POWERCURVE

Version 11 Imperial Tutorial

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Introduction

Power*Curve™ (**P**etrographical **O**ffice **W**ellsite **E**valuation and **R**eporting) is a chip and core logging management program that utilizes single-entry data capturing to produce geological striplogs. The geological data is entered into the system through the use of intuitive data entry forms to ensure standardization of data. This data is stored in an RDBMS(Relational Database Management System) to allow data manipulation using SQL access tools.

Power*Curve™ software consists of four (4) main parts:

1.) A horizontal log editor module that allows you to change the striplogs to suit your needs and preferences.
2.) A data transfer module.
3.) Report printing modules.
4.) An on-line help system that is designed to familiarize you with the commands and functions available in **Power*Curve™** and lead you through many of the processes involved in creating welllogs.

A note about navigating through Power*Curve™ Reports:

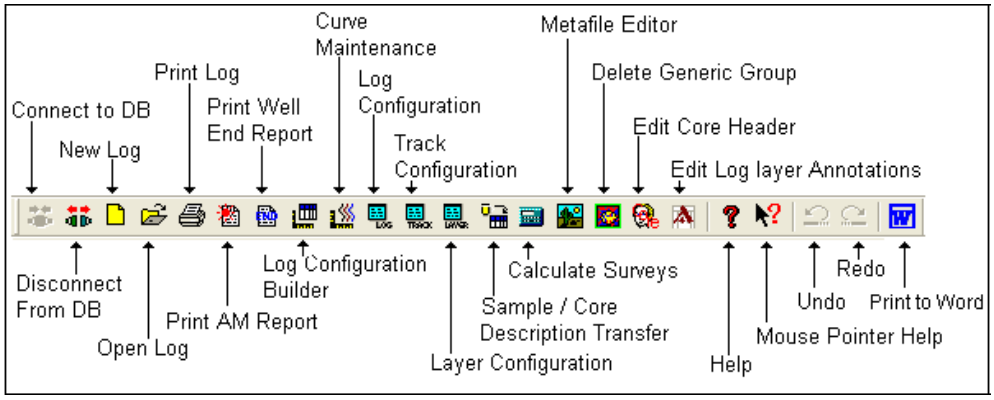
When you are entering information into data forms, you may move between boxes/fields by **pressing** the **Tab key** to go forward and **Shift +Tab keys** to move backwards. To exit forms that do not have an **Exit, OK,** or **Cancel** button, **press** the **Esc key** on the keyboard.

To access the On-line Help System in Power*Curve™:

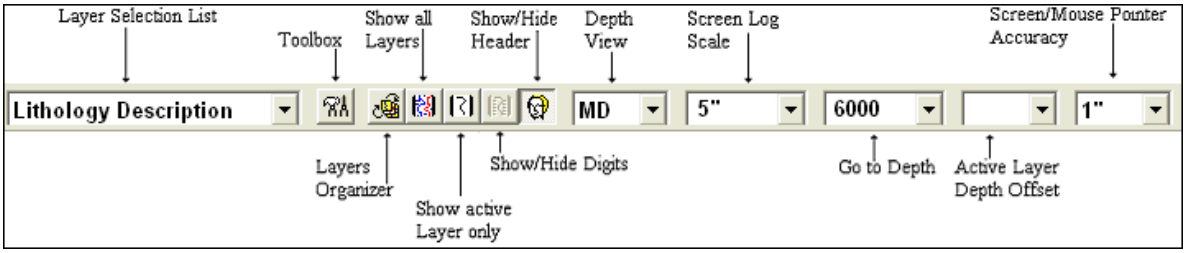
You can make use of the context sensitive help by **pressing** the **F1 key** when you are in a dialogue box. A pertinent help file will appear, opened to the topic relevant to the dialogue box you are in.

Below are some examples of common features within Power*Curve™:

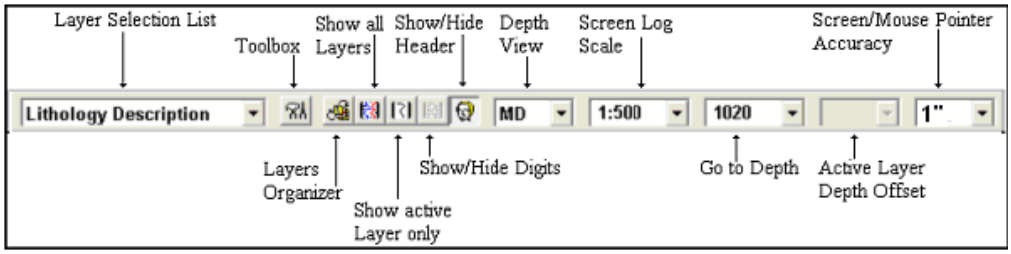
The Toolbar



The Selection Bar…



Selection Bar Using the Default American Style Inches Screen Scale



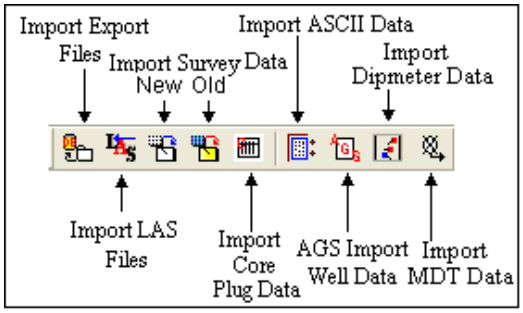
Selection Bar Using the Metric Style Selection Utilizing a Ratio for Screen Scale
The Status Bar…

The **Status Bar** displays system status messages and any error message (associated with a field entry), in the far left corner. The KB elevation is displayed in the lower right corner of the **Status Bar**.

The Import Toolbar

This toolbar is dock able and can be moved to different places on the screen.

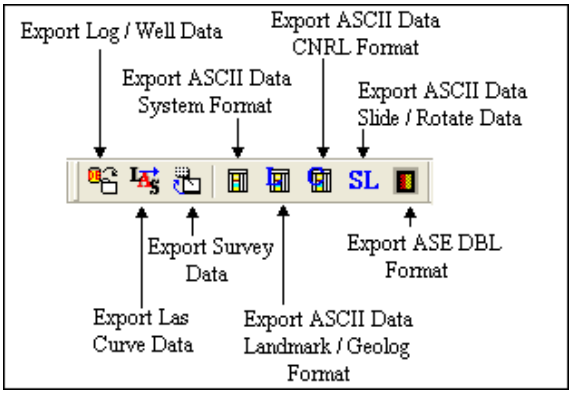
The Power*Log / Core & Curve™ Import Toolbar…



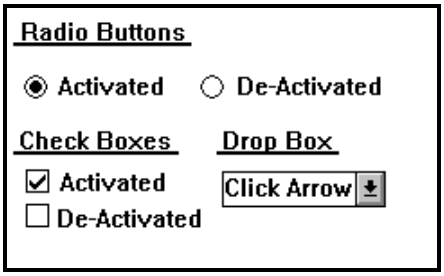
The Export Toolbar

This toolbar is dock able and can be moved to different places on the screen.

The Power*Log / Core & Curve™ Export Toolbar…



Button, Check box and drop box types.



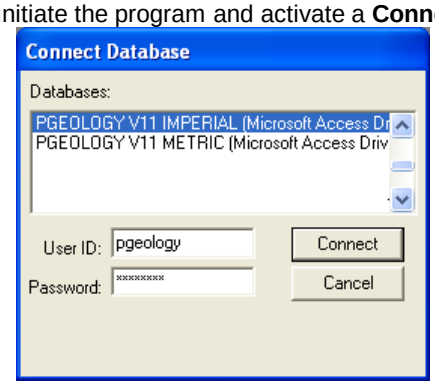
The Four (4) Main On-line Help System Categories:

Commands - Descriptions of each menu command within Power*Log / Core & Curve™.
Toolbar - Shortcuts to common commands are explained.
Database Table Operations - Commands or functions related to the Database Table are described.
Quick Reference Guide - The portion of the On-line Help System that quickly refers you to some of the more commonly performed tasks

This tutorial will guide you through the process of creating and editing a new horizontal striplog (hereafter referred to simply as a log), with curves and interpreted lithology.

Connecting to the Database

1.) **Double click** on the PowerCurve V11 **Icon**. Acknowledge the Security Information window by **clicking** on the OK **button**. This will initiate the program and activate a **Connect Database** window.



2.) Highlight the **PGEOLOGY V11 IMPERIAL (Microsoft Access Driver [*mdb])** database by **clicking** on it once.

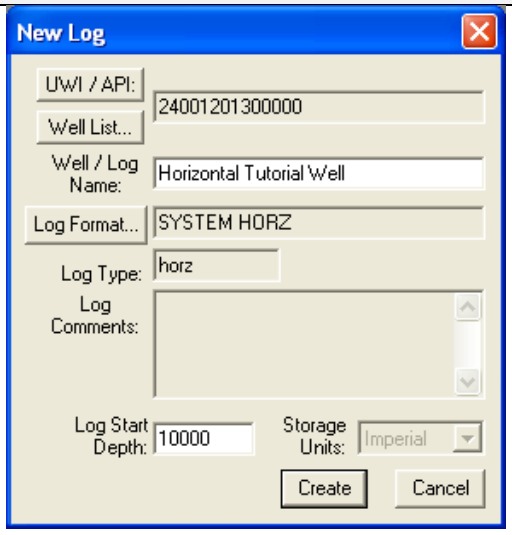
3.) Move your mouse pointer to the **User ID** field and **click**. This will activate a flashing cursor in the **User ID** field. **Type** "**pgeology"** in the **User ID** field. **Press** the **Tab** key on the keyboard to move to the **Password** field.

4.) **Type** "**pgeology"** in the **Password** field and then **click** on the Connect **button**. The program will now load various dictionaries and then activate an **Open Log** window.

5.) **Click** on the Cancel **button** in the **Open Log** window to close the **Open Log** window.

The first step in creating a new log is to click on the **New Log button** on the **Toolbar** or to select **New** under **File** on the **Selection Bar**. This will open the **New Log** window on the next page.

This more than likely will appear after connecting to the Database without you have to do the above procedure if this was the first time you have activated Power*Curve.

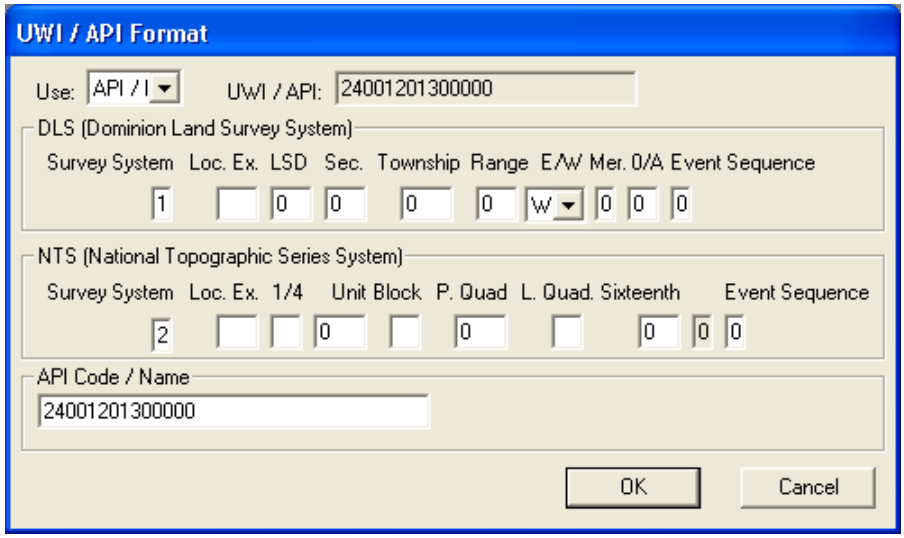


Starting A New Well / Log

1.) The **Well/Log Name** field is where you enter the name of the well (no more than 50 characters long). Type "**Horizontal Tutorial Well"** into the **Well / Log Name** field.

Note: In most cases, the user would click on the **Well List** button first and then select the **Well** that was previously used for building the vertical portion of the striplog. The log name would then be automatically placed in the **Well/Log Name** field and when the horizontal log is created the log name will be appended with the letter "**H**" to indicate its status as a horizontal log. However, any and all information pertinent to the original vertical log/well would then be associated with the new horizontal log.

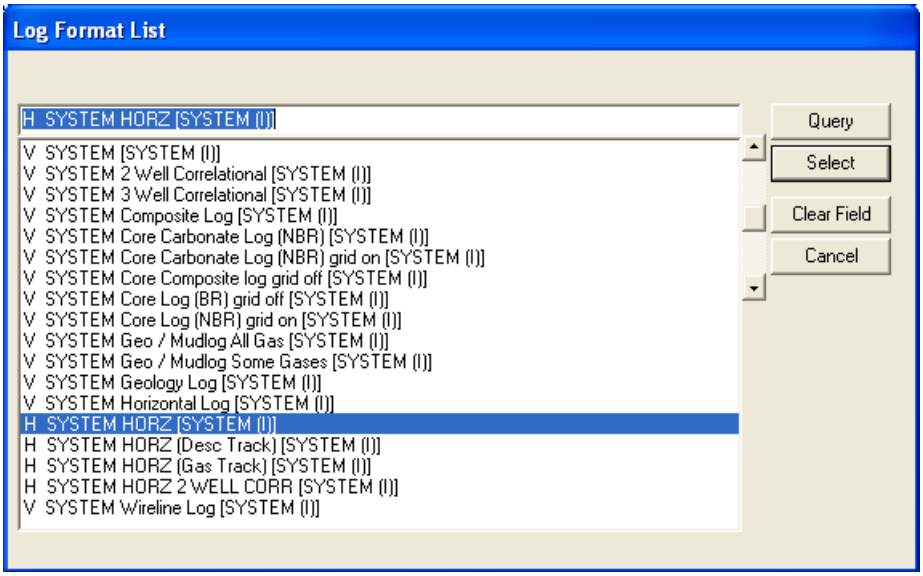
2.) **Click** on the [UWI / API:] **button** to activate the **UWI Format** window.



3.) The default or flashing caret is in the API Code / Name field. **Type** in **"24001201300000"**. The 24 is a State Code, the 001 is a County Code, the 20130 is the Unique Well ID, the 00 is for the sidetrack code, and the last 00 is for the Event Sequence Loc.

4.) **Click** on the [OK] **button** when you have finished entering the **API**.

5.) **Click** on the [Log Format...] **button** to activate the **Log Format List** window.



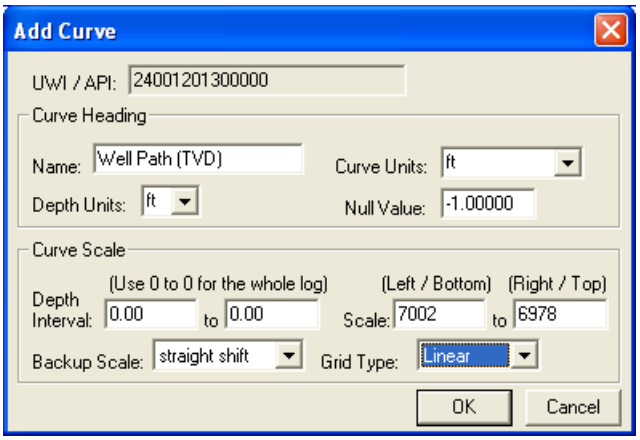
6.) **Click** on "**H SYSTEM HORZ [SYSTEM (I)]"** to highlight it and then **click** on the **Select** button**.** You may also **double click** on "**H SYSTEM HORZ [SYSTEM(I)]."**

Note: The H before the Log name represents a Horizontal Log Format and the V before the Log name represents a Vertical Log Format

7.) Once you have been returned to the **New Log** window, **double click** in the **Log Start Depth** field. This will highlight the zero (**0**) and activate a flashing cursor. Type **10000** in the **Log Start Depth** field.

8.) Once the information is entered, **click** on the Create **button**.

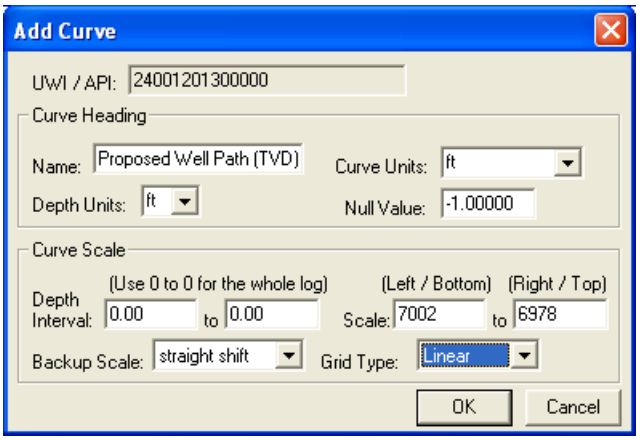
9.) This will initiate a **New Log**. During this process, the curves associated with the selected log format will be added. You will now be prompted with the **Well Path (TVD) Add Curve** window.



The **Well Path Curve** allows the user to draw the actual well path that the well takes when being drilled. The **Well Path Add Curve** window should have the exact same scale values as the **Proposed Well Path Add Curve** window had on the next page.

Note: The **Left / Bottom Scale** maps to the bottom on a horizontal curve and the **Right / Top Scale** maps to the top on a horizontal curve.

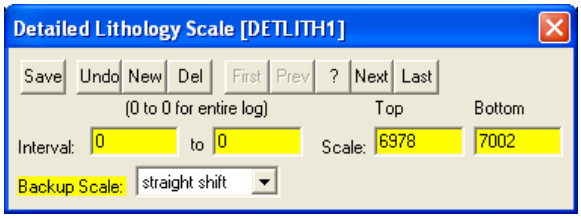
10.) Select "**ft**" for meters in the **Curve Units** field. Then, enter a value of "**7002**" into the **Left/Bottom Scale** field and a value of "**6978**" into the **Right/Top Scale** field. Finally, select "**Linear**" in the **Grid Type** field and then **click** on the OK **button**. The **Proposed Well Path Add Curve** window will then be displayed.



The **Proposed Well Path (TVD) Curve** allows the user to draw the proposed well path as first drawn by the directional drilling company. Typically, you would only show the horizontal portion of the well path and/or the last few meters of the build section.

The **Proposed Well Path Add Curve** window should have the exact same scale values as the **Well Path Add Curve** window had on the previous page.

11.) Select "**ft**" for meters in the **Curve Units** field. Then, enter a value of "**7002**" into the **Left/Bottom Scale** field and a value of "**6978**" into the **Right/Top Scale** field. Finally, select "**Linear**" in the **Grid Type** field and then **click** on the OK **button**. The **Detailed Lithology Scale [DETLITH1]** window will then be displayed



The **Detailed Lithology Scale [DETLITH]** window allows the user to draw **Lithology** in the **Detailed Lithology** track.

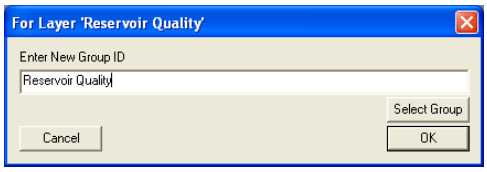
Note: The **Display Depths** associated with the **Detailed Lithology** layer in the **Detailed Lithology** track are determined by the values entered into either the **Major** or the **Minor** field in the **Layer Configuration** window for the **Detailed Lithology** layer.

12.) Enter a value of "**6978**" into the **Top Scale** field and a value of "**7002**" into the **Bottom Scale** field. Select **Straight Shift** in the **Backup Scale** field.

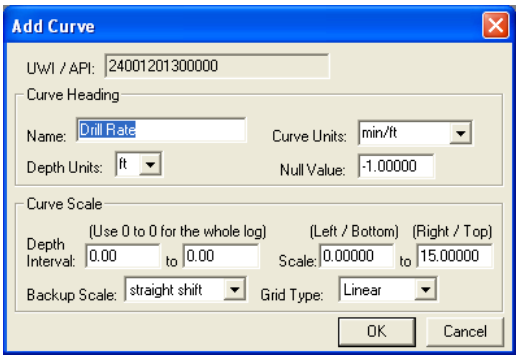
13.) **Click** on the Save **button**, and exit from the ensuing **Shortcut Options** window by clicking once on the Exit **button**.

14.) You will now be prompted with the Curve Fill options window. We will delay this for now so **click** on the Cancel **button**.

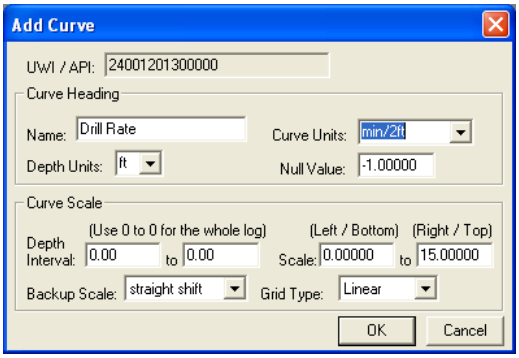
15.) You will now be prompted with an Add Generic Category layer window named Reservoir Quality. **Type Reservoir Quality** into the field as shown in the proceeding window.



16.) **Click** on the OK **button**. You will now be prompted with the Add Curve window for Drill Rate.

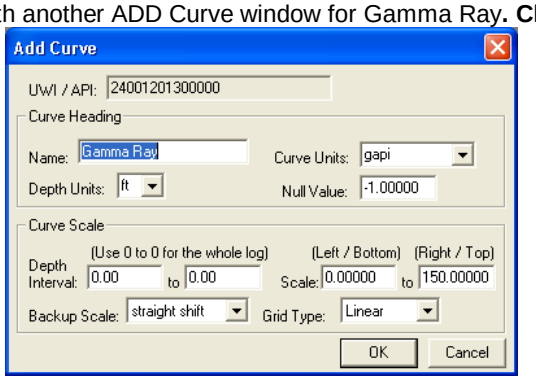


17.) **Select min/2ft** from the **Curve Units drop down box**. If done correctly it will look like Figure on the next page.

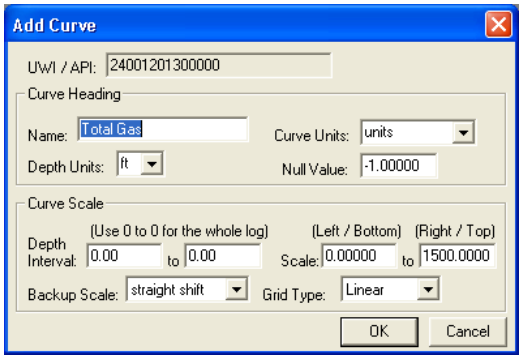


18.) **Click** on the OK **button** in the **Add Curve** window for **Drill Rate.** This will activate the second Add Curve window for **Gamma Ray** shown below.

19.) You will now be prompted with another ADD Curve window for Gamma Ray**. Click** on the OK **button**.

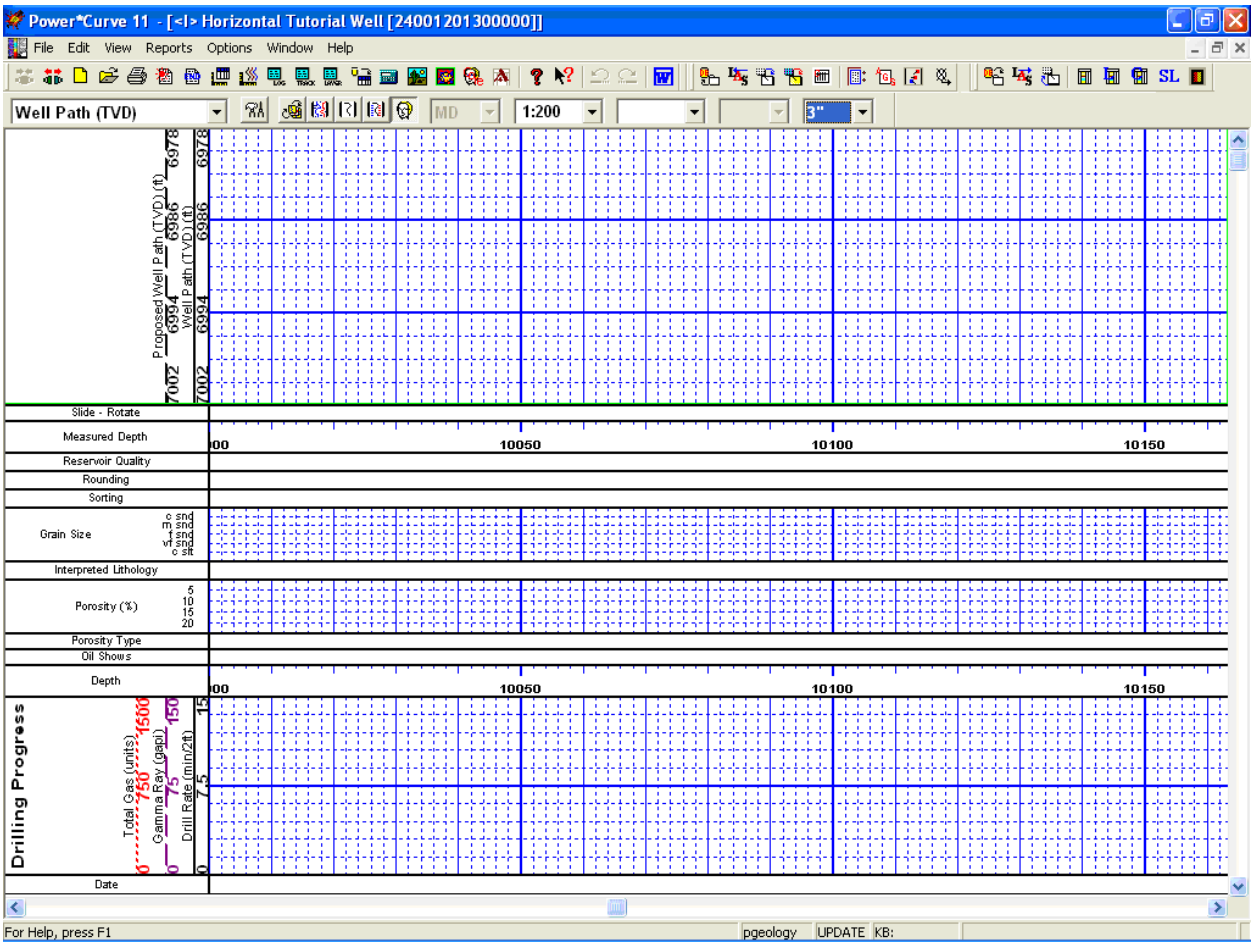


20.) This will activate the last Add Curve window for Total Gas. **Click** on the OK **button**.

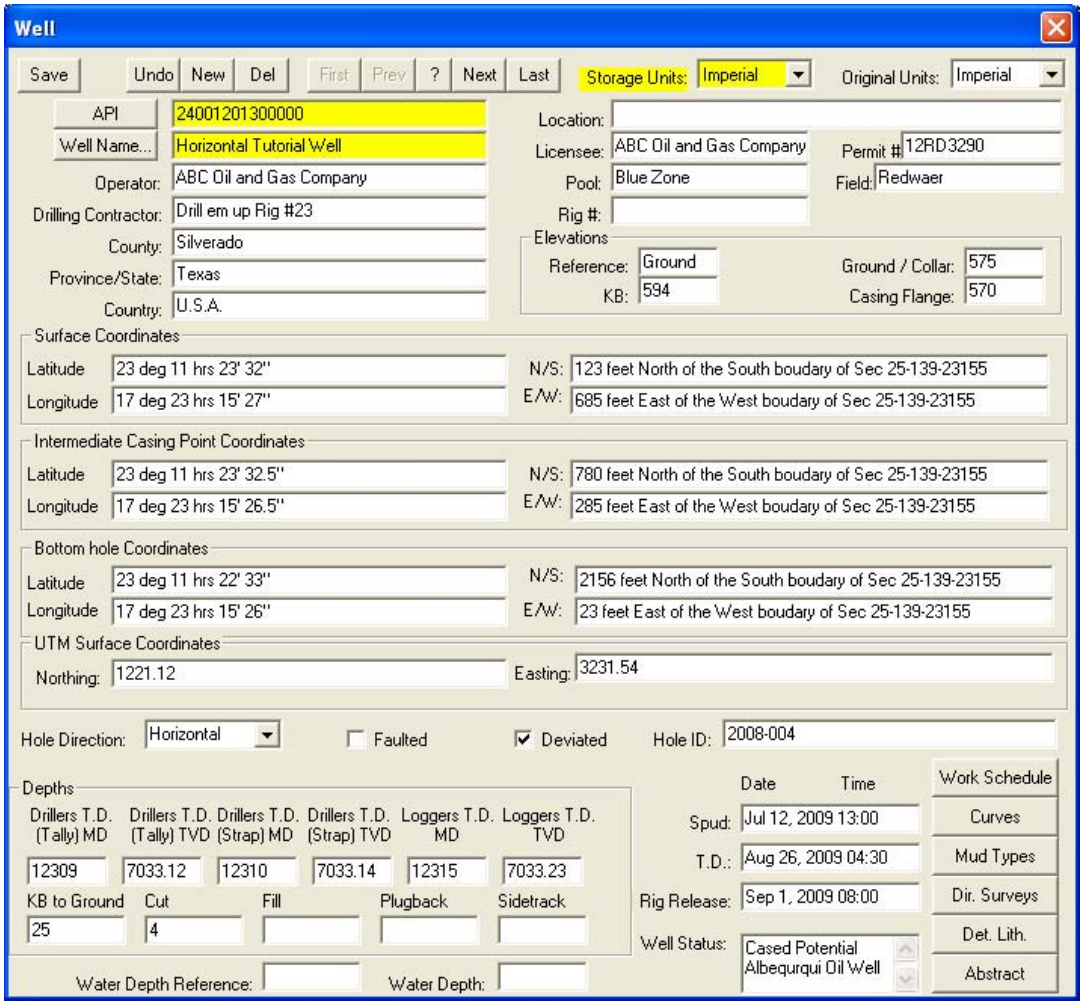


You have just added five curves to the database that will be displayed as layers in the Drilling Progress track and the Detailed Lithology track on your new horizontal log.

***** When your log opens, it should look similar to the log displayed below. *****



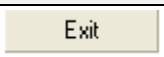
1.) You can now fill in your pertinent well information by selecting **Well** under **Edit** pull down menu on the **Selection Bar** to activate the **Well** window.



