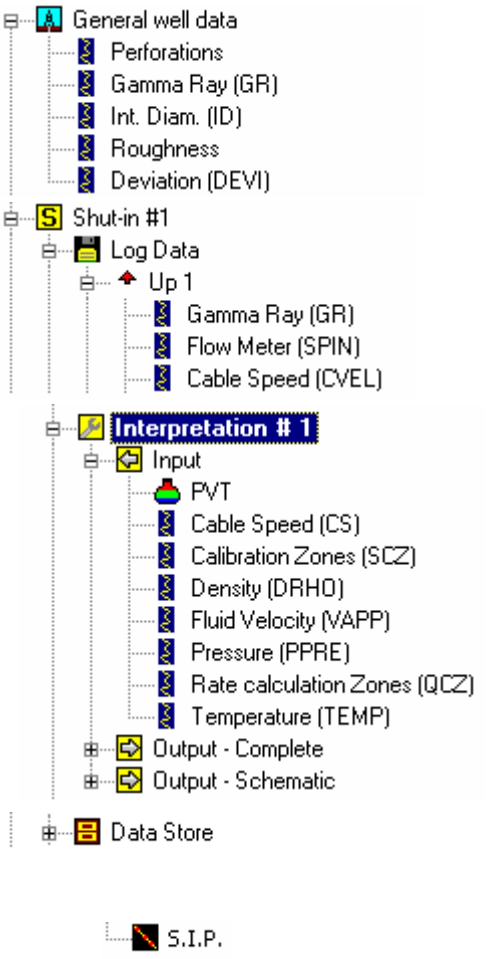
D02 • Data structure & editing

D02.1 • Data hierarchy

Emeraude uses a hierarchical representation of the data as opposed to a flat structure. At any time in a session, it is possible to view this representation in the data browser.
The basic element in the data structure of Emeraude is the **channel**, an array of couples <*Depth,Measure*> where the *Measure* can be any of the input / output properties considered in the program.



⊟ Data whose definition is unique
Used for all surveys/interpretations
Unless redefined locally
Loaded in the Document panel

⊟ Survey , i.e. a particular well condition
⊟ Log Data made of passes
⊟ Pass : contains individual channels
Loaded in the Survey panel.

⊟ PL Interpretation(could be an PNL)
⊟ Input
PVT
Input reference channels

⊟ Output
Calculated rates and simulated Properties.

Conducted in the Interpretation or *PNL Interpretation panel.*

⊟ Data Store
User created copies of channels, averages

Selective Inflow performance analysis

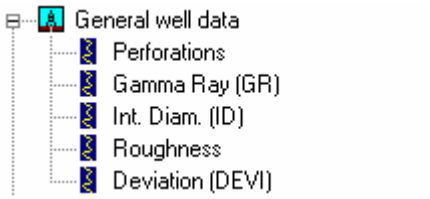
At the top of the hierarchy is the **General Well Data** i.e. data whose definition is unique for the document. Typically the General Well Data will include some of the following: open-hole Gamma Ray, T.V.D. or deviation log, zoned I.D. or caliper log, perforations, etc.

At the same level is the **Survey** (there may be several in a document) i.e. a set of data/information pertaining to a particular well condition. The main survey data is the actual **Log Data**, consisting of **Passes** (Up and Down or Stations). Each pass contains a series of measurements. Each survey has an associated **Data Store** where copies of channels can be made, lateral average created, etc. These manipulations are done in the Browser, see chapter D05.

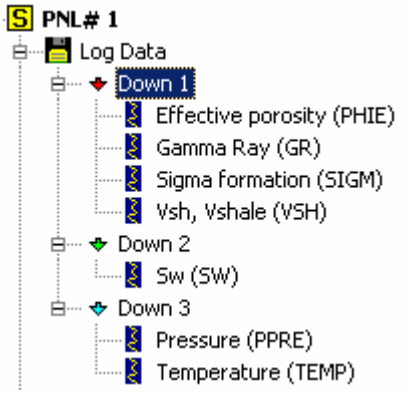
Finally, survey data is the basis for one or several **Interpretations**, the basis for multiple interpretations being, for example, the existence of several tools of the same kind (e.g. in-line and fullbore flowmeters). The above schematic shows only the case of a PL Interpretation. A PNL Interpretation has different sub-nodes (see below).

