IBM POUGHKEEPSIE

Diagnostic Engineering Publication

1410/7010

December 13, 1963

Subject: Diagnostic Program RP01A

Sequence Number 503

Replaces R001E, R002D

I. This Program replaces R001E and R002D for testing the 1402 Reader-Punch when attached to a 1410 or 7010.

II This Program is designed to be compatible with TC50.

III System & Chl Control Cards

System	Card # 001
CHL 1	Card # 002
CHL 2	Card # 003
CHL 3	Card # 004
CHL 4	Card # 005

Enclosures: 73 Pages
Card Deck for CARD ONLY SYSTEMS (as punched by UP51)
8 Cards - Card Loader (1-7) and 1 Core Clear
177 Cards No. 001-177 Data Cards
1 Card Execute Card

Distribution: X 1410
X 7010
Other

1402

READER-PUNCH

DIAGNOSTIC PROGRAM

TO BE USED WITH 1410 or 7010 SYSTEMS

RP01A 1402 CARD READER PUNCH TEST

NOTE: THIS PROGRAM USES SYSTEM & CHANNEL CONTROL CARDS

INDEX

5.00.00.0 TEST DESCRIPTION

RP01 obsoletes the previous set of Diagnostic programs used on the 1402 (R001 and R002). The new program combines the tests previously performed by both R001 and R002 except for priority and overlap which are now tested in the systems tests. The program uses a common control system with special program options that are made available through the alteration of a SPECIAL TAD. This common control system also makes it possible to develop a straight sequential program which is easy to understand and use. In RP01 the common control system has allowed the development of individual test routines, each independent of the others and capable of operating alone.
To further increase the usefulness of the program, the program listing is divided according to the test routines and a description of each routine is included in the listing.

Following is a list in the order in which they occur of the test routines within RP01, a detailed description of each is available in the program listing.

A. Punch Machine Speed — Routine # N01
   Times Cards Punched per Minute
B. Punch Clutch Test — Routine # N02
   Critical Timing of Clutch Engagement
C. Test Punch Busy — Routine # N11
   Insure Punch Can Set Busy
D. Punch Error Deck — Routine # N12
   Punch Error Deck For Reader
E. Test Wrong Length Record — Routine # N13
   Insure No Cards Punched on WLR
F. Punch Patterns-Select Pockets-Move Mode — Routine # N05
   Punch and Stack Test Pattern Cards
G. Punch Patterns-Select Pockets-Load Mode — Routine # N14
   Punch and Stack Test Pattern Cards
H. Reader Speed Test — Routine # N06
   Times Cards Read Per Minute
I. Reader Clutch Test — Routine # N04
   Critical Timing of Clutch Engagement
J. Test Reader Busy — Routine # N15
   Insure Reader Can Set Busy

K. Test Reader Wrong Length Record Routine # N16
Insure Reader Can Set Wrong Length Record
L. Test No Transfer Routine # N17
Insure Reader Can Set No Transfer
M. Read Error Deck, Test Data Check Routine # N18
Insure Reader Can Set Data Check
N. Read Patterns-Select Pockets-Move Mode Routine #N09
Read Punched Pattern Decks
O. Read Patterns-Select Pockets-Load Mode
Routine # N20
Read Punched Pattern Decks
P. Check Reader Stacking Routine # N21
Check Pockets Where Cards Were Stacked

5.00.01.0 OPERATING PROCEDURE

The following should be read carefully to insure proper operation of the program.

01.1 Preparations previous to Running the Program

A. Load all 1402 Punches that are to be tested with at least 300 cards and make ready.
B. Load all 1402 Readers that are to be tested with at least 850 cards and make ready.
C. Set all 1402 Readers and Punchs not ready that are not to be tested.

01.2 Messages & Requests

A. "RP01A"
Program Title
B. "TST CH "
Indicates the channel on which the program is about to test the 1402
C. "PCH SpD IS / MIN"
Indicates program calculated speed of punch
D. "CLR BLK CRDS from Pch Pkts"
The CE at this time removes all cards from punch pockets 0, 4, and 8, these cards are all blank.

E. "CLR Pch, Load CRDs From P-0 In Pch"
The CE clears all cards out of the punch and reloads the cards from pocket 0

F. "Save CRDs From P-0, Load PcH"
The CE Removes and Saves the Error Deck that is in Pocket 0 and loads blank cards into the punch.

G. "CHK Rout N13 If CRDs in Any PcH PkT"
The CE insures that there where no cards fed into any pockets.

H. "Save CRDs From P-0, 4, 8"
The CE Removes the cards from Pocket 0 then 4 and then 8 placing each behind the previous and all of them saved behind the error deck.

I. "RDR SPD IS /MIN"
Indicate program calculated speed of Reader

J. "CLR RDR, Load Err & Pattern (P-0, 4, 8) Decks"
The CE clears all the blank cards from the Reader and loads the Error and Pattern Decks previously punched followed by the decks still in the punch pockets, first from Pocket 0 then 4, then 8.

K. "Load CRDs From P-1, P-2 in RDR"
The CE loads the cards from Reader Pocket 1 and then 2 back into the Reader.

L. "Pass"
Program Complete

01.3 SPECIAL TADS

There is one special tad used in this program (Memory Location 1004) altering this TAD causes the following changes within the program.

A. Redefines the Normal TADs 01000-01003

		Not 1	1
01000	TAD 0	Allow error typeouts	Bypass error typeouts
01001	TAD 1	Do not Req loop after error	Req loop after error
01002	TAD 2	No error halts	No error halts
01003	TAD 3	Single program pass	Repeat program

Note: When the TADs are Re Defined TAD 1 = 1 does not mean unconditional looping; rather it means that after an error has occurred, the program will request if the CE wants to take action. At this point the CE may take any of the standard program options available. (These options are described later in the write-up.)

Also, TAD 2 = 1 has no meaning as there are no error halts in RP01 program.

B. Makes available to the CE a set of 7 program options which allows a greater degree of flexibility when running the program. These options are available by

a. Press Inquiry Request key

b. When the keyboard unlocks, enter

1) Control option code desired
2) Data required by the program to honor the request

c. Press Inquiry Release key.

Providing a legal option has been requested, the program will immediately honor the request. If the option is illegal (it does not exist), the program returnd to the read console operation, a legal option must be requested.

Table 1 shows the options available, and the code and data required to request the option. See control option definitions for details of each option.

Option	Code	Data Required-Enter
End of Test	Blank	None
Alter TAD's (1000-1003)	1	Four new TAD settings desired (all 4 TAD's altered)
Alter Memory	2	Five-digit memory address to be altered
Loop a Routine	4	Five-digit starting address of routine to be looped
Loop an Instruction	5	Enter M or L, Ch code Char, 1 or 4, Pocket # , W or R, BOSIO Op Code, 80 Char Pch FlD
Restart	6	Five-Digit Memory Address to start at
Continue	7	None

TABLE 1

6.00.02.0 OPERATING PROCEDURES (continued)

Definition of Control Options

1. End Test - This option will terminate the test immediately unless TAD 3 = 1, in which case the program would restart from the beginning.

2. Alter TAD's - This option will alter the standard TAD's to those entered after the option code. This option will not alter any special TAD's.

3. Alter Memory - On this option the address to be altered is entered after the option code. After pressing release, the Inquiry Request is pressed again and the alteration is made. Special TAD's may be altered in this manner.

4. Loop a Routine - This option causes the program to loop on the routine whose starting address was entered with the option code. When looping a routine, all error typeouts are bypassed and the loop is ended only by pressing Inquiry Request and selecting another option (probably the continue option).

5. Loop an Instruction - Through this option the CE may cause the program to loop on either Punch or Reader operations with data fields as requested. The operations which may be selected are:

Read a card and stack in Pocket, 0, 1, or 2
Read a card but do not stack
Stack a card
Punch a card and stack in Pocket, 0, 4, or 8

Besides the control option code, the CE must enter the data required to build the one instruction loop and data field desired. This data must be entered in the following manner after the control option code.

a. M for Move mode
L for Load mode
K for Stack Ch 1
4 for Stack Ch 2

b.

% - Ch 1		@ - Ch 1	
↑ - Ch 2		* - Ch 2	
? - Ch 3	Unoverlap	$ - Ch 3	Overlap
! - Ch 4		# - Ch 4	

0, 1, or 2 for Stack

c. 1 Reader
4 Punch

d. 0, 1, 2 Reader Pocket
0, 4, 8 Punch Pocket
9 Read and No Stack

e. W for Write
R for Read

f. R Ch 1
X Ch2
3 Ch 3
1 Ch 4

g. Data Field to be used if punching ending with a word mark-group mark

NOTE: When using this option the CE should be aware of the limitations on the number of characters with word marks versus the mode used. Once the program enters this loop, the Inquiry Request must be used to exit from the loop. Then another option must be selected, most likely the continue option would be selected. No errors are indicated while in this loop.

6. Restart at Desired Memory Location - This allows the CE to begin at any point in the program by entering the memory location at which the restart is desired. To restart a program from the beginning, always enter 02000.

7. Continue from Point Where Program was Interrupted - This allows the CE to cause the program to continue in a normal fashion after interrupting it for looping purposes or accidently pressing the Inquiry Request.

The program control options described here are available when Special TAD0=1 and should be used as much as possible for aids in troubleshooting.

When TAD 1 = 1 (request action after error), the CE may take any of the control options available by using the procedures outlined here after an error has occurred.

5.00.02.0 OPERATING HINTS

READ AND UNDERSTAND THE PROGRAM WRITE-UP

02.1 Only a Punch or only a Reader may be tested by making it the only ready unit.

02.2 Alter Special TAD 0 (Memory Loc. 01004) to 1 using the Standard Program Alter Procedures. Special TAD 0 = 1 makes the 7 program options available.

02.3 When operating with the Special TAD 0 = 1 the following should be kept in mind.

A. The alter memory option and loop a routine option could be used to alter a routine for some condition and then loop on the routine altered for troubleshooting the bug.

B. Several options may be selected sequentially by pressing Inquiry Request immediately after pressing Release for a selected option.

C. To restart a program from the beginning, use option 6 and a starting address of 02000.

02.4 The programs in this package require Machine Preparation before the program is run. Be certain these preparations are made.

5.00.03.0 PROGRAM STOPS & RESTARTS

03.1 ERROR HALTS

THERE ARE NO ERROR HALTS IN RP01.

03.2 NORMAL HALTS

Mem Loc.	Reason
04480	Allow CE to Unload Punch Pockets
04619	Allow CE to Reload Cards in Punch
04751	Allow CE to Unload Punch Pockets and load Punch
04909	Allow CE to check for cards in Punch Pockets
05681	Allow CE to remove cards from Punch Pockets
07187	Allow CE to load Test Decks in Reader
08349	Allow CE to reload cards in Reader

.03.3 AUTOMATIC RESTART PROCEDURE

By setting the check control switch on the console-CE-Test-Panel to Reset and Restart, the programs will automatically restart after a 1410/7010 alarm condition. This can be used to great advantage when looping a routine or instruction which is causing an alarm condition. Furthermore, this technique can be used to insure that once a program is started, it may be left unattended without fear of stopping because of alarms.

MANUAL RESTART PROCEDURE

If the check control switch is not used and an alarm condition is encountered, the program can be made to continue by pressing Computer Reset and Start.

5.00.04.0 LOADING PROCEDURE

USE STANDARD DIAGNOSTIC LOADING PROCEDURES
(Refer to 1410/7010 INTRODUCTORY MATERIAL)

5.00.05.0 ERROR MESSAGES

The error messages used are designed to give the maximum data available about the error that occurred. All error messages will be given on the Console Typewriter. The following is a description of the Error Message Format.

a. All errors will be preceded by "ROUTINE N00." This identifies the failing routine.

b. All status errors, errors indicating status condition on the I/O device, will appear in this format:

*Error 00000 M%F099999W 1248AB

1) 2) 3) 4)

1) Error Flag

2) Starting address of failing routine

3) Failing instruction

4) Status indicator that was on

1	Not ready
2	Busy
4	Data Check
8	Ext. Cond.
A	No transfer
B	Wrong length record

c. All program detected errors, errors other than [illegible] status errors, will appear in the following format. [illegible] Refer to program listing for explanation of error.

*Error 01 02 00000

1) 2) 3)

1) Error Flag
2) Error (s) detected during routine
3) Starting address of failing routine

d. Combinations of status errors and program detected errors will appear in this format:

```
*Error      01   00000   M%F099999W      1248AB
```

e. Any data which may be pertinent to the error, i.e., Data Field used, may appear as the third line of the error message. This is not standard and will be given only as required.

f. If Special TAD 0 = 1 and TAD 1 = 1 (request loop after error), the following will appear; it will be the last line of the error message.

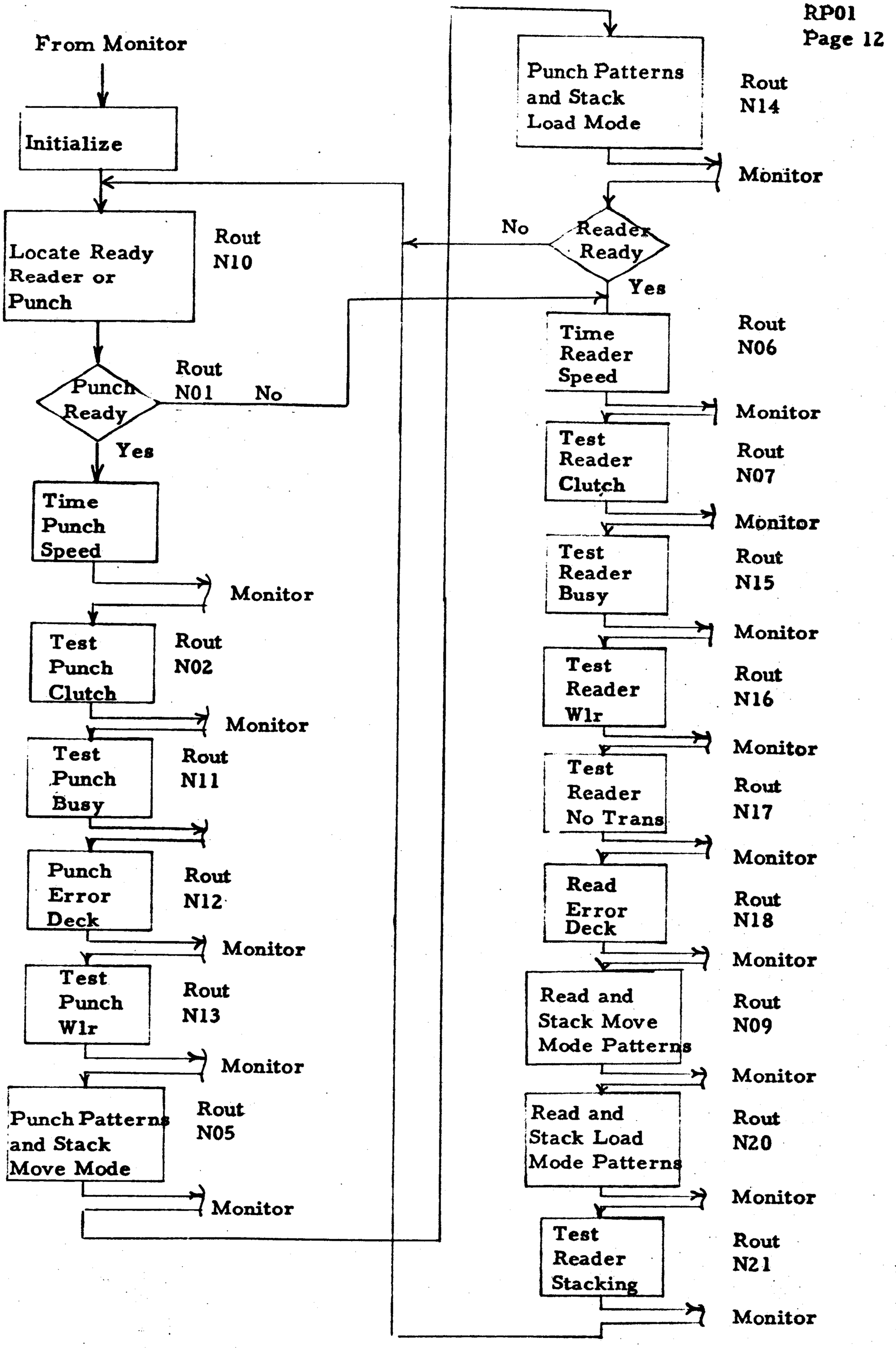
```
REQ ERROR ACTION
```

g. The maximum error message would look like this:

```
ROUTINE N00
*Error  01 00000    M%F099999W    1248AB
PERTINENT DATA
REQ ERROR ACTION
```

5.00.06.0 FLOW CHARTS

The following Flow Chart is designed to give a general picture of the test routine's relationship to one another.


