softJET II - version 2.3

User Manual

```
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This  is  a  FREEWARE  product. You  are  encouraged  to  make
unmodified copies of the softJET disk to be shared with your
friends and associates. You must provide complete and unmod-
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comments, criticisms and donations are greatly appreciated.
If  you  are  interested  the  complete  source  code  for  the
softJET II product is available. Please refer to the order
form  provided  for  more  information  or  contact  me  at  the
number(s) shown below.
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CHAPTER 1: INTRODUCTION

Since the introduction of the Hewlett Packard LaserJET printer in 1984 software developers have added drivers to their programs to take advantage of some of the more complex features offered by this new technology. The additional sophistication in these applications combined with the advanced functionality of laser printers often leads to output that is not always exactly what you expect.

Wouldn't it be convenient to be able to see quickly on your screen how your printed output will look <u>before</u> printing?

softJET II addresses this need by providing users of the Hewlett Packard LaserJet printers (and even those without a laser printer) the capability of previewing output from any application software on their screen before printing.

The difference between softJET and other WYSIWYG (What-You-See-Is-What-You-Get) products is its ability to interface with any application software that supports the LaserJet printer including all the popular word processors, text formatters, report writers, publishing programs and specialized products.

What is softJET?

softJET is a very fast software simulator of a (real) LaserJet printer that will display output from your application software on your screen for quick preview allowing you the convenience of canceling the print if what you see on the screen is not exactly what you expected.

How to use this Manual

This manual assumes the reader has a basic working knowledge of the DOS command language including file management and directory manipulation.

Throughout the manual the following terms and conventions apply:

- The term LaserJet is used to refer to all models of the HP laser printer including the compatibles. Sections that refer to a specific model of printer will indicate that model.

- Text appearing in the TYPEWRITER font is used to represent the output that appears on the screen and commands that you enter.

- When describing the format of a DOS command italics are used to indicate where you should replace the text with your own choice. Bracketed [italic] entries indicate optional items.

- ☞ A paragraph like this with a pointing hand alerts you to important information that should be read carefully.

- Small icons like ⬅, ➡, Shift etc. represent the keys on your keyboard that you should press. When two or more keys are connected with a plus sign as in Shift+➡ it means you should press the ➡ key while holding the Shift key down.

CHAPTER 2: GETTING STARTED

This chapter gets you started using softJET as quickly as possible. It describes the minimum program hardware requirements, how to install it and get it going.

What You Will Need

softJET II is designed to run on an IBM PC/XT/AT, PS/2 or compatible computer with:

- PCDOS 2.x or 3.x,

- at least 256K of available Random Access Memory (RAM),

- at least one 360K disk drive (a hard disk or large RAM disk area is recommended) and

- a compatible CGA, MCGA, EGA, VGA or Hercules™ graphics card.

Make a Backup Copy

The softJET II program diskette is <u>not</u> copy protected so you can make a copy of it with the DOS DISKCOPY or COPY commands. Please refer to your DOS manual for instructions on how to make a copy of a diskette.

Installation

To install softJET copy the contents of the softJET II diskette into a directory called \SJ on your hard disk drive, usually C:.

To do this you must first create the subdirectory with the command:

    MKDIR C:\SJ

then insert the softJET II diskette in the A: drive and copy the files into that subdirectory with the command:

```
COPY A:\*.* C:\SJ
```

After you have installed softJET you can store the original
diskettes in a safe place.

For the rest of this manual it will be assumed that you installed
softJET into a directory called C:\SJ. If you installed it into a
different directory or drive then just replace "C:\SJ" in the
examples with the directory name you chose instead.

Check the README File.

The softJET II diskette contains a file called README. At this
point you should examine the contents of this file by either
displaying it on the screen or printing it on your printer.

To view the file on your screen enter the command:

```
TYPE README
```

To print it on your printer make sure your printer is ready and
enter the command:

```
PRINT README
```

This file contains important last minute information that was not
included in the User Manual.

Specifying the softJET Directory

If you have installed softJET into a directory on your hard disk
you will want to set the default softJET directory so that when
you run softJET from another directory on the disk it will be able
to find the files it needs to execute. To do this, at the DOS
prompt enter the command:

```
SET SOFTJET=-DIR C:\SJ
```

This is called the softJET environment string. You will probably
want to put this command in your AUTOEXEC.BAT file so that it gets
executed automatically whenever your computer is switched on.

softJET maintains temporary working files when it executes. By default these files are stored on the current drive. However, if you have a fast hard disk or a RAM disk you can tell softJET to use it for all its work files by including the "-WD d" option on the command line or, better yet, in the "SOFTJET=" environment string as explained above.

