

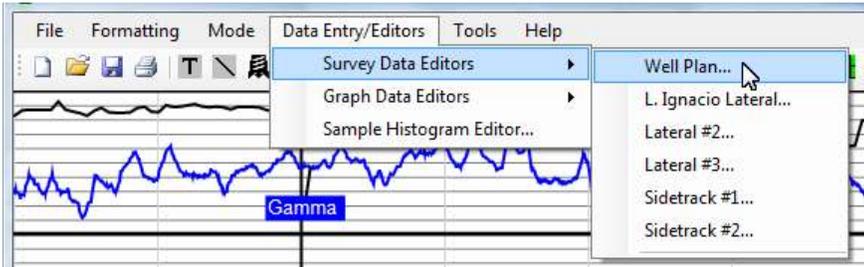
Chapter 2 - Getting Started

Entering Survey Data

The heart of this program is the survey data and the ability for this program to compute the derived survey parameters.

Start the XSection Horizontal Log Program.

Begin by clicking on the menu bar item Data Entry/Editors ->Survey Data Editors->Well Plan....



This will open up the Survey Data Sheet for the Well Plan curve.

The 'Well Plan Survey Data Sheet' window displays survey data and controls. It includes a 'Tie-In Data' section, a 'Slide Report' section, and a main data table.

Tie-In Data

MD	INC	AZ	TVD	VS	NS	EW	DLS
1000	0	180	1000	0	0	0	0

Slide Report

Slide From:
Slide To:
Tool Face (optional): HS

Survey Data Table

MD	INC	AZ	TVD	VS	NS	EW	Dogleg / 100'
1350	89.5	180	1224.05	222.1	-222.11	0.00	25.57
2000	89.5	180	1229.73	872.1	-872.08	0.00	0.00

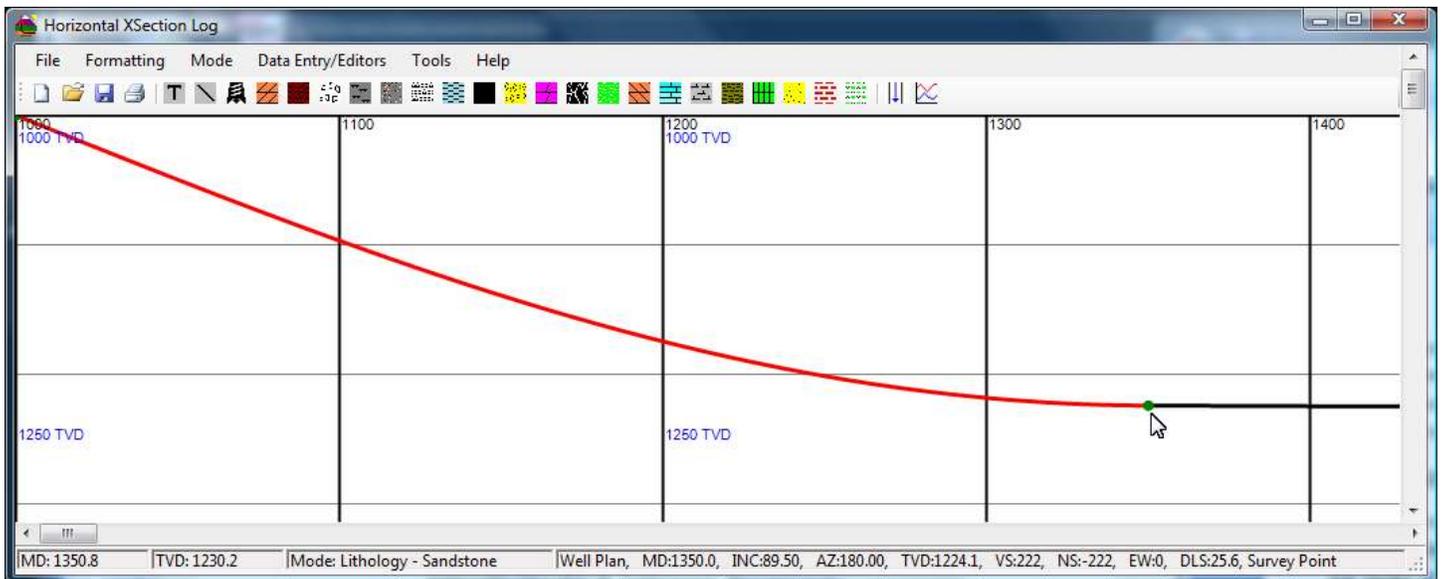
Controls

Edit Survey, Delete Survey, Add Survey, Import Surveys (*.csv), Export Surveys (*.csv), Done, Import Slides (*.csv), Export Slides (*.csv)