From Monitor
Initialize
Locate Ready Reader or Punch
Rout N10
Punch Ready
Rout N01
No
Yes
Time Punch Speed
Monitor
Test Punch Clutch
Rout N02
Monitor
Test Punch Busy
Rout N11
Punch Error Deck
Rout N12
Monitor
Test Punch Wlr
Rout N13
Monitor
Punch Patterns and Stack Move Mode
Rout N05
Monitor
Punch Patterns and Stack Load Mode
Rout N14
Monitor
No
Reader Ready
Yes
Time Reader Speed
Rout N06
Monitor
Test Reader Clutch
Rout N07
Monitor
Test Reader Busy
Rout N15
Monitor
Test Reader Wlr
Rout N16
Monitor
Test Reader No Trans
Rout N17
Monitor
Read Error Deck
Rout N18
Monitor
Read and Stack Move Mode Patterns
Rout N09
Monitor
Read and Stack Load Mode Patterns
Rout N20
Monitor
Test Reader Stacking
Rout N21
Monitor

5.00.07.0 ROUTINE/ERROR INDEX

TO LOCATE ROUTINES AND ERRORS IN THE PROGRAM LISTING

```
PGLIN    LABEL     OPCOD  OPERAND                              CT  ADDRS  INSTRUCTION

1002                CTL    2
1003      *
1004               DEFINE STANDARD TADS              **
1005      *
1006                ORG    1000                        **          01000
1007     TAD0       DCW    @ @                                 1   01000
1008     TAD1              @ @                                 1   01001
1009     TAD2              @ @                                 1   01002
1010     TAD3                                                  1   01003
1011      *                                          **
1012               DEFINE SPECIAL TADS
1013      *                                          **
1014     SPTAD0     DCW    @ @                                 1   01004
1015     SPTAD1            @ @                                 1   01005
1016     SPTAD2            @ @                                 1   01006
1017     SPTAD3            @ @                                 1   01007
1018     SPTAD4            @ @                                 1   01008
1019     SPTAD5            @ @                                 1   01009
1020     SPTAD7            @ @                                 1   01010
1021     SPTAD8            @ @                                 1   01011
1022     SPTAD9            @ @                                 1   01012
1023      #
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1025       $            *** I/O DICOST PROGRAM ***
1026       $         *** ONE INSTRUCTION LOOP ROUTINE ***
1027       $  WHEN THE CE SELECTS A ONE INSTRUCTION LOOP THE I/O INSTRUCTION
1028       $IN THIS ROUTINE IS ALTERED AND THE LOOP IS ENTERED.NOTE THAT THE
1029       $BRANCH ON INQUIRY INSTRUCTION IS THE ONLY EXIT FROM THE LOOP.
1030      LOOP       MU     %11,0,R          I/O INST BEING LUP 0             10  01013  M %11 00000 R
1031                 BAI    *&1                                               7  01023  R 01030 M
1032                 BNQ    PRGCTL           BRCH ON INQ TO PRGCL             7  01030  J 02299 Q
1033                 B      LOOP             CONTINUE TO LOOP                 7  01037  J 01013
1034                 H                                                        1  01044  .
1035       #
```

```
LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION

$            *** I/O DICOST PROGRAM ***
$         *** CHANNEL ALTER ROUTINE ***
$  THIS ROUTINE ALTERS ALL I/O INSTRUCTIONS,BRANCH-ON-STATUS-
$INDICATOR-ON INSTRUCTIONS,AND BRANCH ON CHANNEL OVERLAP IN PRO-
$CESS INSTRUCTIONS ACCORDING TO THE CHANNEL INDICATED.THIS IS DONE
$BY SCANNING A DEFINED AREA OF MEMORY AND ALTERING THESE INSTRUC-
$TIONS.
$
CHALTR    SBR    X5              STORE ACDR                        7  01045  G 00049 B
          MLCA   9&X5,X7         LOAD IX6 & IX7                   12  01052  D 00‡9 00059 T
                                                                                           S
SCAN      SCNLA  0&X6,0&X6       SCAN FOR WM                      12  01064  D 00‡.0 00‡.0 B
          SAR    X6              STORE ADDR OF OPER                7  01076  G 00054 A
          C      X6,X7           HAS ALL OF FLD BEEN              11  01083  C 00054 00059
          BH     13&X5           SEARCHED IF SO BRCH               7  01094  J 00‡/3 U
          MLCS   1&X6,*&12       STORE OP CODE                    12  01101  D 00‡.1 01124 3
          BCE    MLORU,CODES,    IS OP CODE M                     12  01113  B 01149 02624
          BCE                    IS OP CODE L                      1  01125  B
          BCE                    IS OP CODE U                      1  01126  B
          BCE    RX3OR1          IS OP CODE R                      6  01127  B 01168
          BCE                    IS OP CODE X                      1  01133  B
          BCE                    IS OP CODE 3                      1  01134  B
          BCE                    IS OP CODE 1                      1  01135  B
          BCE    JAY             IS OP CODE J                      6  01136  B 01187
          B      SCAN            GO FIND NEXT OPER                 7  01142  J 01064
MLORU     MLCS   10&X5,2&X6      CHEANGE CH-MODE CHAR             12  01149  D 00‡/0 00‡.2 3
          B      SCAN            GO FIND NEXT OPER                 7  01161  J 01064
RX3OR1    MLCS   11&X5,1&X6      CHANGE B-I-S-I-O OP              12  01168  D 00‡/1 00‡.1 3
          B      SCAN            GO FIND NEXT OPER                 7  01180  J 01064
JAY       MLCS   7&X6,*&12       STORE MODIFIER                   12  01187  D 00‡.7 01210 3
          BCE    ONE234,MODS,    IS MODIFIER A 1                  12  01199  B 01221 02628
          BCE                    IS MODIFIER A 2                   1  01211  B
          BCE                    IS MODIFIER A 3                   1  01212  B
          BCE                    IS MODIFIER A 4                   1  01213  B
          B      SCAN            GO FIND NEXT OPER                 7  01214  J 01064
ONE234    MLCS   12&X5,7&X6      CHANGE BOL MODIFIER              12  01221  D 00‡/2 00‡.7 3
```

```
PGLIN     LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
1072                B      SCAN              GO FIND NEXT OPER       7  01233  J 01064
1073                H                                                1  01240  .
1074      #
1075      *
1076                DEFINE SYSTEM & CHANNEL CONTROL CARDS
1077                 ORG    1233                                        01233
1078                 DCW    @RM5PM7RJKPJM503$9@                      17  01249
1079                DEFINE PROGRAM TITLE
1080      *                                          **
1081                 ORG    1250                                        01250
1082      TITLE      DCW    @RP01A@,G                                 5  01254
1083      *
1084                LOCATE THE SYSTEM & CHANNEL CARDS
1085      *
1086                 ORG    1256                                        01256
1087      SYSTEM     DC     @                                  @      50  01256
1088                        @       @                                  7  01312
1089                 ORG    1289                                        01289
1090      CHNL1      DC     @                                  @      50  01289
1091                        @       @                                  7  01345
1092                 ORG    1346                                        01346
1093      CHNL2      DC     @                                  @      50  01346
1094                        @       @                                  7  01402
1095                 ORG    1403                                        01403
1096      CHNL3      DC     @                                  @      50  01403
1097                        @       @                                  7  01459
1098                 ORG    1460                                        01460
1099      CHNL4      DC     @                                  @      50  01460
1100                        @       @                                  7  01516
1101      #
```

```
LABEL     OPCOD  OPERAND                                      CT  ADDRS  INSTRUCTION

$            *** I/O DICOST PROGRAM ***
$         *** TYPE AND REQUEST FOR INTERVENTION ***
$  THIS ROUTINE IS USED TO TYPE ALL MESSAGES AND REQUESTS FOR
$MANUAL INTERVENTION.THE ROUTINE WILL TYPE A MESSAGE FROM A COMMON
$DATA FIELD,OR THE MESSAGE MAY BE LOCATED IMMEDIATELY AFTER THE
$BRANCH INSTRUCTION TO THIS ROUTINE.IF A REPLY IS REQUIRED A READ
$CONSOLE PRINTER OPERATION IS ISSUED.THIS ROUTINE IS USED TO TYPE
$ALL MESSAGES IN THIS PROGRAM.
$
TYMES     SBR    TYPXIT&5        STORE RETURN ADDR             7  01517  G 01591 B
TYPE      WCP    201             TYPE MESSAGE                 10  01524  M %T0 00201 W
          BCB1   TYPE           BRCH BUSY                      7  01534  R 01524 2
                                                                                 G
          BA1    *&1                                           7  01541  R 01548 M
SW11      NOPWM                                                1  01548  N
LAB60     RCP    0               READ CONSOLE PRINTER         10  01549  M %T0 00000 R
                     S                                                           S
          BEX1   *-16,M          BRCH ON ANY BUT WLR           7  01559  R 01549 M
                                                                                 G
          BA1    *&1                                           7  01566  R 01573 M
          CW     SW11&1          TURN OFF SWITCH 11            6  01573  ¤ 01549
          CS     330             CLEAR PRINT AREA              6  01579  / 00330
          CS                                                   1  01585  /
TYPXIT    B      0               RETURN TO DICOST              7  01586  J 00000
TYP1      SBR    X1              STORE ADDR OF MESG            7  01593  G 00029 B
          B      *&14                                          7  01600  J 01620
TYP2      SBR    X1              STORE ADDR OF MESG            7  01607  G 00029 B
          SW     REPLY&1         TURN ON REPLY SW              6  01614  , 01652
          WCP    0&X1            TYPE MESSAGE                 10  01620  M %T0 000*0 W
          SBR    X1              STORE RETURN ADDR             7  01630  G 00029 B
          BCB1   *-23                                          7  01637  R 01620 2
                                                                                 G
          BA1    *&1                                           7  01644  R 01651 M
REPLY     NOPWM                  BRCH                          1  01651  N
          B      RDCON           IF REPLY REGUIRED             7  01652  J 01666
          B      0&X1            RETURN                        7  01659  J 000*0
RDCON     RCP    0&X1            REPLY TO MESG                10  01666  M %T0 000*0 R
          SBR    X1              STORE RETURN ADDR             7  01676  G 00029 B
                     S                                                           S
          BEX1   *-23,M          BRCH ON ANY BUT WLR           7  01683  R 01666 M
```

```
PGLIN   LABEL    OPCOD  OPERAND                                             CT  ADDRS  INSTRUCTION
                                                                                                 G
 1138            BAI    *&1                                                  7  01690  R 01697 M
 1139            CW     REPLY&1                                              6  01697  ¤ 01652
 1140            B      0&X1            RETURN                               7  01703  J 000*0
 1141   DATA     MLCWS  @N@,PASS1       RESET FIRST PASS INST               12  01710  D 09821 01944 7
 1142            BCE    *&13,1264,1     BRCH IF PRIORITY AVAILABLE          12  01722  B 01746 01264 1
 1143            MLCWS  @N@,MONITRET    ALTER PRIORITY INST TO NO-OP        12  01734  D 09821 02073 7
                                                                                                     D
 1144            MRCWG  *&9,1230        RESTORE CHANNEL ALTER ROUTINE       12  01746  D 01766 01230 L
 1145            B      PASS1&T         RETURN TO NORMAL INITIALIZE          7  01758  J 01951
 1146            H                                                           1  01765  .
                         '
 1147            DC     @.73@                                                3  01768
 1148            DCW    @J@                                                  1  01769
 1149            DC     SCAN                                                 5  01774  01064
 1150            DC     @ @                                                  1  01775
 1151            DCW    @.@,G                                                1  01776
 1152            DS     12                                                      01789
 1153    #
 1154    $       *** ERROR TABLES THESE ARE USED FOR ERROR ***
 1155    $       *** SUMMARIES AND ERROR INDENTIFICATION ***
 1156    $
 1157            ORG    *&X00                                                   01800
 1158            ORG    *&1                                                     01801
                         D
 1159   STPTAB   DCW    @L@                                                  1  01801
 1160   E1       DC     @ @                                                  1  01802
 1161   E2       DC     @ @                                                  1  01803
 1162   E3       DC     @ @                                                  1  01804
 1163   E4       DC     @ @                                                  1  01805
 1164   E5       DC     @ @                                                  1  01806
 1165   E6       DC     @ @                                                  1  01807
 1166   E7       DC     @ @                                                  1  01808
 1167   E8       DC     @ @                                                  1  01809
 1168   E9       DC     @ @                                                  1  01810
 1169   E10      DC     @ @                                                  1  01811
 1170   E11      DC     @ @                                                  1  01812
 1171   E12      DC     @ @                                                  1  01813
 1172   E13      DC     @ @                                                  1  01814
 1173   E14      DC     @ @                                                  1  01815
```

PGLIN	LABEL	I/O DICOST TYPE OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1174	E15	DC	a a	1	01816	
1175	E16		a a	1	01817	
1176	E17		a a	1	01818	
1177	E18		a a	1	01819	
1178	E19		a a	1	01820	
1179	E20		a a	1	01821	
1180	E21		a a	1	01822	
1181	E22		a a	1	01823	
1182	E23		a a	1	01824	
1183	E24		a a	1	01825	
1184	E25	DC	a a	1	01826	
1185	E26	DC	a a	1	01827	
1186	E27		a a	1	01828	
1187	E28		a a	1	01829	
1188	E29		a a	1	01830	
1189	E30		a a	1	01831	
1190	E31		a a	1	01832	
1191	E32		a a	1	01833	
1192	E33		a a	1	01834	
1193	E34		a a	1	01835	
1194	E35		a a	1	01836	
1195	E36		a a	1	01837	
1196	E37		a a	1	01838	
1197	E38		a a	1	01839	
1198	E39		a a	1	01840	
1199	E40		a a	1	01841	
1200	E41		a a	1	01842	
1201	E42		a a	1	01843	
1202	E43		a a	1	01844	
1203	E44		a a	1	01845	
1204	E45		a a	1	01846	
1205	E46		a a	1	01847	
1206	E47		a a	1	01848	
1207	E48		a a	1	01849	
1208	E49		a a	1	01850	
1209	E50		a a	1	01851	

```
PGLIN     LABEL     OPCOD  OPERAND          CT  ADDRS  INSTRUCTION
1210      E51       DC     a a               1  01852
1211      E52              a a               1  01853
1212      E53              a a               1  01854
1213      E54              a a               1  01855
1214      E55              a a               1  01856
1215      E56              a a               1  01857
1216      ERRTAB    DC     a+a               1  01858
1217                DC     a a               1  01859
1218      #
```

```
PGLIN     LABEL    OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
1220        $      *** INITIALIZE ROUTINE FOR THE DICOST PROGRAM ***
1221      INITLE   WCP    1250                 PRINT TITLE          10  01860  M %TO 01250 W
1222               BCB1   *-16                                       7  01870  R 01860 2
                                                                                 G
1223               BA1    *&1                                       7  01877  R 01884 M
1224               CS     99                   RESET IND REG S      6  01884  / 00099
1225               SW     25                   SET WM IN IND REG 1  6  01890  , 00025
1226               MLCS   a*a,100              PREPARE TO LOAD 2-15 12  01896  D 09822 00100 3
1227               MRWR   25,30                LOAD IND REG 2-15    12  01908  D 00025 00030 %
1228               MRCWG  RESUME,1             MOVE RESET PROCEDURE 12  01920  D 02015 00001 D
                                                                                                L
1229               MRCWG  INTR,101             MOVE INTERUPT PROC   12  01932  D 02007 00101 D
                                                                                                L
1230      PASS1    B      DATA                 GO DO  MORE INITIALIZING  7  01944  J 01710
1231               CW     LPRT,SW11&1                               11  01951  ¤ 02636 01549
1232               CS     E56                  CLEAR AND RESET      6  01962  / 01857
                                 D
1233               MLCWS  aLa,STPTAB            ERROR TABLE          12  01968  D 09823 01801 7
1234               B      START                GO TO ROUTINE INIT.   7  01980  J 03436
1235        #
1236               H                                                 1  01987  .
1237               ORG    2000                                          02000
1238               B      INITLE                                     7  02000  J 01860
1239        $      *** RESET & INTERUPT ROUTINES,THESE ROUTINES ***
1240        $      *** ARE MOVED TO LOCATIONS 1 & 101
1241      INTR     BNQ    PRGCTL               RETURN TO PROG CNTRL  7  02007  J 02299 Q
                                 G
1242               DCW    a*a                                       1  02014
1243      RESUME   B      CKLUP                                      7  02015  J 02023
                                 G
1244               DCW    a*a                                       1  02022
1245      CKLUP    BW     MONITR,LPRT          CHECK FOR LOOP ROUT  12  02023  V 02066 02636 1
1246               BW     LOOP,LPINST          CHECK INST LOOP SW   12  02035  V 01013 02637 1
1247               MLNA   X3,X2                LOAD IX 2            12  02047  D 00039 00034 /
1248               B      MONITR&7             GO TO MONITR          7  02059  J 02073
1249        #
```

```
PGLIN    LABEL    OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1251      $            *** I/O DICOST PROGRAM ***
1252      $        ***      MCNITOR ROUTINE      ***
1253      $  THE MONITOR IS ENTERED AFTER EVERY TEST ROUTINE IS COMPLETED,OR
1254      $A STATUS ERROR HAS BEEN DETECTED AND INDICATED.IN THE CASE OF A
1255      $STATUS ERROR MCNITOR SIMPLY BRANCHES BACK TO THE POINT AT WHICH
1256      $THE STATUS ERROR WAS DETECTED.WHEN ENTERED FROM THE END OF A
1257      $TEST ROUTINE MCNITOR CHECKS TO SEE IF THE CE PRESSED INQUIRY,THE
1258      $ROUTINE IS BEING LCOPED,ANY ERRORS OCCURED ALTER ROUTINE SEQUENCE
1259      $IS SELECTED,CR THE NEXT SEQUENCIAL ROUTINE SHOULD BE RUN.
1260      $
1261    MONITR    SBR    X2              STORE ADDR                        7  02066  G 00034 B
1262              BXPA   *&1             EXIT ALERT MODE                   7  02073  Y 02080 X
1263              BNQ    CHKTAD          BRCH ON INQ                       7  02080  J 02238 Q
1264    MONIT1    BW     0&X3,LPRT       RETURN IF LOOPING RT             12  02087  V 000M0 02636 1
1265    MONIT2    MLCWS  @M@,224         SET WMGM SHORT MESG              12  02099  D 09824 00224 7
1266              B      ERRCTL                                            7  02111  J 02694
1267    MONIT3    NOP                                                      1  02118  N
1268              MLCWA  X2,X3           LOAD IX3                         12  02119  D 00034 00039 X
1269              MLCWS  @ @,224         CLEAR WMGM                       12  02131  D 09825 00224 7
1270              B      0&X2            GO TO NEXT ROUTINE                7  02143  J 000.0
1271    WHERE2    MLCWS  @ @,224         CLEAR WMGM                       12  02150  D 09825 00224 7
1272              BCE    *&8,0&X2,N      BRCH IF ROUT COMP                12  02162  B 02181 000.0 N
1273              B      0&X2            RETURN TO ROUTINE                 7  02174  J 000.0
1274              BZN    *&8,1&X2,2      BRCH IF CHAR IS NUMR             12  02181  V 02200 000.1 2
1275              B      0&X2            RETURN TO ROUTINE                 7  02193  J 000.0
1276              BZN    *&8,2&X2,2      BRCH IF CHAR IS NUMR             12  02200  V 02219 000.2 2
1277              B      0&X2            RETURN TO ROUTINE                 7  02212  J 000.0
1278              BW     MONIT3,3&X2     BRCH IF CHAR HAS WM              12  02219  V 02118 000.3 1
1279              B      0&X2            RETURN TO ROUTINE                 7  02231  J 000.0
1280      #
1281    CHKTAD    BCE    PRGCTL,1004,1   BRCH IF SPECIAL TAD 0 IS A 1      12  02238  B 02299 01004 1
1282              RCP    CTLFLD          READ CONSOLE PRINTER             1C  02250  M %TO 00201 R
1283              BEX1   *-16,M          BRCH ON ANY BUT WLR               7  02260  R 02250 M
1284              BA1    *&1                                               7  02267  R 02274 M
1285              SW     CTLFLD                                            6  02274  , 00201
1286              MLCA   CTLFLD&4,ALTMEM&20 MOVE ADDRESS ENTERED          12  02280  D 00205 02481 T
```

