

The NEON Project: Developing a Petroleum Prospectus for Nunavut

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ABSTRACT

The Geological Survey of Canada has a four year project to evaluate petroleum potential of frontier sedimentary basins in the Canadian Arctic as a component of Natural Resources Canada's *Northern Resources Development Program*. Two offshore basins, the Saglek Basin in northern Labrador Sea and the Lancaster Basin in northern Baffin Bay, and the Sverdrup Basin in the Canadian Arctic Archipelago have been identified as primary targets. Industry exploration drilling during the 1970's identified one major gas discovery of over 3-TCF of natural gas in the northern Saglek Basin but was never developed.

The *New Energy Options for Northerners* project (NEON) will develop a synthesis of geological and geophysical studies ranging from modern and legacy seismic reflection data, crustal refraction profiles, aeromagnetic surveys, and heat flow measurements. Geochemical analysis of drilling samples from historical wells will be linked with new palynological studies to better define stratigraphic ages and source rock potential. Apatite fission-track analysis will be undertaken to augment thermal maturity studies. Satellite imagery will be linked with organic geochemistry to identify the nature and distribution of oil seeps.

These activities are integrated with government (GEUS), academic (Dalhousie and Saint Mary's), and industry (NUNAOIL, TGS-NOPEC) partners operating off western Greenland. The regional-scale integration of this multi-thematic study will significantly improve the understanding of the formation and evolution of these frontier basins. The project will broadly address issues regarding potential petroleum sources and seals over a large region of the northern Labrador, eastern and northern Nunavut margins. This shared effort between government, academia, and industry will reduce exploration risk and act as an inducement for investment in petroleum exploration.