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# IBM 1800 UTILITY PROGRAMS FOR MAGNETIC TAPES AND TELE-PROCESSING INPUT/OUTPUT

by

H. SCHMID (Euratom)
and
H. CLAESSENS (IBM Belgium)

1969

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European Atomic Energy Community - EURATOM
Joint Nuclear Research Center - Geel Establishment (Belgium)
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This report describes the following utility programs for the IBM 1800 computer :
1. Magnetic tape utility programs to execute a tape dump, tape map and tape duplication for 7 and 9-track tapes.
2. Programs for a tele-processing system with magnetic tape terminals (IBM 7702) connecting the IBM 1800 system with the computers IBM 7090 and 360 (card input and output, list output and Calcomp plotter output).
   All programs are written in IBM 1800 ASSEMBLER language for the Time Sharing Executive System (TSX).

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## ABSTRACT

This report describes the following utility programs for the IBM 1800 computer :

1. Magnetic tape utility programs to execute a tape dump, tape map and tape duplication for 7 and 9-track tapes.

2. Programs for a tele-processing system with magnetic tape terminals (IBM 7702) connecting the IBM 1800 system with the computers IBM 7090 and 360 (card input and output, list output and Calcomp plotter output).

   All programs are written in IBM 1800 ASSEMBLER language for the Time Sharing Executive System (TSX).

## KEYWORDS

COMPUTERS

PROGRAMMING

MAGNETIC TAPES

# CONTENTS

## 1. Introduction (*)

This report describes some IBM 1800 utility programs for magnetic tapes and tele-processing input/output to be used with the IBM 1800 system at the Central Bureau for Nuclear Measurements (CBNM) at Geel in Belgium. The CBNM is linked via a tele-processing system to CETIS ("Centre de Traitement des Informations Scientifiques"), the computer centre of Euratom in Italy. This system is based on two magnetic tape terminals (IBM 7702 with 7-track tapes) and a leased telephone line.

The first part of this report contains the description of subroutines used in the programs to be described. Some of these subroutines may be of general interest for other users, for instance several conversion routines and subroutines facilitating the use of magnetic tapes.

The second part gives the description of tape dump, tape map and tape duplication programs for 7 and 9-track tapes. Because the IBM 1800 is a disk oriented computer IBM does not supply magnetic tape utility programs.

The last section of this report describes the necessary programs to handle the input and output tapes for the IBM 7702 tele-processing system. At the side of CETIS several tape translation programs are used to operate the tele-processing input/output. These programs are not described here.

The following programs have been written:
1. Programs performing the monitor input for the IBM 7090 under IBSYS and for the IBM 360. For 7090 input the following options may be chosen by the user: Either the tape is unblocked and the parity depends on the type of card (BCD or binary) or the tapes are blocked and the parity is odd. The program includes the so-called look-ahead-bits (program PEP8).

   Cards for the IBM 360 are loaded on tape with program PEP7 in which each card is regarded as a binary card and no look-ahead-bits are necessary.
2. Binary or BCD cards loaded on tape and transmitted by the tele-processing system can be punched by program PEP9 or PEP10, depending on whether the cards have been loaded by PEP8 or PEP7. These programs are used to transmit object decks or punched card output from CETIS to the CBNM.
3. Program PEP2 performs the list output of the CETIS computers. The transmitted tape is written in BCD code (even parity) and may be blocked or not. The first character of each line may be used optionally as carriage control.
4. If BCD cards have been loaded on tape so that each card corresponds to 80 BCD characters on tape (the records may be blocked or not) program PEP11 performs the following functions: it reads the tape and punches cards and/or prints a

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list and/or transforms the contents of the input tape to EBCDIC format and writes it on magnetic tape which is compatible with IBM 1800 FORTRAN. This program serves mainly to process tapes from other computer centers.

5. Some of the CBNM programs sent to CETIS utilize the Calcomp subroutines of CETIS (1). These subroutines produce an output tape, the format of which is described in (2). In order to plot these tapes with the IBM 1800 computer three different programs can be used depending on the plotter operation mode:

   a) Off-line use of the Calcomp digital incremental plotter with a Calcomp magnetic tape unit 570. Program TRAN translates the plotter tapes of CETIS into original Calcomp code.

   b) On-line operation of the Calcomp plotter as a slow input/output device. Program P7090 reads the magnetic tape and operates the plotter on-line.

   c) On-line operation of the Calcomp plotter in time-sharing mode. Program T7090 translates the plotter tapes of CETIS to a magnetic tape format, which is compatible with the on-line plotting system of the CBNM Geel (3).

All programs are written in ASSEMBLER language and require the following machine configuration:
- IBM 1800, 16 K with TSX system
- 1443 printer
- 1816 or 1053 typewriter
- 1442 card read/punch
- 2402 magnetic tape units with 7 or 9 tracks (up to 4 units can be handled)
Calcomp plotter

Block diagrams and printout examples of the tape utility programs and the listing of all programs are given as appendix.

## 2. Utility Subroutines

All subroutines save the three index registers, but do not save accumulator, Q-register and status indicators. In all cases the calling sequences differ from the standard method of IBM 1800 FORTRAN. Therefore the subroutines are only to be used by ASSEMBLER written main programs.

## 2.01 MOVE

Entry points with calling sequences:

| | | | | | |
|------|------|-----------|------|-------|-----------|
| CALL | MOVE | | CALL | MOVE1 | |
| DC | ORG | | DC | ORG1 | |
| DC | DEST | | DC | DEST | |
| DC | n | (word count) | DC | n | (word count) |

Subroutines called by MOVE:        none

Core locations used:        46 (2E hexadec.)

Description:

MOVE     A number of n words, starting at location ORG are moved to an area starting at location DEST. DEST must be greater than or equal to ORG.

MOVE1     The contents of ORG1 is moved n times into the area DEST through DEST+n-1.

2. 02 CHIF

Entry points with calling sequences:

| LD | A | | LD | A |
|------|------|------|------|------|
| CALL | CHIF | | CALL | CHIF 1 |
| DC | DEST | | DC | DEST |

Subroutines called by CHIF:      HOLPR ) IBM 1800 library
                                      BINDC

                                        MOVE

Core locations used:                               80 (50 hexadec. )

Description:

CHIF      The positive number in the accumulator is converted to printer code and moved to DEST and DEST+1 with three digits right-hand side adjusted. Leading zeroes and the sign are suppressed.

CHIF 1      The positive number in the accumulator is converted to printer code and moved to DEST through DEST+2 with five digits right-hand side adjusted. Leading zeroes and the sign are suppressed.

## 2. 03 PAGE

Entry points with calling sequences:

| | | | | | |
|---|---|---|---|---|---|
| LIBF | PAGE | | LIBF | BLANK | |
| DC | AREA | | DC | AREA | |
| DC | n | (word count) | DC | n | (word count) |

Subroutines called by PAGE:     PRNTN     IBM 1800 library

CHIF

Core locations used:     76 (4C hexadec. )

Description:

PAGE     The n words from AREA to AREA+n-1 are set to zero.
AREA-1 must contain the word count of the printer out-
put area. Subroutine PAGE prints on the 1443 printer
"PAGE N", where N starts with 1 and is incremented
by 1 each time it is called. "PAGE N" is set starting
with position AREA+n-5.

BLANK     The n words from AREA to AREA+n-1 are set to zero.

## 2.04 SCAL

Entry points with calling sequence:

```
LIBF  SCAL
DC    AREA+n₁
DC    AREA
DC    n           (word count)
```

Subroutines called by SCAL:          PRNTN        IBM 1800 library

MOVE

Core locations used:                  46 (2E  hexadec.)

Description:

SCAL    Subroutine SCAL moves a scale 123456789012... to the area starting at $AREA+n_1$. The length of the scale is n words, i.e. 2n characters. The word count n should be a multiple of 5, otherwise n is rounded to a multiple of 5. Location AREA-1 is supposed to contain a word count for the output area AREA through $AREA+n_1+n-1$. Using this word count the subroutine prints the scale in the 1443 printer. The area is not cleared after execution of SCAL.

## 2. 05 BCD

Entry point with calling sequence:

        CALL    BCD

Subroutine called by BCD:              none

Core locations used:              64 (40 hexadec. )

Description:

BCD     Subroutine BCD contains the table for the conversion
        from BCD to card code. Subroutine BCD is called by
        subroutine PRHOL.

## 2. 06 PRHOL

Entry point with calling sequence:

        LIBF    PRHOL
        DC      ORG
        DC      DEST
        DC      n  (char. count)

Subroutine called by PRHOL:         BCD

Core locations used:              44 (2C hexadec. )

Description:

PRHOL   Subroutine PRHOL converts the n BCD characters (packed
        format) in area  ORG through ORG+n/2-1 to card
        code and stores the result in the area DEST through
        DEST+n-1, where n must be an even number. The
        last  address of the input area must be greater than
        or equal to the last  address of the output area.

## 2.07 CDBCD

Entry point  with calling sequence:

```
CALL   CDBCD
DC     AREA
DC     DEST
DC     n      (char. count)
```

Subroutines called by CDBCD:          none

Core locations used:                  104 (68 hexadec. )

Description:

CD BCD  This subroutine converts IBM card code subset to
        BCD code.
        Input is IBM card code characters starting in location
        AREA. The characters are not packed.
        Output is the 6-bit BCD code starting at location DEST.
        BCD code is packed two characters per binary word in
        bit 2-7 and 10-15, bits 0, 1, 8 and 9 are zero.
        The third parameter gives the character count.

## 2. 08 COMPR

Entry point   with calling sequence:

```
LD    N
CALL  COMPR
DC    /....   )
  .           ) n
  .           )
DC    /....   )
DC    EQUBR
```

Subroutines called by COMPR:        none

Core locations used:                30 (1E hexadec.)

Description:

COMPR   An area starting at location XR2 (contents of index
        register 2) and with a length equal to the value of the
        accumulator, is compared with the words which fol-
        low the call. When matching occurs a branch to loca-
        tion EQUBR is taken, otherwise the following instruc-
        tion is executed.

## 2.09 USER

Entry point with calling sequence (only ASSEMBLER):

```
        CALL    USER
        DC      EOFSW
        .
        .
        .
EOFSW   DC      0
ERRSW   DC      0
TOLSW   DC      0
LNGTH   DC      0
```

Subroutines called by USER:          none

Core locations used:          38 (26 hexadec.)

Description:

USER     Subroutine USER is to be used as the special condition
         routine for the read operation in the MAGT routine.
         It tests the accumulator and sets the switches EOFSW,
         ERRSW, TOLSW and LNGTH in the following way:
         EOFSW  is set non zero if an end-of-file mark has been
                read.

         ERRSW  is set non zero if tape errors were detected

         TOLSW  is set non zero if the record on tape was longer
                than the I/O buffer.

         LNGTH  gives the channel word count at the end of the
                operation. This length must be added to the
                length in the I/O area to obtain the real length
                of the record.

         It is the responsibility of the calling program to reset
         all switches before a tape operation is executed.

## 2. 10 MAG

Entry point with calling sequence:

```
CALL   MAG
DC     ERRBR
DC     EOFBR
DC     EOFSW
```

Subroutines called by MAG:          MAGT        IBM 1800 library

                                     USER

Core locations used:                 116 (74 hexadec. )

Description:

MAG    Subroutine MAG tries to read a magnetic tape alternatively in even and odd parity. When after 100 retries (with three backspaces each tenth retry) the error still persists the routine branches to ERRBR. If an end-of-file has been detected the subroutine branches to EOFBR.
EOFSW is the start address of the four switches used by subroutine USER.
When entering the routine the accumulator must contain the 12 last bits of the I/O control parameter needed for the IBM library routine LIBF MAGT. After execution of subroutine MAG the accumulator contains the 12 last bits of the last utilized control parameter.

## 2. 11 CDTST

Entry point with calling sequence:

```
CALL    CDTST
DC      CARD
RETURN for CARD equal blank
RETURN for CARD not blank
```

Subroutines called by CDTST:        none

Core locations used:        30 (1E hexadec.)

Description:

CDTST: Subroutine CDTST tests if the area starting at CARD through CARD+79 is blank or not. If the area is blank the subroutine returns to the CALL instruction +3, otherwise to the CALL instruction +4.

### 3. Tape Utility Programs

Three different tape utility programs have been written:
a) Tape Dump Program (TPDMP)
   Program TPDMP dumps a tape on the 1443 printer. Input tape and
   output code specifications are given by a control card.
b) Tape Map Program (TPMAP)
   Program TPMAP analyses the tape and produces a map of it on the
   1443 printer with specifications of length, parity, density and number
   of records of the different types of records on tape.
c) Tape Duplication Program (TPDUP)
   Program TPDUP duplicates one tape on another. Input and output tape
   specifications are given by control cards.

### 3.01 General Control Card Format

Programs TPDMP, TPMAP and TPDUP utilize the following general
control card format:

| Col. | Meaning | Program | | |
|---|---|---|---|---|
| | | TPDMP | TPMAP | TPDUP |
| 1-2 | ** | x | x | x |
| 3 | unit number (0, 1, 2, 3) | x | x | x |
| 5 | track number (7, 9) | x | | x |
| 7 | parity (O ,E) | x | | x |
| 9 | bytes per word (2, 3) | x | | x |
| 11-13 | density (200, 556, 800) | x | | x |
| 15-17 | format specification for list printer BCD, EBC, HEX | x | | |

When 9 track tapes are specified columns 7 to 13 are not read. Format
specification is only used with the tape dump program. Data on tape
are supposed to be in EBCDIC or BCD code when EBC or BCD is spe-
cified. In that case the corresponding conversion to printer code is
used. When HEX is specified, the tape is dumped in hexadecimal
format.

### 3.02 Tape Dump Program TPDMP

The program (Fig. 1) reads the control card and checks it. If it is
correct, the control parameter for the MAG routine is prepared and
a branch is set up according to the format specification in the control
card. Then the MAG routine is used to read the record. This routine
tries to read with the parity given by the control parameter. If an
error occurs a retry is performed with the other parity. When the
record is longer than 3000 words, only the first 3000 words will be
printed.

When the list specifications BCD or EBCDIC are used 100 characters
are printed per line. In hexadecimal format only 16 words will be
printed per line. At the end of a record the remaining part of a line
is filled up with asterisks.

Printout examples can be found in figure 2 (hexadecimal) and 3 (BCD or EBCDIC).

When an end-of-file mark is detected the program prints a message and waits. Pressing consol start means continuation of program TPDMP, pressing consol interrupt aborts the job.

Halts and Output Messages
on 1816 (1053) typewriter

1) ** CARD MISSING. CORRECT AND CONTINUE.
2) WRONG TAPE UNIT. CORRECT AND CONTINUE.
3) PARITY WRONG. CORRECT AND CONTINUE.
4) WRONG TRACK NUMBER. CORRECT AND CONTINUE.
5) WRONG NUMBER OF BYTES/WORD. CORRECT AND CONTINUE.
6) WRONG DENSITY. CORRECT AND CONTINUE.
7) WRONG OUTPUT SPECIFICATION. CORRECT AND CONTINUE.
8) END OF FILE. TO CONTINUE PRESS START,
                 TO EXIT CONSOL INTERRUPT.

on 1443 printer

1) ***** END OF FILE *****
2) ***** THIS RECORD IS TOO LONG *****
3) ***** THIS RECORD CONTAINS ERRORS *****

3. 03 Tape Map Program TPMAP

Program TPMAP (Fig. 4) analyses a tape of unknown specifications and produces a map on the 1443 printer. Such problems arise when tapes written by other computer systems than the IBM 1800 have to be processed. Sometimes doubts exist about the parity, density, length of records or the number of files. This program produces a complete lay-out of such a tape.

Program TPMAP reads the control card specifying the unit number and the number of tracks. If 7 tracks were specified, the program tries to read successively in

1) 200 BPI, even parity
2) 200 BPI, odd parity
3) 556 BPI, even parity
4) 556 BPI, odd parity
5) 800 BPI, even parity
6) 800 BPI, odd parity

For 9-track tapes the last possibility will be tried 6 times. Each time when the magnetic tape routine detects an error, the next possibility is tried. If after the six retries the error still persists, a backspace is executed and the same procedure is applied again. If after 3 times the error still persists, 3 backspaces and two skips are executed.

The whole procedure is then restarted up to 6 times. In total
3*6*6=108 retries will be executed before the program concludes
a tape error. In that case an appropriate message will appear on
the listing.

Furthermore the different characteristics of a record is compared
with those of the preceding record and a line is printed in the follo-
wing cases:
1) 100 records with the same characteristics have been read.
2) An end-of-file mark was detected.
3) A change in record length was detected.
4) A change in record parity was detected.
5) A change in record density was detected.
6) A record with tape errors was encountered.

At each end of file the total number of records of that file and the
total number of records on that tape are printed. Figure 5 shows
a printout example. The length indication of records longer than
3000 words will not be correct.

## Halts and Output Messages (on 1816 or 1053 typewriter):

1) ** CARD MISSING. CORRECT AND CONTINUE.
2) WRONG TAPE UNIT. CORRECT AND CONTINUE.
3) WRONG TRACK NUMBER. CORRECT AND CONTINUE.
4) END OF FILE. TO CONTINUE PRESS START.
                 TO EXIT SET DATA SWITCH 0 ON AND PRESS START.


## 3.04 Tape Duplication Program TPDUP

The program (Fig. 6) starts with reading two control cards specifying
the characteristics of the input and output tape. When the input unit
is identical with the output unit, a third control card must be provided
specifying an intermediate tape as buffer unit. This case is usefull for
installations with only one 7 track tape unit when 7-track tape duplica-
tions are to be performed. In that case a 9 track tape copy is made on
the buffer unit, and then this tape is copied back on a new reel on the
7-track drive.

Tapes with records longer than 1500 words (3000 bytes) cannot be
duplicated. When the wrong parity is specified for the input tape,
the program will try the other parity.

After each end-of-file mark the operator has the possibility to con-
tinue or to exit by setting data switch 0 OFF or ON respectively.
In the case of duplication on the same unit, the program rewinds
both tape units and unloads the input tape. The operator must re-
place the original tape by a new reel and press consol start. Then
the reel on the buffer unit is duplicated on the new one, without
stopping at the different end of files.

The job ends with rewinding and unloading both tape units.

Note:
This program does not include 7-track tape to 7-track tape copies with mixed parity.

Halts and Output Messages
on 1816 or 1053

1) ** CARD MISSING. CORRECT CONTROL CARDS AND CONTINUE.
2) UNIT ERROR. CORRECT CONTROL CARDS AND CONTINUE.
3) WRONG TRACK NUMBER. CORRECT CONTROL CARDS AND CONTINUE.
4) WRONG PARITY. CORRECT CONTROL CARDS AND CONTINUE.
5) WRONG BYTES/WORD. CORRECT CONTROL CARDS AND CONTINUE.
6) WRONG DENSITY. CORRECT CONTROL CARDS AND CONTINUE.
7) INFORMATION MAY BE LOST.
8) END OF FILE.
9) TAPE ERRORS - EXIT.
10) TAPE RECORD TOO LONG - EXIT.
11) TO CONTINUE PRESS START. TO EXIT SET DATA SWITCH 0 ON
                                       AND PRESS START.

4. Programs for Tele-Processing System Connecting an IBM 1800
   System with the Computers IBM 7090 and 360

## 4.01 Card to Tape for Tele-Processing - Input for IBM 7090 (PEP8)

Program PEP8 performs the card input for the IBM 7090 computer,
which requires the following tape format: Each BCD card is loaded as
80 characters on tape followed by 4 so-called look-ahead-bits. Each
binary card (7-9 perforation in 1. col. ) is loaded as 160 characters on
tape (row 12-3 of 1. col. determines the first character, row 4-9 of
1. col. the second etc. ) followed by 8 look-ahead-bits.

The look-ahead bits are

| for a BCD card | followed by a BCD card: | bbbb |
| | followed by a binary card: | 9977 |
| for a binary card | followed by a BCD card: | b4bbb1bb |
| | followed by a binary card: | b5b1b5b4 |

where b means blank.

The user can choose two different tape formats, unblocked and blocked
records. In the case of unblocked records, each BCD card corresponds
to a BCD record (even parity) with a length of 84 characters, each bina-
ry card corresponds to a binary record (odd parity) with a length of
168 characters.
Because the tele-processing cannot transmit records in mixed mode and
transmission time is decreased by transmitting blocked records, the
following format has been chosen: Up to a maximum length of 840 charac-
ters are blocked, parity is always binary.

A 7/8 card is regarded as a BCD card.

Furthermore the program has the possibility to recognize special control
cards of CETIS and completes the $ID card (control card for IBM 7090
under IBSYS) in the following way:

| | | |
|---|---|---|
| $ | PUNCH | sets a 12-perforation in col. 4 of the $ID card |
| $ | TIME XXX | sets the time XXX in col. 47-49 of the $ID card |
| $ | LINES XXX | sets the lines XXX in col. 51-53 of the $ID card |
| $ | FORTRAN 2 (VERS. 2) | sets a 2-perforation in col. 4 of the $ID card |
| $ | DUMP IF EXECUTION TIME OVERFLOW | |
| | | sets a 0-perforation in col. 5 of the $ID card |

Card input for PEP8:
1. Control card
   col. 1-2    xx
        3      F       Normal card to tape without recognition of special
                       control cards for IBM 7090
               blank   Card to tape with recognition of the special control
                       cards of CETIS and completion of the $ID card. A
                       list of the $ID cards is printed on the 1443 printer.
        4      G       The output tape is not blocked. Each card corres-
                       ponds to one record, parity is determined wether
                       it corresponds to a BCD or binary card.

blank   The output tape is blocked, parity is binary, maximum record length is 840 characters.

2. Complete input deck for one or several jobs for IBM 7090.

3. Last card:

col. 1-3   END   This card causes an end-of-file mark to be written on tape. The program prints the total number of records and the transmission time. Pressing consol start causes continuation of program PEP8 starting by reading a new control card, pressing consol interrupt aborts the job.

Halts and output messages (on 1816 or 1053 typewriter):

1) THE CONTROL CARD IS MISSING OR WRONG. CORRECT AND CONTINUE.
2) TO CONTINUE PRESS START -
   TO EXIT PRESS CONSOL INTERRUPT.

## 4. 02 Card to Tape for Tele-Processing - Input IBM 360 (PEP7)

Program PEP7 reads cards of any type and stores them as 160 characters on a 7-track tape (unit 0), format is binary, density is 200 characters/inch. Records are blocked to a maximum of 800 characters (= 5 cards). The input deck may also contain cards beginning with //b. No control cards are needed except for the last card, the card END in col. 1-3, which causes an end-of-file mark to be written on tape. Then the program prints the number of records and the transmission time and exists by statement EXIT.

### Card input for PEP7:

1. Input deck to be transmitted by tele-processing
2. Last card
   col. 1-3    END

### Halts and output messages:

## 4.03 Tape to Card for Tele-Processing - Output IBM 7090 (PEP9)

Program PEP9 punches cards from a 7-track tape (unit 0) with density 200 bytes/inch, which has been prepared by program PEP8. For the tape format see 4.01. The program tests the parity and determines the format of the tape, no control card is needed. Cards beginning with $ or ± and 7/8 cards are listed on the 1443 printer.

Halts and output Messages:
on 1816 or 1053 typewriter

1) TAPE NOT COMPATIBLE WITH PEP9 - EXIT.
   This occurs on three consecutive tape errors.
2) TRANSMISSION ERRORS - PRESS START TO CONTINUE .
3) BLANK CARDS MISSING - CORRECT AND CONTINUE .
4) END OF FILE - TO CONTINUE PRESS START - TO EXIT
   CONSOL INTERRUPT.
5) TAPE ERROR(S) IN LAST RECORD.  TO CONTINUE PRESS
   START - TO EXIT CONSOL INTERRUPT.

on 1443 printer

******** END OF FILE *******

## 4. 04 Tape to Card for Tele-Processing - Output IBM 360 (PEP10)

Program PEP10 punches cards from a tape which has been prepared
by program PEP7 c. f. 4. 02.
A list of all cards beginning with $ or ± and the 7/8 cards are printed
on the 1443 printer.
A detection of an end-of-file causes the program to wait, pressing
consol start means continuation with the next file, consol interrupt
finishes the job.

### Card input for PEP10:

1. Control card
   col. 1-2     ±±
       3        magnetic tape unit number (0, 1, 2 or 3)
       5-6      density (200, 556 or 800)

2. Blank cards

### Halts and output messages (on 1443 printer)

1) BLANK CARDS NEEDED.
2) ERROR CONTROL CARD. CORRECT AND CONTINUE.
3) TAPE ERROR. START = SKIP THIS RECORD.
4) END OF FILE.  Start means continuation, consol interrupt aborts
                 the job.

## 4. 05 BCD-TAPE to Print (PEP2)

Program PEP2 performs the list output of the IBM 7090 and 360 computers. It produces a list from a 7-track tape (unit 0) in BCD-format. The input tape may be blocked or not. The maximum physical record length should not exceed 1000 computer words (= 2000 characters), the logical record length must be smaller than 72 words. The end of a logical record is determined by a A-8-2 character on tape. By means of the data switches (see below) the user can choose whether the list is to printed with FORTRAN carriage control or not and he has the possibility to skip a job. The start of a job is determined by a $ID line. The detection of an end-of-file mark causes the program to wait, pressing consol start means continuation of the program. Consol interrupt finishes the job.

### Control card format:

col. 1-2    **
     3-5    density of the tape (200 or 556)

### Data Switches

| | | |
|---|---|---|
| 0 | OFF | First character of a line controls the carriage: |
| | | 1 ... new page |
| | | 0 ... skip one line |
| | | + ... suppress the line feed |
| | | blank   one line feed |
| | | For all other characters the program skips one line. |
| | ON | Suppress carriage control and print first character. Skip to channel 1 (new page) only at detection of channel 12 ( end of page). |
| 1 | OFF | Normal tape to print. |
| | ON | Skip to next $ID-line or end-of-file mark. |

The data switches can be set at any time.

### Halts and output messages
on 1816 or 1053 typewriter

1) **CARD MISSING. CORRECT AND CONTINUE.
2) DATSW 0 ON = CONTROL CHARACTER NOT USED.
   DATSW 1 ON = SKIP TO NEXT FILE OR $ID.
3) WRONG DENSITY WAS ENTERED - REDO.
4) TO CONTINUE PRESS START -
   TO EXIT PRESS CONSOL INTERRUPT .
5) DATSW 1 ON = SKIP TO NEXT FILE OR $ID.

on 1443 printer

1) ---------- TAPE ERROR(S) IN NEXT RECORD ----------
2) ---------- RECORD ON TAPE WAS TOO LONG ----------
3) ***** END OF FILE *****
4) --------- END OF TAPE RECORD WITH ERROR(S) -------

## 4. 06 BCD-Tape to Card and Print Program (PEP11)

Program PEP11 processes BCD-tapes (7 tracks) which have the
following format: The record length is 80 characters in BCD code
or a multiple of 80, maximal 3200 characters. Each character cor-
responds to one card column. The program reads this BCD-tape and
translates the characters to IBM card code, and then to printer code
or EBCDIC format if necessary. The program reads two control cards
(see below) and controls the data switches and produces a list of the
tape on the 1443 printer if data switch 0 is off, punches the data in
cards if data switch 1 is off and writes a tape in EBCDIC format if
data switch 2 is off. The output tape is compatible with IBM 1800
FORTRAN.

The detection of an end-of-file mark causes a message to be printed
on the 1443 printer and an end-of-file mark to be written on the out-
put tape if there was an output tape specified in the control card.

The main purpose of this program is to process tapes received from
other computer centers, for instance centers with an IBM 1401.

### Card input for PEP11:

1.
   col.  1-2  **
          3    input tape unit number (0, 1, 2 or 3)
        5-7   density (200, 556 or 800)

2.
   col.  1-2  **
          3    output tape unit number or blank, if no output tape is
              used. The density is always 800 bytes/inch, 3 bytes
              per word, if a 7-track is specified.

3. Blank cards if necessary.

### Data switches

| | | |
|---|---|---|
| 0 | OFF | The tape is listed on the 1443. |
| | ON | No list is printed. |
| 1 | OFF | Data are punched in cards. |
| | ON | No cards are punched. |
| 2 | OFF | The input tape is transformed to EBCDIC format and written on tape. In contrd card 2 an output tape number must be specified, otherwise data switch 2 has no meaning. |
| | ON | No tape is written. |

The data switches can be set at any time.

Halts and output messages (on 1443 printer)

1) ERROR INPUT CARD. START AGAIN.
2) PROGRAM PEP11
   DATA SW 0 ON...NO LIST, DATA SW 1 ON...NO CARDS,
   DATA SW 2 ON...NO TAPE. START.
3) TAPE ERROR IN RECORD NO. XXX. In that case the record with
                                  errors is skipped.
4) RECORD NO. XXX TOO LONG.
5) BLANK CARDS NEEDED.
6) *** END OF FILE ***    Consol start means continuation of PEP11,
                          consol interrupt finishes the job.

4. 07 Plotter Tape Translation Program for Off-line Operation of
      Calcomp Plotter (TRAN)

The program performs the translation of a Calcomp tape (7 tracks)
written by the IBM 7090 subroutines of CETIS (1) into original Cal-
comp code. The translated tapes are to be utilized with the Calcomp
magnetic tape unit 570 to which the plotter is connected (off-line ope-
ration of a Calcomp plotter). The program indicates an end-of-file
and the last block address which has been written on tape and waits.
Consol start means continuation of tape translation, consol inter-
rupt aborts the job.

Control card format:

1. Card
      col. 1-2    **
           3      input tape unit number (0, 1, 2 or 3)
           5-7    density (200, 556 or 800)

2. Card
      col. 1-2    **
           3      output tape unit number (0, 1, 2 or 3)
           5-7    density (200, 556 or 800)

Halts and output messages (on 1443 printer)

1) EXECUTION OF PLOT TRANSLATION PROGRAM
2) ERROR IN CONTROL CARD. CORRECT INPUT CARD. Put
   both control cards in card  hopper and press start.
3) END OF FILE ON INPUT TAPE. LAST BLOCK ADDRESS = XXX.

## 4. 08 Tape to Plot for On-Line Operation of a Calcomp Plotter (P7090)

Program P7090 reads a Calcomp tape (7 tracks) written by the IBM
7090 subroutines of CETIS (1) and controls the plotter similar to any
other slow input/output device. The program uses the IBM library
routine PLOTX. Detection of an end-of-file mark stops the program.
Pressing consol start means continuation with the following file, pres-
sing consol interrupt finishes the job.

### Control card format:

col. 1-2    **

3       magnetic tape unit number (0,1,2 or 3)

5-7    density (200 or 556)

### Halts and output messages (on 1443 printer):

1) ERROR INPUT CARD. CORRECT AND CONTINUE.
2) END OF FILE.

## 4.09 Plotter Tape Translation Program for On-Line Use of a Calcomp Plotter in Time-Sharing Mode (T7090)

Program T7090 performs the translation of a Calomp tape (7 tracks) written by the IBM 7090 subroutines of CETIS (1) into a code, which is compatible with the plotting system in time-sharing mode of the CBNM at Geel (3). Detection of an end-of-file mark causes an end-of-file mark to be written on the output tape. Then the program waits. Consol start means translation of the following file, consol interrupt finishes the job.

Control card format:

1. Card
   col. 1-2    **
       3       input tape unit number (0, 1, 2 or 3)
       5-7     density (200, 556 or 800)

2. Card
   col. 1-2    **
       3       output tape unit number (0, 1, 2 or 3)
               The output tape has the density 800 bytes/inch,
               format is 3 bytes/word, if 7-track tapes are used.

Halts and output messages (on 1443 printer)

1) ERROR INPUT CARD. START AGAIN.
2) END OF FILE INPUT TAPE. PRESS START OR CONSOL INTERRUPT.

## 5. References

1) P. Moinil and J. Pire, Programmation relative au Calcomp, EUR 2280 f (1965)

2) H. Schmid, A Contribution to the Programming of the Calcomp Digital Incremental Plotter for Off-Line Operation, EUR 3634 e (1967)

3) H. Schmid, An IBM 1800 Program Package for On-Line and Off-Line Operation of a Calcomp Digital Incremental Plotter. Euratom Report in press.
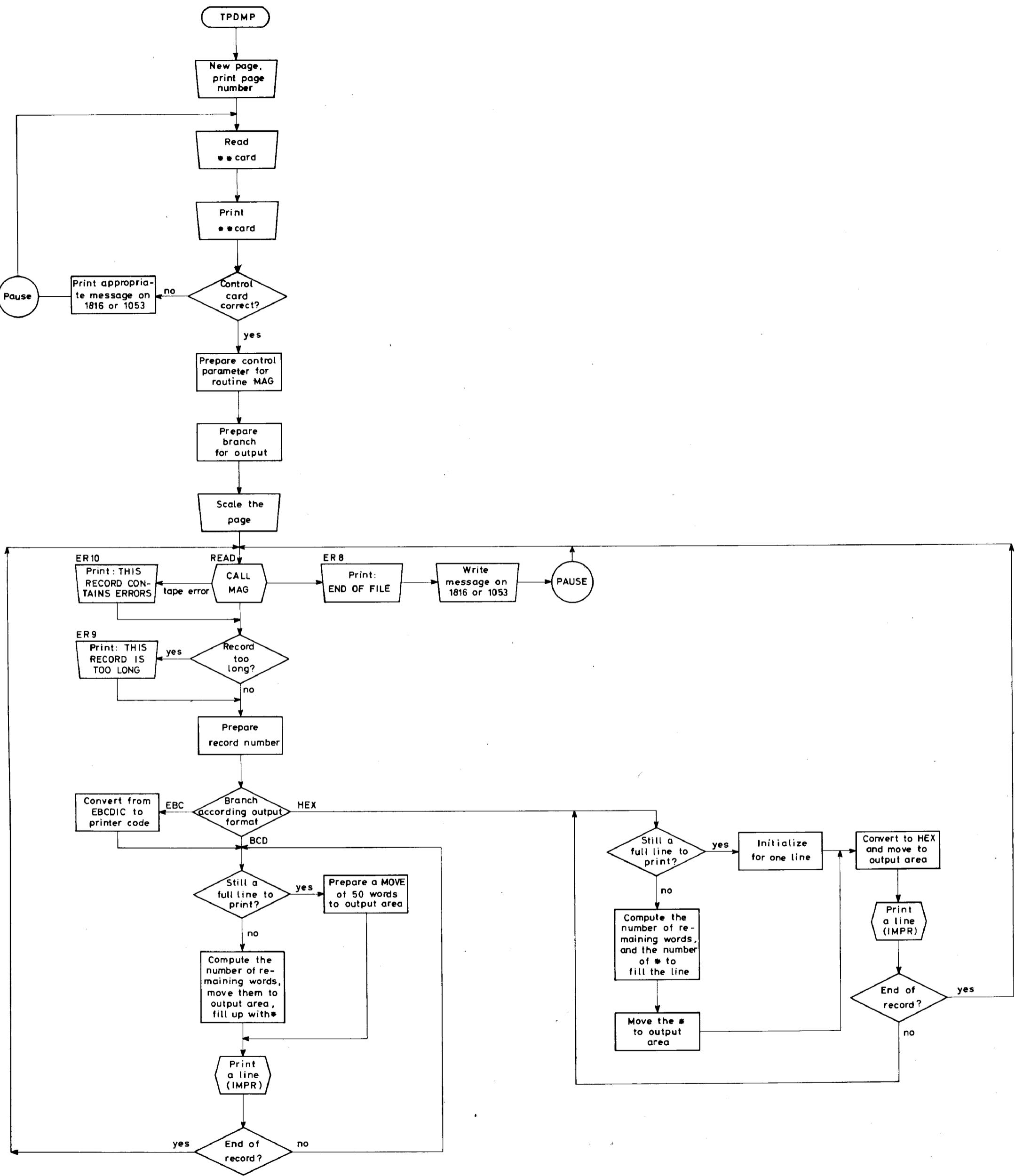
Fig.1

```
**0 7 0 2 200 HEX
          123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890
ODD   1   0000  0000  0000  0009  1A01  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  1A01  0101
ODD   1   0010  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  1A01  0101  0101  0101  0101  0101
ODD   1   0020  0101  0101  0101  0101  0101  0101  1A01  0101  0101  0101  0101  0101  0101  0101  0101  0101
ODD   1   0030  0101  0101  1A01  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  1A01  0101
ODD   1   0040  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  1A01  0101  0101  0101  0101  0101
ODD   1   0050  0101  0101  0101  0101  0101  0101  1A01  0101  0101  0101  0101  0101  0101  0101  0101  0101
ODD   1   0060  0101  0101  1A01  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  1A01  0101
ODD   1   0070  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  1A01  0101  0101  0101  0101  0101
ODD   1   0080  0101  0101  0101  0101  0101  0101  1A01  0101  0101  0101  0101  0101  0101  0101  0101  0101
ODD   1   0090  0101  0101  1A01  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  0101  1A01  011A
ODD   1   00A0  1A1A  *********************************************************************************

ODD   2   0000  0000  0000  0001  0201  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02
ODD   2   0010  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202
ODD   2   0020  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102
ODD   2   0030  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02
ODD   2   0040  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201
ODD   2   0050  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202
ODD   2   0060  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01
ODD   2   0070  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202
ODD   2   0080  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201
ODD   2   0090  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02
ODD   2   00A0  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202
ODD   2   00B0  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102
ODD   2   00C0  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02
ODD   2   00D0  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201
ODD   2   00E0  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202
ODD   2   00F0  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01
ODD   2   0100  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202
ODD   2   0110  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201
ODD   2   0120  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02
ODD   2   0130  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202
ODD   2   0140  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102
ODD   2   0150  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02
ODD   2   0160  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201
ODD   2   0170  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202
ODD   2   0180  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01
ODD   2   0190  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202
ODD   2   01A0  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201
ODD   2   01B0  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02
ODD   2   01C0  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202
ODD   2   01D0  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102
ODD   2   01E0  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02
ODD   2   01F0  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201
ODD   2   0200  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202
ODD   2   0210  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01
ODD   2   0220  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202
ODD   2   0230  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201
ODD   2   0240  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102  0201  0202  0201  1A02
ODD   2   0250  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02  0201  0202  0102  0202
ODD   2   0260  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201  0202  0102  0202  0102
ODD   2   0270  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202  0102  0202  0102  1A02
ODD   2   0280  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01  0202  0201  0202  0201
ODD   2   0290  0202  0102  0202  0102  0201  0202  0201  1A02  0202  0102  0201  0202  0201  0202  0201  0202
ODD   2   02A0  0102  0202  0102  1A02  0201  0202  0102  0202  0102  0201  0202  0201  0202  0201  0202  1A01
```

Fig. 2: Printout example of TPDMP (hexadecimal format)

```
**0  7  E  2  556  BCD
          12345678901234567890123456789012345678901234567890123456789012345678901234567890
EVEN    1    +++++++++13+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++001+++++++++67+++++++++
EVEN    1    292+++++++++++H+++++++++++++++++++++++++++++++++++++++++++002E+++++++++27+++++++++++39+++++E+++H2O+++++
EVEN    1    +++++++++++++++++++++++++++++++++++++++++++++++++003D++++++++218++++++++++221+++++D+++++D++++++++++++++++++
EVEN    1    +++++++++++++++++004E++++++++++28+++++++++++103+++++E+++D2O++++++++++++++++++++++++++++++++++++++++++++++005
EVEN    1    D++++++++219+++++++++184+++++D+++++T+++++++++++++++++++++++++++++++++++++++++++++006A+++++++++50+++++++++
EVEN    1    361+++++A+++BE9++++++++++++++++++++++++++++++++++++++++++007E++++++++++7+++++++++++75++++E+++BEO++++++
EVEN    1    +++++++++++++++++++++++++++++++++++++++++008++++++++++51+++++++++2258+++++++++++C++++++++++++++++++++++++++
EVEN    1    ++++++++++++++++009+++++++++34+++++++++1092++++++++++O+++++++++++++++++++++++++++++++++++++++++++++++010
EVEN    1    ******************************************************************************************************

EVEN    2    +++++++++66+++++++++4134+++++++++U235++++++++++++++++++++++++++++++++++++++++++++011+++++++++65+++++++++3
EVEN    2    103+++++++++PU239++++++++++++++++++++++++++++++++++++++++++++012+++++++++345+++++++++1231+++++++++U233+++++
EVEN    2    +++++++++++++++++++++++++++++++++++++++++013A+++++++++401+++++++++5947+++++A++U238++++++++++++++++++++++++++
EVEN    2    ++++++++++++++++014+++++++++++67++++++++++292++++++++++++3+++++++++++++1++++1.007825+++++++++++4++67+0++1
EVEN    2    +++++++++++1+++++++++1001++++++++++++84++++++++++2+++++++++1002++++++++++++84++67+0++2+++++++++++3+++++++++2
EVEN    2    002+++++++++37++++++++++4+++++++++1102++++++++++84++67+0++3+++++++1001+++++++++++1++0.+++++++++++++++
EVEN    2    ++++++0+++++++++++0+++++++++++0++67+1++11.00000E-10+0.20000E+02+0.30000E+03++++++++++83+++++++++244+
EVEN    2    ++++++++++1++67+1++21.00000E-10+0.19560E+03+0.20000E-09+0.16800E+03+0.80000E-09+0.12000E+03++67+1++3
EVEN    2    ******************************************************************************************************

EVEN    3    1.00000E-09+0.11350E+03+0.20000E-08+0.96000E+02+0.40000E-08+0.81500E+02++67+1++41.00000E-08+0.65800E
EVEN    3    +02+0.25000E-07+0.51200E+02+0.40000E-07+0.45000E+02++67+1++50.50000E-07+0.41240E+02+0.65000E-07+0.38
EVEN    3    600E+03+0.85000E-07+0.35600E+02++67+1++61.00000E-07+0.33700E+02+0.12500E-06+0.31400E+02+0.15000E-06+
EVEN    3    0.30200E+02++67+1++70.17500E-06+0.29200E+02+0.20000E-06+0.28100E+02+0.25000E-06+0.27000E+02++67+1++8
EVEN    3    0.30000E-06+0.26000E+02+0.40000E-06+0.24400E+02+0.50000E-06+0.23200E+02++67+1++90.60000E-06+0.22600E
EVEN    3    +02+0.80000E-06+0.21800E+02+0.10000E-05+0.21400E+02++67+1+100.12500E-05+0.21200E+02+0.15000E-05+0.21
EVEN    3    000E+02+0.20000E-05+0.21000E+02++67+1+110.30000E-05+0.21000E+02+0.40000E-05+0.21000E+02+0.70000E-05+
EVEN    3    0.21000E+02++67+1+121.00000E-05+0.21000E+02+0.15000E-04+0.21000E+02+0.20000E-04+0.21000E+02++67+1+13
EVEN    3    ******************************************************************************************************

EVEN    4    0.40000E-04+0.20800E+02+1.00000E-04+0.20400E+02+0.20000E-03+0.20250E+02++67+1+140.10000E-02+0.20000E
EVEN    4    +02+0.40000E-02+0.19750E+02+0.70000E-02+0.19500E+02++67+1+151.00000E-02+0.19200E+02+0.15000E-01+0.18
EVEN    4    700E+02+0.20000E-01+0.18200E+02++67+1+160.30000E-01+0.17250E+02+0.50000E-01+0.15500E+02+1.00000E-01+
EVEN    4    0.12750E+02++67+1+170.20000E+00+0.10000E+02+0.30000E+00+0.82000E+01+0.40000E+00+0.69800E+01++67+1+18
EVEN    4    0.50000E+00+0.62000E+01+0.60000E+00+0.56000E+01+0.70000E+00+0.51500E+01++67+1+190.80000E+00+0.48500E
EVEN    4    +01+0.90000E+00+0.45300E+01+0.10000E+01+0.42500E+01++67+1+200.11000E+01+0.40300E+01+0.12000E+01+0.38
EVEN    4    500E+01+0.13000E+01+0.36800E+01++67+1+210.14000E+01+0.35400E+01+0.15000E+01+0.34100E+01+0.16000E+01+
EVEN    4    0.32900E+01++67+1+220.17000E+01+0.31700E+01+0.18000E+01+0.30700E+01+0.19000E+01+0.29800E+01++67+1+23
EVEN    4    ******************************************************************************************************
```

Fig. 3: Printout example of TPDMP (BCD format)

**Fig. 4**

XR2 points to the different control words of read operation:

6 means EVEN parity, 200 BPI
5 " ODD " , " "
4 " EVEN " , 556 BPI
3 " ODD " , " "
2 " EVEN " 800 BPI
1 " ODD " , " "

```
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       161
    67 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       768
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       201
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       162
    78 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       768
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       429

*** END OF FILE     1***      TOTAL RECORD(S) =     149 (    149 )

     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       423
     2 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       768
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       300

*** END OF FILE     2***      TOTAL RECORD(S) =       4 (    153 )

     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       161
    67 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       768
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       201
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       162
    78 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       768
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       429

*** END OF FILE     3***      TOTAL RECORD(S) =     149 (    302 )

     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       423
     2 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       768
     1 RECORD(S),  PARITY IS   ODD,DENSITY IS   200,LENGTH IS       300

*** END OF FILE     4***      TOTAL RECORD(S) =       4 (    306 )
```
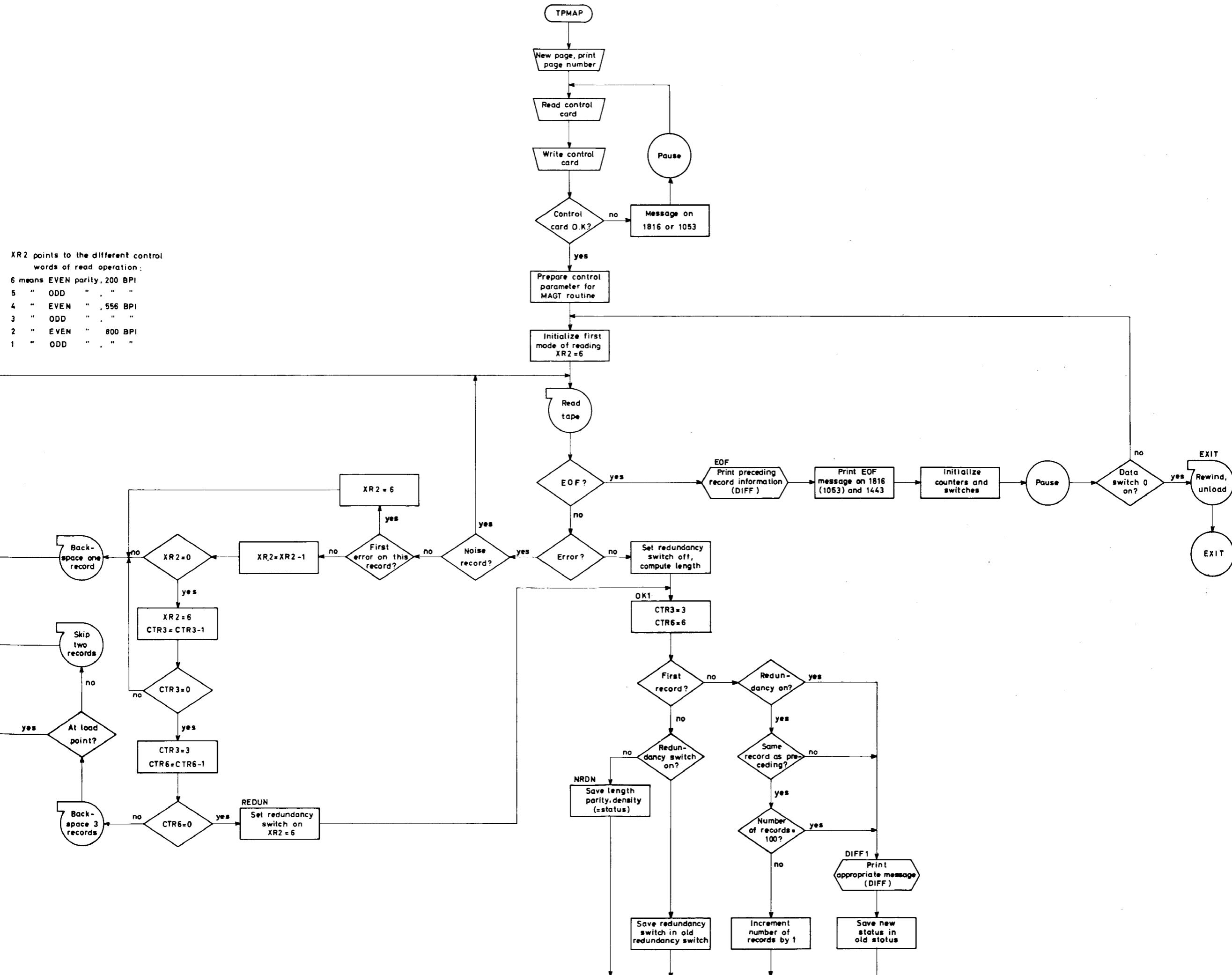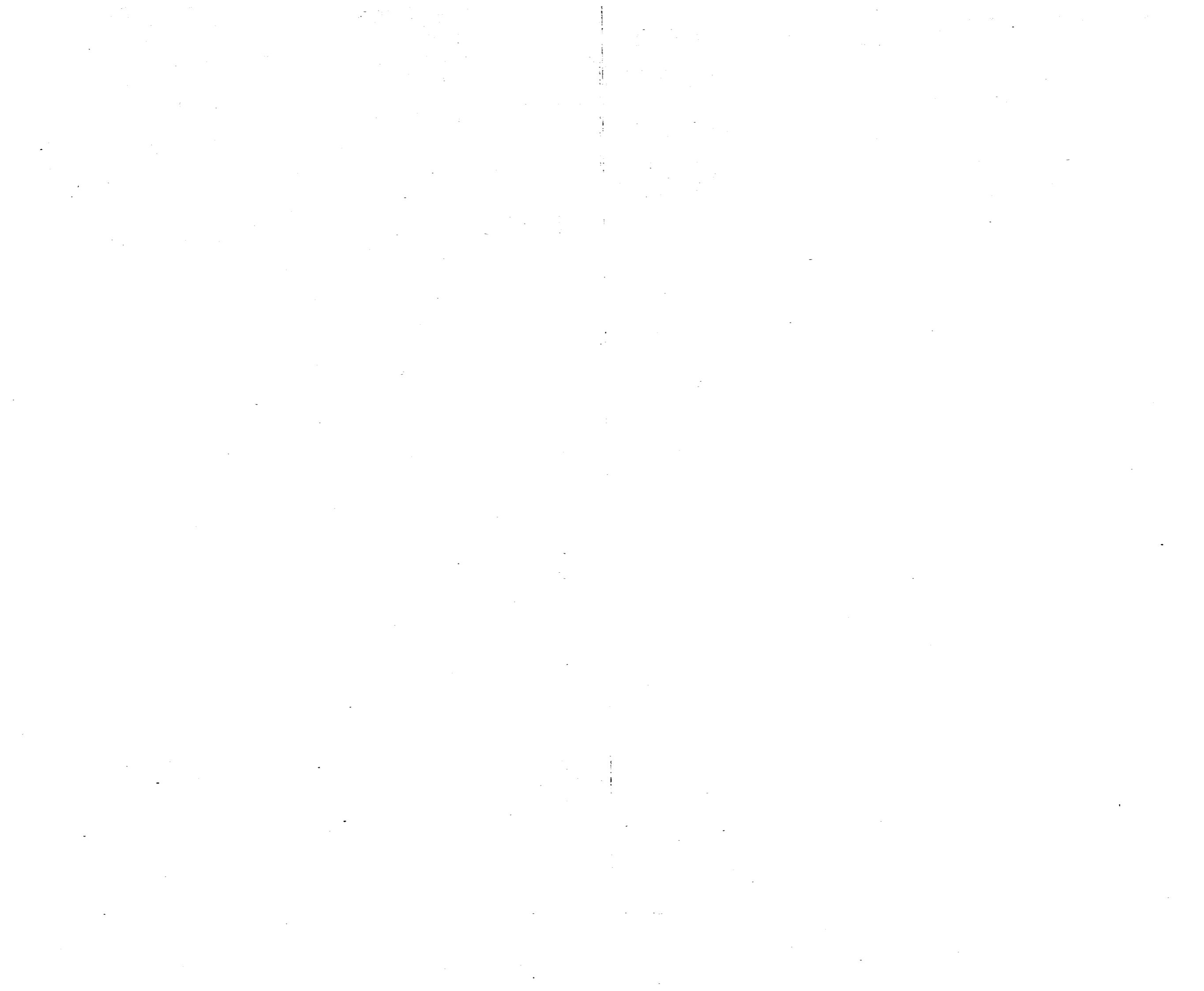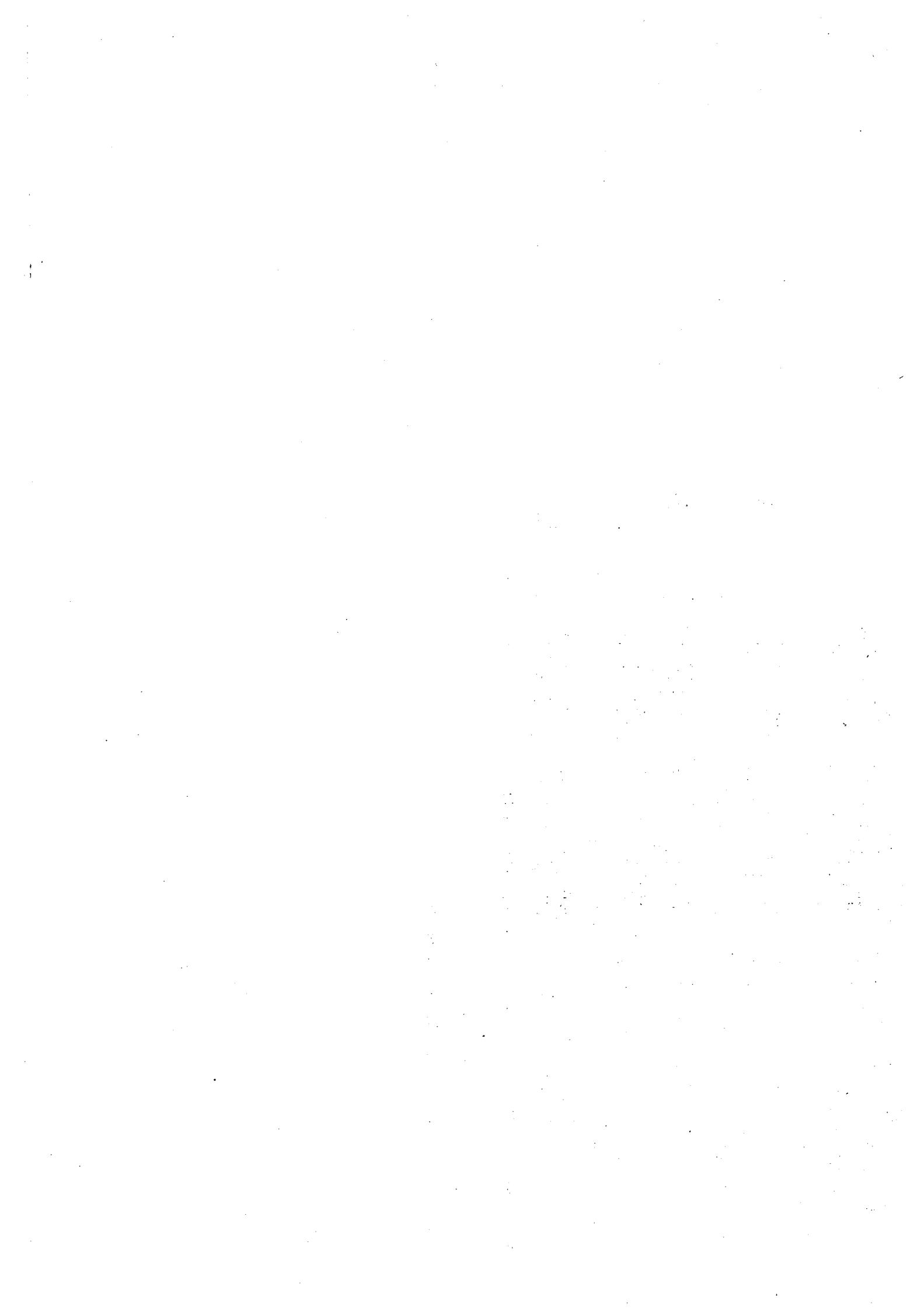
Fig. 5: Printout example of TPMAP
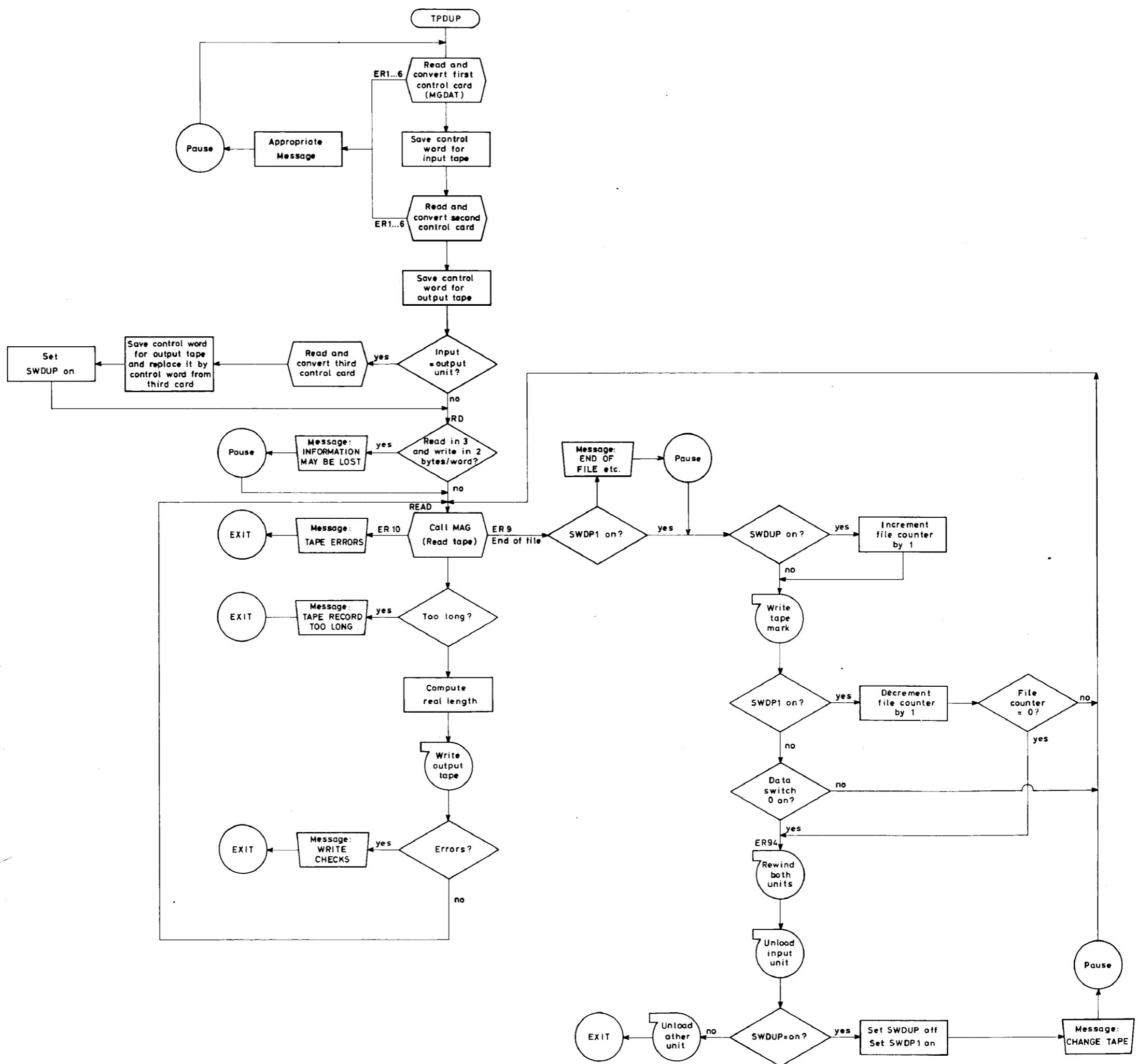
Fig.6

```
                    IBM 1800 SUBROUTINE MOVE/MOVE1                    PAGE   1

                    ****************************************************   MOVE0002
                    *           IBM 1800 UTILITY SUBROUTINES         *   MOVE0003
                    ****************************************************   MOVE0004
                    *                                                *   MOVE0005
                    *       SUBROUTINE MOVE/MOVE1                    *   MOVE0006
                    *                                                *   MOVE0007
                    *       CALLING SEQUENCES                        *   MOVE0008
                    *       -----------------                        *   MOVE0009
                    *       CALL     MOVE                            *   MOVE0010
                    *       DC       ORG                             *   MOVE0011
                    *       DC       DEST                            *   MOVE0012
                    *       DC       N           WORD COUNT DIRECT   *   MOVE0013
                    *                                                *   MOVE0014
                    *       CALL     MOVE1                           *   MOVE0015
                    *       DC       ORG1                            *   MOVE0016
                    *       DC       DEST                            *   MOVE0017
                    *       DC       N           WORD COUNT DIRECT   *   MOVE0018
                    *                                                *   MOVE0019
                    *       SUBR. MOVE TRANSFERS N WORDS FROM AREA ORG *  MOVE0020
                    *       TO AN AREA STARTING AT DEST.             *   MOVE0021
                    *       SUBROUTINE MOVE1 TRANSFERS THE CONTENT OF *   MOVE0022
                    *       ORG1 N TIMES TO AN AREA STARTING AT DEST. *   MOVE0023
                    *                                                *   MOVE0024
                    ****************************************************   MOVE0025
0000     145A5140           ENT      MOVE                                 MOVE0026
0021     145A5171           ENT      MOVE1                                MOVE0027
0000 0   0000      MOVE     DC       0                                    MOVE0028
0001 0   691A               STX   1  SV&1                                 MOVE0029
0002 01  65800000           LDX   I1 MOVE                                 MOVE0030
0004 0   C100               LD    1  0                                    MOVE0031
0005 0   9026               S        K11                                  MOVE0032
0006 0   D00B               STO      MV1&1                                MOVE0033
0007 0   C101               LD    1  1                                    MOVE0034
0008 0   9022               S        K1                                   MOVE0035
0009 0   D00A               STO      MV2&1                                MOVE0036
000A 0   C102               LD    1  2                                    MOVE0037
000B 0   D001               STO      *&1                                  MOVE0038
000C 00  65000000           LDX   L1 *-*                                  MOVE0039
000E 0   7100               MDX   1  0                                    MOVE0040
000F 0   7001               MDX      MV1                                  MOVE0041
0010 0   7006               MDX      SV-4                                 MOVE0042
0011 00  C5000000  MV1      LD    L1 *-*                                  MOVE0043
0013 00  D5000000  MV2      STO   L1 *-*                                  MOVE0044
0015 0   71FF               MDX   1  -1                                   MOVE0045
0016 0   70FA               MDX      MV1                                  MOVE0046
0017 0   C012               LD       HC500                                MOVE0047
0018 0   D0F8               STO      MV1                                  MOVE0048
0019 0   6101               LDX   1  1                                    MOVE0049
001A 0   6911               STX   1  K11                                  MOVE0050
001B 00  65000000  SV       LDX   L1 *-*                                  MOVE0051
001D 01  74030000           MDX   L  MOVE,3                               MOVE0052
001F 01  4C800000           BSC   I  MOVE                                 MOVE0053
                    *                                                     MOVE0054
0021 0   0000      MOVE1    DC       0                                    MOVE0055
0022 0   C006               LD       HC400                                MOVE0056
0023 0   D0ED               STO      MV1                                  MOVE0057
0024 0   1010               SLA      16                                   MOVE0058
```

```
0025 0  D006               STO     K11              MOVE0059
0026 0  C0FA               LD      MOVE1            MOVE0060
0027 0  D0D8               STO     MOVE             MOVE0061
0028 0  70D8               MDX     MOVE&1           MOVE0062
0029 0  C400      HC400 DC /C400              MOVE0063
002A 0  C500      HC500 DC /C500              MOVE0064
002B 0  0001      K1    DC 1                  MOVE0065
002C 0  0001      K11   DC 1                  MOVE0066
002E                      END              MOVE0067
```

        NO ERRORS IN ABOVE ASSEMBLY.
MOVE    MOVE1
DUP FUNCTION COMPLETED

```
        ******************************************************** CHIF0002
        *          IBM 1800 UTILITY SUBROUTINES              *  CHIF0003
        ******************************************************** CHIF0004
        *                                                    *  CHIF0005
        *          SUBROUTINE CHIF/CHIF1                     *  CHIF0006
        *                                                    *  CHIF0007
        *          CALLING SEQUENCES                         *  CHIF0008
        *          ----------------                          *  CHIF0009
        *          LD         A                              *  CHIF0010
        *          CALL       CHIF                           *  CHIF0011
        *          DC         DEST                           *  CHIF0012
        *                                                    *  CHIF0013
        *          LD         A                              *  CHIF0014
        *          CALL       CHIF1                          *  CHIF0015
        *          DC         DEST                           *  CHIF0016
        *                                                    *  CHIF0017
        *          SUBROUTINE CHIF CONVERTES THE POSITIVE    *  CHIF0018
        *          NUMBER IN ACCUMULATOR TO PRINTER CODE AND *  CHIF0019
        *          MOVES IT TO DEST THROUGH DEST+1.          *  CHIF0020
        *          SUBROUTINE CHIF1 CONVERTES THE POSITIVE   *  CHIF0021
        *          NUMBER IN ACCUMULATOR TO PRINTER CODE AND *  CHIF0022
        *          MOVES IT TO DEST THROUGH DEST+2.          *  CHIF0023
        *                                                    *  CHIF0024
        ******************************************************** CHIF0025
0000        03209180            ENT        CHIF                   CHIF0026
003B        032091B1            ENT        CHIF1                  CHIF0027
0000 0      0000        CHIF ·  DC         0                      CHIF0028
0001 0      6A34                STX     2  SAV5&1                 CHIF0029
0002 0      6B35                STX     3  SAVX3+1                CHIF0030
0003 01     66000048            LDX     L2 CH1                    CHIF0031
0005 00     67800067            LDX     I3 103                   CHIF0032
0007 20     02255103            LIBF       BINDC                  CHIF0033
0008 1      0048                DC         CH1                    CHIF0034
0009 20     085935D9            LIBF       HOLPR                  CHIF0035
000A 0      0001                DC         1                      CHIF0036
000B 1      004A        ORG     DC         CH1+2                  CHIF0037
000C 1      0048        ADR     DC         CH1                    CHIF0038
000D 0      0004        K4      DC         4                      CHIF0039
000E 0      C0FE                LD         K4                     CHIF0040
000F 0      1881                SRT        1                      CHIF0041
0010 0      D01D                STO        CT                     CHIF0042
0011 0      C200                LD      2  0                      CHIF0043
0012 0      1888                SRT        8                      CHIF0044
0013 0      C032                LD         H000A                  CHIF0045
0014 0      1088                SLT        8                      CHIF0046
0015 0      F02F        RT2     EOR        H0A0A                  CHIF0047
0016 01     4C200020            BSC     L  FN,Z                   CHIF0048
0018 0      D200                STO     2  0                      CHIF0049
0019 01     74FE000D            MDX     L  K4,-2                  CHIF0050
001B 0      7001                MDX        RT1                    CHIF0051
001C 0      700A                MDX        FN1                    CHIF0052
001D 0      7201        RT1     MDX     2  1                      CHIF0053
001E 0      C200                LD      2  0                      CHIF0054
001F 0      70F5                MDX        RT2                    CHIF0055
0020 0      1888        FN      SRT        8                      CHIF0056
0021 01     4C180024            BSC     L  DROT,+-                CHIF0057
0023 0      F022                EOR        H000A                  CHIF0058
```

```
0024 0  1088         DROT   SLT        8              CHIF0059
0025 0  F020                EOR        HOOOA          CHIF0060
0026 0  D200                STO     2  0              CHIF0061
0027 01 C4800000     FN1    LD      I  CHIF           CHIF0062
0029 0  D003                STO        *+3            CHIF0063
002A 30 145A5140            CALL       MOVE           CHIF0064
002C 1  0048                DC         CH1            CHIF0065
002D 0  0000                DC         *-*            CHIF0066
002E 0  0000         CT     DC         *-*            CHIF0067
002F 0  6204                LDX     2  4              CHIF0068
0030 0  6ADC                STX     2  K4             CHIF0069
0031 0  C01C                LD         ADR1           CHIF0070
0032 0  D0D8                STO        ORG            CHIF0071
0033 01 74010000            MDX     L  CHIF,1         CHIF0072
0035 00 66000000     SAV5   LDX     L2 *-*            CHIF0073
0037 00 67000000     SAVX3  LDX     L3 *-*            CHIF0074
0039 01 4C800000            BSC     I  CHIF           CHIF0075
                     *                                CHIF0076
003B 0  0000         CHIF1  DC         0              CHIF0077
003C 0  1890                SRT        16             CHIF0078
003D 0  C0FD                LD         CHIF1          CHIF0079
003E 0  D0C1                STO        CHIF           CHIF0080
003F 0  C007                LD         K6             CHIF0081
0040 0  D0CC                STO        K4             CHIF0082
0041 01 74FE000B            MDX     L  ORG,-2         CHIF0083
0043 0  1090                SLT        16             CHIF0084
0044 0  70BC                MDX        CHIF+1         CHIF0085
0045 0  0A0A         HOAOA  DC         /0A0A          CHIF0086
0046 0  000A         HOOOA  DC         /000A          CHIF0087
0047 0· 0006         K6     DC         6·             CHIF0088
0048    0006         CH1    BSS        6              CHIF0089
004E 1  004A         ADR1   DC         CH1+2          CHIF0090
0050                        END                       CHIF0091
```

NO ERRORS IN ABOVE ASSEMBLY.
CHIF   CHIF1
DUP FUNCTION COMPLETED

IBM 1800 SUBROUTINE PAGE/BLANK                                    PAGE    1

```
                 ****************************************************    PAGE0002
                 *      IBM 1800 UTILITY SUBROUTINES           *    PAGE0003
                 ****************************************************    PAGE0004
                 *                                             *    PAGE0005
                 *     SUBROUTINE PAGE/BLANK                    *    PAGE0006
                 *                                             *    PAGE0007
                 *     CALLING SEQUENCES                        *    PAGE0008
                 *     -----------------                        *    PAGE0009
                 *     LIBF      PAGE                           *    PAGE0010
                 *     DC        AREA                           *    PAGE0011
                 *     DC        N          WORD COUNT DIRECT   *    PAGE0012
                 *                                             *    PAGE0013
                 *     LIBF      BLANK                          *    PAGE0014
                 *     DC        AREA                           *    PAGE0015
                 *     DC        N          WORD COUNT DIRECT   *    PAGE0016
                 *                                             *    PAGE0017
                 *     SUBROUTINE PAGE PRINTS 'PAGE N' USING AREA  *    PAGE0018
                 *     THROUGH AREA+N-1 AS OUTPUT AREA. AREA-1 MUST*    PAGE0019
                 *     CONTAIN THE WORD COUNT.                  *    PAGE0020
                 *     SUBROUTINE BLANK SETS AREA TO AREA+N-1 TO *    PAGE0021
                 *     ZERO.                                    *    PAGE0022
                 *                                             *    PAGE0023
                 ****************************************************    PAGE0024
                          LIBR                                    PAGE0025
0000     17047140         ENT       PAGE                          PAGE0026
0006     024C1552         ENT       BLANK                         PAGE0027
0000  0  0000    PAGE     DC        0                             PAGE0028
0001  0  COFE              LD        PAGE                         PAGE0029
0002  0  D003              STO       BLANK                        PAGE0030
0003  01 7404001F PAG1     MDX    L  MDX,4                        PAGE0031
0005  0  7001              MDX       BLANK&1                      PAGE0032
0006  0  0000    BLANK    DC        0                             PAGE0033
0007  0  6919              STX    1  X11+1                        PAGE0034
0008  0  6A3D              STX    2  X22&1                        PAGE0035
0009  01 65800006          LDX    I1 BLANK                        PAGE0036
000B  0  71FD              MDX    1  -3                           PAGE0037
000C  0  6901              STX    1  *&1                          PAGE0038
000D  00 65800000          LDX    I1 *-*                          PAGE0039
000F  0  C100              LD     1  0                            PAGE0040
0010  0  D007              STO       X1&1                         PAGE0041
0011  0  C101              LD     1  1                            PAGE0042
0012  0  D012              STO       CTR&1                        PAGE0043
0013  0  D007              STO       X2&1                         PAGE0044
0014  0  7102              MDX    1  2                            PAGE0045
0015  0  69F0              STX    1  BLANK                        PAGE0046
0016  0  1010              SLA       16                           PAGE0047
0017  00 65000000 X1       LDX    L1 *-*                          PAGE0048
0019  0  71FF              MDX    1  -1                           PAGE0049
001A  00 D5000000 X2       STO    L1 *-*                          PAGE0050
001C  01 74FF001B          MDX    L  X2&1,-1                      PAGE0051
001E  0  70FB              MDX       X2                           PAGE0052
001F  0  7000    MDX      MDX       *                            PAGE0053
0020  00 65000000 X11      LDX    L1 *-*                          PAGE0054
0022  01 4C800006          BSC    I  BLANK                        PAGE0055
0024  00 66000000 CTR      LDX    L2 *-*                          PAGE0056
0026  0  72FB              MDX    2  -5                           PAGE0057
0027  0  6901              STX    1  *&1                          PAGE0058
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```
0028 00 76000000          MDX    L2  *-*            PAGE0059
002A 0  C81D              LDD        PG             PAGE0060
002B 0  D200              STO    2   0              PAGE0061
002C 0  1090              SLT        16             PAGE0062
002D 0  D201              STO    2   1              PAGE0063
002E 0  7202              MDX    2   2              PAGE0064
002F 0  6A03              STX    2   *&3            PAGE0065
0030 0  C019              LD         NR             PAGE0066
0031 30 03209180          CALL       CHIF           PAGE0067
0033 0  0000              DC         *-*            PAGE0068
0034 0  6902              STX    1   *&2            PAGE0069
0035 20 176558D5          LIBF       PRNTN          PAGE0070
0036 0  2100              DC         /2100          PAGE0071
0037 0  0000              DC         *-*            PAGE0072
0038 0  0000              DC         0              PAGE0073
0039 20 176558D5          LIBF       PRNTN          PAGE0074
003A 0  0000              DC         0              PAGE0075
003B 0  70FD              MDX        *-3            PAGE0076
003C 01 7401004A          MDX    L   NR,1           PAGE0077
003E 0  10A0              SLT        32             PAGE0078
003F 0  D2FE              STO    2   -2             PAGE0079
0040 0  D2FF              STO    2   -1             PAGE0080
0041 0  D200              STO    2   0              PAGE0081
0042 0  D201              STO    2   1              PAGE0082
0043 01 74FC001F          MDX    L   MDX,-4         PAGE0083
0045 00 66000000    X22   LDX    L2  *-*            PAGE0084
0047 0  70D8              MDX        MDX&1          PAGE0085
0048    0000              BSS    E   0              PAGE0086
0048    0004        PG    DMES   1   PAGE'E         PAGE0087
004A 0  0001        NR    DC         1              PAGE0088
004C                      END                       PAGE0089
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        NO ERRORS IN ABOVE ASSEMBLY.
PAGE    BLANK
DUP FUNCTION COMPLETED
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IBM 1800 SUBROUTINE SCAL                                              PAGE    1

```
         ************************************************************  SCAL0002
         *         IBM 1800 UTILITY SUBROUTINES                    *  SCAL0003
         ************************************************************  SCAL0004
         *                                                         *  SCAL0005
         *         SUBROUTINE SCAL                                 *  SCAL0006
         *                                                         *  SCAL0007
         *         CALLING SEQUENCE                                *  SCAL0008
         *         ----------------                                *  SCAL0009
         *         LIBF      SCAL                                  *  SCAL0010
         *         DC        AREA+N1                               *  SCAL0011
         *         DC        AREA                                  *  SCAL0012
         *         DC        N               WORD COUNT DIRECT     *  SCAL0013
         *                                                         *  SCAL0014
         *         SUBROUTINE SCAL MOVES A SCALE 123456...         *  SCAL0015
         *         TO AREA+N1. N (MULTIPLE OF 5) IS THE LENGTH     *  SCAL0016
         *         OF THE SCALE. THEN THE SUBROUTINE PRINTS THE    *  SCAL0017
         *         SCALE USING AREA THROUGH AREA+N1+N-1 AS         *  SCAL0018
         *         OUTPUT AREA. AREA-1 MUST CONTAIN THE WORD       *  SCAL0019
         *         COUNT.                                          *  SCAL0020
         *                                                         *  SCAL0021
         ************************************************************  SCAL0022
                    LIBR                                                SCAL0023
0000       220C14C0 ENT      SCAL                                       SCAL0024
0000   0   0000     SCAL DC  0                                          SCAL0025
0001   0   6922          STX    1  SAV1&1        SAVE X1                 SCAL0026
0002   01  65800000      LDX   I1  SCAL                                 SCAL0027
0004   0   71FD          MDX    1  -3                                   SCAL0028
0005   0   6901          STX    1  *&1                                  SCAL0029
0006   00  65800000      LDX   I1  *-*           X1# RETURN ADDRESS      SCAL0030
0008   0   C100          LD     1  0                                    SCAL0031
0009   0   D007          STO       X1&1                                 SCAL0032
000A   0   C101          LD     1  1                                    SCAL0033
000B   0   D012          STO       X11                                  SCAL0034
000C   0   C102          LD     1  2                                    SCAL0035
000D   0   D01E          STO       CTR                                  SCAL0036
000E   0   7103          MDX    1  3                                    SCAL0037
000F   0   69F0          STX    1  SCAL                                 SCAL0038
0010   00  65000000  X1  LDX   L1  *-*           X1# AREA                SCAL0039
0012   0   6903          STX    1  *&3                                  SCAL0040
0013   30  145A5140      CALL      MOVE                                 SCAL0041
0015   1   0027          DC        ECH                                  SCAL0042
0016   0   0000          DC        *-*                                  SCAL0043
0017   0   0005          DC        5                                    SCAL0044
0018   0   7105          MDX    1  5                                    SCAL0045
0019   01  74FB002C      MDX   L   CTR,-5                               SCAL0046
001B   0   70F6          MDX       X1+2                                 SCAL0047
001C   20  176558D5      LIBF      PRNTN                                SCAL0048
001D   0   2100          DC        /2100                                SCAL0049
001E   0   0000      X11 DC        *-*                                  SCAL0050
001F   0   1000          NOP                                            SCAL0051
0020   20  176558D5      LIBF      PRNTN                                SCAL0052
0021   0   0000          DC        0                                    SCAL0053
0022   0   70FD          MDX       *-3                                  SCAL0054
0023   00  65000000  SAV1 LDX  L1  *-*                                  SCAL0055
0025   01  4C800000      BSC    I  SCAL                                 SCAL0056
0027       000A      ECH DMES   1  1234567890'E                         SCAL0057
002C   0   0000      CTR DC        *-*                                  SCAL0058
```

IBM 1800 SUBROUTINE SCAL                                         PAGE    2

002E                              END                                     SCAL0059

     NO ERRORS  IN ABOVE ASSEMBLY.
SCAL
DUP FUNCTION COMPLETED

IBM 1800 SUBROUTINE BCD                                            PAGE    1

```
                        ********************************************************   BCD00002
                        *          IBM 1800 UTILITY SUBROUTINES            *   BCD00003
                        ********************************************************   BCD00004
                        *                                                  *   BCD00005
                        *          SUBROUTINE BCD                          *   BCD00006
                        *                                                  *   BCD00007
                        *          CALLING SEQUENCE                        *   BCD00008
                        *          ----------------                        *   BCD00009
                        *          CALL      BCD                           *   BCD00010
                        *                                                  *   BCD00011
                        *          SUBROUTINE CONTAINS THE CONVERSION TABLE *   BCD00012
                        *          FROM BCD TO CARD CODE.                  *   BCD00013
                        *                                                  *   BCD00014
                        ********************************************************   BCD00015
0000    020C4000              ENT       BCD                                       BCD00016
0000  0 0000          BCD     DC        0          BLANK                          BCD00017
0001  0 1000                  DC        /1000      1                              BCD00018
0002  0 0800                  DC        /0800      2                              BCD00019
0003  0 0400                  DC        /0400      3                              BCD00020
0004  0 0200                  DC        /0200      4                              BCD00021
0005  0 0100                  DC        /0100      5                              BCD00022
0006  0 0080                  DC        /0080      6                              BCD00023
0007  0 0040                  DC        /0040      7                              BCD00024
0008  0 0020                  DC        /0020      8                              BCD00025
0009  0 0010                  DC        /0010      9                              BCD00026
000A  0 2000                  DC        /2000      0                              BCD00027
000B  0 0420                  DC        /0420      #                              BCD00028
000C  0 0220                  DC        /0220      @                              BCD00029
000D  0 0120                  DC        /0120      '                              BCD00030
000E  0 00A0                  DC        /00A0      =          8-6                 BCD00031
000F  0 0060                  DC        /0060                 8-7                 BCD00032
                      *                                                           BCD00033
0010  0 0000                  DC        0          NO  CARD CODE                  BCD00034
0011  0 3000                  DC        /3000      /          0-1          11     BCD00035
0012  0 2800                  DC        /2800      S                              BCD00036
0013  0 2400                  DC        /2400      T                              BCD00037
0014  0 2200                  DC        /2200      U                              BCD00038
0015  0 2100                  DC        /2100      V                              BCD00039
0016  0 2080                  DC        /2080      W                              BCD00040
0017  0 2040                  DC        /2040      X                              BCD00041
0018  0 2020                  DC        /2020      Y                              BCD00042
0019  0 2010                  DC        /2010      Z                              BCD00043
001A  0 2820                  DC        /2820                 0-8-2               BCD00044
001B  0 2420                  DC        /2420      ,          0-8-3               BCD00045
001C  0 2220                  DC        /2220      %          0-8-4               BCD00046
001D  0 2120                  DC        /2120      -          0-8-5               BCD00047
001E  0 20A0                  DC        /20A0                 0-8-6               BCD00048
001F  0 2060                  DC        /2060                 0-8-7               BCD00049
                      *                                                           BCD00050
0020  0 4000                  DC        /4000      -                              BCD00051
0021  0 5000                  DC        /5000      J                              BCD00052
0022  0 4800                  DC        /4800      K                              BCD00053
0023  0 4400                  DC        /4400      L                              BCD00054
0024  0 4200                  DC        /4200      M                              BCD00055
0025  0 4100                  DC        /4100      N                              BCD00056
0026  0 4080                  DC        /4080      O                              BCD00057
0027  0 4040                  DC        /4040      P                              BCD00058
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IBM 1800 SUBROUTINE BCD                                          PAGE    2

```
0028  0  4020          DC      /4020    Q                        BCD00059
0029  0  4010          DC      /4010    R                        BCD00060
002A  0  4820          DC      /4820             11-8-2          BCD00061
002B  0  4420          DC      /4420    $        11-8-3          BCD00062
002C  0  4220          DC      /4220    *        11-8-4          BCD00063
002D  0  4120          DC      /4120    )        11-8-5          BCD00064
002E  0  40A0          DC      /40A0             11-8-6          BCD00065
002F  0  4060          DC      /4060             11-8-7          BCD00066
                   *    DC                                       BCD00067
0030  0  8000          DC      /8000    &                        BCD00068
0031  0  9000          DC      /9000    A                        BCD00069
0032  0  8800          DC      /8800    B                        BCD00070
0033  0  8400          DC      /8400    C                        BCD00071
0034  0  8200          DC      /8200    D                        BCD00072
0035  0  8100          DC      /8100    E                        BCD00073
0036  0  8080          DC      /8080    F                        BCD00074
0037  0  8040          DC      /8040    G                        BCD00075
0038  0  8020          DC      /8020    H                        BCD00076
0039  0  8010          DC      /8010    I                        BCD00077
003A  0  8820          DC      /8820             12-8-2          BCD00078
003B  0  8420          DC      /8420    .        12-8-3          BCD00079
003C  0  8220          DC      /8220             12-8-4          BCD00080
003D  0  8120          DC      /8120    (        12-8-5          BCD00081
003E  0  80A0          DC      /80A0             12-8-6          BCD00082
003F  0  8060          DC      /8060             12-8-7          BCD00083
0040                  END                                        BCD00084
```

       NO ERRORS IN ABOVE ASSEMBLY.
BCD
DUP FUNCTION COMPLETED

```
                    ****************************************************** PRHOL002
                    *       IBM 1800 UTILITY SUBROUTINES               * PRHOL003
                    ****************************************************** PRHOL004
                    *                                                   * PRHOL005
                    *       SUBROUTINE PRHOL                            * PRHOL006
                    *                                                   * PRHOL007
                    *       CALLING SEQUENCE                            * PRHOL008
                    *       ---------------                             * PRHOL009
                    *       LIBF      PRHOL                             * PRHOL010
                    *       DC        ORG                               * PRHOL011
                    *       DC        DEST                              * PRHOL012
                    *       DC        N          CHARACTER COUNT DIRECT * PRHOL013
                    *                                                   * PRHOL014
                    *       SUBROUTINE PRHOL CONVERTES THE N BCD CHAR.  * PRHOL015
                    *       IN ORG THROUGH ORG+N/2-1 TO CARD CODE AND   * PRHOL016
                    *       STORES THE RESULT IN DEST THROUGH DEST+N-1. * PRHOL017
                    *       N MUST BE AN EVEN NUMBER.                   * PRHOL018
                    *                                                   * PRHOL019
                    ****************************************************** PRHOL020
                            LIBR                                         PRHOL021
0000    17648593            ENT       PRHOL                              PRHOL022
0000 0  0000        PRHOL   DC        0                                  PRHOL023
0001 00 448000AC            BSI    I  172                                PRHOL024
0003 00 65800037            LDX    I1 55                                 PRHOL025
0005 0  C100               LD     1  0                                  PRHOL026
0006 0  D007                STO       X1&1                               PRHOL027
0007 0  C101                LD     1  1                                  PRHOL028
0008 0  D007                STO       X2&1                               PRHOL029
0009 0  C102                LD     1  2                                  PRHOL030
000A 0  D01E                STO       CTR                                PRHOL031
000B 00 74030037            MDX    L  55,3                               PRHOL032
000D 00 65000000    X1      LDX    L1 *-*                                PRHOL033
000F 00 66000000    X2      LDX    L2 *-*                                PRHOL034
0011 30 020C4000            CALL      BCD                                PRHOL035
0013                        ORG       *-2                                PRHOL036
0011 0  6700                DC        /6700                              PRHOL037
0012                        ORG       *&1                                PRHOL038
0013 0  C100        RET     LD     1  0                                  PRHOL039
0014 0  1000        NOP     SLA       0                                  PRHOL040
0015 0  1002                SLA       2                                  PRHOL041
0016 0  180A                SRA       10                                 PRHOL042
0017 0  D001                STO       *&1                                PRHOL043
0018 00 C7000000            LD     L3 *-*                                PRHOL044
001A 0  D200                STO    2  0                                  PRHOL045
001B 0  C0F8                LD        NOP                                PRHOL046
001C 0  F00B                EOR       H0008                              PRHOL047
001D 0  D0F6                STO       NOP                                PRHOL048
001E 0  C003                LD        MDX                                PRHOL049
001F 0  F00A                EOR       K1                                 PRHOL050
0020 0  D001                STO       MDX                                PRHOL051
0021 0  7201                MDX    2  1                                  PRHOL052
0022 0  7101        MDX     MDX    1  1                                  PRHOL053
0023 01 74FF0029            MDX    L  CTR,-1                             PRHOL054
0025 0  70ED                MDX       RET                                PRHOL055
0026 00 448000AD            BSI    I  173                                PRHOL056
0028 0  0008        H0008   DC        8                                  PRHOL057
0029 0  0000        CTR     DC        *-*                                PRHOL058
```

IBM 1800 SUBROUTINE PRHOL                     PAGE   2

```
002A 0  0001         K1      DC       1                              PRHOL059
002C                         END                                    PRHOL060
        NO ERRORS IN ABOVE ASSEMBLY.
PRHOL
DUP FUNCTION COMPLETED
```

SUBROUTINE CDBCD                                                                    PAGE    1

```
                    ************************************************     CDBCD002
                    *       IBM 1800 UTILITY SUBROUTINES         *     CDBCD003
                    ************************************************     CDBCD004
                    *                                            *     CDBCD005
                    *       SUBROUTINE CDBCD                      *     CDBCD006
                    *                                            *     CDBCD007
                    *       CALLING SEQUENCE                      *     CDBCD008
                    *       ----------------                      *     CDBCD009
                    *       CALL      CDBCD                        *     CDBCD010
                    *       DC        AREA      INPUT  (NOT PACKED) *     CDBCD011
                    *       DC        DEST      OUTPUT (PACKED)    *     CDBCD012
                    *       DC        COUNT                        *     CDBCD013
                    *                                            *     CDBCD014
                    *       THIS SUBROUTINE CONVERTS IBM CARD CODE  *     CDBCD015
                    *       SUBSET TO BCD CODE.                     *     CDBCD016
                    *                                            *     CDBCD017
                    ************************************************     CDBCD018
0000      031020C4            ENT       CDBCD                              CDBCD019
0000  0   0000        CDBCD   DC        0                                  CDBCD020
0001  0   690A                STX       1    XR1+1                         CDBCD021
0002  0   6A0B                STX       2    XR2+1                         CDBCD022
0003  0   6B0C                STX       3    XR3+1                         CDBCD023
0004  01  65800000            LDX       I1   CDBCD                         CDBCD024
0006  0   C102                LD        1    2                             CDBCD025
0007  01  4C300013            BSC       L    C1,-Z                         CDBCD026
0009  01  74030000    EXIT    MDX       L    CDBCD,3                       CDBCD027
000B  00  65000000    XR1     LDX       L1   *-*                           CDBCD028
000D  00  66000000    XR2     LDX       L2   *-*                           CDBCD029
000F  00  67000000    XR3     LDX       L3   *-*                           CDBCD030
0011  01  4C800000            BSC       I    CDBCD                         CDBCD031
                    *                                                     CDBCD032
0013  0   D049        C1      STO       COUNT                             CDBCD033
0014  0   C100                LD        1    0                             CDBCD034
0015  0   D001                STO       *+1                               CDBCD035
0016  00  66000000            LDX       L2   *-*       XR2=INPUT ADDR.     CDBCD036
                    *                                                     CDBCD037
0018  0   C101                LD        1    1                             CDBCD038
0019  0   D001                STO       *+1                               CDBCD039
001A  00  65000000            LDX       L1   *-*       XR1=OUTPUT ADDR.    CDBCD040
001C  0   1010                SLA       16                                CDBCD041
001D  0   D03E                STO       IND                               CDBCD042
001E  01  7400005C    C2      MDX       L    IND,0                         CDBCD043
0020  0   7008                MDX       C3                                CDBCD044
0021  0   683A                STX       IND                               CDBCD045
0022  0   C200                LD        2    0                             CDBCD046
0023  0   4013                BSI       TRANS                             CDBCD047
0024  0   1008                SLA       8                                 CDBCD048
0025  0   D100                STO       1    0                             CDBCD049
0026  0   7201                MDX       2    1                             CDBCD050
0027  0   1000                NOP                                         CDBCD051
0028  0   700A                MDX       C5                                CDBCD052
0029  0   1010        C3      SLA       16                                CDBCD053
002A  0   D031                STO       IND                               CDBCD054
002B  0   C200                LD        2    0                             CDBCD055
002C  0   400A                BSI       TRANS                             CDBCD056
002D  0   E900                OR        1    0                             CDBCD057
002E  0   D100                STO       1    0                             CDBCD058
```

```
002F  0   7201                  MDX    2  1              CDBCD059
0030  0   1000                  NOP                      CDBCD060
0031  0   7101                  MDX    1  1              CDBCD061
0032  0   1000                  NOP                      CDBCD062
0033  01  74FF005D       C5     MDX    L  COUNT,-1       CDBCD063
0035  0   70E8                  MDX       C2             CDBCD064
0036  0   70D2                  MDX       EXIT           CDBCD065
                         *                               CDBCD066
0037  0   0000           TRANS  DC        0              CDBCD067
0038  0   D028                  STO       CODE           CDBCD068
0039  0   902B                  S         X2000          CDBCD069
003A  01  4C180059              BSC    L  EXEPT,+-       CDBCD070
003C  0   C024                  LD        CODE           CDBCD071
003D  0   6303                  LDX    3  3    CONSTRUCT ZONE BITS   CDBCD072
003E  01  4C280043       T1     BSC    L  T3,+Z          CDBCD073
0040  0   1001                  SLA       1              CDBCD074
0041  0   73FF                  MDX    3  -1             CDBCD075
0042  0   70FB                  MDX       T1             CDBCD076
0043  0   6B1A           T3     STX    3  RESLT          CDBCD077
0044  0   C019                  LD        RESLT          CDBCD078
0045  0   1004                  SLA       4              CDBCD079
0046  0   D017                  STO       RESLT          CDBCD080
0047  0   C019                  LD        CODE           CDBCD081
0048  0   E019                  AND       MASK           CDBCD082
0049  0   630C                  LDX    3  12             CDBCD083
004A  0   1340           T4     SLCA   3  0              CDBCD084
004B  0   7300                  MDX    3  0              CDBCD085
004C  0   7001                  MDX       *+1            CDBCD086
004D  0   7009                  MDX       TEXIT          CDBCD087
004E  0   D010                  STO       SAVE           CDBCD088
004F  0   6B10                  STX    3  SAVE3          CDBCD089
0050  0   C013                  LD        K10            CDBCD090
0051  0   900E                  S         SAVE3          CDBCD091
0052  0   800B                  A         RESLT          CDBCD092
0053  0   D00A                  STO       RESLT          CDBCD093
0054  0   C00A                  LD        SAVE           CDBCD094
0055  0   E00D                  AND       MASK1          CDBCD095
0056  0   70F3                  MDX       T4             CDBCD096
0057  0   C006           TEXIT  LD        RESLT          CDBCD097
0058  0   7001                  MDX       *+1            CDBCD098
0059  0   C00C           EXEPT  LD        X000A          CDBCD099
005A  01  4C800037              BSC    I  TRANS          CDBCD100
005C  0   0000           IND    DC        0              CDBCD101
005D  0   0000           COUNT  DC        0              CDBCD102
005E  0   0000           RESLT  DC        0              CDBCD103
005F  0   0000           SAVE   DC        0              CDBCD104
0060  0   0000           SAVE3  DC        0              CDBCD105
0061  0   0000           CODE   DC        0              CDBCD106
0062  0   1FF0           MASK   DC        /1FF0          CDBCD107
0063  0   7FFF           MASK1  DC        /7FFF          CDBCD108
0064  0   000A           K10    DC        10             CDBCD109
0065  0   2000           X2000  DC        /2000          CDBCD110
0066  0   000A           X000A  DC        /000A          CDBCD111
0068                            END                      CDBCD112
```

      NO ERRORS IN ABOVE ASSEMBLY.
CDBCD

IBM 1800 SUBROUTINE COMPR                                                    PAGE    1

```
                    ************************************************* COMPR002
                    *       IBM 1800 UTILITY SUBROUTINES          * COMPR003
                    ************************************************* COMPR004
                    *                                             * COMPR005
                    *    SUBROUTINE COMPR                         * COMPR006
                    *                                             * COMPR007
                    *    CALLING SEQUENCE                         * COMPR008
                    *    ---------------                         * COMPR009
                    *    LD       N                              * COMPR010
                    *    CALL     COMPR                          * COMPR011
                    *    DC       /....                          * COMPR012
                    *    .                                        * COMPR013
                    *    .                                        * COMPR014
                    *    DC       /....                          * COMPR015
                    *    DC       EQUBR                          * COMPR016
                    *                                             * COMPR017
                    *    SUBROUTINE COMPR  COMPARES N WORDS STARTING * COMPR018
                    *    AT XR2 WITH THE N VALUES FOLLOWING THE CALL.* COMPR019
                    *    WHEN MATCHING OCCURS THE PROGRAM BRANCHES TO* COMPR020
                    *    LOCATION EQUBR.                         * COMPR021
                    *                                             * COMPR022
                    ************************************************* COMPR023
0000      035945D9          ENT      COMPR                              COMPR024
0000 0    0000     COMPR DC         0                                   COMPR025
0001 0    6A0B            STX      2  CPR3&1                            COMPR026
0002 0    6A15            STX      2  SV5&1                             COMPR027
0003 0    D001            STO         *&1                              COMPR028
0004 00   66000000  CPR2  LDX     L2  *-*                              COMPR029
0006 0    C0F9            LD          COMPR                            COMPR030
0007 0    D007            STO         CPR1&1                           COMPR031
0008 0    80FC            A           CPR2&1                           COMPR032
0009 0    D0F6            STO         COMPR                            COMPR033
000A 01   74FF000F        MDX     L   CPR1&1,-1                        COMPR034
000C 00   C6000000  CPR3  LD      L2  *-*                              COMPR035
000E 00   96000000  CPR1  S       L2  *-*                              COMPR036
0010 01   4C20001B        BSC     L   CPR4,Z       BRANCH IF NOT EQUAL COMPR037
0012 0    72FF            MDX     2   -1                               COMPR038
0013 0    70F8            MDX         CPR3                             COMPR039
0014 01   C4800000        LD      I   COMPR                            COMPR040
0016 0    D0E9            STO         COMPR                            COMPR041
0017 00   66000000  SV5   LDX     L2  *-*                              COMPR042
0019 01   4C800000        BSC     I   COMPR                            COMPR043
001B 01   74010000  CPR4  MDX     L   COMPR,1                          COMPR044
001D 0    70F9            MDX         SV5                              COMPR045
001E                      END                                          COMPR046
```

      NO ERRORS IN ABOVE ASSEMBLY.
COMPR
DUP FUNCTION COMPLETED

```
          ***********************************************  USER 002
          *       IBM 1800 UTILITY SUBROUTINES          *  USER 003
          ***********************************************  USER 004
          *                                             *  USER 005
          *       SUBROUTINE USER                        *  USER 006
          *                                             *  USER 007
          *       CALLING SEQUENCE                       *  USER 008
          *       ----------------                       *  USER 009
          *       CALL      USER                         *  USER 010
          *       DC        EOFSW                        *  USER 011
          *                                             *  USER 012
          *       SUBROUTINE USER IS TO BE USED AS SPECIAL    *  USER 013
          *       CONDITION ROUTINE FOR THE READ FUNCTION WITH*  USER 014
          *       LIBF MAGT. IT TESTS THE ACCUMULATOR AND SETS*  USER 015
          *       SWITCHES ON EOF AND ERROR DETECTION, WHEN   *  USER 016
          *       THE RECORD WAS TOO LONG OR TOO SHORT.       *  USER 017
          *       EOFSW IS THE START ADDRESS OF 4 SWITCHES,   *  USER 018
          *       EOFSW,ERRSW,TOLSW,LNGTH.                    *  USER 019
          *                                             *  USER 020
          ***********************************************  USER 021
0000      24885640           ENT       USER                  USER 022
0000  0   0000      USER     DC        0                     USER 023
0001  0   690F               STX    1  SAV1&1                USER 024
0002  01  65800000           LDX    I1 USER                  USER 025
0004  0   6901               STX    1  *+1                   USER 026
0005  00  65800000           LDX    I1 *-*                   USER 027
0007  0   901B               S         K1         ACC#1      USER 028
0008  01  4C180016           BSC    L  US1,&-     YES,BRANCH USER 029
000A  0   9018               S         K1         ACC#2      USER 030
000B  01  4C180019           BSC    L  US2,&-     YES,BRANCH USER 031
000D  0   9016               S         K2         ACC#4      USER 032
000E  01  4C180020           BSC    L  US4,&-     YES,BRANCH USER 033
0010  00  65000000  SAV1     LDX    L1 *-*                   USER 034
0012  01  74010000           MDX    L  USER,1                USER 035
0014  01  4C800000           BSC    I  USER                  USER 036
0016  0   C000      US1      LD        *                     USER 037
0017  0   D100               STO    1  0                     USER 038
0018  0   70F7               MDX       SAV1                  USER 039
0019  0   1090      US2      SLT       16                    USER 040
001A  0   8008               A         K1                    USER 041
001B  01  4C08001E           BSC    L  *&1,&      TEST IF TOO  LONG  USER 042
001D  0   D102               STO    1  2          YES        USER 043
001E  0   D103               STO    1  3          NO         USER 044
001F  0   70F0               MDX       SAV1                  USER 045
0020  0   C000      US4      LD        *                     USER 046
0021  0   D101               STO    1  1                     USER 047
0022  0   70F6               MDX       US2                   USER 048
0023  0   0001      K1       DC        1                     USER 049
0024  0   0002      K2       DC        2                     USER 050
0026                         END                             USER 051
```

