

Trace Fossils of the Lower Triassic Montney Formation, Alberta and British Columbia

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The Lower Triassic Montney Formation is undergoing renewed exploration interest in west-central Alberta and northeastern BC, focussed on gas-prone distal shoreface and turbidite facies. Regionally, the Montney exhibits a wide range in reservoir character, reflecting paleogeographic and paleoclimatic changes in western proto-Canada in transition from carbonate-evaporite dominant sedimentation in the Paleozoic, to siliciclastic dominance in the Mesozoic. Productive reservoir facies in the Montney range from storm-wave dominated shoreface sands, tidally-influenced shoreface deposits, turbiditic sands and silts, to dolomitized bivalve coquinas. For many of these facies, underlying structure and paleobathymetry as expressed by topography on the top of the Paleozoic is a major control on distribution and trapping.

The lower section of the Montney records deposition after the Permo-Triassic mass extinction, with survival of only a limited group of organisms. Faunal diversity increases throughout the Lower Triassic, recorded in the Montney by an increase in volume of echinoderms (articulate crinoids, asteroids, other?) in the uppermost units. One earliest Triassic survivor was the phosphatic lingulid brachiopod *Lingula* sp. (or similar). Traces of lingulid burrows, identified as the ichnogenus *Lingulichnus*, are common and locally spectacularly-developed in the Montney. A limited range of other traces (reflecting reduced biotic diversity and/or environmental stresses) also occur in the Montney, including classic *Diplocraterion* burrows. The objective of this core display is to illustrate examples of Montney ichnofacies, and to document and discuss their biotic and environmental implications. The display is a selection from more than 550 Montney cores described by the first author, with refinement of ichnofacies identification and interpretation by the second author.