

TerraNotes

The official newsletter of TERRASCIENCES

Current TerraStation II version: v7.246

2012 Trade Shows

Our appearances at trade shows for 2012 are:

- **AAPG 2012** – (22-25 April) - Annual AAPG convention. We have booth 1718. This will be in Long Beach, CA at the Long Beach Convention Center.
- **PETEX 2012** – (20-22 Nov) – Held at Earls Court 2 Exhibition Center in London, UK.

No SPWLA trade show appearance for this year, but we will be back at the 2013 show.

We look forward to seeing you at the shows.

Colorado Office Location

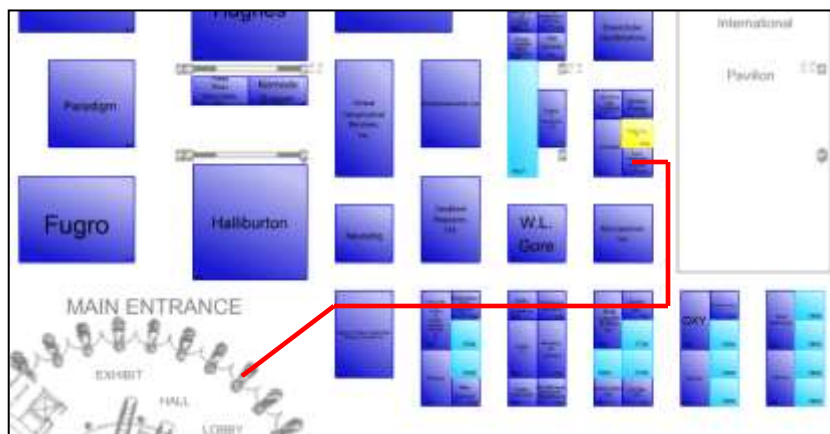
We moved our Colorado office location since the last edition of TerraNotes. For those of you who were not aware of this change the new address is:

TERRASCIENCES Inc.
26 West Dry Creek Circle,
Suite 360,
Littleton
CO 80120
USA

The phone, fax and email addresses are still the same.

AAPG Long Beach 2012

Our annual trip to the AAPG's national convention and exhibition sees us in sunny California – Long Beach to be precise. We will be in booth number **1718**.



We are opposite the International Pavilion, which is to the right of the main entrance area.

The show is at the Long Beach Convention Center in Long Beach, CA, and runs from the 22nd to the 25th April. For more details follow this link: <http://www.aapg.org/longbeach2012/>

Synthetic Curve Generator

We recently added a synthetic curve generation capability to the basic part of the **Petrophysical Analysis** module. This means anyone with a current license has access to the capability.

The technique used, which is a multiple linear regression approach, but with a couple of 'extras', is based on the following paper:

"Sonic/Density Well Log Data Editing with Pseudo Curve Generation - Indonesian Examples using a Multiple Crossproduct Non-Linear Method" by Tony Lawrence, et al. World Petroleum Congress, 1997.

A user guide to this capability for current users can be obtained from TERRASCIENCES if you send an email to support@terrasciences.com

API number field formatting

For users with wells covered by the US API well identification system, we have added a quick way to strip or add the dash '-' characters from/to a numeric entry located in the Well UWI field. This allows the user to make their API number appear consistent.

For example, if the well UWI field contains the string "50629232410000, then that can be made to read 50-629-23241-00-00.

You do this in the **Project Database – Well Data Management** area. Simply highlight two or more wells for which you wish to adjust the UWI field, right click and select either **Strip API Dashes** or **Add API Dashes** from the menu.

Strings that do not appear to conform to the API numbering scheme will be left untouched.

For example ... the following UWI's have been highlighted.

Well Management	
Well name	Well UWI
	351492123400
	3DUL
#76	4207132245
AL FEE A#1	422913245400
7	423713780400
8	4237138139
2-10	4237138210
2 29-3	4237138322
#1	42003000020000
	42003377380000
15	42203342250000
	42313304750000
	42405302640000
	4241931257
State 1-16H	4901520191
14-3444H	4901520218
-24	490352105000

After selecting **Add API Dashes** from the menu the result is...

