

Nalcor Exploration update: The deep water potential

Ian M. Atkinson¹, Michael Enachescu², and Richard Wright¹ - 1. *Nalcor Energy–Oil and Gas Inc., Hydro Place, 500 Columbus Drive, St. John's, Newfoundland and Labrador A1B 0C9, Canada ¶* 2. *MGM Energy Corporation, 4100, 350-7th Avenue Southwest, Calgary, Alberta T2P 3N9, Canada.*

The Canadian province of Newfoundland and Labrador (NL) is currently experiencing its highest levels of exploration and development activity and its oil production, though declining, is still high. In 2011, NL production represented 10% of Canada's total oil production, 32.5% of Canada's conventional light oil, and more than 85% of Atlantic Canada petroleum output. Development work is proceeding on the Hibernia Southern Extension and White Rose Growth projects and the sanction of the Hebron Project is scheduled to occur in Q1 of 2014. The most recent exploration activities offshore Newfoundland includes drilling, acquisition of large 2D and 3D seismic surveys, and satellite seep survey studies carried out in the Mesozoic Labrador, Jeanne d'Arc, Flemish Pass, and Laurentian basins and in the Paleozoic Anticosti and Magdalen basins off western Newfoundland.

In 2009, Nalcor Energy initiated an exploration strategy to better understand the frontier basins in the province's offshore through the acquisition of new geoscience data. The intent was to reduce exploration risk and stimulate more exploration activity. In 2010, a satellite seep survey was conducted by Astrium that indicated the presence of oil seeps in some unexpected areas, like the deep water off Labrador. In 2011, Nalcor partnered with the MKI consortium (TGS and PGS) to acquire a large, long-offset, broadband 2D seismic survey in the area off Labrador. Over 70% of this 22,000 km survey area had no previous data coverage. The survey has extended the previously known basins into the slope and deepwater, has delineated three new deepwater basins and improved our understanding of the petroleum geology of Canadian Labrador margin.

In 2012, the survey was extended south to the Orphan and Flemish Pass basins. By the end of this year, 50,000 km of new regional seismic data will be shot and available for licensing. This dataset has provided a number of new insights and leads in this frontier region and has better imaged exciting undrilled prospects in the Flemish Pass Basin where Statoil recently announced their "high-impact" Bay du Nord light oil discovery. Early seismic AVO analysis on multiple seismic lines has revealed attributes that may be positive hydrocarbon indicators. They especially show interesting anomalies within basin floor fans that may be analogous to those off West Africa.

Additional offshore Newfoundland and Labrador studies include regional pore pressure, rock physics, and source rock studies, as well as biostratigraphy and seabed core analyses. The finished reports will be made available on the Nalcor's website to any interested company.

All of this exploration and development activity in the region points to the potential of major increases in production and development in the years to come. Newfoundland and Labrador is on the threshold of an amazing new era for the petroleum industry.