For example, if you have a RAM disk set up as the D: drive then you could enter:

    SET SOFTJET=-DIR C:\SJ -WD D

Any other valid options can be placed in the environment string to override the factory defaults. See the "Reference" chapter for a complete description of the command line and environment string options.

For a demonstration of the softJET's features from your softJET directory enter the command:

    DEMO

The DEMO.BAT batch file will take you through a quick tutorial on how to use softJET. Follow the instructions that appear on the screen and enjoy the power of preview.

Here is more detailed information regarding the functions available to you when previewing a document.

While each page is displaying and after a page has completed you can press any of the keys described below.

⬅ ➡ ⬆ ⬇   Move the zoom window around the page. The outline of the zoom window appears at its' current position on the page each time you press one of these keys.

Shift+⬅ ➡   Move the zoom window faster. These combinations
Shift+⬆ ⬇   of keys act like those above but move around the page faster.

Ctrl+➡   Expand the zoom window. Press this combination of keys to expand the zoom window to double its current size so that you can zoom into a larger area of the page although in less detail.

Ctrl + ←	Shrink the zoom window. Press this combination of keys to shrink the zoom window to half its current size so that you can zoom into a smaller area of the page at greater detail.
←	Switch between the Zoom and Draft views.
F2	Cross-hair overlay. Press this key to overlay cross-hairs on top of the displayed draft or zoom view temporarily interrupting the preview. By pressing the direction keys you can move the rulers around the displayed page (using the Shift will move it faster). When you are finished with the cross-hairs press the Esc key to return to the page menu.
F3	Go to a page. Enter the page number to go to or Esc to cancel. If you enter a very large number like 999 softJET will go to the last page in the file.
F9	Hires Mode (MCGA/VGA only). On MCGA or VGA systems you can select this mode which will display the draft mode in full character resolution. Normally the draft mode depicts characters as small black rectangles. This makes the draft mode very fast at the cost of readability. However on MCGA and VGA systems the resolution (640x480) is high enough to actually show the character bitmaps in the draft view but this does slow down the preview.
PgDn	Go to the next page in the document (if any).
PgUp	Go to the previous page in the document.
Home	Go to the first page in the document.
Esc	Exit to DOS.

The Status Line

At the bottom of the preview screen is the status line. It shows you the current status of the program. The following fields are displayed on the status line at all times:

input file
: At the left of the status line is the name of the current input file (i.e the file being previewed). Only the file name and extension are shown. The drive and path, if any, are not displayed.

PAGE:
: This is the current page number being displayed. This is the actual sheet number that would be printed and does not necessarily correspond to the page number in your 'document'.

CARTRIDGE:
: This field indicates which cartridge is currently loaded into softJET (* = none).

PAPER:
: This field indicates which type of (simulated) paper is installed in softJET's paper tray (LETTER, LEGAL, A4 or B5).

FONTS:
: This field shows the number of soft fonts currently loaded. This number reflects only those loaded via the preload option (-PL) and not any that are embedded in the file being previewed.

CHAPTER 3: USING SOFJET

Since softJET is a software simulator of a (real) LaserJet printer
its input is usually the output from your application software.
This output can come from a single application such as a word
processor or text formatter or it can be the final result of many
products that eventually produce an output stream for a LaserJet
printer.

It is at this point that you can preview the output with softJET.

Running the Program

The general format of the run command is:

  SJ filename [option] [option] ...

where filename is the name of the file to preview (i.e. the printer
output from your application). If you do not specify a filename
then a description of the program's syntax and options are printed
on the screen. You may also include any options <u>after</u> the
filename. Each option name must be preceeded by a "- " character
and separated from other options by at least one space.

For example, the command:

  SJ DEMO.OUT -C F

will preview the file DEMO.OUT with the "F" cartridge.

You can also include a valid drive and path name before the file
name as in the command:

  SJ C:\OUTPUT\DEMO.OUT -C F

Wildcard characters in the filename are <u>not</u> allowed.

Refer to the "Reference" chapter for a complete description of the
options.

Previewing with Font Cartridges

In order to reproduce an accurate representation of the printed page softJET provides the <u>software</u> equivalent of the HP Font Cartridges.

Each cartridge has two levels of support:

1. spacing (the font metrix) and

2. image (the character images).

The softJET program diskette contains the spacing support files (CARTx.DAT) for the most popular cartridges and also includes the image files (xxxx.IMG) for the printers internal Courier and Line Printer fonts. Other specialized cartridge diskettes that contain the full image and data support are available separately from Wesley Steiner (see the order form included in the package for more details).

Loading a Cartridge

Before softJET can use any of the cartridges for preview the corresponding cartridge file (CARTx.DAT) must be available in your softJET directory.

To load a cartridge add the -C option after the filename on the command line. For example:

```
SJ DEMO.OUT -C F
```

will preview the file DEMO.OUT with the F cartridge.