Well Management	
Well name	Well UWI
	35-149-21234-00
	3DUL
#76	42-071-32245
AL FEE A#1	42-291-32454-00
7	42-371-37804-00
8	42-371-38139
2-10	42-371-38210
2 29-3	42-371-38322
#1	42-003-00002-00-00
	42-003-37738-00-00
15	42-203-34225-00-00
	42-313-30475-00-00
	42-405-30264-00-00
	42-419-31257
State 1-16H	49-015-20191
14-3444H	49-015-20218
-24	49-035-21050-00

Note the second well UWI (3DUL) has not been impacted by the operation.

Well File Constants

The previously unassigned well constant slots 38, 39, and 40 are now used by the TerraStation automatically. They are used for:

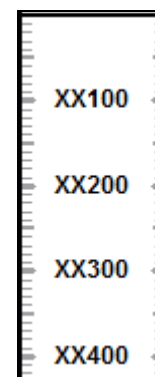
- 38 - Friction Coefficient
- 39 – Biot's Constant
- 40 – Shmax Azimuth

These three values are used in conjunction with pressure regime information to define the stress environment for the Mohr Diagram displays (see later article in this edition).

If you were previously using these constants for anything then please be aware that values in them may be overwritten if you utilize the Mohr Diagram capability.

Anonymous Depth Labels in IMAGELog

In IMAGELog Depth tracks, you can now utilize 'anonymous' depth labels to disguise the true depth location. Simply check the **Anonymous Depth Labels** check box on the track configuration window for the depth track. The result is shown below...



In this way you can show output to people that do not need to know exact depths.

Note: This is a track specific option so if you have more than one depth track be sure to change it on all of them.

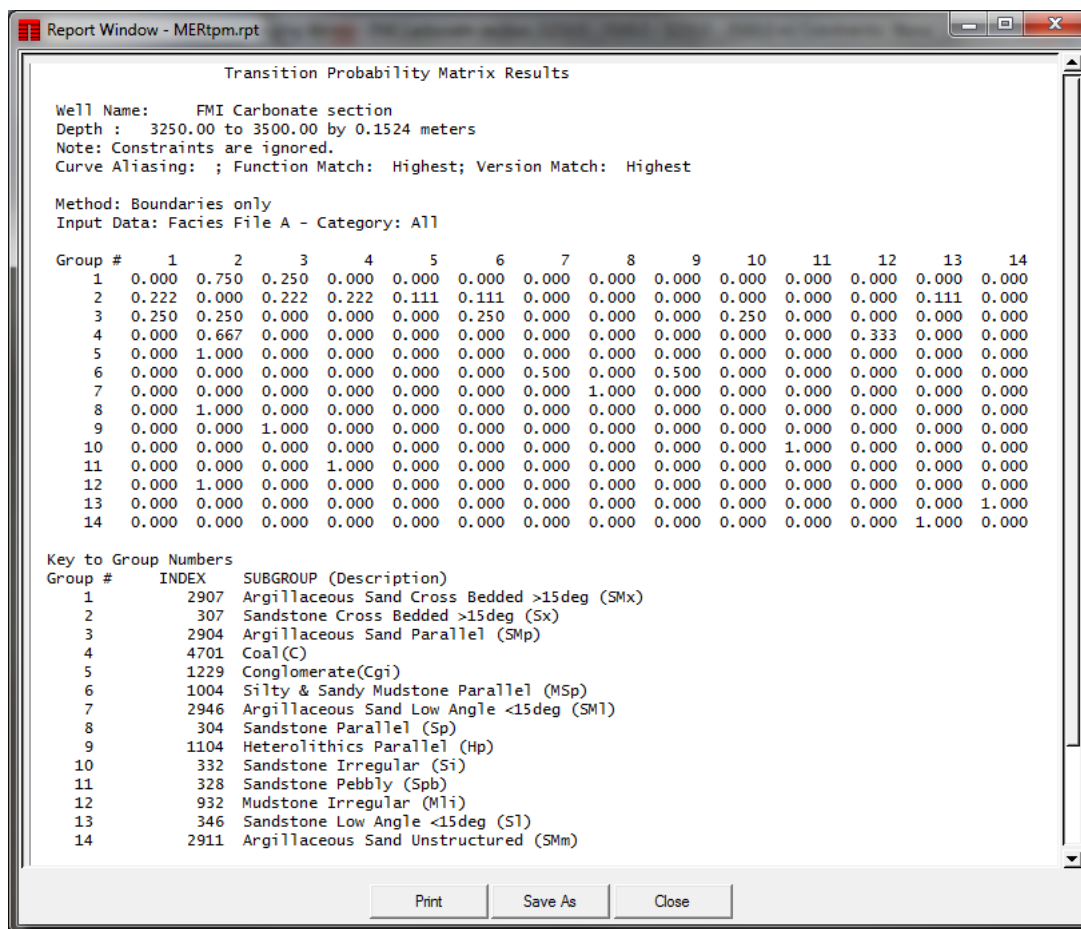
Transition Probability with Lithology/Facies

