Plotting HPGL Plot Files with Interpex DOS Software

Introduction

Interpex DOS based products rely on lists of output devices to which the user may print or plot their results. Over time these lists have, at least in part, become outdated, so that more and more users of this software are encountering difficulty plotting their graphics to modern output devices. This problem cannot be repaired easily, since new DOS based drivers are not available for these modern Windows oriented devices. Rather we have been steadily moving toward the sensible solution: namely the creation of new Windows based products that will replace those currently in service. This new product line is the *IXeTerra® Workbench*, and we have so far released two modules for this product (Ground Penetrating Radar and Seismic Refraction).

However, there are a large number of our customers who continue to rely on the DOS based packages, and need to have their printing and plotting needs addressed in a simple, cost effective manner. That is why we now offer the shareware utility Plot2EMF, from James Greene's *Informatics Consulting*. This paper covers important tips on how to read HPGL dump files created with our products.

Plot2EMF is a shareware utility that we found at http://www.informatics-consulting.com/. At that time it had a few problems that it's creator, James Greene, was very enthusiastic about addressing. We also asked for some additional features to accommodate our clientele, and again, he was forthcoming with all the features we needed. This package is only *$13.50* to register and it works very well.

You may use **Plot2EMF** to process all HPGL output from all **Interpex** DOS based products that have line based color plots; especially where color fill is not an issue. The four DOS based products that use color fill are **Seistrix**, **Gradix**, **Resix 2DI** and **Resix IP2DI**. You may use **Plot2EMF** with the output from these, but you will only see lines and curves, without color fill.

I'll go over some facts you will need to know to get started right away.

Essential things about using Plot2EMF with your Interpex software

> **WARNING** – PLOT2EMF *DOES NOT* READ THE NATIVE INTERPEX FILE FORMATS!!!!!!!!. IF YOU TRY TO DO THIS YOU WILL MEET FAILURE EVERY TIME! PLOT2EMF READS ONLY HEWLETT PACKARD GRAPHICS LANGUAGE (HPGL) ENCODED FILES, AND WINDOWS ENHANCED METAFILES.

Plot2EMF reads HPGL and HPGL2 vector/line plot files created with all **Interpex** DOS based software (or any other HPGL plot driver). All you have to do is go to the EXIT menu in your Interpex software, and execute the SET (new) PLOTTER command and select one of the following plotters to produce color vector HPGL plots:

- Option 2 - Hewlett Packard 7475 or Equivalent

- Option 7 - HP 7596A (Draftmaster II) or equivalent

- Option B – Laserjet III PCL/HP-GL/2

After selecting the one of the listed HPGL plotter drivers, you will be asked if you want to,

"ENABLE COLORS FOR HARD COPY PLOTS?"

To obtain the best plot, you should answer **Yes**, and enable as many pens as you can. **Plot2EMF** (build 930 and up) supports up to 16 pens. Don't worry about the pen color names, since you may assign them in **Plot2EMF.** After choosing the pens, you will be asked to specify a port name for the printer. Usually, this is where you would enter serial or parallel port names like COM1 or LPT2, but here we would like you to enter a filename like MYPLOT.PLT instead. Doing this ensures that the output will not be routed to a hardware port, but rather, to a file on your hard drive. Plot the graphics in the usual way, providing an appropriate filename whenever you are asked to do so.   Once all your plots are made, you can return to Windows, and run **Plot2EMF**. See the lower half of the **Example** below for details on running *Plot2EMF*.

Example of How to Use Plot2EMF

Introduction

In this example we take the **Interpex** DOS program *Resix*, and use its plotter drivers to create an HPGL encoded dump file. It is this dump file that is read into *Plot2EMF*.

Creating an HPGL Encoded Dump File

Start *Resix* in the usual way.

