TerraNotes

The official newsletter of TERRASCIENCES

Current TerraStation II version: v7.310

2014 Trade Shows

Our scheduled appearances at trade shows for 2014 are:

- **AAPG 2014** – (6-9 April, 2014) - Annual AAPG convention. This will be in Houston, TX.

- **PETEX 2014** – London, England. 18-20 November, 2014. The ExCeL Centre.

We look forward to seeing you at these shows.

Note on Well Constants

Please be aware that the previously undesignated well constants slots 38 to 50 inclusive are now used by the Pore Pressure functions and Stress Analysis module. If you have been utilizing these slots in your TCL routines you may want to adjust your routines to use other locations. Of course, if you do not make use of the Pore Pressure and Stress Analysis capabilities then you can still use the constants.

Currently, the only well constant slots that are unassigned are those from 51 to 60, and slots 74 and 75. This may change in future versions.
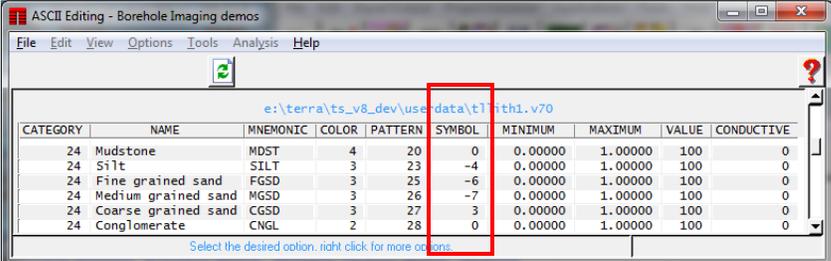
You can access the constants from many locations. One is the **Edit – Well Properties** control panel. Simply press the **Constants** button on the General tab.

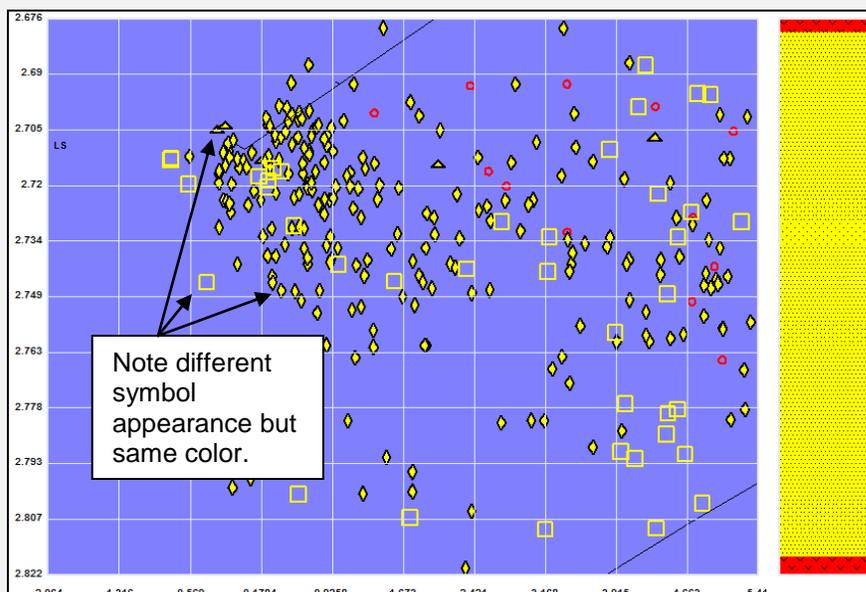## Crossplots and symbols from lithology/facies

Some time ago we added the ability to have the color of symbols on crossplots be obtained from the lithology/facies data. However, an issue could occur when you had the same color assigned to more than one lithology. How do you tell if it is fine, medium or coarse grained sandstone for example?

One obvious way would be to use a different color for each. But if you want to retain the same color for the different lithologies, then how to differentiate on a crossplot?

There is now an extra column in the lithology group definition files. It is called **SYMBOL**. By default it is set to zero, but you can edit this file to have a different symbol for lithologies. For example…
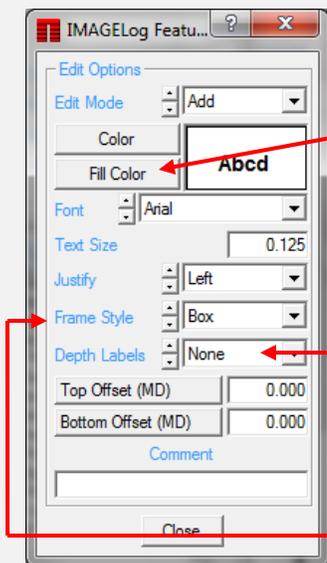

Note different symbol appearance but same color.

