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## Curve Fit Synopsis

The **Curve Fit** application allows you fit data pairs to a curve you select. The supported curve types are polynomial, log-log polynomial, and semi-log in both **X** and **Y**. You are allowed to select a curve order of from 1 through 10 for the polynomial curve types. The fit method used is least squares. To help determine how good the fit is for the curve selected, the sum of the absolute differences and the coefficient of fit performance are reported. The best fits usually have the smallest sum of absolute differences and a coefficient of performance near 1.000. The curve is automatically refitted anytime a change in data or curve type occurs. Two views of the data are supported which are a listing (List View) and a plot (Plot View) view.



### Starting a New Data Set

To fit a curve to a new data set, select **New Data** when asked to select a data file in the opening dialog. You immediately get a tabbed dialog that has the following three pages.


- o The Curve Page allows you to define a data set title, title the **X** & **Y** axes, select a curve type, and set the curve order.
- o The Data Page allows you to enter, import, edit, delete, and rearrange data pairs.
- o The Resolution Page allows you to set the data precision and display-entry format.

You can also start a new data set by selecting the **New Fit Button**  on the tool bar. Enter a data title and the axes titles; pick the curve type and order; select the data resolution and display format; and enter or import the data pairs. Click **OK** when you are satisfied with the data set.


### Plotting the Current Data Set

Once you have entered a data set and fitted a curve, you may select the **Plot Button**  on tool bar to display your data set in graphical form or select the **New Plot Window** option of the Window menu.. Each entered data pair is plotted as an asterisk and the fitted equation is plotted between the minimum and maximum data pairs as a solid green line. To get a better view you can double the plot dimensions by selecting the **Zoom Button**  on the tool bar or by selecting the **Zoom Plot** option of the Options menu. To restore the plot select the **Zoom Button** again.


### Modifying the Current Data Set

You may modify the data title, axes labels, curve type and order, precision, display style, and the data at any time by selecting the **Data Button**  on the tool bar or by selecting the **Data** option of the Options menu..


### Saving a Data Set

Once you have entered a data set, select the **Save...** or **Save As...** option of File menu or the **Save Button**  on the tool bar to save the data. Enter a file name appropriate for your data, and click the **OK** button. This application automatically recognizes data files having a **.dat** extension.

### Loading an Existing Data Set

To load a previously saved data set, use the opening file dialog to find the file on your system. When you have found the file, double click it or click it and then click the **Open Existing** button to load it. The application reads the file and displays pertinent information in the **List View**. You may reload a previously saved data set at any time by selecting the **Open Button**  on the tool bar or by selecting **Open** from the File menu.

### Printing

You may print the data set by selecting the **Print Button**  on the tool bar or by selecting the **Print** option from the File menu. The hard copy will have the same format as the **List View**.

### Importing Data


You may import data from a text file by selecting the **Import** button on the **Data** page. The **X-Y** data pairs may be delimited with a space, tab, comma, semicolon, double quote, and single quote or any combination of these characters. If the file contains more than two columns of data, only the first two are used and the remaining columns are ignored. If you have data in an Excel file, you can export it to a text file and then import it into this application.

### ***Limitations***


Until the application is licensed, you are limited to only 7 data points.

The application is easy to use. It has been tested with a data set in excess of 100,000 pairs and although slow with a data set that large it ran just fine. Select a previously saved file you wish to read from any drive/directory on your system and your off and running.

### ***Windows 95 Customers***

With Windows 95, I had hoped that the display limitations for list boxes et. al. would no longer be a concern. In fact, only 32,767 lines can be displayed in a list box. As a result, only 32,000 lines/data pairs are displayed per display/data page. To overcome this limitation, you may switch display pages using the **Next Page** , **Previous Page**

, and **GoTo Page**











 **Buttons** on the tool bar or selecting the **Next/Previous Display Page** or **GoTo Display Page** option from the **View Menu**. When entering data, the same arrows are available in the upper right corner of the Data Page. For those of you who are running NT, forget this paragraph, you get it all in a single list.

