

New Zoom and Pan Control for Maps

We have added the ability to use the mouse wheel to zoom in and out on maps. We have also added the ability to grab and move the map, in a style similar to that found in Google Maps and other map based software.

Export Auxiliary Data as LAS 2.0 format......8

This is activated by using the following settings in the **<u>Edit->Preferences -> Mapping</u>** control panel.

Preferences	the second s	1.00	? ×
Graphic Colors Miscellaneous Window Control Project Creation Input/Output Paths Output Paths Output Paths MAGELog IMAGELog General Image Pick Handling Image Pick Quality Sonic Waveform IMAGELog Headers Curve Display Correlation Plotting	Map Zoom Control Adjust Scale While Zooming Zoom and Pan Mode Cursor 1. Use these two check boxes to control the settings for zooming and panning.		s 8 1/d**2 Weighted Projectio id Dimensions >= 4, <= 500) 100 2. Press Apply to save the settings. Cancel Apply

Restart TerraStation and these settings will be active on all maps.

Netpay Zone Summary Addition

A new form of Zone Summary is now available. This is accessed via the **Netpay Analysis->Summary** control panel, as shown below. Don't forget to set up the curves to be used first (on the Main Control panel)

Netpay Options	? <mark>×</mark>
Main Control Sensitivity Summary Detailed Rep	port Graphs Probabilistic Volumetrics
Simple Cutoff Controls	Zone Summation Control
Cutoff Control	Zone Summary
Save the Cutoffs	
Restore a Cutoff Set	Press this button.
Units Feet	
	OK Cancel Apply

The initial display looks something like this:

Multi Zone Summation Re		Depth Control -	L.A.S.E.R. S		ISTRATION WEL	L	? <mark>x</mark>
- Zone Depths - Reservoir Cutoffs - Net Pay Cutoffs - Reservoir Results - Net Pay Results	Zone #		Тор (†t) 11000.0	Bottom (ft) 12400.0	Delete Zone		
Add Zone Done Save As Restore Done TerraNotes - September 2019 www.terrasciences.com Page 2							

Press the **Add Zone** button to add as many zones as you need. One press for each new zone. For example...

Multi Zone Summation Repo					_	? <mark>- × -</mark>
	Zone I	Depth Control -	L.A.S.E.R. S	HOW DEMON	ISTRATION WEL	L
Zone Depths	Zone #	Zone Name	Top (ft)	Bottom (ft)	Delete Zone	
Reservoir Cutoffs	1	New Zone	11000.0	12400.0	Delete	
Net Pay Cutoffs	2	New Zone	11000.0	12400.0	Delete <	Press 'Delete' to
Reservoir Results	3	New Zone	11000.0	12400.0	Delete	
Net Pay Results	4	New Zone	11000.0	12400.0	Delete	remove a zone.
						_
				Press	this button	
				to add	l a zone.	
					↓	
Save A	As Restore				Add Zone	Done

Then edit the Zone Names and top and bottom depths in the table...

Multi Zone Summation Repor						? <mark>×</mark>
	Zone	Depth Control - L./	A.S.E.R. SHO	W DEMONS	TRATION WELL	
Zone Depths	Zone #	Zone Name	Top (ft)	Bottom (ft)	Delete Zone	
Reservoir Cutoffs	1	Upper Zone	11000.0	11280.0	Delete	
Net Pay Cutoffs	2	Middle Unit B	11450.0	11495.0	Delete	
- Reservoir Results	3	Middle Unit A	11625.0	12050.0	Delete	
Net Pay Results	4	Lower Zone	12205.0	12400.0	Delete	
	- · · ·		Π			
			`	\backslash		
			Edi	t data he	re.	
	1					
Seve As	Destan	1		Ac	dd Zone	Done
Save As	Restore					

You can then specify the cutoffs for each zone. Note that you can define different cutoff sets for the Netpay and the reservoir rock.

Click on the **Reservoir Cutoffs** option on the left hand side of the window.

