the electric pencil

©1978 Michael Shrayer

for the

TRS-80

THE ELECTRIC PENCIL WORD PROCESSOR

Operator's Manual

Copyright (C) 1978 Michael Shrayer

All Rights Reserved

TABLE OF CONTENTS

Introduction 1
System Hardware Requirements 2
Using This Manual 2
Glossary 3
Tape Loading Instructions 6
In Case of Difficulty 7
Getting Started 8
Commands and Functions 9
Cursor Motion Commands 10
Scrolling and Display Control 10
Delete and Insert 11
Block Movement 12
Enter, Form Feed, Tab and Clear 12
String Search 13
Search and Replace 13
Coded String Searches 13
Repeat Function 14
Sub-System Command Table 15
Tape Reader 15
Tape Writer 16
Tape Verify 16
Word and Record Number 16
Clearing Commands 17
Setting up Print Values 17
Printing 19
Printer Compatibility 19
Titling Pages and Page Numbering 20
Underlining 20
Exit System 20
Lower-Case Modification Instructions. 21
TRS232 Printer Interface 24
Registration Form 25

SOME TRS-80 ELECTRIC PENCIL ZAPS

By Al Domuret

I have been honeymooning with my lovable Electric Pencil for quite some time now, but the little dear has at least two frustrating limitations that I have more or less learned to live with, up until now:

1. PENCIL does not have a "pause at the beginning of a new page" capability for single page printout (as opposed to continuous or fanfold paper). Since I use a Selectric Printer, it is necessary for me to sit by the computer during printout in order to manually stop the printer at the end of a page and insert a new sheet of paper. This time consuming procedure also defeats the automatic page numbering feature of the PENCIL.

2. The space bar which is supposed to effect a pause at the end of a printed line usually does not function properly. The reason is that the space bar repeats when held down just as the other keys do, so the pause is followed by a repeated space bar character input which restarts printout of another line. If the user fails to press and release the space bar at just the right time the pause will either fail or it will occur at the end of the next line which usually is not the intended line for the pause.

The reader is cautioned that the zaps which constitute the major part of the pause-at-beginning-of-page routine will reside in an area of PENCIL that was formerly assigned to code intented to read the sense switches in the Radio Shack RS-232 board (to set baud rate, bits per word, etc.), plus a print routine for serial (RS-232) printer. In other words, it is the area of memory accessed by the "U" command (from PENCIL's K Table) for setting the UART and for serial printing. If the reader is currently using PENCIL to drive a serial printer which depends on the affected PENCIL code, the zaps provided herein will have to be located elsewhere. The affected memory locations used by my zaps are 5888 to 58C1 hex, inclusive. Those of you who use the "Centronics" parallel printer port will have no problems.

The TRS-232 (by Small Systems Software) should operate normally. However, since I don't own one, I can't verify this.

The reason I selected this area for the zaps is that PENCIL's serial printer routine does not have a printer handshake and is therefore not dependable for serial printing above approximately 300 baud. Also, those of you who use serial printers probably use a software driver which "reads" the RS-232 sense switches before the PENCIL is ever called up. I don't know of anyone who relies on the PENCIL's "U" command, so it seemed to provide the ideal memory area needed for my zaps.

Another caution: the K Table "Y" command which provides for a "RCRD NUMBER" count is disabled because the "Y" is used in my zaps to select or de-select the "pause at the beginning of a new page" feature. This selection was made because the RCRD NUMBER count has little or no use for most applications. If the reader needs the RCRD NUMBER count feature, it will be necessary to find another way to select the "pause at the beginning of a new page" feature.

Finally, the user should be aware that the use of the space bar which causes a printer pause at the beginning of a printed line is modified slightly when my zaps are installed. When the space bar is held down, a pause at the beginning of the next printed line is assured, but pressing the space bar again for a subsequent single line printout will not work as it did before. It is necessary to restart the printer by pressing the "ENTER" key. Then if another pause is desired at the beginning of another printed line, press the space bar again and hold it down until the printer again pauses. When the "ENTER" key alone is struck, printing will resume exactly where it left off.

It might help to keep in mind that the space bar pause and break check are performed by PENCIL at the beginning of - not the end or in between - each new line.

The zaps provided herein will not interrupt PENCIL's printer formatting. With the space bar pause functioning as it should, manual underlining with Selectric Printers is easy. The pause at the beginning of a new page permits changing of single sheet printer paper without losing the PENCIL's page numbering feature, and it is not necessary to reset the cursor before restarting the printer for each subsequent page.

ENTER SUPERZAP

For Superzap users, the disk locations for the zaps are provided in the usual Relative Sector/Byte Number format. For example, 14/CC indicates Superzap's relative sector 14 hex, byte CC hex for the zap starting point. Relative sector 14 means the 14th sequential sector, starting the count with zero, one, two and so on.

As usual, make the zaps on a backup copy of PENCIL. It is too easy to make a mistake and clobber the file, but clobbering a backup is no big deal. Just start over again after you have regained your composure.

For DEBUG users, type DEBUG, followed by PENCIL. When PENCIL loads, DEBUG will take control. Use DEBUG to make the zaps in memoryy, then from DOS write PENCIL back to disk with TAPEDISK. Memory start locations for the zaps are provided for those of you who will use this method. When writing PENCIL back to disk, use the start, end and execute addresses for PENCIL as defined in its documentation.

THE ZAPS

1. First, we present the "working" zaps which do the job of activating or deactivating the "pause at the beginning of a new page" when the "Y" key is entered from PENCIL's K Table. This is the area of memory which formerly served PENCIL's "U" function for setting up the UART. At memory 5888 hex (PENCIL activated), or memory 6AD8 hex (PENCIL LOADed from DOS, but not activated), 05/67 (relative sector five, byte 67), change:

```
E5 D5 C5 D3 FB etc. to

CD 4F 65 C3 FF 67 F5 3A 19 40 EE 01 32 19
40 28 0F 3E 55 32 89 58 3E 20 32 6A 3C 32
F9 69 F1 C9 3E 4F 32 89 58 3D 32 6A 3C 32
F9 69 F1 C9 00 F5 (stop).
```

2. Next, we modify the K Table "Y" command Jump Vector. At memory 622A hex (PENCIL either activated or LOADed), 0C/D5, change:

```
CA F9 62 to
CA 8E 58 (stop).
```

3. These zaps cause a jump out of the printer routine to the main set of zaps provided above. At memory 687D hex (PENCIL activated or LOADed), 13/40, change:

```
C2 8E 67 to
C2 88 58 (stop).
```

4. Finally, we change the ASCII characters in the K Table formerly assigned to the "Y" command. The "RCRD NUMBER" capability is lost and is replaced by the new ASCII characters, "xSET PAUSE". The "x" will be either blank (pause set) or an upper case "N" (pause not set). Enter the "Y" key from the K Table to set pause; enter it again to

disable pause. At memory 69F9 hex (either activated or LOADed), 14/C4, change:

00 52 43 52 44 20 4E 55 4D 42 45 52 00 59 to
00 4E 53 45 54 20 50 41 55 53 45 20 00 59 (stop).

5. The last modification (optional) fixes the space bar pause at the beginning of a new line. It can be patched alone or with the above zaps. At memory 6558 hex (either activated or LOADed), 10/0F, change:

FE 20 CB to
00 00 00

That's all there is to it. Hopefully, these zaps will make your PENCIL more lovable than ever.

