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**THE NICEPRINT CARD**

**(formerly the Super-MX card)**

**for the Apple II, II+ or //e.**

**INSTRUCTION MANUAL**

**Spies Laboratories**

## NICEPRINT CARD

## INSTRUCTION MANUAL

August, 1984

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## INTRODUCTION

The NicePrint Card is one of the most effective cost/performance improvements around for high quality printing. The NicePrint Card takes advantage of the amazing resolution that modern dot-matrix printers have to produce text quality that rivals daisy wheel printers!

Some businesses simply will not print correspondence using a dot matrix printer. It really pays off to look as good as possible simply because it looks more professional. Dot matrix quality is fine where speed is much more important than appearances. But high quality printing leaves people with a better impression of you. The NicePrint card eliminates the embarrassment of sending correspondence on a dot matrix printer. And the optional font styles available make your printer as versatile and good looking as a typewriter with interchangeable printing elements.

NicePrint supports the normal Epson or Gemini printer commands so that you can print out rough drafts at high speed in dot-matrix quality. When the document is perfect, a couple of button presses on the printer and a stroke on the Apple keyboard will result in a high quality final draft.

NicePrint has five font styles available which may be changed at any time, even within a line: Roman, Letter Gothic, Orator Large, Script style, and Olde English. All fonts may be italicized.

## INTRODUCTION

In addition to this, each font style may appear in six pitches (characters per inch):

Standard Pica (10-pitch)

Standard Elite (12-pitch)

Condensed (17-pitch)

**Expanded Pica (5-pitch)**

**Expanded Elite (6-pitch)**

**Expanded Condensed (8.5-pitch)**

Furthermore, the above fonts and pitches may be **boldfaced**, **underlined**, and appear as **SUPERSCRIPTS** or **SUBSCRIPTS**.

Even word-processors like Bank Street Writer can use all these features because we have solved the problem of sending control characters to the printer.

We think you will like the **NicePrint** card.

## INSTALLATION DIRECTIONS

To install your **NicePrint** card, perform the following steps:

1. Turn off the power to the Apple. If you fail to follow this step you may damage your Apple, the **NicePrint** card or both!

2. You must set the dipswitch on the **NicePrint** card before using it. The settings are:

Epson: switches 1, 2, 3, 4 all on.

Gemini: 1, 2, 4 on and 3 off.

Apple DMP: 1 and 3 on, 2 and 4 off.

C-Itoh Prowriter, NEC 8023: 1, 2, 3 on and 4 off.

3. Take the cover off of the Apple. Notice the eight slots at the back. The slot nearest the large aluminum power supply box is slot 0. The **NicePrint** card can plug into any slot EXCEPT THIS ONE. Slot 1 is the recommended slot for the **NicePrint** card since almost all Apple software requires the printer to be installed in this slot.

4. If you have an Apple //e, gently pry the cable off the **NicePrint** card and slip it through one of the option holes in the back. When re-installing the cable onto the **NicePrint** card, make sure all pins are plugged into the cable connector with none hanging over the edge.

5. Plug the **NicePrint** card in by gently rocking it into position. Make sure it is fully seated as far as it will go.

6. Replace the cover on the Apple.

7. Plug the other end of the cable into your

## INSTALLATION DIRECTIONS

printer.

The factory dipswitch settings inside the printer are probably correct and you will not need to change them.

If they are incorrectly set, however, here are some symptoms and cures. Read your printer manual section on dipswitches along with this section to diagnose the problem. If a Gemini printer chops the top bit off of high quality characters, set the 7/8 dipswitch to 8 bits (not 7 bits). If the printer is double spacing, the "Automatic Line Feed" switches must be set to not automatically do a line feed after carriage return. If the printer will not print anything, the SLCT IN signal switch should be set to the "fixed" position. The 1 inch skip-over perforation switch should be "invalid".

If you are using Epson MX printers with friction feed or Gemini printers, print quality when in high quality mode may not be as good as it could potentially be. Epson FX series printers and printers without friction feed do not need the spiral wrap. The following steps describe how to install the spiral wrap on the paper bail. But before installing the wrap, check the quality of printout in high quality mode. If every line looks about as good as this manual, do not install the wrap. If the letters on some of the lines are somewhat striped, then you need the spiral wrap. If the printer binds, leave the wrap off.

1. Turn the Epson off. This will allow you to move the print head manually.
2. Notice the two black rollers on the paper

## INSTALLATION DIRECTIONS

bail that press against the paper. Flip these back away from the paper.

3. Look for the two black pieces of plastic about 4 inches long. This is called Spiral Wrap. Take one of the pieces of spiral wrap. Un-twist it about 1/4" in the center and wrap it around the center of the roller. Continue to wrap it around the roller completely. Most of the spiral wrap will be wrapped around the black roller with the rest of it wrapped around the metal paper bail. If the print head gets in the way, carefully move it out of the way.
4. Do this for the other roller as well.
5. When printing in high quality mode, make sure to flip the paper bail back so that the spiral wrap presses against the paper.

What this technique does is to provide a slight amount of back pressure on the paper to keep the printer gears tightly meshed. The NicePrint card demands all the vertical resolution that the Epson offers, about 5 thousandths of an inch. The extra gears that the friction feed option adds introduce paper positioning errors. With the spiral wrap in place, paper positioning is precise and provides the best looking print in high quality mode. Once installed, the spiral wrap looks as if it belongs there.

