POWER SUITE

2016 Addendum Manual

TRIVISION GEOSYSTEMS LTD.
The Intelligent Geological Software Solution
Suite 200, 638 – 11th Avenue S.W.
Calgary, Alberta T2R-0E2
Phone: (403) 777-9454
Website: www.powerlogger.com Email: info@powerlogger.com

Overview

Version 2016 Revisions

Added the ability to **Import Perforated Interval Data**

Added the ability to **Export Perforated Interval**

In the Well record we have added the ability to **Enter the Wells Surface Location Latitude and Longitude** in a formatted degrees minutes and seconds.

In the Well record we have added the ability to **Calculate** the **Wells Casing's Latitude and Longitude** from a measured depth if you have entered the Wells Surface Location in a formatted degrees minutes and seconds.

In the Well record we have added the ability to **Calculate** the **Wells Bottom Hole Location Latitude and Longitude** from a measured depth if you have entered the Wells Surface Location in a formatted degrees minutes and seconds.

We have added another layer to show the **Perforated Intervals** in Power*Log, Power*Curve and Power*Core.

Added a new Open Well Window in the Survey View Module.

Added the ability to designate the Township and Range numbers to the Plan and User defined views in the Survey View Module

Added the ability to define and display and calculate the distance from hard boundaries in the Plan and User defined views in the Survey View Module.

Ability to show the Power*Steer top and base of zones planes on the Survey View Modules User defined view.

Added the Power*Steer Module to our long list of products.

Added a Curve Fill Layer (Power*Steer Option on Single Curve) that allows you to create a visual effect with the Interpretive lithology coupled with the Power*Steer bedding dips and faults. This layer will allow you to automate the drafting on the Lithology along the Well Path in this track. If the Interpretive lithology has been drawn it will be reflected and directly correlated to the corresponding bedding dips and faults created in the Power*Steer application.

Wellsite Information Transfer Specification **(WITS)** for Digital Rig-Site Data is now available. Log on to the to the WITSML Server (with the correct permissions) and you can pole the server for all your curve and survey data along with any or all of the relevant data that has been entered into the Electronic Drilling Recorder (EDR). Imagine you can now get all this data into your database and displayed on all your logs without having to export from the server and then import into our application. Not quite real time as you have to set up a polling time but you can be as little as 1 minute behind the bit.

Table of Contents

File Menu – Import Menu - Perforations 5
Importing Perforated Intervals Data 5
Overview of the window. 6
Importing / Mapping of Perforated Intervals data. 6
How to Import Perforated Intervals with an Existing mapping file. 7
File Menu – Export Menu - Perforations 10
Edit Menu - Well 10
Surface Co-Ordinates Button: 11
Casing and Bottom Hole Co-Ordinates Buttons: 12
Curve Fill Layer (Power*Steer Option on Single Curve) 12
How to Set the Power*Steer Curve Fill options 12
Perforated Intervals Layer 13
Drawing Perforated Intervals in the Perforated Intervals Track / Layer. 13
Modifying Fill Types 14
Resizing Perforated Intervals 14
Mouse Pointer Method 14
Keypad Method 14
Deleting a single Perforated Interval 14
Deleting multiple Perforated Intervals 14
Survey View Module 15
How to Open a set of Surveys for a well. 15
DLS Example 16
NTS Example 17
No Survey System 18
Edit Menu - Properties 18
Overview of Properties Window 19
Display Setting Tab 19
Surface Coordinates Tab (Properties Window) 23
NTS Example 24
Power*Steer Module 24
Connecting to the Database 24
File Menu 25
Open Selection 25
Close Selection 25
Refresh Data Selection 25
Background Graphic Add Selection 26
Background Graphic Remove Selection 26
Import Selection 26
Export Log / Well 27
Export Segment Data 28
Export Surface or Zone Data 28
Print 30
Edit Menu 31
Redo 31
Undo 31
Calculate In / Out 31
View Menu 32
Measured Depth View 32
Toolbar 32
Status Bar 32
Go To Depth (Type Well) 32
Go To Depth (Well Path) 32
Type Well Track Depth Scrolling 32
Mouse Pointer Controls 33

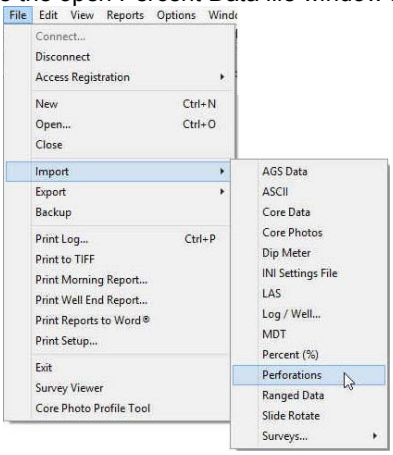
Mouse Roller Ball Control 33
Type Well Depth Scale Display Manipulation 33
Type Well Pane Right Click Options 33
Set Type Well Curve 33
Mapped Offset 33
Add Segment 34
Add the first Segment 34
Set Reference Point 34
Edit Reference Offset 35
Delete Reference Point 35
Add Zone 35
Delete Zone 36
Show All 36
General Properties 36
Curve Display Properties 36
Formation Display Properties 37
Zones Display Properties 38
Screen format Properties 38
Well Path MD/VS Gamma Ray Depth Scale Display Manipulation 40
Well Path TVD Scale manipulation 40
Mouse Pointer Controls 40
Mouse Roller Ball Control 40
Well Path MD/VS Gamma Ray Depth Manipulation 40
Mouse Pointer Controls 41
Mouse Roller Ball Control 41
Well Path Pane Right Click Options 41
Add Segment 41
Delete Segment 41
Change Azimuth 41
Set Well Path 41
Set Gamma 42
Overlay Curves 42
Segment Properties 43
General Properties 43
Curve Display Properties 43
Formation Display Properties 44
Zones Display Properties 45
Show / Hide Formation Top Names 46
Show / Hide Zone Names 46
Show / Hide Perforations 46
Show / Hide Zone Fill 47
Segments 47
Set Reference Point 48
Add the first Segment 49
Adding a second Segment. 49
Defining a Segment 49
Changing the bedding angle of a Segment 50
Changing the Strike Azimuth of a Segment. 50
Segment Data Visibility on the Type Well 50
Creating a fault 51
Extending or Decreasing the (MD / VS) size of a Segment 51
On the Type Well Pane 51
On the Well Path Pane 51
Power*WITS Module 52
Overview of Window 53
Connecting to the Server 54

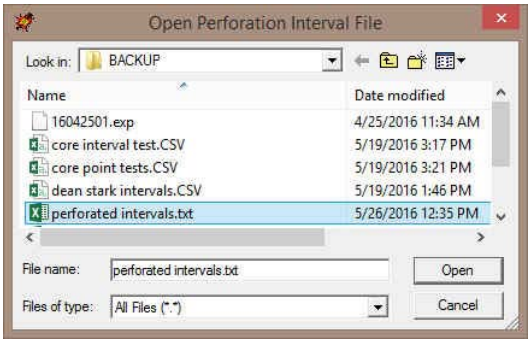
File Menu – Import Menu - Perforations

This method will allow the user to import ASCII, space, comma or tab delimited file formats into our database. We cannot import EXCEL or any other type of spreadsheet format. If the data comes that way you must resave it in another format before attempting to import the data.

Importing Perforated Intervals Data

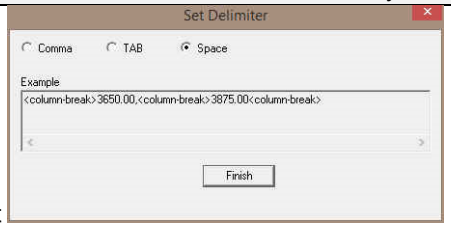
1. To access the Perforation Interval Data Import window, click on **Import** under **File** to activate the pop-out menu and then select **Perforations** or **click** on the  **Import Perforations button** on the **Import Toolbar**. This will activate the open Percent Data file window as shown below.

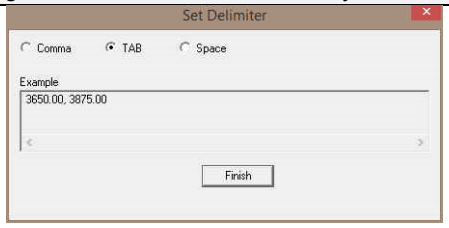




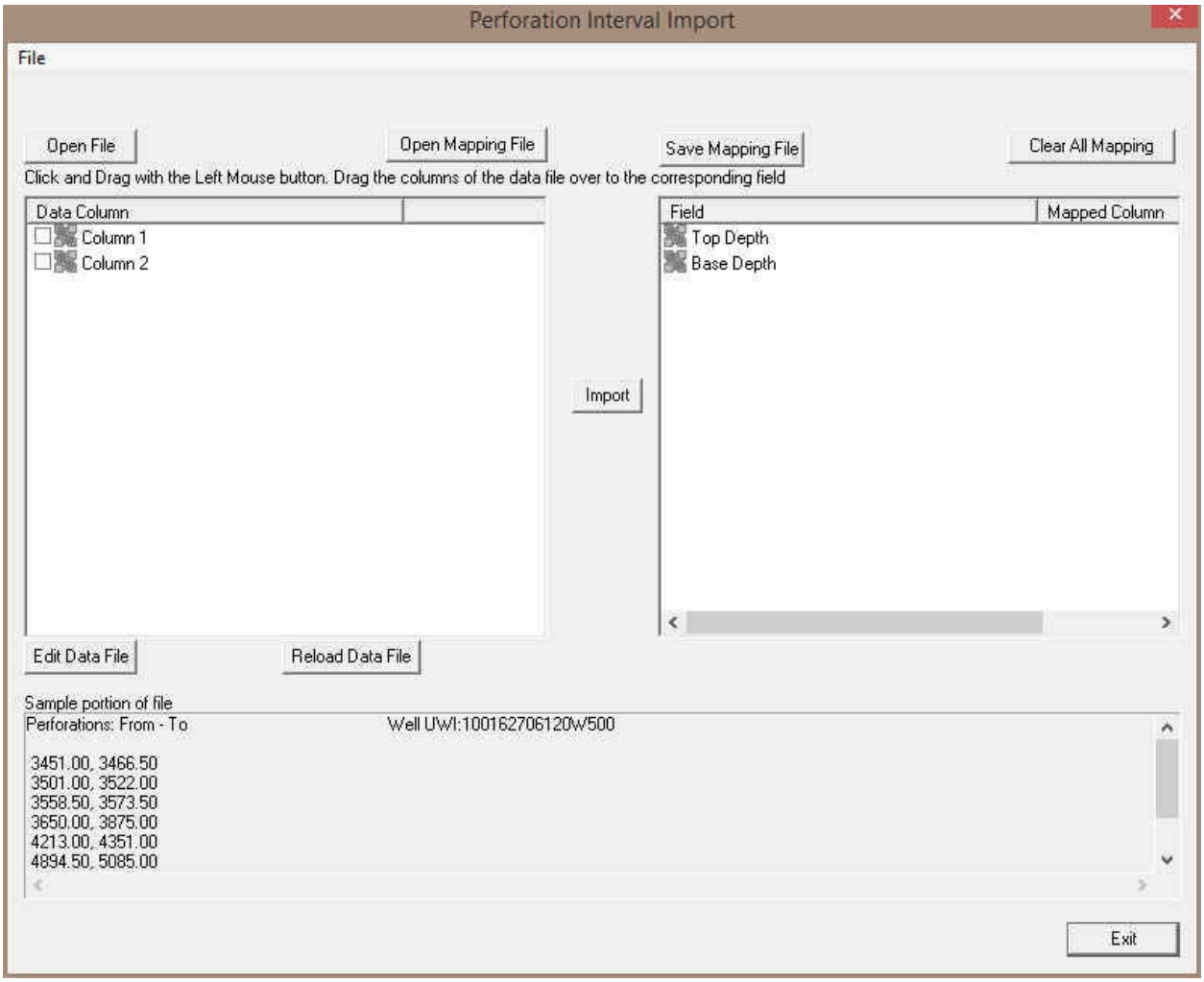
2. **Select the file** from the folder or drive with the corresponding navigational tools provided and either **double click** on the **file name** or **click once** and **click** on the Open **button**. This will activate the **Set delimiter** window as shown below.

N.B. The one on the left the delimiter is set correctly the one on the right the delimiter is set incorrectly.

Correct 

Not Correct 

3. Highlight the correct corresponding ◉ button beside Comma, TAB or Space delimiter (if shown correctly the Example should read <column-break> between the data columns. If you see this then **click** on the Finish **button** to close this window and activate the Perforated Intervals Import window shown below.



Overview of the window.

The **left hand side** of the **Perforated Intervals Import window** allows the user to view the different data columns represented in the file numbered in ascending order.
The **right hand side** of the **Perforated Intervals Import window** allows the user to see the data fields associated with the Perforated Intervals supplied by Power*Suite.

Open File **Button** allows the user to open another Perforated Intervals data file after the Import window has been opened.

Open Mapping File **Button** allows the user to utilize the mapping file saved from above to remap data columns in the Perforated Intervals file to database fields in the Perforated Intervals table in the database**.**

Save Mapping File **Button** allows the user to save the mapping between data columns in the Perforated Intervals file to database fields in the Perforated Intervals table in the database. Once the initial mapping has been done and saved, the user can utilize this mapping file so you do not have to repeat the clicking of dragging of data columns to database fields in the Perforated Intervals table again and again if you do not want to.

Clear All Mapping **Button** allows the user to undo all the mapping from data columns in the slide data file to database fields in the Perforated Intervals table that was done either by dragging or by utilizing the mapping file.

Edit Data File **Button** allows the user to open the file in Word pad to look at the file format and possibly make changes to the data file prior to importing the files data.

Reload Data File **Button** reloads the data into the sample portion of the file window.

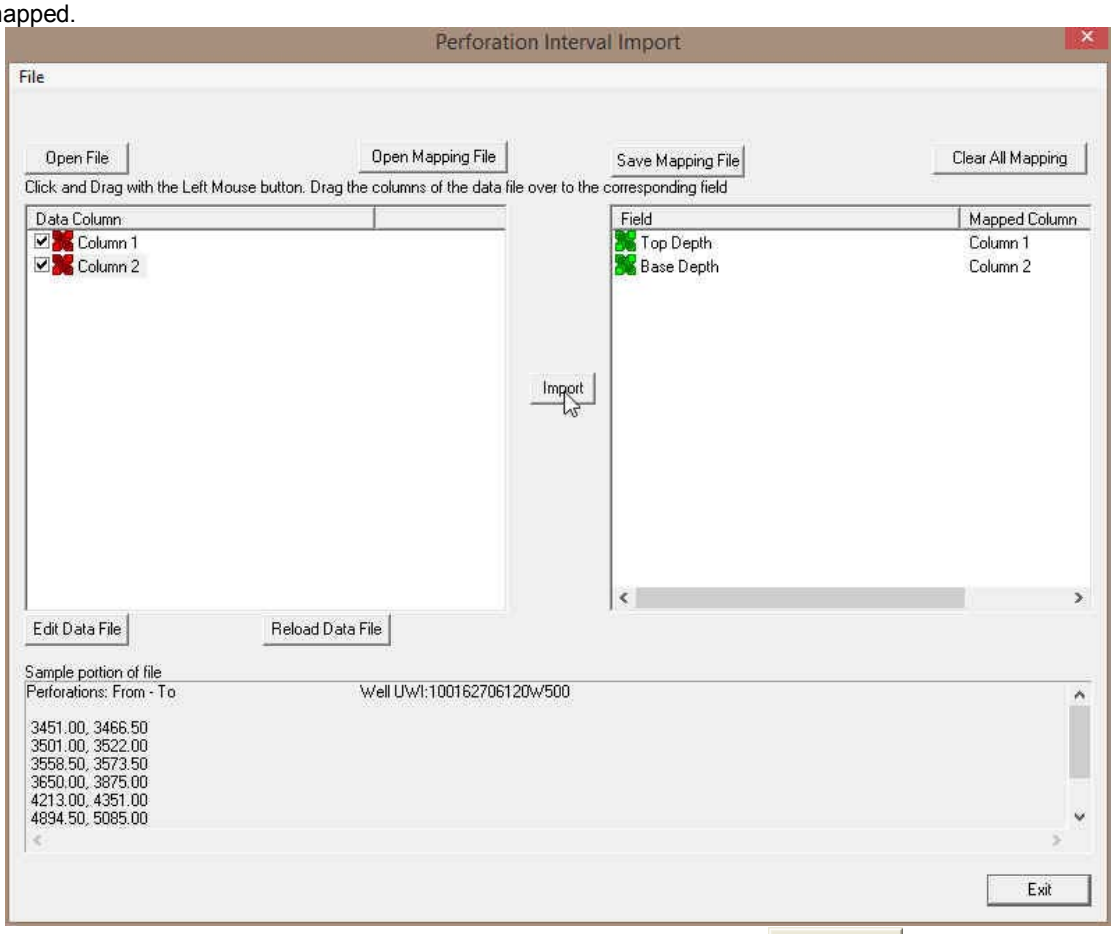
Importing / Mapping of Perforated Intervals data.

A Perforated Intervals Layer should already have been added through the Log configuration builder so that the user has a Perforated Intervals type layer to import to. Otherwise it would be impossible to import any data.

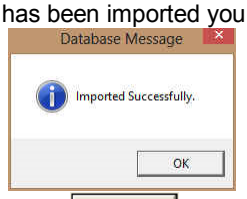
1. **On the left side** of the window **Click and drag** the **data column** you wish to import to the corresponding **table field on the right side** and release it when the field becomes highlighted. If mapped the field will turn green on the right and red on the left.

N.B. The user can **Right click** on the **Field** to remove the mapping.

2. Repeat the Clicking and Dragging of data columns to fields until all the columns that you want have been mapped.



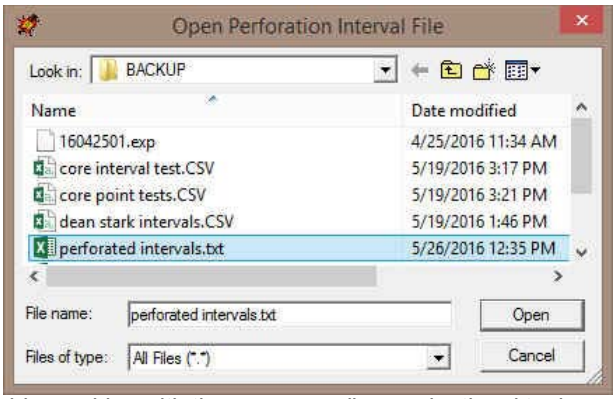
3. The user can save this mapping procedure at this time by **clicking** on the Save Mapping File **button** and giving this procedure a file name and folder to be used again at a later date when you would have to import this data again.
4. **Click** on the Import **button**. After the data has been imported you will be prompted with a system message.



5. **Acknowledge** the Import message. **Click** on the OK **button** and then click on the to exit or **click** on the Exit **button** to close the Window.

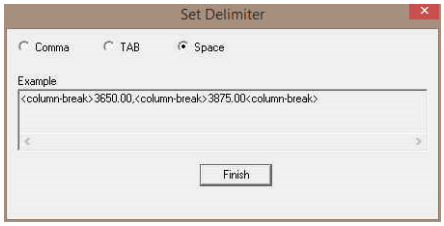
How to Import Perforated Intervals with an Existing mapping file.

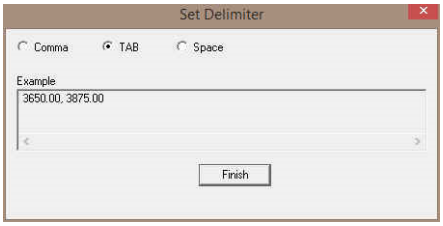
1. To access the Perforated Intervals Import window, click on **Import** under **File** to activate the pop-out menu and then select **Perforations** or **click** on the **button** on the **Import Toolbar**. This will activate the Open Perforated Intervals file window as shown below.



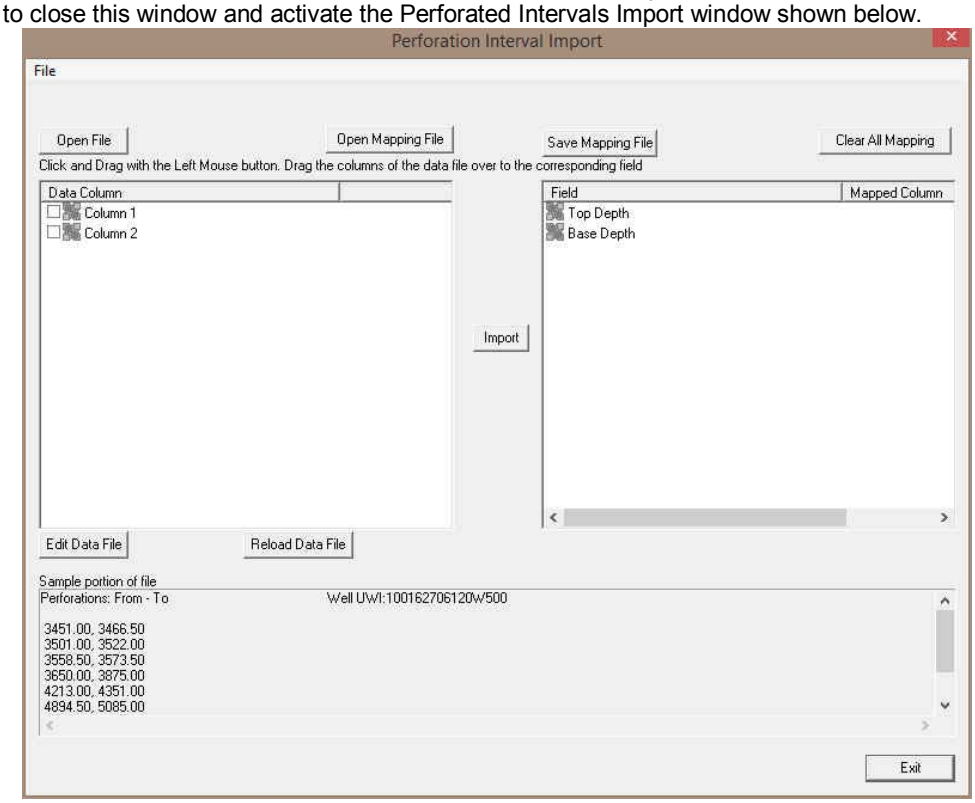
2. **Select the file** from the folder or drive with the corresponding navigational tools provided and either **double click** on the **file name** or **click once** and **click** on the Open **button**. This will activate the **Set delimiter** window as shown below.

N.B. The one on the left the delimiter is set correctly the one on the right the delimiter is set incorrectly.

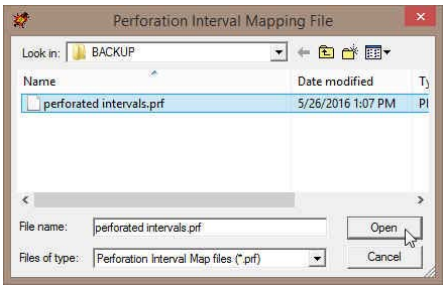
Correct 

Not Correct 

3. Highlight the correct corresponding button beside Comma, TAB or Space delimiter (if shown correctly the Example should read <column-break> between the data columns. If you see this then **click** on the Finish **button** to close this window and activate the Perforated Intervals Import window shown below.



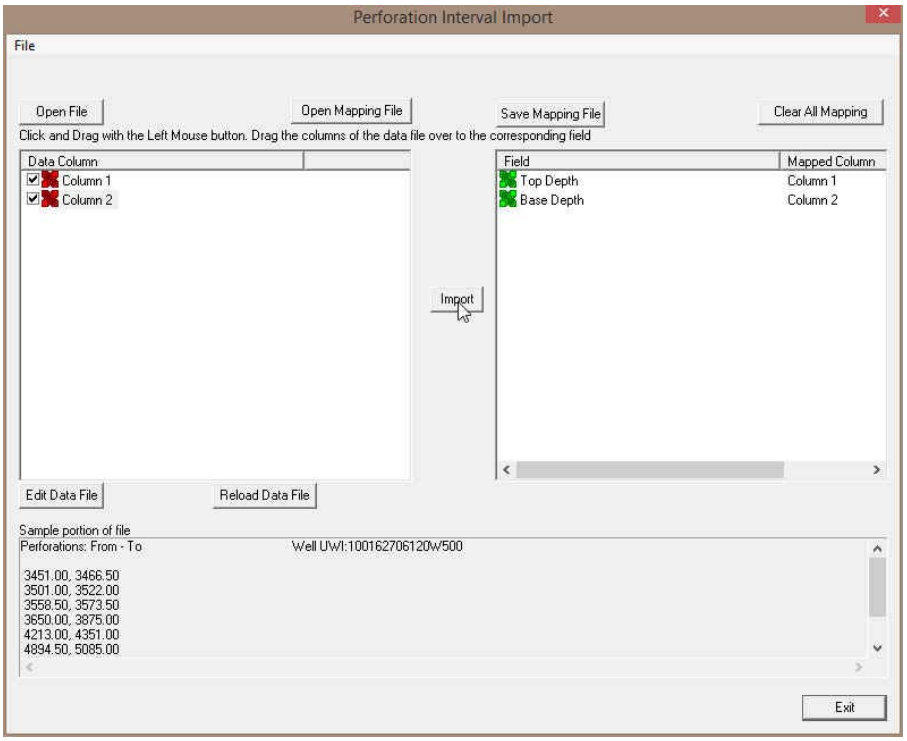
4. In the upper portion of the window **click** on the Open Mapping File **button**. This will activate an open file window.



