

Newfoundland and Labrador Exploration Update: New discoveries, new geoscience data and new basins

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Boundless Energy

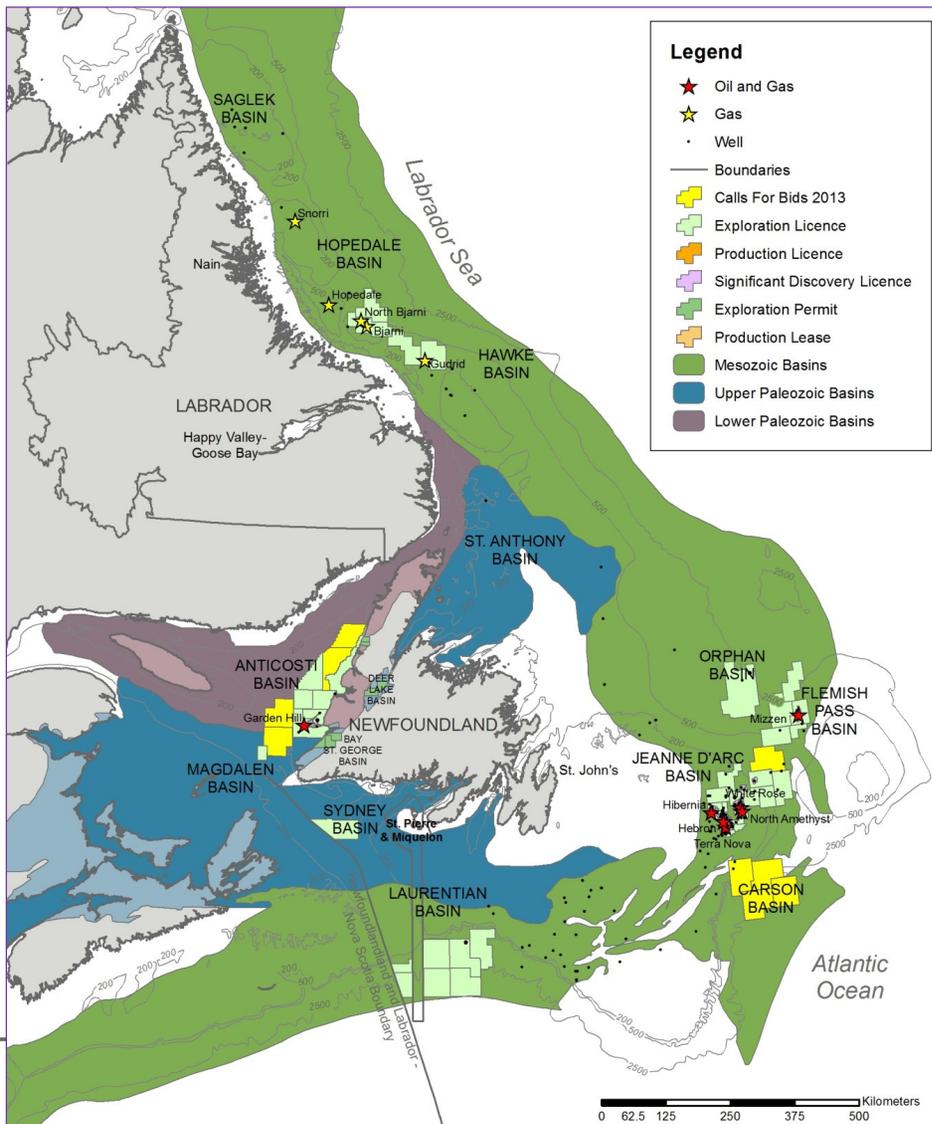


Newfoundland and Labrador Exploration Update:

