HMG Strata Log has graph tracks, up to six, which are used to display data in graph format. Typical types are drilling data, gas data, or MWD/LWD data. There are several methods to load and edit the data for display on the log.

Graph Data Editors

The **Graph Data Editors** menu, located at the top of the HMG Strata Log window will open the editor for each graph. The Graph Editor windows can also be opened using the graph symbols on the top right side of the HMG Strata Log tool bar. Graphs #1 and #2 are enabled by default, use the **Formatting** menu (Chapter 2) to enable Graphs 3-6.
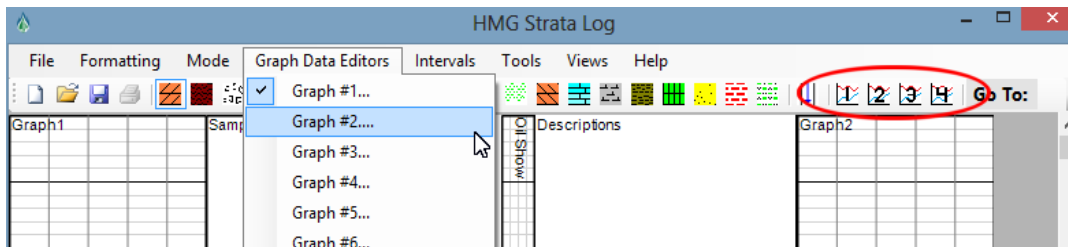

The Graph Data Editor window for each graph is divided into "Edit Curve Attributes" and "Import / Export Graph Data."

Edit Curve Attributes

The Edit Curve Attributes section of the Graph Data Editor window allows changes to Curve Name, Curve Units, Curve Scales, Line Style, and Numeric Data.

To edit a curve attribute for the selected graph, first click on the curve you'd like to edit from the list at the top right corner. To replace the current name or scale units with new name or units, type in the corresponding text box then click "Change **Name**" or "Change **Units**." Use the **Line Style** drop-downs to change the appearance for the selected curve.

To add or change scales at certain depths, use the "MD:" text box for starting depth, then click "**Add New** Scale." Highlight a curve in the "Curve Scales" box to change
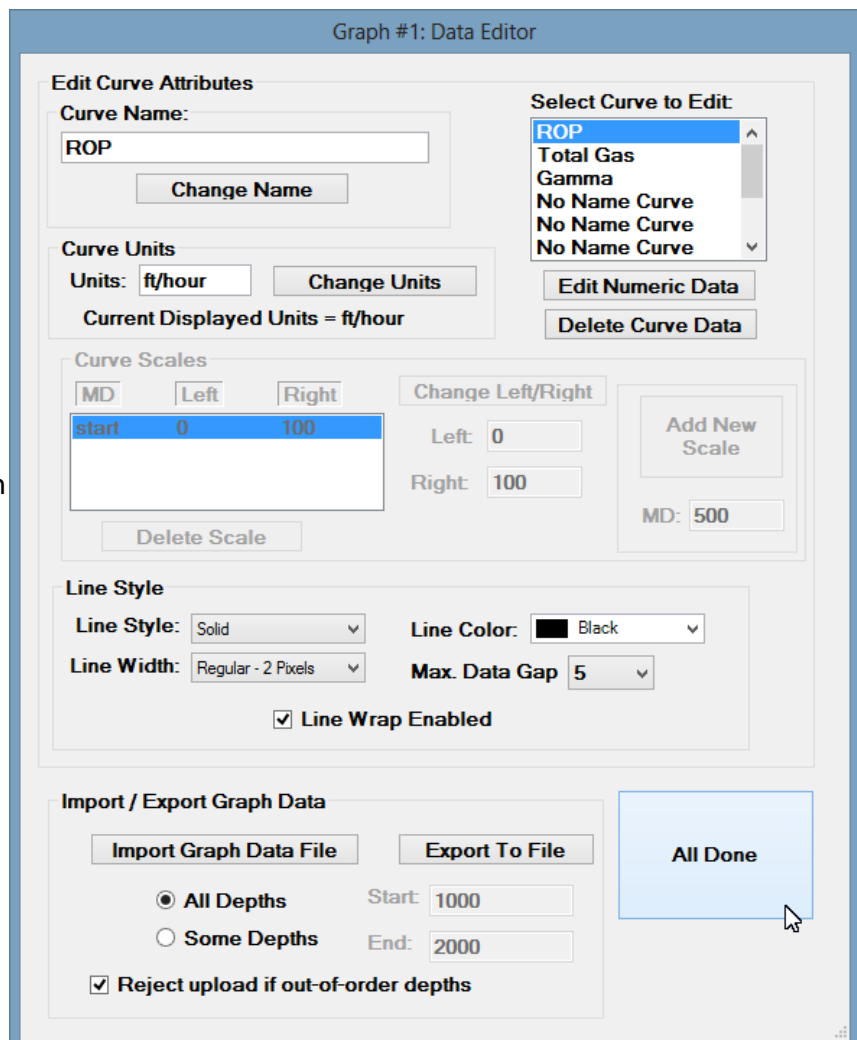
Left/Right values. Use "Delete Scale" to remove the selected scale from the curve (be careful, there is no undo for deleted scales). Scale changes are useful to display graph data with wide ranges, such as gas ppm where large gas shows are encountered.