PGLIN	LABEL	OPCCD	OPERAND		CT	ADDRS	INSTRUCTION
1287		B	ALTMEM&12	GO RESPOND TO REQUEST	7	02292	J 02473

```
PGLIN     LABEL      OPCOD  OPERAND                                              CT  ADDRS  INSTRUCTION

1289      $              *** I/O DICOST PROGRAM ***
1290      $          ***       PROGRAM CONTROL       ***
1291      $  WHEN THE CE PRESSES INQUIRY TO SELECT A STANDARD PROGRAM OPTION
1292      $THIS ROUTINE IS ENTERED.THE CE ENTERS ON THE TYPEWRITER THE
1293      $OPTION CODE DESIRED,ALONG WITH THE DATA NEEDED BY THE OPTION.THE
1294      $ROUTINE DETERMINES WHICH OPTION HAS BEEN SELECTED AND INITIATES
1295      $THE OPTION.
1296      $
1297      PRGCTL     RCPW   CTLFLD              READ THE CONSOLE PRT             10  02299  L %TO 00201 R
1298                 SBR    X1                                                    7  02309  G 00029 B
                               S                                                                  S
1299                 BEX1   PRGCTL,M            BRCH ON ANY BUT WLR               7  02316  R 02299 M
1300                 SW     CTLFLD&1                                              6  02323  , 00202
                                                                                                  G
1301                 BA1    *&1                                                   7  02329  R 02336 M
1302                 CW     LPRT,LPINST         TURN OFF LOOP SWS                11  02336  ¤ 02636 02637
1303                 MLWS   *,E1                CLEAR WM IN ERROR                12  02347  D 02358 01802 4
1304                 MRWR   E1,E2                 TABLE                          12  02359  D 01802 01803 %
1305                 MLCS   CTLFLD,*&12         MOVE CTL CODE ENTERD             12  02371  D 00201 02394 3
1306                 BCE    ENDTST,CTLCOD,      IS CTL CODE BLANK                12  02383  B 09177 02635
1307                 BCE    ALTADS              IS CTL CODE 1                     6  02395  B 02438
1308                 BCE    ALTMEM              IS CTL CODE 2                     6  02401  B 02461
1309                 BCE    LUPRT               IS CTL CODE 4                     6  02407  B 02520
1310                 BCE    ONELUP              IS CTL CODE 5                     6  02413  B 02549
1311                 BCE    RSTART              IS CTL CODE 6                     6  02419  B 02583
1312                 BCE    CONT                IS CTL CODE 7                     6  02425  B 02606
1313                 B      PRGCTL                                                7  02431  J 02299
1314      ALTADS     MLCA   CTLFLD&4,1003       MOVE IN NEW TADS                 12  02438  D 00205 01003 T
1315                 CS     MONIT1,299          CLEAR OUT CTL FLD                11  02450  / 02087 00299
1316      ALTMEM     MLCA   CTLFLD&5,*&9        MOVE ADDR TO BE ALTR             12  02461  D 00206 02481 T
1317                 RCPW   0                   ALTER MEMORY                     10  02473  L %TO 00000 R
                             S                                                                    S
1318                 BEX1   *-16,M              CHECK ALL BUT WLR                 7  02483  R 02473 M
                                                                                                  G
1319                 BA1    *&1                                                   7  02490  R 02497 M
1320                 CS     MONIT1,299          CLEAR THE CNTRL FLD              11  02497  / 02087 00299
                            G
1321      ALTSEQ     MLCWS  aMa,0&X1            SET WMGM AT END                  12  02508  D 09824 000*0 7
1322      LUPRT      SW     LPRT                TURN ON LOOP SWITCH               6  02520  , 02636
1323                 MLNA   CTLFLD&5,X2         LOAD IND REG2                    12  02526  D 00206 00034 /
1324                 CS     MONIT2,299          CLEAR CNTRL FLD                  11  02538  / 02099 00299
```

```
PGLIN    LABEL     OPCOD  OPERAND                                      CT  ADDRS  INSTRUCTION

1325     ONELUP    SW     LPINST              TURN ON LOOP INST SW      6  02549  , 02637
1326     LUPINT    NOPWM                      THIS SW IS TURNED ON      1  02555  N
1327               B      *&8                    BY ERRCTL              7  02556  J 02570
1328               B      PREP                GO TO PREPARE ROUT        7  02563  J 09209
1329               CW     LUPINT&1            TURN OFF SW               6  02570  ¤ 02556
1330               B      LOOP                                          7  02576  J 01013
1331     RSTART    MLNA   CTLFLD&5,X2         LOAD IND REG2            12  02583  D 00206 00034 /
1332               CS     MONIT2,299          CLEAR CNTRL FLD          11  02595  / 02099 00299
1333     CONT      CS     WHERE2,299          CLR CNTL FLD             11  02606  / 02150 00299
1334      #
1335                 I/O DICOST CONSTANTS
1336     CODES     DCW    @J13XRULM@                                    8  02624
1337     MODS      DCW    @4321@                                        4  02628
1338               DCW    @7@                                           1  02629
1339               DC     @6@                                           1  02630
1340                      @5@                                           1  02631
1341                      @4@                                           1  02632
1342                      @2@                                           1  02633
1343                      @1@                                           1  02634
1344     CTLCOD           @ @                                           1  02635
1345     LPRT      DC     @ @                                           1  02636
1346     LPINST    DC     @ @                                           1  02637
1347     ADDR02    DCW    ERRTAB              ADDR OF ERR TABLE         5  02642  01858
1348     ERR       DCW    @*ERROR@                                      6  02648
1349      ACTION   DC     @REQ ERROR ACTION@,G                         16  02649
1350     ERCODE    DCW    @547P@                                        4  02669
1351      SAVIND   DCW    @1 2 4 8 A B@,G                              11  02670
1352      STIND    DC     @1 2 4 8 A B@,G                              11  02682
1353      #
```

```
          LABEL     OPCOD OPERAND                                  CT  ADDRS  INSTRUCTION

          $              *** I/O DICOST FROGRAM ***
          $         ***      ERROR CONTROL       ***
          $  THIS ROUTINE DETERMINES IF ANY STATUS ERRORS OR PROGRAM DETECT-
          SED ERRORS HAVE TO BE INDICATED,IF THERE ARE THIS ROUTINE BUILDS
          $THE ERROR MESSAGE AND HAS IF TYPED OUT.THIS ROUTINE ALSO CHECKS
          $TAD 1 TO SEE IF A REQUEST FOR ERROR ACTION SHOULD BE MADE.
          $
                    LOCATE FAILING INST

          ERRCTL    MLCA  X2,X5          LOAD IND REG 5            12  02694  D 00034 00049 T
                    S     @1@,X5                                   11  02706  S 09826 00049
                                                                                            S
                    SCNLA 0&X5,0&X5      SCAN THE ROUTINE          12  02717  D 00*0 00*0 B
                    SAR   X5             STORE CHAR ADDR            7  02729  G 00049 A
                    MLCS  1&X5,*&12      MOVE CHAR TO BE CHKD      12  02736  D 00*1 02759 3
                    BCE   GOTONE,GODES,  IS OP CODE M              12  02748  B 02792 02624
                    BCE                  IS OP CODE L               1  02760  B
                    BCE   SHORT1         IS OP CODE U               6  02761  B 02811
                    C     X3,X5          HAS ROUTINE BEEN          11  02767  C 00039 00049
                    BL    LODFLD          SEARCHED                  7  02778  J 02835 T
                    B     ERRCTL&12      GO CONTINUE THE SRCH       7  02785  J 02706
          GOTONE    MLCWA 10&X5,LOOP&9   LOAD THE LOOP INST        12  02792  D 00*/0 01022 X
                    B     LODFLD                                    7  02804  J 02835
          SHORT1    MLCWA 5&X5,LOOP&9    LOAD THE LOOP INST        12  02811  D 00*5 01022 X
                    MLCS  @N@,LOOP       SET NO-OP FOR SHORT       12  02823  D 09821 01013 3
                                     INSTRUCTION
          LODFLD    MLCA  LOOP&9,234     MOVE FAILING OPER         12  02835  D 01022 00234 T
                    MLNA  X3,223         MOVE ADDR OF ROUT         12  02847  D 00039 00223 /
                                                                              Q
                    ZA    ADDR02,X1      LOAD ND REG 1             11  02859  M 02642 00029
                                                                              Q
                    ZA    @00209@,X5     LOAD IND REG 5            11  02870  M 09831 00049
                         SCAN ERROR TABLE & UPDATA ERROR COUNT
                                                                                            S
          ERSCAN    SCNLA 0&X1,0&X1      SCAN THE ERROR TABLE      12  02881  D 000*0 000*0 B
                    SAR   X1             STORE ADDR                 7  02893  G 00029 A
                                    D                                                       D
                    BCE   AFTSRH,1&X1,L  HAS TABLE BEEN COMP.      12  02900  B 02959 000*1 L
                    SW    X1-1          DEFINE ERROR                6  02912  , 00028
                    MLNWA X1,0&X5        MOVE ERROR CODE NO.       12  02918  D 00029 00*0 V
                    A     @3@,X5         UPDATE IND REG 5          11  02930  A 09832 00049
```

```
PGLIN   LABEL     OPCOD  OPERAND                                           CT  ADDRS  INSTRUCTION

1391                                     NINE TIMES
1392              CW     1&X1,X1-1          CLEAR WM S                     11  02941  ¤ 000‡1 00028
1393              B      ERSCAN                                             7  02952  J 02881
1394                         LOAD PRINT FIELD WITH ERROR MESG
1395    AFTSRH    BCE    WHERE2,1000,1         BRCH,NO MESG. IND           12  02959  B 02150 01000 1
1396    ERROSW    NOP                                                       1  02971  N
1397              BCE    WHERE2,209            BRCH IF NO ERRORS           12  02972  B 02150 00209
1398              SW     ERROSW&1              RESET ERROR SW               6  02984  , 02972
1399              MLCA   ERR,206               MOVE ERROR                  12  02990  D 02648 00206 T
                                                                                            Q
1400              MLCA   2&X3,ROUTID           MOVE ROUTINE IDENT          12  03002  D 000M2 03031 T
1401              B      TYP1                  GO TYPE ROUTINE ID           7  03014  J 01593
1402              DCW    @ROUTINE @                                         8  03028
1403    ROUTID    DC     @    @,G                                           3  03031
1404              B      TYMES                                              7  03033  J 01517
1405                         TYPE ADDITIONAL  ERROR INFORMATION
1406    EXTRA     NOPWM                                                     1  03040  N
1407              WCP    DATA                  PRINT EXTRA DATA            10  03041  M %T0 01710 W
1408              BCB1   *-16                                               7  03051  R 03041 2
                                                                                                G
1409              BA1    *&1                                                7  03058  R 03065 M
1410              CW     EXTRA&1                                            6  03065  ¤ 03041
1411    ACT       BCE    *&8,1001,1            LOOP ACTION REQUIRED        12  03071  B 03090 01001 1
1412              B      WHERE2                                             7  03083  J 02150
1413              SW     LUPINT&1              TURN ON SWITCH               6  03090  , 02556
                                                                                                    D
1414              MRCWG  ACTION,201            MOVE ACTION MESG            12  03096  D 02649 00201 L
1415              B      TYMES                                              7  03108  J 01517
1416              B      PRGCTL                                             7  03115  J 02299
1417     #
1418     $               *** I/C DICOST PROGRAM ***
1419     $          *** DETERMINE WHICH STATUS INDICATORS ARE ON ***
1420     $  THIS ROUTINE DETERMINES WHICH STATUS INDICATORS ARE ON,ON THE
1421     $CHANNEL BEING USED.THE INDICATORS FOUND  ON ARE STORED IN THE
1422     $PRINT FIELD AND THE PROGRAM BRANCHES TO ERROR CONTROL.
1423    STACHK    SBR    X5                    STORE ADDR IN IND 5          7  03122  G 00049 B
1424              SBR    X2                                                 7  03129  G 00034 B
1425              BW     0&X2,LPRT                                         12  03136  V 000.0 02636 1
```

```
PGLIN   LABEL    OPCOD  OPERAND                                      CT  ADDRS  INSTRUCTION

 1426            S      a7a,X5            REDUCE ADDR BY 7           11  03148  S 09833 00049
 1427            MLCS   0&X5,LOOP&10                                 12  03159  D 00‡‡0 01023 3
 1428            MRCWG  STIND,237         MOVE STATUS CODES          12  03171  D 02682 00237 C L
 1429            MLCS   0&X5,NUOPCO       STORE CHNL CODE            12  03183  D 00‡‡0 03213 3
 1430            B      CHALTR                                        7  03195  J 01045
 1431            DCW    CNTERR            HIGH LIMIT                  5  03206  03368
 1432            DC     NOTRDY            LOW LIMIT                   5  03211  03226
 1433            DCW    a a                                           1  03212
 1434   NUOPCO   DC     a a                                           1  03213
 1435            DC     a a                                           1  03214
 1436            ZA     a00237a,X5        LOAD IX 5                  11  03215  Q M 09838 00049
 1437   NOTRDY   NOP                                                  1  03226  N
 1438            BNR1   CNTERR            CHECK FOR NOT READY         7  03227  R 03368 1
 1439            B      UPIX              GO UPDATE IND REG           7  03234  J 03399
 1440   BUSY     NOP                                                  1  03241  N
 1441            BCB1   CNTERR            CHECK FOR BUSY              7  03242  R 03368 2
 1442            B      UPIX              GO UPDATE IND REG           7  03249  J 03399
 1443   DATACK   NOP                                                  1  03256  N
 1444            BER1   CNTERR            CHECK DATA CNK              7  03257  R 03368 4
 1445            B      UPIX              GO UPDATE IND REG           7  03264  J 03399
 1446   EXTCND   NOP                                                  1  03271  N
 1447            BEF1   CNTERR            CHECK FOR EXT CCND          7  03272  R 03368 8
 1448            B      UPIX              GO UPDATE IND REG           7  03279  J 03399
 1449   NOTRNS   NOP                                                  1  03286  N
 1450            BNT1   CNTERR            CHECK FOR NO TRANS          7  03287  R 03368 S B
 1451            B      UPIX              GO UPDATE IND REG           7  03294  J 03399
 1452   WLR      NOP                                                  1  03301  N
 1453            BWL1   CNTERR            CHECK FOR WLR               7  03302  R 03368 -
 1454            B      UPIX              GO UPDATE IND REG           7  03309  J 03399
 1455            SW     NOTRDY&1,BUSY&1   RESET INSTRUCTIONS         11  03316  , 03227 03242
 1456            SW     DATACK&1,EXTCND&1                            11  03327  , 03257 03272
 1457            SW     NOTRNS&1,WLR&1                               11  03338  , 03287 03302
 1458            MRCG   237,SAVIND        SAVE IND                   12  03349  D 00237 02670 $
 1459            B      ERRCTL            RETURN                      7  03361  J 02694
 1460   CNTERR   SBR    X6                STORE RETURN ADDR           7  03368  G 00054 B
 1461            A      a7a,X6            UPDATE RETURN ADDR         11  C3375  A 09833 00054
```

```
PGLIN   LABEL    OPCOD  OPERAND                            CT  ADDRS  INSTRUCTION

1462             CW     ERROSW&1      TURN OFF ERROR SW     6  03386  ¤ 02972
1463             B      UPIX&19                             7  03392  J 03418
1464    UPIX     SBR    X6            STORE RETURN ADDR     7  03399  G 00054 B
1465             MLCS   @ @,0&X5      REMOVE STATUS CHAR   12  03406  D 09825 00**0 3
1466             A      @2@,X5        UPDATE IND REG 5     11  03418  A 09839 00049
1467             B      0&X6           RETURN TO PROGRAM    7  03429  J 00*.0
1468     *
1469     *
1470    CTLFLD   EQU    201
1471             PST
```

```
PGLIN    LABEL    OPCOD  OPERAND                                                    CT  ADDRS  INSTRUCTION

1473     START    CW     READSW&1,PCHSW&1   RESET ALL SWITCHES                      11  03436  □ 06275 03721
1474              CW     GOSW&1,PCHER4&1                                            11  03447  □ 08982 05622
1475              CW     ERRDCK&1                                                    6  03458  □ 04436
1476              S      CNTCRD             RESET CONUTERS                           6  03464  S 09370
1477              S                                                                  1  03470  S
1478              S                                                                  1  03471  S
1479              S                                                                  1  03472  S
1480              S                                                                  1  03473  S
1481              S                                                                  1  03474  S
1482              S                                                                  1  03475  S
1483              S                                                                  1  03476  S
1484              BCE    C1410,1256,0       BRCH IF THIS IS A 1410                  12  03477  B 03562 01256 0
1485              BCE    C1410I,1256,I      BRCH IF THIS IS A 1410I                 12  03489  B 03623 01256 I
1486              MLCA   LOOPX,LOOPTI       PREPARE                                 12  03501  D 09631 09362 T
1487              MLCA   DELAYX,DELAY              TIMING                           12  C3513  D 09640 09373 T
1488              MLCA   TERM4X,TERM4                     CONSTANTS                 12  C3525  D 09712 09397 T
1489              MLCA                                  FOR                          1  03537  D
1490              MLCA                                 A                             1  03538  D
1491              MLCA                             7010                              1  03539  D
1492              MLCA   TRM8XR,TERM8       PREPARE                                 12  03540  D 09784 09808 T
1493              MLCA                             TIMING                            1  03552  D
1494              MLCA                                    CONSTANTS                  1  03553  D
1495              MLCA                          FOR A 7010                           1  03554  D
1496              B      GETSET                                                      7  03555  J 03677
1497     C1410    MLCA   LOOPO,LOOPTI                                               12  03562  D 09625 09362 T
1498              MLCA   DELAYO,DELAY       PREPARE                                 12  C3574  D 09634 09373 T
1499              MLCA   TERM4O,TERM4              TIMING                           12  03586  D 09664 09397 T
1500              MLCA                                    CONSTANTS                  1  03598  D
1501              MLCA                                              FOR              1  03599  D
1502              MLCA                                                 A             1  03600  D
1503              MLCA   TRM8OR,TERM8                                    7010       12  03601  D 09736 09808 T
1504              MLCA                                                               1  03613  D
1505              MLCA                                                               1  03614  D
1506              MLCA                                                               1  C3615  D
1507              B      GETSET                                                      7  03616  J 03677
```

