

9R01A

721 CARD PUNCH TEST

USING
SPECIAL RIPPLES AND SPECIAL RANDOM NUMBERS PATTERN

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9R01A

721 CARD PUNCH TEST
USING
SPECIAL RIPPLES AND SPECIAL RANDOM NUMBERS PATTERNS

A. UNIT TESTED

1. PURPOSE

TO PROVIDE A RIGOROUS TEST FOR THE 721 CARD PUNCH.

2. METHOD OF TEST

A RIGOROUS TEST HAS BEEN PRODUCED BY USING THREE SPECIAL
RIPPLE PATTERNS AND SIX SPECIAL RANDOM NUMBERS PATTERNS.

A RANDOM START-STOP OR LATCH-UP PUNCHING CONDITION HAS BEEN GIVEN
SPECIAL ATTENTION.

PROVISION IS MADE FOR PUNCHING ANY SPECIAL PATTERN CARD.

A BIAS TEST OF NINETY SIX CARDS HAS BEEN SET UP UNDER SENSE
SWITCH FIVE CONTROL.

THE PROGRAM USES 9DEPRA PRINT ROUTINE AND WILL PRINT OUT PUNCHING
ERRORS WHEN READING AND CHECKING THE PUNCHED CARDS.

THE TEST CONSISTS OF THREE MAIN PARTS

PART 1 MAIN TEST -300 CARDS- 9 PATTERNS 0103-1412

THIS TEST IS ENTERED WITH SSW 5 UP WHEN LOADING PROGRAM AND
AT ANY OTHER TIME BY TRANSFERRING TO 0030. IT IS ALSO ENTERED
BY PUSHING START FROM ANY HTR LOCATION FOLLOWING THE READING
PART OF EITHER OF THE THREE MAIN TESTS. SSW 6 BEING DOWN AND
5 UP.

THIS TEST IS MADE UP OF 9 PATTERNS.

WHEN ALL PATTERNS ARE PUNCHED, PROGRAM STOPS AT 620. TRANSFER
CARDS TO READER, FOLLOW WITH TWO BLANKS. READY READER AND
PUSH START TO READ AND COMPARE PUNCHED CARDS.

0103 - PATTERN ONE -- IS A 12 CARD SEMI-HEAVY RIPPLE PATTERN WITH

EVEN ROWS BEING ZERO AND ODD ROWS BEING FULLY PUNCHED EXCEPT FOR ONE MOVING POSITION. THIS PATTERN IS A RIDGID TEST FOR THE PUNCH DIES.

0154 - PATTERN TWO -- IS A 72 CARD LIGHT RIPPLE PATTERN WHICH PUNCHES ONE PUNCH, AND ONLY ONE, IN EACH ROW, EXCEPT THE 12 ROW, FOR EVERY CARD PUNCHED. THESE POSITIONS ARE SHIFTED UNTIL EVERY COLUMN OF EVERY ROW HAS BEEN PUNCHED. THIS PATTERN IS A RIDGID TEST FOR THE PUNCH MAGNETS.

0223 - PATTERN THREE -- IS A 72 CARD HEAVY RIPPLE PATTERN FOR ROWS 9,6,3, AND 0. ALL OTHERS ROWS ARE ZEROED. ROWS 9,6,3, AND 0 ARE FULLY PUNCHED SAVE ONE POSITION WHICH MOVES THROUGH THE 72 COLUMNS. THIS PATTERN IS RIDGID TEST FOR THE PUNCH MAGNETS AND ALSO THE WRITE THYRATRONS.

THE NEXT SIX PATTERNS ARE SPECIALLY PREPARED RANDOM NUMBER PATTERNS.

TWENTY FOUR CARDS OF EACH PATTERN ARE PUNCHED. A CHECK SUM OF EACH CARD IS PUNCHED IN 9 RIGHT. THE FOLLOWING PATTERNS WILL GIVE A RELIABILITY TEST TO ALL COMPONENTS OF THE PUNCH, ESPECIALLY THE ARC SUPPRESSOR CIRCUITS.

0345 - PATTERN FOUR -- IS A 24 CARD RANDOM NUMBERS PATTERN WITH 9 RIGHT OF EACH CARD CONTAINING THE CHECK SUM FOR THAT CARD.

THE OFF ROWS, EXCEPT 9 RIGHT, ARE DECREASED IN MAGNITUDE SO THAT EACH WORD, LEFT AND RIGHT, HAS ONE PUNCH, TWO PUNCHES, OR NO PUNCHES.

THE EVEN ROWS ARE INCREASED IN MAGNITUDE AND ALL WORDS, LEFT AND RIGHT, ARE BUILT UP UNTIL THE WORDS ARE EITHER ALMOST FULL OR COMPLETELY FULL.

THIS PATTERN FIVES A SEQUENCE OF HEAVY EVEN ROWS, AND LIGHT ODD ROWS, WHILE REMAINING COMPLETELY RANDOM.

0345 - PATTERN FIVE -- IS A 24 CARD RANDOM NUMBERS PATTERN, THE CHECK SUM OF EACH CARD IS PUNCHED IN 9 RIGHT.

PATTERN FIVE IS THE ALTERATE OF PATTERN FOUR. IN THIS PATTERN, THE ODD ROWS ARE HEAVY AND THE EVEN ROWS LIGHT.

0462 - PATTERN SIX -- IS A 24 RANDOM NUMBERS PATTERN. NINE

RIGHT CONTAINS THE CHECK SUM.

THIS IS THE FIRST OF FOUR SIMILAR PATTERNS.

THESE FOUR PATTERNS ARE IDENTICAL TO THE BIAS TEST CARDS.

PATTERN SIX HAS 3 LIGHT ROWS, 3 HEAVY ROWS, AND SIX ZERO ROWS. ALL EVEN ROWS ARE ZERO. ROWS 9,5, AND 1 ARE LIGHT, AND RANDOM, ROWS 7,3, AND 11 ARE HEAVY AND RANDOM.

0462 - PATTERN SEVEN -- IS A 24 CARD RANDOM NUMBERS TEST, NINE RIGHT CONTAINING THE CHECK SUM OF EACH CARD. THIS TEST IS IDENTICAL TO PATTERN SIX EXCEPT THE LIGHT AND HEAVY ROWS ARE SWITCHED. THE EVEN ROWS ARE STILL ZERO.

THE PATTERN THEN IS - 9,5, AND 1 HEAVY- 7,3, AND 11 LIGHT AND ALL EVEN ROWS ZERO.

0462 - PATTERN EIGHT -- IS A 24 CARD RANDOM NUMBERS TEST, NINE RIGHT CONTAINING THE CHECK SUM OF EACH CARD. NOW WE ZERO THE ODD ROWS, EXCEPT 9 RIGHT.

MAKE 6,2, AND 12 HEAVY AND 8,4, AND 0 LIGHT.

0462 - PATTERN NINE -- IS A 24 CARD RANDOM NUMBERS TEST, NINE RIGHT CONTAINING THE CHECK SUM OF EACH CARD.

THE ODD ROWS ARE ZERO, EXCEPT 9 RIGHT.

ROWS 8,4, AND ZERO ARE HEAVY, ROWS 6,2, AND 12 ARE LIGHT.

THESE LAST FOUR PATTERNS TEST EACH WORD AND EACH ROW, EXCEPT 9R WHICH WILL CONTAIN THE CHECK SUM.

PART II SPECIAL PATTERN 24 CARDS 1413-1446

THIS SECTION MAY BE USED IF A PARTICULAR PATTERN NOT COVERED IN THIS TEST CAUSES TROUBLE. ENTRANCE TO THIS TEST IS MADE BY MANUAL TRA TO 1413. THE CARD TO BE PUNCHED IS READIED IN THE READER. READY THE PUNCH. PUSH START TO PUNCH CARDS.

PROGRAM IS SET UP TO PUNCH 24 CARDS THEN STOP.

PLACE PUNCHED CARDS IN READER, READY, AND PUSH START TO COMPARE. AFTER READING, PROGRAM STOPS AT 1446, PUSHING START HERE MAY BRING IN NEXT PROGRAM, REPEAT MAIN PUNCH TEST, OR ENTER BIAS TEST. PROPERLY SET SSW 5 AND 6 FOR DESIRED OPERATION.

PART III 96 CARD BIAS TEST 1447-1732

ENTRANCE TO THIS TEST IS MADE ON LOADING PROGRAM WITH SSW 5 DN. AFTER PERFORMING MAIN TEST OR SPECIAL CARD PATTERN TEST, PART I AND PART II RESPECTIVELY, ENTRANCE MAY BE MADE BY SETTING BOTH SSW 5 AND 6 DOWN AND PUSHING START.

THIS TEST PUNCHES 96 CARDS, 4 PATTERNS OF 24 CARDS EACH. THESE PATTERNS ARE THE SAME AS PATTERNS SIX, SEVEN, EIGHT, AND NINE OF THE MAIN TEST OR PART I.

AFTER PUNCHING THE 96 CARDS THE PROGRAM STOPS. NOW, PLACE PUNCHED CARDS IN READER. READY READER, AND PUSH START TO READ AND COMPARE PUNCHED CARDS.

AFTER READING, PROGRAM STOPS. HERE AGAIN, YOU MAY REPEAT MAIN TEST, BIAS TEST, OR CALL IN NEXT PROGRAM BY PUSHING START WITH PROPER SETTING OF SSW 5 AND 6. ALSO, YOU MAY MANUALLY TRANSFER TO 1413 TO ENTER SPECIAL CARD PATTERN TEST.

B. AREA OF MACHINE REQUIRED

1. MF, CF, CR, PR, AND PUNCH

2. STORAGE LOCATIONS	PROGRAM	0030-2403
	9IOM	5500-6476
	PRINT ROUTINE	6500-7677

C. PROGRAM CONTROL

1. DECK	000	9LD01A LOW END LOADER
	001-055	9R01A PUNCH PROGRAM
	056-079	9IOM
	080-108	PRINT ROUTINE
	109	TRA CARD TO 0030
	110-111	TWO BLANK CARDS

2. SENSE SWITCH CONTROL

SSW 1 UP	TEST SSW 4
SSW 1 DN	REPEAT TEST LOOP
SSW 2 UP	INDICATE ERROR TEST SSW 3
SSW 2 DN	BY-PASS ERROR INDICATION
SSW 3 UP	PRINT ON ERROR IF SSW 2 UP THEN TEST SSW 1
SSW 3 DN	STOP ON ERROR IF SSW 2 UP THEN TEST SSW 1
SSW 4 UP	PROCEED TO NEXT TEST
SSW 4 DN	REPEAT SECTION N TIMES
SSW 5 UP	ENTER MAIN TEST PUNCH 300 CARDS

SSW 5 DN ENTER BIAS TEST PUNCH 96 CARDS
SSW 6 UP CALL IN NEXT PROGRAM
SSW 6 DN REPEAT TEST

3. I/O SELECTION

A. A HALT WILL OCCUR AT 5517 AT WHICH TIME THE OPERATOR MUST SELECT, BY USE OF THE KEYS, THE PUNCHES AND CARD READERS TO BE TESTED AS FOLLOWS.

1. TAG KEY 20 INDICATES CHANNEL A
TAG KEY 19 INDICATES CHANNEL C
TAG KEY 18 INDICATES CHANNEL E

2. KEY 35 DOWN WILL INDICATE A CARD READER, CHANNEL A. KEY 33 DOWN WILL INDICATE A PUNCH, CHANNEL A.

B. IF CHANNEL C WAS SELECTED IN THE TAG, AT THE FIRST STOP A SECOND STOP WILL OCCUR AT 5525, AT WHICH TIME A PUNCH AND/OR CARD READER SHOULD BE SELECTED ON CHANNEL C, BY USE OF KEYS 33 AND 35.

C. IF CHANNEL E WAS SELECTED IN THE TAG AT THE FIRST STOP, A SECOND STOP WILL OCCUR AT 5533, AT WHICH TIME A PUNCH AND/OR CARD READER SHOULD BE SELECTED ON CHANNEL E, BY USE OF KEYS 33 AND 35.

D. IF NO TAG KEYS WERE PUT DOWN AT FIRST STOP A FURTHER HALT WILL OCCUR AT 5540 TO INDICATE THIS.

NOTE -- IF A PUNCH IS SELECTED ON CHANNELS A, C AND E, IT WOULD PROBABLY BE DESIDERABLE TO SELECT A CARD READER, ONLY ON CHANNEL A, AND READ THE PUNCHED CARDS FROM ALL THREE PUNCHES ON CHANNEL A, HOWEVER, THIS NEED NOT BE DONE. ALL THREE CARD READERS MAY ALSO BE SELECTED.

E. NORMAL STOPS

620 PROGRAM STOPS HERE AFTER PUNCHING CARDS OF MAIN PROGRAM, THAT IS THE 300 CARDS OF NINE PATTERNS. THIS STOP ALLOWS THE TRANSFER OF PUNCHED CARDS TO READER TO READ AND COMPARE AGAINST GENERATED IMAGE.

1407 PROGRAM STOPS HERE AFTER READING PUNCHED CARDS OF MAIN PROGRAM, THAT IS, THE 300 CARDS OF NINE PATTERNS. TO REPEAT TEST, SET SSW 6 DN AND START. TO ENTER BIAS TEST SET SSW 5 AND 6 DN AND START.

TO ENTER SPECIAL CARD PATTERN, MANUALLY TRA TO 1442

TO CALL IN NEXT PROGRAM PUSH START.

