Load Core Data into Petrel (ex. Physical Properties from LIMS or Wireline logging data)

This is a Workflow Guide for loading "log data" data into Petrel (v.2016.) It assumes you have a Project file with a Well (hole) and Well header information (lat/lon, depth, etc.) already loaded. The following steps are a guide to loading data and associating the data with a specific well (or hole) in Petrel.

Find your core or log data file(s).

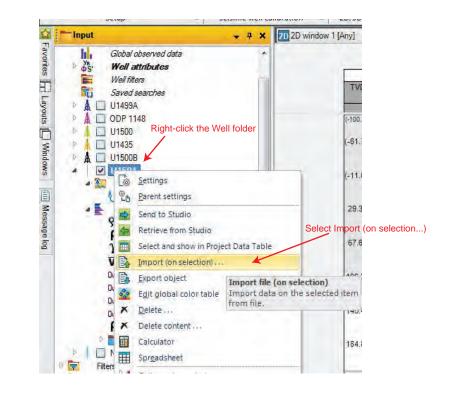
Below is a sample of edited MAD density data downloaded from LIMS. The headers were added, and all the parameters, but two (depth and bulk density), were deleted. It is helpful to convert the data into this format, but it is not required. You can load multiple columns of data and specify the ones you want loaded into the Well project. Quality controlled wireline log data from Columbia are typically prepared in this format.

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9	6.65	1.392	
10	8.76	1,421	
11	10.01	1,428	
12	13.15	1.405	
13	16.06	1.455	
14	19.53	1.412	
15	22.44	1,452	
16	25.381	1.46	
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To load the well log data (e.g. physical properties, wireline, etc.) Right-click the Well corresponding to the data you want to load Select - "Import (on Selection)"





For a 2-column data file (depth, parameter), set the correct measured depth (MD) column. In this case, the depth is the first column.

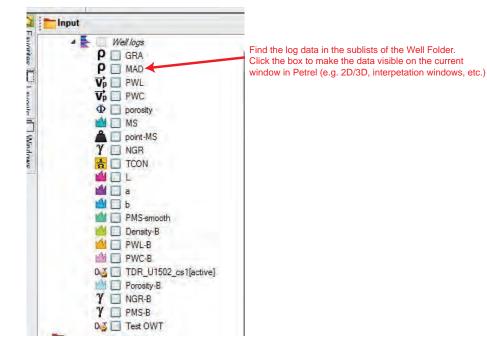
Choose "Specify logs to be loaded" option. The data in this example are Bulk Density, and they are in column 2. Petrel will recognize common data types and their associated units with a property template. In this case, density was chosen (there is also "bulk density" and others in the list. Create a new or overwrite a previous data log. Click "OK" to load the data.

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Choose the appropriate file type and choose the file.

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		Choose the Well	logs file type that	matches the	data. This	
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log data object is greyed out, then you cannot plot it on the current window.



Create a Synthetic Seismogram in Petrel

Click the Seismic Interpretation tab and find the Seismic well tie icon. 1 Stratigraphy Seismic Interpretation File Petroleum Syst 🐥 Wavelet toolbox Ħ DD HI/ 19 -Seismic (default) Log conditioning Managers Seismic Insert Seismid well tie 📲 Well tie editing Seismic horizon 7 👻 🖸 🔁 interpretation Setup Seismic-well calibration 2D/3D interpretation Pavontes Layouts - 4 X 20 2D window 1 [Any] X 30 3D window T32 * T30_a 年年 T60 Tg 1:4046 史 T1 史 Tg_a 0 \$3811.6 史 Tg_b 29.3 毄 TDRint-U1501_NM1 [Converted] TDRint-U1501_NM1 [Not converted]