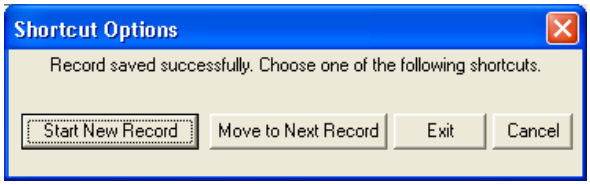
2.) Fill in the information you feel is necessary (the Figure above, has been filled in to give you an idea of how to complete the fields. Please **type in** the **KB elevation field** with "**594**". This is done so that when we add a formation top that a sub sea level (ssl) field will be filled in. Then **click** on the 

button to save any changes you have made to the well record.

Note: Some of the fields in the **Well** window have character restrictions or mandatory requirements. Consequently, if any of these restrictions have been violated or if any requirements have not been met, the offending field will be highlighted, the nature of the problem will be displayed on the **Status Bar** (lower left hand corner of the screen). You will be prompted with a system error message window. Remember to save your work, after the problem has been fixed.

3.) If the record has been successfully saved, **click** on the 

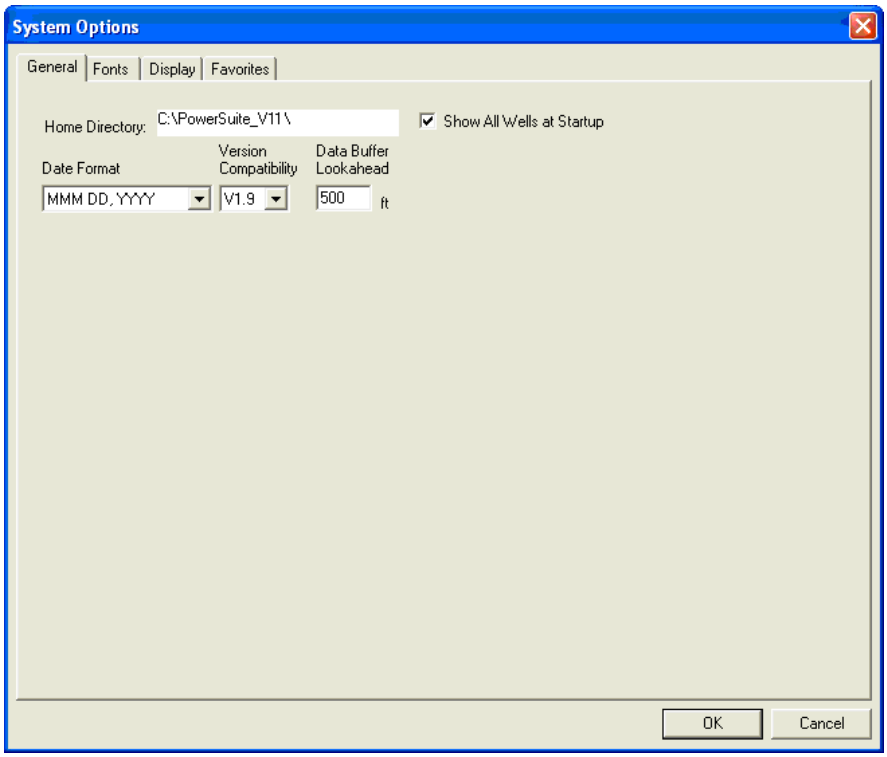
button, when prompted with the **Shortcut Options** system window.



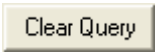
The System Options window:

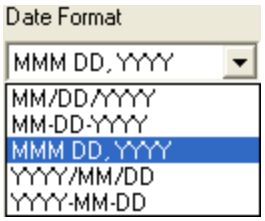
To activate the System Options window **click** on **System Options** under the **Options** menu selection.

General Tab



Home Directory - This is the directory on your hard drive where **Power*Log, Power*Core and Power*Curve** is being executed. The user will not see any symbols on their log or print out any of our reports it you have the wrong home directory.

This check box when  activated will populate the Open Log window with all the wells in the database. If it is unchecked it may help our corporate users and the time it take to retrieve thousands of wells from the database and to populate the Open Log window with that information. If this check box is deactivated and you wish to see all your wells then simply **click** on the  **button** in the Open Log window to see all their wells if this option is deactivated.



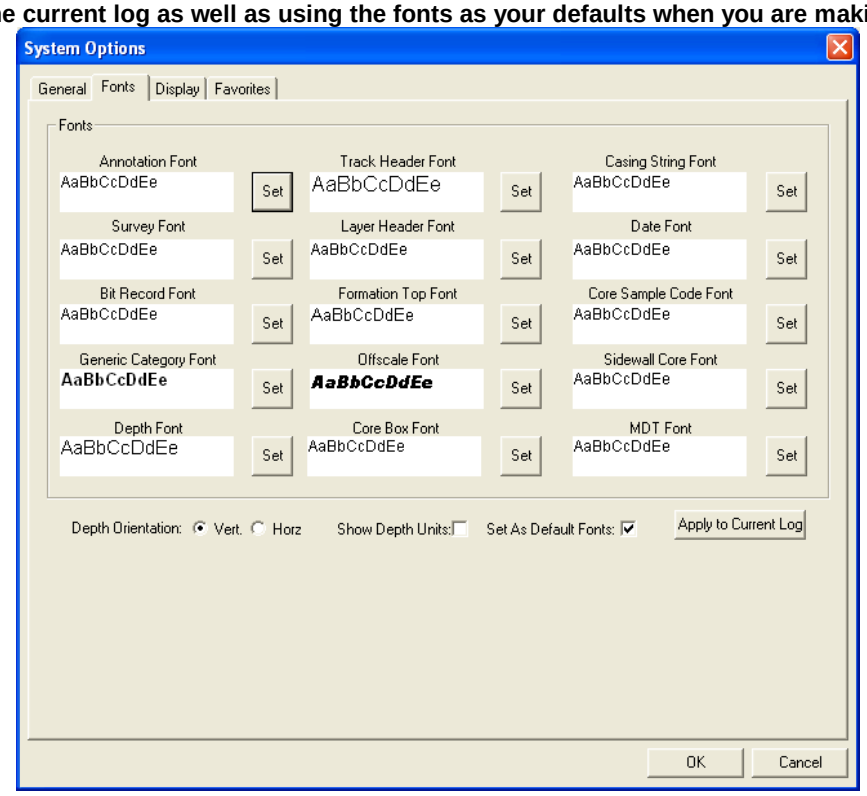
Date Format - From this drop box, you can select the date format. This selection determines how every date in **Power*Log / Core & Curve** will be entered and displayed. If you import a log with different date formats, **Power*Log / Core & Curve** will change the dates to comply with the format you've chosen here. The user can change this at any time and all the Date formats will be changed in the database.

Version Compatibility - Enables the user to achieve compatibility for Annotations in the older Versions of Power*Suite (V1.81 and before) and the Annotations in the newer Versions of Power*Suite (V1.9 and later).

Data Buffer Lookahead - The number placed in this field determines how far ahead and behind the current top depth will be stored in the computers buffer. The larger the look ahead number, the longer it takes for Power*Log / Core & Curve to refresh the screen when you exceed the look ahead value. However, until you meet or exceed the look ahead value, scrolling will be much faster, because the database is not yet being accessed.

Fonts Tab

This tab allows the user to set up most of the fonts used in Power*Log, Core and Curve. You can set it up to be used on the current log as well as using the fonts as your defaults when you are making new logs.



Annotation Font - Allows you to determine the default font style, type, color and size of your annotations on your log, Also this is the default when you use any of the Sample Description Transfer options.

Survey Font - Allows you to determine the font style, type, color and size of your survey data associated with the Survey Layer on your log.

Bit Record Font - Allows you to determine the font style, type, color and size of your bit record data associated with the Bit Record Layer on your log.

Generic Category Font - Allows you to determine the font style, type, color and size of your Long or Short Name display option in all the Generic Category Layers displayed on your log.

Depth Font - This allows you to determine the font style, type, color and size of the depth markers in the **Depth** track of the log.

Depth Orientation: Vert. Horz - These radio buttons allows the user to change the orientation of the Depth Font on the Layer. Beware you may have to change the Track Width to accommodate the Font size and orientation. Refer to the Log Configuration Builder to do this.

Show Depth Units This check box when activated will display the depth units with the depth on the Depth Layer. ie. 1000 ft or 1000 m vs. 1000

Track Header Font - Allows you to determine the font style, type, color and size of your Track Headers on your log. All track headers use the same font across the entire log.

Layer Header Font - Allows you to determine the font style, type, color and size of your Layer Headers on your log. All Layer headers use the same font across the entire log.

Formation Tops Font - Allows you to determine the font style, type, color and size of your Formation Tops data associated with the Formation Tops Long and Expanded Layers on your log.

Offscale Font - Allows you to determine the font style, type, color and size of your curve values displayed when the curve pegs off scale.

Core Box Font - Allows you to determine the font style, type, color and size of your Core Box data entered in the Core Box layer.

Casing String Font - Allows you to determine the font style, type, color and size of your Casing string data displayed on the Casing String layer. This data is entered through the Casing String Report.

Date Font - Allows you to determine the font style, type, color and size of your Date data entered in the Date layer.

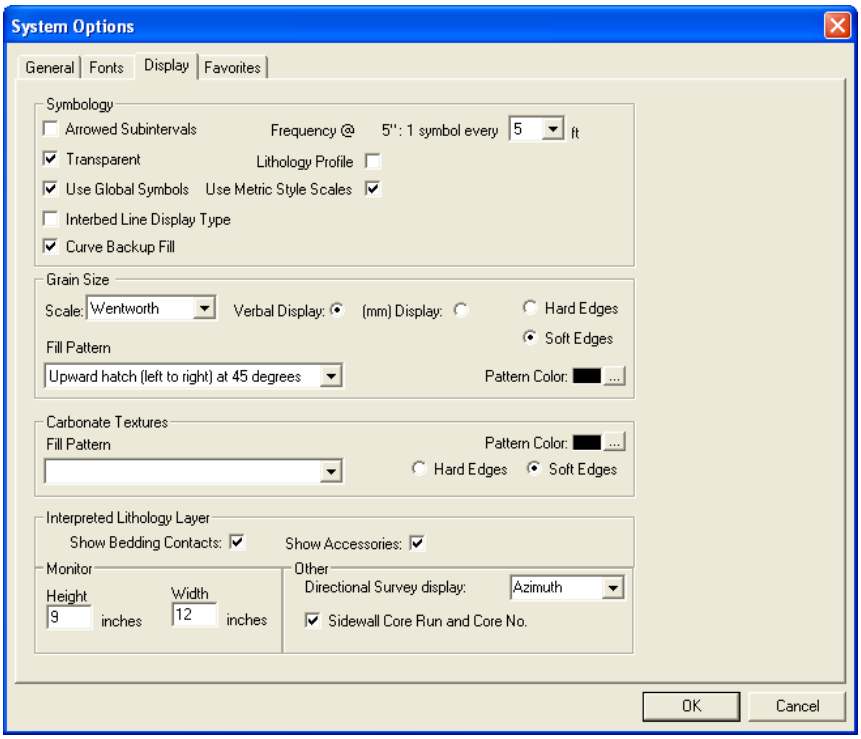
Core Sample Code Font - Allows you to determine the font style, type, color and size of your Core Plug data entered through the Core Plug Report. This font is displayed on the Core Sample Code layer.

Sidewall Core Font - Allows you to determine the font style, type, color and size of your Sidewall Run and Sample Number data entered through the Sidewall Core Report. This font is displayed on the Sidewall Core layer.

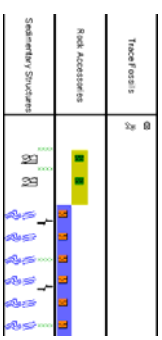
MDT Font - Allows you to determine the font style, type, color and size of your MDT Run and Test Number data entered through the MDT Report. This font is displayed on the MDT layer.

☑ Set As Default Fonts This check box ☑ when activated will make the font setting in this window your defaults for any new log created regardless on the Fonts stored in the template.

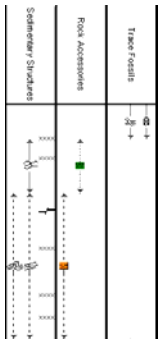
Display Tab



Arrowed Subintervals - This check box ☑ when activated will indicate the top and bottom of your subintervals (portion of an interval) with an arrow rather than a set of symbols. An example is shown below.



Normal Subintervals

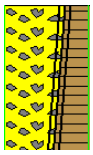


Arrowed Subintervals

Transparent - This check box when activated, this function makes the background of the accessory symbols transparent, so that the bed in the background shows through. If deactivated, a white background surrounds the accessory symbols in order to separate them more from the beds.

Use Global Symbols – With the ability to edit existing metafiles the user may have imported a well that has used metafiles or symbols that have been modified to look differently than the one existing within your system symbols. If you wish to use your symbol set instead of the revised imported ones you can select this check box to make that change.

Interbed Line Display Type - This check box when activated will display the interbed data with a line display splitting the two lithology types or when unchecked will display the lithology in an interbed fashion as displayed below.



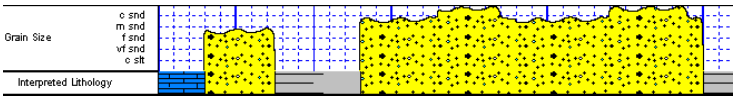
Curve Backup fill – This check box when activated will show a sideways hatching fill pattern when a curve goes off scale or in the backup mode. If unchecked there will be no hatching pattern when the curve goes off scale.

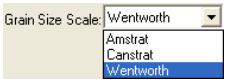
Frequency @ 1:240 – This drop box determines how often symbols are drawn on a **Lithology Layer**, with the scale of 1:240. For example: 1 symbol every 1 meter at 1:240, 2 symbols every 1 meter at 1:120, 1 symbol every 2 meters at 1:480, and so on. These frequencies are only in effect if you utilize the entire interval in **Oil Shows**, **Rounding**, **Sorting**, **Framework**, or designated an interval in **Sedimentary Structures**, **Traces Fossils** and Rock Accessories.

Lithology Profile - This check box when activated will fill in the Carbonate Texture and Grain Size layers with the interpretive lithology. It will draw the lithology to the maximum size filled in over the interval.

Note: The user may wish to turn off the track borders when this option is selected. You will see an example of this shown below.

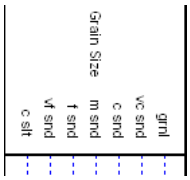
Use Metric Style Scales: This option allows the Imperial Users to utilize a ratio 1:240 or 1:600 rather than 2" or 5" which would be standard selections in the United States.



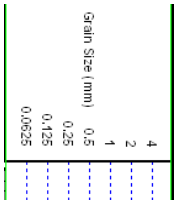


Grain Size Scale List box - You may choose between **Wentworth, Canstrat** or **Amstrat** scales, when using the **Grain Size Builder**. The Wentworth Grain size only allows full grain size while Canstrat / Amstrat allow half grain sizes when drafting in the Grain size and matrix layers.

Verbal Display: This radio button will display the **Grain Size Track header** with the equivalent verbal grain sizes such as such as C slt, VF snd, F snd, M snd, C snd etc.



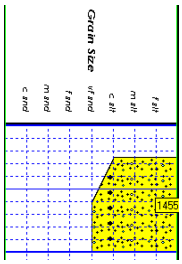
Verbal Scale



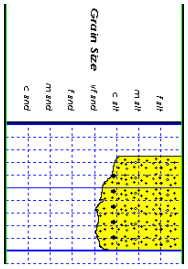
MM Scale

(mm) Display: This radio button will display the **Grain Size Track header** with the equivalent numeric grain sizes (in mm) such as .0625, .125, .25, .5, 1, 2 etc. as shown above.

Hard Edges This radio button will display the grain size with strait edges and right angles between the grain sizes. The illustration below is shown with Lithology Profile activated.



Hard Edges

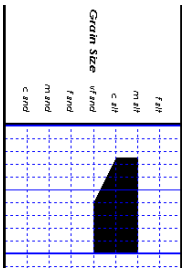


Soft Edges

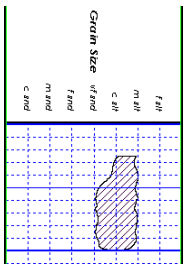
Soft Edges This radio button will display the grain size with curved edges and rounded angles between the grain sizes.

Grain Size Fill Pattern Upward hatch (left to right) at 45 degrees This drop box allows the user to select a hatching pattern when using the Grain Size Layer with the Lithology Profile not activate.

Grain Size Pattern Color: ... This color selector allows the user to pick the line color (foreground) when the fill pattern option is used. The background color is found in the Layer configuration for the Grain Size.



Grain Size No Pattern Hard edges



Grain Size Pattern Soft edges

Carbonate Texture Fill Pattern Upward hatch (left to right) at 45 degrees This drop box allows the user to select a hatching pattern when using the Carbonate Texture Layer with the Lithology Profile not activate.

Carbonate Texture Pattern Color: ... This color selector allows the user to pick the line color (foreground) when the fill pattern option is used. The background color is found in the Layer configuration for the Carbonate Texture Layer.

Carbonate Textures Hard Edges This radio button will display the grain size with strait edges and right angles between the Carbonate Textures. The illustration below is shown with Lithology Profile activated.

Carbonate Textures Soft Edges This radio button will display the grain size with curved edges and rounded angles between the Carbonate Textures.

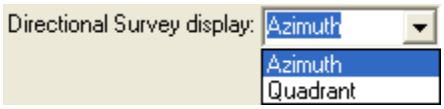
Interpreted Lithology Layer - Show Bedding Contacts: -When this check box is activated the bedding contacts (lines) between the drawn lithology types in the Interpretive Lithology Layer will be shown.

Interpreted Lithology Layer - Show Accessories: When this check box is activated it will turn on the accessories in the Interpretive Lithology Layer.

Monitor Height - This option allows you to scale your monitor for Power*Log / Core so you may correlate on-screen wells with hard copy logs that you may have. It is recommended that you take an opportunity to measure the vertical viewing area of your monitor in inches and then insert that value in the **Monitor Height** field. Be aware, however, that if you adjust the screen height knob on your monitor, this will affect the monitor height setting.

Monitor Width - This option allows you to scale your monitor for Power*Curve so you may correlate on-screen wells with hard copy logs that you may have. It is recommended that you take an opportunity to measure the horizontal viewing area of your monitor in inches and then insert that value in the **Monitor Width** field. Be aware, however, that if you adjust the screen width knob on your monitor, this will affect the monitor width setting.

Note: You must restart **Power*Log / Core & Curve** for the **Monitor Width / Height** changes to take effect.

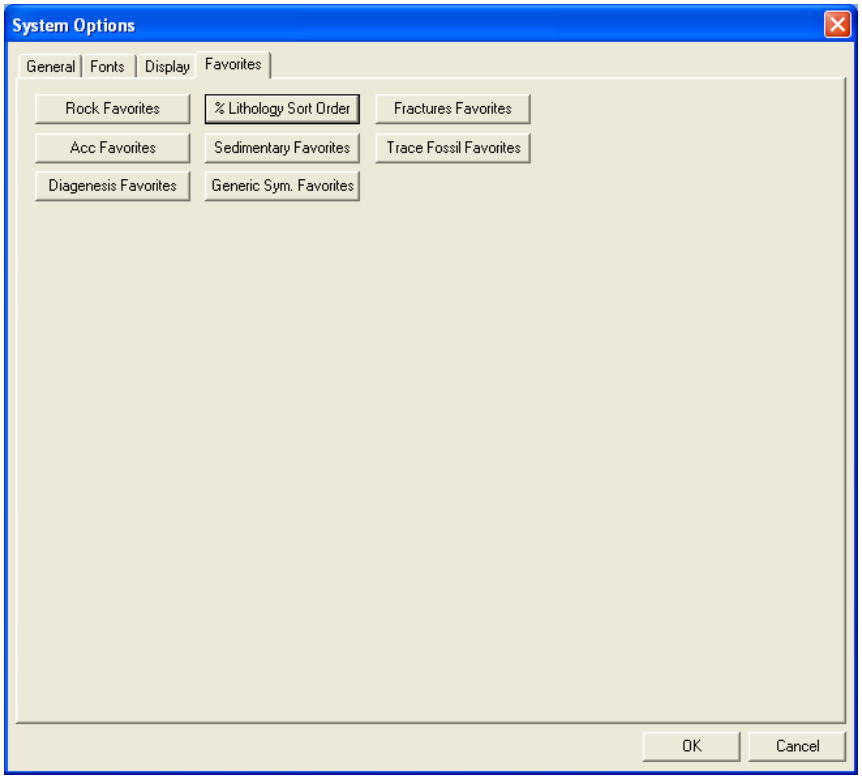


This drop box option will display your directional surveys on your log in either Quadrant format N 62 º W) or Azimuth format (AZ 298 º)

This check box  when activated will display the Sidewall Core Run & Core numbers above the core triangle indicator on the Sidewall Core layer.

Favorites Tab

This tab allows the user to define their System favorites for all the data categories that support these choices. This tab dialogue also allows the user to access the % Lithology Sort order for the % Lithology Track.

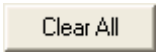


Rock Favorites - The 

button when activated allows the user to determine the number of the activation of the Rock Type Builder window in the Interpreted and Detailed Lithology tracks.

1.) **Click** on the 

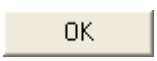
button in the **System Options** window.

2.) **Click** on the 

button in the Rock Type Favorites list window to prepare it for the selection of your Rock Favorites.

3.) Select the following **Rock Types** from the **Rock Type Favorites** list window:

Ls ms [Limestone (mud supported)]
Sh m gy [Shale medium gray]
Ss [Sandstone]
Dol [Dolomite]
Plus any other rock types you would use a lot.

4.) **Click** on the 

button to return to the **System Options** window.

Accessory Favorites - Allows the user to determine their favorite **Accessories** and then displays them in a pop-up menu generated by the activation of the **Accessory Builder** window in the **Interpretive Lithology** track.

1.) **Click** on the Acc Favorites **button** in the System Options window.

2.) **Click** on the Clear All **button** in the **Accessory Favorites** list window to prepare it for the selection of your **Accessory Favorites**.

3.) Select the following **Accessories** from the **Thinbed**, **Components**, and **Cement** headings in the **Accessory Favorites** list window:

Note: You can navigate around these selections by typing in the first two characters of the accessory to get a lot closer to your selection.

Thinbed
- **cht dk pebbles [chert dark pebbles]**
- **sh gy stringers [shale gray stringers]**
- **sid nodules [siderite nodule]**

Component
- **aren [arenaceous]**
- **calcs [calcareous]**
- **carb [carbonaceous]**
- **coal (carb) grs [coal (carbonaceous) grains]**
- **cht dk grs [chert (dark) grains]**
- **fld grs [feldspar grains]**
- **glau grs [glauconite grains]**
- **micmica [micromicaceous]**
- **pyric [pyritic]**
- **slty [silty]**

Cement
- **sid [siderite]**
- **sils [siliceous]**
- **Plus other components that you would use a lot.**

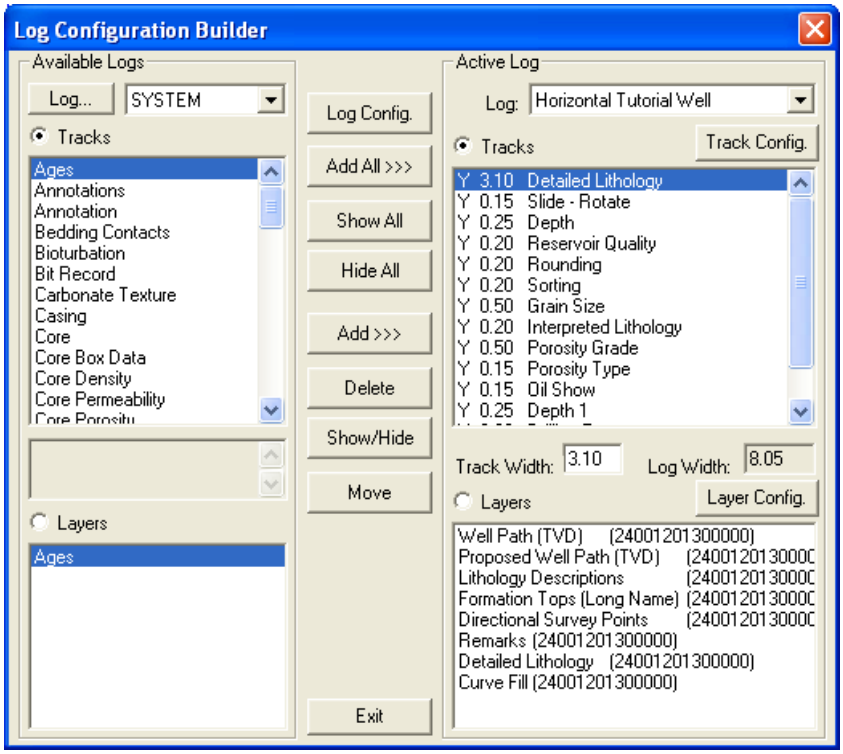
4.) **Click** on the OK **button** to return to the System Options window.

5.) **Click** on the OK **button** to return to the Main Power*Curve window.

The Log Configuration Builder Window

- This is the heart of the Log/Track/Layer configurations and controls the way your well's information is displayed on the log.
- The well may have a lot of information stored in the database, but that information cannot be shown graphically on the log, until the necessary layers have been created to illustrate that information.

Click on **Log Configuration Builder** under the **Options** menu on the **Selection Bar** or click on the **Log Configuration Builder**  **button** on the **Toolbar** to activate the **Log Configuration Builder** window.



Fundamentals of the Log Configuration Builder window:

The left side of the Log Configuration Builder window: Available Logs

The **Available Logs** section or **left** side of the **Log Configuration Builder** window allows you to take any track or layer from **Available Logs** and add it to the log you are currently creating/building. On the **left** side of the window, below the Tracks **radio button** is a list of the tracks available for adding to the **Active Log**.

The **Available Logs** section or left side of the window contains the track and layer configuration of the **SYSTEM [SYSTEM]** log, when the window first opens. You have the option of using any of the existing **Tracks** and their associated layers or any of the existing **Layers,** that are associated with any of the system logs in the log database.

The user can click on the Log... SYSTEM **button** on the left side of the screen to activate a selection list of all log formats that are in your database. The list is comprised of two (2) names with the first name in the list being the system **Log Name** and the second name (in brackets), being the **UWI** of its primary well. **Double click** on the log format you wish to copy from.

Below the Layers **radio button** on the **left** side of the window, is a list of the layers available in the track highlighted above. They will be added all at once, if you add their parent track. However, they can also be added on an individual basis, if you only want to add one(1) layer to an existing **Active Log** track.

The right side of the Log Configuration Builder window: Active Log

The **Active Log** section or **right** side of the window displays the track and layer configuration of the **Active Log** (the log you are currently creating), in the main **Power*Curve™** window. The name of the log is viewed in the **Log** field. In this case, it will be "**Horizontal Tutorial Well**." Below the Tracks **radio button** on the **right** side of the window, is a list of the tracks that are currently found within the **Active Log.** The track at the top of this list is drawn on the left side of the log, while the track on the bottom of the list is drawn on the far right of the log with all of the other tracks drawn in between, respectively. Below the Layers **radio button** on the **right** side of the window, is a list of the layers that are associated with the track highlighted above.

The middle of the Log Configuration Builder window: Selection Buttons

The **selection** buttons, found in the middle column of the window, are for adding layers or tracks from the **Available Logs** to the **Active Log**, activating/deactivating the **Active Log's** tracks, deleting active log tracks or

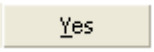
layers, and moving tracks or layers within the **Active Log** itself. Step-by-step instructions for accomplishing these tasks are provided on the following pages.

Working with the Log Configuration Builder window:

Deleting the Date track from the Horizontal Tutorial Log…

1.) On the right side of the Log Configuration Builder Window scroll down in the Tracks list and **highlight** or **click** on the **Date track**.

2.) **Click** on the 

button in the middle of the builder. This action will prompt you with a system message, "***Do you want to delete the selected track in your log*?**" **Click** on the 

button. The **Date** track has now been removed from the log.

Moving the Depth track…

1.) **Click** on the **Depth track** to highlight it on the right side of the Log Configuration Builder window.

Note: Make sure you have clicked on the **Depth** track and NOT the **Depth 1** track.

2.) **Click** on the 

button and it will change to 

button." Then, **click** on the **Detailed Lithology track**. The **Depth track** will then be placed above the **Detailed Lithology track**.

Resizing a track…

1.) On the right side of the Log Configuration Builder window and **highlight** or **click** on the **Detailed Lithology track.**

2.) **Double click** in the **Track Width** field (3.1") and **type** in the value of **3.4** Then, press the **Tab** key and the Detailed Lithology Track with will change as well as the total width of the log itself will change to reflect the increase in the width of the **Detailed Lithology** track.

Note: For paper 8.5" wide, 8.00" is the widest that you want your log to be, especially if you are printing out the log in the **Landscape** paper orientation.

Turning off a track…

1.) **Click** on the **Porosity Type track** to highlight it on the right side of the Log Configuration Builder window.

2.) **Click** on the 

button to turn the "**Y**"(yes), to the left of the track name, to "**N**"(no), indicating that the track will not be shown on the log, until it is reactivated.

3.) Alternatively, you can simply **double click** on the **Porosity Type track** to turn the "**Y**"(yes) to "**N**"(no).

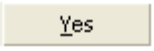
Deleting the Remarks layer from the Detailed Lithology track…

1.) **Click** on the **Detailed Lithology track** to highlight it on the right side of the Log Configuration Builder window. Notice that the layers associated with this track are displayed below, in the Layers list box in the lower right portion of the window.

2.) **Click** on the **Remarks layer** to highlight it in the layers list box. Notice that the 

radio button is automatically activated by highlighting a given layer.

3.) **Click** on the 

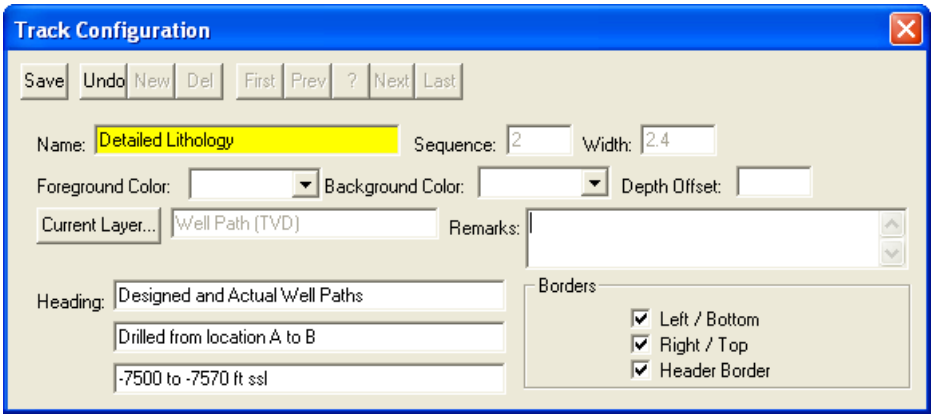
button. This action will prompt you with a system message, "***Do you want to DELETE the selected [layer] in your log*?**" **Click** on the 

button. The **Remarks layer** has now been removed from the log.