## HIGH QUALITY TEXT

High quality text mode prints text in two passes to produce a very detailed type font. Print speed is reduced by a factor of 6. For an FX-80 this reduces speed from 160 characters per second (or about 1800 words per minute) to around 28 characters per second (or 320 words per minute). The speed in high quality mode is comparable to daisy-wheels costing as much as \$2000!

Another point to consider is that high quality text is actually produced by sending graphics to the printer. Because it takes 24 graphics characters to print one letter, even a 64K printer buffer will fill up very fast.

If you are just beginning with your Apple, first get familiar with its operation and operating your word processor before trying high quality mode.

One of the strong points of the NicePrint card is that you retain the speed of dot-matrix while using the slower high quality mode only when necessary. As the following paragraphs will explain, you can print text out at full dot-matrix speed to produce the first draft of a letter. When the draft is perfect, a couple of button presses and a stroke on the Apple keyboard will instantly switch to high quality mode for the final copy. This technique provides the maximum speed.

There are two ways to get into high quality mode. The first way involves manual control from the Apple keyboard. This manual technique has the advantage of working with all existing text software without even the slightest modification. Control of the mode

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switch from normal quality to high quality will be accomplished externally to the program. The method is:

1. Turn the printer on and then press the ON LINE switch. The READY light will go out.

2. Proceed to instruct your word processor (or whatever program) to start printing.

3. The Apple will "boop" (as opposed to the familiar "beep"). Gemini printers need a several second delay before they "boop". At this time the NicePrint card is waiting for a command from the Apple keyboard. You can type "H" on the Apple to get into high quality mode. This will result in Pica spacing (10 characters per inch). After typing "H", you can also try E or C to get Elite (12 characters per inch) or Compressed (17 characters per inch) respectively. Don't forget that you must type the "H" first before entering any other characters.

4. Press the ON LINE switch again. Printing will begin in the mode that you selected.

Some software, Bank Street Writer for example, repeatedly re-initializes the NicePrint card which will drop you back into normal quality. To cure this, type "F" after the "H" and before pressing ON LINE to Freeze the current card settings. The NicePrint card will then forever stay in the previous mode selected until the "N" command un-Freezes the card settings.

Another useful application of the Freeze command is to allow you to set the NicePrint card up for a particular character style and have this be retained even through a re-boot. As long as the power to the Apple has not

## HIGH QUALITY TEXT

been turned off, the NicePrint card settings will remain unchanged. Appendix H contains a setup program written in BASIC that uses the Freeze feature.

The second method for invoking high quality mode requires embedded commands within the text. The @ character precedes all commands. Before using an @ command, @^ must be used to enable the @ commands. Then, an @H will turn high quality on. Therefore, the string @^@H at the beginning of the word processor text will invoke high quality. Any more occurrences of the @^ will be ignored. A few of the more simple word processors, like Bank Street Writer do not allow an @ sign to be entered from the Apple keyboard. The trick around this problem is to turn the printer OFF LINE as explained above. When the Apple "boops", type "HF&". The H invokes high quality, the F Freezes current card settings and the & substitutes & commands in place of @ character commands.

One important feature of NicePrint firmware version 2.00 or later is that these @ commands may be combined in any order, even within a line. For example, here we have Roman, Letter Gothic, Orator Large, Script style, and Olde English fonts. All fonts may be italicized.

In addition to this, each font style may appear in six pitches (characters per inch): Standard Pica (10-pitch, this is the default pitch), Standard Elite (12-pitch), Condensed (17-pitch), Expanded Pica (5-pitch), Expanded Elite (6-pitch), and Expanded Condensed (8.5-pitch).

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Furthermore, the above fonts and pitches may be boldfaced, underlined, and appear as <sup>SUPERSCRIPTS</sup> or <sub>SUBSCRIPTS</sub>.

In addition, these commands may be combined. The maximum number of combinations is huge. The 6 pitches times 5 fonts is 30 variations. Combine this with italics (times 2), boldface (another times 2), super/subscript (another times 2) and we wind up with 240 different looking character sets! Even if you only have one font, you can get 48 variations! Of course, any of these may also be underlined.

Here is a list of all @ commands. All of these commands may be also typed from the Apple keyboard when the Apple boops with the printer off-line. Do not type the @ sign, just the command. In normal dot matrix quality, only one command may be typed, C for condensed for example. Then turn the printer back on-line. In high quality mode, any number of commands may be typed. For example, HLE2D to get high quality, large, elite, font 2, boldface. The H must be the first letter typed. The others may appear in any order. This feature is like the Fingerprint product by Dresselhaus Computer.

@H - High quality printing.

@N - Return to normal dot-matrix quality and cancel Freeze.

@F - Freeze current card settings so that successive PR#1 commands or re-boots will leave the card set up in high quality mode or whatever mode it had been in previously.

@P - Pica pitch (10 characters per inch).

@E - Elite pitch (12 characters per inch).

@C - Compressed pitch (17 characters per

## HIGH QUALITY TEXT

inch).

@L - Large (double wide). Can be used in combination with Pica, Elite and Condensed to form 5-pitch, 6-pitch and 8.5-pitch.

@M - Cancel Large.

@I - Italics.

@J - Cancel Italics.

@D - Boldface.

@Z - Cancel Boldface.

@R - Superscript.

@S - Subscript.

