Drillworks® Software

OVERVIEW

Leading-edge Drillworks® geomechanics software from Halliburton Landmark provides unmatched tools for subsurface pressure analysis and monitoring for optimal refinement of fluid, casing, and fracture design. For engineers and geoscientists, Drillworks software is an essential tool for improving drilling efficiency, completion designs, and operational safety.

BENEFITS

Drillworks software improves human and environmental safety by analyzing subsurface pressure prior to and during drilling operations in order to help prevent blowouts, wellbore collapses, and fluid imbalances. This technology delivers real-time analysis while drilling, which can prevent costly non-productive time (NPT) from wellbore pressure problems by enabling immediate changes to fluid and casing programs. It also improves fracturing effectiveness in unconventional assets by analyzing rock properties and stresses to orient well plans in the optimal direction across the entire field. Additionally, the software can model and update subsurface pressures while drilling to improve drilling performance and safety by adjusting casing and fluid plans in real time.

FEATURES

Pre and Post-drill Geopressure Analysis
This software provides the industry’s most dependable prediction of pore pressures, using an operator-endorsed process established by the Drilling Engineering Association’s (DEA’s) Joint Industry Project (JIP) DEA 119.

Real Time Analysis
Drillworks technology offers real-time analysis, using measurement/logging-while-drilling (M/LWD) data acquired via WITS or WITSML standards.

3D Visualization and Analysis
The Drillworks 3D visualization tool gives users the ability to view easily well paths, along with the cubes, sections, and surfaces of any geopressure-related data, including pore and fracture pressure, and effective stress and seal capacity. Users are able to apply pore pressure prediction analysis to 3D volume data and make extractions from their volume at proposed target locations for detailed analysis and geopressure predictions.

Data Browser with Customizable Views and Mapping
Drillworks software includes a comprehensive browser and visualizer designed to help users quickly and easily find, select, and manage geopressure-related data and create Drillworks projects.

Geostress and Wellbore Stability
With this technology, users can quickly identify wellbore stability problems prior to drilling and perform real-time wellbore stability analysis while drilling.

Stress Polygon Analysis
This component can easily calculate and visualize the stress polygon, a plot of the maximum horizontal stress vs. the minimum horizontal stress at a single depth. This can be used to constrain the magnitude of the stresses based on critically stressed crust theory.

KEY BENEFITS

» Reduce operational risks and NPT by geomechanical modeling updated with real time data
» Estimate geopressures interactively by log and seismic velocity modeling based on sound science
» Integrated, relational and scalable data management from individual machine to enterprise level

KEY FEATURES

» Pre-drill, real-time, and post-drill analyses are all easily performed in one application using the latest data from across the field to help improve drilling efficiency and safety
» Integrated exploration tools enable multi-well planning and drilling monitoring and analysis that incorporates real-time data to improve casing and mud weight designs
» Store, search, and retrieve geopressure data from across the entire field with an integrated relational database, data browsing and 3D visualization tools

Figure 1: Drillworks suite of solutions
Breakout Analysis
This analysis determines the operational window and indicates horizontal stress orientation from caliper logs.

Uncertainty Analysis
This analysis feature enables operators to perform uncertainty analyses on geopressure predictions and wellbore stability calculations.

Evaluating Seal Integrity of Sands and Shales
Drillworks software estimates minimum stress and compartment fluid pressure to determine the sealing structure’s pressure capacity. The resulting calculation is used to assess whether the top seal has the strength to contain the pressure compartment, or if it may have breached and allowed the hydrocarbons to escape.

Leak-Off Test Analysis
Drillworks software ensures that valuable leak-off test data is included in the pore pressure and geomechanics workflow. This application offers full pressure/volume/time plots from a leak-off test to be solved for minimum stress and applied to pore pressure and wellbore stability models. An intuitive graphical interface ensures fast and easy analysis.

Scalable Data Management
Local databases: Drillworks software uses a personal PressBase™ database that empowers users to store and manage their local Drillworks projects and geopressure-related data, which can be integrated with a corporate PressWorks™ database, thus providing a central geopressure data store.

Enterprise relational databases: A PressWorks database can additionally be deployed as an enterprise, corporate-wide database to comprehensively store, manage, and share a broad range of geopressure data, including all relevant well logs, geopressure data, and project analyses from pore pressure and geomechanics project files.

Integration with EDM™ and OpenWorks® Datastores
Drillworks users can retrieve well data from the EDM™ database to source trajectory and casing data. Conversely, users can populate the EDM database with pore pressure and fracture gradient information for optimal casing and mud weight design. They can also have direct well data access from the OpenWorks® data model, including well log and well header information. For mapping workflows, Drillworks software pushes pore pressure and fracture gradient data to the OpenWorks database in order to reduce the time spent transmitting critical data and results between systems.

Figure 2: Interactive calibration of log based models to serve as input into field scale 3D seismic and basin modules