

The Lower Montney Project

Rock Characterization | Reservoir Conditions | Completion Outcomes

Introduction

Unlocking the lower zones of the Montney provides a material competitive advantage for operators striving to achieve the lowest F&D costs in a highly competitive North American gas market. Operational efficiencies, high liquid content, enhanced half-cycle economics and reserves growth are some of the key benefits. The Montney is a big fairway; variations in **rock properties** (mica/illite/muscovite fractions, TOC and micro-laminations) and **reservoir conditions** (pressure, temperature, fluid chemistry) preclude a one-size-fits-all **completions strategy**. But some operators appear to have cracked the code!

The Lower Montney Project is aimed at understanding which completions technologies work best with given **rock properties** and **reservoir conditions**. CDL, in collaboration with Enersoft Inc., invites industry to participate in this exciting project. The first six subscribers are advantaged through steering ability, nomination of focus area, data provision/swapping and preferred pricing.

Key Drivers on Variation in Well Performance

Lower Montney liquids ratios are generally higher than or comparable to the Upper zones. However, repetition of Upper zone completion strategies, i.e. at Kakwa and Tower of 2 – 2.5 t/m (plug and perf) in the Lower zone have yielded good liquids rates +500 bbls/d but 10 to 30% lower boe rates. By contrast, high intensity ~5 t/m plug and perf completions at Blueberry have resulted in 500–700 bbls/d IP liquids rates and 1,000–1,500 boe/d. One size doesn't fit all when it comes to **completion strategy and outcomes**.

Reservoir Conditions Matter

Recent technical work highlights reservoir pressure and fluid mobility as being among the top subsurface drivers on Montney well performance (Stephenson et al., 2019; McDaniels, Pers. Comm.). This project continues to advance the understanding of reservoir pressure relative to the existing phase envelope and its impact on lower zone productivity. We examine fluid maturity and mobility through studying relationships between gas chemistry, viscosity and phase saturation as a function of permeability, rock fabric and effective completions design.

It's All About the Rock

A cornerstone of the project is **rock property and rock fabric characterization** for understanding petrophysical, geomechanical and flow properties. In addition to collecting participant-contributed and pertinent public data, there will be an extensive analytical program. This includes XRD-calibrated XRF scans, clay, cement and framework grain mineralogy, high resolution micro lamination imaging, continuous TOC with short wave infra-red scans, sulfur determination, etc.

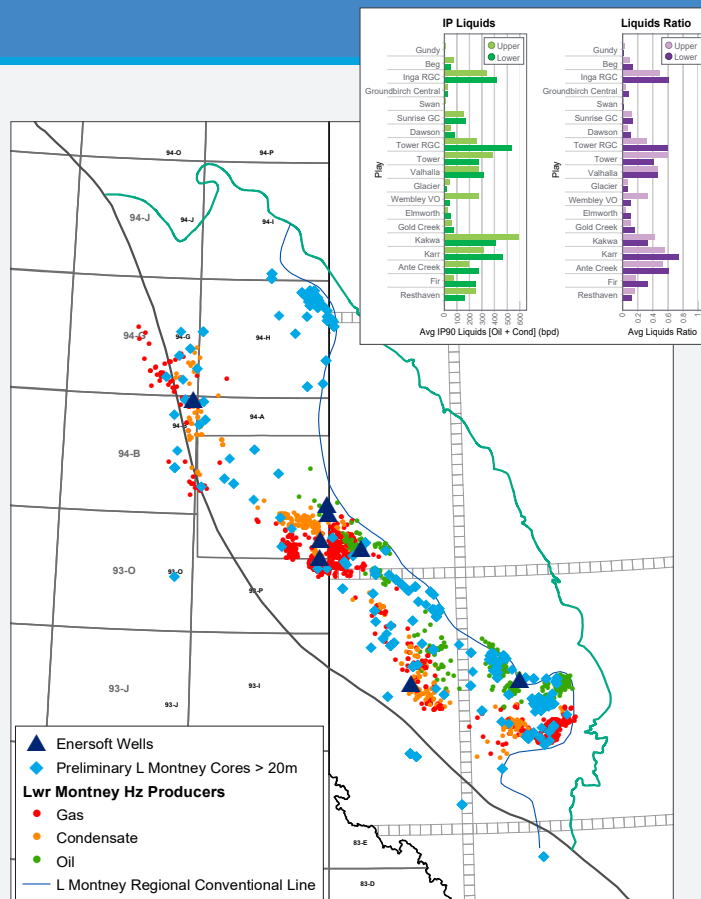
Deliverables

Includes workshops, technical report, databases, pdfs and shapefiles.

Contact Client Relations

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LMP1-V03-2021.02.17



Lower Montney Data Map; Liquids Comparison by Play
Data supplied by geoLOGIC

Client Collaboration

- » Project steering input + selection of one (1) focus area
- » Provide access to or nominate key core covering LM interval, for scanning and analysis
- » Provide access to two (2) hz well chip samples and associated MWD data
- » Participate in interim and project delivery workshops

Cost and Terms

Minimum six participants, flexible invoicing provisions.

Subscription Costs and Deadlines:

First six participants	\$60,000 [†]
Pre-completion	\$67,500 [†]
Post-completion	\$72,500 [†]

[†] plus applicable taxes

enersoFT

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