@T - Cancel Super/Sub-script.

@U - Underline.

@V - Cancel Underline.

@0 thru @9 - Select alternate font.

Requires optional eproms to be installed in the expansion sockets. 0 is the default Roman font that comes standard with the NicePrint card. 1 is a special purpose font that also comes standard. These fonts are in effect only when in high quality print mode. Fonts correspond to the socket that the eproms are installed in. Normally, font chips contain two fonts. Letter Gothic is number 2, Orator Large is number 3, Script is 6 and Olde English is 7. If four fonts are all on one chip, then Letter Gothic is 2, Orator Large is 3, Script is 4 and Olde English is 5. See Appendix E for a diagram of the correspondence between the font numbers 0-9 and which socket they correspond to.

Appendix-I displays every character of every font. Fonts may be changed at any time within a line.

## HIGH QUALITY TEXT

@& - Change the @ escape character to &.

You might want to do this if you use the @ sign frequently. The & character may also be typed with the printer OFF LINE to select an different escape character than @ and also enable @ commands the same way the @^ command does. Any of the following characters as well as any control characters are allowed to be substituted for the @ sign:  
!"#\$%&'()#+,-./:;<=>?

@X - Send the "escape" character to the printer.

@Y - Start a <CTRL-I> text command. See the TEXT COMMANDS section.

## HIGH QUALITY TEXT EXAMPLE

Type the following paragraph into your word processor and print it out with the NicePrint card. This will illustrate proper usage of the NicePrint special features. If your word processor does not allow you to enter an at sign (@), omit the @^ at the beginning of the paragraph. When you have entered this paragraph, just turn your printer on and tell your word processor to start printing. If you have substituted the & character in place of the @ character, you must use an alternate approach. Just before telling the word processor to start printing, turn the printer OFF-LINE. Now start the word processor printing. When the Apple BOOPS, type the letters

&F

instead. Then turn the printer back ON-LINE.

## HIGH QUALITY TEXT

### SAMPLE PARAGRAPH:

@^@H@FThis is a sample text file of high quality print. It is possible to @dboldface@z, @uunderline@v, @iitalicize@j, @rSUPERSCRIPT, AND @sSUBSCRIPT@t text. It is also possible to get @eelite, @ccondensed, @pand pica pitch. We can also get @e@lenlarged elite,@m @penlarged pica,@m @l@cand enlarged condensed pitches.@p@m

Here is what this paragraph will look like when it prints out:

This is a sample text file of high quality print. It is possible to **boldface**, underline, *italicize*, **SUPERSCRIPT**, AND **subscript** text. It is also possible to get **elite**, **condensed**, and **pica** pitch. We can also get **enlarged elite**, **enlarged pica**, and **enlarged condensed pitches**.

Now that you can print like a daisy with your dot-matrix printer, you might want to print on high quality 25% rag bond paper. Companies like Moore Business Forms sell this type of paper on continuous pin-feed forms. The paper is so finely perforated that it tears off with a clean edge. Their number is 800-323-6230. In Illinois call 312-459-0210. Look through Byte magazine for other label and paper dealers. Some have very good mail order prices.

## HIGH QUALITY TEXT

### Notes:

If your word processor is set up to justify the right margin, an imbedded @ command will cause misalignment of the right margin for the line that it occurred on. The reason is that the word processor will count a command, like the @YK command as 3 characters but it will not print because the **NicePrint** card accepted it as a command. Some word processors like Pie Writer fix this problem by allowing "zero-length" strings to print out. WordStar has user function that can be @ commands. Another way around this is to put the @ command on its own line.

When entering high quality mode manually from the Apple keyboard, the first character (the one that caused the "boop") will already have been sent to the internal printer buffer. Most word processors print a blank line at the beginning so this will not be a problem. Otherwise, put a space at the very beginning of the text.

Bank Street Writer does not allow some Apples to enter either an at (@) sign or a caret (^). The **NicePrint** card has a fix for this. Before printing, turn the printer OFF-LINE. Tell Bank Street Writer to start printing. When the Apple BOOPS, type &F on the Apple keyboard and put the printer back online. The & will enable & commands instead of @ commands and the F will freeze this mode. To get high quality, put &H as the first line in the text. Any of the following characters can be substituted for the @ sign:  
!"#\$%&'()\*+,.-./:;<=>?

WordStar running under CP/M will switch the **NicePrint** card into RAW mode (see the RAW

## HIGH QUALITY TEXT

MODE section below) if it sends an escape character. To get around this problem, re-configure WordStar to send the initialization string <CTRL-Y><CTRL-X> to defeat one of the RAW MODE conditions. This is only a problem if you have re-configured WordStar to do special things like super/sub-scripting. The best way to re-configure WordStar for the NicePrint card is to make @^ the initial printer string. Then always use the @ commands to do special things like @R for super-script, @E to change pitch and so on. This way, RAW mode never occurs.

## HIGH QUALITY TEXT

### ADVANCED DOT-MATRIX TEXT FEATURES

Here is a brief list of the text features that seem to be most useful. Also refer to the printer manual for the complete list.

@X8 - Turn off end of paper indicator for single sheet mode. Do this before going into high quality mode. It will be ignored if you are already in high quality mode.

@R@C@X1 - Print little tiny letters very close together. This is how the EPROM labels used on the NicePrint card were printed. The @R command selects superscripting. The @C selects compressed print. The @X1 command sets line spacing of 7/72 inches.

