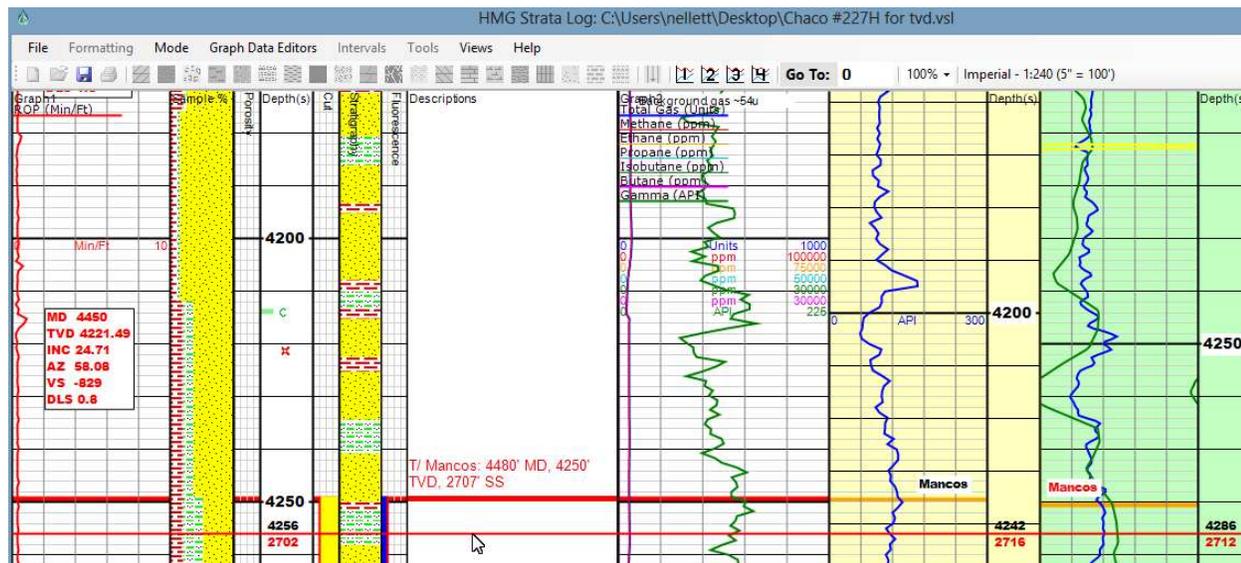
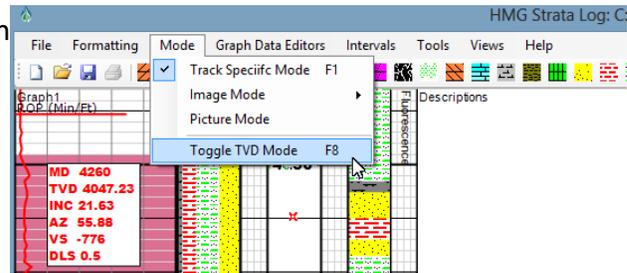


Chapter 9: TVD Mode

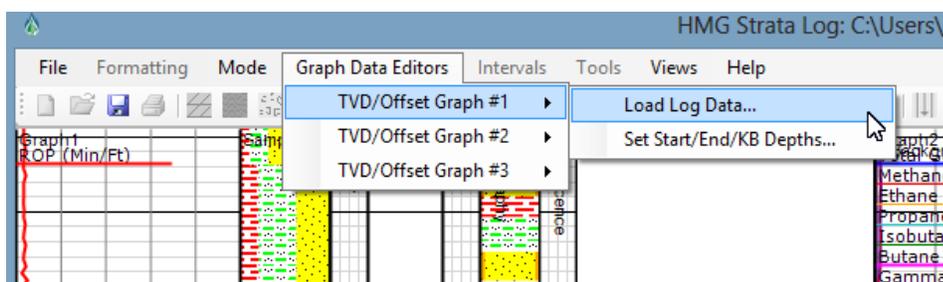
Overview

HMG Strata Log has a **TVD Mode**, which converts a regular measured depth log into a true vertical depth log using the available survey data. Moreover, it opens three separately scrollable graph tracks to import offset logs for correlation purposes. To convert the log to TVD mode go to the Mode Menu and click on **Toggle TVD Mode**. To use TVD Mode, there must be at least two surveys entered (see Chapter 4). Many of the regular log-editing features are disabled when in TVD Mode.



