```
100-200:
....5..110......
/299/080,0011001
1   1   1   1   1

1-200: Fill print area with data and word marks.  Read a card when done.
....5...10....5...20....5...30....5...40....5...50....5...60....5...70....5...80....5...90....5..100
                                                                                1/B168X00FF333010332
                                                                             1    1   1  1 1  1    1
....5..110....5..120....5..130....5..140....5..150....5..160....5..170....5..180....5..190....5..200
/332/,2A2M0-02A2V1290-01)2A2B1410-0}B148M1252A2A176099AB1060970)078N080,0011001........4900333-AREA
1   11   1      1       1   1       1   1      1      11       1   1   1   1   1       1 1

1-200:
....5...10....5...20....5...30....5...40....5...50....5...60....5...70....5...80....5...90....5..100
                                                                                1/B168X00FF333010332
                                                                             1    1   1  1 1  1    1
....5..110....5..120....5..130....5..140....5..150....5..160....5..170....5..180....5..190....5..200
/332/,2A2M0-02A2V1290-01)2A2B1410-0}B148M1252A2A176099AB1060970)078N080,0011001........4900400-AREA
1   11   1      1       1   1       1   1      1      11       1   1   1   1   1       1 1

1-200: Fill print area with data and word marks.  Print it and branch to 60.
....5...10....5...20....5...30....5...40....5...50....5...60....5...70....5...80....5...90....5..100
                                                                                1/B168X00FF333010332
                                                                             1    1   1  1 1  1    1
....5..110....5..120....5..130....5..140....5..150....5..160....5..170....5..180....5..190....5..200
/332/,2A2M0-02A2V1290-01)2A2B1410-0}B148M1252A2A176099AB10609702060N080,0011001........0900400-AREA
1   11   1      1       1   1       1   1      1      11       1   1   1   1   1       1 1

301-399: Set ........xx back to ........09.  Set starting position for ........xx back to 221.
Check for a blank line without word marks.
....5..310....5..320....5..330....5..340....5..350....5..360....5..370....5..380....5..390....5..400
                                D173188D014019M094089,323C0^9332B100/V1000^01B0490889A097089B358014
                                1      1      1      1   1      1    1       1       1      1   1

Print Layout for Index registers, indicators:

....5...10....5...20....5...30....5...40....5...50....5...60....5...70....5...80....5...90....5..100
SENSE SWS   ON b c d e f g     OFF b c d e f g   UNEQUAL            OVFLO OFF   ......*1*..*2*..*3*.
                                                      EQUAL
                                                          HIGH
                                                              LOW
```

```
     * SET WORD MARKS FOR THE SECOND CARD (AND SEVERAL MORE)
               ORG  1                                                 0001
               SW   A1,A2                                   7  0001  , 008 015
     A1        SW   A3,A4                                   7  0008  , 023 030
     A2        NOP  0,0,0                                   8  0015  N 000 000 0
     A3        SW   A5,A6                                   7  0023  , 038 042
     A4        NOP  0,0,0                                   8  0030  N 000 000 0
     A5        SW   A7                                      4  0038  , 049
     A6        SW   A8,A9                                   7  0042  , 053 057
     A7        SW   A10                                     4  0049  , 059
     A8        SW   A11                                     4  0053  , 063
     A9           N0                                        2  0057  N 0
     A10       SW   A12                                     4  0059  , 067
     A11       SW   A13                                     4  0063  , 071
     A12       R    BLOOP            READ THE NEXT CARD     4  0067  1 001
     A13       DCW  #1                                      1  0071

,008015,023030N0000000,038042N0000000,049,053057,059,063N0,067,0711001
1      1      1       1      1       1   1      1   1   1 1   1   1   1

     * Replace group marks in 81-399 by ).
               ORG  1                                                 0001
     BLOOP     MCW  BADDR,BTESTG+6   SET TEST ADDRESS       7  0001  M 055 021
               MCW  BADDR,BREPLG+6   SET REPLACEMENT ADDR   7  0008  M 055 048
     BTESTG    BCE  BREPLG,*,}       GROUP MARK?            8  0015  B 042 XXX }
     BBUMP     A    BINCR,BADDR      UPDATE TEST ADDRESS    7  0023  A 067 055
               BCE  BDONE,BADDR-2,4  DONE WITH SCAN?        8  0030  B 057 053 4
               B    BLOOP            AROUND AGAIN           4  0038  B 001
     BREPLG    MCW  BLOZ,*           REPLACE GROUP MARK     7  0042  M 071 XXX
               B    BBUMP            UPDATE TEST ADDRESS    4  0049  B 023
     BADDR     DCW  @081@                                   3  0055
               DC   @ @                                     1  0056
     BDONE     CC   K                                       2  0057  F K
               CS   *-3              NEED NEW WORD MARKS    4  0059  / 059
               SW   CSTART           READY FOR A NEW CARD   4  0063  , 001
     BINCR     R    CSTART           READ A NEW CARD        4  0067  1 001
     BLOZ      DCW  @)@              LOZENGE ON A CHAIN     1  0071

M055021M055048B042XXX}A067055B0570534B001M071XXXB023081 FK/059,0011001)
1      1      1       1      1       1   1      1   1   1 1   1   1   1

     * Set word marks for the next card, print the print
     * area, then print the word marks.