New discoveries, new geoscience data and new basins

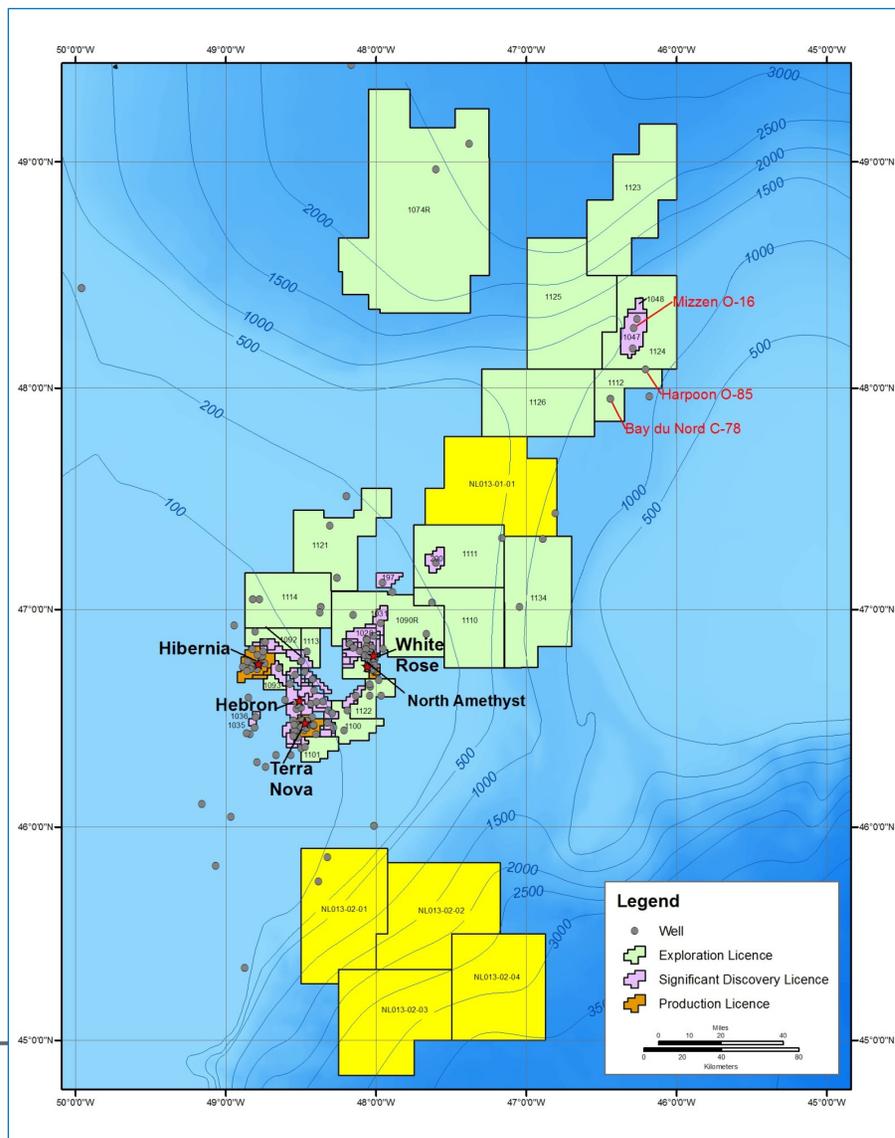
- Current production and future developments
- 2013 Call for Bids
- 2013 exploration wells
- Recent discoveries
- Nalcor Energy's exploration activities and results

Newfoundland and Labrador Exploration Update: New discoveries, new geoscience data and new basins



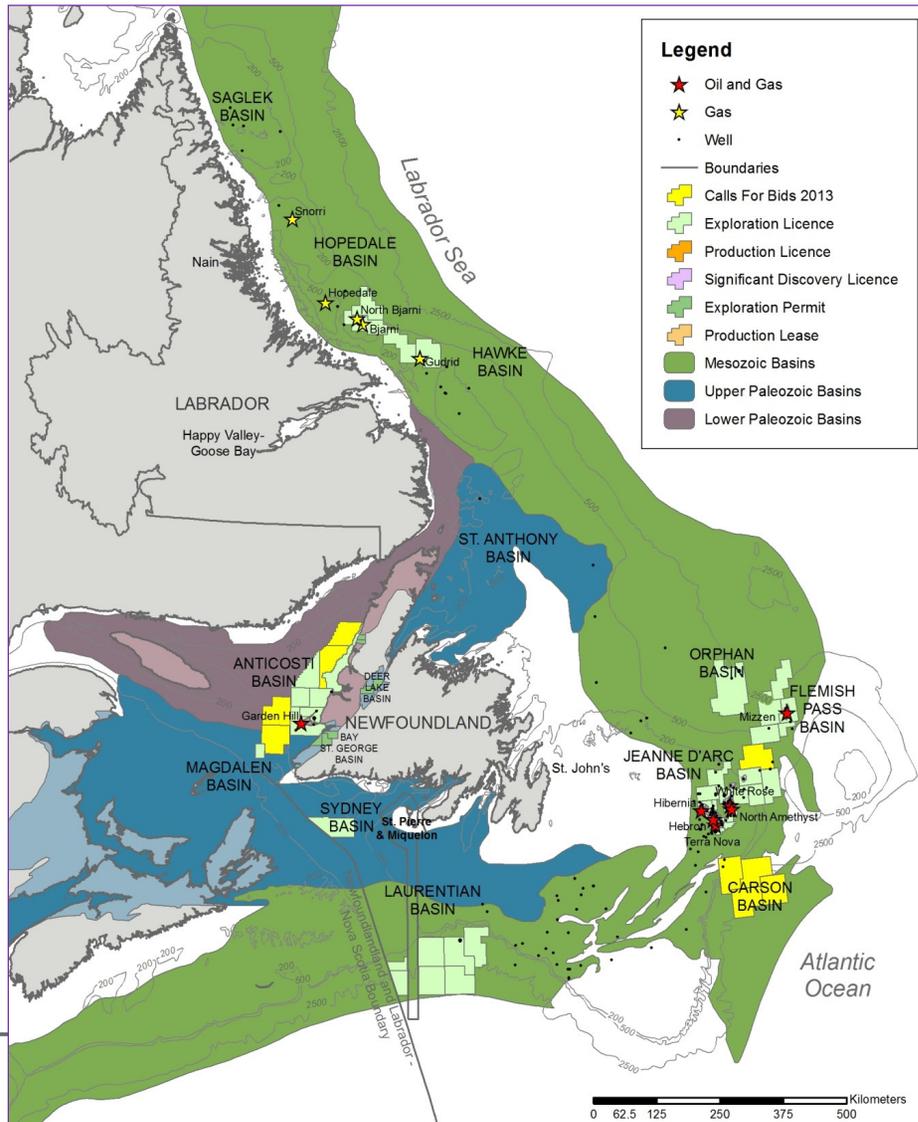
- The old basins map for Eastern Canada shows that vast areas are unexplored or under-explored.
- All of the current production is from the Jeanne d' Arc Basin.
- All of the Labrador wells are on the shelf. 4.2 Tcf of gas was discovered there in the '70's and '80's.
- New seismic data and research is changing our understanding of our basins.