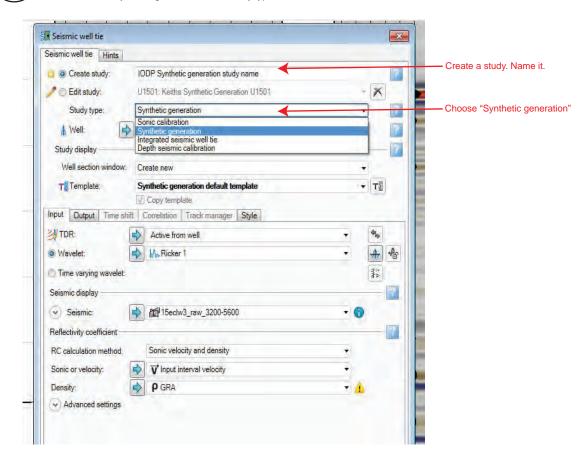
This is a Workflow Guide for creating Synthetic Seismograms in Petrel (v.2016.) It assumes you have a Project file with a Well, Well header information and seismic data already loaded. Density and velocity data, from cores or logging data, can be used to calculate a seismogram. These are data inputs used in this example workflow.

Click the Seismic well tie icon to open the Petrel workflow/toolbox.

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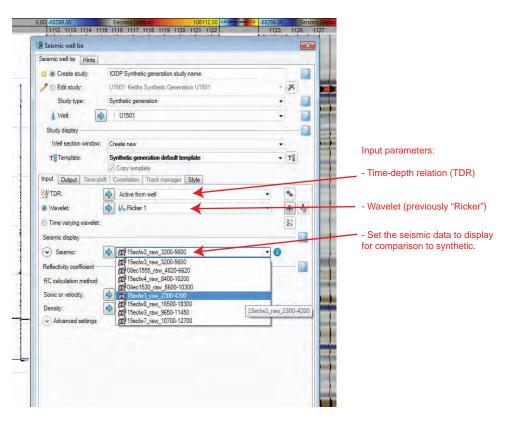
4

a. To create a Synthetic seismogram, create a new study and enter a name in the top entry field. b. Choose "Synthetic generation" in the study type list.



Set the Input and Output parameters

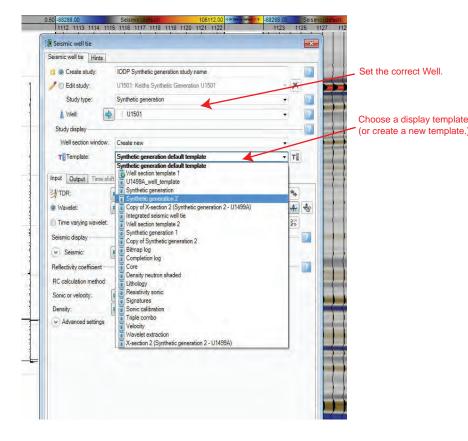
Finally, choose the input and outputs for the model creation. Petrel has standard inputs available. If you are unsure what to use for inputs, try things or consult a professional. You will need to choose a time-depth relation (TDR) and a wavelet filter (see professionals.)



Set the correct well and choose or create a display window/template

3

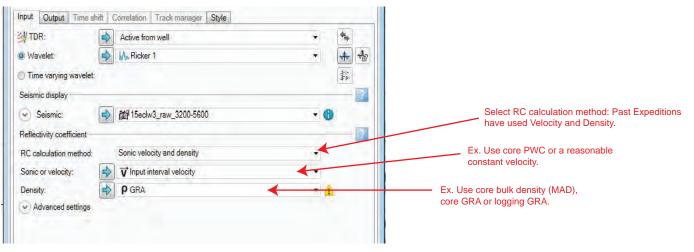
The well tie workflow will create a window for plotting the results – a "Well section window." You can create your own template to display various data (inputs, output or both.) There are also templates available.



Set the Input and Output parameters (continued)

Choose a RC calculation method and insert the appropriate data (core or wireline.) Previous Expeditions have used density and velocity from core (Physical properties) as inputs. A starting point is MAD bulk density and P-Wave (Caliper.) You may also try a reasonable constant velocity assumption. Techs. should consult a professional.

