BIG GUNS ENERGY SERVICES

Inaugural OIL & GAS AWARDS Canada WINNER

# Caprock Integrity Assessments

## BGES & GeoContainment ™

BGES is a leader in subsurface GeoContainment™ services for the petroleum and mining industries in Canada, with expertise in logging, field testing, lab testing and simulation. At BGES, we believe in applying science to prevent disasters, whether it be safety, environmental, or financial. We bridge the science-practice implementation gap by combining a multi-disciplinary Geoscience & Engineering team with experienced operations personnel to provide end-to-end geocontainment solutions. BGES was the winner of "Consultancy of the Year" at the Inaugural Canada Oil & Gas Awards.

## Laboratory Testing


### Caprock Core Handling

BGES's Geoscience & Engineering team provides solutions both in the field and in the laboratory to obtain high-quality data as inputs for model development.

Quality data starts with quality core and accurate in situ measurements. Diligent core handling and management is key to a successful lab test. At BGES, we place great emphasis on the planning stage before and during field operations.


### Laboratory Testing

The triaxial tests generate essential inputs for caprock modelling and are therefore necessary to determine caprock integrity. BGES offers a full suite of geomechanical testing of caprock for thermal projects. Test programs include:

- Caprock core ambient & high-temp triaxial analyses
- Multi-stress & multi-temp permeability tests

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*Simple Solutions for Sophisticated Science*

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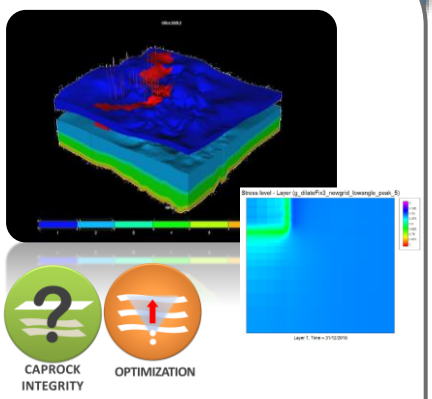
## Field Testing & Simulation


### Mini-frac or DFIT

A mini-frac (or DFIT) is a cost-effective and reliable method to determine the caprock's minimum in-situ stress. BGES executes the tests with advanced injection units and specialized technicians. Test results are presented in a comprehensive regulatory report with transparent interpretation.


### Water Mobility Testing

Improve a reservoir model's accuracy by gaining a better understanding of subsurface fluid mobility and connectivity. The water mobility test can help obtain a reliable description of relative permeability of water, initial pore pressure, formation heterogeneities, layering and connectivity.




### Numerical Modeling & Simulation

Thermal reservoir & geomechanical simulations are conducted simultaneously to predict the stress changes in the caprock during thermal recovery operations. They are necessary to ensure that the steam injected stays in the producing formation supporting production as well as to ensure safe operations.


***Professionals serving professionals***

BGES offers a transparent process through every stage, from clear management of data from the field through laboratory testing, data input and development of 3D simulation model, to delivery of the final report as well as regulatory application development/coordination. Our expert Geoscience & Engineering team is available for support through the entire process.

**Please contact us for more details or to find out about our service offerings for salt cavern GeoContainment™.**

CAVERN INTEGRITY

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