               ORG  1                                                 0001
     CSTART    SW   C1,C2                                   7  0001  , 008 012
     C1        SW   C3                                      4  0008  , 016
     C2        SW   C4                                      4  0012  , 023
```

```
     C3         SW   C5,C6                                          7  0016  , 030 034
     C4         SW   C7,C8                                          7  0023  , 041 048
     C5         SW   C9                                             4  0030  , 049
     C6         SW   C10,C11                                        7  0034  , 056 063
     C7         SW   C4-1,C14                                       7  0041  , 022 072
     C8         SW                                                  1  0048  ,
     C9         SW   C15,C16                                        7  0049  , 074 076
     C10        SW   C17,C12                                        7  0056  , 080 067
     C11        CW   C4                                             4  0063  ) 023
     C12        SW   DLOAD2                                         4  0067  , 029
     C13        W                                                   1  0071  2
     C14           2)                                               2  0072  2 )
     C15           N0                                               2  0074  N 0
     C16        R    DSTART                                         4  0076  1 012
     C17        DCW  @N@                                            1  0080

,008012,016,023,030034,041048,049,056063,022072,,074076,080067)023,02922)N01012N
1      1   1   1      1      1   1      1      11      1      1   1    11 1 1   1

     * Clear 300-332 to make sure 330 isn't a zero.  Fill
     * in the dots and numbers 210-330, print them.
                ORG  1                                                          0001
                DCW  @.......@                                      7  0001
     DNUM       DCW  @210@                                          3  0010
                DC   #1                                             1  0011
     DSTART     CS   332                ENSURE 330 IS NOT @0@  4  0012  / 332
                   N00                                              5  0016  N 000 0
                NOP                                                 1  0021  N
     DLOAD      LCA  DNUM,210           LOAD NUM TO PRINT           7  0022  L 010 210
     DLOAD2     LCA                     LOAD DOTS                   1  0029  L
                CW   C8                                             4  0030  ) 048
                A    DREAD+1,DNUM       ADD 10 T0 NUM               7  0034  A 077 010
                BCE  DDONE,330,0        DONE?                       8  0041  B 067 330 0
                A    DREAD+1,DLOAD+6    ADD 10 TO LOAD PLACE        7  0049  A 077 028
                LCA  2,332              LAST TWO DOTS TO PRINT 7  0056  L 002 332
                B    DLOAD              AROUND AGAIN                4  0063  B 022
     DDONE      CW   DLOAD2                                         4  0067  ) 029
                W                                                   1  0071  2
                   N0                                               2  0072  N 0
                CC   J                                              2  0074  F J
     DREAD      R    ESTART             READ THE NEXT CARD          4  0076  1 012
                DCW  #1                                             1  0080

.......210 /332N0000NL010210L)048A077010B0673300A077028L002332B022)0292N0FJ1012
1      1   1   1    11      11   1      1       1      1      1   1    11 1 1   1

     * Clear 300-332. Remember whether 101 had a word mark.
```

```
     * Set one so we can load from 101 upward.  Load 101-200
     * and its word marks to 201-300.  Clear (or don't
     * clear) the word mark in 201. Print.  Print word marks.
                ORG  1                                                    0001
     EHAVWM     MCW  ENOP,ECW         CHANGE CW TO NOP       7  0001  M 080 067
                B    ELOOP                                   4  0008  B 034
     ESTART     SW   E1                                      4  0012  , 017
                NOP                                          1  0016  N
     E1         CS   332                                     4  0017  / 332
                NOP                                          1  0021  N
                BW   EHAVWM,101       WM IN 101?             8  0022  V 001 101 1
                SW   101              NO, SET ONE            4  0030  , 101
     ELOOP      LCA  101,201          LOAD TO PRINT AREA     7  0034  L 101 201
                BCE  ECW,ELOOP+4,3    STORING AT 300 YET?    8  0041  B 067 038 3
                A    EREAD,ELOOP+3    UPDATE FROM ADDRESS    7  0049  A 076 037
                A    EREAD,ELOOP+6    UPDATE TO ADDRESS      7  0056  A 076 040
                B    ELOOP            NO                     4  0063  B 034
     ECW        CW   201              OR MAYBE NOT           4  0067  ) 201
                W                                            1  0071  2
                   2)                 PRINT THE WORD MARKS   2  0072  2 )
                   N0                                        2  0074  N 0
     EREAD      R    FSTART           READ THE NEXT CARD     4  0076  1 012
     ENOP       DCW  @N@                                     1  0080

M080067B034,017N/332NV0011011,101L101201B0670383A076037A076040B034)20122)N01012N
1      1   1   11   11       1   1      1       1      1      1   1   11 1 1   1

     * Clear 300 to make sure it isn't zero.  Fill in the
     * dots and numbers 110-230.  Print them.