1422 PROGRAM STOPS HERE AFTER PUNCHING 24 SPECIAL PATTERN CARDS.
THIS STOP ALLOWS THE TRANSFER OF CARDS TO READER FOR READING
AND COMPARING TO SPECIAL CARD IMAGE.

1446 PROGRAM STOPS HERE AFTER READING SPECIAL PATTERN CARDS. TO
REPEAT THIS TEST MANUALLY TRA TO 1344 AND START.
TO ENTER MAIN PUNCH TEST SET SSW 6 DN AND START.
TO ENTER BIAS TEST SET SSW 5 AND 6 DN AND START.
TO CALL IN NEXT PROGRAM PUSH START WITH SSW 6 UP.

1605 PROGRAM STOPS HERE AFTER PUNCHING 96 BIAS TEST CARDS. THIS
STOP ALLOWS THE TRANSFER OF THESE 96 CARDS TO READER FOR
READING AND COMPARING TO GENERATED IMAGE.

1727 PROGRAM STOPS HERE AFTER READIN THE 96 BIAS TEST CARDS.
TO REPEAT THIS TEST SET SSW 5 AND 6 DN AND START.
TO REPEAT MAIN PUNCH TEST, THAT IS THE 300 CARD, 9 PATTERN
TEST, SET SSW 6 DN AND START.
TO CALL IN NEXT PROGRAM START WITH SSW 6 UP.
TO ENTER 24 CARDS SPECIAL PATTERN TEST MANUALLY TRA TO 1344.

5517 TO ENTER CHANNEL A CONTROL

5525 TO ENTER CHANNEL C CONTROL

5533 TO ENTER CHANNEL E CONTROL

F. ERROR STOPS

6517 THIS STOP HAPPENS ONLY WHEN SSW 3 IS DN AND THERE IS AN ERROR
OR IN PUNCHING OR READING THE CARD. INDEX REGISTER C CONTAINS THE
6545 TWO S COMPLEMENT OF THE ADDRESS WHERE THE ERROR WAS DETECTED.

G. SENSE LIGHTS

SENSE LIGHTS ARE USED ONLY FOR MAKING PROGRAMMING DECISIONS
SUCH AS TO PUNCH OR READ CARDS AFTER A CERTAIN PATTERN HAS
BEEN GENERATED.

H. PRINT ROUTINE

THE STANDARDIZED PRINT ROUTINE, 9DEPRA, IS USED IN THIS PROGRAM. A
REFERENCE TO THE SENSE SWITCH CONTROL SECTION WILL SHOW THE VARIOUS
SETTINGS. 9DEPRA USES SENSE SWITCHES 1,2,3, AND 4.

I. COMMENTS

CAUTION --

UNLESS YOU ARE REASONABLY SURE THAT THE CBS ARE WELL ADJUSTED,
MAY WE SUGGEST THAT THE CB COVER BE OPENED WHEN RUNNING THIS TEST.
IF ARCING BECOMES TOO VIOLENT, THE TEST MAY HAVE TO BE STOPPED TO
AVOID BURNING OF CONTACTS. IT MAY BE NECESSARY TO ADJUST CBS BEFORE
RUNNING PROGRAM, AND/OR CHECK THE ARC SUPPRESSOR CIRCUITS.

THE PUNCH WILL NOT HAVE TO EXCEED SPECS. IN ORDER TO RUN THIS PROGRAM.

1. 9R01 DEPENDS UPON THE RELIABILITY OF STORAGE, CARD READER, AND MAIN FRAME.
2. THE MAIN PROGRAM, THE 300 CARD 9 PATTERN TEST, HAS A READING RESTART. SO ANY TIME YOU ARE READING THESE CARDS AND HAVE TO RELOAD CARDS AND START OVER, IT IS ONLY NECESSARY TO RESET AND PUSH START.
3. WORD GENERATED IN PRINT OUT REFERS TO THE WORD WHICH WAS GENERATED FOR PUNCHING. WORD READ REFERS TO THE WORD THAT WAS PUNCHED. IT IS POSSIBLE TO HAVE A READER ERROR. IF YOU SUSPECT THIS, COMPARE THE CARD AGAINST THE WORD GENERATED IN THE PRINTOUT TO DETERMINE WHICH ERROR OCCURRED.
4. THE RECNO IN PRINT OUT REFERS TO THE CARD NUMBER. THE WDNO REFERS TO THE WORD ON THE CARD. WDNO 1 REFERS TO 9L, WDNO 2 REFERS TO 9R AND ETC.

THE PRINT FORMAT WILL INDICATE THE CORRECT RECORD NUMBER AND WORD NUMBER EXCEPT IN THE CASE OF A CHECK SUM ERROR. IN THIS CASE THE WORD NUMBER WILL BE 00000.

NORMAL ERROR PRINTOUT

```
TEST LOC 01561, OPN WPUA ,ERROR LOC 01567, 0 LOC 002000000030,SW 000010
NSE 0000, COMP ERROR, WORD GENERATED 000 000 000 000 000 000 000 000 000 000 000 000
REC 00120, WORD 00022, WORD READ 000 000 000 100 000 000 000 000 000 000 000 000
INDS 000000000000 , KEYS 002000000030
```

CHECKSUM ERROR PRINTOUT

```
TEST LOC 01561, OPN WPUA ,ERROR LOC 01567, 0 LOC 002000000030,SW 000010
NSE 0000, COMP ERROR, WORD GENERATED 001 011 110 101 111 101 111 000 000 011
REC 00120, WORD 00000, WORD READ 001 011 111 001 111 101 111 000 000 011
INDS 000000000000, KEYS 002000000030
```

5. THIS TEST HAS PROVEN MOST RIGOUROUS FOR THE PUNCH. IT IS SUGGESTED THAT THE PANEL COVERING THE CBS BE OPENED WHILE RUNNNING.

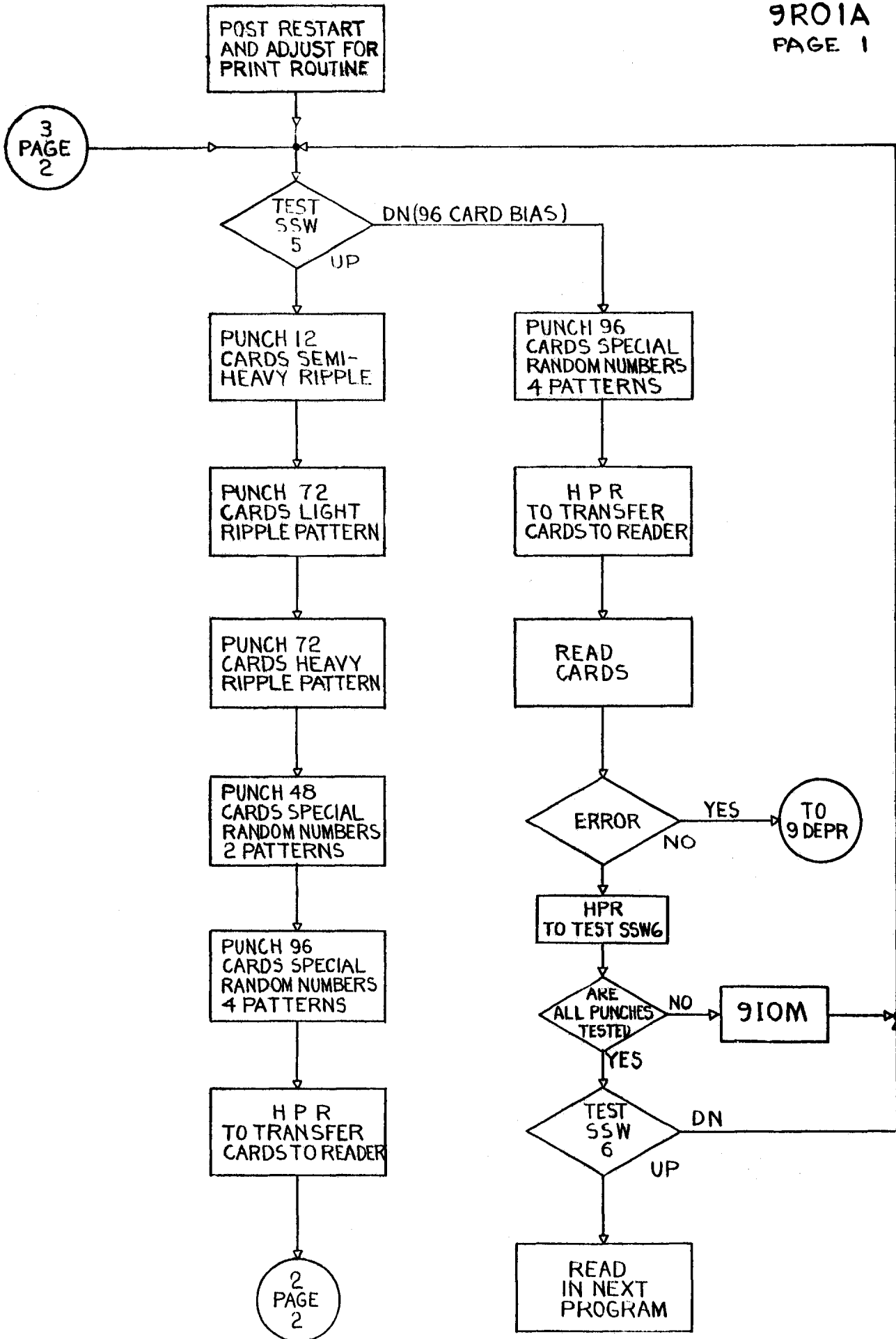
NOTE -- FOR THIS TEST TO OPERATE CORRECTLY, THE PUNCH WILL NOT NEED TO EXCEED SPECIFICATIONS.

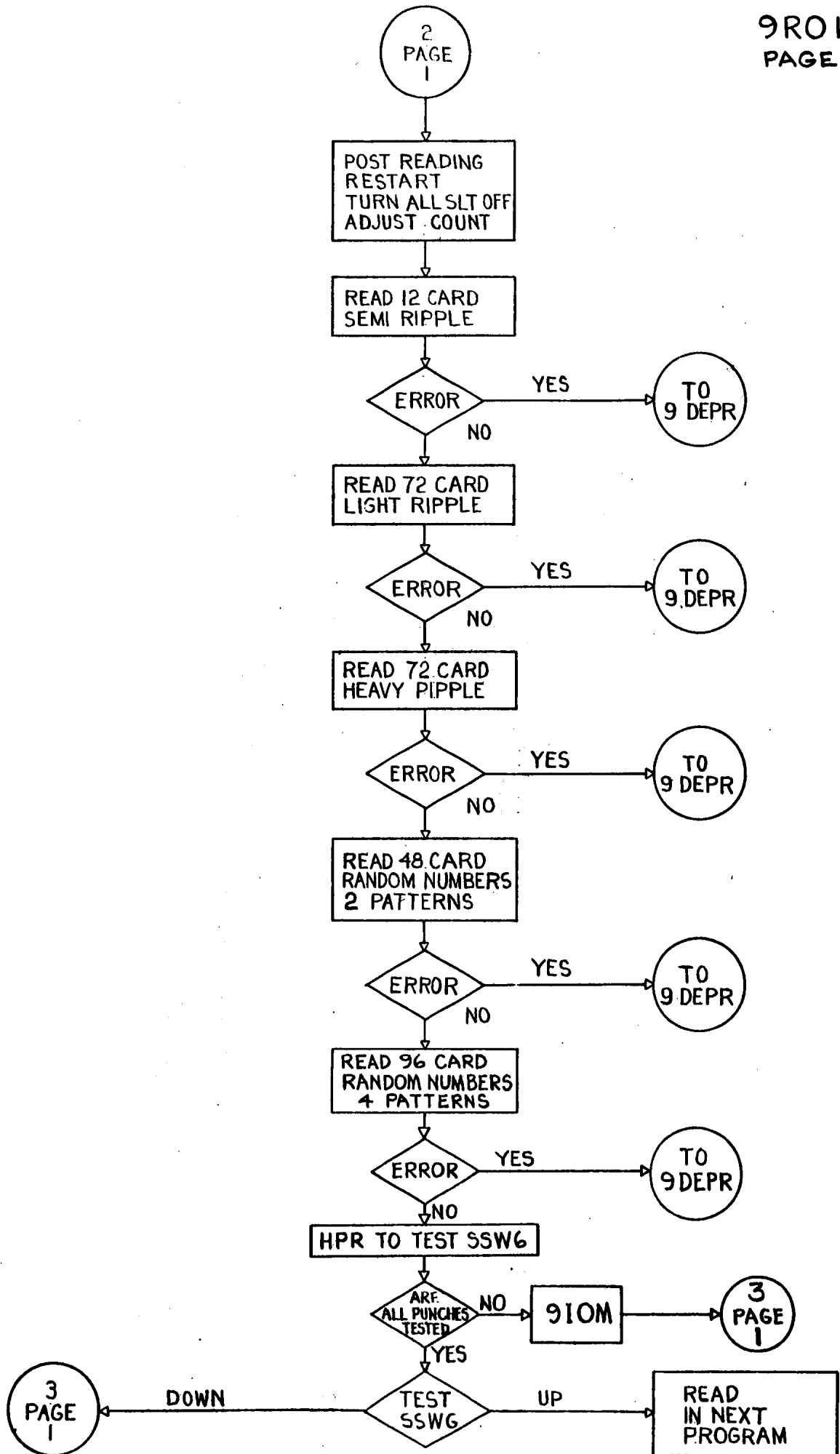
6. THE PROGRAM HAS BEEN DESIGNED TO RUN RANDOM NUMBER PATTERNS 4 THROUGH 9 IN RANDOM LATCH UP.