@X0 - Set 8 lines per inch instead of the default 6 lines per inch.

@X2 - Back to 6 lines per inch.

## BASIC USAGE

The NicePrint Card has been designed to conform to all of the standard Apple printer card commands. The following format defines special symbols that will be used to explain each command:

<CTRL->: Indicates a control character. For example, <CTRL-X> means control X. Enter this by depressing the CTRL key and then simultaneously depressing the X key.

<RETURN>: Indicates the RETURN key.

### TURNING THE NICEPRINT CARD ON AND OFF

#### FROM BASIC:

PR#n<RETURN>

The character "n" should be substituted with the proper slot containing the NicePrint Card. PR#0<RETURN> turns it off again. For example, try the following:

1. Boot the Apple DOS 3.3 System Master.

2. type

PR#1<RETURN>

if the NicePrint card is in slot 1.

3. type

CATALOG<RETURN>

4. The DOS catalog will print to the screen and also to the printer. Strike the space bar when the screen fills up to continue printing.

5. You can type

<ctrl-I>V

to verify that the dipswitches are set to the correct printer. Other information about the version number of the NicePrint firmware will also print out.

## BASIC USAGE

#### FROM THE MONITOR:

n<CTRL-P><RETURN>

Once again the character "n" should be substituted with the proper slot containing the NicePrint Card. <CTRL-P> is entered by holding the CTRL key down while striking the P key. 0<CTRL-P><RETURN> turns it off again.

#### FROM APPLE PASCAL:

The LST: device will automatically be recognized under PASCAL when the NicePrint Card is installed in slot 1. Slot 1 is the only slot that will work with PASCAL as defined by Apple Computer. To verify this, invoke the F(ILER) and type the V(OLUMES) command. All PASCAL recognized devices including LST: will appear.

#### FROM CP/M (with the Softcard):

The LST: device will also automatically be recognized provided that the NicePrint Card is installed in slot 1. As an easy verification, boot CP/M. Type

<CTRL-P><RETURN>

and then

DIR<RETURN>

The directory of A: will print on the printer as will any subsequent commands typed. Type

<CTRL-P><RETURN>

again to disable this.

## TEXT COMMANDS

All text commands are preceded by a <CTRL-I> character. Programs running under CP/M (with the Softcard) or UCSD Pascal precede the text command with a <CTRL-Y>. For word processors that can't print a <CTRL-I> or <CTRL-Y>, the @Y sequence can be used instead. For example, to set line length to 80 and turn off screen echoing, the sequence @@Y80N can be used. Don't leave a space between the <CTRL-I> and the command character.

Most of these commands are standard for other Apple printer interface cards.

<CTRL-I>K :Don't append linefeeds to carriage returns. This command is useful for word processors that do underlining and boldface by doing a carriage return without a line feed. This mode is the default for Pascal and CP/M. I always do an @@YK as the first line of a text file and set up the word processor to do its own line feeds.

<CTRL-I>A :Append linefeeds to carriage returns. This cancels the <CTRL-I>K command.

<CTRL-I>C :Don't allow the <CTRL-G> character to ring the printer bell. This is the default condition when the card is first initialized.

<CTRL-I>B :Allow the <CTRL-G> character to ring the printer bell.

<CTRL-I>X :Don't allow the high order bit (the parity bit) to be output to the printer. This is the default condition.

<CTRL-I>H :Allow the high order bit (the parity bit) to be output to the printer. This is for advanced programmers. See the Graftrax

## TEXT COMMANDS

manual and the RAW Mode section in this manual for details.

<CTRL-I>nN :Set the line length to "n" characters. "n" is a decimal number. The NicePrint card will automatically issue a carriage return after this number of characters is issued. This command also stops echoing characters to the Apple screen. When using the HTAB function with the normal Apple 40 column screen, this command must be used in order to HTAB over 40 columns. When listing a BASIC program to the printer, this command must also be used to allow full 80 column listings.

<CTRL-I>I :Allows printing to the Apple screen simultaneously with the printer. Cancels the <CTRL-I>nN command above.

<CTRL-I>nL :Set left margin. After this command, all printing will begin "n" columns from the left. This command also sets up the left margin for the graphics dump commands.

<CTRL-I>nR :Set right margin. A carriage return will be issued after column number "n" from the left side of the printer. When this command is in effect, the line will be ended only when a blank is encountered to prevent words from being chopped in two.

<CTRL-I>nP :Sets page length to "n". This allows skipping the perforation. Most of the time, you will be using 11 inch paper at 6 lines per inch which is 66 lines per page. 6 lines will be skipped when "n" lines have been printed. You will probably want to specify 60 with this command.

## TEXT COMMANDS

<CTRL-I>S :Dumps the 40 column text screen to the printer. 80 column boards are not supported. Works only with the BASIC roms enabled. Will not work with Pascal.

<CTRL-I>2S :Dumps both text page 1 and 2 side by side to form an 80 column display.

<CTRL-I>G :Enter graphics dump mode. See the Graphics section below.

<CTRL-I>nZ :Send the character "n" to the printer.

<CTRL-I>V :Verify that the dipswitch settings on the card select the correct printer and also print the NicePrint firmware Version number.

<CTRL-I><CTRL-?> :Change the command control character to whatever you want. The new control character will now be used wherever <CTRL-I> was used before.

