

An Integrated Workflow for Predicting Reservoir Production Performance in the Wolfberry, Fasken Ranch, Midland Basin

Join us for an overview talk describing a workflow for evaluating and predicting reservoir production performance on the Fasken Ranch in the Midland Basin.

Rapid and accurate machine learning techniques are used to integrate seismic data and well logs, which provide the necessary stratigraphic and structural context for analysis of operational variables such as drilling and completion.

We answer questions as to whether seismic-based information can be used to improve prediction of production in horizontal wellbores and, if so, can this improvement be quantified in barrels.

We showcase a number of illustrated workflows that include various multivariate statistical algorithms fit for different purposes.

The fundamental premise of these workflows is that improved prediction of porosity by integrating seismic data ultimately leads to an improved prediction in production performance.

Specific techniques include multi-attribute classification to aid seismic interpretation, extraction along deviated wellbores, and non-linear multivariate regression to predict a seismic super-attribute for integration with well logs.

Then, we highlight a set of geological workflows including automated tops correlation, the quantification of borehole geometrics relative to the earth model, and the creation of lithofacies using multivariate regression.

Finally, we use statistical analyses to bring together disparate but related variables for assessing and predicting production performance.

Inputs come from the results of seismic and geologic work in the previous two talks, plus drilling, completion and well spacing information.

The resulting models answer the quantified add-value of seismic data and provide insights for optimizing future operational strategies.