CONSTANT K1100 OR LOCATION 2043 CONTAINS OCTAL 1100. THIS CONSTANT SHOULD BE ADJUSTED AT EACH INSTALLATION TO CAUSE THE DESIRED LATCH UP.

TO RUN WITH NO LATCH UP PLACE ZERO IN LOCATION 2043.

7. THIS PROGRAM HAS BEEN WRITTEN SO AS TO THOROUGHLY TEST THE CB S,
PUNCH MAGNETS, THE WRITE THYRATRONS, THE PUNCH DIE, AND THE
MECHANICAL OPERATION UNDER START-STOP OR LATCH-UP CONDITION.
THE LAST 96 RANDOM CARDS ALSO ARE BUILT TO CAUSE ADDED VIBRATION.





* 9R01A

* 721 CARD PUNCH TEST *
* USING *
* SPECIAL RIPPLES AND SPECIAL RANDOM NUMBERS PATTERNS *
* *****

00030 ORG 24

00030 0020 00 0 01733 TRA WPRA PRINT IDENTIFICATION
00031 0074 00 4 05514 TEST TSX IOC,4 TO ENTER I/O SELECTION

*ENTER INTO KEYS ON HALT AT 5517-KEY 20 FOR CHANNEL A
*KEY 19 FOR CHANNEL C, AND KEY 18 FOR CHANNEL E.
*ALSO ENTER KEY 33 FOR PUNCH-CHANNEL A,
*AND/OR KEY 35 FOR CARD READER

*IF CHANNEL C WAS SELECTED IN TAG KEYS AT FIRST STOP,
*SECOND STOP WILL OCCUR AT 5533. ENTER KEY 33
*TO SIGNIFY PUNCH ON CHANNEL C,
*AND/OR KEY 35 FOR CARD READ

*IF CHANNEL E WAS SELECTED IN TAG KEYS AT FIRST STOP,
*THIRD STOP WILL OCCUR AT 5540. ENTER KEY 33
*TO SIGNIFY PUNCH ON CHANNEL E,
*AND/OR KEY 35 FOR CARD READ

*IF NO TAG KEYS WERE THROWN DOWN ON FIRST HALT
*AN ADDITIONAL HALT WILL OCCUR AT 5525, TO INDICATE THIS.

00032 0441 00 0 05500 LDI CTRL1 1ST CONTROL WORD FROM KEYS
00033 0056 00 100000 RNT 0,1 TEST FOR CHAN A
00034 0020 00 0 00040 TRA TCHC NO-CHECK FOR CHAN. C
00035 0774 00 2 00040 AXT TCHC,2 YES
00036 0634 00 2 01764 SXA COUNT,2
00037 0020 00 0 00072 TRA PRST START TEST

*A CARD READER ON ONLY ONE CHANNEL IS NECESSARY,
*HOWEVER, AT LEAST ONE CARD READER MUST BE SELECTED
*IF CARDS ARE TO BE CHECKED.

00040 0441 00 0 05501 TCHC LDI CTRL2 2ND CONTROL WORD FROM KEYS
00041 0056 00 200000 RNT 0,2 TEST FOR CHANNEL C
00042 0020 00 0 00046 TRA TCHE NO-TEST FOR CHANNEL E
00043 0774 00 2 00046 AXT TCHE,2
00044 0634 00 2 01764 SXA COUNT,2
00045 0020 00 0 00054 TRA CHANC TEST CHANNEL C

00046 0441 00 0 05502 TCHE LDI CTRL3 3RD CONTROL WORD FROM KEYS
00047 0056 00 400000 RNT 0,4 TEST FOR CHANNEL E
00050 0020 00 0 00063 TRA RESET NO-RESET TO CHANNEL A

00051 0774 00 2 00063 AXT RESET,2
00052 0634 00 2 01764 SXA COUNT,2
00053 0020 00 0 00056 TRA CHANE TEST CHANNEL E

00054 0441 00 0 05501 CHANC LDI CTRL2
00055 0020 00 0 00060 TRA TSX

00056 0441 00 0 05502 CHANE LDI CTRL3
00057 0020 00 0 00060 TRA TSX

00060 0074 00 4 05512 TSX TSX CTX,4
00061 0015 50 0 00125 HTR A5E-2,0,BB3+3
00062 0020 00 0 00072 TRA PRST

00063 0441 00 0 01763 RESET LDI RST TO RESET TO CHAN A
00064 0604 00 0 05500 STI CTRL1
00065 0600 00 0 05501 STZ CTRL2
00066 0600 00 0 05502 STZ CTRL3
00067 0074 00 4 05512 TSX CTX,4
00070 0015 50 0 00127 HTR A5E,0,BB3+3
00071 0020 00 0 01742 TRA SW6

* POST RESTART AND AJUST FOR PRINT ROUTINE

00072 0500 00 0 02056 PRST CLA T30 L TRA TO PRST
00073 0601 00 0 00000 STO 0

00074 0500 00 0 02026 CLA K31 L 31
00075 0601 00 0 06556 STO WDNO
00076 0500 00 0 02042 CLA K455 L 455
00077 0601 00 0 06557 STO RECNO

* TEST SSW 5

00100 0760 00 0 00165 SW5 SWT 5
00101 0020 00 0 00103 TRA A5C-1 PUNCH REG GEN PATTERNS
00102 0020 00 0 01447 TRA BIAS 96 CARD BIAS TEST

* PUNCH SPECIAL 12 CARDS HEAVY SIMI-RIPPLE *
* *

* ZERO PUNCH IMAGE

00103 0760 00 0 00140 SLF TURN ALL SENSE LIGHTS OFF
00104 0534 00 1 02025 A5C LXK K30,1 L 30
00105 0600 00 1 02312 STZ PE+24,1
00106 2 00001 1 00105 TIX A5C+1,1,1
00107 0500 00 0 01771 CLA K2 L 2
00110 0601 00 0 01770 STO CT3 SET PASS COUNT

