

Free Software And Database Access To Australian Well Information

As part of its research initiative into oil and gas, the CSIRO has developed a quality controlled database, known as PressureDB™. The database contains over 980 wells and over 50,000 pressure points and represents an information source for formation pressure, temperature, salinity and related geological data for Australian wells.

Historical well data represents a considerable asset for any oil company, but is often poorly archived and in non-digital format. Converting this data to a usable format can be time consuming and expensive. In addition, the relative quality of the data is unknown, potentially introducing large errors to the interpretation.

PressurePlot™ was developed to analyse the PressureDB™ collection of subsurface formation pressure, temperature and salinity data from oil and gas wells across Australia and its territorial waters.

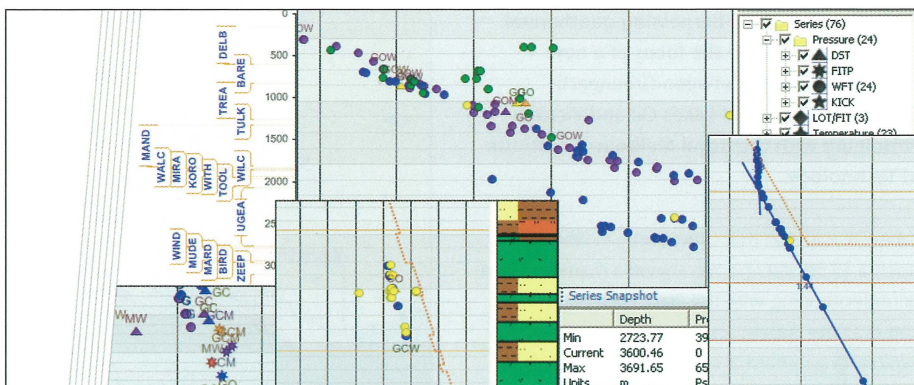
PressureDB™ database

PressureDB™ also stores fluid and geological data required for formation pressure analysis. The data is sourced directly from publicly available well completion reports. PressureDB™ contains:

- Formation pressure (DST, RFT, MDT, etc);
- Formation temperature;
- Formation water salinity and resistivity;
- Leak-Off tests;
- Stratigraphy;
- Lithology;
- Mudweight;
- Fluid contacts.

This database represents the only formation pressure database of its kind for Australian data. It contains complementary data necessary for understanding the pressure regime within a particular unit or formation and a unique system, PressureQC™, for ranking and comparing pressure data.

As of August this year, PressureDB™ contained data for 980 wells totalling over 53,257 pressure, 22,036 temperature and 4,367 salinity data values. PressureDB™ is an active online CSIRO resource and is updated with new information regularly.



The CSIRO's new free software database.

PressureQC™

The CSIRO developed PressureQC™ to provide a fast, systematic and objective way of comparing large sets of historic and contemporary downhole pressure measurements in a meaningful way.

PressureQC™ assesses the quality and quantity of formation pressure data available in the well completion report, and assigns a code which reflects the degree of confidence associated with that measurement. These codes are stored in PressureDB™ and are displayed in PressurePlot™ as a reliability code, ranked from 1-Most Reliable to 5-Very Low Reliability.

PressureQC™ also has systems for assessing temperature and salinity data, displayed as a selectable option in PressurePlot™. PressurePlot™ software has been developed specifically to analyse pressure data on a single well or multi-well basis.

PressurePlot™ application

PressurePlot™ interrogates PressureDB™ database via a set of user selected options. It then plots the data as a vertical profile with depth. PressurePlot™ displays data for any or all of the following:

- pressure
- temperature
- salinity

for single or multiple wells.

The gradient analysis function is used to identify pools and contacts. For single wells, data is plotted against stratigraphy and lithology for immediate assignment to a specific unit.

- Extra features of PressurePlot™ include:
- select data according to type or reliability code;
- change units and datum settings;
- plot hydrostatic and lithostatic gradients;
- plot data by well or by data type;
- zoom features;
- export selected data for spreadsheet analysis.

PressurePlot™ is already being used by major oil companies and international research institutes.

Applications of PressureDB™ and PressurePlot™

Relating the in-situ pressure regime of old and new wells is fundamental to discovering, defining and producing hydrocarbon resources. This system provides immediate access to the data from a large number of wells in a context that allows meaningful comparison of old and new data. PressurePlot™ can be used for any process which requires understanding of the in-situ pressure environment, including:

- pressure gradients;
- fluid contacts;
- compartmentalisation;
- impacts of production;
- reserves estimates;
- capillarity;
- fault seal;
- top seal;
- water chemistry;
- temperature gradients; and
- more on both field and regional scales.

See the CSIRO website for details or go to www.pressureplot.com.