SUBSURFACE ALLIANCE

DATA DRIVEN | SCIENCE BASED | FIT-FOR-PURPOSE

We are a network of subsurface specialists using a Team-of-Teams approach to efficiently solve problems that have a direct business impact in today's fast-paced and evolving energy industry.

FRACTURED RESERVOIRS SOLUTIONS

We offer comprehensive subsurface services to characterize, appraise and develop naturally fractured reservoirs.

We use state-of-the-art geoscience and engineering tools and unique workflows specifically developed for fractured assets.

Our team evaluates each project from a multidisciplinary perspective to identify key subsurface risks and help design data collection programs to mitigate them.

We integrate observations from core all the way through seismic to maximize value of information and reduce uncertainty.

We strive to provide high quality subsurface solutions for the energy industry by bridging the gap between geoscience and engineering

GEOSCIENCE

Integrated multiscale characterization and modeling of fractured reservoirs. Distribution and intensity of different fracture types and effective flow properties

GEOMECHANICS

Physics-based modeling of subsurface in-situ stresses and mechanical properties to predict fracture distribution and fracture network behavior under different development scenarios

RESERVOIR SIMULATION

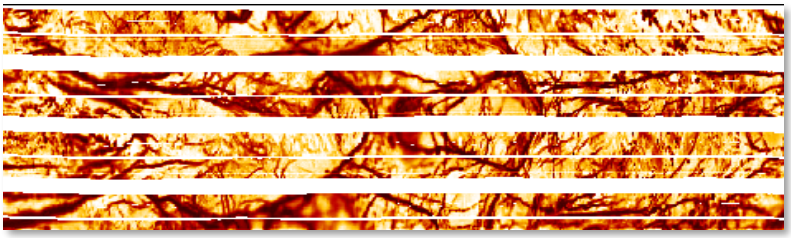
Implementation and simulation of dual porosity models to assess early breakthrough of injected fluids or interaction with hydraulic fractures. Coupled geomechanical models to optimize development plans and drainage during production

TECHNICAL SERVICES

The occurrence of natural fractures in reservoirs provide high permeability pathways that can be several orders of magnitude higher than the background matrix. In low matrix permeability rocks, fractures are critical for economic production of oil & gas and geothermal projects. They can also result in early breakthrough of injected fluids and poor sweep efficiency that negatively impacts ultimate recovery.

CORE CHARACTERIZATION

Because fractures are not all formed in the same way, we use core observations to develop a process-based classification which improves predictivity of fractures (intensity and opening) away from well control.

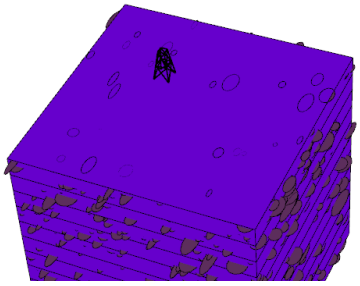


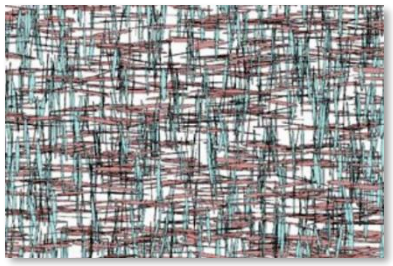
BOREHOLE IMAGES

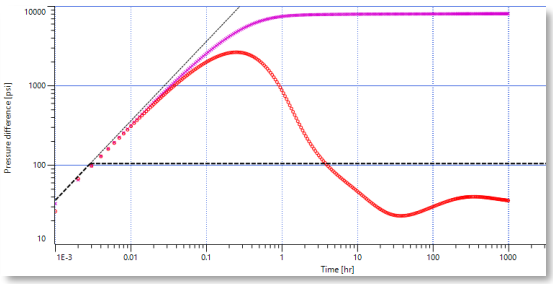
Through integration with core, we develop rules for enhancing image log interpretation, reducing the number of false positive picks, and improving estimates of fracture density and orientation.

MODELING: GEOMECHANICS & DFNs

Geomechanical models are used to predict stress-strain evolution and define areas of higher fracture density. We use quantitative data from core, image logs and numerical models to build Discrete Fracture Network (DFN) models.







WELL TESTS & SIMULATION

We calibrate DFN models using well tests (DST and interference) to fine tune fracture permeability and anisotropy. DFN derived properties of porosity, permeability and sigma factor feed directly into dual porosity reservoir simulations to forecast flow streams and overall reservoir performance under different depletion scenarios. When coupled with geomechanics, it is possible to address fracture network compressibility over time and its economic impact.

CONTACT US

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We offer a variety of **training opportunities** to help develop fracture characterization capabilities within your company. Please reach out today to learn more or set up an initial consultation.

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