Select the "Edit/Add Tie-In Survey" button and enter "1000" in the "MD" field, "180" in the "AZ" field and "1000" in the "TVD" field, leave everything else as zeros and make sure the "Direction" field is set to "180" (see above).

Note: when entering Tie-in Values, all the fields must be filled. If the Tie-In value is an existing survey, you enter all the fields in the tie-in value window from the tie-in survey. In order for the program to accurately calculate the vertical section (VS), the "Direction" field must be correctly set (the Directional Driller will have this information). See "Chapter 5 - Survey Data", for more information regarding the derived survey data. After the tie-in value are entered for a particular lateral, only the MD, AZ and INC need be entered, the Horizontal XSection Log software will calculate the other survey fields .

Now click on the Add Survey button and enter "1350" for Measured Depth (MD), "89.5" for Inclination (INC) and "180" for azimuth (AZ), and click the "Done" button. Click "Add Survey" again and enter "2000" (MD), "89.5" (INC) and "180" (AZ) and click the "Done" button. Now go to the right side of the editor and type "1000" in the "Slide From" text box and "1350" in the "Slide To" text box and click the "Add Slide Interval" button. Now click the "Done" button to exit the Well Plan Survey Data Sheet window. The Horizontal XSection program will draw a well plan curve that goes from vertical to horizontal with 25.57 degree doglegs. Green markers are shown at



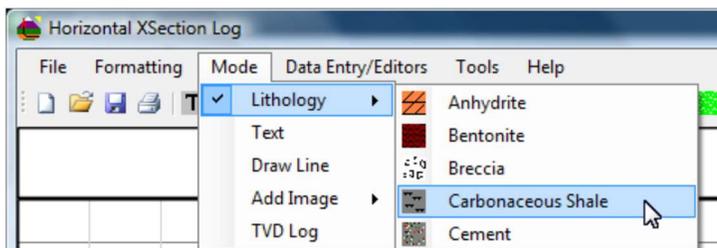
the survey points. The line is red during sliding intervals, and black during rotating intervals. Notice the survey data shown on the status bar at the bottom of the window as you move the mouse along the planned well curve. At survey points, the survey data and parameters will be annotated with the words "Survey Point", as in the example above. Between the survey points the survey data is interpolated and there is no "Survey Point" annotation.

Editing Lateral Curve Attributes

Click the menu item Formatting->Format Lateral Curve Attributes..., to open the "Edit Lateral Line Attributes" window. Select the "Well Plan" lateral from the list on the right side of the window, and all the attributes for this curve will appear in the "Styles" section. Change the line style from "Solid" to "Dash", and make any other changes to the style of the well plan curve. Notice you can even change the name of the lateral, for example type in Well Plan #1, and click change name. This will change the name of the lateral on the logs legend when the log is printed, as well as in the Survey Data Editor menu, the plan view and on the TVD versus Vertical Section view (see later chapters). Click "Done" when you are finished making changes.