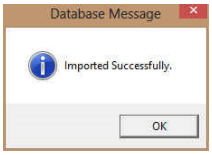
5. Select the mapping file with the ***.prf** saved from previous imports of similar Perforated Intervals files to your percent table by highlighting the file and **clicking** on the Open **button** or double clicking on the file name. Once the file has been opened it will refresh with the current mapping configuration as shown below.

N.B. The user can **Right click** on the **Field** to remove the mapping.

6. The user can map more data columns on the left side of the window **by Clicking and dragging** the **column** you wish to import to the **field** on the right side and release it when the layer becomes highlighted.



7. **Click** on the Import **button**. After the data has been imported you will be prompted with a system message.



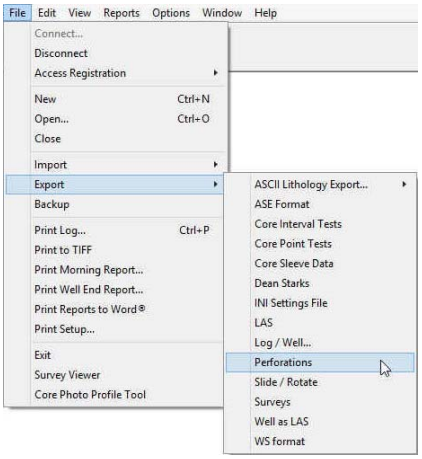
8. **Acknowledge** the Import message. **Click** on the OK **button** and then click on the to exit or **click** on the Exit **button** to close the Window.

File Menu – Export Menu - Perforations

This utility exports your Perforation Intervals. This data can be exported into 3 file formats which can then be used by other applications.

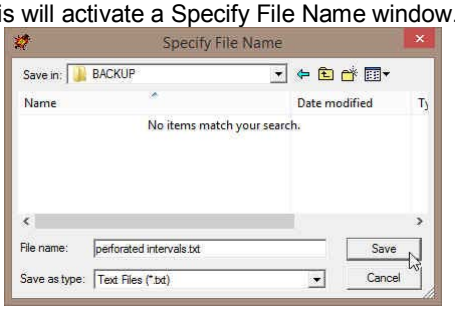
Exporting Perforated Interval Data

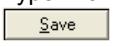
To access the Export Perforated Interval Data window, click on **Export** under **File** to activate the pop-out menu and then select **Perforations**. You can also select the  Icon on the Export toolbar. This will activate the Specify file name window.



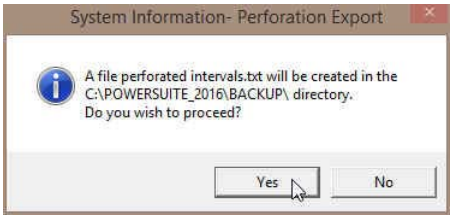
1. **Click** on the **radio button** next to the type of the file that you would like to create.
2. **Click** on the 

button. This will activate a Specify File Name window.



3. Type in a file name and select the drive and directory you wish the survey to be exported to. Then, **click** on the 

button. This will activate the System Information window asking you if you wish to proceed.



4. **Click** on the 

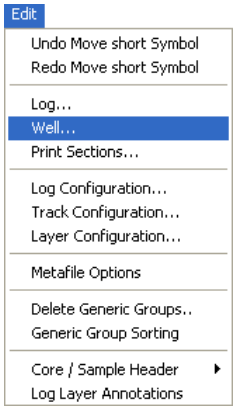
button. This will create the file.

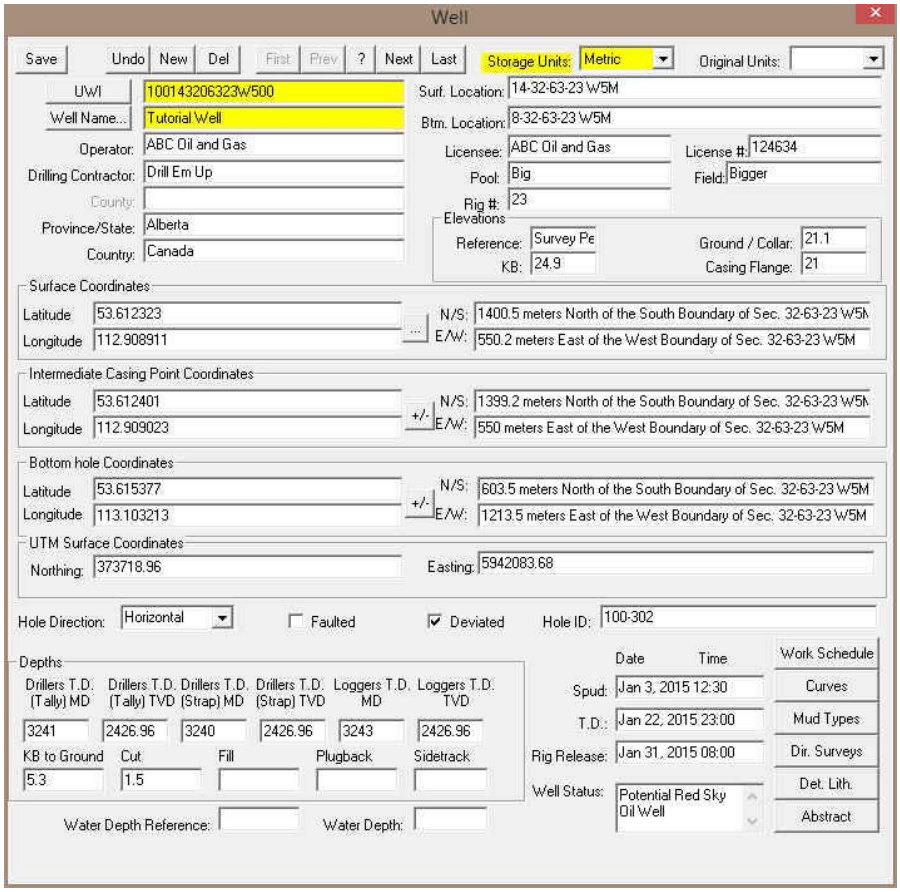
Edit Menu - Well

Lets you edit existing wells, and delete a well. The majority of this information is usually filled in at the start of a well, but should be updated with new information at the completion of a well.

The information associated with each well is entered into the Well window, along with the well's UWI (Unique Well Identifier). Note that each well and the information that it contains must be associated with a UWI (Unique Well Identifier) in order to distinguish it from the other wells residing within the Power*Log / Core & Curve database. However, the only way in which a well's information can then be displayed is by associating it with a log and then having that log open.

1. Click on Well, under the Edit menu selection, to activate the Well window.





Note: The well window has been filled in to give you an idea of how to complete the different fields.

2. Change or add to the different fields by typing in the fields. Certain fields have restrictions to what data they accept. If an error occurs while saving refer to the status bar for instructions.
3. Click on the Save button or press ALT-S and the well data that you have just entered will be saved to the database.

Note: The Well Name field should be highlighted after you have clicked on the Save button or press ALT-S, as an indication of a properly saved record. Some of the fields in the Edit 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 and the problem will be displayed on the Status Bar, at the lower left hand corner of your screen. Remember to save your work again, after the problem has been rectified.

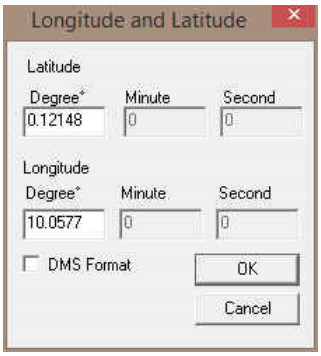
4. If the record has been successfully saved, click on the Exit button, when prompted with the Shortcut Options system window.

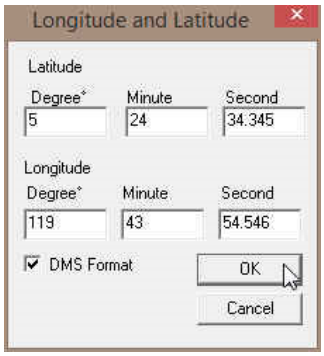
Surface Co-Ordinates Button:

The ... Surface Co-Ordinates button allows the user to input the Longitude and Latitude for the surface location in either pure degrees or degrees minutes and seconds. If you fill this window in we can then calculate the casing and bottom hole co-ordinates with only a depth field to be filled in.

1. **Click** on **Well**, under **Edit**, to activate the **Well** window and it will default to the active well.
2. **Click** on the ... surface co-ordinates **button** to display the **Latitude and Longitude** window.
3. Then, **type** in the wells surface co-ordinates in **Degrees for Latitude and Longitude**.
4. Or **click** on the ☑ DMS Format check box to enter the wells surface co-ordinates in **Degrees for Latitude and Longitude**.

5. **Click** on the OK **button**.

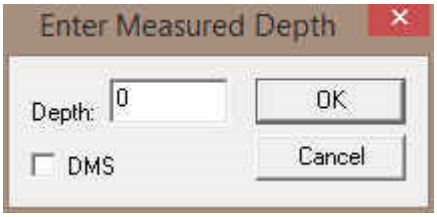




Casing and Bottom Hole Co-Ordinates Buttons:

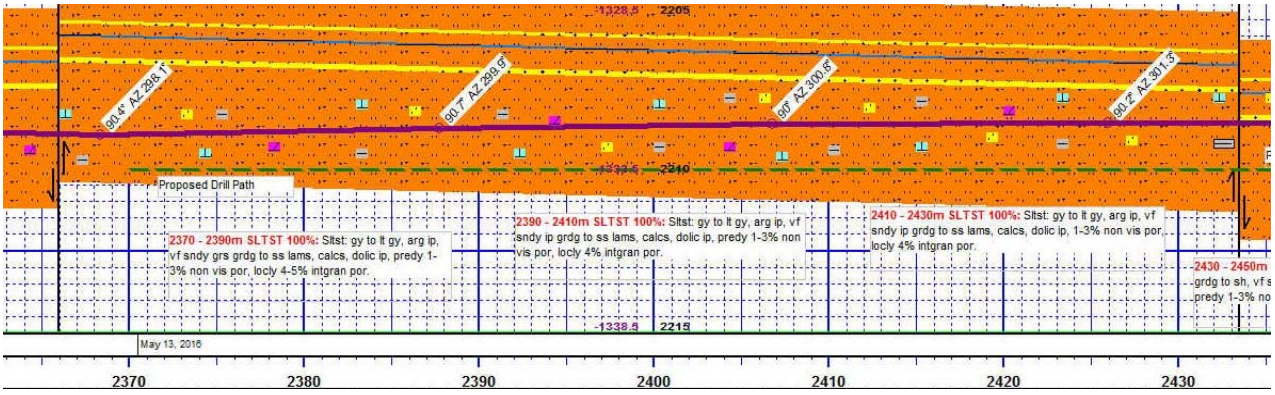
The +/- Casing and bottom Hole Co-Ordinates buttons allows the system to calculate these co-ordinates from a depth entry as long as the user input the Longitude and Latitude for the surface location in either pure degrees or degrees minutes and seconds.

1. **Click** on **Well**, under **Edit**, to activate the **Well** window and it will default to the active well.
2. **Click** on the +/- beside the Casing or Bottom Hole co-ordinates **button** to display the **Enter Measured Depth** window.
3. Then, **type** in the measured depth of the wells casing or bottom hole.
4. **Click** on the DMS Format check box to display the casing or bottom hole co-ordinates in **Degrees, Minutes and seconds for Latitude and Longitude**.
5. **Click** on the OK **button**.



Curve Fill Layer (Power*Steer Option on Single Curve)

In Power*Suite, this layer type allows you to create a visual effect with the Interpretive lithology coupled with the Power*Steer bedding dips and faults. This layer will allow you to automate the drafting on the Lithology along the Well Path in this track. If the Interpretive lithology has been drawn it will be reflected and directly correlated to the corresponding bedding dips and faults created in the Power*Steer application. It has been designed to take the interpretive lithology drawn and fill in the Interpretation for the Horizontal (Power*Curve) application. An example is shown below.



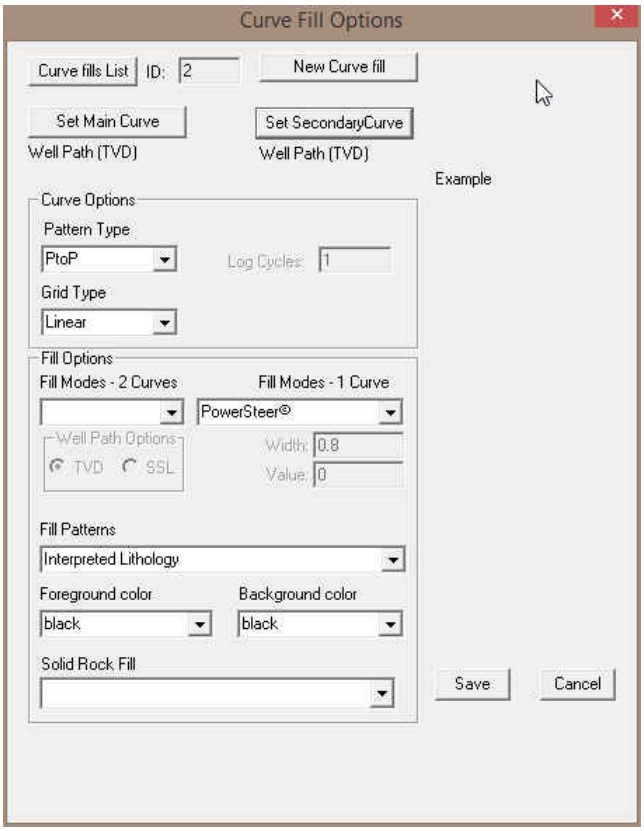
How to Set the Power*Steer Curve Fill options

You will need the Well Path (TVD) curve available for the user to be able to fill in the options correctly. The easiest way to populate the Well Path (TVD) curve with digits would be by calculating the survey points and updating the well path curve with the digital data. *Without actual survey data generating the well path curve this layer will not work correctly.*

Once the curve fill layer has been added to your log the user can now utilize the curve fill layer. To set the Curve Fill Options the user must first make the Curve Fill Layer active. To do so the user must click on a track containing the

Curve Fill layer and then selecting the given Curve Fill layer from the Layer Selection List field at the far left of the Selection Bar.

1. Double click anywhere within the Curve Fill or layer to activate the Curve Fill Options window.
2. Click on the Set Main Curve button. This will activate a list of curves associated with this well.
3. Click on the Well Path curve name to use 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 (TVD) curve that has been generated by the survey data. 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.

1. Click on the Pattern Type down arrow and select the correct curve pattern for the main curve. The default is PtoP (Point to Point).
2. Click on the Grid Type down arrow and select the correct curve grid type for the main curve. The default is Linear.

Fill Options Portion of the Window (1 Curve)

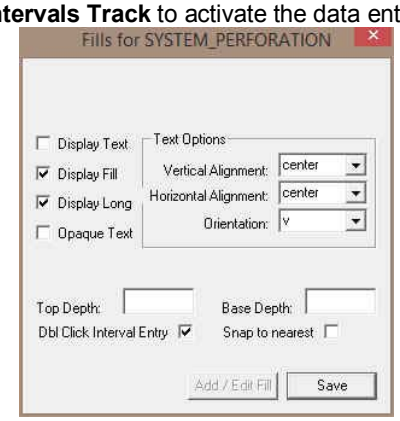
3. Click on the Fill Modes – 1 Curve down arrow and select the Power*Steer from these options.
4. Click on the Fill Patterns down arrow and select Interpretive Lithology.
5. Click on the Save button in the Curve fill Options window. The window will close and the changes you have made will be reflected on the layer.

Perforated Intervals Layer

This layer allows the user to add perforated interval data to the database. These perforated intervals can be displayed in Power*Log, Power*Core, Power*Curve and Power*Steer. The user can define their own intervals either through click and drag method or typing in the intervals. The user can also import them.

Drawing Perforated Intervals in the Perforated Intervals Track / Layer.

1. **Double click** on the **Perforated Intervals Track** to activate the data entry window shown below.



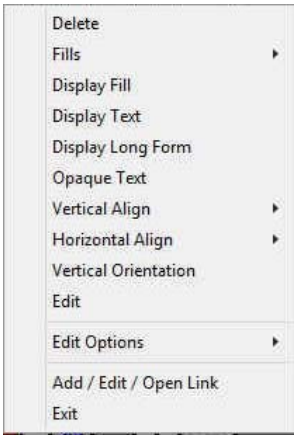
2. Define the desired interval by **clicking and dragging** the mouse pointer within the Perforated Intervals track. The interval will be drawn accordingly.
3. The user can also **type in the depths** in the builder and then **click** on the Save **button**.
4. **Double Click** within an existing rock type interval in the Perforated Intervals layer with the Dbl Click Interval Entry activated and the entire interval will be filled in with the attributes that have been entered into the Fills window.

5. **Click and drag** the mouse on the track / layer close to an existing Fill (either above or below in the same column) with the Snap To Nearest activated and there will be no spaces between the fills. **Remember** you have to be within ¼" of the mouse pointer or screen accuracy from the previous symbol to have the snap to take effect.

Note: Measured Depths can be viewed within the mouse pointer display box 1222.80 1224.80, situated to the right of the mouse pointer.
Also, while dragging the mouse, the user must start and stay within the confines of the track / layer they are working on. If you stray outside, the interval will start flickering and will not be drawn.

Modifying Fill Types

To modify the display on the track the user can right click on the fill and select one of these editing options.



Display Fill – Displays the color of the fill interval.
Display Text – Displays the name Perforation or P.
Display Long- Displays **Perforation** within the fill interval. If unchecked, displays only **P** within the fill interval.
Opaque Text – Displays the white frame around the name of the fill interval for a better visibility.
Text Options - Allows the user to determine how they want the text to be aligned and oriented in the Perforated interval.
Fill Color – The Layer Configuration Display tab foreground Color will change the color from default black to any color you pick

Resizing Perforated Intervals

Mouse Pointer Method

1. To resize an existing fills **hold** your **Ctrl Key down** on your keypad and **move mouse pointer over the end part of the interval** until it turns into a double arrow ↕.
2. **Click and drag** to a new depth. Remember you cannot overwrite existing intervals.

Keypad Method

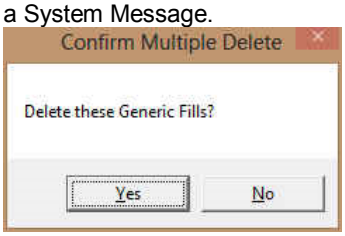
1. **Click** on the **perforated Interval** to be resized so that it goes into the builder.
2. **Type** in the **new top OR base depth** into the builder.
3. **Click** on the Save **button**

Deleting a single Perforated Interval

1. **Double Click** on the **Perforated Interval Layer** to activate the builder.
2. **Right click** on the **interval** you wish to delete and **select delete** from the pop out menu.
3. **Click** on the **Close button** in the upper right hand corner of the builder. This will close down the Environment builder window.

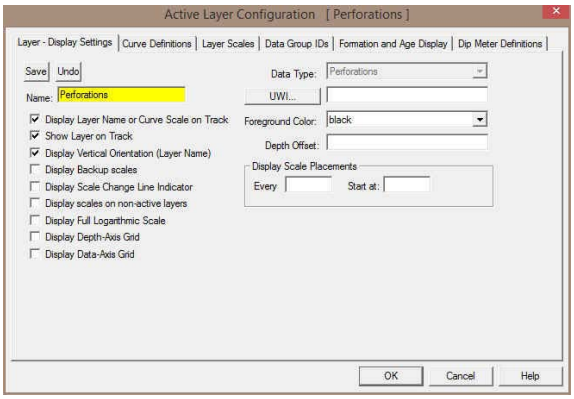
Deleting multiple Perforated Intervals

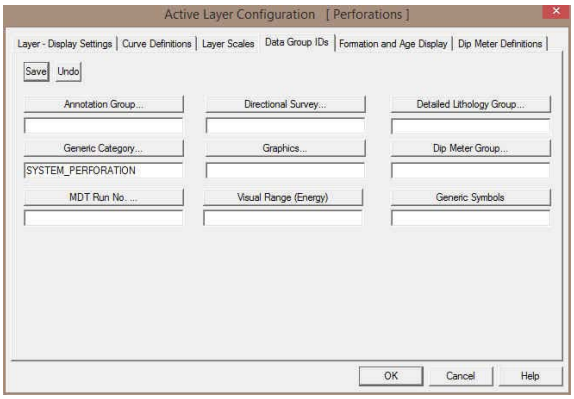
1. **Double Click** on the **Perforated Interval Layer** to activate the builder.
2. **Hold the SHIFT Key down** and **click and drag an area** within the Perforated Interval Layer and **then let go** of the shift and mouse button to activate a System Message.



3. **Click** on the Yes **button** and the corresponding Generic Category fills will be deleted.
4. **Click** on the **Close button** in the upper right hand corner of the builder. This will close down the Environment builder window.

Note: Every type of layer in **Power*Log, Power*Core and Power*Curve** has a **Data Type** classification. The default settings for the **Perforated Intervals** are shown below. To access this window, click on the **Layer Configuration button** on the **Toolbar**, when the **Perforated Interval** layer is active.

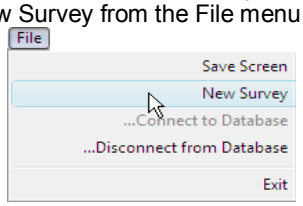


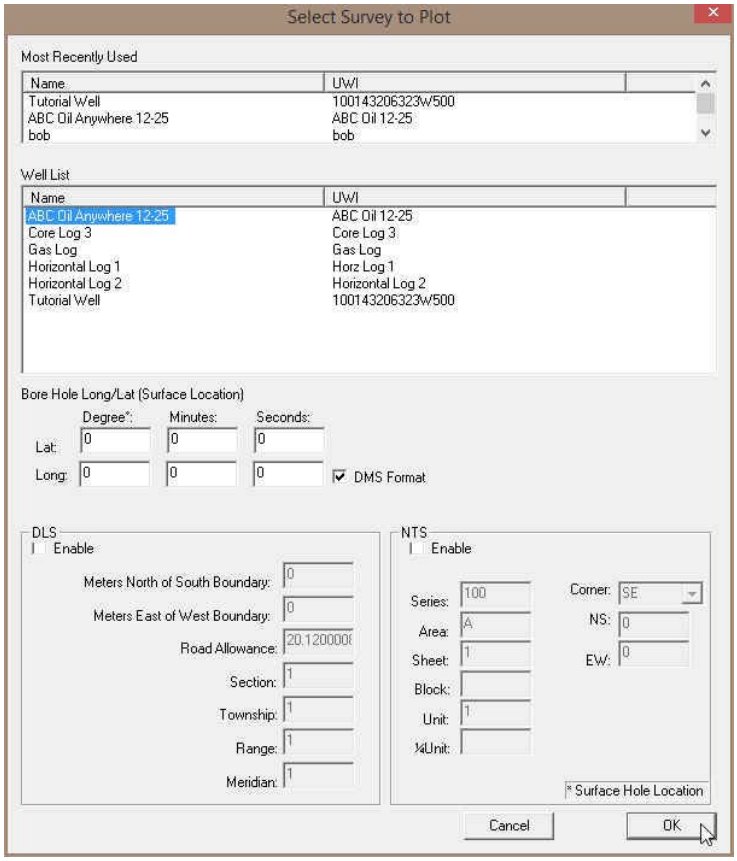


Survey View Module

How to Open a set of Surveys for a well.

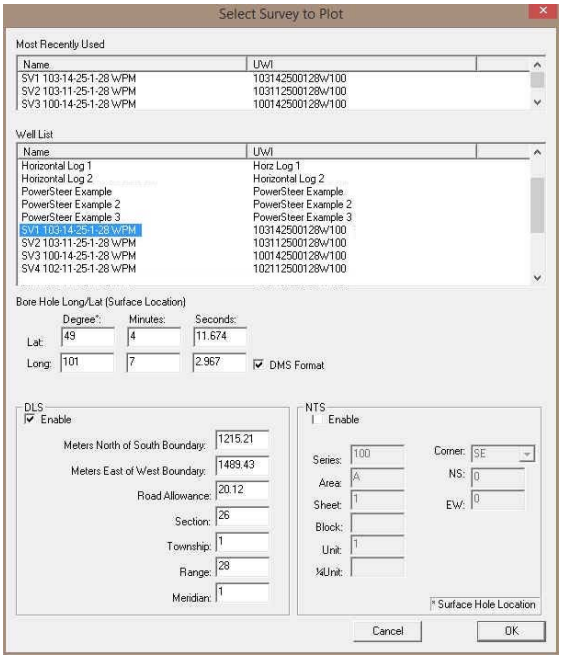
1. This will activate the survey view window shown above. Click on the New Survey button on the toolbar or click on New Survey from the File menu selection to activate the Select Survey to Plot window.

