



HOW-TO

Using multiple component sets with PETRA and IMAGELog

It often happens that you have a well where you want to calculate lithologies with different components in different intervals, but then display the resulting lithologies in IMAGELog for the entire well. To do this, you need to make use of PETRA's saved setups.

For example, taking the well 5-McCormick 13-3 from the demo dataset, let's assume that we have three lithological zones (these are not geologically correct, but will serve as an example of the method).

From 5300ft to 5440 ft we will assume we have Shale, Dolomite and Anhydrite

From 5440ft to 5560ft we assume a Sand & Shale environment

From 5560ft to 5650ft we will assume we have a mix of Limestone, Shale and Dolomite

In the Petrophysics module, we first set the depth interval to 5300 - 5440 ft using the **Depth Interval** Powerbar button.

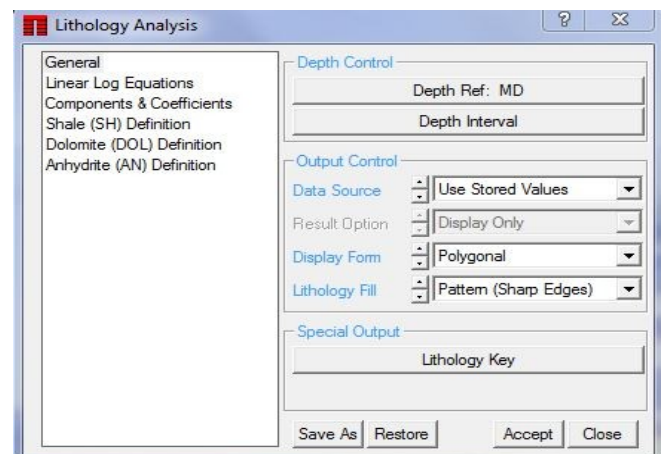
Now go to **Lithology, Petra Lithology** from the **Analysis** drop-down menu.

Click **Linear Log Response Eqns** and select the logs to be used in this interval. You need to select the same number of logs as the components you wish to resolve.

Click **Components & Coefficients** button and select the components to resolve for this interval – we are looking for three Minerals (Shale, Dolomite, Anhydrite) in this first example. For each component, set the colour and pattern to be used to display that component, and set an output curve (in this example we have created new curves called Shale, Dolomite and Anhydrite).

