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B1000 SYSTEM/BUILDTRAIN

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
C	2/9/82	RGhode	Changes for the Mark 11.0 Release Changed periods to underscores throughout document. 1-1 Deleted "(SPO)" from "Translate tables..." paragraph. 3-1 Added "THAI144" and "ASCII96" to standard tables list.

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B1800/B1700 SYSTEM/BUILDTRAIN

PRODUCT SPECIFICATION

REV LTR	REVISION ISSUE DATE	APPROVED BY	REVISIONS
A	3/14/78		Original issue - Software Release Level Mark 7.0.
B	5/12/78		Mark 8.0 Release

Page	Change
3-1	ID Number 002 was FORTRAN48, now FORTRAN48. NONSTD. Added Id Number 036: FORTRAN 48 for 1100/1500 LPM TRAIN PRINTER
3-2	ID Number 130 was FORTRAN48, now FORTRAN48. NONSTD. Added ID Number 130 for FORTRAN48 to 400/750 LPM TRAIN PRINTER

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GENERAL DESCRIPTION

SYSTEM/BUILDTRAIN is a system utility program that creates the translate tables used by the B1247-4 automatic Train Printer Control. The control is called "automatic" because it can recognize, by name or by number, the proper translate table to be loaded by reading an identification directly from the train. The program, basically, generates all the translate tables required by the system and performs additional functions that are controlled by its program switches.

Translate tables generated by the program are loaded into the B1247-4 control through the LT message, according to the syntax discussed in the OPERATING INSTRUCTIONS subsection. Users with non-automatic printer controls should refer to the LT message in the Software Operational Guide for information on how to load translate tables for those types of printer controls.

The B1247-4 Train Printer Control is identified by a device id of 03E0 in the system ELOG listing.

RELATED DOCUMENTATION

Name	Number
B1800/B1700 MCP II	P. S. 2212 5462
B1700 Printer Controls	P. S. 2208 3018
B1800/B1700 Software Operational Guide	1068731

OPERATING INSTRUCTIONS

SYSTEM/BUILDTRAIN expects its input file to be labeled INPUT/PCS_TABLES and to be located on system disk. The format of the input records must conform to that described in INPUT RECORD FORMAT below. The tables which it generates are output into a file called SYSTEM/TRAINTABLE, located on system disk.

When executed, the program produces, by default, the SYSTEM-/TRAINTABLE file and lists its contents. However, the program contains other options that are controlled by program switches one, three, and four (SW1, SW3, SW4).

When all its program switches are set to zero, SYSTEM/BUILDTRAIN generates a new SYSTEM/TRAINTABLE file and lists the contents of the generated tables.

If SYSTEM/BUILDTRAIN is executed with switch 1 set to one, a summary listing of the current SYSTEM/TRAINTABLE file is printed. The following control instruction causes only a summary listing of the current SYSTEM/TRAINTABLE file to be produced:

```
EXECUTE SYSTEM/BUILDTRAIN SW1=1
```

During a "generate" run (SW1=0), program switch three can be set to one (SW3=1) in order to list the input file; and, if switch 4 is set to one, the input file is punched onto cards. This is shown by the following execute statement:

```
EXECUTE SYSTEM/BUILDTRAIN SW3=1, SW4=1
```

INPUT RECORD FORMAT

The input file for a "generate" run is expected to be labeled INPUT/PCS_TABLES, as stated earlier. If it is necessary to designate a different file-identifier or hardware device for the input records, the following FILE statement may be used:

```
? EXECUTE SYSTEM/BUILDTRAIN
? FILE INPUT NAME = <file-identifier> <device>;
```

For each translate table to be included in SYSTEM/TRAINTABLE, a set of sixteen (16) input records is required. The format of each of these records is as follows:

COLUMN	DESCRIPTION
1-20	Train name
22-24	Train ID number
26-28	Character set size
30-31	Printer type (00=400/750 LPM, 01=1100/1500 LPM)
33-64	Link positions specified in hexadecimal (16 per record)

66-67 Sequence number (01-16)
70-80 Optional date (format: 01 JAN 1977)

The train name may be any identification desired. The train id number must be the identification generated by the train module for 1100-1500 LPM printers (all less than 128). For 400/750 LPM printers, the train id number may be any value desired greater than 127 and less than 256.

Each link position consists of two hexadecimal characters that describe the character (graphic) location on the printer train module for that EBCDIC value. Thus, record #01 in a set of sixteen input records gives the link positions for EBCDIC characters @00@ through @0F@, record #02 gives the link positions for EBCDIC characters @10@ through @1F@, and so forth.

Link positions equal to or greater than 128 (@80@) are used to specify unprintable characters. If an internal EBCDIC character translates to a link position equal to or greater than 128 (@80@), an INVALID.CHARACTER exception result descriptor is returned from the print operation. The actual graphic printed is the link position specified minus 128. For example, on the 96-character EBCDIC train module (1100-1500 LPM printer) the INVALID.CHARACTER link position is specified as 145 (@91@). This causes the exception result descriptor to be returned from the print operation and the graphic at link position 17 (@11@ or @91@ - @80@) to be printed (link position 17 (@11@) is the "?" graphic).