Newfoundland and Labrador Exploration Update: Oil Production



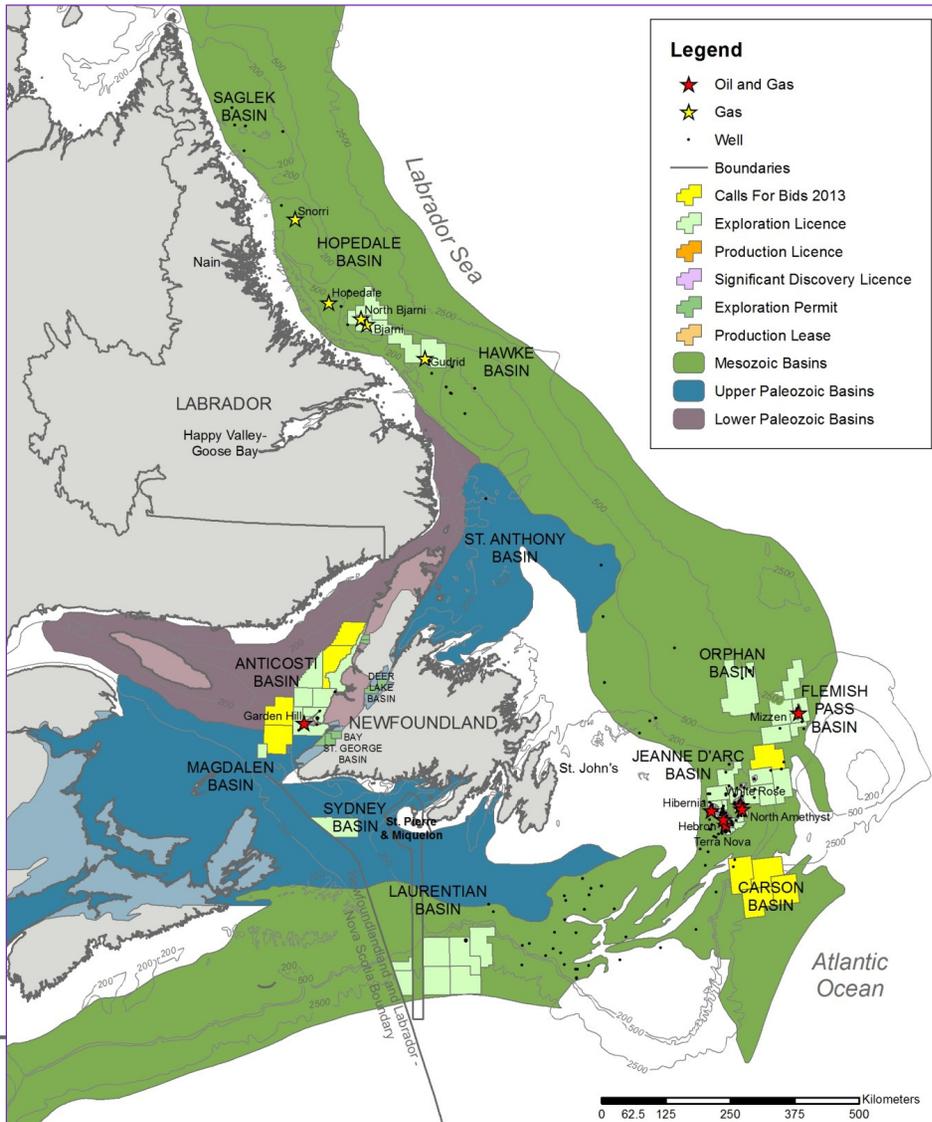
- The producing fields are **Hibernia** (including HSE), **Terra Nova**, **White Rose** and **North Amethyst**.
- Oil production was over 72 mm bbls in 2012 and to date (Sept. 30) over 65 mm bbls have been produced this year.
- The **Hebron Field** development is moving forward with first oil anticipated in 2017.