	Reservoir	Cutoff Control - L./	A.S.E.R. SHO	W DEMONSTR	RATION WELL	
Zone Depths	Zone #	Min Thick (ft)	Vsh Cut	Sw Cut	Phi Cut	
Reservoir Cutoffs	1	0.00	0.380	0.550	0.040	
Net Pay Cutoffs	2	0.00	0.380	0.550	0.040	
Reservoir Results	3	0.00	0.380	0.550	0.040	
Net Pay Results	4	0.00	0.380	0.550	0.040	

Edit them to your desired values.

Repeat this for the **Net Pay Cutoffs**.

Now click on the Reservoir Results item on the left of the window...

	Rese	rvoir Resu	lts - L.A.S.E.R	. SHOW DEI	MONSTRA	ATION W	ELL				
Zone Depths	Zone #	Gross	Res Rock	RR/Gross	Av Vsh	Av Sw	Av Phi	VshH	Phi-wt Sw	PhiH	
Reservoir Cutoffs	1	280.50	214.00	0.7629	0.302	0.788	0.184	0.00	0.44	39.30	
Net Pay Cutoffs	2	45.50	0.00	0.0000	0.000	0.000	0.000	0.00	0.00	0.00	
Reservoir Results	3	425.50	64.50	0.1516	0.238	0.016	0.257	0.00	0.01	16.56	
Net Pay Results	4	195.50	2.50	0.0128	0.369	0.524	0.205	0.00	0.42	0.51	
	· ·				Print F	_	1			Done	

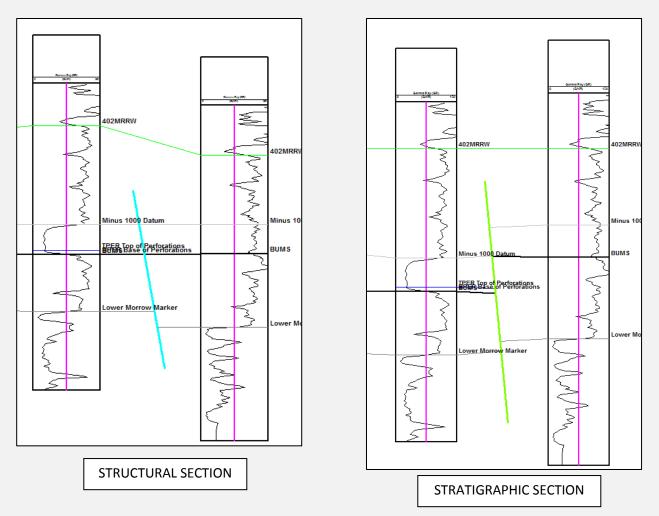
You will see the results of the cutoff calculations for the Reservoir cutoffs.

Click on the **Net Pay Results** item for the corresponding display based on the net pay cutoffs.

You can also generate a summary report by pressing the **Print Report** button.

Faults on Structural and Stratigraphic Sections

Any faults that are added to a structural section are now saved with that section and are specific to that section's type – structural or stratigraphic. This means you can now have your structural interpretation and your stratigraphic fault interpretation saved separately and they will not interfere with each other. This was not the case in the past.



Note: The fault interpretations are stored separately. You must still edit them on the appropriate section display. That is, changes made on the structural version of the fault are not manifested on the stratigraphic version, and vice versa.

Map Annotation Improvements and Additions

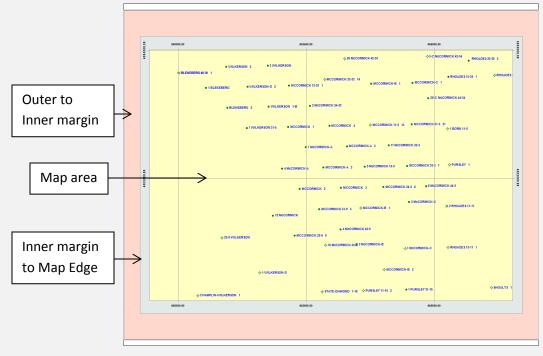
Several improvements to annotating the maps in TerraStation have been added.

i) Background color of the map area

You can now set the background color of the map area. This is done via the **Basemap-> Dimensions & Borders** control panel.