          NO ERRORS IN ABOVE ASSEMBLY.
USER
DUP FUNCTION COMPLETED

IBM 1800 SUBROUTINE MAG                                          PAGE    1

```
                    ****************************************************** MAG00002
                    *       IBM 1800 UTILITY SUBROUTINES               * MAG00003
                    ****************************************************** MAG00004
                    *                                                   * MAG00005
                    *       SUBROUTINE MAG                              * MAG00006
                    *                                                   * MAG00007
                    *       CALLING SEQUENCE                            * MAG00008
                    *       ---------------                            * MAG00009
                    *       CALL      MAG                               * MAG00010
                    *       DC        ERRBR                             * MAG00011
                    *       DC        EOFBR                             * MAG00012
                    *       DC        EOFSW                             * MAG00013
                    *                                                   * MAG00014
                    *       SUBROUTINE MAG TRIES TO READ A TAPE IN EVEN * MAG00015
                    *       AND ODD PARITY. ON EOF DETECTION THE PROG.  * MAG00016
                    *       BRANCHES TO EOFBR, ON ERROR DETECTION TO    * MAG00017
                    *       ERRBR. EOFSW IS THE START ADDRESS OF THE 4  * MAG00018
                    *       SWITCHES USED BY SUBR. USER.                * MAG00019
                    *                                                   * MAG00020
                    ****************************************************** MAG00021
0000      14047000           ENT       MAG                          \     MAG00022
0000  0   0000      MAG       DC        0                                  MAG00023
0001  0   6927                STX       1   SAV1+1                         MAG00024
0002  0   6A28                STX       2   SAV2+1                         MAG00025
0003  0   6A60                STX       2   MAGAR                          MAG00026
0004  0   6B28                STX       3   SAVX3+1                        MAG00027
0005  00  67800067            LDX       I3  103                           MAG00028
0007  01  66800000            LDX       I2  MAG                           MAG00029
0009  0   1004                SLA           4                             MAG00030
000A  0   1804                SRA           4                             MAG00031
000B  0   E864                OR            H2000                         MAG00032
000C  0   D056                STO           MGTCL                         MAG00033
000D  0   8063                A             H5000                         MAG00034
000E  0   D035                STO           MGTC1                         MAG00035
000F  0   D03E                STO           MGTC2                         MAG00036
0010  0   C202                LD        2   2                             MAG00037
0011  0   D04C                STO           EOFER                         MAG00038
0012  01  6580005E  MAG1      LDX       I1  EOFER                         MAG00039
0014  0   404C      READ      BSI           MAGR                          MAG00040
0015  0   C101                LD        1   1                             MAG00041
0016  01  4C200030            BSC       L   ER,Z                          MAG00042
0018  0   C100                LD        1   0                             MAG00043
0019  01  4C200058            BSC       L   EOF,Z                         MAG00044
001B  01  74030000            MDX       L   MAG,3                         MAG00045
001D  01  74FF006E  RET       MDX       L   CTR3,-1                       MAG00046
001F  0   7002                MDX           *+2                           MAG00047
0020  0   C04E                LD            H7000                         MAG00048
0021  0   D029                STO           ER2                           MAG00049
0022  0   C040                LD            MGTCL                         MAG00050
0023  0   1004                SLA           4                             MAG00051
0024  0   1804                SRA           4                             MAG00052
0025  0   620A                LDX       2   10                            MAG00053
0026  0   6A45                STX       2   CTR1                          MAG00054
0027  0   6A45                STX       2   CTR2                          MAG00055
0028  00  65000000  SAV1      LDX       L1  *-*                           MAG00056
002A  00  66000000  SAV2      LDX       L2  *-*                           MAG00057
002C  00  67000000  SAVX3     LDX       L3  *-*                           MAG00058
```

```
002E  01  4C800000              BSC   I   MAG              MAG00059
                          *                                MAG00060
0030  01  74FF006C    ER    MDX   L   CTR1,-1          MAG00061
0032  0   700A              MDX       ER1              MAG00062
0033  01  740A006C          MDX   L   CTR1,10          MAG00063
0035  01  74FF006D          MDX   L   CTR2,-1          MAG00064
0037  0   7013              MDX       ER2              MAG00065
0038  01  740A006D          MDX   L   CTR2,10          MAG00066
003A  0   C200              LD    2   0                MAG00067
003B  0   D0C4              STO       MAG              MAG00068
003C  0   70E0              MDX       RET              MAG00069
003D  0   C103        ER1   LD    1   3                MAG00070
003E  01  84800064          A     I   MAGAR            MAG00071
0040  0   9031              S         K5               MAG00072
0041  01  4C080048          BSC   L   ER3+3,+          MAG00073
0043  20  140478C0          LIBF      MAGT             MAG00074
0044  0   7000        MGTC1 DC        /7000            MAG00075
0045  0   C01D        ER3   LD        MGTCL            MAG00076
0046  0   F024              EOR       H0100            MAG00077
0047  0   D01B              STO       MGTCL            MAG00078
0048  0   1010              SLA       16               MAG00079
0049  0   D101              STO   1   1                MAG00080
004A  0   70C7              MDX       MAG1             MAG00081
                          *                                MAG00082
004B  0   70F1        ER2   MDX       ER1              MAG00083
004C  0   6103              LDX   1   3                MAG00084
004D  20  140478C0    ER4   LIBF      MAGT             MAG00085
004E  0   7000        MGTC2 DC        /7000            MAG00086
004F  0   71FF              MDX   1   -1               MAG00087
0050  0   70FC              MDX       ER4              MAG00088
0051  0   6102              LDX   1   2                MAG00089
0052  0   400E              BSI       MAGR             MAG00090
0053  0   71FF              MDX   1   -1               MAG00091
0054  0   70FD              MDX       *-3              MAG00092
0055  01  6580005E          LDX   I1  EOFER            MAG00093
0057  0   70ED              MDX       ER3              MAG00094
                          *                                MAG00095
0058  0   C201        EOF   LD    2   1                MAG00096
0059  0   D0A6              STO       MAG              MAG00097
005A  0   70C2              MDX       RET              MAG00098
005B  0   0000        USER  DC        0                MAG00099
005C  30  24885640          CALL      USER             MAG00100
005E  0   0000        EOFER DC        *-*              MAG00101
005F  01  4C80005B          BSC   I   USER             MAG00102
                          *                                MAG00103
0061  0   0000        MAGR  DC        0                MAG00104
0062  20  140478C0          LIBF      MAGT             MAG00105
0063  0   0000        MGTCL DC        *-*              MAG00106
0064  0   0000        MAGAR DC        *-*              MAG00107
0065  1   005B              DC        USER             MAG00108
0066  20  140478C0          LIBF      MAGT             MAG00109
0067  0   0000              DC        0                MAG00110
0068  0   70FD              MDX       *-3              MAG00111
0069  01  4C800061          BSC   I   MAGR             MAG00112
                          *                                MAG00113
006B  0   0100        H0100 DC        /0100            MAG00114
006C  0   000A        CTR1  DC        10               MAG00115
```

```
006D  0   000A      CTR2   DC      10          MAG00116
006E  0   0002      CTR3   DC      2           MAG00117
006F  0   7000      H7000  DC      /7000       MAG00118
0070  0   2000      H2000  DC      /2000       MAG00119
0071  0   5000      H5000  DC      /5000       MAG00120
0072  0   0005      K5     DC      5           MAG00121
0074                       END                 MAG00122
```

        NO ERRORS IN ABOVE ASSEMBLY.
MAG
DUP FUNCTION COMPLETED

```
        IBM 1800 SUBROUTINE CDTST                                  PAGE    1

              ********************************************************** CDTST002
              *        IBM 1800 UTILITY SUBROUTINES                   * CDTST003
              ********************************************************** CDTST004
              *                                                       * CDTST005
              *        SUBROUTINE CDTST                               * CDTST006
              *                                                       * CDTST007
              *        CALLING SEQUENCE                               * CDTST008
              *        ----------------                               * CDTST009
              *        CALL    CDTST                                  * CDTST010
              *        DC      CARD                                   * CDTST011
              *        RETURN FOR CARD EQUAL BLANK.                   * CDTST012
              *        RETURN FOR CARD NOT EQUAL BLANK                * CDTST013
              *                                                       * CDTST014
              *        SUBROUTINE CDTST TESTS IF THE AREA CARD        * CDTST015
              *        THROUGH CARD+79 IS BLANK OR NOT.               * CDTST016
              *                                                       * CDTST017
              ********************************************************** CDTST018
0000      031238A3            ENT    .CDTST                            CDTST019
0000 0    0000      CDTST DC         0                                 CDTST020
0001 0    6915            STX    1   X1+1                              CDTST021
0002 0    6A16            STX    2   X2+1                              CDTST022
0003 0    6B17            STX    3   X3+1                              CDTST023
0004 01   65800000        LDX    I1  CDTST                             CDTST024
0006 0    C100            LD     1   0                                 CDTST025
0007 0    D001            STO        C1+1                              CDTST026
0008 00   66000000  C1    LDX    L2  *-*         XR2 HAS START ADDR. OF CDTST027
000A 0    6350            LDX    3   80           CARD                 CDTST028
000B 0    C200      C2    LD     2   0                                 CDTST029
000C 01   4C200014        BSC    L   C3,Z                              CDTST030
000E 0    7201            MDX    2   1                                 CDTST031
000F 0    73FF            MDX    3   -1                                CDTST032
0010 0    70FA            MDX        C2                                CDTST033
0011 01   74010000        MDX    L   CDTST,1                           CDTST034
0013 0    7002            MDX        X1                                CDTST035
0014 01   74020000  C3    MDX    L   CDTST,2                           CDTST036
0016 00   65000000  X1    LDX    L1  *-*                               CDTST037
0018 00   66000000  X2    LDX    L2  *-*                               CDTST038
001A 00   67000000  X3    LDX    L3  *-*                               CDTST039
001C 01   4C800000        BSC    I   CDTST       RETURN                CDTST040
001E                      END                                         CDTST041
        NO ERRORS IN ABOVE ASSEMBLY.
CDTST
DUP FUNCTION COMPLETED
```