INITIALIZE FOR RP01

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
1508	C1410I	MLCA	LOOPI,LOOPTI	PREPARE	12	03623	D 09628 09362 T
1509		MLCA	DELAYI,DELAY	TIMING	12	03635	D 09637 09373 T
1510		MLCA	TERM4I,TERM4	CONSTANTS	12	03647	D 09688 09397 T
1511		MLCA		FOR	1	03659	D
1512		MLCA		A	1	03660	D
1513		MLCA		7010	1	03661	D
1514		MLCA	TRM8IR,TERM8		12	03662	D 09760 09808 T
1515		MLCA			1	03674	D
1516		MLCA			1	03675	D
1517		MLCA			1	03676	D
1518	GETSET	ZA	&N10,X3	LOAD IX REG 3	11	03677	DQMQMQM 09844 00039
1519		ZA	@000002@,X14	LOAD IX 14	11	03688	09849 00094
1520		ZA	@013012@,X15	LOAD IX 15	11	03699	09854 00099
1521		B	36&X3		7	03710	J 000C6

```
LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION

                 ***  TIME THE PUNCH FOR ONE MINUTE  ***

            THIS ROUTINE DETERMINES THE MAXIMUM SPEED OF THE PUNCH IN CARDS
          PER MINUTE.THIS IS DONE BY LOOPING FOR ONE MINUTE WHILE PUNCHING
          BLANK CARDS-THE CARDS MAY BE  USED AGAIN-AND COUNTING THE CARDS
          PUNCHED.WHEN THE MINUTE IS UP THE NUMBER OF CARDS PUNCHED IS TYPED
          OUT.A POOR RESULT INDICATES POSSIBLE MECHANICAL PROBLEMS EXIST OR
          ARE DEVELCPING.

N01       NCP                                                      1  03717  N
          DC     @01@               ROUTINE ID                     2  03719
PCHSW     NOPWM                                                    1  03720  N
          B      N05XIT                                            7  03721  J 05522
          CS     PCHFLD&79          CLEAR PUNCH FLD                6  03728  / 09979
          S      ACCUM                                             6  C3734  S 09354
          BAV    *&1                                               7  03740  J 03747 Z
          S      MINUTE                                            6  03747  S 09359
BOTTOM    S      PCRDCT                                            6  03753  S 09357
PASPCH    P      0,PCHFLD           PASS CRDS                     1C  03759  M %40 09900 W
          BCB1   COUNT1             BRCH BUSY                      7  03769  R 03826 2
          BNR1   N01XIT             BRCH KN NOT READY              7  03776  R 03930 1
                                                                                       G
          BA1    *&1                                               7  C3783  R 03790 M
          A      @001@,PCRDCT       ADD 1 TO CARD COUNT           11  03790  A 09857 C9357
          A      @880@,ACCUM                                      11  03801  A 09860 09354
          BAV    ONESEC                                            7  03812  J 03851 Z
          B      PASPCH                                            7  03819  J 03759
COUNT1    A      LOOPTI,ACCUM       ADD LOOP TIME TO ACCUM        11  03826  A 09362 09354
          BAV    *&8                BRCH EVERY SECOND              7  03837  J 03851 Z
          B      PASPCH                                            7  03844  J 03759
ONESEC    A      @1@,MINUTE         ADD 1 TO MINUTE COUNT         11  03851  A 09826 09359
          BCE    *&8,MINUTE-1,6     BRCH AFTER ONE MINUTE         12  03862  B 03881 09358 6
          B      PASPCH                                            7  03874  J 03759
          A      @1@,PCRDCT         CORRECT PUNCH CARD COUNT      11  03881  A 09826 09357
          MLNA   PCRDCT,PSPDMG&13   MOVE PUNCH CARD COUNT         12  03892  D 09357 03924 /
          B      TYP1                                              7  03904  J 01593
```

```
PGLIN     LABEL     OPCOD  OPERAND                  CT  ADDRS  INSTRUCTION
1558       PSPDMG   DCW    @PCH SPD IS    /MIN@,G    18  03911
1559      NO1XIT    B      MONITR                     7  03930  J 02066
```

```
PGLIN   LABEL    OPCOD  OPERAND                                              CT  ADDRS  INSTRUCTION

1561             ***  AGGRAVATE CLUTCH ENGAGEMENT  **
1562
1563       THIS TEST SIMULATES THE WORST CASE ENGAGEMENT SITUATION FOR THE
1564      CLUTCH BY ISSUING PCH OPS AS CLOSE TO LATCH-UP TIME AS POSSIBLE.
1565      THIS IS DONE WITH DELAYS WHICH ALLOW 180,360,540,AND 720 DEGREES
1566      BETWEEN PUNCH OPS.FAILING CONDITION FOR THIS TEST WILL RE A PUNCH
1567      STOP.
1568    NO2      NOP                                                          1  03937  N
1569             CS     PCHFLD&79         CLEAR PUNCH FLD                     6  03938  / 09979
1570    LATCH    S      ACCUM             RESET                               6  03944  S 09354
1571             P      0,PCHFLD          PASS A CARD                        10  03950  M %40 09900 W
1572             BCB1   *-16                                                  7  03960  R 03950 2
                                                                                                G
1573             BA1    *&1                                                   7  03967  R 03974 M
1574             P      0,PCHFLD          PASS A CARD                        10  03974  M %40 09900 W
1575             BCB1   *-16                                                  7  03984  R 03974 2
                                                                                                G
1576             BA1    *&1                                                   7  03991  R 03998 M
1577             BNR1   STACHK            BRCH NOT READY                      7  03998  R 03122 1
1578    DELAY1   A      DELAY,ACCUM       ADD DELAY LOOP TIME TO ACC         11  04005  A 09373 09354
1579             C      ACCUM,TERM1       IS IT TIME TO TERMINATE THE DELAY  11  04016  C 09354 09379
1580             BL     *&8               IF SO BRCH                          7  04027  J 04041 T
1581             B      DELAY1                                                7  04034  J 04005
1582             S      ACCUM             RESET ACCUMULATOR                   6  04041  S 09354
1583             P      0,PCHFLD          PASS A CARD                        10  04047  M %40 09900 W
1584             BCB1   *-16                                                  7  04057  R 04047 2
                                                                                                G
1585             BA1    *&1                                                   7  04064  R 04071 M
1586             BNR1   STACHK            BRCH NOT READY                      7  04071  R 03122 1
1587    DELAY2   A      DELAY,ACCUM       ADD DELAY TO ACCUM                 11  04078  A 09373 09354
1588             C      ACCUM,TERM2       IS IT TIME TO TERMINATE            11  04089  C 09354 09385
1589             BL     *&8               IF SO BRCH                          7  04100  J 04114 T
1590             B      DELAY2                                                7  04107  J 04078
1591             S      ACCUM             RESET ACCUMULATOR                   6  04114  S 09354
1592             P      0,PCHFLD          PASS A CRD                         10  04120  M %40 09900 W
1593             BCB1   *-16                                                  7  04130  R 04120 2
                                                                                                G
1594             BA1    *&1                                                   7  04137  R 04144 M
1595             BNR1   STACHK            BRCH ON NOT READY                   7  04144  R 03122 1
1596    DELAY3   A      DELAY,ACCUM       ADD DELAY TO ACCUM                 11  04151  A 09373 09354
```

PGLIN	LABEL	CLUTCH TEST OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
1597		C	ACCUM,TERM3		11	04162	C 09354 09391
1598		BL	*&8	IF SO BRCH	7	04173	J 04187 T
1599		B	DELAY3		7	04180	J 04151
1600		S	ACCUM	RESET ACCUMULATOR	6	04187	S 09354
1601		P	0,PCHFLD	PASS A CARD	10	04193	M %40 09900 W
1602		BCB1	*-16		7	04203	R 04193 2 G
1603		BA1	*&1		7	04210	R 04217 M
1604		BNR1	STACHK	BRCH ON NOT READY	7	04217	R 03122 1
1605	DELAY4	A	DELAY,ACCUM	ADD DELAY TO ACCUM	11	04224	A 09373 09354
1606		C	ACCUM,TERM4	IS IT TIME TO TERMINATE	11	04235	C 09354 09397
1607		BL	*&8	IF SO BRCH	7	04246	J 04260 T
1608		B	DELAY4		7	04253	J 04224
1609		A	@1@,TENCNT	ADD 1 TO TEN COUNTER	11	04260	A 09826 09368
1610		BZ	*&8	BRCH AFTER TENTH PASS	7	04271	J 04285 V
1611		B	LATCH	GO FOR ANOTHER PASS	7	04278	J 03944
1612	NO2XIT	B	MONITR		7	04285	J 02066

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1614                ***  SET BUSY ON PUNCH  ***
1615
1616          THIS ROUTINE ISSUES TWO SUCCESSIVE PUNCH OPERATIONS AND CHECKS
1617        FOR BUSY ON THE SECOND OPERATION.IF BUSY IS NOT SET ERROR 1 IS
1618        INDICATED.
1619
1620      N11       NOP                                                      1  04292  N
1621                DC     @11@              ROUTINE ID                     2  04294
1622                CS     PCHFLD&79                                        6  04295  / 09979
1623                P      4,PCHFLD          PASS A CARD                   10  04301  M %44 09900 W
1624                BCB1   *-16                                             7  04311  R 04301 2
1625                BA1    *&1                                              7  04318  R 04325 M G
1626                P      4,PCHFLD          PASS A CARD                   10  04325  M %44 09900 W
1627                BA1    *&1                                              7  04335  R 04342 M G
1628                BCB1   N11XIT            BRCH BUSY                     7  04342  R 04355 2
1629                ***  SET ERROR 1 ON  ***
1630                SW     E1                TURN ON ERROR IND                6  04349  , 01802
1631          TWO SUCCESSIVE PUNCH OPERATIONS DID NOT TURN ON BUSY
1632      N11XIT    B      MONITR                                           7  04355  J 02066
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1634                ***  PUNCH ERROR DECK FOR CARD READER TEST  ***
1635
1636          IN ORDER TO TEST THE READER IT IS NECESSARY TO HAVE A SET OF
1637        CARDS WITH ILLEGAL PUNCHES,THIS ROUTINE PUNCHES SUCH A DECK FOR
1638        THE READER.THIS IS ACCOMPLISHED BY PASSING THE CARDS THROUGH THE
1639        PUNCH TWICE.ONE ILLEGAL COMBINATION IS PUNCHED IN COLUMN 40 OF
1640        EACH CARD,49 CARDS IN ALL ARE PUNCHED.THESE CARDS ARE REMOVED FROM
1641        THE PUNCH AND SAVED AFTER THE SECOND PASS.THE CHARACTERS PUNCHED
1642        ARE LISTED BELOW.
1643        FIRST PASS
1644        &ABCDEFGHIJKLMNOPQR2345678934567945679567967979999
1645        SECOND PASS
1646        -0000000000000000011111111222222333334444555667 8
1647
1648      N12       NOP                                                    1  04362  N
1649                DC      a12a              ROUTINE ID                   2  04364
1650                CS      PCHFLD&79                                      6  04365  / 09979
1651                S       TENCNT                                         6  04371  S 09368
1652                ZA      CON3,X11          RESET AND LOAD IX 11        11  04377  M 09591 00079
1653                ZA      CON4,X12          RESET AND LOAD IX 12        11  04388  M 09596 00084
1654      LDFLD     MLCS    0&X11,PCHFLD&39   LOAD PCHFLD                 12  04399  D 00.MO 09939 3
1655                P       0,PCHFLD          PUNCH A CARD                10  04411  M %40 09900 W
1656                BCB1    *-16                                           7  04421  R 04411 2
1657                BA1     *&1                                            7  04428  R 04435 M
1658      ERRDCK    NOPWM                                                  1  04435  N
1659                B       CTERCD                                         7  04436  J 04480
1660                SW      ERRDCK&1                                       6  04443  , 04436
1661                B       TYP1                                           7  04449  J 01593
1662                DCW     aCLR CRDS FROM PCH PKTSa,G                    22  04477
1663                H                                                      1  04479  .
1664      CTERCD    A       a1a,X11           UPDATE IX 11                11  04480  A 09826 00079
1665                BCE     *&8,0&X11,S       BRCH IF FIRST PASS COMPLETE 12  04491  B 04510 00.MO S
1666                B       LDFLD                                          7  04503  J 04399
1667                CS      PCHFLD&79         CLEAR DATA FLD               6  04510  / 09979
1668      CLRPCH    P       0,PCHFLD          PASS A CARD                 10  04516  M %40 09900 W
1669                BCB1    *-16                                           7  04526  R 04516 2
```

```
                PUNCH ERROR DECK
PGLIN   LABEL   OPCOD  OPERAND
1670            BAI    *&1
1671            A      @1@,TENCNT          COUNT CARDS
1672            BCE    *&8,TENCNT,4        BRCH AFTER 3 CARDS
1673            B      CLRPCH
1674            S      TENCNT              RESET TEN COUNTER
1675            B      TYP1
1676            DCW    @CLR PCH,LOAD CARDS FROM P-O IN PCH@,G
1677            H                          WAIT FOR ACTION
1678    LDFLD2  MLCS   O&X12,PCHFLD&39     LOAD DATA FIELD
1679            P      O,PCHFLD            PUNCH ILLEGAL CARD
1680            BCB1   *-16
1681            BNR1   ENDN12
1682            BAI    LDFLD2&12           BRCH ON ANY ERROR
1683    NEXCHR  A      @1@,X12             UPDATE IX 12
1684            BCE    *&8,O&X12,S         BRCH IF 2ND PASS COMPLETE
1685            B      LDFLD2
1686            CS     PCHFLD&70
1687            P      O,PCHFLD            PASS A CARD
1688            BAI    *-16                BRCH ON ERROR
1689    ENDN12  B      TYP1
1690            DCW    @SAVE CRDS FROM P-O,LOAD PCH@,G
1691            H                          WAIT FOR ACTION
1692    N12XIT  B      MONITR
```

```
CT  ADDRS   INSTRUCTION
 7  04533   R 04540 GM
11  04540   A 09826 09368
12  04551   B 04570 09368 4
 7  04563   J 04516
 6  04570   S 09368
 7  04576   J 01593
34  04616
 1  04618   .
12  04619   D 00MOO 09939 3
10  04631   M %40 09900 W
 7  04641   R 04631 2
 7  04648   R 04715 1
 7  04655   R 04631 GM
11  04662   A 09826 00084
12  04673   B 04692 00MOO S
 7  04685   J 04619
 6  04692   / 09970
10  04698   M %40 09900 W
 7  04708   R 04698 GM
 7  04715   J 01593
27  04748
 1  04750   .
 7  04751   J 02066
```

```
PGLIN     LABEL      OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION

1694                 ¤¤¤  SET WLR ON PUNCH  ***
1695
1696          THIS ROUTINE TURNS ON WLR BY ISSUING A PUNCH INSTRUCTION WITH A
1697        SHORT FIELD,IF WLR DOES NOT COME ON ERROR 3 IS INDICATED.A PUNCH
1698        OP WITH LONG FIELD IS TRIED AND WLR IS CHECKED,IF WLR IS NOT ON
1699        ERROR 4 IS INDICATED.THE ROUTINE ENDS BY REQUESTING THE CE TO
1700        CHECK THAT NO CARDS WERE PASSED WHEN PUNCHING WITH WLR.
1701
1702      N13       NOP                                                      1  04758  N
1703                DC     a13a,              ROUTINE ID                    2  04760
1704                MLCWS  aMa,PCHFLD         SET PUNCH FIELD TO SHORT     12  04761  D 09824 09900 7
1705                P      0,PCHFLD           PUNCH A CARD                 10  04773  M %40 09900 W
1706                BCB1   *-16                                             7  04783  R 04773 2
1707                BA1    *&1                                              7  04790  R 04797 M
1708                BWL1   *&7                BRCH ON WRNG LGTH REC         7  04797  R 04810 -
1709               ***  SET ERROR 3 ON  ***
1710                SW     E3                 TURN ON ERROR IND             6  04804  , 01804
1711        A PUNCH WITH A DATA FIELD OF NO CHARS DOES NOT TURN ON WLR
1712                CS     PCHFLD&80          CLEAR PUNCH FLD,FLD TO LONG   6  04810  / 09980
1713                P      0,PCHFLD           PUNCH A CARD                 10  04816  M %40 09900 W
1714                BCB1   *-16                                             7  04826  R 04816 2
1715                BA1    *&1                                              7  04833  R 04840 M
1716                BWL1   *&7                BRCH ON WRNG LGHT REC         7  04840  R 04853 -
1717               ***  SET ERROR 4 ON  ***
1718                SW     E4                 TURN ON ERROR IND             6  04847  , 01805
1719        A PUNCH WITH A DATA FIELD GREATER THAN 80 CHARACTERS DOES NOT TURN
1720        ON WLR
1721                MLCWS  aMa,PCHFLD&80      SET NORMAL WMGM              12  04853  D 09824 09980 7
1722                B      TYP1                                             7  04865  J 01593
1723                DCW    aCHK ROUT N13 IF CRDS IN ANY PCH PKTa,G          35  04906
1724                H                         WAIT FOR ACTION               1  04908  .
1725      N13XIT    B      MONITR                                           7  04909  J 02066
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1727                    ***  PUNCH PATTERNS AND STACK IN SELECTED POCKETS  ***
1728
1729          THIS ROUTINE PUNCHES THREE PATTERNS CARDS AND STACKS THEM IN A
1730        GIVEN SEQUENCE,THESE PATTERNS ARE REPEATED 27 TIMES WITH THE
1731        STACKING SEQUENCE BEING ALTERED EACH TIME.IN ADDITION TO THE DATA
1732        PATTERN PUNCHED IN THE CARDS,COLUMN 1-79 COLUMN 80 WILL CONTAIN A
1733        0,4,OR 8 ACCORDING TO THE POCKET INTO WHICH THE CARD WILL BE STACK
1734        ED.ALL PUNCHING IS DONE IN THE MOVE MODE AND NOT READY OR WLR
1735        ERROR ARE INDICATED AS STATUS ERRORS.IF A DATA CHECK OCCURES THE
1736        FAILING PATTERN IS DISPLAYED ALONG WITH ERROR 5.IF A HOLE COUNT
1737        ERROR OCCURES THE FAILING PATTERN IS DISPLAYED ALONG WITH ERROR 6.
1738        THE ROUTINE ENDS BY REQUESTING THAT THE CARDS FROM POCKET 0,THEN 4
1739        THEN 8 BE REMOVED AND SAVED BEHIND THE PUNCHED ERROR DECK IN THAT
1740        ORDER.
1741        STACKING SEQUENCE IN GROUPS OF THREE POCKET ADDRESSES
1742
1743                              000       400       800
1744                              004       404       804
1745                              008       408       808
1746                              040       440       840
1747                              044       444       844
1748                              048       448       848
1749                              080       480       880
1750                              084       484       884
1751                              088       488       888
1752
1753        DATA PATTERNS USED
1754                    79 COLUMNS OF 12-7-8 PUNCHES
1755
1756        IQIQIQIQ 79 COLUMNS OF ALTERNATE 12-9/11-8 PUNCHES IQIQ
1757
1758        #@   OAKTONWGQZO   MULTI BIT PATTERN REPEATED FOUR TIMES
1759
1760      NO5         NOP                                                    1  04916  N
1761                  DC      @05@                                           2  04918
1762                  ZA      CON1,X11          LOAD IX 11                  11  04919  M  09502 00079
```

```
PGLIN   LABEL    OPCOD  OPERAND                                                 CT  ADDRS  INSTRUCTION

1763    HERE     CS     PCHFLD&79             CLEAR DATA FIELD                   6  04930  / 09979
1764             SW     PCHFLD                                                   6  04936  , 09900
                        G
1765             MLCS   @M@,PCHFLD&79         LOAD                              12  04942  D 09824 09979 3
1766             MLCB   PCHFLD&79,PCHFLD&78       DATA FIELD                    12  04954  D 09979 09978 L
1767             CW     PCHFLD                                                   6  04966  □ 09900
1768             MLCS   PHPAT1&3,PCHFLD&79 SET POCKET CODE                      12  04972  D 04987 09979 3
1769    PHPAT1   P      0,PCHFLD              PUNCH A PATTERN CARD              10  04984  M %40 09900 W
1770             BCB1   *-16                                                     7  04994  R 04984 2
                                                                                                     G
1771             BA1    DETPAT                BRCH ON ANY ERROR                  7  05001  R 05248 M
1772    PCHER1   CS     PCHFLD&79             CLEAR DATA FIELD                   6  05008  / 09979
1773             SW     PCHFLD                                                   6  05014  , 09900
1774             MLCA   @I0@,PCHFLD&79        LOAD                              12  05020  D 09862 09979 T
1775             MLCB   PCHFLD&79,PCHFLD&77       DATA FIELD                    12  05032  D 09979 09977 L
1776             MLCS   PHPAT2&3,PCHFLD&79 SET POCKET CODE                      12  05044  D 05059 09979 3
1777    PHPAT2   P      0,PCHFLD              PUNCH A PATTERN CARD              10  05056  M %40 09900 W
1778             BCB1   *-16                                                     7  05066  R 05056 2
                                                                                                     G
1779             BA1    DETPAT                BRCH ON ANY ERROR                  7  05073  R 05248 M
1780    PCHER2   CS     PCHFLD&79                                                6  05080  / 09979
1781             SW     PCHFLD                                                   6  05086  , 09900
1782             MLCA   PAT3,PCHFLD&15        LOAD                              12  05092  D 09622 09915 T
1783             MLCA   PAT3,PCHFLD&35            THE                           12  05104  D 09622 09935 T
1784             MLCA   PAT3,PCHFLD&55                DATA                      12  05116  D 09622 09955 T
1785             MLCA   PAT3,PCHFLD&75                     FIELD                12  05128  D 09622 09975 T
1786             MLCS   PHPAT3&3,PCHFLD&79 SET POCKET CODE                      12  05140  D 05155 09979 3
1787    PHPAT3   P      0,PCHFLD              PUNCH A PATTERN CARD              10  05152  M %40 09900 W
1788             BCB1   *-16                                                     7  05162  R 05152 2
                                                                                                     G
1789             BA1    DETPAT                BRCH ON ANY ERROR                  7  05169  R 05248 M
1790    PCHER3   A      @3@,X11               UPDATE IX 11                      11  05176  A 09832 00079
                                                                                                 Q
1791             MLCS   0&X11,PHPAT1&3        LOAD                              12  05187  D 00.M0 04987 3
                                                                                                 Q
1792             MLCS   1&X11,PHPAT2&3            POCKET                        12  05199  D 00.M1 05059 3
                                                                                                 Q
1793             MLCS   2&X11,PHPAT3&3                 ADDRESSES                12  05211  D 00.M2 05155 3
                                                                                                 Q
1794             C      2&X11,@000@           ALL PATTERNS AND POCKETS TRIED    11  05223  C 00.M2 09865
1795             BE     NO5XIT                IF SO BRCH                         7  05234  J 05522 S
1796             B      HERE                                                     7  05241  J 04930
1797    DETPAT   SBR    X10                   STORE ADDRESS                      7  05248  G 00074 B
                        G
1798             MLCWS  @M@,DATA&80                                             12  05255  D 09824 01790 7
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1799                SW     DATA                                              6  05267  , 01710
1800                BER1   PARITY          BRCH ON A PARITY ERROR            7  05273  R 05312 4
1801                BEF1   HOLECT          BRCH ON A HOLE COUNT CHECK        7  05280  R 05349 8
1802                BA1    STACHK          BRCH ON WLR,BUSY,NOT RDY          7  05287  R 03122 GM
1803                S      @24@,X10        ALTER RETURN ADDRESS             11  05294  S 09867 00074
1804                B      0&X10                                             7  05305  J 00..0
1805               *** SET ERROR 05 ON ***
1806      PARITY    SW     E5,EXTRA&1      TURN ON ERROR IND                11  05312  , 01806 03041
1807       DATA CHECK OCCURED,FAILING PATTERN IS DISPLAYED WITH ERROR MESSAGE
1808                MRCWG  PCHFLD,DATA     LOAD FAILING PATTERN INTO ERR MSG 12  05323  D 09900 01710 DL
1809                BA1    STACHK          GO REPORT ERROR                   7  05335  R 03122 GM
1810                B      0&X10                                             7  05342  J 00..0
1811               *** SET ERROR 06 ON ***
1812      HOLECT    SW     E6,EXTRA&1      TURN ON ERROR IND                11  05349  , 01807 03041
1813       HOLE COUNT CHECK,FAILING PATTERN IS DISPLAYED WITH ERROR MESSAGE
1814                BCE    PAT2ER,PCHFLD,# BRCH IF PATTERN 2                12  05360  B 05446 09900 #
1815                BCE    PAT1ER,PCHFLD,I BRCH IF PATTERN 2                12  05372  B 05484 09900 I
1816                MLCA   PAT3,DATA&15    LOAD                             12  05384  D 09622 01725 T
1817                MLCA   PAT3,DATA&35        FAILING PATTERN 3            12  05396  D 09622 01745 T
1818                MLCA   PAT3,DATA&55           INTO ERROR MESSAGE        12  05408  D 09622 01765 T
1819                MLCA   PAT3,DATA&75              DATA FIELD             12  05420  D 09622 01785 T
1820                BA1    STACHK          GO REPROT ERROR                   7  05432  R 03122 GM
1821                B      0&X10                                             7  05439  J 00..0
1822      PAT2ER    MLCA   @1C@,DATA&79    LOAD FAILING PATTERN2 INTO       12  05446  D 09862 01789 T
1823                MLCB   DATA&79,DATA&77    ERROR MESSAGE DATA FIELD       12  05458  D 01789 01787 L
1824                BA1    STACHK          GO REPORT ERROR                   7  05470  R 03122 GM
1825                B      0&X10                                             7  05477  J 00..0
1826      PAT1ER    MLCS   @M@,DATA&79                                       12  05484  D 09824 01789 3
1827                MLCB   DATA&79,DATA&78     ERROR MESSAGE DATA FIELD      12  05496  D 01789 01788 L
1828                BA1    STACHK          GO REPORT ERROR                   7  05508  R 03122 GM
1829                B      0&X10                                             7  05515  J 00..0
1830      NO5XIT    B      MONITR                                            7  05522  J 02066
```

```
PGLIN   LABEL    OPCOD  OPERAND                                    CT  ADDRS  INSTRUCTION

1832             ***  PUNCH PATTERNS IN LOAD MODE AND STACK IN POCKETS ***
1833
1834               THIS ROUTINE IS IDENTICAL TO THE MOVE MODE ROUTINE NO5 EXCEPT
1835             THAT ALL PUNCHING IS DONE IN LOAD MODE.A DATA CHECK WILL CAUSE
1836             ERROR 7,AND A HOLE COUNT CHECK WILL CAUSE ERROR 8.FOR A MORE DE-
1837             TAILED DESCRIPTION REFERENCE ROUTINE NO5.
1838
1839   N14       NOP                                                 1  05529  N
1840             DC     @14@              ROUTINE ID                 2  05531
1841             ZA     CON1,X11          LOAD IX 11                11  05532  Q
                                                                                 M 09502 00079
1842   HERE2     CS     PCHFLD&79         CLEAR DATA FLD             6  05543  / 09979
1843             SW     PCHFLD                                       6  05549  , 09900
1844             MLCS   @M@,PCHFLD&79     LOAD                      12  05555  D 09824 09979 3
                                                                                 G
1845             MLCB   PCHFLD&79,PCHFLD&78   DATA FIELD             12  05567  D 09979 09978 L
1846             CW     PCHFLD                                       6  05579  ¤ 09900
1847             MLCS   PHPAT4&3,PCHFLD&79                          12  05585  D 05600 09979 3
1848   PHPAT4    PW     0,PCHFLD          PUNCH A PATTERN IN LOAD MODE 10  05597  L %40 09900 W
1849             BCB1   *-16                                         7  05607  R 05597 2
1850             BA1    DETLPT            BRCH ON ANY ERROR          7  05614  R 05957 M
                                                                                 G
1851   PCHER4    NOPWM                                               1  05621  N
1852             B      CLRIT                                        7  05622  J 05681
1853             SW     PCHER4&1                                     6  05629  , 05622
1854             B      TYP1                                         7  05635  J 01593
1855             DCW    @SAVE CARDS FROM P-0,4,8,IN THAT ORDER@,G   37  05678
1856             H                        WAIT FOR ACTION            1  05680  .
1857   CLRIT     CS     PCHFLD&79                                    6  05681  / 09979
1858             SW     PCHFLD                                       6  05687  , 09900
1859             MLCWS  @M@,PCHFLD&40     LOAD                      12  05693  D 09824 09940 7
                                                                                 G
1860             MLCA   @I@,PCHFLD&39         DATA                  12  05705  D 09862 09939 T
1861             MLCB   PCHFLD&39,PCHFLD&37       FIELD             12  05717  D 09939 09937 L
1862             MRWG   PCHFLD,PCHFLD&1               FOR LOAD MODE 12  05729  D 09900 09901 •
1863             MLCS   PHPAT5&3,PCHFLD&39                          12  05741  D 05756 09939 3
1864   PHPAT5    PW     0,PCHFLD          PUNCH A PATTERN IN LOAD MODE 10  05753  L %40 09900 W
1865             BCB1   *-16                                         7  05763  R 05753 2
1866             BA1    DETLPT            BRCH ON ANY ERROR          7  05770  R 05957 M
                                                                                 G
```

```
                PUNCH PATTERNS-SEL POKETS IN LOAD MODE
PGLIN    LABEL    OPCOD  OPERAND
1867     PCHER5   CS     PCHFLD&79                                    6 05777 / 09979
1868              SW     PCHFLD                                       6 05783 , 09900
1869              MLCA   PAT3,PCHFLD&15     LOAD                     12 05789 D 09622 09915 T
1870              MLCWA  PAT3,PCHFLD&35         DATA                 12 05801 D 09622 09935 X
1871              MLCWA  PAT3,PCHFLD&55                              12 05813 D 09622 09955 X
1872              MLCWA  PAT3,PCHFLD&75                              12 05825 D 09622 09975 X
1873              MLCWS  @M@,PCHFLD&76                   LOAD MODE   12 05837 D 09824 09976 7
1874              MLCS   PHPAT6&3,PCHFLD&75                          12 05849 D 05864 09975 3
1875     PHPAT6   PW     0,PCHFLD          PUNCH A PATTERN IN LOAD MODE 10 05861 L %40 09900 W
1876              BCB1   *-16                                         7 05871 R 05861 2
1877              BA1    DETLPT            BRCH ANY ERROR             7 05878 R 05957 M
1878     PCHER6   A      @3@,X11           UPDATE IX 11              11 05885 A 09832 00079
1879              MLCS   0&X11,PHPAT4&3     LOAD                     12 05896 D 00.Q0 05600 3
1880              MLCS   1&X11,PHPAT5&3         POCKET               12 05908 D 00.Q1 05756 3
1881              MLCS   2&X11,PHPAT6&3              ADDRESSES       12 05920 D 00.Q2 05864 3
1882              C      2&X11,@000@       ALL PATTERNS AND POCKETS TRIED 11 05932 C 00.Q2 09865
1883              BE     N14XIT            IF SO BRCH                 7 05943 J 06234 S
1884              B      HERE2                                        7 05950 J 05543
1885     DETLPT   SBR    X10                                          7 05957 G 00074 B
1886              MLCWS  @M@,DATA&80                                 12 05964 D 09824 01790 7
1887              SW     DATA                                         6 05976 , 01710
1888              BER1   LPARTY            BRCH IF PERITY ERROR       7 05982 R 06021 4
1889              BEF1   LHOLCT            BRCH IF HOLE COUNT CHECK   7 05989 R 06058 8
1890              BA1    STACHK            BRCH ON WLR,BUSY,NOT RDY   7 05996 R 03122 M
1891              S      @24@,X10          ALTER RETURN ADDRESS      11 06003 S 09867 00074
1892              B      0&X10                                        7 06014 J 00..0
1893                   *** SET ERROR 7 ON ***
1894     LPARTY   SW     E7,EXTRA&1        TURN ON ERROR IND         11 06021 , 01808 03041
1895      DATA CHECK OCCURED,FAILING PATTERN IS DISPLAYED WITH ERROR MESSAGE
1896              MRCWG  PCHFLD,DATA       LOAD FAILING PATTERN      12 06032 D 09900 01710 DL
1897     REPORT   BA1    STACHK            GO REPORT ERROR            7 06044 R 03122 M
1898              B      0&X10                                        7 06051 J 00..0
1899                   *** SET ERROR 8 ON ***
1900     LHOLCT   SW     E8,EXTRA&1                                  11 06058 , 01809 03041
1901      HOLE COUNT CHECK,FAILING PATTERN DISPLAYED WITH ERROR MESSAGE
1902              BCE    PAT5ER,PCHFLD,#   BRCH IF PATTERN 3          12 06069 B 06148 09900 #
```