The professionals may want to QC the data before using it in this model calculation.



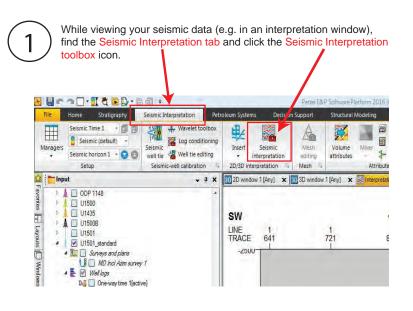
Trace and Interpret Seismic Horizons in Petrel

This is a Workflow Guide for creating Seismic Horizons in Petrel (v.2016.) It assumes you have a Project file with a Well, Well header information and seismic data already loaded. The Seismic Interpretation tools in Petrel help to trace/draw a horizon of interest. The created horizon can be exported as a table of "X, Y" values corresponding to the TWT (or depth) and LAT/LON (or UTM distances.)

of trace you can perform. There are manual and guided types of tracing.

The Seismic interpretation tool palette will display. The first 4 icons on the top can be used to

draw or trace a specific horizon. Hover the mouse over the icons for a description of each type



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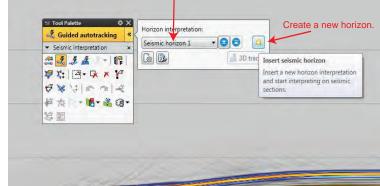
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X	Manual interpretation [U]	
ť	Interpret a horizon by clickin drawing points on a seismic	
¥	intersection. Double click or	N to
N	break. Use Shift to manually snap, Ctrl to autotrack 3D-se	
	+Shift to autotrack 2D-seed	
	+Alt for Guided tracking.	

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Click one of the tracing tools (e.g. the "Guided autotracking" tool.) This will prompt you to choose a pre-existing horizon (if any) or create and name a new horizon. You can also create a new horizon at the input tab.

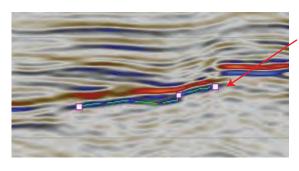


Choose a pre-existing horizon

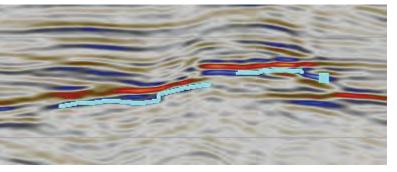


4

After choosing a tracing tool and the horizon name, trace the horizon by clicking on it (e.g. left to right.) The spacing between clicks is interpretive. You can undo clicks. The figure below, shows three clicks and Petrels auto trace of the thick blue line below the thick red line. When you finished tracing double-click on the final piece. The new horizon will become available in the project (typically in an "Interpretation Folder".)



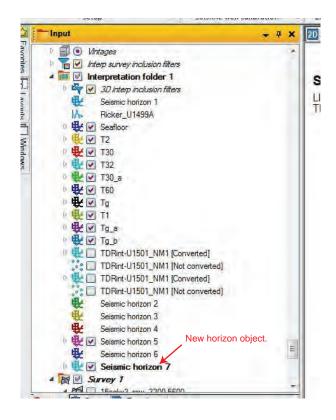
Three points chosen (left to right) along a thick blue horizon. The dashed line between the points is Petrel's draft auto-trace.



To finish tracing, double-click along the tracing path you created. This will create a thick highlighted line to show the Petrel guided track. Try the different tracing tools if you need a better fit or trace.