Although there has been the capability of determining the probability of changing from one state to another in TerraStation for many years, it did involve creating a curve of numerical values representing the various states at each depth.

We recently upgraded the **MERLIN – Transition Probability** function in the **Petrophysical Analysis** module to work directly from the user created lithology and facies data files.

For example, the facies column displayed on the right has been manually interpreted by a geologist.

When the Transition Probability routine is applied, the result is a table showing the likelihood (probability) of any one facies type transitioning to any other facies type. Below the matrix is the key to each group number (facies type) discovered in the facies file.



For example, it can be seen that **Coal** (Group 4) transitions to the **Sandstone Cross Bedded > 15deg (Sx)** facies (Group 2) 66% of the time, and to **Mudstone Irregular** (group 12) the remainder of the time.

Such transition probabilities can be useful when modeling reservoir sequences.

You do need a license to the Merlin suite of statistical analysis options to access this capability. Contact your TERRASCIENCES representative if you do not have access to it.

Mohr Diagrams in TerraStation

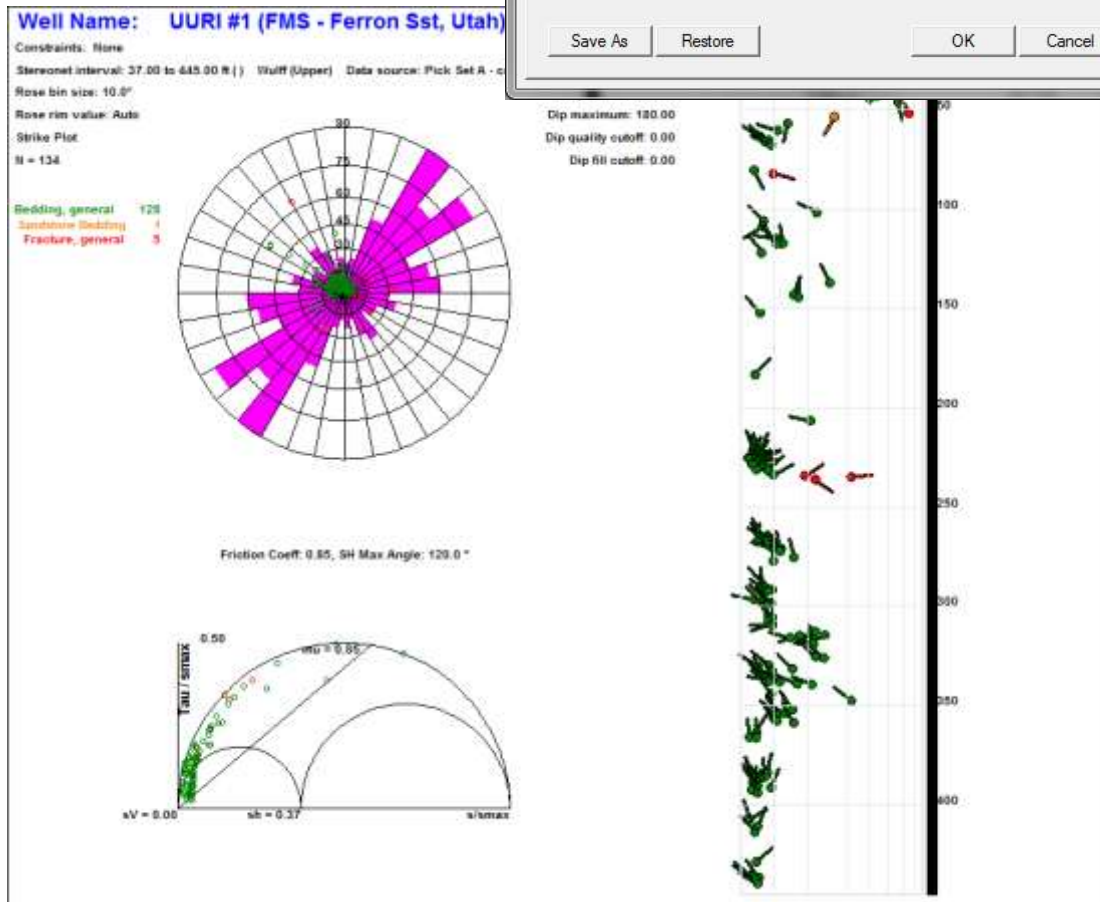
