

Rapid changes in liquid hydrocarbon to gas ratios and liquid geochemical signature in the Montney at Simonette with possible implications for the regional.

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Abstract

The overpressured Montney resource play covers an area in excess of 3MM ha and has been shown to vary considerably in economic quality inside the overpressured window. Sweet spots defined by better reservoir quality rock are readily identifiable on modern log suites combined with a good understanding of Montney lithology and grain size. More difficult to map and predict are abrupt changes in reservoir liquid content that can occur both laterally and vertically. At Simonette geochemical fingerprinting of the liquid component of the hydrocarbon shows a rapid lateral change in hydrocarbon maturity and yields. This change is not consistent with the usual controls of temperature and depth on hydrocarbon maturity. At Simonette the lateral change appears to be controlled by migration pathways of cracked lighter hydrocarbons generated during catagenesis. Similar changes can be mapped in stratigraphically equivalent rock regionally through Alberta using liquid yields and the gravity of the free liquids from which we speculate some of these areas may have a hydrocarbon genesis and migration history analogous to Simonette.