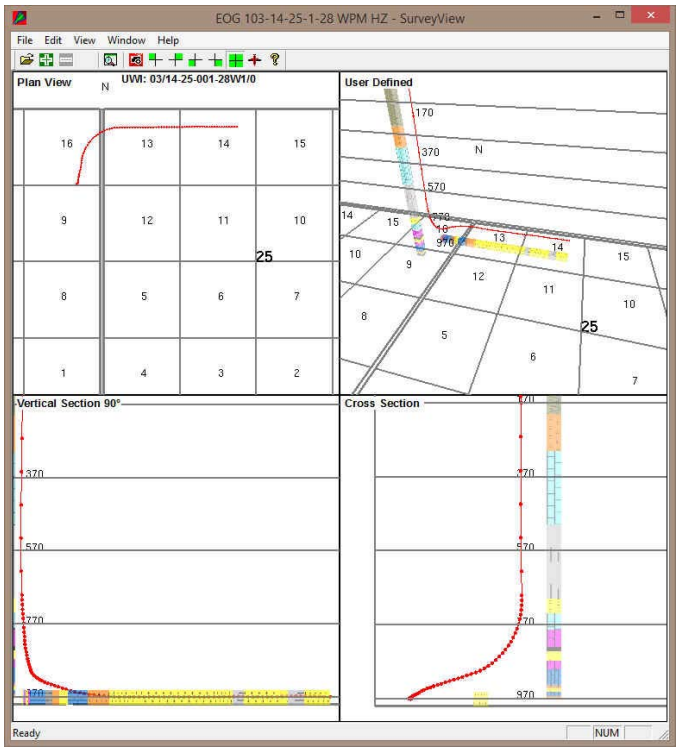




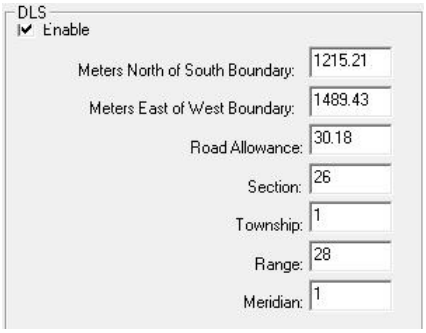
2. **Highlight** the **Well Name** you wish to open by highlighting it with the mouse pointer**.**
3. If you have **hard boundaries** that you wish to stay away from, or you have **multiple wells** you wish to show on the survey plots you will have to **fill in the surface co-ordinates for the latitude and longitude**.
4. Then you will want to **enable the check box** and fill in the **DLS** coordinates or the **NTS** values as indicated in the window shown below. If your survey system does not fall into these survey systems then leave them unchecked and your well will be in the centre of a generic grid system as viewed in the Plan and user defined views.
5. Then **click** on the OK **button** to activate the survey view window with your surveys from this well.

DLS Example





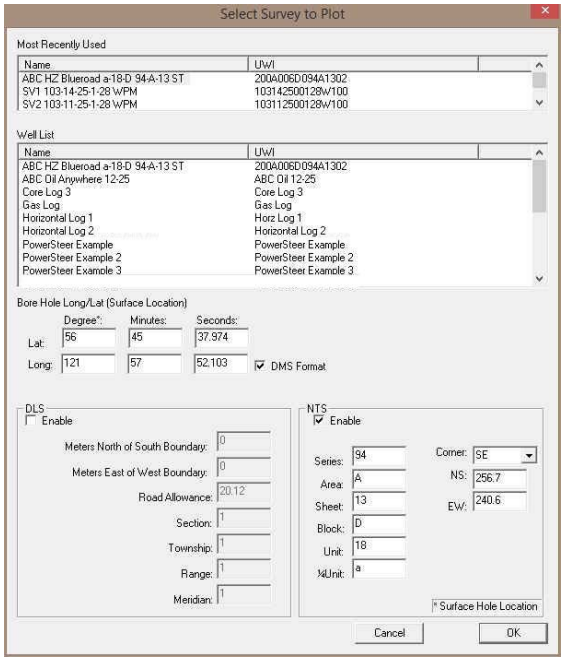
The surface hole Longitude and Latitude fields to not have to be filled in if this is the first well to plot in the survey view application. Any subsequent well data to be displayed the user must fill in the surface hole well co-ordinates for both Latitude and Longitude in degrees minutes and seconds and we will utilize these fields to get subsequent well data onto the plot. If you enable the check box beside the DLS your Plan view and User-defined view will have the DLS grid system marked. The DLS Survey breakdown would be as follows for this example location 09-26-001-28 W1M. Where the 09 is the Location, 26 is the Section, 001 is the township and 28 is the range and the 1 is the meridian

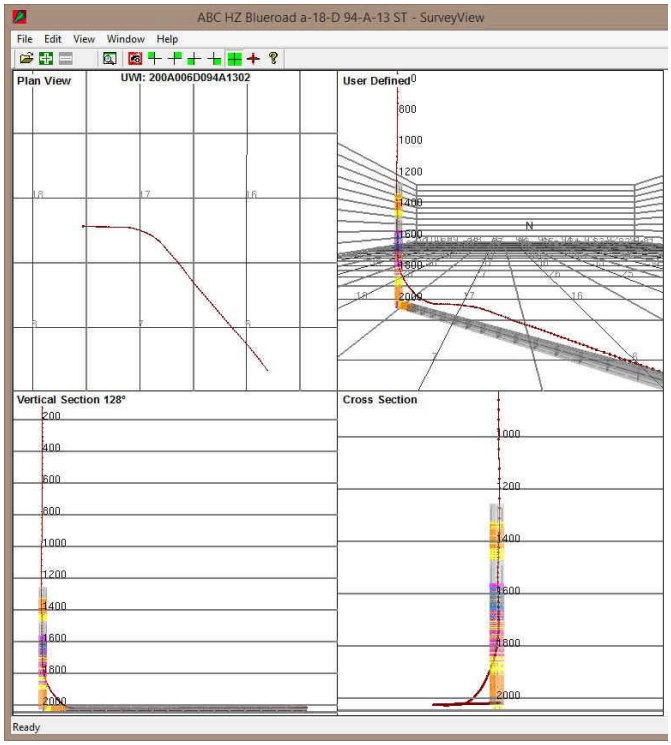


The Meters North of the South Boundary must be just that. If your survey plat gives you from the north boundary, then you have to subtract that number from 1,609.34 m to give you the meters North of South Boundary. The Meters East of the West Boundary must be just that. If your survey plat gives you from the east boundary, then you have to subtract that number from 1,609.34 m to give you the meters East of West Boundary. The Road Allowance field (these are dead areas in the DLS grid system) is traditionally the default value (20.12) but can in some places (30.18). The Township field (Values from 1 to 126) depends on the well location. It is necessary because we have to accommodate for correction lines if your well crosses those on the plan or user defined views. The Section field (Values 1-36) depends on the well location. It is necessary because we have to accommodate for road allowances if your well crosses those on the plan or user defined views

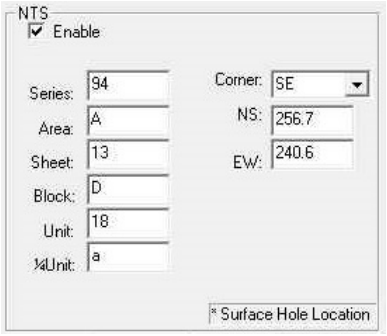
6. Click on the OK button. If done correctly and you have sufficient surveys you should get the survey window filled in with the four (4) views of your well bore. You should see something similar to one of the Survey window shown above.

NTS Example





If you enable the check box beside the NTS your Plan view and User-defined view will have the NTS grid system marked.
Below is an example of the NTS survey system location. Remember we are dealing with the surface location. a-18-D / 94-A-13 whereas a is the ¼ Unit, 18 is the Unit, D is the block, 94 is the series, A is the Area and 13 is the sheet.

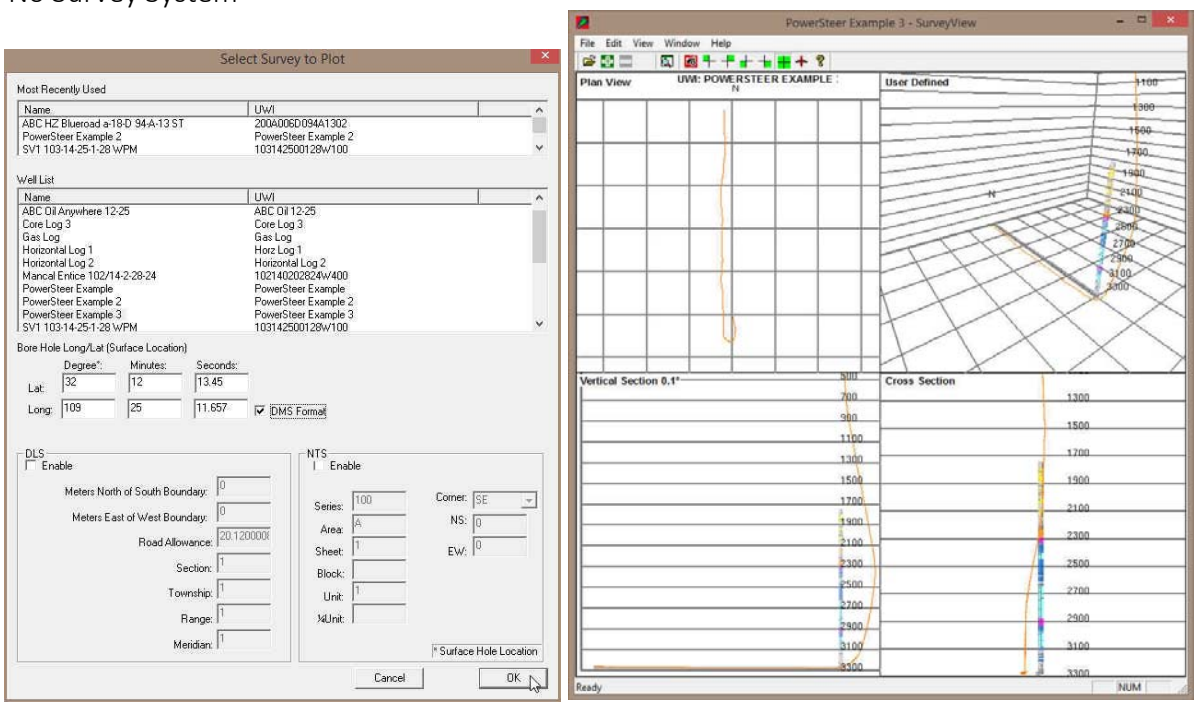


Fill in the surface location fields from the surface location given to you in the survey plat. In this NTS system we can use any corner for the measurements on the surface location but you must pick one from the drop box Then fill in the Meters from the North / South Boundary. Then fill in the Meters from the East / West Boundary. If you are adding multiple wells then you must also fill the surface hole Longitude and Latitude fields to not have to be filled in if this is the first well to plot in the survey view application. Any subsequent well data to be displayed the user must fill in the surface hole well co-ordinates for both Latitude and Longitude in degrees minutes and seconds and we will utilize these fields to get subsequent well data onto the plot.

Fill in the surface location fields from the surface location given to you in the survey plat. In this NTS system we can use any corner for the measurements on the surface location but you must pick one from the drop box Then fill in the Meters from the North / South Boundary. Then fill in the Meters from the East / West Boundary. If you are adding multiple wells then you must also fill the surface hole Longitude and Latitude fields to not have to be filled in if this is the first well to plot in the survey view application. Any subsequent well data to be displayed the user must fill in the surface hole well co-ordinates for both Latitude and Longitude in degrees minutes and seconds and we will utilize these fields to get subsequent well data onto the plot.

3. Click on the OK button. If done correctly and you have sufficient surveys you should get the survey window filled in with the four (4) views of your well bore. You should see something similar to one of the Survey window shown above.

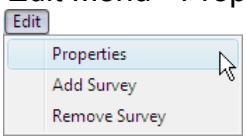
No Survey System



If you do not enable the check boxes beside the DLS or NTS your Plan view and User-defined view will have a generic grid system marked and your well centre will be right in the middle of the plot.

3. Click on the OK button. If done correctly and you have sufficient surveys you should get the survey window filled in with the four (4) views of your well bore. You should see something similar to one of the Survey window shown above.

Edit Menu - Properties

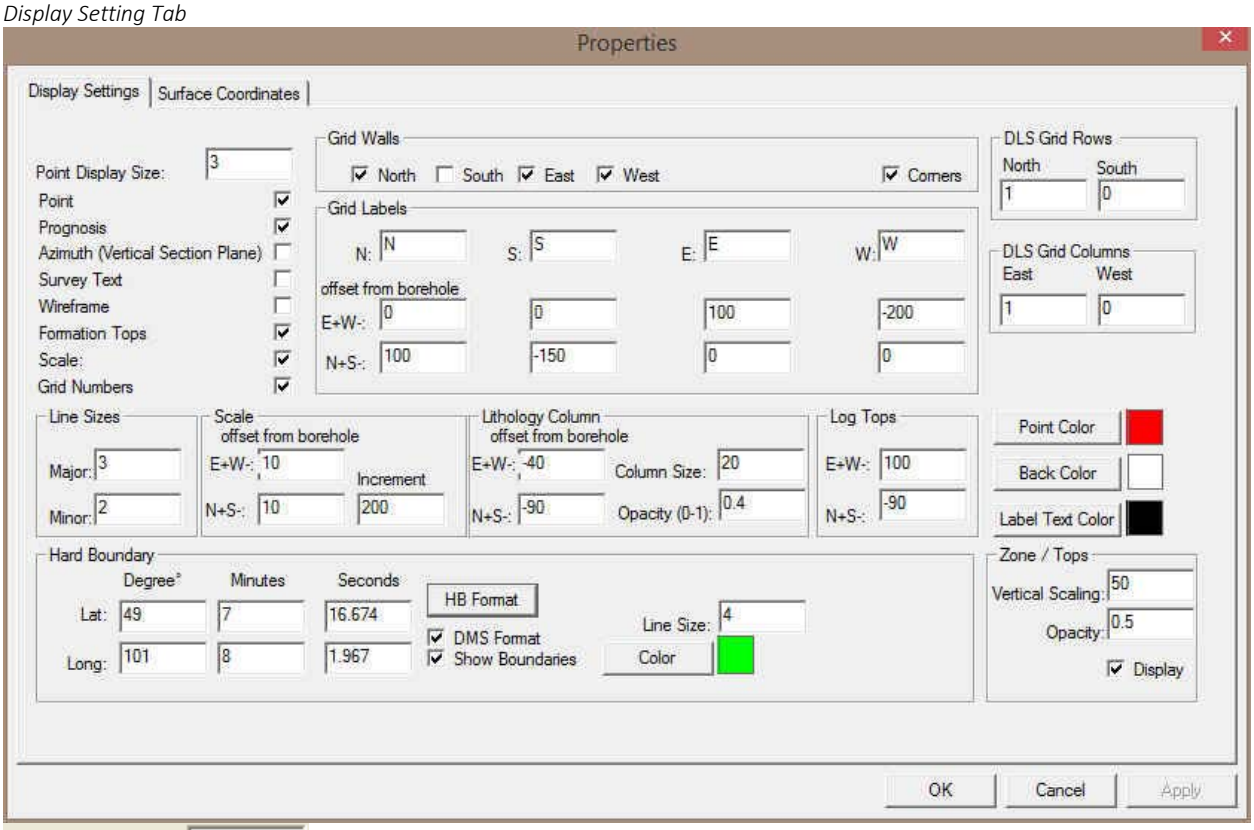


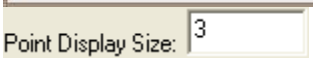
The Properties menu item allows the user to customize the look of the views. There is something to note here that if you make changes to one view they all change so beware.

1. Click on the Properties selection under the edit pull down menu or click on the Properties icon on the tool bar. Another way to activate this menu is to right click on the view and select the properties option from the pop out menu. This will activate the edit window for the survey view application as shown on the next page.

Overview of Properties Window

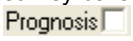
Display Setting Tab





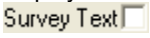
The **Point Display Size** setting allows the user to define the size of the survey points in the survey view displays. If the Point Display is not checked, it will also control the thickness of the line drawn to represent the well path.

The display **Point** check box changes the display from survey point balls with a thin line connecting the survey balls to a solid line view.



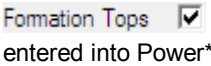
The display **Prognosis** check box setting turns on/off the set of surveys that made up the original prognosis and displays that information. These surveys have to be entered into the Prognosis portion of the survey report in our main applications (Log, Curve and Core) and then calculated.

The display **Azimuth** check box allows the user to turn on/off the target azimuth of the well that has to be entered into the Survey Report window. Ultimately, the master survey group controls this display.

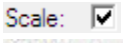


The display **Survey Text** setting turns on/off survey indicators on the **Plan view only** and these indicators illustrate every 10th survey point in the Master survey group.

The display **Wireframe** setting changes the survey point balls from a solid color to a wire frame symbol.

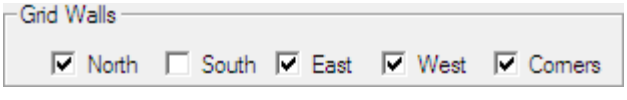


The display Formation tops check box will turn on/off the ability to display the Formation tops entered into Power*Log / Curve or Core and will display the Log / Sample or Prognosed tops as indicated in the Formation tops window.



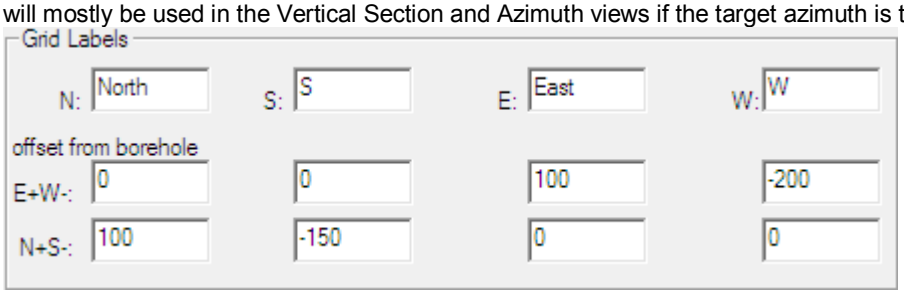
The scale check box will turn on/off the ability to display the scale

The grid numbers check box will turn on/off the section numerical displays on the plan and user defined views.

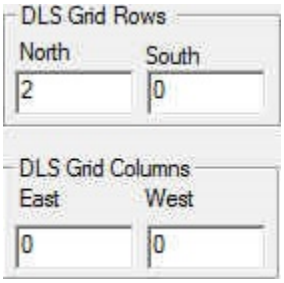


The **Grid Walls** enables the user to turn on/off the exterior walls of the grid system. These walls are displayed in three (3) of the views. These walls can be displayed in the User-defined, Target azimuth and Cross section views. The walls increment is defined by the scale increment of the window.

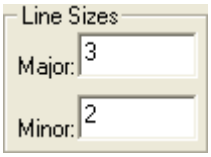
The corners check box turns on/off the corners connecting the grid walls. The ability to turn off the corners will mostly be used in the Vertical Section and Azimuth views if the target azimuth is tangential.



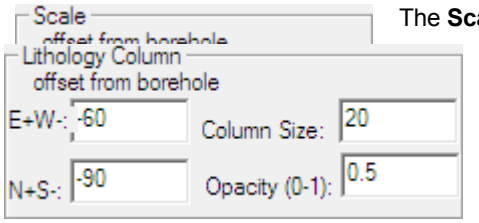
This **Grid Labels** enables the user to control the positioning and label verbiage in two (2) of the views. These labels are displayed in both the Plan view and the User-defined view but cannot be controlled independently. The labels (in this case are North, S, East and W) are displayed in the following example. The E+ / W- axis is left / right with a + value moving it to the right and a – value moving it to the left. The N+ / S- axis is up / down with a + value moving it up and a – value moving it down.

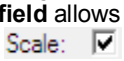


The DLS Grid Rows allows the user to identify where the grid should be drawn for the well path on the Plan View and User defined view to be drawn. We will identify the Section, Township and range numbers on the views as well. Correction lines and road allowances are also determined with the help of the of the surface co-ordinates. The grid rows are indicating how many sections are required to draw in all the directions. In the example here the well is being drilled due north and is covering the section we are starting in as well as 2 more sections to the north.



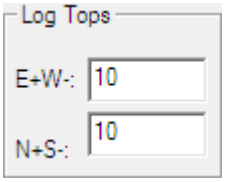
The **Line Sizes** enables the user to change the line thickness on the Plan and user-defined surface grid indications as well as the line thickness in the grid walls. Major lines encompass the exterior borders of a Section in the DLS system, a Unit in the NTS system and the exterior of a no survey system choice. All other lines on the views are minor lines.



The **Scale** enables the user to control where the depth scale is positioned and the increment for the depth scale. The depth Scale is displayed in all views but the Plan view. A positive (+) value in the **E+/W -field** moves the scales to the East with a negative (-) value moves the scale to the West. A positive (+) value in the **N+/S- field** moves the scales to the North with a negative (-) value moves the scale to the South. The **Increment field** allows the user to specify what the wall grid increment will be. The 

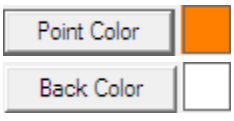
check box covered earlier will turn on/off the scale.

The **Lithology Offset** enables the user to control where the Interpretive Lithology column (displayed in TVD & Vertical Section) is positioned. The Interpretive Lithology column is displayed in all views but the Plan view. A positive (+) value in the **E+/W- field** moves the Interpretive Lithology to the East with a negative (-) value moves the scale to the West. A positive (+) value in the **N+/S- field** moves the Interpretive Lithology to the North with a negative (-) value moves the scale to the South. The **Colum size** field changes the width of the Interpretive Lithology displayed in the views. The **Opacity field** changes the ability to see through the column to view other data. 0 is transparent and 1 would be solid.



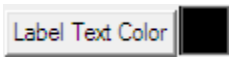
The **Log Tops** enables the user to control where the Formation tops are positioned.. The Log Tops are displayed in all views. A positive (+) value in the **E+/W -field** moves the scales to the East with a negative (-) value moves the scale to the West. A positive (+) value in the **N+/S- field** moves the scales to the North with a negative (-) value moves the scale to the South. The 

check box covered earlier will turn on/off the scale.



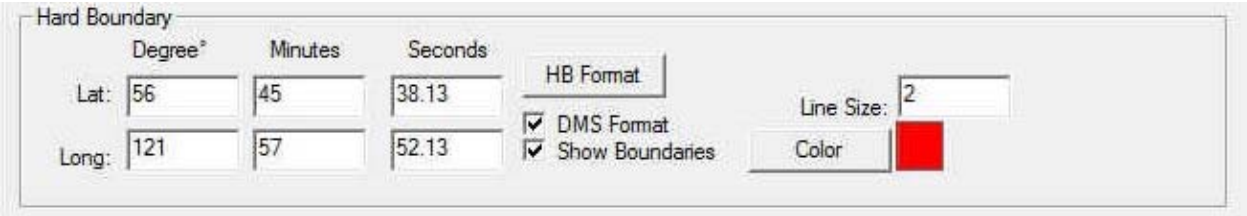
Changes the color of the Survey Points / Line and target azimuth line display.

Changes the background of the entire view.

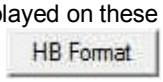


Changes the text color for the blocks, labels and Formation Tops.

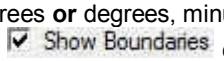
Hard Boundary Portion of window.



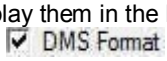
This portion of the window allow the user to enter any Hard boundaries that the well must stay away from. These boundaries can be displayed on both the Plan and User Defined views and the distance from them are calculated and displayed on these views.

The 

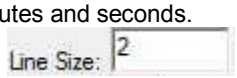
button will change the data entry method from either a Latitude / Longitude in either in strait degrees **or** degrees, minutes and seconds. Or the other method is how many meters N/S and E/W from hole center.

The 

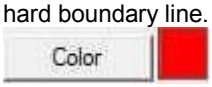
check box will turn on/off the hard boundaries entered into the Hard Boundaries field and display them in the Plan and User Defined views.

The 

check box will toggle the data entry method for the hard boundaries from degrees to degrees minutes and seconds.

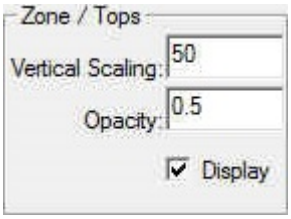
The 

field in the Hard Boundaries portion of the window allows the user to change the thickness hard boundary line. This field can range from 1 pixel to 7 pixels wide.



Changes the color of the Hard boundary lines.