Newfoundland and Labrador Exploration Update: 2013 Land Sale Areas



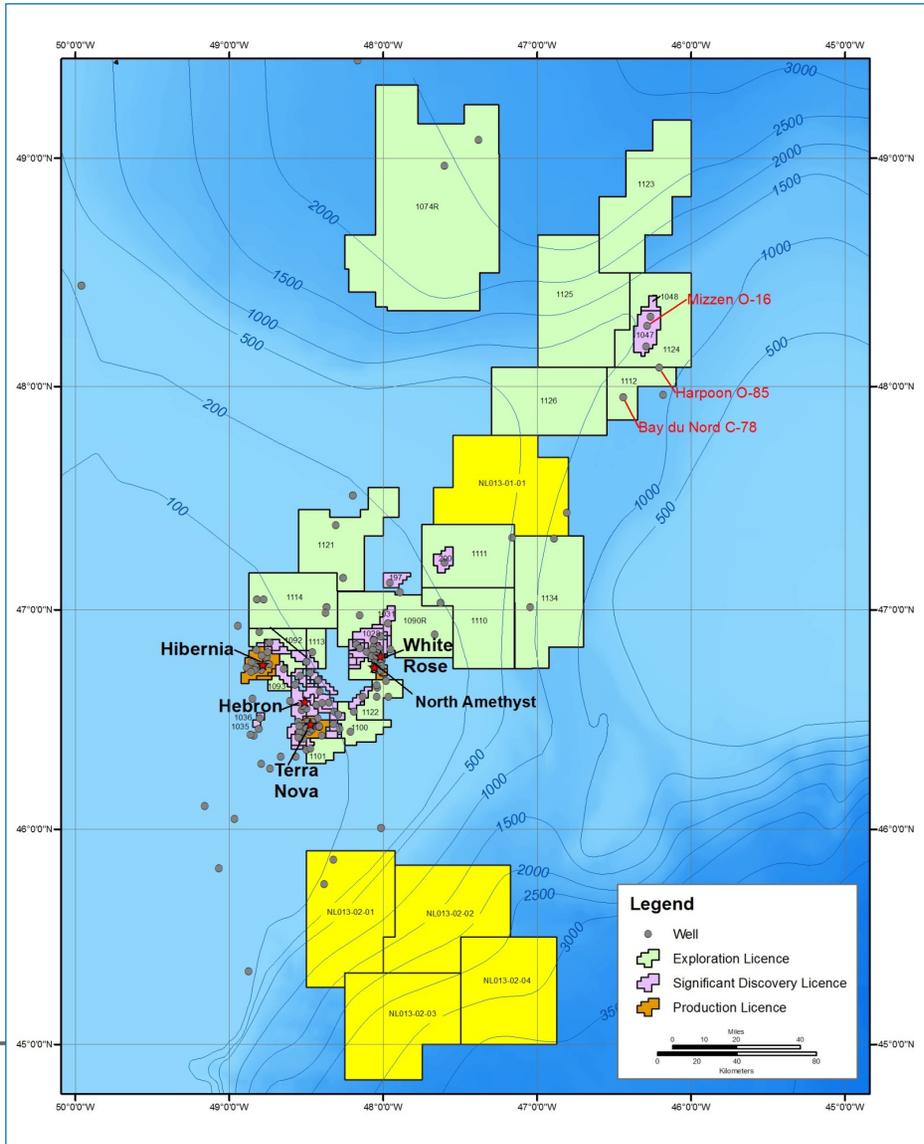
- The 2013 Call for Bids blocks are highlighted in yellow.
- Four Exploration Licences are offered in the Carson Basin and four in Western Nfld.
- One Exploration Licence is in the Flemish Pass Basin (southwest of the recent oil discoveries).