Comments enhancement in IMAGELog

In v7.308 we added some ways to improve the display of comment text. This applies to comment text stored in the .CMT file and not the comments pulled from the various other sources that we allow (e.g. lithology, pick, core data files, etc.)

There are now two additional controls.

Fill color – this allows you to set a background color for the text container.

Depth Labels – this allows you to post the top and bottom depths as computed from the actual depth of the comment, and the top and bottom offset depths.

In addition, there is now a **Hexagon** option on the **Frame Style** list.

This shows a basic string of text that is black, left justified

Next we have the same text, but now surrounded by a box. The box is defined using the **Frame Style** setting of **Box** on the comment entry panel.

Here the box now has a background color defined using the **Fill Color** button on the comment entry panel. Also the **Depth Label** setting is set to **Depth Range**. Top and Bottom Offsets are defined also to give the labels at the top left and bottom right of the comment entry.

Here we have the same general setting except the **Frame Style** is set to **Hexagon**. In addition, the text color has been set to red.
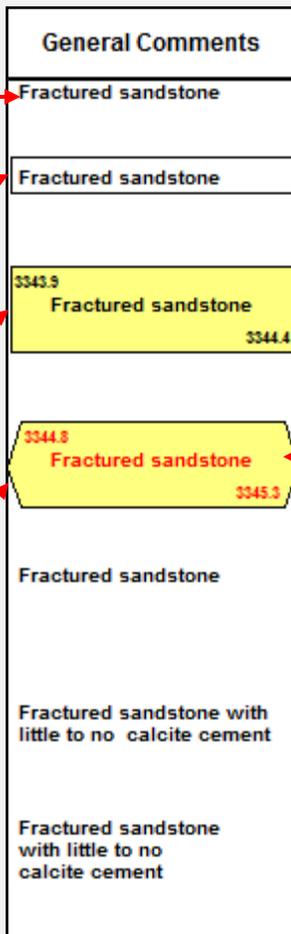

Table reference lines

By default, tables of numbers in TerraStation look like this:

M.Depth [Raw];1 m	C1 [Raw];1 in	C2 [Raw];1 in
3250.0000		
3250.1524	11.82	11.58
3250.3048	11.62	11.42
3250.4572	11.39	11.29
3250.6096	11.24	11.21
3250.7620	11.16	11.13
3250.9144	11.12	11.07
3251.0668	11.08	11.02
3251.2192	11.02	10.96
3251.3716	10.97	10.90
3251.5240	10.95	10.87

When the table is wide it can sometimes be difficult to keep track of which data is on which line. Now you can specify a frequency at which reference lines are displayed. These are lines which will have a different background color. Simply right-click on the table and choose **Add Reference Lines** from the menu. Then type in a number. If you type 2 then you get references lines every other line, like this:

| M.Depth [Raw];1 m	C1 [Raw];1 in	C2 [Raw];1 in
3250.0000		
3250.1524	11.82	11.58
3250.3048	11.62	11.42
3250.4572	11.39	11.29
3250.6096	11.24	11.21
3250.7620	11.16	11.13
3250.9144	11.12	11.07
3251.0668	11.08	11.02
3251.2192	11.02	10.96
3251.3716	10.97	10.90
3251.5240	10.95	10.87

Note the grey shading every other line.

The reference line frequency will remain in effect for all tables. To remove reference lines simply enter zero for the frequency of lines.

Rock Typing Crossplots for Carbonates

In the recent few releases we have added a Rock Typing capability to the Crossplot module. It is designed for use in carbonate environments. Three methods of rock typing are available – Winland35 iso-pore throat radii, the Global Hydraulic Unit method of Corbett, and the Rock Fabric Number technique espoused by Lucia.