- **Configuring the Detailed Lithology track…**

1.) **Click** on the **Detailed Lithology track** to highlight it.

2.) **Click** on the Track Config. **button** (to the right of Tracks portion of the window), to activate the **Track Configuration** window for Detailed Lithology



3.) The Track name is **Detailed Lithology**. To modify the Track Heading name type in "**Designed and Actual Well Paths**" in the first **Heading** field. In the second heading field, type in "**Drilled from location A to B**." and in the third heading field type in **"-7500 to –7570 ft ssl".** These modifications are shown in Figure above.

4.) **Click** on the Save **button** to save the changes.

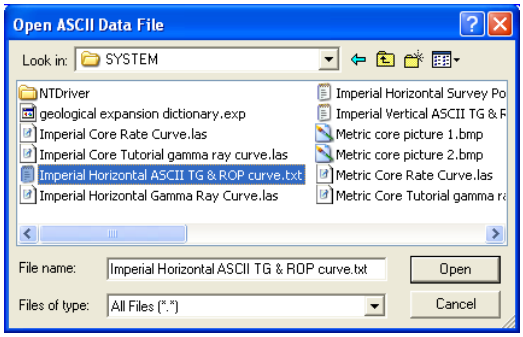
5.) A system message will appear asking the User. "Record saved successfully. Do you wish to exit?" **Click** on the Yes **button**. This action will return you to the **Log Configuration Builder** window. When you exit from the **Log Configuration Builder** window**,** you will notice that the track headings have conformed to your changes.

6.) **Click** on the Exit **button** or depress the **Esc key** on the keyboard to exit from the **Log Configuration Builder** window and you will be returned to the main log window, where you will see the changes you have made to the new log.

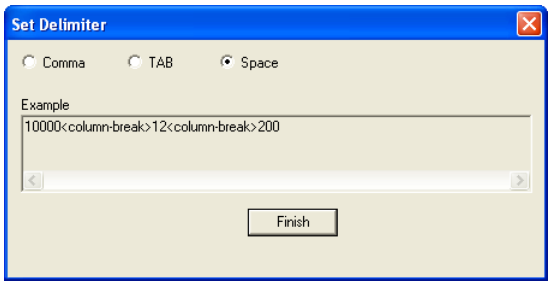
Importing ASCII File Data into the Drill Rate & Total Gas curve layers:

You will be able to do this import only if you have the LAS / ASCII Import Utility. If you do not you will have to input the curve data manually as instructed on pages 24 and 25.

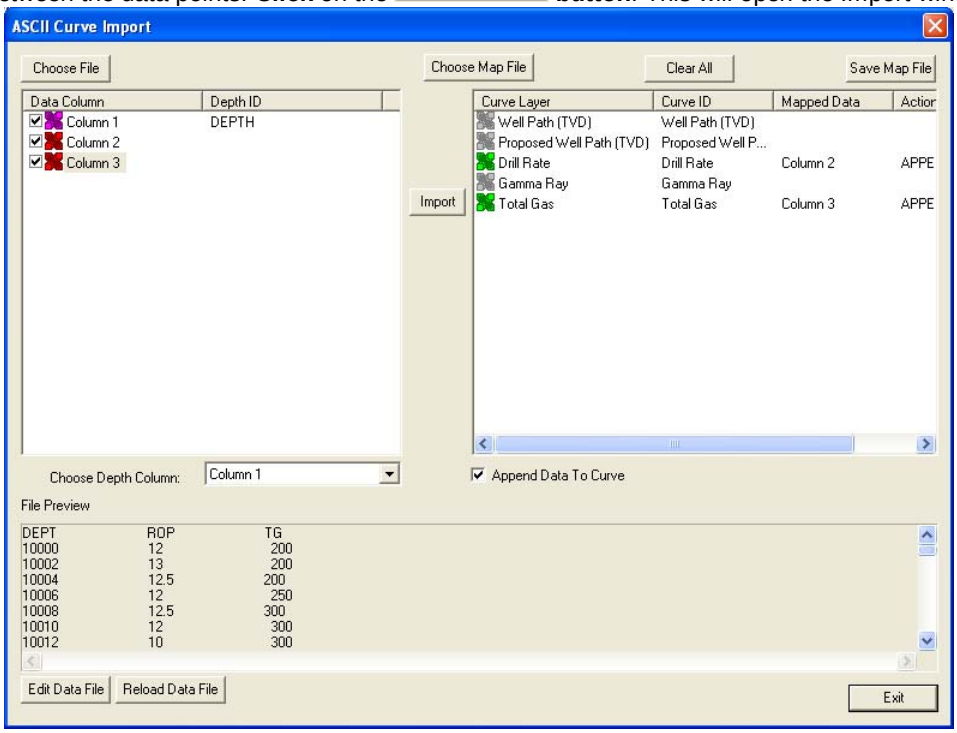
1.) **Click** on the **File** pull down menu, **select Import / Export** and then **select ASCII Import** from the pop out menu. OR the user can **select** the Icon from the Import Tool Bar. This will activate an Open ASCII Data File window.



2.) Navigate to the **C:\Powersuite_V11\system folder** and **select** the **Imperial Horizontal ASCII TG & ROP curve.txt file**. Click on the Open button. Once the file has been selected the Set delimiter window will be activated.



3.) This file is a Space delimited file and the default on this window is space delimited. You will see <column break> between the data points. **Click** on the Finish **button**. This will open the Import window.



4.) The default on the Depth column is Column 1 which is indicated by the purple X**. In our case the depth is the first column so we do not have to change the depth column indicator.**

5.) **Click** on the **Column 2** on the left side and **drag it to the Drill Rate Curve layer** on the right side of the window. You will see Column 2 in the mapped Data field and an APPEND in the action field.

6.) **Click** on the **Column 3** on the left side and **drag it to the Total Gas Curve layer** on the right side of the window. You will see Column 3 in the mapped Data field and an APPEND in the action field.

7.) **Click** on the Import **Button**. This will import the curve data and prompt you with a database message saying Imported successfully.

8.) **Click** on the OK **button** to close the window.

9.) **Click** on the Exit **button** to close the ASCII Import window.

If you have the LAS Import Module proceed to **Changing Curve Scales** on page 25.

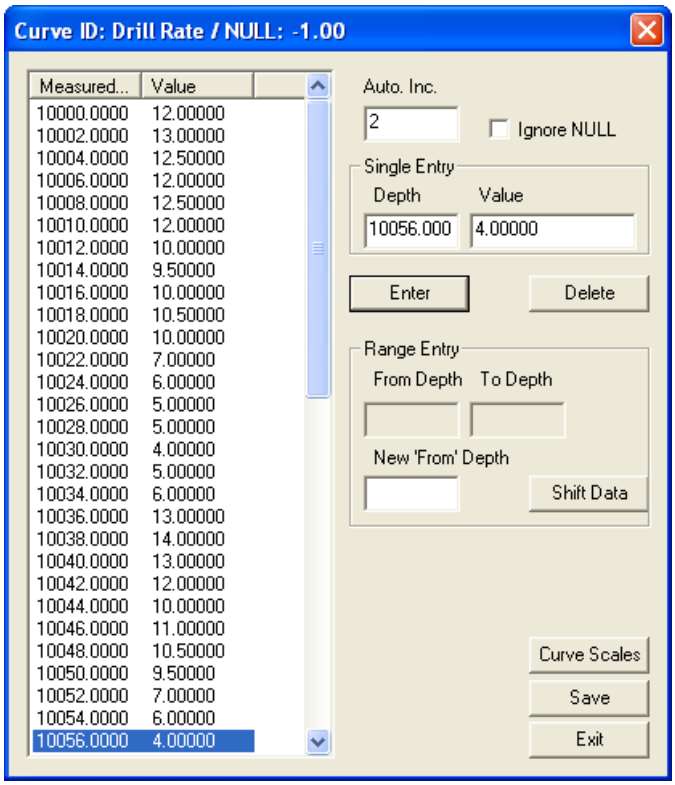
Adding Drill Rate Curve Values Manually (If you do not have the Import Module or Files.)

1.) **Click** anywhere in the **Drilling Progress** track. Depending on your screen resolution you may have to scroll down to see the Drilling Progress track

2.) Use the drop down arrow in the **Layer Selection List** field (located at the upper left side of the **Selection bar**), to display a list of the layers in this track.

3.) **Click** on **Drill Rate** to make it the active layer and the **Layer Selection List** will close automatically after you have made your selection.

4.) **Double click** within the active **Drilling Progress** track to activate the Drill Rate Curve Editor.



5.) When the **Curve Editor** window opens, the cursor will be in the **Depth (ft)** field. **Double Click** in the **Auto Depth Increment** field and replace the (one) 1 with a (two) 2. Press the Tab Key to place the cursor in the Depth field.

6.) Type **10000** into the **Depth** field and then **press** the **Tab** key on the keyboard to move the cursor to the **Value (min/2ft)** field.

7.) Type **12** into the **Value (min/2ft)** field and **press** the **Enter** key on the keyboard. The value will be entered into the list field and the **Depth (ft)** field will automatically advance by the number specified in the **Auto Depth Increment** field, which is currently set at **two** (2).

Note: You do not have to re-enter values if they are identical to the previous value. The previous value is already displayed in the **Value (min/2ft)** field, so you can just press the **Enter** key to insert the same value again.

8.) **Type** in the remaining **Values (min/2ft)** listed on the next page and **pressing** the **Enter** key on the keyboard after each data entry. You will see the list get refreshed with the new values after every time you depress the Enter key on the keyboard.

10002	13.0	10034	6.0	10066	4.0	10098	5.0
10004	12.5	10036	13.0	10068	3.0	10100	3.0
10006	12.0	10038	14.0	10070	3.0	10102	3.0
10008	12.5	10040	13.0	10072	3.5	10104	4.0
10010	12.0	10042	12.0	10074	4.0	10106	3.0
10012	10.0	10044	10.0	10076	4.0	10108	2.0
10014	9.5	10046	11.0	10078	4.0	10110	2.0
10016	10.0	10048	10.5	10080	5.0	10112	3.0
10018	10.5	10050	9.5	10082	5.0	10114	4.0
10020	10.0	10052	7.0	10084	5.0	10116	4.0
10022	7.0	10054	6.0	10086	4.0	10118	3.0
10024	6.0	10056	4.0	10088	4.0	10120	3.0
10026	5.0	10058	5.0	10090	5.0		
10028	5.0	10060	5.0	10092	4.0		
10030	4.0	10062	4.0	10094	4.0		
10032	5.0	10064	5.0	10096	5.0		

9.) When you have finished adding values to the curve, **click** on the Save **button**.

Note: If you forget to save the values before you exit from the **Curve Editor** window, you will be prompted by the following system message, "***Would you like to save the digits*?**" **Click** on the **Yes** button to save the newly edited curve values.

10.) **Click** on the Exit **button** or Press the **Esc** key on the keyboard to exit from the Curve Editor.

- **Adding the Total Gas Curve Manually (If you do not have the Import Module or Files.)**

1.) **Click** anywhere in the **Drilling Progress** track. Depending on your screen resolution you may have to scroll down to see the Drilling Progress track

2.) Use the drop down arrow in the **Layer Selection List** field (located at the upper left side of the **Selection bar**), to display a list of the layers in this track.

3.) **Click** on **Drill Rate** to make it the active layer and the **Layer Selection List** will close automatically after you have made your selection.

4.) Double Click on the **Total Gas** layer to bring up the **Curve Editor** window for the **Gamma Ray** curve.

5.) When the **Curve Editor** window opens, the cursor will be in the **Depth (ft)** field. **Double Click** in the **Auto Depth Increment** field and replace the (one) 1 with a (two) **2**. Press the Tab Key to place the cursor in the Depth field.

6.) Enter the values found on the following page into the **Depth (ft)** and **Value (units)** fields, respectively.

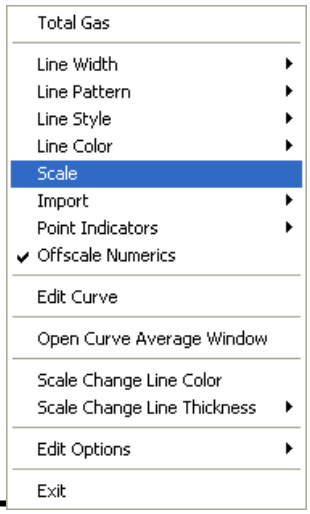
Note: After the first value has been entered into the **Depth** field, the **Curve Editor** window automatically performs each subsequent increment, according to the value placed in the **Auto Depth Increment** field. Consequently, the only values you need to enter manually, after the first entry, are the **Value (units)** field values.

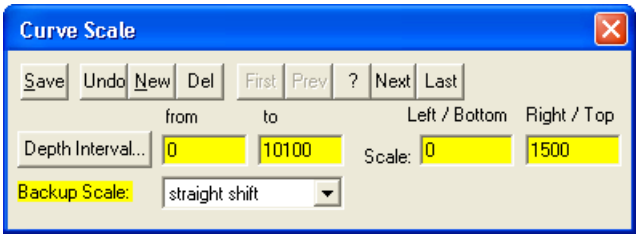
10000	200	10032	780	10064	1380	10096	1370
10002	200	10034	650	10066	1380	10098	1370
10004	200	10036	400	10068	1300	10100	1370
10006	250	10038	400	10070	1300	10102	1410
10008	300	10040	450	10072	1300	10104	1410
10010	300	10042	350	10074	1300	10106	1420
10012	300	10044	450	10076	1250	10108	1490
10014	250	10046	450	10078	1250	10110	1490
10016	250	10048	500	10080	1250	10112	1460
10018	250	10050	600	10082	1280	10114	1460
10020	350	10052	600	10084	1280	10116	1490
10022	600	10054	900	10086	1280	10118	1490
10024	680	10056	1200	10088	1320	10120	1460
10026	680	10058	1200	10090	1320		
10028	700	10060	1450	10092	1320		
10030	780	10062	1380	10094	1360		

Changing Curve Scales from Total Gas Layer Pop Up Menu.

1.) **Right click** on the **Total Gas layer**. This will activate a Total Gas Pop-up menu.

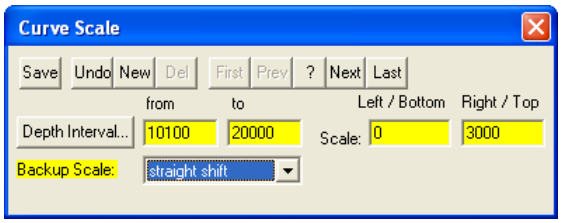
2.) **Select Scale** from the menu**.** This will activate the Scale Window shown below. We will be changing scales in our case at **10100ft**.





3.) **Type** in a different from Depth Interval changing the 0 to **10100** and then **click** on the Save **button.** This will activate a System message stating Record Saved Successfully.

4.) **Click** on Start New Record **button**. This will clear the window.



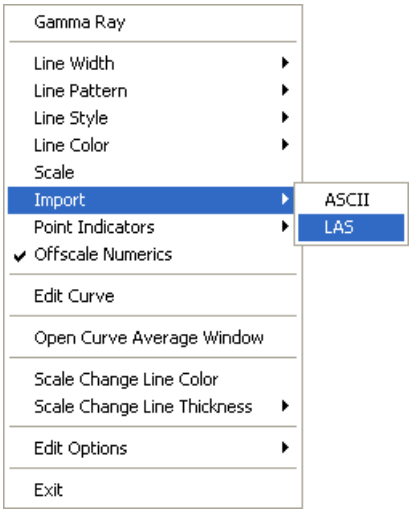
5.) **Type** in **10100** in the **from depth** interval field, **tab**, type **20000** in the **to depth** interval field, **tab**, type in **0** in the **left / bottom scale** field, type in **3000** in the **right / top scale** field, **select strait shift** from the **Backup Scale** drop box.

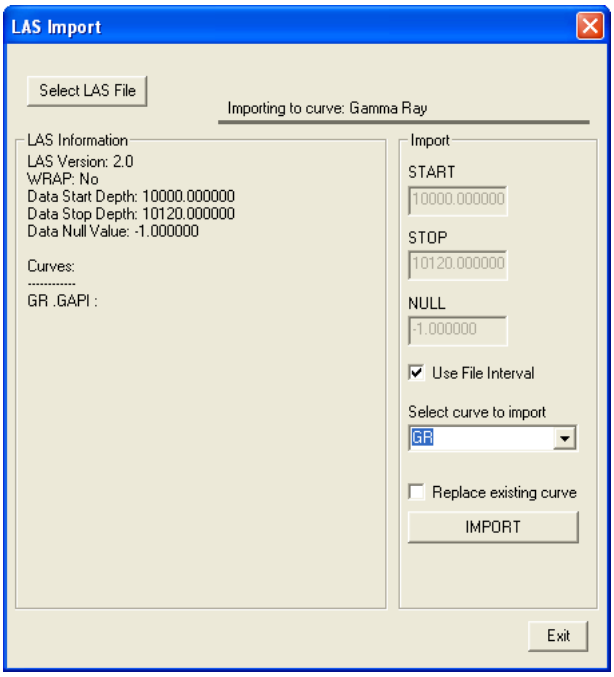
6.) **Click** on the Save **button** and then **click on** the Exit **button** from the ensuing Record Saved Successfully message box.

Importing an LAS Gamma Ray Curve data file…

There are two ways to import LAS Files. If you are importing only one curve it is easier to use the method described below. If you are importing more than one curve it would be best to utilize the LAS Import method found on the Import toolbar or under the File menu.

1.) **Click** on the **Drill Progress track** to make it active. You will notice a green trace around the outside of the track if done correctly.
2.) Use the drop down arrow in the **Layer Selection List** field (located on the left side of the **Selection bar**), to display the **Drilling Progress** track layer list.
3.) **Select** the **Gamma Ray** layer to make it the active layer and the **Layer Selection List** will close automatically after you have made your selection.
4.) **Right click** on the **Gamma Ray layer** to activate a popup menu.
5.) **Select Import** from the pop-up menu to activate a pop out menu and **select LAS**. This will activate the Las Import Window.





6.) **Click** on the Select LAS File **button**. This will activate the Open LAS File window and locate the **"Imperial Horizontal Gamma Ray Curve.las"** in the Powersuite_V11 / System directory.

7.) After locating the Drive and Directory where the **Imperial Horizontal Gamma Ray Curve.las** file is the user must select the file by **double clicking on the file name** or **clicking on it once** and clicking on the OK **button**. This will bring the file header into the LAS Import window.

8.) **Click** on the **Select Curve to Import drop box** and select the **GR** curve.

9.) **Click** on the IMPORT **button**. The curve will import and the window will disappear leaving the core rate curve on the layer.

- **Adding the Gamma Ray Curve Manually (If you do not have the Import Module)**

1.) Double Click on the **Gamma Ray** layer to bring up the **Curve Editor** window for the **Gamma Ray** curve.

2.) **Double Click** on the **Auto Depth Increment** field and **replace** the one **(1)** with a two **(2)**. **Press** the **Tab key** on your keyboard and this will place the cursor in the Depth field.

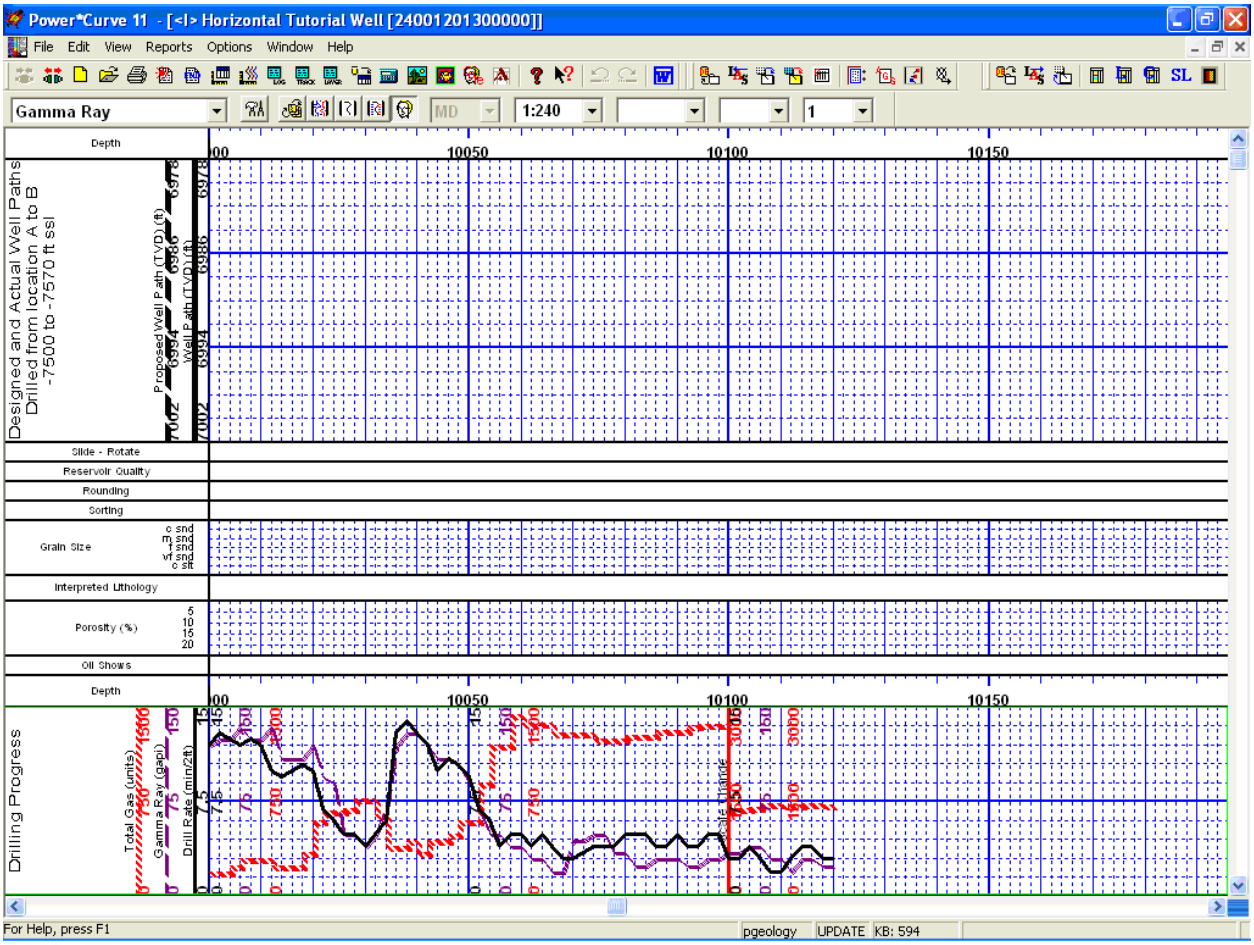
3.) Enter the values found on the following page into the **Depth** and **Value (gapi)** fields, respectively.

Note: After the first value has been entered into the **Depth (ft)** field, the **Curve Editor** window automatically performs each subsequent increment, according to the value placed in the **Auto Depth Increment** field. Consequently, the only values you need to enter manually, after the first entry, are the **Value (gapi)** field values.

10000	120.0	10022	95.0	10044	110.0	10066	20.0
10002	125.0	10024	90.0	10046	110.0	10068	20.0
10004	125.0	10026	50.0	10048	105.0	10070	45.0
10006	135.0	10028	50.0	10050	90.0	10072	45.0
10008	125.0	10030	40.0	10052	70.0	10074	50.0
10010	125.0	10032	50.0	10054	50.0	10076	50.0
10012	135.0	10034	70.0	10056	50.0	10078	35.0
10014	110.0	10036	120.0	10058	40.0	10080	35.0
10016	110.0	10038	130.0	10060	40.0	10082	25.0
10018	110.0	10040	130.0	10062	30.0	10084	25.0
10020	120.0	10042	120.0	10064	30.0	10086	30.0

10088	30.0	10098	30.0	10108	30.0	10118	25.0
10090	30.0	10100	35.0	10110	30.0	10120	25.0
10092	25.0	10102	35.0	10112	20.0		
10094	25.0	10104	40.0	10114	30.0		
10096	30.0	10106	40.0	10116	30.0		

***** Your log should now look similar to the log shown below. *****



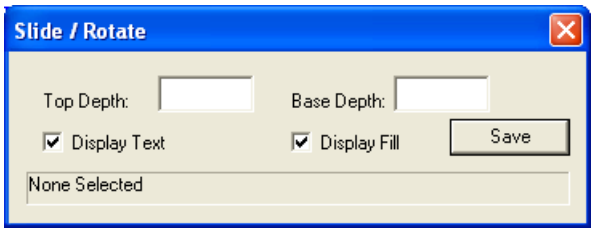
The Slide/Rotate Layer:

The **Slide/Rotate** layer provides a visual representation of the **Drill String Rotation** and **Orientation** throughout the progress of the well.

The **Rotate** function of the window is shown as disabled, because rotation is represented as a blank space on the layer. The only thing you can physically draw on this layer is a **Slide**, which is shown as a black bar covering the distance of the slide or orientation of the drill string.

- **Drawing a Slide…**

1.) **Double click** on the **Slide/Rotate layer** to activate the **Slide/Rotate** window.



2.) On the **Slide/Rotate** track**,** position your mouse pointer at **10000'**, because this is where the **Slide** will begin.

3.) **Hold down your left mouse button and drag** the mouse pointer to **10050'** 10000' 10050', because this is the position where you want the **Slide** to end.

4.) **Release the mouse button** and the **Slide** will be drawn from **10000'** to **10050'**.

- **Drawing another Slide…**

1.) Position your mouse pointer at **10070 ft** on the **Slide/Rotate** track.

2.) **Hold down the left mouse button and drag** the mouse pointer to **10100'** 10070' 10100' on the **Slide/Rotate** track.

3.) **Release the mouse button** and the **Slide** will be drawn from **10070'** to **10100'**.

- **Drawing yet another Slide…**

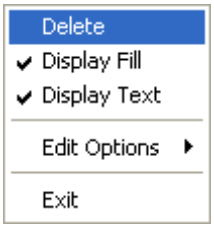
1.) Position your mouse pointer at **10110'** on the **Slide/Rotate** track.

2.) **Hold down the left mouse button and drag** the mouse pointer to **10120'** 10110' 10120' on the **Slide/Rotate** track.

3.) **Release the mouse button** and the **Slide** will be drawn from **10110'** to **10120'**.

- **Deleting a Slide…**

1.) **Right click** your mouse button on the **Slide** between **10110'** and **10120'**. This will activate the pop-out menu.



2.) **Click** on the **Delete** Selection and your slide drawn between 10110' and 10120' will be deleted

- **Resizing a Slide…**

1.) Hold down the **Ctrl** key on the **keyboard** and **position** the mouse pointer to the edge of the **Slide** you wish to resize (in this case the **Slide** residing between **10070'** and **10100'**) at 10100 ft. The mouse pointer will turn into a resize ↕ cursor.

2.) While continuing to hold down the **Ctrl key** and the mouse button, **drag the mouse pointer** to the right to resize the **Slide** from **10070'** and **10100'** to **10070'** and **10106'**. Notice that the yellow increment box displays the two depth limits of the **Slide**, as you move the mouse pointer.

3.) **Release** the **left mouse button** (before the Ctrl key) and the new **Slide** interval will be drawn from **10070'** and **10106'**.

4.) **Press** the **Esc key** on the **keyboard** or **click** on the  in the builder to exit from the **Slide/Rotate** window.

Adding values to the Proposed Well Path Curve:

The following steps will show you how to add values to the **Proposed Well Path** curve layer. In a actual Wellsite situation the User could import the Proposed well path curve if the ASCII file for the drilling program is available form the directional drillers. We will make up proposed well path in this case. Ie where the well was designed to be drilled.

1.) **Click** anywhere in the **Detailed Lithology** track. Notice that a **green** border highlights or surrounds the track. This is used to indicate that the track is ACTIVE.

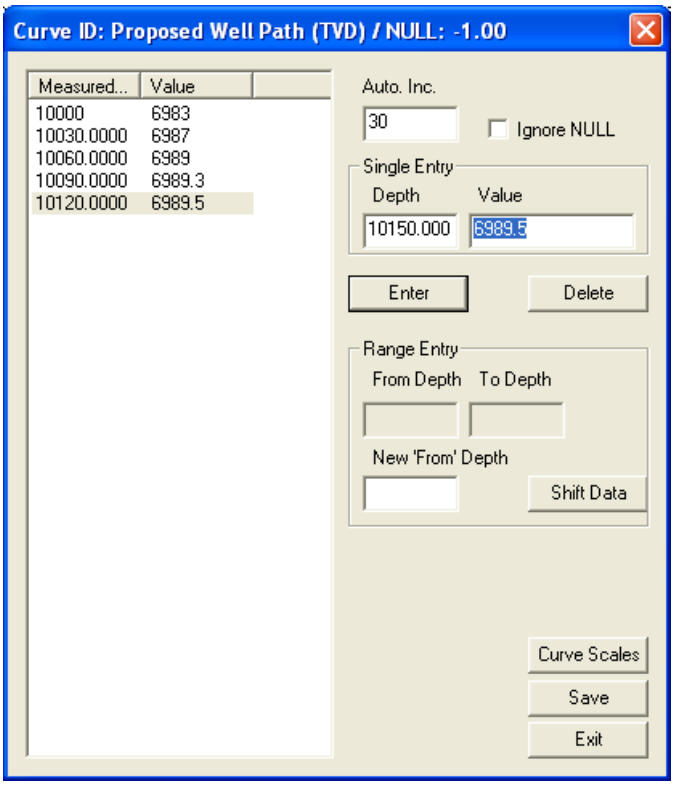
2.) **Click** on the **down arrow** of the **Layer Selection List** to drop the list.

3.) **Click** on the **Proposed Well Path** from the Layer Selection List. This will make the Proposed Well Path curve layer the active.

4.) **Double click** within the active **Detailed Lithology track** to activate the Curve Editor for the Proposed Well Path Curve. Or the user can **click once** on the  **Data Editing Tool of Active Layer button** on the **Toolbar**.

5.) **Double click** in the **Auto Depth Increment** field and **type** in a value of thirty (**30**). Then, **press** the **Tab** key on the keyboard once to move the cursor to the **Depth (ft)** field.

