JewelSuite 4D GeoMechanics

Quickly and accurately predict the full-field geomechanical behavior of your reservoir over time

The Baker Hughes JewelSuite™ 4D GeoMechanics software allows you to minimize risk and enhance reserves by simulating the complex geomechanical behavior of your reservoir. The full-field, 4D finite-element geomechanics software will improve your understanding of the entire reservoir, allowing you to make well-informed decisions to develop your assets.

At the heart of JewelSuite 4D GeoMechanics is the ability to seamlessly link with the industry’s leading finite-element mechanical simulator, Dassault Systèmes’ Abaqus™ software, which provides high-performance numerical simulations that can rapidly perform parametric studies to capture uncertainties in your model input parameters. This integration offers an end-to-end workflow that’s supported by a single model container, a new and customizable modeling platform, and functioning, lean connections with advanced and legacy systems. By combining Abaqus with JewelSuite software, you will benefit from a simple, straightforward setup that allows you to execute complex geomechanical simulations faster.

Applications
- Full-field 4D reservoir geomechanics
  - Compaction and subsidence
  - Permeability changes
  - Complex stress fields
  - Caprock integrity
  - Fault leakage
  - Depletion effects
  - Wellbore stability, casing integrity, and sanding

Features and benefits
- Connect to Dassault Systèmes’ Abaqus software
  - Link seamlessly with Abaqus, the leading finite-element mechanical simulator
  - Set up and execute complex numerical simulations quickly
  - Generate precise, high-performance numerical simulations
- Access to superior 3D gridding and meshing technology
  - Model structurally complex reservoirs realistically
  - Achieve breakthrough image resolution in areas of interest
  - Create efficient, full-field complex geomechanics models
- Simplified workflows in a single software platform
  - Create fast, cross-disciplinary data sets in a single model container
  - Build models and post-process results using all context information
  - Get the absolute best from next-generation well-centric geomechanical models and applications
  - Link directly to reservoir fluid flow simulators, such as CMG’s IMEX and GEM

Integrate your reservoir models using a single unified container to quickly model complex structures without compromise.
Bridge the gap between geomodeling, fluid flow simulation, and geomechanical simulation using a customizable, end-to-end multidisciplinary workflow.

Bridge the gap between geomodeling and geomechanical simulation

With the seamless connectivity between the JewelSuite software and Abaqus, you can use the lean, functional modeling capabilities of both powerful applications without the worry of potential compatibility problems. The JewelSuite software will take care of comprehensive pre- and post-processing, as well as simulator job management. Furthermore, JewelSuite software can easily connect to industry-leading reservoir fluid flow simulators, such as CMG’s IMEX™ and GEM™, for coupled flow and geomechanics simulations.

Improved efficiency and ease of use

You can accelerate your workflow and reduce errors using several key features included in JewelSuite 4D 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 that can easily be converted to workflow automation scripts. Building reliable geomechanical models with JewelSuite 4D GeoMechanics is straightforward and painless.

Model complex structures without compromise

JewelSuite 4D GeoMechanics software uses powerful 3D gridding and meshing technology to create realistic and accurate representations of your reservoir. Easy access to sophisticated yet user-friendly tools lets you create a meaningful watertight mesh and perform consistent upscaling. You can easily achieve sufficient resolution in your areas of interest, while limiting the size of your numerical problem. With our subsurface modeling software, you can model your complex reservoir accurately from overburden to basement, allowing you to address your more challenging problems and determine greater opportunities in your assets.

Seamless connectivity with other applications

Our software offers the most advanced multidisciplinary knowledge and techniques available to interpret your data quickly, accurately, and effectively to optimize your drilling campaigns. JewelSuite 4D GeoMechanics is built on the JewelEarth development platform so you can easily incorporate your models and analysis in an advanced, integrated geomechanical workflow. You can use applications seamlessly by exchanging data between them through shared files, or by dragging and dropping data.

Integrate your reservoir models using a single unified container

When using JewelSuite software as a platform, you can integrate seismic, structural, geologic, geomechanical, and fluid flow models into a single, multidisciplinary workflow. You can aggregate, visualize, and analyze cross-disciplinary data in a single consistent environment, which allows you to minimize uncertainty in your sparse data and maximize confidence in your modeling results.

By managing your structural complexity in one program, JewelSuite 4D Geomechanics software can deliver a comprehensive reservoir view that will improve your approach towards optimally producing your well.

To find out how you can improve your reservoir decisions using our full-field JewelSuite 4D Geomechanics software, contact your Baker Hughes representative or visit BakerHughes.com/reservoir-software.