* GENERATE SPECIAL HEAVY RIPPLE IMAGE

00111 0500 00 0 02027 A5D CLA K37 L 377 777 777 777

```
00112 0601 00 0 02052      STO SAV1
00113 0534 00 4 01772      LXA K6,4          L 6
00114 0534 00 1 02025      LXA K30,1        L 30
00115 0500 00 0 02051      CLA ONES
00116 0560 00 0 02052      LDQ SAV1
00117 -0773 00 0 00001      RQL 1
00120 0601 00 1 02312  A5D1  STO PE+24,1
00121 -0600 00 1 02313  A5D2  STQ PE+25,1
00122  2 00004 1 00117      TIX A5D+6,1,4
00123 -0600 00 0 02052      STQ SAV1

00124 -0760 00 0 00143      SLT 3
00125 0020 00 0 00127      TRA A5E          PUNCH CARDS
00126 0020 00 0 00631      TRA A5K          READ CARDS

*      PUNCH SPECIAL HEAVY RIPPLE IMAGE

00127 0766 00 0 01341  A5E   WPUA
00130 0540 00 0 02316      RCHA PUCTR      CONTROL TO PUNCH ONE CARD
00131 0060 00 0 00131      TCOA *          FROM PE
00132  2 00001 4 00114      TIX A5D+3,4,1

*      HAS LEFT HALF BEEN DONE

00133 -0760 00 0 00142  A5F   SLT 2
00134 0020 00 0 00136      TRA A5G          NO
00135 0020 00 0 00146      TRA A5H

*      SWITCH STORE INSTRUCTIONS FOR LEFT HALF

00136 0500 00 0 00120  A5G   CLA A5D1
00137 0400 00 0 02050      ADD ONE
00140 0601 00 0 00120      STO A5D1
00141 0500 00 0 00121      CLA A5D2
00142 0400 00 0 02050      ADD ONE
00143 0601 00 0 00121      STO A5D2
00144 0760 00 0 00142      SLN 2           TURN ON SENSE LIGHT 2
00145 0020 00 0 00111      TRA A5D

*      RESTORE ORIGINAL STORE INSTRUCTIONS

00146 0500 00 0 00120  A5H   CLA A5D1
00147 0402 00 0 02050      SUB ONE
00150 0601 00 0 00120      STO A5D1
00151 0500 00 0 00121      CLA A5D2
00152 0402 00 0 02050      SUB ONE
00153 0601 00 0 00121      STO A5D2
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*****
*
*      PUNCH SPECIAL 72 CARDS LIGHT RIPPLE PATTERN
*
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*      MOVE ORIGINAL IMAGE TO SHIFTING IMAGE LOCATION
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00154	0534	00	1	02025	A	LXA K30,1	L30
00155	0500	00	1	02111		CLA PAA,1	
00156	0601	00	1	02142		STO PBB,1	
00157	2	00001	1	00155		TIX A+1,1,1	
* PUNCH FIRST CARD OF 72							
00160	0534	00	2	02031	A1	LXA K110,2	
00161	0766	00	0	01341		WPUA	
00162	0540	00	0	02317		RCHA PUCTR+1	CONTROL TO PUNCH ONE CARD FROM PB
00163	2	00001	2	00164		TIX A2,2,1	
* PUNCH LOOP FOR NEXT 61 CARDS							
00164	0766	00	0	01341	A2	WPUA	
00165	0534	00	1	02025		LXA K30,1	L 30
00166	-0500	00	1	02142		CAL PB+24,1	9L, 8L, ETC.
00167	0560	00	1	02143		LDQ PB+25,1	9R, 8R, ETC.
00170	-0763	00	0	00001		LGL 1	MOVE LEFT
00171	0602	00	1	02142		SLW PB+24,1	9L, 8L, ETC.
00172	-0600	00	1	02143		STQ PB+25,1	9R, 8R, ETC.
00173	2	00002	1	00166		TIX A2+2,1,2	
00174	0540	00	0	02317		RCHA PUCTR+1	CONTROL TO PUNCH ONE CARD FROM PB
00175	-0500	00	0	02112		CAL PB	P BIT TEST
00176	-0760	00	0	00001		PBT	
00177	2	00001	2	00164		TIX A2,2,1	PUNCH NEXT CARD
00200	2	00001	2	00201		TIX A3,2,1	PUNCH NEXT CARD
* PUNCH LOOP FOR LAST TEN CARDS							
00201	0766	00	0	01341	A3	WPUA	
00202	0534	00	1	02025		LXA K30,1	L 30
00203	-0500	00	1	02142		CAL PB+24,1	9L, 8L, ETC.
00204	0560	00	1	02143		LDQ PB+25,1	9R, 8R, ETC.
00205	-0763	00	0	00001		LGL 1	
00206	0602	00	1	02142		SLW PB+24,1	9L, 8L, ETC.
00207	-0600	00	1	02143		STQ PB+25,1	9R, 8R, ETC.
00210	2	00002	1	00203		TIX A3+2,1,2	
00211	0500	00	0	02050		CLA ONE	
00212	0601	00	0	02113		STO PB+1	
00213	0540	00	0	02317	A4	RCHA PUCTR+1	CONTROL TO PUNCH ONE CARD FROM PB
00214	0500	00	0	00212		CLA A4-1	
00215	0400	00	0	02055		ADD TWO	L2
00216	0601	00	0	00212		STO A4-1	
00217	2	00001	2	00201		TIX A3,2,1	
00220	0060	00	0	00220		TCOA *	
00221	0500	00	0	02011		CLA K9R	RESET FOR LOWER
00222	0601	00	0	00212		STO A4-1	RIGHT CORNER

*
* PUNCH SPECIAL 72 CARDS HEAVY RIPPLE PATTERN *
*

* MOVE ORIGINAL IMAGE TO SHIFTING IMAGE LOCATION

00223 0534 00 1 02025 B LXA K30,1 L 30
00224 -0500 00 1 02111 CAL PAA,1
00225 0760 00 0 00006 COM
00226 0602 00 1 02142 SLW PBB,1
00227 2 00001 1 00224 TIX B+1,1,1

* ZERO ALL ROWS EXCEPT 9,6,3, AND 0

00230 0534 00 1 02024 BZ LXA K26,1 L 26
00231 0600 00 1 02142 STZ PB+24,1 ZERO LEFT HALF ROW
00232 0600 00 1 02143 STZ PB+25,1 ZERO RIGHT HALF ROW
00233 0600 00 1 02144 STZ PB+26,1 ZERO LEFT HALF ROW
00234 0600 00 1 02145 STZ PB+27,1 ZERO RIGHT HALF ROW
00235 2 00006 1 00231 TIX BZ+1,1,6 FINISH CARD

* PUNCH FIRST CARD OF 72

00236 0534 00 2 02031 LXA K110,2 L 110
00237 0766 00 0 01341 WPUA
00240 0540 00 0 02317 RCHA PUCTR+1 CONTROL TO PUNCH ONE CARD
00241 0060 00 0 00241 TCOA * FROM PB
00242 2 00001 2 00243 TIX B1A,2,1

* RESTORE SHIFTING IMAGE

00243 0534 00 1 02025 B1A LXA K30,1 L 30
00244 -0500 00 1 02111 CAL PAA,1
00245 0602 00 1 02142 SLW PBB,1
00246 2 00001 1 00244 TIX B1A+1,1,1

* PUNCH LOOP FOR NEXT 61 CARDS

00247 0766 00 0 01341 B2 WPUA
00250 0534 00 1 02025 LXA K30,1 L 30
00251 -0500 00 1 02142 CAL PB+24,1 9L, 8L, ETC.
00252 0560 00 1 02143 LDQ PB+25,1 9R, 8R, ETC.
00253 -0763 00 0 00001 LGL 1
00254 0602 00 1 02142 SLW PB+24,1 9L, 8L, ETC.
00255 -0600 00 1 02143 STQ PB+25,1 9R, 8R, ETC.
00256 0760 00 0 00006 COM
00257 0602 00 1 02224 SLW PD+24,1 9L, 8L, ETC.
00260 -0600 00 0 02053 STQ TEMP
00261 -0500 00 0 02053 CAL TEMP
00262 0760 00 0 00006 COM
00263 0602 00 1 02225 SLW PD+25,1 9R, 8R, ETC.
00264 2 00002 1 00251 TIX B2+2,1,2

* ZERO ALL ROWS EXCEPT 9,6,3, AND 0

00265	0534	00	1	02024	BZ1	LXA K26,1	L 26
00266	0600	00	1	02224		STZ PD+24,1	LEFT
00267	0600	00	1	02225		STZ PD+25,1	RIGHT
00270	0600	00	1	02226		STZ PD+26,1	LEFT
00271	0600	00	1	02227		STZ PD+27,1	RIGHT
00272	2	00006	1	00266		TIX BZ1+1,1,6	FINISH CARD
00273	0540	00	0	02320		RCHA PUCTR+2	CONTROL TO PUNCH ONE CARD FROM PD
00274	-0500	00	0	02112		CAL PB	
00275	-0760	00	0	00001		PBT	
00276	2	00001	2	00247		TIX B2,2,1	PUNCH NEXT CARD
00277	2	00001	2	00300		TIX B3,2,1	PUNCH NEXT CARD

* PUNCH LOOP FOR LAST TEN CARDS

00300	0766	00	0	01341	B3	WPUA	
00301	0534	00	1	02025		LXA K30,1	L 30
00302	-0500	00	1	02142		CAL PB+24,1	9L, 8L, ETC.
00303	0560	00	1	02143		LDQ PB+25,1	9R, 8R, ETC.
00304	-0763	00	0	00001		LGL 1	
00305	0602	00	1	02142		SLW PB+24,1	9L, 8L, ETC.
00306	-0600	00	1	02143		STQ PB+25,1	
00307	0760	00	0	00006		COM	
00310	0602	00	1	02224		SLW PD+24,1	9L, 8L, ETC.
00311	-0600	00	0	02053		STQ TEMP	
00312	-0500	00	0	02053		CAL TEMP	
00313	0760	00	0	00006		COM	
00314	0602	00	1	02225		SLW PD+25,1	9R, 8R, ETC.
00315	2	00002	1	00302		TIX B3+2,1,2	
00316	-0500	00	0	02050	B3A	CAL ONE	
00317	0602	00	0	02113		SLW PB+1	
00320	0760	00	0	00006		COM	
00321	0602	00	0	02175		SLW PD+1	

* ZERO ALL ROWS EXCEPT 9,6,3, AND 0

00322	0534	00	1	02024	BZ2	LXA K26,1	L 26
00323	0600	00	1	02224		STZ PD+24,1	LEFT
00324	0600	00	1	02225		STZ PD+25,1	RIGHT
00325	0600	00	1	02226		STZ PD+26,1	LEFT
00326	0600	00	1	02227		STZ PD+27,1	RIGHT
00327	2	00006	1	00323		TIX BZ2+1,1,6	FINISH CARD
00330	0540	00	0	02320		RCHA PUCTR+2	CONTROL TO PUNCH ONE CARD FROM PD
00331	0500	00	0	00317		CLA B3A+1	
00332	0400	00	0	02055		ADD TWO	
00333	0601	00	0	00317		STO B3A+1	
00334	0500	00	0	00321		CLA B3A+3	
00335	0400	00	0	02055		ADD TWO	
00336	0601	00	0	00321		STO B3A+3	

00337 2 00001 2 00300 TIX B3,2,1
00340 0060 00 0 00340 TCOA *

00341 0500 00 0 02011 CLA K9R RESTORE FOR LOWER
00342 0601 00 0 00317 STO B3A+1 RIGHT CORNER
00343 0500 00 0 02012 CLA K9S
00344 0601 00 0 00321 STO B3A+3

* PUNCH SPECIAL RANDOM NUMBERS PATTERN *
* *

00345 0500 00 0 02055 CLA TWO L 2
00346 0601 00 0 01767 STO CT2
00347 0760 00 0 00140 SLF TURN OFF SENSE LIGHTS
00350 0534 00 2 02025 LXA K30,2 L 30
00351 0500 00 0 02314 CLA PRM L245716312345
00352 0601 00 0 02315 STO PRM1

* GENERATE RANDOM NUMBER CARD PUNCH IMAGE

00353 0766 00 0 01341 AA WPUA
00354 0534 00 1 02030 LXA K65,1 L 65
00355 0560 00 0 02315 LDQ PRM1 INITIAL RN LOAD
00356 -0773 00 0 00001 RQL 1
00357 0200 00 0 02313 MPY PR L357642357563
00360 -0600 00 1 02261 STQ PDD,1
00361 2 00001 1 00356 TIX AA+3,1,1

* DECREASE MAGNITUDE OF ODD ROWS

00362 0534 00 1 02025 AA1 LXA K30,1 L 30
00363 0534 00 4 00422 LXA AA2,4 L 0
00364 -0500 00 1 02224 CAL PD+24,1 9 L
00365 -0320 00 4 02260 ANA PD+52,4
00366 -0320 00 4 02257 ANA PD+51,4
00367 -0320 00 4 02256 ANA PD+50,4
00370 -0320 00 4 02255 ANA PD+49,4
00371 0602 00 1 02224 SLW PD+24,1 9L
00372 -0500 00 1 02225 CAL PD+25,1 9R
00373 -0320 00 4 02254 ANA PD+48,4
00374 -0320 00 4 02253 ANA PD+47,4
00375 -0320 00 4 02252 ANA PD+46,4
00376 -0320 00 4 02251 ANA PD+45,4
00377 0602 00 1 02225 SLW PD+25,1 9R
00400 1 00004 4 00401 TXI AA1A,4,4
00401 2 00004 1 00364 AA1A TIX AA1+2,1,4

* INCREASE MAGNITUDE OF EVEN ROWS

00402 0534 00 1 02024 AA1B LXA K26,1 L 26
00403 0534 00 4 00422 LXA AA2,4 L 0
00404 -0500 00 1 02224 CAL PD+24,1 8L
00405 -0501 00 4 02260 ORA PD+52,4

00406 -0501 00 4 02257 ORA PD+51,4
00407 -0501 00 4 02256 ORA PD+50,4
00410 -0501 00 4 02255 ORA PD+49,4
00411 0602 00 1 02224 SLW PD+24,1 8L
00412 -0500 00 1 02225 CAL PD+25,1 8R
00413 -0501 00 4 02254 ORA PD+48,4
00414 -0501 00 4 02253 ORA PD+47,4
00415 -0501 00 4 02252 ORA PD+46,4
00416 -0501 00 4 02251 ORA PD+45,4
00417 0602 00 1 02225 SLW PD+25,1 8R
00420 1 00004 4 00421 TXI AA1C,4,4
00421 2 00004 1 00404 AA1C TIX AA1B+2,1,4

* GENERATE CHECK SUM FOR EACH CARD AND STORE IN 9R

00422 -0754 00 0 00000 AA2 PXD CLEAR AC
00423 0534 00 1 02024 LXA K26,1
00424 -0500 00 0 02174 CAL PD 9L
00425 0361 00 1 02224 ACL PD+24,1
00426 2 00001 1 00425 TIX AA2+3,1,1
00427 0602 00 0 02175 SLW PD+1 9R

* TEST SL 1 TO PUNCH OF READ CARDS

00430 -0760 00 0 00141 AA2A SLT 1
00431 0020 00 0 00433 TRA AA3 PUNCH CARDS
00432 0020 00 0 01205 TRA AA5 READ CARDS

* PUNCH CARDS

00433 0540 00 0 02320 AA3 RCHA PUCTR+2 CONTROL TO PUNCH ONE CARD
FROM PD
00434 0500 00 0 02227 CLA PD+27
00435 0601 00 0 02315 STO PRM1

* SET RANDOM DELAY TO CAUSE RANDOM DISCONNECT

00436 0771 00 0 00041 AARD ARS 33
00437 0400 00 0 02043 ADD K1100 L 1100
00440 0734 00 1 00000 PAX 0,1
00441 2 00001 1 00441 TIX AARD+3,1,1
00442 2 00001 2 00353 TIX AA,2,1 PUNCH ALL CARDS

* HAVE LIGHT AND HEAVY ROWS BEEN SWITCHED

00443 0500 00 0 01767 AA3A CLA CT2
00444 0402 00 0 02050 SUB ONE
00445 0100 00 0 00454 TZE AA3C
00446 0601 00 0 01767 STO CT2

* ADJUST FOR HEAVY ODD ROWS AND LIGHT EVEN ROWS

00447 0500 00 0 00362 AA3B CLA AA1
00450 0560 00 0 00402 LDQ AA1B

* INCREASE MAGNITUDE OF ODD ROWS 7,3, AND 11

00515	0534	00	1	02023	PP1B	LXA K24,1	L 24
00516	0534	00	4	00541		LXA PP2,4	L 0
00517	-0500	00	1	02224		CAL PD+24,1	8L
00520	-0501	00	4	02260		ORA PD+52,4	
00521	-0501	00	4	02257		ORA PD+51,4	
00522	-0501	00	4	02256		ORA PD+50,4	
00523	-0501	00	4	02255		ORA PD+49,4	
00524	0602	00	1	02224		SLW PD+24,1	8L
00525	-0500	00	1	02225		CAL PD+25,1	8R
00526	-0501	00	4	02254		ORA PD+48,4	
00527	-0501	00	4	02253		ORA PD+47,4	
00530	-0501	00	4	02252		ORA PD+46,4	
00531	-0501	00	4	02251		ORA PD+45,4	
00532	0602	00	1	02225		SLW PD+25,1	8R
00533	1 00004	4	00534			TXI PP1C,4,4	
00534	2 00010	1	00517	PP1C		TIX PP1B+2,1,8	

* ZERO EVEN ROWS

00535	0534	00	1	02024	PP1D	LXA K26,1	L 26
00536	0600	00	1	02224		STZ PD+24,1	LEFT
00537	0600	00	1	02225		STZ PD+25,1	RIGHT
00540	2 00004	1	00536			TIX PP1D+1,1,4	

* GENERATE CHECK SUM FOR EACH CARD AND STORE IN 9R

00541	-0754	00	0	00000	PP2	PXD	CLEAR AC
00542	0534	00	1	02024		LXA K26,1	
00543	-0500	00	0	02174		CAL PD	9L
00544	0361	00	1	02224		ACL PD+24,1	
00545	2 00001	1	00544			TIX PP2+3,1,1	
00546	0602	00	0	02175		SLW PD+1	9R

* TEST SL 1 TO PUNCH OR READ CARDS

00547	-0760	00	0	00141	PP2P	SLT 1	TEST LITE ONE
00550	0020	00	0	00552		TRA PP3	PUNCH CARDS