VARKEEP

VARKEEP will add the following four commands to Level II or Disk BASIC on your TRS-80:

NAME SAVE
NAME DELETE
NAME RESTORE
NAME CLEAR

Using these commands will allow the BASIC programmer to:

★★ Protect the values of all variables from erasure by LOAD, RUN, NEW and CLEAR.

★★ Restore to a program all variables used by a previous program. This provides the ability to easily simulate the powerful CHAIN command found in other BASICs.

★★ Delete variables no longer needed in order to reclaim valuable memory space. This feature allows arrays to be redimensioned.

★★ Change the amount of string space available to a program while it is running WITHOUT losing any variables or a single string.

VARKEEP is written in assembly language, and installed by a BASIC loader program. VARKEEP uses approximately 720 bytes of user RAM and will automatically be relocated by the loader program.

$29.95 on cassette or diskette.

MACHINE LANGUAGE PROGRAMS "BUGGING" YOU??

Debug them -- with C-ALL!!

- GENERAL OPERATION MODE
  machine language tape I/O, user memory and CPU register control, I/O port control, memory operations like fill, block move, and search
- DISASSEMBLY MODE
  dump to screen or screen and printer the assembly language mneumonics for instructions or data of a known format. Includes page formatting and breakpoint control.
- TRACE MODE
  large number of options: default displays four lines of CPU data, trace address, hex code and assembly language mneumonic prior to execution. Delay is 1 second or 1/16 second with shift pressed. Top of CRT displays CPU register and memory data; bottom displays last 7 instructions executed. Optional dump to printer.

C-ALL: JUST $19.95

(Level II or DOS, 32K recommended)

1806 Ada Street
Lansing, MI 48910
517-487-3358
517-485-0344

Add: $2.00/postage, $1.50/COD, 4%/Visa.

TRS-80 ADVENTURES FOR 16K COLOR 80

Extended color or Level II BASIC

ESCAPE FROM MARS – You are stranded on Mars and somewhere in the Martian city are the parts you need to repair your ship. Our best adventure for new adventurers.

TREK ADVENTURE – You will recognize the spaceship this takes place on. The crew has left—for good reason—but they forgot you—and the "Orbit is Decaying." Almost as good as being there.

PYRAMID – Our most advanced and challenging adventure, this takes place in our own special ancient pyramid. The builders were as nasty as pyramid builders usually are, and ransacking this one is a dangerous job.

ADVENTURES are all written in BASIC, all come with listings, and each sells for $14.95.

ARCADE AND THINKING GAMES

16K and extended or level II BASIC

TIME TREK, REAL TIME REAL GRAPHICS TREK. See the torpedoes fly and the Klinsons explode. No more scolling displays, no more turn taking. – This one has real time and real displays. In BASIC – for 16K level II or extended color BASIC. $14.95.

STARFIGHTER – This one man space war game pits you against spacecruisers, battlewagons, and one man fighters. You have the view from your cockpit window, a working instrument panel, and your wits. Another real time goody.

BATTLEFLEET – This grown-up version of Battleship is the toughest thinking game available on 80 computers. There is no luck involved as you seek out the 80's hidden fleet. This is a topographical toughie. $9.95.

SLASHBALL – A two player game of strategy and skill, this is like nothing you have ever seen before. This takes fast fingers, quick wits and concentration. Playable from age 6 to 65, it is a good family game. $9.95.

FREE CATALOG

AARDVARK-80

2352 S. Commerce, Walled Lake, MI 48088

(313) 669-3110

INTRODUCTION

The Electric Pencil is a Character Oriented Word Processing System. This means that text is entered as a continuous string of characters and is manipulated as such. This allows the user enormous freedom and ease in the movement and handling of text. Since lines are not delineated, any number of characters, words, lines or paragraphs may be inserted or deleted anywhere in the text. The entirety of the text shifts and opens up or closes as needed in full view of the user. The typing of carriage returns as well as word hyphenation is not required since each line of text is formatted automatically. As text is typed in and the end of a screen line is reached, a partially completed word is shifted to the beginning of the following line. Whenever text is inserted or deleted, existing text is pushed down or pulled up in a wrap around fashion. Everything appears on the video display screen as it occurs thereby eliminating any guesswork. Text may be reviewed at will by variable speed scrolling both in the forward and reverse directions.

By using the search or the search and replace function, any string of characters may be located and/or replaced with any other string of characters as desired. Specific sets of characters within encoded strings may also be located and used in creating selective mailing lists.

When text is printed, The Electric Pencil automatically inserts carriage returns where they are needed. Numerous combinations of Line Length, Page Length, Character Spacing, Line Spacing and Page Spacing allow for any form to be handled. Right Justification gives right-hand margins that are even. Pages may be numbered as well as titled.

To take full advantage of The Electric Pencil for the TRS-80, the lower case modification kit should be installed in your TRS-80. This modification, described in detail near the end of this manual, allows lower case characters to be entered from the keyboard and displayed on the screen. However, this modification does require opening the case of the computer and will void the warranty. If you prefer not to install this kit, The Electric Pencil will still operate, but with upper case characters only.

The Electric Pencil has been adapted to the TRS-80 by Small System Software of Newbury Park, California.

SYSTEM HARDWARE REQUIREMENTS

The following is a list of the minimum equipment that is required to operate The Electric Pencil Word Processing System:

TRS-80 Level I or Level II Microcomputer
16K of memory (minimum)
Radio Shack Interface Box and Printer, or
Small System Hardware TRS232 Interface and any RS-232 Printer
Lower case modification kit (optional)
Cassette Recorder

USING THIS MANUAL

Knowing full well that instruction manuals can be rather tedious, this one was assembled with ease of application as its main criteria. This text is not intended to be a course but rather a guide to the proper operation of The Electric Pencil Word Processing System. Within a few hours, anyone can certainly start using The Electric Pencil and in less than a few days can be expert at it. It is assumed that the reader is familiar with a standard electric typewriter keyboard.

THE BEST WAY TO LEARN TO OPERATE THIS SYSTEM IS TO USE IT !!!

Trying all the commands and experimenting with different combinations as well as discovering the most efficient ways to do things will really pay off.

GLOSSARY

Any words that may be new to the reader are included in this glossary. Commonly used words that may have a special meaning in the context of word processing are also included. Words that appear within definitions that are also defined in the glossary are capitalized. If any of the text seems vague while reading this manual, simply go back to the last point in the text that was fully understood, read forward to the word that was not fully understood, and look it up. Try it, it works!

BLOCK

Any amount of text as small as one CHARACTER or as large as an entire FILE. A BLOCK may be a WORD or a sentence or a paragraph or a group of paragraphs.

CHARACTER

Any letter, number, punctuation or symbol appearing on the VIDEO DISPLAY SCREEN or keyboard.

CLEAR

The action of erasing or wiping out or deleting text from the face of the VIDEO DISPLAY SCREEN or from the FILE AREA.

COMMAND

A CONTROL CHARACTER or normal letter CHARACTER that is used to tell The Electric Pencil what to do.

CONTROL

A keyboard key that is used together with any letter key to create a CONTROL CHARACTER. Unmodified TRS-80's (upper-case only) use the shift key to create control characters. When the TRS-80 is modified for lower-case entry and display, a separate CONTROL key is added as part of the lower-case modification kit.

CONTROL CHARACTER

A non-printing ASCII character used to tell The Electric Pencil what to do.

CURSOR

A transparent white block which appears on the VIDEO DISPLAY SCREEN and is used to indicate the CHARACTER or space about to be typed, moved, inserted or deleted.

