Command	Description

136 HORZCHAR c<1>

Set character c just as above, but don't change the current value of the H-coordinate (or V-coordinate, either).

137 FONT f<4>

From now on, set characters from font number f. Note that this command is not currently used by TEX—it is only needed if f is greater than 63. See FONTNUM commands below.

144 X2 m<2>

Move right m rsu's by adding m to the H-coordinate, and put m into the current x-amount. Note that m is in 2s complement, so this could actually be a move to the left.

143 X3 m<3>

As above.

142 X4 m<4>

As above.

145 X0   Move right the current x-amount (which can be negative, etc).

140 W2 m<2>

The same as the X commands (i.e. alters H-coordinate), but alter w-amount rather than x-amount, so that doing a W0 command can have different results than doing an X0 command.

139 W3 m<3>

As above.

138 W4 m<4>

As above.

141 W0   Move right the current w-amount.

148 Y2 n<2>

Same idea, but now it's "down" rather than "right", so the V-coordinate changes, as does the y-amount.

147 Y3 n<3>

As above.

146 Y4 n<4>

As above.

149 Y0   Guess.

152 Z2 m<2>

Another downer.   Affects the V-coordinate and z-amount.

151 Z3 m<3>

150 Z4 m<4>

153 Z0   Guess again.

154 to 217 FONTNUM's

Make 0, 1, ..., 63 the current font.

218 to 255 are currently undefined

and will not be output by TEX.

Pages need not be sequential by number, but any blank or non-existent page might not be represented, so page —5's pointer to the "previous page" might point to page 34, for instance (remember that TEX uses negative numbers for roman-numbered pages). The first page in the file has a "previous page" pointer of —1.

The postamble begins with a PST command, followed by four bytes of previous-page pointer to the last real page, followed by four bytes of the height of the tallest page (in rsu's), followed by four bytes of the width of the widest. Next come some Font Definitions (maybe none, if you're an authoritarian), each of which has a Font ID in the first 4 bytes, followed by 4 bytes of Font Number, followed by any character not in the font name, followed by the Font Name, one character per byte for as many bytes as necessary, followed by that same character that was not in the Font Name (a quote is probably a good choice for such a character). The end of the font definitions is marked by an ID of —1 (which will not be followed by font number, etc). The four bytes following this phony ID are a pointer to the PST command (i.e. the begining of the postamble), which is followed by a zero byte, which is followed by at least 4 bytes containing the number 223_{10} (which is '337 octal). The reason for some of the above weirdness is twofold: We are producing DVI files with a Pascal program, and to avoid doing any non-serial I/O, the postamble pointer has to go at the end of the file. Of course, most programs that read these files need not be generally transportable, and can do a random seek to the end of the file, and then another to get right to the postamble. The fact that page-pointers point backwards is in the same spirit, but this also allows the file to be read in backwards-page-order efficiently. This, in turn, will allow for further efficiencies in communicating with your device, depending on how clever it (and you) is (are).

Stanford University   July 10, 1980.

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UNIVERSITY OF MINNESOTA
CDC SITE REPORT
Thea Hodge

We have succeeded in compiling TEX-in-PASCAL on our Cyber 172 but cannot yet run it. TEXPRE, which should generate the required table file, has some problem relative to our system. Michael Frisch, our manager of user libraries and graphics software, is working on that. We are awaiting

the font tables promised to us by I. J. Zabala of Stanford.

Luis and his staff have broken TₑX into parts so that it is easier to compile, although the binary will still be very large, I believe. The parts are:

1. the system-dependent user library,
2. the rest of the TₑX program,
3. tables and font files.

We are working on the input and output from several different points.

A. We have upgraded a Decwriter II (LA36) with a SELANAR Graphics II circuit board which allows us to have 4 character sets online at a time—standard, APL, Math-Greek as defined by SELANAR Corp., and any set we wish to down-load from a Cyber or from a Terak. We have encountered a few difficulties in the Terak-Decwriter interaction and will continue to work on these.

B. Presently, we can produce text with special characters as follows: enter and edit the text on a Terak (176 characters online and displayable on the screen), send the file asynchronously to a Cyber for formatting with Purdue's TXTFORM, send back the file for re-editing on the Terak, return final version to the Cyber where TXTPLOT generates the codes to produce medium-quality hard copy on the Varian printer-plotter (200 dots/inch). We are also working on a program in CDC Fortran 77 to translate a TROFF or TₑX output file for the Varian.

C. We are working in the University's printing department, driving the Mergenthaler Linotron 202 with a Terak microcomputer. We have with partial success typeset a page of a textbook. We write a TROFF file to an 8-inch floppy on a PDP-11/40 and use this file on a Terak to drive the Linotron.

Throughout this memo I have used "we" as a collective pronoun for all of us involved in this project. In fact, this project is made up of many small projects. The important names are Michael Frisch, Prof. Steven Bruell, Peter Zechmeister, Mark Everett, and Jeffrey Woolsey. I will be happy to forward any questions you may have to the appropriate person.

I would like to hear from all CDC users about what you are doing in text processing. In particular, I want to hear about and would be glad to distribute information about your efforts and achievements in the area of I/O. If you know of other interested people at CDC sites, I would be glad to add their names to my TₑX-related mailing list.

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Warnings & Limitations

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Troubles with Trace, and Other Oddities

One of the options of \trace (manual page 147), $z = 2$, is not available under TOPS-20 (DECSystem 20); if that option is used, input lines are displayed on your terminal, but a carriage return flushes them into oblivion instead of delivering them to TₑX for processing.

Another thing to be careful of is that such commands as \baselineskip, if invoked within an \hbox par, have no effect whatever on the boxed text; they must be given prior to the box command to be effective. This is actually documented (manual page 128, ⟨glueparam⟩⟨glue⟩, and perhaps on other pages), but it is easy to overlook.

Ligatures "ff", "ffi", "ffl", etc. interact with hyphenation in the following manner. Hyphenation never occurs between characters of a ligature in a word, even though such a word ("differential") might legitimately be hyphenated, and in fact might require hyphenation to avoid an overlong line. The solution for an overlong line is to use a discretionary hyphen, \-, but there's a catch: if other changes in the paragraph cause the forcibly hyphenated word to move from the end of a line, neither a hyphen nor a ligature will result (compare: "differential", "differential"), and the discretionary hyphen should be removed for most elegant results.

Barbara Beeton

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Macros

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There are two reports on macro packages in this issue. One appears above: see Michael Spivak's "𝒜ℳ𝒮-TₑX—A Very Friendly Product" under General Delivery. (An order form for the "pre-preliminary" edition of the 𝒜ℳ𝒮-TₑX manual is included in the package with this issue.) The second report, "An Indexing Facility for TₑX", was submitted by Terry Winograd and Bill Paxton, and is attached as Appendix A.