

The Montney Formation Shale Gas Play NEBC Part 1: Sequence Stratigraphy and Reservoir Characterization

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The Lower Triassic Montney Formation is a somewhat unique petroleum system in the Western Canada Sedimentary Basin demonstrating an almost complete continuum from conventional reservoirs in the east, through to basin centered tight gas and finally shale gas reservoirs in the west. In 2009 Talisman Energy cut a nearly continuous core of approximately three hundred meters encompassing the entire Montney Formation at Farrell Creek, North East British Columbia (NEBC) in the heart of the shale gas fairway. This core provided an unrivaled opportunity to define the stratigraphic and sedimentological framework that fundamentally controls the distribution of the component lithofacies and their associated reservoir and rock mechanical properties, aiding in well and frac placement.

At Farrell Creek the Montney Formation can be described in terms of six (+) Transgressive-Regressive cycles composed of individual shallowing upward shelfal cycles (parasequences). Prior to 2008 most of the horizontal development in NEBC targeted the sandier proximal sections within these cycles. More recently companies including Talisman have been targeting areas where the more distal lithofacies are more dominant and the reservoir has greater thickness and storage capacity.

Higher total organic carbon's (TOC) are associated with these more distal regions particularly during the transgressive and early parts of the regressive systems tracts. The high TOC's not only provide the source of the hydrocarbons, the potential for a desorbed gas component but also play a role in enhancing reservoir properties of the Montney.