Data precision is limited to 14 decimal places maximum and 0 decimal places minimum.

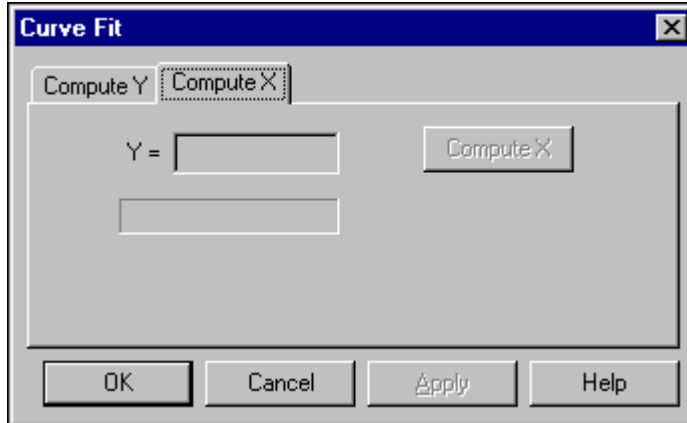
## Tool Bar



The tool bar provides a quick means to perform a task. Simply select the appropriate button and click on it. From left to right the buttons are:

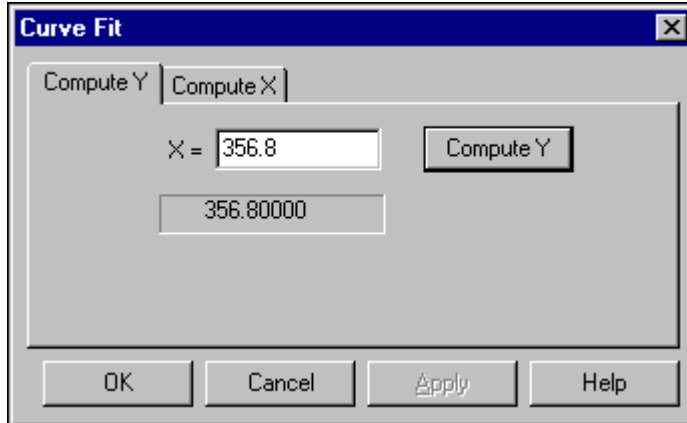
-  Start a new curve fit session.
-  Open a previously saved curve fit file.
-  Save the current curve fit to file.
-  Plot the data and fitted curve.
-  Double or restore the plot.
-  Display next page.
-  Display previous page.
-  Go to a Display/Data page.
-  Print the list view display.
-  Get HELP!!

## Compute X



This page is only active when you have elected to fit your data to the  $X = Ae^{BY}$  semi-log curve. You may enter a Y value in the edit control and X will be computed using the fitted curve coefficients when you click the **Compute X** button.

## Compute Y



This page is active when you have elected to fit your data to the  $Y = Ae^{BX}$  semi-log curve or any polynomial. You may enter an X value in the edit control and Y will be computed using the fitted curve coefficients when you click the **Compute Y** button.

## ***Registration Form***

Your Name: \_\_\_\_\_

Note: Type/print your name and company below **EXACTLY** as it appears in the **Registration** dialog in the **Help Menu** of the Application.

Registration Dialog Name: \_\_\_\_\_

Registration Dialog Company: \_\_\_\_\_

Please type or print clearly the following information:

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Check the programs you wish to Register.

Curve Fit:	_____	\$20.00
Find String:	_____	\$15.00
HTML Merge:	_____	\$20.00
Search/Replace String:	_____	\$15.00
Set Text File Line Break:	_____	\$10.00
Touch File Date/Time:	_____	\$10.00
Both Search/Replace & Find String:	_____	\$25.00
Both Search/Replace & HTML Merge:	_____	\$30.00

I have enclosed a

Check     Money Order     Cash    (Check One)

Preferred Registration Code delivery:

Mail     E-mail    (Check One)

Please include a self addressed envelope for mail delivery to speed up the response.