                ORG  1                                                    0001
                DCW  @.......@                               7  0007
     FNUM       DCW  @110@                                   3  0010
                DC   @ @                                     1  0011
     FSTART     CS   300              ENSURE 300 ISN'T 0     4  0012  / 300
                NOP                                          1  0016  N
                SW   FLOAD2                                  4  0017  , 029
                NOP                                          1  0021  N
     FLOAD      LCA  FNUM,210         LOAD NUM TO PRINT      7  0022  L 010 210
     FLOAD2     LCA                   LOAD THE DOTS          1  0029  L
                NOP  0                                       4  0030  N 000
                A    FREAD+1,FNUM     ADD 10 TO NUM          7  0034  A 077 010
                BCE  FDONE,300,0      DONE?                  8  0041  B 067 300 0
                A    FREAD+1,FLOAD+6  ADD 10 TO LOAD PLACE   7  0049  A 077 028
                NOP  0,0                                     7  0056  N 000 000
                B    FLOAD            AROUND AGAIN           4  0063  B 022
     FDONE      CW   FLOAD2                                  4  0067  ) 029
                W                                            1  0071  2
```

```
               N0                                          2  0072  N 0
            CC   J                                         2  0074  F J
     FREAD  R    GSTART           READ THE NEXT CARD       4  0076  1 017
            DCW  @N@                                       1  0080

.......110 /300N,029NL010210LN000A077010B0673000A077028N000000B022)0292N0FJ1017N
1      1   1   11   11      11   1      1       1      1      1   1    11 1 1   1

     * Clear 300.  Remember whether 81 had a word mark.  Set
     * one.  Load 81-99 and its word marks to 281-299.
     * Clear (or don't clear) the word mark in 281.  Print.
     * Print word marks.
            ORG  1                                                 0001
     GHAVWM MCW  GNOP,GCW         CHANGE CW TO NOP         7  0001  M 080 067
            B    GLOOP                                     4  0008  B 034
            DCW  #4                                        4  0015
            DCW  #1                                        1  0016
     GSTART CS   300                                       4  0017  / 300
            CS                                             1  0021  /
            BW   GHAVWM,81        WM IN 81?                8  0022  V 001 081 1
            SW   81               NO, SET ONE              4  0030  , 081
     GLOOP  LCA  81,201           LOAD TO PRINT AREA       7  0034  L 081 201
            BCE  GCW,GLOOP+4,3    STORING AT 300 YET?      8  0041  B 067 038 3
            A    GREAD,GLOOP+3    UPDATE FROM ADDRESS      7  0049  A 076 037
            A    GREAD,GLOOP+6    UPDATE TO ADDRESS        7  0056  A 076 040
            B    GLOOP            NO                       4  0063  B 034
     GCW    CW   281              OR MAYBE NOT             4  0067  ) 281
            W                                              1  0071  2
               2)                 PRINT THE WORD MARKS     2  0072  2 )
               N0                                          2  0074  N 0
     GREAD  R    HSTART           READ THE NEXT CARD       4  0076  1 030
     GNOP   DCW  @N@                                       1  0080

M080067B034     /300/V0010811,081L081281B0670383A076037A076040B034)28122)N01030N
1      1   1   11   11       1   1      1       1      1      1   1    11 1 1   1

     * Load index register identification to 281-300.
