

Montney Shale Formation Evaluation and Reservoir Characterization Case Study Well Comparing 300m of Core and Log Data in the Upper and Lower Montney

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Summary

In recent times, the Triassic Montney play of NE British Columbia has extended far beyond the original hot bed of activity in the Montney tight sand fairway in the Dawson and Swan strike areas that began in the mid 2000's. This newer hybrid play of tight sands, silts and shale has a large areal extend of over 7 million ha with estimates up to 750 Tcf (Wood 2006). The Montney formation, because of this lateral extent, has significant variability across the play. Reservoir characterization through traditional formation evaluation measurements becomes increasingly difficult as the Montney formation shale content increases to the West. A sandstone density porosity cutoff for net of pay has often been incorrectly applied.

This type of formation needs to use a corrected density porosity equation in most areas as matrix bulk density is not 2.65 grams/cc. The bulk density changes across the Montney formation which makes this correction difficult to apply without core data.

Complicating reservoir characterization is the upper and lower Montney zones in the same area have different mineralogy which affects the formation evaluation data. The lower Montney is especially difficult as conventional open hole logs have historically caused people to believe that the lower Montney to be very tight. While the lower Montney has less porosity than the upper Montney formation, core data over the lower zone has porosity higher than expected.

The case study Montney well will be presented with 300m of core analysis through the upper and lower Montney in the Altares strike area. The core data will be compared with open hole and cased hole formation evaluation measurements to attempt to accurately characterize both the upper and lower Montney zones. Open hole and cased hole log to core correlations will be explored as well as a cost comparison with data quality for vertical and horizontal Montney wells.