```
PGLIN   LABEL    OPCOD  OPERAND                          CT  ADDRS  INSTRUCTION
1903             BCE    PAT4ER,PCHFLD,I                  12  06081  B 06203 09900 I
1904             MLCWA  PAT3,DATA&15                      12  06093  D 09622 01725 X
1905             MLCWA  PAT3,DATA&35                      12  06105  D 09622 01745 X
1906             MLCWA  PAT3,DATA&55                      12  06117  D 09622 01765 X
1907             MLCWA  PAT3,DATA&75                      12  06129  D 09622 01785 X
1908             B      REPORT                            7  06141  J 06044
1909    PAT5ER   MLCA   @IQ@,DATA&39     LOAD FAILING PATTERN 2    12  06148  D 09862 01749 T
1910             MLCB   DATA&39,DATA&38    INTO ERROR MESSAGE      12  06160  D 01749 01748 L
1911             MLCWS  @M@,DATA&40       DATA FIELD              12  06172  D 09824 01750 7
1912             MRWG   DATA,DATA&1                               12  06184  D 01710 01711 •
1913             B      REPORT                                    7  06196  J 06044
1914    PAT4ER   MLCS   @M@,DATA&79       LOAD FAILING            12  06203  D 09824 01789 3
1915             MLCB   DATA&79,DATA&78              PATTERN 1    12  06215  D 01789 01788 L
1916             B      REPORT                                    7  06227  J 06044
1917    N14XIT   CS     PCHFLD&79                                 6  06234  / 09979
1918             P      0,PCHFLD          PASS A CARD             10  06240  M %40 09900 W
1919             BCB1   *-16                                      7  06250  R 06240 2
1920             BA1    *&1                                       7  06257  R 06264 M
1921             B      MONITR                                    7  06264  J 02066
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1923                ***  TIME READER FOR ONE MINUTE  ***
1924
1925          THIS ROUTINE DETERMINE THE MAXIMUM SPEED OF THE READER IN CARDS
1926        PER MINUTE.THIS IS DONE BY LOOPING FOR ONE MINUTE WHILE READING
1927        BLANK CARDS-THE CARDS MAY BE USED AGAIN-AND COUNTING THE NUMBER OF
1928        CARDS READ.THE NUMBER OF CARDS READ IN ONE MINUTE IS TYPED OUT AND
1929        A POOR RESULT MAY INDICATE POSSIBLE MECHANICAL TROUBLES DEVELOPING
1930
1931      NO6       NOP                                                    1  06271  N
1932                DC     @06@             ROUTINE ID                     2  06273
1933      READSW    NOPWM                                                  1  06274  N
1934                B      N2OXIT                                          7  06275  J 08388
1935                CS     READFD&79        CLEAR READ FIELD               6  06282  / 09979
1936                S      ACCUM            RESET                          6  06288  S 09354
1937                S      MINUTE                COUNTERS                  6  06294  S 09359
1938                S      PCRDCT                        AND ACCUMULATOR   6  06300  S 09357
1939                BAV    *&1              RESET OVERFLOW                 7  06306  J 06313 Z
1940      PASCRD    R      0,READFD         PASS A CARD                   10  06313  M %10 09900 R
1941                BCB1   COUNT2           BRCH BUSY                      7  06323  R 06380 2
1942                BNR1   NO6XIT           BRCH ON NOT READY              7  06330  R 06484 1
1943                BA1    *&1                                             7  06337  R 06344 M
1944                A      @001@,PCRDCT     COUNT CARDS                   11  06344  A 09857 09357
1945                A      @880@,ACCUM      CORRECT ACCUMULATOR           11  06355  A 09860 09354
1946                BAV    ONE2ND           BRCH IF 1 SECOND IS UP         7  06366  J 06405 Z
1947                B      PASCRD                                          7  06373  J 06313
1948      COUNT2    A      LOOPTI,ACCUM     ADD LOOP TIME TO ACCUMULATOR  11  06380  A 09362 09354
1949                BAV    *&8              BRCH EVERY SECOND              7  06391  J 06405 Z
1950                B      PASCRD                                          7  06398  J 06313
1951      ONE2ND    A      @1@,MINUTE       ADD 1 TO MINUTE COUNT         11  06405  A 09826 09359
1952                BCE    *&8,MINUTE-1,6   BRCH AFTER 60 SECONDS         12  06416  B 06435 09358 6
1953                B      PASCRD                                          7  06428  J 06313
1954                A      @1@,PCRDCT       CORRECT CARD COUNT            11  06435  A 09826 09357
1955                MLNA   PCRDCT,RSPDMG&13  MOVE READER CARD COUNT        12  06446  D 09357 06478 /
1956                B      TYP1                                            7  06458  J 01593
1957       RSPDMG   DCW    @RDR SPD IS    /MIN@,G                         18  06465
```

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1958	N06XIT	B	MONITR	7	06484	J 02066

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1960                ***  AGGRAVATE CLUTCH ENGAGEMENT  ***
1961          THIS TEST SIMULATES THE WORSE CASE ENGAGEMENT SITUATION FOR THE
1962        CLUTCH.THIS IS DONE BY ISSUING READ OPS AS CLOSE TO LATCH UP TIME
1963        AS POSSIBLE.THIS IS DONE WITH DELAYS WHICH ALLOW 180,360,540,AND
1964        720 DEGREES BETWEEN READ OPS.FAILING CONDITION FOR THIS TEST WILL
1965        BE A READER STOP
1966
1967      NO7       NOP                                                       1  06491  N
1968                DC      @07@          ROUTINE ID                          2  06493
1969                CS      READFD&79     CLEAR PUNCH FIELD                   6  06494  / 09979
1970      LATCH2    S       ACCUM         RESET                               6  06500  S 09354
1971                R       0,READFD      PASS A CARD                        10  06506  M %10 09900 R
1972                BCB1    *-16                                              7  06516  R 06506 2
1973                BA1     *&1                                               7  06523  R 06530 M
1974                BNR1    STACHK        BRCH ON NOT READY                   7  06530  R 03122 1
1975      DELAY5    A       DELAY,ACCUM   ADD LOOP TIME TO ACCUMULATOR        11  06537  A 09373 09354
1976                C       ACCUM,TERM5   IS IT TIME TO TERMINATE THE DELAY   11  06548  C 09354 09790
1977                BL      *&8           IF SO BRCH                          7  06559  J 06573 T
1978                B       DELAY5                                            7  06566  J 06537
1979                R       0,READFD      PASS A CARD                        10  06573  M %10 09900 R
1980                BCB1    *-16                                              7  06583  R 06573 2
1981                BA1     *&1                                               7  06590  R 06597 M
1982                BNR1    STACHK        BRCH ON NOT READY                   7  06597  R 03122 1
1983      DELAY6    A       DELAY,ACCUM   ADD DELAY TO ACCUM                  11  06604  A 09373 09354
1984                C       ACCUM,TERM6   IS IT TIME TO TERMINATE             11  06615  C 09354 09796
1985                BL      *&8           IF SO BRCH                          7  06626  J 06640 T
1986                B       DELAY6                                            7  06633  J 06604
1987                R       0,READFD      PASS A CARD                        10  06640  M %10 09900 R
1988                BCB1    *-16                                              7  06650  R 06640 2
1989                BA1     *&1                                               7  06657  R 06664 M
1990                BNR1    STACHK        BRCH NOT READY                      7  06664  R 03122 1
1991      DELAY7    A       DELAY,ACCUM   ADD DELAY TO ACCUM                  11  06671  A 09373 09354
1992                C       ACCUM,TERM7   IS TI TIME TO TERMINATE             11  06682  C 09354 09802
1993                BL      *&8           IF SO BRCH                          7  06693  J 06707 T
1994                B       DELAY7                                            7  06700  J 06671
```

```
                        READER CLUTCH TEST
PGLIN     LABEL         OPCOD  OPERAND
1995                    R      0,READFD          PASS A CARD
1996                    BCB1   *-16
1997                    BA1    *&1
1998                    BNR1   STACHK            BRCH NOT READY
1999      DELAY8        A      DELAY,ACCUM       ADD DELAY TO ACCUM
2000                    C      ACCUM,TERM8       IS IT TIME TO TERMINATE
2001                    BL     *&8               IF SO BRCH
2002                    B      DELAY8
2003                    A      @1@,TENCNT        COUNT TEN PASSES
2004                    BZ     *&8               BRCH AFTER TENTH PASS
2005                    B      LATCH2            GO TRY ANOTHER PASS
2006      NO2XIT        B      MONITR
```

```
CT  ADDRS  INSTRUCTION
10  06707  M %10 09900 R
 7  06717  R 06707 2
 7  06724  R 06731 G
 7  06731  R 03122 M
11  06738  A 09373 09354 1
11  06749  C 09354 09808
 7  06760  J 06774 T
 7  06767  J 06738
11  06774  A 09826 09368
 7  06785  J 06799 V
 7  06792  J 06500
 7  06799  J 02066
```

```
PGLIN     LABEL      OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION

2008                 ***  SET BUSY ON READER
2009           THIS ROUTINE ISSUES TWO SUCCESSIVE READS AND THEN CHECKS THE
2010          BUSY INDICATOR,IF IT IS NOT ON ERROR 9 IS INDICATED.
2011
2012      N15        NOP                                                    1  06806  N
2013                 DC     @15@              ROUTINE ID                    2  06808
2014                 CS     READFD&79         CLEAR DATA FIELD              6  06809  / 09979
2015                 R      0,READFD          PASS A CARD                  10  06815  M %10 09900 R
2016                 BCB1   *-16                                            7  06825  R 06815 2
2017                 BA1    *&1                                             7  06832  R 06839 MG
2018                 R      1,READFD          TRY TO PASS A CARD           10  06839  M %11 09900 R
2019                 BA1    *&1                                             7  06849  R 06856 MG
2020                 BCB1   *&7               BRCH BUSY                     7  06856  R 06869 2
2021                ***  SET ERROR 9 ON  ***
2022                 SW     E9                TURN                          6  06863  , 01810
2023          TWO SUCCESSIVE READS DID NOT TURN ON THE BUSY INDICATOR
2024      N15XIT     B      MONITR                                          7  06869  J 02066
```

```
PGLIN     LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
2026                ***  SET WLR ON READER  ***
2027
2028          THIS ROUTINE ISSUES A READ OP WITH SHORT FIELD AND CHECKS FOR A
2029        WLR,IF THE INDICATOR IS NOT ON ERROR 10 IS INDICATED.A READ OP
2030        WITH A LONG DATA FIELD IS ISSUED AND WLR IS CHECKED,IF IT IS NOT
2031        ON ERROR 11 IS SET ON.
2032
2033      N16       NOP                                               1  06876  N
2034                DC      @16@              ROUTINE ID              2  06878
2035                MLCWS   @M@,READFD        SET READ FIELD SHORT   12  06879  D 09824 09900 7
2036                R       0,READFD          PASS A CARD            10  06891  M %10 09900 R
2037                BCB1    *-16                                      7  06901  R 06891 2
2038                BA1     *&1                                       7  06908  R 06915 M
2039                BWL1    *&7               BRCH ON WLR             7  06915  R 06928 -
2040                ***  SET ERROR 10 ON  ***
2041                SW      E10               TURN ON ERROR IND       6  06922  , 01811
2042        A READ OP WITH A DATA FIELD OF 0 DOES NOT TURN ON WLR
2043                CS      READFD&80         SET READ FIELD LONG     6  06928  / 09980
2044                R       0,READFD          PASS A CARD            10  06934  M %10 09900 R
2045                BCB1    *-16                                      7  06944  R 06934 2
2046                BA1     *&1                                       7  06951  R 06958 M
2047                BWL1    *&7               BRCH ON WLR             7  06958  R 06971 -
2048                ***  SET ERROR 11 ON  ***
2049                SW      E11               TURN ON ERROR IND       6  06965  , 01812
2050        A READ OP WITH A DATA FIELD OF MORE THAN 80 CHARS DOES NOT TURN
2051          ON WLR
2052                MLCWS   @M@,READFD&80                            12  06971  D 09824 09980 7
2053      N16XIT    B       MONITR                                    7  06983  J 02066
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
2055                ***  SET NO TRANSFER ON READER  ***
2056
2057          THIS ROUTINE ISSUES TWO SUCCESSIVE READ AND NO STACK OPS AND
2058        THEN CHECKS NO TRANSFER,IF IT IS NOT ON ERROR 12 IS INDICATED.TWO
2059        SUCCESSIVE STACKER SELECT AND FEED OPS ARE ISSUED AND THE NO TRANS
2060        FER INDICATOR IS CHECKED,IF IT IS NOT ON ERROR 13 IS INDICATED.
2061
2062      N17       NOP                                                    1  06990  N
2063                DC      a17a          ROUTINE ID                       2  06992
2064                R       9,READFD      READ BUT DO NOT STACK           10  06993  M %19 09900 R
2065                BCB1    *-16                                           7  07003  R 06993 2G
2066                BA1     *&1                                            7  07010  R 07017 M
2067                R       9,READFD      READ BUT DO NOT STACK           10  07017  M %19 09900 R
2068                BCB1    *-16                                           7  07027  R 07017 2GM
2069                BA1     *&1                                            7  07034  R 07041 MS
2070                BNT1    *&7           BRCH ON NO TRANSFER              7  07041  R 07054 B
2071               ***  SET ERROR 12 ON  ***
2072                SW      E12           TURN ON ERROR IND                6  07048  , 01813
2073        TWO SUCCESSIVE READ AND NO STACK OPS DOES NOT TURN ON NO TRANSFER
2074      SSF1      SSF     0             STACK A CARD                     2  07054  K 0
2075                BCB1    *-8                                            7  07056  R 07054 2G
2076                BA1     *&1                                            7  07063  R 07070 M
2077      SSF2      SSF     0             STACK A CARD                     2  07070  K 0
2078                BCB1    *-8                                            7  07072  R 07070 2GM
2079                BA1     *&1                                            7  07079  R 07086 MS
2080                BNT1    *&7           BRCH NO TRANSFER                 7  07086  R 07099 B
2081               ***  SET ERROR 13 ON  ***
2082                SW      E13           TURN ON ERROR IND                6  07093  , 01814
2083        TWO SUCCESSIVE STACKER SELECT AND FEED OPS DO NOT TURN ON NO TRANS
2084      N17XIT    B       MONITR                                         7  07099  J 02066
```

```
                    READ ERROR DECK
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION

2086                ***  SET DATA CHECK ON READER  ***
2087
2088          THIS ROUTINE USES THE ERROR DECK PUNCHED IN ROUTINE N12 TO CAUSE
2089        VALIDITY  CHECKS,AND DATA CHECKS.THE ERROR DECK READ CONTAINS 50
2090        CARDS WITH ONE ILLEGAL PUNCH PER CARD.EACH CARD READ SHOULD CAUSE
2091        A DATA CHECK,IF IT DOES NOT ERROR 14 IS INDICATED.THE FAILING CARD
2092        WILL BE THE LAST CARD IN POCKET 1,THE CARDS THAT CAUSE ERRORS WILL
2093        FALL INTO POCKET 0.
2094
2095        THE ILLEGAL PUNCHES EXPECTED ARE,EACH SET OF PUNCHES WILL BE IN 40
2096        12 12 12 12 12 12 12 12 12 12 11 11 11 11 11 11 11 11 11 1 1 1 1 1
2097         0  0  0  0  0  0  0  0  0 11  0  0  0  0  0  0  0  0  0 2 3 4 5 6
2098         1  2  3  4  5  6  7  8  9     1  2  3  4  5  6  7  8  9
2099
2100        1 1 1 2 2 2 2 2 2 3 3 3 3 3 4 4 4 4 5 5 5 6 6 7 8
2101        7 8 9 3 4 5 6 7 9 4 5 6 7 9 5 6 7 9 6 7 9 7 9 9 9
2102
2103      N18       NOP                                                      1  07106  N
2104                DC      @18@                ROUTINE ID                   2  07108
2105                B       TYP1                                             7  07109  J 01593
2106                DCW     @CLR RDR,LOAD ERR&PATTERNBP-0,4,8B DECKS@,G      39 07154
2107                H                           WAIT FOR ACTION              1  07156  .
                                                                                        Q
2108                ZA      @1@,X11                                          11 07157  M 09826 00079
2109      RDERCD    R       1,READFD            READ A CARD                  10 07168  M %11 09900 R
2110                BCB1    *-16                                             7  07178  R 07168 2
                                                                                        G
2111                BA1     *&1                                              7  07185  R 07192 M
2112                BER1    CNTECD              BRCH ON DATA CHECK           7  07192  R 07212 4
2113                ***  SET ERROR 14 ON  ***
2114                SW      E14                 TURN ON ERROR IND            6  07199  , 01815
2115         ILLEGAL PUNCHES DID NOT CAUSE DATA CHECK,FAILING CARD IN POCKET 1
2116                B       MONITR                                           7  07205  J 02066
2117      CNTECD    A       @1@,X11             COUNT ERROR CARDS            11 07212  A 09826 00079
2118                BCE     *&8,X11-1,5         BRCH                         12 07223  B 07242 00078 5
2119                B       RDERCD                                           7  07235  J 07168
2120      N18XIT    B       MONITR                                           7  07242  J 02066
```