00551	0020	00	0	01275		TRA PP5	READ CARDS

* PUNCH CARDS

00552	0540	00	0	02320	PP3	RCHA PUCTR+2	CONTROL TO PUNCH ONE CARD FROM PD
00553	0500	00	0	02227		CLA PD+27	
00554	0601	00	0	02315		STO PRM1	
00555	0534	00	1	02033		LXA K114,1	L 114
00556	2 00001	1	00561			TIX PP3+7,1,1	DELAY

* SET UP RANDOM DELAY FOR RANDOM LATCH-UP

00557	0771	00	0	00041	PPRD	ARS 33	
-------	------	----	---	-------	------	--------	--

00560 0400 00 0 02043 ADD K1100
00561 0734 00 1 00000 PAX 0,1
00562 2 00001 1 00562 TIX PPRD+3,1,1

00563 2 00001 2 00466 TIX PP,2,1 PUNCH ALL CARDS

* HAVE LIGHT AND HEAVY ROWS BEEN SWITCHED

00564 0500 00 0 01767 PP3P CLA CT2
00565 0402 00 0 02050 SUB ONE
00566 0100 00 0 00575 TZE PP3D
00567 0601 00 0 01767 STO CT2

* SWITCH LIGHT AND HEAVY ROWS

00570 0500 00 0 00475 PP3B CLA PP1
00571 0560 00 0 00515 LDQ PP1B
00572 0601 00 0 00515 STO PP1B
00573 -0600 00 0 00475 STQ PP1
00574 0020 00 0 00463 TRA PP-3

* SWITCH COMPLETE PATTERN AND ZERO ODD ROWS

00575 -0760 00 0 00142 PP3D SLT 2 TEST LITE 2
00576 0020 00 0 00600 TRA PP3E
00577 0020 00 0 00612 TRA PP3F

00600 0760 00 0 00142 PP3E SLN 2 TURN ON LITE 2
00601 0500 00 0 02016 CLA K9W L LXA K26,1
00602 0601 00 0 00475 STO PP1
00603 0500 00 0 02017 CLA K9X L LXA K22,1
00604 0601 00 0 00515 STO PP1B
00605 0500 00 0 02013 CLA K9T L LXA K30,1
00606 0601 00 0 00535 STO PP1D
00607 0500 00 0 02055 CLA TWO RESTORE COUNT
00610 0601 00 0 01767 STO CT2
00611 0020 00 0 00463 TRA PP-3

* RESTORE TO ORIGINAL SETTING

00612 0500 00 0 02013 PP3F CLA K9T L LXA K30,1
00613 0601 00 0 00475 STO PP1
00614 0500 00 0 02020 CLA K9Y L LXA K24,1
00615 0601 00 0 00515 STO PP1B
00616 0500 00 0 02016 CLA K9W L LXA K26,1
00617 0601 00 0 00535 STO PP1D

00620 0000 00 0 00621 HTR READ READY PUNCHED CARDS IN
READER AND PRESS START, TO
COMPARE

* POST NEW RESTART FOR READING

00621 0500 00 0 02057 READ CLA TRC TRA TO READ

00622 0601 00 0 00000 STO 0
00623 0760 00 0 00140 SLF TURN OFF LITES

*
* READ AND CHECK 12 CARDS HEAVY SEMI-RIPPLE *
*

00624 0500 00 0 01771 CLA K2 L 2
00625 0601 00 0 01770 STO CT3
00626 0534 00 2 02041 LXA K454,2 L 454
00627 0760 00 0 00143 SLN 3 TURN ON LITE 3
00630 0020 00 0 00104 TRA A5C

00631 0762 00 0 01321 A5K RCDA
00632 0540 00 0 02321 RCHA PUCTR+3 CONTROL TO READ ONE CARD
00633 0060 00 0 00633 TCOA * INTO PB
00634 0020 00 0 00636 TRA A5L

00635 664764216060 BCD 1WPUA

00636 0534 00 1 02025 A5L LXA K30,1 L 30
00637 0500 00 1 02142 CLA PBB,1
00640 0340 00 1 02312 CAS PEE,1
00641 0020 00 0 00643 TRA A5L+5 ERROR
00642 0020 00 0 00650 TRA A5M OK
00643 0560 00 1 02312 LDQ PEE,1 ERROR
00644 -0634 00 4 02060 SXD XRC,4
00645 0074 00 4 06502 TSX ERROR-2,4
00646 0020 00 0 00636 TRA A5L
00647 -0534 00 4 02060 LXD XRC,4

00650 2 00001 1 00637 A5M TIX A5L+1,1,1

00651 0760 00 0 00143 SLN 3 TURN ON LITE 3
00652 2 00001 2 00653 TIX A5M+3,2,1
00653 2 00001 4 00114 TIX A5D+3,4,1

* HAS LEFT HALF BEEN DONE

00654 0500 00 0 01770 A5N CLA CT3 L COUNT
00655 0402 00 0 02050 SUB ONE
00656 0100 00 0 00667 TZE A5P
00657 0601 00 0 01770 STO CT3

* SWITCH STORE INSTRUCTIONS

00660 0500 00 0 00120 CLA A5D1
00661 0400 00 0 02050 ADD ONE
00662 0601 00 0 00120 STO A5D1
00663 0500 00 0 00121 CLA A5D2
00664 0400 00 0 02050 ADD ONE
00665 0601 00 0 00121 STO A5D2
00666 0020 00 0 00111 TRA A5D

* RESTORE ORIGINAL STORE INSTRUCTIONS

00667 0500 00 0 00120 A5P CLA A5D1
 00670 0402 00 0 02050 SUB ONE
 00671 0601 00 0 00120 STO A5D1
 00672 0500 00 0 00121 CLA A5D2
 00673 0402 00 0 02050 SUB ONE
 00674 0601 00 0 00121 STO A5D2

 *
 * READ AND CHECK 72 CARDS LIGHT RIPPLE PATTERN *
 *

* RESTORE MOVING IMAGE TO ORIGINAL CARD IMAGE

00675 0534 00 2 02040 LXA K440,2 L 440
 00676 0534 00 1 02025 A5 LXA K30,1 L30
 00677 0500 00 1 02111 CLA PAA,1
 00700 0601 00 1 02142 STO PBB,1
 00701 2 00001 1 00677 TIX A5+1,1,1

* COMPARE WORD PUNCHED TO GENERATED WORD

00702 0762 00 0 01321 A6 RCDA
 00703 0540 00 0 02322 RCHA PUCTR+4 CONTROL TO READ ONE CARD
 00704 0060 00 0 00704 TCOA * INTO PC
 00705 0020 00 0 00707 TRA A6A

* COMPARE LOOP FOR CARD 1

00706 664764216060 BCD 1WPUA

 00707 0534 00 1 02025 A6A LXA K30,1 L30
 00710 0500 00 1 02173 CLA PCC,1
 00711 0340 00 1 02142 CAS PBB,1
 00712 0020 00 0 00714 TRA A6A+5 ERROR
 00713 0020 00 0 00717 TRA A7 OK
 00714 0560 00 1 02142 LDQ PBB,1 ERROR
 00715 0074 00 4 06502 TSX ERROR-2,4
 00716 0020 00 0 00707 TRA A6A

 00717 2 00001 1 00710 A7 TIX A6A+1,1,1

 00720 2 00001 2 00721 TIX A7+2,2,1 READ NEXT CARD

 00721 0534 00 1 02025 LXA K30,1 L 30
 00722 -0500 00 1 02142 CAL PB+24,1 9L, 8L, ETC.
 00723 0560 00 1 02143 LDQ PB+25,1 9R, 8R, ETC.
 00724 -0763 00 0 00001 LGL 1
 00725 0602 00 1 02142 SLW PB+24,1 9L, 8L, ETC.
 00726 -0600 00 1 02143 STQ PB+25,1 9R, 8R, ETC.
 00727 2 00002 1 00722 TIX A7+3,1,2

 00730 0762 00 0 01321 A8 RCDA

00731 0540 00 0 02322 RCHA PUCTR+4 CONTROL TO READ ONE CARD
 00732 0060 00 0 00732 TCOA * INTO PC
 00733 0020 00 0 00735 TRA A8A

* COMPARE LOOP FOR CARDS 2-62

00734 664764216060 BCD 1WPUA
 00735 0534 00 1 02025 A8A LX A K30,1 L 30
 00736 0500 00 1 02173 CLA PCC,1
 00737 0340 00 1 02142 CAS PBB,1
 00740 0020 00 0 00742 TRA A8A+5 ERROR
 00741 0020 00 0 00745 TRA A9 OK
 00742 0560 00 1 02142 LDQ PBB,1 ERROR
 00743 0074 00 4 06502 TSX ERROR-2,4
 00744 0020 00 0 00735 TRA A8A

00745 2 00001 1 00736 A9 TIX A8A+1,1,1

00746 -0500 00 0 02112 CAL PB
 00747 -0760 00 0 00001 PBT
 00750 2 00001 2 00721 TIX A7+2,2,1 READ NEXT CARD
 00751 2 00001 2 00752 TIX A10,2,1 READ NEXT CARD

* SET INITIAL IMAGE FOR LAST TEN CARDS

00752 0534 00 1 02025 A10 LX A K30,1 L 30
 00753 -0500 00 1 02142 CAL PB+24,1 9L, 8L, ETC.
 00754 0560 00 1 02143 LDQ PB+25,1 9R, 8R, ETC.
 00755 -0763 00 0 00001 LGL 1
 00756 0602 00 1 02142 SLW PB+24,1 9L, 8L, ETC.
 00757 -0600 00 1 02143 STQ PB+25,1 9R, 8R, ETC.
 00760 2 00002 1 00753 TIX A10+1,1,2

00761 0762 00 0 01321 A11 RCDA
 00762 0500 00 0 02050 CLA ONE
 00763 0601 00 0 02113 STO PB+1
 00764 0540 00 0 02322 RCHA PUCTR+4 CONTROL TO READ ONE CARD
 00765 0060 00 0 00765 TCOA * INTO PC
 00766 0020 00 0 00770 TRA A11A

* COMPARE LOOP FOR CARDS 63-72

00767 664764216060 BCD 1WPUA
 00770 0534 00 1 02025 A11A LX A K30,1 L 30
 00771 0500 00 1 02173 CLA PCC,1
 00772 0340 00 1 02142 CAS PBB,1
 00773 0020 00 0 00775 TRA A11A+5 ERROR
 00774 0020 00 0 01000 TRA A12 OK
 00775 0560 00 1 02142 LDQ PBB,1 ERROR
 00776 0074 00 4 06502 TSX ERROR-2,4
 00777 0020 00 0 00770 TRA A11A

01000 2 00001 1 00771 A12 TIX A11A+1,1,1

01001 0500 00 0 00763 CLA A11+2
01002 0400 00 0 02055 ADD TWO
01003 0601 00 0 00763 STO A11+2
01004 2 00001 2 01005 TIX A12+5,2,1
01005 3 00330 2 00752 TXH A10,2,216
01006 0761 00 0 00000 NOP

01007 0500 00 0 02011 CLA K9R RESET FOR LOWER
01010 0601 00 0 00763 STO A11+2 RIGHT CORNER

*
* READ AND CHECK 72 CARDS HEAVY RIPPLE PATTERNS *
*

01011 0534 00 2 02037 LXA K330,2 L 330
01012 0534 00 1 02025 B5 LXA K30,1 L 30
01013 -0500 00 1 02111 CAL PAA,1
01014 0760 00 0 00006 COM
01015 0602 00 1 02142 SLW PBB,1
01016 2 00001 1 01013 TIX B5+1,1,1

* ZERO ALL ROWS EXCEPT 9,6,3, AND 0

01017 0534 00 1 02024 BZ3 LXA K26,1 L 26
01020 0600 00 1 02142 STZ PB+24,1 LEFT
01021 0600 00 1 02143 STZ PB+25,1 RIGHT
01022 0600 00 1 02144 STZ PB+26,1 LEFT
01023 0600 00 1 02145 STZ PB+27,1 RIGHT
01024 2 00006 1 01020 TIX BZ3+1,1,6 FINISH CARD

01025 0762 00 0 01321 B6 RCDA
01026 0540 00 0 02322 RCHA PUCTR+4 CONTROL TO READ ON CARD
01027 0060 00 0 01027 TCOA * INTO PC
01030 0020 00 0 01032 TRA B6A

* COMPARE LOOP FOR CARD 1

01031 664764216060 BCD 1WPUA

01032 0534 00 1 02025 B6A LXA K30,1 L 30
01033 0500 00 1 02173 CLA PCC,1
01034 0340 00 1 02142 CAS PBB,1
01035 0020 00 0 01037 TRA B6A+5 ERROR
01036 0020 00 0 01042 TRA B7 OK
01037 0560 00 1 02142 LDQ PBB,1 ERROR
01040 0074 00 4 06502 TSX ERROR-2,4
01041 0020 00 0 01032 TRA B6A

01042 2 00001 1 01033 B7 TIX B6A+1,1,1

* RESTORE SHIFTING IMAGE

01043 0534 00 1 02025 B7A LXA K30,1 L 30

01044	-0500	00	1	02111		CAL	PAA,1	
01045	0602	00	1	02142		SLW	PBB,1	
01046	2	00001	1	01044		TIX	B7A+1,1,1	
01047	2	00001	2	01050		TIX	B7B,2,1	READ NEXT CARD
01050	0534	00	1	02025	B7B	LXA	K30,1	L 30
01051	-0500	00	1	02142		CAL	PB+24,1	9L, 8L, ETC.
01052	0560	00	1	02143		LDQ	PB+25,1	9R, 8R, ETC.
01053	-0763	00	0	00001		LGL	1	
01054	0602	00	1	02142		SLW	PB+24,1	9L, 8L, ETC.
01055	-0600	00	1	02143		STQ	PB+25,1	9R, 8R, ETC.
01056	0760	00	0	00006		COM		
01057	0602	00	1	02224		SLW	PD+24,1	9L, 8L, ETC.
01060	-0600	00	0	02053		STQ	TEMP	
01061	-0500	00	0	02053		CAL	TEMP	
01062	0760	00	0	00006		COM		
01063	0602	00	1	02225		SLW	PD+25,1	9L, 8L, ETC.
01064	2	00002	1	01051		TIX	B7B+1,1,2	
* ZERO ALL ROWS EXCEPT 9,6,3, AND 0								
01065	0534	00	1	02024	BZ4	LXA	K26,1	L 26
01066	0600	00	1	02224		STZ	PD+24,1	LEFT
01067	0600	00	1	02225		STZ	PD+25,1	RIGHT
01070	0600	00	1	02226		STZ	PD+26,1	LEFT
01071	0600	00	1	02227		STZ	PD+27,1	RIGHT
01072	2	00006	1	01066		TIX	BZ4+1,1,6	FINISH CARD
01073	0762	00	0	01321	B8	RCDA		
01074	0540	00	0	02322		RCHA	PUCTR+4	CONTROL TO READ ONE CARD
01075	0060	00	0	01075		TCOA	*	INTO PC
01076	0020	00	0	01100		TRA	B8A	
* COMPARE LOOP FOR CARDS 2-62								
01077	664764216060					BCD	1WPUA	
01100	0534	00	1	02025	B8A	LXA	K30,1	L 30
01101	0500	00	1	02173		CLA	PCC,1	
01102	0340	00	1	02224		CAS	PD+24,1	
01103	0020	00	0	01105		TRA	B8A+5	ERROR
01104	0020	00	0	01110		TRA	B9	OK
01105	0560	00	1	02224		LDQ	PD+24,1	ERROR
01106	0074	00	4	06502		TSX	ERROR-2,4	
01107	0020	00	0	01100		TRA	B8A	
01110	2	00001	1	01101	B9	TIX	B8A+1,1,1	
01111	-0500	00	0	02112		CAL	PB	
01112	-0760	00	0	00001		PBT		
01113	2	00001	2	01050		TIX	B7B,2,1	READ NEXT CARD
01114	2	00001	2	01115		TIX	B10,2,1	READ NEXT CARD
* SET INITIAL IMAGE FOR LAST TEN CARDS								

01115	0534	00	1	02025	B10	LXA K30,1	L 30
01116	-0500	00	1	02142		CAL PB+24,1	9L, 8L, ETC.
01117	0560	00	1	02143		LDQ PB+25,1	9R, 8R, ETC.
01120	-0763	00	0	00001		LGL 1	
01121	0602	00	1	02142		SLW PB+24,1	9L, 8L, ETC.
01122	-0600	00	1	02143		STQ PB+25,1	9L, 8L, ETC.
01123	0760	00	0	00006		COM	
01124	0602	00	1	02224		SLW PD+24,1	9L, 8L, ETC.
01125	-0600	00	0	02053		STQ TEMP	
01126	-0500	00	0	02053		CAL TEMP	
01127	0760	00	0	00006		COM	
01130	0602	00	1	02225		SLW PD+25,1	9L, 8L, ETC.
01131	2	00002	1	01116		TIX B10+1,1,2	

01132	0762	00	0	01321	B11	RCDA	
01133	-0500	00	0	02050		CAL ONE	
01134	0602	00	0	02113		SLW PB+1	
01135	0760	00	0	00006		COM	
01136	0602	00	0	02175		SLW PD+1	

* ZERO ALL ROWS EXCEPT 9,6,3, AND 0

01137	0534	00	1	02024	BZ5	LXA K26,1	L 26
01140	0600	00	1	02224		STZ PD+24,1	LEFT
01141	0600	00	1	02225		STZ PD+25,1	RIGHT
01142	0600	00	1	02226		STZ PD+26,1	LEFT
01143	0600	00	1	02227		STZ PD+27,1	RIGHT
01144	2	00006	1	01140		TIX BZ5+1,1,6	FINISH CARD
01145	0540	00	0	02322		RCHA PUCTR+4	CONTROL TO READ ONE CARD
01146	0060	00	0	01146		TCOA *	INTO PC
01147	0020	00	0	01151		TRA B11A	

* COMPARE LOOP FOR CARDS 63-72

01150	664764216060					BCD 1WPUA	
01151	0534	00	1	02025	B11A	LXA K30,1	L 30
01152	0500	00	1	02173		CLA PCC,1	
01153	0340	00	1	02224		CAS PD+24,1	
01154	0020	00	0	01156		TRA B11A+5	ERROR
01155	0020	00	0	01161		TRA B12	OK
01156	0560	00	1	02224		LDQ PD+24,1	ERROR
01157	0074	00	4	06502		TSX ERROR-2,4	
01160	0020	00	0	01151		TRA B11A	
01161	2	00001	1	01152	B12	TIX B11A+1,1,1	FINISH CARD
01162	0500	00	0	01134		CLA B11+2	
01163	0400	00	0	02055		ADD TWO	
01164	0601	00	0	01134		STO B11+2	
01165	0500	00	0	01136		CLA B11+4	
01166	0400	00	0	02055		ADD TWO	
01167	0601	00	0	01136		STO B11+4	
01170	2	00001	2	01171		TIX B12+8,2,1	
01171	3	00220	2	01115		TXH B10,2,144	