            ORG  1                                                 0001
     HDOTS  DCW  @......*@                                 7  0007
     HINDX1 DCW  @1*..@                                    4  0011
            DCW  @*2*.@                                    4  0015
     H1     DCW  @.@                                       1  0016
     HINDX  DCW  @*3*.@                                    4  0020
            DC   #1                                        1  0021
     H2     DCW  #1                                        1  0022
     H3     DC   #7                                        7  0029
     HSTART SW   H4                                        4  0030  , 048
```

```
              CW   HDOTS+1,HINDX+1                         7  0034  ) 008 012
              CW   H2,H1+1                                 7  0041  ) 022 017
       H4     CW                                           1  0048  )
              LCA  HINDX,300        MOVE XR ID TO 300      7  0049  L 020 300
              SW   H1,H2+1                                 7  0056  , 023 016
              R    ISTART           READ THE NEXT CARD     4  0063  1 049
              DCW  #4                                      4  0070
              DCW  #1                                      1  0071
              DCW  #2                                      2  0073
              DCW  #2                                      2  0075
              DCW  #4                                      2  0079
              DCW  #1                                      1  0080

......*1*..*2*..*3*.        ,048)008012)022017)L020300,0230161049
1                           1   1      1      11      1      1   1   11 1 1   1


     * Load sense switch identifiers to 201-234.
              ORG  1                                                0001
     ISSTXT   DCW  @SENSE SWS   ON@                       14  0014
              DC   #1                                      1  0015
              DCW  #7                                      7  0022
              DCW  #7                                      7  0029
     IOFF     DCW  @OFF@                                   3  0032
              DC   #1                                      1  0033
              DCW  #7                                      7  0040
              DCW  #7                                      7  0047
              DCW  #1                                      1  0048
     ISTART   LCA  ISSTXT,214       LOAD SS ON TEXT TO 214 7  0049  L 014 214
              LCA  IOFF,234         LOAD SS OFF            7  0056  L 032 234
              CW   C15                                     4  0063  ) 074
              CW   C12                                     4  0067  ) 067
              NOP                                          1  0071  N
              SW   JSTART                                  4  0072  , 011
              R    JSTART           READ THE NEXT CARD     4  0076  1 011
              DCW  #1                                      1  0080

SENSE SWS   ON             OFF                L014214L032234)074)067N,0111011
1              1      1      1   1      1      11      1      1   1   11   1   1

     * Put list of on and off sense switches in 236... (on)
     * or 216... (off).
              ORG  1                                                0001
     JTWO     DCW  2                                       1  0001
              DC   #9                                      9  0010
     JSTART   BSS  JON,B            SWITCH ON?             5  0011  B 034 B
     JOFF     M    JB,236           NO, MOVE SS ID TO OFF  7  0016  M 080 236
```

```
            A    JTWO,JOFF+6      INCR OFF ID SPOT       7  0023  A 001 022
            B    JBOTH                                   4  0030  B 049
     JON    M    JB,216           YES, MOVE SS ID TO ON  7  0034  M 080 216
            A    JTWO,JON+6                              7  0041  A 001 040
            NOP                                          1  0048  N
     JBOTH  A    JREAD,JSTART+4   INCR SWITCH TEST       7  0049  A 076 015
            A    JREAD,JB         INCR SS ID             7  0056  A 076 080
            BCE  JREAD,JB,H       DONE?                  8  0063  B 076 080 H
            NOP                                          1  0071  N
            B    JSTART           AROUND AGAIN           4  0072  B 011
     JREAD  R    KSTART           READ THE NEXT CARD     4  0076  1 034
     JB     DCW  @B@              SS ID TO PRINT         1  0080

2         B034BM080236A001022B049M080216A001040NA076015A076080B076080HNB0111034B
1         1    1      1      1   1      1      11      1      1       11   1   1

     * Save comparison indicators in 100..125.
            ORG  1                                                 0001
     KUNEQ  DCW  @   UNEQUAL@                            7  0010
     KEQUAL DCW  @EQUAL@                                 5  0015
     KHIGH  DCW  @ HIGH@                                 5  0020
            DC   #2                                      2  0022
     KLOW   DCW  @LOW@                                   3  0025
            DC   #4                                      4  0029
            DCW  #4                                      4  0033
     KSTART LCA  KUNEQ,110        SAVE  UNEQUAL          7  0034  L 010 110
            LCA  KEQUAL,115       SAVE  EQUAL            7  0041  L 015 115
            NOP                                          1  0048  N
            LCA  KHIGH,120        SAVE  HIGH             7  0049  L 020 120
            LCA  KLOW,125         SAVE  LOW              7  0056  L 025 125
            NOP  0,0,0                                   8  0063  N 000 000 0
            NOP                                          1  0071  N
            NOP  0                                       4  0072  N 000
            R    LSTART                                  4  0076  R 011
            DCW  #1                                      1  0080

   UNEQUALEQUAL HIGH  LOW        L010110L015115NL020120L025125N0000000NN0001011
1         1    1      1      1   1      1      11      1      1       11   1   1

     * Move appropriate comparison indicators to 247..265.
