JewelSuite GeoMechanics
Well-centric geomechanical modeling and wellbore stability analysis

Now more than ever, you need to optimize your well plans and proactively prevent potential rock mechanical challenges. These challenges, if undetected, can cause a lot of high risk and costly problems.

JewelSuite™ GeoMechanics software provides a proven workflow to help you optimize your well plans and define a safe operating window to maximize drilling performance, minimize drilling risk, and improve safety. With the JewelSuite GeoMechanics software, you can quickly create accurate geomechanical models, reliably predict abnormal pressure incidents and analyze wellbore stability giving you greater insight to optimize the performance of your wells and reservoirs.

Well-centric geomechanical analysis
JewelSuite GeoMechanics provides a thorough well centric workflow that includes log compositions, lithology, overburden, pore pressures, horizontal stress, mapping, wellbore stability and more.

You can use well logs and drilling data to create well-centric geomechanical models consisting of lithology, rock mechanical properties, overburden pressure, pore pressure, minimum and maximum horizontal stress, and fracture pressure. You are able to display drilling events, manage multiple wells and cases, depth stretch logs and tops, manipulate logs graphically, analyze local correlations, and create customizable reports. The lock management feature allows full control on updates of any calculations. With all locks open any update can propagate through the workflow automatically from first change to last influenced property.

Pore pressure prediction
JewelSuite GeoMechanics enables you to reliably predict abnormal pressure incidents during drilling to mitigate kicks, blowouts, and lost circulation. You can predict pore pressure using traditional log-based trend line methods calibrated with drilling data. You can also access advanced methods such as effective stress, buoyancy, centroid, and effects of injection or depletion.

Applications
- Offshore and onshore drilling
- Exploration wells
- High angle and extended reach wells
- Complex geology
- Depleted reservoirs
- Environmentally sensitive areas

Features and benefits
- Complete geomechanical modeling workflow
  - Ensures accurate calculations of rock properties, overburden, formation pore and fracture pressure, and horizontal stress from well logs and drilling data
  - Minimizes risk and improves safety during drilling
  - Optimizes reservoir performance
- Thorough wellbore stability analysis workflow
  - Identifies wellbore stability problems prior to and after drilling
  - Ensures optimum well paths
  - Identifies safe mud weights to prevent drilling problems
  - Minimizes risk and improves safety during drilling
  - Optimizes reservoir performance
  - Improves wellbore stability analysis for standard geomechanical models and advanced mode models with inclined stress, bedding planes and temperature effects
- Access to real-time drilling data
  - Displays the data and uses the data to update pre-drill geomechanical model
  - Connectivity to remote WITSML servers
  - Can download and upload data using industry-standard format
Wellbore stability
You are able to quickly evaluate the drilling risk for proposed well plans by calculating wellbore failure along the well trajectory for a proposed mud program. Likewise, you can predict the required mud weight to support wellbore stability and evaluate your casing design to prevent wellbore failure. In the advanced mode, you not only have the ability to work on standard geomechanical models, but can also include inclined stress, temperature effects and/or weak bedding planes. In all scenarios, our software enables you to reliably forecast wellbore instability before, during and after drilling to mitigate wellbore collapse, tight hole, stuck pipe, fishing, kicks, lost circulation, formation damage, casing deformation, and sidetracks.

Optimized well placement and trajectory
JewelSuite GeoMechanics enables you to calculate optimal mud weight windows, mud programs and casing designs from tolerated wellbore breakout, considering your standard or advanced mode geomechanical model. You can also analyze wellbore stability for arbitrary well trajectories in one depth by calculating drilling direction plots that display the collapse pressure or the fracture initiation pressure. Other depth based plots allow you to evaluate the relative effects of rock strength, mud weight and allowable breakout width in selected depths. In the quantitative risk analysis workflow, you can calculate the probability of wellbore instability versus mud weight by incorporating the uncertainty of the input parameters.

Access real-time data
The JewelSuite™ RT (Real-time) WITSML Add-in is available for access to real-time WITSML drilling data. WITSML is the industry leading wellsite information transfer standard markup language. With JewelSuite RT WITSML, you have the flexibility to connect to a remote WITSML server to download and upload WITSML data, or use local WITSML files to import and export WITSML data. By updating your predrill model through real-time data acquisition, you can minimize uncertainty, maximize confidence in your results, enhance understanding of the complete picture, and address more challenging problems and greater opportunities.

Improved efficiency and ease of use
Accelerate your projects and reduce errors using several key features included in JewelSuite GeoMechanics. Workflows lead you step-by-step through processes and enable even the most novice users to quickly learn the application. The built-in audit trail captures all actions performed for a project and provides auditable and reproducible modeling steps. Dynamic help is available within the application and allows you to view detailed information on any object simply by clicking an icon.

Seamless connectivity with other applications
You can use JewelSuite GeoMechanics as a standalone application or in combination with other geomechanics software to complement your existing workflow. JewelSuite GeoMechanics is built on the JewelEarth™ development platform so you can easily incorporate your models and analysis in an advanced, integrated subsurface modeling workflow. You can use applications seamlessly by exchanging data between them through shared files, or by dragging and dropping data.

Learn more: contact us today
To learn more about JewelSuite GeoMechanics software, contact your Baker Hughes representative today or visit BakerHughes.com/reservoir-software.