Newfoundland and Labrador Exploration Update: 2013 Exploration Activity



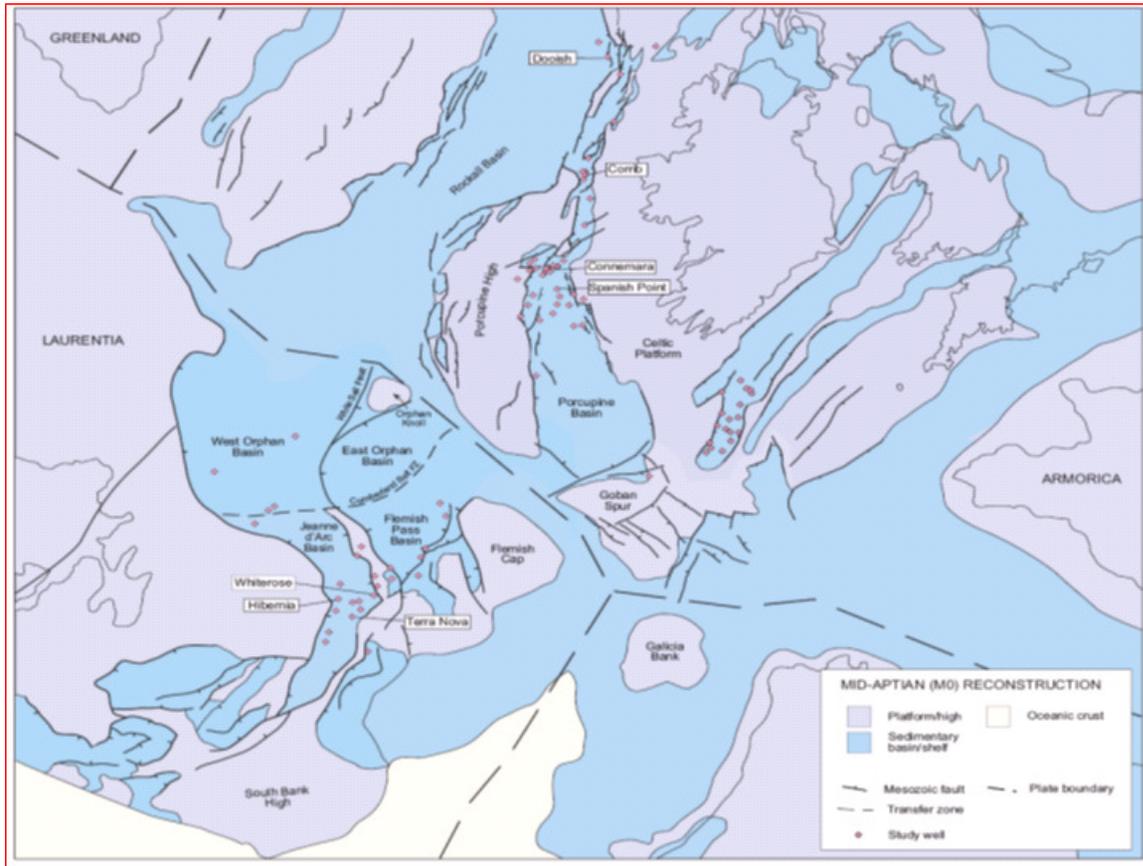
- 5 exploration wells were drilled in 2013.
- 2 wells were drilled in the Jeanne d' Arc Basin and 2 in the Flemish Pass Basin with one well in the Orphan Basin.
- The 2 Flemish Pass wells were declared significant discoveries.
- Awaiting results of 2 other wells.

Newfoundland and Labrador Exploration Update: New discoveries



- In 2013, Statoil announced two new oil discoveries in the Flemish Pass Basin at the Harpoon and Bay du Nord locations.
- This is in addition to the nearby Significant Discovery Licence that was awarded in 2011 for the Mizzen oil discovery.
- Statoil announced early estimates of recoverable oil for Bay du Nord to be 300-600MM bbls.
- Statoil has committed to additional wells to delineate both the Harpoon and Bay du Nord prospects.

