

Oil Resource Potential of the Beaufort-Mackenzie Basin

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The Beaufort-Mackenzie Basin hosts large quantities of proven and potential petroleum resources that are of strategic importance for future North American energy supply. Petroleum exploration in the province has resulted in 53 distinct accumulations in 48 significant conventional crude oil and gas discoveries. The discovered quantities of conventional petroleum resources are estimated to be $277.3 \times 10^6 \text{m}^3$ recoverable crude oil and $332.4 \times 10^9 \text{m}^3$ recoverable natural gas. Recent studies of unconventional petroleum resources indicate that an immense natural gas potential exists in the form of methane hydrate in this province. In the past few years, studies in organic geochemistry, basin hydrodynamics, petroleum system analysis, and geoscience data integration in cooperation with industry, provide an improved geoscience framework for understanding the petroleum resource potential in this province. This assessment of oil resource potential is based on the previous resource assessment conducted by the Geological Survey of Canada with emphasis on the petroliferous rifted basin margin and the southern part of the Canada Basin, extending from south of the Mackenzie Delta, north to about the 2500 meter isobath. Eighteen plays were defined based on the trap configurations and reservoir age and types, among which fourteen are identified or inferred to have oil potential. These fourteen plays were assessed separately for oil and the resources were then aggregated into play groups to represent the stratigraphic and geographic distribution of the oil potential. The six play groups include the rifted margin group, the Taglu Delta group, the Kugmallit Delta group, the basinal facies, deep-water group, and western Beaufort Sea group. The aggregated mean for the six play groups is $2.6 \times 10^9 \text{m}^3$ (16.5 billion barrels) recoverable oil.