Edit Numeric Data will open a window for the selected curve, which allows manual editing of imported data if there are missing, incorrect, or undesired data.
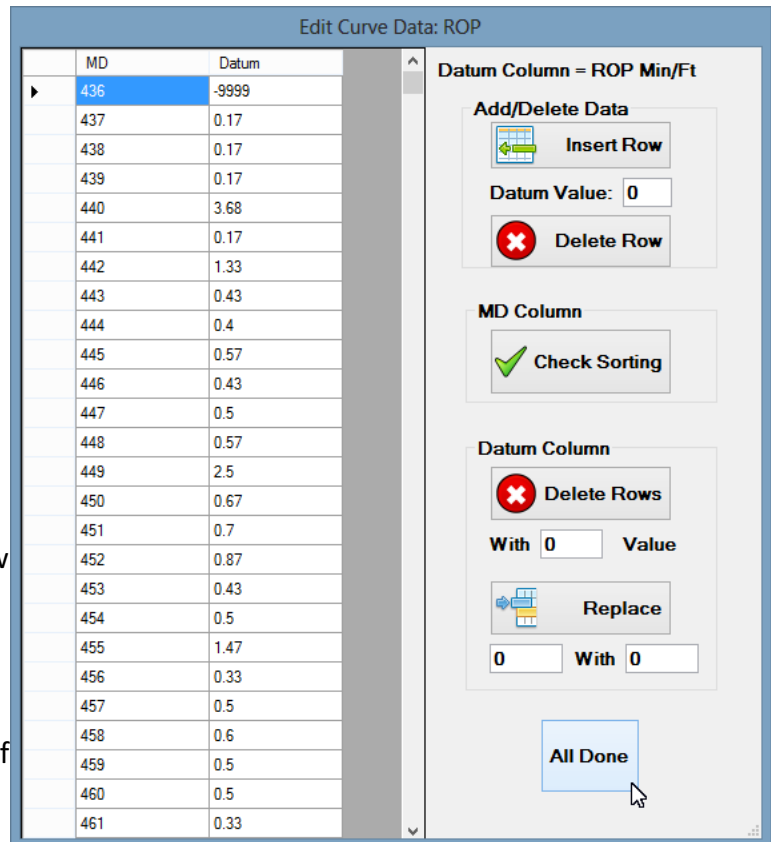
Delete Curve Data will completely delete the data in a selected curve, after prompting "Are you sure?"

Editing Numeric Data

Most data will be imported into the log graphs from text (*.txt) or LAS (*.las) files, but sometimes it is necessary or simpler to edit and enter the data directly using the "Edit Numeric Data" function.

From the Graph Data Editors menu, select the correct graph, then select the curve you'd like to edit numeric data in.

Use the table to edit the data as desired (just click on an existing value and type new value). "Insert Row" will add a row below the highlighted cell with corresponding depth (MD) increase and datum. "Delete Row" will remove the selected row and its datum. "Check Sorting" will check for out of order depths in the MD column. Use the "Datum Column" functions to delete or replace all data values with a particular, user-set value.

MD	Datum
436	-9999
437	0.17
438	0.17
439	0.17
440	3.68
441	0.17
442	1.33
443	0.43
444	0.4
445	0.57
446	0.43
447	0.5
448	0.57
449	2.5
450	0.67
451	0.7
452	0.87
453	0.43
454	0.5
455	1.47
456	0.33
457	0.5
458	0.6
459	0.5
460	0.5
461	0.33

Edit Curve Data: ROP

Datum Column = ROP Min/Ft

Add/Delete Data

Insert Row

Datum Value: 0

Delete Row

MD Column

Check Sorting

Datum Column

Delete Rows

With 0 Value

Replace

0 With 0

All Done

Import / Export Graph Data

Importing and exporting graph data is a key feature of HMG Strata Log. Importing data is the easiest and quickest way to display ROP, Gamma, Gas, etc. on the log. HMG Strata Log will accept text files (*.txt), comma separated files (*.csv), and Log ASCII Standard (LAS) files (*.las).