Newfoundland and Labrador Exploration Update: New Discoveries



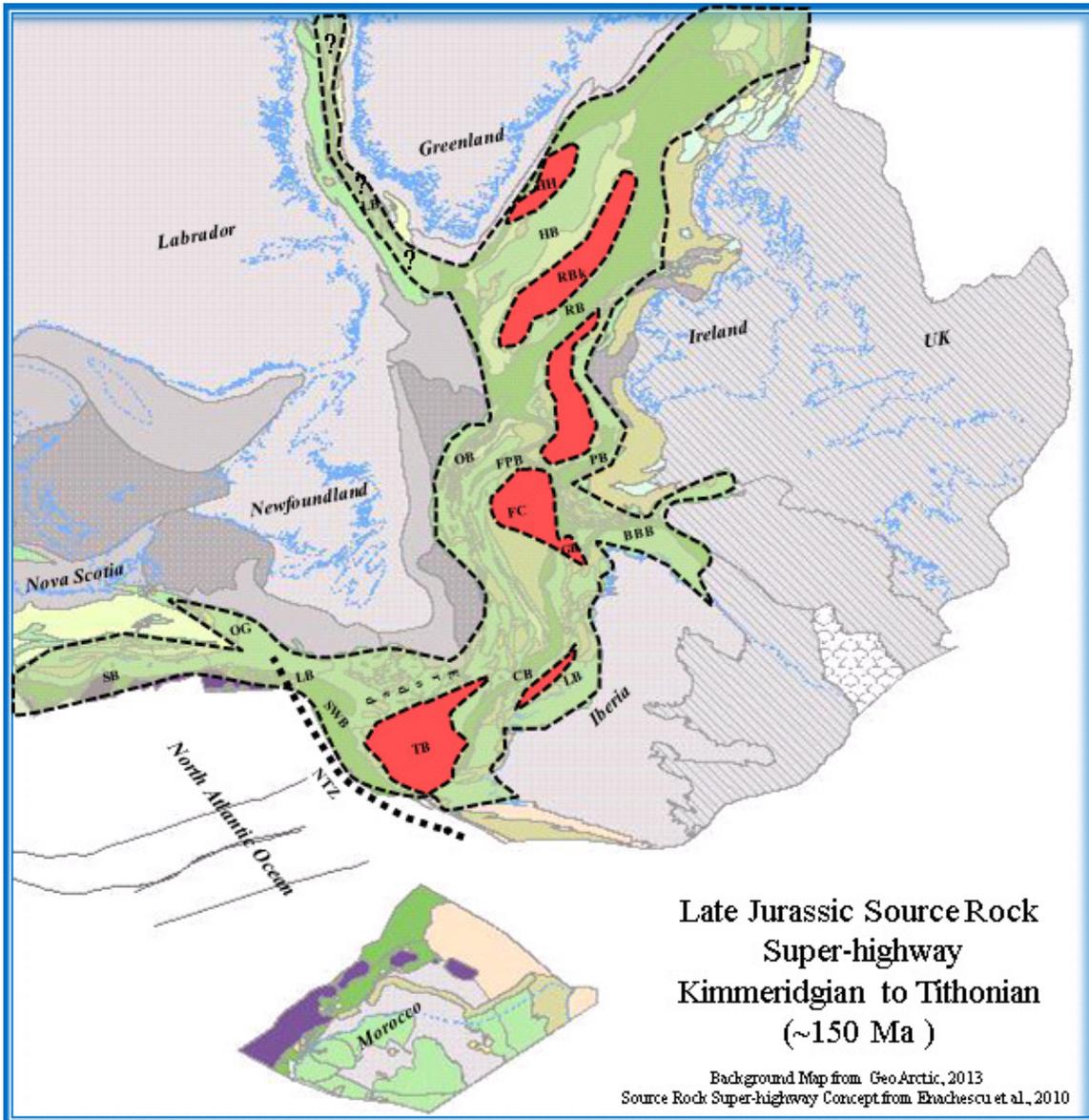
The new discoveries in the Flemish Pass Basin may have positive implications for exploration in Ireland.

A map showing the North Atlantic reconstruction just prior to the onset of seafloor spreading, showing that the petroleum basins of Ireland and Newfoundland were once connected.

This demonstrates the importance of our research collaboration under NAPSA.