            ORG  1                                                 0001
     LINC   DCW  5003             INC FOR TWO ADDRS      4  0004
            DC   #6                                      6  0010
     LSTART BU   LINDON           INDICATOR ON?          5  0011  B 041 /
            NOP  0,0                                     7  0016  N 000 000
            NOP  0,0                                     7  0023  N 000 000
            B    LINDOF           NO                     4  0030  B 049
```

```
            DCW  #7                                       7  0040
     LINDON  MCW  110,256          MOVE INDICATOR TO PR   7  0041  M 110 256
            NOP                                           1  0048  N
     LINDOF  A    LREAD,LSTART+4   INCR INDICATOR TEST    7  0049  A 076 015
            A    LINC,LINDON+6    INCR BOTH ADDRS        7  0056  A 004 047
            B    LREAD,LSTART+4,V  DONE?                 8  0063  B 076 015 V
            NOP                                           1  0071  N
            B    LSTART           AROUND AGAIN           4  0072  B 011
     LREAD   R    MSTART           READ THE NEXT CARD     4  0075  1 011
            DCW  #1                                       1  0080

5003      B041/N000000N000000B049       M110256NA076015A004047B076015VNB0111011
1         1    1      1      1   1      1      11      1      1       11   1   1

     * Construct overflow off (or on) indicator.
     * Move it to 268..277.
            ORG  1                                                 0001
     MOVFF   DCW  @OVFLO OFF@                              9  0009
            DC   #1                                       1  0010
     MSTART  BAV  MOVFL            OVERFLOW?              5  0011  B 041 Z
     MOVON   DCW  @N @             NOP, AND  N  FOR MSG   2  0017
            DC   @00000@          REST OF THE NOP INSTR  5  0022
            NOP  0,0                                      7  0023  N 000 000
            B    MOVFON                                   4  0030  B 049
            DCW  #7                                       7  0040
     MOVFL   MCW  MOVON,MOVFF      CHANGE  OFF  TO  ON    7  0041  M 017 009
            NOP                                           1  0048  N
     MOVFON  MCW  MOVFF,277        MOVE MSG TO PRINT AREA 7  0049  M 009 277
            NOP  0,0                                      7  0056  N 000 000
            NOP  0,0,0                                    8  0063  N 000 000 0
            NOP                                           1  0071  N
            NOP  0                                        4  0072  N 000
            R    NSTART                                   4  0076  1 034
            DCW  #1                                       1  0080

OVFLO OFF B041ZN 00000N000000B049       M017009NM009277N000000N0000000NN0001034
1         1    1      1      1   1      1      11      1      1       11   1   1

     * Move clear routines for 200-299 and 0-80 to
     * 101-116.  Print indicators. Clear 200-299 and 0-80.
     * Set word mark in 1, read a card and branch to 1.
            ORG  1                                                 0001
            DCW  @/299080,0@      CLEAR STORAGE ROUTINE 10  0010
            DCW  @01100@          SEE SOURCE CODE BELOW  5  0015
     NCLEAR  DCW  @1@                                      1  0016
            DC   #6                                       6  0022
            DCW  #7                                       7  0029
```

```
           DCW  #4                                      7  0033
NSTART     SW   N1,N2                                   7  0034  , 067 074
           CW   JSTART,NCLEAR                           7  0041  ) 011 016
           CW                                           1  0048  )
           LCA  NCLEAR,NCLEND-1                         7  0049  L 016 116
           SW   NCLEND,NCL3                             7  0056  , 117 113
           SW   NCL2                                    4  0063  , 109
N1         SW   NCL1                                    4  0067  , 105
           W                                            1  0071  2
           CC   L                                       2  0072  F L
N2         CC   K                                       2  0074  F K
           B    NCLBEG                                  4  0076  B 101
           DCW  #1                                      1  0080
* Routine to clear 200-299 and 0-80, then set a word
* mark at 1, read a card and branch to 1.  The text of
* this routine is punched in cc 1-16 of card N.
           ORG  101                                           0101
NCLBEG     CS   299                                     4  0101  / 299
NCL1       CS   80                                      4  0105  / 080
NCL2       SW   1                                       4  0109  , 001
NCL3       R    OSTART                                  4  0113  1 001
NCLEND     DCW  #1                                      1  0117

/299/080,0011001                 ,067074)011016)L016116,117113,109,1052FLFKB101
1                      1      1   1      1      11      1      1   1   11 1 1   1
1         1    1       1      1   1      1      11      1      1       11   1   1

* Routine to move data and word marks to print area.
* Convert group marks to ).
* Read a card when done.