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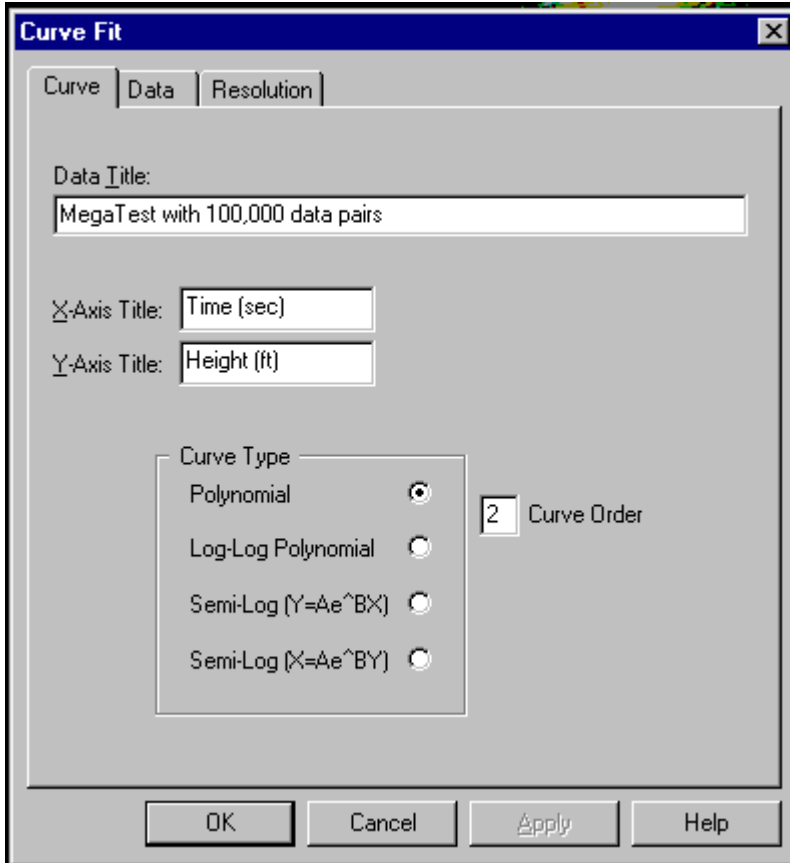
Please make checks payable to Richard Floersch.

Mail this form and your check or money order to:

Richard Floersch  
7307 W 89th Terr  
Overland Park, Ks    66212

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## Curve Page

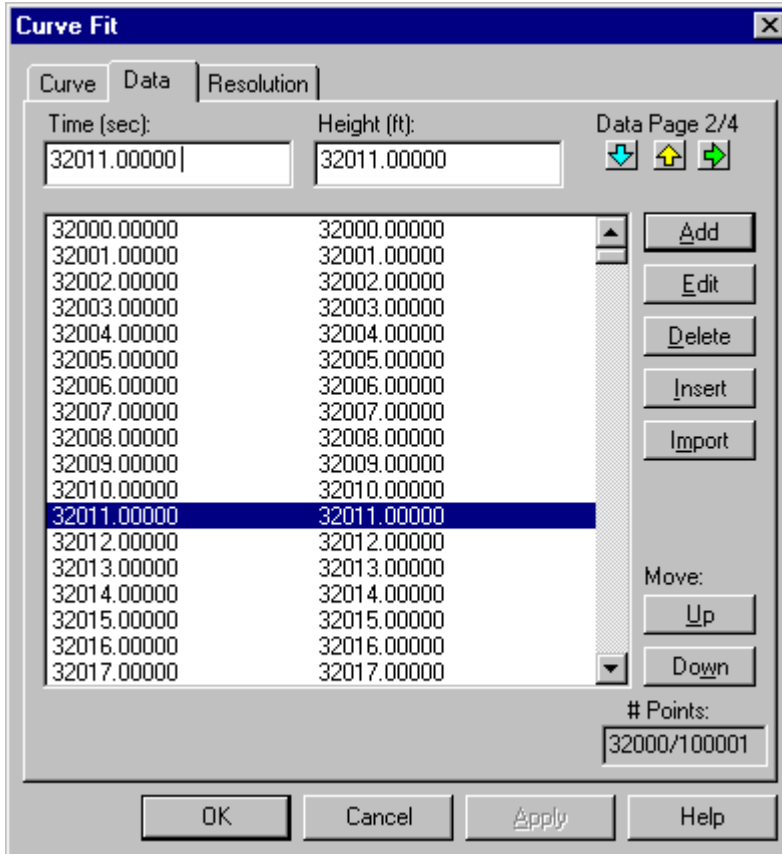


The screenshot shows a dialog box titled "Curve Fit" with three tabs: "Curve", "Data", and "Resolution". The "Curve" tab is active. The "Data Title" field contains "MegaTest with 100,000 data pairs". The "X-Axis Title" field contains "Time (sec)" and the "Y-Axis Title" field contains "Height (ft)". Under "Curve Type", four options are listed: "Polynomial" (selected with a radio button), "Log-Log Polynomial", "Semi-Log (Y=Ae^BX)", and "Semi-Log (X=Ae^BY)". To the right of these options is a "Curve Order" field containing the number "2". At the bottom of the dialog are four buttons: "OK", "Cancel", "Apply", and "Help".

The **Curve** page allows you to enter a title that describes your data, assign labels to the X & Y axes, and select a curve type. You may select a polynomial, log-log polynomial, or one of two semi-log curves. For the polynomial curves you may set the fit order of the curve from a 1st (straight line) to a 10th order curve. You must enter at least one more data pair than the order of the curve you select (e.g., for a 3rd order curve you must enter at least 4 data pairs). You may change the curve type or order at any time and the application will refit the data to the new choice.






## Data Page



The **Data** page allows you to add, import, modify, delete, and rearrange data pairs.

### Large Data Sets and Windows 95

With Windows 95, I had hoped that the display limitations for list boxes et. al. would no longer be a concern. In fact, I found out that I can only display 32,767 data pairs in the data list box. As a result, only 32,000 data pairs are displayed per data page. You may switch between data pages using the **Next Page** , **Previous Page** , and **GoTo Page**

 **Buttons** in the upper right hand corner of the dialog page. For those of you who are running NT, you get it all in one list.

### Adding/Inserting/Editing

Enter data pairs in the fields you titled on the **Curve** page and click the **Add** button to add a new data pair to the data set. Double clicking on a data pair loads their values in your titled fields where either may be modified. Click the **Edit** button to replace the highlighted pair, click the **Insert** button to insert the data above the highlighted pair, or click the **Add** button to add the new pair to the data set. If multiple pages are required to display your data, you may add/insert up to 700 more data pairs to an existing full display page. When you reach the 700 limit, a message box will be displayed telling you that the list will be rebuilt. If the page isn't full, you will be able to add the difference between 32,000 and the existing displayed pairs plus the additional 700.

### Deleting Data Pairs

To delete one or more pairs, highlight the data pairs in the data list you want to eliminate then click the **Delete** button. If multiple pages are required to display your data, the delete operation will not automatically bring the data from ensuing pages into the current page. Rebuilding the list box is time consuming, therefore, I chose to NOT automatically rebuild. You will need to switch pages before the data pairs are rearranged for display.