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION

```
PGLIN   LABEL   OPCOD  OPERAND                                              CT  ADDRS  INSTRUCTION

                ***  READ PATTERN CARDS AND STACK  ***

          THIS ROUTINE READS THE PATTERN CARDS PUNCHED IN THE MOVE MODE IN
        ROUTINE NO5.THIS ROUTINE EXPECTS TO FIND ONE OF THREE PATTERNS AND
        ALSO CHECKS THE POCKET ADDRESS IN COLUMN 80.THE POCKET ADDRESSES
        ARE EXPECTED TO RUN 27 CARDS WITH 0,27 CARDS WITH 4,AND 27 CARDS
        WITH 8 IN THAT ORDER.IF THE PUNCH MISS STACKED ANY CARDS THE SEQ-
        UENCE IS BROKEN AND ERROR 19 IS INDICATED.THE FIRST 27 CARDS ARE
        STACKED IN POCKET 0,THE NEXT IN POCKET 1,AND THE LAST 27 IN POCKET
        2.EACH CARD READ IS CHECK FOR A 12-7-8,ALTERNATE 12-9/11-8,OR
        MULTI BIT PATTERN,IF IT IS NONE OF THESE ERROR 15 AND THE FAILING
        DATA IS DISPLAYED.IF A CARD DOES NOT CONTAIN THE ENTIRE PATTERN
        ERROR 16 IS INDICATED FOR 12-7-8,ERROR 17 FOR ALTERNATE 12-9/11-8,
        AND ERROR 18 FOR MULTI BIT PATTERN.THE FAILING PATTERN IS DISPLAY-
        ED WITH EACH ERROR.

        PATTERNS EXPECTED
             79 COLUMNS OF 12-7-8 PUNCHES

        IQIQ 79 COLUMNS OF 12-9/11-8 PUNCHES IQIQIQ

        #@   OAKTONWGQZO MULTI BIT PATTERN REPEATED 4 TIMES

        N09     NOP                                                          1  07249  N
                DC     @09@            ROUTINE ID                            2  07251
                S      CNTCRD                                                6  07252  S 09370
                MLCS   @0@,RDPAT&3     RESET POCKET ADDRESS                 12  07258  D 09868 07291 3
                MLCS   @0@,NEXRD&11    RESET BCE MODIFIER                   12  07270  D 09868 07578 3
                CS     READFD&79       CLEAR DATA FIELD                      6  07282  / 09979
        RDPAT   R      0,READFD        READ A PATTERN CARD                  10  07288  M %10 09900 R
                BCB1   *-16                                                  7  07298  R 07288 2
                                                                                                   D
                MRCWG  READFD,DATA     LOAD FAILING PATTERN                 12  07305  D 09900 01710 L
                                                                                              G
                BA1    READ1E                                                7  07317  R 07366 M
                SW     READFD                                                6  07324  , 09900
                                 G                                                                 G
                BCE    GM,READFD,M     CHECK FOR 12-7-8                     12  07330  B 07384 09900 M
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
2157                BCE    IQ,READFD,I          CHECK FOR 12/11-8           12  07342  B 07420 09900 I
2158                BCE    POUND,READFD,#       CHECK FOR MULTI BIT         12  07354  B 07456 09900 #
2159               ***  SET ERROR 15 ON   ***
2160      READ1E    SW     E15,EXTRA&1          TURN ON ERROR IND           11  07366  , 01816 03041
2161       DATA READ IS NOT ONE OF THE THREE EXPECTED PATTERNS,OR CARD READ
2162       CAUSED DATA CHECK,FAILING PATTERN IS DISPLAYED.
2163                B      RDPTER               GO REPORT ERROR              7  07377  J 07560
2164      GM        C      READFD&78,READFD&77  CHECK FOR ALL 12-7-8 PUNCHES 11  07384  C 09978 09977
2165                BE     NEXRD                BRCH IF SC                   7  07395  J 07567 S
2166               ***  SET ERROR 16 ON  ***
2167                SW     E16,EXTRA&1          TURN ON ERROR IND           11  07402  , 01817 03041
2168       12-7-8 PATTERN IS NCT CORRECT ACCROSS ENTIRE CARD,POCKET ADDRESS
2169       DISPLAYED AS 80TH CHAR IN DATA FIELD.
2170                B      RDPTER               GO REPORT ERROR              7  07413  J 07560
2171      IQ        C      READFD&78,READFD&76  CHECK FOR ALTERNATE 12-9/11-8 11  07420  C 09978 09976
2172                BE     NEXRD                IF SO BRCH                   7  07431  J 07567 S
2173               ***  SET ERROR 17 ON  ***
2174                SW     E17,EXTRA&1          TURN ON ERROR IND           11  07438  , 01818 03041
2175       ALTERNATE 12-9/11-8 PATTERN READ IS INCORRECT,POCKET ADDRESS DIS-
2176       PLAYED AS 80TH CHAR IN DATA FIELD.
2177                B      RDPTER               GO REPORT ERROR              7  07449  J 07560
2178      POUND     C      READFD&15,PAT3       CHECK FOR CORRECT DATA      11  07456  C 09915 09622
2179                BE     *&8                  IF CORRECT BRCH              7  07467  J 07481 S
2180                B      DATAER                                            7  07474  J 07549
2181                C      READFD&35,PAT3       CHECK FOR CORRECT DATA      11  07481  C 09935 09622
2182                BE     *&8                                               7  07492  J 07506 S
2183                B      DATAER                                            7  07499  J 07549
2184                C      READFD&55,PAT3       CHECK FOR CORRECT DATA      11  07506  C 09955 09622
2185                BE     *&8                                               7  07517  J 07531 S
2186                B      DATAER                                            7  07524  J 07549
2187                C      READFD&75,PAT3       CHECK FOR CORRECT DATA      11  07531  C 09975 09622
2188                BE     NEXRD                                             7  07542  J 07567 S
2189               ***  SET ERROR 18 ON  ***
2190      DATAER    SW     E18,EXTRA&1                                      11  07549  , 01819 03041
2191       MULTI BIT PATTERN READ IS INCORRECT,POCKET ADDRESS DISPLAYED AS
2192       80TH CHAR IN DATA FIELD.
```

READ PATTERNS AND STACK-MOVE MODE

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
2193	RDPTER	B	MONITR	GO REPORT ERROR	7	07560	J 02066
2194	NEXRD	BCE	POKTOK,READFD&79,0	CHECK FOR PUNCH STACKED CORRECT	12	07567	B 07604 09979 0
2195		***	SET ERROR 19 ON ***				
2196		SW	E19,EXTRA&1	TURN ON ERROR IND	11	07579	, 01820 03041
2197	CARD READ HAS INCORRECT POCKET ADDRESS IN COLUMN 80,PUNCH MISS						
2198	STACKED OR POSSIBLY MISSED PUNCHING A CARD.CHECK MODIFIER OF BCE						
2199	INST AT LABLE NEXRD FOR POCKET ADDRESS EXPECTED.						
2200		B	MONITR	GO REPORT ERROR	7	07590	J 02066
2201		B	*&12		7	07597	J 07615
2202	POKTOK	A	@1@,CNTCRD	COUNT CARDS	11	07604	A 09826 09370
2203		CS	READFD&79		6	07615	/ 09979
2204		C	CNTCRD,@27@	ALL CARDS FROM ONE POCKET READ	11	07621	C 09370 09870
2205		BE	*&8	IF SO BRCH	7	07632	J 07646 S
2206		B	RDPAT		7	07639	J 07288
2207		S	CNTCRD	RESET CARD COUNT	6	07646	S 09370
2208		SW	RDPAT&3,NEXRD&11		11	07652	, 07291 07578
2209		A	@4@,NEXRD&11	UPDATE POCKET ADDRESS	11	07663	A 09871 07578
2210		A	@1@,RDPAT&3		11	07674	A 09826 07291
2211		CW	NEXRD&11,RDPAT&3		11	07685	¤ 07578 07291
2212		BCE	*&8,NEXRD&11,2	BRCH WHEN ALL MOVE MODE CARDS RD	12	07696	B 07715 07578 2
2213		B	RDPAT		7	07708	J 07288
2214		MLCS	@0@,NEXRD&11	RESTORE POCKET CHECK	12	07715	D 09868 07578 3
2215	N09XIT	B	MONITR		7	07727	J 02066

```
PGLIN    LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
2217                  *** READ PATTERN CARDS IN LOAD MODE AND STACK ***
2218                THIS ROUTINE IS IDENTICAL TO THE READ MOVE MODE ROUTINE N09 EX-
2219               CEPT THAT ALL READS ARE PERFORMED IN LOAD MODE.IN ADDITION THE
2220               LAST PATTERN CARD READ BY THIS ROUTINE SHOULD BE THE LAST CARD IN
2221               THE READER AND AN ECF IS CHECKED FOR FOLLOWED BY A READ AND A NOT
2222               READY,IF NOT READY IS NOT SET ERROR 25 IS INDICATED.IF THE EOF IS
2223               NOT SET ERRCR 20 WILL BE INDICATED.FOR GREATER DETAIL REFERENCE
2224               ROUTINE N09.
2225
2226     N20       NOP                                                       1  07734  N
2227               DC      @20@              ROUTINE ID                      2  07736
2228               S       CNTCRD                                            6  07737  S 09370
2229               MLCS    @0&,RDPAT2&3      LOAD POCKET ADDRESS            12  07743  D 09868 07764 3
2230               CS      READFD&79         CLEAR DATAFD                    6  07755  / 09979
2231     RDPAT2    RW      0,READFD          READ A PATTERN                 10  07761  L %10 09900 R
2232               BCB1    *-16                                              7  07771  R 07761 2
2233               MRCWG   READFD,DATA       LOAD FAILING ADDRESS           12  07778  D 09900 01710 DL
2234               BEF1    ENDN20            BRCH ON CONDITION               7  07790  R 08322 8
2235               BA1     *&1                                               7  07797  R 07804 GM
2236               BEX1    READ2E,X          BRCH ON ANY ERROR BUT WLR       7  07804  R 07847 X
2237               BCE     LOADGM,READFD,M   BRCH IF 12-7-8 PATTERN         12  07811  B 07865 09900 GM
2238               BCE     LOADIQ,READFD,I   BRCH IF ALTER 12-9/11-8         12  07823  B 07913 09900 I
2239               BCE     LPOUND,READFD,#   BRCH IF MULTI BIT PATTERN       12  07835  B 08027 09900 #
2240              *** SET ERROR 20 ON ***
2241     READ2E    SW      E2C,EXTRA&1       TURN ON ERROR IND              11  07847  , 01821 03041
2242               CARD READ DOES NOT CONTAIN ONE OF THE THREE EXPECTED PATTERNS,OR
2243               A DATA CHECK,NOT READY,NO TRANSFER OCCURED.
2244               B       RDPER2                                            7  07858  J 08131
2245     LOADGM    SW      READFD                                            6  07865  , 09900
2246               C       READFD&78,READFD&77  CHECK FOR ALL 12-8-7 PUNCHES  11  07871  C 09978 09977
2247               CW      READFD                                            6  07882  ¤ 09900
2248               BE      NEXRD2            IF SO BRCH                      7  07888  J 08138 S
2249              *** SET ERROR 21 ON ***
2250               SW      E21,EXTRA&1       TURN ON ERROR IND              11  07895  , 01822 03041
2251               12-7-8 PATTERN READ IS IN CORRECT,POCKET ADDRESS DISPLAY AS BOTH
2252               CHAR OF DATA FIELD
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
2253                B      RDPER2                                           7   07906  J 08131
2254      LOADIQ    ZA     &READFD,X12          LOAD IX 12                  11  07913  M 09876 00084
2255                BW     *&8,0&X12            CHECK WM S                  12  07924  V 07943 00M00 1
2256                B      IQERR                                            7   07936  J 07973
2257                A      @1&,X12              UPDATE IX 12                11  07943  A 09826 00084
2258                BCE    *&8,X12-1,4          HAVE WORD MARKS BEEN CHECKED 12  07954  B 07973 00083 4
2259                B      LOADIQ&11                                        7   07966  J 07924
2260      IQERR     SW     READFD&41                                        6   07973  , 09941
2261                MLCB   READFD&39,READFD&79  MOVE DATA                   12  07979  D 09939 09979 L
2262                C      READFD&78,READFD&76 CHECK FOR ALTER  12-9/11-8    11  07991  C 09978 09976
2263                BE     NEXRD2                                           7   08002  J 08138 S
2264                ***  SET ERROR 22 ON  ***
2265                SW     E22,EXTRA&1          TURN ON ERROR IND           11  08009  , 01823 03041
2266       12-9/11-8 PATTERN READ IS INCORRECT,POCKET ADDRESS DISPLAYED AS
2267       40 CHAR OF DATA FIELD.
2268                B      RDPER2                                           7   08020  J 08131
2269      LPOUND    C      PAT3-1,READFD&74     CHECK                       11  08027  C 09621 09974
2270                BE     *&8                      VARIABLE                7   08038  J 08052 S
2271                B      DATER2                           PATTERN         7   08045  J 08120
2272                C      PAT3,READFD&55       CHECK                       11  08052  C 09622 09955
2273                BE     *&8                      VARIABLE                7   08063  J 08077 S
2274                B      DATER2                           PATTERN         7   08070  J 08120
2275                C      PAT3,READFD&35       CHECK                       11  08077  C 09622 09935
2276                BE     *&8                      VARIABLE                7   08088  J 08102 S
2277                B      DATER2                           PATTERN         7   08095  J 08120
2278                C      PAT3,READFD&15       CHECK                       11  08102  C 09622 09915
2279                BE     NEXRD2                   VARIABLE PATTERN        7   08113  J 08138 S
2280                ***  SET ERROR 23 ON  ***
2281      DATER2    SW     E23,EXTRA&1          TURN ON ERROR IND           11  08120  , 01824 03041
2282       MULTI BIT PATTERN READ IS INCORRECT,POCKET ADDRESS DISPLAYED AS
2283       76TH CHAR OF DATA FIELD.
2284      RDPER2    B      MONITR               GO REPORT ERROR              7   08131  J 02066
2285      NEXRD2    BCE    PKTOK2,READFD&79,0 CHECK FOR CORRECT POCKET CODE 12  08138  B 08199 09979 0
2286                BCE    PKTCK2,READFD&75,0 CHECK FOR CORRECT POCKET CODE 12  08150  B 08199 09975 0
2287                BCE    PKTOK2,READFD&39,0 CHECK FOR CORRECT POCKET CODE 12  08162  B 08199 09939 0
2288                ***  SET ERROR 24 ON  ***
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
2289                SW     E24,EXTRA&1        TURN ON ERROR IND             11  08174  , 01825 03041
2290       CARD READ HAS INCORRECT POCKET ADDRESS,PUNCH MISS STACKED OR
2291       POSSIBLY MISSED PUNCHING A CARD.CHECK MODIFIER OF BCE INSTRUCTION
2292       AT LABLE NEXRD2 FOR POCKET ADDRESS EXPECTED.
2293                B      MONITR                                            7  08185  J 02066
2294                B      *&12                                              7  08192  J 08210
2295      PKTOK2    A      @1@,CNTCRD         COUNT CARDS                   11  08199  A 09826 09370
2296                CS     READFD&79          CLEAR READ FIELD               6  08210  / 09979
2297                C      CNTCRD,@27@        ALL CARDS FROM ONE POCKET READ 11  08216  C 09370 09870
2298                BE     *&8                IF SO BRCH                     7  08227  J 08241 S
2299                B      RDPAT2                                            7  08234  J 07761
2300                S      CNTCRD             RESET CARD COUNT               6  08241  S 09370
2301                SW     RDPAT2&3,NEXRD2&11 UPDATE                        11  08247  , 07764 08149
2302                A      @4@,NEXRD2&11            POCKET                  11  08258  A 09871 08149
2303                A      @1@,RDPAT2&3                   ADDRESS AND CHECKS11  08269  A 09826 07764
2304                CW     RDPAT2&3,NEXRD2&11 UPDATE                        11  08280  ¤ 07764 08149
2305                MLCS   NEXRD2&11,NEXRD2&23      POCKET                   12  08291  D 08149 08161 3
2306                MLCS   NEXRD2&11,NEXRD2&35             ADDRESS CHECKS    12  08303  D 08149 08173 3
2307                B      RDPAT2                                            7  08315  J 07761
2308      ENDN20    MLCS   @0@,NEXRD2&11     RESTORE                        12  08322  D 09868 08149 3
2309                MLCS   @0@,NEXRD2&23              POCKET ADDRESS         12  08334  D 09868 08161 3
2310                MLCS   @0@,NEXRD2&35                       CHECKS        12  08346  D 09868 08173 3
2311                R      0,READFD                                          10  08358  M &10 09900 R
2312                BNR1   N20XIT                                            7  08368  R 08388 1
2313                BA1    *&1                                               7  08375  R 08382 M
                                                                                          G
2314               *** SET ERROR 25 ON ***
2315                SW     E25                                               6  08382  , 01826
2316       ON LAST CARD EOF WAS SET ANOTHER READ OP DID NOT SET NOT READY
2317      N20XIT    B      MONITR                                            7  08388  J 02066
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION

2319                ***  CHECK CARD READER STACKING  ***
2320
2321          THIS ROUTINE CHECKS THE CARDS STACKED IN POCKETS 1 AND 2 IN
2322        ROUTINES N09,AND N20.THE CARDS ARE LOADED INTO THE READER FROM
2323        POCKET 1 THEN 2.THE ROUTINE EXPECTS 54 CARDS FROM POCKET 1 AND 54
2324        CARDS FROM POCKET 2.THE CARDS STACKED WITH AN SSF INST IN 1 AND 2
2325        POCKETS.A READ AND NO STACK IS ISSUED AND THE POCKET ADDRESS IN
2326        THE CARD IS CHECKED FOR A 4,IF ITS NOT 4,ERROR 26 IS SET.AFTER 54
2327        CARDS ARE READ AND STACKED THE POCKET ADDRESS CHECKED IS 8,A FAIL-
2328        URE HERE IS INDICATED BY ERROR 27.
2329
2330      N21       NOP                                                    1  08395  N
2331                DC      @21@              ROUTINE ID                   2  08397
2332                B       TYP1                                           7  08398  J 01593
2333                DCW     @ LOAD CRDS FROM P-1,2 IN THAT ORDER IN RDR@,G 42  08446
2334                H                         WAIT FOR ACTION              1  08448  .
2335                S       CNTCRD                                         6  08449  S 09370
2336                CS      READFD&79         CLEAR DATA FIELD             6  08455  / 09979
2337      NOSTAK    RW      9,READFD          READ A CARD                  10 08461  L %19 09900 R
2338                BCB1    *-16                                           7  08471  R 08461 2
2339                BEX1    STACHK,M T        BRCH ON ERROR                7  08478  R 03122 TMGM
2340                BA1     *&1                                            7  08485  R 08492 M
2341                BCE     STAKIT,READFD&79,4 CHECK                       12 08492  B 08558 09979 4
2342                BCE     STAKIT,READFD&75,4      FOR CORRECT            12 08504  B 08558 09975 4
2343                BCE     STAKIT,READFD&39,4                POCKET CODE  12 08516  B 08558 09939 4
2344               ***  SET ERROR 26 ON  ***
2345                SW      E26,EXTRA&1       TURN ON ERROR IND            11 08528  , 01827 03041
2346         CARD READ FROM POCKET 1 HAS INCORRECT ADDRESS,READER APPARENTLY
2347         MISS STACKED CARD,FAILING CARD DISPLAYED WITH ERROR MESSAGE
2348                MRCWG   READFD,DATA       MOVE FAILING CARD            12 08539  D 09900 01710 DL
2349                B       MONITR                                         7  08551  J 02066
2350      STAKIT    SSF     1                 STACK CARD IN POCKET 1       2  08558  K 1
2351                BCB1    *-16                                           7  08560  R 08550 2
2352                BA1     *&1                                            7  08567  R 08574 GMT
2353                BEX1    STACHK,M T        BRCH ON ERROR                7  08574  R 03122 M
```

```
                    CHECK READER STACKING
PGLIN     LABEL     OPCOD  OPERAND                                    CT  ADDRS  INSTRUCTION
2354                A      a1a,CNTCRD          COUNT CARDS            11  08581  A 09826 09370
2355                C      CNTCRD,a54a         BRCH IF ALL CARDS FROM ONE 11  08592  C 09370 09878
2356                BE     *&8                    POCKET HAVE BEEN READ    7  08603  J 08617 S
2357                B      NOSTAK                                        7  08610  J 08461
2358                S      CNTCRD                                        6  08617  S 09370
2359      NOSTK2    RW     9,READFD            READ A CARD               10  08623  L %19 09900 R
2360                BCB1   *-16                                          7  08633  R 08623 2
2361                BA1    *&1                                           7  08640  R 08647 GMT
2362                BEX1   STACHK,MT           BRCH ON ERROR             7  08647  R 03122 M
2363                BCE    STKIT2,READFD&79,8  CHECK                    12  08654  B 08720 09979 8
2364                BCE    STKIT2,READFD&75,8      FOR CORRECT          12  08666  B 08720 09975 8
2365                BCE    STKIT2,READFD&39,8                  POCKET CODE 12  08678  B 08720 09939 8
2366               *** SET ERROR 27 ON ***
2367                SW     E27,EXTRA&1         TURN ON ERROR IND         11  08690  . 01828 03041
2368       CARD READ FROM POCKET 2 HAS INCORRECT ADDRESS,APPARENTLY READER
2369       MISS STACKED CARDS,FAILING CARD DISPLAYED WITH ERROR MESSAGE
2370                MRCWG  READFD,DATA         MOVE FAILING ADDR         12  08701  D 09900 01710 DL
2371                B      MONITR                                        7  08713  J 02066
2372      STKIT2    SSF    2                   STACK CARD IN POCKET 2     2  08720  K 2
2373                BCB1   *-16                                          7  08722  R 08712 2
2374                BA1    *&1                                           7  08729  R 08736 GMT
2375                BEX1   STACHK,MT           BRCH ON ERROR             7  08736  R 03122 M
2376                A      a1a,CNTCRD          COUNT CARDS              11  08743  A 09826 09370
2377                C      CNTCRD,a54a         BRCH IF ALL CARDS READ   11  08754  C 09370 09878
2378                BE     *&8                                           7  08765  J 08779 S
2379                B      NOSTK2                                        7  08772  J 08623
2380      N21XIT    B      MONITR                                        7  08779  J 02066
```