6.) Type **10000** into the **Depth** field and then press the **Tab** key on the keyboard to move the cursor to the **Value (ft)** field.



Note: The **Depth (ft)** field in the **Curve Editor** window represents **the Measured Depth** (**MD**) in the **Detailed Lithology** track, while the **Value (ft)** field represents the **True Vertical Depth** (**TVD**) in the **Detailed Lithology** track.

7.) Type **6983** into the **Value (ft)** field and then press the **Enter** key on the keyboard. The depth value will automatically advance by 30 as specified in the Auto Depth Increment field.

8.) Type in the remaining **Value (ft)** values listed below. After typing in a value the user must then press the **Enter** key on the keyboard to see his values getting added to the list.

10030 ft	6987.0 ft
10060 ft	6989.0 ft
10090 ft	6989.3 ft
10120 ft	6989.5 ft

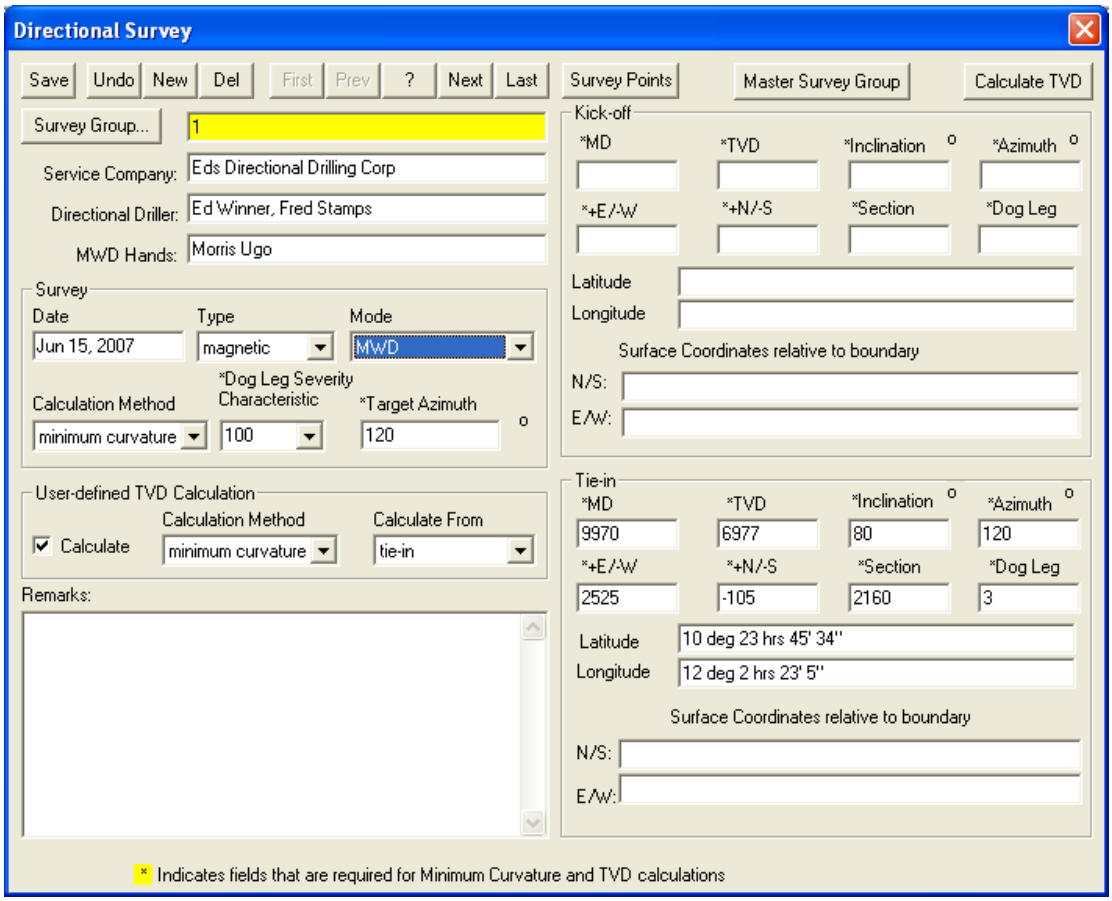
9.) When you are finished adding values to the curve, **click** on the Save **button**.

Click on the Exit **button** or the user can press the **Esc key** on the keyboard to exit from the Curve Editor window and put you back into the main Power*Curve Window.

Importing Directional Surveys, Running Minimum Curvature Calculations and Updating the Well Path Curve.

Before we can successfully import surveys, run the minimum survey calculations and update the well path curve at one time we have to fill in some necessary information in the Survey Report.

1.) **Click** on the **Report** selection on the Menu bar and **select** the **Directional Survey** selection from the pull down menu. This will activate the Direction Survey Window**.** The steps below will fill in the necessary fields to run minimum curvature calculations, you can fill in the rest if you so desire.



2.) **Select 100** from the **Dog Leg Severity Characteristic** Drop Box.

3.) **Type** in **120** in the **Target Azimuth Field**

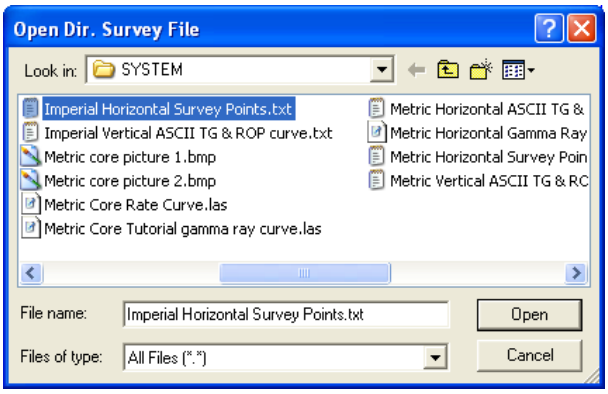
4.) **Type** in **9970** in the **Tie in MD Field, tab, 6977** in the **Tie in TVD Field, tab, 80** in the **Inclination field, tab, 120** in the **Azimuth Field, tab, 2525** in the **E/W field, -105** in the **N/S field, tab, 2160** in the **Section field, tab,** and **3** in the **Dog Leg Severity field.**

5.) In the user defined portion of the window **place a check in the box beside the calculate field, select minimum curvature** from the calculation method drop box and **select tie in** from the **calculate from drop box.** Doing this will automate the calculation in survey points window.

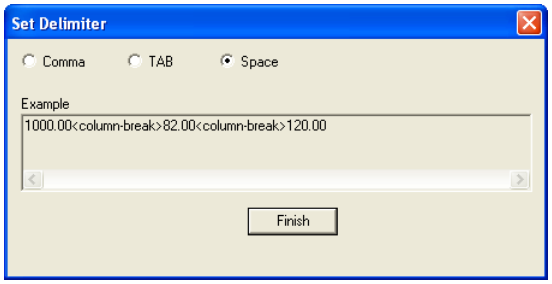
6.) **Click** on the Save **button** and then **click** on the Exit **button** from the ensuing Record Saved Successfully System Message. This will put you back into the main Power*Curve window.

Note: If you do not have the Las Import Module or you do not have Access to the necessary data file hztutsp.txt in the Pgeology \ System directory skip to page 34 to do the manual entry method.

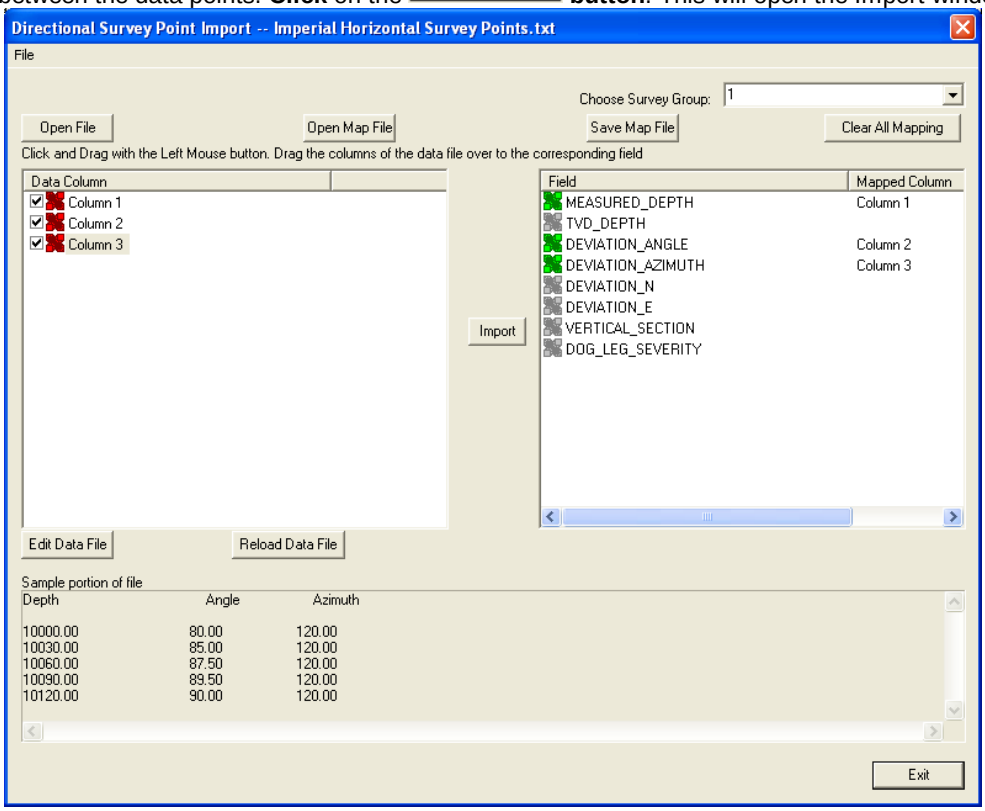
7.) **Click** on the **File** selection to activate the pull down menu and **select Import / Export** to activate the pop-out menu and **Select Import Surveys...** or you can **click** on the **Import Surveys button** on the toolbar to activate the Open Dir. Survey file window so you can pick the file you wish to Import.



8.) **Select** the **"Imperial Horizontal Survey Points.txt"** located in the **Powersuite_V11 / System** directory. If chosen correctly it will look like the Open Dir. Survey File Window. **Click** on the Open **button**. This will activate the Set Delimiter window.



10.) This file is a Space delimited file and the default on this window is space delimited. You will see <column break> between the data points. **Click** on the Finish **button**. This will open the Import window.



11.) **Click** on the **Column 1** on the left side and **drag it to the Measured Depth** on the right side of the window. You will see Column 1 in the mapped Data field and an APPEND in the action field.

12.) **Click** on the **Column 2** on the left side and **drag it to the Deviation_Angle** on the right side of the window. You will see Column 2 in the mapped Data field and an APPEND in the action field.

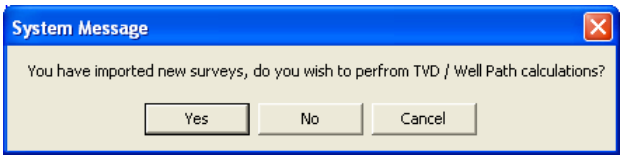
13.) **Click** on the **Column 3** on the left side and **drag it to the Deviation_Azimuth** on the right side of the window. You will see Column 3 in the mapped Data field and an APPEND in the action field.

14.) **Click** on the Import **Button**. This will import the curve data and prompt you with a database message saying Imported successfully.

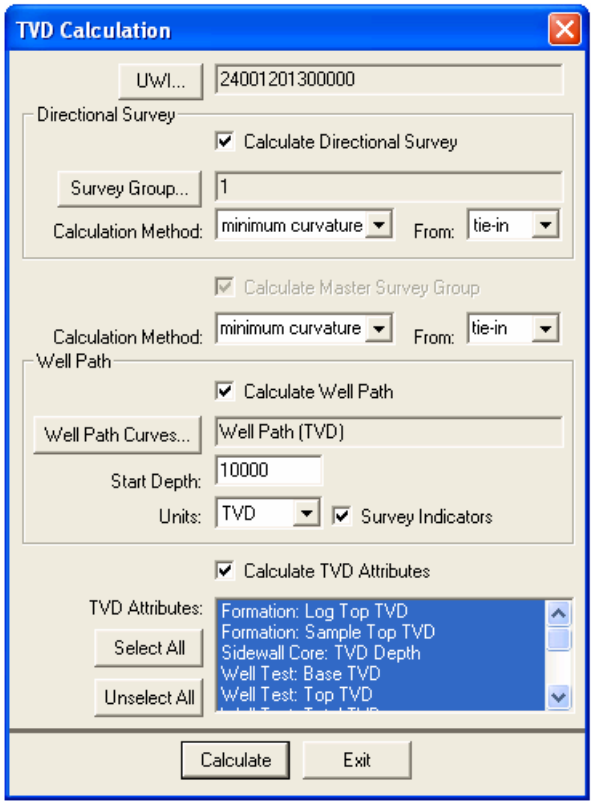
15.) **Click** on the OK **button** to close the window.

16.) **Click** on the Exit **button** to close the ASCII Import window.

17.) This will activate a System Message will be activated asking the user *"Do you wish to perform TVD / Well path Calcualtions?*".



18.) **Click** on the Yes **button**. This will activate the TVD Calculations window.



19.) In the **Directional Survey portion** of this window the defaults should be set by the Directional survey report we filled in earlier. Make sure that the **Calculate Directional Survey check box is checked, Survey Group One (1)** is viewed, **Minimum Curvature** is selected in the Calculation Method drop box and **tie in** is selected from drop box

20.) In the Master Survey Group **select** the **Minimum Curvature** in the Calculation Method drop box and **tie in** is selected from drop box

21.) In the Well Path portion of the window **select** the **Calculate Well path check box**. **Click** on the Well Path Curves... **button**. This will activate a Curve List window.

22.) **Double Click** on the **Well Path (TVD**) curve **or Click once** on the **Well Path (TVD)** curve and **click** on the Select **button**. This will put you back into the TVD Calculations window and place the Well Path (TVD) curve name. **Type** in a Start Depth of **10000** in the Start Depth field and **select** the **Units** for the curve as **TVD**. Also **check** the **Point Indicators check box**.

23.) In the **Calculate TVD Attributes** portion of the window deselect the **check box**. We do not have any of these fields to be updated at this point in time.

24.) **Click** on the **Calculate Button**. This will activate a Progress Window followed by a System message "***Exit TVD Calculation Window?***". **Click** on the Yes **button.**

You should now see the directional survey points and well path plotted in the Detailed Lithology Track **proceed to page 36.**

Adding Directional Survey Points Manually:

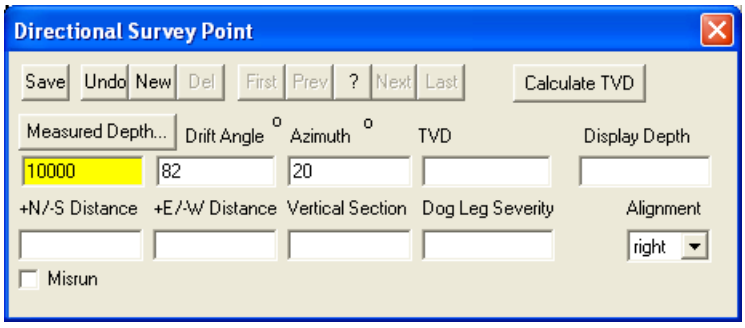
If you have already imported the surveys skip ahead to page 30 dealing with **Adding an Oil / Water Contact curve layer to the log**. Those that do not have access to the import files or do not have the LAS Import module proceed with the next steps.

There are two ways of getting the survey points into the program. The user can either enter them manually into the survey point window. Or you can get an ASCII or LAS file from the directional driller. We will show you the manual entry here.

Click on the **Report** selection on the Menu bar and **select** the **Directional Survey** selection from the pull down menu. This will activate the Direction Survey Window**.**

Adding a Directional Survey Point…

1.) **Click** on the Survey Points **button**. This will activate the Survey Points window.



2.) **Click** on the New **button** to prepare the **Directional Survey Point** window for the acceptance of a new record.

3.) **Type** in **10000** into the field beneath the **Measured Depth** button, **tab**, **82** in the **Drift Angle** field, **tab**, and **120** in the **Azimuth** field.

Note: The **Alignment** always defaults to the **right (top)** of the track that holds the directional survey points layer. However, if you select a Blank **Alignment** from the **Alignment** field drop box, your **Directional Survey Point(s)**

will not be displayed on the **Detailed Lithology** track, but they will still be printed out in the **Well End Report** print window.

4.) **Click** on the Save **button** and then select **Start New Record** from the ensuing **Shortcut Options** window.

- **Adding another Directional Survey Point…**

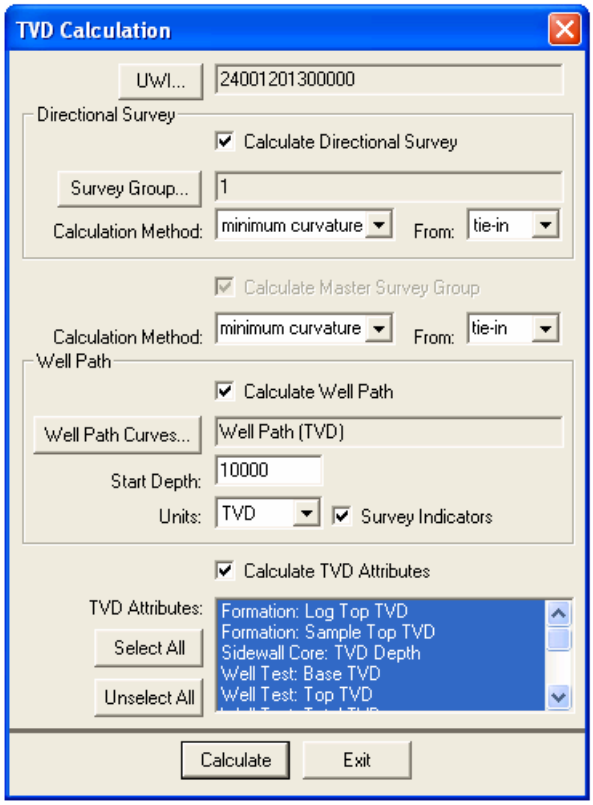
1.) **Type** in **10030** into the field beneath the **Measured Depth** button, **tab**, **85** in the **Drift Angle** field, **tab**, and **120** in the **Azimuth** field.

2.) **Click** on the Save **button** and **click** on the Start New Record from the ensuing **Shortcut Options** window.

3.) Repeat steps 1 and 2 until you enter the last 10120 Survey point and then proceed with step 4

10060	87.5	120	10090	89.5	120	10120	90	120

4.) **Click** on the Calculate TVD **button** to activate the TVD Calculations window**.**



5.) In the **Directional Survey portion** of this window the defaults should be set by the Directional survey report we filled in earlier. Make sure that the **Calculate Directional Survey check box is checked, Survey Group One (1)** is viewed, **Minimum Curvature** is selected in the Calculation Method drop box and **tie in** is selected from drop box

6.) In the Master Survey Group **deselect** the **Calculate Master Survey Group check box** as we only have one set of survey points and we do not need to assemble a master survey group.

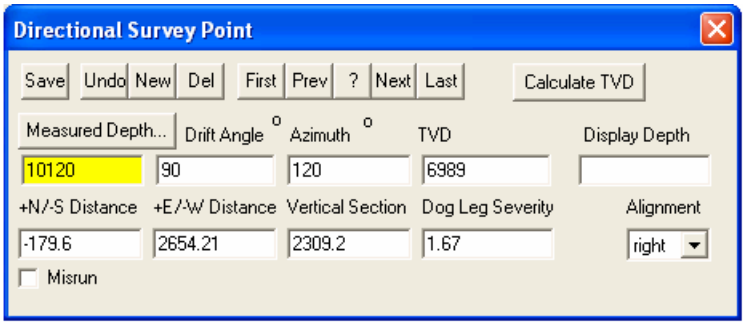
7.) In the Well Path portion of the window **select** the **Calculate Well path check box**. **Click** on the Well Path Curves... **button**. This will activate a Curve List window.

8.) **Double Click** on the **Well Path (TVD**) curve **or Click once** on the **Well Path (TVD)** curve and **click** on the Select **button**. This will put you back into the TVD Calculations window and place the Well Path (TVD) curve name. **Type** in a Start Depth of **10000** in the Start Depth field and **select** the **Units** for the curve as **TVD**.

9.) In the Calculate TVD Attributes portion of the window deselect the check box. We do not have any of these fields to be updated at this point in time.

10.) **Click** on the Calculate **button**. This will activate a Progress Window followed by a System message "***Exit TVD Calculation Window?***". **Click** on the Yes **button.**

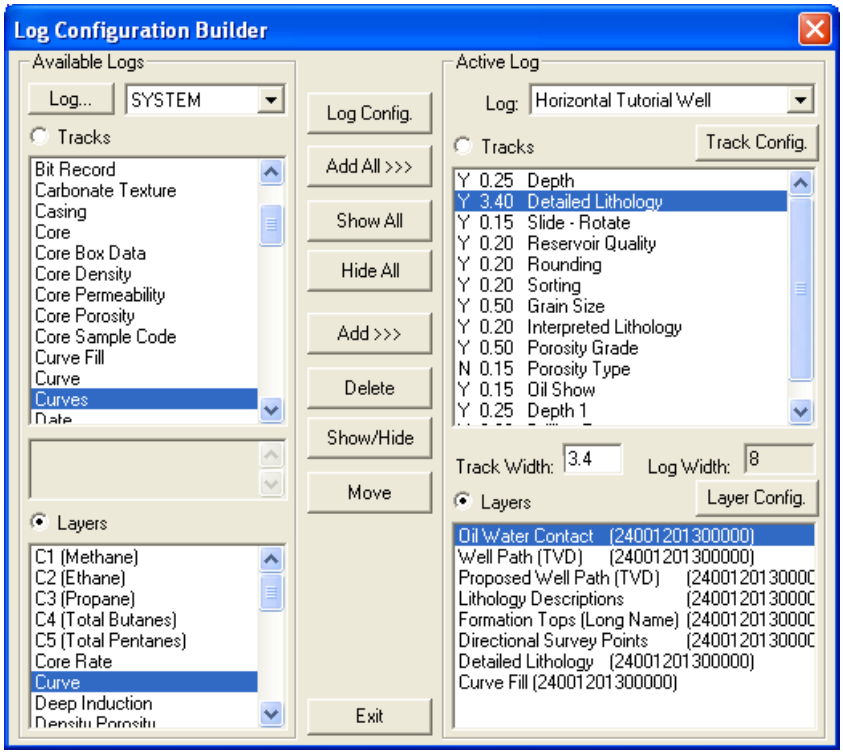
When it is done your Directional Survey Point Window will be filled in with the calculation results shown.



11.) **Click on the X** or Press your esc key to Exit this window. Your survey points and Well Path should now be seen on you log in the Detailed Lithology Track.

Adding an Oil / Water Contact Curve Layer to your log.

1.) Under the **Options** menu, click on **Log Configuration Builder** or click on the **Log Configuration Builder button** on the **Toolbar** to activate the **Log Configuration Builder** window.



2.) On the left side scroll down in the tracks portion of the window and **highlight** the **Curves** track

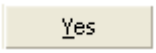
It just so happens that the default Available Log [System] defaults to the Generic Curve track. This track has all of the curves available except for mud gas curves. These can be found in the Mudlogs. The User can change names of any of the curve layers to represent any curve you wish but in our case all we have to do is follow step 2.

3.) **Click** on the **Curve** layer in the layers portion of the window on the lower left side of the builder to highlight it. Also notice the 

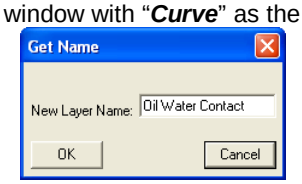
radio button on the let hand side gets activated.

4.) On the **right** side (**Active Log**) of the **Log Configuration Builder** window, click on the **Detailed Lithology** track to highlight it. This is the track we want to add the Curve layer to.

5.) **Click** on the 

button and you will be prompted with the following system message, "***Do you want to ADD the selected (layer) from the available log to the active log?"*** **Click** on the 

button. This will activate a **Get Name** window with "***Curve***" as the name in the **New Layer Name** field.



6.) **Type** in the Get Name window "**Oil Water Contact**" and then **Click** on the 

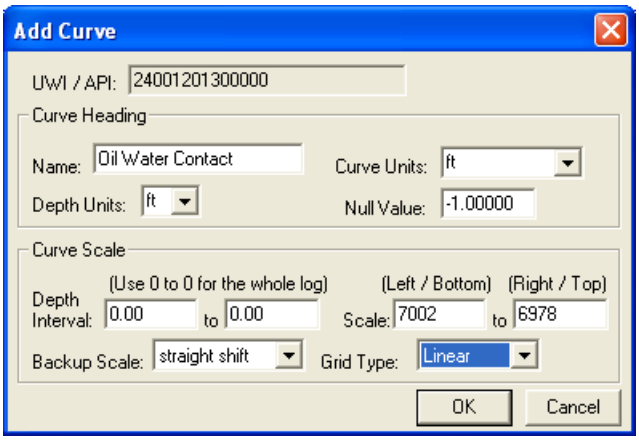
button and the **Oil Water Contact** layer will then be added to the **Detailed Lithology** track.

Note: The **Oil Water Contact** curve has not yet been associated with the layer yet. This will be done when the **Add Curve** window has been correctly filled in.

7.) **Click** on the 

button to return to the log and the log will be initialized with the new layer, which in turn will generate an **Add Curve** window.

- **The Add Curve window…**



1.) **Select ft** from the **Curve Units** drop box field.

2.) Make sure **ft** is in the **Depth Units** drop box field.

3.) Make sure the **Null Value** field is **-1**.

4.) Make sure the Depth **Interval** is **0** and **0** indicating the present curve scale is applicable to any depth on the log.

5.) **Type** in **7002** in the **Left / Bottom** field and **6978** to the **Right / Top** field**.**

6.) Make sure the **Backup Scale** drop box field is **Straight Shift**.

7.) **Select Linear** from the **Grid Type drop box**.

8.) **Click** on the 

button to add the curve layer to the Detailed Lithology Track.

<u>Changing the Oil / Water Contact line color and adding two (2) data points to draw a line.</u>

1.) **Click** anywhere in the **Detailed Lithology** track. Notice that a **green** border highlights or surrounds the track. This is used to indicate that the track is ACTIVE.

2.) **Click** on the **down arrow on the right hand side of the Layer Selection List** to activate the list.

3.) **Click** on the **Oil Water Contact** selection from the Layer Selection List. This will make the Oil / Water Contact layer active.

4.) **Right Click** on the **Oil Water Contact layer** to activate the pop-up menu and **select color** and then **select Purple** from the pop-out menu**.** Your curve will now be purple.

5.) **Double click** within the active **Detailed Lithology track** to activate the Curve Editor for the Oil / Water Contact Curve. **Or** the user can **click once** on the  **Data Editing Tool of Active Layer button** on the **Toolbar**.

6.) **Double click** on the **Depth** field and type **10000** into the **Depth (ft)** field and then press the **Tab** key on the keyboard to move the cursor to the **Value (ft)** field.

7.) **Type 6994** into the **Value** field and then press the **Enter** key on the keyboard.

8.) **Double click** again on the **Depth** field and **type 10200** into the **Depth (ft)** field and then press the **Tab** key on the keyboard to move the cursor to the **Value (ft)** field.

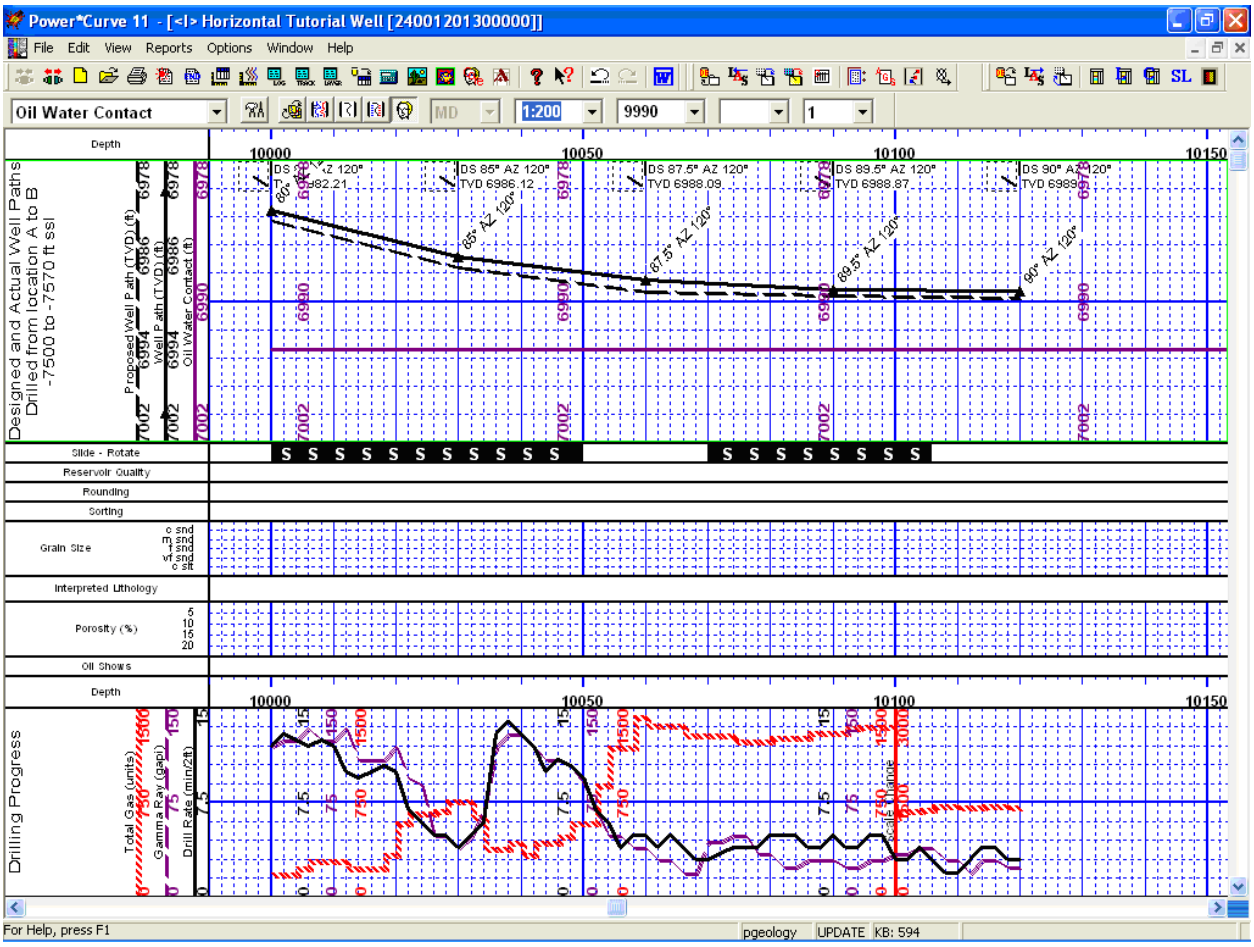
9.) **Type 6994** into the **Value (m)** field and then press the **Enter** key on the keyboard.