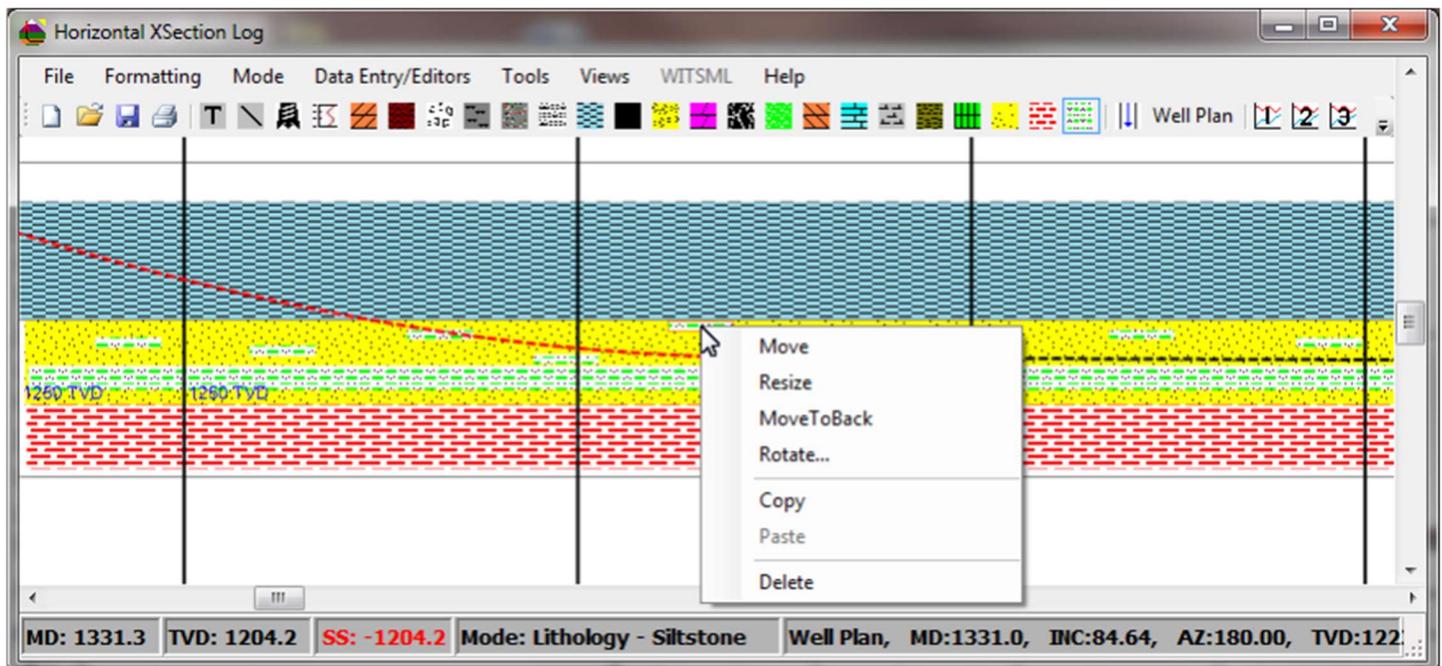
Lithology Mode and Drawing Lithology Beds

There are six modes for editing your log: "Lithology" mode, "Text" mode, "Draw Line" mode, "Add Image" mode, "TVD Log" mode and "Geo-Horizon" mode.



For the lithology mode, simply click the menu item Mode->Lithology-> and select any of the 20 Lithology patterns, alternately, select a lithology from the toolbar. The cursor will change to a cross. Left click and hold,

move the mouse to draw your bed, release the mouse when done drawing. To add a stringer to your log, just click once without moving the mouse, and a stringer will appear at the click point. Use the menu item Mode->Lithology->Set Stringer Size... to change the default stringer dimensions.