## TEXT COMMANDS

### DEFAULT TEXT MODES

Every time DOS 3.3 does a PR#n or Pascal or CP/M initialize the printer, the following conditions are the default:

} @ commands are disabled. Left margin, right margin, line length and page length = 0 which means that these features are disabled.  
Echoing to the screen is on for DOS, but off for Pascal and CP/M who take care of screen echoing themselves. The parity bit is forced off and the printer bell is disabled for all operating systems. Line feed is automatically sent after carriage return under DOS but not CP/M or Pascal. This will cause double spacing under Visicalc unless you specify the "--" option when starting to print. If your word processor is double spacing, you may have to include an "@^@YK" command at the beginning of your text to disable automatic line feed. Also, check the dipswitch settings inside the printer. See the installation section for required dipswitch settings.

## TEXT COMMANDS

### RAW MODE

This section has been written for advanced programmers only.

Much software has been written that sends graphics characters to the printer. The problem with other interface cards is that they try to interpret individual characters as command strings, such as <CTRL-I>. Graphics programs require that every character be passed through without alteration such as masking the parity bit off or intercepting <CTRL-I> and trying to execute it as a command. The NicePrint card switches into "RAW" mode to allow all characters to pass to the printer when the following circumstances occur: 1. The command string character must be changed from <CTRL-I> to <CTRL-Y> 2. a "<CTRL-Y>K" must be sent to not append linefeeds after carriage return 3. a "<CTRL-Y>N" must be sent to turn screen echoing off 4. an escape character (hex 1B) is received AND 5. dipswitch number 1 on the NicePrint card must be off. Under CP/M and PASCAL, the first three conditions are the default. Under DOS 3.3, they must be manually sent. When in RAW mode, there are no characters that get interpreted as commands. To get out of RAW mode, a PR#n must be executed (from DOS), a <CTRL-C> or a return to the prompt (from CP/M), or the device re-opened (from Pascal). The Fancy Font system from SoftCraft meets the above 4 conditions and will automatically work with the NicePrint card without any hardware or software modifications whatsoever if dipswitch number 1 is off.

## GRAPHICS COMMANDS

Graphics commands are preceded by a <CTRL-I>G (or <CTRL-Y>G from CP/M or Pascal). They can alternatively be preceded by @^@YG to avoid the need to type control characters. Carriage return terminates graphics dump commands. Following the "G", the options listed below can appear in any order. For example, the string

@^@YGDLIRE2

will dump double sized, using the left margin spacing, inverse, rotated and emphasized from hi-res page 2. If no options are specified, the dump will be centered and from page 1.

Do not put a space between the <CTRL-I>, and the G or between the G and any other graphics option characters.

Graphics dump software packages require configuration for a particular printer interface card type. The NicePrint card is similar to a Grappler card (not the Grappler+).

When typing graphics dump commands directly into Basic, you will get a SYNTAX ERROR after the dump is finished because BASIC tries to execute the <CTRL-I> command. To get around this, use a PRINT statement like:

PRINT CHR\$(9);"GDIRL2"

<CTRL-I>G : Dump hi-res page 1 to the printer.

Other options available are:

2 - Dump hi-res page 2 instead of 1.

D - Dump double sized. Is emphasized when non-rotated to print with the correct aspect ratio.

E - Dump emphasized for a darker print.

## GRAPHICS COMMANDS

Printing speed is considerably slower.  
I - Inverted image (photographic negative).  
This is usually used for photographs being dumped.  
L - Use the left margin value to indent the entire dump. This value can be specified with a @nL command as described under TEXT COMMANDS.  
M - Dump the hi-res screen with the bottom 4 lines as text. Will not work with "R" or "D".  
R - Rotate the dump clockwise 90 degrees.  
S - Print both hi-res pages side by side.  
Only an MX-100 is wide enough to print this.  
Cannot be used with "R" or "D" above.

## APPENDIX A. HIGH QUALITY TEXT

Some degree of manual control is allowed from the Apple keyboard. To use:

1. Turn printer on.
2. Press the ON LINE button the turn the READY light off.
3. Instruct the program to begin printing.
4. Wait for the Apple to do a "boop". A "boop" has a lower pitch than the normal Apple "beep".
5. Type the single character command from the Apple keyboard.
6. Press the ON LINE button again to proceed with printing.

All @ commands are available directly from the Apple keyboard. The **NicePrint** card can function like the **FINGERPRINT** product designed by Dan Dresselhaus because you can change print parameters without running a program to send characters to the printer. When in dot-matrix quality, only one command can be sent to the printer with the printer off-line when the Apple BOOPS. This is enough for Visicalc, for example, when you want to print a spreadsheet in 132 columns and have to set up the printer for condensed (C) print. When in high quality mode, this restriction to only one command does not apply. Any number of commands may be typed on the Apple keyboard with the printer off-line. The H must be first. For example, HLE2D will enter high quality, large (double wide pitch), elite pitch, font 2, and boldface.

@^ - Enable @ commands. Otherwise, @ signs will print out instead of being executed.  
@ - The @ sign is a special feature of the **NicePrint** Card to allow access to any of the following commands to any word processor.

## APPENDIX A. HIGH QUALITY TEXT

@H - High quality printing.  
@N - Return to normal dot-matrix quality and cancel Freeze.  
@F - Freeze current card settings so that successive PR#1 commands or re-boots will leave the card set up in high quality mode or whatever mode it had been in previously.  
  