TAPE DUMP PROGRAM   TPDMP                                          PAGE    1

```
                    **********************************************  TPDMP002
                    *     IBM 1800 MAGNETIC TAPE UTILITY PROGRAMS   *  TPDMP003
                    **********************************************  TPDMP004
                    *                                              *  TPDMP005
                    *     TAPE DUMP PROGRAM   TPDMP                 *  TPDMP006
                    *                                              *  TPDMP007
                    *     PROGRAM TPDMP DUMPS A TAPE ON THE 1443    *  TPDMP008
                    *     PRINTER IN BCD, EBCDIC OR HEXADECIMAL     *  TPDMP009
                    *     FORMAT.                                   *  TPDMP010
                    *                                              *  TPDMP011
                    *     CONTROL CARD                              *  TPDMP012
                    *     COL. 1-2      **                          *  TPDMP013
                    *          3        INPUT TAPE UNIT NO. (0,1,2,3) *  TPDMP014
                    *          5        NUMBER OF TRACKS (7 OR 9)    *  TPDMP015
                    *          7        PARITY (O OR E)              *  TPDMP016
                    *          9        BYTES/WORD (2 OR 3)          *  TPDMP017
                    *          11-13    DENSITY (200,556 OR 800)     *  TPDMP018
                    *          15-17    OUTPUT FORMAT (BCD,EBC OR HEX) *  TPDMP019
                    *                                              *  TPDMP020
                    **********************************************  TPDMP021
                    *                                  IBM BRUSSELS  TPDMP022
                    *                                              TPDMP023
0000 20 176558D5    BEGIN LIBF      PRNTN       NEW PAGE           TPDMP024
0001 0  3100              DC        /3100                          TPDMP025
0002 20 17047140          LIBF      PAGE        PAGE NR            TPDMP026
0003 1  02B0              DC        ZPRNT&1                        TPDMP027
0004 0  003C              DC        60                             TPDMP028
0005 01 65000186    RET   LDX   L1  R                              TPDMP029
0007 20 03059115          LIBF      CARDN       READ ** CARD       TPDMP030
0008 0  1000              DC        /1000                          TPDMP031
0009 1  025E              DC        ZCART                          TPDMP032
000A 0  0000              DC                                       TPDMP033
000B 20 03059115          LIBF      CARDN       WAIT               TPDMP034
000C 0  0000              DC        0                              TPDMP035
000D 0  70FD              MDX       *-3                            TPDMP036
000E 20 085935D9          LIBF      HOLPR       CONVERT TO PRINTER CODE TPDMP037
000F 0  0001              DC        1                              TPDMP038
0010 1  025F              DC        ZCART&1                        TPDMP039
0011 1  02B0              DC        ZPRNT&1                        TPDMP040
0012 0  0050              DC        80                             TPDMP041
0013 01 660002AF          LDX   L2  ZPRNT                          TPDMP042
0015 0  C201              LD    2   1           TEST IF **         TPDMP043
0016 0  910F              S     1   H2C2C-R                        TPDMP044
0017 01 4C200114          BSC   L   ER1,Z       BRANCH IF NOT      TPDMP045
0019 01 44000164          BSI   L   IMPR        PRINT THE CARD     TPDMP046
001B 0  C202              LD    2   2           TEST TAPE UNIT     TPDMP047
001C 0  1808              SRA       8                              TPDMP048
001D 0  9120              S     1   K10-R       IS IT ZERO         TPDMP049
001E 01 4C180026          BSC   L   ZERO,&-                        TPDMP050
0020 0  8120              A     1   K10-R       NO                 TPDMP051
0021 0  9117              S     1   K4-R        IS IT 1,2,3        TPDMP052
0022 01 4C300117          BSC   L   ER2,-Z      NO,BRANCH          TPDMP053
0024 0  8117              A     1   K4-R        YES                TPDMP054
0025 0  D104              STO   1   UNTNR-R     SAVE UNIT          TPDMP055
0026 0  C203        ZERO  LD    2   3                              TPDMP056
0027 0  1808              SRA       8                              TPDMP057
0028 0  9116              S     1   K7-R        TEST IF 7-TRACK    TPDMP058
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TAPE DUMP PROGRAM   TPDMP                                                    PAGE    2

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0029 01  4C28011A           BSC   L   ER3,&Z                                TPDMP059
002B 01  4C180031           BSC   L   SEPT,&-     BRANCH IF YES             TPDMP060
002D 0   9114        .       S     1   K2-R .      TEST IF 9-TRACK           TPDMP061
002E 01  4C20011A           BSC   L   ER3,Z                                 TPDMP062
0030 0   7024               MDX       READ1                                 TPDMP063
0031 0   C204        SEPT   LD    2   4           TEST PARITY               TPDMP064
0032 0   1808               SRA       8                                     TPDMP065
0033 0   9111               S     1   H26-R       IS IT ODD PARITY          TPDMP066
0034 01  4C18003B           BSC   L   ODD,+-      YES, BRANCH               TPDMP067
0036 0   9112               S     1   H000F-R                               TPDMP068
0037 01  4C20011D           BSC   L   ER4,Z                                 TPDMP069
0039 0   C110        EVEN   LD    1   H0100-R     SAVE PARITY               TPDMP070
003A 0   D105               STO   1   PARTY-R                               TPDMP071
003B 0   C205        ODD    LD    2   5           TEST BYTES/WORD           TPDMP072
003C 0   1808               SRA       8                                     TPDMP073
003D 0   9114               S     1   K2-R                                  TPDMP074
003E 01  4C200043           BSC   L   *+3,Z       BRANCH IF NOT TWO         TPDMP075
0040 0   C10B               LD    1   H0040-R                               TPDMP076
0041 0   D106               STO   1   BYTES-R     SAVE  BYTES/WORD          TPDMP077
0042 0   7003               MDX       *+3                                   TPDMP078
0043 0   9113               S     1   K1-R                                  TPDMP079
0044 01  4C200120           BSC   L   ER5,Z                                 TPDMP080
0046 0   C206               LD    2   6           TEST DENSITY              TPDMP081
0047 0   910E               S     1   H020A-R                               TPDMP082
0048 01  4C180053           BSC   L   DENS2,&-    BRANCH IF   20X           TPDMP083
004A 0   910C               S     1   H02FB-R                               TPDMP084
004B 01  4C180051           BSC   L   DENS5,&-    BRANCH IF  55X            TPDMP085
004D 0   910D         \      S     1   H0305-R                              TPDMP086
004E 01  4C200123           BSC   L   ER6,Z       BRANCH IF   ERROR         TPDMP087
0050 0   7004        DENS8  MDX       DENS2&2                               TPDMP088
0051 0   C109        DENS5  LD    1   H0020-R                               TPDMP089
0052 0   7001               MDX       *&1                                   TPDMP090
0053 0   C10A        DENS2  LD    1   H0010-R                               TPDMP091
0054 0   D107               STO   1   DENS-R      SAVE  DENSITY             TPDMP092
0055 0   C108        READ1  LD    1   MGTCL-R                               TPDMP093
0056 0   E904               OR    1   UNTNR-R                               TPDMP094
0057 0   E905               OR    1   PARTY-R                               TPDMP095
0058 0   E906               OR    1   BYTES-R                               TPDMP096
0059 0   E907               OR    1   DENS-R      SAVE MAGT CONTROL WORD    TPDMP097
005A 0   D108               STO   1   MGTCL-R                               TPDMP098
005B 0   C208               LD    2   8           IS IT BCD                 TPDMP099
005C 0   9118               S     1   BC-R                                  TPDMP100
005D 0   6200               LDX   2   0                                     TPDMP101
005E 01  4C18006A           BSC   L   ACT,&-      YES  BRANCH               TPDMP102
0060 0.  9119               S     1   EB-R        IS IT EBCDIC              TPDMP103
0061 0   7201               MDX   2   1                                     TPDMP104
0062 01  4C18006A           BSC   L   ACT,&-      YES  BRANCH               TPDMP105
0064 0   911A               S     1   HE-R        IS IT  HEXADECIMAL        TPDMP106
0065 0   7201               MDX   2   1                                     TPDMP107
0066 01  4C18006A           BSC   L   ACT,&-      YES  BRANCH               TPDMP108
0068 01  4C000126           BSC   L   ER7                                   TPDMP109
006A 01  C60001A1    ACT    LD    L2  BC1         PREPARE BRANCH            TPDMP110
006C 0   D02F               STO       BRNCH&1                               TPDMP111
006D 20  024C1552           LIBF      BLANK                                 TPDMP112
006E 1   02B0               DC        ZPRNT+1                               TPDMP113
006F 0   0005               DC        5                                     TPDMP114
0070 20  220C14C0           LIBF      SCAL        SCALE THE PAGE            TPDMP115
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TAPE DUMP PROGRAM   TPDMP                                    PAGE    3

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0071  1   02B5              DC       ZPRNT+6                                   TPDMP116
0072  1   02AF              DC       ZPRNT                                     TPDMP117
0073  0   0032              DC       50                                        TPDMP118
0074  20  024C1552    READ  LIBF     BLANK      BLANK OUTPUT AREA             TPDMP119
0075  1   02B0              DC       ZPRNT&1                                   TPDMP120
0076  0   003C              DC       60                                        TPDMP121
0077  01  44000164          BSI   L  IMPR                                      TPDMP122
0079  01  65000186          LDX   L1 R                                         TPDMP123
007B  01  660002EC          LDX   L2 ZMAGT                                     TPDMP124
007D  0   C108              LD    1  MGTCL-R                                   TPDMP125
007E  30  14047000          CALL     MAG                                       TPDMP126
0080  1   014B              DC       ER10       TAPE ERROR BRANCH             TPDMP127
0081  1   0129              DC       ER8        EOF BRANCH                    TPDMP128
0082  1   01AB              DC       EOFSW                                     TPDMP129
0083  0   D108              STO   1  MGTCL-R                                   TPDMP130
0084  0   C128        RET11 LD    1  LNGTH-R                                   TPDMP131
0085  01  840002EC          A     L  ZMAGT                                     TPDMP132
0087  0   D045              STO      CTRL                                      TPDMP133
0088  0   C127              LD    1  TOLSW-R    RECORD TO LONG                TPDMP134
0089  01  4C20013E          BSC   L  ER9,Z      YES, BRANCH                   TPDMP135
008B  0   7201        RET12 MDX   2  1                                         TPDMP136
008C  0   C108              LD    1  MGTCL-R                                   TPDMP137
008D  0   1808              SRA      8                                         TPDMP138
008E  01  4C200092          BSC   L  EVEN1,Z                                   TPDMP139
0090  0   C900              LDD   1  KODD-R                                     TPDMP140
0091  0   7001              MDX      BR                                        TPDMP141
0092  0   C902        EVEN1 LDD   1  KEVEN-R                                   TPDMP142
0093  01  DC0002B0    BR    STD   L  ZPRNT+1                                   TPDMP143
0095  0   C122              LD    1  RECNR-R                                   TPDMP144
0096  0   8113              A     1  K1-R                                      TPDMP145
0097  0   D122              STO   1  RECNR-R                                   TPDMP146
0098  30  03209180          CALL     CHIF                                      TPDMP147
009A  1   02B2              DC       ZPRNT+3                                   TPDMP148
009B  00  4C000000    BRNCH BSC   L  *-*                                      TPDMP149
                       *                                                       TPDMP150
009D  01  74CE00CD    BCD   MDX   L  CTRL,-50   STILL ONE  FULL LINE          TPDMP151
009F  0   701E              MDX      BCD1       YES ,BRANCH                   TPDMP152
00A0  0   1010              SLA      16         NO                            TPDMP153
00A1  0   902B              S        CTRL                                      TPDMP154
00A2  0   D012              STO      CMPT       CMPT NUMBER OF *              TPDMP155
00A3  01  658000CD          LDX   I1 CTRL                                      TPDMP156
00A5  0   7132              MDX   1  50                                        TPDMP157
00A6  0   7000              MDX      *                                         TPDMP158
00A7  0   6908              STX   1  CMP1       CMP1 NUMBER OF CHARACTERS     TPDMP159
00A8  01  750002B5          MDX   L1 ZPRNT&6                                   TPDMP160
00AA  0   6909              STX   1  DEST       DEST#STARTING POINT OF *      TPDMP161
00AB  0   6A02              STX   2  ORG1       ORG1#STARTING POINT IN        TPDMP162
00AC  30  145A5140    MV    CALL     MOVE       MAGT AREA                     TPDMP163
00AE  0   0000        ORG1  DC       *-*        MOVE CHARACTERS               TPDMP164
00AF  1   02B5              DC       ZPRNT&6                                   TPDMP165
00B0  0   0000        CMP1  DC       *-*                                      TPDMP166
00B1  30  145A5171          CALL     MOVE1      MOVE *                        TPDMP167
00B3  1   0195              DC       H2C2C                                     TPDMP168
00B4  1   00B4        DEST  DC       DEST                                      TPDMP169
00B5  0   0000        CMPT  DC       *-*                                      TPDMP170
00B6  01  65000186          LDX   L1 R                                         TPDMP171
00B8  0   41DE              BSI   1  IMPR-R                                    TPDMP172
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00B9  0   7232                MDX    2  50                              TPDMP173
00BA  0   C012                LD        CTRL                            TPDMP174
00BB  01  4C280074            BSC    L  READ,&Z                         TPDMP175
00BD  0   70DF                MDX       BCD                             TPDMP176
00BE  0   6AEF        BCD1    STX    2  ORG1         PRINT A FULL LINE  TPDMP177
00BF  0   C11E                LD     1  K50-R        OF                 TPDMP178
00C0  0   DOEF                STO       CMP1         50    WORDS        TPDMP179
00C1  0   1010                SLA       16                             TPDMP180
00C2  0   DOF2                STO       CMPT                            TPDMP181
00C3  0   70E8                MDX       MV                             TPDMP182
                                                                       TPDMP183
00C4  0   C008        EBC     LD        CTRL                            TPDMP184
00C5  0   1001                SLA       1                              TPDMP185
00C6  0   D006                STO       CTRL                            TPDMP186
00C7  0   6A04                STX    2  *+4                            TPDMP187
00C8  0   6A02                STX    2  *+2          CONVERT TO         TPDMP188
00C9  20  05097663            LIBF      EBPRT        PRINTER CODE       TPDMP189
00CA  0   0001                DC        1                              TPDMP190
00CB  0   0000                DC        *-*                            TPDMP191
00CC  0   0000                DC        *-*                            TPDMP192
00CD  0   0000        CTRL    DC        *-*                            TPDMP193
00CE  0   COFE                LD        CTRL                            TPDMP194
00CF  0   1801                SRA       1                              TPDMP195
00D0  0   DOFC                STO       CTRL                            TPDMP196
00D1  0   70CB                MDX       BCD                             TPDMP197
                                                                       TPDMP198
                                                                       TPDMP199
00D2  0   1010        HEX     SLA       16           INITIALISE WORD NUMBER  TPDMP200
00D3  0   D124                STO    1  NRO-R                           TPDMP201
00D4  01  65000186    HEX3    LDX    L1 R                               TPDMP202
00D6  0   COF6                LD        CTRL                            TPDMP203
00D7  0   911F                S      1  K16-R                           TPDMP204
00D8  0   DOF4                STO       CTRL                            TPDMP205
00D9  01  4C2800FD            BSC    L  HEX1,&Z                         TPDMP206
00DB  0   C11F                LD     1  K16-R        NO  INITIALISE A LINE  TPDMP207
00DC  0   D121                STO    1  CT-R                            TPDMP208
00DD  01  650002B8    HEX5    LDX    L1 ZPRNT&9                         TPDMP209
00DF  01  C40001AA            LD     L  NRO          LOAD  WORD NUMBER  TPDMP210
00E1  30  03595227            CALL      CONHX                           TPDMP211
00E3  0   0001                DC        1                              TPDMP212
00E4  1   02B5                DC        ZPRNT+6                         TPDMP213
00E5  01  741001AA            MDX    L  NRO,16                          TPDMP214
00E7  01  740001A7    HEX2    MDX    L  CT,0                            TPDMP215
00E9  0   7001                MDX       *+1                            TPDMP216
00EA  0   700D                MDX       HEX6                            TPDMP217
00EB  0   C200                LD     2  0                              TPDMP218
00EC  0   6903                STX    1  *+3                            TPDMP219
00ED  30  03595227            CALL      CONHX                           TPDMP220
00EF  0   0001                DC        1            4.CHARACTERS       TPDMP221
00F0  0   0000                DC        *-*                            TPDMP222
00F1  0   7103                MDX    1  3                              TPDMP223
00F2  0   7201                MDX    2  1                              TPDMP224
00F3  0   1010                SLA       16                             TPDMP225
00F4  0   D1FF                STO    1  -1           TWO BLANKS         TPDMP226
00F5  01  74FF01A7            MDX    L  CT,-1        STILL ANOTHER WORD TPDMP227
00F7  0   70EF                MDX       HEX2         GO FOR NEXT WORD   TPDMP228
00F8  0   406B        HEX6    BSI       IMPR         PRINT LINE         TPDMP229
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00F9 0  C0D3              LD    CTRL            TEST IF ONE MORE LINE     TPDMP230
00FA 01 4C280074          BSC L READ,&Z         BRANCH IF NOT            TPDMP231
00FC 0  70D7              MDX   HEX3            ELSE GO TO NEXT WORD      TPDMP232
00FD 0  1010         HEX1 SLA   16                                       TPDMP233
00FE 0  90CE              S     CTRL                                     TPDMP234
00FF 0  A115              M   1 K3-R                                     TPDMP235
0100 0  1090              SLT   16                                       TPDMP236
0101 0  9113              S   1 K1-R                                     TPDMP237
0102 0  D00F              STO   HEX4            HEX4# NUMBER *            TPDMP238
0103 0  C0C9              LD    CTRL                                     TPDMP239
0104 0  811F              A   1 K16-R                                    TPDMP240
0105 0  D121              STO 1 CT-R            CT  # NUMBER OF WORDS     TPDMP241
0106 0  A115              M   1 K3-R                                     TPDMP242
0107 0  1090              SLT   16                                       TPDMP243
0108 0  D003              STO   *&3                                      TPDMP244
0109 01 650002B8          LDX L1 ZPRNT+9                                 TPDMP245
010B 00 75000000          MDX L1 *-*                                     TPDMP246
010D 0  6903              STX 1 HEX4-1          HEX4-1 #STARTING PNT OF * TPDMP247
010E 30 145A5171          CALL  MOVE1           MOVE *                   TPDMP248
0110 1  0195              DC    H2C2C                                    TPDMP249
0111 0  0000              DC    *-*                                      TPDMP250
0112 0  0000         HEX4 DC    *-*                                      TPDMP251
0113 0  70C9              MDX   HEX5            GO TO PRINT THE LINE      TPDMP252
                     *                                                   TPDMP253
0114 01 650001BB     ER1  LDX L1 M1                                      TPDMP254
0116 0  703D              MDX   TYP                                      TPDMP255
                     *                                                   TPDMP256
0117 01 650001C4     ER2  LDX L1 M2                                      TPDMP257
0119 0  703A              MDX   TYP                                      TPDMP258
                     *                                                   TPDMP259
011A 01 650001CD     ER3  LDX L1 M3                                      TPDMP260
011C 0  7037              MDX   TYP                                      TPDMP261
                     *                                                   TPDMP262
011D 01 650001DA     ER4  LDX L1 M4                                      TPDMP263
011F 0  7034              MDX   TYP                                      TPDMP264
                     *                                                   TPDMP265
0120 01 650001E2     ER5  LDX L1 M5                                      TPDMP266
0122 0  7031              MDX   TYP                                      TPDMP267
                     *                                                   TPDMP268
0123 01 650001F1     ER6  LDX L1 M6                                      TPDMP269
0125 0  702E              MDX   TYP                                      TPDMP270
                     *                                                   TPDMP271
0126 01 650001F9     ER7  LDX L1 M7                                      TPDMP272
0128 0  702B              MDX   TYP                                      TPDMP273
                     *                                                   TPDMP274
0129 20 024C1552     ER8  LIBF  BLANK                                    TPDMP275
012A 1  02B0              DC    ZPRNT+1                                  TPDMP276
012B 0  003C              DC    60                                       TPDMP277
012C 30 145A5140          CALL  MOVE                                     TPDMP278
012E 1  0209              DC    M8+1                                     TPDMP279
012F 1  02BE              DC    ZPRNT+15                                 TPDMP280
0130 0  000B              DC    FM8-M8-1                                 TPDMP281
0131 0  C067              LD    K1                                       TPDMP282
0132 0  D123              STO 1 LNCTR-R                                  TPDMP283
0133 0  4030              BSI   IMPR                                     TPDMP284
0134 20 23A17155          LIBF  TYPEN                                    TPDMP285
0135 0  2001              DC    /2001                                    TPDMP286
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0136 1  0214              DC      M81              TPDMP287
0137 0  0000              DC                       TPDMP288
0138 20 17064885          LIBF    PAUSE            TPDMP289
0139 0  FFFF              DC      /FFFF            TPDMP290
013A 0  1010              SLA     16               TPDMP291
013B 0  D125              STO   1 EOFSW-R          TPDMP292
013C 01 4C000074          BSC   L READ             TPDMP293
                    *                              TPDMP294
013E 01 C40002EC   ER9    LD    L ZMAGT            TPDMP295
0140 0  D08C              STO     CTRL             TPDMP296
0141 30 145A5140          CALL    MOVE             TPDMP297
0143 1  0238              DC      M9+1             TPDMP298
0144 1  02BE              DC      ZPRNT&15         TPDMP299
0145 0  0011              DC      FM9-M9-1         TPDMP300
0146 0  401D              BSI     IMPR             TPDMP301
0147 0  1010              SLA     16               TPDMP302
0148 0  D127              STO   1 TOLSW-R          TPDMP303
0149 01 4C00008B   ER91   BSC   L RET12            TPDMP304
                    *                              TPDMP305
014B 0  1010       ER10   SLA     16               TPDMP306
014C 0  D126              STO   1 ERRSW-R          TPDMP307
014D 30 145A5140          CALL    MOVE             TPDMP308
014F 1  024A              DC      M10+1            TPDMP309
0150 1  02BE              DC      ZPRNT&15         TPDMP310
0151 0  0013              DC      FM10-M10-1       TPDMP311
0152 0  4011              BSI     IMPR             TPDMP312
0153 0  70F5              MDX     ER91             TPDMP313
                    *                              TPDMP314
0154 0  6902       TYP    STX   1 *&2              TPDMP315
0155 20 23A17155          LIBF    TYPEN            TPDMP316
0156 0  2001              DC      /2001            TPDMP317
0157 0  0000              DC      *-*              TPDMP318
0158 0  0000              DC                       TPDMP319
0159 20 23A17155          LIBF    TYPEN            TPDMP320
015A 0  2001              DC      /2001            TPDMP321
015B 1  01AF              DC      MO               TPDMP322
015C 0  0000              DC      0                TPDMP323
015D 0  10A0              SLT     32               TPDMP324
015E 0  D82B              STD     UNTNR            TPDMP325
015F 0  D82C              STD     BYTES            TPDMP326
0160 20 17064885          LIBF    PAUSE            TPDMP327
0161 0  FFFF              DC      /FFFF            TPDMP328
0162 01 4C000005   TYP1   BSC   L RET              TPDMP329
                    *                              TPDMP330
                    *                              TPDMP331
0164 0  0000       IMPR   DC      0                TPDMP332
0165 20 176558D5          LIBF    PRNTN            TPDMP333
0166 0  2000              DC      /2000            TPDMP334
0167 1  02AF              DC      ZPRNT            TPDMP335
0168 0  0000              DC                       TPDMP336
0169 20 176558D5          LIBF    PRNTN            TPDMP337
016A 0  4000              DC      /4000            TPDMP338
016B 0  1001              SLA     1                TPDMP339
016C 01 4C100183          BSC   L IMPR1,-          TPDMP340
016E 20 176558D5          LIBF    PRNTN            TPDMP341
016F 0  3100              DC      /3100            TPDMP342
0170 30 145A5140          CALL    MOVE             TPDMP343
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0172  1   02B0              DC      ZPRNT&1              TPDMP344
0173  1   01C4              DC      M2                   TPDMP345
0174  0   0008              DC      8                    TPDMP346
0175  20  17047140          LIBF    PAGE                 TPDMP347
0176  1   02B0              DC      ZPRNT&1              TPDMP348
0177  0   003C              DC      60                   TPDMP349
0178  20  220C14C0          LIBF    SCAL                 TPDMP350
0179  1   02B5              DC      ZPRNT&6              TPDMP351
017A  1   02AF              DC      ZPRNT                TPDMP352
017B  0   0032              DC      50                   TPDMP353
017C  30  145A5140          CALL    MOVE                 TPDMP354
017E  1   01C4              DC      M2                   TPDMP355
017F  1   02B0              DC      ZPRNT&1              TPDMP356
0180  0   0008              DC      8                    TPDMP357
0181  01  743A01A9          MDX   L LNCTR,58             TPDMP358
0183  01  4C800164  IMPR1   BSC   I IMPR                 TPDMP359
0186      0000              BSS   E 0                    TPDMP360
0186                      R EQU     *                    TPDMP361
0186      0004    KODD      DMES  1 ODD'E                TPDMP362
0188      0004    KEVEN     DMES  1 EVEN'E               TPDMP363
018A  0   0000    UNTNR     DC      *-*                  TPDMP364
018B  0   0000    PARTY     DC      *-*                  TPDMP365
018C  0   0000    BYTES     DC      *-*                  TPDMP366
018D  0   0000    DENS      DC      *-*                  TPDMP367
018E  0   2000    MGTCL     DC      /2000                TPDMP368
018F  0   0020    H0020     DC      /0020                TPDMP369
0190  0   0010    H0010     DC      /0010                TPDMP370
0191  0   0040    H0040     DC      /0040                TPDMP371
0192  0   02FB    H02FB     DC      /02FB                TPDMP372
0193  0   0305    H0305     DC      /0305                TPDMP373
0194  0   020A    H020A     DC      /020A                TPDMP374
0195  0   2C2C    H2C2C     DC      /2C2C                TPDMP375
0196  0   0100    H0100     DC      /0100                TPDMP376
0197  0   0026    H26       DC      /0026                TPDMP377
0198  0   000F    H000F     DC      /000F                TPDMP378
0199  0   0001    K1        DC      1                    TPDMP379
019A  0   0002    K2        DC      2                    TPDMP380
019B  0   0003    K3        DC      3                    TPDMP381
019C  0   0007    K7        DC      7                    TPDMP382
019D  0   0004    K4        DC      4                    TPDMP383
019E  0   3233    BC        DC      /3233                TPDMP384
019F  0   02FF    EB        DC      /3532-/3233          TPDMP385
01A0  0   0303    HE        DC      /3835-/3532          TPDMP386
01A1  1   009D    BC1       DC      BCD                  TPDMP387
01A2  1   00C4              DC      EBC                  TPDMP388
01A3  1   00D2              DC      HEX                  TPDMP389
01A4  0   0032    K50       DC      50                   TPDMP390
01A5  0   0010    K16       DC      16                   TPDMP391
01A6  0   000A    K10       DC      10                   TPDMP392
01A7  0   0000    CT        DC      *-*                  TPDMP393
01A8  0   0000    RECNR     DC      *-*                  TPDMP394
01A9  0   003A    LNCTR     DC      58                   TPDMP395
01AA  0   0000    NRO       DC      0                    TPDMP396
01AB  0   0000    EOFSW     DC      *-*                  TPDMP397
01AC  0   0000    ERRSW     DC      *-*                  TPDMP398
01AD  0   0000    TOLSW     DC      *-*                  TPDMP399
01AE  0   0000    LNGTH     DC      *-*                  TPDMP400
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01AF 0  000B      M0    DC        FM0-M0-1                          TPDMP401
01B0    0016             DMES      'RCORRECT AND CONTINUE'E          TPDMP402
01BB    0000      FM0   BES       0                                 TPDMP403
01BB 0  0008      M1    DC        FM1-M1-1                          TPDMP404
01BC    0010             DMES      'R**CARD MISSING'E                TPDMP405
01C4    0000      FM1   BES       0                                 TPDMP406
01C4 0  0008      M2    DC        FM2-M2-1                          TPDMP407
01C5    0010             DMES      'RWRONG TAPE UNIT'E               TPDMP408
01CD    0000      FM2   BES       0                                 TPDMP409
01CD 0  000C      M3    DC        FM3-M3-1                          TPDMP410
01CE    0018             DMES      'RWRONG NUMBER OF TRACKS'E        TPDMP411
01DA    0000      FM3   BES       0                                 TPDMP412
01DA 0  0007      M4    DC        FM4-M4-1                          TPDMP413
01DB    000E             DMES      'RPARITY WRONG'E                  TPDMP414
01E2    0000      FM4   BES       0                                 TPDMP415
01E2 0  000E      M5    DC        FM5-M5-1                          TPDMP416
01E3    001C             DMES      'RWRONG  NUMBER OF BYTES/WORD'E   TPDMP417
01F1    0000      FM5   BES       0                                 TPDMP418
01F1 0  0007      M6    DC        FM6-M6-1                          TPDMP419
01F2    000E             DMES      'RWRONG DENSITY'E                 TPDMP420
01F9    0000      FM6   BES       0                                 TPDMP421
01F9 0  000E      M7    DC        FM7-M.7-1                         TPDMP422
01FA    001C             DMES      'R WRONG OUTPUT SPECIFICATION'E   TPDMP423
0208    0000      FM7   BES       0                                 TPDMP424
0208 0  000B      M8    DC        FM8-M8-1                          TPDMP425
0209    0016             DMES    1 '5F*END OF FILE'5F*'E            TPDMP426
0214    0000      FM8   BES       0                                 TPDMP427
0214 0  0022      M81   DC        FM81-M81-1                        TPDMP428
0215    001F             DMES      'REND OF FILE'R TO CONTINUE PRESS' TPDMP429
0224    0021             DMES      START'R TO EXIT PRESS CONSOL INTER' TPDMP430
0235    0004             DMES      RUPT'E                            TPDMP431
0237    0000      FM81  BES       0                                 TPDMP432
0237 0  0011      M9    DC        FM9-M9-1                          TPDMP433
0238    0022             DMES    1 '5F*THIS RECORD IS TOO LONG'5F*'E TPDMP434
0249    0000      FM9   BES       0                                 TPDMP435
0249 0  0013      M10   DC        FM10-M10-1                        TPDMP436
024A    0026             DMES    1 '5F*THIS RECORD CONTAINS ERRORS'5F*'E TPDMP437
025D    0000      FM10  BES       0                                 TPDMP438
025E    0000             BSS     E 0                                TPDMP439
025E 0  0050      ZCART DC        80                                TPDMP440
025F    0050             BSS       80                               TPDMP441
02AF 0  003C      ZPRNT DC        60                                TPDMP442
02B0    003C             BSS       60                               TPDMP443
02EC 0  0BB8      ZMAGT DC        3000                              TPDMP444
02ED    0BB9             BSS       3001                             TPDMP445
0EA6    0000             END       BEGIN                            TPDMP446
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       NO ERRORS IN ABOVE ASSEMBLY.
TPDMP
DUP FUNCTION COMPLETED

TAPE MAP PROGRAM    TPMAP                                    PAGE    1

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                    ********************************************  TPMAP002
                    *      IBM 1800 MAGNETIC TAPE UTILITY PROGRAMS      *  TPMAP003
                    ********************************************  TPMAP004
                    *                                          *  TPMAP005
                    *      TAPE MAP PROGRAM   TPMAP            *  TPMAP006
                    *                                          *  TPMAP007
                    *      PROGRAM TPMAP READS A TAPE AND PRODUCES A    *  TPMAP008
                    *      TAPE MAP ON THE 1443 PRINTER SPECIFYING      *  TPMAP009
                    *      THE NUMBER OF RECORDS, THE LENGTH AND THE    *  TPMAP010
                    *      PARITY.                             *  TPMAP011
                    *                                          *  TPMAP012
                    *      CONTROL CARD                        *  TPMAP013
                    *      COL. 1-2        **                  *  TPMAP014
                    *           3          INPUT TAPE UNIT NO. (0,1,2,3) *  TPMAP015
                    *           5          NUMBER OF TRACKS (7 OR 9)  *  TPMAP016
                    *                                          *  TPMAP017
                    ********************************************  TPMAP018
                    *                                  IBM BRUSSELS  TPMAP019
                    *                                             TPMAP020
0000 20 176558D5  BEGIN LIBF     PRNTN       NEW PAGE            TPMAP021
0001 0  3100            DC       /3100                           TPMAP022
0002 20 17047140        LIBF     PAGE        PRINT PAGE NUMBER   TPMAP023
0003 1  02D7            DC       ZPRT&1                          TPMAP024
0004 0  0032            DC       50                              TPMAP025
0005 01 65000190  DEBUT LDX  L1  R           R# RELOCATION INDICATOR  TPMAP026
0007 20 03059115        LIBF     CARDN       READ ** CARD        TPMAP027
0008 0  1000            DC       /1000                           TPMAP028
0009 1  023E            DC       ZCART                           TPMAP029
000A 0  0000            DC       0                               TPMAP030
000B 20 03059115        LIBF     CARDN       WAIT                TPMAP031
000C 0  0000            DC       0                               TPMAP032
000D 0  70FD            MDX      *-3                             TPMAP033
000E 20 085935D9        LIBF     HOLPR       CONVERT TO 1816 CODE  TPMAP034
000F 0  0000            DC       0                               TPMAP035
0010 1  023F            DC       ZCART&1                         TPMAP036
0011 1  0291            DC       ZTYP&2                          TPMAP037
0012 0  0006            DC       6                               TPMAP038
0013 20 23A17155        LIBF     TYPEN       TYPE THE CARD       TPMAP039
0014 0  2001            DC       /2001                           TPMAP040
0015 1  028F            DC       ZTYP                            TPMAP041
0016 0  0000            DC                                       TPMAP042
0017 20 23A17155        LIBF     TYPEN                           TPMAP043
0018 0  0001            DC       1                               TPMAP044
0019 0  70FD            MDX      *-3                             TPMAP045
001A 0  10A0            SLT      32                              TPMAP046
001B 0  D910            STD   1  UNIT-R                          TPMAP047
001C 01 66000291        LDX   L2 ZTYP&2                          TPMAP048
001E 0  C200            LD    2  0                               TPMAP049
001F 0  9128            S     1  HAA-R                           TPMAP050
0020 01 4C200177        BSC   L  ER1,Z       NO,BRANCH           TPMAP051
0022 0  C201            LD    2  1                               TPMAP052
0023 0  1808            SRA      8                               TPMAP053
0024 0  9122            S     1  HOOC4-R     TEST IF GOOD UNIT   TPMAP054
0025 01 4C18003B        BSC   L  D1,&-       IF 0,BRANCH         TPMAP055
0027 01 740101A0        MDX   L  UNIT,1                          TPMAP056
0029 0  9123            S     1  HOOFC-R                         TPMAP057
002A 01 4C18003B        BSC   L  D1,&-       IF 1 BRANCH         TPMAP058
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002C  01  740101A0            MDX   L   UNIT,1                              TPMAP059
002E  0   9124                S.        1 H00D8-R                           TPMAP060
002F  01  4C18003B            BSC   L   D1,&-       IF 2 BRANCH             TPMAP061
0031  01  740101A0            MDX   L   UNIT,1                              TPMAP062
0033  0   9125                S         1 H00DC-R                           TPMAP063
0034  01  4C20017A            BSC   L   ER2,Z                               TPMAP064
0036  0   1000                NOP                                           TPMAP065
0037  01  4C18003B            BSC   L   D1,&-       IF 3 BRANCH             TPMAP066
0039  01  4C00017A            BSC   L   ER2         WRONG NUMBER            TPMAP067
003B  0   C202          D1    LD    2   2                                   TPMAP068
003C  0   1808                SRA       8           TEST TRACK NUMBER       TPMAP069
003D  0   9126                S         1 H00D4-R                           TPMAP070
003E  0   4C180045            BSC   L   D2,&-       IF 7 BRANCH             TPMAP071
0040  0   9127                S         1 H00E0-R                           TPMAP072
0041  01  4C20017D            BSC   L   ER3,Z       IF 9 CONTINUE,ELSE CONTINU  TPMAP073
0043  0   C000                LD        *                                   TPMAP074
0044  0   D111                STO       1 TRACK-R   SET TRACK NOT ZERO      TPMAP075
0045  0   C110          D2    LD        1 UNIT-R                            TPMAP076
0046  01  EC000171            OR    L   MGTC2                               TPMAP077
0048  01  D4000171            STO   L   MGTC2                               TPMAP078
004A  0   C110                LD        1 UNIT-R                            TPMAP079
004B  0   E92C                OR        1 MGTC4-R   PREPARE READ ON UNIT    TPMAP080
004C  0   D12C                STO       1 MGTC4-R                           TPMAP081
004D  0   6206                LDX       2 6         INITIALISE FIRST TRY    TPMAP082
004E  01  C60001BC      D3    LD    L2  MGTC4                              TPMAP083
0050  0   E92C                OR        1 MGTC4-R                           TPMAP084
0051  0   D005                STO       MGTCL                               TPMAP085
0052  0   D035                STO       MGTC3       PREPARE READ            TPMAP086
0053  0   8136                A         1 H5000-R   PREPARE BACKSPACE       TPMAP087
0054  0   D02E                STO       MGTC1                               TPMAP088
0055  0   D029                STO       MGTC5                               TPMAP089
                         *                                                   TPMAP090
                         *                                                   TPMAP091
0056  20  140478C0      D4    LIBF      MAGT        READ TAPE               TPMAP092
0057  0·  0000          MGTCL DC        *-*                                 TPMAP093
0058  1   0309                DC        ZMAGT                               TPMAP094
0059  1   008E                DC        USER                                TPMAP095
005A  20  140478C0            LIBF      MAGT        WAIT                    TPMAP096
005B  0   0000                DC        0                                   TPMAP097
005C  0   70FD                MDX       *-3                                 TPMAP098
005D  0   C10C                LD        1 EOFSW-R                           TPMAP099
005E  01  4C200138            BSC   L   EOF,Z       BRANCH IF END OF FILE   TPMAP100
0060  0   C10D                LD        1 ERRSW-R                           TPMAP101
0061  01  4C180099            BSC   L   OK,&-       BRANCH IF NO ERROR      TPMAP102
0063  0·  1010                SLA       16                                  TPMAP103
0064  0   D10D                STO       1 ERRSW-R                           TPMAP104
0065  0   C10F                LD        1 LNGTH-R                           TPMAP105
0066  0   84000309            A     L   ZMAGT       TEST FOR NOISE RECORD   TPMAP106
0068  0   9133                S         1 K5-R                              TPMAP107
0069  01  4C080056            BSC   L   D4,&                                TPMAP108
006B  01  740001C7            MDX   L   FSW,0       TEST IF FIRST ERROR     TPMAP109
006D  0   7004                MDX       D5          NO                      TPMAP110
006E  01  740A01C7            MDX   L   FSW,10      YES                     TPMAP111
0070  0   6206                LDX       2 6                                 TPMAP112
0071  0   7001                MDX       D5&1                                TPMAP113
0072  0   72FF          D5    MDX   2   -1          TRY SOMETHING ELSE      TPMAP114
0073  0   700A                MDX       BCK                                 TPMAP115
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0074  0   6206                  LDX    2  6                                        TPMAP116
0075  01  74FF01AA              MDX  L    CTR3,-1                                  TPMAP117
0077  0   7006                  MDX       BCK          REDO THE 6POSSIBITIES       TPMAP118
0078  01  740301AA              MDX  L    CTR3,3       3 TIMES                     TPMAP119
007A  01  74FF01A9              MDX  L    CTR6,-1                                  TPMAP120
007C  0   7004                  MDX       BCK1         PERFORM 3 BACKSPACES AND    TPMAP121
007D  0   7016                  MDX       REDUN        2 SKIPS AND RETRY,IF AFTER  TPMAP122
007E  20  140478C0     BCK      LIBF      MAGT         6 RETRIES THERE IS STILL    TPMAP123
007F  0   7000         MGTC5    DC        /7000        REDUNDANCY,GO TO REDUN      TPMAP124
0080  0   70CD                  MDX       D3                                       TPMAP125
0081  0   70FC         BCK1     MDX       BCK          WILL BE CHANGED TO LDX 2 3  TPMAP126
0082  20  140478C0              LIBF      MAGT                                     TPMAP127
0083  0   7000         MGTC1    DC        /7000                                    TPMAP128
0084  0   72FF                  MDX    2  -1                                       TPMAP129
0085  0   70FC                  MDX       BCK1+1                                   TPMAP130
0086  0   6202                  LDX    2  2                                        TPMAP131
0087  20  140478C0     SKIP     LIBF      MAGT                                     TPMAP132
0088  0   2000         MGTC3    DC        /2000                                    TPMAP133
0089  1   0309                  DC        ZMAGT                                    TPMAP134
008A  1   008E                  DC        USER                                     TPMAP135
008B  0   72FF                  MDX    2  -1                                       TPMAP136
008C  0   70FA                  MDX       SKIP                                     TPMAP137
008D  0   70BF                  MDX       D3-1                                     TPMAP138
                       *                                                          .TPMAP139
008E  0   0000         USER     DC        0                                        TPMAP140
008F  30  24885640              CALL      USER                                     TPMAP141
0091  1   019C                  DC        EOFSW                                    TPMAP142
0092  01  4C80008E              BSC  I    USER                                     TPMAP143
                       *                                                          TPMAP144
0094  0   C000         REDUN    LD        *            SET REDUNDANCY SWITCH ON    TPMAP145
0095  0   D11F                  STO    1  RDNSW-R                                  TPMAP146
0096  0   D11E                  STO    1  OLNGT-R      SET LENGTH NEGATIVE         TPMAP147
0097  0   6206                  LDX    2  6            INITIALISE X2               TPMAP148
0098  0   700C                  MDX       OK1                                      TPMAP149
0099  0   1010         OK       SLA       16           SET REDUNDANCY SWITCH OFF   TPMAP150
009A  0   D11F                  STO    1  RDNSW-R                                  TPMAP151
009B  0   D137                  STO    1  FSW-R                                    TPMAP152
009C  0   C10F                  LD     1  LNGTH-R      COMPUTE LENGT OF RECORD     TPMAP153
009D  01  84000309              A    L    ZMAGT        AND SAVE IT IN LNGTH.       TPMAP154
009F  0   D10F                  STO    1  LNGTH-R                                  TPMAP155
00A0  01  74FF01C4              MDX  L    CTR2,-1                                  TPMAP156
00A2  0   7002                  MDX       *+2                                      TPMAP157
00A3  0   C135                  LD     1  H6203-R                                  TPMAP158
00A4  0   D0DC                  STO       BCK1                                     TPMAP159
00A5  0   C117         OK1      LD     1  K3-R         INITIALISE RETRY COUNTERS   TPMAP160
00A6  0   D11A                  STO    1  CTR3-R       CTR3                        TPMAP161
00A7  0   1001                  SLA       1            AND                         TPMAP162
00A8  0   D119                  STO    1  CTR6-R       CTR6                        TPMAP163
00A9  0   C121                  LD     1  FRTSW-R      IS IT A FIRST RECORD        TPMAP164
00AA  01  4C2000BA              BSC  L    NFRST,Z      NO,BRANCH                   TPMAP165
00AC  0   C000                  LD        *            YES,SET SWITCH FRTSW ON     TPMAP166
00AD  0   D121                  STO    1  FRTSW-R                                  TPMAP167
00AE  0   C11F                  LD     1  RDNSW-R      TEST IF REDUNDANCY          TPMAP168
00AF  01  4C1800B4              BSC  L    NRDN,&-      NO,BRANCH                   TPMAP169
00B1  0   C11F                  LD     1  RDNSW-R      YES,SAVE RDNSW IN ORDNS     TPMAP170
00B2  0   D120                  STO    1  ORDNS-R                                  TPMAP171
00B3  0   709A         RT       MDX       D3           READ NEXT RECORD            TPMAP172
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00B4  0   C10F      NRDN  LD    1  LNGTH-R     SAVE LNGTH IN OLNGT        TPMAP173
00B5  0   D11E            STO   1  OLNGT-R                               TPMAP174
00B6  01  C60001BC        LD    L2 MGTC4       SAVE DENSITY,PARITY IN     TPMAP175
00B8  0   D11D            STO   1  OPRDS-R     OPRDS                      TPMAP176
00B9  0   7094            MDX      D3          READ NEXT RECORD           TPMAP177
                    *                                                    TPMAP178
                    *                                                    TPMAP179
00BA  0   C11F      NFRST LD    1  RDNSW-R     TEST IF REDUNDANCY         TPMAP180
00BB  01  4C2000CD        BSC   L  DIFF1,Z     YES,WE MUST PRINT          TPMAP181
00BD  0   C10F            LD    1  LNGTH-R     TEST IF SAME RECORD AS     TPMAP182
00BE  0   911E            S     1  OLNGT-R     RECORD BEFORE THIS ONE     TPMAP183
00BF  01  4C2000CD        BSC   L  DIFF1,Z     NO,BRANCH TO PRINT         TPMAP184
00C1  01  C60001BC        LD    L2 MGTC4                                  TPMAP185
00C3  0   911D            S     1  OPRDS-R                                TPMAP186
00C4  01  4C2000CD        BSC   L  DIFF1,Z     NO,BRANCH TO PRINT         TPMAP187
00C6  0   C112            LD    1  NRREC-R                                TPMAP188
00C7  0   911C            S     1  K100-R                                 TPMAP189
00C8  01  4C1000CD        BSC   L  DIFF1,-                                TPMAP190
00CA  01  740101A2        MDX   L  NRREC,1     YES,SAME RECORD,INCREMENT  TPMAP191
00CC  0   70E6            MDX      RT          RECORD COUNT NRREC.        TPMAP192
                    *                                                    TPMAP193
                    *                                                    TPMAP194
00CD  0   400A      DIFF1 BSI      DIFF        PRINT A LINE               TPMAP195
00CE  01  C60001BC        LD    L2 MGTC4       TRANFER ACTUAL STATUS OF   TPMAP196
00D0  0   D11D            STO   1  OPRDS-R     RECORD TO OLD STATUS OF    TPMAP197
00D1  0   C10F            LD    1  LNGTH-R     RECORD COPRDS,OLNGT,ORDNS  TPMAP198
00D2  0   D11E            STO   1  OLNGT-R                                TPMAP199
00D3  0   C11B            LD    1  K1-R        INITIALISE RECORD COUNT    TPMAP200
00D4  0   D112            STO   1  NRREC-R                                TPMAP201
00D5  0   C11F            LD    1  RDNSW-R                                TPMAP202
00D6  0   D120            STO   1  ORDNS-R                                TPMAP203
00D7  0   70DB            MDX      RT          READ NEXT RECORD           TPMAP204
                    *                          THIS ROUTINE PRINTS        TPMAP205
                    *                          THE APPROPRIATE RECORD     TPMAP206
00D8  0   0000      DIFF  DC       0           INFORMATION.               TPMAP207
00D9  0   C113            LD    1  TOTNR-R     ADJUST COUNTER TOTNR       TPMAP208
00DA  0   8112            A     1  NRREC-R                                TPMAP209
00DB  0   D113            STO   1  TOTNR-R                                TPMAP210
00DC  01  740001B0        MDX   L  ORDNS,0     TEST IF PRECEDING RECORD   TPMAP211
00DE  0   703C            MDX      ERRDN       WAS REDUNDANT,YES BRANCH   TPMAP212
00DF  0   C112      SEPT  LD    1  NRREC-R     NO,PREPARE NUMBER OF       TPMAP213
00E0  30  032091B1        CALL     CHIF1       RECORDS AND LENGTH FOR     TPMAP214
00E2  1   0294            DC       RECNR       PRINTING                   TPMAP215
00E3  0   C11E            LD    1  OLNGT-R                                TPMAP216
00E4  30  032091B1        CALL     CHIF1                                  TPMAP217
00E6  1   02B2            DC       LGT                                    TPMAP218
00E7  01  740001A1        MDX   L  TRACK,0     TEST IF NINE TRACK         TPMAP219
00E9  0   7026            MDX      NN          YES,BRANCH                 TPMAP220
00EA  0   C11D            LD    1  OPRDS-R     IF 7-TRACK PREPARE DENSITY TPMAP221
00EB  0   1007            SLA      7           AND PARITY FOR PRINTING    TPMAP222
00EC  01  4C1000F0        BSC   L  ODD,-                                  TPMAP223
00EE  0   C900      EVEN  LDD   1  HEVN-R                                 TPMAP224
00EF  0   7001            MDX      *&1                                    TPMAP225
00F0  0   C902      ODD   LDD   1  HODD-R                                 TPMAP226
00F1  01  D40002A2        STO   L  PRT                                    TPMAP227
00F3  0   1090            SLT      16                                     TPMAP228
00F4  01  D40002A3        STO   L  PRT&1                                  TPMAP229
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00F6  0   C11D             LD    1  OPRDS-R                                     TPMAP230
00F7  0   100B             SLA      11                                          TPMAP231
00F8  01  4C0200FE         BSC   L  CNQ,C                                       TPMAP232
00FA  01  4C280100         BSC   L  DX,&Z                                       TPMAP233
00FC  0   C906     HUIT    LDD   1  H800-R                                      TPMAP234
00FD  0   7003             MDX      *&3                                         TPMAP235
00FE  0   C908     CNQ     LDD   1  H556-R                                      TPMAP236
00FF  0   7001             MDX      *&1                                         TPMAP237
0100  0   C904     DX      LDD   1  H200-R                                      TPMAP238
0101  01  D40002AA         STO   L  DS                                          TPMAP239
0103  0   1090             SLT      16                                          TPMAP240
0104  01  D40002AB         STO   L  DS&1                                        TPMAP241
0106  30  145A5140         CALL     MOVE                                        TPMAP242
0108  1   0294             DC       RECNR                                       TPMAP243
0109  1   02D7             DC       ZPRT&1                                      TPMAP244
010A  0   0021             DC       FST-RECNR                                   TPMAP245
010B  0   C12B             LD    1  K10-R         INITIALISE REDUNDANCY         TPMAP246
010C  0   D12A             STO   1  CTRRD-R       COUNTER                       TPMAP247
010D  0   4019     RR      BSI      IMPR          PRINT                         TPMAP248
010E  01  4C8000D8         BSC   I  DIFF          RETURN                        TPMAP249
          *                                                                     TPMAP250
0110  30  145A5140 NN      CALL     MOVE          IF 9-TRACK,PRINT IT           TPMAP251
0112  1   02B5             DC       NINE                                        TPMAP252
0113  1   029D             DC       PRT-5                                       TPMAP253
0114  0   000F             DC       FN-NINE                                     TPMAP254
0115  30  145A5140         CALL     MOVE                                        TPMAP255
0117  1   0294             DC       RECNR                                       TPMAP256
0118  1   02D7             DC       ZPRT&1                                      TPMAP257
0119  0   0021             DC       FST-RECNR                                   TPMAP258
011A  0   70F0             MDX      RR-2                                        TPMAP259
          *                                                                     TPMAP260
011B  20  024C1552 ERRDN   LIBF     BLANK         IF REDUNDANCY IN PRECEDING    TPMAP261
011C  1   02D7             DC       ZPRT&1        RECORD PRINT IT               TPMAP262
011D  0   0032             DC       50                                          TPMAP263
011E  30  145A5140         CALL     MOVE                                        TPMAP264
0120  1   02C4             DC       RDNN                                        TPMAP265
0121  1   02DA             DC       ZPRT&4                                      TPMAP266
0122  0   0012             DC       FR-RDNN                                     TPMAP267
0123  01  74FF01BA         MDX   L  CTRRD,-1      IF MORE THAN 10 REDUNDANT     TPMAP268
0125  0   70E7             MDX      RR            RECORD IN SEQUENCE,EXIT       TPMAP269
0126  0   7049             MDX      EXIT                                        TPMAP270
          *                          THIS ROUTINE PRINTS A                     TPMAP271
          *                          LINE AND TESTS FOR CH. 12                 TPMAP272
0127  0   0000     IMPR    DC       0             IN THAT CASE IT PRINTS THE    TPMAP273
0128  20  176558D5         LIBF     PRNTN         PAGE NUMBER.                  TPMAP274
0129  0   2000             DC       /2000                                       TPMAP275
012A  1   02D6             DC       ZPRT                                        TPMAP276
012B  0   0000             DC                                                   TPMAP277
012C  20  176558D5         LIBF     PRNTN                                       TPMAP278
012D  0   4000             DC       /4000                                       TPMAP279
012E  0   1001             SLA      1                                           TPMAP280
012F  01  4C900127         BSC   I  IMPR,-                                      TPMAP281
0131  20  176558D5         LIBF     PRNTN                                       TPMAP282
0132  0   3100             DC       /3100                                       TPMAP283
0133  20  17047140         LIBF     PAGE                                        TPMAP284
0134  1   02D7             DC       ZPRT&1                                      TPMAP285
0135  0   0032             DC       50                                          TPMAP286
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TAPE MAP PROGRAM   TPMAP                                                          PAGE   6

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0136  01  4C800127                *      BSC   I   IMPR                                      TPMAP287
                                   *                                                          TPMAP288
                                   *                                                          TPMAP289
0138  01  440000D8        EOF      BSI   L   DIFF        IF END OF FILE PRINT PRE-           TPMAP290
013A  01  740101A5                 MDX   L   NREOF,1     CEDING RECORD INFORMATION           TPMAP291
013C  0   C114                     LD    1   TOTOT-R     ADJUST COUNTERS                     TPMAP292
013D  0   8113                     A     1   TOTNR-R                                         TPMAP293
013E  0   D114                     STO   1   TOTOT-R                                         TPMAP294
013F  0   C115                     LD    1   NREOF-R                                         TPMAP295
0140  30  03209180                 CALL      CHIF        PREPARE EOF MESSAGE                 TPMAP296
0142  1   0226                     DC        TOT3                                            TPMAP297
0143  0   C113                     LD    1   TOTNR-R                                         TPMAP298
0144  30  032091B1                 CALL      CHIF1                                           TPMAP299
0146  1   0235                     DC        TOT1                                            TPMAP300
0147  0   C114                     LD    1   TOTOT-R                                         TPMAP301
0148  30  032091B1                 CALL      CHIF1                                           TPMAP302
014A  1   0239                     DC        TOT2                                            TPMAP303
014B  20  024C1552                 LIBF      BLANK                                           TPMAP304
014C  1   02D7                     DC        ZPRT&1                                          TPMAP305
014D  0   0032                     DC        50                                              TPMAP306
014E  0   40D8                     BSI       IMPR                                            TPMAP307
014F  30  145A5140                 CALL      MOVE                                            TPMAP308
0151  1   021E                     DC        EOFMS                                           TPMAP309
0152  1   02D7                     DC        ZPRT&1                                          TPMAP310
0153  0   001F                     DC        FOFMS-EOFMS                                     TPMAP311
0154  0   40D2                     BSI       IMPR        PRINT IT                            TPMAP312
0155  20  024C1552                 LIBF      BLANK                                           TPMAP313
0156  1   02D7                     DC        ZPRT&1                                          TPMAP314
0157  0   0032                     DC        50                                              TPMAP315
0158  0   40CE                     BSI       IMPR                                            TPMAP316
0159  0   C11B                     LD    1   K1-R        INITIALE                            TPMAP317
015A  0   D112                     STO   1   NRREC-R     NRREC                               TPMAP318
015B  0   1010                     SLA       16          INITIALISE                          TPMAP319
015C  0   D113                     STO   1   TOTNR-R     TOTAL NRREC IN 1 FILE               TPMAP320
015D  0   D121                     STO   1   FRTSW-R                                         TPMAP321
015E  0   D10C                     STO   1   EOFSW-R                                         TPMAP322
015F  0   C117                     LD    1   K3-R        RETRY COUNTERS                      TPMAP323
0160  0   D11A                     STO   1   CTR3-R                                          TPMAP324
0161  0   1001                     SLA       1                                               TPMAP325
0162  0   D119                     STO   1   CTR6-R                                          TPMAP326
0163  0   C12B                     LD    1   K10-R                                           TPMAP327
0164  0   D12A                     STO   1   CTRRD-R     REDUNDANCY COUNTER                  TPMAP328
0165  20  23A17155                 LIBF      TYPEN       TYPE MESSAGE                        TPMAP329
0166  0   2001                     DC        /2001                                           TPMAP330
0167  1   01F5                     DC        MSEOF                                           TPMAP331
0168  0   0000                     DC                                                        TPMAP332
0169  20  17064885                 LIBF      PAUSE       WAIT                                TPMAP333
016A  0   FFFF                     DC        /FFFF                                           TPMAP334
016B  0   090A                     XIO   1   DATSW-R     TEST IF DATSW 0 ON                  TPMAP335
016C  01  4C280170                 BSC   L   EXIT,&Z     EXIT IF YES                         TPMAP336
016E  01  4C00004D                 BSC   L   D3-1        NO,READ NEXT FILE                   TPMAP337
0170  20  140478C0        EXIT     LIBF      MAGT        REWIND UNLOAD                       TPMAP338
0171  0   6000            MGTC2    DC        /6000                                           TPMAP339
0172  20  140478C0                 LIBF      MAGT        WAIT                                TPMAP340
0173  0   0000                     DC        0                                               TPMAP341
0174  0   70FD                     MDX       *-3                                             TPMAP342
0175  30  059C98C0                 EXIT                                                      TPMAP343
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                           *                                              TPMAP344
0177 01 650001C8    ER1    LDX   L1 MS1              **                    TPMAP345
0179 0  7006               MDX      ERG                                    TPMAP346
                           *                                              TPMAP347
017A 01 650001D1    ER2    LDX   L1 MS2              UNIT                  TPMAP348
017C 0  7003               MDX      ERG                                    TPMAP349
                           *                                              TPMAP350
017D 01 650001DE    ER3    LDX   L1 MS3              TRACK                 TPMAP351
017F 0  7000               MDX      ERG                                    TPMAP352
                           *                                              TPMAP353
0180 0  4007        ERG    BSI      TYP                                    TPMAP354
0181 01 650001E9           LDX   L1 MS7                                    TPMAP355
0183 0  4004               BSI      TYP                                    TPMAP356
0184 20 17064885           LIBF     PAUSE                                  TPMAP357
0185 0  FFFF               DC       /FFFF                                  TPMAP358
0186 01 4C000005           BSC   L  DEBUT                                  TPMAP359
                           *                                              TPMAP360
0188 0  0000        TYP    DC       0                                      TPMAP361
0189 0  6902               STX   1  *&2                                    TPMAP362
018A 20 23A17155           LIBF     TYPEN                                  TPMAP363
018B 0  2001               DC       /2001                                  TPMAP364
018C 0  0000               DC       *-*                                    TPMAP365
018D 0  0000               DC       *-*                                    TPMAP366
018E 01 4C800188           BSC   I  TYP                                    TPMAP367
                           *                                              TPMAP368
0190    0000        R      BSS   E  0                                      TPMAP369
0190                R      EQU      *                                      TPMAP370
0190    0004        HEVN   DMES  1  EVEN'E                                 TPMAP371
0192    0004        HODD   DMES  1   ODD'E                                 TPMAP372
0194    0004        H200   DMES  1   200'E                                 TPMAP373
0196    0004        H800   DMES  1   800'E                                 TPMAP374
0198    0004        H556   DMES  1   556'E                                 TPMAP375
019A 0  0000        DATSW  DC       0                                      TPMAP376
019B 0  0740               DC       /0740                                  TPMAP377
019C 0  0000        EOFSW  DC       *-*                                    TPMAP378
019D 0  0000        ERRSW  DC       *-*                                    TPMAP379
019E 0  0000        TOLSW  DC       *-*                                    TPMAP380
019F 0  0000        LNGTH  DC       *-*                                    TPMAP381
01A0 0  0000        UNIT   DC       *-*                                    TPMAP382
01A1 0  0000        TRACK  DC       *-*                                    TPMAP383
01A2 0  0001        NRREC  DC       1                                      TPMAP384
01A3 0  0000        TOTNR  DC       *-*                                    TPMAP385
01A4 0  0000        TOTOT  DC       *-*                                    TPMAP386
01A5 0  0000        NREOF  DC       *-*                                    TPMAP387
01A6 0  0002        K2     DC       2                                      TPMAP388
01A7 0  0003        K3     DC       3                                      TPMAP389
01A8 0  0006        K6     DC       6                                      TPMAP390
01A9 0  0006        CTR6   DC       6                                      TPMAP391
01AA 0  0003        CTR3   DC       3                                      TPMAP392
01AB 0  0001        K1     DC       1                                      TPMAP393
01AC 0  0064        K100   DC       100                                    TPMAP394
01AD 0  0000        OPRDS  DC       *-*                                    TPMAP395
01AE 0  0000        OLNGT  DC       *-*                                    TPMAP396
01AF 0  0000        RDNSW  DC       *-*                                    TPMAP397
01B0 0  0000        ORDNS  DC       *-*                                    TPMAP398
01B1 0  0000        FRTSW  DC       *-*                                    TPMAP399
01B2 0  00C4        H00C4  DC       /00C4              0                   TPMAP400
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01B3  0  0038    H00FC  DC      /00FC-/00C4      1-0        TPMAP401
01B4  0  FFDC    H00D8  DC    ' /00D8-/00FC      2-1        TPMAP402
01B5  0  0004    H00DC  DC      /00DC-/00D8      3-2        TPMAP403
01B6  0  00D4    H00D4  DC      /00D4            7          TPMAP404
01B7  0  000C    H00E0  DC      /00E0-/00D4      9-7        TPMAP405
01B8     0002    HAA    DMES    **'E                        TPMAP406
01B9  0  7000    H7000  DC      /7000                       TPMAP407
01BA  0  000A    CTRRD  DC      10                          TPMAP408
01BB  0  000A    K10    DC      10                          TPMAP409
01BC  0  2000    MGTC4  DC      /2000                       TPMAP410
01BD  0  0040    CTLTP  DC      /0040                       TPMAP411
01BE  0  0140           DC      /0140 .                     TPMAP412
01BF  0  0060           DC      /0060                       TPMAP413
01C0  0  0160           DC      /0160                       TPMAP414
01C1  0  0050           DC      /0050                       TPMAP415
01C2  0  0150           DC      /0150                       TPMAP416
01C3  0  0005    K5     DC      5                           TPMAP417
01C4  0  0002    CTR2   DC      2                           TPMAP418
01C5  0  6203    H6203  DC      /6203                       TPMAP419
01C6  0  5000    H5000  DC      /5000                       TPMAP420
01C7  0  0000    FSW    DC      *-*                         TPMAP421
01C8  0  0008    MS1    DC      FMS1-MS1-1                  TPMAP422
01C9     0010           DMES    'R** CARD MISSING'E         TPMAP423
01D1     0000    FMS1   BES     0                           TPMAP424
01D1  0  000C    MS2    DC      FMS2-MS2-1                  TPMAP425
01D2     0018           DMES    'RWRONG TAPE UNIT NUMBER'E  TPMAP426
01DE     0000    FMS2   BES     0                           TPMAP427
01DE  0  000A    MS3    DC      FMS3-MS3-1                  TPMAP428
01DF     0014           DMES    'RWRONG TRACK NUMBER'E      TPMAP429
01E9     0000    FMS3   BES     0                           TPMAP430
01E9  0  000B    MS7    DC      FMS7-MS7-1                  TPMAP431
01EA     0016           DMES    'RCORRECT AND CONTINUE'E    TPMAP432
01F5     0000    FMS7   BES     0                           TPMAP433
01F5  0  0028    MSEOF  DC      FMSEO-MSEOF-1               TPMAP434
01F6     001F           DMES    'REND OF FILE'RTO  CONTINUE PRESS'  TPMAP435
0205     0022           DMES    START'RTO EXIT SET DATA SWITCH 0 ON'  TPMAP436
0216     000F           DMES    AND PRESS START'E           TPMAP437
021E     0000    FMSEO  BES     0                           TPMAP438
021E     0010    EOFMS  DMES   1 '3F* END OF FILE 'E        TPMAP439
0226     0002    TOT3   BSS     2                           TPMAP440
0228     001A           DMES   1 '3F*     TOTAL RECORD(S) = 'E  TPMAP441
0235     0003    TOT1   BSS     3                           TPMAP442
0238     0002           DMES   1  ('E                       TPMAP443
0239     0003    TOT2   BSS     3                           TPMAP444
023C     0002           DMES   1  )'E                       TPMAP445
023D     0000    FOFMS  BES     0                           TPMAP446
023E     0000           BSS   E 0                           TPMAP447
023E  0  0050    ZCART  DC      80                          TPMAP448
023F     0050           BSS     80                          TPMAP449
028F  0  0004    ZTYP   DC      4                           TPMAP450
0290  0  8121           DC      /8121                       TPMAP451
0291     0003           BSS     3                           TPMAP452
0294     0003    RECNR  BSS     3                           TPMAP453
0297     0016           DMES   1  RECORD(S), PARITY IS 'E   TPMAP454
02A2     0002    PRT    BSS     2                           TPMAP455
02A4     000C           DMES   1 ,DENSITY IS 'E             TPMAP456
02AA     0002    DS     BSS     2                           TPMAP457
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02AC      000C       LG    DMES  1 ,LENGTH IS 'E                          TPMAP458
02B2      0003       LGT   BSS     3                                      TPMAP459
02B5      0000       FST   BES     0                                      TPMAP460
02B5      001E       NINE  DMES  1 RECORDING MODE IS 9-TRACK       'E     TPMAP461
02C4      0000       FN    BES     0                                      TPMAP462
02C4      0024       RDNN  DMES  1 PERMANENT REDUNDANCY ON THIS RECORD'E  TPMAP463
02D6      0000       FR    BES     0                                      TPMAP464
02D6  0   0032       ZPRT  DC      50                                     TPMAP465
02D7      0032             BSS     50                                     TPMAP466
0309  0   0BB8       ZMAGT DC      3000                                   TPMAP467
030A      0BB9             BSS     3001                                   TPMAP468
0EC4      0000             END     BEGIN                                  TPMAP469
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          NO ERRORS IN ABOVE ASSEMBLY.
TPMAP
DUP FUNCTION COMPLETED
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                    ************************************************** TPDUP002
                    *       IBM 1800 MAGNETIC TAPE UTILITY PROGRAMS    * TPDUP003
                    ************************************************** TPDUP004
                    *                                                * TPDUP005
                    *       TAPE DUPLICATION PROGRAM   TPDUP          * TPDUP006
                    *                                                * TPDUP007
                    *       PROGRAM TPDUP DUPLICATES ONE TAPE ONTO    * TPDUP008
                    *       ANOTHER. TAPE SPECIFICATIONS ARE GIVEN BY * TPDUP009
                    *       CONTROL CARDS. IF DUPLICATION IS ON THE SAME* TPDUP010
                    *       UNIT, A THIRD CARD MUST BE PROVIDED TO     * TPDUP011
                    *       SPECIFY A BUFFER UNIT. WITH 9-TRACK TAPES  * TPDUP012
                    *       PARITY, NO. OF BYTES/WORD AND DENSITY ARE  * TPDUP013
                    *       IGNORED.                                   * TPDUP014
                    *                                                * TPDUP015
                    *       CONTROL CARDS                              * TPDUP016
                    *       1. CARD                                    * TPDUP017
                    *       COL. 1-2          **                      * TPDUP018
                    *            3            INPUT TAPE UNIT NO. (0,1,2,3) * TPDUP019
                    *            5            NUMBER OF TRACKS (7 OR 9) * TPDUP020
                    *            7            PARITY (O OR E)          * TPDUP021
                    *            9            BYTES/WORD (2 OR 3)      * TPDUP022
                    *            11-13        DENSITY (200,556 OR 800) * TPDUP023
                    *       2. CARD                                    * TPDUP024
                    *       ANALOGOUS TO CARD 1 FOR OUTPUT TAPE        * TPDUP025
                    *                                                * TPDUP026
                    ************************************************** TPDUP027
                    *                                        IBM BRUSSELS TPDUP028
                    *                                                  TPDUP029
0000 01 65000162   START LDX   L1 R                                   TPDUP030
0002 0  4056             BSI      MGDAT       CONVERT UNIT,TRACK,PARITY, TPDUP031
0003 0  D105             STO    1 MGTC1-R      SAVE FOF INPUT TAPE     TPDUP032
0004 0  4054             BSI      MGDAT       IDEM OUTPUT TAPE         TPDUP033
0005 0  E830             OR       MGTC2                               TPDUP034
0006 0  D02F             STO      MGTC2                               TPDUP035
0007 0  F105             EOR    1 MGTC1-R                             TPDUP036
0008 0  100C             SLA      12          TEST IF NOT SAME UNIT   TPDUP037
0009 01 4C200014         BSC    L RD,Z                                TPDUP038
000B 0  404D             BSI      MGDAT       READ DATA OF BUFFER UNIT TPDUP039
000C 0  1890             SRT      16                                  TPDUP040
000D 0  C028             LD       MGTC2                               TPDUP041
000E 0  D106             STO    1 SWDUP-R                             TPDUP042
000F 0  180C             SRA      12                                  TPDUP043
0010 0  1084             SLT      4                                   TPDUP044
0011 0  1804             SRA      4                                   TPDUP045
0012 0  108C             SLT      12                                  TPDUP046
0013 0  D022             STO      MGTC2                               TPDUP047
0014 0  C105       RD    LD     1 MGTC1-R                             TPDUP048
0015 0  E11E             AND    1 H0040-R     TEST IF NOT READ IN 3 AND TPDUP049
0016 01 4C20001C         BSC    L READ,Z      WRITE IN 2 BYTES/WORD.  TPDUP050
0018 0  E81D             OR       MGTC2                               TPDUP051
0019 0  E11E             AND    1 H0040-R                             TPDUP052
001A 01 4C2000E3         BSC    L ER8,Z       BRANCH IF YES           TPDUP053
001C 01 65000162   READ  LDX   L1 R                                   TPDUP054
001E 0  C104             LD     1 K1500-R                             TPDUP055
001F 01 D400029C         STO    L ZMAGT                               TPDUP056
0021 01 6600029C         LDX   L2 ZMAGT                               TPDUP057
0023 0  C105             LD     1 MGTC1-R                             TPDUP058
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0024 30 14047000          CALL   MAG                                      TPDUP059
0026 1  014F              DC     ER10                                     TPDUP060
0027 1  00EC              DC     ER9                                      TPDUP061
0028 1  0162              DC     EOFSW                                    TPDUP062
0029 0  C102      M2      LD   1 TOLSW-R                                  TPDUP063
002A 01 4C180030          BSC  L M3,&-                                   TPDUP064
002C 0  1010              SLA    16                                       TPDUP065
002D 0  D102              STO  1 TOLSW-R                                  TPDUP066
002E 01 4C000154          BSC  L ER11            BRANCH IF RECORD TOO LONG TPDUP067
0030 0  C103      M3      LD   1 LNGTH-R          COMPUTE REAL LENGTH      TPDUP068
0031 01 8400029C          A    L ZMAGT                                    TPDUP069
0033 01 D400029C          STO  L ZMAGT                                    TPDUP070
0035 20 140478C0          LIBF   MAGT                                     TPDUP071
0036 0  3000      MGTC2 DC     /3000            WRITE ON MAGT            TPDUP072
0037 1  029C              DC     ZMAGT                                    TPDUP073
0038 1  00B4              DC     USER                                     TPDUP074
0039 20 140478C0    .     LIBF   MAGT                                     TPDUP075
003A 0  0000              DC     0                                        TPDUP076
003B 0  70FD              MDX    *-3                                      TPDUP077
003C 0  C101              LD   1 ERRSW-R          TEST IF TAPE ERROR       TPDUP078
003D 01 4C200159          BSC  L ER12,Z    .      BRANCH  IF YES           TPDUP079
003F 0  70DC              MDX    READ                                     TPDUP080
                   *                                                      TPDUP081
                   *                                                      TPDUP082
0040 0  0000      UNCK  DC     0                                        TPDUP083
0041 0  1808              SRA    8                FIND UNIT                TPDUP084
0042 0  9110              S    1 H00C4-R          IS IT 0                  TPDUP085
0043 01 4C980040          BSC  I UNCK,+-                                  TPDUP086
0045 01 7401016E          MDX  L UNIT,1           NO                       TPDUP087
0047 0. 8110              A    1 H00C4-R                                   TPDUP088
0048 0  9111              S    1 H00FC-R          IS IT 1                  TPDUP089
0049 01 4C980040          BSC  I UNCK,&-                                  TPDUP090
004B 01 7401016E          MDX  L UNIT,1                                   TPDUP091
004D 0  8111              A    1 H00FC-R                                   TPDUP092
004E 0  9112              S    1 H00D8-R          IS IT 2                  TPDUP093
004F 01 4C980040          BSC  I UNCK,&-                                  TPDUP094
0051 01 7401016E          MDX  L UNIT,1                                   TPDUP095
0053 0  8112              A    1 H00D8-R                                   TPDUP096
0054 0  9113              S    1 H00DC-R          IS IT 3                  TPDUP097
0055 01 4C980040          BSC  I UNCK,&-                                  TPDUP098
0057 01 4C0000BD          BSC  L ER2              NO  UNIT ERROR           TPDUP099
                   *                                                      TPDUP100
0059 0  0000      MGDAT DC     0                                        TPDUP101
005A 20 03059115          LIBF   CARDN            READ ** CARD            TPDUP102
005B 0  1000              DC     /1000                                    TPDUP103
005C 1  023A              DC     ZCART                                    TPDUP104
005D 0  0000              DC     0                                        TPDUP105
005E 20 03059115          LIBF   CARDN            WAIT                    TPDUP106
005F 0  0000              DC     0                                        TPDUP107
0060 0  70FD              MDX    *-3                                      TPDUP108
0061 20 085935D9          LIBF · HOLPR            CONVERT TO   1816 CODE  TPDUP109
0062 0  0000              DC     0                                        TPDUP110
0063 1  023B              DC     ZCART&1                                  TPDUP111
0064 1  028D              DC     ZTYP&2                                   TPDUP112
0065 0  000E              DC     14                                       TPDUP113
0066 20 23A17155          LIBF   TYPEN                                    TPDUP114
0067 0  2001              DC     /2001                                    TPDUP115
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TAPE DUPLICATION PROGRAM   TPDUP                                          PAGE    3

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0068 1  028B            DC       ZTYP                                        TPDUP116
0069 0  0000            DC                                                   TPDUP117
006A 01 6600028D        LDX   L2 ZTYP&2                                     TPDUP118
006C 00 C6000000        LD    L2 0         TEST IF  **                      TPDUP119
006E 0  910B            S      1 HAA-R                                      TPDUP120
006F 01 4C2000BA        BSC   L  ER1,Z     BRANCH IF NOT                    TPDUP121
0071 0  7201            MDX    2 1                                          TPDUP122
0072 0  C200            LD     2 0                                          TPDUP123
0073 0  40CC            BSI      UNCK                                       TPDUP124
0074 0  C201     MGD    LD     2 1                                          TPDUP125
0075 0  1808            SRA      8                                          TPDUP126
0076 0  9114            S      1 HOOD4-R    IS IT 7-TR                      TPDUP127
0077 01 4C18007F        BSC   L  MGD1,&-    YES BRANCH                      TPDUP128
0079 0  8114            A      1 HOOD4-R                                    TPDUP129
007A 0  9115            S      1 HOOEO-R    IS IT 9-TR                      TPDUP130
007B 01 4C1800A8        BSC   L  MGD2,&-    YES BRANCH                      TPDUP131
007D 01 4C0000C2        BSC   L  ER3        NO,TRACK ERROR                  TPDUP132
007F 0  C202     MGD1   LD     2 2                                          TPDUP133
0080 0  1808            SRA      8                                          TPDUP134
0081 0  9116            S      1 H0052-R    IS IT ODD PARITY                TPDUP135
0082 01 4C18008B        BSC   L  ODD,&-     YES BRANCH                      TPDUP136
0084 0  9117            S      1 H0036-R    IS IT EVEN                      TPDUP137
0085 01 4C180089        BSC   L  EVN,&-     YES, BRANCH                     TPDUP138
0087 01 4C0000C5        BSC   L  ER4        NO  ERROR                       TPDUP139
0089 0  C11B     EVN    LD     1 H0100-R                                    TPDUP140
008A 0  D10D            STO    1 PARTY-R                                    TPDUP141
008B 0  C203     ODD    LD     2 3                                          TPDUP142
008C 0  1808            SRA      8                                          TPDUP143
008D 0  9112            S      1 HOOD8-R    2 BYTES/WORD                    TPDUP144
008E 01 4C180096        BSC   L  MGD3,&-    YES,BRANCH                      TPDUP145
0090 0  8112            A      1 HOOD8-R                                    TPDUP146
0091 0  9113            S      1 HOODC-R    3 BYTES/WORD                    TPDUP147
0092 01 4C180098        BSC   L  MGD4,&-    YES   BRANCH                    TPDUP148
0094 01 4C0000C8        BSC   L  ER5        NO    BRANCH TO ERROR          TPDUP149
0096 0  C11E     MGD3   LD     1 H0040-R                                    TPDUP150
0097 0  D10E            STO    1 NRBYT-R                                    TPDUP151
0098 0  C204     MGD4   LD     2 4                                          TPDUP152
0099 0  9118            S      1 HE4C4-R    IS IT 80X                       TPDUP153
009A 01 4C1800A8        BSC   L  MGD2,&-    YES BRANCH                      TPDUP154
009C 0  9119            S      1 HD8C4-R    IS IT 20X                       TPDUP155
009D 01 4C1800A4        BSC   L  MGD6,&-    YES BRANCH                      TPDUP156
009F 0  911A            S      1 HF4F4-R    IS IT 55X                       TPDUP157
00A0 01 4C1800A6        BSC   L  MGD7,&-    YES BRANCH                      TPDUP158
00A2 01 4C0000CB        BSC   L  ER6        ERROR                           TPDUP159
00A4 0  C11C     MGD6   LD     1 H0010-R                                    TPDUP160
00A5 0  7001            MDX      *&1                                        TPDUP161
00A6 0  C11D     MGD7   LD     1 H0020-R                                    TPDUP162
00A7 0  D10F            STO    1 DENS-R                                     TPDUP163
00A8 0  C10C     MGD2   LD     1 UNIT-R     PREPARE CONTROL WORD            TPDUP164
00A9 0  E90D            OR     1 PARTY-R                                    TPDUP165
00AA 0  E90E            OR     1 NRBYT-R                                    TPDUP166
00AB 0  E90F            OR     1 DENS-R                                     TPDUP167
00AC 0  1890            SRT      16         SAVE IN Q                       TPDUP168
00AD 0  D10C            STO    1 UNIT-R     CLEAR                           TPDUP169
00AE 0  D10D            STO    1 PARTY-R                                    TPDUP170
00AF 0  D10E            STO    1 NRBYT-R                                    TPDUP171
00B0 0  D10F            STO    1 DENS-R                                     TPDUP172
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00B1  0  1090              SLT     16                                   TPDUP173
00B2  01 4C800059          BSC   I MGDAT                                TPDUP174
                      *                                                 TPDUP175
                      *                                                 TPDUP176
00B4  0  0000       USER   DC      0                                    TPDUP177
00B5  30 24885640          CALL    USER                                 TPDUP178
00B7  1  0162              DC      EOFSW                                TPDUP179
00B8  01 4C8000B4          BSC   I USER                                 TPDUP180
                      *                               ** MISSING        TPDUP181
00BA  01 65000184   ER1    LDX   L1 MS1                                 TPDUP182
00BC  0  7011              MDX     MSG                                  TPDUP183
                      *                               UNIT ERROR        TPDUP184
00BD  0  1010       ER2    SLA     16                                   TPDUP185
00BE  0  D10C              STO   1 UNIT-R                               TPDUP186
00BF  01 6500018D          LDX   L1 MS2                                 TPDUP187
00C1  0  700C              MDX     MSG                                  TPDUP188
                      *                               TRACK ERROR       TPDUP189
00C2  01 65000194   ER3    LDX   L1 MS3                                 TPDUP190
00C4  0  7009              MDX     MSG                                  TPDUP191
                      *                               PARITY ERROR      TPDUP192
00C5  01 6500019F   ER4    LDX   L1 MS4                                 TPDUP193
00C7  0  7006              MDX     MSG                                  TPDUP194
                      *                               BYTES/WORD ERROR  TPDUP195
00C8  01 650001A7   ER5    LDX   L1 MS5                                 TPDUP196
00CA  0  7003              MDX     MSG                                  TPDUP197
                      *                               DENSITY ERROR     TPDUP198
00CB  01 650001B1   ER6    LDX   L1 MS6                                 TPDUP199
00CD  0  7000              MDX     MSG                                  TPDUP200
                      *                               END OF FILE       TPDUP201
00CE  30 145A5171   MSG    CALL    MOVE1                                TPDUP202
00D0  1  00E0              DC      ZERO                                 TPDUP203
00D1  1  016E              DC      UNIT                                 TPDUP204
00D2  0  0004              DC      4                                    TPDUP205
00D3  0  4007              BSI     TYP                                  TPDUP206
00D4  01 650001E8          LDX   L1 MS13                                TPDUP207
00D6  0  4004              BSI     TYP                                  TPDUP208
00D7  20 17064885          LIBF    PAUSE                                TPDUP209
00D8  0  FFFF              DC      /FFFF                                TPDUP210
00D9  01 4C000000          BSC   L START                               TPDUP211
                      *                                                 TPDUP212
00DB  0  0000       TYP    DC      0                                    TPDUP213
00DC  0  6902              STX   1 *&2                                  TPDUP214
00DD  20 23A17155          LIBF    TYPEN                                TPDUP215
00DE  0  2001              DC      /2001                                TPDUP216
00DF  0  0000              DC      *-*                                  TPDUP217
00E0  0  0000       ZERO   DC      0                                    TPDUP218
00E1  01 4C8000DB          BSC   I TYP                                  TPDUP219
                      *                                                 TPDUP220
00E3  01 650001B9   ER8    LDX   L1 MS8          3BYTE/WORD TO          TPDUP221
00E5  0  40F5              BSI     TYP           2BYTE/WORD             TPDUP222
00E6  20 17064885          LIBF    PAUSE                                TPDUP223
00E7  0  FFFF              DC      /FFFF                                TPDUP224
00E8  01 65000162          LDX   L1 R                                   TPDUP225
00EA  01 4C00001C          BSC   L READ                                 TPDUP226
                      *                                                 TPDUP227
                      *                                                 TPDUP228
00EC  0  1010       ER9    SLA     16                                   TPDUP229
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TAPE DUPLICATION PROGRAM  TPDUP                                    PAGE    5

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00ED  0   D100              STO    1  EOFSW-R        END OF FILE        TPDUP230
00EE  0   C121              LD     1  SWDP1-R                           TPDUP231
00EF  01  4C2000FC          BSC    L  ER96,Z                            TPDUP232
00F1  01  650001C6          LDX    L1 MS9                               TPDUP233
00F3  0   40E7              BSI       TYP                               TPDUP234
00F4  01  650001F8          LDX    L1 MS14                              TPDUP235
00F6  0   40E4              BSI       TYP                               TPDUP236
00F7  01  65000205          LDX    L1 MS15                              TPDUP237
00F9  0   40E1              BSI       TYP                               TPDUP238
00FA  20  17064885          LIBF      PAUSE                             TPDUP239
00FB  0   FFFF              DC        -1                                TPDUP240
00FC  01  C4000036   ER96   LD     L  MGTC2                             TPDUP241
00FE  01  E4000181          AND    L  HOFFF                             TPDUP242
0100  0   D06D              STO       UNIT                              TPDUP243
0101  01  EC00016A          OR     L  H8000                             TPDUP244
0103  0   D007              STO       MGTC3                             TPDUP245
0104  01  C4000168          LD     L  SWDUP                             TPDUP246
0106  01  4C18010A          BSC    L  ER91,+-                           TPDUP247
0108  01  74010182          MDX    L  CTRFL,1                           TPDUP248
010A  20  140478C0   ER91   LIBF      MAGT           WRITE TAPE MARK    TPDUP249
010B  0   8000       MGTC3  DC        /8000                             TPDUP250
010C  20  140478C0          LIBF   ·  MAGT                              TPDUP251
010D  0   0000              DC        0                                 TPDUP252
010E  0   70FD              MDX       *-3                               TPDUP253
010F  01  C4000183          LD     L  SWDP1                             TPDUP254
0111  01  4C20014B          BSC    L  ER92,Z                            TPDUP255
0113  0   084C              XIO       DATSW          TEST IF EXIT       TPDUP256
0114  01  65000162          LDX    L1 R                                 TPDUP257
0116  01  4C10001C          BSC    L  READ,-                            TPDUP258
0118  0   C055       ER94   LD        UNIT                              TPDUP259
0119  01  EC00016C          OR     L  H5000                             TPDUP260
011B  0   D007              STO       MGTC4                             TPDUP261
011C  01  C4000167          LD     L  MGTC1                             TPDUP262
011E  0   E062              AND       HOFFF                             TPDUP263
011F  01  EC00016B          OR     L  H6000                             TPDUP264
0121  0   D003              STO       MGTC5                             TPDUP265
0122  20  140478C0          LIBF      MAGT                              TPDUP266
0123  0   5000       MGTC4  DC        /5000                             TPDUP267
0124  20  140478C0          LIBF      MAGT                              TPDUP268
0125  0   6000       MGTC5  DC        /6000                             TPDUP269
0126  20  140478C0          LIBF      MAGT                              TPDUP270
0127  0   0000              DC        0                                 TPDUP271
0128  0   70FD              MDX       *-3                               TPDUP272
0129  01  65000162   CON    LDX    L1 R                                 TPDUP273
012B  0   C106              LD     1  SWDUP-R                           TPDUP274
012C  01  4C180141          BSC    L  CON12,+-                          TPDUP275
012E  01  C4000036          LD     L  MGTC2                             TPDUP276
0130  0   9107              S      1  H2000-R                           TPDUP277
0131  0   D105              STO    1  MGTC1-R                           TPDUP278
0132  0   C106              LD     1  SWDUP-R                           TPDUP279
0133  01  D4000036          STO    L  MGTC2                             TPDUP280
0135  0   1010              SLA       16                                TPDUP281
0136  0   D106              STO    1  SWDUP-R                           TPDUP282
0137  0   C000              LD        *                                 TPDUP283
0138  0   D121              STO    1  SWDP1-R                           TPDUP284
0139  20  23A17155          LIBF      TYPEN                             TPDUP285
013A  0   2001              DC        /2001                             TPDUP286
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013B 1  022B                DC         MS16                                 TPDUP287
013C 0  0000                DC         0                                    TPDUP288
013D 20 17064885            LIBF       PAUSE                                TPDUP289
013E 0  FFFF                DC         /FFFF                                TPDUP290
013F 01 4C00001C   ER93     BSC    L   READ                                 TPDUP291
0141 0  C10C       CON12    LD     1   UNIT-R                               TPDUP292
0142 0  E909                OR     1   H6000-R                              TPDUP293
0143 0  D001                STO        MGTC8                                TPDUP294
0144 20 140478C0            LIBF       MAGT                                 TPDUP295
0145 0  6000       MGTC8    DC         /6000                                TPDUP296
0146 20 140478C0            LIBF       MAGT                                 TPDUP297
0147 0  0000                DC         0                                    TPDUP298
0148 0  70FD                MDX        *-3                                  TPDUP299
0149 30 059C98C0            EXIT                                            TPDUP300
           *                                                                TPDUP301
014B 01 74FF0182   ER92     MDX    L   CTRFL,-1                             TPDUP302
014D 0  70F1                MDX        ER93                                 TPDUP303
014E 0  70C9                MDX        ER94                                 TPDUP304
           *                                TAPE ERRORS                     TPDUP305
014F 01 650001CD   ER10     LDX    L1  MS10                                 TPDUP306
0151 0  4089                BSI        TYP                                  TPDUP307
0152 30 059C98C0            EXIT                                            TPDUP308
           *                                                                TPDUP309
           *                                RECORD TOO LONG                 TPDUP310
0154 01 650001D8   ER11     LDX    L1  MS11                                 TPDUP311
0156 0  4084                BSI        TYP                                  TPDUP312
0157 30 059C98C0            EXIT                                            TPDUP313
           *                                WRITE CHECK                     TPDUP314
0159 01 65000219   ER12     LDX    L1  MS12                                 TPDUP315
015B 01 440000DB            BSI    L   TYP                                  TPDUP316
015D 30 059C98C0            EXIT                                            TPDUP317
           *                                                                TPDUP318
0160    0000                BSS    E   0                                    TPDUP319
0160 0  0000       DATSW    DC         0                                    TPDUP320
0161 0  0740                DC         /0740                                TPDUP321
0162    0000                BSS    E   0                                    TPDUP322
0162            R            EQU        *                                    TPDUP323
0162 0  0000       EOFSW    DC         *-*                                  TPDUP324
0163 0  0000       ERRSW    DC         *-*                                  TPDUP325
0164 0  0000       TOLSW    DC         *-*                                  TPDUP326
0165 0  0000       LNGTH    DC         *-*                                  TPDUP327
0166 0  05DC       K1500    DC         1500                                 TPDUP328
0167 0  0000       MGTC1    DC         *-*                                  TPDUP329
0168 0  0000       SWDUP    DC         *-*                                  TPDUP330
0169 0  2000       H2000    DC         /2000                                TPDUP331
016A 0  8000       H8000    DC         /8000                                TPDUP332
016B 0  6000       H6000    DC         /6000                                TPDUP333
016C 0  5000       H5000    DC         /5000                                TPDUP334
016D    0002       HAA      DMES       **'E                                 TPDUP335
016E 0  0000       UNIT     DC         *-*                                  TPDUP336
016F 0  0000       PARTY    DC         *-*                                  TPDUP337
0170 0  0000       NRBYT    DC         *-*                                  TPDUP338
0171 0  0000       DENS     DC         *-*                                  TPDUP339
0172 0  00C4       H00C4    DC         /00C4      0                         TPDUP340
0173 0  00FC       H00FC    DC         /00FC      1                         TPDUP341
0174 0  00D8       H00D8    DC         /00D8      2                         TPDUP342
0175 0  00DC       H00DC    DC         /00DC      3                         TPDUP343
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                    TAPE DUPLICATION PROGRAM   TPDUP                              PAGE   7

0176 0  00D4       H00D4 DC     /00D4        7                              TPDUP344
0177 0  00E0       H00E0 DC     /00E0        9                              TPDUP345
0178 0  0052       H0052 DC     /0052        0                              TPDUP346
0179 0  FFE4       H0036 DC     /0036-/52    E                              TPDUP347
017A 0  E4C4       HE4C4 DC     /E4C4                  80X                  TPDUP348
017B 0  F400       HD8C4 DC     /D8C4-/E4C4                   20X           TPDUP349
017C 0  1C30       HF4F4 DC     /F4F4-/D8C4                   55X           TPDUP350
017D 0  0100       H0100 DC     /0100        .                             TPDUP351
017E 0  0010       H0010 DC     /0010                                      TPDUP352
017F 0  0020       H0020 DC     /0020                                      TPDUP353
0180 0  0040       H0040 DC     /0040                                      TPDUP354
0181 0  0FFF       H0FFF DC     /0FFF                                      TPDUP355
0182 0  0000       CTRFL DC     *-*                                        TPDUP356
0183 0  0000       SWDP1 DC     *-*                                        TPDUP357
0184 0  0008       MS1   DC     FMS1-MS1-1                                 TPDUP358
0185    0010             DMES   'R**CARD MISSING'E                         TPDUP359
018D    0000       FMS1  BES    0                                          TPDUP360
018D 0  0006       MS2   DC     FMS2-MS2-1                                 TPDUP361
018E    000C             DMES   'RUNIT ERROR'E                             TPDUP362
0194    0000       FMS2  BES    0                                          TPDUP363
0194 0  000A       MS3   DC     FMS3-MS3-1                                 TPDUP364
0195    0014             DMES   'RWRONG TRACK NUMBER'E                     TPDUP365
019F    0000       FMS3  BES    0                                          TPDUP366
019F 0  0007       MS4   DC     FMS4-MS4-1                                 TPDUP367
01A0    000E             DMES   'RWRONG PARITY'E                           TPDUP368
01A7    0000       FMS4  BES    0                                          TPDUP369
01A7 0  0009       MS5   DC     FMS5-MS5-1                                 TPDUP370
01A8    0012             DMES   'RWRONG BYTES/WORD'E                       TPDUP371
01B1    0000       FMS5  BES    0                                          TPDUP372
01B1 0  0007       MS6   DC     FMS6-MS6-1                                 TPDUP373
01B2    000E             DMES   'RWRONG DENSITY'E                          TPDUP374
01B9    0000       FMS6  BES    0                                          TPDUP375
01B9 0  000C       MS8   DC     FMS8-MS8-1                                 TPDUP376
01BA    0018             DMES   'RINFORMATION MAY BE LOST'E                TPDUP377
01C6    0000       FMS8  BES    0                                          TPDUP378
01C6 0  0006       MS9   DC     FMS9-MS9-1                                 TPDUP379
01C7    000C             DMES   'REND OF FILE'E                            TPDUP380
01CD    0000       FMS9  BES    0                                          TPDUP381
01CD 0  000A       MS10  DC     FMS10-MS10-1                               TPDUP382
01CE    0014             DMES   'RTAPE ERRORS - EXIT.'E                    TPDUP383
01D8    0000       FMS10 BES    0                                          TPDUP384
01D8 0  000F       MS11  DC     FMS11-MS11-1                               TPDUP385
01D9    001E             DMES   'RTAPE RECORD TOO LONG - EXIT.'E           TPDUP386
01E8    0000       FMS11 BES    0                                          TPDUP387
01E8 0  000F       MS13  DC     FMS13-MS13-1                               TPDUP388
01E9    001E             DMES   'RCORRECT  **CARDS AND CONTINUE'E          TPDUP389
01F8    0000       FMS13 BES    0                                          TPDUP390
01F8 0  000D       MS14  DC     FMS14-MS14                                 TPDUP391
01F9    0018             DMES   'RTO CONTINUE PRESS START'E                TPDUP392
0205    0000       FMS14 BES    0                                          TPDUP393
0205 0  0013       MS15  DC     FMS15-MS15-1                               TPDUP394
0206    0021             DMES   'RTO EXIT SET DATSW 0 ON AND PRESS'        TPDUP395
0216    0005             DMES   START'E                                    TPDUP396
0219    0000       FMS15 BES    0                                          TPDUP397
0219 1  022B       MS12  DC     FMS12                                      TPDUP398
021A    0022             DMES   'RWRITE CHECK ON LAST RECORD -EXIT.'E      TPDUP399
022B    0000       FMS12 BES    0                                          TPDUP400
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TAPE DUPLICATION PROGRAM   TPDUP                                PAGE    8

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022B  0   000E     MS16    DC      FMS16-MS16-1                         TPDUP401
022C      001C             DMES    'RCHANGE TAPE AND PRESS START'E      TPDUP402
023A      0000     FMS16   BES   0                                      TPDUP403
023A  0   0050     ZCART   DC      80                                   TPDUP404
023B      0050             BSS     80                                   TPDUP405
028B  0   0008     ZTYP    DC      8                                    TPDUP406
028C  0   8121             DC      /8121                                TPDUP407
028D      000F             BSS     15                                   TPDUP408
029C  0   05DC     ZMAGT   DC      1500                                 TPDUP409
029D      05DC             BSS     1500                                 TPDUP410
087A      0000             END     START                               TPDUP411
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        NO ERRORS IN ABOVE ASSEMBLY.
TPDUP
DUP FUNCTION COMPLETED

CARD TO TAPE FOR TELEPR. PEP8                          PAGE    1

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                   ************************************************** PEP80002
                   *      IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS    * PEP80003
                   ************************************************** PEP80004
                   *                                                * PEP80005
                   *      CARD TO TAPE FOR TELEPROCESSING PROGRAM PEP8* PEP80006
                   *                                                * PEP80007
                   *      PROGRAM PEP8 PREPARES A 7-TRACK TAPE FOR   * PEP80008
                   *      TELEPROCESSING. IT LOADS CARDS ON TAPE     * PEP80009
                   *      INCLUDING THE SO-CALLED LOOK-AHAED-BITS.   * PEP80010
                   *                                                * PEP80011
                   *      CONTROL CARD                              * PEP80012
                   *      CC    1-2        **                        * PEP80013
                   *      CC    3          F     NORMAL CARD TO TAPE * PEP80014
                   *                       BLANK RECOGNITION OF SPECIAL * PEP80015
                   *                             CONTROL CARDS FOR CETIS * PEP80016
                   *      CC    4          G     UNBLOCKED OUTPUT    * PEP80017
                   *                       BLANK BLOCKED OUTPUT      * PEP80018
                   *                                                * PEP80019
                   ************************************************** PEP80020
                   *                                    IBM BRUSSELS PEP80021
                   *                                                  PEP80022
0000 20 176558D5   DEBUT LIBF     PRNTN       SKIP                    PEP80023
0001 0  3100             DC       /3100                               PEP80024
0002 01 4400025A         BSI   L  PAGE        PRINT PAGE              PEP80025
0004 20 176558D5         LIBF     PRNTN       WAIT                    PEP80026
0005 0  0000             DC       0                                   PEP80027
0006 0  70FD             MDX      *-3                                 PEP80028
0007 01 65000266         LDX   L1 R           X1 #RELOCATION INDICATOR PEP80029
0009 01 66000361         LDX   L2 CART1                               PEP80030
000B 20 03059115   D1    LIBF     CARDN                               PEP80031
000C 0  1000             DC       /1000                               PEP80032
000D 1  0361             DC       CART1                               PEP80033
000E 0  0000             DC                                           PEP80034
000F 20 03059115         LIBF     CARDN                               PEP80035
0010 0  0000             DC       0                                   PEP80036
0011 0  70FD             MDX      *-3                                 PEP80037
0012 0  CA01             LDD   2  1           TEST IF ** IN COL 1-2   PEP80038
0013 0  9118             S     1  H4220-R                             PEP80039
0014 01 4C200068         BSC   L  ER1,Z       BRANCH IF NOT           PEP80040
0016 0  1090             SLT      16                                  PEP80041
0017 0  9118             S     1  H4220-R                             PEP80042
0018 01 4C200068         BSC   L  ER1,Z       BRANCH IF NOT           PEP80043
001A 0  C204             LD    2  4           TEST G SWITCH           PEP80044
001B 0  9124             S     1  H8040-R                             PEP80045
001C 01 4C200021         BSC   L  *&3,Z       BRANCH IF OF            PEP80046
001E 0  1010             SLA      16                                  PEP80047
001F 0  D12C             STO   1  K8-R                                PEP80048
0020 0  D12D             STO   1  K9-R                                PEP80049
0021 0  C203             LD    2  3           TEST F SWITCH           PEP80050
0022 0  9119             S     1  H8080-R                             PEP80051
0023 01 4C18006F         BSC   L  D4,&-       BRANCH IF ON            PEP80052
0025 30 145A5140         CALL     MOVE                                PEP80053
0027 1  02D6             DC       M1                                  PEP80054
0028 1  02AA             DC       P6                                  PEP80055
0029 0  0007             DC       M2-M1                               PEP80056
002A 01 4400024B         BSI   L  IMPR        PRINT   TITLE           PEP80057
002C 01 44000260         BSI   L  BLANK                               PEP80058
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CARD TO TAPE FOR TELEPR. PEP8                                    PAGE    2