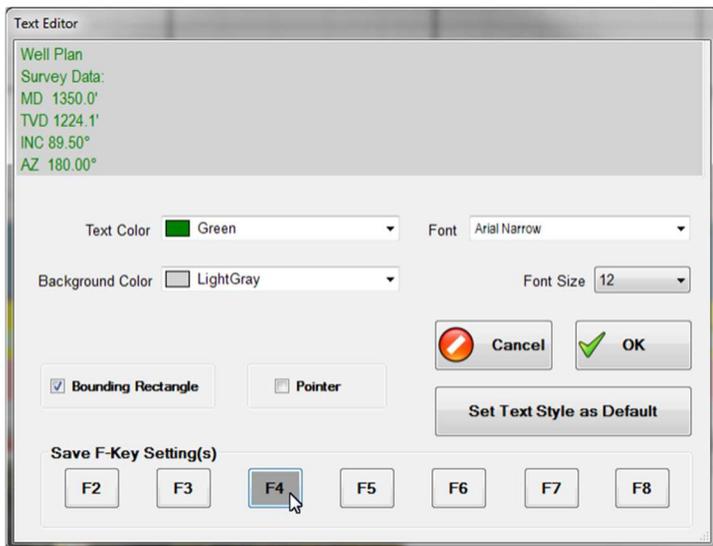


An orange border will appear when the mouse cross hovers over a particular lithology element (bed or stringer). When you see the orange border, right click to "Move", "Delete", "MoveToBack", "Rotate" or "Copy" the selected element. A delete lithology bed shortcut is to left click a bed while holding down the "Ctrl" key. Similarly, hold down the "shift" key while left-clicking a lithology bed to move the selected lithology bed to the back (MoveToBack function).

Text Mode and Adding Text to your Log

Text can be added to the cross-section track, the graph tracks and the sample % track.

Click the menu item Mode->Text, or select the Text Symbol **T** from the toolbar. Click on the log where you want to add text and a Text Editor window will appear. The text editor window is very simple and self-explanatory. To select text that is already on the log, just click on the selected text in Text Mode, and the text editor will appear with the selected text loaded into the Text Editor.

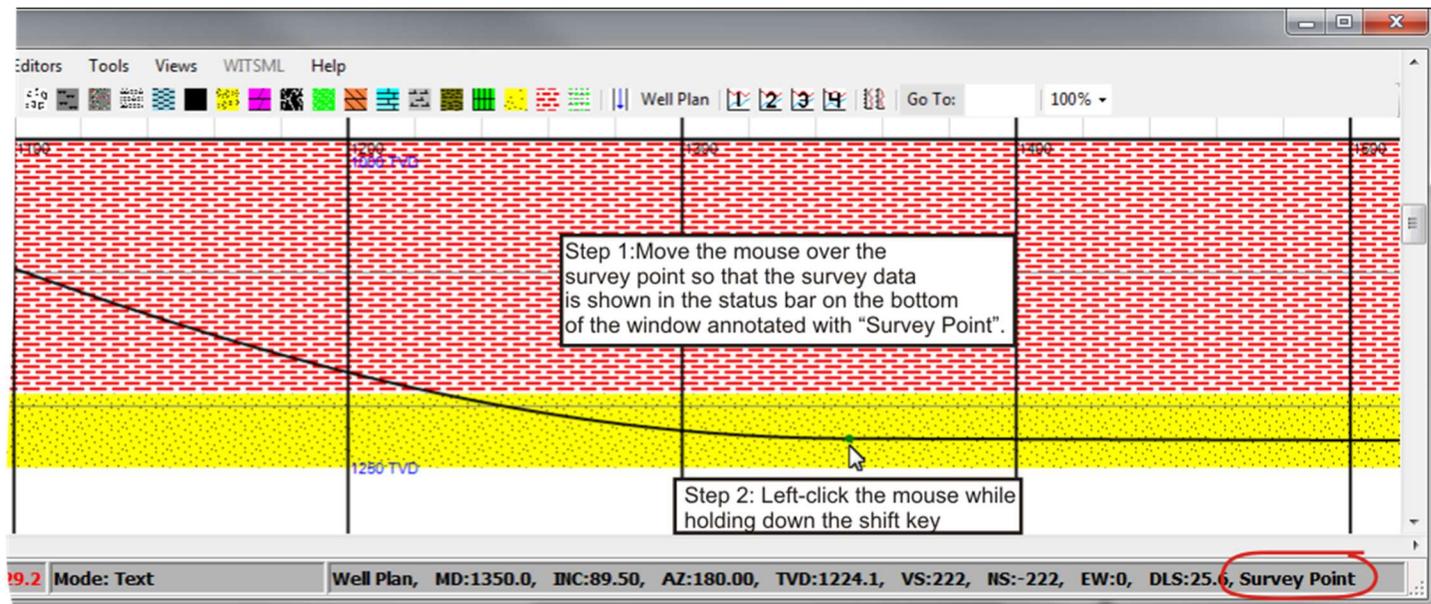


By depressing the F4 button in the "Text Editor" as show to the left, the selected font (Arial Narrow), font size (12), background color (light gray), and font color (green), will be saved to the F4 key. Now whenever the text editor is opened, depressing the F4 key on the keyboard will load Arial narrow, font size 12, background color light gray and font color green on the keyboard.