GLOSSARY

DEFAULT VALUE

A PRINT VALUE assumed by The Electric Pencil whenever no value is specified by the user.

DELETE

The process of removing a CHARACTER, a space, a line or a BLOCK of text from the VIDEO DISPLAY SCREEN.

FILE

The entirety of text that has been entered onto the VIDEO DISPLAY SCREEN and subsequently into the memory of The Electric Pencil. All the text resident within the system at any given time is called a FILE.

FILE AREA

The area in memory that has been reserved for the FILE. When The Electric Pencil is first turned on, this area is automatically determined by the system by examining all available contiguous (adjoining) memory and claiming it. Whenever the FILE AREA is full, the message "FILE AREA FULL" will appear on the screen.

FORM FEED

A character entered into the file that will cause the printer to advance to the top of the next page. The character on the screen is the down arrow.

JUSTIFICATION

The process of adjusting spaces within a line of text in order to create an even right-hand margin.

LINE FEED

A character in the file that will terminate a line and cause a new line to begin. The character on the screen is a left arrow and is typed into the file using the ENTER key.

PAGE

Sixteen lines of text appearing on the VIDEO DISPLAY SCREEN. May be any number of lines of text when referring to a printed PAGE.

PAGENATION

The process of automatically numbering pages.

GLOSSARY

PRINTER

An electric typewriter that prints text from The Electric Pencil FILE AREA onto paper.

PRINT VALUE

A value assigned to a printing function by the user or by the system. This value will determine Line Length, PAGE Length, Line Spacing, etc.

READ

The action of moving a FILE from a cassette tape and inserting it into the FILE AREA ("playing" a tape into the computer).

RECORD

Any BLOCK of text that is terminated by an ENTER (ENTER key) or a FORM FEED. A RECORD may be as short as one CHARACTER or as long as the entire FILE. A RECORD is most nearly like a paragraph.

SCROLL

The action of the text moving up or down the VIDEO DISPLAY SCREEN. More than 16 lines of text (one PAGE) must exist in the FILE for this action to occur.

STRING

Any consecutive grouping of letters, spaces, numbers, punctuation or symbols. In this system, a STRING may be anywhere from 1 to 40 characters long.

VIDEO DISPLAY SCREEN

The electronic display unit of the TRS-80. Also called a CRT (Cathode Ray Tube) or monitor or simply screen.

WORD

Any number of characters with at least one space at either end. A WORD may be as short as one CHARACTER or as long as one line.

WRITE

The action of moving text from the FILE AREA and recording it onto cassette tape ("recording" a tape from the computer).

TAPE LOADING INSTRUCTIONS

The Electric Pencil is furnished on cassette using Small System Software's Two-Level tape format. Two-Level tapes are designed to load and run on either LEVEL I or LEVEL II TRS-80 computers. To accomplish this, all of the keyboard routines, video routines and tape cassette routines are included as part of The Electric Pencil. In other words, once a two-level tape has been loaded, none of the routines in BASIC are used. This not only allows loading into either type of TRS-80, it prevents your two-level programs from becoming obsolete, since they will run even if new versions of BASIC are released.

Two-level tapes consist of a short tape loading routine which is recorded at the LEVEL I rate of 250 baud. This is followed by the main program which is recorded at the LEVEL II rate of 500 baud. The main program is recorded to load into LEVEL II machines using the SYSTEM command, which is designed to load machine language tapes. The short loader at 250 baud is a special version of the SYSTEM command which is designed to run on LEVEL I machines.

LEVEL I LOADING INSTRUCTIONS

Load The Electric Pencil the same as any CLOAD tape. Start the tape at the beginning by using the CLOAD (or CL.) command. When the tape starts to load, the two stars will appear in the upper left corner of the screen. After about 5 seconds, the screen will clear (except for the cursor), indicating that the bootstrap loader is running. After about 4 more seconds, two stars will appear in the upper right corner of the screen, indicating that the main program is beginning to load. The right hand star of this pair will blink about every 4 seconds, or after each 256 byte block of code is loaded. If a tape error is detected, the WHAT? message will appear. When the tape is finished loading, the program will automatically begin running.

LEVEL II LOADING INSTRUCTIONS

Load two-level tapes using the SYSTEM command. Type SYSTEM and press ENTER. A star and question mark will appear (*?). Prepare the tape and recorder to load the tape. Type the program name, which is PENCIL. When the ENTER key is pressed, the cassette will start running. The LEVEL I loader on the tape will be ignored by the LEVEL II computer. When the main program is reached on the tape, two stars will appear in the upper right of the screen. The right hand star will blink about every 4 seconds. If a tape error is detected, the left star will be replaced by a C, indicating a Checksum error, and the machine will usually hang up, requiring the reset button to be used. When a successful load is achieved, the star and question mark will return. At this point, you must type a slash (/) and ENTER. The Electric Pencil will now start running.

IN CASE OF DIFFICULTY

If your tape fails to load, first be sure the tape is recorded. If you cannot hear your tapes while they are loading, pull the plug and listen. Write down the tape counter settings where the sound begins and ends. Please also note that there is a second copy of the program on each cassette, which starts about 10 seconds after the end of the first copy. Be sure to write down the numbers for both copies.

Nearly all tape loading difficulties can be resolved by adjusting the volume control on your tape recorder. Our tapes load reliably using the Radio Shack CTR-41 recorder with the tone control in the high position and the volume control set between 6 and 7 1/2. Start with your control set for 7 1/2. If this doesn't work for you, try lowering the volume control by about 1/4 number. Level II tapes are very touchy; a change of 1/4 in volume can make a major difference in performance. Continue this procedure until you reach 6 or slightly under on your volume control. Usually volume control problems show up very quickly, thus this procedure should not take too long. Experiment with your tape, and when it loads, write down the setting on the cassette label. Be sure to try both copies before giving up. If you are unable to load either copy of your program at any volume level, contact your dealer for a replacement cassette.

We suggest that you modify your tape recorder so that you can hear it during record or playback operations. It is a simple matter to place a resistor (about 100 ohms; experiment to determine the proper volume level) across the speaker disable switch inside the recorder. You will then be able to better judge the proper volume level for your tapes, will be able to tell when the tape starts and ends, and can sometimes hear a tape dropout problem when it occurs.

GETTING STARTED

When you have successfully loaded The Electric Pencil and the program is running, the screen will clear and display:

LOWER CASE KIT INSTALLED? (Y/N)

The lower-case kit must include both a control key and a memory chip for the screen memory, as described near the end of this document. Addition of the memory chip alone is not sufficient. If you have the lower-case kit, type Y, otherwise type N. If you type Y without the kit in the computer, The Electric Pencil will not run properly, and you must reload your cassette to correct the error. (It is OK to type N if you have the kit installed).

After you type Y or N, or any time the system is cleared, the screen will clear and display:

THE ELECTRIC PENCIL (C) 1978 MICHAEL SHRAYER

Depressing any key on the keyboard will clear the screen and a blinking white cursor will appear in the HOME or upper left-hand corner of the screen. A file may now be started by typing in the desired text. If you have the lower-case kit installed, type SHIFT-BREAK to enable lower-case entry. A second SHIFT-BREAK will return the keyboard to upper-case only. Any key held down for more than 1/2 second will repeat at a rate of about 10 characters per second. Note that ENTER is not used at the end of a line and that any partially completed word that doesn't fit on the line will be brought down to the next line. Typing can proceed normally until the end of a paragraph is reached. At this point ENTER should be typed to terminate the paragraph or record. A left-arrow will appear on the screen at the end of the line, and the cursor will advance to the beginning of the next line. Any additional ENTERS will insert blank lines after the record. If this is to be the end of a page, a FORM FEED (shift down-arrow or control-L) is typed. Before continuing with this manual, the user is advised to try this in order to get a "feel" of how text is entered into The Electric Pencil file area.