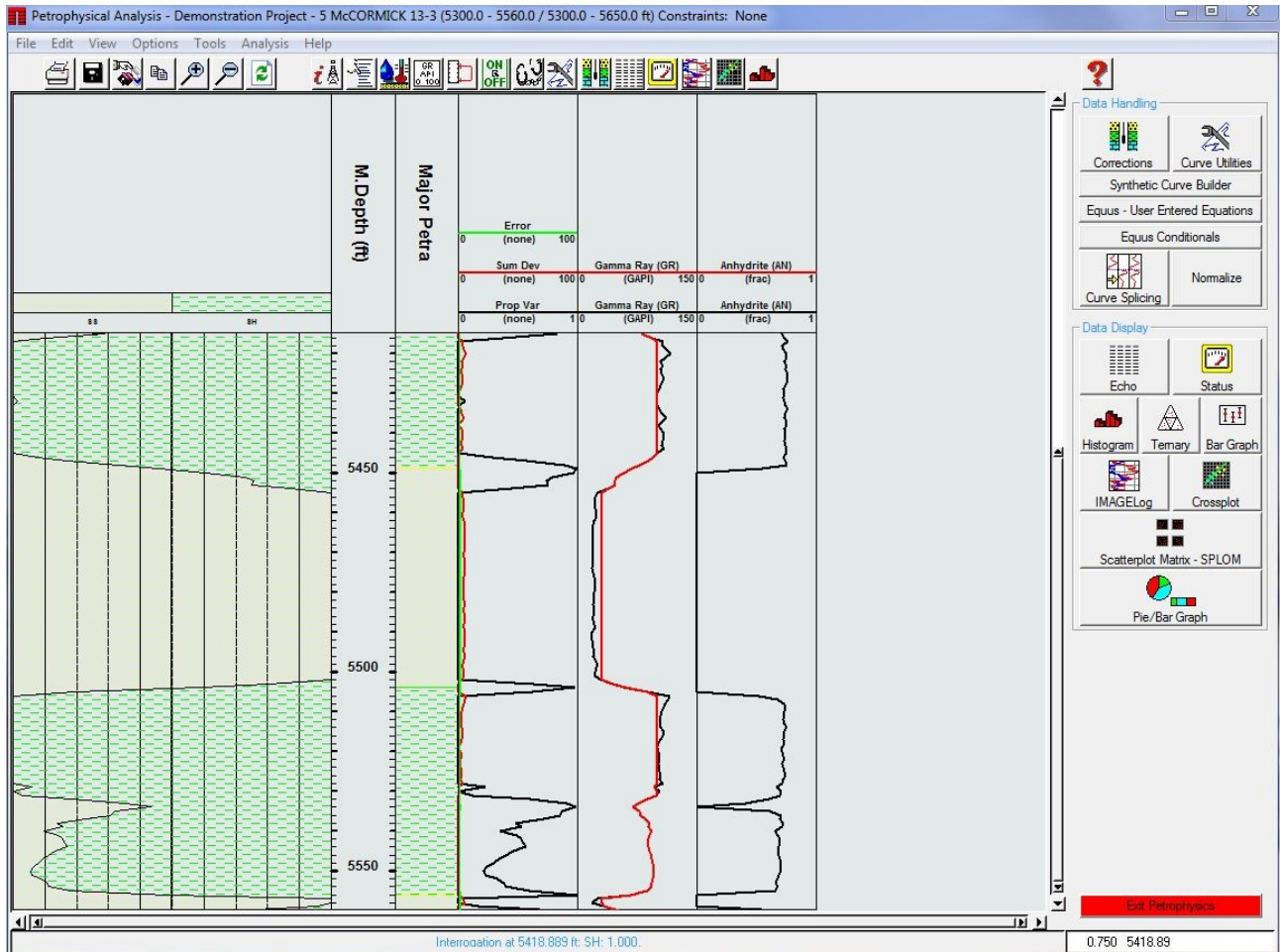
Click General and make sure that first **Data Source** toggle is set to **Compute Values**, then click the **Coefficients & Coefficients** followed by the **Coefficients** **button**.

Enter the typical responses of your selected logs for the components you are trying to resolve, then close the Coefficients window.





Click back on General and make sure that the **Result Option** toggle is set to **Display & Store**, then click **Accept**.



Now set the Depth Interval to 5440 – 5560 ft using the **Depth Interval** button. Click the Close button followed by Accept.

Click **Components & Coefficients** followed by the Coefficients **button**. Click the Clear button and select the components to resolve for this interval – this time we are looking for two Minerals (Shale and Sand). For each component, set the colour and pattern to be used to display that component, and set an output curve - here we have created a new curve for Sand but reselected the Shale curve that we used in the first interval.

Click **Linear Log Response Eqns** and select the curves to be used – only two are required for this interval as we are only trying to resolve two components.

Click **Coefficients & Coefficients** followed by the Coefficients **button** and enter the typical values of your selected logs for these components.