The user supplies porosity and permeability inputs, and chooses the rock typing overlay to use. For example…
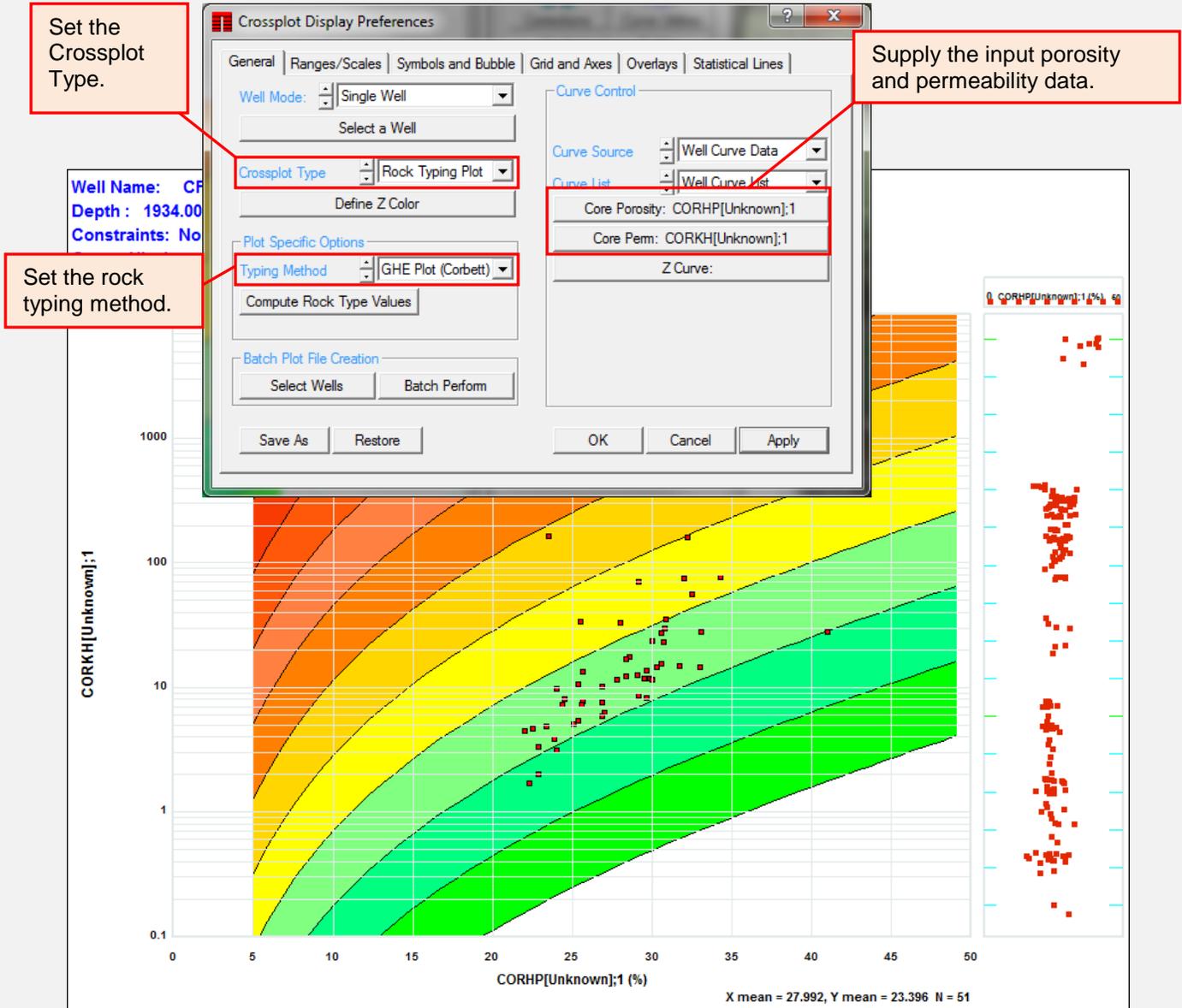
Example of Rock Typing plot using the Global Hydraulic Unit method

You should make sure the data ranges, units and scales are set appropriately for the plot overlays. In the case of the Porosity it is usually linear, but for the Lucia RFN plot the porosity is displayed on a logarithmic basis in order to get straight lines on the plot. Use the **Ranges/Scales** tab settings to control this.

In the case of the GHE and RFN plots, you can press the **Compute Rock Type Values** and a curve is automatically generated with the GHE unit or RFN number stored in it. These are names GHE_UNIT and RFN_LUCIA respectively. See the software help file for details on these techniques.