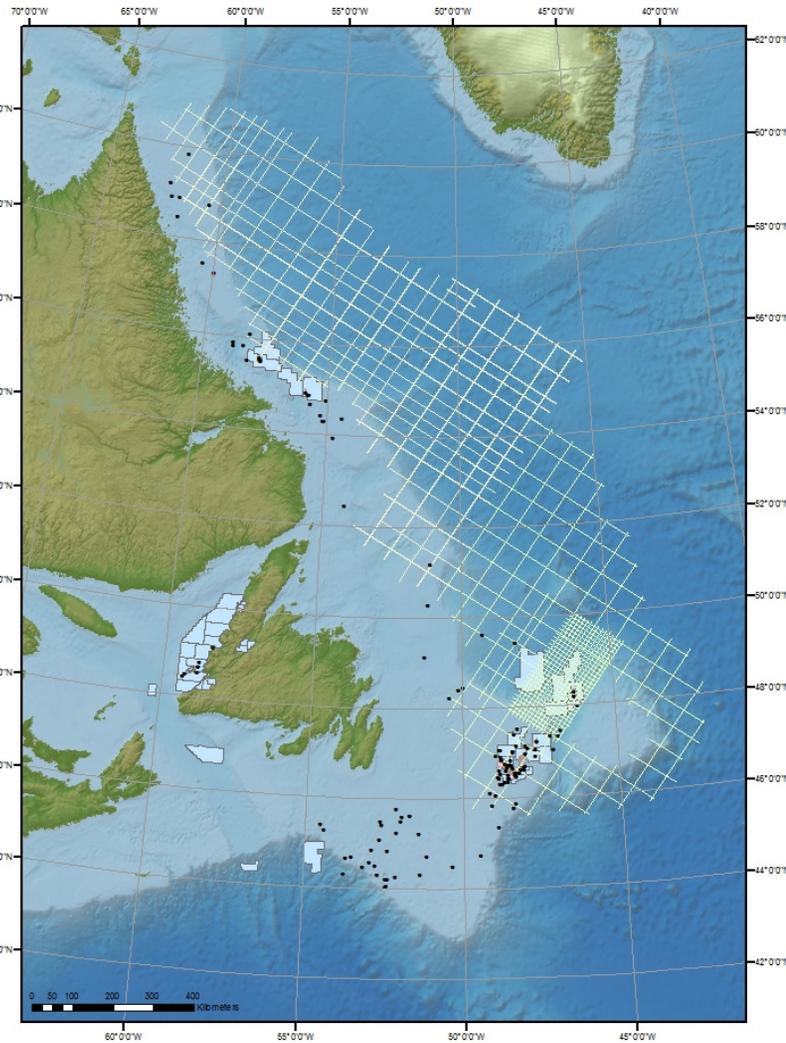
Map from a **2006 PAD Special Publication** The Kimmeridgian source rock super-highway documented on both margins
from Enachescu et al., 2010

Newfoundland and Labrador Exploration Update: New Discoveries



The map shows the late Jurassic source rock “super-highway” (Enachescu 2010) superimposed on the Plate Reconstruction Project map from the NAPSA funded project (GeoArctic 2013).

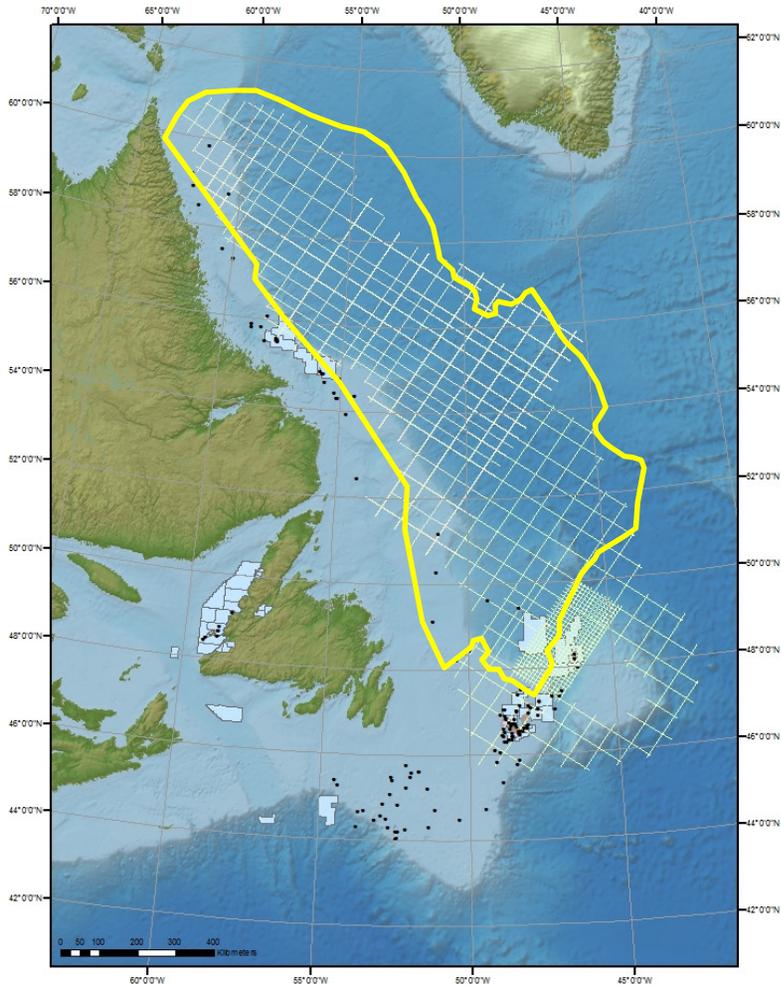
Newfoundland and Labrador Exploration Update: New Geoscience Data, New Basins, New Plays