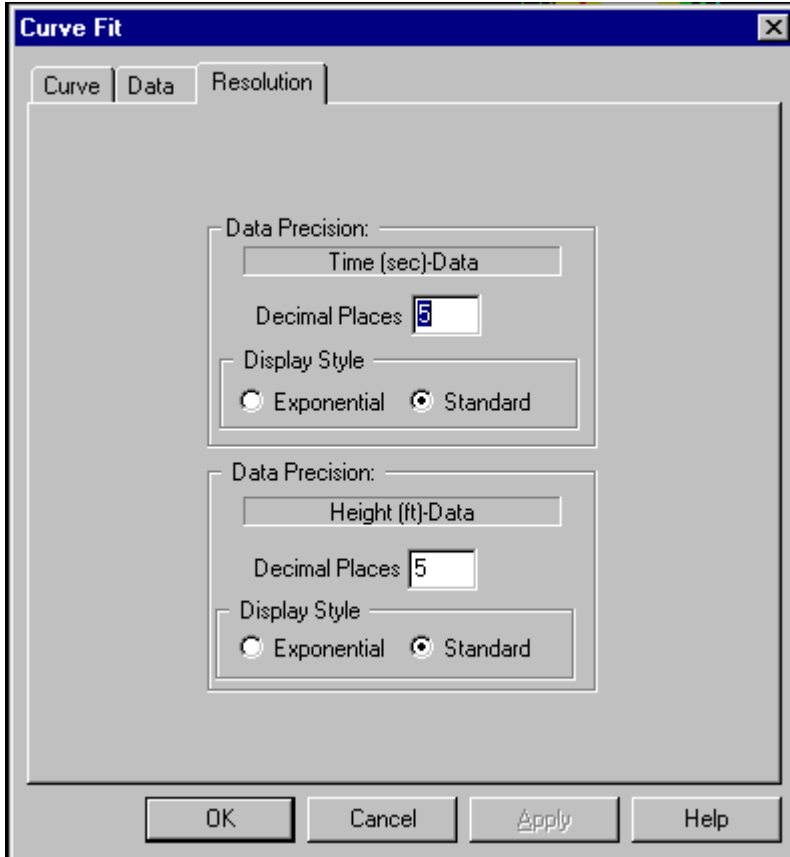
### ***Moving Data***

You may rearrange the data pairs by highlighting a pair and clicking the move **Up** or **Down** buttons to exchange the pair with the pair above or below it respectively. If multiple pages are required to display your data, you will not be allowed to move a data pair to the previous or ensuing display page. You may only move it within the current page.