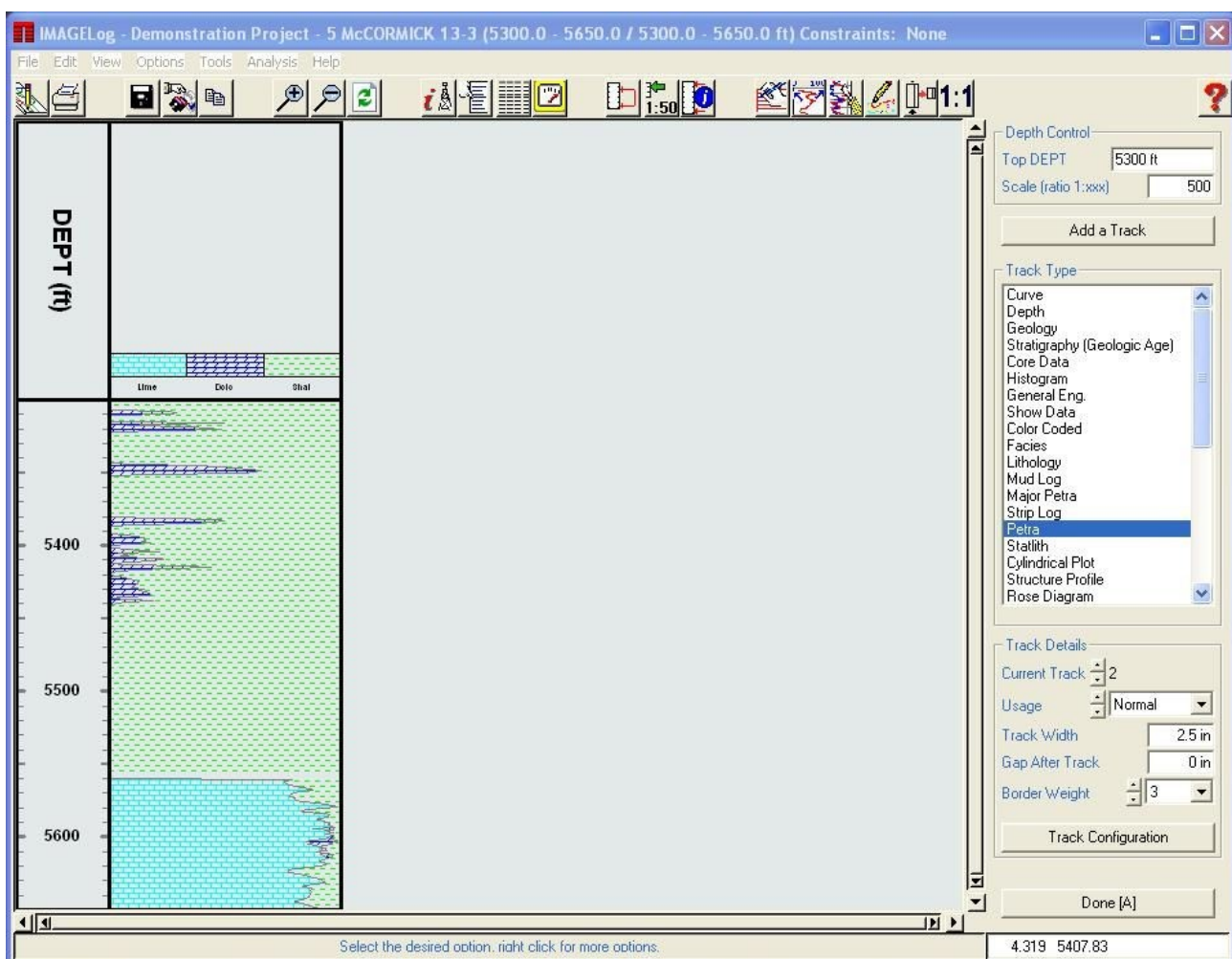
Back on General make sure that the **Result Option** toggle is set to **Display & Store**, then click **Accept**.

Next set the depth interval for the final zone (5560 – 5650 ft). Select the components (Limestone, Dolomite and Shale) for this zone. The Dolomite and Shale components can be stored in the existing curves created for the other intervals, but you will have to create a new curve for Limestone.

Select the curves to be used – you need 3 this time – and also set the coefficients appropriately. Click **Accept** to resolve the final zone.

Having resolved our lithology all the way down the well, the next thing to do is to display it in IMAGELog. Make sure you reset the depth interval to the full well interval first!