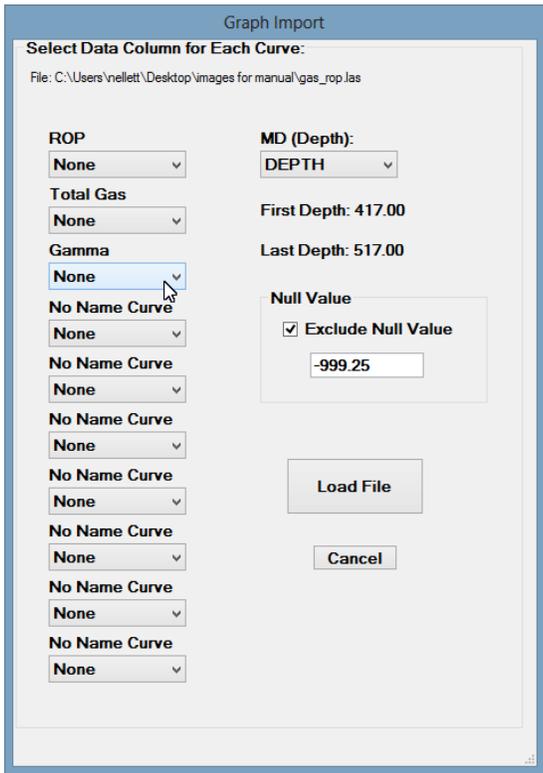
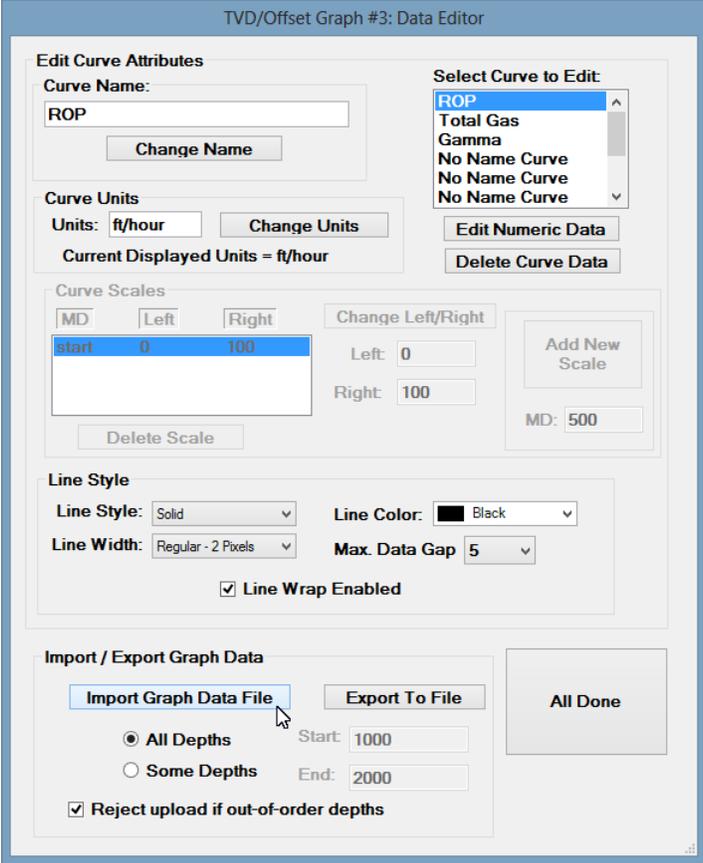
Loading Offset Graph Data

Offset graph data curves can only be entered into the offset graphs when in TVD Mode (Mode->Toggle TVD Mode or F8). Click Graph Data Editors->TVD/Offset Graph #x->**Load Log Data**. Entering the log

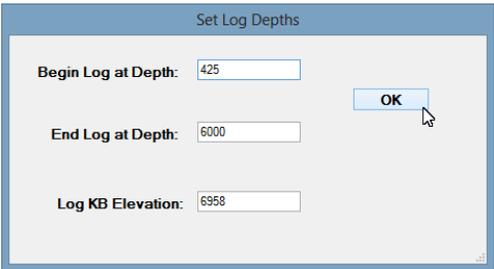


data for the offset graphs is very similar to the regular graph tracks (see Chapter 3).

Click *Import Graph Data File*, and find the gamma, resistivity, bulk density, or other wireline/LWD data file (*.las format recommended, but *.txt and *.csv also work) you're interested in from the offset well. After selecting a file, the Graph Import Editor window will open. Use the dropdowns to select a data column for each curve then click *Load File*. You can change the names of curves in the same manner as other graph curves in HMG Strata Log (see Chapter 3). Just highlight the curve to edit, type a new name and click *Change Name*. Once the data are imported, you can also change the **scale** and the line style. Finally, click *All Done* from the TVD/Offset Graph Data Editor window.