Previewing with Soft Fonts

softJET can preview documents that use any HP compatable soft fonts. Since all of the character spacing and image information is included in the soft font file softJET can accurately represent the characters on the screen in both the draft and zoom views.

In order to preview a document that uses soft fonts you must first convert each HP soft font file into softJET's format with the SF2SJ program then when you run softJET include the -PL option to PreLoad them. This is the softJET equivalent of downloading them to the printer.

In order to preview a document that uses soft fonts you must first convert each font to a format that softJET can use. You convert soft fonts with the SF2SJ.EXE conversion program. This program will convert any HP compatible soft font file into softJET's preview format, then the next time you run softJET (with the -PL option) you will be able to preview output that uses these fonts.

To convert a soft font, from the softJET directory enter the command:

    SF2SJ   fontfile [id]

where fontfile is the name of the HP compatible soft font file that you wish to add, you can include an optional drive and path name before the fontfile, and id is an <u>optional</u> font id number as defined in the LaserJet reference manual. If you do not include an id number then the font is converted but not activated until you assign an id number with the Soft Font Manager program SFM.EXE.

☞ Note that there must be only <u>one</u> soft font in the fontfile and it must be a raw font without any extra PCL commands in it. This is usually they way it comes from the supplier.

Every soft font that is downloaded to the printer must have a unique id number between 0 and 32767. Your application software will usually assign these id numbers for you when it downloads the fonts to the printer. For some applications the id number is significant while for others it is arbitrary. Refer to the documentation supplied with your application for information on the id numbers used with soft fonts.

If your application selects fonts by id number alone then you must assign the same id numbers. If your application selects fonts by characteristics then the id number is not as important. In either case softJET should have the same id number in order to accurately preview your output.

The font id number is also used to determine the order in which the fonts are stored and ultimately accessed in the printer's memory and likewise in softJET's working environment. This order is important when fonts are selected by characteristic rather than by id number since the first matching font in the list of available fonts will be selected.

Here are some examples of adding soft fonts:

```
SF2SJ CO100RPN.USP 1
```

This example converts the file CO100RPN.USP in the current direc-
tory and assigns it the id number 1.

```
SF2SJ A:TR180BPN.USP 1000
```

This example converts the file TR180BPN.USP in the A: drive and
assigns it the id number 1000.

```
SF2SJ C:\FONTS\GARAMOND\GA080IPN.USP
```

This example converts the file GA080IPN in the C:\FONTS\GARAMOND
directory and does not give it an id number. The id number can be
assigned or changed later with the SFM.EXE program.

The converted soft fonts are added to the SOFTFONT.DAT file in the
softJET directory. See the "Reference" chapter for more informa-
tion on converting soft fonts.

Managing the Soft Fonts

The Soft Font Manager program (SFM.EXE) maintains the file of
converted soft fonts (SOFTFONT.DAT). It allows you to:

- Activate/Deactivate a font or fonts,

- Change a font's id number,

- Download a font or fonts to LPT1,

- and Erase a font or fonts.

To run the SFM program, from the softJET directory enter the
command:

```
SFM  [option] [option] ...
```

where option is one or more of the following:

    -?   to print the help screen

    -A   to Activate a font or fonts

    -C   to Change a font id

    -D   to Deactivate a font or fonts

    -DL   to download a font or fonts to the printer

    -E   to Erase all or some fonts

    -L   to List the current entries

For example, to list the fonts currently available for preview
(i.e. those converted with the SF2SJ.EXE program) enter the com-
mand:

    SFM -L

This will list the font entry number (record number), the id number
and the status flag, (+) if the font is activated and (-) if it
is not, followed by a description of the font characteristics.

When specifying a font you can refer to it by its entry number
(#n) or by its id number (n). You can also specify all fonts with
the asterisk (*).

For example, to activate fonts include the -A option followed by
a list of the fonts you want to activate:

    SFM -A font [font] ...

where font can be an entry number (#n) or an id number (n) as in:

    SFM -A #1 #2 87 92

This example will activate entry numbers 1 and 2 and id numbers
87 and 92. This method of specifying fonts applies to each option
that requires font arguments.

Refer to the "Reference" chapter for a detailed description of
each option.

Preloading the Soft Fonts

Once you have converted and activated the soft fonts as explained above you can then use them for previewing by including the -PL (PreLoad) option when you run softJET. For example:

    SJ MYFILE.OUT -PL

will preview the file MYFILE.OUT with all of the activated soft fonts preloaded. When you include this option on the command line softJET looks in the softJET directory for the file named SOFT-FONT.DAT and loads only the <u>active</u> fonts. You can load only as many fonts as are currently defined by the -SF option to a maximum of 32. The FONTS: field on the status line will indicate how many were loaded.

