

# Graph

## SOFTWARE MANUAL

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*D0002502-C*

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## Introduction

The North American division of Reservoir Group was established in 1992. Now as a part of Reservoir Group, It is a specialized technology company that researches, designs, and manufactures an extensive line of memory gauges and permanent down-hole pressure and temperature monitoring systems for the oil and gas industry. These highly accurate devices can measure, log, transmit, and display both reservoir and surface pressure and temperature data.

Reservoir Group's commitment to remain number one in this specialized field has resulted in a level of in-house expertise and experience that is second-to-none. Our commitment to customer satisfaction, combined with a significant investment in innovation, research, and development, have earned Reservoir Group "Preferred Supplier" status with leading service companies and oil and gas producers worldwide.

Reservoir Group offers three categories of products:

- Memory tools
- Subworks tools
- Surface tools

### Memory Tools

Our memory tools are durable, innovative and easy to use for slickline, coiled tubing, frac, and other stimulation applications. A full line of quartz and piezo-resistive tools is available in 0.5", 0.75", or 1.25" outside diameter. These tools are characterized by their durability and ease of use.

### Subworks Tools

Our continuous bottom-hole pressure and temperature monitoring system consists of modular components that can be tailored to match most reservoir monitoring applications and budgets. Common applications include long-term reservoir analysis and automated reservoir optimization solutions, including interfacing with PCP, ESP, and chemical injection equipment.

### Surface Tools

Our collection of surface-related electronics include the innovative line of wireless surface gauges and accessories.

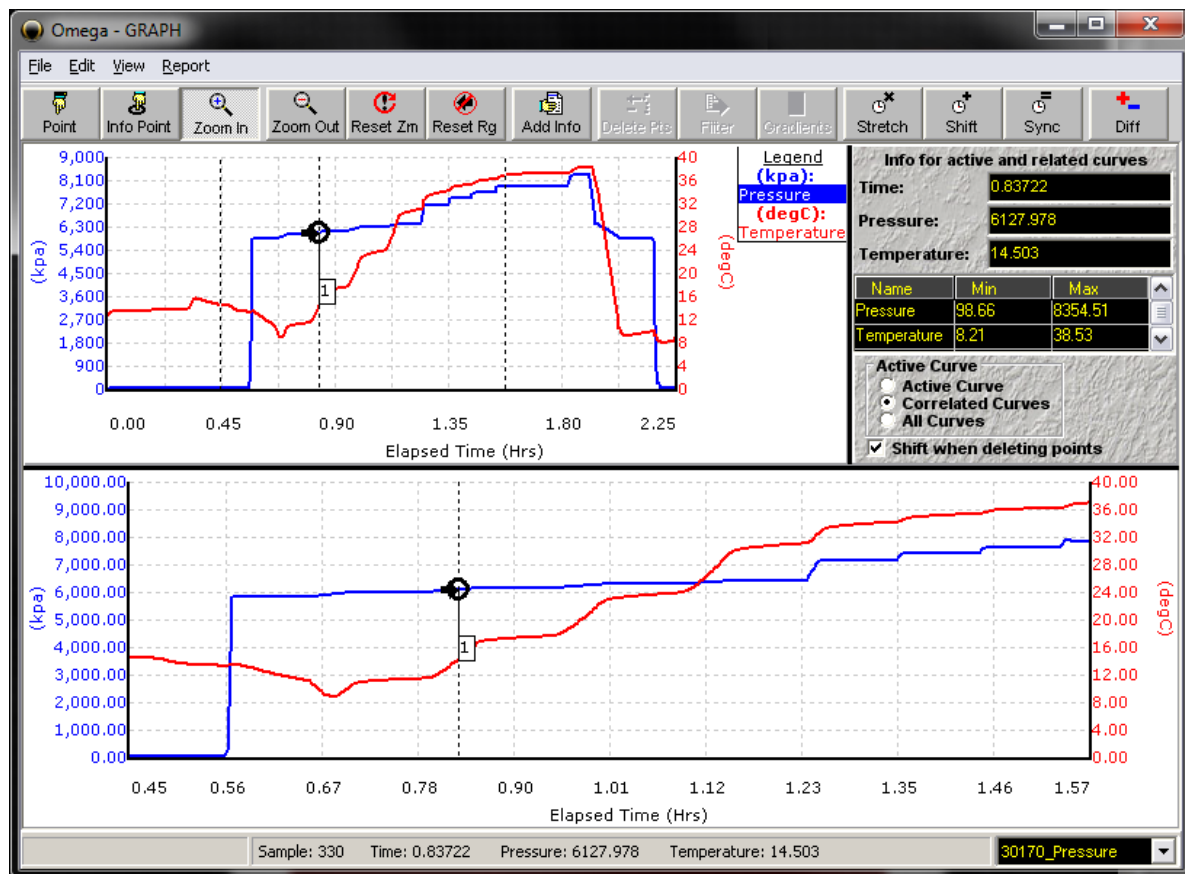
## Graph Overview

Graph is a software application that is used to display and manipulate data that is acquired from Reservoir Group's Memory and Permanent Monitoring gauges. Additional functions include the ability to generate Gradient reports based on the information from a Static Gradient analysis.

## General Operations and Definitions

### Workspace

Below is a diagram of the Graph Workspace showing the two Graph windows. The Top one is referred to as the *Full Display* and the Bottom is the *Zoomed Display*.



## Active Curve

The *Active Curve* is the curve where the selected operation (info point, add info point, ect) will be performed. The active curve is highlighted in the legend and its title is displayed in the bottom right corner drop-down menu. To select the *Active Curve* click on the curve title in the legend window or click the down arrow on the bottom right side of the screen and select the curve title.

## Correlated Curves

Correlated curves are data sets opened from the same data file that contain the same number of samples and are related to the same time stamps.

For example: A data file is correlated when it contains the same number of pressure and temperature samples and each data sample is associated to the same time signature. If the data samples in one of the curves is altered (Points are deleted) but not the other then they are no longer correlated. If another file is opened, the curves from this new file are NOT correlated with those from the first file.

## Info Points

These are points on the graph that have been tagged as points of interest. They are circled on the graph and have a label connected to them. To insert an Info Point to a Selected Point, Click on the *Add Info* toolbar button. Double clicking on a Selected Point will also insert an Info Point.

## Gradient Point

An *Info Point* which has the *Gradient Point* box checked in the point's *Info* window.

## Graph

A graph is a visual display including all curves presently open.

## Full Display

The *Full Display* is the top graph in the *Workspace* which always shows the entire data set.

## Zoomed Display

Allows you to *magnify* an area of interest on the Graph.

On either the Full Display or Zoomed Display, click and hold the left mouse button and then drag to draw a rectangle on the area to be zoomed. Once the desired area is enclosed, release the mouse button. The enclosed area will be zoomed in and displayed on the *Zoomed Display*.

## Selected Point

The Selected Point is a data point of interest on the graph.

Selecting the *Point Button* lets you click on a data point on the graph. The data point's information is displayed in the *Sample Info* bar at the bottom of the screen and in the *Info For Active* and *Related Curves*. The *Selected Point* is highlighted with a vertical dotted line that shows where the point is in relation to the other plots.