### ***Importing Data***

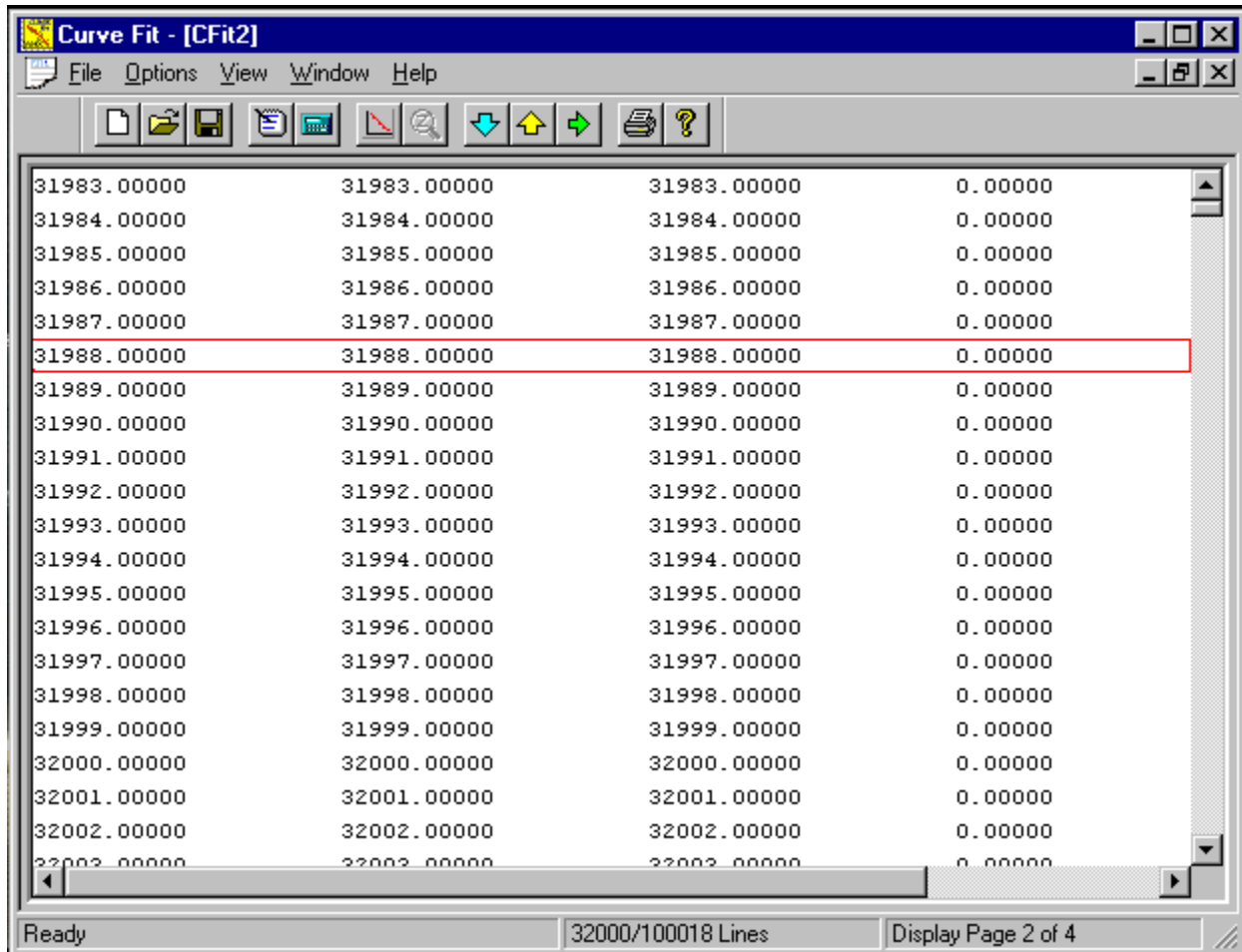
To import data pairs from a text file, click the **Import** button. The data file may contain multiple columns of data but only the first two columns are used. The data pairs must be separated by a comma, a semicolon, a space, a tab, a single quote, or a double quote in any combination. The first column will be interpreted as the **X** value. Importing will stop when the end-of-file is reached, an error occurs, or seven data pairs have been read if the application is not licensed. Imported data is always added to the end of any existing data. If the imported data exceeds 32,000 pairs, all pairs will all be imported but you will have to switch data pages to display the pairs that exceed the 32,000 limitation.

## Resolution Page



The **Resolution** page allows you to specify the data entry/display format and number of precision digits you want your data to have. The two formats supported are standard (e.g., 13400.) or exponential (e.g., 1.34e+04). Each data point can be 16 digits, a sign, and a decimal point. The data precision is set to five by default and is restricted to from 0 (no decimal point) to 14 decimal positions. If you want fewer or more digits to the right of the decimal, enter the number you want in the appropriate decimal places control.


## List View




The **List View** displayed above is a scroll window that allows you to view or print your data set and the pertinent information about the fitted curve. The **List View** is the primary display window. If you pop up the **Plot View** and kill the **List View** window, select **New List Window** option from the **Window** menu to redisplay it.