Load your database and dataset and perform any necessary processing. Once all this is done, and the graphics look the way you want them to look, go to the **EXIT** menu, and select the **SET (new) PLOTTER** command (as pictured in Figure 1).
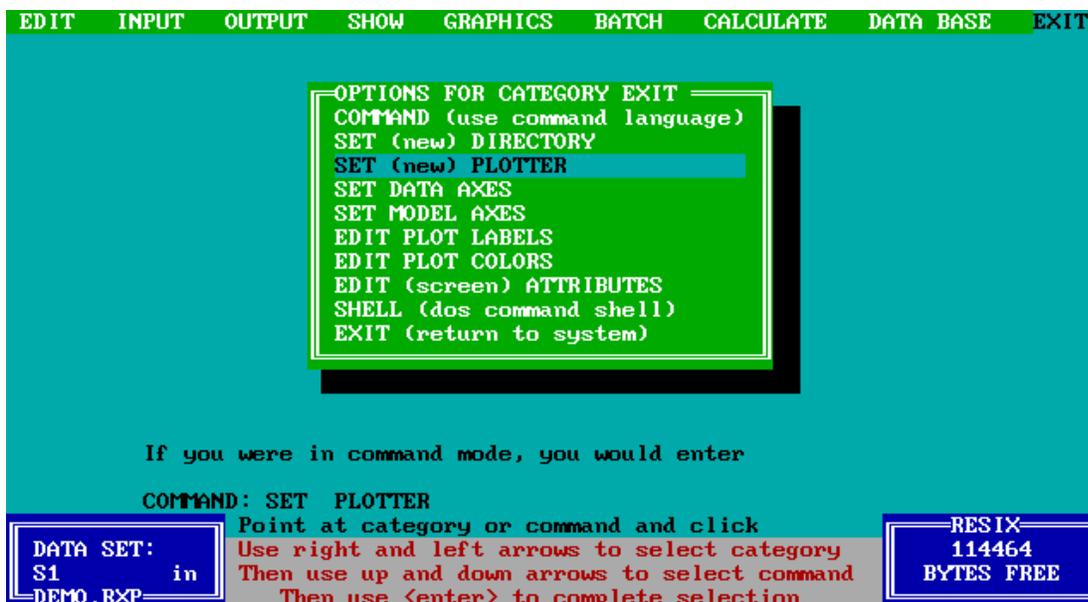
Figure 1: The EXIT Menu with the SET (new) PLOTTER command selected

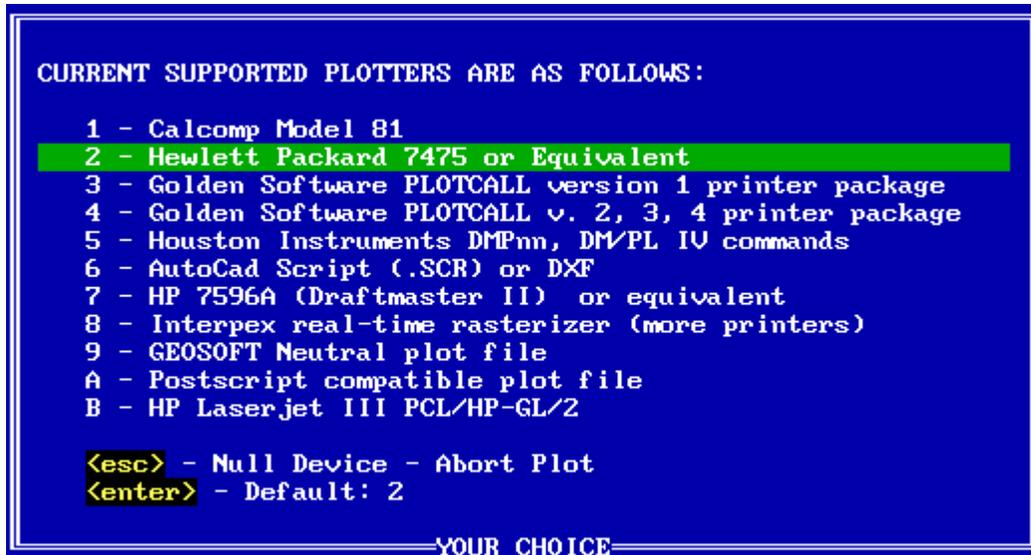Press the <ENTER> key. After you do this you should see the following dialog box.

