

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

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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.