```

01172 0500 00 0 02011      CLA K9R      RESTORE FOR LOWER
01173 0601 00 0 01134      STO B11+2   RIGHT CORNER
01174 0500 00 0 02012      CLA K9S
01175 0601 00 0 01136      STO B11+4
  
```

```

*****
*
*      READ AND CHECK SPECIAL RANDOM NUMBERS PATTERN
*
*****
  
```

```

*      REGENERATE SPECIAL RANDOM NUMBER IMAGE
  
```

```

01176 0534 00 2 02036      LXA K220,2   L 220
01177 0500 00 0 02055      CLA TWO      L 2
01200 0601 00 0 01767      STO CT2
01201 0760 00 0 00141      SLN 1        TURN ON LITE
01202 0500 00 0 02314      CLA PRM      L 245716312345
01203 0601 00 0 02315      STO PRM1
01204 0020 00 0 00354      TRA AA+1
  
```

```

*      READ CARDS
  
```

```

01205 0762 00 0 01321  AA5  RCDA
01206 0540 00 0 02323      RCHA PUCTR+5 CONTROL TO READ ON CARD
01207 0060 00 0 01207      TCOA *      INTO PE
01210 0534 00 1 02024      LXA K26,1   L26
01211 -0500 00 0 02262      CAL PE      9L
01212 0361 00 1 02312      ACL PE+24,1
01213 2 00001 1 01212      TIX *-1,1,1
01214 0602 00 0 02312      SLW PEE     9R CHECK SUM
01215 0020 00 0 01217      TRA AA6
  
```

```

*      COMPARE CARDS
  
```

```

01216 664764216060      BCD 1WPUA

01217 0534 00 1 02025  AA6  LXA K30,1   L30
01220 0500 00 1 02312      CLA PE+24,1
01221 0340 00 1 02224      CAS PD+24,1
01222 0020 00 0 01224      TRA AA6+5   ERROR
01223 0020 00 0 01227      TRA AA6A-2  OK
01224 0560 00 1 02224      LDQ PD+24,1 ERROR
01225 0074 00 4 06502      TSX ERROR-2,4
01226 0020 00 0 01217      TRA AA6
01227 2 00001 1 01220      TIX AA6+1,1,1 FINISH CARD
  
```