3D Borehole Visualizer Enhancements

We have improved the display capability of image picks in 3D. This includes the ability to specify the size and shape of a pick's plane in 3D view (3,4,5,or 6 sided polygon) to allow you to easily differentiate between certain types of picks, for example faults and fractures.
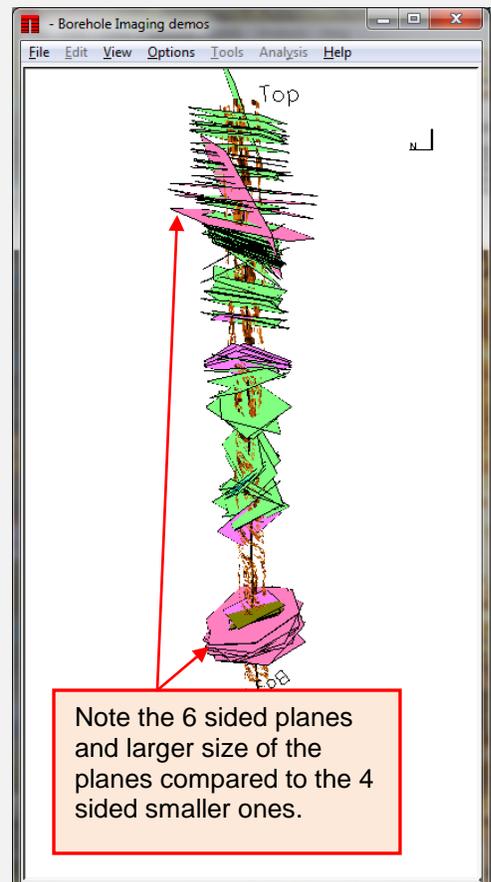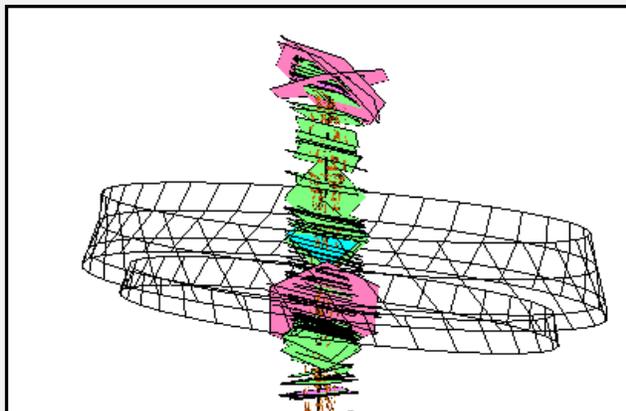
You do this by modifying the SHAPE setting of the feature category in the ***tspcktyp.v70*** control file. The size is controlled by the SIZE parameter for each pick type. For example…

Set the SHAPE parameter

Set the SIZE parameter

Once this is done,then when the borehole visualizer is invoked, the picks are shown with their specified shapes and sizes. For example…

You can edit the tspcktyp.v70 file by pressing the **View Category File** button on the **Pick and Breakout** menu option when you right-click on a Formation View track.

We have also added an initial attempt at displaying FRAC stages on the borehole vizualizer. The FRAC stage information is entered on the .ENG (History/Engineering) file. You supply a top and bottom depth, and a half height and half width. The result is a display of the stage interval as a representative of an oval volume around the hole. A simple example with two stages is shown below.

Note the 6 sided planes and larger size of the planes compared to the 4 sided smaller ones.

Shale Gas option added to FAST FE module.

We have recently added a Shale Gas model to the Fast Formation Evaluation (FastFE) module in the Petrophysical Analysis software. There is now a **Reservoir Type** setting on the main control panel that dictates what type of reservoir you are modeling.
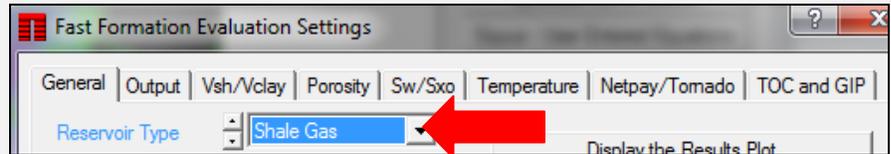
When set to **Shale Gas** several additional inputs are required, including a TOC curve. Most of these inputs are on the **TOC and GIP** tab, but there are also some on the **Vsh/Vclay** tab.

Note that at this time, the ability to use Monte Carlo modeling of the input parameters is disabled for the Shale Gas reservoir, as is the Net Pay/Tornado option.

Output consists of gas in place and cumulative gas – both adsorbed and total.

The methodology is discussed within the help file, but is predominantly that outlined by Sondergeld, et al in SPE Paper 131768 (2010).