## Range of Points

The Range of Points is a selection of a continuous set of points.

To select a range of points, click the Point button, then use the left mouse button to select the beginning of the range the right mouse button to select the end of the range.

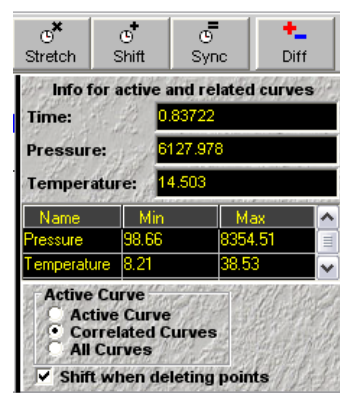
### NOTE

The black arrow on the range marker line indicates what information is displayed in *Sample Info* and *Info For Active and Related Curves*.

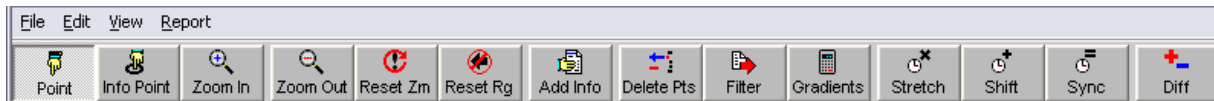
## Info for Active and Related Curves

The first three boxes contain *Time*, *Temperature* and *Pressure* (these will change depending on the information being measured) associated with the *Data Point* selected on the graph. Notice that it is the same as the time in the *Sample Info* at the bottom of the screen.

- **Max and Min:** The *Minimum* and *Maximum* values of each curve on the graph.
- **Active Curve:** The Active Curve is the curve where the selected operation will be performed. (Deleting points, add info ect).
- **Correlated Curve:** Any operation preformed on the Active Curve will also be performed on the Correlated Curve(s) (If deleting points, all Correlated Curves would have the same points deleted).
- **All Curves:** Any operation preformed on the Active Curve will also be performed on all *Open Curves* (If deleting points, ALL curves will have the points deleted from the selected range of time).
- **Shift When Deleting Points:** Automatically shift the data that follows a deleted point to join with the data that precedes the deleted point. This removes the time gap that would normally appear when a Range of Points are removed.
- **NOTE**  
When selecting points on the graph no arrows will appear around a *Range of Points* since all curves are being included.



# Buttons



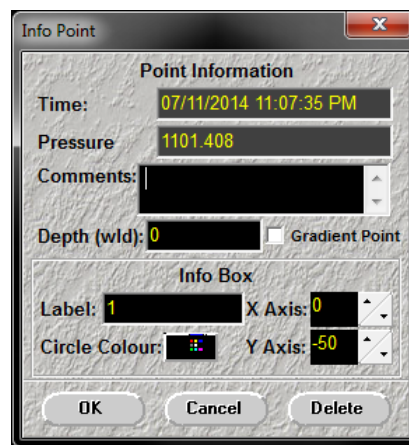
## Point

Allows you to select a point by clicking on either the *Full Display* or the *Zoom Display* and have the corresponding information for the selected point displayed in the Status Bar and in the *Info Box for Active and Related Curves*.

## Info Point

Selects only the Info Points on the graph. Allows you to easily select the Info Points without having to precisely click on them. This button is only available when *Info Points* exist.

### 1. Selected Data Point Information:

- **Time:** The *Time* which the data in the selected data point was recorded.
  - **Pressure:** This is the measured pressure of the *Data Point*. (This will display the necessary data being recorded and plotted on the *Active Curve*. EXAMPLE: temperature, pressure)
  - **Comments:** Additional information about the *Selected Point*. This information will not be displayed on the label, however it can be printed or saved as a *Job Log*.
  - **Depth:** The measured depth of the selected *Data Point* was recorded at. This is used for *Gradient* calculations (see section on Gradients).
  - **Gradient Point:** Check this box if the *Selected Point* is to be used for *Gradient Calculation* (see section on Gradients).
- 

### 2. Info Box: Used for the visual representation of the Info Point on the Work Space.

- **Label:** The title of the *Info Point* on the *Work Space*. The label defaults to the next *Info Point* number.
- **Circle Color:** Select the Color of the *Info Point*.
- **X Axis:** The *Horizontal Distance* away from the selected *Data Point* (in pixels) that the label will be drawn For Example: If set to 30, the label will appear 30 pixels to the right of the actual point on the graph, if set to -30 it will be 30 pixels to the left.



- **Y Axis:** The *Vertical Distance* away from the selected *Data Point* (in pixels) that the label will be drawn For Example: If set to 30, the label will appear 30 pixels down from the actual point on the graph, if set to -30 it will be 30 pixels up from it.
3. **Buttons on the Info Point screen:**
- **OK:** Changes the *Info Point's* values to the new given values.
  - **Cancel:** Closes the window and leaves the *Info Point's* values unchanged.
  - **Delete:** Deletes the *Info Point*, from the graph. This can also be accomplished on the graph window by pressing the 'Delete' key on the keyboard when an *Info Point* is highlighted.

## Zoom In

When selected, this button allows the user to *Zoom* in on an area of interest on the *Graph*. Click and hold the left mouse button down on either graph. Drag the mouse to the opposite corner of the area to be zoomed. Once the desired area is enclosed, let go of the mouse button. The enclosed area will appear as a closer view on the *Zoom Display*.

### NOTE:

One major difference between zooming in on the *Zoom Display* and zooming in on the *Full Display* (top graph) is the *Full Display* only allows one re-size of the area of interest. *Zooming* on the *Zoom Display* (bottom graph) allows you to zoom in multiple times and more precisely. A high level zoom will show *Data Points* surrounded by boxes.

## Zoom Out

Zoom out to the previous zoom level.

## Reset Zoom

Resets Zoom level to the original level (Zooms out all the way).

## Reset Rg

Removes the selected range markers from the work area.

## Add Info

Inserts an Info Point on a Selected Point.

After selecting the *Point* button and clicking on a point of interest, click the Add Info button to insert an Info Point (see Info Point button for information on creating Info Points).

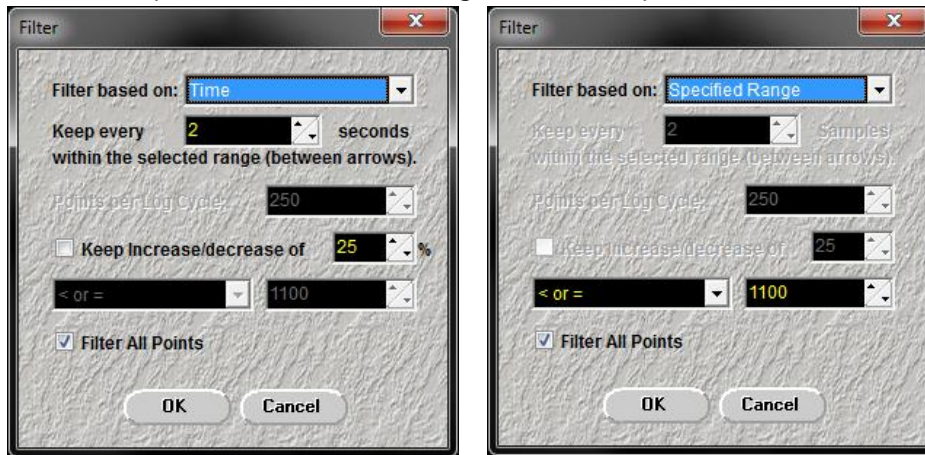
If an Info Point has already been created on the Selected Point, this button will open the Info Point window and display the information already on the Selected Point.