Base Map Properties	? ×
Projection Projection Border Annotation Geopolitical Annotation Special Display Fault S Fault Display Fault Loading Fault Loading Fault Export Legend Map Display Map Display Horizontal Dimension 27.89 in Vertical Dimension 27.	Frame Display Map Border Weight Inner Margin Weight Immer Margin Weight Outer Margin Weight Horizontal Total Margin Vertical Total Margin Vertical Total Margin Outer - Inner Margin: Outer - Inner Margin: Nuter - Inner Margin: Inner Margin - Map Edge: Offwhite

The <u>Map Background</u> button is highlighted in the above screen shot. Combined with the **Outer** and **Inner Margin** color control buttons – also on this panel – you have control over how your map appears on screen and in output plots. For example...



ii) Use of a Predefined Title Block

This is similar to the one found in cross section annotation. This is located on the **Base Map->Legend** panel. The inputs to the title block are controlled by the items on the left hand side of the panel.

Projection Dimensions & Borders Border Annotation Geopolitical Well Spots Annotation Special Displays Faults Fault Schut Fault Sepont Legend	Base Map Properties			
Save As Restore Accept Close	Dimensions & Borders Border Annotation Geopolitical Well Spots Annotation Special Displays Faults Fault Display Fault Editing Fault Loading Fault Export	Company Line 1 Company Line 2 Description 1 Description 2 Description 3 Interpreter	XYZ Oil Corporation Map of Sorrento Field SE, Colorado, USA A.N. Other Display Options I Project File Name I Map Datum Info I Mask Legend Area	Title Block: Select Title Block Set Title Block Position Position Reference Lower-Left Comer Position Title Block

The title block can be positioned at one of the four corners of the map area using the **Location** toggle.

For example...

XYZ Oil Corporation Map of Sorrento Field SE, Colorado, USA UTM, Zone = 13 North - Clarke, 1866 (NAD 27) Project file: tstawin Scale: 1:20000 Interpreter: A.N. Other

The ability to use an ASCII title block command file is still available on the right hand side of the panel. You can utilize both to have two legend boxes if you wish.

Export Auxiliary Data as LAS 2.0 format

We have added the option of LAS format for the export of the many of the well auxiliary data files. For example lithology, Facies, Picks, and so on.

Access to this is via the Input/Output -> Well Export ->Auxiliary Well Data option of the main TerraStation menu bar.

Once the main control window appears, you can specify the format desired by setting the toggle at the top of the Output File section to LAS 2.0. There is also the option to 'Block Fill' the intervals. This allows the LAS file to be output with a line of data for every depth, as opposed to a single line per interval, if desired.

Well Export - Sorrento Field, CO		
Auxiliary Data Export	⊂ Output File	
<u></u> ,	÷LAS 2.0	Select Format
Select Wells	Change Output Folder	
- Auxiliary Data Source	Filename Prefix	
Well Stratigraphy Facies A Facies B	Output depths as TVD as well as MD	
Facies C Facies D Lithology A Lithology B	LAS Options	Block Fill option
Janology D		
	< Back Next > Cancel [X]	

US OFFICE

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

Tel: (303) 794 5511 Intl: +1 (303) 794 5511

Sales Email: sales@terrasciences.com

Support Email: support@terrasciences.com

TERRASCIENCES Locations and Agents

UK OFFICE

TERRASCIENCES Ltd. Palace Chambers 41 London Road Stroud, Glos., GL5 2AJ United Kingdom

Tel: (07470) 987970 Intl: +44 (7470) 987970

Sales Email: sales@terrasciences.co.uk

Support Email: <u>support@terrasciences.co.uk</u>

Mexico Agent

Oil & Gas Optimization SA Prolongacion Paseo Usumacinta, Plaza Los Cedros, local 34, Nacajuca, Tabasco CP 86220, Mexico

Tel: +52 (993) 3139419 Email: info@ogopt.com