@P - Pica pitch (10 per inch).  
@E - Elite pitch (12 per inch).  
@C - Condensed pitch (17 per inch).  
@L - Large (double wide). Can be used in combination with Pica, Elite and Condensed to form 5-pitch, 6-pitch and 8.5-pitch respectively.  
@M - Cancel Large.  
  
@I - Italics.  
@J - Cancel Italics.  
  
@D - Boldface.  
@Z - Cancel Boldface.  
  
@R - Superscript.  
@S - Subscript.  
@T - Cancel Super/Sub-script.  
  
@U - Underline.  
@V - Cancel Underline.  
  
@X - Send an escape character to the printer.  
@0 is the standard Roman font. The middle EPROM socket contains either font 2, fonts 2 and 3, or fonts 2, 3, 4 and 5 depending on the size of the EPROM or RAM chip. Likewise, the last expansion socket contains either font 6, or fonts 6 and 7, or fonts 6, 7, 8, and 9. See Appendix E.

## APPENDIX A. HIGH QUALITY TEXT

@K - Stop printing text immediately (Kill printing). If you want to abort a listing, just turn the printer off and type "K" when the Apple "boops" at you.  
@Y - This is the same as printing a <CTRL-I> (or <CTRL-Y> from Pascal or CP/M).  
@@ - Print an @ sign.  
@& - Change the @ command character to a & character. Any character less than ASCII A can be used. That is, !#\$%&'()\*+,-./:;<=>? and control characters can take the place of the @ sign.  
&@ - Change back to the @ character.

## APPENDIX B. GRAPHICS COMMANDS

Graphics commands are preceded by a <CTRL-I>G (or <CTRL-Y>G from CP/M or Pascal). They can alternatively be preceded by @YG to avoid the need to type control characters. Remember to use @^ to enable @ commands first. Carriage return terminates graphics dump commands.

<CTRL-I>G :Dump hi-res page 1 to the printer.

Other options available are:

2 - Dump hi-res page 2 instead of 1.  
D - Dump double sized. Will automatically print emphasized when non-rotated to correct the aspect ratio.  
E - Dump emphasized for a darker print.  
Prints slower.  
I - Inverted image (photographic negative).  
L - Use the left margin value to indent the entire dump.  
M - Dump the hi-res screen with the bottom 4 lines as text.  
R - Rotate the dump clockwise 90 degrees.  
S - Print both hi-res pages side by side.  
Only a 132 column printer is wide enough to print this. Cannot be used with "R" or "D" above.

## APPENDIX C. TEXT COMMANDS

@Y can be used in place of <CTRL-I> in every instance below. @^ must first be used to enable @ commands.

<CTRL-I>G - Enter graphics dump mode. See Appendix C for details.

PR#n - Turn the NicePrint card on.

PR#0 - Turn the NicePrint card off.

PRINT D\$;"PR#";SLOT - Turn the NicePrint card on. Note: D\$=CHR\$(4).

PRINT D\$;"PR#0" - Under DOS 3.3, turn the NicePrint card off.

<CTRL-I>K - Don't automatically print line feed after carriage return.

<CTRL-I>A - Automatically print line feed after carriage return.

<CTRL-I>C - Turn printer bell off.

<CTRL-I>B - Turn printer bell on.

<CTRL-I>H - Allow the high order bit to be sent to the printer.

<CTRL-I>X - Don't allow the high order bit to be sent to the printer.

The following commands require a decimal number from 0-255 to precede the command character. A 0 value turns that command off.

<CTRL-I>nZ - Output a single character whose value is "n". In this manner, any character 0-255 can be sent to the printer.

<CTRL-I>nN - Set line length to "n" and turn off Apple screen while printing.

<CTRL-I>I - Turn Apple screen back on while printing.

<CTRL-I>nL - Set left margin to "n" spaces.

<CTRL-I>nR - Set right margin to "n" spaces from the left of the paper.

<CTRL-I>nP - set (page length - 6) lines per page. 6 line feeds will allow perforation skipping.

