JewelSuite Reservoir Stimulation
Optimize your hydraulic fracturing designs for wells and well pads in unconventional fields

As a drilling engineer responsible for optimizing your hydraulic fracturing plans, you need to analyze existing wells and apply lessons learned to your new well plans. To do this you need a tool that quickly imports and accurately visualizes all relevant data, runs hydraulic fracturing simulations and identifies stress shadowing to evaluate the increase of stress surrounding hydraulic fractures. JewelSuite™ Reservoir Stimulation is that tool.

JewelSuite Reservoir Stimulation is a dedicated, fit-for-purpose, standalone application that enables users to visualize and interpret historic reservoir stimulations and optimally design planned reservoir stimulations.

Intelligent, fast and easy data import
JewelSuite Reservoir Stimulation allows users to quickly and easily import industry standard data including wellbore, well logs, fracture stages, hydraulic fracture designs and microseismic data. Our unique intelligent importer recognizes and loads all standard data types and provides optimized data import functionality that gets smarter each time data is imported. The intelligent importer makes dedicated assumptions during the import process based on information extracted from the file names, the file contents, and common processes. The assumption can be easily changed after import without the need for re-importing.

Drag & drop capability, data type recognition and template assignment facilitates the process of importing large datasets with many wells, stages, microseismic events and fractures. Common data formats are recognized without user intervention. When a data format is not recognized, only the missing format information needs to be provided thus minimizing user intervention. Subsequently, this new data format is recognized for future data import.

Visualize data in 3D
Data is visualized in a powerful 3D viewer to derive lessons learned from historic stimulations. Visualizing data in 3D can reveal patterns and feature relationships that are not obvious in two dimensions. The large view allows maximum workspace to visualize and analyze data.

JewelSuite Reservoir Stimulation provides powerful 3D visualization and animation functionality allowing analysis of all available data such as wells, logs, micro seismic, etc. Time-sequence data including microseismic data and hydraulic fracturing modeling results from the Baker Hughes MFrac™ hydraulic fracturing simulator can be replayed in time. The view properties are adjustable and the display properties of the data (colors, line thickness, symbol shape and size, and transparency) are modifiable.

Applications
- Unconventional oil and gas reservoirs
  - Tight oil and gas reservoirs that need hydraulic fracturing for economic production

Features and benefits
- Fast and easy data importing
  - Intelligent import tool that recognizes and quickly loads standard industry data types for wellbores, well logs, fracture stages, hydraulic fractures, and microseismic data
  - Drag and drop option for all data files
- 3D data visualization of data for evaluating existing wells and planning new wells
- Built-in connectivity to MFrac™, the industry trusted hydraulic fracturing design and evaluation simulator
- Patent-pending microseismic data analysis capability
- Inclusion of stress shadowing effects during simulation
- Easy to learn and use
  - Modern, intuitive interface
  - Built-in workflows that guide users step-by-step through processes
Optimized stimulation design workflow
The main modeling workflow leads users from data import of all relevant data, 3D visualization and animation for analysis, fracture stage placement to setup of the stimulation designs.

The stimulation design is based on modeling results from hydraulic fracturing simulations and stress shadowing computations. The treatments are simulated via the industry-leading hydraulic fracturing simulator, MFrac™. The effects of stress shadowing for multiple stages are computed for sequential and alternating staging. Informed decisions can be made concerning well placement, landing zone, hazard avoidance, well azimuth, lateral length, well spacing, stimulation method, stage spacing, hydraulic fracturing fluids and proppants, and treatment rate and volume.

JewelSuite Reservoir Stimulation uses a build-in optimizer to find the optimal solution for the field based on all available data.

Microseismic analysis
JewelSuite Reservoir Stimulation uses state of the art microseismic interpretation technology to further analyze historical wells with measured microseismic events. Our patent pending microseismic interpretation technology allows visualization and investigation of the stimulated reservoir either in a map- or cross-section view.

From the stimulated volume or microseismic events per stage, it can be determined whether the stages are properly spaced and if the hydraulic fractures are simulated correctly. JewelSuite Reservoir Stimulation also enables you to evaluate if the treatments had optimal coverage without interfering with nearby wells with hydraulic fractures.

Stress shadowing effects
Fractures placed too close together can interfere with each other and increase pressures. Predicting and mitigating the effects of these stress shadow effects can make a significant difference in the success of your stimulation program.

With JewelSuite Reservoir Stimulation, stress shadowing effects can be taken into account during simulation of the hydraulic fractures. The stress shadowing calculations are either based on analytical solutions or on response surface behaviors which are calculated using sophisticated finite elements models. These geomechanical effects will assist in designing the most ideal fracture stage location, the optimal distance between fracture stages and ultimately the best fracture stage design for the entire well or well pad.

Improved efficiency and ease of use
You can accelerate your workflow and reduce errors using several key features included in JewelSuite Reservoir Stimulation. The software manages the different scenarios and corresponding data files to allow you to spend your time on optimizing the field development plan, instead of having to worry about managing data, importing and exporting data files while at the same time ensuring consistency.

JewelSuite Reservoir Stimulation takes into account stress shadowing effects and enables quick multi-well, multi-fracture designs to be simulated with just a few button clicks, to get to an optimal well and fracture design plan.

Seamless connectivity with other applications
Only JewelSuite Reservoir Stimulation seamlessly connects to MFrac™, the oil and gas industry’s most trusted hydraulic fracturing design and evaluation simulator, to provide accurate fracture design and treatment analysis. You can use JewelSuite Reservoir Stimulation as a stand-alone application or in combination with other JewelSuite applications.

JewelSuite Reservoir Stimulation is built on the JewelEarth™ development platform so you can easily incorporate your models and analysis in an advanced, integrated workflow.

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