```

01230 0534 00 1 02026      LXA K31,1   L 31
  
```

```

01231 0500 00 0 02312  AA6A  CLA PEE     CHECK SUM TEST
01232 0340 00 0 02175      CAS PD+1
01233 0020 00 0 01235      TRA AA6A+4  ERROR
01234 0020 00 0 01240      TRA AA6B    OK
01235 0560 00 0 02175      LDQ PD+1
01236 0074 00 4 06502      TSX ERROR-2,4
01237 0020 00 0 01217      TRA AA6
  
```

01240 0500 00 0 02227 AA6B CLA PD+27
01241 0601 00 0 02315 STO PRM1
01242 0760 00 0 00141 SLN 1 TURN ON LITE ONE
01243 2 00001 2 01244 TIX AA7,2,1
01244 3 00170 2 00354 AA7 TXH AA+1,2,120 GENERATE NEXT IMAGE
01245 -3 00140 2 01257 TXL AA9,2,96

* SWITCH TO READ HEAVY ODD ROWS AND LIGHT EVEN ROWS

01246 0500 00 0 00362 AA8 CLA AA1
01247 0560 00 0 00402 LDQ AA1B
01250 0601 00 0 00402 STO AA1B
01251 -0600 00 0 00362 STQ AA1
01252 0500 00 0 01773 CLA K9A L TXH AA,2,96
01253 0601 00 0 01244 STO AA7
01254 0500 00 0 02314 CLA PRM
01255 0601 00 0 02315 STO PRM1
01256 0020 00 0 00354 TRA AA+1

* RESTORE TO PUNCH OR READ HEAVY EVEN AND LIGHT ODD

01257 0500 00 0 00362 AA9 CLA AA1
01260 0560 00 0 00402 LDQ AA1B
01261 0601 00 0 00402 STO AA1B
01262 -0600 00 0 00362 STQ AA1
01263 0500 00 0 01774 CLA K9B L TXH,2,120
01264 0601 00 0 01244 STO AA7

*
* READ AND CHECK SPECIAL RANDOM NUMBERS *
* THREE ROWS HEAVY *
* THREE ROWS LIGHT *
* SIX ROWS ZERO *
* READ FOUR PATTERNS OF 24 CARDS EACH *
*

01265 0760 00 0 00140 SLF TURN OFF SENSE LITES
01266 0500 00 0 02055 CLA TWO
01267 0601 00 0 01767 STO CT2
01270 0534 00 2 02034 LXA K140,2 L 140

* REGENERATE PUNCHED IMAGES

01271 0760 00 0 00141 SLN 1 TURN LITE 1 ON
01272 0500 00 0 02314 CLA PRM L 245716312345
01273 0601 00 0 02315 STO PRM1
01274 0020 00 0 00467 TRA PP+1

* READ CARDS

01275 0762 00 0 01321 PP5 RCDA
01276 0540 00 0 02323 RCHA PUCTR+5 CONTROL TO READ ONE CARD
01277 0534 00 1 02024 LXA K26,1 INTO PE

01300	0060	00	0	01300		TCOA *	
01301	-0500	00	0	02262		CAL PE	9L
01302	0361	00	1	02312		ACL PE+24,1	8L-12R
01303	2	00001	1	01302		TIX *-1,1,1	
01304	0602	00	0	02312		SLW PEE	9R CHECK SUM
01305	0020	00	0	01307		TRA PP6	

* COMPARE CARDS

01306	664764216060					BCD 1WPUA	
01307	0534	00	1	02025	PP6	LXA K30,1	L30
01310	0500	00	1	02312		CLA PE+24,1	
01311	0340	00	1	02224		CAS PD+24,1	
01312	0020	00	0	01314		TRA PP6+5	ERROR
01313	0020	00	0	01317		TRA PP6P-2	OK
01314	0560	00	1	02224		LDQ PD+24,1	ERROR
01315	0074	00	4	06502		TSX ERROR-2,4	
01316	0020	00	0	01307		TRA PP6	
01317	2	00001	1	01310		TIX PP6+1,1,1	FINISH CARD
01320	0534	00	1	02026		LXA K31,1	L 31
01321	0500	00	0	02312	PP6P	CLA PEE	CHECK SUM TEST
01322	0340	00	0	02175		CAS PD+1	
01323	0020	00	0	01325		TRA PP6P+4	ERROR
01324	0020	00	0	01330		TRA PP6P+7	OK
01325	0560	00	0	02175		LDQ PD+1	
01326	0074	00	4	06502		TSX ERROR-2,4	
01327	0020	00	0	01307		TRA PP6	
01330	0500	00	0	02227		CLA PD+27	
01331	0601	00	0	02315		STO PRM1	
01332	0760	00	0	00141		SLN 1	TURN ON LITE ONE
01333	2	00001	2	01334		TIX PP7,2,1	
01334	3	00110	2	00467	PP7	TXH PP+1,2,72	
01335	-3	00001	2	01410		TXL LCC,2,1	

* HAVE LIGHT AND HEAVY ROWS BEEN SWITCHED

01336	0500	00	0	01767	PP7P	CLA CT2	
01337	0402	00	0	02050		SUB ONE	
01340	0100	00	0	01353		TZE PP8B	
01341	0601	00	0	01767		STO CT2	

* SWITCH LIGHT AND HEAVY ROWS

01342	0500	00	0	00475	PP8	CLA PP1	
01343	0560	00	0	00515		LDQ PP1B	
01344	0601	00	0	00515		STO PP1B	
01345	-0600	00	0	00475		STQ PP1	
01346	0500	00	0	01776	PP8A	CLA K9D	L TXH PP,2,48
01347	0601	00	0	01334		STO PP7	
01350	0500	00	0	02314		CLA PRM	L 245716312345
01351	0601	00	0	02315		STO PRM1	
01352	0020	00	0	00467		TRA PP+1	

* SWITCH COMPLETE PATTERN AND ZERO ODD ROWS

01353	0500	00	0	02016	PP8B	CLA K9W	L LXA K26,1
01354	0601	00	0	00475		STO PP1	
01355	0500	00	0	02017		CLA K9X	L LXA K22,1
01356	0601	00	0	00515		STO PP1B	
01357	0500	00	0	02013		CLA K9T	L LXA K30,1
01360	0601	00	0	00535		STO PP1D	
01361	0500	00	0	02055		CLA TWO	
01362	0601	00	0	01767		STO CT2	
01363	0500	00	0	01777		CLA K9E	L TXH PP,2,24
01364	0601	00	0	01334		STO PP7	
01365	0500	00	0	02000		CLA K9F	L CLA K9G
01366	0601	00	0	01346		STO PP8A	
01367	0500	00	0	02314		CLA PRM	L 245716312345
01370	0601	00	0	02315		STO PRM1	
01371	0020	00	0	00467		TRA PP+1	
01372	0020	00	0	00464		TRA PP-2	

* RESTORE TO ORIGINAL SETTING

01373	0500	00	0	02013	PP8C	CLA K9T	L LXA K30,1
01374	0601	00	0	00475		STO PP1	
01375	0500	00	0	02020		CLA K9Y	L LXA K24,1
01376	0601	00	0	00515		STO PP1B	
01377	0500	00	0	02016		CLA K9W	L LXA K26,1
01400	0601	00	0	00535		STO PP1D	
01401	0500	00	0	01775		CLA K9C	L TXH PP,2,72
01402	0601	00	0	01334		STO PP7	
01403	0500	00	0	02002		CLA K9J	L CLA K9D
01404	0601	00	0	01346		STO PP8A	
01405	0500	00	0	02045		CLA KTXL1	L TXL LCC,2,1
01406	0601	00	0	01335		STO PP7+1	
01407	0000	00	0	01760		HTR CHECK	CARDS HAVE BEEN READ AND COMPARED. PRESSING START WILL TEST PUNCH-NEXT CHAN.
01410	0500	00	0	02044	LCC	CLA KTRA1	L TRA PP8C
01411	0601	00	0	01335		STO PP7+1	
01412	0020	00	0	00467		TRA PP+1	

 *
 * PUNCH SPECIAL CARD PATTERN *
 *

01413	0762	00	0	01321	CARD	RCDA	READ SPECIAL PUNCH
01414	0540	00	0	02317		RCHA PUCTR+1	IMAGE INTO PB
01415	0060	00	0	01415		TCOA *	
01416	0534	00	2	02025	WPU	LXA K30,2	L 30
01417	0766	00	0	01341		WPUA	PUNCH CARDS
01420	0540	00	0	02317		RCHA PUCTR+1	CONTROL TO PUNCH

01421 2 00001 2 01417 FROM PB
TIX WPU+1,2,1 PUNCH NEXT CARD

01422 0000 00 0 01423 HTR RD
READY PUNCHED CARDS IN
READER AND PRESS START, TO
COMPARE

*
* READ SPECIAL CARD PATTERN *
*

01423 0500 00 0 02026 RD CLA K31 L 31
01424 0601 00 0 06556 STO WDNO
01425 0601 00 0 06557 STO RECNO
01426 0534 00 2 02025 LXA K30,2 L 30
01427 0762 00 0 01321 RCDA
01430 0540 00 0 02322 RCHA PUCTR+4 CONTROL TO READ
01431 0060 00 0 01431 TCOA * SPECIAL IMAGE
01432 0020 00 0 01434 TRA CAS

* COMPARE LOOP SPECIAL CARD IMAGE

01433 664764216060 BCD 1WPUA

01434 0534 00 1 02025 CAS LXA K30,1 L 30
01435 0500 00 1 02173 CLA PCC,1
01436 0340 00 1 02142 CAS PBB,1
01437 0020 00 0 01441 TRA CAS+5 ERROR
01440 0020 00 0 01444 TRA NEXT OK
01441 0560 00 1 02142 LDQ PBB,1 ERROR
01442 0074 00 4 06502 TSX ERROR-2,4
01443 0020 00 0 01434 TRA CAS

01444 2 00001 1 01435 NEXT TIX CAS+1,1,1 FINISH CARD
01445 2 00001 2 01427 TIX RD+4,2,1 NEXT CARD

01446 0000 00 0 01760 HTR CHECK
CARDS HAVE BEEN READ AND
COMPARED. PRESSING START
WILL TEST PUNCH-NEXT CHAN.

*
* PUNCH SPECIAL RANDOM NUMBERS PATTERN *
* THREE ROWS HEAVY *
* THREE ROWS LIGHT *
* SIX ROWS ZERO *
* PUNCH FOUR PATTERNS OF 25 CARDS EACH *
*

* ADJUST CONSTANTS FOR BIASING

01447 0500 00 0 02035 BIAS CLA K141 L141
01450 0601 00 0 06557 STO RECNO

01451	0500	00	0	02055	CLA TWO	L2
01452	0601	00	0	01767	STO CT2	
01453	0500	00	0	02026	CLA K31	L31
01454	0601	00	0	06556	STO WDNO	
01455	0760	00	0	00140	SLF	TURN OFF ALL LIGHTS
01456	0534	00	2	02025	LXA K30,2	L 30
01457	0500	00	0	02314	CLA PRM	L245716312345
01460	0601	00	0	02315	STO PRM1	

* GENERATE RANDOM NUMBER CARD PUNCH IMAGE

01461	0766	00	0	01341	BB	WPUA	
01462	0534	00	1	02030	LXA K65,1	L 65	
01463	0560	00	0	02315	LDQ PRM1	INITIAL RN LOAD	
01464	-0773	00	0	00001	RQL 1		
01465	0200	00	0	02313	MPY PR	L357642357563	
01466	-0600	00	1	02261	STQ PDD,1		
01467	2	00001	1	01464	TIX BB+3,1,1		

* DECREASE MAGNITUDE OF ODD ROWS 9,5, AND 1

01470	0534	00	1	02025	BB1	LXA K30,1	L 30
01471	0534	00	4	01534	LXA BB2,4	L 0	
01472	-0500	00	1	02224	CAL PD+24,1		
01473	-0320	00	4	02260	ANA PD+52,4		
01474	-0320	00	4	02257	ANA PD+51,4		
01475	-0320	00	4	02256	ANA PD+50,4		
01476	-0320	00	4	02255	ANA PD+49,4		
01477	0602	00	1	02224	SLW PD+24,1	9L	
01500	-0500	00	1	02225	CAL PD+25,1	9R	
01501	-0320	00	4	02254	ANA PD+48,4		
01502	-0320	00	4	02253	ANA PD+47,4		
01503	-0320	00	4	02252	ANA PD+46,4		
01504	-0320	00	4	02251	ANA PD+45,4		
01505	0602	00	1	02225	SLW PD+25,1	9R	
01506	1	00004	4	01507	TXI BB1A,4,4		
01507	2	00010	1	01472	BB1A	TIX BB1+2,1,8	

* INCREASE MAGNITUDE OF ODD ROWS 7,3, AND 11

01510	0534	00	1	02023	BB1B	LXA K24,1	L 24
01511	0534	00	4	01534	LXA BB2,4	L 0	
01512	-0500	00	1	02224	CAL PD+24,1	8L	
01513	-0501	00	4	02260	ORA PD+52,4		
01514	-0501	00	4	02257	ORA PD+51,4		
01515	-0501	00	4	02256	ORA PD+50,4		
01516	-0501	00	4	02255	ORA PD+49,4		
01517	0602	00	1	02224	SLW PD+24,1	8L	
01520	-0500	00	1	02225	CAL PD+25,1	8R	
01521	-0501	00	4	02254	ORA PD+48,4		
01522	-0501	00	4	02253	ORA PD+47,4		
01523	-0501	00	4	02252	ORA PD+46,4		
01524	-0501	00	4	02251	ORA PD+45,4		
01525	0602	00	1	02225	SLW PD+25,1	8R	
01526	1	00004	4	01527	TXI BB1C,4,4		

01527 2 00010 1 01512 BB1C TIX BB1B+2,1,8

* ZERO EVEN ROWS

01530 0534 00 1 02024 BB1D LXA K26,1 L 26
01531 0600 04 1 02224 STZ PD+24,1,4 ZERO LEFT HALF EVEN ROWS
01532 0600 04 1 02225 STZ PD+25,1,4 ZERO RIGHT HALF EVEN ROWS
01533 2 00004 1 01531 TIX BB1D+1,1,4

* GENERATE CHECK SUM FOR EACH CARD AND STORE IN 9R

01534 -0754 00 0 00000 BB2 PXD CLEAR AC
01535 0534 00 1 02024 LXA K26,1
01536 -0500 00 0 02174 CAL PD 9L
01537 0361 00 1 02224 ACL PD+24,1
01540 2 00001 1 01537 TIX BB2+3,1,1
01541 0602 00 0 02175 SLW PD+1 9R

* TEST SL 1 TO PUNCH OR READ CARDS

01542 -0760 00 0 00141 BB2B SLT 1 TEST LITE ONE
01543 0020 00 0 01545 TRA BB3 PUNCH CARDS
01544 0020 00 0 01616 TRA BB5 READ CARDS

* PUNCH CARDS

01545 0540 00 0 02320 BB3 RCHA PUCTR+2 CONTROL TO PUNCH ONE CARD
FROM PD
01546 0500 00 0 02227 CLA PD+27
01547 0601 00 0 02315 STO PRM1
01550 2 00001 2 01461 TIX BB,2,1 PUNCH ALL CARDS

* HAVE LIGHT AND HEAVY ROWS BEEN SWITCHED

01551 0500 00 0 01767 BB3A CLA CT2
01552 0402 00 0 02050 SUB ONE
01553 0100 00 0 01562 TZE BB3D
01554 0601 00 0 01767 STO CT2

* SWITCH LIGHT AND HEAVY ROWS

01555 0500 00 0 01470 BB3B CLA BB1
01556 0560 00 0 01510 LDQ BB1B
01557 0601 00 0 01510 STO BB1B
01560 -0600 00 0 01470 STQ BB1
01561 0020 00 0 01456 TRA BB-3

* SWITCH COMPLETE PATTERN AND ZERO ODD ROWS

01562 -0760 00 0 00142 BB3D SLT 2 TURN ON LITE TWO
01563 0020 00 0 01565 TRA BB3E
01564 0020 00 0 01577 TRA BB3F
01565 0760 00 0 00142 BB3E SLN 2 TURN ON LIGHT TWO

01566	0500	00	0	02016		CLA K9W	L LXA K26,1
01567	0601	00	0	01470		STO BB1	
01570	0500	00	0	02017		CLA K9X	L LXA K22,1
01571	0601	00	0	01510		STO BB1B	
01572	0500	00	0	02013		CLA K9T	L LXA K30,1
01573	0601	00	0	01530		STO BB1D	
01574	0500	00	0	02055		CLA TWO	RESTORE COUNT
01575	0601	00	0	01767		STO CT2	
01576	0020	00	0	01456		TRA BB-3	

* RESTORE TO ORIGINAL SETTING

01577	0500	00	0	02013	BB3F	CLA K9T	L LXA K30,1
01600	0601	00	0	01470		STO BB1	
01601	0500	00	0	02020		CLA K9Y	L LXA K24,1
01602	0601	00	0	01510		STO BB1B	
01603	0500	00	0	02016		CLA K9W	L LXA K26,1
01604	0601	00	0	01530		STO BB1D	
01605	0000	00	0	01606	BB4	HTR BB4+1	READY PUNCHED CARDS IN READER AND PRESS START TO COMPARE

*
