

Assessing Reservoir Quality Characteristics Influenced by Bioturbated Sandstone in the Lower Triassic Montney Formation

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Abstract

The Lower Triassic Montney Formation is a significant hydrocarbon reservoir in Western Canada. Core data presented in this study were collected through the detailed observation of sedimentological and ichnological characteristics in the Puskwaskau Field (e.g. well 13-03-74-26w5) which is located near Grand Prairie. Based upon core analysis, eight facies, composed of variable lithologies, are identified, including siltstone, sandstone, conglomerate, and bioclastic packstone/grainstone. Sedimentological characteristics of the core interval (well 13-03-74-26w5), including planar parallel lamination, cross stratification, soft sedimentary deformation structures, post-depositional features, bedding contacts, and accessory minerals (e.g. pyrite), are variable in each facies. The ichnology of this core are also variable. The trace fossils include *Arenicolites*, *Asterosoma*, *Cylindrichnus*, *Diplocraterion*, *Fugichnia*, *Helminthopsis*, *Palaeophycus*, *Phycosiphon*, *Planolites*, *Rhizocorallium*, *Skolithos*, and *Teichichnus*. Ichnology play an important role in the environmental interpretation, and the sedimentary environments preserved are associated with shoreface, wave dominated delta and proximal offshore settings. Employing spot-minipermeametry, the effect of ichnological fabrics on the reservoir properties is assessed. The results demonstrate that bioturbation locally enhances storativity and permeability in the Montney Formation.