It is thus possible to specify a different graphic for printing as the INVALID.CHARACTER by changing the link position to that of the graphic desired plus 128 (@80@). For examole, to print a blank for the INVALID.CHARACTER on the 96-character EBCDIC train module, a link position of 128 may be substituted for every occurrence of the @91@ link position in the input record set.

If the resulting link position is greater than the number of characters on the train printer module (character set size), a PRINT CHECK exception result descriptor is returned from the print operation. On a 96-character EBCDIC print module, link positions 97 through 112 (@61@ through @73@) and 225 through 255 (@E1@ through @FF) result in a PRINT CHECK exception.

STANDARD TRANSLATE TABLES

A set of "standard" printer translate tables is supplied with SYSTEM/BUILDTRAIN in a disk file labeled "INPUT/PCS_TABLES". SYSTEM/TRAINTABLE may be generated from these standard tables directly by simply executing SYSTEM/BUILDTRAIN, or they may be modified to suit individual installation requirements.

The standard tables supplied are as follows:

1100/1500 LPM TRAIN PRINTER

Train Name	ID Number	Description
EBCDIC18	001	18-character EBCDIC
FORTRAN48_NONSTD	002	48-character FORTRAN
B300_B50048	003	48-character B300/B500
EBCDIC48	004	48-character EBCDIC
EBCDIC72	005	72-character EBCDIC
UKB3500_72	006	72-character United Kingdom Subset
UKB6500_72	007	72-character United Kingdom Subset
PORTUGAL_72	008	72-character Portuguese Subset
SPAIN_72	009	72-character Spanish Subset
FINLAND_72	010	72-character Finnish Subset
DENMARK_72	011	72-character Danish Subset
BCL72	012	72-character BCL
TURKEY_72	013	72-character Turkish Subset
SWEDEN_72	014	72-character Swedish Subset
ASCII72	015	72-character ASCII
EBCDIC96	016	96-character EBCDIC
EBCDIC96_UPPER_CASE	016	96-character EBCDIC
EBCDIC96_UPPER_CASEB	016	96-character EBCDIC
EBCDIC96_LOWER_CASE	016	96-character EBCDIC
EBCDIC96_LOWER_CASEB	016	96-character EBCDIC
KATAKANA	017	96-character Katakana Subset
EBCDIC_A72	018	72-character Alphabetized EBCDIC
EBCDIC_N72	019	72-character Numericized EBCDIC
RPG48	020	48-character RPG
OCR_A72	021	72-character OCR-A
OCR_B72	022	72-character OCR-B
FORTRAN48	036	48-character FORTRAN
THAI144	052	144-character Special Thai train
ASCII96	055	96-character ASCII

The five versions of the 96-character EBCDIC translate table are presented as examples of the way that specific tables can be generated and tailored to individual requirements. EBCDIC96 is the standard 96-character EBCDIC tranlator, having both upper and lower case graphics. It prints the "?" graphic for the INVALID.CHARACTER. EBCDIC96_UPPER_CASE and EBCDIC96_LOWER_CASE also print the "?" graphic for the INVALID.CHARACTER; however, EBCDIC96_UPPER_CASE prints all lower-case characters as their upper-case equivalents and EBCDIC96_LOWER_CASE prints all upper-

case characters as their lower-case equivalents. EBCDIC96_UPPER_CASEB and EBCDIC96_LOWER_CASEB function in a similar manner; however, they both print the space graphic (" ") for the INVALID.CHARACTER.

Multiple translate tables with the same train ID number (but unique train names) may be contained in the same SYSTEM/TRAINTABLE file. The most commonly used version should be the first one specified in the input file; it is the table loaded automatically by the MCP when the printer first goes "ready" following a Clear/Start.

A specific version of such multiple translate tables may be designated by using the train ID name in the LT message. For example,

```
LT LPA EBCDIC96_UPPER_CASEB
```

Such a translate table will remain loaded until the next CLEAR/START or until explicitly changed by another LT message.

Note: It is not possible to designate a translate table for the 1100/1500 LPM printers where the train ID number does not match the identification number contained in the train module.

400-750 LPM TRAIN PRINTER

TRAIN NAME	ID NUMBER	DESCRIPTION
FORTRAN48	130	48-character FORTRAN
FORTRAN48_NONSTD	130	48-character FORTRAN
B300_B500_48	131	48-character B300/B500
EBCDIC3_48	132	48-character EBCDIC-3
RPG48	140	48-character RPG
EBCDIC96	144	96-character EBCDIC
KATAKANA	145	96-character Katakana Subset
EBCDIC3_16	254	16-character EBCDIC-3
EBCDIC3_64	255	64-character EBCDIC-3

The 400-750 LPM train printers do not have automatic train identification, and the proper translate table must be explicitly specified with the LT message.

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ERROR MESSAGES

SYSTEM/BUILDTRAIN recognizes several situations as errors. It generates an error message which is written on the printer, forces a memory dump and goes to end-of-job. The output is formatted below:

```
<last input record> ***** LAST INPUT RECORD.
     *****  F A T A L  E R R O R  *****
```

The following errors are possible:

1. NON HEXADECIMAL CHARACTER IN TRANSLATE TABLE
2. LESS THAN 16 RECORDS FOR TRANSLATE TABLE
3. INPUT RECORD OUT OF SEQUENCE
4. IDENTIFICATION MISMATCH

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