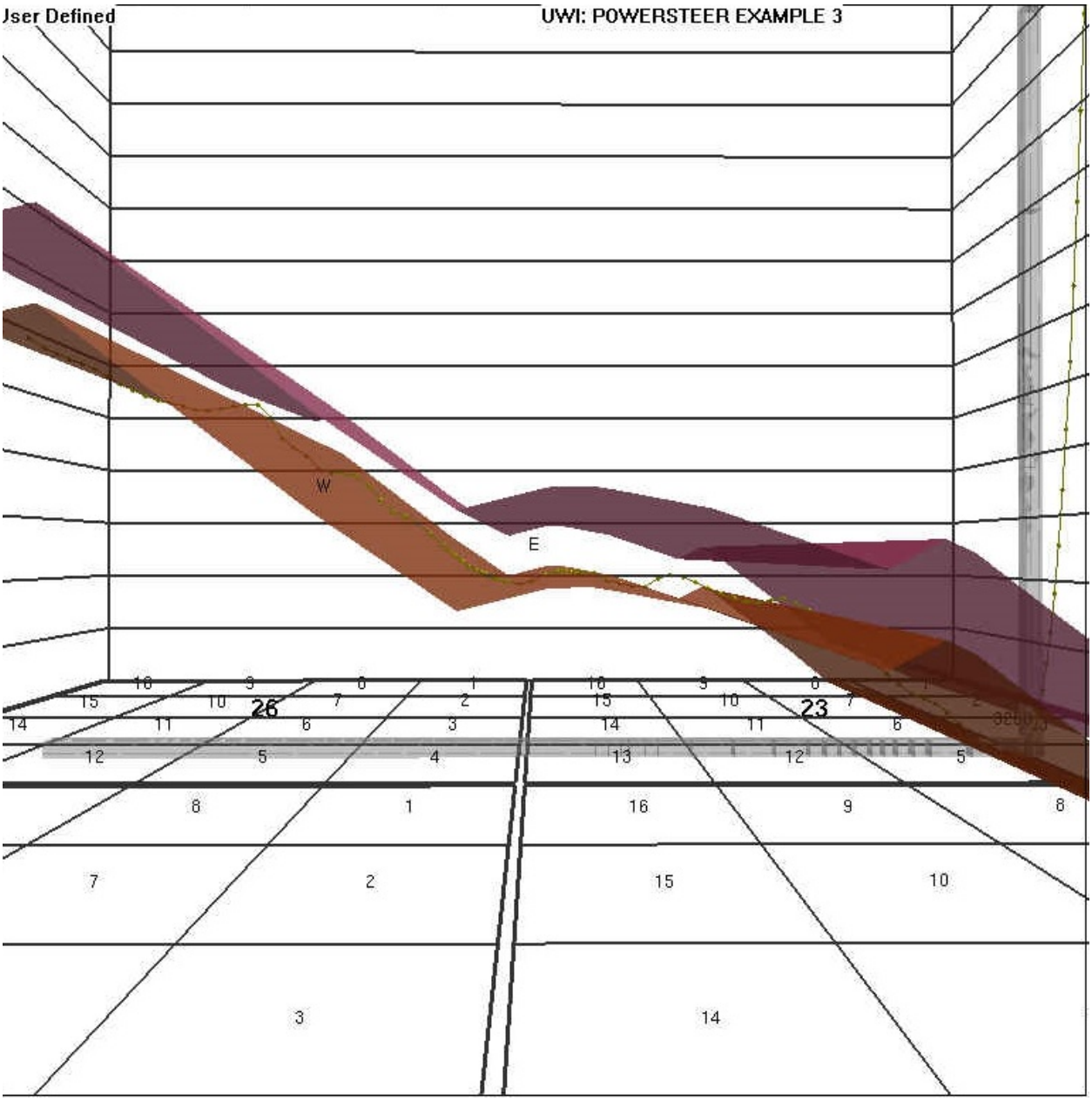
Zone / Tops Portion of window.



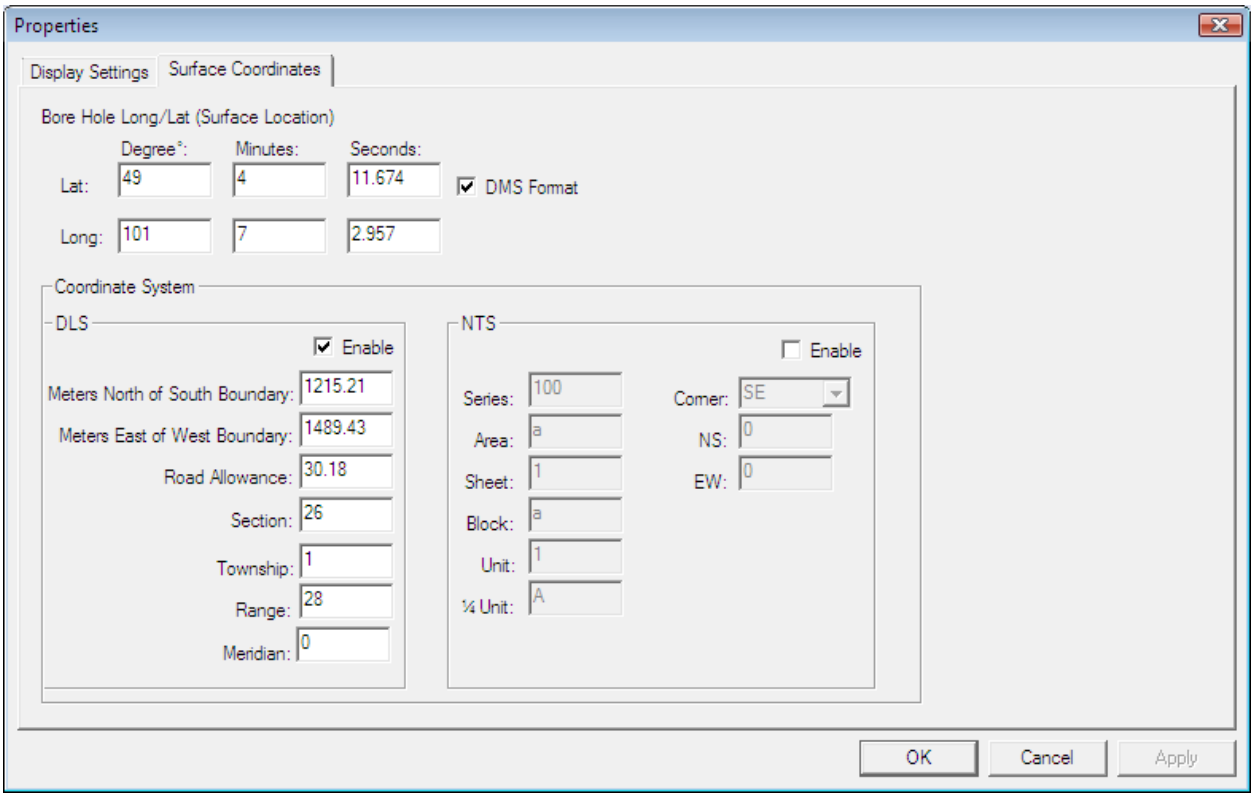
This portion of the window allows the user to display the Top and Base Zones calculated from the Power*Steer data. These Zone boundaries can only be displayed on the User Defined view.

The **Vertical Scaling field** will change the scaling on all views from the normal 1:1 TVD / Lateral Movement scale ratio. The example above will give you a 50:1 scale creating a much larger movement on the TVD Scale.
The **Opacity field** ranges from 1 (solid) to 0 (clear).

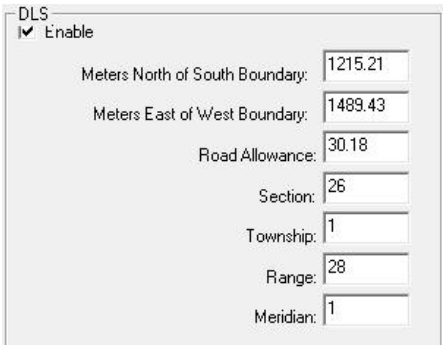
An Example of the Zones displayed in the User Defined view shown below.



Surface Coordinates Tab (Properties Window)



This portion of the window allows the user to add the Latitude (Lat:) /Longitude (Long:) for the surface hole which is necessary if this is an additional well to be plotted or correct the DLS or NTS portion of the window. These fields were entered when the survey plot was initially started.
The surface hole Longitude and Latitude fields to not have to be filled in if this is the first well to plot in the survey view application. Any subsequent well data to be displayed the user must fill in the surface hole well co-ordinates for both Latitude and Longitude in degrees minutes and seconds and we will utilize these fields to get subsequent well data onto the plot. If you enable the check box beside the DLS your Plan view and User-defined view will have the DLS grid system marked. The DLS Survey breakdown would be as follows for this example location 09-26-001-28 W1M. Where the 09 is the Location, 26 is the Section, 001 is the township and 28 is the range and the 1 is the meridian

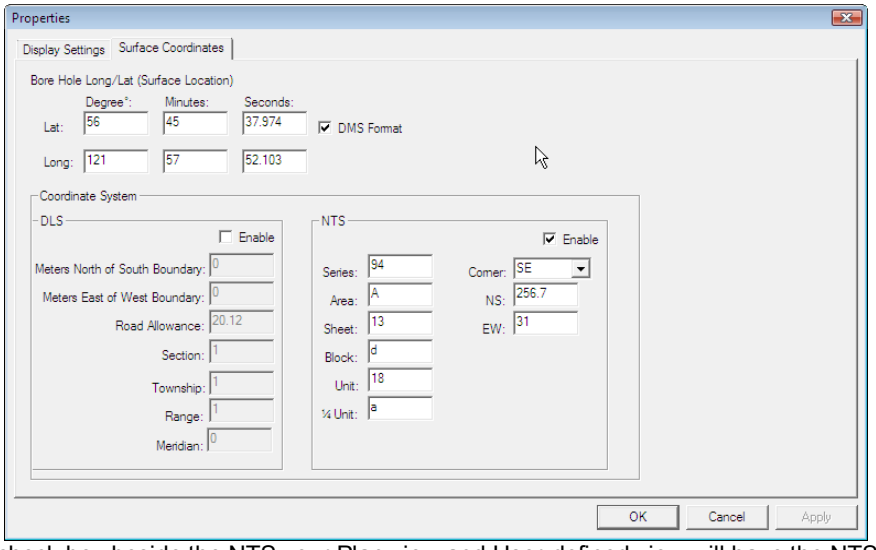


The Meters North of the South Boundary must be just that. If your survey plat gives you from the north boundary, then you have to subtract that number from 1,609.34 m to give you the meters North of South Boundary. The Meters East of the West Boundary must be just that. If your survey plat gives you from the east boundary, then you have to subtract that number from 1,609.34 m to give you the meters East of West Boundary. The Road Allowance field (these are dead areas in the DLS grid system) is traditionally the default value (20.12) but can in some places (30.18). The Township field (Values from 1 to 126) depends on the well location. It is necessary because we have to accommodate for correction lines if your well crosses those on the plan or user defined views. The Section field (Values 1-36) depends on the well location. It is necessary because we have to accommodate for road allowances if your well crosses those on the plan or user defined views

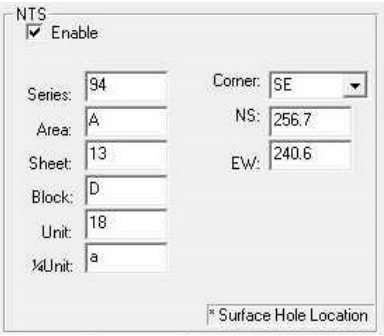
7. Click on the 

button. If done correctly and you have sufficient surveys you should get the survey window filled in with the four (4) views of your well bore. You should see something similar to one of the Survey window shown above.

NTS Example



If you enable the check box beside the NTS your Plan view and User-defined view will have the NTS grid system marked.



To the left is an example of the NTS survey system location. Remember we are dealing with the surface location.
a-18-D 94-A-13 whereas a is the ¼ Unit, 18 is the Unit, D is the block, 94 is the series, A is the Area and 13 is the sheet.
Fill in the surface location fields from the surface location given to you in the survey plat. In this NTS system we can use any corner for the measurements on the surface location but you must pick one from the drop box Then fill in the Meters from the North / South Boundary. Then fill in the Meters from the East / West Boundary. If you are adding multiple wells then you must also fill the surface hole Longitude and Latitude fields to not have to be filled in if this is the first well to plot in the survey view application. Any subsequent well data to be displayed the user must fill in the surface hole well co-ordinates for both Latitude and Longitude in degrees minutes and seconds and we will utilize these fields to get subsequent well data onto the plot.

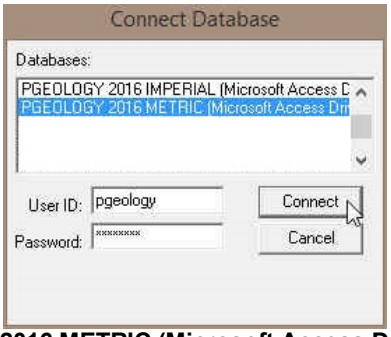
4. Click on the OK button. If done correctly and you have sufficient surveys you should get the survey window filled in with the four (4) views of your well bore. You should see something similar to one of the Survey window shown above.

Power*Steer Module

Connecting to the Database

1.) **Double click** on the **Power*Steer** 

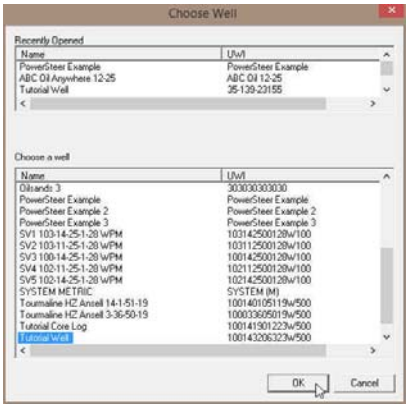
Icon. This will initiate the program and activate a **Connect Database** window.



1.) Highlight the **PGEOLOGY 2016 METRIC (Microsoft Access Driver[*.mbd]))** database by **clicking** on it once.

2.) 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.

3.) **Type** "**pgeology"** in the **Password** field and then **click** on the Connect **button**. The program will now load various dictionaries and then activate a Well List window.



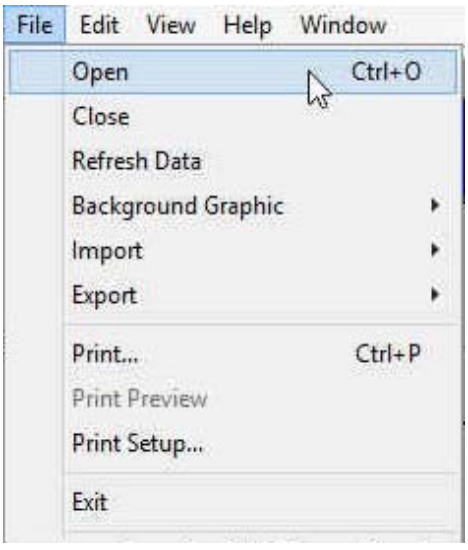
4.) **Double Click on the Well** you want to open or **Highlight the Well** and then **click on the** Select **button.** If this is the first time the Well has been opened it will be a blank template starting at zero depths with no scales.

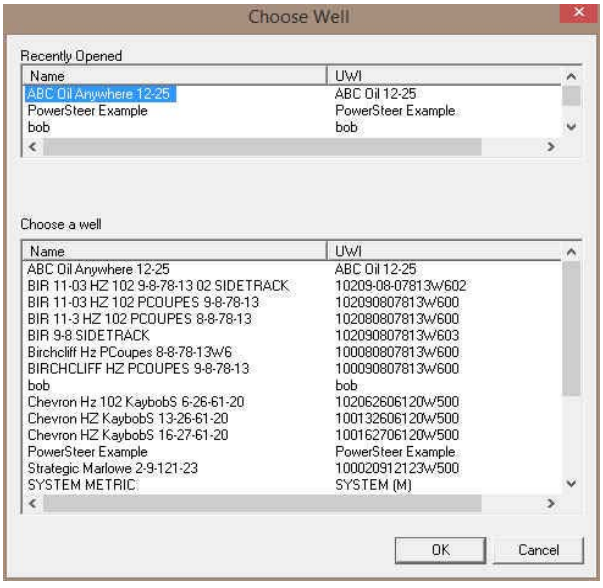
File Menu

The File pull down menu contains numerous selections described below.

Open Selection

1. **Click** on the **File Menu** to activate the drop down list **and click** on the **Open** Selection to activate the **Choose Well List**.





2. **Select** the well you wish to work with in Power*Steer by **double clicking** on the **well name** or **highlighting once** and **click** on the OK **button.**

Note: The Recently Used list (located above the Well List) will remember the last 10 wells you worked on.

Close Selection

1. **Click** on the **File Menu** to activate the drop down list **and Click** on the **Close** Selection to close the well you have open in Power*Steer.

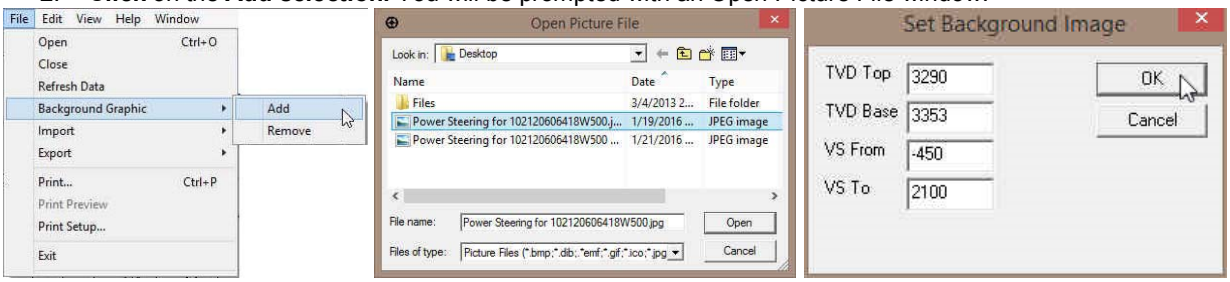
Refresh Data Selection

1. **Click** on the **File Menu** to activate the drop down list and **Click** on the **Refresh Data** Selection to refresh the well's data you have open in Power*Steer.

This would be done if you have updated the data in Power*Log or Power*Curve and the well is already open in Power*Steer. Otherwise if you have just opened the well then there is no need to refresh the data.

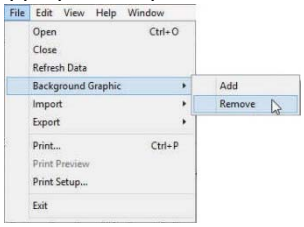
Background Graphic Add Selection
The User has the ability to place a graphic (maybe a seismic representation in the background of the Power*Steer Well Path Pane

1. **Click** on the **File Menu** to activate the drop down list and **Click** on the **Background Graphic** Selection. This will activate a Pop out menu.
2. **Click** on the **Add selection.** You will be prompted with an Open Picture File window.



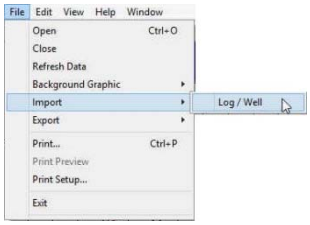
3. Navigate the folder and file name and then **Click** on the Open **button**. This will open a Set Background Image window.
4. **Type** in the appropriate True Vertical Depth (TVD) top and base depths along with the appropriate Vertical Section (VS) depths tabbing between fields.
5. **Click** on the OK **button**. You should see your graphic displayed at the appropriate depths.

Background Graphic Remove Selection
The User has the ability to remove a graphic once it has been added.



1. **Click** on the **File Menu** to activate the drop down list and **Click** on the **Background Graphic** Selection. This will activate a Pop out menu.
2. **Click** on the **Remove selection.** The graphic previously inserted will be removed.

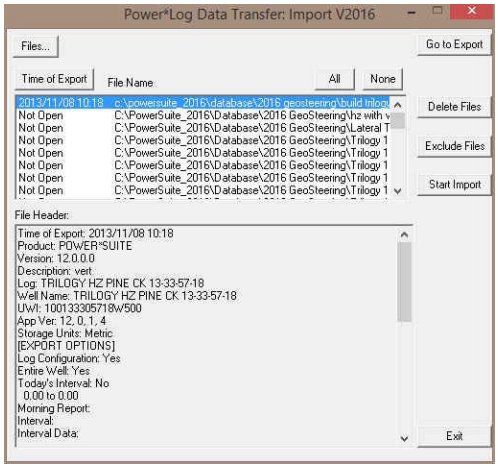
Import Selection



1. **Click** on the **File Menu** to activate the drop down list and **Click** on the **Import** Selection. This will activate a pop out list.
2. **Click** on the **Import Log / Well** selection to import Power*Suite data exported from another user or time into Power*Steer. This will activate the Power*Log Data Transfer Import window.

Importing a Log / Well…

1. **Click** on the Files... **button** to browse through your drives/directories for the file(s) you wish to import. Note that files available for importing will have an **.EXP** file extension. Any of the files that you select will then be added to the **File** list. Please make sure that the files you wish to import are highlighted (selected), in the list prior to importing.



Note: The Exclude Files **button** will remove the selected/highlighted files from the import list, but will not delete them. The Delete Files **button**, on the other hand, will completely erase the selected/highlighted files from their directory. Once deleted, these files will no longer be recoverable.

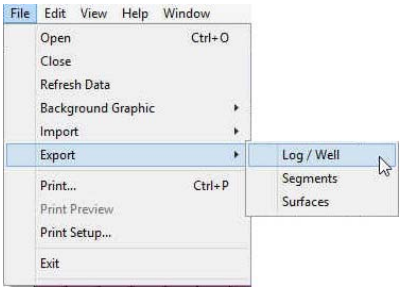
2. **Click** on the Start Import **button** to activate the following system message, "***Do you really want to IMPORT the highlighted files?***"
3. **Click** on the Yes **button** to proceed with the import.

Note: If you click on the Yes button, and the file you are importing contains the information from an **Entire Well**, the following system message will be activated, "***About to IMPORT ENTIRE WELL data. All information associated with this well in the database will be OVERWRITTEN. Continue?***"

4. **Click** on the Yes **button**. Upon completion of the import, the following system message will then be activated, "***Data has been imported successfully.***"
5. **Click** on the OK **button** to confirm the successful import of the data.
6. Once the data has been imported you must **select Refresh data** from the **File pull down menu.**

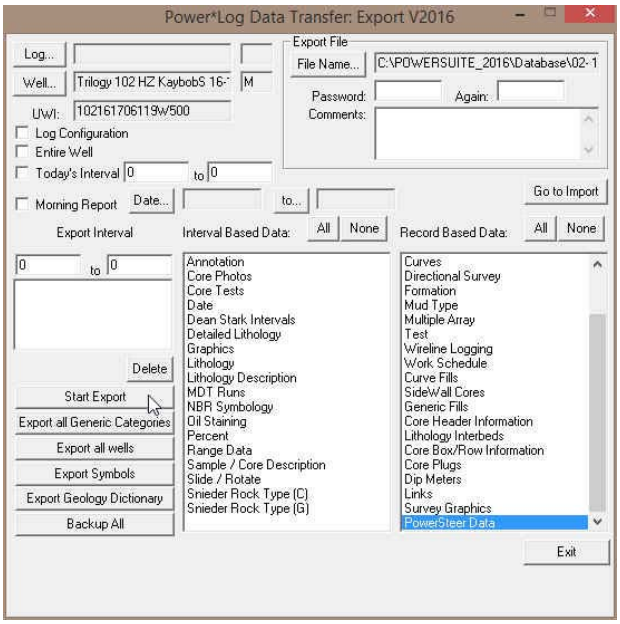
Export Log / Well

Allows you to export log configurations, well information, system symbols and your Geology Expansion Dictionary. In this example we will show you how to export your Power*Steer data only.



1. **Click** on the **File Menu** to activate the drop down list and **select Export**. This will activate a pop out menu
2. **Select Export Log / Well** from the pop out menu. This will activate the Power*Log Data Transfer Export Window

When **Data Transfer Export** window opens from the main **Power*Log / Core, Curve and Steer™** it automatically defaults to the currently active Power*Steer log.



3. The **Log Configuration** check box ☐ should not be activated (unchecked), as you are not exporting a log.
4. The **Entire Well** check box ☐ should also be activated (unchecked), as it is the default but in our case we will **uncheck** the Entire well as we are just exporting the Power*Steer data.
5. Because we are exporting only the Power*Steer data **click** on the None **buttons** beside the Interval and Record Based Data. This will deselect all the Interval and record based data types.

Record Based Data:

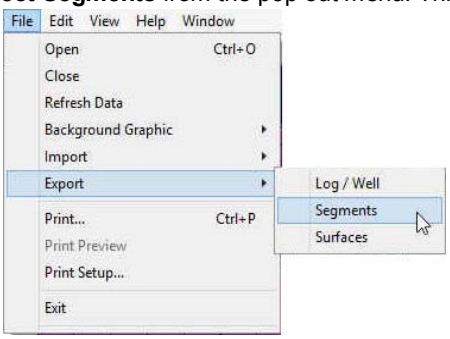
6. In the Record based Data portion of the window and **click on or select** the **Power*Steer data selection** to highlight it.
7. **Name the export file** by clicking on the File Name... **button** and then select a destination and a filename. Do not type in a file extension other than .EXP. If you omit the extension, an .EXP file extension will be added, automatically, to your filename by **Power* Steer™**.
8. **Click** on the Start Export **button**.

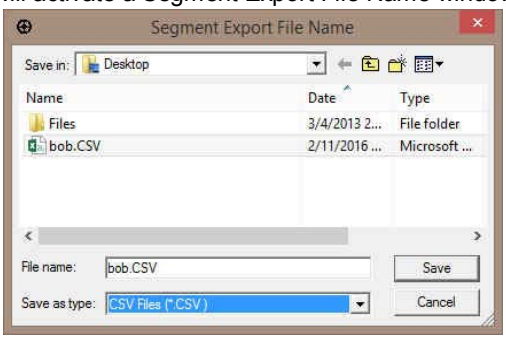
This will backup your Power*Steer data that can be imported if things go awry or is overwritten by another export file.

