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Looking for Gas in the Canadian Frontier

Recent steep demand growth for natural gas in the North American market has triggered a large amount of interest in exploration opportunities north of Latitude 608. Significant gas reservoirs occur in Alaska, the Mackenzie Delta-southern Beaufort Sea, and in the Liard region.

In the far off-shore Beaufort Sea, new discoveries are expected in contractional features that have developed seaward of gravity driven extensional faults. In this deep-water petroleum system, overpressured shale units within Tertiary deltaic deposits serve as detachment horizons.

The Mackenzie Delta and southern Beaufort Sea region hosts significant petroleum accumulations within Cretaceous and Tertiary units. The Lower Cretaceous Kamik Formation hosts much of the large gas reserves located in the Parsons Lake (~1.7 Tcf) and Tuk gas fields (~230 Bcf). Porosity is mainly secondary in nature due to the preferential dissolution of chert grains and carbonate cements. Future exploration along the strike of the basin-bounding fault zone should reveal additional accumulations similar to those in the Tuk Field.

The area between Liard in the south, and the Mackenzie Delta in the north, has yet to reveal giant gas accumulations, although known gas pools occur at Colville Hills (450 Bcf) and Chance (~85 Bcf). The large Norman Wells oil field (680 MMbl OOIP) also occurs in this area, although new oil discoveries have been elusive since this pool was found in 1942.

The key issue in the future of development of natural gas resources north of 608 is transportation. Gas transportation infrastructure has moved north into the Liard region driven, in part, by the expansion of transportation capacity in northern British Columbia (i.e. Alliance pipeline). The relatively close proximity to transport suggests that modest gas fields found near to the Liard region may be tied in to southern markets sooner than the larger, but more remote, gas resources north of 688.