```
002E 30 145A5171        CALL      MOVE1                            PEP80059
0030 1  0280            DC        HOBOB         AND                PEP80060
0031 1  02AA            DC        P6                               PEP80061
0032 0  0007            DC        M2-M1                            PEP80062
0033 01 4400024B        BSI   L   IMPR          UNDERLINE          PEP80063
0035 01 44000260        BSI   L   BLANK                            PEP80064
0037 30 145A5140        CALL      MOVE                             PEP80065
0039 1  02DD            DC        M3                               PEP80066
003A 1  029A            DC        P1                               PEP80067
003B 0  0011            DC        M4-M3                            PEP80068
003C 30 145A5140        CALL      MOVE                             PEP80069
003E 1  02EE            DC        M5                               PEP80070
003F 1  02BA            DC        P7                               PEP80071
0040 0  0004            DC        M6-M5                            PEP80072
0041 01 4400024B        BSI   L   IMPR          PRINT    SYSTEM C/TIME ETC PEP80073
0043 30 145A5171        CALL      MOVE1                            PEP80074
0045 1  0280            DC        HOBOB                            PEP80075
0046 1  029A            DC        P1                               PEP80076
0047 0  0003            DC        3                                PEP80077
0048 30 145A5171        CALL      MOVE1                            PEP80078
004A 1  0280            DC    .   HOBOB                            PEP80079
004B 1  029F            DC        P3                               PEP80080
004C 0  0003            DC        3                                PEP80081
004D 30 145A5171        CALL      MOVE1                            PEP80082
004F 1  0280            DC        HOBOB                            PEP80083
0050 1  02A4            DC        P5                               PEP80084
0051 0  0007            DC        7                                PEP80085
0052 0  18A0            SRT       32                               PEP80086
0053 0  C11A            LD    1   HOBOB-R                          PEP80087
0054 0  1888            SRT       8                                PEP80088
0055 01 DC0002BA        STD   L   P7                               PEP80089
0057 01 DC0002BC        STD   L   P8                               PEP80090
0059 01 4400024B        BSI   L   IMPR                             PEP80091
005B 20 176558D5        LIBF      PRNTN         DOUBLE SPACE       PEP80092
005C 0  3E00            DC        /3E00                            PEP80093
005D 01 44000260        BSI   L   BLANK         INITIALISE THE  BUFFERS PEP80094
005F 20 03059115   D2   LIBF      CARDN                            PEP80095
0060 0  1000            DC        /1000                            PEP80096
0061 1  0361            DC        CART1                            PEP80097
0062 0  0000            DC                                         PEP80098
0063 01 660003B2        LDX   L2  CART2                            PEP80099
0065 01 44000149   D3   BSI   L   GET                              PEP80100
0067 0  700A            MDX       D5                               PEP80101
0068 20 23A17155   ER1  LIBF      TYPEN                            PEP80102
0069 0  2001            DC        /2001                            PEP80103
006A 1  02F2            DC        M7                               PEP80104
006B 0  0000            DC                                         PEP80105
006C 20 17064885        LIBF      PAUSE                            PEP80106
006D 0  FFFF            DC        /FFFF                            PEP80107
006E 0  709C            MDX       D1                               PEP80108
006F 0  C000       D4   LD        *             MEMORISE IF  F ON  PEP80109
0070 0  D105            STO   1   SWF-R                            PEP80110
0071 0  70ED            MDX       D2                               PEP80111
0072 0  C105       D5   LD    1   SWF-R         TEST SWITCH F      PEP80112
0073 01 4C200102        BSC   L   DD99,Z                           PEP80113
0075 0  C201            LD    2   1             TEST IF $          PEP80114
0076 0  911C            S     1   H4420-R                          PEP80115
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0077 01 4C2000C8          BSC  L  D6,Z        BRANCH IF NOT              PEP80116
0079 0  7201              MDX     2 1                                    PEP80117
007A 0  C110              LD      1 K5-R                                 PEP80118
007B 30 035945D9          CALL      COMPR     IS IT A                    PEP80119
007D 0  8010              DC        /8010     I                          PEP80120
007E 0  8800              DC        /8800     B                          PEP80121
007F 0  2800              DC        /2800     S                          PEP80122
0080 0  2020              DC        /2020     Y                          PEP80123
0081 0  2800              DC        /2800     S   CARD                   PEP80124
0082 1  0104              DC        D11       YES,BRANCH TO D11          PEP80125
0083 0  C12B              LD      1 K7-R                                 PEP80126
0084 30 035945D9          CALL      COMPR     IS IT A                    PEP80127
0086 0  8100              DC        /8100     E                          PEP80128
0087 0  2040              DC        /2040     X                          PEP80129
0088 0  8100              DC        /8100     E                          PEP80130
0089 0  8400              DC        /8400     C                          PEP80131
008A 0  2200              DC        /2200     U                          PEP80132
008B 0  2400              DC        /2400     T                          PEP80133
008C 0  8100              DC        /8100     E   CARD                   PEP80134
008D 1  0109              DC        D12       YES,BRANCH TO D12          PEP80135
008E 0  7205              MDX     2 5                                    PEP80136
008F 0  C10C              LD      1 K4-R                                 PEP80137
0090 30 035945D9          CALL      COMPR     IS IT A                    PEP80138
0092 0  8200              DC        /8200     D                          PEP80139
0093 0  2200              DC        /2200     U                          PEP80140
0094 0  4200              DC        /4200     M                          PEP80141
0095 0  4040              DC        /4040     P   CARD                   PEP80142
0096 1  0123              DC        D13       YES,BRANCH TO D13          PEP80143
0097 0  C10C              LD      1 K4-R                                 PEP80144
0098 30 035945D9          CALL      COMPR     IS IT A                    PEP80145
009A 0  2400              DC        /2400     T                          PEP80146
009B 0  8010              DC        /8010     I                          PEP80147
009C 0  4200              DC        /4200     M                          PEP80148
009D 0  8100              DC        /8100     E   CARD                   PEP80149
009E 1  0126              DC        D14       YES BRANCH TO D14          PEP80150
009F 0  C110              LD      1 K5-R                                 PEP80151
00A0 30 035945D9          CALL      COMPR     IS IT A                    PEP80152
00A2 0  4400              DC        /4400     L                          PEP80153
00A3 0  8010        H8010 DC        /8010     I                          PEP80154
00A4 0  4100              DC        /4100     N                          PEP80155
00A5 0  8100              DC        /8100     E                          PEP80156
00A6 0  2800              DC        /2800     S   CARD                   PEP80157
00A7 1  012F              DC        D15       YES BRANCH TO D15          PEP80158
00A8 0  C110              LD      1 K5-R                                 PEP80159
00A9 30 035945D9          CALL      COMPR     IS IT A                    PEP80160
00AB 0  4040              DC        /4040     P                          PEP80161
00AC 0  2200              DC        /2200     U                          PEP80162
00AD 0  4100              DC        /4100     N                          PEP80163
00AE 0  8400              DC        /8400     C                          PEP80164
00AF 0  8020              DC        /8020     H   CARD                   PEP80165
00B0 1  013E              DC        D16       YES BRANCH TO D16          PEP80166
00B1 0  C12B              LD      1 K7-R                                 PEP80167
00B2 30 035945D9          CALL      COMPR     IS IT A                    PEP80168
00B4 0  8080              DC        /8080     F                          PEP80169
00B5 0  4080              DC        /4080     O                          PEP80170
00B6 0  4010              DC        /4010     R                          PEP80171
00B7 0  2400              DC        /2400     T                          PEP80172
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CARD TO TAPE FOR TELEPR.    PEP8                              PAGE    4

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00B8  0   4010              DC        /4010      R                            PEP80173
00B9  0   9000              DC        /9000      A                            PEP80174
00BA  0   4100              DC        /4100      N CARD                       PEP80175
00BB  1   0142              DC        D17        YES BRANCH TO D17            PEP80176
00BC  0   72FB              MDX    2  -5                                      PEP80177
00BD  0  ·C128        D7    LD     1  K2-R                                    PEP80178
00BE  30  035945D9          CALL      COMPR      IS IT A                      PEP80179
00C0  0   8010              DC        /8010      I                            PEP80180
00C1  0   8200              DC        /8200      D CARD                       PEP80181
00C2  1   00C5              DC        *&2        YES GO TO *&2                PEP80182
00C3  01  4C000160     D9   BSC    L  PUT                                     PEP80183
00C5  0   C11C              LD     1  H4420-R                                 PEP80184
00C6  0   D200              STO    2  0          SET $ IN FIRST COLUMN        PEP80185
00C7  0   7006              MDX       D8         DO THE  $ID OPERATIONS       PEP80186
00C8  0   811C         D6   A      1  H4420-R    IS IT A *                    PEP80187
00C9  0   9118              S      1  H4220-R                                 PEP80188
00CA  0   7201              MDX    2  1                                       PEP80189
00CB  01  4C1800BD          BSC    L  D7,&-      YES,BRANCH TO   TEST *ID     PEP80190
00CD  0   70F5              MDX       D9         ELSE PUT CARD ON TAPE        PEP80191
00CE  0   C104         D8   LD     1  TOTIM-R    COMPUTE TOTAL TIME           PEP80192
00CF  30  03209180          CALL      CHIF                                   PEP80193
00D1  1   02A0              DC        P3&1                                    PEP80194
00D2  0   C100              LD     1  SWDMP-R    SET DUMP SIGN                PEP80195
                    *                                                        PEP80196
00D3  0   D204              STO    2  4                                       PEP80197
00D4  0   C103              LD     1  SWFOR-R    SET FORTRAN SIGN             PEP80198
00D5  0   D203              STO    2  3                                       PEP80199
00D6  0   6A02              STX    2  *&2                                     PEP80200
00D7  20  085935D9          LIBF      HOLPR      CONVERT CARD TO   PRINTER    PEP80201
00D8  0   0001              DC        1          CODE                         PEP80202
00D9  0   0000              DC        *-*                                     PEP80203
00DA  1   02A4              DC        P5                                      PEP80204
00DB  0   0050              DC        80                                      PEP80205
00DC  0   C101              LD     1  TIMES-R                                 PEP80206
00DD  01  4C1800FE          BSC    L  NTM,&-     TEST IF TIME NOT ZERO        PEP80207
00DF  30  03209180          CALL      CHIF                                   PEP80208
00E1  1   02BA              DC        P7         ELSE FILL IN WITH BLANK      PEP80209
00E2  01  CC0002BA          LDD    L  P7                                     PEP80210
00E4  0   1088              SLT       8                                      PEP80211
00E5  01  DC0002BA     DD9  STD    L  P7                                     PEP80212
00E7  0   C102              LD     1  LINES-R    DO THE SAME THING WITH       PEP80213
00E8  01  4C180100          BSC    L  DDA,&-     LINES                        PEP80214
00EA  30  03209180          CALL      CHIF                                   PEP80215
00EC  1   02BC              DC        P8                                      PEP80216
00ED  01  CC0002BC          LDD    L  P8                                     PEP80217
00EF  0   1088              SLT       8                                      PEP80218
00F0  01  DC0002BC     D10  STD    L  P8                                     PEP80219
00F2  01  4400024B          BSI    L  IMPR       PRINT THE $ID CARD LINE      PEP80220
00F4  0   C106              LD     1  PT2-R                                  PEP80221
00F5  0   D003              STO       *&3                                    PEP80222
00F6  30  145A5140          CALL      MOVE                                   PEP80223
00F8  1   02A4              DC        P5                                     PEP80224
00F9  0   0000              DC        *-*                                    PEP80225
00FA  0   0028              DC        40                                     PEP80226
00FB  01  44000260          BSI    L  BLANK                                  PEP80227
00FD  0   706F              MDX       PT9                                    PEP80228
00FE  0   10A0         NTM  SLT       32                                     PEP80229
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CARD TO TAPE FOR TELEPR.    PEP8                                    PAGE    5

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OOFF  0   70E5                    MDX     DD9                                      PEP80230
                            *                                                     PEP80231
0100  0   10A0         DDA   SLT     32                                           PEP80232
0101  0   70EE               MDX     D10                                          PEP80233
                            *                                                     PEP80234
0102  0   7201         DD99  MDX  2  1         ADJUST X2 FOR PUT IF                PEP80235
0103  0   70BF               MDX     D9        SWITCH F ON                        PEP80236
0104  0   10A0         D11   SLT     32        ALL SWITCHES MUST BE               PEP80237
0105  0   D900               STD  1  SWDMP-R   MADE ZERO AT AN IBSYS CARD         PEP80238
0106  0   D902               STD  1  LINES-R                                      PEP80239
0107  0   D103               STO  1  SWFOR-R                                      PEP80240
0108  0   70BA               MDX     D9                                           PEP80241
                            *                                                     PEP80242
0109  0   720E         D12   MDX  2  14        TEST SYSTEM                        PEP80243
010A  0   C110               LD   1  K5-R                                         PEP80244
010B  30  035945D9           CALL    COMPR     IS IT A                           PEP80245
010D  0   8080               DC      /8080     F                                  PEP80246
010E  0   4080               DC      /4080     O                                  PEP80247
010F  0   4010               DC      /4010     R                                  PEP80248
0110  0   2400               DC      /2400     T                                  PEP80249
0111  0   4010               DC      /4010     R CARD                             PEP80250
0112  1   011C               DC      D19       YES BRANCH TO D19                  PEP80251
0113  0   7201         D18   MDX  2  1         IBJOB SYSTEM OR SOMETHING          PEP80252
0114  0   6A02               STX  2  *&2       ELSE                               PEP80253
0115  20  085935D9           LIBF    HOLPR                                        PEP80254
0116  0   0001               DC      1                                           PEP80255
0117  0   0000               DC      *-*                                          PEP80256
0118  1   029A               DC      P1                                           PEP80257
0119  0   0005               DC      5.                                           PEP80258
011A  0   72F1               MDX  2  -15                                          PEP80259
011B  0   70A7               MDX     D9                                           PEP80260
011C  30  145A5140     D19   CALL    MOVE      FORTRAN SYSTEM                     PEP80261
011E  1   0311               DC      M9                                           PEP80262
011F  1   029A               DC      P1                                           PEP80263
0120  0   0003               DC      M10-M9                                       PEP80264
0121  0   72F2               MDX  2  -14                                          PEP80265
0122  0   70A0               MDX     D9                                           PEP80266
                            *                                                     PEP80267
0123  0   C120         D13   LD   1  H2000-R   DUMP                               PEP80268
0124  0   D100               STO  1  SWDMP-R                                      PEP80269
0125  0   7006               MDX     D20                                          PEP80270
                            *                                                     PEP80271
0126  0   7203         D14   MDX  2  3         TIME                               PEP80272
0127  0   400C               BSI     D21                                          PEP80273
0128  0   D101               STO  1  TIMES-R                                      PEP80274
0129  0   8104               A    1  TOTIM-R                                      PEP80275
012A  0   D104               STO  1  TOTIM-R                                      PEP80276
012B  0   72FD               MDX  2  -3                                           PEP80277
012C  0   72FA         D20   MDX  2  -6                                           PEP80278
012D  01  4C000065           BSC  L  D3                                           PEP80279
                            *                                                     PEP80280
012F  0   7204         D15   MDX  2  4         LINES                              PEP80281
0130  0   4003               BSI     D21                                          PEP80282
0131  0   D102               STO  1  LINES-R                                      PEP80283
0132  0   72FC         D201  MDX  2  -4                                           PEP80284
0133  0   70F8               MDX     D20                                          PEP80285
                            *                                                     PEP80286
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CARD TO TAPE FOR TELEPR.   PEP8                                    PAGE   6

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0134 0  0000       D21    DC       0                                PEP80287
0135 0  1010              SLA      16                               PEP80288
0136 0  D200              STO   2  0                                PEP80289
0137 0  D201              STO   2  1                                PEP80290
0138 0  D202              STO   2  2                                PEP80291
0139 0  6A01              STX   2  *&1                              PEP80292
013A 20 04OC2255          LIBF     DCBIN                            PEP80293
013B 0  0000              DC       *-*                              PEP80294
013C 01 4C800134          BSC   I  D21                              PEP80295
                   *                                                PEP80296
013E 0  C123       D16    LD    1  H8000-R    PUNCH                 PEP80297
013F 0  E903              OR    1  SWFOR-R                          PEP80298
0140 0  D103              STO   1  SWFOR-R                          PEP80299
0141 0  70EA              MDX      D20                              PEP80300
                   *                                                PEP80301
0142 0  C121       D17    LD    1  H0800-R    FORTRAN 2             PEP80302
0143 0  E903              OR    1  SWFOR-R                          PEP80303
0144 0  D103              STO   1  SWFOR-R                          PEP80304
0145 0  C122              LD    1  H023C-R    2)                    PEP80305
0146 01 D400029C          STO   L  P1&2                             PEP80306
0148 0  70E3              MDX      D20                              PEP80307
                   *                                                PEP80308
                   *                                                PEP80309
                   *                 GET   X2 POINTS AT THE COUNT OF    PEP80310
                   *                       THE LAST USED BUFFER         PEP80311
                   *                       THE ROUTINE TEST IF THE LAST PEP80312
                   *                       READ CARD WAS A END CARD,    PEP80313
                   *                       IF NOT IF FILLS THE BUFFER AND PEP80314
                   *                       POINTS X2  TO THE OTHER BUFFER PEP80315
                   *                       ELSE IT GOES TO THE END      PEP80316
                   *                       PROCESSING                   PEP80317
0149 0  0000       GET    DC       0                                PEP80318
014A 20 03059115          LIBF     CARDN                            PEP80319
014B 0  0000              DC       0                                PEP80320
014C 0  70FD              MDX      *-3                              PEP80321
014D 0  6A0B              STX   2  BUFN                             PEP80322
014E 01 6680015F          LDX  I2  BUFN1                            PEP80323
0150 0  C129              LD    1  K3-R                             PEP80324
0151 30 035945D9          CALL     COMPR                            PEP80325
0153 0  8100              DC       /8100      E                     PEP80326
0154 0  4100              DC       /4100      N                     PEP80327
0155 0  8200              DC       /8200      D IF YES               PEP80328
0156 1  020F              DC       END        BRANCH TO END         PEP80329
0157 20 03059115          LIBF     CARDN                            PEP80330
0158 0  1000              DC       /1000                            PEP80331
0159 0  0000       BUFN   DC       *-*        BUFFER USED BY      CARDN PEP80332
015A 0  0000              DC                                        PEP80333
015B 0  C0FD              LD       BUFN       PREPARE BUFN1 FOR     PEP80334
015C 0  D002              STO      BUFN1      NEXT CALL             PEP80335
015D 01 4C800149          BSC   I  GET                             PEP80336
015F 1  0361       BUFN1  DC       CART1      BUFFER USED BY PROGRAM PEP80337
                   *                          FOR NEXT OPERATION    PEP80338
                   *                     PUT. THIS ROUTINE MOVES    PEP80339
                   *                          CARD INPUT TO OUTPUT  PEP80340
                   *                          BUFFER UNTIL IT IS PLENTY PEP80341
                   *                          THEN IT WRITES BUFFER ON PEP80342
                   *                          TAPE.IT DETERMINES THE PEP80343
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CARD TO TAPE FOR TELEPR.  PEP8                                    PAGE   7

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                         *                    LOOK AHEAD BITS TOO.      PEP80344
0160 0  C200            PUT   LD    2 0       X2 POINTS ON CARD BUFFER   PEP80345
0161 0  E11D                  AND   1 H0050-R TEST IF  BINARY            PEP80346
0162 0  F11D                  EOR   1 H0050-R                           PEP80347
0163 01 4C1801B6              BSC   L  PBIN,&- BRANCH IF YES             PEP80348
0165 0  6A04                  STX   2 PT1        PREPARE CONVERSION      PEP80349
0166 0  C106                  LD    1 PT2-R                             PEP80350
0167 0  D003                  STO     PT3                               PEP80351
0168 30 031020C4              CALL    CDBCD    CONVERSION AND TRANSFER   PEP80352
016A 0  0000            PT1   DC      *-*                               PEP80353
016B 0  0000            PT3   DC      *-*                               PEP80354
016C 0  0050                  DC      80                                PEP80355
016D 01 7401026D        PT9   MDX   L  CTR,&1   UPDATE COUNT BLOCKS      PEP80356
016F 01 74280403              MDX   L  CTRL,40            LENGTH         PEP80357
0171 01 7428026C              MDX   L  PT2,40           START IN OUTPUT  PEP80358
0173 0  C12C                  LD    1 K8-R                             PEP80359
0174 01 4C20017B              BSC   L  PT6,Z                            PEP80360
0176 0  C125                  LD    1 H0100-R                          PEP80361
0177 01 EC0001E2              OR    L  MGTCL                            PEP80362
0179 01 D40001E2              STO   L  MGTCL                            PEP80363
017B 0  72FF            PT6   MDX   2 -1                  AREA           PEP80364
017C 0  4075                  BSI     BITST                            PEP80365
017D 0  7029                  MDX     NXTBI    BRANCH IF NEXT CARD IS   PEP80366
017E 0  18A0                  SRT     32       BINARY                   PEP80367
017F 0  402D                  BSI     PT4      PUT LOOK AHEAD BITS       PEP80368
0180 0  4008                  BSI     PT8                              PEP80369
0181 0  C107                  LD    1 CTR-R    TEST IF MORE THAN 9 RECORD PEP80370
0182 0  912D                  S     1 K9-R                             PEP80371
0183 01 4C3001E1        PT5   BSC   L  MAG,Z-   BRANCH IF YES           PEP80372
0185 00 66000000        SAV1  LDX   L2 *-*     RESTORE X2               PEP80373
0187 01 4C000065              BSC   L  D3                              PEP80374
                         *                                             PEP80375
0189 0  0000            PT8   DC      0                                PEP80376
018A 0  C12C                  LD    1 K8-R                             PEP80377
018B 01 4CA00189              BSC   I  PT8,Z                           PEP80378
018D 0  6A14                  STX   2 SVX2&1   FILL THE ZEREOS          PEP80379
018E 0  622A                  LDX   2 42       WITH THE HEX VALUE 10    PEP80380
018F 0  6A15                  STX   2 CCC                              PEP80381
0190 01 6680026C              LDX   I2 PT2                             PEP80382
0192 0  72D6                  MDX   2 -42                             PEP80383
0193 0  10A0            PPP   SLT     32                              PEP80384
0194 0  C200                  LD    2 0                               PEP80385
0195 0  18C8                  RTE     8                               PEP80386
0196 0  4818                  BSC     +-                              PEP80387
0197 0  E927                  OR    1 H1010-R                         PEP80388
0198 0  18D0                  RTE     16                              PEP80389
0199 0  4818                  BSC     +-                              PEP80390
019A 0  E927                  OR    1 H1010-R                         PEP80391
019B 0  18C8                  RTE     8                               PEP80392
019C 0  D200                  STO   2 0                               PEP80393
019D 0  7201                  MDX   2 1                               PEP80394
019E 01 74FF01A5              MDX   L  CCC,-1                          PEP80395
01A0 0  70F2                  MDX     PPP                             PEP80396
01A1 00 66000000        SVX2  LDX   L2 *-*                            PEP80397
01A3 01 4C800189              BSC   I  PT8                            PEP80398
01A5 0  0000            CCC   DC      *-*                             PEP80399
                         *                                             PEP80400
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01A6  0   4006              BSI       PT4                                    PEP80401
01A7  0   C90A    NXTBI     LDD     1 LKHD-R        H09090707                PEP80402
01A8  0   4004              BSI       PT4                                    PEP80403
01A9  0   40DF              BSI       PT8                                    PEP80404
01AA  0   C107    NXTB1     LD      1 CTR-R         TEST IF MORE THAN 8 BLOCKS PEP80405
01AB  0   912C              S       1 K8-R                                   PEP80406
01AC  0   70D6              MDX       PT5                                    PEP80407
      *                                                                      PEP80408
01AD  0   0000    PT4       DC        0             STORES THE LOOK AHEAD BITS PEP80409
01AE  01  DC80026C          STD     I PT2                                    PEP80410
01B0  01  7402026C          MDX     L PT2,2                                  PEP80411
01B2  01  74020403          MDX     L CTRL,2                                 PEP80412
01B4  01  4C8001AD          BSC     I PT4                                    PEP80413
      *                                                                      PEP80414
01B6  0   C106    PBIN      LD      1 PT2-R         IT IS A BINARY CARD      PEP80415
01B7  0   910E              S       1 K1-R                                   PEP80416
01B8  0   D009              STO       PBIN1&1       MOVE THE  BINARY CARD    PEP80417
01B9  0   6150              LDX     1 80            TO OUTPUT AREA           PEP80418
01BA  0   72FF              MDX     2 -1                                     PEP80419
01BB  0   6A01              STX     2 PBIN2&1                                PEP80420
01BC  00  C5000000  PBIN2   LD     L1 *-*          XXXXXXXXXXXX....          PEP80421
01BE  0   188A              SRT       10           ..........XXXXXXXXXXXX    PEP80422
01BF  0   1002              SLA       2             XXXXXX..XXXXXX           PEP80423
01C0  0   1086              SLT       6            ..XXXXXX..XXXXXX          PEP80424
01C1  00  D5000000  PBIN1   STO    L1 *-*                                    PEP80425
01C3  0   71FF              MDX     1 -1                                     PEP80426
01C4  0   70F7              MDX       PBIN2                                  PEP80427
01C5  01  65000266          LDX    L1 R                                      PEP80428
01C7  01  7450026C          MDX     L PT2,80        ADJUST ENTRY BLOCK       PEP80429
01C9  01  74500403          MDX     L CTRL,80       ADJUST LENGTH            PEP80430
01CB  01  C12C              LD      1 K8-R                                   PEP80431
01CC  01  4C2001D3          BSC     L PT7,Z                                  PEP80432
01CE  0   C126              LD      1 HFOFF-R                                PEP80433
01CF  01  E40001E2          AND     L MGTCL                                  PEP80434
01D1  01  D40001E2          STO     L MGTCL                                  PEP80435
01D3  01  7402026D  PT7     MDX     L CTR,2         ADJUST NUMBER OF BLOCKS  PEP80436
01D5  0   401C              BSI       BITST         TEST IF NEXT BINARY      PEP80437
01D6  0   7005              MDX       NSTBI         YES,BRANCH               PEP80438
01D7  0   C90C              LDD     1 K4-R          STORE LOOK AHEAD BITS    PEP80439
01D8  0   40D4              BSI       PT4           H0004000000010000        PEP80440
01D9  0   C90E              LDD     1 K1-R                                   PEP80441
01DA  0   40D2              BSI       PT4                                    PEP80442
01DB  0   70A5              MDX       PT5-2                                  PEP80443
      *                                             NEXT CARD IS BINARY      PEP80444
01DC  0   C910    NSTBI     LDD     1 K5-R                                   PEP80445
01DD  0   40CF              BSI       PT4           STORE LOOK AHEAD BITS    PEP80446
01DE  0   C912              LDD     1 H0005-R       H0005000100005000H       PEP80447
01DF  0   40CD              BSI       PT4                                    PEP80448
01E0  0   70C9              MDX       NXTB1                                  PEP80449
      *                                                                      PEP80450
      *                                                                      PEP80451
01E1  20  140478C0  MAG     LIBF      MAGT          WRITE ON TAPE            PEP80452
01E2  0   3050    MGTCL     DC        /3050                                  PEP80453
01E3  1   0403              DC        CTRL                                   PEP80454
01E4  1   0202              DC        USER                                   PEP80455
01E5  20  140478C0          LIBF      MAGT                                   PEP80456
01E6  0   0000              DC        0                                      PEP80457
```

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01E7 0  70FD         MDX      *-3                                    PEP80458
01E8 0  1010         SLA      16           SET COUNTERS ZERO         PEP80459
01E9 01 D4000403     STO   L  CTRL                                   PEP80460
01EB 01 D400026D     STO   L  CTR                                    PEP80461
01ED 0  C116         LD    1  ADCTR-R      INITIALISE PT2            PEP80462
01EE 0  D106         STO   1  PT2-R                         .        PEP80463
01EF 01 7401026E     MDX   L  NREC,1       UPDATE RECORD COUNT       PEP80464
01F1 0  7093         MDX      SAV1                                   PEP80465
                  *                                                  PEP80466
01F2 0  0000    BITST DC      0            TEST IF NEXT CARD IS      PEP80467
01F3 20 03059115     LIBF     CARDN        BINARY                    PEP80468
01F4 0  0000         DC       0                                      PEP80469
01F5 0  70FD         MDX      *-3                                    PEP80470
01F6 0  6A8F         STX   2  SAV1&1                                 PEP80471
01F7 01 66800159     LDX   I2 BUFN                                   PEP80472
01F9 0  C201         LD    2  1                                      PEP80473
01FA 0  E11D         AND   1  H0050-R      HAS IT   7-9 IN COLUMN. 1 PEP80474
01FB 0  F11D         EOR   1  H0050-R                                PEP80475
01FC 01 4C9801F2     BSC   I  BITST,&-     YES GO TO RETURN ADDRESS  PEP80476
01FE 01 740101F2     MDX   L  BITST,1      ELSE GO TO RETURN & 1     PEP80477
0200 01 4C8001F2     BSC   I  BITST                                  PEP80478
                  *                                                  PEP80479
0202 0  0000    USER DC       0                                      PEP80480
0203 0  6908         STX   1  SV1&1        COUNTS THE NUMBER OF      PEP80481
0204 01 65000266     LDX   L1 R            ERASES ON TAPE            PEP80482
0206 0  9129         S        K3-R                                   PEP80483
0207 01 4C20020B     BSC   L  SV1,Z                                  PEP80484
0209 01 7401026F US1 MDX   L  CTRER,1                                PEP80485
020B 00 65000000 SV1 LDX   L1 *-*                                    PEP80486
020D 01 4C800202     BSC   I  USER                                   PEP80487
                  *                                                  PEP80488
                  *                                                  PEP80489
020F 01 74000403 END MDX   L  CTRL,0       STILL ONE RECORD          PEP80490
0211 0  702C         MDX      END2         YES,MOVE IT               PEP80491
0212 0  4032         BSI      END1         TWO  SPACES.              PEP80492
0213 30 145A5140 END3 CALL    MOVE                                   PEP80493
0215 1  0314         DC       M13                                    PEP80494
0216 1  02A0         DC       P3&1                                   PEP80495
0217 0  000B         DC       M14-M13                                PEP80496
0218 0  C108         LD    1  NREC-R                                 PEP80497
0219 30 03209180     CALL     CHIF                                   PEP80498
021B 1  02AC         DC       P6&2                                   PEP80499
021C 0  402E         BSI      IMPR         PRINT NUMBER OF RECORDS   PEP80500
021D 0  4027         BSI      END1         TWO SPACES                PEP80501
021E 0. C12C         LD    1  K8-R                                   PEP80502
021F 01 4C180232     BSC   L  END4,&-                                PEP80503
0221 0  C108         LD    1  NREC-R       COMPUTE TRANSMISSION TIME PEP80504
0222 0  A12E         M     1  D983-R                                 PEP80505
0223 0  D900         STD   1  SWDMP-R                                PEP80506
0224 0  C109         LD    1  CTRER-R                                PEP80507
0225 0  A130         M     1  D40-R                                  PEP80508
0226 0  8900         AD    1  SWDMP-R                                PEP80509
0227 0  8914         AD    1  K5000-R                                PEP80510
0228 0  A92F         D     1  D1000-R                                PEP80511
0229 30 03209180     CALL     CHIF                                   PEP80512
022B 1  02B0         DC       P6&6                                   PEP80513
022C 30 145A5140     CALL     MOVE                                   PEP80514
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022E 1  031F                  DC    M15                                    PEP80515
022F 1  02A0                  DC    P3&1                                   PEP80516
0230 0  000E                  DC    M16-M15                                PEP80517
0231 0  4019                  BSI   IMPR        PRINT TRANSMISSION TIME    PEP80518
0232 20 140478C0       END4   LIBF  MAGT        WRITE TAPE MARK            PEP80519
0233 0  8050                  DC    /8050                                  PEP80520
0234 20 23A17155              LIBF  TYPEN                                  PEP80521
0235 0  2001                  DC    /2001                                  PEP80522
0236 1  0340                  DC    M18                                    PEP80523
0237 0  0000                  DC    0                                      PEP80524
0238 20 17064885              LIBF  PAUSE                                  PEP80525
0239 0  FFFF                  DC    /FFFF                                  PEP80526
023A 30 17157E00              LINK  PEP8                                   PEP80527
                       *                                                   PEP80528
                       *                                                   PEP80529
023E 20 140478C0       END2   LIBF  MAGT        MOVE LAST RECORD ON TAPE   PEP80530
023F 0  3050                  DC    /3050                                  PEP80531
0240 1  0403                  DC    CTRL                                   PEP80532
0241 1  0202                  DC    USER                                   PEP80533
0242 01 7401026E        MDX L NREC,1                                      PEP80534
0244 0  70CD                  MDX   END3-1                                 PEP80535
                       *                                                   PEP80536
0245 0  0000           END1   DC    0                                     PEP80537
0246 0  4019                  BSI   BLANK                                  PEP80538
0247 0  4003                  BSI   IMPR                                   PEP80539
0248 0  4002                  BSI   IMPR                                   PEP80540
0249 01 4C800245              BSC  I END1                                 PEP80541
                       *                                                   PEP80542
                       *                                                   PEP80543
024B 0  0000           IMPR   DC    0           PRINT  ONE LINE            PEP80544
024C 20 176558D5              LIBF  PRNTN                                  PEP80545
024D 0  2000                  DC    /2000                                  PEP80546
024E 1  0299                  DC    PRNT1                                  PEP80547
024F 0  1100                  DC    /1100       PRINT PAGE IF CHANNEL1     PEP80548
0250 20 176558D5              LIBF  PRNTN       TEST, FOR CHANNEL 1        PEP80549
0251 0  4000                  DC    /4000                                  PEP80550
0252 0  1001                  SLA   1                                      PEP80551
0253 01 4C100258              BSC  L IMP,-                                 PEP80552
0255 20 176558D5              LIBF  PRNTN                                  PEP80553
0256 0  3100                  DC    /3100                                  PEP80554
0257 0  4002                  BSI   PAGE                                   PEP80555
0258 01 4C80024B       IMP    BSC  I IMPR                                 PEP80556
                       *                                                   PEP80557
                       *                                                   PEP80558
025A 0  0000           PAGE   DC    0           BLANKS THE PRINT AREA      PEP80559
025B 20 17047140              LIBF  PAGE                                   PEP80560
025C 1  029A                  DC    PRNT1&1                                PEP80561
025D 0  003C                  DC    60                                     PEP80562
025E 01 4C80025A              BSC  I PAGE                                 PEP80563
                       *                                                   PEP80564
0260 0  0000           BLANK  DC    0           BLANKS THE PRINT AREA      PEP80565
0261 20 024C1552              LIBF  BLANK                                  PEP80566
0262 1  029A                  DC    PRNT1&1                                PEP80567
0263 0  003C                  DC    60                                     PEP80568
0264 01 4C800260              BSC  I BLANK                                PEP80569
                       *                                                   PEP80570
                       *                                                   PEP80571
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0266    0000                  BSS  E  0                                      PEP80572
0266              R           EQU     *                                      PEP80573
0266  0 0000      SWDMP       DC      *-*                                    PEP80574
0267  0 0000      TIMES       DC      *-*                                    PEP80575
0268  0 0000      LINES       DC      *-*                                    PEP80576
0269  0 0000      SWFOR       DC      *-*                                    PEP80577
026A  0 0000      TOTIM       DC      *-*                                    PEP80578
026B  0 0000      SWF         DC      *-*                                    PEP80579
026C  1 0404      PT2         DC      CTRL&1                                 PEP80580
026D  0 0000      CTR         DC      *-*                                    PEP80581
026E  0 0000      NREC        DC      *-*                                    PEP80582
026F  0 0000      CTRER       DC      *-*                                    PEP80583
0270  0 0909      LKHD        DC      /0909                                  PEP80584
0271  0 0707                  DC      /0707                                  PEP80585
0272  0 0004      K4          DC      /0004                                  PEP80586
0273  0 0000                  DC      0                                      PEP80587
0274  0 0001      K1          DC      1                                      PEP80588
0275  0 0000                  DC      0                                      PEP80589
0276  0 0005      K5          DC      5                                      PEP80590
0277  0 0001                  DC      1                                      PEP80591
0278  0 0005      H0005       DC      5                                      PEP80592
0279  0 0004                  DC      4                                      PEP80593
027A  0 0000      K5000       DC      0                                      PEP80594
027B  0 1388                  DC      5000                                   PEP80595
027C  1 0404      ADCTR       DC      CTRL&1                                 PEP80596
027D  0 0000      SWERT       DC      *-*                                    PEP80597
027E  0 4220      H4220       DC      /4220        *    CARD                 PEP80598
027F  0 8080      H8080       DC      /8080        F    CARD                 PEP80599
0280  0 0B0B      H0B0B       DC      /0B0B        ##   PRINTER              PEP80600
0281  0 1D1D      H1D1D       DC      /1D1D        --   PRINTER              PEP80601
0282  0 4420      H4420       DC      /4420        $    IN CARD              PEP80602
0283  0 0050      H0050       DC      /0050                                  PEP80603
0284  0 001F      H001F       DC      /001F                                  PEP80604
0285  0 0F00      H0F00       DC      /0F00                                  PEP80605
0286  0 2000      H2000       DC      /2000                                  PEP80606
0287  0 0800      H0800       DC      /0800        2    CARD                 PEP80607
0288  0 023C      H023C       DC      /023C        2)   PRINTER              PEP80608
0289  0 8000      H8000       DC      /8000                                  PEP80609
028A  0 8040      H8040       DC      /8040                                  PEP80610
028B  0 0100      H0100       DC      /0100                                  PEP80611
028C  0 FOFF      HFOFF       DC      /FOFF                                  PEP80612
028D  0 1010      H1010       DC      /1010                                  PEP80613
028E  0 0002      K2          DC      2                                      PEP80614
028F  0 0003      K3          DC      3                                      PEP80615
0290  0 0006      K6          DC      6                                      PEP80616
0291  0 0007      K7          DC      7                                      PEP80617
0292  0 0008      K8          DC      8                                      PEP80618
0293  0 0009      K9          DC      9                                      PEP80619
0294  0 03D7      D983        DC      983                                    PEP80620
0295  0 2710      D1000       DC      10000                                  PEP80621
0296  0 0000      D40         DC      40                                     PEP80622
0298    0000                  BSS  E  0                                      PEP80623
0298  0 0000                  DC                                             PEP80624
0299  0 003C      PRNT1       DC      60                                     PEP80625
029A    0003      P1          BSS     3       SYSTEM                         PEP80626
029D    0002      P2          BSS     2       C/TIME                         PEP80627
029F    0003      P3          BSS     3                                      PEP80628
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CARD TO TAPE FOR TELEPR.   PEP8                                    PAGE   12

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02A2    0002      P4     BSS    2                                           PEP80629
02A4    0006      P5     BSS    6         CARTE $ID                         PEP80630
02AA    0010      P6     BSS    16        DEBUT DE $ID-CARDS LIST.          PEP80631
02BA    0002      P7     BSS    2         TEMPS                             PEP80632
02BC    0010      P8     BSS    16        LIGNES                            PEP80633
02CC    000A      P9     BSS    10                                          PEP80634
02D6    000E      M1     DMES   1 ID-CARDS LIST.'E                         PEP80635
02DD    0000      M2     BES    0                                           PEP80636
02DD    0022      M3     DMES   1 SYSTEM      C/TIME     IDENTIFICATION'E   PEP80637
02EE    0000      M4     BES    0                                           PEP80638
02EE    0008      M5     DMES   1 T. L. 'E                                 PEP80639
02F2    0000      M6     BES    0                                           PEP80640
02F2  0 001E      M7     DC     M8-M7-1                                     PEP80641
02F3    0020             DMES   'RTHE CONTROL CARD IS MISSING OR '         PEP80642
0303    001C             DMES   WRONG. CORRECT AND CONTINUE'E              PEP80643
0311    0000      M8     BES    0                                           PEP80644
0311    0006      M9     DMES   1 F2(V3)'E                                 PEP80645
0314    0000      M10    BES    0                                           PEP80646
0314    0016      M13    DMES   1 NUMBER OF RECORDS #   'E                 PEP80647
031F    0000      M14    BES    0                                           PEP80648
031F    001C      M15    DMES   1 TRANSMISSION TIME IN MIN. # 'E           PEP80649
032D    0000      M16    BES    0                                           PEP80650
032D    0026      M17    DMES   1 PAGE                                     PEP80651
0340  0 001E      M18    DC     FM18-M18-1                                  PEP80652
0341    0021             DMES   'R TO CONTINUE PRESS START 'R TO EX'       PEP80653
0351    001B             DMES   IT PRESS CONSOLE INTERRUPT 'E              PEP80654
035F    0000      FM18   BES    0                                           PEP80655
0360    0000             BSS    E  0                                        PEP80656
0360  0 0000             DC                                                 PEP80657
0361  0 0050      CART1  DC     80                                          PEP80658
0362    0050             BSS    80                                          PEP80659
03B2  0 0050      CART2  DC     80                                          PEP80660
03B3    0050             BSS    80                                          PEP80661
0403  0 0000      CTRL   DC     *-*                                        PEP80662
0404    01A4             BSS    420                                         PEP80663
05A8    0000             END    DEBUT                                      PEP80664
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       NO ERRORS IN ABOVE ASSEMBLY.
PEP8
DUP FUNCTION COMPLETED

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                CARD TO TAPE FOR TELEPROCESSING  PEP7                    PAGE   1
                ********************************************************  PEP70002
                *      IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS         *  PEP70003
                ********************************************************  PEP70004
                *                                                     *  PEP70005
                *      CARD TO TAPE FOR TELEPROCESSING PROGRAM PEP7*  PEP70006
                *                                                     *  PEP70007
                *      PROGRAM PEP7 PREPARES A 7-TRACK TAPE FOR       *  PEP70008
                *      TELEPROCESSING. INPUT IS AN INPUT DECK FOR     *  PEP70009
                *      IBM 360. OUTPUT IS BLOCKED, BINARY FORMAT.     *  PEP70010
                *      EACH RECORD HAS 800 BYTES (400 WORDS)          *  PEP70011
                *                                                     *  PEP70012
                *      CONTROL CARD                                   *  PEP70013
                *                                                     *  PEP70014
                *      LAST CARD (FOLLOWING THE INPUT DECK)           *  PEP70015
                *      CC    1-3      END                             *  PEP70016
                *                                                     *  PEP70017
                ********************************************************  PEP70018
                *                                         IBM BRUSSELS    PEP70019
                *                                                         PEP70020
0000 20 176558D5  DEBUT LIBF    PRNTN      NEW PAGE                       PEP70021
0001 0  3100            DC       /3100                                    PEP70022
0002 01 440000B8        BSI   L  PAGE                                     PEP70023
0004 20 176558D5        LIBF    PRNTN                                     PEP70024
0005 0  0000            DC       0                                        PEP70025
0006 0  70FD            MDX      *-3                                      PEP70026
0007 01 650000BE        LDX   L1 R          SET  //   SWITCH OFF          PEP70027
0009 00 66800068        LDX   I2 104                                     PEP70028
000B 0  C000            LD       *                                       PEP70029
000C 0  D220            STO    2 32                                       PEP70030
000D 20 03059115  D2    LIBF    CARDN      PREPARE BUFFERS                PEP70031
000E 0  1000            DC       /1000                                    PEP70032
000F 1  0123            DC       CART1                                    PEP70033
0010 0  0000            DC                                                PEP70034
0011 01 66000174        LDX   L2 CART2                                    PEP70035
                *                                                         PEP70036
                *       GET     X2 POINTS AT THE COUNT OF THE LAST        PEP70037
                *               USED BUFFER,WHICH IS NOW FREE.            PEP70038
                *               A LAST CARD TEST IS PERFORMED ON          PEP70039
                *               THE LAST CARD READ,IF IT WAS NOT A        PEP70040
                *               LAST CARD,  A NEW CARD IS READ IN         PEP70041
                *               THE FREE BUFFER AND X2 POINTS TO          PEP70042
                *               THE BUFFER IN USE                         PEP70043
0013 20 03059115  GET   LIBF    CARDN      WAIT UNTIL                     PEP70044
0014 0  0000            DC       0          CARD READ                     PEP70045
0015 0  70FD            MDX      *-3                                      PEP70046
0016 0  6A0B            STX    2 BUFN       PREPARE AREA FOR NEXT CARD    PEP70047
0017 01 66800027        LDX   I2 BUFN1      SET INDEX TO ACTUAL CARD      PEP70048
0019 0  C109            LD     1 K3-R                                     PEP70049
001A 30 03594509        CALL    COMPR      TEST IF IT WAS END             PEP70050
001C 0  8100            DC       /8100                                    PEP70051
001D 0  4100            DC       /4100                                    PEP70052
001E 0  8200            DC       /8200                                    PEP70053
001F 1  0062            DC       END        YES,BRANCH TO END             PEP70054
0020 20 03059115        LIBF    CARDN      NO,READ NEXT                   PEP70055
0021 0  1000            DC       /1000                                    PEP70056
0022 0  0000      BUFN  DC       *-*                                      PEP70057
0023 0  0000            DC                                                PEP70058
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CARD TO TAPE FOR TELEPROCESSING   PEP7                    PAGE    2

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0024 0  COFD              LD        BUFN                            PEP70059
0025 0  D001              STO       BUFN1                           PEP70060
0026 0  7001              MDX       *+1                             PEP70061
0027 1  0123      BUFN1   DC        CART1                           PEP70062
              *                                                     PEP70063
              *                     CONVERTS A CARD IN BINARY CARD FORMAT PEP70064
              *                     FOR TELEPROCESSING AND MOVES IT TO    PEP70065
              *           PUT       THE OUTPUT BUFFER. IF IT   IS PLENTY   PEP70066
              *                     THE BUFFER IS WRITTEN ON TAPE.        PEP70067
              *                                                     PEP70068
0028 0  7201      PUT     MDX    2  1                               PEP70069
0029 0  C200              LD     2  0                               PEP70070
002A 0  910A              S      1  H3000-R      TEST FOR  //       PEP70071
002B 01 4C200039          BSC    L  PUT1,Z                         PEP70072
002D 0  C201              LD     2  1                               PEP70073
002E 0  910A              S      1  H3000-R                         PEP70074
002F 01 4C200039          BSC    L  PUT1,Z                         PEP70075
0031 0  6A02              STX    2  *+2          IF // PRINT THE CARD PEP70076
0032 20 085935D9          LIBF      HOLPR                           PEP70077
0033 0  0001              DC        1                               PEP70078
0034 0  0000              DC        *-*                             PEP70079
0035 1  00CE              DC        ZPRNT+1                          PEP70080
0036 0  0050              DC        80                              PEP70081
0037 01 4400009E          BSI    L  IMPR                            PEP70082
0039 0  C104      PUT1    LD     1  PT2-R        CONVERSION         PEP70083
003A 0  9108              S      1  K1-R                            PEP70084
003B 0  D009              STO       PBIN1+1                         PEP70085
003C 0  6150              LDX    1  80                              PEP70086
003D 0  72FF              MDX    2  -1                              PEP70087
003E .0 6A01              STX    2  PBIN2+1                         PEP70088
003F 00 C5000000  PBIN2   LD     L1 *-*          AAAAAAAAAAAAXXXX   PEP70089
0041 0  188A              SRT       10                  AAAAAAAAAAAA PEP70090
0042 0  1002              SLA       2                   AAAAAA00AAAAAA PEP70091
0043 0  1086              SLT       6            XXAAAAAA00AAAAAA    PEP70092
0044 00 D5000000  PBIN1   STO    L1 *-*                             PEP70093
0046 0  71FF              MDX    1  -1                              PEP70094
0047 0  70F7              MDX       PBIN2                           PEP70095
0048 01 650000BE          LDX    L1 R                               PEP70096
004A 01 745000C2          MDX    L  PT2,80       ADJUST POINTER OUTPUT PEP70097
004C 01 745001C5          MDX    L  CTRL,80      ADJUST LENGTH  OUTPUT PEP70098
004E 01 74FE00C5  PT7     MDX    L  CTR2,-2      BUFFER PLENTY TEST PEP70099
0050 0  70C2              MDX       GET          NO                 PEP70100
0051 01 740A00C5          MDX    L  CTR2,10      YES                PEP70101
0053 20 140478C0          LIBF      MAGT         WRITE              PEP70102
0054 0  3050              DC        /3050                           PEP70103
0055 1  01C5              DC        CTRL                            PEP70104
0056 1  00AD              DC        USER                            PEP70105
0057 20 140478C0          LIBF      MAGT                            PEP70106
0058 0  0000              DC        0                               PEP70107
0059 0  70FD              MDX       *-3                             PEP70108
005A 0  1010              SLA       16                              PEP70109
005B 01 D40001C5          STO    L  CTRL                            PEP70110
005D 0  C10E              LD     1  ADCTR-R                         PEP70111
005E 0  D104              STO    1  PT2-R                           PEP70112
005F 01 740100C3          MDX    L  NREC,1                          PEP70113
0061 0  70B1              MDX       GET                             PEP70114
              *                                                     PEP70115
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CARD TO TAPE FOR TELEPROCESSING   PEP7                    PAGE   3

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                               *                                          PEP70116
0062 01 740001C5   END   MDX  L  CTRL,0       TEST IF BUFFER EMPTY        PEP70117
0064 0  7028             MDX     END2          NO                         PEP70118
0065 0  402E             BSI     END1          YES,TWO SPACES             PEP70119
0066 30 145A5140   END3  CALL    MOVE                                     PEP70120
0068 1  010A             DC      M13                                      PEP70121
0069 1  00D4             DC      P3+1                                     PEP70122
006A 0  000B             DC      M14-M13                                  PEP70123
006B 0  C105             LD    1 NREC-R                                   PEP70124
006C 30 03209180         CALL    CHIF                                     PEP70125
006E 1  00E0             DC      P6+2                                     PEP70126
006F 0  402E             BSI     IMPR          PRINT NUMBER OF RECORDS    PEP70127
0070 0  4023             BSI     END1          TWO  SPACES                PEP70128
0071 0  C105             LD    1 NREC-R                                   PEP70129
0072 0  A10B             M     1 D983-R        COMPUTE TRANSMISSION TIME  PEP70130
0073 0  D902             STD   1 SWDMP-R                                  PEP70131
0074 0  C106             LD    1 CTRER-R                                  PEP70132
0075 0  A10D             M     1 D40-R                                    PEP70133
0076 0  8902             AD    1 SWDMP-R                                  PEP70134
0077 0  8900             AD    1 K5000-R                                  PEP70135
0078 0  A90C             D     1 D1000-R                                  PEP70136
0079 30 03209180         CALL    CHIF                                     PEP70137
007B 1  00E4             DC      P6+6                                     PEP70138
007C 30 145A5140         CALL    MOVE                                     PEP70139
007E 1  0115             DC      M15                                      PEP70140
007F 1  00D4             DC      P3+1                                     PEP70141
0080 0  000E             DC      M16-M15                                  PEP70142
0081 0  401C             BSI     IMPR          PRINT IT                   PEP70143
0082 20 140478C0   END4  LIBF    MAGT                                     PEP70144
0083 0  8050             DC      /8050                                    PEP70145
0084 20 140478C0         LIBF    MAGT                                     PEP70146
0085 0  0000             DC      0                                        PEP70147
0086 0  70FD             MDX     *-3                                      PEP70148
0087 00 66800068         LDX   I2 104                                     PEP70149
0089 0  1010             SLA     16                                       PEP70150
008A 0  D220             STO   2 32                                       PEP70151
008B 30 059C98C0         EXIT                                             PEP70152
                   *                                                      PEP70153
008D 20 140478C0   END2  LIBF    MAGT                                     PEP70154
008E 0  3050             DC      /3050                                    PEP70155
008F 1  01C5             DC      CTRL                                     PEP70156
0090 1  00AD             DC      USER                                     PEP70157
0091 01 740100C3         MDX  L  NREC,1                                   PEP70158
0093 0  70D1             MDX     END3-1                                   PEP70159
                   *                                                      PEP70160
0094 0  0000       END1  DC      0                                        PEP70161
0095 20 024C1552         LIBF    BLANK                                    PEP70162
0096 1  00CE             DC      ZPRNT+1                                  PEP70163
0097 0  003C             DC      60                                       PEP70164
0098 01 4400009E         BSI  L  IMPR                                     PEP70165
009A 01 4400009E         BSI  L  IMPR                                     PEP70166
009C 01 4C800094         BSC  I  END1                                     PEP70167
                   *                                                      PEP70168
009E 0  0000       IMPR  DC      0                                        PEP70169
009F 20 176558D5         LIBF    PRNTN                                    PEP70170
00A0 0  2000             DC      /2000                                    PEP70171
00A1 1  00CD             DC      ZPRNT                                    PEP70172
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00A2 0  0000                    DC                       PEP70173
00A3 20 176558D5                LIBF      PRNTN          PEP70174
00A4 0  4000                    DC        /4000          PEP70175
00A5 0  1001                    SLA       1              PEP70176
00A6 01 4C1000AB                BSC   L   IMP,-          PEP70177
00A8 20 176558D5                LIBF      PRNTN          PEP70178
00A9 0  3100                    DC        /3100          PEP70179
00AA 0  400D                    BSI       PAGE           PEP70180
00AB 01 4C80009E        IMP     BSC   I   IMPR           PEP70181
                        *                                PEP70182
                        *                                PEP70183
00AD 0  0000           USER     DC        0              PEP70184
00AE 0  6906                    STX   1   SV1+1          PEP70185
00AF 01 650000BE                LDX   L1  R              PEP70186
00B1 0  9109                    S     1   K3-R           PEP70187
00B2 01 740100C4       US1      MDX   L   CTRER,1        PEP70188
00B4 00 65000000       SV1      LDX   L1  *-*            PEP70189
00B6 01 4C8000AD                BSC   I   USER           PEP70190
                        *                                PEP70191
00B8 0  0000           PAGE     DC        0              PEP70192
00B9 20 17047140                LIBF      PAGE           PEP70193
00BA 1  00CE                    DC        ZPRNT+1        PEP70194
00BB 0  0032                    DC        50             PEP70195
00BC 01 4C8000B8                BSC   I   PAGE           PEP70196
00BE    0000                    BSS   E   0              PEP70197
00BE            R               EQU       *              PEP70198
00BE 0  0000           K5000    DC        0              PEP70199
00BF 0  1388                    DC        5000           PEP70200
00C0    0002           SWDMP    BSS       2              PEP70201
00C2 1  01C6           PT2      DC        CTRL+1         PEP70202
00C3 0  0000           NREC     DC        *-*            PEP70203
00C4 0  0000           CTRER    DC        *-*            PEP70204
00C5 0  000A           CTR2     DC        10             PEP70205
00C6 0  0001           K1       DC        1              PEP70206
00C7 0  0003           K3       DC        3              PEP70207
00C8 0  3000           H3000    DC        /3000          PEP70208
00C9 0  03D7           D983     DC        983            PEP70209
00CA 0  2710           D1000    DC        10000          PEP70210
00CB 0  0028           D40      DC        40             PEP70211
00CC 1  01C6           ADCTR    DC        CTRL+1         PEP70212
00CD 0  003C           ZPRNT    DC        60             PEP70213
00CE    0003           P1       BSS       3              PEP70214
00D1    0002           P2       BSS       2              PEP70215
00D3    0003           P3       BSS       3              PEP70216
00D6    0002           P4       BSS       2              PEP70217
00D8    0006           P5       BSS       6              PEP70218
00DE    0010           P6       BSS       16             PEP70219
00EE    0002           P7       BSS       2              PEP70220
00F0    0010           P8       BSS       16             PEP70221
0100    000A           P9       BSS       10             PEP70222
010A    0016           M13      DMES  1   NUMBER OF RECORDS =    'E    PEP70223
0115    0000           M14      BES       0              PEP70224
0115    001C           M15      DMES  1   TRANSMISSION TIME IN MIN. = 'E  PEP70225
0123    0000           M16      BES       0              PEP70226
0123 0  0050           CART1    DC        80             PEP70227
0124    0050                    BSS       80             PEP70228
0174 0  0050           CART2    DC        80             PEP70229
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0175      0050                  BSS     80                              PEP70230
01C5  0   0000         CTRL     DC      *-*                             PEP70231
01C6      0190                  BSS     400                             PEP70232
0356      0000                  END     DEBUT                           PEP70233
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        NO ERRORS IN ABOVE ASSEMBLY.
PEP7
DUP FUNCTION COMPLETED

TAPE TO CARD FOR TELEPROCESSING   PEP9                    PAGE    1