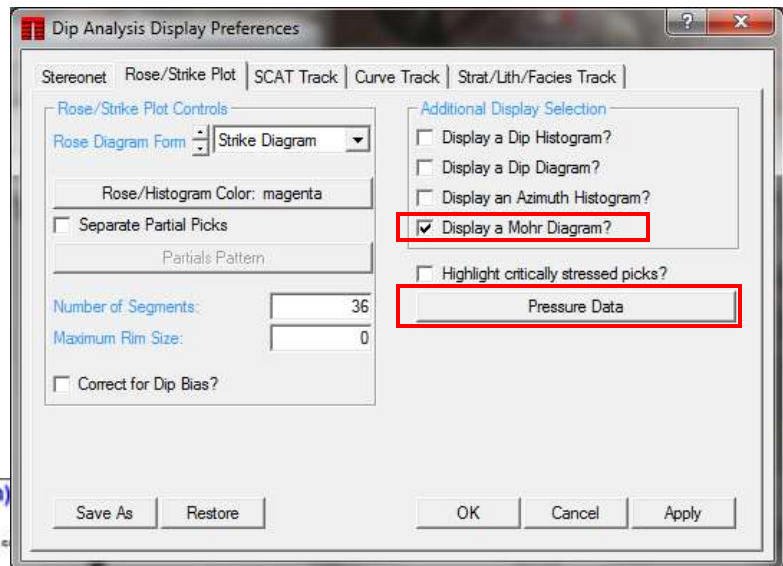
It is now possible to display Mohr Diagrams both within an IMAGELog track and within the Dip Analysis module.

It is necessary to have generated the required stress regime inputs in order to utilize the diagrams. This can be done using the **Pressure Model** track type in IMAGELog. Alternatively, it can be done outside of TerraStation and then loaded into curves in the well file.

In the Dip Analysis module, you activate the diagram by checking the **Display a Mohr Diagram?** box on the **Rose/Strike Plot** panel.

You will also have to define the pressure/stress regime information. This is done by pressing the **Pressure Data** button and defining the various input curves and parameters needed.

The result is a Mohr diagram displayed beneath the existing rose/stereonet. For example...



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In IMAGELog the Mohr Diagrams are displayed via the new **Mohr Diagram** track type.

This track type operates in a similar manner to the other 'diagram' type tracks such as the Rose Diagram and Stereonet tracks. Depth intervals for the diagrams can be controlled in a number of ways. You do also need to define the Pressure Data regime in the same way as in the Dip Analysis module.

Below is an example of a rose track and a Mohr diagram track in IMAGELog.