The different hierarchy levels, General Well data, Survey, PL Interpretation (and PNL Interpretation) are mirrored by the control panel modes: Document, Survey, PL Interpretation, and PNL Interpretation.

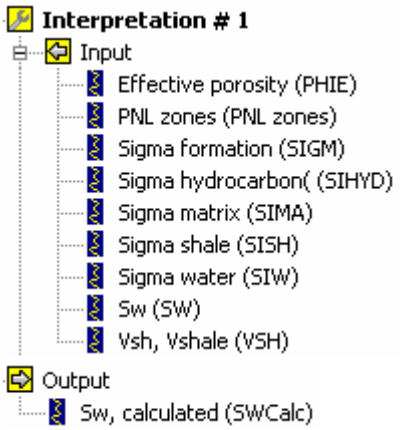
Data structure PNL



⊟ Data which definition is unique
Loaded in the Document panel.



⊟ PNL Survey, i.e. a particular test sometime from OH logs; i. e. Original petrophysical conditions
⊟ Log Data made of passes
⊟ Pass: contains individual channels
Loaded in the Survey panel.



⊟ Interpretation
⊟ Input
Input reference channels, here for a shaly single water model
Channels are dropped or defined through correlations in Infos/New PNL or though crossplots in PNL Interpretation panel

⊟ Output
Calculated water saturation

D02.2 • Data activation: Survey, interpretation, and pass

At a given time there is one active Survey and within this survey, one active Interpretation. Selection of the active survey and active interpretation is done from the main toolbar.

Active survey

All options in the Survey panel apply to the active survey. The views associated to this survey are displayed (or accessed with the Hidden plot toolbar). These include automatic plots created by Emeraude, as well as user views created by the user inside this survey. Each survey has its own independent list of plots.

Active interpretation

In the same fashion only one interpretation is active at a given time and options in the interpretation panel apply to this active interpretation. Note that if the active interpretation is a PL interpretation, options of the PNL interpretation panels are disabled. Conversely, if the active interpretation is a PNL interpretation, options of the PL interpretation panel will be disabled.

Active pass

A particular pass of the active survey is made active from the pass toolbar. Options affecting the active pass are all other options of the pass toolbar, as well as the spinner reversal option of the survey panel.

D02.3 • Data naming convention

The hierarchical view of the data given by the browser suppresses the need for a complex naming of the curves. When loading data, the software only retains the mnemonic, and associated data type.

When a channel is referenced anywhere outside its original location, Emeraude automatically constructs a name for this channel indicating its exact origin. A name is then constructed with the following convention:

- For a channel part of the General Well Data: mnemo GWD
- For a channel in an Up (or Down) pass: mnemo U**n, XX** (or mnemo D**n**, **XX**)
- For a channel in a Stationary pass: mnemo S**n, XX** (or mnemo D**n**, **XX**)
  where **n** is the pass number in the type (Up, Down, or Station), and **XX** is the survey short name as defined by the user (defined in the Info/New option of the survey panel).
- For an interpretation input channel: mnemo **YY, XX**
  where **YY** is the interpretation short name, **XX** is the survey short name
- For an interpretation output channel: mnemo **-> YY, XX**
  where **YY** is the interpretation short name, **XX** is the survey short name

- For a channel in a Data Store: mnemo DS, **XX**
  where **XX** is the survey short name

D02.4 • Data editing

Editing options in Emeraude can be classified in the following manner:

Depth editing (chapter D08)

Stretch: applies to all Log or a section of the Data in a given survey. Defined in the Stretch or Zone stretch options of the Survey panel.
Pass Shift: applies to all Log Data in a Pass. Depth shifting is done using the pass toolbar.
Tool Shift: applies to all Log Data in a Pass with a particular mnemonic. Depth shifting is done using the pass toolbar
If combined, the transformations are applied in the following order: tool shift, stretch, pass shift.

Browser editing (chapter D05)

Delete: a channel, pass, survey, etc. can be deleted.

Y -> a.Y + b: a particular measurement, i.e. the Y entry of a given channel, can be modified by a factor and/or shift. A check box permits application of the same factor/shift to all channels of the considered type.

Delete parts / Fill gap: create/fill a gap in a channel.

Interactive edit: replace a section or extend a selected channel by directly drawing on the screen.

Filter, Derivative

Special editing

Spinner reversal (section D08.6): Defined interactively with the Spinner reversal option of the Survey panel, can also be entered/viewed in the Information option of the pass toolbar.