```
                    **************************************************   PEP90002
                    *      IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS    *   PEP90003
                    **************************************************   PEP90004
                    *                                                *   PEP90005
                    *      TAPE TO CARD FOR TELEPROCESSING PROGRAM PEP9*  PEP90006
                    *                                                *   PEP90007
                    *      PROGRAM PEP9 PUNCHES CARDS FROM A TAPE     *   PEP90008
                    *      PREPARED BY PEP8. THE PROGRAM TESTS THE    *   PEP90009
                    *      PARITY, NO CONTROL CARD IS REQUIRED.       *   PEP90010
                    *                                                *   PEP90011
                    **************************************************   PEP90012
                    *                                      IBM BRUSSELS  PEP90013
                    *                                                    PEP90014
0000 20 176558D5    BEGIN LIBF       PRNTN       NEW PAGE                 PEP90015
0001 0  3100              DC         /3100                                PEP90016
0002 01 44000115          BSI   L    PAGE                                 PEP90017
0004 00 65800068          LDX   I1   104                                  PEP90018
0006 0  C000              LD         *                                    PEP90019
0007 0  D120              STO   1    32                                   PEP90020
0008 01 65000168    DEBUT LDX   L1   R                                    PEP90021
000A 0  C107              LD    1    PHYSW-R      IS PHYSICAL READ NECESSARY PEP90022
000B 01 4C18004A          BSC   L    DEB1,+-      BRANCH IF NOT           PEP90023
000D 0  C108        RDMAG LD    1    MGTCL-R      YES,READ                PEP90024
000E 01 660002A3          LDX   L2   ZMAGT                                PEP90025
0010 30 14047000          CALL       MAG                                  PEP90026
0012 1  003F              DC         ERRBR        ERROR BRANCH            PEP90027
0013 1  002B              DC         EOF          EOF   BRANCH            PEP90028
0014 1  017A              DC         EOFSW                                PEP90029
0015 0  1007        RD1   SLA        7                                    PEP90030
0016 01 4C100029          BSC   L    ODDM,-                               PEP90031
0018 0  C900              LDD   1    H1010-R                              PEP90032
0019 01 D4000135    RD2   STO   L    BCDC                                 PEP90033
001B 01 D4000136          STO   L    BCDC+1                               PEP90034
001D 0  C115              LD    1    LNGTH-R                              PEP90035
001E 01 840002A3          A     L    ZMAGT                                PEP90036
0020 01 840002A2          A     L    ADRMG                                PEP90037
0022 0  D002              STO        *+2                                  PEP90038
0023 0  C111              LD    1    HFFFF-R      SET END OF RECORD       PEP90039
0024 00 D4000000          STO   L    *-*          INDICATOR               PEP90040
0026 0  1010              SLA        16                                   PEP90041
0027 0  D107              STO   1    PHYSW-R      SET PHYSW OF            PEP90042
0028 0  7021              MDX        DEB1                                 PEP90043
                    *                                                     PEP90044
0029 0  1010        ODDM  SLA        16                                   PEP90045
002A 0  70EE              MDX        RD2                                  PEP90046
                    *                                                     PEP90047
002B 20 024C1552    EOF   LIBF       BLANK        PRINT EOF MESSAGE       PEP90048
002C 1  0270              DC         PRINT+1                              PEP90049
002D 0  0032              DC         50                                   PEP90050
002E 30 145A5140          CALL       MOVE                                 PEP90051
0030 1  01E5              DC         EOFM+1                               PEP90052
0031 1  0279              DC         PRINT+10                             PEP90053
0032 0  000B              DC         11                                   PEP90054
0033 01 4400011B          BSI   L    IMPR                                 PEP90055
0035 0  1010              SLA        16                                   PEP90056
0036 0  D112              STO   1    EOFSW-R                              PEP90057
0037 01 650001C0          LDX   L1   MES5                                 PEP90058
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TAPE TO CARD FOR TELEPROCESSING   PEP9                    PAGE   2

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0039 01 4400010B        BSI  L   MSSGE                                PEP90059
003B 01 65000168        LDX  L1  R                                    PEP90060
003D 0  70CF            MDX      RDMAG                                 PEP90061
                    *                                                  PEP90062
003E 0  0000    SAVAC   DC       *-*                                  PEP90063
003F 0  D0FE    ERRBR   STO      SAVAC                                 PEP90064
0040 0  1010            SLA      16                                   PEP90065
0041 0  D113            STO   1  ERRSW-R                               PEP90066
0042 01 650001F0        LDX  L1  MES6                                  PEP90067
0044 01 4400010B        BSI  L   MSSGE                                 PEP90068
0046 01 65000168        LDX  L1  R                                     PEP90069
0048 0  C0F5            LD       SAVAC                                 PEP90070
0049 0  70CB            MDX      RD1                                   PEP90071
                    *                                                  PEP90072
004A 00 65800068 DEB1   LDX  I1  104                                  PEP90073
004C 0  C000            LD       *                                    PEP90074
004D 0  D120            STO   1  32                                   PEP90075
004E 01 65000168        LDX  L1  R                                     PEP90076
0050 0  C104            LD    1  BINSW-R                               PEP90077
0051 0  F105            EOR   1  RDODD-R   IS NEXT BLOCK BINARY        PEP90078
0052 01 4C180077        BSC  L   BIN2,&-   YES,BRANCH                  PEP90079
0054 0  C104            LD    1  BCDSW-R   IS NEXT BLOCK BCD           PEP90080
0055 0  F106            EOR   1  RDEVN-R                              .PEP90081
0056 01 4C1800B7        BSC  L   BCD2,&-   YES,BRANCH                  PEP90082
0058 01 44000149        BSI  L   BIN       NO,THERE HAS BEEN A BAD     PEP90083
005A 0  7061            MDX      BIN1      TRANSMISSION. IS IT BINARY  PEP90084
005B 0  72D8            MDX   2  -40       IF YES GO TO BIN1           PEP90085
005C 01 44000131        BSI  L   BCD       IF NOT TEST IF BCD          PEP90086
005E 0  7024            MDX      BCD1      YES                         PEP90087
005F 0  400E            BSI      CDPRT                                 PEP90088
0060 01 74FF017E        MDX  L   ERCNT,-1  NO RETRY   3 TIMES          PEP90089
0062 0  70AA            MDX      RDMAG                                 PEP90090
0063 20 23A17155        LIBF     TYPEN        TYPE MESSAGE             PEP90091
0064 0  2001            DC       /2001                                 PEP90092
0065 1  017F            DC       MES1                                  PEP90093
0066 0  8040    H8040   DC       /8040                                 PEP90094
0067 20 140478C0        LIBF     MAGT      REWIND UNLOAD               PEP90095
0068 0  6000            DC       /6000                                 PEP90096
0069 20 140478C0        LIBF     MAGT                                  PEP90097
006A 0  0000            DC       0                                     PEP90098
006B 0  70FD            MDX      *-3                                   PEP90099
006C 30 059C98C0        EXIT                                           PEP90100
006E 0  0000    CDPRT   DC       0                                     PEP90101
006F 00 65800068        LDX  I1  104                                  PEP90102
0071 0  1010            SLA      16                                   PEP90103
0072 0  D120            STO   1  32                                   PEP90104
0073 01 65000168        LDX  L1  R                                     PEP90105
0075 01 4C80006E        BSC  I   CDPRT                                 PEP90106
                    *                                                  PEP90107
0077 01 44000149 BIN2   BSI  L   BIN       IS IT REALLY A BINARY REC   PEP90108
0079 0  7042            MDX      BIN1      YES                         PEP90109
007A 0  1010            SLA      16        NO                          PEP90110
007B 0  D104            STO   1  BINSW-R   ERROR RECOVERY PROCEDURE    PEP90111
007C 01 7401016F        MDX  L   PHYSW,1                               PEP90112
007E 01 65000193        LDX  L1  MES2                                  PEP90113
0080 01 4400010B        BSI  L   MSSGE                                 PEP90114
0082 0  7085            MDX      DEBUT                                 PEP90115
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                        *                                                PEP90116
0083 20 03059115  BCD1  LIBF      CARDN     READ A BLANK CARD            PEP90117
0084 0  1000            DC        /1000                                  PEP90118
0085 1  05ED            DC        ZCAR2                                  PEP90119
0086 0  0000            DC        0                                      PEP90120
0087 0  7201            MDX    2  1                                      PEP90121
0088 0  C200            LD     2  0                                      PEP90122
0089 0  F10A            EOR    1  H2B00-R                                PEP90123
008A 0  1808            SRA       8                                      PEP90124
008B 01 4C1800E2        BSC    L  PR1,&-     BRANCH IF YES               PEP90125
008D 0  910F            S      1  K7-R       TEST IF *                   PEP90126
008E 01 4C1800E2        BSC    L  PR1,&-     BRANCH IF YES               PEP90127
0090 0  C200            LD     2  0          TEST IF  7/8                PEP90128
0091 0  F10E            EOR    1  H0F00-R                                PEP90129
0092 0  1808            SRA       8                                      PEP90130
0093 01 4C180101        BSC    L  SPTHT,&-   BRANCH IF YES               PEP90131
0095 0  6A01            STX    2  *&1                                    PEP90132
0096 20 17648593  BCD3  LIBF      PRHOL      CONVERT TO HOLLERITH        PEP90133
0097 0  0000            DC        *-*                                    PEP90134
0098 1  021F            DC        ZCART&1                                PEP90135
0099 0  0050            DC        80                                     PEP90136
009A 0  7229            MDX    2  41                                     PEP90137
009B 0  C104      PUNCH LD     1  BINSW-R                                PEP90138
009C 01 D4000170        STO    L  MGTCL                                  PEP90139
009E 20 03059115        LIBF      CARDN      TEST IF BLANK CARD READ     PEP90140
009F 0  0000            DC        0                                      PEP90141
00A0 0  70FD            MDX       *-3                                    PEP90142
00A1 0  40CC            BSI       CDPRT                                  PEP90143
00A2 0  6150      PNC1  LDX    1  80                                     PEP90144
00A3 01 C50005ED        LD     L1 ZCAR2                                  PEP90145
00A5 01 4C2000D9        BSC    L  ER2,Z      NO   BRANCH                 PEP90146
00A7 0  71FF            MDX    1  -1                                     PEP90147
00A8 0  70FA            MDX       PNC1&1                                 PEP90148
00A9 20 03059115        LIBF      CARDN      PUNCH IT                    PEP90149
00AA 0  2000            DC        /2000                                  PEP90150
00AB 1  021E            DC        ZCART                                  PEP90151
00AC 0  1000            NOP                                              PEP90152
00AD 0  C201            LD     2  1                                      PEP90153
00AE 0  F007            EOR       HF                                     PEP90154
00AF 01 4C200008        BSC    L  DEBUT,Z                                PEP90155
00B1 0  C000            LD        *                                      PEP90156
00B2 01 D400016F        STO    L  PHYSW                                  PEP90157
00B4 01 4C000008        BSC    L  DEBUT                                  PEP90158
00B6 0  FFFF      HF    DC        /FFFF                                  PEP90159
                  *                                                      PEP90160
00B7 0  7228      BCD2  MDX    2  40         IS IT  REALLY A BCD  REC    PEP90161
00B8 01 44000131        BSI    L  BCD                                    PEP90162
00BA 0  70C8            MDX       BCD1       YES                         PEP90163
00BB 0  70BE            MDX       BIN2&3     NO  ERROR RECOVERY          PEP90164
                  *                                                      PEP90165
00BC 20 03059115  BIN1  LIBF      CARDN      READ A BLANK CARD           PEP90166
00BD 0  1000            DC        /1000                                  PEP90167
00BE 1  05ED            DC        ZCAR2                                  PEP90168
00BF 0  0000            DC        0                                      PEP90169
00C0 0  690C            STX    1  SAV1&1                                 PEP90170
00C1 0  6A02            STX    2  *&2                                    PEP90171
00C2 0  6150            LDX    1  80                                     PEP90172
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TAPE TO CARD FOR TELEPROCESSING - PEP9                    PAGE    4

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00C3 00 C5000000    BIN11 LD    L1 *-*        0011111100111111               PEP90173
00C5 0  1886              SRT      6          000000001111111001111111XXXX   PEP90174
00C6 0  1802              SRA      2          00000000001111111111111XXXX    PEP90175
00C7 0  108A              SLT      10         11111111111XXXX                PEP90176
00C8 01 D500021E          STO   L1 ZCART                                     PEP90177
00CA 0  71FF              MDX    1 -1                                        PEP90178
00CB 0  70F7              MDX      BIN11                                     PEP90179
00CC 00 65000000    SAV1  LDX   L1 *-*                                       PEP90180
00CE 0  7254              MDX    2 84                                        PEP90181
00CF 0  70CB              MDX      PUNCH                                     PEP90182
                    *                                                        PEP90183
00D0 0  0000              DC                                                 PEP90184
00D1 0  C200              LD     2 0                                         PEP90185
00D2 0  F0E3              EOR      HF                                        PEP90186
00D3 01 4C2000D7          BSC   L  *&2,Z      TEST IF END OF RECORD          PEP90187
00D5 01 7401016F    PHYEN MDX   L  PHYSW,1    YES                           PEP90188
00D7 01 4C000008          BSC   L  DEBUT      NO                            PEP90189
                    *                                                        PEP90190
                    *                                                        PEP90191
00D9 01 650001AA    ER2   LDX   L1 MES3       .BLANK CARDS MISSING           PEP90192
00DB 01 4400010B          BSI   L  MSSGE                                     PEP90193
00DD 20 03059115          LIBF     CARDN      ERROR RECOVERY                 PEP90194
00DE 0  1000              DC       /1000                                    PEP90195
00DF 1  05ED              DC       ZCAR2                                     PEP90196
00E0 0  0000              DC                                                 PEP90197
00E1 0  70BC              MDX      PUNCH&3                                   PEP90198
                    *                                                        PEP90199
00E2 0  6A02        PR1   STX    2 *&2                                       PEP90200
00E3 30 145A5140          CALL     MOVE                                     PEP90201
00E5 0  0000              DC       *-*                                      PEP90202
00E6 1  0270              DC       PRINT&1                                  PEP90203
00E7 0  0028              DC       40                                       PEP90204
00E8 0  6128              LDX    1 40                                       PEP90205
00E9 0  10A0        PR12  SLT      32                                       PEP90206
00EA 01 C500026F          LD    L1 PRINT                                    PEP90207
00EC 01 F4000168          EOR   L  H1010                                    PEP90208
00EE 0  1888              SRT      8                                        PEP90209
00EF 0  4820              BSC      Z                                        PEP90210
00F0 01 F4000168          EOR   L  H1010                                    PEP90211
00F2 0  18D0              RTE      16                                       PEP90212
00F3 0  4820              BSC      Z                                        PEP90213
00F4 01 F4000168          EOR   L  H1010                                    PEP90214
00F6 0  18C8              RTE      8                                        PEP90215
00F7 01 D500026F          STO   L1 PRINT                                    PEP90216
00F9 0  71FF              MDX    1 -1                                       PEP90217
00FA 0  70EE              MDX      PR12                                     PEP90218
00FB 01 65000168          LDX   L1 R                                        PEP90219
00FD 01 4400011B          BSI   L  IMPR                                     PEP90220
00FF 01 4C000095    PR11  BSC   L  BCD3-1                                   PEP90221
                    *                                                        PEP90222
0101 0  6A02        SPTHT STX    2 *&2        7/8                           PEP90223
0102 30 145A5140          CALL     MOVE                                     PEP90224
0104 0  0000              DC       *-*                                      PEP90225
0105 1  0270              DC       PRINT&1                                  PEP90226
0106 0  0028              DC       40                                       PEP90227
0107 0  C902              LDD    1 H78-R                                    PEP90228
0108 01 DC000270          STD   L  PRINT&1                                  PEP90229
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TAPE TO CARD FOR TELEPROCESSING   PEP9                          PAGE    5

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010A  0   70DD                 *          MDX        PR12-1                          PEP90230
                                                                                     PEP90231
010B  0   0000          MSSGE  DC         0                                          PEP90232
010C  0   6902                 STX     1  *&2                                        PEP90233
010D  20  23A17155             LIBF       TYPEN                                      PEP90234
010E  0   2001                 DC         /2001                                      PEP90235
010F  0   0000                 DC         *-*                                        PEP90236
0110  0   0000                 DC         0                                          PEP90237
0111  20  17064885             LIBF       PAUSE                                      PEP90238
0112  0   FFFF                 DC         /FFFF                                      PEP90239
0113  01  4C80010B             BSC     I  MSSGE                                      PEP90240
                               *                                                    PEP90241
0115  0   0000          PAGE   DC         0                                          PEP90242
0116  20  17047140             LIBF       PAGE                                       PEP90243
0117  1   0270                 DC         PRINT&1                                    PEP90244
0118  0   0032                 DC         50                                         PEP90245
0119  01  4C800115             BSC     I  PAGE                                       PEP90246
                               *                                                    PEP90247
011B  0   0000          IMPR   DC         0                                          PEP90248
011C  20  176558D5             LIBF       PRNTN                                      PEP90249
011D  0   2000                 DC         /2000                                      PEP90250
011E  1   026F                 DC         PRINT                                      PEP90251
011F  0   0000                 DC         0                                          PEP90252
0120  20  176558D5             LIBF       PRNTN                                      PEP90253
0121  0   4000                 DC         /4000                                      PEP90254
0122  0   1001                 SLA        1                                          PEP90255
0123  01  4C100129             BSC     L  IMPR1,-                                    PEP90256
0125  20  176558D5             LIBF       PRNTN                                      PEP90257
0126  0   3100                 DC         /3100                                      PEP90258
0127  01  44000115             BSI     L  PAGE                                       PEP90259
0129  01  4C80011B      IMPR1  BSC     I  IMPR                                       PEP90260
                               *                                                    PEP90261
012B  0   0000          USER   DC         0                                          PEP90262
012C  30  24885640             CALL       USER                                      PEP90263
012E  1   017B                 DC         ERRSW                                      PEP90264
012F  01  4C80012B             BSC     I  USER                                       PEP90265
                               *                                                    PEP90266
0131  0   0000          BCD    DC         0            IS IT REALLY BCD              PEP90267
0132  0   C109                 LD      1  K2-R                                       PEP90268
0133  30  035945D9             CALL       COMPR                                      PEP90269
0135  0   0000          BCDC   DC         0                                          PEP90270
0136  0   0000                 DC         0                                          PEP90271
0137  1   0142                 DC         BCBCD                                      PEP90272
0138  0   C109                 LD      1  K2-R                                       PEP90273
0139  30  035945D9             CALL       COMPR                                      PEP90274
013B  0   0909                 DC         /0909                                      PEP90275
013C  0   0707                 DC         /0707                                      PEP90276
013D  1   0147                 DC         BCBIN                                      PEP90277
013E  01  74010131             MDX     L  BCD,1                                      PEP90278
0140  01  4C800131      RETBC  BSC     I  BCD                                        PEP90279
0142  0   C106          BCBCD  LD      1  RDEVN-R      NEXT BCD                      PEP90280
0143  00  7600FFD8             MDX     L2 -40                                        PEP90281
0145  0   D104                 STO     1  BINSW-R                                    PEP90282
0146  0   70F9                 MDX        RETBC                                      PEP90283
0147  0   C105          BCBIN  LD      1  RDODD-R      NEXT BIN                      PEP90284
0148  0   70FA                 MDX        BCBCD&1                                    PEP90285
                               *                                                    PEP90286
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                             *                                              PEP90287
0149  0   0000             BIN   DC       0        IS IT REALLY BINARY       PEP90288
014A  00  76000050               MDX  L2  80                                 PEP90289
014C  0   C005                   LD       K4                                 PEP90290
014D  30  035945D9               CALL     COMPR                              PEP90291
014F  0   0005                   DC       5                                  PEP90292
0150  0   0001                   DC       1                                  PEP90293
0151  0   0005                   DC       5                                  PEP90294
0152  0   0004             K4    DC       4                                  PEP90295
0153  1   0160                   DC       BINBI                              PEP90296
0154  0   C0FD                   LD       K4                                 PEP90297
0155  30  035945D9               CALL     COMPR                              PEP90298
0157  0   0004                   DC       4                                  PEP90299
0158  0   0000                   DC       0                                  PEP90300
0159  0   0001                   DC       1                                  PEP90301
015A  0   0000                   DC       0                                  PEP90302
015B  1   0165                   DC       BINBC                              PEP90303
015C  01  74010149               MDX  L   BIN,1                              PEP90304
015E  01  4C800149         RETBI BSC  I   BIN                                PEP90305
0160  0   C105             BINBI LD   1   RDODD-R      NEXT BIN              PEP90306
0161  00  7600FFB0               MDX  L2  -80                                PEP90307
0163  0   D104                   STO  1   BINSW-R                            PEP90308
0164  0   70F9                   MDX      RETBI                              PEP90309
0165  0   C106             BINBC LD   1   RDEVN-R      NEXT BCD              PEP90310
0166  0   70FA                   MDX      BINBI&1                            PEP90311
                             *                                              PEP90312
                             *                                              PEP90313
0168      0000                   BSS  E   0                                  PEP90314
0168                       R     EQU      *                                  PEP90315
0168  0   1010             H1010 DC       /1010                              PEP90316
0169  0   1010                   DC       /1010                              PEP90317
016A      0004             H78   DMES 1   7/8 'E                             PEP90318
016C  0   1150             BINSW DC       /1150                              PEP90319
016C                       BCDSW EQU      BINSW                              PEP90320
016D  0   1050             RDODD DC       /1050                              PEP90321
016E  0   1150             RDEVN DC       /1150                              PEP90322
016F  0   0001             PHYSW DC       1                                  PEP90323
0170  0   1050             MGTCL DC       /1050                              PEP90324
0171  0   0002             K2    DC       2                                  PEP90325
0172  0   2B00             H2B00 DC       /2B00        $                     PEP90326
0173  0   000B             CTR11 DC       11                                 PEP90327
0174  0   0100             H0100 DC       /0100                              PEP90328
0175  0   1000             H1000 DC       /1000                              PEP90329
0176  0   0F00             H0F00 DC       /0F00                              PEP90330
0177  0   0007             K7    DC       7            2C EOR 2B #00000111   PEP90331
0178  0   1F00                   DC       /1F00        7/9                   PEP90332
0179  0   FFFF             HFFFF DC       -1                                 PEP90333
017A  0   0000             EOFSW DC       *-*                                PEP90334
017B  0   0000             ERRSW DC       *-*                                PEP90335
017C  0   0000             TOLSW DC       *-*                                PEP90336
017D  0   0000             LNGTH DC       *-*                                PEP90337
017E  0   0000             ERCNT DC       *-*                                PEP90338
017F  0   0013             MES1  DC       FMES1-MES1-1                       PEP90339
0180      0021                   DMES     'RTAPE NOT COMPATIBLE WITH PEP9 - ' PEP90340
0190      0005                   DMES     EXIT.'E                            PEP90341
0193      0000             FMES1 BES       0                                 PEP90342
0193  0   0016             MES2  DC       FMES2-MES2-1                       PEP90343
```

TAPE TO CARD FOR TELEPROCESSING    PEP9                    PAGE    7

```
0194      0021            DMES    'RTRANSMISSION ERRORS'RPRESS START '    PEP90344
01A4      000B            DMES    TO CONTINUE'E                           PEP90345
01AA      0000    FMES2 BES      0                                        PEP90346
01AA  0   0015    MES3  DC       FMES3-MES3-1                             PEP90347
01AB      0021            DMES    'RBLANK CARDS MISSING'RCORRECT AND '    PEP90348
01BB      0009            DMES    CONTINUE'E                              PEP90349
01C0      0000    FMES3 BES      0                                        PEP90350
01C0  0   0023    MES5  DC       FMES5-MES5-1                             PEP90351
01C1      001F            DMES    'REND OF FILE'RTO CONTINUE PRESS '      PEP90352
01D0      0022            DMES    START'R TO EXIT PRESS CONSOLE INTER'    PEP90353
01E1      0005            DMES    RUPT'E                                  PEP90354
01E4      0000    FMES5 BES      0                                        PEP90355
01E4  0   000B    EOFM  DC       11                                       PEP90356
01E5      0016            DMES  1 '5F*END OF FILE'5F*'E                   PEP90357
01F0  0   002C    MES6  DC       FMES6-MES6-1                             PEP90358
01F1      0021            DMES    'RTAPE ERROR(S) IN LAST RECORD.TO '     PEP90359
0201      0023            DMES    CONTINUE PRESS START'R TO EXIT PRESS'   PEP90360
0213      0014            DMES     CONSOLE INTERRUPT'E                    PEP90361
021D      0000    FMES6 BES      0                                        PEP90362
021E      0000          BSS    E 0                                        PEP90363
021E  0   0050    ZCART DC       80                                       PEP90364
021F      0050          BSS      80                                       PEP90365
026F  0   0032    PRINT DC       50                                       PEP90366
0270      0028          BSS      40                                       PEP90367
0298      000A          BSS      10                                       PEP90368
02A2      0000          BSS    E 0                                        PEP90369
02A2  1   02A4    ADRMG DC       *&1                                      PEP90370
02A3  0   0348    ZMAGT DC       840                                      PEP90371
02A4      0349          BSS      841                                      PEP90372
05ED  0   0050    ZCAR2 DC       80                                       PEP90373
05EE      0050          BSS      80                                       PEP90374
063E      0000          END      BEGIN                                   PEP90375
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     NO ERRORS IN ABOVE ASSEMBLY.
PEP9
DUP FUNCTION COMPLETED

*COMMON 403

<pre>
                TAPE  TO  CARD  FOR  TELE-PROC.   PEP10                    PAGE    1
                ****************************************************** PEP10003
                *       IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS       * PEP10004
                ****************************************************** PEP10005
                *                                          .         * PEP10006
                *      TAPE TO CARD FOR TELE-PROC. PROGRAM  PEP10     * PEP10007
                *                                                    * PEP10008
                *      THIS PROGRAMS PUNCHES CARDS FROM TAPE          * PEP10009
                *      WHICH HAS BEEN PREPARED BY PEP7.               * PEP10010
                *                                                    * PEP10011
                *      CONTROL CARD                                   * PEP10012
                *      CC    1-2        **                            * PEP10013
                *      CC    3     INPUT TAPE UNIT NUMBER (0,1,2,3)    * PEP10014
                *      CC    5-7       DENSITY (200,556,800)          * PEP10015
                *                                                    * PEP10016
                ****************************************************** PEP10017
                *                                       EURATOM GEEL   PEP10018
                *                                                      PEP10019
0000 20  03059115    START  LIBF      CARDN                            PEP10020
0001 0   1000               DC        /1000                            PEP10021
0002 1   00EE               DC        CARD                             PEP10022
0003 0   0000               DC        0                                PEP10023
0004 20  03059115           LIBF      CARDN                            PEP10024
0005 0   0000               DC        0                                PEP10025
0006 0   70FD               MDX       *-3                              PEP10026
                *                                                      PEP10027
0007 01  660000EE           LDX    L2 R                                PEP10028
0009 0   C201               LD     2  CARD+1-R                         PEP10029
000A 0   92C0               S      2  AST-R                            PEP10030
000B 01  4C180014           BSC    L  A4,+-                            PEP10031
000D 20  176558D5   A2      LIBF      PRNTN                            PEP10032
000E 0   2100               DC        /2100                            PEP10033
000F 1   019B               DC        MES3-1                           PEP10034
0010 0   0000               DC        0                                PEP10035
0011 20  17064885           LIBF      PAUSE                            PEP10036
0012 1   00B5               DC        K10                              PEP10037
0013 0   70EC               MDX       START                            PEP10038
0014 0   C203       A4      LD     2  CARD+3-R                         PEP10039
0015 0   6106               LDX    1  6                                PEP10040
0016 0   1140               SLCA   1  0                                PEP10041
0017 01  6D0000AF           STX    L1 SAVE1                            PEP10042
0019 0   C2C6               LD     2  K4-R                             PEP10043
001A 0   92C1               S      2  SAVE1-R                          PEP10044
001B 0   D01E               STO       TPNR                             PEP10045
001C 0   EAC8               OR     2  X7000-R                          PEP10046
001D 0   D2AF               STO    2  A18-R                            PEP10047
001E 0   C205               LD     2  CARD+5-R                         PEP10048
001F 0   F2CD               EOR    2  MASK1-R                          PEP10049
0020 01  4C200024           BSC    L  A5,Z                             PEP10050
0022 0   C2D0               LD     2  CON1-R                           PEP10051
0023 0   7009               MDX       A7                               PEP10052
0024 0   F2CE       A5      EOR    2  MASK2-R                          PEP10053
0025 01  4C200029           BSC    L  A6,Z                             PEP10054
0027 0   C2D1               LD     2  CON2-R                           PEP10055
0028 0   7004               MDX       A7                               PEP10056
0029 0   F2CF       A6      EOR    2  MASK3-R                          PEP10057
002A 01  4C20000D           BSC    L  A2,Z                             PEP10058
002C 0   C2D2               LD     2  CON3-R                           PEP10059
</pre>