           ORG  78
DWSTRT     BU   WSTART                                  5  0078  B 001 /
DW1        B    SWITCH                                  4  0083  B 168
X1         DCW  @X00@                                   3  0089
DFF        DCW  @FF@                                    2  0091
X2         DCW  333                                     3  0094
DW3        DCW  01                                      2  0096
X3         DC   033                                     3  0099
DWPRNT     W                                            1  0100  2
DW5        CS   332                                     4  0101  / 332
           CS                                           1  0105  /
DWLOOP     SW   212+X3          ASSUME DATA HAS WM      4  0106  , 2A2
DW7        MCW  0+X2,212+X3     MOVE THE DATA           7  0110  M 0-0 2A2
DW8        BW   GOTWM,0+X2      DID IT HAVE WM?         8  0117  V 129 0-0 1
LOZ        CW   212+X3          NO, CLEAR ASSUMED WM    4  0125  ) 2A2
GOTWM      BCE  GOTGM,0+X3,}    GROUP MARK?             8  0129  B 141 0-0 }
DW9        B    NOGM            NO                      4  0137  B 148
```

```
     GMTGM      MCW  LOZ,212+X3        REPL GROUP MARK WITH ) 7  0141  M 125 2A2
     NOGM       A    DWREAD,X3         BUMP X3                7  0148  A 176 099
                A                      BUMP X2                1  0155  A
     DW12       BCE  DWLOOP,X3-2,0     AROUND AGAIN           8  0156  B 106 097 0
                CW   DWSTRT            CHANGED LATER TO W 060 4  0164  ) 078
     SWITCH     NOP  080               CHANGED TO N OR /      4  0168  N 080
     DW14       SW   PSTART                                   4  0172  , 001
     DWREAD     R    PSTART            READ THE NEXT CARD     4  0176  1 001
     DWDOTS     DCW  @........@                               8  0187
     DWLOW      DCW  49                LOW ORDER TWO DIGITS   2  0189
     DWBEGN     DCW  00333             BEGIN OF LINE          5  0194
     DWAREA     DC   @-AREA @                                 6  0200

     * Set word marks, move some code to 164-200.
                ORG  1                                              0001
     OSTART     SW   O1,O2                                    7  0001  , 008 015
     O1         SW   O3,O4                                    7  0008  , 022 023
     O2         SW   O5,O6                                    7  0015  , 027 031
     O3         NOP                                           1  0022  N
     O4         SW   O7                                       4  0023  , 038
     O5         SW   O8                                       4  0027  , 042
     O6         LCA  O9,DWAREA                                7  0031  L 078 200
     O7         R    PSTART                                   4  0038  1 001
     O8         DCW  @)@               CW JUST BEFORE SWITCH  1  0042
     O9         DC   @078N080,0011001........4900333-AREA @ 36  0078

                                              ....170.......180.......190.......200
,008015,022023,027031N,038,042L0782001001)078N080,0011001........4900333-AREA
1      1      1      11   1   1      1   1

     * Move some code to 125-163, set some word marks.
                ORG  1                                              0001
     PSTART     LCA  P1,DW12+7                                7  0001  L 080 163
                SW   DWBEGN-4,DWLOW-1                         7  0008  , 190 188
                SW   DW12,DW12                                7  0015  , 156 156
                SW                                            1  0022  ,
                SW   DWDOTS-7                                 4  0023  , 180
                SW   DWREAD                                   4  0027  , 176
                SW   DW14,SWITCH                              7  0031  , 172 168
                R    QSTART                                   4  0038  1 001
                DCW  @)2A2B1410-0}B148M1252A2A176099A@      31  0072
     P1         DC   @B1060970@                               8  0080

                                              ...130.......140.......150.......160...
L080163,190188,156156,,180,176,1721681001)2A2B1410-0}B148M1252A2A176099AB1060970
1      1      1      11   1   1      1   1
```

```
     * Move some code to 87-124, set some word marks.
               ORG  1                                                  0001
     QSTART    LCA  Q1,DW8+7                              7  0001  L 079 124
               SW   NOGM,GOTGM                            7  0008  , 148 141
               SW   DW5,DWLOOP                            7  0015  , 101 106
               SW                                         1  0022  ,
               SW   DW9                                   4  0023  , 137
               SW   GOTWM                                 4  0027  , 129
               SW   DW8,DW7                               7  0031  , 117 110
               R    SSTART                                4  0038  1 001
               DCW  @X00FF333010332/332/,2A2M0-02A2@     30  0071
     Q1        DC   @V1290-01@                            8  0079

                                            ..90.......100.......110.......120....