Each Offset Graph also has a **Set Start/End/KB Depths** option. Start Log at Depth and End Log at Depth will simply trim or expand the offset graph to the specified depths. Log KB Elevation is important because it will determine correct SS (Sub-Sea) depths when correlating.

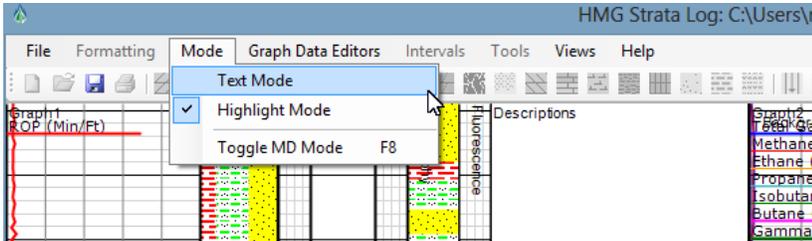


Highlight Mode and Text Mode

In TVD Mode, the *Mode* menu at the top of the window contains three items: Text Mode, Highlight Mode, and Toggle TVD Mode.

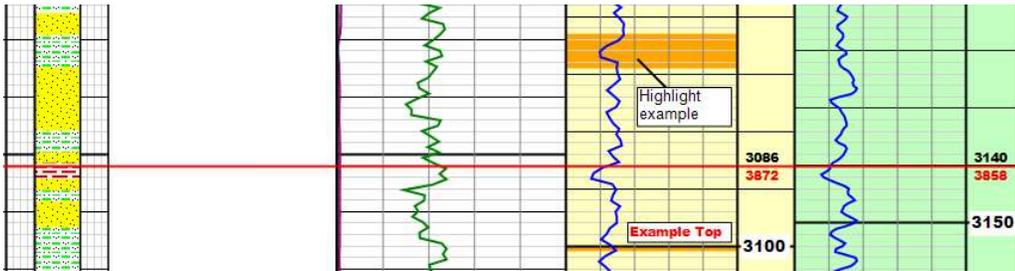
Text Mode

Text Mode will create notes and text within the Offset Graphs. Just click where on the Offset Graph you want to enter text and a text window will appear. The text can be used to label tops, interesting features, well parameters, etc. for the offset graph. While in TVD Mode, text can only be added to the offset graphs. To add text to the main portion of the log, the user will need to Toggle TVD Mode (F8) to MD Mode.



Highlight Mode

Highlight Mode will make highlighted sections on the Offset Graph. This is useful for denoting tops and unique signatures that are helpful when correlating. To highlight a section in TVD Mode, go to Mode->Highlight Mode and just click and drag over the section you'd like to highlight. Again, highlighting can only be added to the offset graphs in TVD Mode. To add tops or similar markers to the main log, use the *Intervals* menu (see Chapter 6).



Correlating with Red Line

After data have been added to the TVD/Offset Graph(s) and the Graph 2 track on the main log (see Chapter 3), correlating between them is easy. Click in the main log area to add a red line. This line shows TVD and SS depths for each track in black and red numbers, respectively, above and below the red line. Then, find a distinctive gamma or (other curve) peak on each graph and line them up using the separate scroll bars and depth markers for each offset graph. After the graphs are lined up, you can scroll all of them at once by holding *Shift* and using the main scroll bar on the far right, or use F9 to lock the scroll bars. TVD Mode is very useful when you have offset graph data from a nearby well with geologic tops highlighted and labeled. Then, as MWD/LWD data is available for the Graph 2 track, the same tops can be found and recorded.

Note: If MWD/LWD data extend beyond the last input survey (i.e. using near-bit gamma tool), the TVD corrected log will interpolate depths based on the last available survey. This is not a big deal at low or unchanging inclinations. But for the most accurate TVD depths at dynamic inclinations (i.e. during

build/curve section), it is necessary add projected surveys for a more accurate TVD log.