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002D  0   E80C        A7      OR          TPNR                      PEP10060
002E  0   EAD3                OR       2  CON4-R                    PEP10061
002F  0   D00A                STO         TPNR                      PEP10062
0030  0   C2D4                LD       2  K400-R                    PEP10063
0031  00  D4007E6D            STO      L  AREA                      PEP10064
                     *                                              PEP10065
                     *        END OF READING TAPE CARD, READ MAG.TAPE  PEP10066
                     *                                              PEP10067
0033  01  C40000B5    A8      LD       L  K10                       PEP10068
0035  0   D07A                STO         COUNT                     PEP10069
0036  0   1010        A9      SLA         16                        PEP10070
0037  01  D40000BA            STO      L  LNGTH                     PEP10071
0039  20  140478C0            LIBF        MAGT                      PEP10072
003A  0   0000        TPNR    DC          *-*                       PEP10073
003B  0   7E6D                DC          AREA                      PEP10074
003C  1   00A8                DC          USER                      PEP10075
003D  20  140478C0            LIBF        MAGT                      PEP10076
003E  0   0000                DC          0                         PEP10077
003F  0   70FD                MDX         *-3                       PEP10078
0040  01  740000B7            MDX      L  EOFSW,0                   PEP10079
0042  0   705C                MDX         EOF                       PEP10080
0043  01  740000B8            MDX      L  ERRSW,0                   PEP10081
0045  0   704C                MDX         ERROR                     PEP10082
0046  0   C06A                LD          ADDR                      PEP10083
0047  0   D008                STO         A12+1                     PEP10084
0048  00  6500FE70            LDX      L1 -400                      PEP10085
004A  0   62B0        A11     LDX      2  -80                       PEP10086
004B  20  03059115            LIBF        CARDN                     PEP10087
004C  0   1000                DC          /1000                     PEP10088
004D  1   00EE                DC          CARD                      PEP10089
004E  0   0000                DC          0                         PEP10090
004F  00  C6000000    A12     LD       L2 *-*                       PEP10091
0051  0   1886                SRT         6                         PEP10092
0052  0   1802                SRA         2                         PEP10093
0053  0   108A                SLT         10                        PEP10094
0054  01  D6000190            STO      L2 CARD1+81                  PEP10095
0056  0   7201                MDX      2  1                         PEP10096
0057  0   70F7                MDX         A12                       PEP10097
0058  20  03059115            LIBF        CARDN                     PEP10098
0059  0   0000                DC          0                         PEP10099
005A  0   70FD                MDX         *-3                       PEP10100
005B  30  031238A3            CALL        CDTST                     PEP10101
005D  1   00EF                DC          CARD+1                    PEP10102
005E  0   7007                MDX         A13                       PEP10103
005F  20  176558D5            LIBF        PRNTN                     PEP10104
0060  0   2100                DC          /2100                     PEP10105
0061  1   0190                DC          MES1-1                    PEP10106
0062  0   0000                DC          0                         PEP10107
0063  20  17064885            LIBF        PAUSE                     PEP10108
0064  1   004E                DC          A12-1                     PEP10109
0065  0   70E4                MDX         A11                       PEP10110
0066  20  03059115    A13     LIBF        CARDN                     PEP10111
0067  0   2000                DC          /2000                     PEP10112
0068  1   013F                DC          CARD1                     PEP10113
0069  0   0000                DC          0                         PEP10114
006A  20  03059115            LIBF        CARDN                     PEP10115
006B  0   0000                DC          0                         PEP10116
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TAPE TO CARD FOR TELE-PROC.   PEP10                    PAGE    3

```
006C  0   70FD            MDX         *-3              PEP10117
006D  01  C4000140        LD     L    CARD1+1          PEP10118
006F  0   B042            CMP         DOLLR            PEP10119
0070  0   7002            MDX         A14              PEP10120
0071  0   7001            MDX         A14              PEP10121
0072  0   7003            MDX         MESSG            PEP10122
0073  0   B03A     A14    CMP         AST              PEP10123
0074  0   700B            MDX         A15              PEP10124
0075  0   700A            MDX         A15              PEP10125
0076  20  085935D9 MESSG  LIBF        HOLPR            PEP10126
0077  0   0001            DC          1                PEP10127
0078  1   0140            DC          CARD1+1          PEP10128
0079  1   00C5            DC          PAREA+2          PEP10129
007A  0   0050            DC          80               PEP10130
007B  20  176558D5        LIBF        PRNTN            PEP10131
007C  0   2100            DC          /2100            PEP10132
007D  1   00C3            DC          PAREA            PEP10133
007E  0   0000            DC          0                PEP10134
007F  0   7007            MDX         A16              PEP10135
0080  0   B032     A15    CMP         P78              PEP10136
0081  0   7005            MDX         A16              PEP10137
0082  0   7004            MDX         A16              PEP10138
0083  20  176558D5        LIBF        PRNTN            PEP10139
0084  0   2100            DC          /2100            PEP10140
0085  1   01B2            DC          MES5-1           PEP10141
0086  0   0000     SAVE   DC          0                PEP10142
0087  0   7150     A16    MDX    1    80               PEP10143
0088  0   7001            MDX         A17              PEP10144
0089  0   70A9            MDX         A8               PEP10145
008A  01  74500050 A17    MDX    L    A12+1,80         PEP10146
008C  0   69F9            STX    1    SAVE             PEP10147
008D  0   C0F8            LD          SAVE             PEP10148
008E  0   B02B            CMP         LNGTH            PEP10149
008F  0   70A3            MDX         A8               PEP10150
0090  0   70B9            MDX         A11              PEP10151
0091  0   70A1            MDX         A8               PEP10152
                    *                                  PEP10153
0092  01  74FF00B0 ERROR  MDX    L    COUNT,-1         PEP10154
0094  0   7007            MDX         BACK             PEP10155
0095  20  176558D5        LIBF        PRNTN            PEP10156
0096  0   2100            DC          /2100            PEP10157
0097  1   01B6            DC          MES7-1           PEP10158
0098  0   0000            DC          0                PEP10159
0099  20  17064885        LIBF        PAUSE            PEP10160
009A  1   0098            DC          *-3              PEP10161
009B  0   7097            MDX         A8               PEP10162
009C  20  140478C0 BACK   LIBF        MAGT             PEP10163
009D  0   0000     A18    DC          *-*              PEP10164
009E  0   7097            MDX         A9               PEP10165
                    *                                  PEP10166
009F  20  176558D5 EOF    LIBF        PRNTN            PEP10167
00A0  0   2100            DC          /2100            PEP10168
00A1  1   01CA            DC          MES9-1           PEP10169
00A2  0   0000            DC          0                PEP10170
00A3  20  17064885        LIBF        PAUSE            PEP10171
00A4  1   00A2            DC          *-3              PEP10172
00A5  0   1010            SLA         16               PEP10173
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00A6  0  D010                STO     EOFSW                              PEP10174
00A7  0  708B                MDX     A8                                 PEP10175
00A8  0  0000        USER    DC      0                                  PEP10176
00A9  30 24885640            CALL    USER                               PEP10177
00AB  1  00B7                DC      EOFSW                              PEP10178
00AC  01 4C8000A8            BSC   I USER                               PEP10179
                   *                                                    PEP10180
00AE  0  4220        AST     DC      /4220                              PEP10181
00AF  0  0000        SAVE1   DC      0                                  PEP10182
00B0  0  0000        COUNT   DC      0                                  PEP10183
00B1  0  7EBE        ADDR    DC      AREA+81                            PEP10184
00B2  0  4420        DOLLR   DC      /4420                              PEP10185
00B3  0  0060        P78     DC      /0060                              PEP10186
00B4  0  0004        K4      DC      4                                  PEP10187
00B5  0  000A        K10     DC      10                                 PEP10188
00B6  0  7000        X7000   DC      /7000                              PEP10189
00B7  0  0000        EOFSW   DC      0                                  PEP10190
00B8  0  0000        ERRSW   DC      0                                  PEP10191
00B9  0  0000        TOLSW   DC      0                                  PEP10192
00BA  0  0000        LNGTH   DC      0                                  PEP10193
00BB  0  0800        MASK1   DC      /0800                              PEP10194
00BC  0  0900        MASK2   DC      /0900                              PEP10195
00BD  0  0120        MASK3   DC   .  /0120                              PEP10196
00BE  0  0050        CON1    DC      /0050                              PEP10197
00BF  0  0060        CON2    DC      /0060                              PEP10198
00C0  0  0040        CON3    DC      /0040                              PEP10199
00C1  0  1000        CON4    DC      /1000                              PEP10200
00C2  0  0190        K400    DC      400                                PEP10201
00C3  0  002A        PAREA   DC      42                                 PEP10202
00C4     002A                BSS     42                                 PEP10203
00EE  0  0050        CARD    DC      80                                 PEP10204
00EF     0050                BSS     80                                 PEP10205
013F  0  0050        CARD1   DC      80                                 PEP10206
0140     0050                BSS     80                                 PEP10207
0190  0  000A                DC      MES2-MES1                          PEP10208
0191     0014        MES1    DMES  1 '2XBLANK CARDS NEEDED'E            PEP10209
019B     0000        MES2    BSS     0                                  PEP10210
019B  0  0016                DC      MES4-MES3                          PEP10211
019C     0023        MES3    DMES  1 '2XERROR CONTROL CARD. CORRECT AND C' PEP10212
01AD     0009                DMES    ONTINUE.'E                         PEP10213
01B2     0000        MES4    BSS     0                                  PEP10214
01B2  0  0003                DC      MES6-MES5                          PEP10215
01B3     0006        MES5    DMES  1 '2X7/8'E                           PEP10216
01B6     0000        MES6    BSS     0                                  PEP10217
01B6  0  0013                DC      MES8-MES7                          PEP10218
01B7     0023        MES7    DMES  1 '2XTAPE ERROR. START = SKIP THIS REC' PEP10219
01C8     0003                DMES  1 ORD'E                              PEP10220
01CA     0000        MES8    BSS     0                                  PEP10221
01CA  0  0007                DC      MES10-MES9                         PEP10222
01CB     000E        MES9    DMES  1 '2XEND OF FILE.'E                  PEP10223
01D2     0000        MES10   BSS     0                                  PEP10224
7E6D                 AREA    EQU     32768-403                          PEP10225
00EE                 R       EQU     CARD                               PEP10226
01D2     0000                END     START                             PEP10227
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NO ERRORS IN ABOVE ASSEMBLY.
PEP10

BCD-TAPE TO PRINT PROGRAM   PEP2                                    PAGE    1

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                    ******************************************************  PEP20002
                    *      IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS       *  PEP20003
                    ******************************************************  PEP20004
                    *                                                   *  PEP20005
                    *      BCD-TAPE TO PRINT PROGRAM   PEP2             *  PEP20006
                    *                                                   *  PEP20007
                    *      PROGRAM PEP2 PERFORMS THE LIST OUTPUT OF     *  PEP20008
                    *      IBM 7090. IT READS A BCD TAPE AND LISTS IT   *  PEP20009
                    *      ON THE 1443 PRINTER.                         *  PEP20010
                    *                                                   *  PEP20011
                    *      CONTROL CARD                                 *  PEP20012
                    *      CC   1-2         **                          *  PEP20013
                    *           3-5            DENSITY (200 OR 556)     *  PEP20014
                    *                                                   *  PEP20015
                    ******************************************************  PEP20016
                    *                                         IBM BRUSSELS  PEP20017
                    *                                                       PEP20018
0000 20 23A17155    DEBUT LIBF      TYPEN       PRINT MESSAGES             PEP20019
0001 0  2001              DC        /2001       DATSW 0 ON =CTL CH. UNUSED PEP20020
0002 1  01B9              DC        MESS1                                  PEP20021
0003 0  0800        H0800 DC        /0800                     FILE         PEP20022
0004 20 17064885          LIBF      PAUSE                                  PEP20023
0005 0  FFFF              DC        /FFFF                                  PEP20024
0006 20 03059115    WRDEN LIBF      CARDN                                  PEP20025
0007 0  1000              DC        /1000                                  PEP20026
0008 1  0116              DC        DENS                                   PEP20027
0009 0  0100        H0100 DC        /0100                                  PEP20028
000A 20 03059115          LIBF      CARDN   WAIT                           PEP20029
000B 0  0000              DC        0                                      PEP20030
000C 0  70FD              MDX       *-3                                    PEP20031
000D 01 65000167          LDX    L1 R           R=RELOCATION INDIC         PEP20032
000F 01 66000302          LDX    L2 MGARA                                  PEP20033
0011 0  C1B0              LD      1 DENS&1-R                               PEP20034
0012 0  9104              S       1 H4220-R                                PEP20035
0013 01 4C200019          BSC    L  ER1,Z                                 PEP20036
0015 0  C1B1              LD      1 DENS&2-R                               PEP20037
0016 0  9104              S       1 H4220-R                                PEP20038
0017 01 4C18001C          BSC    L  *&3,&-                                PEP20039
0019 01 650001A5    ER1   LDX    L1 MESS                                  PEP20040
001B 0  700A              MDX       ER                                     PEP20041
001C 0  C1B2              LD      1 DENS&3-R                               PEP20042
001D 0  90E5              S         H0800       OBTAIN CTL PARAM. FOR MAGT PEP20043
001E 01 4C18002E          BSC    L  CT1,+-      BRANCH IF  2XX            PEP20044
0020 0  C1B2              LD      1 DENS&3-R                               PEP20045
0021 0  90E7              S         H0100                                  PEP20046
0022 01 4C180030          BSC    L  CT2,+-      BRANCH IF  5XX            PEP20047
0024 01 650001DE          LDX    L1 MESS2                                 PEP20048
0026 0  6902        ER    STX     1 *&2                                   PEP20049
0027 20 23A17155          LIBF      TYPEN                          ,      PEP20050
0028 0  2001              DC        /2001                                 PEP20051
0029 0  0000              DC        *-*                                   PEP20052
002A 0  0000              DC        0                                     PEP20053
002B 20 17064885          LIBF      PAUSE                                 PEP20054
002C 0  FFFF              DC        /FFFF                                 PEP20055
002D 0  70D8              MDX       WRDEN                                 PEP20056
002E 0  C109        CT1   LD      1 H0010-R     DENSITY IS  2XX           PEP20057
002F 0  7001              MDX       *+1                                   PEP20058
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BCD—TAPE TO PRINT PROGRAM PEP2                          PAGE    2

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0030 0  C107        CT2   LD    1  H0020-R   DENSITY IS 5XX            PEP20059
0031 0  E802              OR       MGCTL                               PEP20060
0032 0  D001              STO      MGCTL                               PEP20061
0033 20 140478C0    P2    LIBF     MAGT      READ 6000 WORDS           PEP20062
0034 0  1140        MGCTL DC       /1140                               PEP20063
0035 1  0302              DC       MGARA                               PEP20064
0036 1  019F              DC       USER                                PEP20065
0037 20 140478C0          LIBF     MAGT      WAIT                      PEP20066
0038 0  0000              DC       0                                   PEP20067
0039 0  70FD              MDX      *-3                                 PEP20068
003A 0  C103              LD    1  LNGTH-R                             PEP20069
003B 01 4C300044          BSC   L  EF,-Z                               PEP20070
003D 01 84000302          A     L  MGARA                               PEP20071
003F 0  81A8              A     1  K1-R                                PEP20072
0040 0  D002              STO      *&2                                 PEP20073
0041 0  C105              LD    1  K1AFF-R                             PEP20074
0042 00 D6000000          STO   L2 *-*                                PEP20075
0044 01 74000167    EF    MDX   L  EOFSW,0    TEST IF END OF FILE SWITCH PEP20076
0046 0  705A              MDX      EOF        BRANCH IF ON             PEP20077
0047 00 C4000073          LD    L  115                                PEP20078
0049 0  D1A1              STO   1  DATSW-R                             PEP20079
004A 01 74000168    TAPER MDX   L  ERRSW,0                            PEP20080
004C 0  7001              MDX      *&1                                 PEP20081
004D 0  7004              MDX      LGTER                               PEP20082
004E 20 176558D5          LIBF     PRNTN                               PEP20083
004F 0  2100              DC       /2100                               PEP20084
0050 1  01EF              DC       MESS3                               PEP20085
0051 0  1000              NOP                                          PEP20086
0052 01 74000169    LGTER MDX   L  TOLSW,0                            PEP20087
0054 0  7001              MDX      *&1                                 PEP20088
0055 0  7004              MDX      LGT1                                PEP20089
0056 20 176558D5          LIBF     PRNTN      MDX    *                PEP20090
0057 0  2100              DC       /2100                               PEP20091
0058 1  021D              DC       MESS4                               PEP20092
0059 0  1000              NOP                                          PEP20093
005A 0  C1A1        LGT1  LD    1  DATSW-R    TEST IF EOT             PEP20094
005B 0  91A4              S     1  H0063-R                            PEP20095
005C 01 4C200060          BSC   L  NEOT,Z     BRANCH IF NOT           PEP20096
005E 0  C1A5              LD    1  ADREX-R                            PEP20097
005F 0  D03E              STO      EXTSW      PREPARE EXIT SWITCH     PEP20098
0060 01 66000302    NEOT  LDX   L2 MGARA      SCANNING OF INPUT AREA  PEP20099
0062 0  1010              SLA      16         INITIALISE  LDBUT AND   PEP20100
0063 0  D1A6              STO   1  SWGC1-R    STBYT USED TO EXTRACT AND PEP20101
0064 0  D1A7              STO   1  SWGC2-R    STORE BYTES FROM READ AREA PEP20102
0065 0  C1A8              LD    1  K1-R       TO PRINT AREA           PEP20103
0066 01 D4000175          STO   L  DISP1                              PEP20104
0068 0  1010        R2    SLA      16                                 PEP20105
0069 0  D12C              STO   1  DISP2-R                            PEP20106
006A 01 670002B9          LDX   L3 ZPRT                               PEP20107
006C 0  09A1              XIO   1  DATSW-R    TEST DATSW 0            PEP20108
006D 0  1001              SLA      1                                  PEP20109
006E 01 4C280072          BSC   L  R3,+Z                              PEP20110
0070 01 4C020078          BSC   L  R1,C                               PEP20111
0072 01 44000173    R3    BSI   L  LDBYT      SAVE                    PEP20112
0074 0  D1A9              STO   1  CONTR-R                            PEP20113
0075 0  9108              S     1  H0OFF-R                            PEP20114
0076 01 4C180085          BSC   L  SORT,+-                            PEP20115
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0078 01 44000173   R1      BSI   L   LDBYT                                    PEP20116
007A 0  91AA               S         1 H001A-R                               PEP20117
007B 01 4C1800B1           BSC   L   EOB,+-                                   PEP20118
007D 0  81AA               A         1 H001A-R                               PEP20119
007E 0  9108               S         1 H00FF-R                               PEP20120
007F 01 4C180085           BSC   L   SORT,+-                                  PEP20121
0081 0  8108               A         1 H00FF-R                               PEP20122
0082 01 44000189           BSI   L   STBYT                                    PEP20123
0084 0  70F3               MDX       R1                                       PEP20124
0085 00 67800067   SORT    LDX   I3  103                                      PEP20125
0087 0  C101               LD        1 ERRSW-R                               PEP20126
0088 01 4C180092           BSC   L   ER7,&-                                   PEP20127
008A 0  1010               SLA       16                                       PEP20128
008B 0  D101               STO       1 ERRSW-R                               PEP20129
008C 20 176558D5           LIBF      PRNTN                                    PEP20130
008D 0  3D00               DC        /3D00                                    PEP20131
008E 20 176558D5           LIBF      PRNTN                                    PEP20132
008F 0  2100               DC        /2100                                    PEP20133
0090 1  0257               DC        MESS7                                    PEP20134
0091 0  1000               NOP                                                PEP20135
0092 0  C102       ER7     LD        1 TOLSW-R                               PEP20136
0093 01 4C18009D           BSC   L   EX,&-                                    PEP20137
0095 0  1010               SLA       16                                       PEP20138
0096 0  D102               STO       1 TOLSW-R                               PEP20139
0097 20 176558D5           LIBF      PRNTN                                    PEP20140
0098 0  3D00               DC        /3D00                                    PEP20141
0099 20 176558D5           LIBF      PRNTN                                    PEP20142
009A 0  2100               DC        /2100                                    PEP20143
009B 1  0257               DC        MESS7                                    PEP20144
009C 0  1000               NOP                                                PEP20145
009D 01 4C000033   EX      BSC   L   P2                                       PEP20146
009E            EXTSW       EQU       *-1                                      PEP20147
009F 30 059C98C0   EXIT    EXIT                                               PEP20148
00A1 0  1010       EOF     SLA       16           PUT OFF EOF SWITCH          PEP20149
00A2 0  D100               STO       1 EOFSW-R                               PEP20150
00A3 20 176558D5   EOF1    LIBF      PRNTN        PRINT END OF FILE MESSAGE   PEP20151
00A4 0  3E00               DC        /3E00                                    PEP20152
00A5 20 176558D5           LIBF      PRNTN                                    PEP20153
00A6 0  2100               DC        /2100                                    PEP20154
00A7 1  024B               DC        MESS6                                    PEP20155
00A8 0  1000               NOP                                                PEP20156
00A9 20 23A17155           LIBF      TYPEN                                    PEP20157
00AA 0  2001               DC        /2001                                    PEP20158
00AB 1  029A               DC        MESS9                                    PEP20159
00AC 0  2D00               DC        /2D00                                    PEP20160
00AD 20 17064885           LIBF      PAUSE                                    PEP20161
00AE 0  FFFF               DC        /FFFF                                    PEP20162
00AF 01 4C000033           BSC   L   P2                                       PEP20163
                   *                     COMPLETE THE OUTPUT AREA             PEP20164
                   *                     IF BYTE COUNT IS ODD.                PEP20165
00B1 01 7400010E   EOB     MDX   L   SWGC2,0      IF NOT ZERO NEXT BYTE IS    PEP20166
00B3 0  7001               MDX       *+1          ON RIGHT-FILL IN WITH       PEP20167
00B4 0  7003               MDX       EOB1         BLANK                       PEP20168
00B5 0  1010               SLA       16                                       PEP20169
00B6 01 44000189           BSI   L   STBYT                                    PEP20170
00B8 01 C4000193   EOB1    LD    L   DISP2                                    PEP20171
00BA 0  D300               STO       3 0                                      PEP20172
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00BB  0   09A1                  XIO   1  DATSW-R    TEST DATSW 1              PEP20173
00BC  0   1001                  SLA      1                                   PEP20174
00BD  01  4C2800EA              BSC   L  $IDT,+Z                             PEP20175
00BF  0   6300                  LDX   3  0                                   PEP20176
00C0  01  4C0200CF              BSC   L  EOB3,C                              PEP20177
00C2  0   6300         EOB6     LDX   3  0                                   PEP20178
00C3  0   C1A9                  LD    1  CONTR-R    TEST IF CTL CHAR IS PLUS  PEP20179
00C4  0   910A                  S     1  PLUS-R                              PEP20180
00C5  01  4C1800DC              BSC   L  EOB4,+-    BRANCH IF PLUS            PEP20181
00C7  0   C1A9                  LD    1  CONTR-R                             PEP20182
00C8  01  4C1800CF              BSC   L  EOB3,+-    BRANCH IF BLANK           PEP20183
00CA  0   7301                  MDX   3  1                                   PEP20184
00CB  0   910B                  S     1  ONE-R                               PEP20185
00CC  01  4C1800CF              BSC   L  EOB3,+-    BRANCH IF ONE             PEP20186
00CE  0   7301                  MDX   3  1                                   PEP20187
00CF  01  C7000113     EOB3     LD    L3 CON                                 PEP20188
00D1  0   D009                  STO      EOB35+1                             PEP20189
00D2  00  67800067              LDX   13 103        PERFORM CTL OPERATION     PEP20190
00D4  01  94000114              S     L  CON+1                               PEP20191
00D6  01  4C2000DA              BSC   L  EOB35,Z                             PEP20192
00D8  20  176558D5              LIBF     PRNTN                               PEP20193
00D9  0   3D00                  DC       /3D00                               PEP20194
00DA  20  176558D5     EOB35    LIBF     PRNTN                               PEP20195
00DB  0   0000                  DC       *-*                                 PEP20196
00DC  00  67800067     EOB4     LDX   13 103                                 PEP20197
00DE  0   C12C                  LD    1  DISP2-R                             PEP20198
00DF  01  4C0800E5              BSC   L  *+4,+                               PEP20199
00E1  20  176558D5              LIBF     PRNTN                               PEP20200
00E2  0   2110                  DC       /2110                               PEP20201
00E3  1   02B9                  DC       ZPRT                                PEP20202
00E4  0   0000                  DC                                           PEP20203
00E5  0   1010         EOB5     SLA      16                                  PEP20204
00E6  0   D1A7                  STO   1  SWGC2-R                             PEP20205
00E7  0   C1A8                  LD    1  K1-R                                PEP20206
00E8  01  4C000068              BSC   L  R2                                  PEP20207
      *                                                                      PEP20208
00EA  0   CB01         $IDT     LDD   3  1                                   PEP20209
00EB  0   1888                  SRT      8                                   PEP20210
00EC  0   1088                  SLT      8                                   PEP20211
00ED  0   B99F                  DCM   1  H2B39-R                             PEP20212
00EE  0   7002                  MDX      $IDT1                               PEP20213
00EF  0   7001                  MDX      $IDT1                               PEP20214
00F0  0   7005                  MDX      $IDT2                               PEP20215
00F1  0   CB03         $IDT1    LDD   3  3                                   PEP20216
00F2  0   1088                  SLT      8                                   PEP20217
00F3  0   B99F                  DCM   1  H2B39-R                             PEP20218
00F4  0   70F0                  MDX      EOB5                                PEP20219
00F5  0   70EF                  MDX      EOB5                                PEP20220
00F6  00  67800067     $IDT2    LDX   13 103                                 PEP20221
00F8  20  23A17155              LIBF     TYPEN                               PEP20222
00F9  0   2001                  DC       /2001                               PEP20223
00FA  1   0286                  DC       MESS8                               PEP20224
00FB  0   0000                  DC       0                                   PEP20225
00FC  20  176558D5              LIBF     PRNTN                               PEP20226
00FD  0   3100                  DC       /3100                               PEP20227
00FE  20  176558D5              LIBF     PRNTN                               PEP20228
00FF  0   2100                  DC       /2100                               PEP20229
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0100  1   02B9              DC        ZPRT                           PEP20230
0101  0   0000              DC        0                              PEP20231
0102  20  17064885          LIBF      PAUSE                          PEP20232
0103  0   FFFF              DC        /FFFF                          PEP20233
0104  0   70E0              MDX       EOB5                           PEP20234
0106      0000              BSS   E   0                              PEP20235
0106  0   2B39      H2B39   DC        /2B39                          PEP20236
0107  0   3400      H3400   DC        /3400                          PEP20237
0108  0   0000      DATSW   DC                                       PEP20238
0109  0   0740              DC        /0740                          PEP20239
010A  1   0033      ADRP2   DC        P2                             PEP20240
010B  0   0063      H0063   DC        /0063                          PEP20241
010C  1   009F      ADREX   DC        EXIT                           PEP20242
010D  0   0000      SWGC1   DC        *-*                            PEP20243
010E  0   0000      SWGC2   DC        *-*                            PEP20244
010F  0   0001      K1      DC        1             1 BCD            PEP20245
0110  0   0000      CONTR   DC        *-*                            PEP20246
0111  0   001A      H001A   DC        /001A         END OF BLOCK     PEP20247
0112  0   0000      SWIMP   DC        *-*           ZERO = SW  ON    PEP20248
0113  0   3D00      CON     DC        /3D00         CTL CHAR IS BLANK ONE SPAC PEP20249
0114  0   3100              DC        /3100         CTL CHAR IS ONE  SKIP      PEP20250
0115  0   3E00              DC        /3E00         CTL CHAR IS ZERO TWO SPACE PEP20251
0116  0   0050      DENS    DC        80                             PEP20252
0117      0050              BSS       80                             PEP20253
0167  0   0000      EOFSW   DC        *-*                            PEP20254
0168  0   0000      ERRSW   DC        *-*                            PEP20255
0169  0   0000      TOLSW   DC        *-*                            PEP20256
016A  0   0000      LNGTH   DC        *-*                            PEP20257
016B  0   4220      H4220   DC        /4220                          PEP20258
016C  0   1AFF      K1AFF   DC        /1AFF                          PEP20259
016D  0   FF00      HFF00   DC        /FF00                          PEP20260
016E  0   0020      H0020   DC        /0020                          PEP20261
016F  0   00FF      H00FF   DC        /00FF                          PEP20262
0170  0   0010      H0010   DC        /0010                          PEP20263
0171  0   0030      PLUS    DC        /30                            PEP20264
0172  0   0001      ONE     DC        1                              PEP20265
0173  0   0000      LDBYT   DC        0                              PEP20266
0174  00  C6000000          LD    L2  *-*                            PEP20267
0175                DISP1   EQU       *-1                            PEP20268
0176  01  7400010D          MDX   L   SWGC1,0       IF ZERO TAKE LEFT PART     PEP20269
0178  0   700B              MDX       SWG1          ELSE RIGHT PART            PEP20270
0179  0   1890              SRT       16                             PEP20271
017A  0   C000              LD        *                             PEP20272
017B  0   D1A6      LDB1    STO   1   SWGC1-R                        PEP20273
017C  0   1010              SLA       16                             PEP20274
017D  0   1088              SLT       8                              PEP20275
017E  0   9109              S     1   H0010-R                        PEP20276
017F  01  4C980173          BSC   I   LDBYT,+-                       PEP20277
0181  0   8109              A     1   H0010-R                        PEP20278
0182  01  4C800173          BSC   I   LDBYT                          PEP20279
0184  0   1888      SWG1    SRT       8                              PEP20280
0185  01  74010175          MDX   L   DISP1,+1                       PEP20281
0187  0   1010              SLA       16                             PEP20282
0188  0   70F2              MDX       LDB1          DISP1 WILL POINT AT THE    PEP20283
                  .*                                WORD THAT IS THREATED      PEP20284
0189  0   0000      STBYT   DC        0                              PEP20285
018A  01  7400010E          MDX   L   SWGC2,0       IF ZERO PUT BYTE ON LEFT   PEP20286
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018C 0  7009                 MDX     RSIDE      SIDE OF THE WORD      PEP20287
018D 01 74010193             MDX  L  DISP2,1                         PEP20288
018F 01 6C00010E             STX  L  SWGC2                           PEP20289
0191 0  1008                 SLA     8                               PEP20290
0192 00 D7000000    STB      STO  L3 *-*                             PEP20291
0193              DISP2       EQU     *-1                             PEP20292
0194 01 4C800189             BSC  I  STBYT                           PEP20293
0196 0  1888       RSIDE     SRT     8                               PEP20294
0197 0  COFB                 LD      DISP2                           PEP20295
0198 0  D004                 STO     OROP+1                          PEP20296
0199 0  1010                 SLA     16                              PEP20297
019A 0  D1A7                 STO  1  SWGC2-R                         PEP20298
019B 0  1088                 SLT     8                               PEP20299
019C 00 EF000000   OROP      OR   L3 *-*                             PEP20300
019E 0  70F3                 MDX     STB                             PEP20301
019F 0  0000       USER      DC      0                               PEP20302
01A0 30 24885640             CALL    USER                            PEP20303
01A2 1  0167                 DC      EOFSW                           PEP20304
01A3 01 4C80019F             BSC  I  USER                            PEP20305
01A5 0  0013       MESS      DC      FMESS-MESS-1                    PEP20306
01A6    0020                 DMES    'R** CARD MISSING.CORRECT AND CON' REP20307
01B6    0006                 DMES    TINUE'E                         PEP20308
01B9    0000       FMESS     BES     0                               PEP20309
01B9 0  0024       MESS1     DC      FMES1-MESS1-1                   PEP20310
01BA    0021                 DMES    'RDATSW 0 ON = CONTROL CHAR NOT US' PEP20311
01CA    0021                 DMES    ED'RDATSW 1 ON = SKIP TO NEXT FILE' PEP20312
01DB    0006                 DMES    OR $ID'E                        PEP20313
01DE    0000       FMES1     BES     0                               PEP20314
01DE 0  0010       MESS2     DC      FMES2-MESS2-1                   PEP20315
01DF    0020                 DMES    'RWRONG DENSITY WAS ENTERED REDO'E PEP20316
01EF    0000       FMES2     BES     0                               PEP20317
01EF 0  002D       MESS3     DC      FMES3-MESS3-1                   PEP20318
01F0    003B                 DMES 1  '30F-'STAPE ERROR(S) IN NEXT RECORD' PEP20319
020D    001F                 DMES 1  'S'30F-'E                       PEP20320
021D    0000       FMES3     BES     0                               PEP20321
021D 0  002D       MESS4     DC      FMES4-MESS4-1                   PEP20322
021E    003A                 DMES 1  '30F-'SRECORD ON TAPE WAS TOO LONG' PEP20323
023B    0020                 DMES 1  'S'30F-'E                       PEP20324
024B    0000       FMES4     BES     0                               PEP20325
024B 0  000B       MESS6     DC      FMES6-MESS6-1                   PEP20326
024C    0016                 DMES 1  '5F*END OF FILE'5F*'E           PEP20327
0257    0000       FMES6     BES     0                               PEP20328
0257 0  002E       MESS7     DC      FMES7-MESS7-1                   PEP20329
0258    003B                 DMES 1  '29F- END OF TAPE RECORD WITH ERROR' PEP20330
0275    0021                 DMES 1  (S) '29F-'E                     PEP20331
0286    0000       FMES7     BES     0                               PEP20332
0286 0  0013       MESS8     DC      FMES8-MESS8-1                   PEP20333
0287    0022                 DMES    'RDATSW 1 ON # SKIP TO NEXT FILE OR' PEP20334
0298    0004                 DMES    SID'E                           PEP20335
029A    0000       FMES8     BES     0                               PEP20336
029A 0  001D       MESS9     DC      FMES9-MESS9-1                   PEP20337
029B    001B                 DMES    'R TO CONTINUE PRESS START'R '  PEP20338
02A8    001F                 DMES    TO EXIT PRESS CONSOL INTERRUPT 'E PEP20339
02B8    0000       FMES9     BES     0                               PEP20340
02B8    0000                 BSS  E  0                               PEP20341
02B8 0  0000                 DC      0                               PEP20342
02B9 0  0048       ZPRT      DC      72                              PEP20343
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02BA      0048              BSS     72                                    PEP20344
0302  0   03E8      MGARA   DC      1000                                  PEP20345
0303      03E8              BSS     1000                                  PEP20346
06EB  0   1AFF              DC      /1AFF                                 PEP20347
0167              R         EQU     EOFSW                                 PEP20348
06EC      0000              END     DEBUT                                 PEP20349
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      NO ERRORS IN ABOVE ASSEMBLY.
PEP2
DUP FUNCTION COMPLETED

±COMMON 1720

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                     ****************************************************** PEP11003
                     *       IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS      * PEP11004
                     ****************************************************** PEP11005
                     *                                                   * PEP11006
                     *       TAPE TO CARD AND PRINT PROGRAM   PEP11       * PEP11007
                     *                                                   * PEP11008
                     *       PROGRAM PEP11 READS A BCD-TAPE WHICH HAS     * PEP11009
                     *       BEEN LOADED BY BCD CARDS AND PRODUCES        * PEP11010
                     *       A LIST AND/OR CARDS AND/OR WRITES A TAPE IN  * PEP11011
                     *       EBCDIC FORMAT COMPATIBLE WITH IBM 1800       * PEP11012
                     *       FORTRAN. THE RECORD LENGTH OF THE INPUT TAPE * PEP11013
                     *       IS 80 CHARACTERS OR A MULTIPLE OF 80(MAX. =  * PEP11014
                     *       3200 CHARACTERS). THERE IS NO SEPARATING     * PEP11015
                     *       CHAR. IF THE RECORDS ARE BLOCKED.            * PEP11016
                     *                                                   * PEP11017
                     *       CONTROL CARDS                                * PEP11018
                     *       1. CARD                                      * PEP11019
                     *       CC    1,2   **                               * PEP11020
                     *       CC    3     INPUT TAPE UNIT NUMBER (0,1,2,3) * PEP11021
                     *       CC    5-7  DENSITY (200,556 OR 800)          * PEP11022
                     *       2. CARD                                      * PEP11023
                     *       CC    1,2   **                               * PEP11024
                     *       CC    3     OUTPUT TAPE UNIT NUMBER (0,1,2,3)* PEP11025
                     *                   OR BLANK, IF NO OUTPUT TAPE IS   * PEP11026
                     *                   USED.                            * PEP11027
                     *       THE OUTPUT TAPE HAS ALWAYS DENSITY 800 BPI.  * PEP11028
                     *                                                   * PEP11029
                     ****************************************************** PEP11030
                     *                                      EURATOM GEEL   PEP11031
                     *                                                     PEP11032
0000 0  61FE         START LDX   1  -2                                     PEP11033
0001 01 66000148           LDX   L2 R                                      PEP11034
0003 20 03059115     A1    LIBF     CARDN                                  PEP11035
0004 0  1000               DC       /1000                                  PEP11036
0005 1  014C               DC       CARD                                   PEP11037
0006 0  0000               DC       0                                      PEP11038
0007 20 03059115           LIBF     CARDN                                  PEP11039
0008 0  0000               DC       0                                      PEP11040
0009 0  70FD               MDX      *-3                                    PEP11041
                     *                                                     PEP11042
000A 0  C205               LD    2  CARD+1-R                               PEP11043
000B 0  92E6               S     2  AST-R                                  PEP11044
000C 01 4C180015           BSC   L  A4,+-                                  PEP11045
000E 20 176558D5     A2    LIBF     PRNTN                                  PEP11046
000F 0  2100               DC       /2100                                  PEP11047
0010 1  01ED               DC       MES1-1                                 PEP11048
0011 0  0000               DC       0                                      PEP11049
0012 20 17064885           LIBF     PAUSE                                  PEP11050
0013 0  0000               DC       0                                      PEP11051
0014 0  70EB               MDX      START                                  PEP11052
0015 0  C207         A4    LD    2  CARD+3-R                               PEP11053
0016 0  6206               LDX   2  6                                      PEP11054
0017 0  1240               SLCA  2  0                                      PEP11055
0018 01 6E00012F           STX   L2 SAVE2                                  PEP11056
001A 01 66000148           LDX   L2 R                                      PEP11057
001C 0  C2E8               LD    2  K4-R                                   PEP11058
001D 0  92E7               S     2  SAVE2-R                                PEP11059
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001E 01 D5000135          STO  L1 CONST+2                            PEP11060
0020 0  C209              LD   2  CARD+5-R                           PEP11061
0021 01 D5000137          STO  L1 CONST+4                            PEP11062
0023 0  7101              MDX  1  1                                  PEP11063
0024 0  70DE              MDX     A1                                 PEP11064
                   *                                                 PEP11065
0025 0  C2ED              LD   2  CONST+2-R                          PEP11066
0026 0  F2F6              EOR  2  MASK1-R     DENS. 200              PEP11067
0027 01 4C20002B          BSC  L  A5,Z                               PEP11068
0029 0  C2F0              LD   2  CON1-R                             PEP11069
002A 0  7009              MDX     A7                                 PEP11070
002B 0  F2F7          A5  EOR  2  MASK2-R     DENS. 500              PEP11071
002C 01 4C200030          BSC  L  A6,Z                               PEP11072
002E 0  C2F1              LD   2  CON2-R                             PEP11073
002F 0  7004              MDX     A7                                 PEP11074
0030 0  F2FD          A6  EOR  2  MASK3-R     DENS. 800              PEP11075
0031 01 4C20000E          BSC  L  A2,Z        BRANCH IF ERROR        PEP11076
0033 0  C2F2              LD   2  CON3-R                             PEP11077
0034 0  EAEB          A7  OR   2  CONST-R                            PEP11078
0035 0  EAF5              OR   2  CON6-R                             PEP11079
0036 0  D035              STO     TPNR1                              PEP11080
                   *                                                 PEP11081
0037 0  C2EC              LD   2  CONST+1-R                          PEP11082
0038 01 4C28003D          BSC  L  A8,+Z                              PEP11083
003A 0  92E8              S    2  K4-R                               PEP11084
003B 01 4C280040          BSC  L  A9,+Z                              PEP11085
003D 01 6C000137      A8  STX  L  IND                                PEP11086
003F 0  7008              MDX     A95                                PEP11087
0040 0  C2EC          A9  LD   2  CONST+1-R                          PEP11088
0041 0  EAF3              OR   2  CON4-R                             PEP11089
0042 01 D400010B          STO  L  TPNR2                              PEP11090
0044 0  C2EC              LD   2  CONST+1-R                          PEP11091
0045 0  EAF4              OR   2  CON5-R                             PEP11092
0046 01 D400011E          STO  L  EOF2                               PEP11093
                   *                                                 PEP11094
0048 20 176558D5      A95 LIBF    PRNTN                              PEP11095
0049 0  2100              DC      /2100                              PEP11096
004A 1  01FE              DC      MES3-1                             PEP11097
004B 0  0000              DC      0                                  PEP11098
004C 20 176558D5          LIBF    PRNTN                              PEP11099
004D 0  2100              DC      /2100                              PEP11100
004E 1  0206              DC      MES5-1                             PEP11101
004F 0  0001          K1  DC      1                                  PEP11102
0050 20 176558D5          LIBF    PRNTN                              PEP11103
0051 0  3100              DC      /3100                              PEP11104
0052 20 17064885          LIBF    PAUSE                              PEP11105
0053 0  0000              DC      0                                  PEP11106
0054 0  1010              SLA     16                                 PEP11107
0055 0  D2FE              STO  2  COUNT-R                            PEP11108
0056 01 6C000147          STX  L  INDMG                              PEP11109
0058 0  C2EA              LD   2  K1600-R                            PEP11110
0059 00 D40079BF          STO  L  AREA                               PEP11111
005B 20 024C1552          LIBF    BLANK                              PEP11112
005C 0  7975              DC      MAREA+1                            PEP11113
005D 0  004A          K74 DC      74                                 PEP11114
005E 0  C0FE              LD      K74                                PEP11115
005F 00 D4007974          STO  L  MAREA                              PEP11116
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TAPE TO CARD AND PRINT PROGRAM PEP11                          PAGE    3

```
0061 0   C0ED              LD     K1                          PEP11117
0062 00  D4007975          STO  L MAREA+1                     PEP11118
0064 0   C2E9              LD   2 K40-R                        PEP11119
0065 00  D400794B          STO  L PAREA                       PEP11120
              *                                               PEP11121
0067 01  74010146   A10    MDX  L COUNT,1                     PEP11122
0069 01  66000148          LDX  L2 R                          PEP11123
006B 20  140478C0          LIBF   MAGT                        PEP11124
006C 0   0000       TPNR1  DC     *-*                         PEP11125
006D 0   79BF              DC     AREA                        PEP11126
006E 1   0125              DC     USER                        PEP11127
006F 20  140478C0          LIBF   MAGT                        PEP11128
0070 0   0000              DC     0                           PEP11129
0071 0   70FD              MDX    *-3                         PEP11130
0072 01  74000148          MDX  L EOFSW,0                     PEP11131
0074 0   7004              MDX    EOF                         PEP11132
0075 01  74000149          MDX  L ERRSW,0                     PEP11133
0077 0   7003              MDX    ERROR                       PEP11134
0078 0   700F              MDX    A11                         PEP11135
0079 01  4C000114   EOF    BSC  L EOF1                        PEP11136
007B 0   C2FE        ERROR LD   2 COUNT-R                     PEP11137
007C 30  03209180          CALL   CHIF                        PEP11138
007E 1   023F              DC     MES8-2                      PEP11139
007F 20  176558D5          LIBF   PRNTN                       PEP11140
0080 0   2100              DC     /2100                       PEP11141
0081 1   0232              DC     MES7-1                      PEP11142
0082 0   0000              DC     0                           PEP11143
0083 0   1010              SLA    16                          PEP11144
0084 0   D201              STO  2 ERRSW-R                     PEP11145
0085 0   D202              STO  2 TOLG-R                      PEP11146
0086 0   D203              STO  2 LNGTH-R                     PEP11147
0087 0   70DF              MDX    A10                         PEP11148
0088 01  7400014A   A11    MDX  L TOLG,0                      PEP11149
008A 0   7001              MDX    A12                         PEP11150
008B 0   700A              MDX    A13                         PEP11151
008C 0   C2FE       A12    LD   2 COUNT-R                     PEP11152
008D 30  03209180          CALL   CHIF                        PEP11153
008F 1   0247              DC     MES10-2                     PEP11154
0090 20  176558D5          LIBF   PRNTN                       PEP11155
0091 0   2100              DC     /2100                       PEP11156
0092 1   0241              DC     MES9-1                      PEP11157
0093 0   0000              DC     0                           PEP11158
0094 0   1010              SLA    16                          PEP11159
0095 0   D202              STO  2 TOLG-R                      PEP11160
              *                                               PEP11161
0096 00  6600F9C0   A13    LDX  L2 -1600                      PEP11162
0098 30  020C4000   A14    CALL   BCD      MEANS LDX   L3 BCD PEP11163
009A              ORG    *-2                                  PEP11164
0098 0   6700              DC     /6700                       PEP11165
0099     0001              BSS    1                           PEP11166
009A 0   1010              SLA    16                          PEP11167
009B 01  D4000140          STO  L SWTC                        PEP11168
009D 0   61B0              LDX  1 -80                          PEP11169
009E 00  C6008000   A15    LD   L2 AREA+1601                 PEP11170
00A0 01  74000140          MDX  L SWTC,0                      PEP11171
00A2 0   7002              MDX    A16                         PEP11172
00A3 0   1808              SRA    8                           PEP11173
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00A4  0   7002            MDX      A17                    PEP11174
00A5  01  E4000141   A16  AND    L MASK                   PEP11175
00A7  0   D001       A17  STO      *+1                    PEP11176
00A8  00  C7000000        LD     L3 *-*                   PEP11177
00AA  01  D50001ED        STO    L1 CARD1+80              PEP11178
00AC  01  74000140        MDX    L  SWTC,0                PEP11179
00AE  0   7004            MDX      A19                    PEP11180
00AF  01  6C000140        STX    L  SWTC                  PEP11181
00B1  0   7101            MDX    1  1                      PEP11182
00B2  0   70EB            MDX      A15                    PEP11183
00B3  0   1010       A19  SLA      16                     PEP11184
00B4  01  D4000140        STO    L  SWTC                  PEP11185
00B6  0   7201            MDX    2  1                      PEP11186
00B7  0   7001            MDX      A20                    PEP11187
00B8  0   7009            MDX      A21                    PEP11188
00B9  0   6A75       A20  STX    2  SAVE2                 PEP11189
00BA  0   C074            LD       SAVE2                  PEP11190
00BB  01  9400014B        S      L  LNGTH                 PEP11191
00BD  01  4C1000C2        BSC    L  A21,-                 PEP11192
00BF  0   7101            MDX    1  1                      PEP11193
00C0  0   70DD            MDX      A15                    PEP11194
00C1  0   7003            MDX      A22                    PEP11195
00C2  0   1010       A21  SLA      16                     PEP11196
00C3  01  D4000147        STO    L  INDMG                 PEP11197
00C5  0   087C       A22  XIO      DATSW                 PEP11198
00C6  00  67800067        LDX    I3 TVLOC                PEP11199
00C8  01  4C2800D3        BSC    L  A25,+Z               PEP11200
00CA  20  085935D9        LIBF     HOLPR                 PEP11201
00CB  0   0001            DC       1                      PEP11202
00CC  1   019D            DC       CARD1                 PEP11203
00CD  0   794C            DC       PAREA+1               PEP11204
00CE  0   0050            DC       80                     PEP11205
00CF  20  176558D5        LIBF     PRNTN                 PEP11206
00D0  0   2100            DC       /2100                 PEP11207
00D1  0   794B            DC       PAREA                 PEP11208
00D2  0   0000            DC       0                      PEP11209
00D3  0   1001       A25  SLA      1                      PEP11210
00D4  0   D06F            STO      TEST                   PEP11211
00D5  01  4C2800FB        BSC    L  A28,+Z               PEP11212
00D7  20  03059115        LIBF     CARDN                 PEP11213
00D8  0   0000            DC       0                      PEP11214
00D9  0   70FD            MDX      *-3                    PEP11215
00DA  00  65800068   A26  LDX    I1 104                  PEP11216
00DC  0   C000            LD       *                      PEP11217
00DD  0   D120            STO    1  32                    PEP11218
00DE  20  03059115        LIBF     CARDN                 PEP11219
00DF  0   1000            DC       /1000                 PEP11220
00E0  1   014C            DC       CARD                   PEP11221
00E1  0   0000            DC       0                      PEP11222
00E2  20  03059115        LIBF     CARDN                 PEP11223
00E3  0   0000            DC       0                      PEP11224
00E4  0   70FD            MDX      *-3                    PEP11225
00E5  0   1010            SLA      16                     PEP11226
00E6  0   D120            STO    1  32                    PEP11227
00E7  30  031238A3        CALL     CDTST                 PEP11228
00E9  1   014D            DC       CARD+1                PEP11229
00EA  0   7007            MDX      A27                    PEP11230
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                              *
00EB 20 176558D5          LIBF    PRNTN                            PEP11231
00EC 0  2100              DC      /2100                            PEP11232
00ED 1  024E              DC      MES13-1                          PEP11233
00EE 0  0000              DC      0                                PEP11234
00EF 20 17064885          LIBF    PAUSE                            PEP11235
00F0 0  0000              DC      0                                PEP11236
00F1 0  70E8              MDX     A26                              PEP11237
00F2 30 145A5140   A27    CALL    MOVE                             PEP11238
00F4 1  019D              DC      CARD1                            PEP11239
00F5 1  014D              DC      CARD+1                           PEP11240
00F6 0  0050              DC      80                               PEP11241
00F7 20 03059115          LIBF    CARDN                            PEP11242
00F8 0  2000              DC      /2000                            PEP11243
00F9 1  014C              DC      CARD                             PEP11244
00FA 0  0000              DC      0                                PEP11245
00FB 01 74000137   A28    MDX  L  IND,0                            PEP11246
00FD 0  7010              MDX     A30                              PEP11247
00FE 0  C045              LD      TEST                             PEP11248
00FF 0  1001              SLA     1                                PEP11249
0100 01 4C28010E          BSC  L  A30,+Z                           PEP11250
0102 20 140478C0          LIBF    MAGT                             PEP11251
0103 0  0000              DC      0                                PEP11252
0104 0  70FD              MDX     *-3                              PEP11253
0105 20 08593142          LIBF    HOLEB                            PEP11254
0106 0  0000              DC      0                                PEP11255
0107 1  019D              DC      CARD1                            PEP11256
0108 0  7976              DC      MAREA+2                          PEP11257
0109 0  0050              DC      80                               PEP11258
010A 20 140478C0          LIBF    MAGT                             PEP11259
010B 0  0000      TPNR2   DC      *-*                              PEP11260
010C 0  7974              DC      MAREA                            PEP11261
010D 1  012B              DC      USER1                            PEP11262
010E 01 74000147   A30    MDX  L  INDMG,0                          PEP11263
0110 0  7087              MDX     A14                              PEP11264
0111 0  6835              STX     INDMG                            PEP11265
0112 01 4C000067          BSC  L  A10                              PEP11266
                              *                                    PEP11267
                              *     END OF JOB                     PEP11268
                              *                                    PEP11269
                                                                   PEP11270
0114 0  1010      EOF1    SLA     16                               PEP11271
0115 0  D032              STO     EOFSW                            PEP11272
0116 20 176558D5          LIBF    PRNTN                            PEP11273
0117 0  2100              DC      /2100                            PEP11274
0118 1  0259              DC      MES15-1                          PEP11275
0119 0  0000              DC      0                                PEP11276
011A 01 74000137          MDX  L  IND,0                            PEP11277
011C 0  7002              MDX     A32                              PEP11278
011D 20 140478C0          LIBF    MAGT                             PEP11279
011E 0  0000      EOF2    DC      *-*                              PEP11280
011F 20 17064885   A32    LIBF    PAUSE                            PEP11281
0120 0  0000              DC      0                                PEP11282
0121 0  1010              SLA     16                               PEP11283
0122 0  D023              STO     COUNT                            PEP11284
0123 01 4C000067          BSC  L  A10                              PEP11285
                              *                                    PEP11286
0125 0  0000      USER    DC      0                                PEP11287
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0126 30 24885640              CALL    USER                                    PEP11288
0128 1  0148                  DC      EOFSW                                   PEP11289
0129 01 4C800125              BSC   I USER                                    PEP11290
                     *                                                        PEP11291
012B 0  0000        USER1 DC          0                                       PEP11292
012C 01 4C80012B              BSC   I USER1                                   PEP11293
                     *                                                        PEP11294
                     *        CONSTANTS AND WORK AREAS                        PEP11295
                     *                                                        PEP11296
012E 0  4220        AST   DC          /4220                                   PEP11297
012F 0  0000        SAVE2 DC          0                                       PEP11298
0130 0  0004        K4    DC          4                                       PEP11299
0131 0  0028        K40   DC          40                                      PEP11300
0132 0  0640        K1600 DC          1600                                    PEP11301
0133 0  0000        CONST DC          0                                       PEP11302
0134 0  0000              DC          0                                       PEP11303
0135 0  0000              DC          0                                       PEP11304
0136 0  0000              DC          0                                       PEP11305
0137 0  0000        IND   DC          0                                       PEP11306
0138 0  0050        CON1  DC          /0050                                   PEP11307
0139 0  0060        CON2  DC          /0060                                   PEP11308
013A 0  0040        CON3  DC          /0040                                   PEP11309
013B 0  3000        CON4  DC          /3000      WRITE WITH ERROR RETRIES     PEP11310
013C 0  8000        CON5  DC          /8000      EOF                          PEP11311
013D 0  1100        CON6  DC          /1100      READ WITH ERROR RETRIES      PEP11312
013E 0  0800        MASK1 DC          /0800                                   PEP11313
013F 0  0900        MASK2 DC          /0900                                   PEP11314
0140 0  0000        SWTC  DC          0                                       PEP11315
0141 0  00FF        MASK  DC          /00FF                                   PEP11316
0142    0000              BSS   E     0                                       PEP11317
0142 0  0000        DATSW DC          0                                       PEP11318
0143 0  0740              DC          /0740                                   PEP11319
0144 0  0000        TEST  DC          0                                       PEP11320
0145 0  0120        MASK3 DC          /0120                                   PEP11321
0146 0  0000        COUNT DC          0                                       PEP11322
0147 0  0001        INDMG DC          1                                       PEP11323
0148 0  0000        EOFSW DC          0                                       PEP11324
0149 0  0000        ERRSW DC          0                                       PEP11325
014A 0  0000        TOLG  DC          0                                       PEP11326
014B 0  0000        LNGTH DC          0                                       PEP11327
014C 0  0050        CARD  DC          80                                      PEP11328
014D    0050              BSS         80                                      PEP11329
019D    0050        CARD1 BSS         80                                      PEP11330
01ED 0  0010              DC          MES2-MES1                               PEP11331
01EE    0020        MES1  DMES  1 ERROR INPUT CARDS. START AGAIN.'E           PEP11332
01FE    0000        MES2  BSS         0                                       PEP11333
01FE 0  0007              DC          MES4-MES3                               PEP11334
01FF    000E        MES3  DMES  1 PROGRAM PEP11'E                             PEP11335
0206    0000        MES4  BSS         0                                       PEP11336
0206 0  002B              DC          MES6-MES5                               PEP11337
0207    0023        MES5  DMES  1 DATA SW 0 ON ... NO LIST, DATA SW 1'        PEP11338
0218    0023              DMES  1  ON ... NO CARDS, DATA SW 2 ON ... '        PEP11339
022A    0010              DMES  1 NO TAPE. START.'E                          PEP11340
0232    0000        MES6  BSS         0                                       PEP11341
0232 0  000E              DC          MES8-MES7                               PEP11342
0233    0018        MES7  DMES  1 TAPE ERROR IN RECORD NO.'E                  PEP11343
0241    0002        MES8  BES         2                                       PEP11344
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0241 0  000C                    DC      MES12-MES9               PEP11345
0242    000A        MES9  DMES  1 RECORD NO.'E                   PEP11346
0249    0002        MES10 BES     2                              PEP11347
0249    000A              DMES  1 TOO LONG.'E                    PEP11348
024E    0000        MES12 BSS     0                              PEP11349
024E 0  000A              DC      MES14-MES13                    PEP11350
024F    0014        MES13 DMES  1 BLANK CARDS NEEDED.'E          PEP11351
0259    0000        MES14 BSS     0                              PEP11352
0259 0  0013              DC      MES16-MES15                    PEP11353
025A    0026        MES15 DMES  1 *** END OF FILE ***.           PEP11354
026D    0000        MES16 BSS     0                              PEP11355
                    *                                            PEP11356
0067                TVLOC EQU     103                            PEP11357
0148                R     EQU     EOFSW                          PEP11358
79BF                AREA  EQU     32768-1601                     PEP11359
7974                MAREA EQU     AREA-75                        PEP11360
794B                PAREA EQU     MAREA-41                       PEP11361
026E    0000              END     START                          PEP11362
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        NO ERRORS IN ABOVE ASSEMBLY.
PEP11
DUP FUNCTION COMPLETED