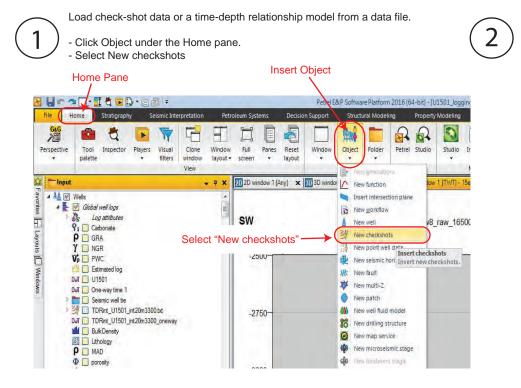
5

Finally, once you created a trace and double-clicked, you should see the horizon in the input tab with the wells and other data. Horizons are usually created and placed in an Interpretation folder. You can right-click and export the horizon as an ascii file.



This is a Workflow Guide for plotting core or wireline logging data onto a Seismic Image (e.g. TWT axis) in Petrel (v.2016.) It assumes you have a Project file with a Well, Well header information and seismic data already loaded. For help loading core data, use the Workflow Guide "Loading Core Data into Petrel." Finally, this assumes you have a time-depth relation (TDR) for the associated Site/Hole (i.e. a model or check-shots), and it is not loaded in Petrel.

Background: Core data are referenced to depth. Seismic data are not automatically referenced to depth, but usually two-way travel time (TWT.) The depth data need to be referenced or related to TWT (or vice-versa) in order to plot them on the same axis. The first step in this process is to associated a (pre-existing) time-depth relationship (TDR) with your Site/Hole.



After selecting Import (on selection), import the TDR from a file. Format the file

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with three columns: Depth, TWT and Well. The Well is the name of the Site or

Hole. The Well in the file should match the Well name in your project folder.

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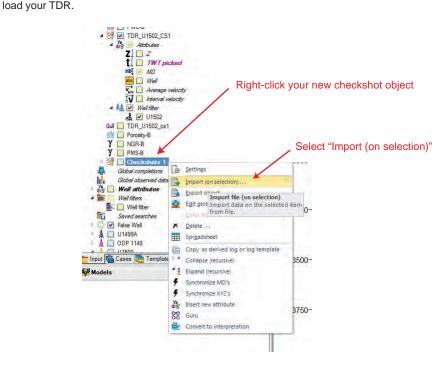
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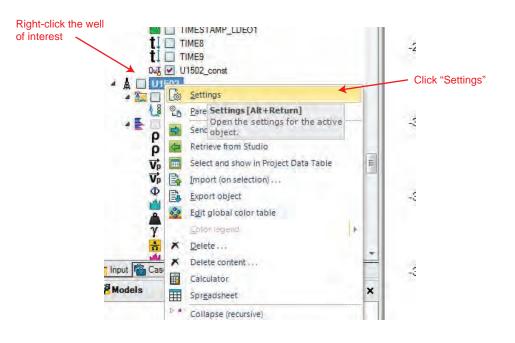
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After selecting "New checkshots", find your checkshots object in the Input Pane under Global Wells.

Right-click on the Checkshots icon and select "Import (on selection)...". This will prompt you to

Right-click the Hole/Site of interest and click Settings. This will show a box with different tabs. Select the "Time" tab.



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Import file dialogue Choose and load TDR file

> The "Time" tab will allow you to associate a TDR with a Hole. First, create a one-way time (OWT) object by selecting "Create new." Then choose your Checkshots/TDR that was loaded in the previous steps (under the "From velocity function" option.) Then click "Run."

Create and name a One-way time log



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Sample of the data file (Depth, TWT, Hole)

✓ OKfor all ✓ OK X Cancel

Now ensure that the OWT object is associated with the Well/Hole. You can check under the Well object by finding your OWT. It will say "Active" next to the name of the object if it is set. After the OWT/TDR is set for the well, any data you load (i.e. via import on selection) in the well will have the TDR associated with it. If you have the seismic data plotted in an Interpretation window, then select any log data (e.g. GRA, PWC) and it should plot on the TWT axis.

▼ ╄ X 20 2D window 1 [Any] X 30 window 1 [Any] X