Figure 2: The supported plotters and printers list

Above you will see the dialog box with a list of plotting devices. In that list you will see a column of numbers and next to each number the name of a plotter or print device. Push the number 2 on your computer's keyboard. This will select the

"Hewlett Packard 7475 or Equivalent"

plot driver. If this is not the printer on your machine, do not worry, we are not going to send the image to your printer. It is not important that you have this actual device, we just want to use the HPGL encoded file its driver creates.

Next you will be asked the following question:

Figure 3: Shall we enable colors? YES!

Push the "Y" key on your computer's keyboard - this will cause a **Pen Selector** dialog box to appear (Figure 4).

Below, you will see a list of pen numbers and colors. The "Plotter Color" name is not important at this time, since we will set them in *Plot2EMF*. Simply fill the "Pen Number" column out the way I have shown below.

Figure 4: Setting all the pens so they are in use

Once your **Pen Selector** dialog looks like mine, then press the <end> key. Again, if you have filled in the "plotter Color" names with something other than "Undefined" that will be quite fine.

Once this is done you will be asked to select a plotter port.

Figure 5: Selecting a Filename as a Printer Port

If you had the HP 7475 connected to your computer, you would enter a hardware port name like "COM1" or "LPT2" in this field.   ***But we do not want to do this!*** Instead we want to put the name of a *file* in here. You can use the one we used above. This ensures that the HPGL plotter code will be stored in an ASCII based DOS text file, and not sent to the hardware port.

Once you have entered a filename to store the HPGL output, press the <enter> key. Immediately you will see the following warning:
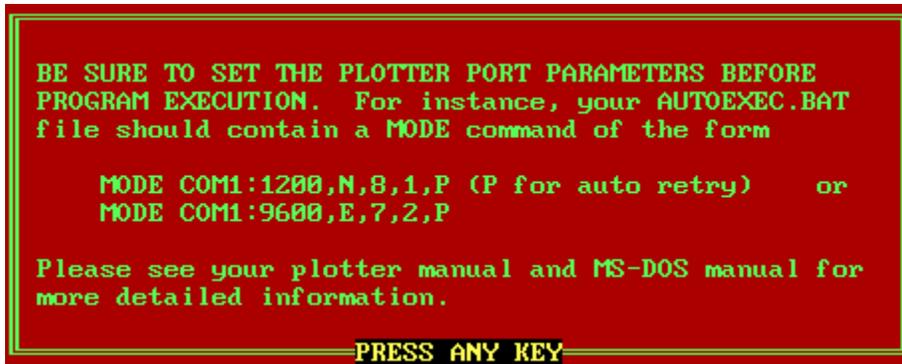
Figure 6: DISREGARD THIS WARNING! It is *not* important to us.

You should ignore it. It is for those who have the plotter connected to their serial port – which we do not have. To dismiss this warning, press any key.

