

## **An Emerging Viking Formation Tight Oil Play in South-central Alberta**

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With high oil prices and increasing global demand, industry players, both big and small, are retooling for tight oil exploration and development. Tight oil plays have been the focus of development over the past five years; most notably, the Saskatchewan Bakken, the Pembina Cardium, and more recently, the Dodsland and central-Alberta Viking. This talk will focus on the sedimentology and stratigraphy of the central-Alberta Viking.

The Albian Viking Formation is roughly contemporaneous with the Bow Island Formation, Paddy Member, Pelican Formation, and Newcastle Formation. The Viking extends over most of the Western Canada Sedimentary Basin as a wedge-shaped succession of clastics that prograded eastward. The succession is composed primarily of marine-influenced sandstone, siltstone and shale, with occasional poorly to well-developed conglomerate beds.

The Viking can be sub-divided in the area into at least seven parasequences. Each parasequence is bounded by a regionally mappable surface interpreted to be a flooding surface formed by a relative sea-level rise. Each of the parasequences is composed of a mud to siltstone-dominated base which coarsens upward into a well-sorted, fine to medium-grained sandstone. Occasionally, conglomerates are found within each of the parasequences and occasional capping some of the parasequences. The parasequences are stacked into aggradational to progradational parasequence sets reflecting progradation from southwest to northeast in the study area.

Initially, the transgressive conglomeratic lag (historically known as the Viking grit) at the top of the Viking was the only Viking zone capable of producing oil in economic quantities. However, the effectiveness of horizontal drilling and multi-stage fracturing has recently enabled the underlying, traditionally tight shorefaces to produce oil in economic quantities.