## Delete Pts

Removes all the *Selected Points* and *Info Points* between the *Range Markers*. For information on *Range Markers*, see: Range of Points in the General Operations section. May also be selected in the Tools > Delete Points menu.

## Filter

Removes all points from a selected range based on a specified filter criteria.



1. *Filter based on Time:* Filters the data, based on a simple arithmetic time scale. For example, if a time step of 2 seconds is selected, the *Graph* will retain one *Data Point* every two seconds.
2. *Filter based on Number of Samples:* Filters the *Data Points* based on a simple numeric basis. For example, if 2 samples is entered into the *Keep Every \_\_ Samples* Box, the *Graph* will keep every second point and remove the rest.
3. *Keep Increase/Decrease of \_\_%:* if checked, *Data Points* will NOT be filtered if an increase or decrease from one point to the next is greater than the entered percentage.

### EXAMPLE

The curve's maximum value is 1000, and the minimum value is 0, and percentage is set to 25, any points with an increase or decrease of 250 will NOT be filtered out.

4. *Filter based on a Specified Ranged:* Filters the *Data Points* based on where the value of the *Data Point* is *Greater Than*, *Less Than* or *Equal* to a specified value.

### EXAMPLE

Choosing the criteria, *> or = 1100* will remove any data values greater than or equal to 1100. Choosing the criteria, *< or = 1100* will remove any data values less than or equal to 1100. Choosing the criteria, *= 1100* will remove any data values equal to 1100.

5. *Filter All Points:* Selecting this option will apply the filter to the entire range of data points regardless of the range was defined prior to opening the Filter window.

## Gradients

This will open the *Gradients* window (see Gradients for details). May also be found in the Tools >>> Gradients pop up menu.

## Stretch

Multiplies each Time sample in the *Data File* or from a selected *Range of Points* by a factor which you specify. This will open a window prompting for a value to multiply the time by..

## Shift

Offset each Time sample in the *Data File* or from a selected *Range of Points* by adding a specified number of seconds. This will open a window prompting for a value to add to the time.

## Sync

This will synchronize (line up) the curves according to the start time.

## Diff

Calculates and plots a *Difference Curve* based on the differences in each data sample between two selected curves.

### EXAMPLE

A data sample taken from the first curve is 100, and the same sample from the second curve is 70. The Difference of 30 will be plotted on the new curve.

## Gradients

*Static Gradients* are run on wells utilizing pre-determined stop depths, stop times and stop duration. The Graph allows you to enter *Gradient information* and produce a *Gradient report*.

### NOTE

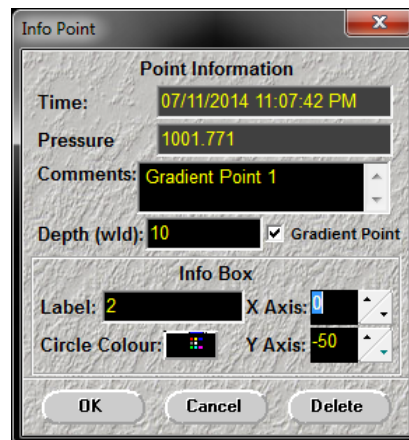
If the Active Curve (pressure) has no correlating curves (temperature) then the gradients will be calculated for the Active Curve only. If the Active Curve does have correlating curves (temperature) then the gradients for this curve will also be calculated.

The following describes how to produce a Pressure Gradient with a correlating Temperature Gradient. This could also be done for an Active Temperature Curve (Temperature Gradient) with a correlating Pressure Curve.

## Creating Gradient Stops:

To pick the Pressure Point at each gradient stop, consider the following:

1. Make sure the *Point* button is selected on the *Tool Bar*.
2. Click on the graph where a *Gradient Stop* is located. Ensure that the selected pressure point is stable.
3. Click the *Add Info* button on the *Tool Bar* (or double click the point on the graph). This will open the following window:
4. The corresponding *Time and Pressure* for the selected *Data Point* is indicated in the first row boxes. Miscellaneous comments for the selected point can be inserted into the comment box. This information will not be displayed on the Graph.
5. Enter the depth that corresponds to this point (the depth that this point was measured at).
6. Make sure the *Gradient Point* box is checked. Only points that have this box checked will be used in the *Gradients*. At any time this box can be checked or unchecked and *Gradients* recalculated with or without including it, respectively.

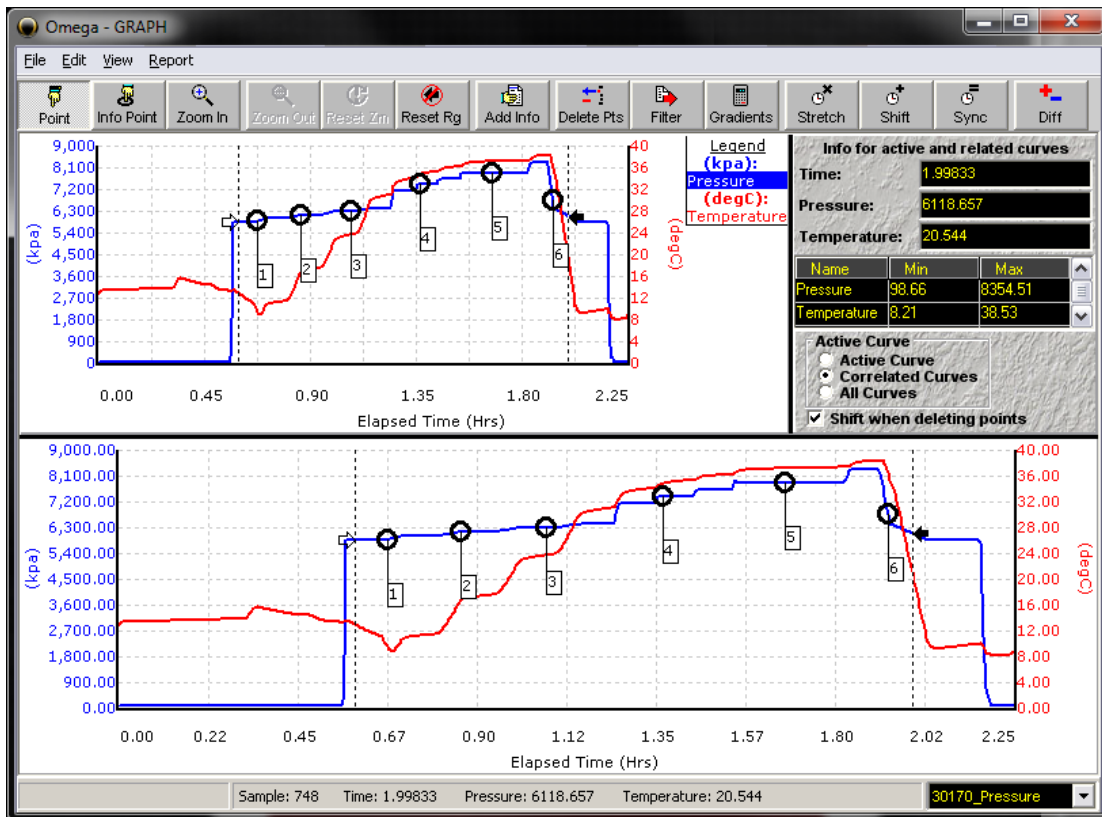


The 'Info Point' dialog box contains the following fields and controls:

- Point Information**
  - Time: 07/11/2014 11:07:42 PM
  - Pressure: 1001.771
  - Comments: Gradient Point 1
  - Depth (wld): 10
  - ☒ Gradient Point
- Info Box**
  - Label: 2
  - X Axis: 0
  - Circle Colour: [Color Selection Icon]
  - Y Axis: -50
- Buttons: OK, Cancel, Delete

7. The *Info Box* is used to obtain a visual representation of the selected gradient stop (refer to *Buttons* on *Info Point* screen)

The following is an example of what the graph might look like after this step:



8. Select the *Range of Pressure Points* that were recorded during the *Static Gradient*. Click the left mouse button at the start of the *Static Gradient* test and click the right mouse button at the end of the *Static Gradient* test. This can also be done by selecting Edit > Select all Points. In this case the surrounding arrows cannot be seen as they are pointing to the left-most and right-most point.
9. *Calculating Gradients*: Click the *Gradient* button on the Toolbar. Then click *Calculate Gradients*. The *Gradient Well Info* window will open.

## Well Info

Information relating to the well where Gradient data is acquired is inputted here.

- **Fields:** Any value may be entered; they are for printing and saving purposes only.
- **Apply KB:** This applies when a *Kelly Bushing* value (a depth reference point) is used during the Static Gradient test. If this checkbox is checked then the given value will be added, as an offset, to the depths of all of the gradients points. This implies that the depth measurements are taken below reference Kelly Bushing.
- **Items:** Include additional information regarding the depths of specific equipment used in the well and known fluids. The values given in these grids are for printing and saving purposes with the exception of *Perforations*.
- **Include Perfs in Gradients:** Quite often it is useful to include the locations of Perforations on the graph. If this box is checked then any *Perfs* that are listed in the grid (In the example: *Perf 1000 TO 1050*) will be shown on the *Gradient* window and displayed in the graph.

Gradient Well Info

Title:

Company ID:

Address:

Customer Info:

Name:

County/Region:

Well:

Prov/State:

Field:

Country:

Test Info:

Engineer:

Well API:

Tool Type:

Well Type:

Serial Num:

Test Type:

Gauge Range:

Well Status:

Date:

Minimum ID:

☐ Apply KB:

Maximum ID:

Items:

Type	Depth	To	Depth	Type	
Casing:	11	To	14	H2O Level:	<input type="text" value="0"/>
Perf:	1000	To	1050		

☒ Include Perfs in Gradients Grid

OK

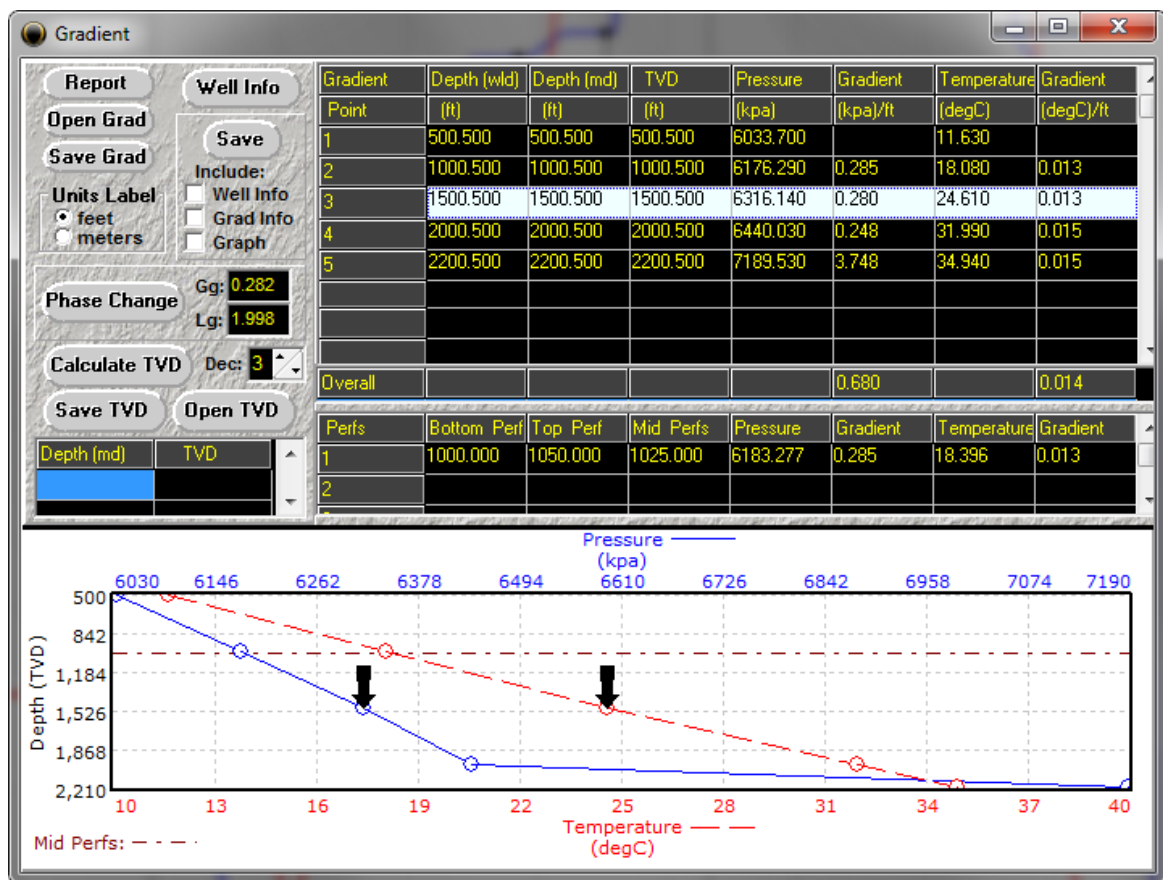
Cancel

## Gradient

The *Gradient Grid* displays the measured *Pressure Point* at each gradient stop along with the corresponding depth and calculated gradient between each point. Since temperature is a correlated curve it also appears here.