Now program control will return to the Main Menu screen. Go to the **GRAPHICS** (or **PLOT**) menu and execute a **PLOT** command (like **PLOT (hard copy graphics)**).
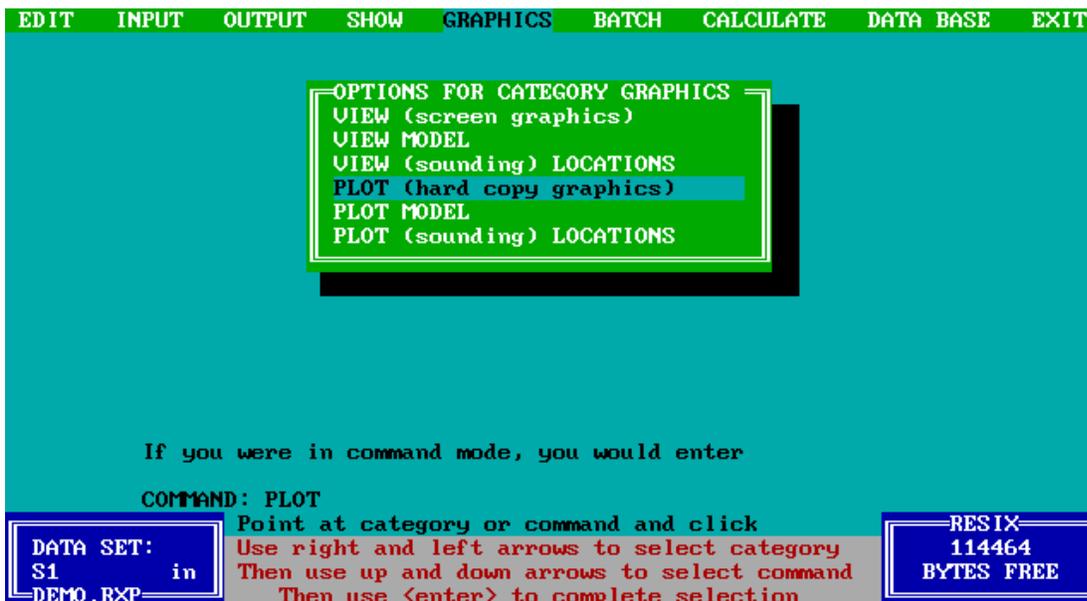

Figure 7: The GRAPHICS menu

A dialog box like the following will appear:

Figure 8: Dump File Naming dialog for HPGL files

Type any 8 character file name in this field followed by a dot and the three character PLT extension, just like we did in the picture shown above.   Press <enter> to start the plotting process. At this time *Resix* will store the HPGL encoded image in a DOS ASCII text file. *That file is the one we will read with **Plot2EMF**.* In this example, we will search for and read the file called FILE1.PLT.

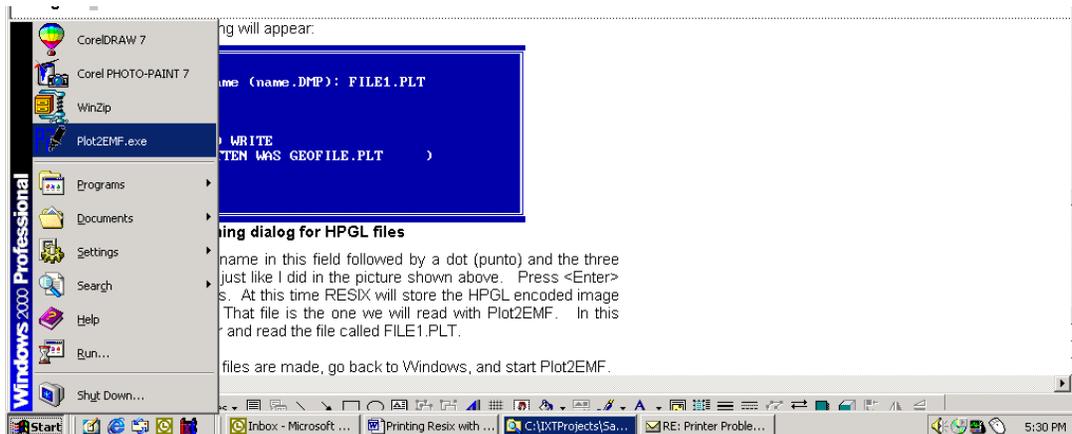Once all of your HPGL plot files are made, go back to Windows, and start **Plot2EMF**.

Figure 9: Starting Plot2EMF from Windows

Using Plot2EMF to read your HPGL dump file

Upon starting **Plot2EMF**, the Windows standard **File Open Dialog** will appear, as shown below.