LOCATE READY READER/PUNCH

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
2382	N10	NOP			1	08786	N
2383		DC	a10a	ROUTINE ID	2	08788	
2384		CW	READSW&1,PCHSW&1		11	08789	¤ 06275 03721
2385		A	a57a,X15	UPDATE IX REG 15	11	08800	A 09880 00099
2386		A	a3a,X14	UPDATE IX REG 14	11	08811	A 09832 00094
2387		BCE	N1CXIT,X15,I	HAVE ALL CHANNELS BEEN TESTED	12	08822	B 09170 00099 I
2388		BCE	*&7,0&X15,R	READER ON THIS CHANNEL	12	08834	B 08852 00MM0 R (QQ)
2389		SW	READSW&1	SET NO READER SWITCH ON	6	08846	, 06275
2390		BCE	*&19,2&X15,P	BRCH IF PUNCH AVAIL ON THIS CHNL	12	08852	B 08882 00MM2 P (QQ)
2391		SW	PCHSW&1	SET NO PUNCH SWITCH ON	6	08864	, 03721
2392		BW	N10,READSW&1	BRCH IF NO PUNCH OR READER	12	08870	V 08786 06275 1
2393		MLCA	CODE3&X14,INCODE	MOVE CHANNEL CODES	12	08882	D 09HJ1 08913 T
2394		B	CHALTR		7	08894	J 01045
2395		DCW	TOP	HI LIMIT	5	08905	08975
2396		DC	BOTTOM	LO LIMIT	5	08910	03753
2397		DCW	a a		1	08911	
2398		DC	a a		1	08912	
2399	INCODE	DC	a a		1	08913	
2400		R	9,READFD	TST RDR RDY	10	08914	M %19 09900 R
2401		BEF1	*-16		7	08924	R 08914 8 (G)
2402		BA1	*&1		7	08931	R 08938 M
2403		BNR1	*&7	BRCH ON NOT READY	7	08938	R 08951 1
2404		SW	GOSW&1	SET GO SWITCH ON RDR READY	6	08945	, 08982
2405		P	0,PCHFLD	TST PUNCH READY	10	08951	M %40 09900 W
2406		BA1	*&1		7	08961	R 08968 M (G)
2407		BNR1	*&7	BRCH ON NOT READY	7	08968	R 08981 1
2408	TOP	SW	GOSW&1	TURN OFF GO SWITCH	6	08975	, 08982
2409	GOSW	NOPWM			1	08981	N
2410		B	*&8		7	08982	J 08996
2411		B	N10		7	08989	J 08786
2412		CW	GOSW&1	TURN OFF GO SWITCH	6	08996	¤ 08982
2413		MLCS	INCODE,RDYMSG&7	MOVE CHANNEL NUMBER	12	09002	D 08913 09028 3
2414		B	TYP1		7	09014	J 01593
2415	RDYMSG	DCW	aTST CH a,G		8	09021	
2416		ZA	&NO1,X3	LOAD IX 3	11	09030	M 09885 00039 (Q)

```
PGLIN   LABEL    OPCOD  OPERAND                                                   CT  ADDRS  INSTRUCTION

2417             BCE    CH2SSF,INCODE,2     BRCH IF ON CHANNEL 2                  12  09041  B 09108 08913 2
2418             MLCS   @K@,SSF1            ALTER                                 12  09053  D 09886 07054 3
2419             MLCS   @K@,SSF2                 STACKER                          12  09065  D 09886 07070 3
2420             MLCS   @K@,STAKIT                      SELECT                    12  09077  D 09886 08558 3
2421             MLCS   @K@,STKIT2                          AND FEED CHL 1        12  09089  D 09886 08720 3
                                                                                                 Q
2422             B      0&X3                                                       7  09101  J 000P0
2423    CH2SSF   MLCS   @4@,SSF1            ALTER                                 12  09108  D 09871 07054 3
2424             MLCS   @4@,SSF2                 STACKER                          12  09120  D 09871 07070 3
2425             MLCS   @4@,STAKIT                      SELECT                    12  09132  D 09871 08558 3
2426             MLCS   @4@,STKIT2                          AND FEED CHL 2        12  09144  D 09871 08720 3
                                                                                                 Q
2427             B      0&X3                                                       7  09156  J 000M0
                                                                                                 Q
2428             B      0&X3                                                       7  09163  J 000M0
2429    N1OXIT   B      MONITR                                                     7  09170  J 02066
2430    ENDTST   B      TYP1                                                       7  09177  J 01593
2431             DCW    @PASS@,G                                                   4  09187
2432             BCE    2000,TAD3,1         CHECK FOR REPEATING TST               12  09189  B 02000 01003 1
2433             B      400                                                        7  09201  J 00400
2434             H                                                                 1  09208  .
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
2436	PREP	SW	CTLFLD&1,CTLFLD&5		11	09209	, 00202 00206
2437		MLCA	CTLFLD&2,LOOP&1	MOVE CHANNEL CODES,MODE CODES	12	09220	D 00203 01014 T
2438		BCE	SSF,LOOP,4		12	09232	B 09323 01013 4
2439		BCE	SSF,LOOP,K	BRCH IF A SSF OP	12	09244	B 09323 01013 K
2440		MLCWS	CTLFLD&3,LOOP&2	MOVE UNIT CODE	12	09256	D 00204 01015 7
2441		MLCS	CTLFLD&4,LOOP&3	MOVE POCKET CODE	12	09268	D 00205 01016 3
2442		MLCA	CTLFLD&6,LOOP&10	MOVE MODIFIER AND B-O-S-I-O	12	09280	D 00207 01023 T
2443		BCE	GOLOOP,LOOP&2,2	BRCH IF A READ OP	12	09292	B 09335 01015 2
2444		MRCWG	CTLFLD&7,PCHFLD	LOAD DATA FIELD	12	09304	D 00208 09900 L
2445		B	GOLOOP		7	09316	J 09335
2446	SSF	MLCWS	ANA,LOOP&2	SET NOP FOR SSF OP	12	09323	D 09821 01015 7
2447	GOLOOP	CS	CTLFLD&99	CLEAR CONTROL FIELD	6	09335	/ 00300
2448		B	LOOP		7	09341	J 01013
2449		H			1	09348	.

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2451	READFD	EQU	PCHFLD EQUATE READ & PUNCH FIELDS			
2452	ACCUM	DCW	@0000000@	6	09354	
2453	PCRDCT	DCW	@000@	3	09357	
2454	MINUTE	DCW	@00@	2	09359	
2455	LOOPTI	DCW	@000@	3	09362	
2456	STKSEQ	DCW	@000@	3	09365	
2457	CNTSKU	DCW	@00@	2	09367	
2458	TENCNT	DCW	@0@	1	09368	
2459	CNTCRD	DCW	@00@	2	09370	
2460	DELAY	DCW	@000@	3	09373	
2461	TERM1	DCW	@ @	6	09379	
2462	TERM2	DCW	@ @	6	09385	
2463	TERM3	DCW	@ @	6	09391	
2464	TERM4	DCW	@ @	6	09397	
2465	PASONE	DCW	@&ABCDEFGHIJKLMNOPQR2345678934567945679567967979995@	50	09398	
2466	PASTWO	DCW	@-0000000000000000001111111222222333334444555667850@	50	09448	
2467	CON1	DCW	STASEQ	5	09502	09503
2468	STASEQ	DCW	@0C0@	3	09503	
2469			@0C4@	3	09508	
2470		DCW	@008@	3	09511	
2471			@040@	3	09514	
2472			@044@	3	09517	
2473			@048@	3	09520	
2474			@080@	3	09523	
2475			@084@	3	09526	
2476			@088@	3	09529	
2477			@400@	3	09532	
2478			@404@	3	09535	
2479			@408@	3	09538	
2480			@440@	3	09541	
2481			@444@	3	09544	
2482			@448@	3	09547	
2483			@480@	3	09550	
2484			@484@	3	09553	
2485			@488@	3	09556	
2486			@800@	3	09559	

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2487			a804a	3	09562	
2488			a8C8a	3	09565	
2489			a840a	3	09568	
2490			a844a	3	09571	
2491			a848a	3	09574	
2492			a880a	3	09577	
2493			a884a	3	09580	
2494			a888a	3	09583	
2495			a000a	3	09586	
2496	CON3	DCW	PASONE	5	09591	09398
2497	CON4		PASTWO	5	09596	09448
2498	CON7	DCW	PCHER2	5	09601	05080
2499	CON8	DCW	PCHER3	5	09606	05176
2500	PAT3	DCW	a#a.TMOAKTDNWGQZ0a	16	09622	
2501	LOOPO	DCW	a284a	3	09625	
2502	LOOPI	DCW	a244a	3	09628	
2503	LOOPX	DCW	a090a	3	09631	
2504	DELAYO		a292a	3	09634	
2505	DELAYI		a260a	3	09637	
2506	DELAYX		a087a	3	09640	
2507	TERM1O	DCW	a2978402	6	09646	
2508	TERM7O		a3579922	6	09652	
2509	TERM3O		a4181442	6	09658	
2510	TERM4O		a4780042	6	09664	
2511	TERM1I		a2979602	6	09670	
2512	TERM2I		a3577602	6	09676	
2513	TERM3I		a4180802	6	09682	
2514	TERM4I		a4778802	6	09688	
2515	TERM1X		a2979752	6	09694	
2516	TERM2X		a3580052	6	09700	
2517	TERM3X		a4180352	6	09706	
2518	TERM4X		a4785002	6	09712	
2519	TRM5OR		a1600162	6	09718	
2520	TRM6OR	DCW	a2350602	6	09724	
2521	TRM7OR		a3098122	6	09730	
2522	TRM8OR		a3851482	6	09736	

CONSTANTS

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2523	TRM5IR		@152100@	6	09742	
2524	TRM6IR		@228540@	6	09748	
2525	TRM7IR		@309420@	6	09754	
2526	TRM8IR		@381560@	6	09760	
2527	TRM5XR		@159993@	6	09766	
2528	TRM6XR		@234987@	6	09772	
2529	TRM7XR		@309981@	6	09778	
2530	TRM8XR		@384975@	6	09784	
2531	TERM5	DCW	@ @	6	09790	
2532	TERM6		@ @	6	09796	
2533	TERM7		@ @	6	09802	
2534	TERM8		@ @	6	09808	
2535	CODE3	DCW	@%R1@	3	09811	
2536		DCW	@¤X2@	3	09814	
2537		DCW	@M33@	3	09817	
2538		DCW	@.14@	3	09820	
2539		LTORG			09821	
2539			@N@	1	09821	
2539			@‡@	1	09822	
2539			@L@	1	09823	
2539			@M@	1	09824	
2539			@ @	1	09825	
2539			@1@	1	09826	
2539			@00209@	5	09831	
2539			@3@	1	09832	
2539			@7@	1	09833	
2539			@00237@	5	09838	
2539			@2@	1	09839	
2539			N10	5	09844	08786
2539			@0C000@	5	09849	
2539			@01301@	5	09854	
2539			@001@	3	09857	
2539			@880@	3	09860	
2539			@1Q@	2	09862	
2539			@000@	3	09865	
2539			@24@	2	09867	

CONSTANTS

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2539			@0@	1	09868	
2539			@27@	2	09870	
2539			@4@	1	09871	
2539			READFD	5	09876	09900
2539			@54@	2	09878	
2539			@57@	2	09880	
2539			N01	5	09885	03717
2539			@K@	1	09886	
2540		ORG	*&X00		09900	
2541	PCHFLD	DC	@ @	1	09900	
2542		DS	79		09979	
2543		DCW	@M@	1	09980	
2544		LOAD				
2545		END				

END OF ASSEMBLY

5.00.08.0 RP01A SUMMARY

08.1 SET UP

A. Load all punches to be tested with at least 300 cards and make ready.

B. Load all readers to be tested with at least 800 cards and make ready.

08.2 LOADING

Use Standard 1410/7010 Diagnostic Load Procedures.

08.3 CONTROL

A. Standard diagnostic TADs

B. Special TADs

Set to 1 for additional program options. (Refer to RP01 program write-up, Section 01.3.)

08.4 ERROR MESSAGE FORMAT

"ROUTINE N00"
(Failing routine number)
"*ERROR 00 00000 M%1000000R 1248AB
A B C D E

A. Error flag

B. Error number, error is described in program listing.

C. Starting address of failing routine

D. Failing instruction (if any)

E. Status Ind. on (if any)

1	Not Ready
2	Busy
4	Data Check
8	Ext. Condition
A	No Transfer
B	Wrong Length Record

5.00.08.0 SUMMARY (continued)

08.5 SUCCESSFUL PASS

No error typeouts and the "END OF JOB" typeout "PASS"

08.6 ERROR HALTS

There are none in RP01.

08.7 NORMAL HALTS

Mem. loc.	Reason
04480	Allow CE to unload punch pockets
04619	Allow CE to reload cards in punch
04751	Allow CE to unload punch pockets and load punch
04909	Allow CE to check punch pockets
05681	Allow CE to remove cards from punch pockets
07157	Allow CE to load test decks in reader
08449	Allow CE to reload cards in reader

08.8 TEST DECKS IN ORDER THAT THEY ARE LOADED INTO READER

A. Error Deck - 49 Cards

B. Pattern Deck - Move Mode
From Punch Pocket 0, 27 Cards
From Punch Pocket 4, 27 Cards
From Punch Pocket 8, 27 Cards

C. Pattern Deck - Load Mode
From Punch Pocket 0, 27 Cards
From Punch Pocket 4, 27 Cards
From Punch Pocket 8, 27 Cards