10.) **Click** on the Save **button**.

Note: If you forget to save the values before you exit from the **Curve Editor** window, you will be prompted by the following system message, "***Would you like to save the digits?***" **Click** on the Yes **button** to save the newly edited curve values.

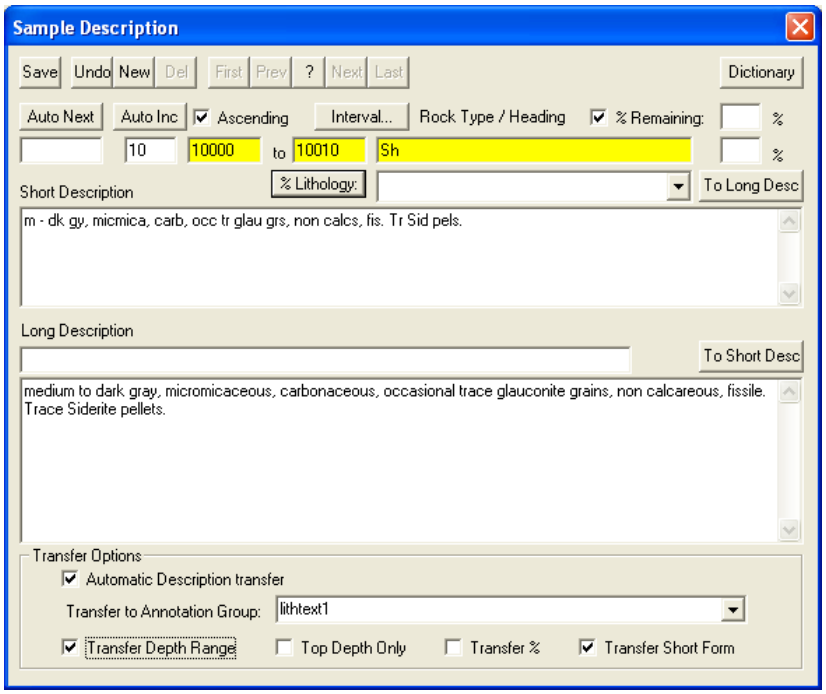
11.) **Click** on the Exit **button** or the user can press the **Esc key** on the keyboard to exit from the Curve Editor window and put you back into the main Power*Curve Window.

*** Your log should now look similar to the log shown below. ***



Adding Sample Descriptions:

1.) **Click** on the **Reports** selection on the **Power*Curve™ Menu Bar** to activate the pull down menu and then **Click** on **Sample Description** to open the **Sample Description** window.



2.) Type **10000** into the **Interval** (From) field and then depress the tab key.

3.) Type **10010** into the **Interval** (To) field and then depress the tab key.

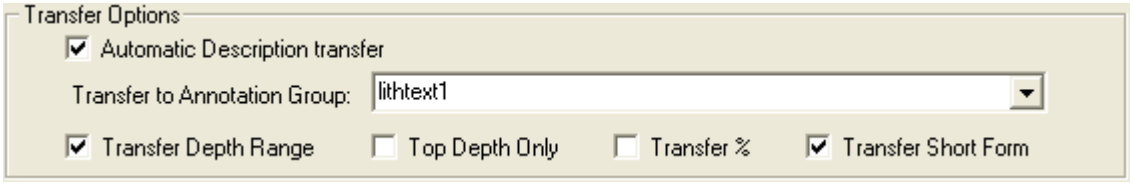
4.) Type **Sh** into the **Rock Type** field and then depress the **tab key 4 times**. This will move the cursor to the Short description field.

Note: The rock types can be entered in a percentage format. This would generate a % description report as well as a % track or layer. For this exercise we will describe the samples interpretively.

5.) Type the following description into the **Short Description** field, exactly as it appears below:

m – dk gy, micmica, carb, occ tr glau grs, non calcs, fis. Tr Sid pels.

Note: The **Short Description** can be added to the **Lithology Description** layer in the main **Power*Curve™** window and the **Long Description** will be printed out in the **Sample Description Reports** in the **Well End Report** window.



6.) In the transfer options portion of the window **check mark** the **Automatic Description transfer**, **check mark** the **Transfer Depth Range**, and **check mark** the **Transfer Short Form** and select the lithtext1 group from the Transfer to Annotation Group drop box.

7.) **Click** on the 

button and then **click** on the 

button from the ensuing **Shortcut Options** window.

Note: This will automatically transfer your samples descriptions to the Striplog.

- **Adding another Sample Description…**

1) **Click** on the Auto Next **button** to advance the description interval from depth to **10010 ft** and places the caret or highlight in the Interval to field.
2) Type **10022** into the **Interval** (To) field and then depress the tab key
3) Type **Ls** into the **Rock Type** field and then depress the **tab key 4 times**. This will move the cursor to the Short description field.
4) Type the following description into the **Short Description** field, exactly as it appears below:

lt gy brn, rexld mdst (crpxl), arg, dns, ns.

5) **Click** on the Save **button** and then **click** on the Start New Record **button** from the ensuing **Shortcut Options** window.

Note: If you have made any typing errors the user can click on the Cancel button, then you can make any necessary corrections and then Save the record once again to replace the old record with the new one.

- **Adding another Sample Description**

1.) **Click** on the Auto Next **button** to advance the description interval from depth to **10022 ft** and places the caret or highlight in the Interval to field.
2.) Type **10036** into the **Interval** (To) field and then depress the tab key
3.) Type **Ss** into the **Rock Type** field and then depress the **tab key 4 times**. This will move the cursor to the Short description field.
4.) Type the following description into the **Short Description** field.

m gy brn, m - c gred, mod srtg, rdd, qtz, com cht, occ glau & carb grs, sils cmt, fr - g intgran por (14-20%), com - abnt brn o stng, bri yel flor, g stmg mky yel cut flor.

5.) **Click** on the Save **button** and then **click** on the Start New Record **button** from the ensuing **Shortcut Options** window.

- **Copying a Sample Description…**

1.) While still in the **Sample Description** window, **click** on the Interval... **button** to bring up a list of the descriptions you have already entered.
2.) **Double click** on **10000 - 10010 Sh** and you will now see this description displayed in the **Sample Description** window.
3.) Highlight the text in the **Short Description** field by **clicking and dragging the mouse pointer over the text.**
4.) Once the text is highlighted, **hold down** the **Ctrl** key on the keyboard, press the letter **"C"** key on the keyboard, and then release the **Ctrl** key. This will **copy** the highlighted text to the computer's clipboard. Alternatively, **Windows 95** users can simply **right click** anywhere and then select the **Copy** function from the ensuing pop-up menu.
5.) **Click** on the New **button** to clear the **Sample Description** window.
6.) **Type** in a new from **depth** of **10036 ft** and **press** the **tab key** to place the caret or highlight in the Interval to field.
7.) Type **10052** into the **Interval** (To) field and then depress the tab key
8.) Type **Sh** into the **Rock Type** field and then depress the **tab key 4 times**. This will move the cursor to the Short description field.
9.) In the **Short Description** field **hold down** the **Ctrl key** on the keyboard, press the letter **"V"** key on the keyboard, and then release the **Ctrl** key. This will **paste** the contents of the clipboard into the **Short Description** field. Alternatively, users can simply **right click** anywhere and then select the **Paste** function from the ensuing pop-up menu.

10.) **Click** on the Save **button** and then **click** on the Start New Record **button** from the ensuing **Shortcut Options** window.

- **Adding more Sample Descriptions…**

1.) **Click** on the Auto Next **button** to advance the description interval from depth to **10052 ft** and places the caret or highlight in the Interval to field.

2.) Type **10120** into the **Interval** (To) field and then depress the tab key

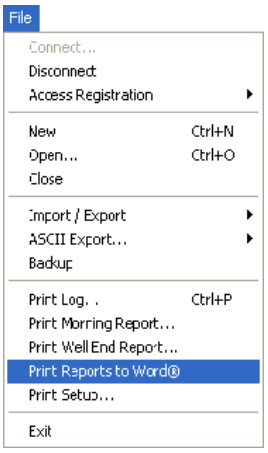
3.) **Type Ss** into the **Rock Type** field and then depress the **tab key 4 times**. This will move the cursor to the Short description field.

4.) **Type** the following description into the **Short Description** field, exactly as it appears below:

wh, lt gy, m - c gred, modly w srt, sbang - sbrdd, qtz, tr wthrd fld grs, tr dk cht pbls, sils cmt, g - ex intgran por (20-22%), abnt even brn o stng, flor aa.

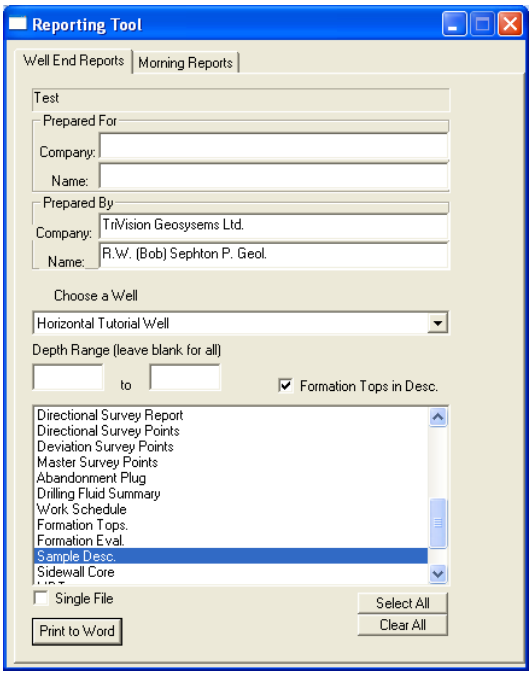
5.) **Click** on the Save **button** and then **click** on the Exit **button** from the ensuing **Shortcut Options** window.

Printing out Sample Descriptions to Word. (Only if you have Word for Windows)



1.) **Click** on the **Print Reports to Word button** on the **Toolbar** or **select Print Reports to Word Selection,** under the **File menu,** on the **Selection Bar** to activate the **Power*Log Report: Well End Report** window.

2.) The **Reporting Tool** print window will automatically default to the active **Well/Log Name.**: You will see **Horizontal Tutorial Well** in the **Choose a Well** field If it is not the defaulted well then go to the Well list drop box and select it from the List.



3.) Highlight **Sample Desc** in the **Reports** field by clicking on it once.

4.) Leave the Depth Range field blank to print all the descriptions.

5.) **Click** on the Formation Tops in Desc. **check box**

6.) **Click** on the Print to Word **button** in the **Well End Report** window to printout the **Sample Descriptions**. This will activate you word program and you will get the Sample descriptions and Formation tops that were input through the Reports window.

7.) When you are finished, **press** the **Esc** key on the keyboard to exit from the **Well End Report** window and to activate the following system message, "***Do you want to save the setup***" Clicking on the Yes button and the window selections you have just made will be remembered for the next time. Clicking on the No button will remember the default selections that were set for this window.

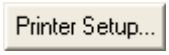
Printing out Sample Descriptions (If you do not have Word for Windows)

1.) **Click** on the  **Print Well End Report button** on the **Toolbar** or **select Print Well End Report,** under **File,** on the **Selection Bar** to activate the **Power*Log Report: Well End Report** window.

2.) The **Well End Report** print window will automatically default to the active **Well/Log Name** and its associated **UWI**: you will see **Horizontal Tutorial Well (24001201300000)** in the **Well List** field and it should be highlighted. If it is not highlighted, move the mouse pointer to the **Well List** field and **click** on the desired **Well / Log Name** to highlight the **Well** you wish to print information from.

3.) Highlight **Sample Descriptions** in the **Reports** field by clicking on it once.

4.) **Select Printer** from the **Output** drop box field list.

5.) **Click** on the 

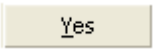
button, in the upper right corner of the **Well End Report** window, to activate the **Print Setup** window. Notice that the currently selected printer is listed beneath the **Default printer** radio button (), at the top left of the **Print Setup** window. Use the **Printer** section of the **Print Setup** window to specify the use of a printer other than the default printer.

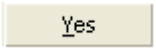
Note: Power*Curve™ automatically defaults to a **Paper Orientation** of **Portrait** and a **Paper Size** of **8 5 x 11**, as specified in the **Orientation** and **Paper** sections, respectively, of the **Print Setup** window. Please do **NOT** change these default settings.

6.) Make sure that the **All** check box (), in the **Sample Description** section at the lower right of the **Well End Report** window, is activated.

7.) **Click** on the 

button in the **Well End Report** window to printout the **Sample Descriptions**.

8.) When you are finished, **press** the **Esc** key on the keyboard to exit from the **Well End Report** window and to activate the following system message, "***Do you want to save the setup configuration*?**" **Click** on the 

button and all of the printer selection/settings information utilized in the **Well End Report** window will be saved to the database for any future **Well End Report** print jobs. Clicking on the 

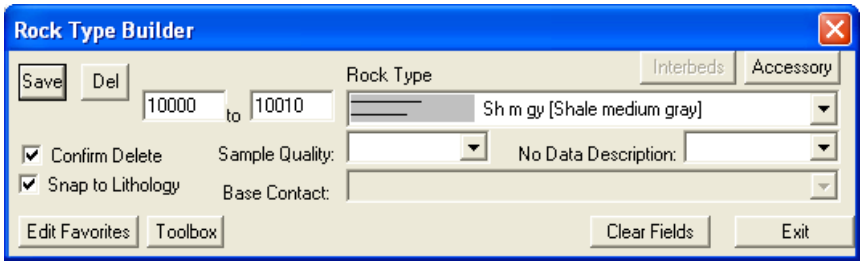
button will also return you to the main log window.

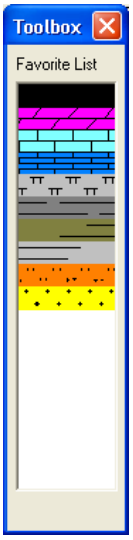
Drawing Interpreted Lithology:

Note: To work on any layer in any track, simply **double click** on the track in which you wish to work to activate the "**builder**" window for that particular layer. Once the "**builder**" window for a given layer is active, you are then able to access the right click pop-up menu(s) associated with that "**builder**" window and may proceed to enter any necessary intervals and graphical descriptions for the given layer.

- **Drawing Rock Types…**

1.) **Double click** anywhere within the **Interpreted Lithology** track to activate the **Rock Type Builder** window and its **Toolbox**.





Note: The **Rock Types** are selected by the user in the **System Options** window (See **System Options** earlier in this tutorial).

2.) **Select** the Rock Type for **Shale (medium gray)** from the Toolbox and it will automatically be displayed in the **Rock Type** field within the **Rock Type Builder** window.

3.) **Define** the left side of the interval by **clicking and holding** the **left mouse button** at **10000'** on the **Interpreted Lithology** track.

4.) **Define** the right side of the interval by **dragging** the mouse pointer to **10010'** 

5.) **Release the mouse button** and the interval will be drawn accordingly.

- **Drawing another Rock Type…**

1.) **Select** the Rock Type for **Limestone (mud supported)** from the Toolbox and it will automatically be displayed in the **Rock Type** field within the **Rock Type Builder** window.

2.) Define the left side of the interval by **clicking and holding** the **left mouse button** at **10010'** on the **Interpreted Lithology** track.

3.) Define the right side of the interval by **dragging** the mouse pointer to **10022'** 

4.) **Release the mouse button** and the interval will be drawn accordingly.

Drawing another Rock Type…

1.) **Select** the Rock Type for **Sandstone** from the Toolbox and it will automatically be displayed in the **Rock Type** field within the **Rock Type Builder** window.

2.) Define the left side of the interval by **clicking and holding** the **left mouse button** at **10022'** on the **Interpreted Lithology** track.

3.) Define the right side of the interval by **dragging** the mouse pointer to **10110'** 

4.) **Release the mouse button** and the interval will be drawn accordingly.

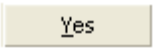
Inserting Rock Type within an interval…

1.) **Select** the Rock Type for **Shale (medium gray)** from the Toolbox and it will automatically be displayed in the **Rock Type** field within the **Rock Type Builder** window.

2.) **Define** the left side of the interval by **clicking and holding** the **left mouse button** at **10036'** on the **Interpreted Lithology** track.

3.) Define the right side of the interval by **dragging** the mouse pointer to **10051'** 

4.) **Release the mouse button** and the user will be prompted with a system message ***"Do you want to ADD an interbedded interval?'***

5.) **Click** on the 

button and the Shale bed will be inserted within the Sandstone Interval. If you had any accessories, grain size, sorting, rounding etc. Within this interval they would have been deleted.

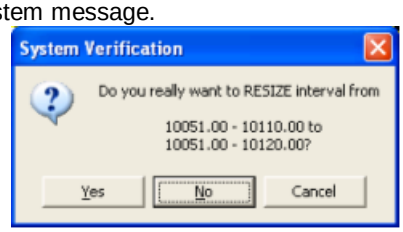
Resizing an interval…

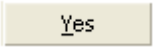
Note: The user can only resize either the top or the bottom of a particular bed at any one time. Accordingly, if you wish to resize both, you will have to repeat the steps.

1.) **Left click** once anywhere within the **Sandstone** bed on the **Interpreted Lithology** track between **10051'** and **10110'** to bring up the **Sandstone** bed and its associated interval (**10051 to 10110**), in the **Rock Type Builder** window.

2.) **Press and hold** the **Ctrl** key on the keyboard **down**, while hovering over the right border of the Sandstone bed drawn earlier @ **10110'** so that the mouse pointer turns into a resize ↕ cursor and then **click and drag** the **left** mouse button from **10100'** to **10120'** on the **Interpreted Lithology** track.

3.) **Release the mouse button** at **100120'**, followed by the release of the **Ctrl** key on the keyboard, and you will be prompted with the following system message.

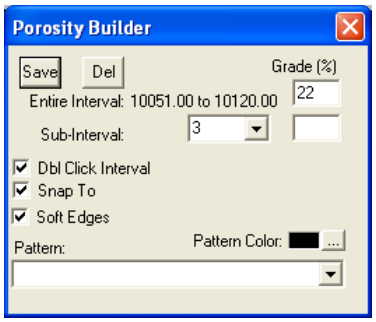


4.) **Click** on the 

button to resize the **Sandstone** bed and then press the **Esc** key on the keyboard to exit from the **Rock Type Builder** window.

Drawing Porosity (%)

1.) **Double click** on the **Porosity (%)** track to activate the **Porosity Builder** window.



2.) Set the overall **Porosity** of the entire interval (**Ss** from **10022' to 10036'**), by moving the mouse pointer to the left or right within the **Porosity (%)** track, until the mouse pointer displays

10027' [18%] in the yellow display box adjacent to the mouse pointer.

3.) Double click the mouse pointer and the desired **Porosity grade** will be drawn in purple to represent an entire interval.

4.) Set the overall **Porosity** of the entire interval (**Ss** from **10051' to 10120'**), by moving the mouse pointer to the left or right within the **Porosity (%)** track, until the mouse pointer displays **10081 [22%]** 10081' [22%] in the yellow display box adjacent to the mouse pointer.

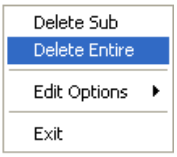
5.) Double click the mouse pointer and the desired **Porosity grade** will be drawn in purple to represent an entire interval.

- **Drawing Porosity Grade sub-intervals…**

To draw **Porosity (%)** sub-intervals, as illustrated on **Page 59**, simply **click and drag** the mouse pointer from a desired **Depth** and **Porosity (%)** to another **Depth** on the **Porosity Grade track** and the sub-interval will be drawn in green to represent a subinterval.

- **Deleting entire Porosity (%) intervals and sub-intervals…**

If you wish to delete an entire **Porosity (%)** interval or sub-interval, while the **Porosity Builder** window is open, **right click** within the interval or sub-interval slated for deletion to activate a pop-up menu, and then left or right click on the appropriate selection.



Drawing Grain Size:

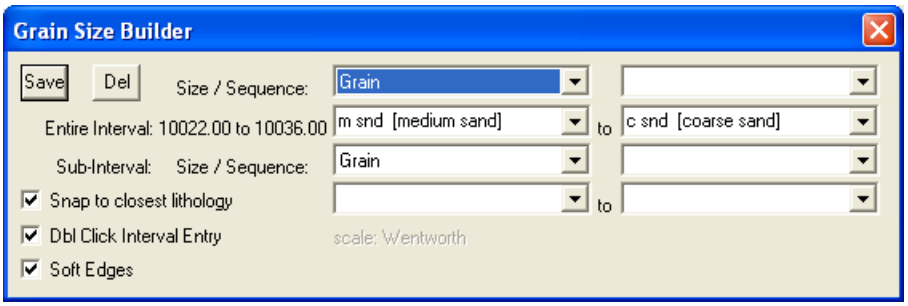
1.) **Double click** on the **Grain Size** track to activate the **Grain Size Builder** window.

2.) **Click and drag** the mouse pointer from **10022' [m snd]** to **10036' [c snd]** 10022' [m snd] 10036' [c snd] on the **Grain Size** track.

Note: Measured Depths and **Grain Sizes**, like **10022' [m]**, can be viewed within the mouse pointer display box, situated just to the right of the mouse pointer.

3.) **Release the mouse button** and the entire **Grain Size** interval will be drawn accordingly in purple to represent the entire interval.

4.) Another method for drawing larger intervals of Grain Size is to click the mouse pointer within the interval. In our case click the mouse in the grain size track between 10051' and 10120'. You will notice the builder will show the entire interval for the bed.



5.) **Click** on the top Grain size **from field drop box arrow** and select **m [medium]** from the resulting choice list.

6.) **Click** on the top Grain size **to field drop box arrow** and select **c [coarse]** from the resulting choice list.

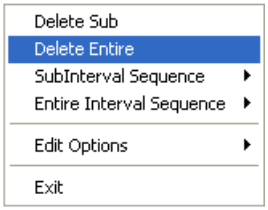
7.) **Click** on the Save **button** and the entire interval will be drawn in purple.

- **Drawing Grain Size sub-intervals...**

1.) **Click and drag** the mouse pointer from **100064' [m snd]** to **10078' [vc snd]** 10064' [m snd] 10078' [vc snd].
2.) Release the mouse button and the sub-interval will be drawn accordingly in green to represent a subinterval.
3.) Repeat **Steps 1** and **2** for **10098' [m snd]** to **10120' [vc snd]** 10098' [m snd] 10120' [vc snd].
4.) To exit from the **Grain Size Builder** window press the **Esc** key on the keyboard once.

- **Deleting entire Grain Size intervals and sub-intervals…**

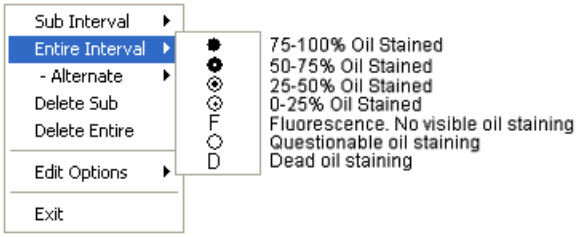
If you wish to delete an entire **Grain Size** interval or sub-interval, while the **Grain Size Builder** window is open. Simply **right click** within the interval or sub-interval slated for deletion to activate a pop-up menu, and then left or right click once on the appropriate selection.



Drawing Oil Shows

1.) **Double click** on the **Oil Show** track to activate the **Oil Show Builder** window.

2.) **Right click** anywhere within the **10022'** to **10036'** interval in the **Oil Show track** to activate the pop-up menu.



Note: The symbols utilized in the pop-up menu, represent a specific percentage (**%**) or amount of oil staining, as illustrated in the above diagram.

3.) **Select 50-75%** oil staining from the **Entire Interval** pop out menu and the entire bed will be populated with the **Oil Show** symbol ( ).indicating **50-75%** oil staining.
4.) **Right click** anywhere within the **10051'** to **10120'** interval in the **Oil Show track** to activate the pop-up menu.
5.) **Select 75-100%** oil staining from the **Entire Interval** pop out menu and the entire bed will be populated with the **Oil Show** symbol indicating **75-100%** oil staining.

Note: The Symbol frequency or the number of symbols on a 5" scale is determined in the System Options located under the Option pull down men on the Power*Curve Menu Bar

- **Drawing Oil Show sub-intervals…**

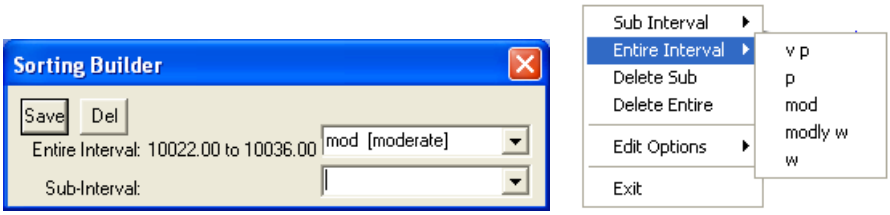
1.) **Right click** anywhere **Oil Show** Track to activate the pop-up menu.
2.) **Select 50-75%** oil staining from the **Sub Interval** pop-up menu.
3.) **Click and drag from 10061'-10066'** 10061' 10066', **10080'-10086'** 10080' 10086', and **10095'-10102'** 10095' 10102' and three sub-intervals will be populated with the **50-75%** oil staining symbol ( ).

- **Deleting entire Oil Show intervals and sub-intervals…**

To delete an entire **Oil Show** interval or sub-interval, while the **Oil Show Builder** window is open, **right click** within the interval or sub-interval slated for deletion to activate the pop-up menu and then left or right click on the appropriate selection.

Drawing Sorting

1.) **Double click** on the **Sorting** track to activate the **Sorting Builder** window.



2.) **Right click** anywhere within the **10022'** to **10036'** interval the **Sorting Track** to activate the pop-up menu.
3.) **Select mod** for the **Entire Interval** from the pop-up menu and the entire bed will be populated with the "**M**" symbol.
4.) **Right click** anywhere within the **10051'** to **10120'** interval the **Sorting Track** to activate the pop-up menu.
5.) **Select modly w** for the **Entire Interval** from the pop-up menu and the entire bed will be populated with the "**mW**" symbol.

- **Drawing a Sorting sub-interval…**

1.) **Right click** anywhere on the **Sorting** track to activate the pop-up menu.
2.) **Select mod** from the Sub Interval pop-up menu.
3.) **Click and drag** from **10098' to 10108'** 

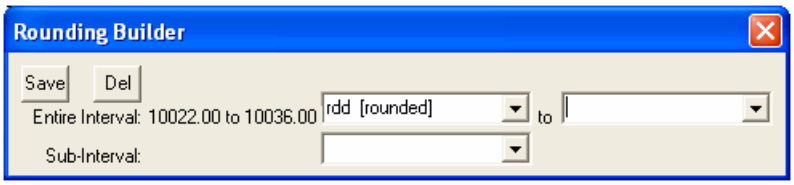
and the specified sub-interval will be populated with the "**M**" symbol.

- **Deleting entire Sorting intervals and sub-intervals…**

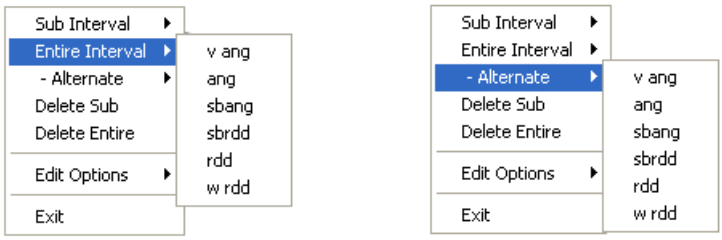
To delete an entire **Sorting** interval or sub-interval, while the **Sorting Builder** window is open, **right click** within the interval or sub-interval slated for deletion to activate the pop-up menu and then left or right click once on the appropriate selection.

Drawing Rounding:

1.) **Double click** on the **Rounding** track to activate the **Rounding Builder** window



2.) **Right click** anywhere within the **10022'** to **10036'** interval in the **Rounding** Track to activate the pop-up menu.



3.) **Select rdd** for the **Entire Interval** from the pop-up menu and the entire bed will be populated with the "**R**" symbol.

4.) **Right click** anywhere within the **10051'** to **10120'** interval in the **Rounding** Track to activate the pop-up menu.

5.) **Select sbrdd** from the **Entire Interval pop-out menu** and the entire bed will be populated with the "**r**" symbol.