CHAPTER 4: ABOUT SOFTJET

This chapter presents a technical overview of how the softJET
program works. By gaining a better understanding of the internal
workings of the program the user may be able to better apply
softJET in their own situation.

The Program

The program is written entirely in assembly language in order to
produce the fastest possible code in the smallest possible space.

The Input File

softJET will accept any DOS file as input. If you can send the
file to a LaserJet printer (and it prints) then it can be previewed
by softJET (except for Landscape printing). The file can contain
any PCL text and data sequences that are valid for the LaserJET,
LaserJetPlus or LaserJET500plus printers.

Limits on PCL Commands

One possible restriction is in the use of values in PCL commands.
In order to achieve high speed preview softJET uses only integers
when manipulating a value in a PCL command such as the value "10.1"
in the command "[Esc]&a10.1L" (set left margin). The real printer
manipulates these values as floating point numbers and so sacri-
fices execution speed for accuracy. For those cases when decimal
points are involved softJET will scale up the value to accept as
many decimal positions that are necessary to maintain accuracy in
the preview and keep the performance up.

Also, invalid PCL sequences may not produce the same result as the
printer does. We have done as many tests of invalid cases as we
can in order to correctly reverse engineer the software in the
printer however we cannot guarantee that we caught them all. This
should not be a problem if you are previewing output from a proven
application because it should only be outputting valid PCL com-
mands.

Pagination

softJET will faithfully interpret the incoming PCL data stream and produce the screen output as it is encountered until the current page is forced out of the printer either by an explicit page eject command, like a formfeed (0Ch), or as a consequence of passing the bottom margin.

softJET maintains pointers to the start and end of the currently displayed page. Then when you zoom into a section the entire page is re-interpreted from the start but only those dots that fall within the zoom window will be drawn on the screen. When the page is relatively simple this process is almost instantaneous. However as the page becomes more complex and includes graphics images the delay in zooming starts to become noticable.

Character Image files

When you zoom into a section of text on the screen softJET must have the character images avialable in order to represent them accurately. Each font, whether internal, cartridge or soft, has a separate image file (xxxx.IMG) associated with it.

When softJET is drawing the draft page these image files are not necessary because the characters are greeked, only the spacing data is needed and that is kept available in RAM at all times.

In the zoom mode, each time the font changes softJET must bring in the corresponding image file from the disk into the image buffer. This again adds to the time delay when zooming. When softJET goes to the disk to find an image file it will look in the softJET directory. If it can't find the file for whatever reason then black boxes will appear in the zoom window instead of the character images. These black boxes are exactly the same size as the actual character so that the correct spacing is maintained.

Font Cartridges

Included in the softJET package is support for as many of the cartridges A through Z that are currently offered by HP that spacing data is avialable for. These cartridge files CARTx.DAT contain the spacing data only (no images) for the cartridges. These files are loaded into the cartridge buffer when a cartridge is selected. Thus the spacing data is available in RAM. This spacing data can then be accessed quickly during the preview.

The cartridge file must be available in the softJET directory.

Associated with each cartridge are the images for the fonts in the cartridge. Some image files are included in the softJET package. Others must be ordered separatey from Wesley Steiner in order to fully support the images in the zoom view.

Soft Fonts

softJET can accept any HP compatable soft font in the same way that it is downloaded to the printer. Any soft font that is loaded into softJET goes through the same interpreter as the other PCL commands. When a soft font is encountered in the input stream its spacing data is extracted and stored in the soft font buffer in RAM. At the same time the character images are also extracted and stored in the image buffer.

When the font changes or when the page is ejected the soft font image (in the image buffer) is saved in a temporary disk file IMAGEnnn.TSI on the softJET work drive. Then when the font is later selected for printing (i.e. previewing) the image file for that soft font is loaded back into the image buffer so that the exact image is presented in the zoom view. This is the truest form of WYSIWYG previewing available.

Optimization Techniques

It is possible to gain much better performance and save disk and RAM space with softJET by following some of the following techniques. The strategy or combination of them you use depends more on your particular application than anything else.

Disk Space

You can conserve valuable disk real estate when using some cartridges by deleting any font images that you know you will not need. For example, the Z cartridge contains 32 fonts. This means there are 32 xxxx.IMG files necessary to _fully_ support this cartridge for previewing. However half of these fonts are the ASCII symbol set and the other half are the ECMA symbol set. If you know that your application will not need the ECMA set you can delete these image files from your softJET directory. The worst that can happen is that you will get black boxes in the zoom window if a document never uses these fonts.

softJET utilizes the disk frequently for intermediate files and image files. When the input file and the softJET directory are on the same drive the drive heads have to move back and forth quickly to transfer from input to fonts and back again. This leads to a lot of unecessary thrashing. It is better to keep your input on a drive seperate from softJET's data or image directories. For example you could always have your application output to a file on a RAM disk, then the input to softJET will be from a drive different from the softJET directory.