L079124,148141,101106,,137,129,1171101001X00FF333010332/332/,2A2M0-02A2V1290-01
1      1      1      11   1   1      1   1

     * Set some word marks, move some code to 78-86
     * (actually part of an instruction)
               ORG  1                                                  0001
     RSTART    SW   R1,SDONE                              7  0001  , 045 049
               SW   S1,SLOW-6                             7  0008  , 056 060
               LCA  R5,DW1+3                              7  0015  L 068 086
               NOP                                        1  0022  N
               CW   O8                                    4  0023  ) 042
               CW   O5                                    4  0027  ) 027
               SW   X2+1,X2-2                             7  0031  , 095 092
               SW   X1+1,DW1                              7  0038  , 090 083
     R1        R    SSTART                                4  0045  1 001
               DCW  #11                                  11  0059
     R5        DCW  @   1/B168@                           9  0068

                                                               .80...85.
,045049,056060L068086N)042)027,095092,0900831001                  1/B168
1      1      1      11   1   1      1      1   1      1   1                1

     * Move "00333-AREA " with zero suppression to
     * 201-211.  Update "xxxxx-AREA " to 00400.  Put
     * .....39 - ........99 in print area.  Go to print it
     * and to set up to print 333-399 area.
               ORG  1                                                  0001
     SSTART    MCS  DWAREA,211                            7  0001  Z 200 211
               MCW  SADDR,DWBEGN     REPLACE 333 WITH 400   7  0008  M 071 194
     SLOOP     LCA  DWLOW,261        FIRST DOTS OFFSET 49   7  0015  L 189 261
               LCA                   MOVE THE DOTS          1  0022  L
               BCE  SDONE,DWLOW-1,9  DONE FILLING DOTS?     8  0023  B 049 188 9
               A    DWREAD,DWLOW-1   BUMP DOTS ADDR BY 10   7  0031  A 176 188
```

```
            A    DWREAD,SLOOP+5   BUMP DOTS POINT BY 10  7  0038  A 176 020
            B    SLOOP            AROUND AGAIN           4  0045  B 015
    SDONE   LCA  SLOW,251         PUT ......39 IN PRINT  7  0049  L 066 251
    S1      B    DWPRNT           GO PRINT IT            4  0056  B 100
    SLOW    DCW  @.....39@                               7  0066
    SADDR   DC   00400                                   5  0071

                                                      .....190....
Z200211M071194L189261LB0491889A176188A176020B015L066251B100.....3900400
1      1      1      11       1      1      1   1      1   1                 1

    * Reset ........xx to ........09.  Set starting
    * position for dots to 221.  Check for a blank line
    * without word marks.
            ORG  333                                          0333
    TBSTRT  MN   173,DWLOW-1                             7  0333  D 173 188
    TB1     MN   WLOOP-1,WLOOP+4  BACK TO 222            7  0340  D 014 019
    TB2     MCW  X2,X1                                   7  0347  M 094 089
    TB3     SW   323                                     4  0354  , 323
    TBLOOP  C    9+X1,332         BLANK AREA?            7  0358  C 0^9 332
            BU   DWPRNT           NO, PRINT              5  0365  B 100 /
    TB4     BW   DWPRNT,0+X1      WORDMARK? NO, PRINT    8  0370  V 100 0^0 1
    TB5     BCE  WRET,X1-1,9      DONE?                  8  0378  B 049 088 9
    TB6     A    X3-2,X1          BUMP X1 BY 10          7  0386  A 097 089
    TB7     B    TBLOOP           AROUND AGAIN           4  0393  B 358
    MSIZ    DCW  @014@            MEMORY SIZE / 100      3  0399

    * Move some code to 333-364.  Set some word marks.
            ORG  1                                            0001
    TSTART  CW   S1,SLOW-6                               7  0001  ) 056 060
            LCA  T2,TBLOOP+6                             7  0008  L 080 364
            SW   TB1,TB2                                 7  0015  , 340 347
            NOP                                          1  0022  N
            NOP  0,0,0                                   8  0023  N 000 000 0
    T1      SW   TB3,TBLOOP                              7  0031  , 354 358
            CW   T1,T1                                   7  0038  ) 031 031
            R    USTART                                  4  0045  1 001
    T2      DCW  @D173188D014019M094089,323C0^9332@     32  0080

                                            .....340.......350.......360....
)056060L080364,340347NN0000000,354358)0310311001D173188D014019M094089,323C0^9332
1      1      1      11       1      1      1   1

    * Move some code to 365-396.  Set some word marks.
            ORG  1                                            0001
    USTART  LCA  U2,TB7+3                                7  0001  L 080 396
            SW   U1,V1                                   7  0008  , 030 056
```

```
             SW   TB4,TB5                                 7  0015  , 370 378
             NOP                                          1  0022  N
             SW   TB6,TB7                                 7  0023  , 386 393
     U1      NOP  0,0,0                                   8  0030  N 000 000 0
             SW   DWSTRT,DWSTRT                           7  0038  , 078 078
             R    VSTART                                  4  0045  1 001
             DCW  @B@            B OF  BU DWPRNT          1  0049
     U2      DC   @100/V1000^01B0490889A097089B358@      31  0080

                                                    ...370.......380.......390......