Text files are easy to create and edit using Notepad. Comma separated files can be opened and edited in Microsoft Excel (good for editing large amounts of data). The LAS file format is common in the oil and gas industry, used for MWD/LWD data, directional data, and data from an EDR (i.e. Pason or TOTCO).

Importing Data

To **Import Data**, first open the Graph Data Editor. Then select the "All Depths" bullet to overwrite existing curve data or the "Some Depths" bullet if specific sections of imported data are needed. Then,

click "Import Graph Data File," find the file to be imported on your computer, and click open. A "Graph Import" window will open with drop-downs according to specified curves on the graph track.

By default, the program will use column 1 from the imported file as MD (can be changed if needed). The other curves require the user to select the correct column from the imported file. An advantage of LAS files is that the columns are usually named to describe the data (GRC, ROP, or Total Gas, for instance).

When the appropriate columns have been selected for the chosen curves, click "*Load File*," then "*All Done*". The Graph Import window will remember which columns were selected the next time data is imported.

The "Reject upload if out-of-order depths" box is automatically checked and will reject files with out-of-order or duplicated MD values. Disabling this feature may allow errors in curve data, but these can be corrected later from the Edit Numeric Data menu (see above).

Overwriting Data

When data is loaded for a curve that already has data, it will overwrite depths that overlap. If Graph #1 already has ROP data from 1000-2000' MD and a file is imported with ROP data from 1500-2500' MD, Graph #1 will then show data from 1000-2500' MD. But, if another imported file contains data from 1000-1500' MD, the section from 1500'-2500' MD will be deleted. These features make it simple to add data for sidetracks without deleting data by hand, overwrite errors in curve data with a corrected file, and import curve data in smaller sections that build on each other.

Linear or Semi-Log Scales

The graph tracks can employ either linear or semi-logarithmic scales. The selection is made using the formatting menu (see Chapter 2). The linear scale option allows for more customization of the log scale. Each curve may have a different scale, and scales can be changed numerous times for each curve. Also, left and right values can be changed and curve wrap can be enabled or disabled.

A graph with a semi-log scale has fewer options. The semi-log scale is useful for displaying curves with a wide range of values (i.e. Total Gas units and Gas Chromatograph ppm data). Semi-log scales always have a minimum value of 1. Maximum values are set in the graph editor and can range from 100 to 1,000,000. The direction of the semi-log scale is either normal (higher values to the right), or reverse (higher values to the left). All curves share the same scale minimum and maximum values and only one scale is possible for a semi-log graph track.
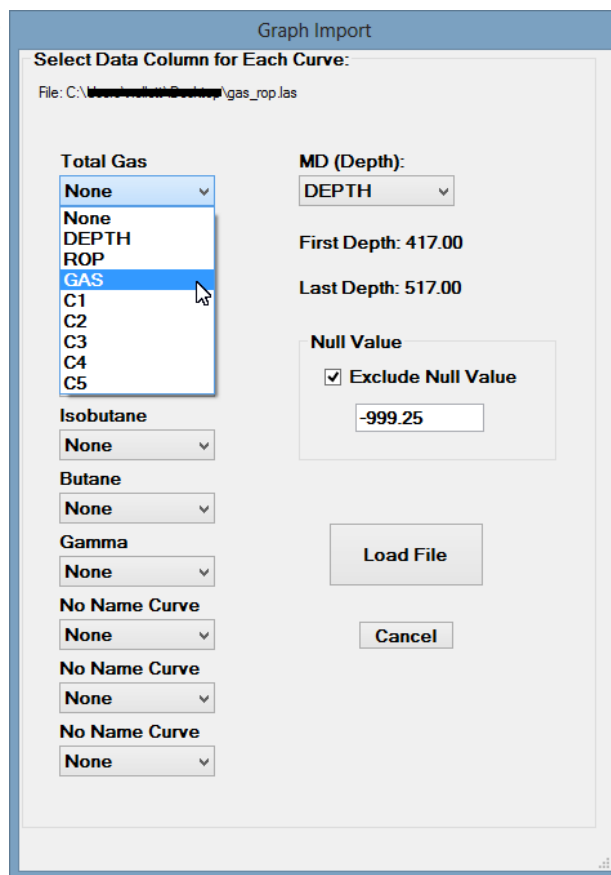
Exporting Data

HMG Strata Log will **export** individual graph curve data as text files (*.txt), or comma separated files (*.csv). The Export Curve Data (Ctrl+ L) function (see Chapter 2) will export all curve data from the log as a Log ASCII Standard (*.las) file.