

Integrated Geomechanical Study of the Duvernay Formation

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Summary

This presentation is a portion of a larger geologic study of the Duvernay Formation. The area of focus was the West Shale Basin located in Central Alberta, specifically Willesden Green. Industry activity in the last few years has been focused in Kaybob, driven by the higher production rates and well repeatability. Additionally, wells drilled in Kaybob use lower mud weights and tend to experience fewer drilling problems. This presentation will focus on the magnitude and variance of key geomechanical properties influencing fracability of the Duvernay Formation on a regional interwell and local intrawell scale.

Willesden Green is transected by the Snowbird Shear Zone which is characterized by mostly strike-slip faulting which is difficult to identify on seismic. This complexity has created challenges for drilling and completions and can result in poorer well performance. One of the key factors for the success in Duvernay is targeting areas with low problematic structural complexity in order to easily and repeatedly stimulate natural fracture pathways while maintaining containment.

This presentation uses the integration of key geomechanical data sets such as Diagnostic Fracture Injection Tests (DFITs), dipole sonic logs, microseismic and completions reports to better characterize areas of problematic complexity.