Export Segment Data

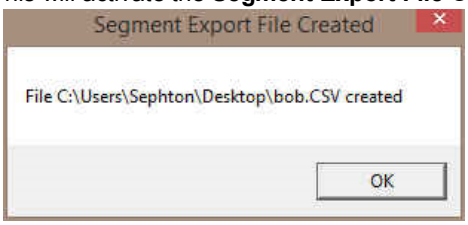
This utility exports your Power*Steer Segment data into a *csv (comma separated values) file format which can then be utilized by other applications.

1. **Click** on the **File Menu** to activate the drop down list and **select Export**. This will activate a pop out menu
2. **Select Segments** from the pop out menu. This will activate a Segment Export File Name window.





3. **Type** in a **file name** and **select the drive and directory** you wish the survey to be exported to. Then, **click** on the Save **button**. This will activate the **Segment Export File Created** window.



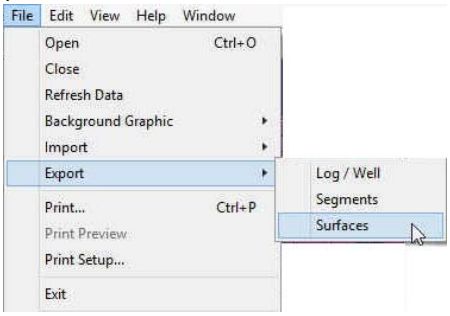
4. **Click** on the OK **button** to exit **Segment Export file** window.

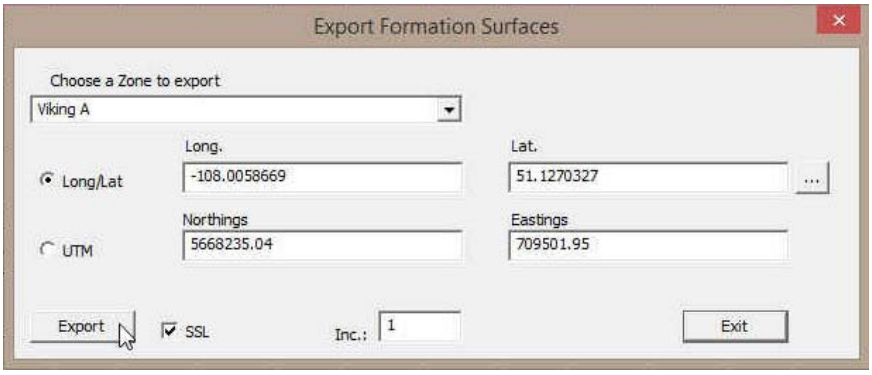
This will export the segment data only which can then be utilized by another 3rd party application. We cannot import this segment file data.

Export Surface or Zone Data

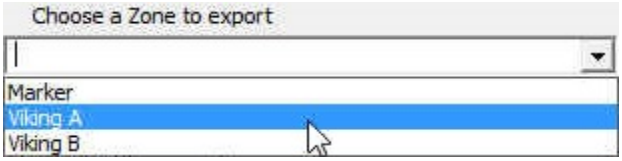
This utility exports your Power*Steer Surface data into a *csv (comma separated values) file format which can then be utilized by other applications.

1. **Click** on the **File Menu** to activate the drop down list and **select Export**. This will activate a pop out menu
2. **Select Surfaces** from the pop out menu. This will activate a Surface Export File Name window.

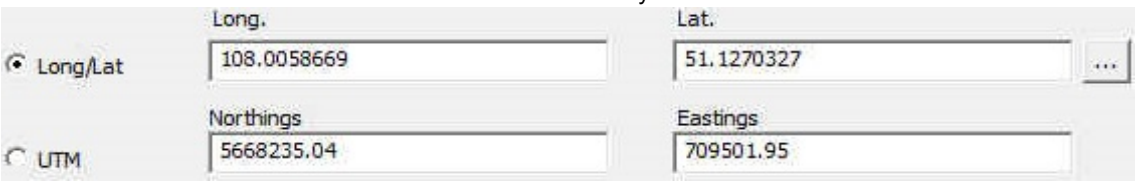




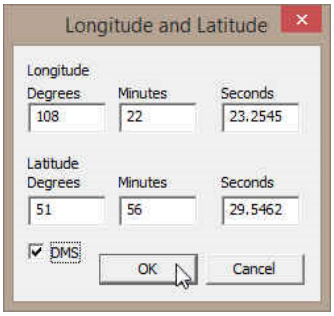
3. You will have to choose a zone of formation top to export from the drop list provided.

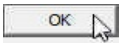


4. Decide on the X and Y coordinate system. We can export the data in either Longitude / Latitude or UTM Co-ordinates. **Click** on the **radial button** to determine which system to use.

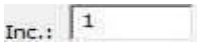


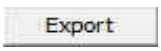
5. These surface co-ordinates are originally taken from the Well Record for the well. If the choice is Long / Lat and you have nothing in the well record for the Surface co-ordinates and you have the co-ordinates in degrees minutes second format you will want to **click** on the  **button** to activate the Longitude and Latitude DMS entry window.

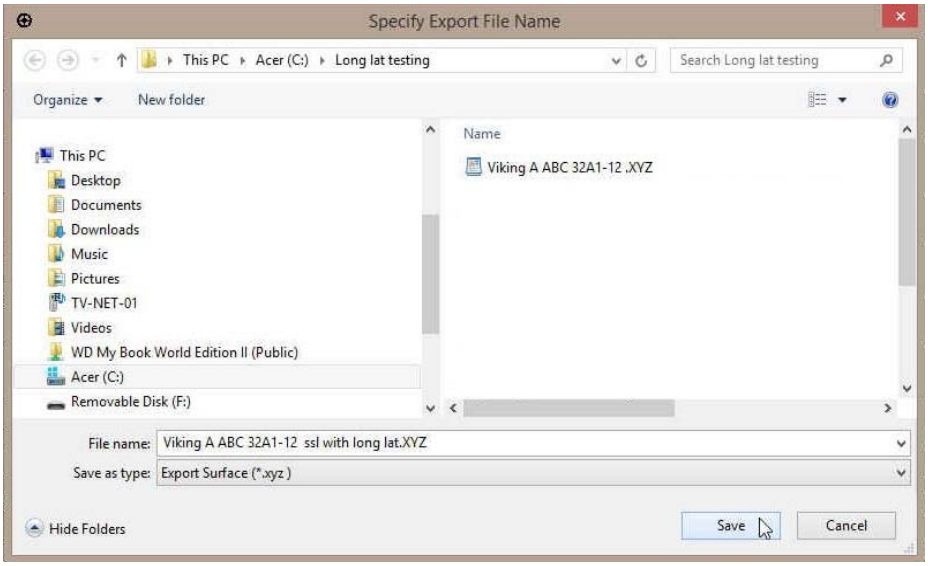


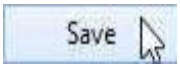
6. **Click** on the  **check box** and type in the appropriate data. **Click** on the  **button** to close the window and this action will fill in the Long / Lat portion of the window.
7. Determine whether you want the Z portion (depth) of the export file in subsea or true vertical depth values by checking the check box for Subsea.

8. Determine the depth increment of the file to be exported (along the Target Azimuth of the well) by **typing in a number in the increment field**. The default is 50 meters.



9. **Click** on the  **button**. This will activate the Specify Export File Name window.



10. **Type** in a **file name** and **select the drive and directory** you wish the survey to be exported to. Then, **click** on the 

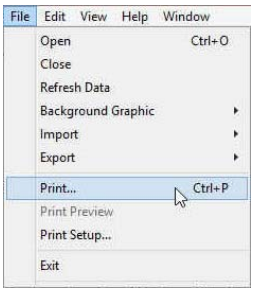
button. This will activate the **Segment Export File Created** window.

11. **Click** on the 

button to exit **Export file** window.

This will export a single surface in the desired format so that it can then be utilized by another 3rd party application. We cannot import this Surface file data.

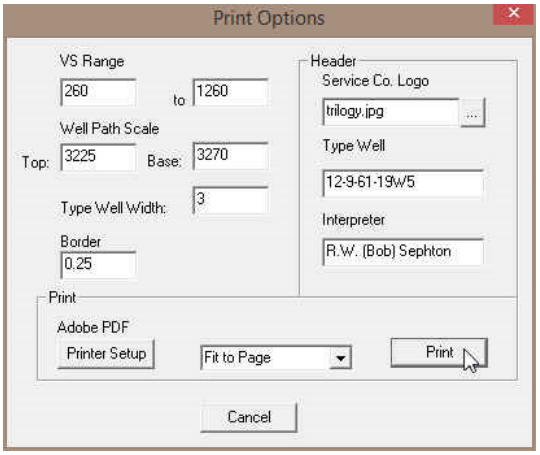
Print



1. **Click** on the **File Menu** to activate the drop down list.
2. **Click** on **Print selection** or **click** on the  **Print button** on the Toolbar to activate the **Print Options** window shown below.
3. VS / MD Range portion of the window indicates the Vertical Section depth range or Measured Depth Range you wish to print. **Type** in the **depth range** in the **fields provided**.

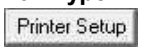
(Your Power*Steer application may be in Measured Depth [MD Range] units.)

4. Well Path Scale portion of the window indicates the TVD depth range you wish to print. **Type** in the TVD **depth range** in the **fields provided**.
5. Type Well Width field is how wide you want to print this portion of the Power*Steer window. **Type** in a **width** in Inches in the field.



The depth scale interval and scale of the Type well will be determined by what is viewed on your screen and the paper size an orientation.

6. Border field is how much border you wish to have around the top, bottom, and left edges of your print. **Type** in a **border width** in inches in the field.
7. Print field drop box is the VS Depth Scale of your print. **Click** on the **drop box** and **select** from the **List or** the user can also **Type** a VS **depth scale** in the **field**.
8. **Click** on the Service Company logo  **button** to search your computer for a logo to put in your header.
9. **Type** in the **Type well Name / Location** is the Type Well field. Depress the tab key on your keypad to advance the cursor to the Interpreter field.
10. **Type** in the **Interpreters name** who created the interpretation in the Interpreter field.



button allows the user to setup the printer for the Power*Steer output

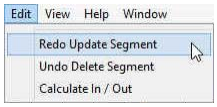
11. When you are ready to print your Power*Steer log, **click** on the 

button.

Edit Menu

Redo

This selection allows the user to redo and undo of the last segment revisions. This can go on for as many undo's that have been made by the user. It is only applicable to the segment revision. If a user deletes other data they will have to enter that data again. The undo comments changes with each function performed to indicate what undo action will be performed.

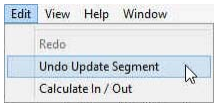


1. **Click** on the **File Menu** to activate the drop down list and **select Redo**.
2. Perform this action as many times as is necessary.

Note: Commonly it will take a couple of redo's to get back to where you were.

Undo

This selection allows the user to undo the last segment revisions. This can go on for as many undo's that have been made by the user. It is only applicable to the segment revision. If a user deletes other data they will have to enter that data again. The undo comments changes with each function performed to indicate what undo action will be performed.

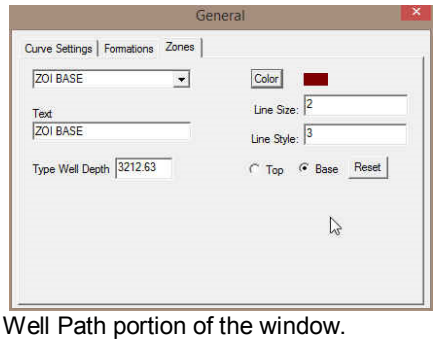


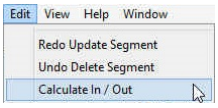
1. **Click** on the **File Menu** to activate the drop down list and **select Undo**.
2. Perform this action as many times as is necessary.

Note: Commonly it will take a couple of undo's to get back to where you were.

Calculate In / Out

This menu selection works with the zones that were added and where the zones were indicated as the top and base. When those are defined the user can select this Edit menu selection and it will calculate the amount of well path that is in the zone and the amount of well path that is out of the zone. This calculation is started when the well path first encounters the top of your zone of interest.

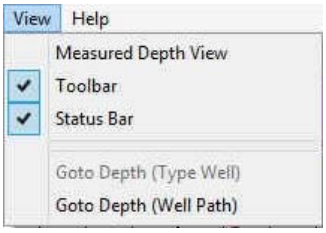




1. **Click** on the **Edit Menu** to activate the drop down list and **select Calculate In / Out**.

This will be printed in the output as well as displayed in the Status bar when your mouse pointer is focused in the Well Path portion of the window.

Well Path: VS 231.10, MD 3281.99, TVD 3253.27 In/Out: 1397.23/607.62



View Menu

Measured Depth View

1. **Click** on the **View Menu** to activate the drop down list.
2. **Click** on **Measured Depth View** to switch from Measured Depth view to Vertical Section Depth view and vice versa.

Note: Sometimes in the beginning before the well gets to a continuous positive Vertical Section Segments cannot be added because of the fact that the well is going back and forth on itself with respect to Vertical Section and can only be added in the Measured depth view.

Toolbar

1. **Click** on the **View Menu** to activate the drop down list.
2. **Click Tool bar** selection to turn on or off the toolbar. 

The toolbar buttons will allow you to Open another well, Undo, Redo, access the about menu and activate the Print the Power*Steer Log.

Note: To activate the Help Menu depress the F1 key on your keypad

Status Bar

1. **Click** on the **View Menu** to activate the drop down list.
2. **Click** on **Status Bar** selection to turn on or off the Status Bar.

MD Curve (Gamma Ray) : VS 662.82, MD 3734.98, value 133.16 Mouse pointer in MD Gamma Ray portion of window.

Well Path: VS 605.32, MD 3677.44, TVD 3259.00 In/Out: 183.12/713.30 Mouse pointer in Well Path portion of window.

RSD Curve (12-9-61-19W5 GR) : RSD (TVD) Depth 3214.02, MD Depth 4130.20, Value 140.91 Mouse pointer in Type Well portion of window.

Go To Depth (Type Well)

1. **Click** on the **Type Well** Portion of the window**.**
2. **Click** on the **View Menu** to activate the drop down list.
3. **Click** on **Go To Depth (Type Well)** selection to activate the Goto Window.
4. **Type** a **depth** in the Type Well Depth Field.
5. **Click** on the OK **button**.

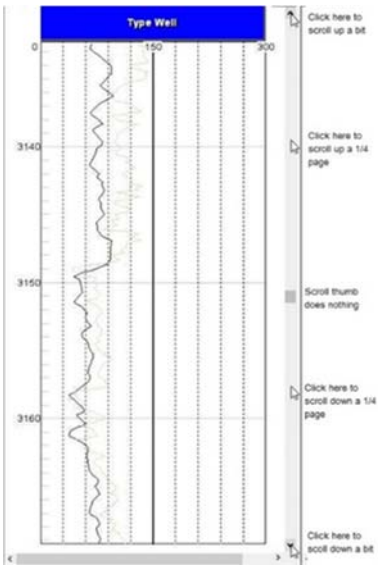
Go To Depth (Well Path)

1. **Click** on the **Well Path** Portion of the window**.**
2. **Click** on the **View Menu** to activate the drop down list.
3. **Click** on **Go To Depth (Well Path)** selection to activate the Goto Window.
4. **Type** a **depth** in the Well Path Depth Field.
5. **Click** on the OK **button**.

Type Well Track Depth Scrolling

Once the Type Well curve has been added to this track the user has the ability to scroll up and down the curve depth display.

Mouse Pointer Controls



The user can **click** on the **up / down arrows** on the right side of the track pane to move up or down a bit or **click on the space between the thumb and arrows** to move up or down 1/4 page.

Mouse Roller Ball Control

Click on the **Type Well pane** and then **roll the roller ball away** from you to scroll up the view.
Click on the **Type Well pane** and then **roll the roller ball towards** you to scroll down the view.

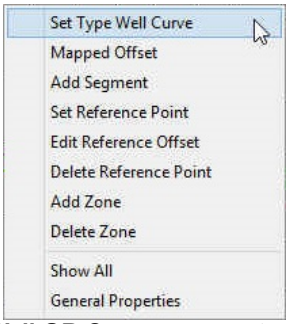
Type Well Depth Scale Display Manipulation

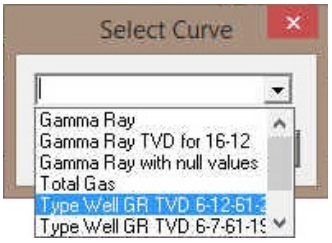
Click on the **Type Well pane**, **hold the CTRL Key down** on the keypad and then **roll the roller ball away** from you to decrease the scale so that you can see less data in the Type Well.
Click on the **Type Well pane**, **hold the CTRL Key down** on the keypad and then **roll the roller ball towards** you to increase the scale so that you can see more data in the Type Well.

Type Well Pane Right Click Options

Set Type Well Curve

1. **Right click** on the **Type Well portion of the screen (left side)**
2. **Select Set Type Well Curve** from the pop out menu list. This will activate a Select Curve list.



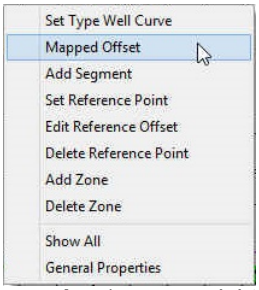


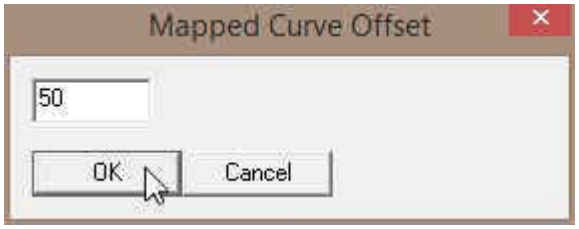
3. **Select** the **Type Well GR Curve** you are steering to**.** This is Type Well GR curve you imported into your steered well in Power*Log or Power*Curve.
4. **Click** on the OK **button**.

Mapped Offset

This allows the user to offset or shift the MD Gamma Ray Curve data that has been mapped onto the type well curve to the left with a negative number and to the right with a positive number.

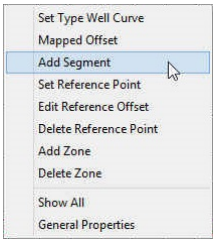
1. **Right click** on the **Type Well portion of the screen (left side)**
2. **Select Mapped Offset** from the pop out menu list. This will activate the Mapped Curve Offset window.





3. **Type** in a **value** (+ moves right / - move left) in the **field** provided.

4. **Click** on the OK button.



Add Segment

Once the reference point has been set you will see a pink line in both the Type Well and your Steering well. You can now add segments. A segment is usually defined over an interval where the MD / VS Gamma curve can be correlated with the Type well curve and more than likely be a continuous downward or upward well path movement.

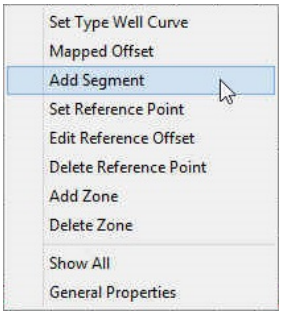
Add the first Segment

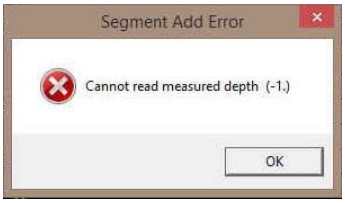
(First one is different than all the rest) The top of this segment cannot be moved. The rest of the segments after the first can be moved or resized.

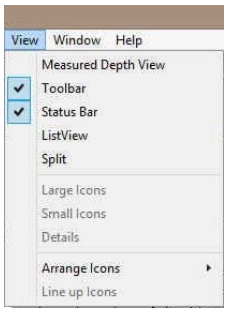
1. **Right Click** somewhere near (but deeper) than your reference point and **Select Add Segment** from the pop out menu list.

Note: Once the first segment has been added you may not be allowed to add another segment due to the fact that you have a negative vertical section where you are adding the next segment.

2. If you are experiencing the **Segment Add Error message** when you are adding another segment **Click** on the OK **button** in the message box.





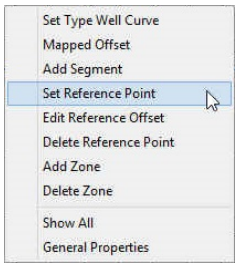


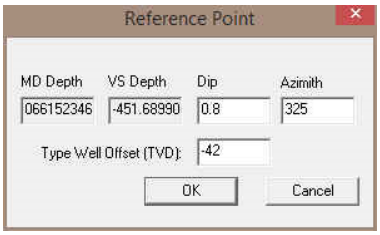
3. Then switch your View from Vertical Section to Measured depth view by **clicking** on the **View menu pull down** and **selecting Measured depth** to switch from Vertical Section View to Measured Depth View. This will allow you to add another segment in either the Type Well or the Well Path panes.
4. You will more than likely have to scroll deeper on the Well Path section to see you Gamma Ray / Well Path data.

Set Reference Point

First thing you have to do is set up a reference point. You will need to know the Regional strike and dip of the formation you wish to steer this well for and maybe a depth offset so that you can move the steered wells curve data up or down to match near the zone of interest. This offset can be changed after the fact but the Regional Strike and Dip will not be allowed to change. If you do want to change the Regional strike and dip then you will have to delete the Reference point and that will delete all the segments that have been entered so you will be starting anew.

1. **Right Click** on the **Type Well Pane** a little above the depth that you wish to start your correlations and **select Set Reference Point** from the pop out menu list. This will activate the **Reference Point window**.





2. In the Reference Point window the user will fill in the general bed dip degree and strike azimuth for your intended formation or zone you wish to steer. **Tab** to the **Dip field** or **double click** to highlight the **Dip field**, **Type** the **dip** for the bed in the dip field, **depress** the **tab key** to advance the highlight to the azimuth field.
3. **Type** in the **strike azimuth of the bed** in this field. **Depress** the **tab key** to advance the highlight to the Type Well Offset field.

4. **Type** in the **Type well offset**. This is not too critical as this can be changed after the fact. It just moves your correlatable well up or down to match with the Type well.

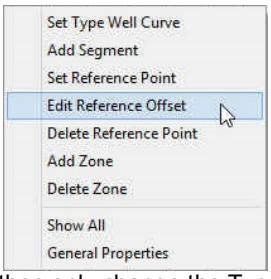
Note: A negative number will shove the Gamma Ray trace up and a positive number will shove your Gamma Ray trace well down.

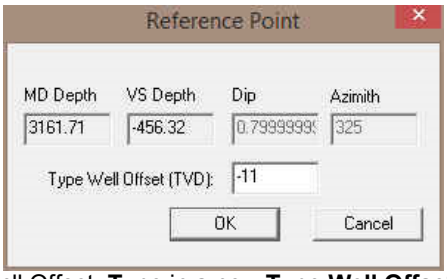
5. **Click** on the OK **button**.

Edit Reference Offset

The Reference offset results in moving the traces from the VS / MD gamma segments shown on the Type Well up or down with respect to the Type Well Gamma Curve. A negative number (-5) will move the traces up 5 in the Type Well where a positive number (5) will move the traces down 5 in the Type Well.

1. **Right Click** on the **Type Well Pane at the depth where your Reference Point is** set (indicated by a Pink Line with Reference Point Text below it) and **select Edit Reference Offset** from the pop out menu list. This will activate the **Reference Point window.**



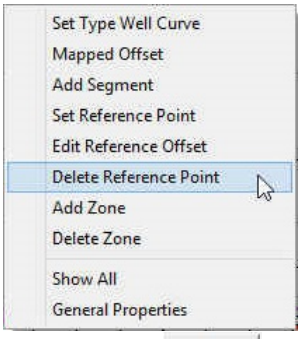


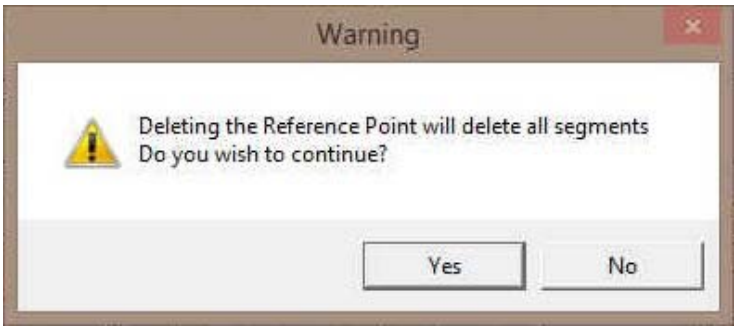
2. The user can then only change the Type Well Offset. **Type** in a new **Type Well Offset (TVD) in the field** provided and **click** on the OK **button**.

Note: If you need to change the Regional Bedding Dip and Azimuth then you will have to Delete the Reference Point and start again removing all your segment data.

Delete Reference Point

1. **Right Click** on the **Type Well Pane at the depth where your Reference Point is** set (indicated by a Pink Line with Reference Point Text below it).
2. **Select Delete Reference Point** from the resulting pop out menu. This will activate the **Warning Message**.