However, when you go to IMAGELog and create an image containing a PETRA track, you will get something that looks like this :



The PETRA column is using the last set of components that was used in PETRA, which is correct for the lower zone but does not contain all of the components calculated in the other two zones, resulting in an incorrect display – the Sand is completely missing from the middle zone, as is the Anhydrite from the upper zone.

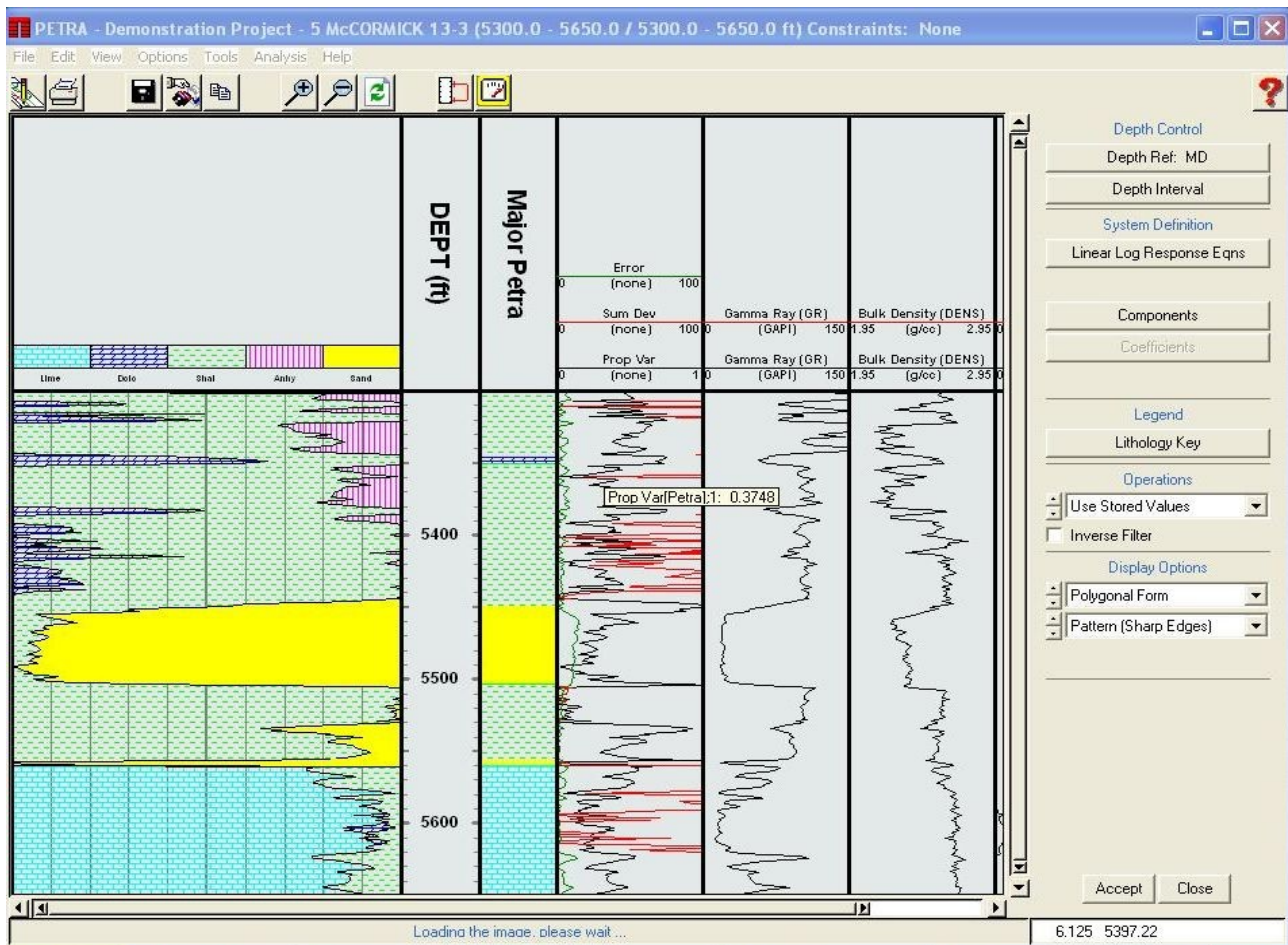
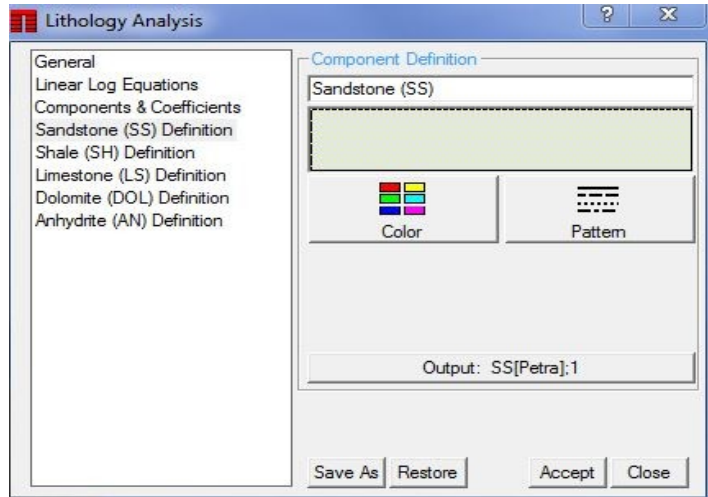


