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Deciphering the subsurface and engineering controls on well performance in the Montney

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Summary

Even after drilling more than 450 wells in the Montney in Groundbirch, the reality of ever changing completion design, well architecture, landing zone and well spacing makes the controls on well performance complex to unravel. The challenge in this multivariate world is correlations with subsurface parameters are either weak, or being masked by the engineering and development decision changes. Following a more integrated approach to the assessment of rock quality, strong correlations between production and subsurface parameters were observed.

A critical step in any multi-layer development is a robust characterization of frac height. Through an assessment of microseismic, geochemical fingerprinting, production interference and modeling, confidence was built to average rock properties over a 60m flowing interval. Then, using an efficient, purpose-built, integrated analysis tool in Spotfire, multiple hypotheses for controls on well performance were tested against the production data. After iterative high grading, a robust correlation between a rock quality index normalized for completions intensity and a normalized production metric was found. This result has far-reaching implications for our level of predictability, volume assessment and planning the future field development.