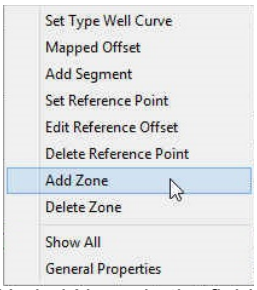
3. **Click** on the Yes **Button**.

Note: If you need to change the Regional Bedding Dip and Azimuth then you will have to Delete the Reference Point and start again removing all your segment data.

Add Zone

This would be where you would add a Zone to your Type Well. They could be formation tops or other indicators that you wish to mark on your Type Well and will be transposed and manipulated by your segment movements in the Well Path pane.

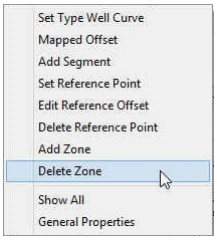
1. **Right Click** at the **depth you wish to add a Zone** in your **Type Well pane** to activate the pop out menu.
2. **Select Add Zone** from the pop out menu list. This will activate the Add Label window.



3. **Type** in a Zone / Label Name in the field provided.

Note: If this is a **zone marker** that indicates that you are **inside the designated target** and you would like to calculate the percentage of the well's path that is inside the target boundaries then you must indicate whether this label is the **top or base of the Zone**. The user can only have one labels designated at top and one zone label that is designated as base.

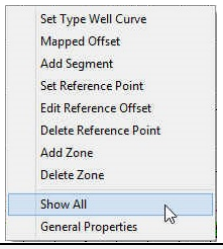
4. **If this is the primary target label indicator** then you must activate a radio button indicating the top or base by clicking on the radio button. Top Base. If it is not the designated target zone label then skip on to step 5.
5. If this is a zone marker that indicates that you are inside the designated target and you would like to calculate the percentage
6. **Click** on the OK **button**. This will close the window and add the zone label to both the Type Well and Well Path panes.



This will add the zone to both the Type Well and the Well Path Panes You may not see the zones on the Well Path Pane until you have some segments added.

Delete Zone

1. **Right Click** on the **Type Well Pane at the depth where the Zone Label** has been added.
2. **Select Delete Zone** from the pop out menu list. This will delete the Zone label from both the Type Well and the Well Path Panes.



Show All

This selection is more like a toggle to show all / hide all the segment traces that have been added and manipulated on the type well. The first time will show all and then the next time will hide all the segment data.

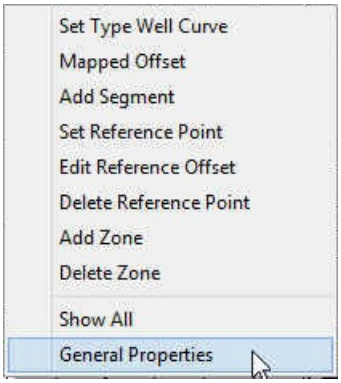
1. **Right Click anywhere** in the **Type Well Pane**
2. **Select Show All** from the pop out menu list.

Note: If you click on a segment in the lower portion of the Well path (under the Curve trace portion of the window (Indicated by a color bar) it will turn red to show that it is selected and then double click on the red bar and this will turn on the segment in the Type well Pane after selecting another segment and will be indicated by the default color.

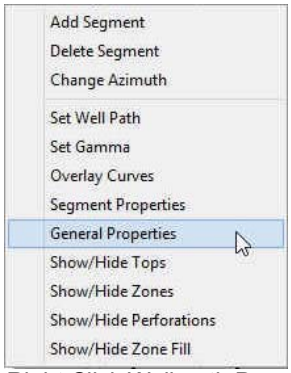
General Properties

Curve Display Properties

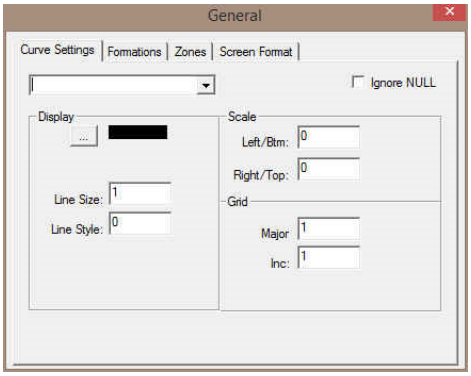
1. **Right Click anywhere** in either pane to activate the pop out menu.
2. **Select General Properties**. This will activate the General Properties window.



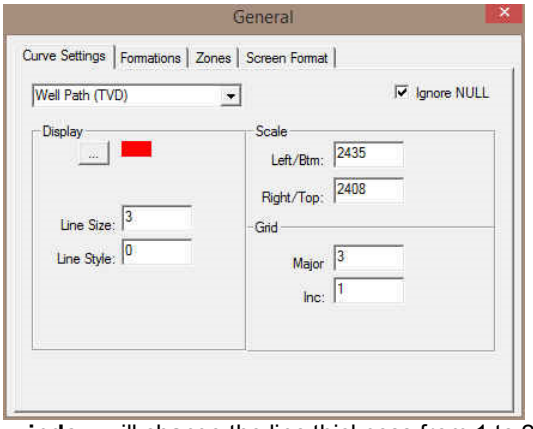
Right Click Type Well Pane



Right Click Well path Pane



1. **Click** on the **drop arrow** and **select** the **curve** you wish to change the display for.

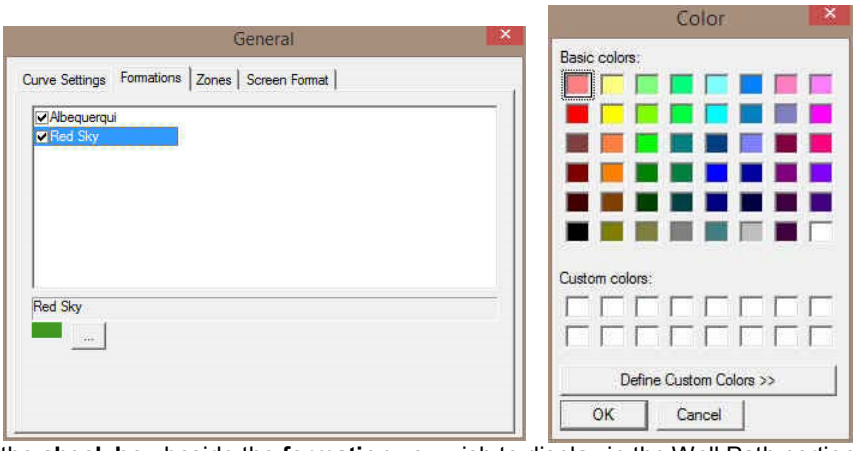


2. **Line Size portion of the window** will change the line thickness from 1 to 20 (pixels wide). You have to **type a number** in the **size field** and your input will be automatically displayed by the curve.
3. **Line Style portion of the window** will change the line style. You have to **type a number** in the **style field from 0 to 3** and your input will be automatically displayed by the curve. 0=Solid line, 1=Dashed Line, 2=Dotted Line, 3=Dash Dot Line
4. **Scale Portion of window** allows the user to change scales for the selected curve. Type a value in the appropriate fields to change the scales. The scales will change as you type.
5. **Grid Portion of window** allows the user to change the grid pattern for the selected curve. Type a value in the appropriate fields to change the grids. The grids will change as you type. Major Grids will indicate a value. The minor grids will divide the whole track and not the majors.
6. **Ignore NULL's check box** when activated will join curve values ignoring the null values. When deactivated the curve will only draw when there are two consecutive data points.
7. **Click** on the  in the upper right hand corner to **exit** this window.

Formation Display Properties

1. **Right Click anywhere** in either pane to activate the pop out menu.
2. **Select General Properties**. This will activate the General Properties window.
3. **Click** on the **Formations Tab** to activate the Formation display properties.

Note: Formations will only appear in this list if they have a calculated thickness in the Formation Report window in Power*Log, Power*Core or Power*Curve.



4. **Activate** the **check box** beside the **formation** you wish to display in the Well Path portion of Geo*Steer.
5. If the formation is highlighted the user can also select a color from a color palette activated by the ... **button**. **Click** on a **color** and then **click** on the OK **button**.
6. **Click** on the ✕ in the upper right hand corner to **exit** this window.

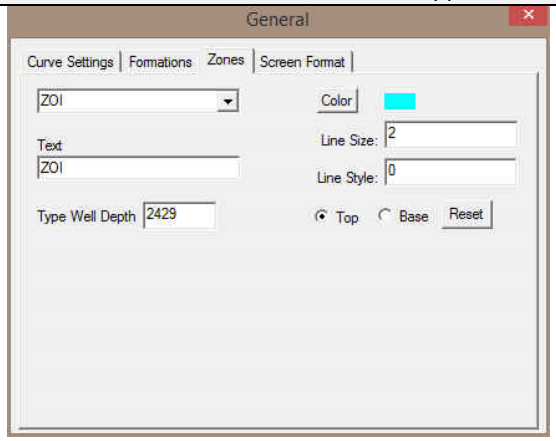
Zones Display Properties

1. **Right Click anywhere** in either pane to activate the pop out menu.
2. **Select General Properties**. This will activate the General Properties window.
3. **Click** on the **Zones Tab** to activate the Zones display properties.

Note: Zones will only appear in this list if they been entered in the **Type Well Portion** (left side) of the Geo*Steer application.

1. **Click** on the **drop arrow** and **select** the **zone** you wish to change the display for.

Note: You can change the display name if you wish by typing in a new Zone name. These can be tops or any other indicators you wish to display in the Well Path Section of the Geo*Steer application.

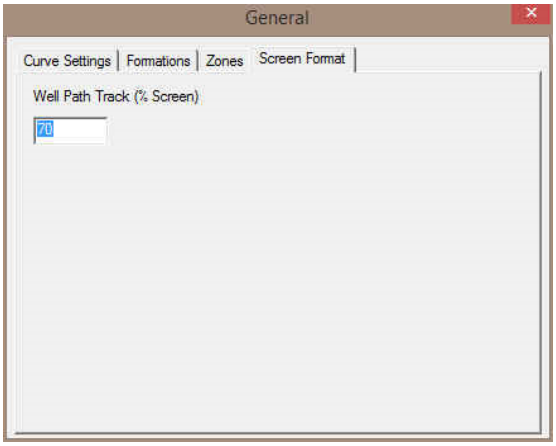


2. **Line Size portion of the window** will change the line thickness from 1 to 9 (pixels wide). You have to **type a number** in the **size field** and your input will be automatically displayed by the curve.
3. **Line Style portion of the window** will change the line style. You have to **type a number** in the **style field from 0 to 3** and your input will be automatically displayed by the curve. 0=Solid line, 1=Dashed Line, 2=Dotted Line, 3=Dash Dot Line
4. **Click** on the ✕ in the upper right hand corner to **exit** this window.

Screen format Properties

1. **Right Click anywhere** in either pane to activate the pop out menu.
2. **Select General Properties**. This will activate the General Properties window.
3. **Click** on the **Screen Format Tab** to activate the Screen format display properties.

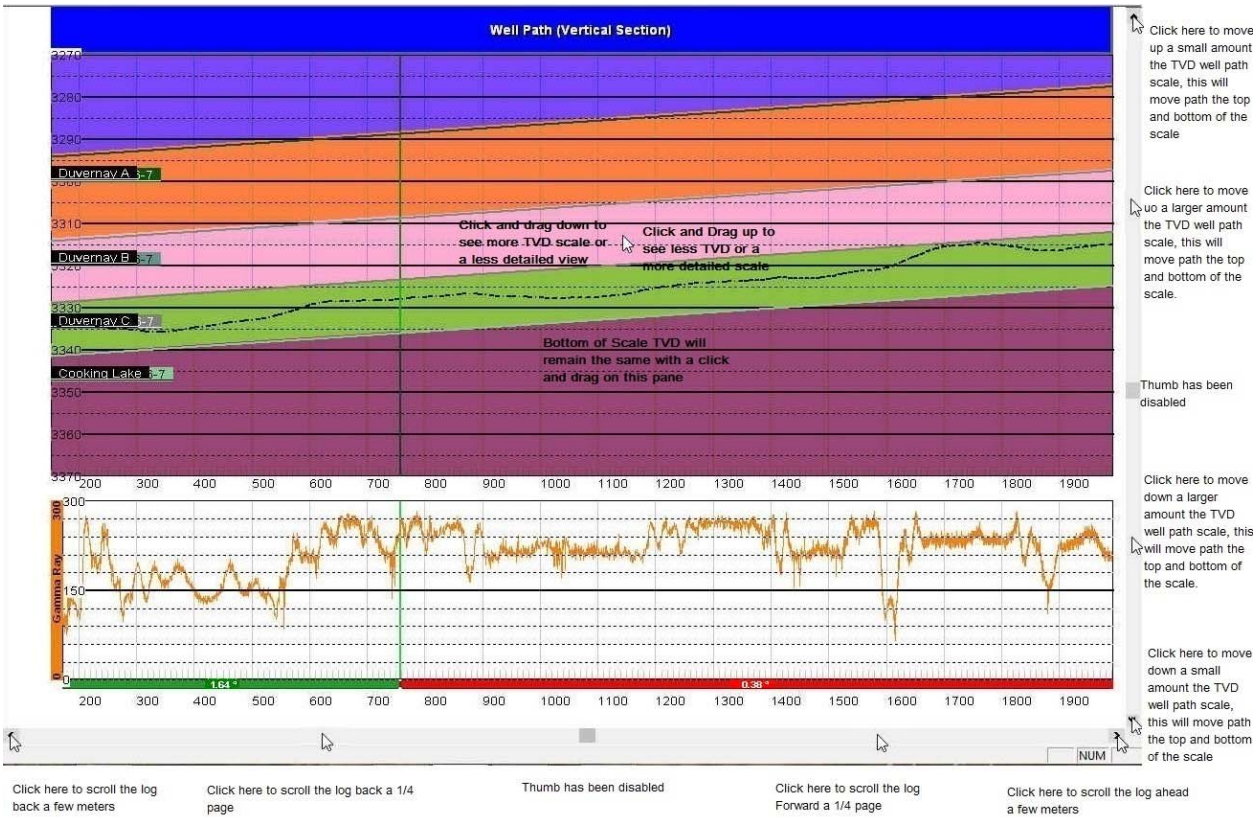
4. **Double Click** in the **Well Path Track** field and change the % from 70 to another percentage to change the Well Path Pane size.



Well Path MD/VS Gamma Ray Depth Scale Display Manipulation

1. **Click** on the **Well Path pane**, **hold the CTRL Key down** on the keypad and then **roll the roller ball away** from you to decrease the scale so that you can see less data in the Well Path and MD / VS Gamma Ray.

1. **Click** on the **Well Path pane**, **hold the CTRL Key down** on the keypad and then **roll the roller ball towards** you to increase the scale so that you can see more data in the Well Path and MD / VS Gamma Ray.



Well Path TVD Scale manipulation

Mouse Pointer Controls

1. The user can **click** on the **up / down arrows** on the right side of the track pane to move up or down a bit or **click on the space between the thumb and arrows** to move up or down 1/4 page. This will move all the scales (both top and bottom scales simultaneously).

Mouse Roller Ball Control

1. **Click** on the **Well Path pane**, **hold the Shift Key down** on the keypad and then **roll the roller ball towards** you will move the TVD scale down (both top and bottom scales simultaneously).
2. **Click** on the **Well Path pane**, **hold the Shift Key down** on the keypad and then **roll the roller ball away from** you will move the TVD scale up (both top and bottom scales simultaneously).
3. **Click and drag up** on the Well Path portion of the pane to see a more detailed view or less TVD range. This action will not move the bottom TVD scale.

4. **Click and drag down** on the Well Path portion of the pane to see a less detailed view or more TVD range. This action will not move the bottom TVD scale.

Well Path MD/VS Gamma Ray Depth Manipulation

Once the Well Path TVD curve, Measured Depth Gamma Ray curve has been added to these track the user has the ability to scroll left and right to change the curve depth display.

Mouse Pointer Controls

1. The user can **click** on the **left / right arrows** on the bottom side of the track pane to move left or right a bit or **click on the space between the thumb and arrows** to go left or right 1/4 page.

Mouse Roller Ball Control

1. **Click** on the **Well Path pane** and then **roll the roller ball away** from you to scroll left or back.
2. **Click** on the **Well Path pane** and then **roll the roller ball towards** you to scroll right or forward.

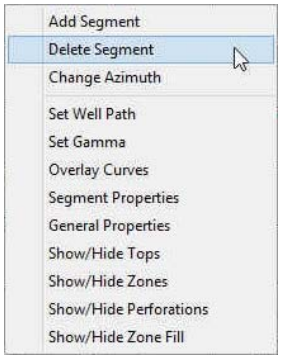
Well Path Pane Right Click Options

Add Segment

Right Click on the **Well Path Pane at the depth** you wish to add a segment and **select Add Segment** from the resulting pop out menu. This will add a segment at that depth.
Note: Segments can be added anywhere but you will want to add segments where the well path changes from up to down (< 90 / > 90) or where the segments start to vary from your Type well trace.

Delete Segment

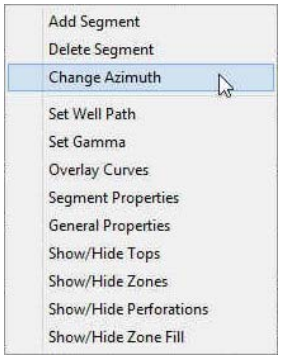
In the Well Path Pane **click on the Segment** you wish to delete. Anywhere between the segment depths to change the color of the segment from it's default color to a red indicator to make it active.
Right Click anywhere between the Segment depths on the **Well Path Pane** and **select Delete Segment** from the resulting pop out menu. This will delete the segment.



Change Azimuth

In the Well Path Pane **click on the Segment** you wish to change Azimuth or bed Strike. Anywhere between the segment depths to change the color of the segment from it's default color to a red indicator to make it active.

1. **Right Click** anywhere between the Segment depths on the **Well Path Pane to activate the pop out menu.**
2. **Select Change Azimuth**. This will activate the Change Azimuth window.



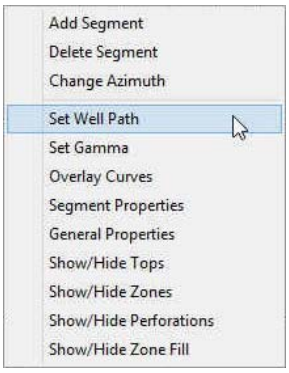
3. **Click** on the **up or down arrows** to change the segments strike azimuth. Once you have the corrected azimuth viewed.
4. **Click** on the 

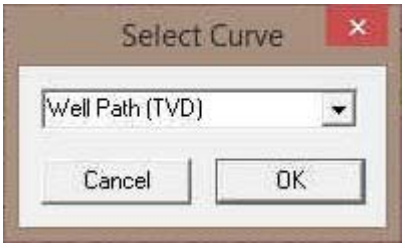
button.

Note: Changing the segment azimuth will affect the apparent dip and will result in a change of VS Start and VS End points. Once this new segment azimuth has been changed it will change the apparent dip for all segments added after this change.

Set Well Path

1. **Right click** on the **Well Path pane (right side)** to activate the pop out menu
2. **Select Set Well Path**. This will activate a Select Curve Window.



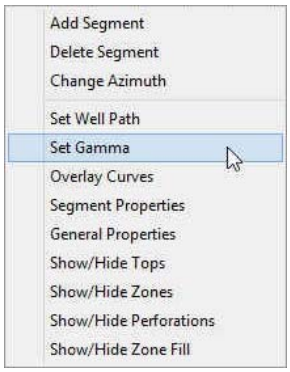


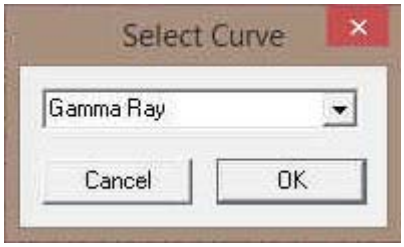
3. **Select** the steered **Well Path Curve** in TVD units from the drop down list by **clicking** on the **down arrow** and **selecting** it from your **curve list** for this well from your database.
4. **Click** on the OK **button**.

Note: This curve has to be added on the setup of Power*Log / Power*Curve when the well is started. If this has not been done then you will not see this curve available to you. The Well Path (TVD) curve can be imported into Power*Log / Power*Curve from an LAS or ASCII file or can be calculated with the survey data.

Set Gamma

1. **Right click** on the **Well Path pane (right side)** to activate the pop out menu
2. **Select Set Gamma**. This will activate a Select Curve Window.





3. **Select** the steered wells **Gamma Ray** curve in measured depth units from the drop down list by **clicking on the down arrow** and **selecting** it from your **curve list** for this well from your database.

Note: This Gamma Ray curve will be displayed on the lower portion of the well path and will either be displayed in MD or VS depth units depending on the view. This is the curve that you will be attempting to correlate to the Type Well Curve. It doesn't necessarily have to be the Gamma Curve but this tool is by far the most common tools to be run downhole while drilling.

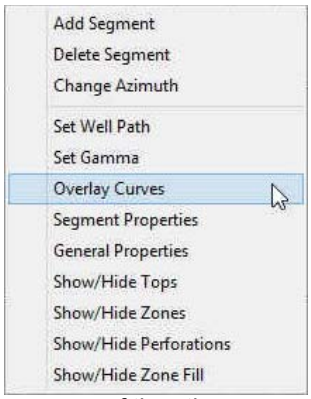
4. **Click** on the OK **button**.

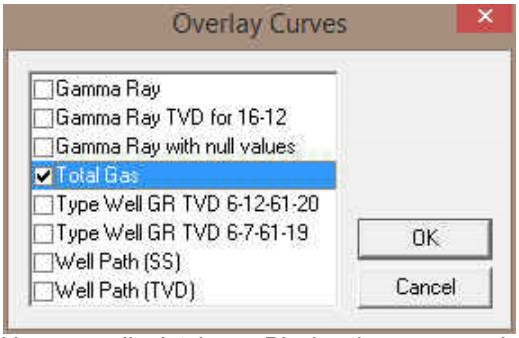
Note: This curve has to be added on the setup of Power*Log / Power*Curve when the well is started. If this has not been done then you will not see this curve available to you. The Gamma Ray curve can be imported into Power*Log / Power*Curve from an LAS or ASCII file.

Overlay Curves

If the user wishes to have more curves displayed on the Segment portion of the window the user can also display those curves in either MD or vertical section depth display. These are only for display purposes and will not be used to correlate to the Type Wells data.

1. **Right click** on the **Well Path pane (right side)** to activate the pop out menu
2. **Select Overlay Curves**. This will activate an Overlay Curves list.





3. **Select** as many of the other curves captured in your wells database. Display these curves data by activating the check box beside the curves.

Note: These Overlay curves will be displayed on the lower portion of the well path and will either be displayed in MD or VS depth units depending on the view. These curves are for display purposes only.

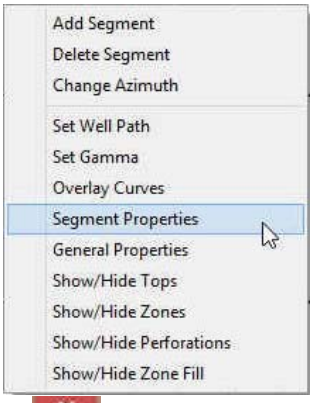
4. **Click** on the OK **button**.

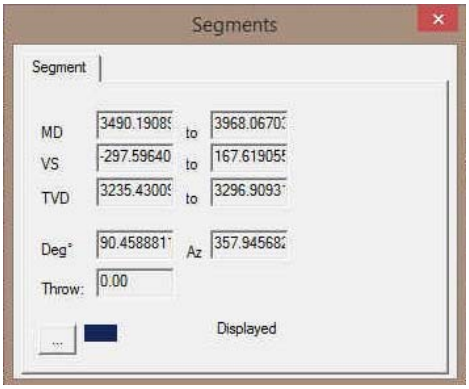
Note: These curves have to be added on the setup of Power*Log / Power*Curve when the well is started. If this has not been done then you will not see these curves available to you.

Segment Properties

This selection allows the user to view the segment properties on each induvial segment. They include Measured Depths from and to, Vertical Section Depths from and to, True Vertical Depths from and to, segment dip and azimuth, segment throw, segment default color and display option on the Type Well Pane.
In the Well Path Pane **click on the Segment** you wish to view the properties of. Anywhere between the segment depths to change the color of the segment from it's default color to a red indicator to make it active.

1. **Right Click** anywhere between the Segment depths on the **Well Path Pane to activate the pop out menu.**
2. **Select Segment Properties**. This will activate the Segments window.





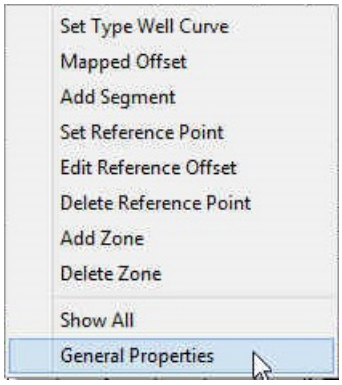
3. **Click** on the ✕ to close this window.

