



BC Central Montney Fluid Dynamics and Liquids Production

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Summary

In recent years, commodity prices have driven Montney operators to pursue liquids-rich areas at the expense of drier gas regions. Fluid dynamics data, such as pressure, temperature and gas chemistry are valuable tools for understanding the complex distribution of reservoir fluids in the Montney. The objective of this analysis is to link regional fluid dynamics trends to liquids production in the BC Montney from Septimus to Dawson.

In August 2020, the BC Oil and Gas Commission began providing data on plant products, including ethane, propane, butane, and pentanes plus data, allocated to producing wells (BCOGC, 2020). This new data set provides a more comprehensive picture of liquids production in the BC Montney and presents an opportunity to test the validity of previously published workflows for predicting reservoir fluid distributions (Gibbs, 2020).

Background and Theory

The Montney is a complex hydrodynamic system comprising a conventional system to the east and an unconventional Deep Basin-style system to the west (CDL, 2019). Geothermal gradient mapping, combined with empirical correlations relating present-day temperature to T_{max}, are useful for identifying key temperatures that mark the boundaries between oil, wet gas, and dry gas production within the deep basin (Gibbs and Rakhit, 2019). In the absence of proper condensate reporting in publicly available data, gas chemistry has proven to be a useful proxy for liquids content (Gibbs, 2020).

Workflow and Conclusions

A workflow is presented for using fluid dynamics data to identify liquids domains and establish analogue areas within the Montney. Production results are correlated to pressure and temperature trends to determine what conditions are most conducive to condensate production. Completion designs are compared across areas in different pressure and temperature regimes to investigate how operators have optimized their hydraulic fracture stimulations in each area.

In some areas, operators are achieving higher liquids yields in the lower Montney zones, which have been targeted much less frequently than the upper zones. Case studies are presented to illustrate how operators are customizing their completions designs based on target zone and liquids content.

References

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