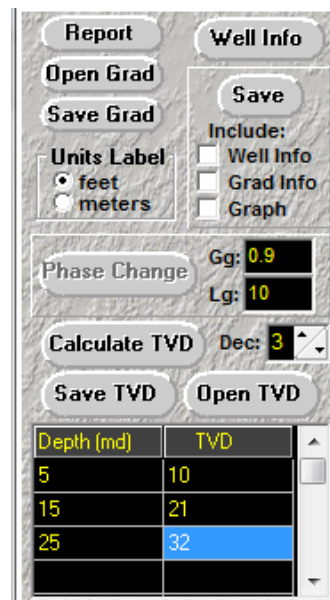
Each Gradient Point in the table has the following information associated with it:

- Measured Depth (md)
- True Vertical Depth (TVD)
- Pressure
- Pressure Gradient
- Temperature
- Temperature Gradient





- **Report:** Opens the Report window.
- **Open Grad:** Open and load data from a previously saved Gradient file.
- **Save Grad:** Saves gradient information to a Gradient file.
- **Units Label:** Choose between feet and meters for the *Depth Units*.
- **Well Info:** Opens Well Info Window.
- **Save:** Saves the selected items, (Well Info, Gradient Info, Graph) to a text file that can be read by any text editor. It also saves an image of the graph in .jpg format that can be printed or viewed.
- **Include:** When checked, the items will be included on the *Saved Files*.
- **Phase Change:** This will calculate any *Phase Changes* that may have occurred. *Points* are plotted where the estimated *Phase Change* took place. The estimation is based on the points before and after the *Phase Change*.
  - **Gg:** the *Gas Gradient* that is used in the *Phase Change* calculation.
  - **Lg:** the *Liquid Gradient* that is used in the *Phase Change* calculation.
- **Calculate TVD:** Calculates the **True Vertical Depth** for each Gradient Point. The True Vertical Depth calculation is based on the values entered in a comparison table between the measured depth and the true vertical depth.
  - *True Vertical Depth (TVD)* is the actual depth below ground. The entered *Depth* of the *Gradient Points*, are the measured depths (md) of the points. If the well is *Deviated*, not vertical, a *True Vertical Depth (TVD)* table can be entered which will compare the *True Vertical Depth* to given measured depths. Once the *TVD* table has been entered, click the *Calculate* button. If the *TVD* table is altered after calculation has occurred, the values must be recalculated.
- **Save TVD:** Save the Measured Depth and True Vertical Depth table to a file.
- **Open TVD:** Open and load Measured Depth and True Vertical Depth data from a previously saved TVD file.



Report Well Info

Open Grad

Save Grad

Units Label  
☒ feet  
☐ meters

Save  
 Include:  
☐ Well Info  
☐ Grad Info  
☐ Graph

Phase Change Gg: 0.9  
 Lg: 10

Calculate TVD Dec: 3

Save TVD Open TVD

Depth (md)	TVD
5	10
15	21
25	32

#### NOTES:

- The highlighted point in the gradient grid has arrows pointing to the points on the graph.
- Since the box Include *Perfs* in *Gradients* was checked in the *Well Info* window, the *Perf* that was listed in the *Items* grid is shown in the *Mid Perfs* grid and shown on the graph. If multiple *Perfs* are included then the highlighted one appears as above and the non-selected ones appear as a thinner line.



## Main Menu

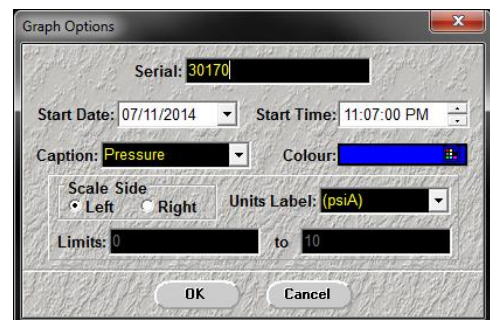
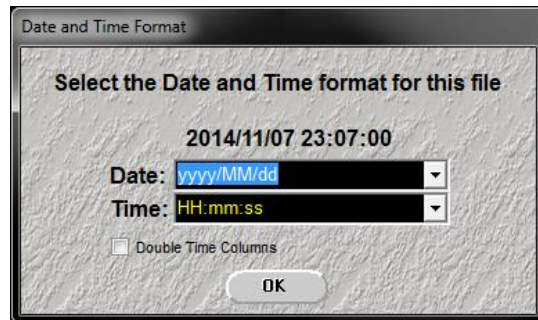
### A. File

1. **Open:** This will open a data file (.rec). A dialog box will prompt for a file to open.

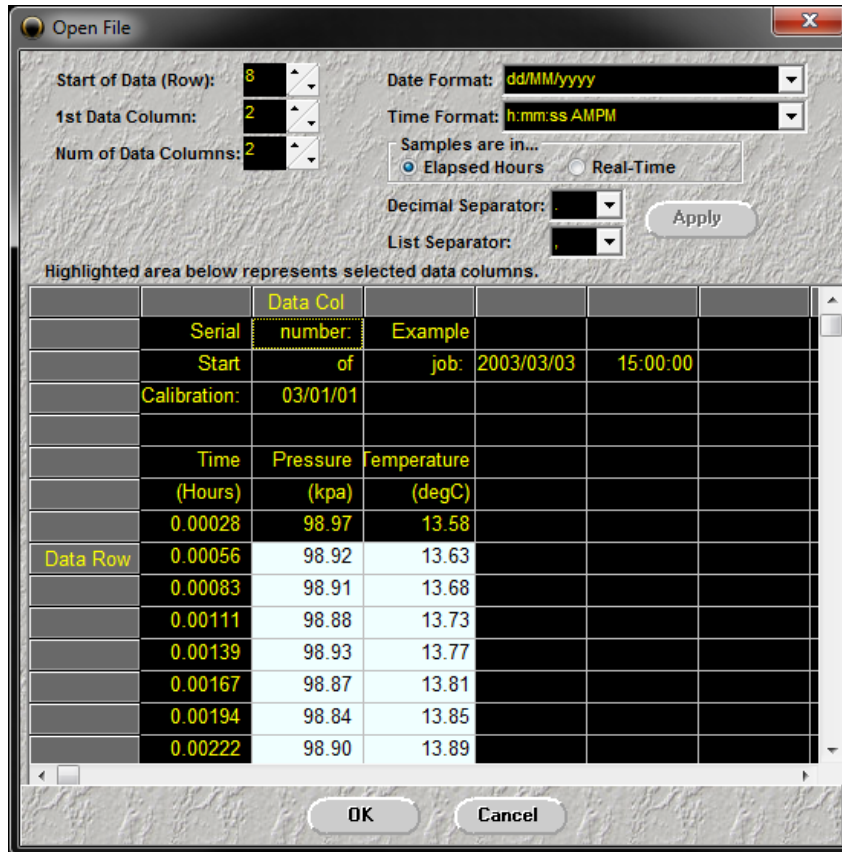
Then using the drop down boxes, select a *Date* and *Time* format. The listed date/time is actual date and time that was found in the file.

After selecting the *Date* and *Time* format, the following *Graph Options* window will appear. For every column of data in the opened file a new *Graph Options* window will appear. Complete this window for each data column.

To change the *Graph Options* at any time, select **Edit > Graph Info**.



2. **Open Using Template:** This will open a previously saved .rec file and display the information in a columns format. To select information, click on the top and/or side of the column, or use the selection arrows at the top of the screen.



**Open File**

Start of Data (Row): 8  
 1st Data Column: 2  
 Num of Data Columns: 2

Date Format: dd/MM/yyyy  
 Time Format: h:mm:ss AMPM  
 Samples are in...  
☒ Elapsed Hours ☐ Real-Time  
 Decimal Separator: .  
 List Separator: ,

Highlighted area below represents selected data columns.

