

## April 2022 – CSUR Technical Webinar

# Depositional, Stratigraphic and Structural Controls on the Geometry of Montney Formation Reservoirs

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**TECHNICAL  
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**DEPOSITIONAL, STRATIGRAPHIC AND  
STRUCTURAL CONTROLS ON THE GEOMETRY  
OF MONTNEY FORMATION RESERVOIRS**

**PRESENTED BY**  
**PETER PROVERBS**  
SR. EXPLORATIONIST  
TOURMALINE OIL CORP

This installment of CSUR's Webinar Series featured a more traditional technical presentation on Canada's most prolific and well-known unconventional play: The Montney Formation. Peter Proverbs, Senior Explorationist with Tourmaline Oil Corporation, was the keynote speaker for the session. His talk was titled: Depositional, Stratigraphic and Structural Controls on the Geometry of Montney Formation Reservoirs. The objective of the session was to demonstrate the workflow in understanding the influences on the depositional setting and geometry of the various layers within the greater Montney Formation.

The Montney Formation delivers approximately half of Canada's natural gas production. The speaker's study area, which straddles the Alberta – British Columbia border, has almost 8,000 producing Montney wells and contributes roughly 4.5 bcf/d, which is about 2/3 of the total Montney production. The Montney zone can be profiled to be up to 320 meters in vertical thickness, with 3 separate sequence boundaries. Although the initial wells into this formation were drilled vertically to exploit the more conventional reservoirs, the horizontal wells are the only mode of operation for the unconventional layers and account for the majority, if not all, of the current Montney production.

In detailing & summarizing his study, the speaker methodically went through the structural features that define the study area,

the sequence stratigraphy and the depositional model for the Montney. He also provided an in-depth description of the facies for each of the layers. He concluded that the work strongly suggests a dominantly deltaic depositional setting, with sequential stacking responding to the relative sea level changes and may also have been partly tectonically driven. Finally, he noted that the application of this methodology can likely also be utilized in other similar fine-grained reservoirs.

### SUMMARY

Both conventional and unconventional reservoirs in the Montney Formation of northeast BC and northwest Alberta occur at the scale of systems tracts within the depositional sequence stratigraphic paradigm. Detailed regional stratigraphic analysis, supplemented with integrated ichnological - sedimentological interpretation of selected cores, has revealed that the fine-grained reservoirs that characterize the Montney Formation accumulated in a prodeltaic setting,

primarily in subenvironments associated with higher energy and more proximal conditions. The temporal and spatial distribution of these higher energy and more proximal components of the prodelta facies was controlled by fluctuations in relative sea-level.

Within the three depositional sequences that comprise the Montney Formation, reservoirs occur in each of the falling stage and lowstand systems tract, and variously within the transgressive and highstand systems tract. Detailed mapping of the systems tracts that straddles the Sequence 1 & 2 boundary (the lower Montney) reveals that syndepositional tectonism was the controlling factor affecting the ultimate geometry of the component reservoirs by directly influencing both the local basin physiography, as well as local accommodation. This work demonstrates that the distribution and geometry of the reservoirs that characterize the Montney Formation result from the dynamic interplay between syndepositional tectonism, fluctuating relative sea-level and the processes associated with deposition in a prodeltaic setting. Understanding and recognizing the integrated role of these controlling factors will ultimately result in improvements in our predictive capabilities that will enhance exploration and exploitation of the Montney Formation, as well as other, similar, fine-grained reservoirs elsewhere.

**PRESENTER:** *Peter Proverbs, Sr. Explorationist - Tourmaline Oil Corp.*

Peter Proverbs is a graduate of McMaster University in Hamilton Ont. where he obtained an Honours a BSc in Geology and Geography. He has over 30 years of experience working in the Western Canada Sedimentary Basin, beginning his career at Petro-Canada where he gained valuable experience exploring across the basin in a variety of carbonate, clastic and unconventional play types. After 17 years at Petro Canada, Peter moved on to Anderson Exploration and later Devon Canada before joining Huron Energy, a private start-up, in 2005. Since the purchase of Huron Energy by Tourmaline Oil Corp in November 2012, Peter has been employed as a Sr. Staff Explorationist, working Tourmaline's assets in NE BC.

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presented by  
Peter Proverbs, Sr. Explorationist  
Tourmaline Oil Corp

Thursday, April 21st, 2022  
10:00am MDT

**\*\*pre-registration is mandatory\*\***  
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