It is recommended that sentences begin at the extreme left margin since indentation can not be guaranteed unless a line is terminated by an ENTER. Whenever a specific number of spaces within a line are essential, the line must be terminated by an ENTER. This is because lines are not delineated and may be broken up at any point during printing. Exactly where a line will end is determined by the line length that is selected by the user just prior to printing. However, by assuming manual control of The Electric Pencil during printing, indentation is possible.

Experimentation and imagination will bring about almost any desired results in the final printing of text.

COMMANDS AND FUNCTIONS

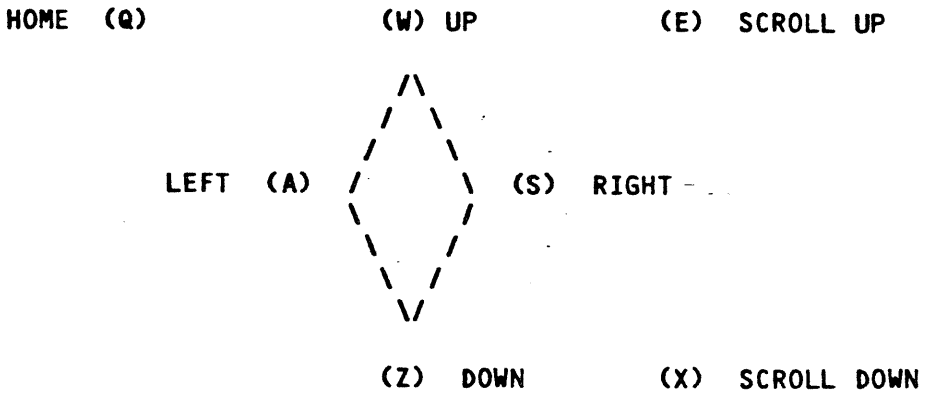
NOTE: Control Character Commands require that the CONTROL key (SHIFT key for unmodified computers) and the specified alphabetic character key be depressed simultaneously. Control Character Commands (except ENTER and FORM FEED) will not appear on the video display screen. In this text, all references to Control Character Commands shall be designated by enclosing them in parentheses, e.g. (A), (B). Standard keyboard characters when referenced shall be enclosed in brackets, e.g. [A], [B], [5], etc.

COMMAND	FUNCTION	NOTES
(A)	CURSOR LEFT	Left-arrow also
(S)	CURSOR RIGHT	Right-arrow also
(W)	CURSOR UP	Up-arrow also
(Z)	CURSOR DOWN	Down-arrow also
(Q)	CURSOR HOME	
(N)	CURSOR to FILE END	
(B)	CURSOR TO FILE BEGINNING	
(E) ?	SCROLL UP (Forward)	roll to end of text
(X) ?	SCROLL DOWN (Backwards)	
(D)	DELETE CHARACTER	
(F)	INSERT CHARACTER	
(Y)	DELETE LINE	
(G)	INSERT LINE	
(T)	ERASE to END of LINE	
(U)	DELETE BLOCK	
(H)	INSERT BLOCK	
(L)	FORM FEED To next page	Shift Down-Arrow also
(M)	Same as ENTER	
(V)	STRING SEARCH	
(C)	CONTINUE SEARCH	
(R)	REPEAT FUNCTION	
(K)	SUB-SYSTEM COMMAND TABLE	
(P)	PRINT	
(O)	EXIT SYSTEM	Jumps to BASIC
(I)	Reserved	
(J)	Reserved	
BREAK	RETURN to MAIN SYSTEM	
ENTER	TERMINATE RECORD (LINE FEED)	
CLEAR	CURSOR to BEGINNING of LINE	
SHIFT BREAK	LOWER-CASE ENTRY ON/OFF	
SHIFT CLEAR	UNDERLINE	With lower-case kit only
SHIFT UP-ARROW	SAME as BREAK	
SHIFT DOWN-ARROW	TERMINATE PAGE (FORM FEED)	
SHIFT LEFT-ARROW	BACKSPACE and ERASE CHARACTER	
SHIFT RIGHT-ARROW	CURSOR 8 SPACES RIGHT (TAB)	
CONTROL or SHIFT	CREATE CONTROL CHARACTER	SHIFT if no lower-case kit

CONTROL CHARACTERS were selected for location and convenience rather than significance as shall be discussed.

CURSOR MOTION COMMANDS

Notice that the most often used Cursor Motion Command keys are clustered at the left of the keyboard. The keys that move the cursor UP and DOWN, and to the LEFT and RIGHT form a diamond that conveniently points in these directions. The (Q) in the upper left hand corner represents HOME, which is also the upper left corner of the video display screen. You may also use the four arrow keys to move the cursor if you desire. If you hold down a cursor motion key (or any other key), it will begin to repeat at about 10 characters per second after a 1/2 second delay. This feature may be used to rapidly position the cursor anywhere on the screen.



MOVING THE CURSOR TO THE BEGINNING AND END OF FILE

The (B) and (N) are not as heavily used as the above cursor commands and therefore are not located in the same area. (B) returns the cursor to the beginning of the file and (N) moves the cursor to the end of the file.

SCROLLING AND DISPLAY CONTROL

SCROLLING is the action of the text moving up or down the video display screen. More than 16 lines of text (one page) must exist in the file for this action to occur. The (E) and (X) keys scroll the screen up and down respectively. The cursor will disappear from the screen during a scroll. Scrolling speed may be controlled by typing the numerals [1] through [5] while scrolling. [1] is the fastest speed, and [5] is the slowest. Further control is provided by the SPACE BAR, which temporarily halts the scroll. Continued depressions of the SPACE BAR will scroll one line at a time in the direction previously selected. The ENTER key will continue the scroll after it has been halted by the SPACE BAR. When the end of the file is reached or when BREAK is used, the scroll will stop completely, the cursor will re-appear on the screen, and total system control will return to the user.

DELETE CHARACTER

(D) is used to delete a character that exists in a body of text. The cursor is simply placed over the character to be deleted, and (D) is typed. The entire text then moves towards the cursor one position. Multiple deletions are also possible from any location by deleting one character or space at a time.

INSERT CHARACTER

The Electric Pencil is normally in an over-write mode. This means that any character typed will appear wherever the cursor is located. If there is already a character at the current cursor position, the new character typed will replace the existing one. By typing (F), the Insert Mode is entered. The size of the cursor will increase to warn the user that the system is now in Insert Mode. While in the Insert Mode any character typed will automatically shift the entire text to the right and insert the new character into the cursor position. Typing (F) or leaving the current line will exit the Insert Mode and the cursor will assume its normal form. When the end of a line is reached, while in the Insert Mode (or even while in the normal over-write mode), an entire line will be opened up to allow for additional character insertion. If a line is only partially filled, (D) will pull up the rest of the text to the cursor. Doing the above actions will demonstrate more clearly what actually happens far better than this manual can.

DELETE LINE

(Y) will delete whatever line the cursor is currently on.