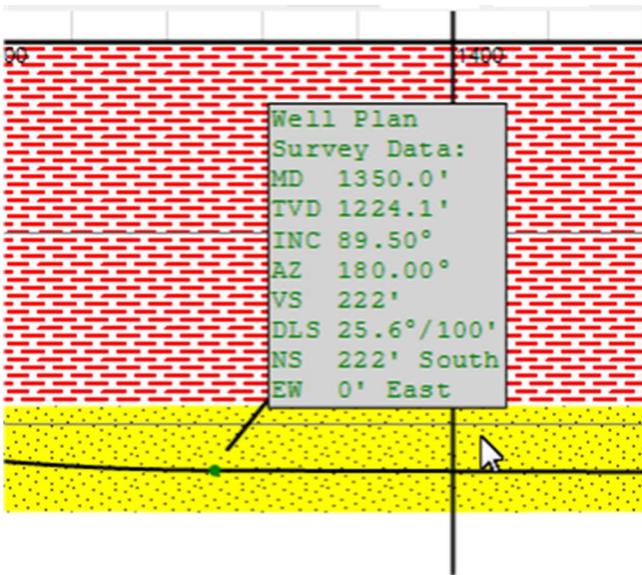
When in "Text" mode, an orange border will appear when the mouse arrow moves over a text element, or within 10 pixels (about a 10th of an inch) of the end of a pointer line associated with a text element. Right click to "Move" "Resize" or "Delete" a text element. A pointer line can only be moved. Open the text editor to deselect the pointer or bounding rectangle check boxes to make them disappear.

Adding Formatted Surveys as Text to your Log

To add formatted survey data to your log, while in "Text Mode" move the cursor to the desired point on the lateral, **hold down the shift key and left-click the mouse**. This will load the survey data that is in the status bar at the bottom of the window into the Text Editor.



To make the survey data easier to read for the viewer, choose a monospaced font, for example "Courier New".



Note, if a client computer does not have the font that you selected, a default font will be substituted - usually this font will be "Microsoft Sans Serif". This may result in a log that looks different on your client's computer than on your computer. One way to avoid this problem is to select common fonts like Arial, Times New Roman, Courier New and Consolas.

How to Quickly Change Text parameters (Fonts, Font Size, Font Color and Font Background Color)

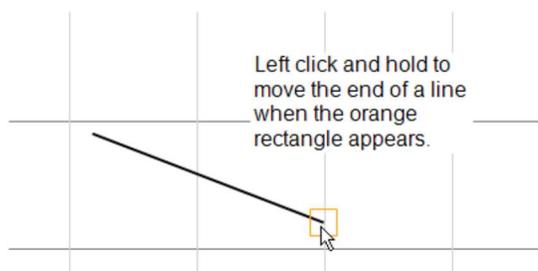
For organizational purposes, it is a good idea to use the same text parameters (font, font size, font color and background color) for text added for similar purposes. For example use one set of text parameters for sample descriptions, another for drilling parameters. A recent change to the text editor now allows the geologist / user to preset the F2 through F8 Keys to any text style (font type, font size, font color and background color). With the text editor open the user can depress any of the F2 through F8 to load the preset text style. Use the "Set F Keys" buttons to set F2 – F8 to the loaded font style. F key preset styles are saved to the laptop, so that any new font style set to any F key is remembered by the program between user sessions.