* READ AND CHECK SPECIAL RANDOM NUMBERS *
* THREE ROWS HEAVY *
* THREE ROWS LIGHT *
* SIX ROWS ZERO *
* READ FOUR PATTERN OF 24 CARDS EACH *
*

01606	0760	00	0	00140		SLF	TURN OFF SENSE LIGHTS
01607	0500	00	0	02055		CLA TWO	
01610	0601	00	0	01767		STO CT2	
01611	0534	00	2	02034		LXA K140,2	L 140

* REGENERATE PUNCHED IMAGES

01612	0760	00	0	00141		SLN 1	TURN ON LITE ONE
01613	0500	00	0	02314		CLA PRM	L 245716312345
01614	0601	00	0	02315		STO PRM1	
01615	0020	00	0	01462		TRA BB+1	

* READ CARDS

01616	0762	00	0	01321	BB5	RCDA	
01617	0540	00	0	02323		RCHA PUCTR+5	CONTROL TO READ ONE CARD INTO PE
01620	0534	00	1	02024		LXA K26,1	
01621	0060	00	0	01621		TCOA *	
01622	-0500	00	0	02262		CAL PE	9L
01623	0361	00	1	02312		ACL PE+24,1	8L-12R
01624	2 00001	1	1	01623		TIX *-1,1,1	
01625	0602	00	0	02312		SLW PEE	9R CHECK SUM
01626	0020	00	0	01630		TRA BB6	

* COMPARE CARDS

01627	664764216060		BCD 1WPUA		
01630	0534 00 1 02025	BB6	LXA K30,1		L30
01631	0500 00 1 02312		CLA PE+24,1		
01632	0340 00 1 02224		CAS PD+24,1		
01633	0020 00 0 01635		TRA BB6+5		ERROR
01634	0020 00 0 01640		TRA BB6B-2		OK
01635	0560 00 1 02224		LDQ PD+24,1		
01636	0074 00 4 06502		TSX ERROR-2,4		
01637	0020 00 0 01630		TRA BB6		
01640	2 00001 1 01631		TIX BB6+1,1,1		FINISH CARD
01641	0534 00 1 02026		LXA K31,1		L 31
01642	0500 00 0 02312	BB6B	CLA PEE		
01643	0340 00 0 02175		CAS PD+1		
01644	0020 00 0 01646		TRA BB6B+4		ERROR
01645	0020 00 0 01651		TRA BB7-4		OK
01646	0560 00 0 02175		LDQ PD+1		
01647	0074 00 4 06502		TSX ERROR-2,4		
01650	0020 00 0 01630		TRA BB6		
01651	0500 00 0 02227		CLA PD+27		
01652	0601 00 0 02315		STO PRM1		
01653	0760 00 0 00141		SLN 1		TURN ON LITE ONE
01654	2 00001 2 01655		TIX BB7,2,1		
01655	3 00110 2 01462	BB7	TXH BB+1,2,72		
01656	-3 00001 2 01730		TXL LC,2,1		

* HEAVY LIGHT AND HEAVY ROWS BEEN SWITCHED

01657	0500 00 0 01767	BB7B	CLA CT2		
01660	0402 00 0 02050		SUB ONE		
01661	0100 00 0 01674		TZE BB8B		
01662	0601 00 0 01767		STO CT2		

* SWITCH LIGHT AND HEAVY ROWS

01663	0500 00 0 01470	BB8	CLA BB1		
01664	0560 00 0 01510		LDQ BB1B		
01665	0601 00 0 01510		STO BB1B		
01666	-0600 00 0 01470		STQ BB1		
01667	0500 00 0 02003	BB8A	CLA K9L		L TXH BB,2,48
01670	0601 00 0 01655		STO BB7		
01671	0500 00 0 02314		CLA PRM		L 245716312345
01672	0601 00 0 02315		STO PRM1		
01673	0020 00 0 01462		TRA BB+1		

* SWITCH COMPLETE PATTERN AND ZERO ODD ROWS

01674	0500 00 0 02016	BB8B	CLA K9W		L LXA K26,1
01675	0601 00 0 01470		STO BB1		
01676	0500 00 0 02017		CLA K9X		L LXA K22,1
01677	0601 00 0 01510		STO BB1B		
01700	0500 00 0 02013		CLA K9T		L LXA K30,1

01701	0601	00	0	01530		STO	BB1D	
01702	0500	00	0	02055		CLA	TWO	
01703	0601	00	0	01767		STO	CT2	
01704	0500	00	0	02004		CLA	K9M	L TXH BB,2,24
01705	0601	00	0	01655		STO	BB7	
01706	0500	00	0	02005		CLA	K9N	L CLA K9O
01707	0601	00	0	01667		STO	BB8A	
01710	0500	00	0	02314		CLA	PRM	L 245716312345
01711	0601	00	0	02315		STO	PRM1	
01712	0020	00	0	01462		TRA	BB+1	

* RESTORE TO ORIGINAL SETTING

01713	0500	00	0	02013	BB8C	CLA	K9T	L LXA K30,1
01714	0601	00	0	01470		STO	BB1	
01715	0500	00	0	02020		CLA	K9Y	L LXA K24,1
01716	0601	00	0	01510		STO	BB1B	
01717	0500	00	0	02016		CLA	K9W	L LXA K26,1
01720	0601	00	0	01530		STO	BB1D	
01721	0500	00	0	02007		CLA	K9P	TXH BB,2,72
01722	0601	00	0	01655		STO	BB7	
01723	0500	00	0	02010		CLA	K9Q	L CLA K9L
01724	0601	00	0	01667		STO	BB8A	
01725	0500	00	0	02047		CLA	KTXL	L TXL LC,2,1
01726	0601	00	0	01656		STO	BB7+1	
01727	0000	00	0	01760		HTR	CHECK	CARDS HAVE BEEN READ AND COMPARED. PRESSING START WILL TEST PUNCH-NEXT CHAN.
01730	0500	00	0	02046	LC	CLA	KTRA	L TRA BB8C
01731	0601	00	0	01656		STO	BB7+1	
01732	0020	00	0	01462		TRA	BB+1	

*
* TEST SSW6 TO REPEAT OR BRING IN NEXT TEST *
*

* TEST SSW6

01733	0760	00	0	00163	WPRA	SWT	3	
01734	0020	00	0	01736		TRA	*+2	
01735	0020	00	0	00031		TRA	TEST	
01736	0766	00	0	01361		WPRA		TO
01737	0760	00	0	01363		SPRA	3	PRINT
01740	0540	00	0	01765		RCHA	NPER	IDENTIFICATION
01741	0020	00	0	00031		TRA	TEST	
01742	0760	00	0	00163	SW6	SWT	3	
01743	0020	00	0	01745		TRA	*+2	
01744	0020	00	0	01750		TRA	*+4	

01745	0766	00	0	01361		WPRA	
01746	0760	00	0	01363		SPRA 3	
01747	0540	00	0	01766		RCHA PPCOM	
01750	0760	00	0	00166		SWT 6	
01751	0020	00	0	01753		TRA *+2	SELECT CARD READER
01752	0020	00	0	00031		TRA TEST	REPEAT TEST
01753	0762	00	0	01321		RCDA	CALL
01754	0540	00	0	01757		RCHA *+3	NEXT
01755	0544	00	0	00000		LCHA 0	PROGRAM
01756	0020	00	0	00001		TRA 1	
01757	-1	00003	0	00000		IOCT 0,0,3	
01760	0500	00	0	01764	CHECK	CLA COUNT	
01761	0621	00	0	01762		STA *+1	
01762	0020	00	0	00000		TRA	

 *
 *
 *
 *
 *

CONSTANTS AND IMAGES

01763	0000	00	1	00005	RST	HTR 5,1	
01764	+0000000000000				COUNT	OCT 0	
01765	0000	30	0	02324	NPER	IOCD CRIM,0,24 TO PRINT IDENTIFICATION	
01766	0000	30	0	02354	PPCOM	IOCD CRIM1,0,24 TO PRINT PASS COMPLETE	
01767	+0000000000000				CT2	OCT 0	
01770	+0000000000000				CT3	OCT 0	
01771	+0000000000002				K2	OCT 2	
01772	+0000000000006				K6	OCT 6	
01773	3	00140	2	00354	K9A	TXH AA+1,2,96	
01774	3	00170	2	00354	K9B	TXH AA+1,2,120	
01775	3	00110	2	00467	K9C	TXH PP+1,2,72	
01776	3	00060	2	00467	K9D	TXH PP+1,2,48	
01777	3	00030	2	00467	K9E	TXH PP+1,2,24	
02000	0500	00	0	02001	K9F	CLA K9G	
02001	3	00001	2	00467	K9G	TXH PP+1,2,1	
02002	0500	00	0	01776	K9J	CLA K9D	
02003	3	00060	2	01462	K9L	TXH BB+1,2,48	
02004	3	00030	2	01462	K9M	TXH BB+1,2,24	
02005	0500	00	0	02006	K9N	CLA K9O	
02006	3	00001	2	01462	K9O	TXH BB+1,2,1	
02007	3	00110	2	01462	K9P	TXH BB+1,2,72	
02010	0500	00	0	02003	K9Q	CLA K9L	
02011	0602	00	0	02113	K9R	SLW PB+1	
02012	0602	00	0	02175	K9S	SLW PD+1	
02013	0534	00	1	02025	K9T	LXA K30,1	L 30
02014	2	00001	2	00353	K9U	TIX AA,2,1	
02015	2	00001	2	01244	K9V	TIX AA7,2,1	
02016	0534	00	1	02024	K9W	LXA K26,1	
02017	0534	00	1	02022	K9X	LXA K22,1	

02020	0534 00 1 02023	K9Y	LXA	K24,1
02021	+0000000000012	K12	OCT	12
02022	+0000000000022	K22	OCT	22
02023	+0000000000024	K24	OCT	24
02024	+0000000000026	K26	OCT	26
02025	+0000000000030	K30	OCT	30
02026	+0000000000031	K31	OCT	31
02027	+3777777777777	K37	OCT	3777777777777
02030	+0000000000065	K65	OCT	65
02031	+0000000000110	K110	OCT	110
02032	+0000000000111	K111	OCT	111
02033	+0000000000114	K114	OCT	114
02034	+0000000000140	K140	OCT	140
02035	+0000000000141	K141	OCT	141
02036	+0000000000220	K220	OCT	220
02037	+0000000000330	K330	OCT	330
02040	+0000000000440	K440	OCT	440
02041	+0000000000454	K454	OCT	454
02042	+0000000000455	K455	OCT	455
02043	+0000000001100	K1100	OCT	1100
02044	0020 00 0 01373	KTRA1	TRA	PP8C
02045	-3 00001 2 01410	KTXL1	TXL	LCC,2,1
02046	0020 00 0 01713	KTRA	TRA	BB8C
02047	-3 00001 2 01730	KTXL	TXL	LC,2,1

02050	+0000000000001	ONE	OCT	1
02051	-3777777777777	ONES	OCT	7777777777777
02052	+0000000000000	SAV1	OCT	0
02053	+0000000000000	TEMP	OCT	0
02054	0020 00 0 01012	TB5	TRA	B5
02055	+0000000000002	TWO	OCT	2
02056	0020 00 0 00072	T30	TRA	PRST
02057	0020 00 0 00621	TRC	TRA	READ
02060	+0000000000000	XRC	OCT	0

* INITIAL CARD PUNCH IMAGE

02061	+0000000000000	PA	OCT	0	9L
02062	+000000002000		OCT	2000	9R
02063	+0000000000000		OCT	0	8L
02064	+000000001000		OCT	1000	8R
02065	+0000000000000		OCT	0	7L
02066	+000000000400		OCT	400	7R
02067	+0000000000000		OCT	0	6L
02070	+000000000200		OCT	200	6R
02071	+0000000000000		OCT	0	5L
02072	+000000000100		OCT	100	5R
02073	+0000000000000		OCT	0	4L
02074	+000000000040		OCT	40	4R
02075	+0000000000000		OCT	0	3L
02076	+000000000020		OCT	20	3R
02077	+0000000000000		OCT	0	2L
02100	+000000000010		OCT	10	2R
02101	+0000000000000		OCT	0	1L
02102	+0000000000004		OCT	4	1R
02103	+0000000000000		OCT	0	0L

02104 +0000000000002 OCT 2 0R
 02105 +0000000000000 OCT 0 11L
 02106 +0000000000001 OCT 1 11R
 02107 +0000000000000 OCT 0 12L
 02110 +0000000000000 OCT 0 12R
 02111 +0000000000000 PAA OCT 0

* SHIFTING CARD PUNCH IMAGE

 02112 PB BSS 24
 02142 +0000000000000 PBB OCT 0

* READ IMAGE

 02143 PC BSS 24
 02173 +0000000000000 PCC OCT 0

 02174 PD BSS 53
 02261 +0000000000000 PDD OCT 0

 02262 PE BSS 24
 02312 +0000000000000 PEE OCT 0

02313 +357642357563 PR OCT 357642357563
 02314 +245716312345 PRM OCT 245716312345
 02315 +0000000000000 PRM1 OCT 0

02316 0000 30 0 02262 PUCTR IOCD PE,0,24 PUNCH HEAVY SEMI-RIPPLE
 02317 0000 30 0 02112 IOCD PB,0,24 PUNCH LIGHT RIPPLE
 02320 0000 30 0 02174 IOCD PD,0,24 PUNCH RANDOM PATTERN

02321 0000 30 0 02112 IOCD PB,0,24 READ HEAVY SEMI-RIPPLE
 02322 0000 30 0 02143 IOCD PC,0,24 STANDARD READ IMAGE
 02323 0000 30 0 02262 IOCD PE,0,24 READ RANDOM PATTERN

*IMAGE-NOW PERFORMING DIAGNOSTIC -9R01-PUNCH TEST

02324 +000112040230 CRIM OCT 112040230 9L
 02325 +0000000000000 OCT 0 9R
 02326 +0000000000000 OCT 0 8L
 02327 +0200000000000 OCT 20000000000 8R
 02330 +000400410000 OCT 400410000 7L
 02331 -0000000000000 OCT 40000000000 7R
 02332 +006060002000 OCT 6060002000 6L
 02333 +0000000000000 OCT 0 6R
 02334 +010201004000 OCT 10201004000 5L
 02335 +1020000000000 OCT 10200000000 5R
 02336 +000004100000 OCT 4100000 4L
 02337 +2000000000000 OCT 20000000000 4R
 02340 +0000000000500 OCT 500 3L
 02341 +0444000000000 OCT 44400000000 3R
 02342 +000000001000 OCT 1000 2L
 02343 +0010000000000 OCT 10000000000 2R
 02344 +000000020002 OCT 20002 1L
 02345 +0000000000000 OCT 0 1R
 02346 +002000001404 OCT 200001404 0L

02347	+205400000000	OCT	205400000000	0R
02350	+014535006051	OCT	14535006051	11L
02351	-100000000000	OCT	500000000000	11R
02352	+000242570300	OCT	242570300	12L
02353	+062000000000	OCT	062000000000	12R

*IMAGE-PASS COMPLETE-9R01-ALL PUNCHES TESTED

02354	+000000003000	CRIM1	OCT 3000	9L
02355	+000000000000		OCT 0	9R
02356	+000000000000		OCT 0	8L
02357	+100000000000		OCT 100000000000	8R
02360	+000100200002		OCT 100200002	7L
02361	+000000000000		OCT 0	7R
02362	+000001000000		OCT 1000000	6L
02363	+000000000000		OCT 0	6R
02364	+000000050000		OCT 50000	5L
02365	-042200000000		OCT 442200000000	5R
02366	+000000400001		OCT 400001	4L
02367	+000100000000		OCT 100000000	4R
02370	+000002120030		OCT 2120030	3L
02371	+204400000000		OCT 204400000000	3R
02372	+000030000000		OCT 30000000	2L
02373	+021000000000		OCT 21000000000	2R
02374	+000040000240		OCT 40000240	1L
02375	+000000000000		OCT 0	1R
02376	+000030020401		OCT 30020401	0L
02377	+025400000000		OCT 25400000000	0R
02400	+000101705132		OCT 101705132	11L
02401	-000000000000		OCT 400000000000	11R
02402	+000042050040		OCT 42050040	12L
02403	+342300000000		OCT 342300000000	12R
	06504	ERROR	EQU 3396	
	06511	OK	EQU 3401	
	06556	WDNO	EQU 3438	
	06557	RECNO	EQU 3439	
	05514	IOC	EQU 2892	
	05500	CTRL1	EQU 2880	
	05501	CTRL2	EQU 2881	
	05502	CTRL3	EQU 2882	
	05512	CTX	EQU 2890	
	00000		END	