INSERT LINE

(G) will move the line that the cursor is currently on down one and the cursor will assume a position at the beginning of the empty line. Text may now be typed in as needed and when the end of the line is reached, another (G) will automatically be entered by the system allowing the user to continue entering text without interruption.

ERASE TO END OF LINE

(T) erases all text from the current cursor position to the end of the current line.

BLOCK MOVEMENT

A block is defined as any amount of text as small as one character or as large as an entire file. It may be a word or a sentence or a paragraph or a group of paragraphs. In order to move a block of text to another part of the file or to delete a block of text, it must first be marked. The character used to mark the boundaries of a block is an up-arrow. This character is also called a "marker". To mark the boundaries of a block, the cursor is placed over the first character of the text desired and then the SHIFT UP-ARROW keys are depressed. The action will be the same as if the Insert Mode was entered. The text will shift right and the "marker" will be placed. The cursor should now be moved to one character beyond the end of the block of text desired and similarly marked. Exactly two markers must be used; otherwise, a MARKER ERROR message will appear on the video display screen when a move is attempted. BREAK is used when this occurs to return to the system so that the user can place the markers correctly. Markers may be deleted using the search function. Markers are automatically deleted during a block delete. Markers should not be placed after a LF (back-arrow) character on the screen. Instead, place the marker at the beginning of the following line. This will prevent the appearance of two markers on the screen.

DELETE BLOCK

(U) will delete a block that has been correctly marked as stated above. The block markers are also deleted during this action. If a block is incorrectly marked or not marked at all, "MARKER ERROR" will appear on the video display screen.

INSERT BLOCK

(H) is used to insert a correctly marked block at any selected cursor position and may be repeated as often as desired. "MARKER ERROR" will appear on the video display screen if an attempt is made to move a block into itself or if more or less than two markers exist in the file.

ENTER, FORM FEED, TAB and CLEAR (RETURN)

ENTER is used to terminate a record or to place an empty line between records. When ENTER is typed, a left-arrow will appear at cursor position and the cursor will advance to the beginning of the next line. FORM FEED (SHIFT DOWN-ARROW or (L)) is also used to terminate a record, but when it is encountered during printing, the printer will advance the paper to the top of the next page. TAB (SHIFT RIGHT-ARROW) may be used as an "express" key to quickly move across the screen as well as for its normal function of tabbing 8 spaces to the right. CLEAR moves the cursor to the beginning of the current line (carriage return).

STRING SEARCH

The search function is used to locate any string of characters that may exist in the file from the current cursor position to the end of the file. (V) clears the video display screen and then displays:

SEARCH STRING?

The character string desired followed by an ENTER is then typed in by the user. The maximum string length is 40 characters. The first occurence of the string from the cursor position forward will appear as the top line on the video display screen. The search may be continued by typing control character (C). Each subsequent "find" will also appear as the top line on the screen. When the end of the file is reached or the string no longer exists in the file,

CAN NOT LOCATE "String"

will appear on the video display screen. This function is used to quickly locate selected areas within a file.

SEARCH and REPLACE

This function is used to locate a string and replace it with another string. The old and new strings may be of different lengths. The way this is handled is as follows:

SEARCH STRING? Old string/New string/12

followed by a RETURN. 12 represents the number of times that the replacement is to occur and may be any decimal number. In the event that "Old string" only appears 8 times in the text (from the current cursor position), the screen will clear and display:

LOCATED "Old string" 8 TIMES

The actual replacement will have been made 8 times. If "Old string" occurs 12 or more times in the text, 12 replacements will be made and the cursor will return to the file. All occurences of "Old string" can be replaced by typing a number greater than the possible occurences of "Old string" at the end of the reply to the SEARCH STRING? question. For example:

SEARCH STRING? Mr. Jones/Mr. Smith/9999

The system will respond with:

LOCATED "Mr. Jones" 14 TIMES

Assuming "Mr. Jones" appears only 14 times in the text.

CODED STRING SEARCHES

Strings may be also located where only a certain pattern is required. Assuming a file consists of names and addresses of clients with a code prefix as follows:

WS1234HP
Tom Jones
15 E. 94th St.
New York, N.Y. 10028

WP1235LP
Bill Smith
3800 Wilshire Blvd.
Los Angeles, CA. 90016

WS6784HL
Elmer Brown
300 N. Vermont
Los Angeles, CA. 90028

SEARCH STRING? WS###4H

will locate Tom Jones. Typing a control character (C) will then locate Elmer Brown. Note that [#] is a "don't care" character. Using this function, a selected mailing list can be produced. Other uses might include lists of sales prospects with action dates to represent appointments, expirations, service dates, etc. Data can be selectively extracted from a file automatically using the coded string search function.

REPEAT FUNCTION (R)

Most functions may be repeated any number of times as per the following examples:

(R)[5](D) will delete 5 characters.

(R)[22][.] will type 22 periods.

(R)[3](P) will print 3 times.

The cursor will disappear whenever (R) is typed and will return after the number of repeats are performed. In the event of a typing error, the cursor will return and nothing else will happen. This three part command is not visible on the screen.

LOWER-CASE ENABLE

If you have installed the lower-case modifcation in your TRS-80, SHIFT-BREAK will toggle the keyboard between upper-case only and upper/lower case operation (normal typewriter).

SUB-SYSTEM COMMAND TABLE

Within The Electric Pencil is a Sub-System Command Table that permits implementation of additional commands as well as the setting up of Print Values. (K) clears the video display screen and displays the Sub-System Command Table as follows:

(K)

```
TAPE READER   R
TAPE WRITER   W
TAPE VERIFY   V
WORD NUMBER   X
RCRD NUMBER   Y
CLER AA CUR   CAA
CLER AB CUR   CAB
CLER SYSTEM   CLR
RGHT JUSTFY   JO-1
LINE SPACNG   S1-5
PAGE SPACNG   A2-20
PAGE LENGTH   G1-72
LEFT MARGIN   MO-100
PAGE NUMBER   N1-255
PRNT LENGTH   PO-255
LINE LENGTH   L25-125
```

While in this mode, the standard keyboard keys are used alone without the CONTROL key. The above commands are NOT Control Character Commands.

When these commands are referenced in this text, they shall be enclosed in brackets, e.g. [A], [B], [5]. All commands must be terminated with ENTER. The LEFT-ARROW key is used to backspace, and the BREAK key is used to leave the sub-system. Command entry errors are indicated with a question mark "?" on the video display screen. Note that some of the functions are abbreviated on the screen.

[R] TAPE READER

To enter a file that is on cassette tape into the file area of The Electric Pencil, first depress the Tape Reader command [R], then run the cassette recorder to a little before the file starts on the tape, press the cassette recorder play button, and then hit ENTER. The cursor will disappear from the screen and reading will begin. When the file has been correctly read into memory, "READY" will appear on the screen. If there is an error in the tape, "TAPE ERROR" will appear. When a file is read into The Electric Pencil, it is normally placed at the end of any material that may already exist in the file area. If this is to be a new file, the file area should be cleared. See [CLR], [CAA] and [CAB]. If the incoming file is too long for the existing memory, "FILE AREA FULL" will appear on the screen. The partially loaded file will then be removed from the file area with no damage to the current file, if any.