> *Note:* All **Plot2EMF** functions and dialogs are very clearly explained in its help system.
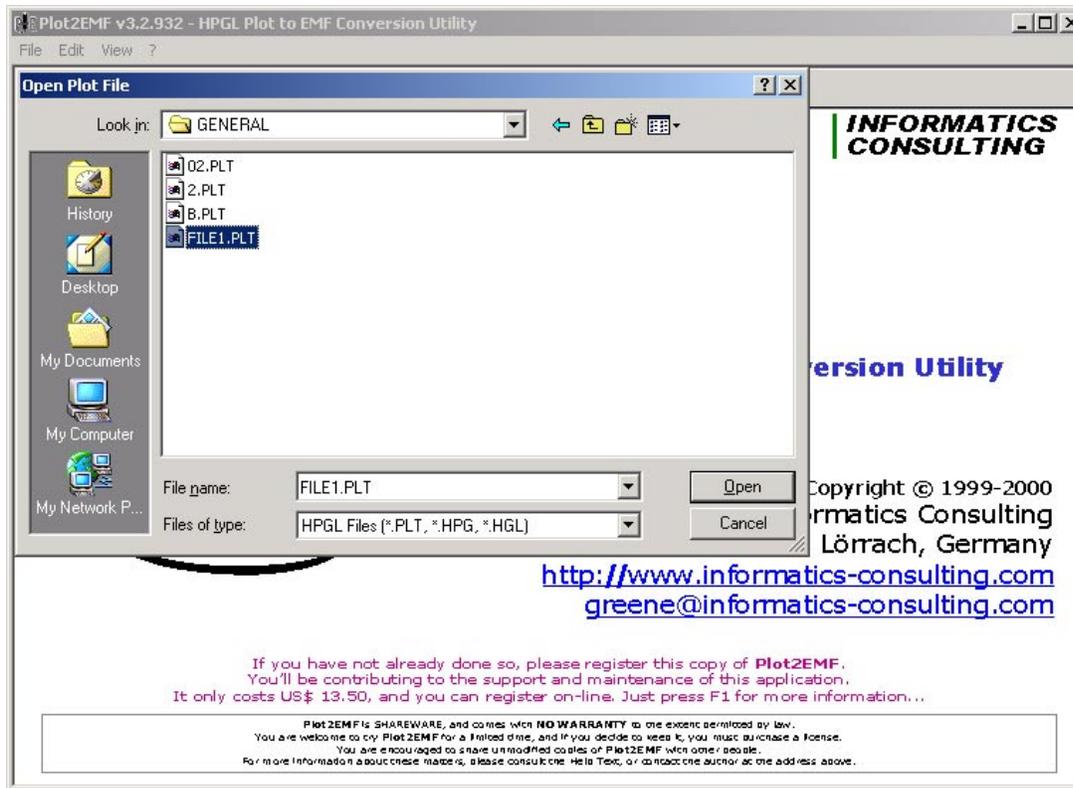
Figure 10: The initial file Open Dialog in Plot2EMF

If the file does not appear in the initial window, you will have to browse for it by changing the **Look in** location. As you can see, we have a small collection of HPGL files here. The one we want to look at is called FILE1.PLT. Remember, this is the file we created from *Resix* (if this is unclear, please reread the previous section, going through the steps for yourself). Click the mouse on the **Open** button to begin loading the file.

