

Newfoundland and Labrador Entering a New Era

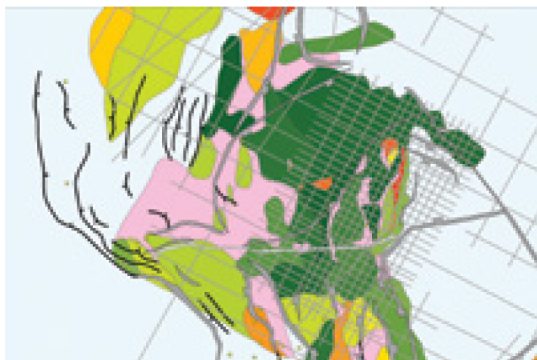
Newly acquired data and studies shed new light on the area

Contributed by TGS

Recent big discoveries, new seismic acquisition, and a new land-tenure system have generated increased interest to explore in the offshore Newfoundland and Labrador regions of eastern Canada. The next step of this new era will happen on 12 November 2015 when the bids are in for the first license rounds of the new land-tenure system for the highly prospective Flemish Pass Basin (NL15-01EN).

Throughout this renaissance, which began in 2011, TGS and partner PGS have been providing the highest quality new geoscience solutions to the industry. The first of a new generation of modern multiclient seismic data was acquired, and every season since then the database has grown. TGS now can offer the industry 195,000 km of 2D and 9,000 square km of 3D, a library of digital well data, and interdisciplinary interpretation studies covering all areas along the Newfoundland and Labrador Atlantic Margin.

These newly acquired data and studies have shed new light on the area. One such example of this comes from new seismic well ties, thermal modeling, and sea floor sampling in the Labrador Sea around an area scheduled for lease sale in 2017 (NL01-LS). Exploration offshore Labrador has been confined to the shelf with no test of the slope or basin floor. The hydrocarbon potential on the shelf has



Depositional environment map from Newfoundland interdisciplinary interpretation.

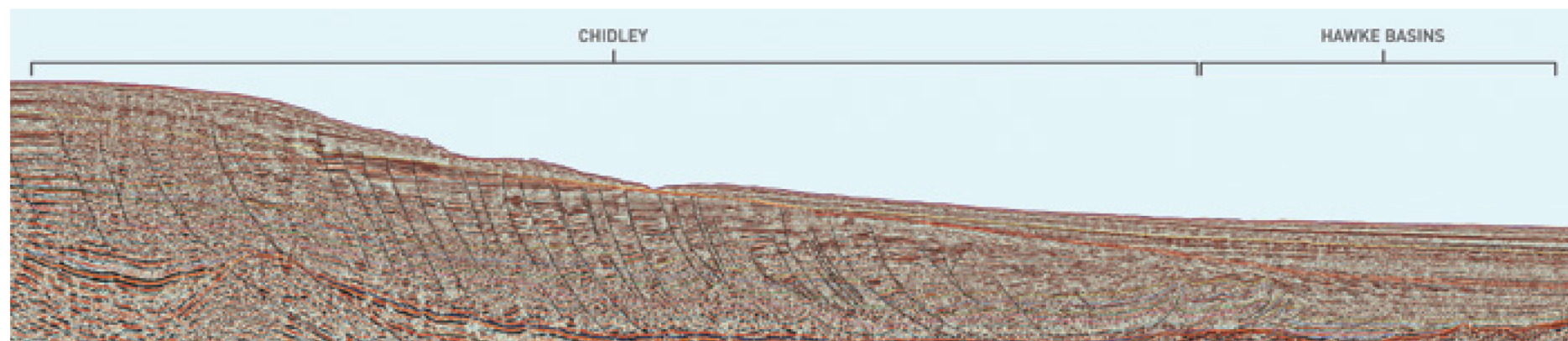
been proved by six gas discoveries. There have been no significant oil discoveries to date.

By combining a regional play fairway analysis, which includes seismic interpretation of more than 22,000 km of data and sequence stratigraphic study of 31 wells, with the new well tie information from the 2014 acquisition season, a detailed set of stratigraphic and structural leads with supporting AVO analysis has been built. Next, a

basin geohistory model was developed and calibrated with vitrinite reflectance and temperature data for a sample of wells on the shelf, and a number of pseudowells in the basin were modeled. Thermal modeling was used to determine the optimum source rock zone and the risk on hydrocarbon charge.

Oil shows in a well on the shelf in the vicinity of the NL01-LS sector demonstrates a lacustrine source (Bjarni, K40-K20). The results from the sea floor samples taken over this sector identified zones of liquid hydrocarbon seepage with primary and secondary hydrocarbon signatures associated with type II/III (marine/marine delta). The marine sediments of the Markland (K80-K60) and Cartwright (T40) formations on the slope and basin floor are buried to sufficient depths to be within the oil window, with expulsion commencing from the Late Eocene to Mid Oligocene.

There will be lease sales in Newfoundland and Labrador in the foreseeable future, and TGS plans to continue to provide multiclient geoscience data to help the industry properly evaluate these areas. For more information, contact Andy Dyke (Andrew.Dyke@tgs.com), Steve Whidden (steve.whidden@tgs.com), or visit TGS at booth 2435. ■



Offshore Newfoundland and Labrador.