L080396,030056,370378N,386393N0000000,0780781001B100/V1000^01B0490889A097089B358
1      1      1      11      1       1      1   1

     * Set some word marks.  Change SWITCH to 2060N
     * Change first ........x9 to ........09.
     * Move the core size to 396-399.
             ORG  1                                                0001
     VSTART  SW   XRET,W4                                 7  0001  , 060 062
             SW   W5,WTEST                                7  0008  , 064 071
             M    VSWICH,SWITCH+3  CHANGE SWITCH TO 2060  7  0015  M 053 168
             M                                            1  0022  M
     V1      MN   DWREAD+1,DWLOW-1  X9 TO ........09      7  0023  D 173 188
             NOP  0,0,0                                   8  0030  N 000 000 0
             LCA  VCORE,MSIZ       SAVE CORE SIZE         7  0038  L 058 399
             R    WSTART           READ THE NEXT CARD     4  0045  1 164
             W    XRET             NEW FOR SWITCH         4  0049  2 060
     VSWICH  NOP                                          1  0053  N
             DC   @  @                                    2  0055
     VCORE   DCW  014              CORE SIZE / 100        4  0058
             DC   00               TENS DIGIT OF CORE     2  0060
             DCW  @  CORE SIZE@    JUST A COMMENT        11  0071
                                                    .....  ...
,060062,064071M053168MD173188N0000000L05839911642060N  01400  CORE SIZE
1      1      1      11      1       1      1   1      1   1 1 1      1      1

     * Move "xxxxx-AREA " with zero supression to 201-211.
     * Update xxxxx by 100.
     * Put ........09 - ........99 to 212-311.
     * Go put data and word marks in the print area and
     * print the data.  Print the word marks on return.
             ORG  1                                                0001
     WSTART  MCS  DWAREA,211                              7  0001  Z 200 211
             A    DWREAD,DWBEGN-2  BUMP ADDR BY 100       7  0008  A 176 192
     WLOOP   LCA  DWLOW,221        ........X9 TO PRINT    7  0015  L 189 222
             LCA                                          1  0022  L
             A    DWREAD,WLOOP+5   BUMP ........X9 POSN   7  0023  A 176 020
             BCE  TBSTRT,DWLOW-1,9  DONE WITH ........X9? 8  0030  B 333 188 9
```

```
             A    DWREAD,DWLOW-1   BUMP X IN ........X9   7  0038  A 176 188
             B    WLOOP            AROUND AGAIN           4  0045  B 015
     WRET    A    DWREAD+2,X2      BUMP CORE START BY 100 7  0049  A 178 094
             B    WTEST                                   4  0056  B 071
     XRET       2)                 PRINT THE WORD MARKS   2  0060  2 )
     W4      CC   J                                       2  0062  F J
     W5      MN   DW14+1,X3-2      ZERO TO HIGH DIGIT     7  0064  D 173 097
     WTEST   C    MSIZ,DWBEGN-2    DONE?                  7  0071  C 399 192
             BU   WSTART           DOESN'T FIT, BUT OK    3  0078  B 001 /
     *                             (rest is on card R)

Z200211A176192L189221LA176020B3331889A176188B015A178094B0712)FJD173097C399192B00
1      1      1      11      1       1      1   1      1   1 1 1      1      1

     * Print whether Sense switch A is on.
             ORG  1                                                0001
     YSTART  SW   Y1,Y3                                   7  0001  , 031 054
             CW   XRET,WTEST                              7  0008  ) 060 071
             SW   Y2,YHALT                                7  0015  , 036 064
             SW                                           1  0022  ,
             CW   W4,DWSTRT                               7  0023  ) 062 078
             NOP                                          1  0030
     Y1      CS   332                                     4  0031  / 332
             CS                                           1  0035  /
     Y2         N0                                        2  0036  N 0
             LCA  YSWA,213                                7  0038  L 080 213
             SW   YHALT+4                                 4  0045  , 068
             BSS  YPRINT,A         SS A ON?               5  0049  B 063 A
     Y3         N0                                        2  0054  N 0
             MCW  DFF,214          CHANGE MSG TO  OFF     7  0056  M 091 214
     YPRINT  W                                            1  0063  2
     YHALT   H    YHALT            ALL DONE               4  0064  . 064
     YSWA    DCW  @SENSE SW A ON@                        13  0080

,031054)060071,036064,)062078N/332/N0L080213,068B063AN0M0912142.064SENSE SW A ON
1      1      1      11      11   11 1      1   1    1 1      11   1
```