Adding Text to the Sample % Track

Because left-mouse clicking on the sample % track opens the sample % editor, even in text mode, adding text to this track is slightly different than to the other tracks. To add or edit text in the Sample % track, the program must be in "Text" Mode and the user **must have the Control (Ctrl) key depressed when depressing the left mouse key! The Control (Ctrl) key must also be depressed to move, resize or delete text blocks in the Sample % track!**

Draw Line Mode and Adding a Line to your Log

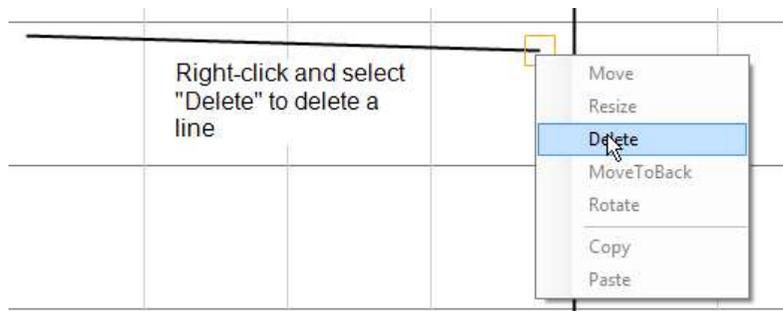
Click the menu item Mode->Add Image, or click the  icon on the toolbar. Click and hold the left-button on the mouse to start drawing your line. Release the left mouse button when done drawing. To move a line, position the mouse arrow over either end of the line until the small orange rectangle appears. Then left click and hold while moving the mouse.



Release the left-mouse button when finished repositioning the line. To delete a line, first position the mouse over either end of a line until the orange rectangle appears. Then right-click the mouse and select "Delete". Another method of deleting a line is simply to **resize the line to**

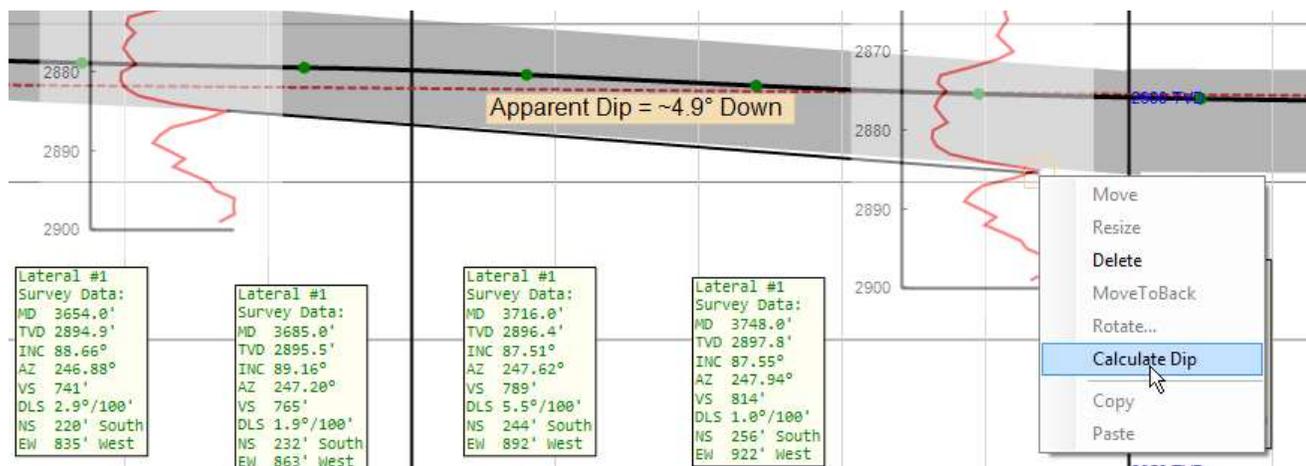
less than 1/2 inch.

Note, the steps for drawing and moving a line in "Draw Line" mode are different than the steps for moving a pointer line connected to a text block in "Text" Mode.



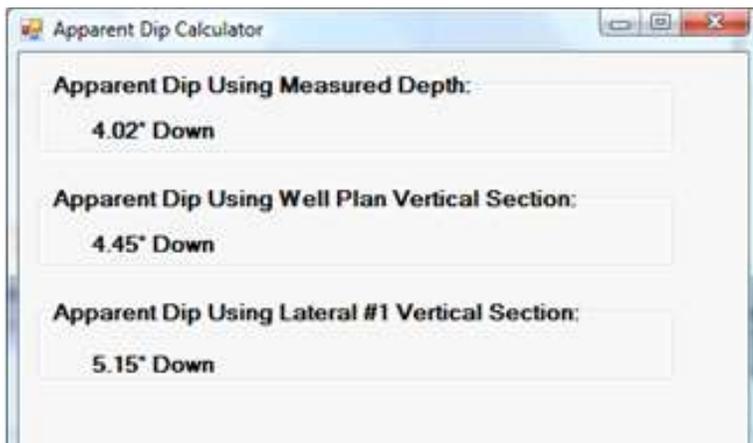
Calculating Apparent Dip Using the Draw Line Feature