### Windows 95 Customers

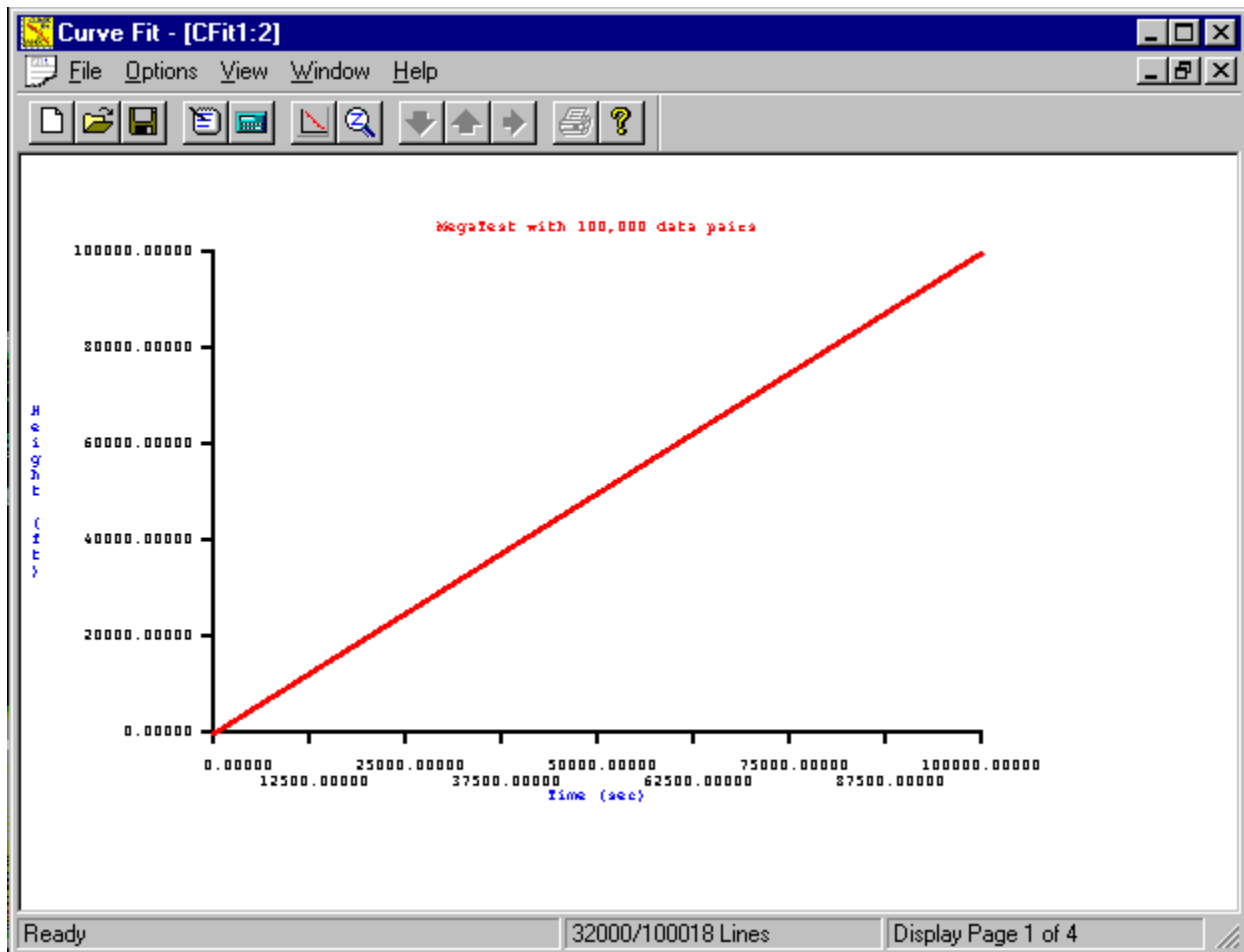
With Windows 95, I had hoped that the display limitations for list boxes et. al. would no longer be a concern. In fact, I assumed that, only to find out that I can only display 32767 lines in a list box. As a result, only 32,000 lines are displayed per display page. To overcome this limitation, you may switch display pages using the **Next Page**



 , **Previous Page**

 , and **GoTo Page**

 **Buttons** on the tool bar or selecting the **Next/Previous Display Page** or **GoTo Display Page** option from the **View Menu**. For those of you who are running NT, you get all the data displayed in one display page.

## Plot View



You can get a plot of the data pairs and the fitted curve by selecting the **New Plot Window** option from the **Window** menu or by clicking the **Plot Button**  on the tool bar. Click the **Zoom Button**  to double the size of the plot. Click the **Zoom Button** again to restore the plot to its original size. Each data pair is represented by a red asterisk. The green line is a plot generated by evaluating the fitted equation between the minimum and maximum data pairs.

**Note:** The plot displayed above is a perfect straight line with 100,000 data pairs plotted, consequently, the green line doesn't show up because it is overpowered by the red asterisks.