You need to go back to PETRA and create (and save) a set of components that includes all of those you resolved for this well.

Back in PETRA, set the **Data Source** toggle to **Use Stored Values**.

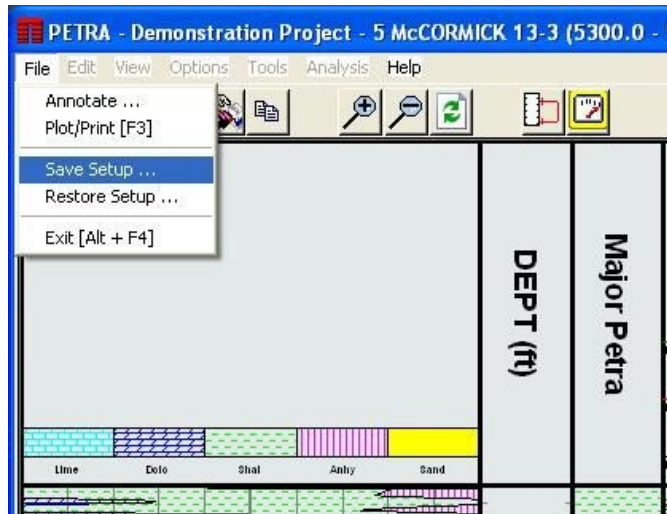
Click **Components & Coefficients** and select all the components that you have resolved for this well (Limestone, Dolomite, Shale, Anhydrite & Sandstone). The order in which you select them will be the order in which they are displayed (left to right). For each component, click the **Output** button and select the curve in which you stored the results of your PETRA calculations. Also make any changes you want to the colour and pattern.

Click **Accept** and make sure that you get all of your components displayed how you want them.





Once you are happy with the display here, select **Save Setup...** from the **File** drop-down menu.