The "Draw Line" mode of the Horizontal XSection has a "Calculate Dip" tool that will calculate the apparent dip of the line based on the change in TVD of the line and the distance between the beginning of the line and the end of the line. To access this feature, simply draw a line where you want to measure the dip. Then right-click the mouse over either end of the line and select the "Calculate Dip" from the popup menu as show below. Note: the line in question is drawn between the bottom of the coal seam connecting the two TVD Logs.



The apparent dip calculator will calculate a value based on the difference in measured depth and TVD (or SS) for the line that was drawn. However, this could be an inaccurate value for a borehole trajectory that is not near 90° Inclination, or is turning. The program will also project the apparent dip using the vertical section values for any laterals that are present for the whole length of the drawn line. In the above example, the apparent dip is calculated using the measured depth of the line as well as the vertical section for similar depths for the "Well Plan" and "Lateral #1". Surprisingly, the values diverge by over 1°.

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Or, use the "Dip Calculator" in the tools menu as an alternate method to determine an apparent dip.

Add Image Mode and Adding Images to your Log

Click the menu item Mode->Add Image->select any of the images in the list, or click the  icon on the toolbar. The toolbar holds the last image selected from the Add Image menu. Left click anywhere on the cross-section track to add your image. Right click over

the image to delete or move the image. There is more on images in "Chapter 7 - Log Images and Photos".

TVD Log Mode

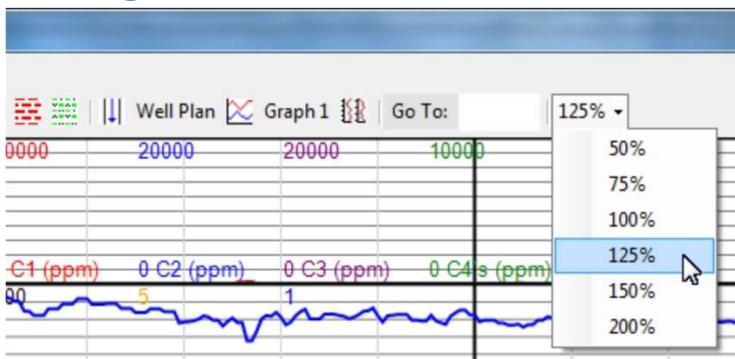
The TVD Log mode is used for adding Log curves to the cross-section track. These logs can be from pilot hole wire-line logs, TVD logs generated while drilling the curve, or offset logs from nearby wells, and is an essential tool in geo-steering your horizontal well.

Click the menu item Mode->TVD Log ->select any of the logs in the list, or click the  icon on the toolbar. If there are no logs loaded in the menu item, the user will not be able to select "TVD Log" mode. This is true, even if there are log images on the cross-section.

Much more can be learned in Chapter 10 - "TVD Logs in the Cross-Section".

Note: occasionally when a log file is first opened by double clicking on a file, the TVD logs will be missing from the list in the TVD Log menu. Open and close the "Cross-Section TVD Log Editor" (Data Entry/Editors->Cross-Section TVD Log Editor... menu) to list the TVD logs.

Zooming



The graphic on the left shows the location of a drop down menu on the far right of the toolbar. Simply select the degree of magnification that you desire and the log will automatically scale and redraw. The default magnification is 100%. Note however, that all elements will automatically move and be scaled to the new magnification, with the exception of Log Images and Photos that are added to the log. Because of issues with pixilation, there is no scaling of photos or Log Images.

For example, a two- inch square photo added to the log remains 2-inch square regardless of the degree of zooming. However, pointer lines attached to a log image or photo will be scaled and shifted correctly!