[W] TAPE WRITER

To write a file onto cassette tape, first place the cursor to the position in the file from which you wish to write. If the entire file is needed, then (B) should be used to place the cursor at the beginning of file. (K) will then bring up the Sub-System Command Table. Depress [W], place the cassette recorder in Record mode at a convenient location on the tape, and hit ENTER. The cursor will disappear and writing will begin. When the file has been recorded onto tape, "WRITTEN" will appear on the screen. Rewind the recorder to a little before the location where the writing started and VERIFY. When working with lengthy text, it is advisable to periodically write the file onto tape as a precaution against power failures which can destroy all material in the file area as well as The Electric Pencil itself.

[V] TAPE VERIFY

[V] is basically the same as [R] except the file is not placed into the file area. It is, however, checked for correctness, and returns with "VERIFIED" if the tape is correct or with "TAPE ERROR" if it is not. A tape just written showing "TAPE ERROR" should be re-written with [W]. Continual tape errors indicate faulty tape or a faulty cassette recorder.

[X] WORD NUMBER

[X] will return the number of words that are in the file from the current cursor position. A word is defined as any amount of characters with at least one space at either end. A word may be as short as one character or as long as one line.

[Y] RECORD NUMBER

[Y] will return the number of records that are in the file from the current cursor position. A record is defined as any block of text that is terminated by ENTER or FORM FEED (L). A record may be as short as one character or as long as the entire file. A record is most nearly like a paragraph.

CLEARING COMMANDS

The following clearing commands require three characters to be entered by the user as a precaution against accidental destruction of the file area. These commands should be used with caution since any material in the file area cannot be retrieved once it has been erased. Back-up copies of text should always be made of files before text is cleared.

[CAA] CLEAR ALL AFTER CURSOR

[CAA] will clear all text in the file from the cursor position just prior to entering the Sub-System to the end of the file. Upon completion, the Sub-System is aborted and normal operation is resumed.

[CAB] CLEAR ALL BEFORE CURSOR

[CAB] will clear all text in the file from the cursor position just prior to entering the Sub-System to the beginning of the file. The character under the cursor will not be cleared. Upon completion, the Sub-System is aborted and normal operation is resumed.

[CLR] CLEAR SYSTEM

[CLR] will clear the entire file area as well as reset all PRINT VALUES to their DEFAULT VALUES. The video display screen will clear and display:

THE ELECTRIC PENCIL (C) 1978 MICHAEL SHRAYER

[CLR] as well as [CAA] and [CAB] should be used with care.

SETTING UP PRINT VALUES

The following PRINT VALUES are automatically set to DEFAULT VALUES when The Electric Pencil is first entered or when [CLR] is used. Whenever a command is entered without a value and is followed by a RETURN, the system assumes the DEFAULT VALUE for that command.

[J] RIGHT JUSTIFY DEFAULT VALUE=0

[J0] (zero) sets the system to print as many characters on a line as will fit without justifying the right-hand margin of the text. [J1] tells the system to calculate the number of characters in a line and expand the text so that the right-hand margin is justified (even). This is accomplished by inserting additional blank spaces between words. Hyphenation is normally not required using [J1].

[S] LINE SPACING DEFAULT VALUE=1

[S1] through [S5] sets the number of blank lines between text lines that will appear in printing (single spacing, double spacing, etc.). [SX] inhibits transmission of line-feed characters during printing, as required by certain printers (see section on Printing, page 19).

[A] PAGE SPACING DEFAULT VALUE=12

[A2] through [A20] sets the number of spaces (empty lines) between pages during printing.

[G] PAGE LENGTH DEFAULT VALUE=54

[G1] through [G72] sets the number of lines of text that will appear on a page during printing. An empty line also counts as a line of text.

[M] LEFT MARGIN DEFAULT VALUE=0

[M0] through [M100] sets the position of the left margin. This value added to LINE LENGTH must not exceed the carriage width of the printer.

[N] PAGE NUMBER DEFAULT VALUE=1

[N1] through [N255] sets the first page number to be used during printing. This assumes that pagenation has been set up. The highest page number available is 255 and then the system resets to 0, 1, 2, etc.

[P] PRINT LENGTH DEFAULT VALUE=0

[P0] enables printing of all the text from the cursor position to the end of the file. [P1] through [P255] sets the number of records that will be printed from the cursor position onward.

[L] LINE LENGTH DEFAULT VALUE=62

[L25] through [L125] sets the number of characters per line of text that will be printed. Using justification, extra spaces are added to each line to maintain the total equal to the selected value. At the DEFAULT VALUE, the line length will be the same as that which appears on the video display screen, and if justification is not selected, the text will be printed exactly as it appears on the screen.

PRINTING

(P) commands The Electric Pencil to start printing text from the current cursor position forward. The amount of text that will be printed is governed by the setting of Print Length [P] in the sub-system. The format that the printed page will assume is determined by the Print Values set up by the user prior to printing. Printing may be repeated in order to obtain multiple copies of text by using the Repeat Command (R).

Two printer interfaces are supported, the standard Radio Shack expansion interface and the Small System Hardware TRS232 printer interface. The software automatically selects the printer the first time the print command is typed. If you have the Radio Shack expansion interface, be sure the printer is turned on before you type (P)! Failure to do so will cause selection of the TRS232. If this happens, type BREAK, save your file on tape, reload The Electric Pencil, reload your file and continue.

Page Spacing [A] in the sub-system will determine the number of lines between pages. Manually advance the paper to the location where you wish printing to actually start on the paper. The cursor is then placed over the first character of text desired, and (P) is typed. Printing will begin. Printing may be controlled by using the SPACE BAR, ENTER and BREAK as in scrolling. You will have to hold these keys down until the printer reaches the end of a line to stop printing.

PRINTER COMPATIBILITY

Some RS-232 printers require fill characters (nulls) after each carriage return to allow time for the carriage to reach the home position. If, for example, your printer requires 5 fill characters (see your printer manual), you may select these by entering the command [F5] where the 5 may be from 0-255. Note that this special command is NOT displayed on the right of the screen.

The Electric Pencil will operate RS-232 printers through the TRS232 at 300 baud. If your printer requires a different baud rate, refer to documentation furnished with the TRS232 for instructions to modify the baud rate.

Some printers, including Selectric models, will double-space when [S1] has been selected. This is caused by an automatic line-feed when a carriage return is executed, followed by a second line-feed when the line-feed character is transmitted. To correct this condition, type [SX], which inhibits transmission of line feed characters to the printer. Once the [SX] command has been typed, it cannot be reversed. If you accidentally enter this command, you will have to reload The Electric Pencil to restore line feeds.

TITLING PAGES and PAGE NUMBERING

Pages may have title headings as in this manual by entering the following information at the beginning of the file onto the video display screen:

$This is a Sample Title Heading [ENTER]

Note that in the above example a dollar sign [$] MUST precede the title and [ENTER] MUST be typed after the title text. In order for the title to appear in printing as a title, printing MUST start with the cursor directly over the dollar sign [$]. Otherwise, the title will be printed as regular text. If the title length is greater than the Line Length [L] minus 10 selected in the sub-system, the title text will appear on the printed page as regular text. Whenever a title heading is used, pages will be automatically numbered at the extreme top right of each page as they appear in this manual. If only page numbering is desired without a page title, only the dollar sign [$] immediately followed by ENTER is used. Printing must also begin directly over the [$]. In the course of printing, title headings may be changed by placing additional title headings (using the above form) into the text. The Electric Pencil will recognize these ONLY if they appear directly after a FORM FEED (L). The new title heading will then appear on all subsequent pages till the end of printing, unless still another title is inserted after a FORM FEED. Page numbering will remain sequential throughout. The starting page number will always be 1 unless set otherwise in the sub-system.