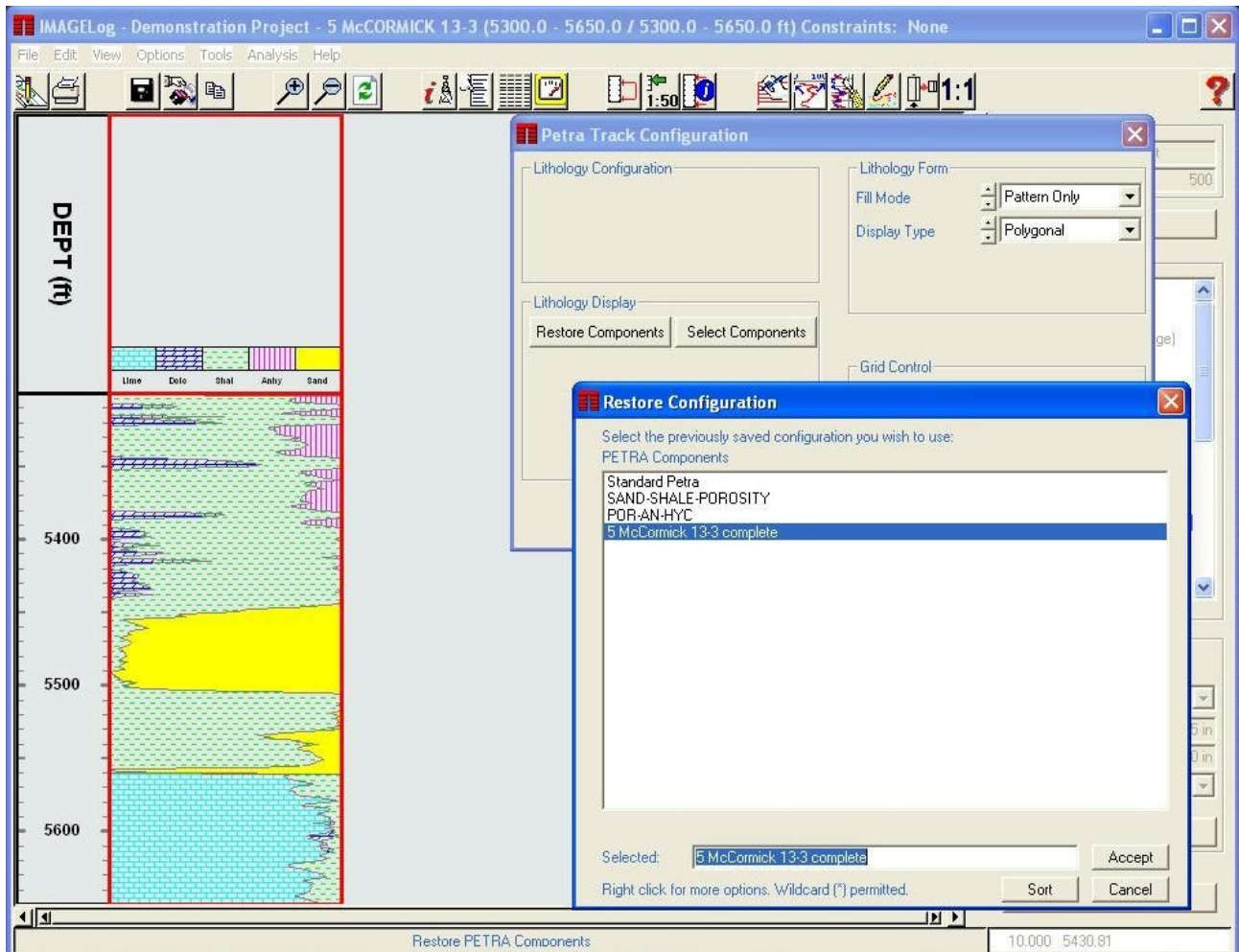
You will be asked for a configuration name – we have used “5 McCormick 13-3 complete” to indicate that this is the complete component set for this well.



Now exit from PETRA and return to IMAGELog.



In the Track Configuration for your PETRA track, click the **Restore Components** button and select the component set you just saved in PETRA. You should now see all of the components you have resolved displayed in your PETRA track.



Note:

It is also possible to create a component set in IMAGELog. Just click on the **Select Components** button in the PETRA Track Configuration, select the components, select the curves to be displayed for each one along with the colour and pattern. When you click **Accept** you will be asked for a name for the component set.