You can also specify a separate drive and path for the image files with the -WD option. Because softJET must access these files frequently for zooming operations and since soft font image files are created on the fly as temporary files only it is a good idea to set the image directory to a RAM disk if possible. This greatly improves the performance during zooming. It is also advantages because when you turn you computer off at the end of the day any temporary files that softJET created will automatically be deleted and you will start with a clean disk in the morning.

CHAPTER 5: REFERENCE

This chapter is a reference section for the softJET program and support utilities. It describes in detail the command line syntax and options for each program.

softJET (SJ.EXE)

SJ.EXE is a DOS program that will preview any LaserJet PCL output file on a graphics screen.

Command Line Syntax

The general from of the command line is:

    SJ   filename [option] ...

where filename is the name of the file to be previewed, you may include an optional drive and path specification, and option is one more of the following options.

Options

Any options must appear after the filename and must be separated from other options and values by at least one space. The ordering of the options is not significant as long as they are mutually exclusive.

Options can be included on the command line or in the "SOFTJET=" environment string. Any option appearing on the command line will override the current environment setting for that option.

-C x   (Load a cartridge. Default: none)

            This option starts softJET with the x cartridge in-
            stalled where x is a letter in the range A through Z.
            If the cartridge file CARTx.DAT is available in the
            softJET directory it is loaded. This is equivalent to
            turning your LaserJet printer ON with the x cartridge
            installed. For example, the command:

```
SJ DEMO.OUT -C F
```

will preview the file DEMO.OUT with the Tms Rmn "F" cartridge installed.

-CGA   (Force CGA 640x200 mode.)

-DIR   (softJET directory. Default: the current directory)
[path]
                This parameter sets the softJET directory. The softJET directory is the directory that contains the softJET program, cartridge files and image files. This is usually the directory into which softJET was installed.

-EGA   (Force EGA 640x350 mode.)

-HGC   (Force Hercules 720x348 mode.)

                This option will override softJET's automatic graphics card detection and force it to use the Hercules graphics mode. Use this option if softJET cannot automatically detect the presence of a hercules graphics card in your system.

-LJ   (Emulate a classic LaserJET printer.)

-LJ5   (Emulate a LaserJET500plus printer.)

-LJP   (Emulate a LaserJetPlus printer. Default)

-MCGA   (Force MCGA 640x480 mode.)

-PL   (Preload soft fonts.)

                When this option is included softJET will 'preload' any soft fonts from the SOFTFONT.DAT file that have been activated by the Soft Font Manager (SFM.EXE) program. These soft fonts will then be available for previewing.

-VGA   (Force VGA 640x480 mode.)

-WD d   (Work Drive. Default: current drive)

                This option will tell softJET which drive to use for its work files where d is the driver letter. It is usually best to assign the fastest drive as the work drive.

Abnormal Program Termination!

This error indicates that softJET encountered a severe error condition during the previewing operation. This can occur, for example, when the work drive is full.

Cartridge letter invalid after -C option!

The cartridge letter specified after the -C option on the command line is invalid. Correct it and try again.

Cartridge letter missing after -C option!

The cartridge letter after the -C option is missing. Enter a valid cartridge letter and try again.

Cartridge not found in the softJET directory!

The cartridge file CARTx.DAT was not found in the current softJET directory.

File not found or not available!

The input file specified on the command line was not found on the disk or is not currently available.

Graphics card required!

softJET tried to detect the presence of a graphics card but was unsuccessful. If you know what type of graphics card you have you can force softJET to use a particular mode with one of the -CGA -MCGA -EGA -VGA or -HGC options.

Parameter Value Error!

A numeric value field of one of the parameters on the command line was invalid.

Soft Font Conversion (SF2SJ.EXE)

SF2SJ.EXE is a DOS program that will convert any HP compatible soft font file into a format suitable for softJET previewing.

Command Line Syntax

The general form of the command line is:

    SF2SJ filename id

where filename is the name of the HP soft font file to be converted, you may include an optional drive and path specification, and id is an optional font id number.

Error Messages

File 'xxx' not found or not available!

The file 'xxx' was not found or could not be opened.

Not a HP compatible soft font file.

This message indicates that the file you specified on the command line is probably not a valid HP PCL soft font file.

Image Buffer Overflow! Complete font not saved.

The font is too big to be converted completely to softJET format. Some of the character images could not be saved although all of the spacing data is intact. When you preview output with this font you may get Black Boxes on the screen instead of the character images.

Soft Font Management (SFM.EXE)

SFM.EXE is a DOS program that allows you to manage the fonts converted with the SF2SJ.EXE program.