UNDERLINING

Underlining is possible only after installation of the modifciation kit allowing lower-case characters. You cannot underline if you are using a printer which does not have separate carriage return and line feed control, thus underlining is not possible on most Selectric printers. Words or phrases may be underlined ONLY in lines shorter than 62 characters terminated by ENTER. Underlining is not permissable within justified text. Text is underlined by entering the following onto the video display screen (use SHIFT-CLEAR to enter the underline character):

_____ [ENTER]
THIS IS A TEST [ENTER] will print: THIS IS A TEST

[ENTER]
This is a NEW test [ENTER] will print: This is a NEW test

EXIT SYSTEM

(0) is used to exit The Electric Pencil and return to BASIC.

REGISTRATION

Please fill out the registration form that appears on the last page of this manual so that your name will be placed on a mailing list to receive information of any up-dates as well as improvements to The Electric Pencil. Happy Word Processing !!!

LOWER CASE MODIFICATION INSTRUCTIONS

To modifiy the TRS-80 for lower-case operation with the electric pencil, changes must be made to the screen display memory and to the keyboard. There are many ways to accomplish this modification and it is up to the user to determine the most satisfactory approach. The modification requires changes to the circuit boards within the keyboard enclosure of your TRS-80, thus your warranty will be voided by this modification. We have modified several computers ourselves and have had no difficulty with the TRS-80 after making the changes, however, WE CANNOT ACCEPT RESPONSIBILITY FOR DAMAGE TO YOUR COMPUTER CAUSED BY INSTALLATION OF THIS MODIFICATION!

SCREEN MEMORY MODIFICATION

The TRS-80 video display uses a dedicated block of 1024 bytes of memory located in memory space at 3C00 Hex. When received from the factory, there are only 7 memory chips installed in this block of memory, providing 128 possible characters for screen display. The stock TRS-80 uses 64 of these combinations for graphics and a second 64 for the upper-case subset of the ASCII character set. Bits 0-5 control the character selection, and the highest bit (bit 7) is used to determine if the character is alpha-numeric or graphic. Bit 6 is missing!

To add lower-case display, bit 6 must be implemented. This may be accomplished by switching the memory chip for bit 7 to bit 6, thereby enabling lower-case letters and eliminating graphics, or by addition of an 8th memory chip. We prefer adding the extra chip. In either case, if you plan to use Level II Basic, you must include a switch to disable bit 6, or Basic will place a lot of funny characters on the screen!

Refer to the top portion of the figure on page 23. A low-power 2102A memory chip (available at most electronic stores) is piggy-backed onto an existing 2102A, and appropriate connections are made. Take the new 2102A, carefully bend pins 11 and 12 up from their normal position, then slide the chip down over the 2102 located at position Z45 on the larger of the two TRS-80 circuit boards (the Z-number is printed on the circuit board next to each chip). Be sure that the chip is oriented to place pin 1 on top of pin 1! When all pins are aligned and contacting (except 11 and 12, of course), carefully solder each of the 14 pins from the added chip to the chip on the circuit board. Work quickly but be sure you get a good solder joint! Now, connect a small piece of insulated wire (wire-wrap wire is ideal) to pin 11. Locate pin 13 on chip Z44, and attach the other end of the wire to the pad which is connected to this pin.

Between chips Z29 and Z30 there are three traces, two wide and one narrow. Cut the narrow trace with a sharp knife. Attach two pieces of insulated wire to each of the cut ends of this trace, and a third piece to pin 12 of the added memory chip. Run these three wires to a single-pole double-throw switch as shown in the diagram. This switch changes the screen memory from the original 7-bit configuration to the new 8 bit configuration, thus allowing you to switch back and forth between Basic and The Electric Pencil.

pg 22 & 23
show Model I
mods.

TRS232 PRINTER INTERFACE

Small System Hardware is offering a low-cost printer interface as an alternative to the Radio Shack expansion interface. The printer package in the Electric Pencil has been specially configured to support either the Radio Shack interface or the TRS232 printer interface. The TRS232 interface allows you the versatility of using any of a large number of computer terminals or printers with your TRS-80 and the Electric Pencil. In addition, each TRS232 is delivered with cassette software for driving the printer from LEVEL-II Basic, thus this one interface will support both word processing and normal program listing and documentation. The TRS232 comes completely assembled and tested with documentation and cassette software for $49.95.

The TRS232 printer interface is a low-cost software-driven output port. The interface is totally self-contained, and includes all the electronics necessary for converting the tape recorder output level to RS-232 compatible voltage levels. Normal operation of the cassette recorder is maintained.

Any RS-232 compatible printer may be used with the TRS232. This includes most standard computer terminals, Diablo printers, the new Teletype model 43 terminal, TI Silent, etc. In addition, provisions have been included for driving a 20-mil current loop so that commonly available teletypes may also be used if desired.

The TRS232 is small (about 1" x 2" x 3") and installs in series with the power and cassette cables on your TRS-80 computer. The cassette output cable from the computer plugs into the TRS232. Two short cables are attached to the TRS232; one plugs into the power input jack on the TRS-80 and the second mates with the plug from the TRS-80 power supply. Finally, there is a standard DB-25 connector on the TRS232 which mates with the printer cable. The TRS232 may be left in place at all times, since it does not interfere with cassette operation and power requirements are negligible.

The TRS232 is shipped fully assembled and tested, and includes documentation, cassette software and source listings for driving printers from LEVEL-II Basic or from your own machine language programs. It may be ordered for $49.95 plus $2.00 for handling and postage (Calif. residents add 6% tax) from:

SMALL SYSTEM HARDWARE
Post Office Box 366
Newbury Park, CA 91320

pg 253 Reg.

DISK VERSION ADDITIONAL INSTRUCTIONS

Pages 26-30 of additional instructions for the TRS-80 disk version of The Electric Pencil are to be placed at the end of the current Operator's Manual of The Electric Pencil Word Processor.

The Electric Pencil Word Processor computer program is distributed on an "AS IS" basis without warranty. Michael Shrayer Software, Inc. shall have no liability or responsibility to customer or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused directly or indirectly by The Electric Pencil computer program, including but not limited to any interruption of service, loss of business or anticipatory profits or consequential damages resulting from the use The Electric Pencil computer program.

The Electric Pencil computer program is furnished to customer for use on a single computer only and may be copied (with the inclusion of Michael Shrayer's copyright notice) only for use on such computer. The customer shall not provide or otherwise make available The Electric Pencil computer program or any portion thereof in any form to any third party without the prior written approval of Michael Shrayer Software, Inc. Title to the ownership of the software shall at all times remain with Michael Shrayer Software, Inc.

Copyright (c) 1978, 1979 Michael Shrayer. All Rights Reserved. The contents of this publication may not be reproduced in any form or by any means in whole or in part without the prior written consent of the copyright owner.

GETTING THE ELECTRIC PENCIL ONTO DISK

The Electric Pencil is normally supplied on cassette tape, and loading it onto disk requires the use of the Radio Shack TAPEDISK utility supplied with TRSDOS 2.1. The Electric Pencil will require 5 Grans of diskette space.

1. Set up a tape recorder for playback with The Electric Pencil at the start of one of the two recordings.

2. Type TAPEDISK (Enter).

3. When the prompt '?' appears, type C (Enter).

   (Unless there is an error in reading the tape, the prompt '?' will reappear).

