

Mackenzie Delta-Beaufort Sea Petroleum Province Conventional And Non-Conventional (Gas Hydrate) Petroleum Reserves And Undiscovered Resources

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ABSTRACT

The Mackenzie Delta-Beaufort Sea region hosts an immense proven and potential petroleum resource, of strategic importance for the North American gas supply and with great potential for the territorial and national economies. The total energy resource endowment includes 52 conventional crude oil and natural gas fields found by 263 wells, including four gas hydrate research wells. The discovered quantities of conventional crude oil and natural gas are expected to be $183.44 \times 10^6 \text{ m}^3$ (1.16×10^9 bbls.) recoverable crude oil and condensate and $254.67 \times 10^9 \text{ m}^3$ (9 Tcf) marketable natural gas. The same region is estimated to have an expected undiscovered conventional petroleum potential of $856.0 \times 10^6 \text{ m}^3$ (5.39×10^9 bbls.) recoverable crude oil and $1.51 \times 10^{12} \text{ m}^3$ (53.3 Tcf) recoverable natural gas. The conventional resources are co-located with an immense potential petroleum hydrate resource that is estimated to be between 2.4×10^{12} and $87 \times 10^{12} \text{ m}^3$ (84.7 Tcf and 3,071 Tcf) raw natural gas in place. The gas hydrate resources are estimated using data gathered during exploration for deep conventional resources, which generally treated gas hydrates as a drilling hazard, and which, as a result, may have negatively biased indications for gas hydrates in wells. Development of the, often co-located, gas hydrate petroleum resource could augment the conventional petroleum province significantly within the production life-span of the conventional onshore fields. The specific impact and effect of three candidate Marine Protected Area (MPA) sites identified by the Department of Fisheries and Oceans (DFO) in the southern Canadian Beaufort Sea on the exploration, development and transportation of existing regional petroleum reserves and resources cannot be appropriately determined using the available sources of data and inference. Much important new industrial data is not considered in these estimates. Since, the proven conventional petroleum reserves indicate that the Mackenzie Delta-Beaufort Sea has a potential to be a prolific producer of conventional natural gas and light oil, probably towards the end of this decade, it is recommended that a detailed and comprehensive revision and review of existing and new data be undertaken to re-evaluate the conventional and non-conventional petroleum potential of this region

prior to taking any decisions that might affect the exploration, development and transportation of either the conventional or non-conventional petroleum resources of the region.