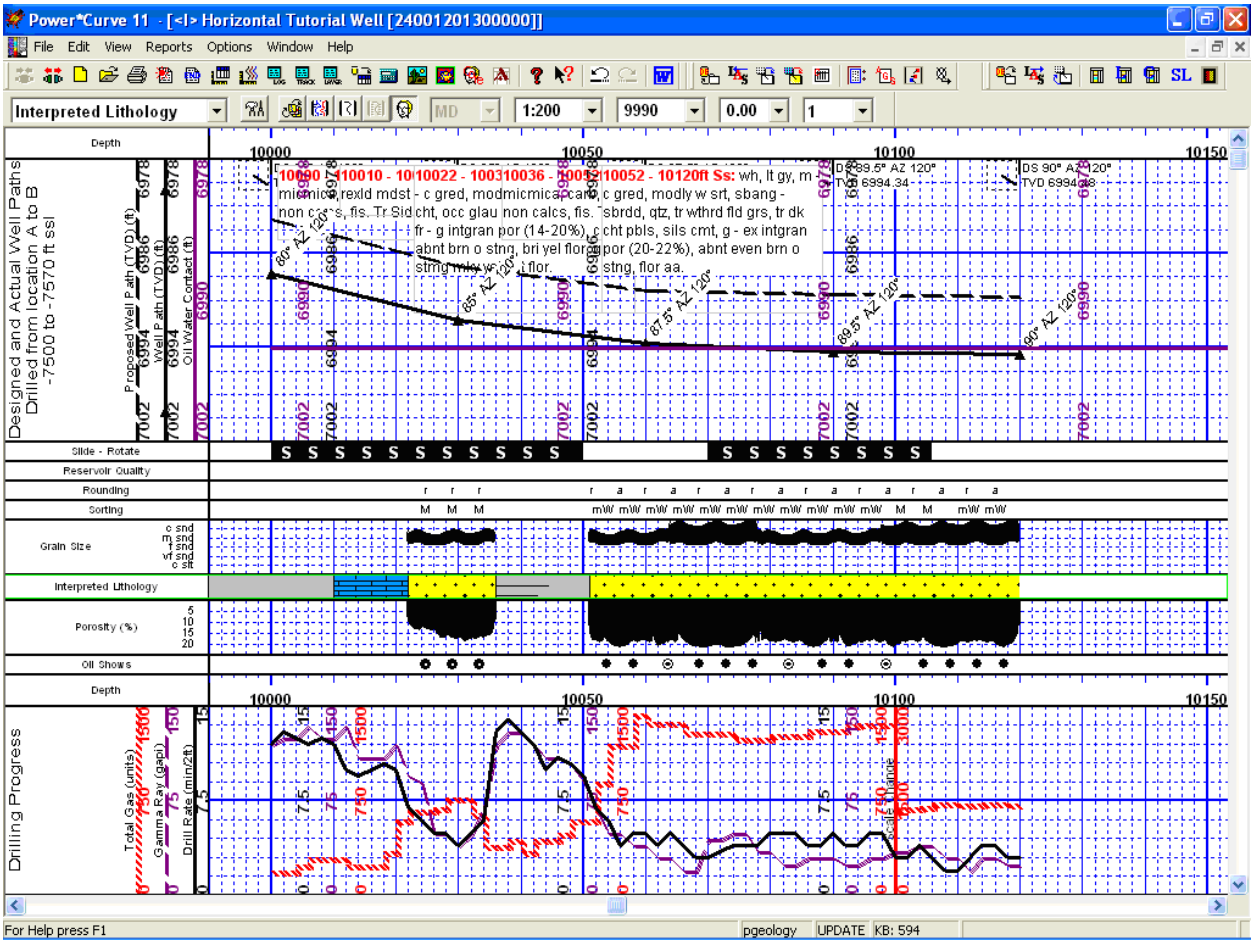
6.) **Right click** anywhere within the **10051'** to **10120'** interval in the **Rounding** Track to activate the pop-up menu.

7.) **Select sbang** from the **- Alternate pop-out menu** and you will view alternating **"a"** and **"r"** symbols in this track.

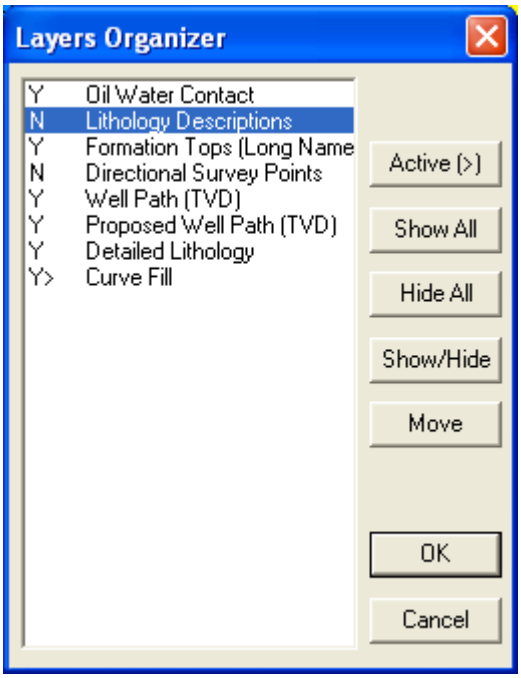
- **Deleting entire Rounding intervals and sub-intervals…**

If you wish to delete an entire **Rounding** interval or sub-interval, while the **Rounding Builder** window is open, **right click** within the interval or sub-interval slated for deletion to activate the pop-up menu and then left or right click once on the appropriate Delete selection.

***** Your log should now look similar to the log shown below. *****



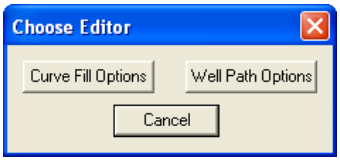
Utilizing the Layers Organizer for a track



1.) **Click** on the **Detailed Lithology** track to make it active (highlighted in green).
2.) **Click** on the **View pull down menu** and **select Layers Organizer**. You can also select the  button on the selection bar. This will activate the Layers Organizer window for the detailed Lithology Track.
3.) **Click** on the **Directional Survey Points Layer** so that it is highlighted.
4.) **Click** on the Show/Hide **button**. This will turn off the directional survey layer as they are redundant because we are utilizing the survey points associated with the Well path curve. You will notice and N beside the layer name.
5.) **Click** on the **Lithology Description Layer** so that it is highlighted.
6.) **Click** on the Show/Hide **button**. This will turn off the lithology description layer so that we can work with the curve fill layer. You will notice and N beside the layer name.
7.) Click on the Curve Fill Layer and then click on the Active (>) button. This will put a > symbol beside this layer. This indicates it is the active layer.
8.) **Click** on the OK **button**. This will close the window and turn off the Lithology Description and the Directional Survey Points layers and make the Curve fill layer actie on the detailed lithology track.

Curve Fill Layer to Draw Lithology in the Detailed Lithology Track

1.) **Double click** anywhere within the **Detailed Lithology** track to activate the Choose Editor window shown below.



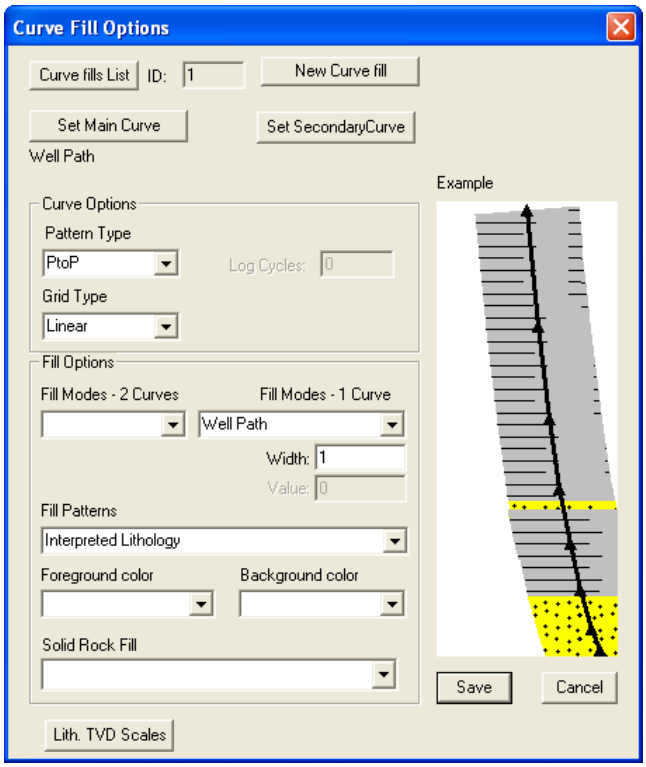
2.) **Click** on the Curve Fill Options **button** to activate the **Curve Fill Options** window shown below.
3.) **Click** on the Set Main Curve **button**. This will activate a list of curves associated with this well.
4.) **Click** on the **Well Path** so that it gets listed in the upper portion of the window and then **click** on the Select **button** or **double click** on the **Well Path**. You will now view the curve name below the Set Main Curve button.

Curve Options Portion of the Window. This information is pertaining to the Main Curve and its Curve attributes.

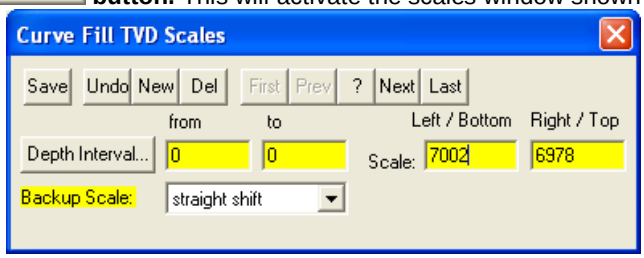
5.) **Click** on the **Pattern Type down arrow** and **select** PtoP (Point to Point).
6.) **Click** on the **Grid Type down arrow** and **select** the **Linear.**

Fill Options Portion of the Window (One Curve)

7.) **Click** on the **Fill Modes – 1 Curve down arrow** and **select Well Path.**

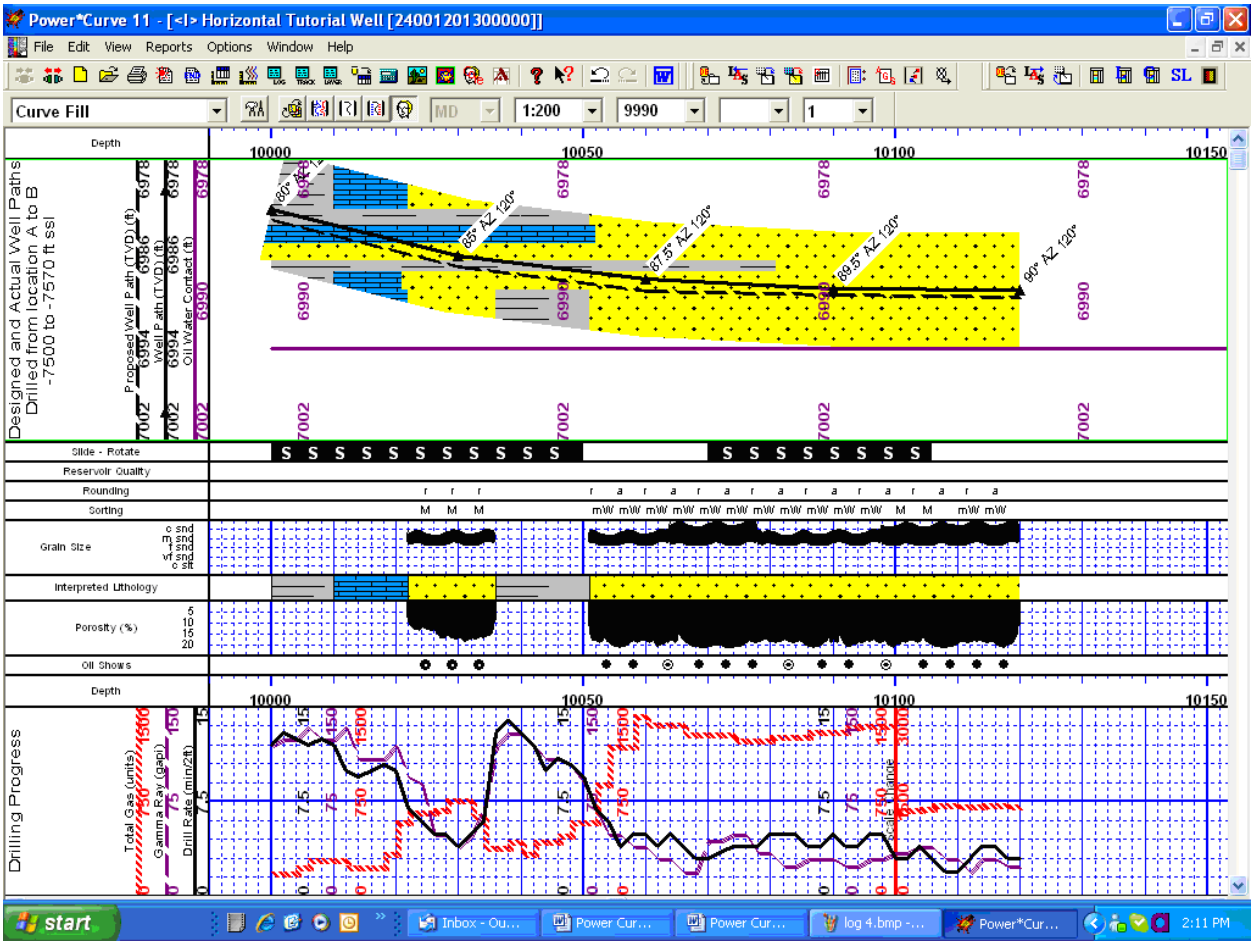


8.) **Type 1** in the **Width field.** Example If (1) one is type into the width field then the fill will be ½" either side of the Well Path Curve.
9.) **Click** on the **Fill Patterns** down arrow and **select** the **Interpretive Lithology**.
8.) **Click on the** Lith. TVD Scales **button.** This will activate the scales window shown below.



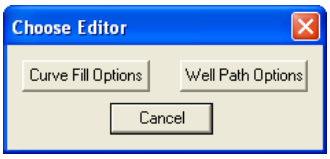
9.) **Type 0** in the **from** and **to** Depth interval fields.
10.) **Type** in **6978** in the **Left / Bottom** and **7002** to the **Right / Top** fields**.**
11.) **Select Straight Shift** from the **Backup Scale drop box**.
12.) **Click** on the Save **button** to add the TVD Scales to the Curve fill layer in the Detailed Lithology Track. This will activate the Shortcut Options menu.
13.) **Click** on the Exit **button** to close this window.

***** Your log should now look similar to the Log shown below. *****

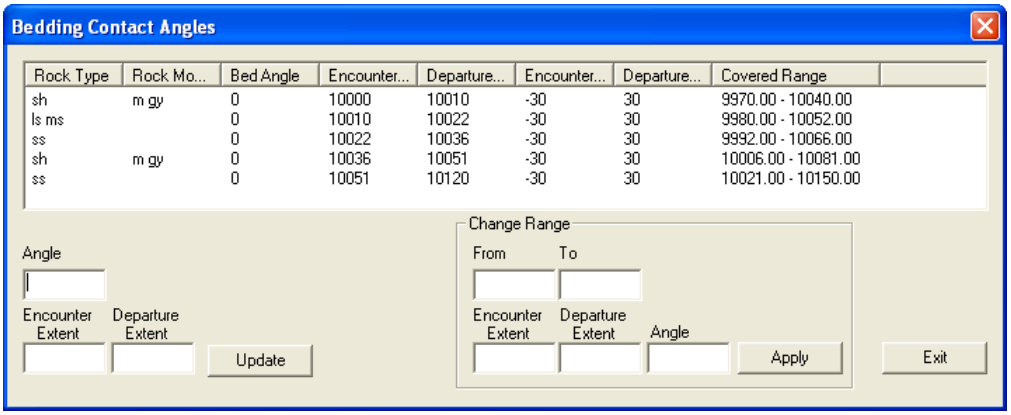


The Well Path Curve Fill Layer

1.) **Double click** anywhere within the Curve Fill Layer in the Detailed Lithology track to activate the Choose Editor window shown below.



2.) **Click** on the Well Path Options **button** to activate the **Bedding Contact Angles** window shown below.

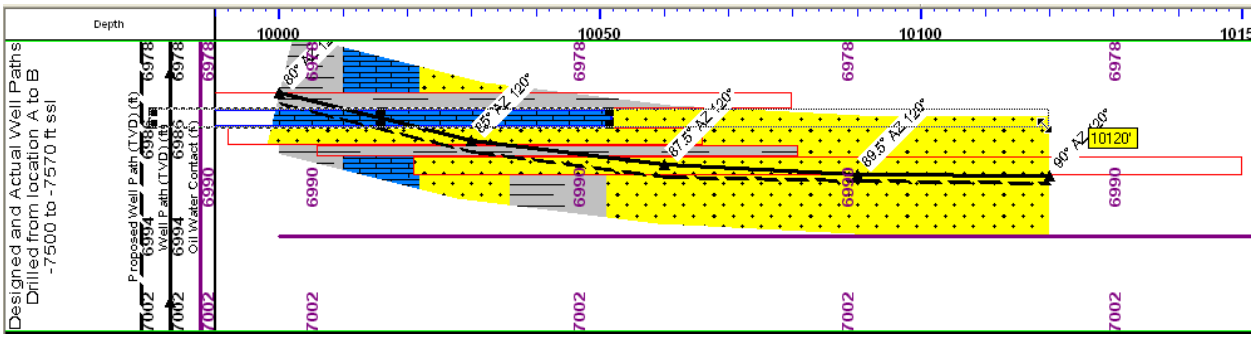


We will now modify the extents of the individual beds. To do so you can utilize the Mouse pointer or the keypad method of data entry. We will demonstrate both in this tutorial.

3.) **Click** on the **top sh mgy bed** and it will appear in the lower right hand info portion of the window. **Change the departure extent from 30 to 70** and then **click** on the Update **botton**.

4.) **Click** on the **Ls Ms Bed (blue)** on the **curve fill layer** to activate the blue box around it. This will also activate it in the Bedding Contacts Angles window as well.

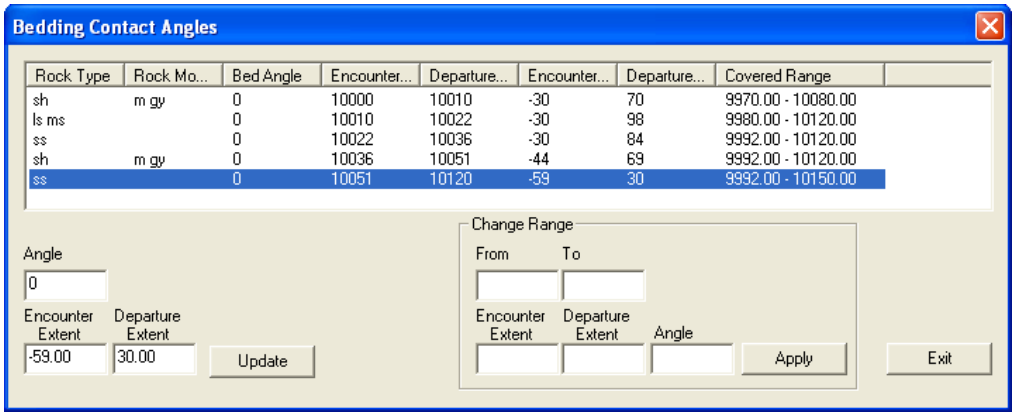
5.) **Hold** the **CTRL Key down** and **move mouse over the right edge of the bed (departure extent)** and **click and drag the** departure extend out to **10120ft** as shown in the illustration below and **let the mouse button go.** This will revise the bed in the Bedding Contact Angles window and refresh on the screen with the LS Ms going to the end of the area.

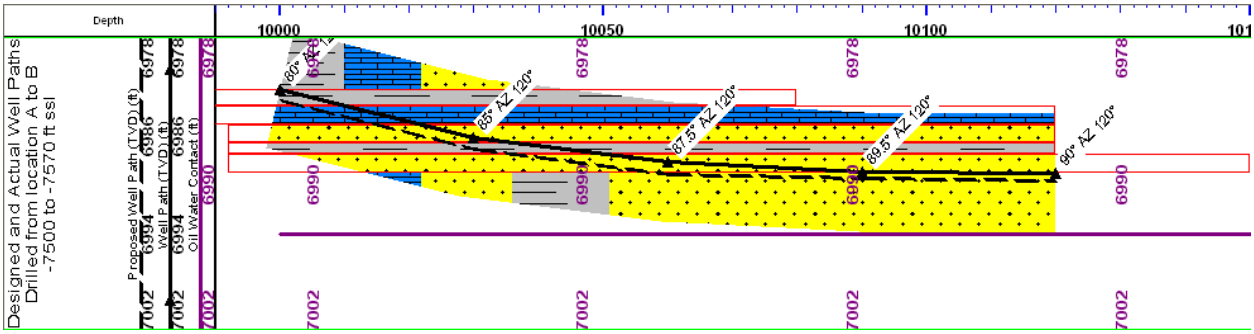


6.) **Click** on the **top ss bed** and it will appear in the lower right hand info portion of the window. **Change the departure extent from 30 to 84** and then **click** on the Update **botton**.

7.) **Click** on the **bottom sh m gy bed** and it will appear in the lower right hand info portion of the window. **Change the Encounter extend from -30 to -44** and **Change the departure extent from 30 to 69** and then **click** on the Update **botton**

8.) **Click** on the **bottom ss bed** and it will appear in the lower right hand info portion of the window. **Change the Encounter extend from -10 to -59** and then **click** on the Update **botton**. If done correctly your Bedding Contacts window will look like the one below.



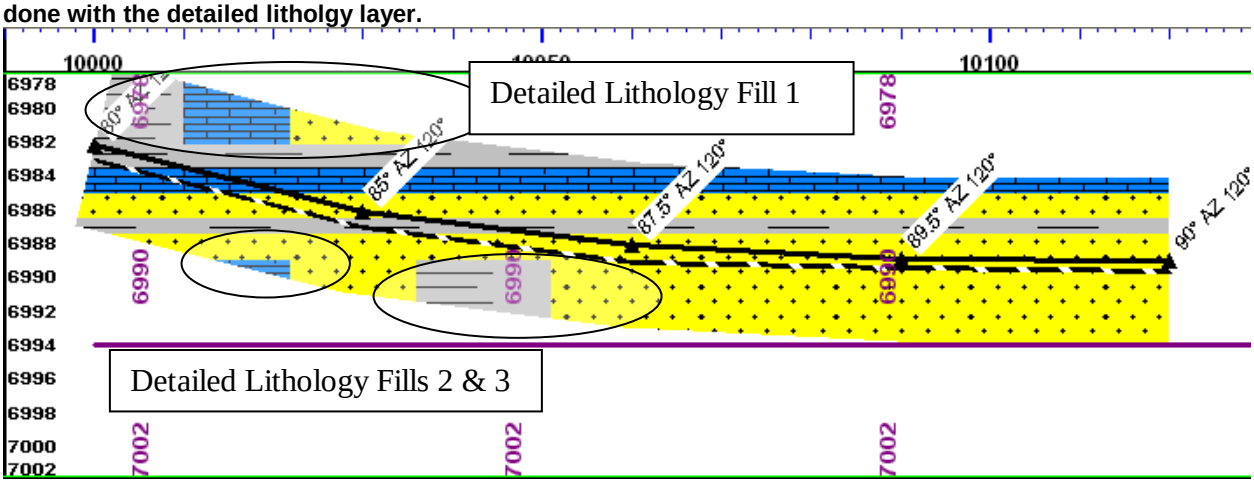


9.) **Click** on the Exit **button** to close this window.

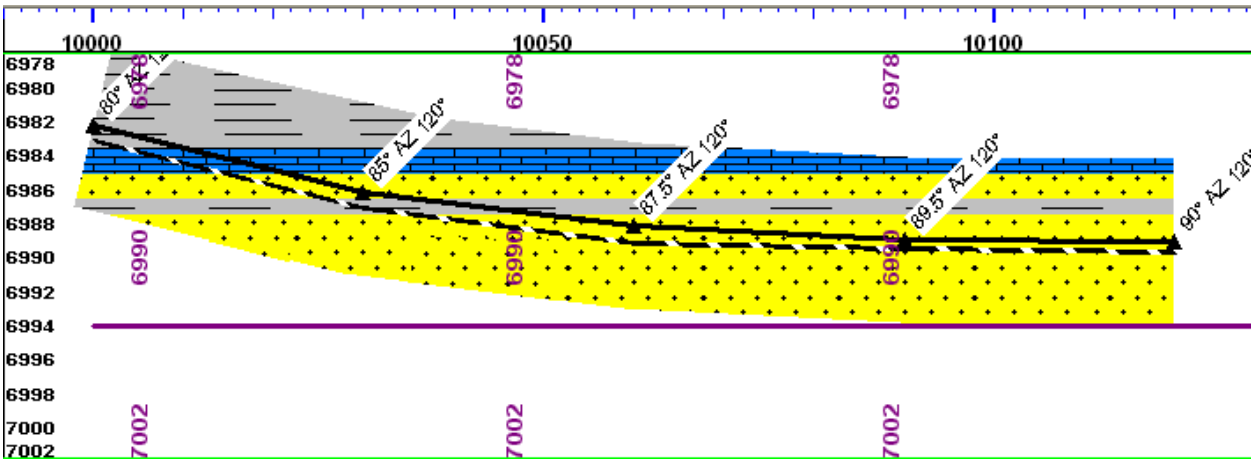
The Detailed Lithology Layer

In **Power*Curve™**, this layer allows you to create a visual representation of the **Interpreted Lithology** associated with your horizontal well path and gives you the ability to show **Lithology** above and below the well path curves or fill in areas where the Curve fill layer leaves a bit to be desired.

This is an illustration of the log before we fill in the erroneous lithology drawn by the curve fill layer. This is done with the detailed litholgy layer.



This is an illustration of the log after we have drawn in some lithology with detailed litholgy layer.



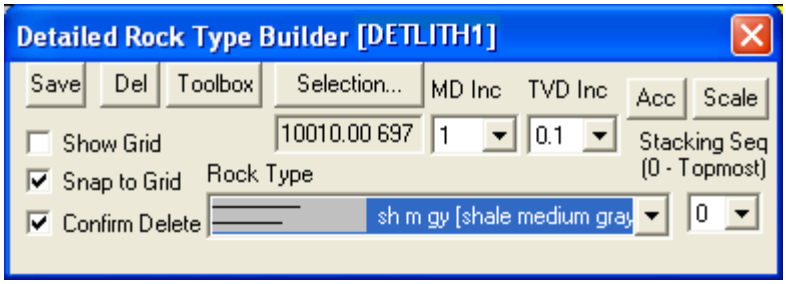
- **Drawing Detailed Lithology Fill1…**

1.) Make the **Detailed Lithology** layer active within the **Detailed Lithology** track by clicking on the Track and then selecting the **Detailed Lithology** layer from the **Layer Selection List** field.

Note: When this layer was first added to your log, you were prompted with a **Measured Depth** interval and a **Scale** for the top and bottom of the layer. This scale defines the upper and lower limits of your **Detailed Lithology** and should correspond to the top/right and bottom/left scales of your well path curves. The scale can be changed at any time and new scales may be added within the Detailed Lithology builder window.

When **Detailed Lithology** is your active or working layer, you will have the **True Vertical Depth** (**TVD**) increments visible on the left side of the layer. These are predetermined by the major/minor linear cycle settings set in the **Layer Configuration** window for this layer.

2.) **Double click** on the track to activate the **Detailed Rock Type Builder** window, the Toolbox, and a grid pattern (both the MD and TVD are defaulted to **1m** increments), in the **Detailed Lithology** layer.



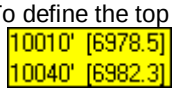
3.) In our case we will need a little more accuracy in the TVD grid pattern and MD grid pattern. To change the grid pattern in the detailed lithology layer **click on the MD Inc drop box arrow** and **select 1** and then **click on the TVD Inc drop box arrow** and **select 0.1** from the subsequent list. This grid change will now be the default when you open this builder window the next time.

4.) Also turn off the Show Grid check box as shown in the builder above. With the grid off the detailed lithology layer is not as busy as the MD and TVD Inc are quite close together.

The Grid pattern is determined by the MD Inc and the TVD Inc drop boxes. This grid pattern is extremely helpful when the **snap to grid option** is activated. This makes the drawing of lithology a lot simpler when the user is attempting to join similar rock types together. The Show Grid option is a troggle for lack of better terms. It places the grid in front of the rock type, in back of the rock type and then it also turns the grid off entirely. As you click on this option you will notice the 3 different types of grid options.

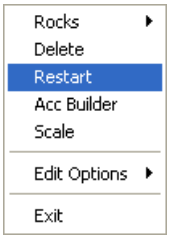
Drawing Fill 1 in the Detailed Lithology layer…

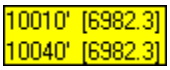
1.) **Click** once on the **Sh m gy [Shale medium gray] selection** in the Rock Type Favorite toolbox to highlight it

2.) To define the top of the Shale bed move the mouse pointer to the detailed lithology layer so that you see in the yellow field that follows the mouse **10010 [6978.5].** To define the top **left click and drag** your mouse on the Detailed Lithology layer until you see **10040 [6982.3]** 

in the lower portion of the yellow field that follows the mouse pointer and then **release the left mouse button**. This will draw a line indicating the top of the Shale bed.

Note: If you do not like the position of the line the user can right click on the layer and you can select Restart from the resulting pop-out menu and the line will disappear so that you can proceed with step 2 again.

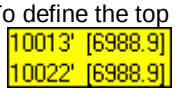


3.) Move the mouse pointer to the detailed lithology layer so that you see in the yellow field that follows the mouse **10010 [6982.3].** To define the bottom of the Shale bed **left click and drag** your mouse on the Detailed Lithology layer until you see **10040 [6982.3].** 

in the lower portion of the yellow field that follows the mouse pointer and then **release the left mouse button**. This will fill in the area between the two lines with Shale medium gray.

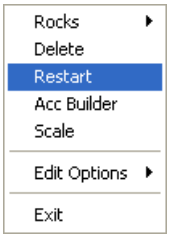
Drawing Fill 2 in the Detailed Lithology layer…

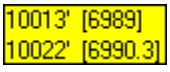
1.) **Click** once on the **Ss [Sandstone] selection** in the Rock Type Favorite toolbox to highlight it

2.) To define the top of the Shale bed move the mouse pointer to the detailed lithology layer so that you see in the yellow field that follows the mouse **10013 [6988.9].** To define the top **left click and drag** your mouse on the Detailed Lithology layer until you see **10022 [6988.9]** 

in the lower portion of the yellow field that follows the mouse pointer and then **release the left mouse button**. This will draw a line indicating the top of the Sandstone bed.

Note: If you do not like the position of the line the user can right click on the layer and you can select Restart from the resulting pop-out menu and the line will disappear so that you can proceed with step 2 again.

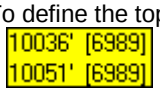


3.) Move the mouse pointer to the detailed lithology layer so that you see in the yellow field that follows the mouse **10013 [6889].** To define the bottom of the Shale bed **left click and drag** your mouse on the Detailed Lithology layer until you see **10022 [6890.3]** 

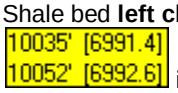
in the lower portion of the yellow field that follows the mouse pointer and then **release the left mouse button**. This will fill in the area between the two lines with Sandstone.

Drawing Fill 3 in the Detailed Lithology layer…

1.) **Click** once on the **Ss [Sandstone] selection** in the Rock Type Favorite toolbox to highlight it

2.) To define the top of the Shale bed move the mouse pointer to the detailed lithology layer so that you see in the yellow field that follows the mouse **10036 [6989].** To define the top **left click and drag** your mouse on the Detailed Lithology layer until you see **10051 [6989]** 

in the lower portion of the yellow field that follows the mouse pointer and then **release the left mouse button**. This will draw a line indicating the top of the Sandstone bed.

3.) Move the mouse pointer to the detailed lithology layer so that you see in the yellow field that follows the mouse **10035 [6991.4].** To define the bottom of the Shale bed **left click and drag** your mouse on the Detailed Lithology layer until you see **10052 [6992.6]** 

in the lower portion of the yellow field that follows the mouse pointer and then **release the left mouse button**. This will fill in the area between the two lines with Sandstone.