As the HPGL plotter file loads, you will see a status bar telling you how the loading of the HPGL file is going.
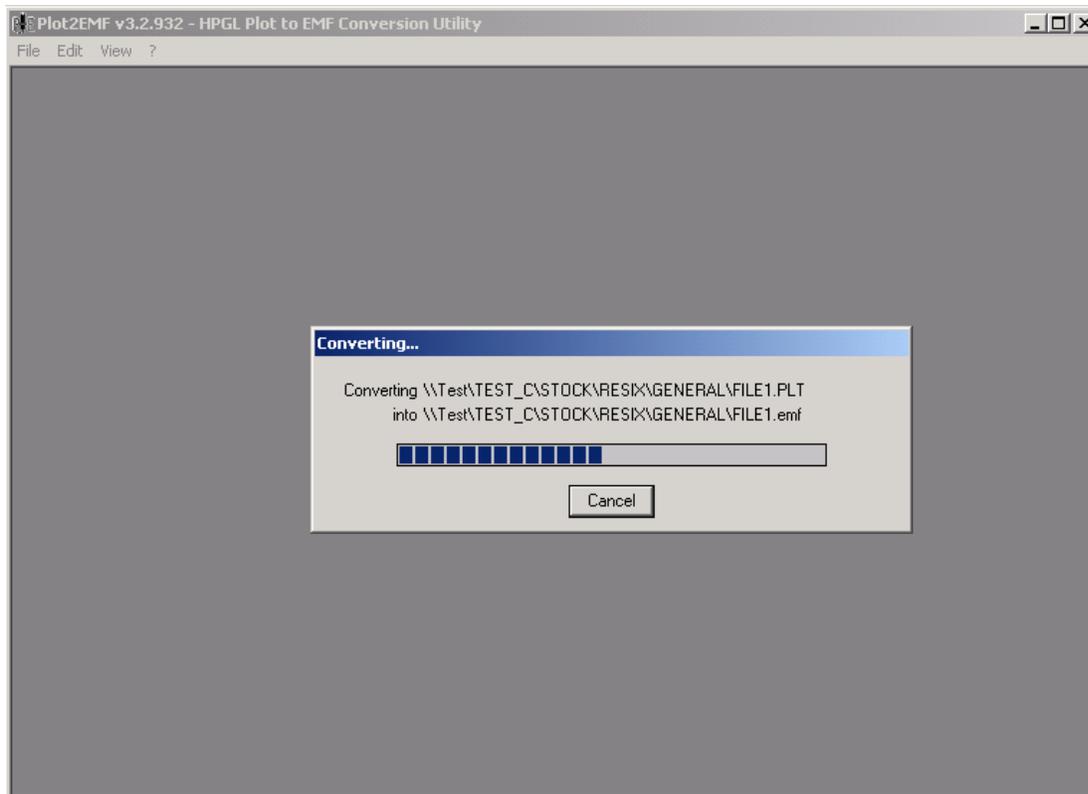
Figure 11: Status bar while loading the HPGL Dump File and creating the EMF File

Additionally, **Plot2EMF** creates a Windows Enhanced Meta File (EMF) as well.

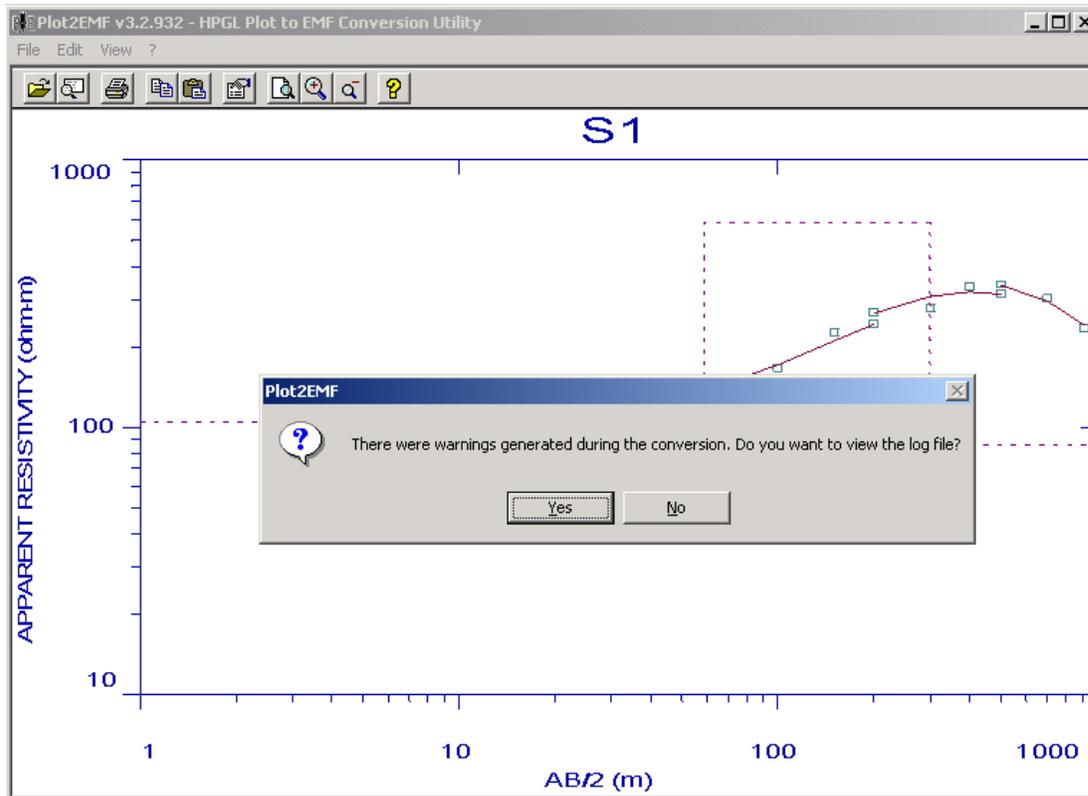Once this process is complete, you will see the following warning:

Figure 12: Unsupported Command Warning: Answer NO

Plot2EMF does not support all HPGL commands (some are only used to make a plotter do things, that software does not need to do). What is important is that the image looks the way you want it to look. So whenever this warning appears, you will usually answer NO, unless the plot is missing, then you will want to read it to find out what went wrong. The last thing we want to show you is the **Settings** dialog.
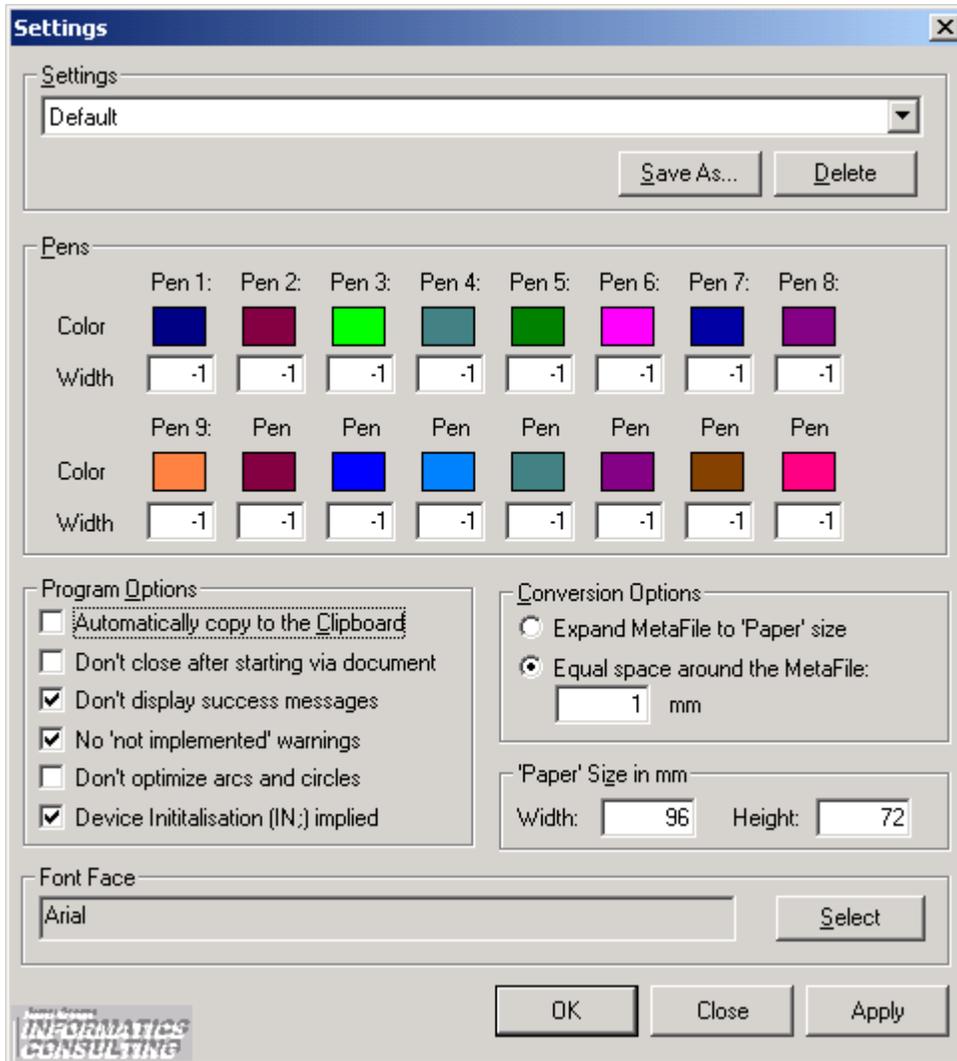
Figure 13: Edit Menu, Options Command: The Settings Dialog