Note: This is the information that is exported when you Export Segments. You may wish to keep this window open to compare the strike and dips of the segments. Also if you see the throw field has a value (other than 0.00) displayed and you have not placed a fault on purpose then you do have an issue. The throw is carried forward from segment to segment. So you will have to find the first segment that changed from 0.00 throw to a throw value and attempt to make the throw back to 0.00 by moving the segment up or down on the Type Well pane.

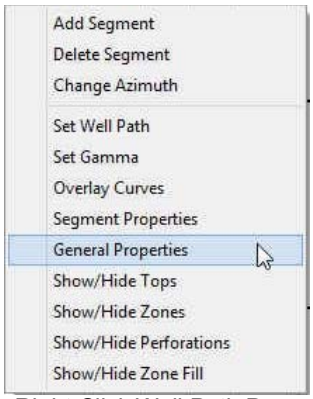
General Properties

Curve Display Properties

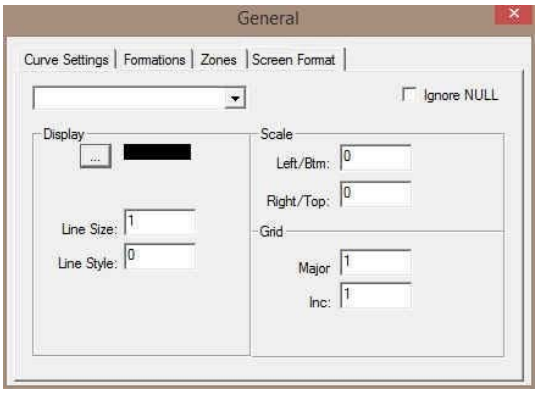
1. **Right Click anywhere** in either pane to activate the pop out menu.
2. **Select General Properties**. This will activate the General Properties window.



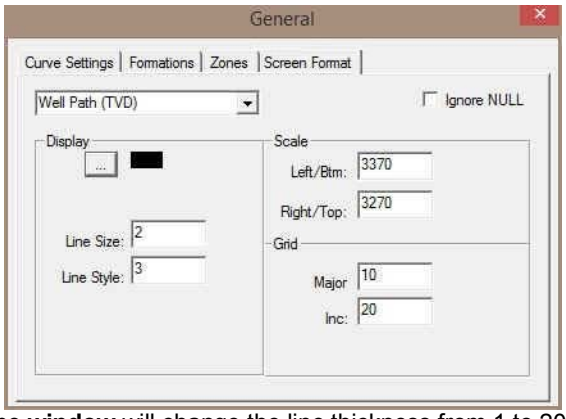
Right Click Type Well Pane



Right Click Well Path Pane



3. **Click** on the **drop arrow** and **select** the **curve** you wish to change the display for.

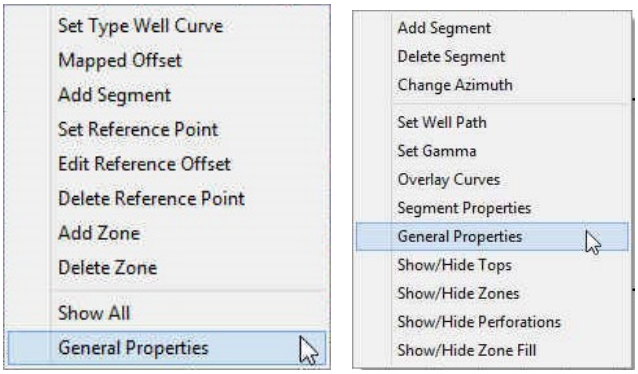


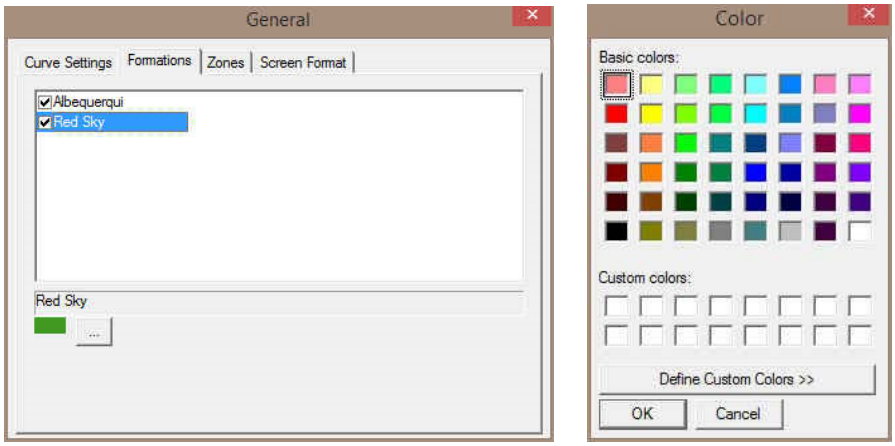
4. **Line Size portion of the window** will change the line thickness from 1 to 20 (pixels wide). You have to **type a number** in the **size field** and your input will be automatically displayed by the curve.
5. **Line Style portion of the window** will change the line style. You have to **type a number** in the **style field from 0 to 3** and your input will be automatically displayed by the curve. 0=Solid line, 1=Dashed Line, 2=Dotted Line, 3=Dash Dot Line
6. **Scale Portion of window** allows the user to change scales for the selected curve. Type a value in the appropriate fields to change the scales. The scales will change as you type.
7. **Grid Portion of window** allows the user to change the grid pattern for the selected curve. Type a value in the appropriate fields to change the grids. The grids will change as you type. Major Grids will indicate a value. The minor grids will divide the whole track and not the majors.
8. **Ignore NULL's check box** when activated will join curve values ignoring the null values. When deactivated the curve will only draw when there are two consecutive data points.
9. **Click** on the  in the upper right hand corner to **exit** this window.

Formation Display Properties

1. **Right Click anywhere** in either pane to activate the pop out menu.
2. **Select General Properties**. This will activate the General Properties window.
3. **Click** on the **Formations Tab** to activate the Formation display properties.

Note: Formations will only appear in this list if they have a calculated thickness in the Formation Report window.





4. **Activate the check box** beside the **formation** you wish to display in the Well Path portion of Geo*Steer.
5. If the formation is highlighted the user can also select a color from a color palette activated by the ... **button**. **Click** on a **color** and then **click** on the OK **button**.
6. **Click** on the ✕ in the upper right hand corner to **exit** this window.

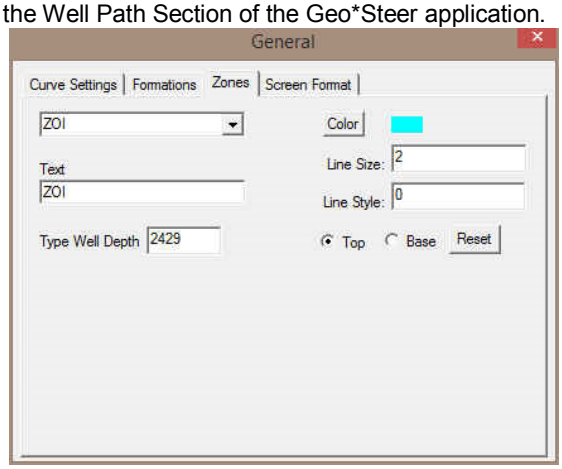
Zones Display Properties

1. **Right Click anywhere** in either pane to activate the pop out menu.
2. **Select General Properties**. This will activate the General Properties window.
3. **Click** on the **Zones Tab** to activate the Zones display properties.

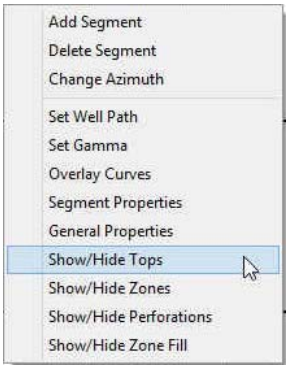
Note: Zones will only appear in this list if they been entered in the **Type Well Portion** (left side) of the Geo*Steer application.

4. **Click** on the **drop arrow** and **select** the **zone** you wish to change the display for.

You can change the display name if you wish by typing in a new Zone name. These can be tops or any other indicators you wish to display in the Well Path Section of the Geo*Steer application.



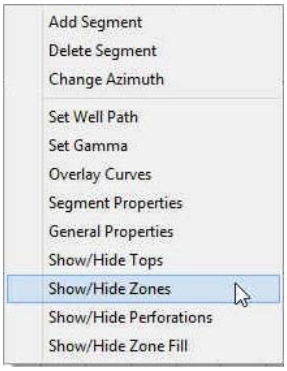
5. **Line Size portion of the window** will change the line thickness from 1 to 9 (pixels wide). You have to **type a number** in the **size field** and your input will be automatically displayed by the curve.
6. **Line Style portion of the window** will change the line style. You have to **type a number** in the **style field from 0 to 3** and your input will be automatically displayed by the curve.
   0=Solid line, 1=Dashed Line, 2=Dotted Line, 3=Dash Dot Line
7. **Click** on the  in the upper right hand corner to **exit** this window.



Show / Hide Formation Top Names

This selection is a toggle to either Show or Hide the Formation Top Names displayed on the Well Path pane.

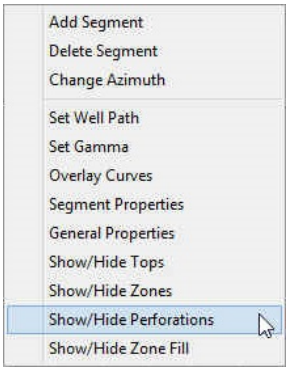
1. **Right click** on the **Well Path pane (right side)** to activate the pop out menu.
2. **Select Show / Hide Tops** from the pop out menu list**.** This will toggle between Showing and Hiding the Formation Top Names in the Well Path pane



Show / Hide Zone Names

This selection is a toggle to either Show or Hide the Zone Names displayed on the Well Path pane.

1. **Right click** on the **Well Path pane (right side)** to activate the pop out menu.
2. **Select Show / Hide Zones** from the pop out menu list. This will toggle between Showing and Hiding the Zone Names in the Well Path pane.

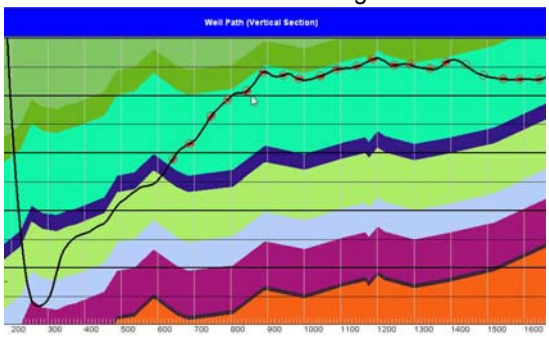


Show / Hide Perforations

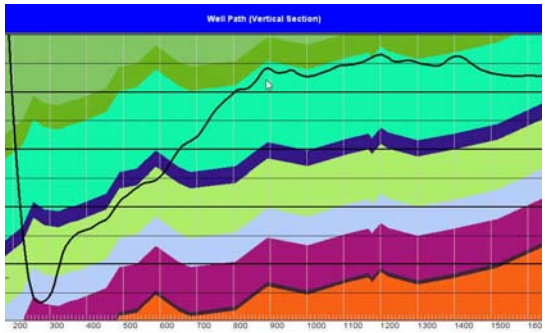
This selection is a toggle to either Show or Hide the Perforated Intervals entered into Power*Suite displayed along the Well Path curve in the Well Path pane.

Note: The perforated intervals must be either imported or created in Power*Log, Core or Curve.

1. **Right click** on the **Well Path pane (right side)** to activate the pop out menu.
2. **Select Show / Hide Perforations** from the pop out menu list. This will toggle between Showing and Hiding the Perforated Intervals along the Well Path curve in the Well Path pane.

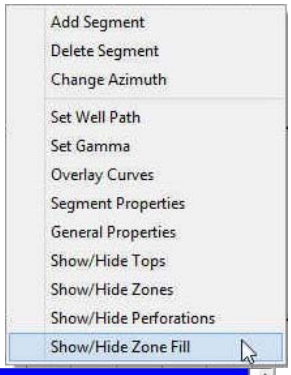


Perforated Intervals Shown



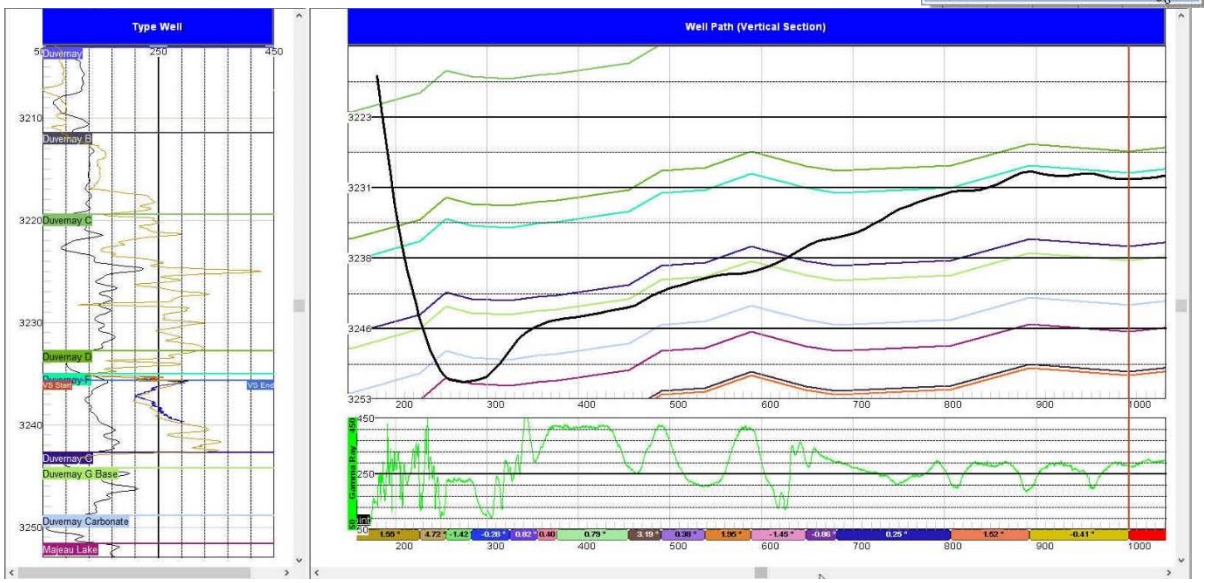
Perforated Intervals Hidden

Show / Hide Zone Fill

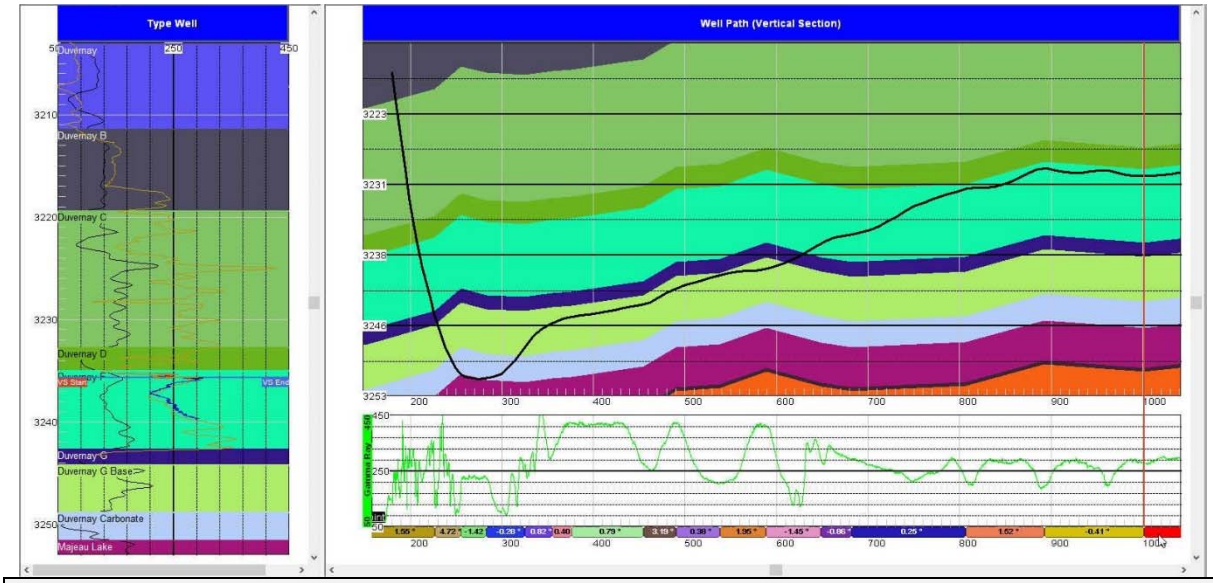


This selection is a toggle to either Show or Hide the Zone Fills displayed on both the Well Path and Type Well Panes. The Zone fill will fill in the area between the Zone Marker and the next Zone Marker.

1. **Right click** on the **Well Path pane (right side)** to activate the pop out menu.
2. **Select Show / Hide Zone Fill** from the pop out menu list. This will toggle between Showing and Hiding the Zone Fills on both the Well Path and Type Well Panes.



Hidden Zone Fills above / Shown Zone Fills below



The Colors of the fill are determined by the Zone Markers Colors found in the Right Click General properties selection located in the Zones Tab

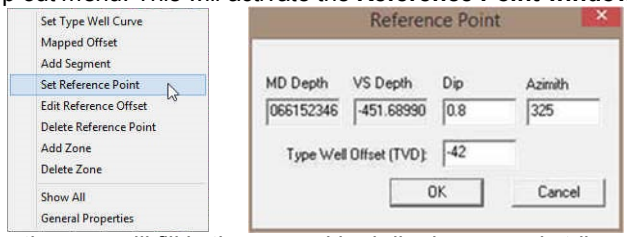
Segments

This is the nuts and bolts of the Power*Steer application and we should spend some time explaining what a segment does for you. Before we can add a segment we must add a Reference point to tie the Segment data to the Type well.

A segment consists of various integral pieces of data that has Vertical Section depths from and to, Measured Depths from and to, True Vertical Depths from and to along with Dip angle, Azimuths and throws. All the Segment data is manipulated on the type well by shrinking and extending the VS start and VS end points, moving the entire segment to create a throw (indicated by a fault on the Well Path Pane) or changing the Segment Azimuth. So we will start with setting a Reference Point.
Before any of this is done you will have to add the Type Well Gamma Ray Curve (TVD units), the steered well Gamma Ray curve (MD units) and the Well Path curve (TVD Units).

Set Reference Point

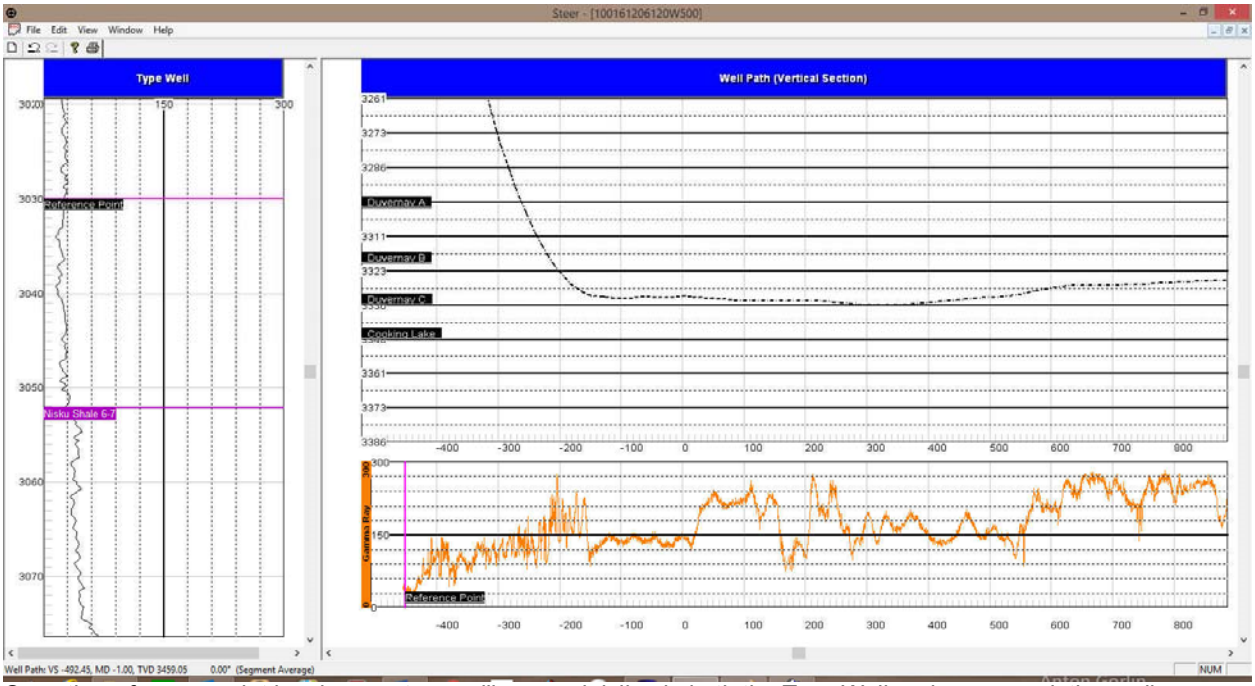
First thing you have to do is set up a reference point. You will need to know the general strike and dip of the formation you wish to steer this well for and maybe a depth offset so that you can move the steered wells curve data up or down to match near the zone of interest. This offset can be changed after the fact but the Strike and Dip will not be allowed to change. If you do want to change the strike and dip then you will have to delete the Reference point and that will delete all the segments that have been entered so you will be starting anew.
Right Click on the **Type Well Pane** a little above the depth that you wish to start your correlations and **select Set Reference Point** from the pop out menu. This will activate the **Reference Point window**.



In the Reference Point window the user will fill in the general bed dip degree and strike azimuth for your intended formation or zone you wish to steer.
Tab to the **Dip field** or **double click** to highlight the **Dip field**, **Type** the **dip** for the bed in the dip field, **depress** the **tab key** to advance the highlight to the **azimuth field**, **type** in the strike azimuth of the bed in this field, **depress** the **tab key** to advance the highlight to the Type Well Offset field and **type** in the Type well offset.

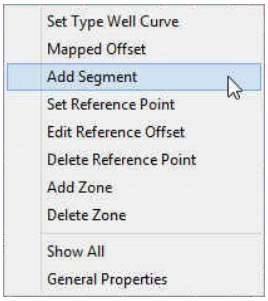
Type Well Offset field is not too critical as this can be changed after the fact. It just moves your correlatable well up or down to match with the Type well. A negative number will shove your steered well being drilled up and a positive number will shove your correlatable well down.

Click on the OK **button**.



Once the reference point has been set you will see a pink line in both the Type Well and your correlating well as shown above. You can also see a zone marker (Nisku Shale 6-7) in the illustration above. We will deal with the zone markers later on in the manual.

Add the first Segment



(First one is different than all the rest) The top of this segment cannot be moved. It is just a starting point. The rest of the segments after the first can be moved or resized.

1. **Right Click** somewhere near (but deeper than) your reference point and **Select Add Segment** from the pop out menu.

The first segment will be displayed on your Type Well as a red curve and will be placed at the offset depth that was entered into your Set Reference Point. The display depths on the Type Well pane have been recalculated into True Vertical Depth units so the user can attempt to correlate to the type Well. The first segment will extend to the end depth of your current data in your Gamma Curve.

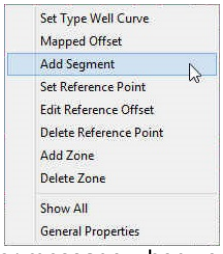
Note: You can only manipulate the bottom of this first segment (VS End).

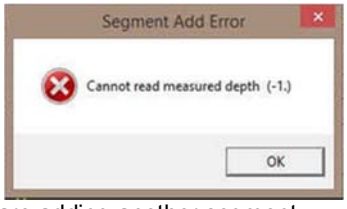
Adding a second Segment.

1. **Right Click** somewhere near (but deeper than) than the Start of your first segment and **Select Add Segment** from the pop out menu. This can be done on either the Well Path pane or the Type Well pane

The second segment will be displayed on your Type Well as a red curve and will also be placed at the offset depth that was entered into your Set Reference Point. The display depths on the Type Well pane have been recalculated into True Vertical Depth units so the user can attempt to correlate the second segment to the type Well. The second segment will extend to the end depth of your current data in your Gamma Curve.

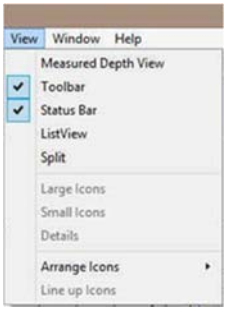
Note: This second segment may not be allowed due to the fact that you have a negative vertical section where you are adding the next segment.





If you are experiencing this Error message when you are adding another segment.

