042

OVR, TCF

7620 6001

ION

7621 5437

JMP I ATFCLF

S