

Reservoir in the Nechako Basin

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Summary

A major issue for hydrocarbon exploration in the Nechako basin is reservoir quality. Candidates for reservoir units are thick, coarse-grained clastic sequences that formed in response to compressional tectonics in mid to late Cretaceous time, which include the Taylor Creek and Jackass Mountain Groups on the southern fringe of the basin, the Skeena Group to the north, and correlative rocks in the subsurface and at surface in the Nazko River area. In contrast to many proven clastic reservoir units in the Western Canadian Sedimentary basin, these Cretaceous units tend to be mineralogically and texturally immature. Volcanic lithic fragments and detrital feldspars are locally abundant, and sorting is highly variable. Primary porosity is almost completely absent in surface and core samples from the Nechako region. However, multiple factors, including early compaction that inhibited the precipitation of diagenetic products, the development of secondary solutional porosity, and mineral leaching conspire to create local zones of good porosity. Lithologically similar units do form productive oil and gas reservoirs in other basins. One example is the Rewan Group in the Bowen Basin of Queensland, Australia.