<CTRL-I>S - Dump the 40 column Apple screen

## APPENDIX C. TEXT COMMANDS

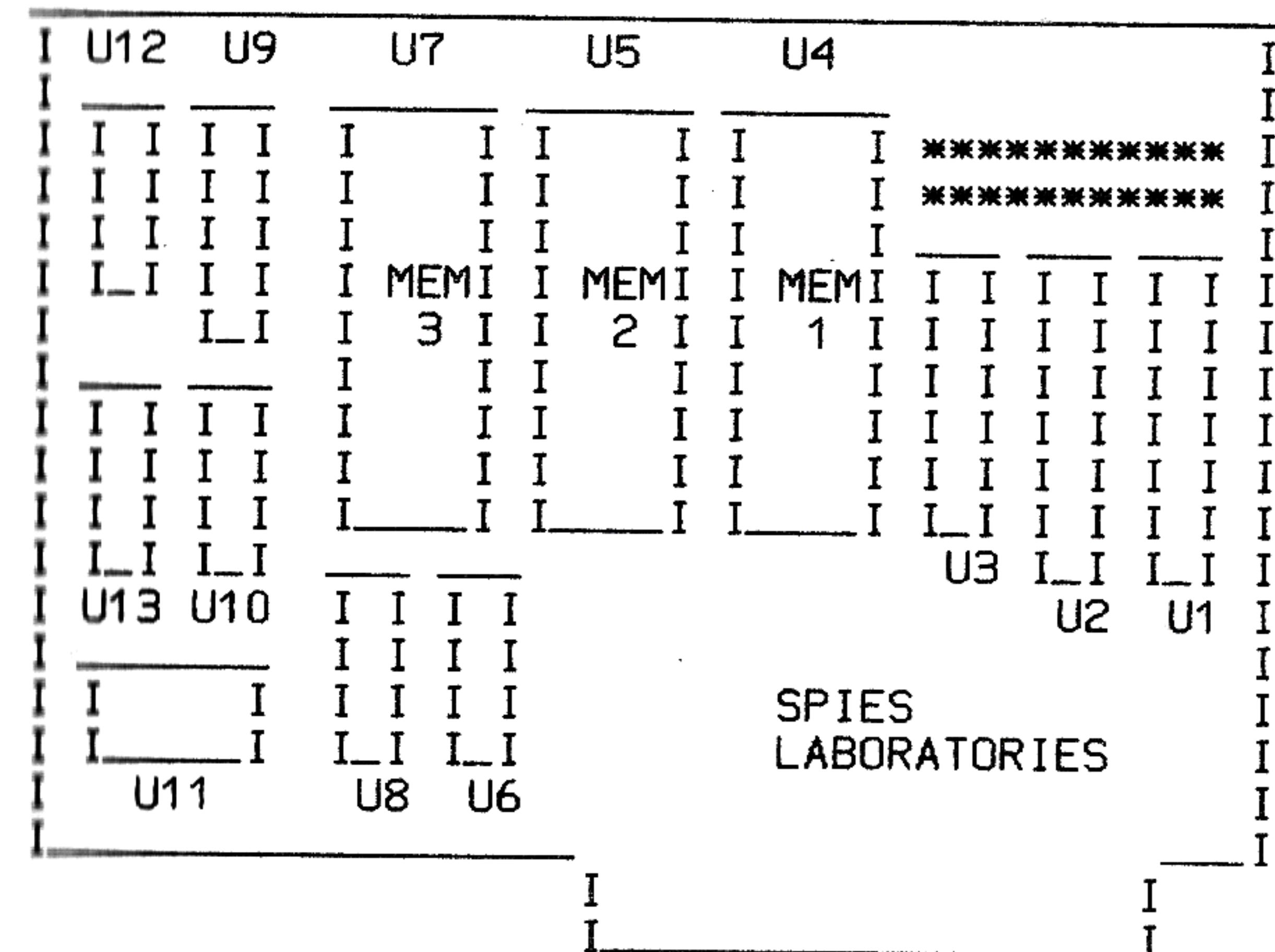
to the printer. BASIC roms must be enabled for this command to work. Will not work with Pascal.

<CTRL-I>2S - Dump both page 1 and 2 of the 40 column Apple screen to the printer to form an 80 column page.

<CTRL-I><CTRL-?> - Change command control character to another.

<CTRL-Y><CTRL-?> - Change command control character to another.

## APPENDIX D. PARTS LAYOUT



### Parts list:

- U1, U2 - 74LS374
- U3 - 74LS279
- U4 - 2764 EPROM
- U5, U7 - OPTIONAL EPROM
- U6 - 74LS00
- U8, U13 - 74LS138
- U9 - 2114 RAM
- U10 - 74LS02
- U11 - 74LS174
- U12 - 74LS30

## APPENDIX E. FONT NUMBERING

The numbering of the fonts remains constant for each of the sockets MEM 1, MEM 2, and MEM 3. MEM 1 currently can have only quality fonts 0 and 1. MEM 2 can have at most font numbers 2, 3, 4, and 5. MEM 3 can have at most 6, 7, 8, and 9. The number of fonts per socket is limited by the amount of storage in the memory chip plugged into that socket. Each font requires 2K bytes of storage.

## APPENDIX E. FONT NUMBERING

The following table shows the font numbering scheme:

A 2716 and a 6116 RAM can hold only one font. A 2732 holds two fonts. A 2764 can hold four fonts.

Device installed..	2716	RAM	2732	2764
MEM 1 .....	xxx	xxx	0	0,1
MEM 2 .....	2	2	2,3	2,3,4,5
MEM 3 .....	6	6	6,7	6,7,8,9

If MEM 2 or MEM 3 are empty, selecting that font will print garbage. There are two common configurations. The first places the Letter Gothic Orator Large font chip in MEM 2 and the Script Olde English chip in MEM 3. In this case, Letter Gothic is font number 2, Orator Large is font 3, Script is font 6 and Olde English is font 7.

The second case has all four fonts in MEM 2 in which case Letter Gothic is number 2, Orator Large is 3, Script is 4 and Olde English is 5. If there is also a RAM chip, it usually is in MEM 3. It will contain font number 6.

## APPENDIX F. MACHINE LANGUAGE

This section shows how to write your own driver for sending characters to the printer. People doing commercial packages to do graphics dump routines should read the section entitled RAW MODE. Whenever possible, use the firmware on the card. The Apple has enough absolute PEEKs and POKEs without adding more. This card emulates the old GRAPPLER card (not GRAPPLER+).

Read Printer status - \$C0n1 (read).

Bit 0 - Busy signal from printer.

Bit 1 - Select signal from printer.