Command Line Syntax

The general form of the command line is:

    SFM [option] ...

where option is one or more of the following options:

Options

Each option must begin with a dash ('-') character and be separated from other options and arguments by at least one space. Some of the options require you to include a font or fonts as arguments. When specifying a font you can refer to it by its entry number (analogous to the record number) or by its id number. In the descriptions that follow the font arguments can be either a font id number n or a font entry number #n or an asterisk (*).

-?   Print the help screen.

-A font ...   Activate a font or fonts.

               This option will activate the specified font or fonts. An active font will be preloaded into softJET whenever you run it with the -PL option. Active fonts appear on the list (see the -L option) with a plus ('+') character after their entry number.

                   SFM -A #1 #2 87 92

                   SFM -A *

                   SFM -A #1 #2 87 92 -L

               The first example activates entry numbers 1 and 2 and fonts with id numbers 87 and 92. The second example activates all the fonts. The third example does the same as the first and then lists the fonts on the screen.

-C font n   Change a font's id number.

                 This option will change a font's id number to n.

                     SFM -C 1 2

                     SFM -C #1 2

                 The first example changes the id number of the
                 first font with id 1. The second example changes
                 the id number of <u>entry</u> number 1.

-D font ...   Deactivate a font or fonts.

                 This option will deactivate the specified font or
                 fonts. An inactive font will <u>not</u> be preloaded into
                 softJET when you run it with the -PL option. Inac-
                 tive fonts appear on the list (see the -L option)
                 with a minus ('-') character after their entry
                 number.

                     SFM -D #7 #8 20100 20101

                     SFM -D *

                 The first example deactivates entry numbers 7 and
                 8 and fonts with id numbers 20100 and 20101. The
                 second example deactivates all the fonts.

-DL font ...   Download a font or fonts to the printer.

                 This option will download the active font or fonts
                 to the printer (LPT1:) with their current id num-
                 bers.

                     SFM -DL 20100 #7 #8 20101

                     SFM -DL *

                 The first example will download font id number
                 20100, entry number 7, entry number 8 and font id
                 number 20101 in that order. The second example
                 will download all the fonts in the order they
                 appear on the list.

-E font ...   Erase a font or fonts.

This option will erase (delete) the specified font or fonts from the SOFTFONT.DAT file. This does <u>not</u> delete the original font file.

    SFM -E 20100 #7 #8 20101

    SFM -E *

The first example will erase entry numbers 7 and 8 and font id numbers 20100 and 20101. The second example will erase <u>all</u> the fonts. To use a soft font again after it has been erased you must convert it again with the SF2SJ.EXE program as described earlier.

-L   List the current fonts.

This option will list all the fonts that have been converted with the SF2SJ.EXE program and are available for previewing.

    SFM -L

    SFM -C #10 100 -A #10 -L

The first example will list the font entry number, the id number and the status flag, (+) if the font is active and (-) if it is not, followed by a description of the font characteristics of each font. You can also include this option at the end of a list of other option in order to verify the results as in the second example.

Error Messages

<u>"xxx" is an invalid font id.</u>

The string **"xxx"** is not a valid font id number. A font id number must be in the range 0 to 32767.

<u>"xxx" is an invalid font specifier.</u>

The string **"xxx"** is not a valid font specifier. A font specifier must be a font d number (n), a font entry number (#n) or an asterisk ('*').

<u>"xxx" is an invalid ID!</u>

The id number "xxx" could not be converted into a valid id number (0..32767).

<u>Entry #n is too large.</u>

You have exceeded the maximum number of fonts allowed (999).

<u>Font "xxx" is invalid!</u>

The font entry number "xxx" is invalid. The entry number must be between 1 and the number of entries indicated in the list.

<u>Font "xxx" not found!</u>

The font entry number "xxx" was not found. The entry number must be between 1 and the number of entries indicated in the list.

<u>Font and id missing after -C option.</u>

You did not specify a font and id number to change after the -C option.

<u>Font list missing after -A option.</u>

You did not specify a list of fonts to be activated after the -A option.

<u>Font list missing after -D option.</u>

You did not specify a list of fonts to be deactivated after the -D option.

<u>Font list missing after -DL option.</u>

You did not specify a list of fonts to be downloaded after the -DL option.

<u>Font list missing after -E option.</u>

You did not specify a list of fonts to be erased after the -E option.

APPENDIX A: CARTRIDGE FILE FORMAT

Included in the softJET package are support files (CARTx.DAT) for
some of the LaserJet cartridges. These cartridge files contain
the metrix data for the fonts in the cartridges.

