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Interactive Petrophysics

Pore Pressure Prediction module

BENEFITS

- Enhances drilling programs with pore pressure interpretation
- Minimizes the risk of costly well kicks by using the predictive properties of the Interactive Petrophysics™ Pore Pressure Prediction module

Interactive Petrophysics log analysis software is comprehensive yet easy-to-use log analysis software. Designed by petrophysicists, it fits the needs of both the expert and the casual user. The Pore Pressure Prediction module adds key capabilities to the Interactive Petrophysics suite.

WHAT IS PORE PRESSURE PREDICTION?

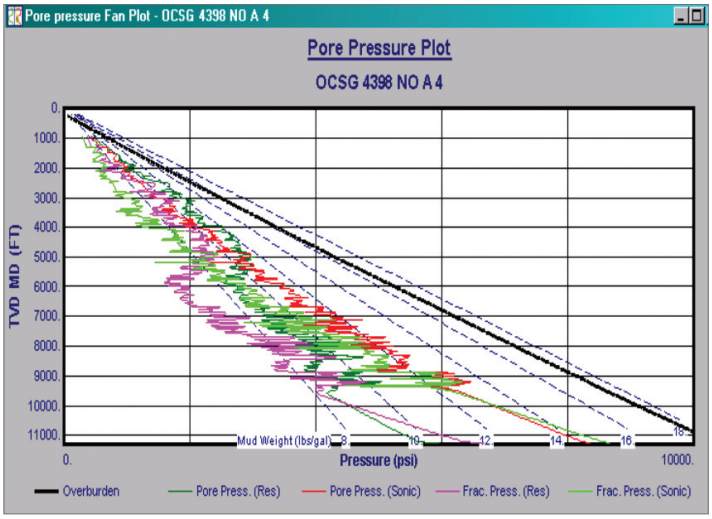
The Pore Pressure Prediction module within Interactive Petrophysics allows you to evaluate subsurface pressures encountered while drilling a well. Pore pressure predictions are essential to drilling planning processes because they predict hazardous zones within the reservoir during drilling operations, reducing time and costs. Users can model overburden (OB), pore pressure (PP), and fracture pressure (FP) based on log curves, drilling information, and seismic data input.

The results are used as a predictive predrill tool, a real-time tool, and for postdrilling analysis to update and refine OB, PP, and FP models. Three steps support these analyses: density estimation, overburden gradient calculation, and pore pressure prediction.

Density estimation allows you to generate a density curve from sonic log data for use in the overburden gradient calculation. When density log information is not available, it can be estimated from P-wave velocity (V_p) using an empirical relationship. The most common density-from-sonic transit time algorithms are included in the Pore Pressure Prediction module.

Overburden gradient calculates the instantaneous average overburden gradient from the depth reference to model overburden gradient (OBGrad) and OB pressure curves for the well being evaluated. The OBGrad curve is modeled directly from user-selected density curve data, user input average density values, or both. Alternatively, in the absence of density logs, lookup tables or an empirical relationship can be used. Results are displayed in log plots.

Pore pressure prediction requires the overburden gradient curve, the volume of shale curve, plus any related drilling information to generate the pore pressure and fracture pressure gradient models. The fracture gradient supports a number of algorithms, with the option to create your own Poisson's ratio curve for use in the calculation. All results have the flexibility to be displayed as cross-plots, log-plots, and histograms as seen in the pore pressure fan plot.



Pore pressure fan plot.

Pore pressure prediction results are essential to drilling planning processes and can be easily and quickly passed on to the well planning team for input into the geomechanical model within the Osprey* Risk drilling risk prediction model. These results enable the drilling team to reduce risk and more accurately model and mitigate risks arising from overpressure and wellbore stability.

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