Turning on the Lithology Description Layer

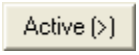
1.) **Click** on the **Detailed Lithology** track to make it active (highlighted in green).

2.) **Click** on the **View pull down menu** and **select Layers Organizer**. You can also select the  button on the selection bar. This will activate the Layers Organizer window for the detailed Lithology Track.

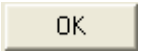
3.) **Click** on the **Litholgy Description Layer** so that it is highlighted.

4.) **Click** on the 

button. This will turn on the lithology description layer so that we can work with this layer. You will notice and Y beside the layer name.

5.) Then **click** on the 

button. This will put a > symbol beside this layer. This indicates it is the active layer.

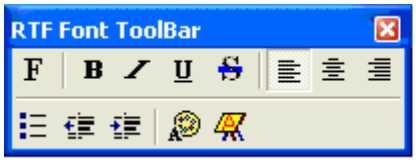
6.) **Click** on the 

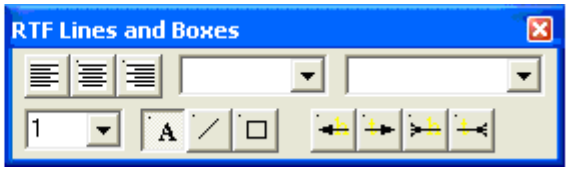
button. This will close the window and turns on the Lithology Description and makes the Lithology Description the active layer on the detailed lithology track.

Moving a Lithology Description

1.) Make the **Lithology Descriptions** layer active within the **Detailed Lithology** track by clicking on the Track and then selecting the **Lithology Descriptions** layer from the **Layer Selection List** field.

2.) **Click** anywhere within an **Annotation** to activate the RTF Toolbars for the Lithology Descriptions Layer and it will highlight that description.





3.) Place the mouse pointer on the outline surrounding the selected **Sample Description** on the **Lithology Descriptions** layer and the mouse pointer will turn into a cross-hairs  cursor.

4.) **Click and drag** the mouse pointer to the Sample Description's new position and then release the mouse button, and the **Sample Description** will be redrawn at its new location.

5.) **Click** anywhere **outside** the description to **save** and close the RTF builders.

6.) **Repeat steps 2-5** to move all of the descriptions to where they best fit.

Refer to the Log Example on Page 59 for our suggestions.

- **Resizing Sample Descriptions**

1.) **Click** anywhere within an **Annotation** to activate the RTF Toolbars for the Lithology Descriptions Layer and it will highlight that description and an outline will appear around the **Sample Description**.

Note: You may only be able to activate the red dot associated with the uppermost **Sample Description**, because the **Sample Descriptions** created by you in the **Sample Description** window may overlap one another within the **Lithology Descriptions** layer.

2.) Place the mouse pointer overtop of the square boxes in the outline around the selected **Sample Description** on the **Lithology Descriptions** layer and the mouse pointer will turn into a resize ↕ cursor.

3.) **Click and drag** the mouse pointer to the Sample Description's new size and then **release** the **mouse button**, and the **Sample Description** will be redrawn at its new size.

4.) Repeats steps 2-3 to change any of the sizes of the Sample Descriptions on your Log.

5.) **Click** anywhere **outside** the annotation to **save** and close the RTF builders.

- **Editing a Sample Descriptions**

In this example, you will change the description of the **Shale** originally placed at **10036 ft** The description was 10036-10052ft Sh : m – dk gy, micmica, carb, occ tr glau grs, non calcs, fis. Tr Sid pels.

1.) **Click** on the above sample description to activate RTF Toolbars and an outline will appear around the **Sample Description**.

2.) Click and drag over the description **from the rock type to the end and replace the shale description with aa**.

3.) **Click** anywhere **outside** the description to **save** and close the RTF builders

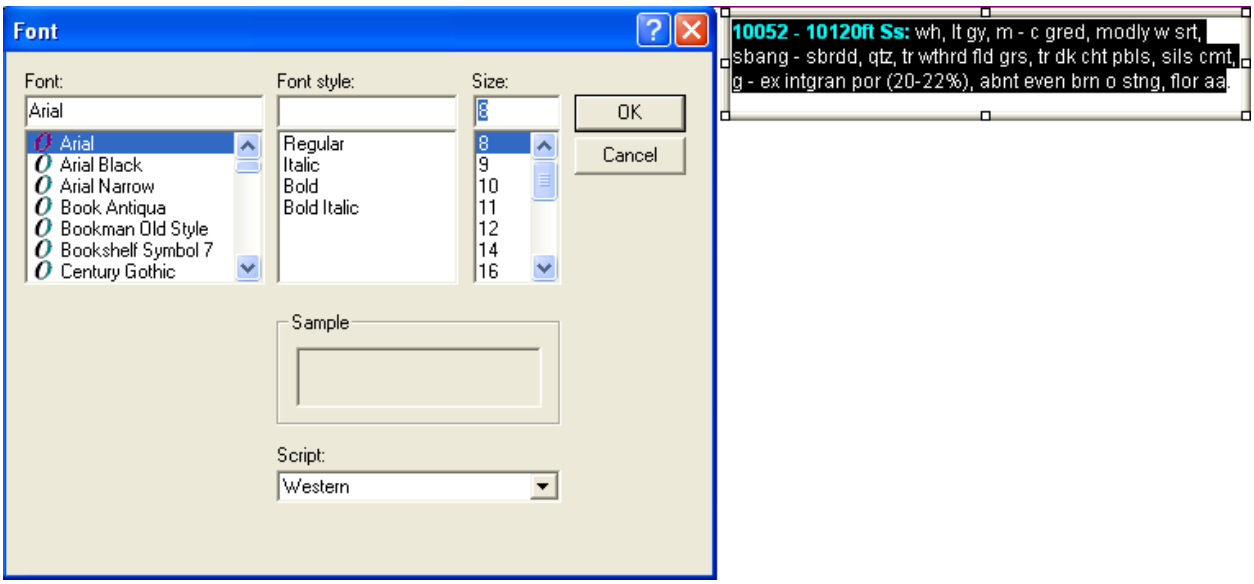
- **Resizing the font in a Sample Descriptions**

1.) **Click** on the **Ss description from 10052 to 10120 ft** to activate the RTF Toolbars for the Lithology Descriptions Layer and it will highlight that description

2.) **Highlight the entire description by clicking and dragging the mouse pointer**.

3.) **Click** on the **F** **selection** in the RTF Font builder. This will activate the Font builder.

4.) **Drop** the **Size menu** and **select 8** point font.



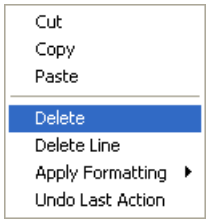
5.) **Click** on the 

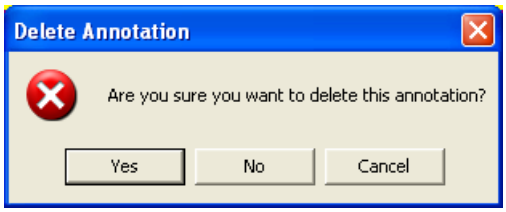
button in the Font builder, when you are finished.

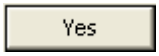
6.) **Click** anywhere **outside** the description to **save** and close the RTF builders

Deleting a Sample Description

1.) **Click** anywhere within an **Annotation** to activate the RTF Toolbars for the Lithology Descriptions Layer and it will highlight that description and an outline will appear around the **Sample Description**.
2.) **Right click** inside the annotation to activate the pop-up menu and then **click** on the **Delete selection**. This will activate a System message



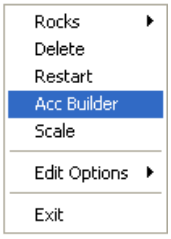


3.) **Click** on the 

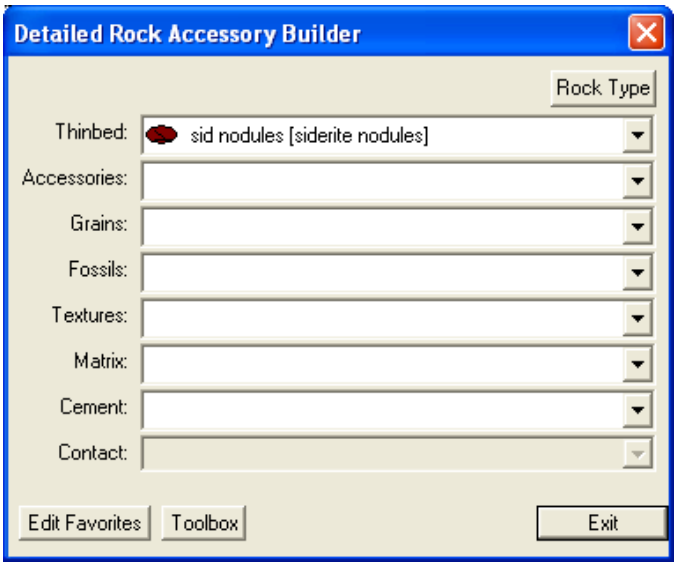
button. Your annotation will be deleted

Drawing Accessories:

1.) Make the **Detailed Lithology** layer active within the **Detailed Lithology** track by clicking on the Track and then selecting the **Detailed Lithology** layer from the **Layer Selection List** field.
2.) **Double click** anywhere within the **Detailed Lithology** track to activate the **Detailed Rock Type Builder** window and it favorites toolbox.
3.) **Right click** once anywhere within the **Detailed Lithology** track to activate the pop-up menu.



4.) **Select Acc Builder** from the pop-up menu to activate the **Detailed Rock Accessory Builder** window along with the **Accessory Favorite Toolbox**.



Note: The graphical images utilized in the Favorites Toolbox shown above represents the specific **Accessories** selected by the user in the **System Options** window (See **System Options** earlier in this tutorial).

…Adding a Thinbed…

1.) **Click** on the symbol for **Siderite Nodules** from the Toolbox and the Thinbed field in the Detailed Rock Accessory Builder window will be filled in with sid nodules [siderite nodules].
2.) **Click anywhere** within the existing Detailed Lithology layer to insert the desired symbol.
3.) Repeat Steps 1 to 2 for **dark chert pebbles**

Note: To delete an **Accessory symbol**, activate the **Detailed Rock Accessory Builder** window, **right click** on the upper left corner of the **Accessory** symbol you wish to delete, and then select **Delete** from the pop-up menu.

- **Adding a Cement…**

1.) **Click** on the symbol for **Siliceous Cement** from the Toolbox and the **Cement** field in the Detailed Rock Accessory Builder window will be filled in with sils [siliceous].
2.) **Click** anywhere within the existing Detailed Lithology layer to insert the desired Symbol.

- **Adding an Accessory…**

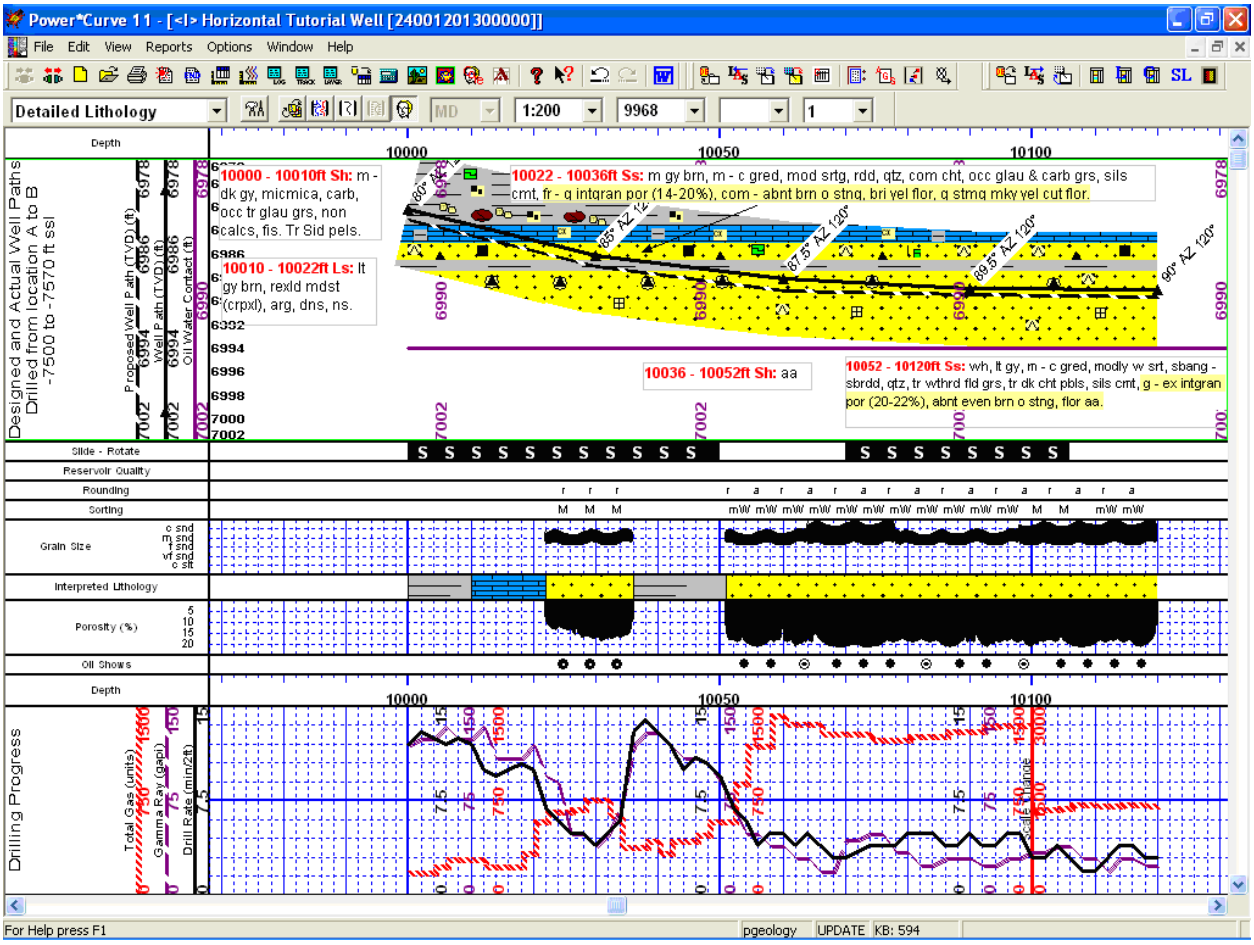
1.) **Click** on the symbol for **Carbonaceous** from the Toolbox and the **Accessories** field in the **Detailed Rock Accessory Builder** window will be filled in with **carb [carbonaceous]**.
2.) **Click** anywhere within the existing Detailed Lithology layer to insert the desired Symbol.

Note: When placing **Accessories** on the log, you may wish to increase the mouse accuracy from the default of **1** to **0.1**. This selection is located to the far left on the **Selection Toolbar**.

- **Adding more Accessories, Grains and Textures…**

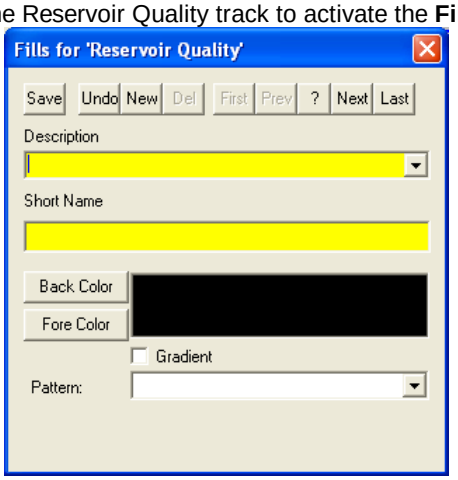
1.) **Right Click** on the **Detailed lithology layer** to activate the pop out menu.
2.) **Click** on the **Accessories** selection to activate the favorites list**.**
3.) **Click** on the symbol for **Micromicaceous** from the pop-out menu and the component field in the Detailed Rock Accessory Builder window will be filled in with micmica [micromicaceous].
4.) **Click** anywhere within the existing Detailed Lithology layer to insert the desired Symbol.
5.) Repeat **Steps 1** and **4** for the following grains and textures:
argillaceous chert grains feldspar grains cryptocrystalline glauconite grains

***** Your log should now look similar to the Log shown below.***



Adding Reservoir Qualities to the Reservoir Quality Track

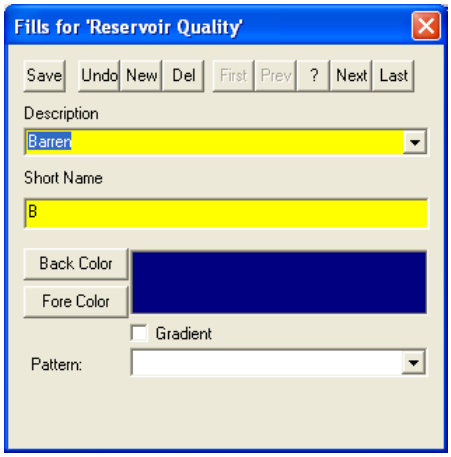
1.) **Double click** anywhere within the Reservoir Quality track to activate the **Fills for Reservoir Quality** window.



2.) **Type Barren** into the Description field**.**

3.) **Type B** into the Short name field.

4.) **Click** on the Back Color **button** and **select a blue color** from the palette and then **click** on the OK **button.**



5.) **Click** on the Save **button** and then **select** Start New Record from the ensuing **Shortcut Options** window. This will clear the window and allow the user to enter a new record.

Adding more environments to the Environment fill category…

1.) **Type Good** into the Description field**.**

2.) **Type G** into the Short name field.

3.) **Click** on the Back Color **button** and **select a maroon color** from the palette and then **click** on the OK **button.**

4.) **Click** on the Save **button** and then **select** Start New Record from the ensuing **Shortcut Options** window. This will clear the window and allow the user to enter a new record.

5.) **Type Excellent** into the Description field**.**

6.) **Type Ex** into the Short name field.

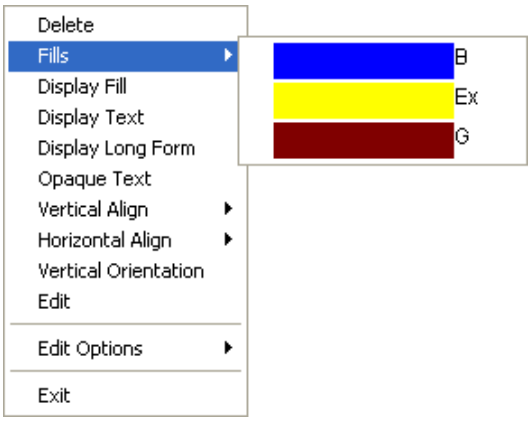
7.) **Click** on the Back Color **button** and **select a yellow color** from the palette and then **click** on the OK **button.**

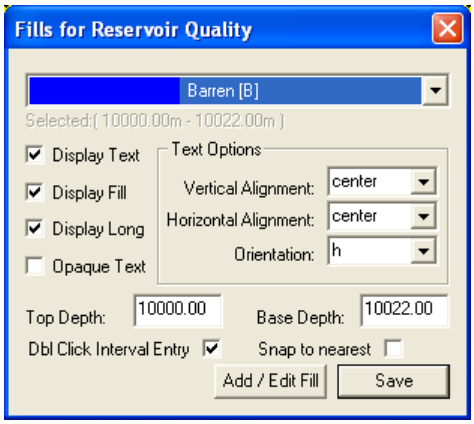
8.) **Click** on the Save **button** and then **select** Exit from the ensuing **Shortcut Options** window. This will close the window.

Drawing Reservoir Quality onto the Reservoir Quality Track…

1.) **Double click** on the **Reservoir Quality** to activate the window.

2.) **Right click** in the **Reservoir Quality track** to activate the pop out window, **select fills** and **click** on the **B selection. Or click** on the **builder drop box** and **select Barren [B].**





3.) Define the interval by **clicking and dragging** within the **Reservoir Quality track** from **10000' to 10022'** 

. The Barren Reservoir Quality will be displayed in that interval.

4.) **Right Click** on the **fill just drawn** and **select** or **click on** the **Opaque Text** selection to turn off the background around the text.

5.) Define another interval with the same properties by **clicking and dragging** within the **Reservoir Quality track** from **10036' to 10051'** 

. The Barren Reservoir Quality will be displayed in that interval.

6.) **Right click** on an empty area in the **Reservoir Quality track** to activate the pop out window, **select fills** and **click** on the **G selection.** Or **click** on the **builder drop box** and **select Good [G].**

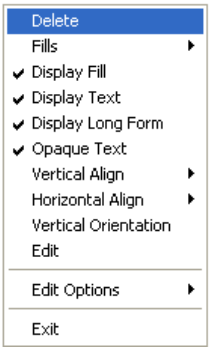
7.) Define an entire interval by **double clicking** within the Reservoir Quality track **between the depths of 10022' and 10036'.** The Good Reservoir Quality will be displayed in that interval. This is capturing the rock interval data entry and utilizing it to draw an entire interval.

8.) Define another entire interval by first selecting another Fill type. **Right click** on an empty area in the **Reservoir Quality track** to activate the pop out window, **select fills** and **click** on the **Ex selection.** Or **click** on the **builder drop box** and **select Excellent [Ex]**

9.) **Double click** within the Reservoir Quality track **between the depths of 10051' and 10120'.** The Excellent Reservoir Quality will be displayed in that interval.

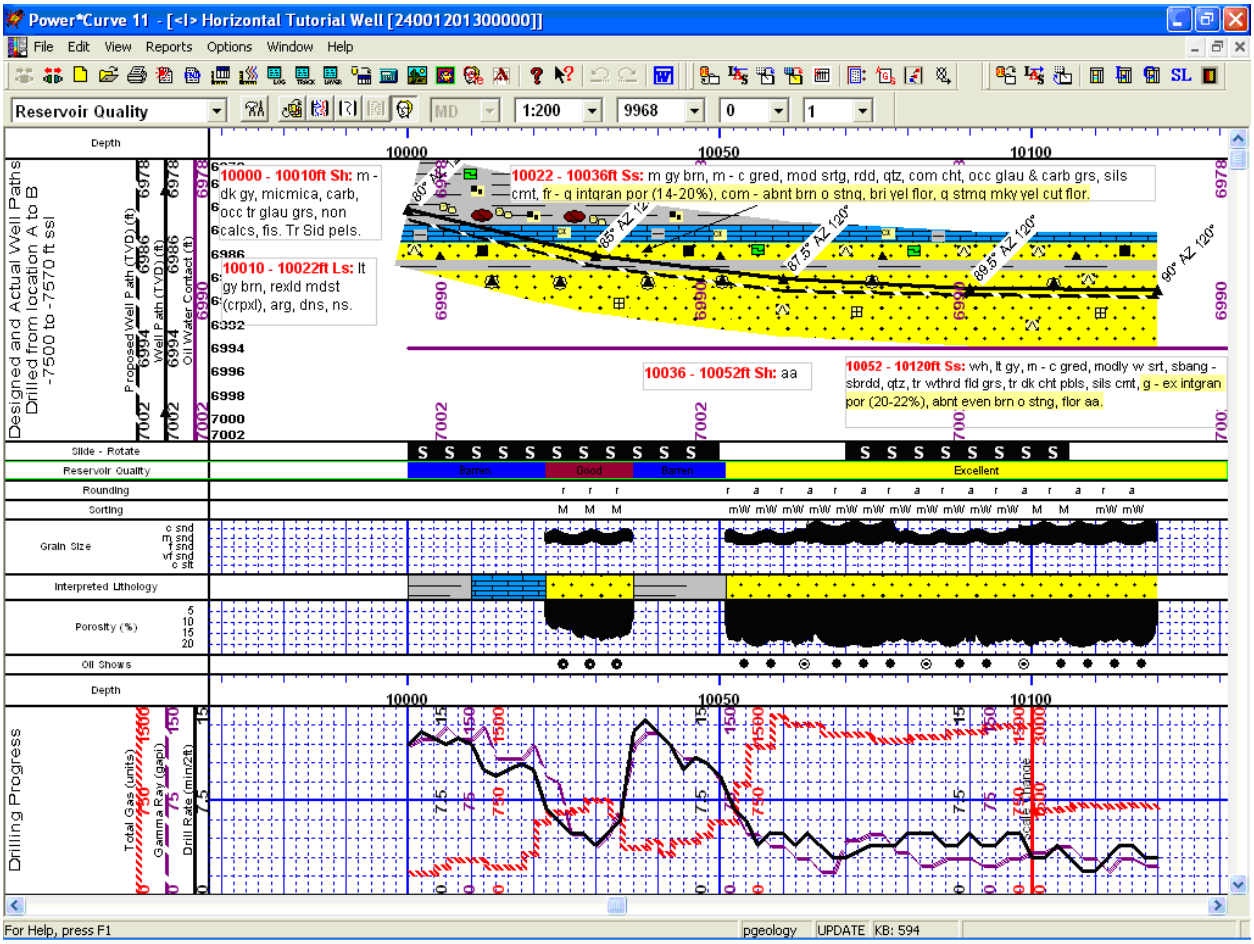
To **resize** an existing fill **hold your Ctrl Key down** on your keypad and **move mouse pointer over the end part of the interval until it turns into a resize cursor** ↕ **and then click and drag** to a new depth. Remember you cannot overwrite existing intervals.

To **delete** an exiting interval **right click on the interval** and **select delete** from the pop out menu.



10.) Click on the  close button in the upper right hand corner of the builder. This will close down the Environment builder window.

***** Your log should now look similar to the log shown below. *****



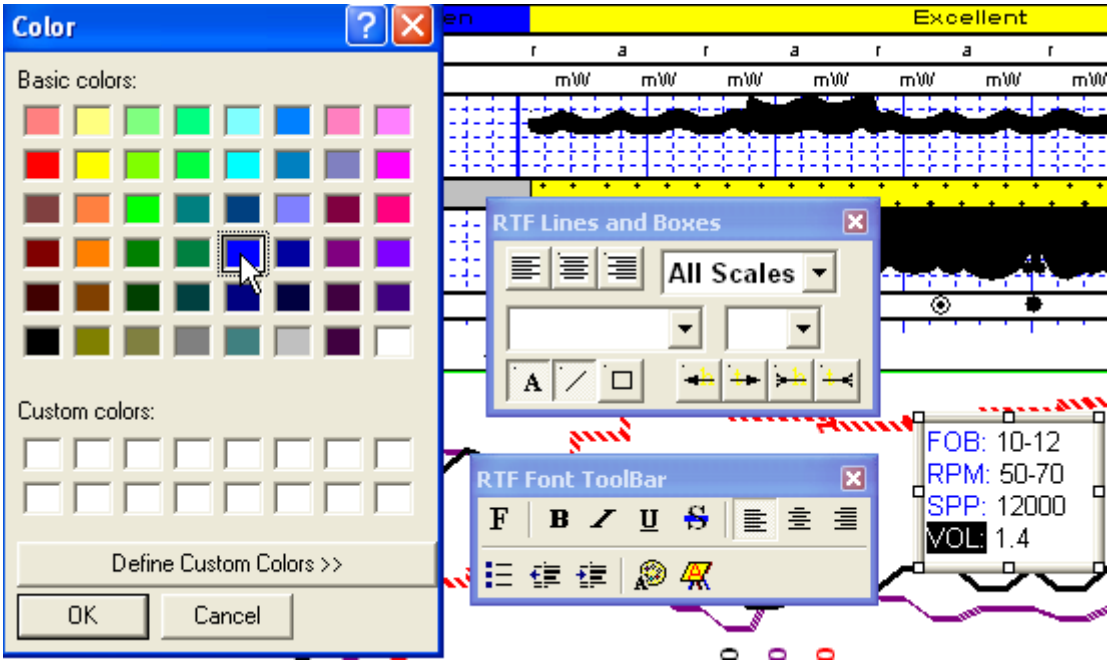
Adding an Annotation to the Drilling Progress Track

There are a number of annotations layers associated with this track. These are represented with Engineering Parameters, Mud Parameters and Gas Annotations. You could one annotation layer for all three types of annotations. We will deal with making an annotation in the Engineering Parameters layer.

1.) **Click** on the **Drilling Progress** track to make it active (highlighted in green).

2.) **Select Engineering Parameters**, as your active layer, from the **Layer Selection List** field.

3.) Define the area on the layer where the **Annotation** will appear by:
   a) placing the mouse pointer at the desired depth;
   b) **clicking and dragging** the **left** mouse button from the upper left corner to the lower right corner of the desired area to form a rectangular shape
   c) releasing the **left** mouse button. This will activate the RTF Toolbars.



4.) **Type** the following into the text field in the annotation layer:

FOB: 10-12
RPM: 50-70
SPP: 12000
VOL: 1.4

5.) To change the Font Color **Highlight the Text you want to change by dragging the Mouse over the text** to highlight the letters.

6.) **Click** on the  **button** in the RFT Font toolbar. This will activate the color palette.

7.) **Click** on the **new color** and then **click** on the  **button**. This will close the Color Palette and make your changes.

8.) **Click anywhere outside the text box** to save your annotation and close the Toolbars.

7.) The user would probably want a Grid Pattern on this Track for printing purposes. Select a Curve layer (Gamma Ray, Drill Rate or Total Gas) from the layer selection list on the Selection Bar.

Adding an Annotation to the Detailed Lithology Track

1.) **Click** on the **Detailed Lithology** track to make it active (highlighted in green).

2.) **Select Lithology Description**, as your active layer, from the **Layer Selection List** field.

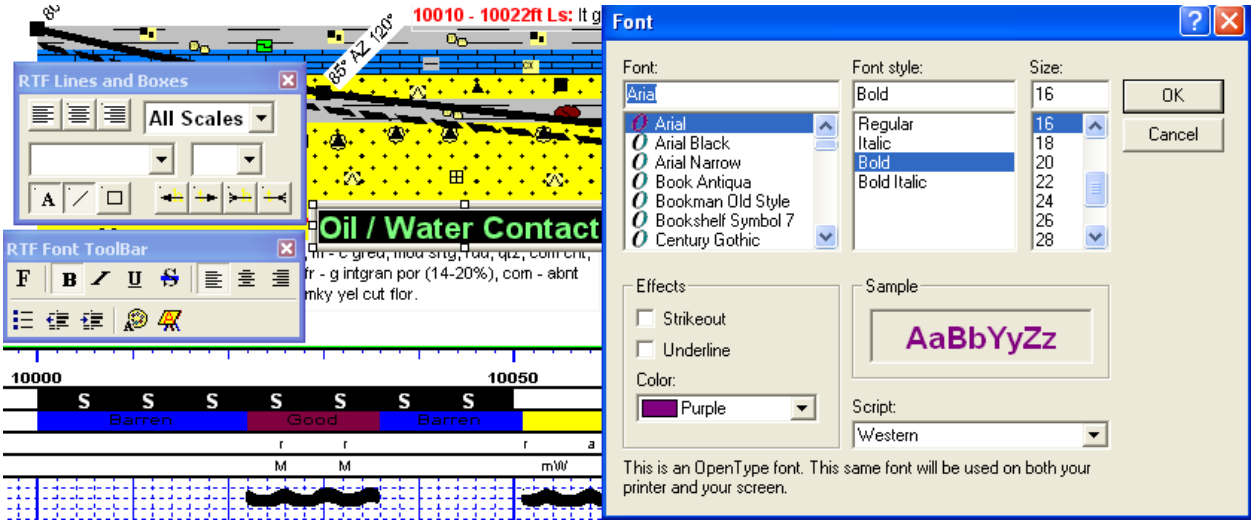
3.) Define the area on the layer where the **Annotation** will appear by:

a) placing the mouse pointer at the desired depth;

b) **clicking and dragging** the **left** mouse button from the upper left corner to the lower right corner of the desired area to form a rectangular shape

c) releasing the **left** mouse button. This will activate the RTF Toolbars.