Bit 2 - Paper Empty signal from printer.

Bit 3 - Printer busy signal.

Load 8 bit output latch - \$C0n1 (write).

Pull strobe low - \$C0n2 (write).

Pull strobe high - \$C0n0 (write).

Address bit 3 is ignored at present so \$C0n1 is the same as \$C0n5, \$C0n2 is the same as \$C0n6, \$C0n0 is the same as \$C0n4. For slot 1, n is 9. Assuming you installed the NicePrint card in slot 1, the commands to be used are \$C091, \$C092 and \$C094. Using \$C094 is preferred over \$C0n0 because this provides GRAPPLER compatibility.

## APPENDIX G. DEMONSTRATION PROGRAM

The following APPLESOFT program will print out all 96 characters in high quality mode with both PICA and ELITE spacing:

```
100 D$ = CHR$(4)
200 PRINT "INPUT NICEPRINT SLOT NUMBER"
300 INPUT SL
400 PRINT "ENTER FONT NUMBER"
500 INPUT N$
600 PRINT D$;"PR#";SL
700 PRINT CHR$(64);";^@H@";N$:GOSUB 5000
800 PRINT "@E":GOSUB 5000
900 PRINT D$;"PR#0"
999 END
5000 FOR I=32 TO 63:PRINT CHR$(I)::NEXT I
5100 PRINT : PRINT "@";
5200 FOR I=64 TO 95:PRINT CHR$(I)::NEXT I
5300 FOR I=96 TO 126:PRINT CHR$(I)::NEXT I
5400 PRINT
5500 RETURN
```

## APPENDIX H. SETUP PROGRAM

This setup program is a menu driven program that you can use to initialize the NicePrint card in high quality mode for later use by a word processor. Once set up for a particular mode, the NicePrint card will remain in that mode until you turn the Apple off.

Step 1. Boot the Apple DOS 3.3 System Master diskette.

Step 2. Insert a blank diskette into drive 1. Make sure it is blank because Step 3 will destroy all data on it!

Step 3. Type the following line.

INIT HELLO

Step 4. When the drive stops, type the following line.

NEW

Step 5. Enter the following BASIC program and carefully check it for errors.

```
10 D$ = CHR$(4):A$=CHR$(64):C$=CHR$(94):M$=CHR$(38)
20 PRINT "TURN PRINTER ON."
30 PRINT "NICEPRINT CARD MUST BE IN SLOT 1."
40 PRINT "ENTER QUALITY. H FOR HIGH QUALITY,"
50 PRINT "OR N FOR NORMAL DOT-MATRIX QUALITY."
60 GET Q$:PRINT Q$
70 IF Q$ <> "H" AND Q$ <> "N" THEN GOTO 40
80 N$ = "0":IF Q$ = "N" THEN GOTO 120
90 PRINT "ENTER FONT NUMBER."
100 GET N$:PRINT N$
110 IF N$ < "0" OR N$ > "9" THEN GOTO 90
120 PRINT "ENTER PITCH, P FOR PICA, E FOR ELITE,"
130 PRINT "OR C FOR CONDENSED."
140 GET P$:PRINT P$
150 IF P$<>"P" AND P$<>"E" AND P$<>"C" THEN GOTO 120
160 PR#1
```

## APPENDIX H. SETUP PROGRAM

```
170 REM ENTER FOLLOWING LINE FOR BANK STREET WRITER
180 PRINT M$;A$;CHR$(24);
190 PRINT A$;C$;A$;N$;A$;P$;A$;Q$;A$;"F";
200 REM ENTER FOLLOWING LINE FOR BANK STREET WRITER
210 PRINT A$;M$;
220 PR#0
230 PRINT "PUT YOUR WORD PROCESSOR IN DRIVE 1"
240 PRINT "AND PRESS RETURN TO RE-BOOT."
250 INPUT A$:PR#6
260 END
```

Step 6. Type the following line.  
SAVE HELLO

Step 7. Boot this diskette and follow the prompts.

This diskette will serve as an easy and reliable way to get you going with the NicePrint card.

Notes: Lines 180 and 210 are only to be entered if you are using a word processor that cannot enter an @ (at sign) or a ^ (caret). Omit these lines entirely otherwise. What they do is to change the @ character to an & (ampersand). For Bank Street Writer, use & control sequences in the text instead of @ control sequences.

## APPENDIX I. OPTIONAL FONTS

### ROMAN FONT - PICA

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### ROMAN FONT - ELITE

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### SPECIAL FONT

!"#\$%&'()\*+, -./0123456 turns into:  
£◦∞◦•●◦□◻↑+↓+@@™¢+¶§

ABCDEFGHIJKLMNPQ turns into:  
ΔΠΓΦΩΣΛΞ≈∫≈±∂≈+∞°

'abcdefghijklmn turns into:  
ΞαΒγδεφλστθΞμ≥≤

### LETTER GOTHIC - PICA

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### LETTER GOTHIC - ELITE

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

## APPENDIX I. OPTIONAL FONTS

### ORATOR LARGE - PICA

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### ORATOR LARGE - ELITE

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### SCRIPT - PICA

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### SCRIPT - ELITE

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### NICE ENGLISH - PICA

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~

### NICE ENGLISH - ELITE

!"#\$%&'()\*+, -./0123456789:;=>  
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^\_  
'abcdefghijklmnopqrstuvwxyz{|}~