This appendix describes the format of these cartridge files. If
you have a cartridge that is not supported by Wesley Steiner you
can use this information to build your own. If you create a
cartridge file without any supporting image files then your pre-
view will be correctly spaced but all the character images will
be replaced by black boxes when you zoom in.

The Cartridge File
_____

A cartridge file is in binary format so it cannot be edited with
a standard text editor. Wesley Steiner does not supply the tools
for creating these files. You must use your own tools or create
your own programs for the task.

The file must be named CARTx.DAT where x is a single character of
your choice. After you have created a cartridge file it must be
available in the softJET directory when you specify it on the
command line with the "-C x" parameter.

The general format of a cartridge file is:

Cartridge File Header
Header for Font #1
Header for Font #2
...
Header for Font #n
Metrix Data for Font #1
Metrix Data for Font #2
...
Metrix Data for Font #n

The Cartridge File Header must be the first block in the file. The
other sections are referenced via offsets in the Cartridge File
Header and therefore can be in any order that you prefer.

The Cartridge File Header

The cartridge file header is the first block in the file and is used to identify the default font, if this cartridge has one, and locations of the other font headers in the file.

WORD OFFSET	Default Font
WORD OFFSET	Font #1
WORD OFFSET	Font #2
...	
WORD OFFSET	Font #n
WORD 0000H	END.

Default Font
: Some cartridges have a default font. The default font is automatically selected when the printer is powered up with the cartridge installed. This WORD field is the byte offset in the file of the font header for the default font or 0000H if this cartridge does not have a default font.

Font #x
: Each font in the cartridge requires a font header. This WORD field, one for each font, contains the byte offset in the file to the font's header.

END
: This WORD field (0000H) serves to mark the end of the fonts in this cartridge.

Font Headers

Each font in the cartridge requires a font header formatted as follows:

WORD	Symbol Set Value
WORD	Pitch
WORD	Point Size
WORD	Cell Width
WORD	Cell Height
WORD	Baseline Position
WORD OFFSET	Delta X Table
WORD OFFSET	Width Table
WORD OFFSET	Height Table
WORD OFFSET	Left Offset Table
WORD OFFSET	Top Offset Table
BYTE (13)	Image File

BYTE	Stroke Weight
BYTE	Typeface
BYTE	Flags

Symbol Set Value

This WORD field specifies the font's Symbol Set as defined in the LaserJet reference manual. For example, the ROMAN8 symbol set is specified as "8U" in a PCL command sequence which is stored as $277 = 8*32+'U'-64$.

Pitch

This WORD field specifies the font's Pitch in 1200^{ths} of an inch units. For example a 10 pitch font would be stored in this field as $120 = 1200/10$.

Point Size

This WORD field specifies the font's Point Size as an integer that defines the Point Size x 100. For example, a point size of 12.50 would be specified in this field as $1250 = 12.50*100$.

Cell Width

This WORD field defines the font's Cell Width in 1200^{ths} of an inch units.

Cell Height

This WORD field defines the font's Cell Height in 1200^{ths} of an inch units.

Baseline Position

This WORD field defines the font's Baseline Position in 1200^{ths} of an inch units.

DeltaX Table.

This WORD field specifies the byte offset in the file to the first byte of the character Delta X table or 0000H if this is a fixed space font (i.e. all characters are the same width). See below, Metrix Data, for a description of the table.

Width Table.

This WORD field specifies the byte offset in the file to the first byte of the character Width table. See below, Metrix Data, for a description of the table.

Height Table.

This WORD field specifies the byte offset in the file to the first byte of the character Height table. See below, Metrix Data, for a description of the table.

Left Offset Table.

This WORD field specifies the byte offset in the file to the first byte of the character Left

		Offset table. See below, Metrix Data, for a description of the table.

Top Offset Table. This WORD field specifies the byte offset in the file to the first byte of the character Top Offsets table. See below, Metrix Data, for a description of the table.

Image file. This 13 BYTE field contains a NULL terminated string that specifies the Image File associated with this font or a null string if there is no image file.

Stroke Weight. This BYTE field specifies the font's Stroke Weight as defined in the LaserJet reference manual.

Typeface. This BYTE field specifies the font's Typeface value as defined in the LaserJet reference manual.

Flags. This BYTE field contains eight Bit flags that specify the following:

	OFF(0)	ON(1)
Bit 0 (LSB)	Reserved	---
Bit 1	Reserved	---
Bit 2	Reserved	---
Bit 3	Not Used	---
Bit 4	Upright	Italic
Bit 5	Fixed	Proportional
Bit 6	7-Bit Font	8-Bit Font
Bit 7 (MSB)	Portrait	Landscape

Metrix Data

Each font has five Metrix Data Tables associated with it as outlined above in the font header. These tables all have the same format: 128 or 256 bytes for each table, one byte for each character. In each case the first byte represents the data value for character code 0 on up to character code 127 for a 7-bit font and 255 for an 8-bit font. For tables that require only positive values, like the Width table, the values can range from 0 to 255. For tables that require a signed value, like the Delta X table, the values can range from -128 to 127.