4.) **Type** in **Oil / Water Contact** into the text field.



6.) To change the Font Color **Highlight the Text you want to change by dragging the Mouse over the text** to highlight the letters.

7.) **Click** on the F **button** in the RFT Font toolbar. This will activate the Font Builder.

8.) **Select 16** from the **Font Size Drop box.**

9.) **Select Purple** from the **Color Drop box**

10.) **Click** on the OK **button.** This will close the Font Builder and make your changes.

11.) **Click** on the **Icon** in the RTF Lines and Boxes toolbar to draw a box around your annotation.

12.) **Click anywhere outside the text box** to save your annotation and close the Toolbars.

13.) **Press** the **Esc key** on the keyboard or **Click** on the **close button** in the upper right hand corner of the builder to exit from the **Annotation Builder** window.

14.) The user would probably want a Grid Pattern on this Track. Select a Curve layer (Proposed Well path, Well Path, or Oil / Water Contact) from the layer selection list on the Selection Bar.

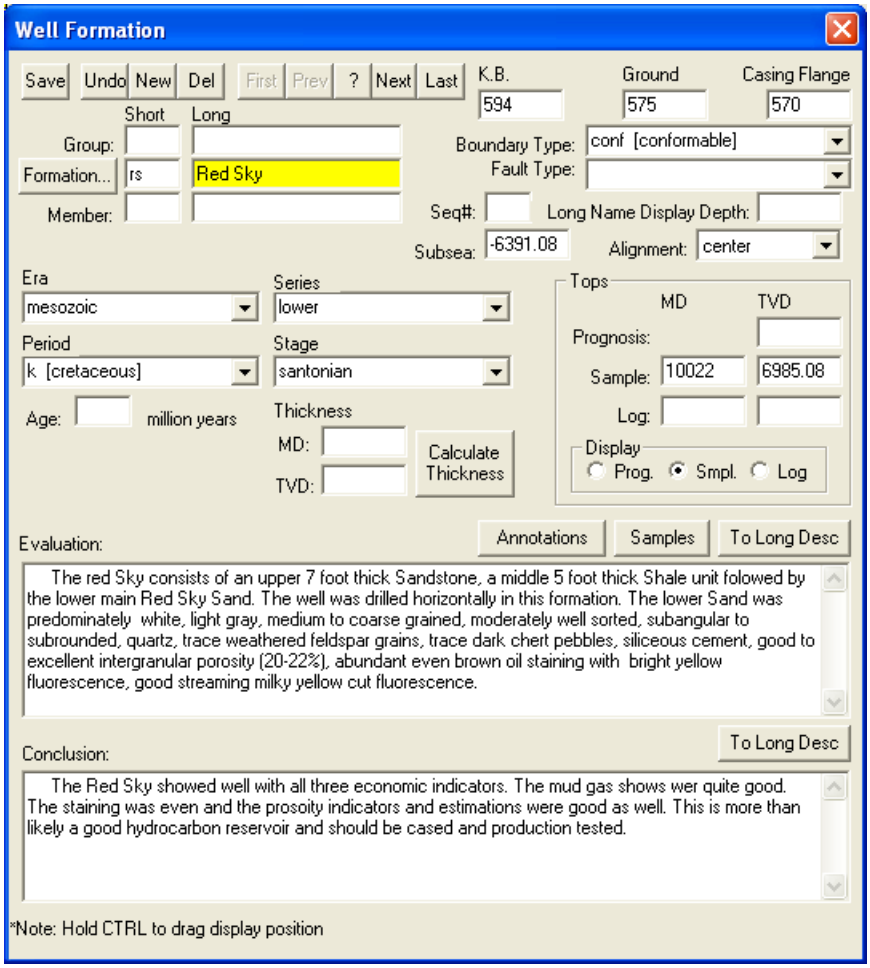
Adding a Formation Top:

1.) **Click** on the **Reports** selection on the **Power*Curve™ Menu Bar** to activate the pull down menu and then **Click** on **Formation** to open the **Formation** window shown on the next page.

2.) **Click** on the New **button** to clear the window and get the window ready to accept another record.

3.) **Click** in the **Formation Short Name field** to activate a flashing caret and **type** in **rs**. Press the Tab Key. This will advance the user to the Formation Long Name field. The rs will be drawn in the Formation Tops (Short Name) layer which is associated with the Measured Depth Tracks.

4.) **Type** in the **Red Sky** in the Formation Long name field. Red Sky will be drawn in the Formation Tops (Long Name) layer which is associated with the Detailed Lithology Track.



5.) **Select Mesozoic** from the **Era drop down box**.

6.) **Select Lower** from the **Series drop down box**.

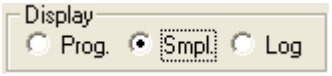
7.) **Select K (Cretaceous)** from the **Period drop down box.** The K will be drawn in the Formation Tops (Short Name) layer which is associated with the Measured Depth Tracks.

8.) **Select Santorian** from the **Stage drop down box.**

9.) **Select Center** from the **Alignment drop down box.** Red Sky will be drawn in the center of the Formation Tops (Long Name) layer which is associated with the Detailed Lithology Track along with its Subsea and TVD values

Note: The subsea values are calculated from the K.B. elevations entered into the Well window which can be edited. The Well window can be found by clicking on Edit on the Power*Curve men bar and select Well from the resulting pull down menu.

10.) **Select Conformable** from the **Boundary Type drop down box.**

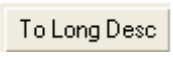
11.) **Select** 

from the Display portion of the Window.

12.) Type **10022** into the **Sample Top MD** field. You will notice that the TVD Sample top field will be calculated for you. Then depress the tab key four times. This will place the flashing caret in the Evaluation field.

13.) The user can then **type** in the Evaluation short form or the user can go to the **Annotations** or **Samples button** and search the samples to copy and paste the relevant description. Once done **click** on the 

button to expand the description. Then depress the tab key. This will advance the flashing caret to the Conclusion field.

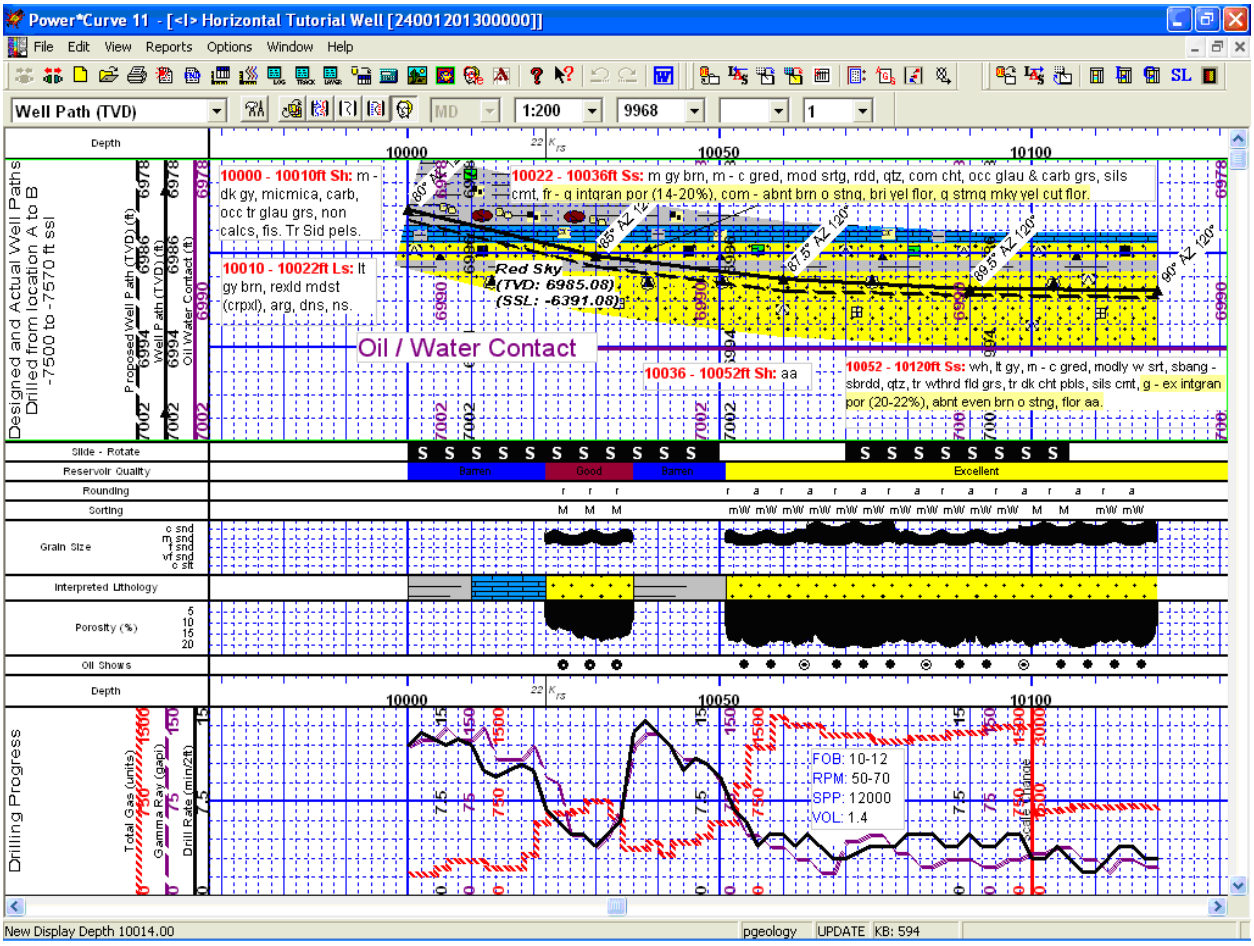
14.) **Type** the **Conclusion** into the Conclusion field. **Click** on the 

button to expand the description.

14.) **Click** on the 

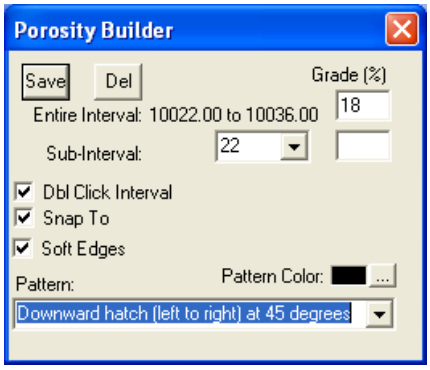
button and then select **Exit** from the ensuing **Shortcut Options** window. You will notice the both the Short Name and Long Name formation tops layers filled in with the appropriate Red Sky tops information.

***** Your log should now look similar to log shown below. *****

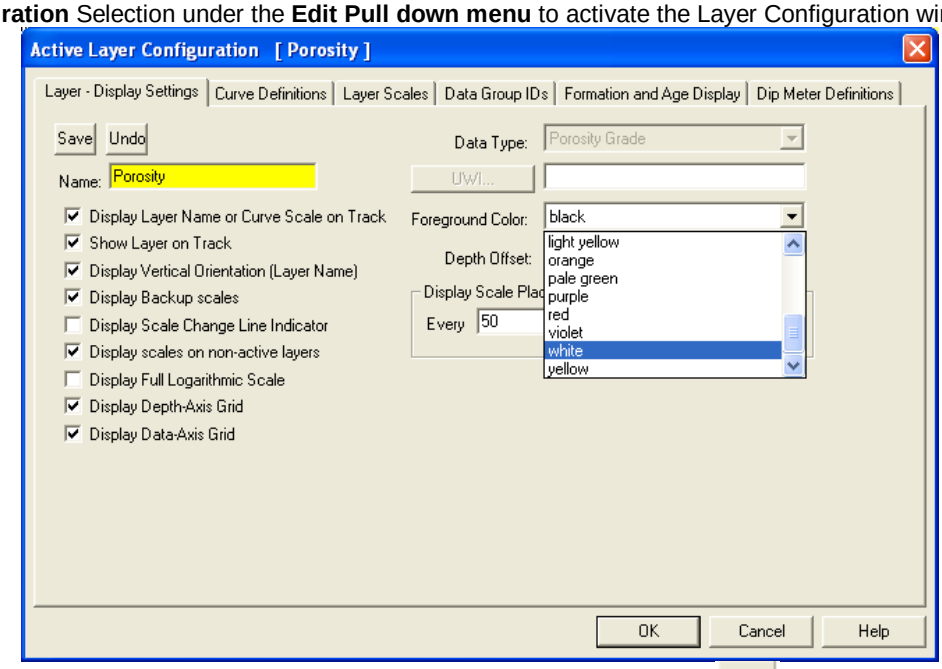


Changing the Display for the Porosity Grade Layer.

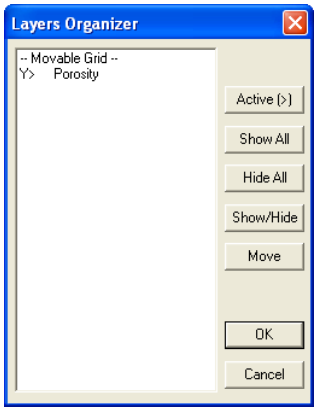
1. **Double Click** on the **Porosity Grade Layer** to activate the porosity builder.



2. **Select** the **Downward Hatch (left to right) at 45 degrees** from the **Pattern drop box**.
3. **Click** on the Save **button.** Then exit the builder by pressing the **Esc Key** on your keypad or **click** on the button in the builder.
4. With the porosity Grade Layer still active **Click** on the **button** on the **tool bar** or **click** on the **Layer Configuration** Selection under the **Edit Pull down menu** to activate the Layer Configuration window.



5. **Select white** from the **Foreground Color drop box** and then **click** on the Save **button**
6. With the Porosity Grade layer still active **click** on the **button** on the selection bar or **click** on the **Layers Organizer** Selection under the **View** Pull down menu**.** This will activate the layers organizer for the Porosity Grade track.

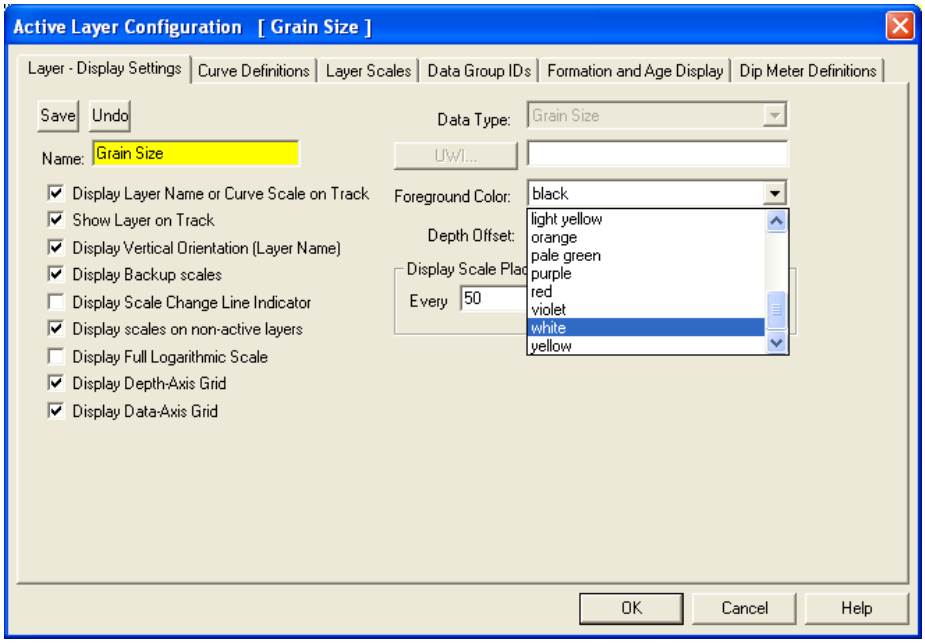


7. **Click** on the **Movable Grid layer**, then **click** on the Move **button** which will turn into a Move Start button and then **click** on the **Porosity layer** to move the grid above the hatching pattern on the log. Finally **click** on the OK **button.**

You should now have a black hatching pattern with a white foreground and the Grid showing through as seen on the log on page 59.

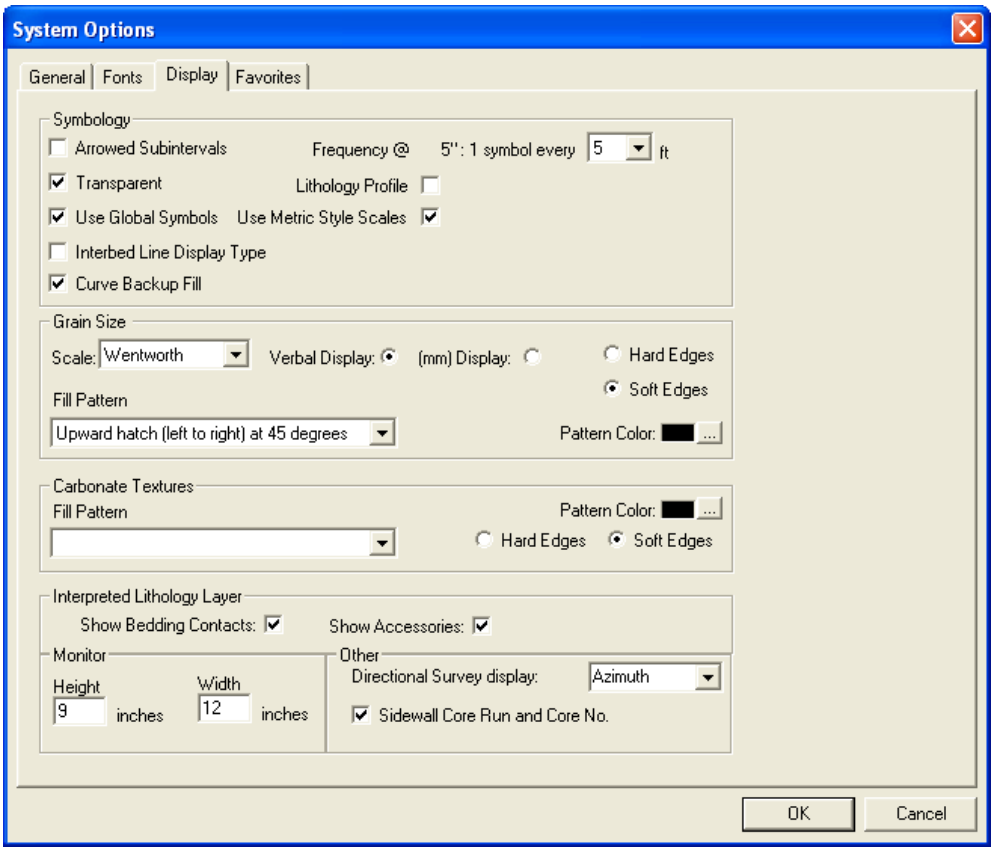
Changing the Display for the Grain Size Layer.

1. **Click** on the **Grain Size Layer** to make the Grain size layer active.
2. With the Grain Size Layer active **Click** on the **button** on the tool bar or **click** on the **Layer Configuration** Selection under the **Edit** Pull down menu to activate the Layer Configuration window.



3. **Select white** from the **Foreground Color drop box** and then **click** on the Save **button**
4. With the Grain Size layer still active **Click** on the **button** on the selection bar or **click** on the **Layers Organizer** Selection under the **View** Pull down menu**.** This will activate the layers organizer for the Porosity Grade track.

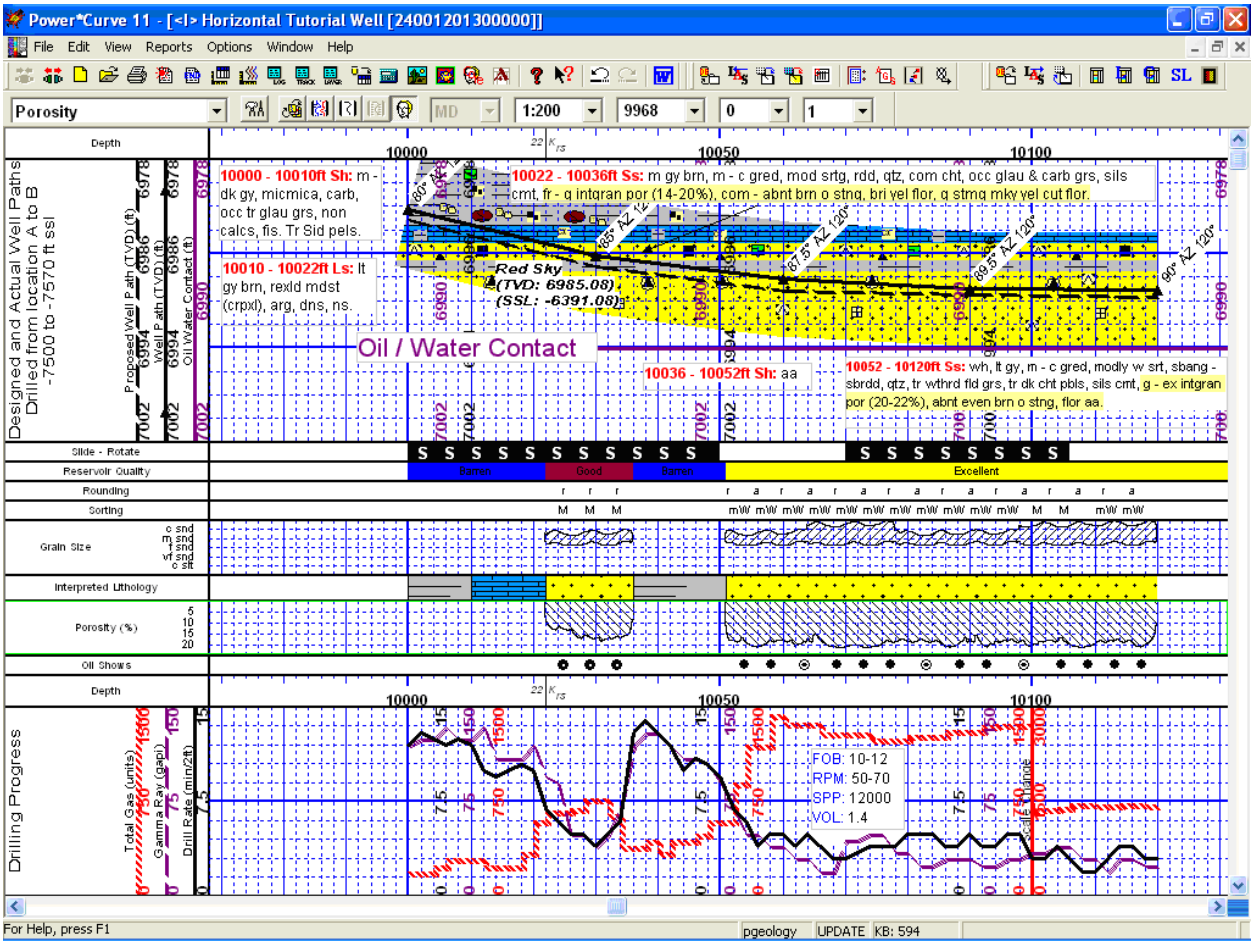
5. **Click** on the **Movable Grid layer**, then **click** on the Move **button** which will turn into a Move Start button and then **click** on the **Grain Size layer** to move the grid above the hatching pattern on the log. Finally **Click** on the OK **button.**
6. **Click** on **Option pull down menu** and **select System options.** This will activate the System Options window.
7. **Click** on the **Display tab** to make it active**.**



8. **Select** the **Upward Hatch (left to right) at 45 degrees** from the **Fill Pattern drop box for grain Size**.
9. **Click** on the OK **button.** This will close the System Options window**.**

You should now have a black hatching pattern with a white foreground and the Grid showing through as seen on the log on page 71.

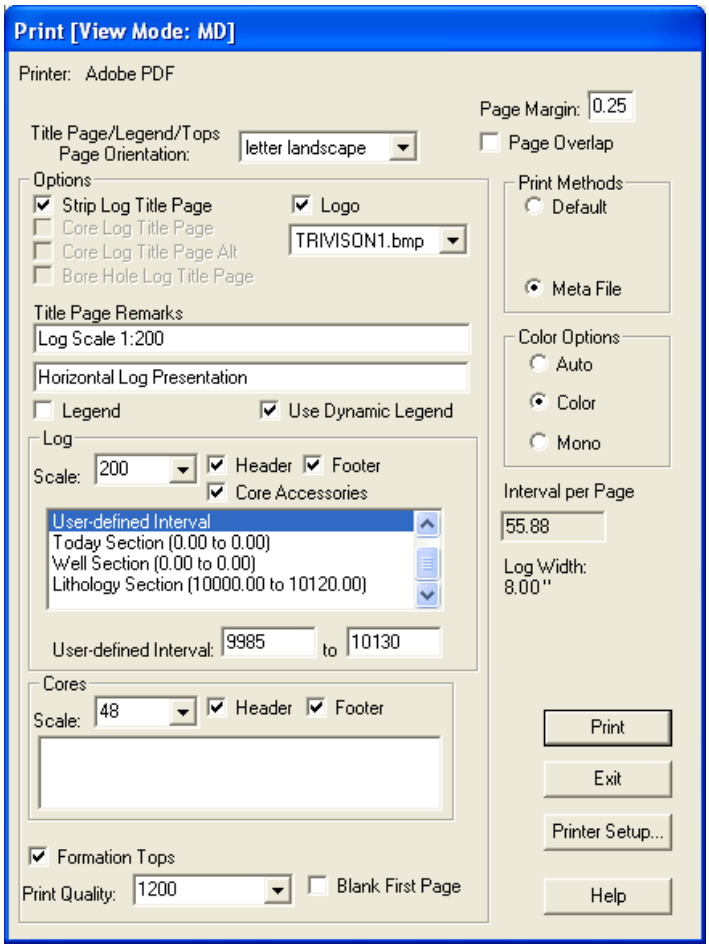
***** Your log should now look similar to the log shown below. *****



How to Print the Log

1.) Under the **File** menu, **click** on **Print Log** or **click** on the  **Print button** on the **Toolbar** to activate the **Print Log** window.

Note: The Title bar and all depths associated with the Print Log window are defaulted to the Depth View that Power*Core are in at the time of the activation of the Print Log window.



2.) **Select** the **letter landscape** paper orientation from the **Page Orientation drop box field** and the **Title Page**, **Legend**, and **Formation Tops** will automatically conform to the selected orientation.

Note: The letter or legal landscape or portrait settings selected from within the **Print Log** window will NOT override the paper orientation settings selected in the printer's **Properties** window. Therefore, you must also modify the paper orientation settings in your printer's **Properties** window to letter or legal landscape.

4.) Activate the **Dynamic Legend** check box (☑), if you wish to have the legend reflect only the symbols printed on the log or core portions of the printed intervals defined in the log and core portions of the print log window. Leave the Dynamic Legend unchecked if you wish to print out the entire list of symbols.

In the Log portion of the Print Log window

5.) **Select 1:200** from the scale drop box for the log to be printed out at.

6.) **Click** to activate the **Header and Footer** check boxes (☑) to print the track headers on the log.

7.) **Click** on **User Defined Section** and **type** in **9985 to 10130** in the appropriate fields to highlight it in the printing options selection box.

Note: The log itself must be displayed in whatever depth view you wish to print before you activate the print log window. To change the log to the desired format refer to depth view under the view pull down menu.

Page Margin The page margin field is available, primarily, when you are printing to Adobe Acrobat writer. When a numerical value in inches is typed into this field it will initiate a top and left margin for the templates (Title Page, Legend and Formation Tops) as well as a left margin for the main log.

Page Overlap Activate the **Page Overlap** check box( ) if you are printing on single sheets. This will force the printer to include an additional 1/4 inch of the log at the top and bottom of each page, so that you can cut-and-paste pages manually, if you so desire.

Print Methods…

Default Activating the **Default** radio button ( ) forces Power*Log / Curve / Core to use a **raster or bitmap graphic printing method.** This printing method is generally used with Laser printers but not exclusively so.

Meta File Activating the **Meta File** radio button ( ) forces Power*Log / Curve / Core to use the **meta file technology printing method**. This printing method was developed for the newer models of printers on the market today as well as using the Adobe Acrobat Distiller or pdf printing technology.

Color Options…

Auto Activating the Auto radio button ( ) forces Power*Log / Curve / Core to use the settings from the printer driver to printout the log.

Color Activating the Color radio button ( ) forces Power*Log / Curve / Core to override the printer driver settings and consequently Power*Log / Curve / Core assumes that you are using a color printer.

Mono Activating the Mono radio button ( ) forces Power*Log / Curve / Core to override the printer driver settings and consequently Power*Log / Curve / Core assumes that you are using a monochrome (black and white) printer.

Interval per page field indicates how many meters of log will fit on a page of selected paper size and orientation selected in the setup as well as what log scale you are printing at. This will help indicate to the user how many pages will be required by the print job.

8.) **Click** on the Printer Setup... **button** to activate the **Print Setup** window and confirm that the correct printer settings are in effect.

Note: If you are printing out logs in color, you must activate the **Diffusion** or **Error Diffusion** option normally found under **Graphics** in the **Properties** window for most printers.

9.) When you are ready to print your log, **click** on the Print **button**.

Note: If you do exit from the **Print Log** window, you will be asked if you wish to save the print settings. If you **click** on **Yes,** the program will remember every setting that you made to the **Print Log** window and then will default to those settings the next time you enter the **Print Log** window.

This concludes the Power*Curve™ Tutorial. If you need help with specific functions or operations, please use the Table of Contents in the Power*Suite™ User Manual to find the desired topic or use the Search function built into the Power*Curve™ On-line Help System.