	Data Col				
Serial	number:	Example			
Start	of	job:	2003/03/03	15:00:00	
Calibration:	03/01/01				
Time	Pressure	Temperature			
(Hours)	(kpa)	(degC)			
0.00028	98.97	13.58			
<b>Data Row</b>	0.00056	98.92	13.63		
	0.00083	98.91	13.68		
	0.00111	98.88	13.73		
	0.00139	98.93	13.77		
	0.00167	98.87	13.81		
	0.00194	98.84	13.85		
	0.00222	98.90	13.89		

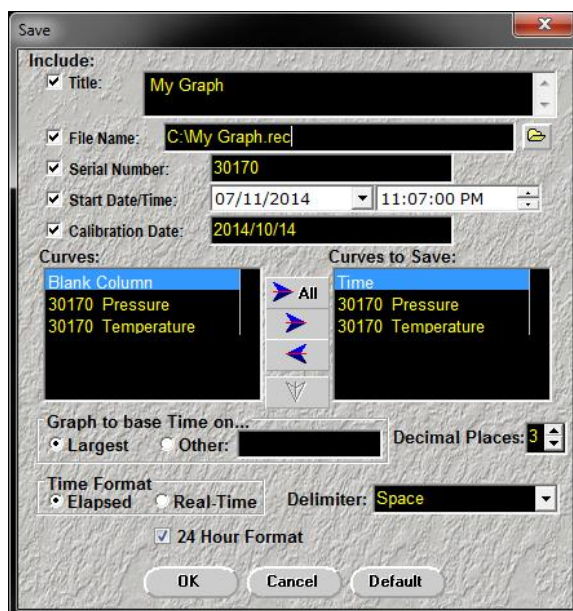
OK Cancel

3. **Append:** Opens another data file and appends the correlated curves to the end of any currently opened data file. Data files are appended if they have the same number of correlating curves. When attaching two files together, it is recommended that the first file be opened and the second be attached before any graph editing occurs.

## 1. Save

- a. **Data:** This will create a file for the *Data Points* and any *Info Points*. Select a file name, fill out the appropriate information and click OK. Only the items that are checked will be saved in the header of the file.

- **Title:** Enter any Header Information that is needed in the title column.
- **File Name:** Click the folder icon to select a location to save the file.
- **Serial Number:** Enter the *Serial Number* of the gauge or instrument that was used to record the data.
- **Start Date/Time:** Enter the *Start Date* and *Time* of when the data was first being recorded.
- **Calibration Date:** Enter the *Calibration Date* of the gauge or instrument that was used to record the data..
- **Curves/Curves to Save:** The *Curves Box* shows all *Curves* that are presently open in the graph window. To include a *Data Curve* in the list of *Curves to Save*, highlight the curve by clicking on it then select the arrow pointing right. If a blank column is added to the list of *Curves to Save*, an empty column will be added in the file saved. To include all *Data Curves*, click *All*. All *Data Curves* listed will be placed in the *Curves to Save* box. (time will always be included). To remove a *Curve* from the *Curves to Save* box, highlight and click the left pointing arrow.
- **Graph to base Time on...:** This is only applicable if some of the columns that are included in the *Curves to Save box* are **NOT Correlated Curves**. **Example:** If two curves are opened and one was run at 5 second samples for 10 minutes and the other is run at 10 second samples for 15 minutes then the sample times will **NOT** correlate from one curve to the other. Saving them both to the same file can cause problems (since there is only 1 Time column). If *Largest* is checked then the time for the *Largest Curve* included in the file will be the basis for the *Time Column*. If *Other* is checked, the option to choose a curve that will represent basis for the *Time Column* is available. *Other*, also allows a column to be selected by highlighting it in the *Curves box* and clicking the down arrow.
- **Decimal Place:** This is the *Number of Decimal Places* (EXAMPLE: 0.003 = 3 decimal places)
- **Time Format:** This is the *Time Format* that will be used for the data samples. In the example above the time for sample 1 would be 03/05/27 18:35:57 (depending on your computer's date/time format), instead of 0.00028



- **Delimiter:** Select the character used as the data separator for the columns. If the *Delimiter* is set to '*Space*' then a blank space will separate the columns. If the *Delimiter* is set to '*Comma*' then the columns will be separated by commas. *EXAMPLE: Comma Delimited: 0.00022,5894.22,27.43*
- **OK:** Saves the file using the entered values, setting, columns, etc.
- **Cancel:** Aborts the Save.
- **Default:** Defaults the settings back to the recommended settings.

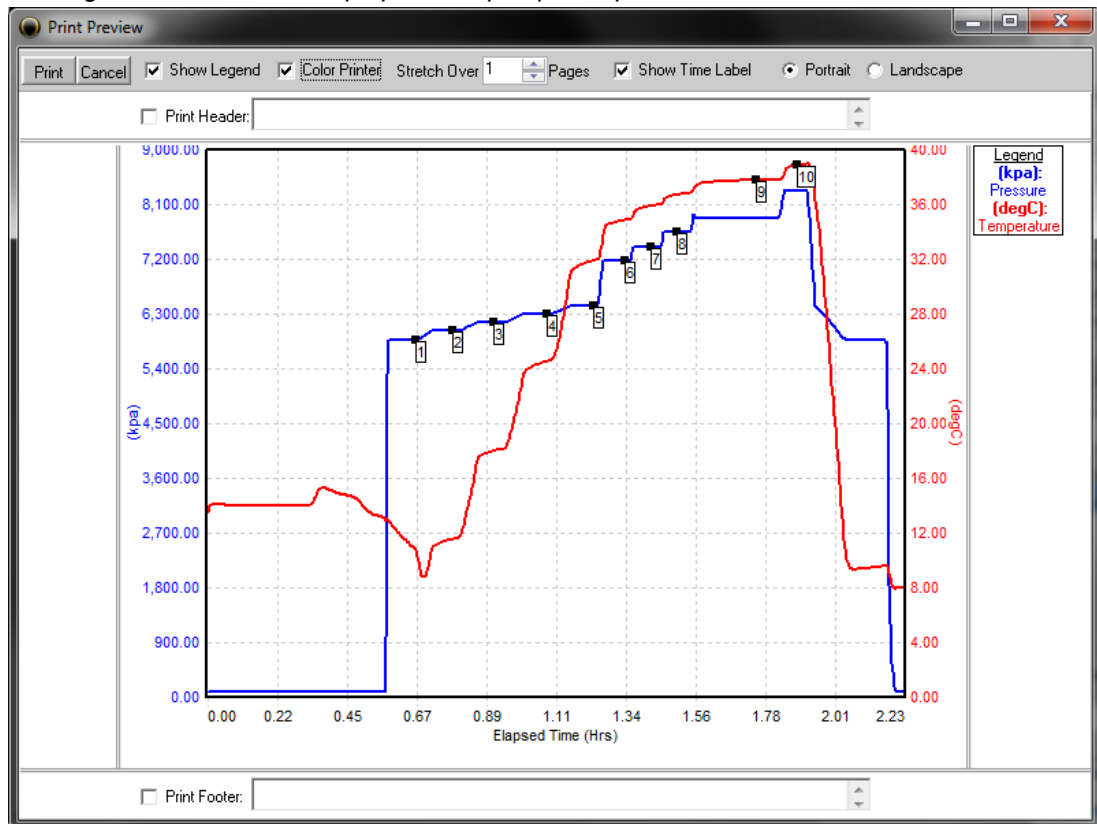
NOTE: To guarantee that the file can be read by the program, use the default settings.  
**EXAMPLE** The file saved as [c:\My Graph.rec](#) will be a text file. Only *Serial Number* and *Start Date/Time* and *Calibration Date* are checked so only these will be included in the file header. Only the Pressure column is included in the *Columns to Save* box so only the *Press data* will be saved. Open the file save in a text editor like Notepad, and the following is displayed:

Serial number: 30222  
 Start of job: 05/07/2005 4:40:00 PM  
 Calibration: 06/11/01

Time (Hours)	Pressure (kpa)
0.00028	98.97
0.00056	98.92
0.00084	98.91
0.00112	98.88
0.00140	98.93

- Job Log:** Saves a text file containing the info for all *Info Points*.
  - Bitmap (bmp):** Asks whether to save the *Full Display* (top graph) or the *Zoom Display* (bottom graph) and saves that graph as a *Bitmap File (bmp)*.
  - JPEG (jpg):** Asks whether to save the *Full Display* (top graph) or the *Zoom Display* (bottom graph) and saves that graph as a *Digital Image (a jpg file)*.
  - Metafile (emf):** Asks whether to save the *Full Display* (top graph) or the *Zoom Display* (bottom graph) and saves that graph as a *Windows Metafile (an emf file)*.
- Close**
    - Active Curve:** Only the *Active Curve* will be closed
    - All Curves:** *All Curves* will be closed and the graph will be empty.
  - Print Graph:** Send the graph to a printer. The option to print the *Full Display* (top graph) or the *Zoom Display* (bottom graph) is available.

The following Print Preview will display a variety of print options:



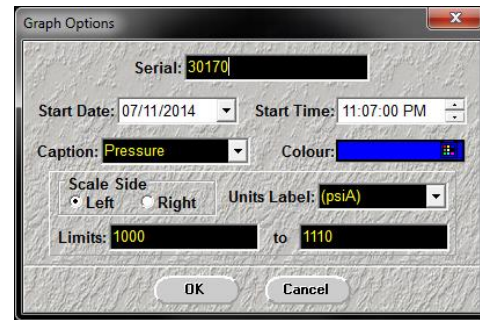
- a. **Print:** Prints the graph based on the present settings and margins.
- b. **Cancel:** Aborts print.
- c. **Show Legend:** When checked, the *Legend* appears on the right side of the window and printout.
- d. **Color Printer:** If checked the graph will be printed in colour.
- e. **Stretch Over # Pages:** The graph will be printed over the number of pages entered here.
- f. **Show Time Label:** Print the time label at the bottom of the graph.
- g. **Print Header:** If checked, the text that is located in the header box will be displayed at the top of each page of the printout.
- h. **Print Footer:** If checked, the text that is located in the footer box will be displayed at the bottom of each page of the printout.

- i. **Margins:** On all 4 sides of the graph are splitters. Click and hold the mouse button on these splitters to move them around. The actual printout will have top, bottom, right, and left margins that are in the same proportion of the printed page as these margins are to the displayed graph.

4. **Exit:** Exits the program.

## B. Edit

1. **Graph Info:** Each *Data Curve* has specific options that can be adjusted. This menu item will open the following window displaying the detail for the *Active Curve*. Some information may have been altered, so you may be required to enter or change some of the values to fit your requirements. This window can also be opened by double-clicking the graph name in the legend.



- a. **Serial:** This is the *Serial Number* for the file
- b. **Start Date and Start Time:** The *Start Date* and *Time* of the file
- c. **Caption:** This will label the *Data Curve* on the graph and is displayed in the legend.
- d. **Colour:** This allows a specific *Colour* to be chosen for each *Data Curve* on the graph.
- e. **Units Label:** The Unit of Measure which the data is expressed in. Each Curve can have its own *Unit Label* or multiple curves may have the same *Unit Label*. To create new units, select <New> from the drop down list and type the unit name in the pop-up window. Then press OK. To use units that already exist (EXAMPLE: open two files that have curves in psi and compare them), select the unit in the drop-down menu. For each new set of *Scale Units* there is an entry in the *Legend* on the graph with any *Data Curves* that are scale based on those units
- f. **Scale Side:** Select which side of the Graph the scale will appear on.
- g. **Limits:** the graph scale limit can be manually set.

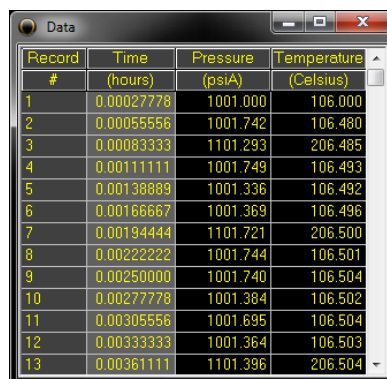
2. **Point Info:** Same as the *Add Info/Edit Info* button.

3. **Remember Curve:** The program will “remember” the zoomed portion of the graph and can be viewed and printed for further use. The program will prompt the user to name the graph, and will place it under Reports >>> View Reports >>> Graph. This will also allow the user to select which portion of the graph, pressure, temperature or both, to be used in the detailed report. This will not save the graph or report to memory, it will only remember it as long as the program is open, therefore if the program is closed this data will be lost.
4. **Select All Points:** Selects all points in the curve as a *Range of Points*.
5. **Point:** Refer to Buttons for description
6. **Info Point:** Refer to Buttons for description
7. **Zoom In:** Refer to Buttons for description

### c. View

1. **Show Data:** Shows the *Actual Data*, as seen in the screen shot below. The window can then be closed directly or by clicking the Show Data menu item again.

NOTE: for very large file sizes (200,000+ samples), it is not recommended to use this function, use a text editor that can handle that size of file.



Record #	Time (hours)	Pressure (psiA)	Temperature (Celsius)
1	0.00027778	1001.000	106.000
2	0.00055556	1001.742	106.480
3	0.00083333	1101.293	206.485
4	0.00111111	1001.749	106.493
5	0.00138889	1001.336	106.492
6	0.00166667	1001.369	106.496
7	0.00194444	1101.721	206.500
8	0.00222222	1001.744	106.501
9	0.00250000	1001.740	106.504
10	0.00277778	1001.384	106.502
11	0.00305556	1001.695	106.504
12	0.00333333	1001.364	106.503
13	0.00361111	1101.396	206.504

2. **Zoom Out:** Will *Zoom* back to the previous zoom level. If zooming on the *Full Display* (top graph), there is only one level of zoom, so this button will reset the zoom. If zooming on the *Zoom Display* (bottom graph), you can add zoom multiple times, so this button will subtract zoom to the previous zoom level instead of subtracting zoom all the way.
3. **Zoom Reset:** *Resets* the zoom level to the original level (Zooms out all the way).



## D. Report

This section will create a detailed field report with the information added into the fields.