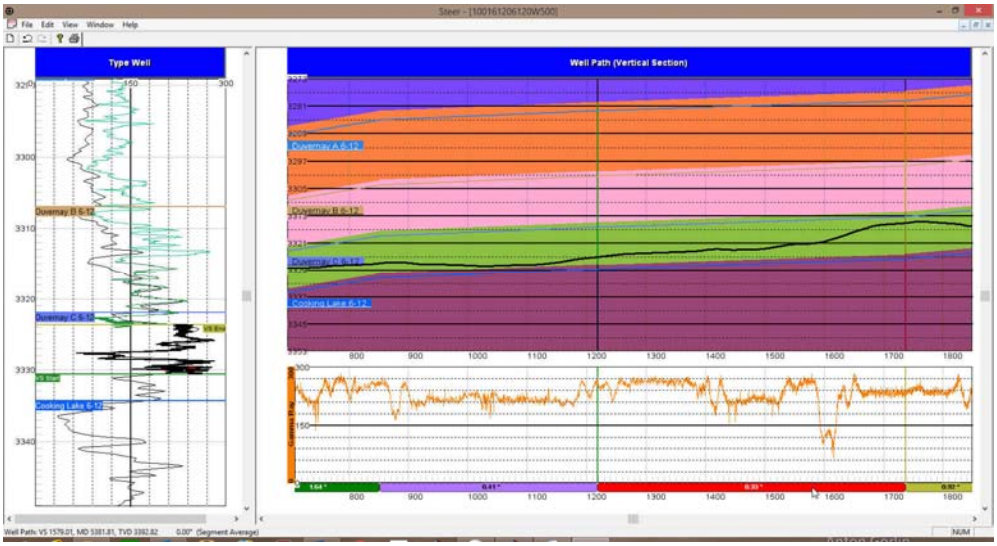
1. **Click** on the OK button in the Segment Add Error window.
2. Then switch your View from Vertical Section to Measured depth by **clicking** on the **View menu pull down** and **selecting Measured depth** to switch the view. This will allow you to add another segment in either the Type well or the Well Path panes.



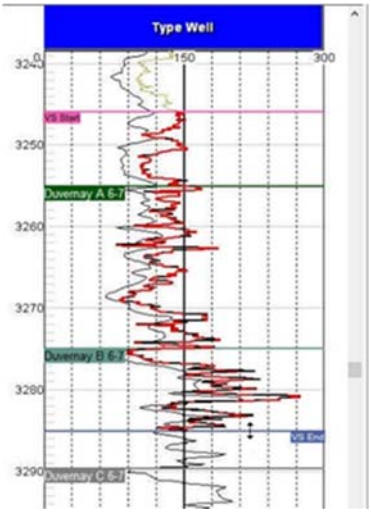
You will more than likely have to scroll deeper on the Well Path section to see you Gamma Ray / Well Path data.

Defining a Segment

A segment is a depth range on the Gamma Ray trace (either MD or VS depth range) that is then converted to TVD depth on the Trace Well. You have to **click** on the **segment marker** which is shown below the Steered well Gamma ray curve (turns red) to make it active on the Type well. Once it is active on the Type Well the segment will have a VS start line and VS finish line. The Gamma ray trace may go down or up or both depending on the well path over the segment interval. The segment trace on the Type well will appear red when going down and black when going up.



Changing the bedding angle of a Segment

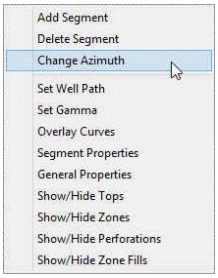


1. **Click once** on the **Segment Marker** below the Gamma Ray curve (shown above) to highlight the segment on the Type Well.
2. If you were to move the mouse pointer to hover over the VS End marker (blue line above and right) or hover over the VS Start marker (mauve line above and right) the cursor will turn into a ↕
3. **Click and drag** the segment down (extend it) or drag it up (shrink it) to match the Type Well Gamma Curve. This result will be angle change for the Zone Markers and or Formation Tops if they are displayed on the Well Path.

Changing the Strike Azimuth of a Segment.

Changing the Strike Azimuth will change the apparent dip of the segment.

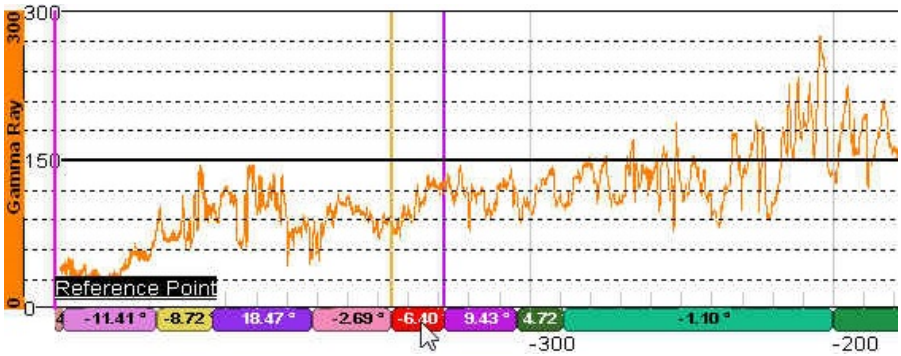
1. **Click once** on the **Segment Marker** below the Gamma Ray curve (shown below) to highlight the segment on the Type Well.
2. **Right Click between the Segment Markers on the Well Path pane** and **select Change Azimuth** from the resulting pop out menu. This will activate the Change Azimuth Window.



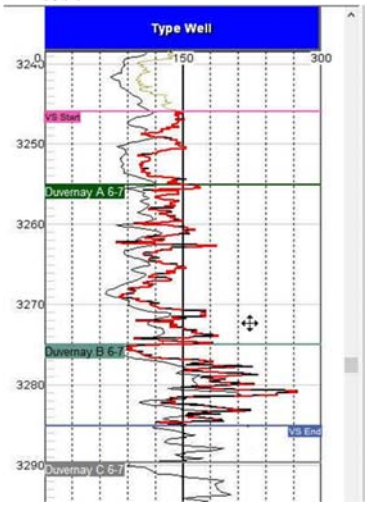
3. **Click** on the **up down arrows** to change the Azimuth.
4. **Click** on the Exit **button**.

Segment Data Visibility on the Type Well

If you would like to keep the Gamma Ray segment data on the Type well once you click on or create another segment. To view this data you would **double click** on the **Segment portion under the Gamma Ray Curve**. Vice versa it you want to **turn it off** you would then **double click** on the **segment again**.



Creating a fault



1. **Click once** on the **Segment Marker** below the Gamma Ray curve (shown below) to highlight the segment on the Type Well.
2. **Move Mouse pointer between the VS End** marker (blue line right) and the **VS Start** marker (mauve line) it will turn into a ✥
3. **Click and drag** the segment down or drag it up to match the Type Well Gamma Curve. This will result with a thrust or normal fault block for the Zone Markers and or Formation Tops if they are displayed on the Well Path.

Extending or Decreasing the (MD / VS) size of a Segment

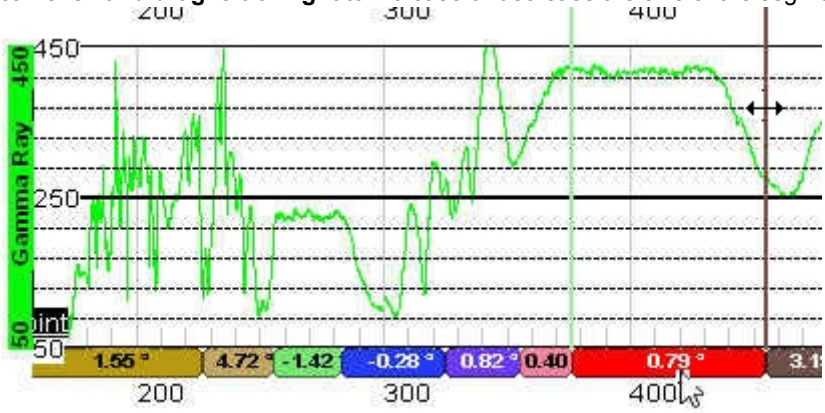
As more data comes or you wish to extend or decrease the size of an existing segment.

On the Type Well Pane

1. **Click once** on the **Segment Marker** below the Gamma Ray curve (shown above) to highlight the segment on the Type Well.
2. **Click once** on the **Interval between the VS Start and VS End on the Type Well.**
3. **Hold the Shift Key down** on the keypad and then **roll the roller ball on your mouse away from you** to decrease the size of the Segment. You will notice the VS End going up on the Type Well Pane and to the left on the Well Path pane. **Or Hold the Shift Key down** on the keypad and then **roll the roller ball on your mouse towards you** to increase the size of the Segment. You will notice the VS End going down on the Type Well Pane and to the right on the Well Path pane.

On the Well Path Pane

1. **Click once** on the **Segment Marker** below the Gamma Ray curve (shown below) to highlight the segment on the Type Well.
2. You can mouse over **(Hover)** on the Well path Pane over a **Segment end line** and it will turn into a ↔ and then you can **click and drag left or right** to increase or decrease the size of the segment.



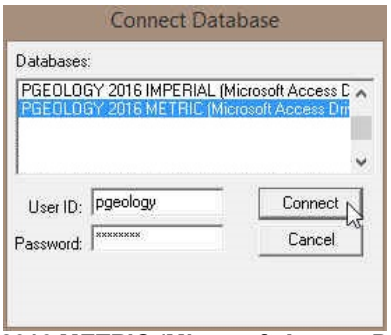
Power*WITS Module

The Wits Module allows the user to get the data hub, that is populated from the Electronic Drilling Recorder (EDR) in virtually real time. It allows you do download any and all curve data, survey data, and some of the well record data. The data populates the database and the user merely refreshes their log periodically.

Connecting to the Database

1.) **Double click** on the **Power*WITS** 

Icon. This will initiate the program and activate a **Connect Database** window.

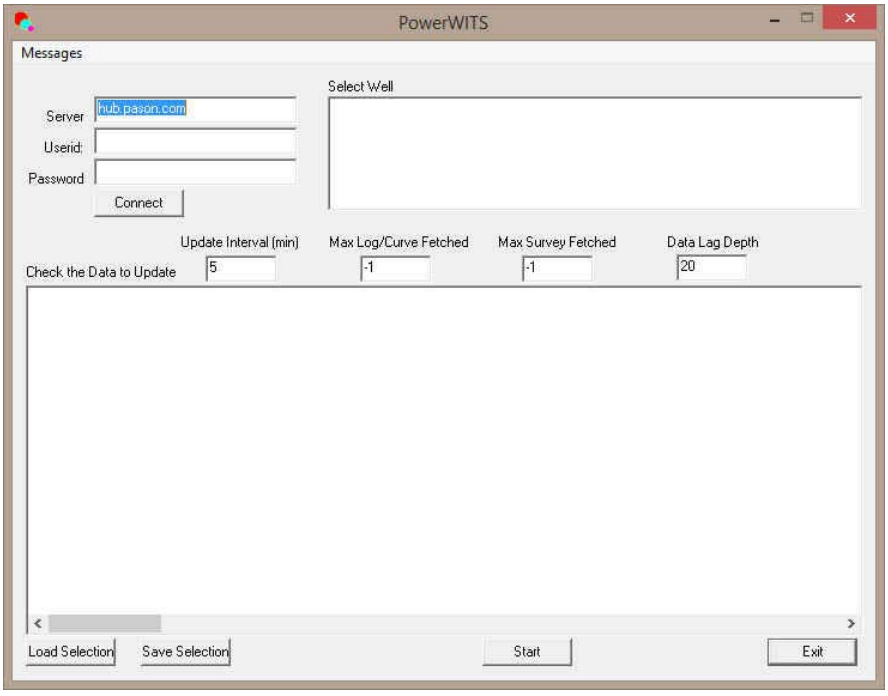


2.) Highlight the **PGEOLOGY 2016 METRIC (Microsoft Access Driver[*.mbd]))** database by **clicking** on it once.

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 

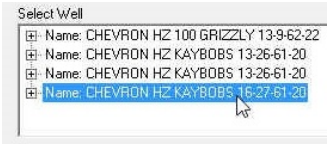
button. This will activate the Power*WITS window below.



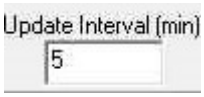
Overview of Window

These fields allow the user to type in the Network Sever name. The user will also have to fill in their User Id and password in the appropriate fields given to you by the Network Server administrator.

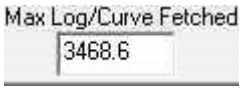
This button will activate the connection to the server once you have identified the server and typed in both the User ID and the Password field.



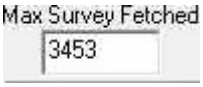
The **Select Well** portion of the window shows the wells that you have been given permissions to view and access data from. These permissions in this case are granted to you by a Network Server administrator or Pason representative.



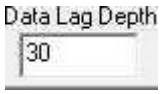
This field allows the user to determine how often the Power*WITS application will go and look for new data from the Server. If this is a Pason Server the data is updated to the server every 5 minutes so that would be the minimum time you would type in this field.



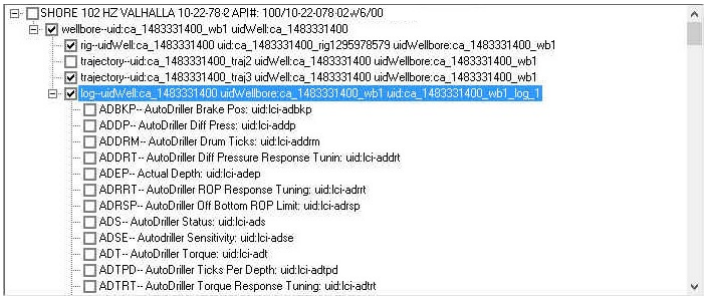
This field notifies you of the last depth that curve data was retrieved from the server. If you are starting fresh you may want to type in the depth where you want to retrieve curve data from the server in this field.



This field notifies you of the last depth that Survey data was retrieved from the server. If you are starting fresh you will want to type in the depth of Zero “0” where you will want to retrieve all the survey data from the server.



This field allows the user to reset the Max Log/Curve Fetched back a few meters. The number you type in here will all depend on the depth of your hole or the positioning of the LWD tools in your bottom hole string. The bit depth when retrieved from the server will have some data but the Mud Gas Data / LWD data will be lagged. This field will compensate for those depths so you have all the data.

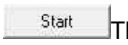


This portion of the Selection window allows the user to select different data types from the server. In this case we will be retrieving some well bore data including basic Striplog header information, survey data from trag3 in this case, and curve data from log-uid selection. The curves being retrieved are not being shown in the illustration to the left. The Survey data group will have a name made up from the server. Our default group name is 1 so you will have to modify the Master group to handle the import of surveys from the server.

This portion of the Selection window allows the user to select different curves to download from the server. In this case we will be retrieving 3 sets of curve data from the Server. The curves being retrieved are Gam, PGAS and TOP.
N.B. The curves being imported will have these curve names and must then be associated with a curve layer and will also have to have some scales associated with the curves for them to be displayed correctly.

This button will use the save the selections of curve and well bore, that you have picked for data to download and will be saved with a file name that you provide..

This button will load the saved selection of curve and well bore selections that were saved from the Save Selection button.



This button will start the download process with the particulars that you have entered into the various fields.

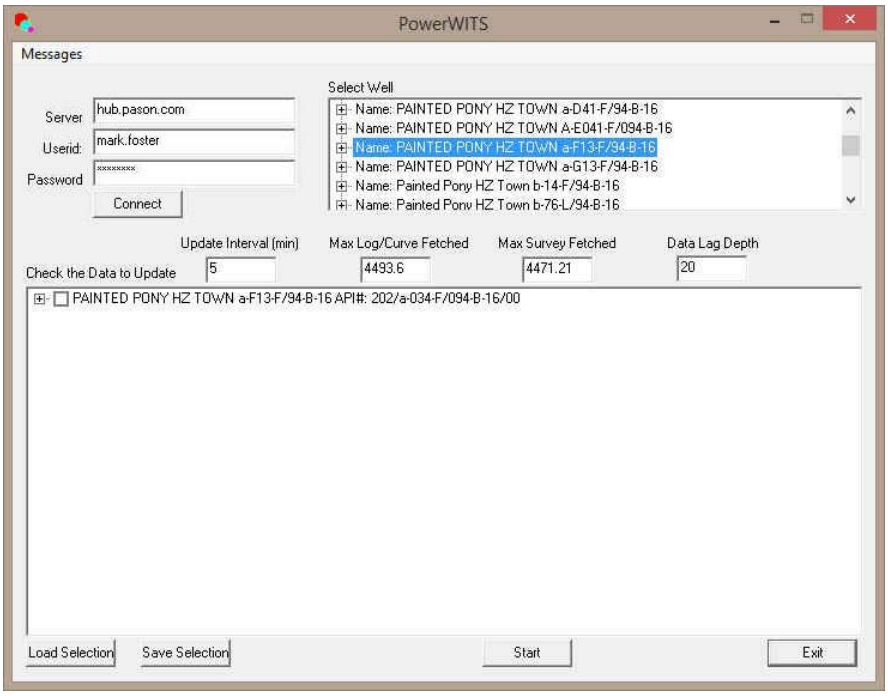
Stop This button will stop the process and will only be seen after you start the download process.

Connecting to the Server

1.) **Click** in the **Server name field** and **type in the sever name** and website (in our case it is a Pason EDR) and the server location is "hub.pason.com". **Tab** to the Userid field.
2.) **Type** in your User ID in the Userid field. **Tab** to the Password field.
3.) **Type** in your **password** in the password field.
4.) **Click** on the Connect **button.**

Note: You will need some special permissions to access the datahub.
Drilling Bit Access (bit)
Drilling/Service Rig Data Access (edr)
Live Data (live_data)
And **the be all end all you need permissions** to the **WITSML Server**
With these permissions you will be able to see the well names you have been given permissions to get data from.

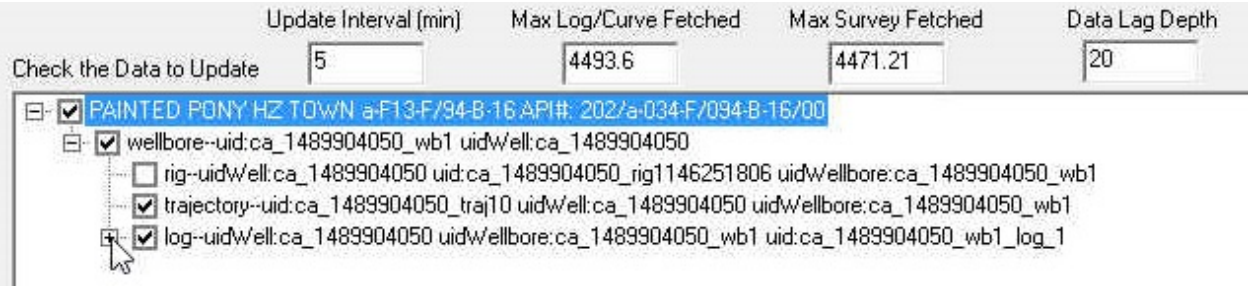
5.) **Click** on the **Well Name** in the **Select Well** portion of the Window. This will activate the Well in the lower portion of the window.



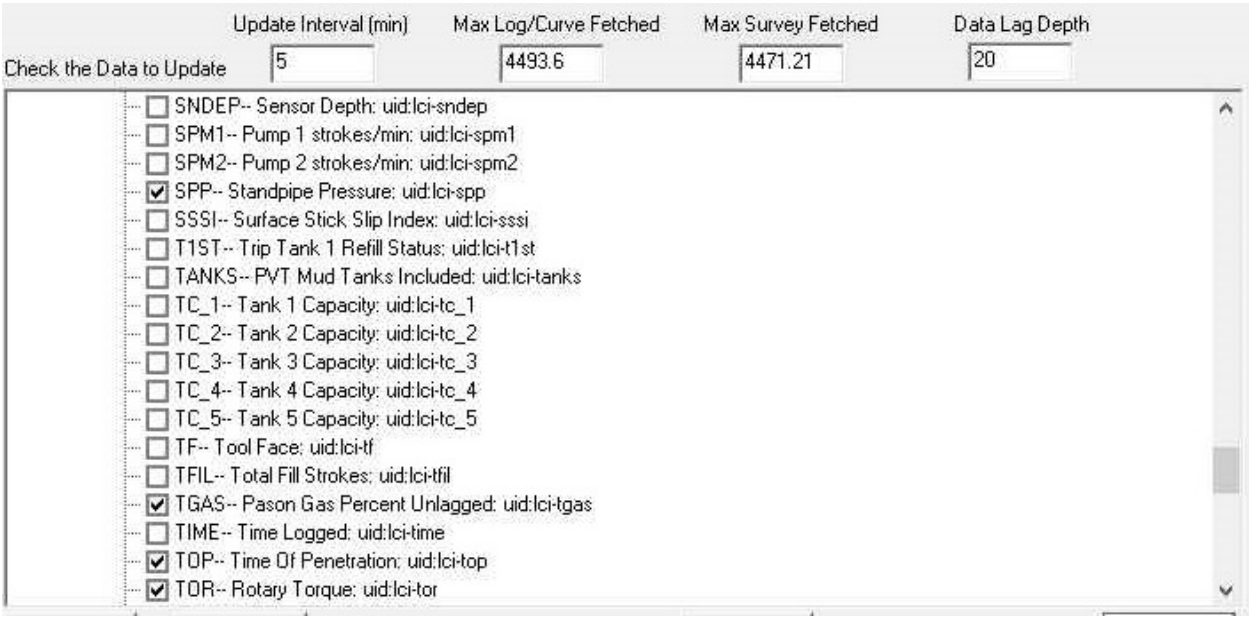
6.) **Click** on the  to expand the well and **activate** the **check mark** in the appropriate box as indicated in the graphic below.

7.) **Click** on the  to expand the wellbore-uid and **activate** the **check mark** in the appropriate box as indicated in the graphic below.

8.) **Click** on the  to expand the rig—uid (this will import some of the Well data but you may not want to keep this activated as it will overwrite the data you have put in the well record), trajectory—uid (this will import the survey data) and the log—uid (this will import the curve data) and **activate** the **check marks** in the appropriate box as indicated in the graphic below.

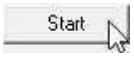


9.) **Click** on the  to expand the log-uid and **activate** the **check marks** in the appropriate box as indicated in the graphic below for the curve data you wish to download. The Max Log / Curve Fetched field indicates the deepest data retrieved for your curve data to date. The Max Survey Data Fetch field indicates the deepest survey data fetched to date.

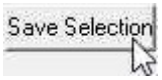


10.) **Click** in the **Update interval (min) field** and **type** in a **time interval** you want the updating to happen in Minutes.

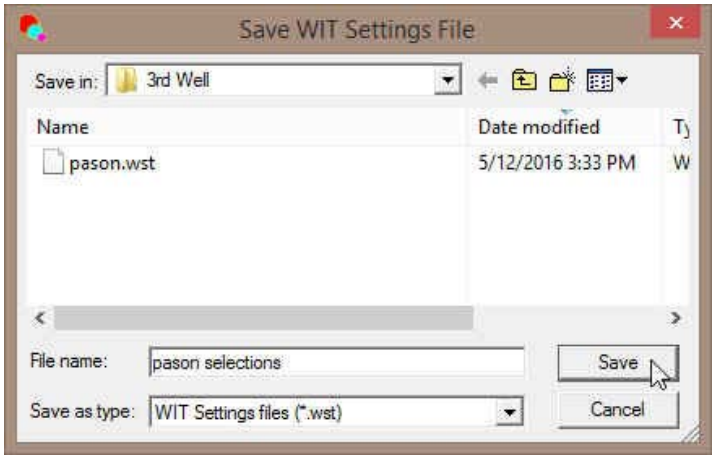
11.) **Click** in the **Data Lagged depth field** and **type** in the depth delay or the lag you want to repeat when importing data. This is **typically** for **gas** as there is a lag from the time drilled to the time it is recorded on the surface. Otherwise you will be getting nothing but zeros for your gas.

12.) **Click** on the 

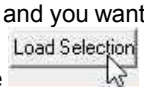
button. This will initiate the download of data. The curves downloaded will be in the database but will not be reflected on your log until you map the downloaded curve data to the appropriate layer. See **Curve Maintenance section** in the manual.

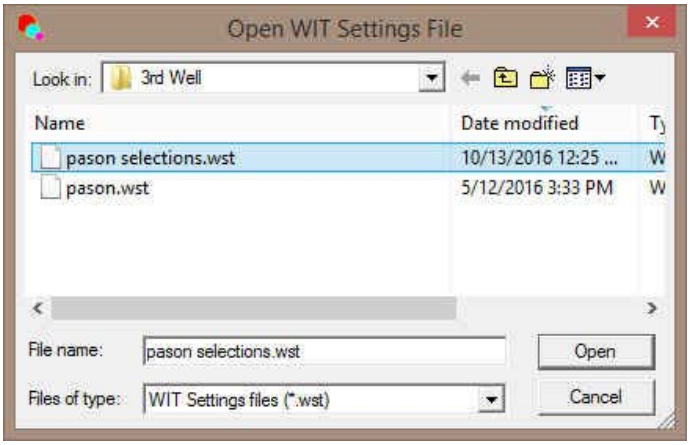
13.) If you want to **save the selected curve and well data click** on the 

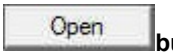
button. This will initiate a Save WITS Setting File window.



14.) **Type** in a **file name** and **click** on the  **button.**

15.) If you happen to close the Power*WITS application and you want to start up again when you get to the curve selection portion of the window you can click on the  button to designate which curve data you are wanting to download. This will activate the Open WITS Setting File window.



16.) **Highlight** your **saved file** name and **click** on the  **button**.

17.) **Click** on the  **button** to close the Power*WITS application.