

Geology and Source Rock Potential of the Upper Triassic Baldonnel and Pardonet Formations, Northeastern British Columbia

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This study provides new insight into the sedimentology, stratigraphy, and hydrocarbon source rock potential of the Baldonnel and Pardonet formations in northeastern British Columbia. Nine outcrop sections were described and sampled for geochemical analyses. This was combined with descriptions and geochemical sampling of Pardonet and Baldonnel core.

The Upper Triassic Baldonnel and Pardonet formations in northeastern British Columbia comprise predominantly carbonate rocks, that were deposited in a distally-steepened ramp environment. Lithofacies associations for these units are interpreted as shallow subtidal, bioclastic limestone slope, and hemi-pelagic facies associations. Condensed deposits are also present at Sikanni Chief.

Geochemical analyses using Rock-Eval/TOC pyrolysis indicated a total organic carbon content ranging from 0.03 to 0.94 wt % for the Baldonnel and 0.02 to 4.12 wt % for the Pardonet samples. The Rock-Eval Tmax data are ambiguous, however they suggest that these units are overmature with respect to liquid hydrocarbon generation, with one exception (West Burnt River). Thus, the Pardonet Formation may have generated significant quantities of petroleum in the past, but has no remaining hydrocarbon potential. The Baldonnel Formation had only poor to fair initial hydrocarbon potential, and thus is unlikely to have generated significant volumes of liquid hydrocarbons.