5. **Print/View Report:** This will allow the user to input information, view and print a detailed report. Each Tab has a series of check boxes. Each box that is checked will be included in the printed copy of the report. If the Select All button is pressed the program will choose all the check boxes. Be sure to click on each tab to ensure all information is entered before printing the report.

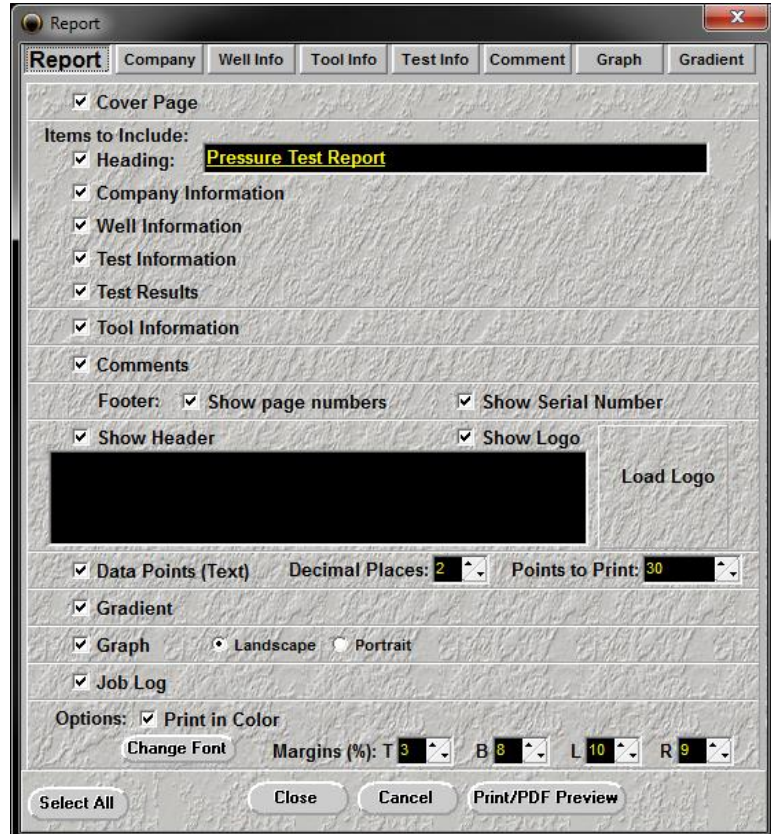
- Any information added in the gradient section of the *Big Graph* program, will be automatically transferred to the *Gradient* and *Well Info* section in the *Report*.

- The report can NOT be saved, therefore DO NOT close the program before the report has been printed for this will be the only hard copy. The Reports window can be closed and reopened, and the same information entered will still be there, but if the program is closed, the information will be lost.

- Print preview may be clicked, to view the report before it is printed. Select a printer and then press print. The report will go into a preview window but will not print until print is selected on the preview window.

- In the Graph section of the report window, there may be a list of graphs to place in the report. Select the one/s to be placed in the report. If the graph was “remembered” (see Edit >>> Remember Graph) the user will be allowed to choose which curve/s to place in the detailed report.
- A company Logo can be loaded into the program to be printed and displayed in the report. To do this, simply click on <Load Logo>. The program will accept a .jpg, .bmp, .wmf or .emf formats.
- Points to Print will allow the use to choose the number of data points to print in the report.
- Change Font allows the user to choose a style of font preference.
- Margin % allows you to set the size of the unprintable area on the printed page.

## 6. Import



The screenshot shows the 'Report' window with the following tabs: Report, Company, Well Info, Tool Info, Test Info, Comment, Graph, and Gradient. The 'Report' tab is active, displaying a list of items to include in the report, each with a checked checkbox:

- ☒ Cover Page
- Items to Include:
  - ☒ Heading: **Pressure Test Report**
  - ☒ Company Information
  - ☒ Well Information
  - ☒ Test Information
  - ☒ Test Results
- ☒ Tool Information
- ☒ Comments
- Footer:
  - ☒ Show page numbers
  - ☒ Show Serial Number
- ☒ Show Header
- ☒ Show Logo
- 
- ☒ Data Points (Text)
  - Decimal Places: **2**
  - Points to Print: **30**
- ☒ Gradient
- ☒ Graph
  - ☒ Landscape
  - ☐ Portrait
- ☒ Job Log
- Options:
  - ☒ Print in Color
  - 
  - Margins (%): T **3**, B **8**, L **10**, R **9**

At the bottom of the window are four buttons: , , , and .

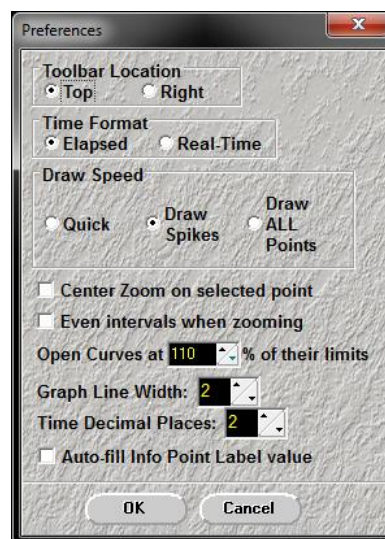


- a. **Printout Setup:** Allows the user to import a previously saved printout setup.
  - b. **Tool Info:** Allows the user to import previously saved tool information.
  - c. **Well Info:** Allows the user to import previously saved well information
7. **Export**
- a. **Printout Setup:** Allows the user to export a current printout setup
  - b. **Tool Info:** Allows the user to export current tool information
  - c. **Well Info:** Allows the user to export current well information

## E. Tools

See Buttons section of description of some selections

8. **Apply Calibrations:** Convert a data file containing a gauge or instrument's Raw Count data into Real Values. This requires the instrument's calibration file.
9. **Language**
  - a. **English**
  - b. **Spanish**
  - c. **German**
10. **Preferences**
  - a. **Toolbar Location:** Changes the location of the toolbar.
  - b. **Time Format:** Changes the format that Time is displayed on the graph.
  - c. **Draw Speed:** depends how detailed the user wants the graph to be drawn.
  - d. **Center Zoom on selected point:** When this is checked, if a point is selected on the graph, the *Zoom Display* (bottom graph) will zoom in on that point.
  - e. **Time Decimal Places:** The number of decimal places in the Time values.
  - f. **Graph Line Width:** The line thickness of the *Data Curves* on the graph.
  - g. **Auto fill Info Point Value:** Automatically insert the data point's values in the label of new Info Points.
  - h. **OK:** Accepts the changes.
  - i. **Cancel:** Aborts any changes.



## File Structure

1. **File Requirements:** Almost any data file can be opened. Anything can be put in the header, but there are only three things that should always be present.
  - a. **Column Headings:** Any column headings will do, except for the Time heading that should ALWAYS be Time.
  - b. **Column Units:** Under each column heading there should be the column units. This is not required but definitely useful so that you don't have to manually enter them when the file is opened.
  - c. **Data:** Under each column there should be an equal number of rows of data.

**Example:**

Time	Press	Temp	Depth
hrs	psi	°C	m
0.0028	14.3	28.2	12.5
0.0056	14.3	28.1	12.6
0.0084	14.3	28.2	12.7