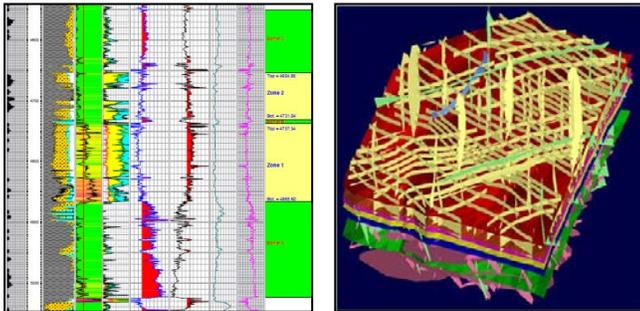


DFN models incorporate also the properties of the matrix system which, in shale gas, provides most of the gas content in the form of free and adsorbed gas (dual porosity/single permeability model).

As such, the DFN model represents the most comprehensive and consistent characterization of the subsurface, incorporating all static and dynamic available information.



TOC & Gas Content

Reservoir Model

The upscaled DFN-based geocellular model, once calibrated through history matching, provides an indispensable tool to characterize the main features impacting reservoir performance, as well as the mechanism to optimize well placement, well completion and stimulation. At this stage of the evaluation, justification to construct the DFN model will depend upon the quantity and quality of the available data

The basic steps for the construction of a DFN model consist of the following tasks:

- Characterization of features such as large scale faults derived from seismic data
- Identification of smaller-scale features such as sub-seismic faulting / fracturing and joint sets
- Statistical modeling of the various fracture sets derived from the analysis of outcrop, cores, and image data

Building a DFN model requires the estimation of the properties associated with each of the fracture sets observed in the data, the main ones being represented by:

- Static properties, such as size and aperture distribution, dip and dip azimuth distribution and density
- Dynamic properties, such as the effective permeability (permeability tensor)

Several sources of information are used with this aim, some of them through direct measurement (formation images, cores, outcrops) and others through indirect measurements such as seismic data, petrophysical logs, analogue fields, and dynamic data, among others.

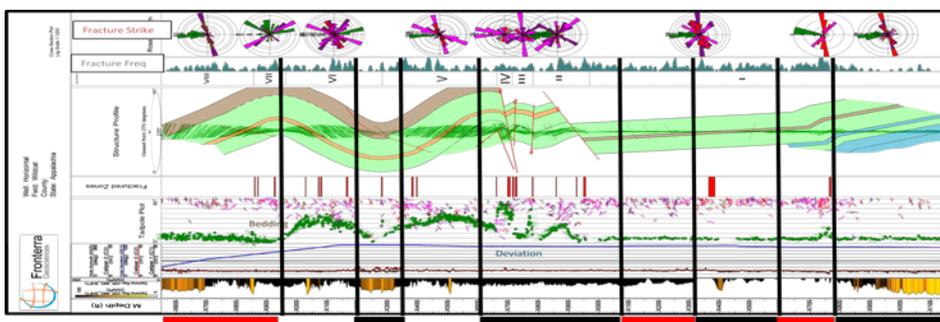
Reserves and Development

The ultimate objective in our Shale Oil Workflow is the optimization of the drilling, completion and stimulation operations, to reach a successful technical and economic development of the shale play. To achieve this, a number of critical aspects of the shale play require an in-depth analysis and understanding:

- Geomechanical reservoir properties
- Dynamic fracture system
- Production analysis
- Dynamic modeling
- Well placement
- Completion and stimulation analysis

The results of this evaluation phase will enter into the field development plan which will represent the planning instrument for our client's operations.

It is important to note that shale oil evaluations cannot be accurately performed using automated software packages. At Task Fronterra, we use carefully selected software to ensure an efficient process and accurate results, whilst at all times our highly educated and experienced consultants retain the ability to assess the validity of the results.



Hydraulic Fracture Stage Selection using Borehole Image Logs

Task Fronterra Geoscience is a global independent provider of industry leading, integrated geoscience solutions, from single well analysis to complete reservoir studies. Some tasks described herein may be performed by one or more associates.