4. Type F PENCIL/CMD:Ø 5589 6C94 5C61 (Enter).

   (Unless there is an error in creating the disk file, the '?' prompt will reappear).

5. Type E (Enter) and return to TRSDOS 2.1

   To use the disk version of The Electric Pencil, you need only type PENCIL (Enter) thereafter. Each copy of The Electric Pencil must bear the following copyright notice on the diskette:

   THE ELECTRIC PENCIL Copyright (c) 1979 MICHAEL SHRAYER

   The Electric Pencil software is for the use of the original purchaser only and may not be distributed to others.

In some TRS-8Ø systems whenever the DOS is first entered, typing BREAK will cause the system to jump to BASIC. This must be overcome, since The Electric Pencil uses the BREAK key extensively. To avoid this occurance, always type DIR prior to entering the Pencil.

The Electric Pencil tape is a System-type tape with the name PENCIL. It will not execute properly and may destroy data on any or all mounted diskettes! The ONLY use for this tape is to create the Disk File PENCIL/CMD under TAPEDISK as described above. The Electric Pencil will then execute properly from the disk when the command PENCIL (Enter) is typed from TRSDOS 2.1.

CHANGES IN THE SUB-SYSTEM COMMAND TABLE

The TAPE READER (R), TAPE WRITER (W) and TAPE VERIFY (V) commands still exist in the disk version, although they are not displayed. This allows the user to load any previously created text files and to then save them onto disk. The disk commands are now displayed (DI,DL,DS). An additional command exists in the disk sub-system (DK) which is not displayed.

DI (DISK DRCTRY)

DI followed by the drive number will list all PENCIL files on the designated drive. Default is Drive Ø if none is specified. Three columns will be displayed, if needed, displaying up to 48 files, the maximum for any diskette. Only files having the extension /PCL will be shown, and the extension will not be shown. If DI is requested from a drive without a diskette with a readable directory, TRSDOS 2.1 will hang, and the system will have to be rebooted. WARNING!!! Text in The Electric Pencil will be lost in this case. Be sure to clear the screen of the directory before entering any additional commands. This is done by striking any key except BREAK.

DS filespec (Used to save a file onto diskette)

The TRSDOS 2.1 filespec conventions must be followed when using the DS (SAVE DSKFIL) command. The file will be created with the extension /PCL, whether or not any extension is explicitly included in the filespec. If a password is specified at creation time, it will be an access password (until changed by the ATTRIB utility from TRSDOS 2.1).

DL filespec (Used to load a file into the file area)

The TRSDOS 2.1 filespec conventions must be followed when using the DL (LOAD DSKFIL) command. The file will be sought with the extension /PCL, whether or not any extension is explicitly included in the filespec. If a password is specified, it will be used as an acess password. If a password is used for a file with a blank password, file access will be denied by TRSDOS.

DK filespec (DK is not displayed on the screen)

The TRSDOS 2.1 filespec conventions must be followed when using the DK (DISK KILL) command. The file will be sought with the extension /PCL, whether or not any extension is explicitly included in the filespec. If a password is specified, it will be used as an access password. If a password is used for a file with a blank password, file access will be denied by TRSDOS.

OPTIONAL FORMS OF INSTRUCTIONS

SHIFT/ZERO is used to toggle from lower case to upper case and back. It is equivalent to the SHIFT/BREAK key, but under certain conditions of machine instability, any use of the BREAK key may cause TRSDOS 2.1 to reboot, while SHIFT/ZERO will not.

RIGHT ARROW is used to exit the sub-system. Equivalent to the BREAK key ONLY WHEN IN THE SUB-SYSTEM, its use can avoid triggering certain machine instabilities which sometimes attend any use of the BREAK key.

Note that there is no optional form of the BREAK key itself except in the sub-system. When in the main part of Pencil, the BREAK key is used to abort printing and scrolling. At times when machine instability is being experienced, it is recommended that the cursor motion controls (cursor up & cursor down) be used to effectuate scrolling. Good data processing technique also dictates frequent and redundant disk saves of files being edited at all times.

There is a modificaion to the Expansion Interface available from Radio Shack Service Centers which is said to reduce or eliminate the problem of erratic rebooting of TRSDOS 2.1; contact Radio Shack directly for information regarding the availability, cost, benefits, and detriments of this modification in your system.

THE U (UART) INSTRUCTION

Typing U (Enter) into the sub-system causes the printed output from The Electric Pencil to be routed through the TRS-80 RS-232 Interface Board supplied by Radio Shack. The switches on the board must be set up as specified in the Radio Shack instructions, except for one difference: when the DIP switch Baud-rate is set for 9600 Baud (S6-open, S7-open, S8-open), The Electric Pencil (and only The Electric Pencil at this time) will actually operate at 134.5 Baud, required by certain Selectric terminals.

SUMMARY OF ELECTRIC PENCIL COMMANDS AND FUNCTIONS

CONTROL COMMANDS (TEXT MODE)

COMMAND	FUNCTION	NOTES
(A)	CURSOR LEFT	Left-arrow also
(S)	CURSOR RIGHT	Right-arrow also
(W)	CURSOR UP	Up-arrow also
(Z)	CURSOR DOWN	Down-arrow also
(Q)	CURSOR HOME	
(N)	CURSOR to FILE END	
(B)	CURSOR TO FILE BEGINNING	
(E)	SCROLL UP (Forward)	
(X)	SCROLL DOWN (Backwards)	
(D)	DELETE CHARACTER	
(F)	INSERT CHARACTER	
(Y)	DELETE LINE	
(G)	INSERT LINE	
(T)	ERASE to END of LINE	
(U)	DELETE BLOCK	
(H)	INSERT BLOCK	
(L)	FORM FEED	Shift Down-Arrow also
(V)	STRING SEARCH	
(C)	CONTINUE SEARCH	
(R)	REPEAT FUNCTION	
(K)	SUB-SYSTEM COMMAND TABLE	
(P)	PRINT	
(O)	EXIT SYSTEM	Jumps to BASIC
BREAK	RETURN to MAIN SYSTEM	
ENTER	TERMINATE RECORD (LINE FEED)	
CLEAR	CURSOR to BEGINNING of LINE	
SHIFT BREAK	LOWER-CASE ENTRY ON/OFF	
SHIFT CLEAR	UNDERLINE	With lower-case kit only
SHIFT UP-ARROW	SAME as BREAK	
SHIFT DOWN-ARROW	TERMINATE PAGE (FORM FEED)	
SHIFT LEFT-ARROW	BACKSPACE and ERASE CHARACTER	
SHIFT RIGHT-ARROW	CURSOR 8 SPACES RIGHT (TAB)	
CONTROL or SHIFT	CREATE CONTROL CHARACTER	SHIFT if no lower-case kit

SUB-SYSTEM COMMAND TABLE

TAPE READER	R	RGHT JUSTFY	JO-1
TAPE WRITER	W	LINE SPACNG	S1-5
TAPE VERIFY	V	PAGE SPACNG	A2-20
WORD NUMBER	X	PAGE LENGTH	G1-72
RCRD NUMBER	Y	LEFT MARGIN	M0-100
CLER AA CUR	CAA	PAGE NUMBER	N1-255
CLER AB CUR	CAB	PRNT LENGTH	P0-255
CLER SYSTEM	CLR	LINE LENGTH	L25-125

NOTE DS — MUST PUT CURSOR AT TOP OF FILE FIRST!

DS) "FILE SPEC.1"

small
-- letters