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.

From 1D well-centric models to static full-field 3D models, JewelSuite™ GeoMechanics software gives you greater insight to optimize the performance of your wells and reservoirs.

Well-centric geomechanical analysis
The 1D Model module 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 stress, pore pressure, minimum and maximum horizontal stress, and fracture gradient. 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
The 1D Model module also enables you to reliably predict abnormal pressure incidents during drilling to mitigate kicks, blowouts, and lost circulation. You can predict pore pressure using traditional methods such as Eaton, equivalent depth ration and Bowers calibrated with drilling data. You can also access advanced methods such as buoyancy, centroid, and effects of injection or depletion.

Wellbore stability
Using the Wellbore Stability module, 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**
The Wellbore Stability module also 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**
Access to real-time WITSML drilling data is made possible by using the JewelSuite™ RT (Real-time) WITSML Add-in. WITSML is the industry leading wellsite information transfer standard markup language. With this Add-in, 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.

**Full field geomechanical analysis**
The 3D Model module offers proven methods to build accurate 3D static geomechanical models from 3D structural models and 1D well-centric geomechanical models using common geostatistical and interpolation techniques. From the 3D geomechanical models, you can extract virtual 1D well-centric models for arbitrary well locations and trajectories for both planned wells and for wells with incomplete data. This powerful application addresses moderately complex geology without major stress distortions and overcomes the limitations of 1D depth stretching that can be used for wells in simple geology by honoring structural and stratigraphic constraints.

**Fault and fracture stability analysis**
Predicting the slip potential of faults is critical when making decisions about well placement and design, reservoir compartmentalization and drainage patterns, production strategies, and enhanced recovery techniques.

With the fault and fracture stability module, you can quickly model fault structures, stress, and pore pressure and analyze the effects of pressure changes during drilling and production operations. You can also analyze caprock integrity in order to determine the proximal distance to failure if pore pressure communication exists between your reservoir and surrounding rock.

**Seamless connectivity with other applications**
You can use the modules within JewelSuite GeoMechanics as standalone applications or in combination with other modules for an advanced, integrated geomechanical workflow. The full suite of modules includes 1D Model, Wellbore Stability, 3D Model and Fault and Fracture Stability.

JewelSuite GeoMechanics is built on the JewelEarth™ development platform so you can easily exchanging data between other JewelSuite applications 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.