Scroll bars, Scroll Lock and the F9 key in TVD Mode

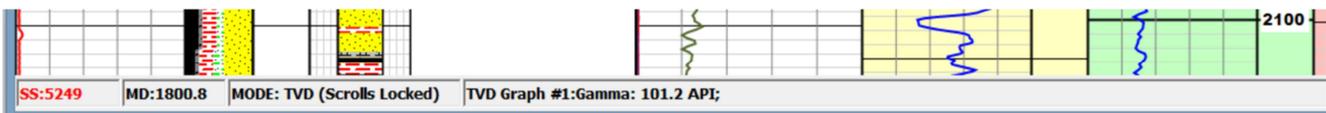
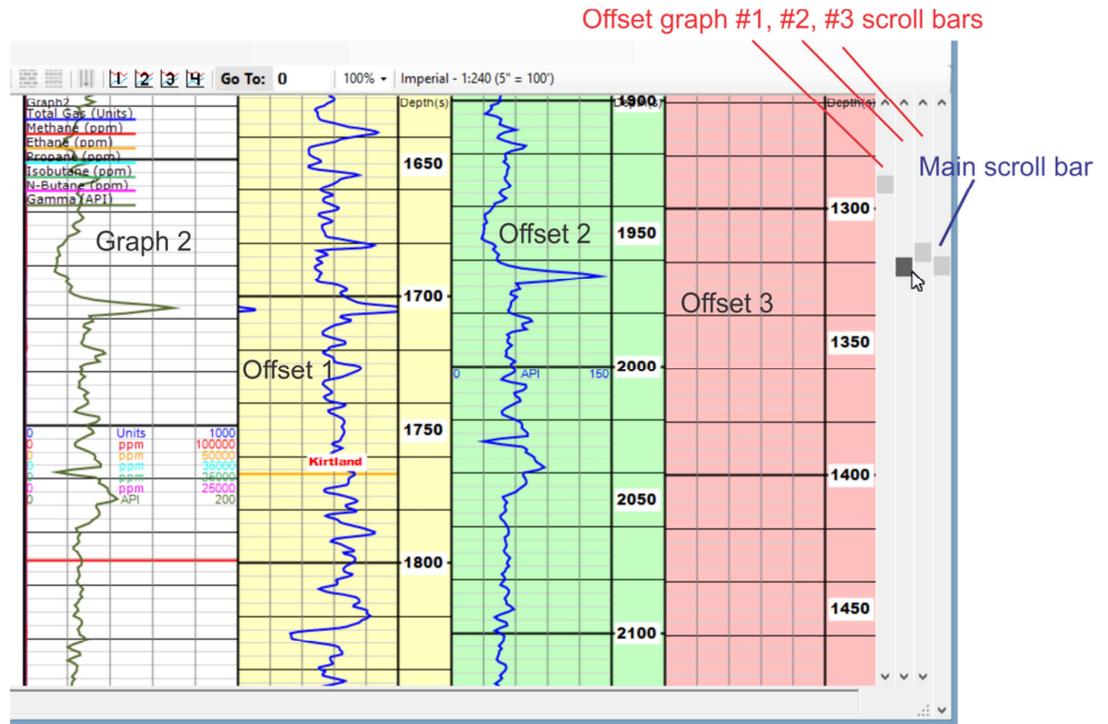
Once data have been added to the Graph 2 Track and at least one TVD/Offset Graph, the tracks can be scrolled individually or all at once in TVD Mode.

To scroll each track individually, there are 4 scroll bars in TVD Mode, shown below. The main scroll bar is on the far right of the screen and will control the main portion of the log. The offset tracks are controlled with the other three scroll bars.

To scroll all of the tracks together, hold the **Shift** key down and use the main scroll bar. This will move the main log and all 3 offset tracks as one.

Alternatively, press the **F9** key to “lock” the scroll bars. The status bar at the base will show “TVD Log” or “TVD (Scrolls Locked)”. When the scrolls are locked, the offset tracks can still be scrolled individually, but using

the main scroll bar will move everything together. Press F9 again to unlock the scroll bars, where each track will move independently.



Special Features of TVD Mode

TVD mode has some special features.

Omitted Text Items

Because a TVD log will condense much of the MD log data as your inclination increases, long text paragraphs will not be displayed when the log is toggled from MD Mode to TVD Mode. For example a description in the description track that is more than a few sentences will not be displayed. Short text items, like formation tops, will be displayed. In the example below the TVD Mode log shows the tops and the depths of the target and formation markers, but no descriptions. That is because the longer descriptions did not meet the short length criteria to be displayed on the TVD log. That way a TVD log will not become unreadable because of overlapping text items.

LAS Files

LAS files that are exported using the menu item **File->Export Curve Data as LAS File (*.las)** when in TVD mode will have a column for MD and an **additional column for TVD**. When in MD mode the exported LAS file will only contain the MD value.