APPENDIX B: IMAGE FILE FORMAT

Included in the softJET package are support files (xxxx.IMG) for
the internal LaserJet fonts. These image files contain the bit
image data for the characters of a particular font. In order to
preview with full character images these image files must be
available for the font currently selected.

This appendix describes the format of these image files. If you
have are using a cartridge that is not supported by Wesley Steiner
you can use this information to build your own image support files.

The Image File

An image file is in binary format so it cannot be edited with a
standard text editor. Wesley Steiner does not supply the tools
for creating these files. You must use your own tools or create
your own programs for the task.

The file must be named xxxx.IMG, where xxxx is a unique identifier,
and be available in the softJET directory. The image file name is
then entered in the Image File field of the font header in the
corresponding cartridge file.

The general format of an image file is:

Pointer Table
Image Data for Character #1
Image Data for Character #2
...
Image Data for Character #n

The Poiner Table must be the first block in the file. The image
data is referenced via offsets in the Pointer Table and therefore
can be in any order that you prefer.

The Pointer Table

The Pointer Table is a block of 256 WORDs. Each one is a byte offset to the ith character image in the file. So for example the 66th WORD in the Pointer Table is the offset to the image of the 'A' character (65H). If an image is not available then it's pointer value is FFFFH (-1). Since the file uses 2 byte pointers the entire font image data is limited to 64K-512 bytes.

Image Data

The Image Data is a string of bytes that represent the 300 dpi character image for a particular character with a "1" bit specifying a black dot on the page. Each row of bit data is padded with "0" bits in the last byte. The total number of bytes needed for an image is defined by the metrix data in the cartridge file for that character. For example, a character that is 21 dots wide and 33 dots high requires 99 bytes to store the image (((21+7) div 8)*33).

APPENDIX C: PROBLEMS?

This appendix identifies some of the common problems that might
occur when using softJET II, why they occur and how to resolve
them.

On Hercules graphics systems nothing appears on the screen but the
program seems to be working.

        This problem arises when softJET did not successfully detect
        a Hercules graphics board in your system and incorrectly
        assumed that it was an EGA or VGA system. To fix this run
        the program with the -HGC option to force it to use Hercules
        mode. If this solves the problem you may want to include this
        option in the "SOFTJET=" environment string as the default.

Black Boxes appear in the zoom window instead of characters.

        If softJET cannot find the character image file (xxxx.IMG)
        for the current font it will display a black rectangle of
        exactly the same size and position instead. This can happen
        when you preview a file that requires a specific cartridge
        or soft font and you forgot to specify it on the command line
        or you may not have correctly specified the softJET directory
        (-DIR option) and so when run from another directory it
        cannot find the .IMG files.

The displayed page is not the same as the printed page.

        This situation can be the result of one of two possibilities:

          1. softJET is not configured the same as the printer.

          2. softJET is not correctly simulating the printer (a bug).

        In the first case it is possible that softJET has not been
        configured the same as the printer before previewing. Some-
        times the printer will contain a cartridge that is different
        from the one loaded into softJET or the printer model is not
        the same as the one softJET is simulating.

        Check the following points first before accepting the second
        explanation;

Model   The default printer model that softJET is simu-
                 lating is a LaserJET+. There are some obvious and
                 some subtle differences between the original
                 LaserJET printer and the LaserJET+ or Laser-
                 JET500+ models. Therefore make sure that softJET
                 is configured as the proper model (-LJ, -LJP or
                 -LJ5) before previewing.

Cartridge   Make sure that the cartridge (if any) that softJET
                 is previewing with is the same as the one in-
                 stalled in the printer when the document was
                 printed.

Soft   Make sure that softJET has the same soft fonts
Fonts   preloaded into it that the printer has had down-
                 loaded to it. The combination and order of inter-
                 nal, cartridge and soft fonts is very important
                 to the selection algorithm built into the printer
                 and likewise into softJET.

                 If you have exhausted all of the above points and
                 the document that is printed is still different
                 from that previewed by softJET then you have
                 probably discovered a bug in the softJET II inter-
                 preter that is not correctly simulating the
                 printer. Wesley Steiner would like to hear about
                 it as quickly as possible so that it can be
                 corrected.

                 To report the bug print the file PROBLEMS.FRM on
                 your printer and complete the form, then mail it
                 with a diskette containing the PCL output file and,
                 if possible, include a hard copy of the printed
                 output as well. If you are a member of Compuserve
                 you can upload the file to user id# [71652,275]
                 with a note describing the problem.