PLOT TRANSLATION PROGRAM   TRAN                                    PAGE   1

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          ****************************************************   TRAN0002
          *        IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS    *   TRAN0003
          ****************************************************   TRAN0004
          *                                                  *   TRAN0005
          *        PLOT TRANSLATION PROGRAM   TRAN           *   TRAN0006
          *                                                  *   TRAN0007
          *        THE PROGRAM PERFORMS THE PLOTTER TAPE TRANS-*  TRAN0008
          *        LATION FROM CETIS CODE INTO ORIGINAL CALCOMP*  TRAN0009
          *        CODE.                                     *   TRAN0010
          *                                                  *   TRAN0011
          *        CONTROL CARDS                             *   TRAN0012
          *        1.CARD                                    *   TRAN0013
          *        CC 1,2     **                             *   TRAN0014
          *        CC 3       0     IF TAPE UNIT 0 IS INPUT  *   TRAN0015
          *                   1                       1      *   TRAN0016
          *                   2                       2      *   TRAN0017
          *                   3                       3      *   TRAN0018
          *        CC 4       BLANK                          *   TRAN0019
          *        CC 5,7     200   DENSITY OF INPUT TAPE    *   TRAN0020
          *                   556                           *   TRAN0021
          *                   800                           *   TRAN0022
          *        2.CARD                                    *   TRAN0023
          *        ANALOG CARD 1 FOR OUTPUT TAPE             *   TRAN0024
          *                                                  *   TRAN0025
          ****************************************************   TRAN0026
          *                                        EURATOM GEEL  TRAN0027
          *                                                      TRAN0028
0000 20 176558D5   START LIBF    PRNTN      PRINT MESSAGE EXECUTION OF  TRAN0029
0001 0  2100             DC      /2100      PLOT TRANSLATION PROGRAM    TRAN0030
0002 1  0A41             DC      MES1-1                                 TRAN0031
0003 0  0000             DC      0                                      TRAN0032
0004 0  61FE       A0    LDX  1  -2         XR1=-2                      TRAN0033
0005 00 67800067   A1    LDX  I3 103                                    TRAN0034
0007 20 03059115         LIBF    CARDN      READ CONTROL CARD           TRAN0035
0008 0  1000             DC      /1000                                  TRAN0036
0009 1  01A2             DC      CARD                                   TRAN0037
000A 0  0000             DC      0                                      TRAN0038
000B 20 03059115   A2    LIBF    CARDN      TEST IF OPERATION COMPLETE  TRAN0039
000C 0  0000             DC      0                                      TRAN0040
000D 0  70FD             MDX     A2                                     TRAN0041
          *                                                             TRAN0042
000E 01 67000180         LDX  L3 R          XR3 HAS RELOCATION ADDRESS  TRAN0043
0010 0  C323             LD   3  CARD+1-R                               TRAN0044
0011 0  93FC             S    3  AST-R      TEST IF FIRST CHARACTER ON  TRAN0045
0012 01 4C18001D         BSC  L  A4,+-      INPUT CARD WAS A *          TRAN0046
0014 00 67800067   A3    LDX  I3 103        ERROR                       TRAN0047
0016 20 176558D5         LIBF    PRNTN      PRINT MESSAGE TO CORRECT    TRAN0048
0017 0  2100             DC      /2100      THE INPUT CARDS             TRAN0049
0018 1  0A55             DC      MES3-1                                 TRAN0050
0019 0  0000             DC      0                                      TRAN0051
001A 20 17064885         LIBF    PAUSE                                  TRAN0052
001B 0  0000             DC      0                                      TRAN0053
001C 0  70E7             MDX     A0         RESTART                     TRAN0054
001D 0  C325       A4    LD   3  CARD+3-R   DETERMINE UNIT NUMBER       TRAN0055
001E 0  6206             LDX  2  6                                      TRAN0056
001F 0  1240             SLCA 2  0                                      TRAN0057
0020 01 6E00015B         STX  L2 SAVE2                                  TRAN0058
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0022 0  C3E6              LD     3  K4-R                                         TRAN0059
0023 0  93DB              S      3  SAVE2-R                                      TRAN0060
0024 01 D500017F          STO    L1 CONST+2                                      TRAN0061
0026 0  C327              LD     3  CARD+5-R    DETERMINE DENSITY                TRAN0062
0027 0  F3DE              EOR    3  MASK1-R                                      TRAN0063
0028 01 4C20002C          BSC    L  A5,Z        BRANCH IF DENSITY IS NOT         TRAN0064
002A 0  C3E1              LD     3  CON1-R      200                              TRAN0065
002B 0  7009              MDX       A7                                          TRAN0066
002C 0  F3DF        A5    EOR    3  MASK2-R                                      TRAN0067
002D 01 4C200031          BSC    L  A6,Z        BRANCH IF DENSITY IS NOT         TRAN0068
002F 0  C3E2              LD     3  CON2-R      556                              TRAN0069
0030 0  7004              MDX       A7                                          TRAN0070
0031 0  F3E0        A6    EOR    3  MASK3-R                                      TRAN0071
0032 01 4C200014          BSC    L  A3,Z        BRANCH IF DENSITY IS NOT         TRAN0072
0034 0  C3E3              LD     3  CON3-R      800                              TRAN0073
0035 01 ED00017F    A7    OR     L1 CONST+2     CONSTRUCT CONSTANTS FOR          TRAN0074
0037 01 D500017F          STO    L1 CONST+2     MAG. TAPE ROUTINE                TRAN0075
0039 0  7101              MDX    1  1           XR1=XR1+1                        TRAN0076
003A 0  70CA              MDX       A1          READ SECOND INPUT CARD           TRAN0077
                    *                                                           TRAN0078
                    *     END OF READING THE INPUT CARDS                        TRAN0079
                    *                                                           TRAN0080
003B 0  C3FD              LD     3  CONST-R                                      TRAN0081
003C 0  EBE4              OR     3  CON4-R                                       TRAN0082
003D 0  D00E              STO       A9          INSERT READ BITS                 TRAN0083
003E 0  C3FE              LD     3  CONST+1-R                                    TRAN0084
003F 0  EBE5              OR     3  CON5-R      INSERT WRITE BITS                TRAN0085
0040 01 D400011C          STO    L  A33                                         TRAN0086
0042 0  6209              LDX    2  9                                           TRAN0087
0043 01 6C00016D          STX    L  IND                                         TRAN0088
0045 01 44000127          BSI    L  A40         BRANCH TO WRITE FIRST            TRAN0089
                                                BLOCK ADDRESS                    TRAN0090
                    *     READ MAGNETIC TAPE                                     TRAN0091
                    *                                                           TRAN0092
0047 0  1010        A8    SLA       16                                          TRAN0093
0048 0  D3F4              STO    3  LNGTH-R                                      TRAN0094
0049 00 67800067          LDX    I3 103                                         TRAN0095
004B 20 140478C0          LIBF      MAGT        READ A RECORD FROM INPUT         TRAN0096
004C 0  0000        A9    DC        *-*         TAPE                             TRAN0097
004D 1  0740              DC        AREA1                                       TRAN0098
004E 1  0151              DC        A50                                         TRAN0099
004F 20 140478C0    A10   LIBF      MAGT        TEST IF OPERATION                TRAN0100
0050 0  0000              DC        0           COMPLETE                         TRAN0101
0051 0  70FD              MDX       A10                                         TRAN0102
0052 0  67000180          LDX    L3 R           XR3 HAS RELOCATION ADDRESS       TRAN0103
0054 01 74000171          MDX    L  EOFSW,0     TEST END OF FILE                 TRAN0104
0056 0  700C              MDX       A13         BRANCH IF END OF FILE            TRAN0105
0057 00 6500FD02          LDX    L1 -766        XR1=-766 COUNTER INPUT AR.       TRAN0106
0059 0  7101        A12   MDX    1  1           XR1=XR1+1                        TRAN0107
005A 0  7001              MDX       *+1                                         TRAN0108
005B 0  7020              MDX       A15         BRANCH IF COUNTER = 0            TRAN0109
005C 01 6D00015A          STX    L1 SAVE1                                       TRAN0110
005E 0  C3DA              LD     3  SAVE1-R                                      TRAN0111
005F 0  B3F4              CMP    3  LNGTH-R     TEST IF END OF INPUT AREA        TRAN0112
0060 0  7023              MDX       A17         IF NOT CONTINUE AT A17           TRAN0113
0061 0  7022              MDX       A17                                         TRAN0114
0062 0  701C              MDX       A16         BRANCH IF END OF INPUT           TRAN0115
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                              *                        AREA            TRANO116
                              *    END OF FILE ON INPUT TAPE           TRANO117
                              *                                        TRANO118
0063 01 7400016E    A13    MDX   L   SWBL,0                            TRANO119
0065 0  7002               MDX       A14                              TRANO120
0066 01 44000127           BSI   L   A40         WRITE A FINAL BLOCK   TRANO121
0068 0  C3EF        A14    LD    3   BLNUM-R      ADDRESS              TRANO122
0069 00 67800067           LDX   I3  103         CONVERT BLOCK NUMBER TO  TRANO123
006B 20 02255103           LIBF      BINDC       PRINTER CODE         TRANO124
006C 1  0176               DC        OUTPT                             TRANO125
006D 20 085935D9           LIBF      HOLPR                             TRANO126
006E 0  0001               DC        /1                                TRANO127
006F 1  0179               DC        OUTPT+3                           TRANO128
0070 1  0A84               DC        DCBL                              TRANO129
0071 0  0003               DC        3                                 TRANO130
0072 20 176558D5           LIBF      PRNTN        PRINT BLOCK NUMBER   TRANO131
0073 0  2100               DC        /2100                             TRANO132
0074 1  0A6B               DC        MES5-1                            TRANO133
0075 0  0000               DC        0                                 TRANO134
0076 20 17064885           LIBF      PAUSE        END OF JOB           TRANO135
0077 0  0000               DC        0                                 TRANO136
0078 0  1810               SRA       16           CLEAR EOFSW          TRANO137
0079 01 D4000171           STO   L   EOFSW                             TRANO138
007B 0  70CB               MDX       A8                                TRANO139
                              *                                        TRANO140
                              *    END OF INPUT AREA                   TRANO141
                              *                                        TRANO142
007C 0  1810        A15    SRA       16                                TRANO143
007D 0  D3EE               STO   3   SWBL-R                            TRANO144
007E 0  70C8               MDX       A8                                TRANO145
007F 01 44000127    A16    BSI   L   A40         WRITE A BLOCK ADDRESS IF  TRANO146
0081 01 6C00016E           STX   L   SWBL        THERE WAS A SHORTER RECORD  TRANO147
0083 0  70C3               MDX       A8                                TRANO148
                              *                                        TRANO149
                              *    BEGIN OF TAPE TRANSLATION           TRANO150
                              *                                        TRANO151
0084 0  1010        A17    SLA       16                                TRANO152
0085 0  D3EB               STO   3   SWITC-R     CLEAR SWITCH          TRANO153
0086 01 C5000A41           LD    L1  AREA1+769                         TRANO154
0088 0  1888               SRT       8                                 TRANO155
0089 0  D3DC               STO   3   SAVEA-R                           TRANO156
008A 0  1010               SLA       16                                TRANO157
008B 0  1088               SLT       8                                 TRANO158
008C 0  D3DD               STO   3   SAVEB-R                           TRANO159
008D 01 7400016D    A18    MDX   L   IND,0                             TRANO160
008F 0  7001               MDX       *+1                               TRANO161
0090 0  7008               MDX       A19                               TRANO162
0091 01 6E00015B           STX   L2  SAVE2       TEST IF CALCOMP BUFFER  TRANO163
0093 0  C3DB               LD    3   SAVE2-R     FULL                  TRANO164
0094 0  B3F5               CMP   3   KLNG1-R                           TRANO165
0095 0  7001               MDX       *+1                               TRANO166
0096 0  7002               MDX       A19         IF NOT BRANCH TO A19  TRANO167
0097 01 440000FE           BSI   L   A30         BRANCH TO OUTPUT      TRANO168
0099 0  C3DC        A19    LD    3   SAVEA-R                           TRANO169
009A 0  B3F0               CMP   3   P082-R      TEST IF NO ACTION     TRANO170
009B 0  7002               MDX       *+2         CHARACTER             TRANO171
009C 0  7001               MDX       *+1                               TRANO172
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PLOT TRANSLATION PROGRAM   TRAN                                    PAGE   4

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009D  0   7029                     MDX       A23           BRANCH IF YES          TRANO173
009E  0   7201                     MDX    2  1             XR2=XR2+1              TRANO174
009F  0   83DC                     A      3  SAVEA-R                              TRANO175
00A0  0   D3DC                     STO    3  SAVEA-R                              TRANO176
00A1  01  6E00015B                 STX    L2 SAVE2         SAVE XR2              TRANO177
00A3  01  6680015C                 LDX    I2 SAVEA                               TRANO178
00A5  01  C6000181                 LD     L2 TABEL+1                             TRANO179
00A7  0   1808                     SRA       8                                   TRANO180
00A8  0   4804                     BSC       E                                   TRANO181
00A9  0   D3EC                     STO    3  PENI-R        SET INDICATOR IF PEN  TRANO182
00AA  01  CE000180        A20      LDD    L2 TABEL         MOTION                TRANO183
00AC  01  6680015B                 LDX    I2 SAVE2         RESTORE XR2           TRANO184
00AE  01  7400016D                 MDX    L  IND,0         TEST IND              TRANO185
00B0  0   700C                     MDX       A21           BRANCH IF NOT 0       TRANO186
00B1  0   1888                     SRT       8             IND=0                 TRANO187
00B2  01  EE000198                 OR     L2 AREA2                               TRANO188
00B4  01  D6000198                 STO    L2 AREA2                               TRANO189
00B6  0   1090                     SLT       16                                  TRANO190
00B7  0   7201                     MDX    2  1             XR2=XR2+1             TRANO191
00B8  01  D6000198                 STO    L2 AREA2                               TRANO192
00BA  01  6C00016D                 STX    L  IND           SET IND NOT EQUAL ZERO TRANO193
00BC  0   7007                     MDX       A22                                 TRANO194
00BD  01  D6000198        A21      STO    L2 AREA2         IND NOT EQUAL ZERO    TRANO195
00BF  0   1090                     SLT       16                                  TRANO196
00C0  01  D6000199                 STO    L2 AREA2+1                             TRANO197
00C2  0   1010                     SLA       16                                  TRANO198
00C3  0   D3ED                   · STO    3  IND-R         SET IND=0             TRANO199
00C4  01  7400016C        A22      MDX    L  PENI,0        TEST IF PEN MOTION    TRANO200
00C6  0   7008                     MDX       A24           YES                   TRANO201
00C7  01  7400016B        A23      MDX    L  SWITC,0       NO, TEST SWITC        TRANO202
00C9  0   708F                     MDX       A12       ╲   RETURN TO NEXT WORD   TRANO203
00CA  01  6C00016B                 STX    L  SWITC         SET SWITC NOT EQUAL   TRANO204
00CC  0   C3DD                     LD     3  SAVEB-R       ZERO                  TRANO205
00CD  0   D3DC                     STO    3  SAVEA-R                             TRANO206
00CE  0   70BE                     MDX       A18                                 TRANO207
                         *                                                       TRANO208
                         *         INSERT NO OPERATION CONSTANTS IF PEN MOTION   TRANO209
                         *                                                       TRANO210
00CF  0   1810          A24        SRA       16                                  TRANO211
00D0  0   D3EC                     STO    3  PENI-R        SET PENI=0            TRANO212
00D1  01  7400016D                 MDX    L  IND,0         TEST IND              TRANO213
00D3  0   700B                     MDX       A25           IND NOT EQUAL         TRANO214
00D4  0   C300                     LD     3  TABEL-R                             TRANO215
00D5  0   7202                     MDX    2  2                                   TRANO216
00D6  01  D6000198                 STO    L2 AREA2                               TRANO217
00D8  0   1808                     SRA       8                                   TRANO218
00D9  01  EE000197                 OR     L2 AREA2-1                             TRANO219
00DB  01  D6000197                 STO    L2 AREA2-1                             TRANO220
00DD  01  6C00016D                 STX    L  IND                                 TRANO221
00DF  01  6D00015A        A25      STX    L1 SAVE1         SAVE XR1              TRANO222
00E1  0   611E                     LDX    1  30                                  TRANO223
00E2  01  6E00015B        A26      STX    L2 SAVE2                               TRANO224
00E4  0   C3DB                     LD     3  SAVE2-R                             TRANO225
00E5  0   4804                     BSC       E                                   TRANO226
00E6  0   7001                     MDX       A27                                 TRANO227
00E7  0   700F                     MDX       A29                                 TRANO228
00E8  0   B3F5          A27        CMP    3  KLNG1-R       TEST IF BUFFER FULL   TRANO229
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00E9 0  7001                    MDX      *+1                                     TRAN0230
00EA 0  7003                    MDX      A28                                     TRAN0231
00EB 01 440000FE                BSI   L  A30          BRANCH TO OUTPUT           TRAN0232
00ED 0  7006                    MDX      A285                                    TRAN0233
00EE 0  CB00         A28        LDD   3  TABEL-R                                 TRAN0234
00EF 0  7202                    MDX   2  2                                       TRAN0235
00F0 01 DE000197                STD   L2 AREA2-1                                 TRAN0236
00F2 0  71FF                    MDX   1  -1                                      TRAN0237
00F3 0  70EE                    MDX      A26                                     TRAN0238
00F4 01 6580015A     A285       LDX   I1 SAVE1        RESTORE XR1                TRAN0239
00F6 0  70D0                    MDX      A23                                     TRAN0240
00F7 0  CB00         A29        LDD   3  TABEL-R                                 TRAN0241
00F8 0  7203                    MDX   2  3                                       TRAN0242
00F9 01 D6000196                STO   L2 AREA2-2                                 TRAN0243
00FB 01 DE000197                STD   L2 AREA2-1                                 TRAN0244
00FD 0  70E4                    MDX      A26                                     TRAN0245
                     *                                                           TRAN0246
                     *          SUBROUTINE FOR WRITING CALCOMP BUFFER ON TAPE    TRAN0247
                     *                                                           TRAN0248
00FE 0  0000         A30        DC       0                                       TRAN0249
00FF 01 7400016D                MDX   L  IND,0        TEST IND                   TRAN0250
0101 0  700C                    MDX      A31                                     TRAN0251
0102 01 6C00016D                STX   L  IND                                     TRAN0252
0104 0  CB00                    LDD   3  TABEL-R      FILL LAST WORD WITH        TRAN0253
0105 0  1888                    SRT      8            NO OPERATION CONSTANTS.    TRAN0254
0106 01 EE000198                OR    L2 AREA2                                   TRAN0255
0108 01 D6000198                STO   L2 AREA2                                   TRAN0256
010A 0  1090                    SLT      16                                     TRAN0257
010B 0  7201                    MDX   2  1                                       TRAN0258
010C 01 D6000198                STO   L2 AREA2                                   TRAN0259
010E 0  CB16         A31        LDD   3  END-R                                   TRAN0260
010F 01 D6000199                STO   L2 AREA2+1                                 TRAN0261
0111 0  1090                    SLT      16                                     TRAN0262
0112 01 D600019A                STO   L2 AREA2+2                                 TRAN0263
0114 0  7202                    MDX   2  2                                       TRAN0264
0115 01 6E00015B                STX   L2 SAVE2                                   TRAN0265
0117 0  C3DB                    LD    3  SAVE2-R                                 TRAN0266
0118 0  D318                    STO   3  AREA2-R                                 TRAN0267
0119 00 67800067                LDX   I3 103                                     TRAN0268
011B 20 140478C0                LIBF     MAGT                                    TRAN0269
011C 0  0000         A33        DC       *-*                                     TRAN0270
011D 1  0198                    DC       AREA2                                   TRAN0271
011E 1  0157                    DC       SPEC         SPECIAL COND. ROUTINE      TRAN0272
011F 0  6209                    LDX   2  9                                       TRAN0273
0120 20 140478C0     A34        LIBF     MAGT         TEST IF OPERATION COMPLETE TRAN0274
0121 0  0000                    DC       0                                       TRAN0275
0122 0  70FD                    MDX      A34                                     TRAN0276
0123 01 67000180                LDX   L3 R            XR3 HAS RELOCATION CONST.  TRAN0277
0125 01 4C8000FE                BSC   I  A30          RETURN                     TRAN0278
                     *                                                           TRAN0279
                     *          SUBROUTINE FOR CONSTRUCTING A BLOCK ADDRESS      TRAN0280
                     *                                                           TRAN0281
0127 0  0000         A40        DC       0                                       TRAN0282
0128 0  40D5                    BSI      A30          BRANCH TO OUTPUT           TRAN0283
0129 01 7401016F                MDX   L  BLNUM,1      INCREMENT BLOCK ADDRESS    TRAN0284
012B 0  C3E9                    LD    3  X0301-R                                 TRAN0285
012C 0  D321                    STO   3  AREA2+9-R                               TRAN0286
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PLOT TRANSLATION PROGRAM  TRAN                              PAGE   6

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012D  0   6103              LDX    1  3             XR1=3                       TRAN0287
012E  0·  1090              SLT       16            CLEAR Q-REGISTER            TRAN0288
012F  0   C3EF              LD     3  BLNUM-R       LOAD BLOCK NUMBER IN ACCUM  TRAN0289
0130  0   1890        A41   SRT       16                                        TRAN0290
0131  0   A835              D         K10           DIVIDE BY 10                TRAN0291
0132  0   D3DC              STO    3  SAVEA-R       SAVE QUOTIENT               TRAN0292
0133  0   108E              SLT       14            TREATE REMAINDER            TRAN0293
0134  0   1006              SLA       6                                         TRAN0294
0135  0   1082              SLT       2                                         TRAN0295
0136  0   EB19              OR     3  AREA2+1-R                                 TRAN0296
0137  01  D50001A1          STO    L1 AREA2+9       STORE DECODED BLOCK         TRAN0297
0139  0   C3DC              LD     3  SAVEA-R       ADDRESS                     TRAN0298
013A  0   71FF              MDX    1  -1                                        TRAN0299
013B  0   70F4              MDX       A41                                       TRAN0300
013C  0   C3E8              LD     3  X0103-R       INSERT BLOCK ADDRESS INDIC  TRAN0301
013D  0   D325              STO    3  AREA2+13-R                                TRAN0302
013E  0   CB1E              LDD    3  AREA2+6-R     INSERT CONSTANTS 0303       TRAN0303
013F  0   DB26              STD    3  AREA2+14-R                                TRAN0304
0140  0   D328              STO    3  AREA2+16-R                                TRAN0305
0141  0   CB1A              LDD    3  AREA2+2-R                                 TRAN0306
0142  0   D329              STO    3  AREA2+17-R                                TRAN0307
0143  0   61E2              LDX    1  -30           XR1=-30                     TRAN0308
0144  01  DD0001C8    A42   STD    L1 AREA2+48      STO CONSTANT 0404           TRAN0309
0146  0   7102              MDX    1  2             XR1=XR1+2                   TRAN0310
0147  0   70FC              MDX       A42                                       TRAN0311
0148  0   622F              LDX    2  47                                        TRAN0312
0149  01  6C00016D          STX    L  IND          IND NOT EQUAL ZERO          TRAN0313
014B  01  440000FE          BSI    L  A30          BRANCH TO OUTPUT            TRAN0314
014D  0   C3EA              LD     3  X0302-R                                   TRAN0315
014E  0   D321              STO    3  AREA2+9-R                                 TRAN0316
014F  01  4C800127          BSC    I  A40                                       TRAN0317
                     *                                                          TRAN0318
                     *         USER SUBROUTINE FOR MAG. TAPE ROUTINE            TRAN0319
                     *                                                          TRAN0320
0151  0   0000        A50   DC        0                                         TRAN0321
0152  30  24885640          CALL      USER                                     TRAN0322
0154  1   0171              DC        EOFSW                                     TRAN0323
0155  01  4C800151          BSC    I  A50                                       TRAN0324
                     *                                                          TRAN0325
0157  0   0000        SPEC  DC        0                                         TRAN0326
0158  01  4C800157          BSC    I  SPEC                                      TRAN0327
                     *                                                          TRAN0328
                     *         CONSTANTS AND WORKAREAS                          TRAN0329
                     *                                                          TRAN0330
015A  0   0000        SAVE1 DC        *-*                                       TRAN0331
015B  0   0000        SAVE2 DC        *-*                                       TRAN0332
015C  0   0000        SAVEA DC        *-*                                       TRAN0333
015D  0   0000        SAVEB DC        *-*                                       TRAN0334
015E  0   0800        MASK1 DC        /0800                                     TRAN0335
015F  0   0900        MASK2 DC        /0900                                     TRAN0336
0160  0   0120        MASK3 DC        /0120                                     TRAN0337
0161  0   0050        CON1  DC        /0050                                     TRAN0338
0162  0   0060        CON2  DC        /0060                                     TRAN0339
0163  0   0040        CON3  DC        /0040                                     TRAN0340
0164  0   1000        CON4  DC        /1000                                     TRAN0341
0165  0   3000        CON5  DC        /3000                                     TRAN0342
0166  0   0004        K4    DC        4                                         TRAN0343
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0167 0  000A      K10   DC    10                                    TRAN0344
0168 0  0103      X0103 DC    /0103                                 TRAN0345
0169 0  0301      X0301 DC    /0301                                 TRAN0346
016A 0  0302      X0302 DC    /0302                                 TRAN0347
016B 0  0000      SWITC DC    *-*                                   TRAN0348
016C 0  0000      PENI  DC    *-*                                   TRAN0349
016D 0  0000      IND   DC    *-*                                   TRAN0350
016E 0  0000      SWBL  DC    *-*                                   TRAN0351
016F 0  0000      BLNUM DC    0                                     TRAN0352
0170 0  001A      PO82  DC    /001A      BCD CODE A-8-2             TRAN0353
0171 0  0000      EOFSW DC    *-*                                   TRAN0354
0172 0  0000      ERRSW DC    *-*                                   TRAN0355
0173 0  0000      TOLSW DC    *-*                                   TRAN0356
0174 0  0000      LNGTH DC    *-*                                   TRAN0357
0175 0  05A3      KLNG1 DC    AREAE-AREA2-5                         TRAN0358
0176    0006      OUTPT BSS   6                                     TRAN0359
017C 0  4220      AST   DC    /4220      PERFORATION *              TRAN0360
017D 0  0000      CONST DC    0                                     TRAN0361
017E 0  0000            DC    0                                     TRAN0362
0180    0000            BSS E 0                                     TRAN0363
0180 0  0606      TABEL DC    /0606      CONVERSION TABEL           TRAN0364
0181 0  0606            DC    /0606                                 TRAN0365
0182 0  0607            DC    /0607      +Y                         TRAN0366
0183 0  0600            DC    /0600                                 TRAN0367
0184 0  0707            DC    /0707      +X +Y                      TRAN0368
0185 0  0600            DC    /0600                                 TRAN0369
0186 0  0706            DC    /0706      +X                         TRAN0370
0187 0  0600            DC    /0600                                 TRAN0371
0188 0  0705            DC    /0705      +X -Y                      TRAN0372
0189 0  0600            DC    /0600                                 TRAN0373
018A 0  0605            DC    /0605      -Y                         TRAN0374
018B 0  0600            DC    /0600                                 TRAN0375
018C 0  0505            DC    /0505      -X -Y                      TRAN0376
018D 0  0600            DC    /0600                                 TRAN0377
018E 0  0506            DC    /0506      -X                         TRAN0378
018F 0  0600            DC    /0600                                 TRAN0379
0190 0  0507            DC    /0507      -X +Y                      TRAN0380
0191 0  0600            DC    /0600                                 TRAN0381
0192 0  0606            DC    /0606      PEN DOWN                   TRAN0382
0193 0  0500            DC    /0500                                 TRAN0383
0194 0  0606            DC    /0606      PEN UP                     TRAN0384
0195 0  0700            DC    /0700                                 TRAN0385
0196 0  0406      END   DC    /0406                                 TRAN0386
0197 0  0304            DC    /0304                                 TRAN0387
0198 0  0000      AREA2 DC    *-*                                   TRAN0388
0199 0  0404            DC    /0404                                 TRAN0389
019A 0  0404            DC    /0404                                 TRAN0390
019B 0  0404            DC    /0404                                 TRAN0391
019C 0  0404            DC    /0404                                 TRAN0392
019D 0  0404            DC    /0404                                 TRAN0393
019E 0  0303            DC    /0303                                 TRAN0394
019F 0  0303            DC    /0303                                 TRAN0395
01A0 0  0303            DC    /0303                                 TRAN0396
01A1 0  0302            DC    /0302                                 TRAN0397
01A2 0  0050      CARD  DC    80                                    TRAN0398
01A3    0050            BSS   80                                    TRAN0399
0740    054D      AREAE BES   1438-81                               TRAN0400
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PLOT TRANSLATION PROGRAM    TRAN                        PAGE    8

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0180                    R      EQU         TABEL                               TRAN0401
0740  0  0300           AREA1  DC          768                                 TRAN0402
0741     0300                  BSS         768                                 TRAN0403
0A41  0  0013                  DC          MES2-MES1                           TRAN0404
0A42     0023           MES1   DMES    1 EXECUTION OF PLOT TRANSLATION PROGR'   TRAN0405
0A53     0003                  DMES    1 AM.'E                                  TRAN0406
0A55     0000           MES2   BSS         0                                   TRAN0407
0A55  0  0015                  DC          MES4-MES3                           TRAN0408
0A56     0022           MES3   DMES    1 ERROR IN CONTROL CARD. CORRECT INP'   TRAN0409
0A67     0008                  DMES    1 UT CARD.'E                            TRAN0410
0A6B     0000           MES4   BSS         0                                   TRAN0411
0A6B  0  001C                  DC          MES6-MES5                           TRAN0412
0A6C     0023           MES5   DMES    1 END OF FILE ON INPUT TAPE. LAST BLO'  TRAN0413
0A7D     000D                  DMES    1 CK ADDRESS = 'E                       TRAN0414
0A84     0003           DCBL   BSS         3                                   TRAN0415
0A87     0002                  DMES    1 .'E                                   TRAN0416
0A88     0000           MES6   BSS         0                                   TRAN0417
0A88     0000                  END         START                              TRAN0418
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       NO ERRORS IN ABOVE ASSEMBLY.
TRAN
DUP FUNCTION COMPLETED

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                    TAPE TO PLOT PROGRAM  P7090                         PAGE    1

                    ***************************************************  P7090002
                    *     IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS     *  P7090003
                    ***************************************************  P7090004
                    *                                                *  P7090005
                    *     TAPE TO PLOT PROGRAM   P7090               *  P7090006
                    *                                                *  P7090007
                    *     PROGRAM P7090 READS A PLOTTER TAPE IN CETIS *  P7090008
                    *     CODE AND PLOTS THE DATA ON THE CALCOMP     *  P7090009
                    *     PLOTTER (ON-LINE OPERATION).               *  P7090010
                    *                                                *  P7090011
                    *     CONTROL CARD                               *  P7090012
                    *     CC   1,2   **                              *  P7090013
                    *     CC   3     INPUT TAPE UNIT NUMBER (0,1,2,3) *  P7090014
                    *     CC   5-6   DENSITY (200,556 OR 800)        *  P7090015
                    *                                                *  P7090016
                    ***************************************************  P7090017
                    *                                    EURATOM GEEL  P7090018
                    *                                                   P7090019
0000 20 03059115    START LIBF     CARDN                                P7090020
0001 0  1000              DC       /1000                                P7090021
0002 1  0082              DC       CARD                                 P7090022
0003 0  0000              DC       0                                    P7090023
0004 20 03059115    A1    LIBF     CARDN                                P7090024
0005 0  0000              DC       0                                    P7090025
0006 0  70FD              MDX      A1                                   P7090026
                    *                                                   P7090027
0007 01 66000082          LDX   L2 R                                    P7090028
0009 0  C201              LD    2  CARD+1-R                             P7090029
000A 0  92FE              S     2  AST-R                                P7090030
000B 01 4C180014          BSC   L  A4,+-                                P7090031
000D 20 176558D5    A2    LIBF     PRNTN                                P7090032
000E 0  2100              DC       /2100                                P7090033
000F 1  03DC              DC       MES3-1                               P7090034
0010 0  0000              DC       0                                    P7090035
0011 20 17064885          LIBF     PAUSE                                P7090036
0012 1  0003              DC       A1-1                                 P7090037
0013 0  70EC              MDX      START                                P7090038
0014 0  C203        A4    LD    2  CARD+3-R                             P7090039
0015 0  6106              LDX   1  6                                    P7090040
0016 0  1140              SLCA  1  0                                    P7090041
0017 01 6D000071          STX   L1 SAVE1                                P7090042
0019 0  C2F7              LD    2  K4-R                                 P7090043
001A 0  92EF              S     2  SAVE1-R                              P7090044
001B 0  D015              STO      TPNR                                 P7090045
001C 0  C205              LD    2  CARD+5-R                             P7090046
001D 0  F2F0              EOR   2  MASK1-R                              P7090047
001E 01 4C200022          BSC   L  A5,Z                                P7090048
0020 0  C2F3              LD    2  CON1-R                               P7090049
0021 0  7009              MDX      A7                                   P7090050
0022 0  F2F1        A5    EOR   2  MASK2-R                              P7090051
0023 01 4C200027          BSC   L  A6,Z                                P7090052
0025 0  C2F4              LD    2  CON2-R                               P7090053
0026 0  7004              MDX      A7                                   P7090054
0027 0  F2F2        A6    EOR   2  MASK3-R                              P7090055
0028 01 4C20000D          BSC   L  A2,Z                                P7090056
002A 0  C2F4              LD    2  CON2-R                               P7090057
002B 0  E805        A7    OR       TPNR                                 P7090058
```

TAPE TO PLOT PROGRAM   P7090                                    PAGE    2

```
002C  0   EAF6                  OR    2  CON4-R                    P7090059
002D  0   D003                  STO      TPNR                      P7090060
                        *                                         P7090061
                        *       END OF READING TAPE CARD, READ MAG. TAPE  P7090062
                        *                                         P7090063
002E  0   1010          A8      SLA      16                        P7090064
002F  0   D2FD                  STO   2  LNGTH-R                   P7090065
0030  20  140478C0              LIBF     MAGT                      P7090066
0031  0   0000          TPNR    DC       *-*                       P7090067
0032  1   00D3                  DC       AREA                      P7090068
0033  1   006B                  DC       USER                      P7090069
0034  20  140478C0              LIBF     MAGT                      P7090070
0035  0   0000                  DC       0                         P7090071
0036  0   70FD                  MDX      *-3                       P7090072
0037  01  7400007C              MDX   L  EOFSW,0                   P7090073
0039  0   7024                  MDX      EOF                       P7090074
003A  00  6500FD02              LDX   L1 -766                      P7090075
003C  0   7101          A12     MDX   1  1                         P7090076
003D  0   7001                  MDX      *+1                       P7090077
003E  0   70EF                  MDX      A8                        P7090078
003F  01  6D000071              STX   L1 SAVE1                     P7090079
0041  0   C2EF                  LD    2  SAVE1-R                   P7090080
0042  0   B2FD                  CMP   2  LNGTH-R                   P7090081
0043  0   70EA                  MDX      A8                        P7090082
0044  0   7001                  MDX      A13                       P7090083
0045  0   70E8                  MDX      A8                        P7090084
0046  0   1010          A13     SLA      16                        P7090085
0047  0   D2F8                  STO   2  SWITC-R                   P7090086
0048  01  C50003D4              LD    L1 AREA+769                  P7090087
004A  0   1888                  SRT      8                         P7090088
004B  0   B2F9          A135    CMP   2  P082-R                    P7090089
004C  0   7002                  MDX      A14                       P7090090
004D  0   7001                  MDX      A14                       P7090091
004E  0   7007                  MDX      A17                       P7090092
004F  0   B2FF          A14     CMP   2  X000A-R                   P7090093
0050  0   7002                  MDX      A15                       P7090094
0051  0   7001                  MDX      A15                       P7090095
0052  0   1010                  SLA      16                        P7090096
0053  0   D001          A15     STO      A16                       P7090097
0054  20  174D68E7              LIBF     PLOTX                     P7090098
0055  0   0000          A16     DC       *-*                       P7090099
0056  01  7400007A      A17     MDX   L  SWITC,0                   P7090100
0058  0   70E3                  MDX      A12                       P7090101
0059  01  6C00007A              STX   L  SWITC                     P7090102
005B  0   1010                  SLA      16                        P7090103
005C  0   1088                  SLT      8                         P7090104
005D  0   70ED                  MDX      A135                      P7090105
                        *                                         P7090106
                        *       END  OF FILE INPUT TAPE            P7090107
                        *                                         P7090108
005E  20  176558D5      EOF     LIBF     PRNTN                     P7090109
005F  0   3D00                  DC       /3D00                     P7090110
0060  20  176558D5              LIBF     PRNTN                     P7090111
0061  0   2100                  DC       /2100                     P7090112
0062  1   03D4                  DC       MES1-1                    P7090113
0063  0   0000                  DC       0                         P7090114
0064  20  176558D5              LIBF     PRNTN                     P7090115
```

```
0065 0  3D00               DC       /3D00                          P7090116
0066 20 17064885           LIBF     PAUSE                          P7090117
0067 1  0003               DC       A1-1                           P7090118
0068 0  1010               SLA      16                             P7090119
0069 0  D2FA               STO    2 EOFSW-R                        P7090120
006A 0  70C3               MDX      A8                             P7090121
                       *                                           P7090122
006B 0  0000       USER    DC       0                              P7090123
006C 30 24885640           CALL     USER                           P7090124
006E 1  007C               DC       EOFSW                          P7090125
006F 01 4C80006B           BSC    I USER                           P7090126
                       *                                           P7090127
                       *          CONSTANTS AND WORKAREAS          P7090128
                       *                                           P7090129
0071 0  0000       SAVE1   DC       0                              P7090130
0072 0  0800       MASK1   DC       /0800                          P7090131
0073 0  0900       MASK2   DC       /0900                          P7090132
0074 0  0120       MASK3   DC       /0120                          P7090133
0075 0  0050       CON1    DC       /0050                          P7090134
0076 0  0060       CON2    DC       /0060                          P7090135
0077 0  0040       CON3    DC       /0040                          P7090136
0078 0  1000       CON4    DC       /1000                          P7090137
0079 0  0004       K4      DC       4                              P7090138
007A 0  0000       SWITC   DC       0                              P7090139
007B 0  001A       PO82    DC       /001A                          P7090140
007C 0  0000       EOFSW   DC       0                              P7090141
007D 0  0000       ERRSW   DC       *-*                            P7090142
007E 0  0000       TOLSW   DC       0                              P7090143
007F 0  0000       LNGTH   DC       0                              P7090144
0080 0  4220       AST     DC       /4220                          P7090145
0081 0  000A       X000A   DC       /000A                          P7090146
0082 0  0050       CARD    DC       80                             P7090147
0083    0050               BSS      80                             P7090148
00D3 0  0300       AREA    DC       768                            P7090149
00D4    0300               BSS      768                            P7090150
03D4 0  0007               DC       MES2-MES1                      P7090151
03D5    000E       MES1    DMES   1 '2XEND OF FILE.'E              P7090152
03DC    0000       MES2    BSS      0                              P7090153
03DC 0  0015               DC       MES4-MES3                      P7090154
03DD    0023       MES3    DMES   1 '2XERROR INPUT CARD. CORRECT AND CON'  P7090155
03EE    0007               DMES   1 TINUE.'E                       P7090156
03F2    0000       MES4    BSS      0                              P7090157
0082               R       EQU      CARD                           P7090158
03F2   ·0000               END      START                         P7090159
```

        NO ERRORS IN ABOVE ASSEMBLY.
P7090
DUP FUNCTION COMPLETED

PLOT TRANSLATION PROGRAM  T7090                          PAGE   1

```
                    ************************************************  T7090002
                    *       IBM 1800 PERIPHERAL EQUIPMENT PROGRAMS         *  T7090003
                    ************************************************  T7090004
                    *                                                      *  T7090005
                    *       PLOT TRANSLATIONPROGRAM   T7090                 *  T7090006
                    *                                                      *  T7090007
                    *       THE PROGRAM PERFORMS THE PLOTTER TAPE TRANS-*  T7090008
                    *       LATION FROM CETIS CODE INTO BCMN GEEL CODE.  *  T7090009
                    *                                                      *  T7090010
                    *       CONTROL CARDS                                   *  T7090011
                    *       1. CARD                                         *  T7090012
                    *       CC    1,2    **                                 *  T7090013
                    *       CC    3      INPUT TAPE UNIT NUMBER (0,1,2,3)  *  T7090014
                    *       CC    5-7    DENSITY (200,556 OR 800)          *  T7090015
                    *       2. CARD                                         *  T7090016
                    *       CC    1,2    **                                 *  T7090017
                    *       CC    3      OUTPUT TAPE UNIT NUMBER (0,1,2,3) *  T7090018
                    *                                                      *  T7090019
                    *       THE OUTPUT TAPE HAS ALWAYS DENSITY 800 BPI.  *  T7090020
                    *                                                      *  T7090021
                    ************************************************  T7090022
                    *                                         EURATOM GEEL  T7090023
                    *                                                         T7090024
0000 01 660000D0   START LDX   L2 R                                          T7090025
0002 0  61FE             LDX    1 -2                                         T7090026
0003 20 03059115   A0    LIBF     CARDN                                      T7090027
0004 0  1000          ·  DC       /1000                                      T7090028
0005 1  00D0             DC       CARD                                       T7090029
0006 0  0000             DC       0                                          T7090030
0007 20 03059115         LIBF     CARDN                                      T7090031
0008 0  0000             DC       0                                          T7090032
0009 0  70FD             MDX      *-3                                        T7090033
                    *                                                        T7090034
000A 0  C201             LD     2 CARD+1-R                                   T7090035
000B 0  92FC             S      2 AST-R                                      T7090036
000C 01 4C180015         BSC   L  A3,+-                                      T7090037
000E 20 176558D5   A2    LIBF     PRNTN                                      T7090038
000F 0  2100             DC       /2100                                      T7090039
0010 1  0510             DC       MES1-1                                     T7090040
0011 0  0000       SAVE  DC       0                                          T7090041
0012 20 17064885         LIBF     PAUSE                                      T7090042
0013 0  0000             DC       0                                          T7090043
0014 0  70EB             MDX      START                                      T7090044
                    *                                                        T7090045
0015 0  C203       A3    LD     2 CARD+3-R                                   T7090046
0016 0  6206             LDX    2 6                                          T7090047
0017 0  1240             SLCA   2 0                                          T7090048
0018 0  6AF8             STX    2 SAVE                                       T7090049
0019 01 660000D0         LDX   L2 R                                          T7090050
001B 0  C2F1             LD     2 K4-R                                       T7090051
001C 0  90F4             S        SAVE                                       T7090052
001D 01 D50000CC         STO   L1 CONST+2                                    T7090053
001F 0  C205             LD     2 CARD+5-R                                   T7090054
0020 0  F2E9             EOR    2 MASK1-R                                    T7090055
0021 01 4C200025         BSC   L  A4,Z                                       T7090056
0023 0  C2EB             LD     2 CON1-R                                     T7090057
0024 0  7006             MDX      A6                                         T7090058
```

PLOT TRANSLATION PROGRAM   T7090

```
0025  0   F2EA           A4      EOR    2 MASK2-R                   T7090059
0026  01  4C20002A               BSC  L  A5,Z                      T7090060
0028  0   C2EC                   LD     2 CON2-R                    T7090061
0029  0   7001                   MDX      A6                        T7090062
002A  0   C2ED           A5      LD     2 CON3-R                    T7090063
002B  01  ED0000CC       A6      OR   L1 CONST+2                    T7090064
002D  01  D50000CC               STO  L1 CONST+2                    T7090065
002F  0   7101                   MDX    1 1                         T7090066
0030  0   70D2                   MDX      A0                        T7090067
                                                                    T7090068
                        *
                        *       END READING TAPE CARDS              T7090069
                        *                                           T7090070
0031  0   C2FA                   LD     2 CONST-R                   T7090071
0032  0   EAEE                   OR     2 CON4-R                    T7090072
0033  0   D00B                   STO      A9                        T7090073
0034  0   C2FB                   LD     2 CONST+1-R                 T7090074
0035  0   EAEF                   OR     2 CON5-R                    T7090075
0036  0   D06D                   STO      A18                       T7090076
0037  0   C2FB                   LD     2 CONST+1-R                 T7090077
0038  0   EAF0                   OR     2 CON6-R                    T7090078
0039  0   D048                   STO      A16                       T7090079
003A  00  6500FEC1       A7      LDX  L1 -319                       T7090080
003C  0   10A0                   SLT      32                        T7090081
003D  0   DAFE                   STD    2 AREA2+1-R                 T7090082
                        *                                           T7090083
                        *       READ MAGNETIC TAPE                  T7090084
                        *                                           T7090085
003E  20  140478C0       A8      LIBF     MAGT                      T7090086
003F  0   0000           A9      DC       *-*                       T7090087
0040  1   020F                   DC       AREA1                     T7090088
0041  1   00B3                   DC       USER                      T7090089
0042  20  140478C0               LIBF     MAGT                      T7090090
0043  0   0000                   DC       0                         T7090091
0044  0   70FD                   MDX      *-3                       T7090092
0045  01  740000C6               MDX  L   EOFSW,0                   T7090093
0047  0   7036                   MDX      EOF                       T7090094
                        *                                           T7090095
                        *       BEGIN LOOP ON INPUT AREA            T7090096
                        *                                           T7090097
0048  00  6600FD02               LDX  L2 -766                       T7090098
004A  0   7201           A10     MDX    2 1                         T7090099
004B  0   7001                   MDX      A11                       T7090100
004C  0   70F1                   MDX      A8                        T7090101
004D  0   6AC3           A11     STX    2 SAVE                      T7090102
004E  0   C0C2                   LD       SAVE                      T7090103
004F  0   B079                   CMP      LNGTH                     T7090104
0050  0   7007                   MDX      A12                       T7090105
0051  0   7006                   MDX      A12                       T7090106
0052  0   C06D                   LD       X8000                     T7090107
0053  0   D07A                   STO      AREA2+1                   T7090108
0054  0   4038                   BSI      OUTPT                     T7090109
0055  0   1010                   SLA      16                        T7090110
0056  0   D072                   STO      LNGTH                     T7090111
0057  0   70E6                   MDX      A8                        T7090112
                        *                                           T7090113
0058  01  C6000510       A12     LD   L2 AREA1+769                  T7090114
005A  0   1888                   SRT      8                         T7090115
```

```
005B  0   1008              SLA      8                    T7090116
005C  0   1888              SRT      8                    T7090117
005D  0   D86C              STD      SAVEA                T7090118
005E  0   4003              BSI      TRANS                T7090119
005F  0   C06B              LD       SAVEB                T7090120
0060  0   4001              BSI      TRANS                T7090121
0061  0   70E8              MDX      A10                  T7090122
                     *                                    T7090123
                     *                                    T7090124
0062  0   0000     TRANS DC         0                     T7090125
0063  0   B061              CMP      P082                 T7090126
0064  0   7002              MDX      A13                  T7090127
0065  0   7001              MDX      A13                  T7090128
0066  0   7015              MDX      A15                  T7090129
0067  00  67000010  A13   LDX   L3  16                   T7090130
0069  0   73FC              MDX   3  -4                   T7090131
006A  0   1300              SLA   3  0                    T7090132
006B  01  ED00020E          OR    L1 AREA2+321           T7090133
006D  01  D500020E          STO   L1 AREA2+321           T7090134
006F  0   7300              MDX   3  0                    T7090135
0070  0   7008              MDX      A14                  T7090136
0071  0   6310              LDX   3  16                   T7090137
0072  0   1010              SLA      16                   T7090138
0073  01  D500020F          STO   L1 AREA2+322           T7090139
0075  0   7101              MDX   1  1                    T7090140
0076  0   7002              MDX      A14                  T7090141
0077  0   4015              BSI      OUTPT                T7090142
0078  0   7003              MDX      A15                  T7090143
0079  0   6BEE     A14   STX   3  A13+1                T7090144
007A  00  67800067          LDX   I3 TVLOC               T7090145
007C  01  4C800062  A15   BSC   I  TRANS                T7090146
                     *                                    T7090147
007E  0   C041     EOF   LD       X8000                T7090148
007F  0   D04E              STO      AREA2+1              T7090149
0080  0   400C              BSI      OUTPT                T7090150
0081  20  140478C0          LIBF     MAGT                 T7090151
0082  0   0000     A16   DC       *-*                  T7090152
0083  0   1010              SLA      16                   T7090153
0084  0   D041              STO      EOFSW                T7090154
0085  20  176558D5          LIBF     PRNTN                T7090155
0086  0   2100              DC       /2100                T7090156
0087  1   0520              DC       MES3-1               T7090157
0088  0   0000              DC       0                    T7090158
0089  20  17064885          LIBF     PAUSE                T7090159
008A  0   0000     SAVE1 DC       0                    T7090160
008B  01  4C00003A          BSC   L  A7                   T7090161
                     *                                    T7090162
008D  0   0000     OUTPT DC       0                    T7090163
008E  01  C500020E          LD    L1 AREA2+321           T7090164
0090  0   4818              BSC      +-                   T7090165
0091  0   71FF              MDX   1  -1                   T7090166
0092  0   1000              NOP                           T7090167
0093  0   69F6              STX   1  SAVE1                T7090168
0094  0   C0F5              LD       SAVE1                T7090169
0095  0   802E              A        K320                 T7090170
0096  0   D0F3              STO      SAVE1                T7090171
0097  0   E836              OR       AREA2+1              T7090172
```

```
0098 0  D035              STO      AREA2+1                              T7090173
0099 0  C0F0              LD       SAVE1                                T7090174
009A 0  9027              S        K9                                   T7090175
009B 0  4828              BSC      +Z                                   T7090176
009C 0  1010              SLA      16                                   T7090177
009D 0  8025              A        K10                                  T7090178
009E 0  D02E              STO      AREA2                                T7090179
009F 0  6310              LDX    3 16                                   T7090180
00A0 0  6BC7              STX    3 A13+1                                T7090181
00A1 00 67800067          LDX   13 TVLOC                                T7090182
00A3 20 140478C0          LIBF     MAGT                                 T7090183
00A4 0  0000      A18     DC       *-*                                  T7090184
00A5 1  00CD              DC       AREA2                                T7090185
00A6 1  00B0              DC       USER1                                T7090186
00A7 20 140478C0          LIBF     MAGT                                 T7090187
00A8 0  0000              DC       0                                    T7090188
00A9 0  70FD              MDX      *-3                                  T7090189
00AA 0  10A0              SLT      32                                   T7090190
00AB 0  D822              STD      AREA2+1                              T7090191
00AC 00 6500FEC1          LDX   L1 -319                                 T7090192
00AE 01 4C80008D          BSC    I OUTPT                                T7090193
         *                                                              T7090194
00B0 0  0000      USER1   DC       0                                    T7090195
00B1 01 4C8000B0          BSC    I USER1                                T7090196
         *                                                              T7090197
00B3 0  0000      USER    DC       0                                    T7090198
00B4 30 24885640          CALL     USER                                 T7090199
00B6 1  00C6              DC       EOFSW                                T7090200
00B7 01 4C8000B3          BSC    I USER                                 T7090201
         *                                                              T7090202
         *        CONSTANTS AND WORKAREAS                               T7090203
         *                                                              T7090204
00B9 0  0800      MASK1   DC       /0800                                T7090205
00BA 0  0900      MASK2   DC       /0900                                T7090206
00BB 0  0050      CON1    DC       /0050                                T7090207
00BC 0  0060      CON2    DC       /0060                                T7090208
00BD 0  0040      CON3    DC       /0040                                T7090209
00BE 0  1000      CON4    DC       /1000                                T7090210
00BF 0  3000      CON5    DC       /3000                                T7090211
00C0 0  8000      CON6    DC       /8000                                T7090212
00C1 0  0004      K4      DC       4                                    T7090213
00C2 0  0009      K9      DC       9                                    T7090214
00C3 0  000A      K10     DC       10                                   T7090215
00C4 0  0140      K320    DC       320                                  T7090216
00C0             X8000   EQU      CON6                                  T7090217
00C5 0  001A      P082    DC       /001A                                T7090218
00C6 0  0000      EOFSW   DC       0                                    T7090219
00C7 0  0000      ERRSW   DC       0                                    T7090220
00C8 0  0000      TOLSW   DC       0                                    T7090221
00C9 0  0000      LNGTH   DC       0                                    T7090222
00CA    0000              BSS    E 0                                    T7090223
00CA 0  0000      SAVEA   DC       0                                    T7090224
00CB 0  0000      SAVEB   DC       0                                    T7090225
00CC 0  4220      AST     DC       /4220                                T7090226
00CD 0  0140      AREA2   DC       320                                  T7090227
00CE 00 00000000          DEC      0                                    T7090228
00D0 0  0050      CARD    DC       80                                   T7090229
```

PLOT TRANSLATION PROGRAM   T7090                    PAGE   5

```
00D1      013E              BSS   321-3                                    T7090230
020F  0   0300     AREA1 DC       768                                      T7090231
0210      0300              BSS   768                                      T7090232
0510  0   000F              DC    MES2-MES1                                T7090233
0511      001E     MES1  DMES  1 ERROR INPUT CARD. START AGAIN.'E          T7090234
0520      0000     MES2  BSS   0                                           T7090235
0520  0   001C              DC    MES4-MES3                                T7090236
0521      0024     MES3  DMES  1 END OF FILE INPUT TAPE. PRESS START       T7090237
0533      0014              DMES  1 OR CONSOL INTERRUPT.'E                 T7090238
053D      0000     MES4  BSS   0                                           T7090239
00CA               CONST EQU   SAVEA                                       T7090240
00D0               R     EQU   CARD                                        T7090241
0067               TVLOC EQU   103                                        T7090242
053E      0000              END   START                                    T7090243
```

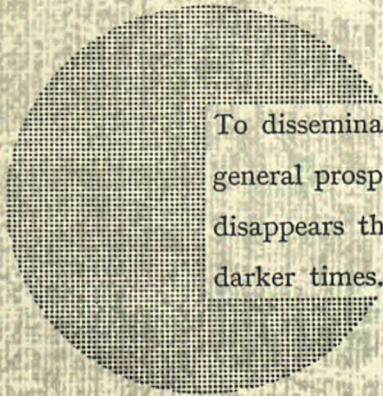        NO ERRORS IN ABOVE ASSEMBLY.
T7090
DUP FUNCTION COMPLETED

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Alfred Nobel

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