Setting Lines (pen) Colors - Invariably, the colors of the plot elements will not be to your liking. Go to the **Edit** menu, and select the **Options** command. In this window you will find 16 pen color cells. Click on a color cell to open the color selector dialog box. In this dialog, you may assign any color that is in your computer's color palette to the respective pen.

> *Take Care!* – If you select the color **white** as a pen color, the line colors will be drawn in *white*. Thus, on a white screen background, they will not be visible. If a line or curve you *think* ought to be there is not visible, look at the pen colors to see if any are assigned a white attribute.

Setting Line Width - The width of the lines in the plot is defined in the **Width** cells. You are given three means of defining plot line width for each pen.

> *Note* - If you enter a floating point number in this field, only the integer part is regarded as significant.

1. **Set a constant line width or allow the HPGL code to set line width** - A value of zero in any of these cells allows any 'PT' commands in the HPGL file to adjust the pen thickness to

a specified width. In the absence of the 'PT' commands, this option fixes any unspecified line widths to 0.3 mm.

2. **Set pen thickness in pixels, rather than millimeters** - A value less than zero sets the pen width (measured in pixels) to the absolute value of the negative number you entered. Thus, if you wanted the line to be 10 pixels wide, you would enter –10 for the width parameter.

Set pen thickness in increments of 0.3 millimeters – Since most modern video display monitors use a pixel width somewhere between 0.2 and 0.3 mm, the best increment size for visible line width is probably right around 0.3 mm, at a minimum. Furthermore, any lines that one would wish to view on the screen, would have to be rendered in terms of this basic line width. Thus, positive entries in the **Width** field will tell **Plot2EMF** the number of line widths required to render a line on the screen. By way of example, a 5 in a given **Width** field will indicate that the respective pen width is close to 5 pixels wide or 1.5 mm.

Setting Font Attributes – Near the bottom of the **Options** dialog is a **Font Face** control for selecting the type of font you want to appear in the plot. Select the font name you prefer to see, ignoring the font weight, or size, since these are preset and unalterable.

Applying the attributes to a loaded plot – While in the **Options** dialog, click on the **Apply** button, and **Plot2EMF** asks you if you want to reprocess (that is, reload) the plot with the current attributes. Clicking on the **Yes** button will cause the HPGL plot to be reloaded with the established parameters.

> *Take Care!* – If you use plotter option 7, make sure that the **Initialization Implied** checkbox is checked, or else **Plot2EMF** won't know what to do with the initialization string .

All **Plot2EMF** functions and dialogs are very clearly explained in the help system.

Saving Files as EMF and BMP with Plot2EMF

The Windows bitmap is a fairly popular graphics format, and it is provided here in the **File** menu.

> *Take Care!* – The BMP files produced with this format are very large (often in excess of 4 MB).

Plot2EMF automatically creates an EMF file during the load process. The Enhanced MetaFile and HPGL formats can be read into Paintshop Pro v. 6 (found at http://www.jasc.com).

Again, the **Interpex** Dataset file is not a picture format. *DO NOT TRY TO READ THESE FILES WITH PLOT2EMF – IT WILL NEVER WORK!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*