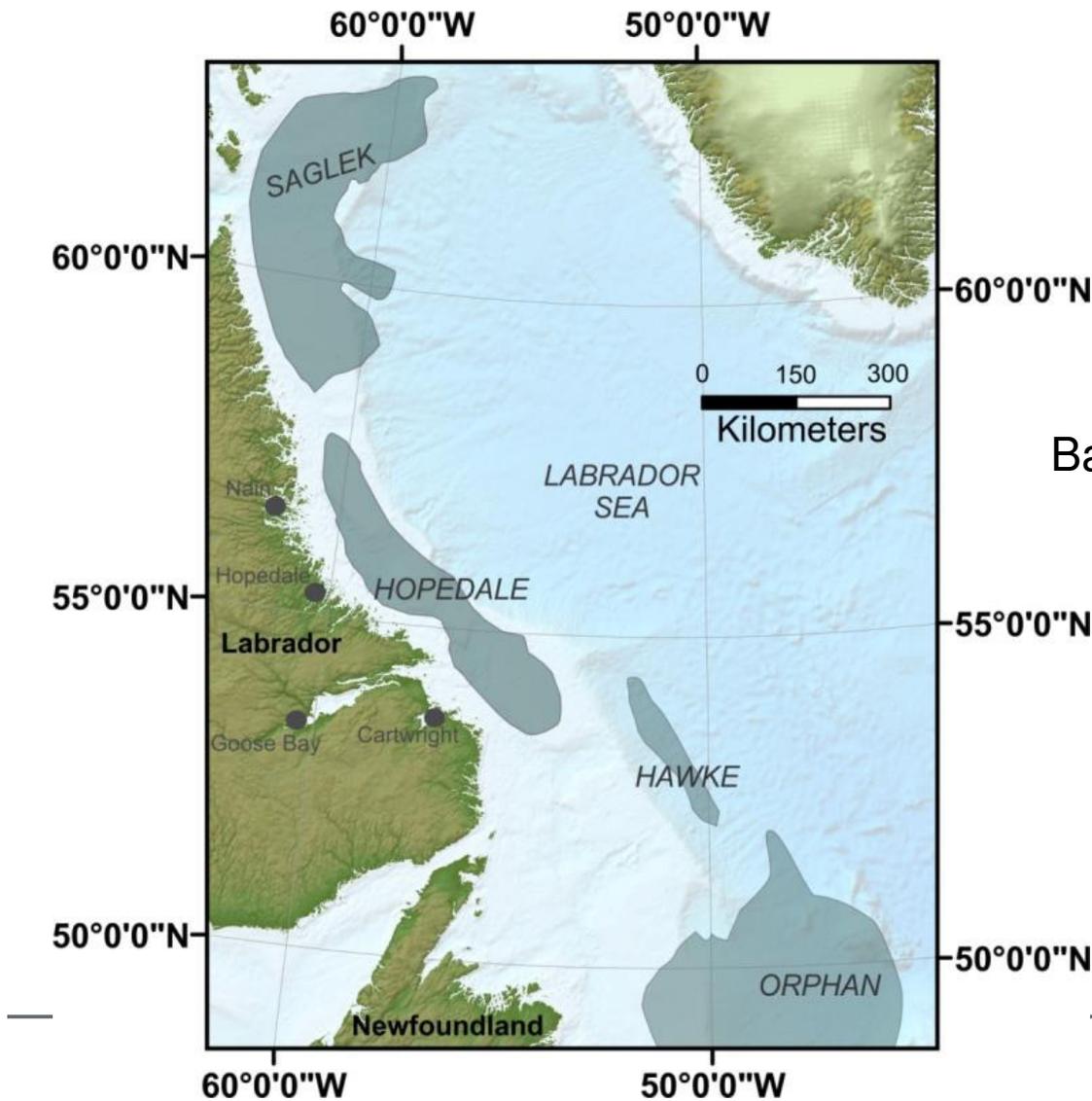
Nalcor Seismic Investment

- 2011-2013 plan shown
- TGS and PGS - industry leaders as partners
- 50,000 line km to be acquired
- Placed with Satellite Seeps Survey
- Survey is one of the largest data programs globally

Newfoundland and Labrador Exploration Update: New Geoscience Data, New Basins, New Plays

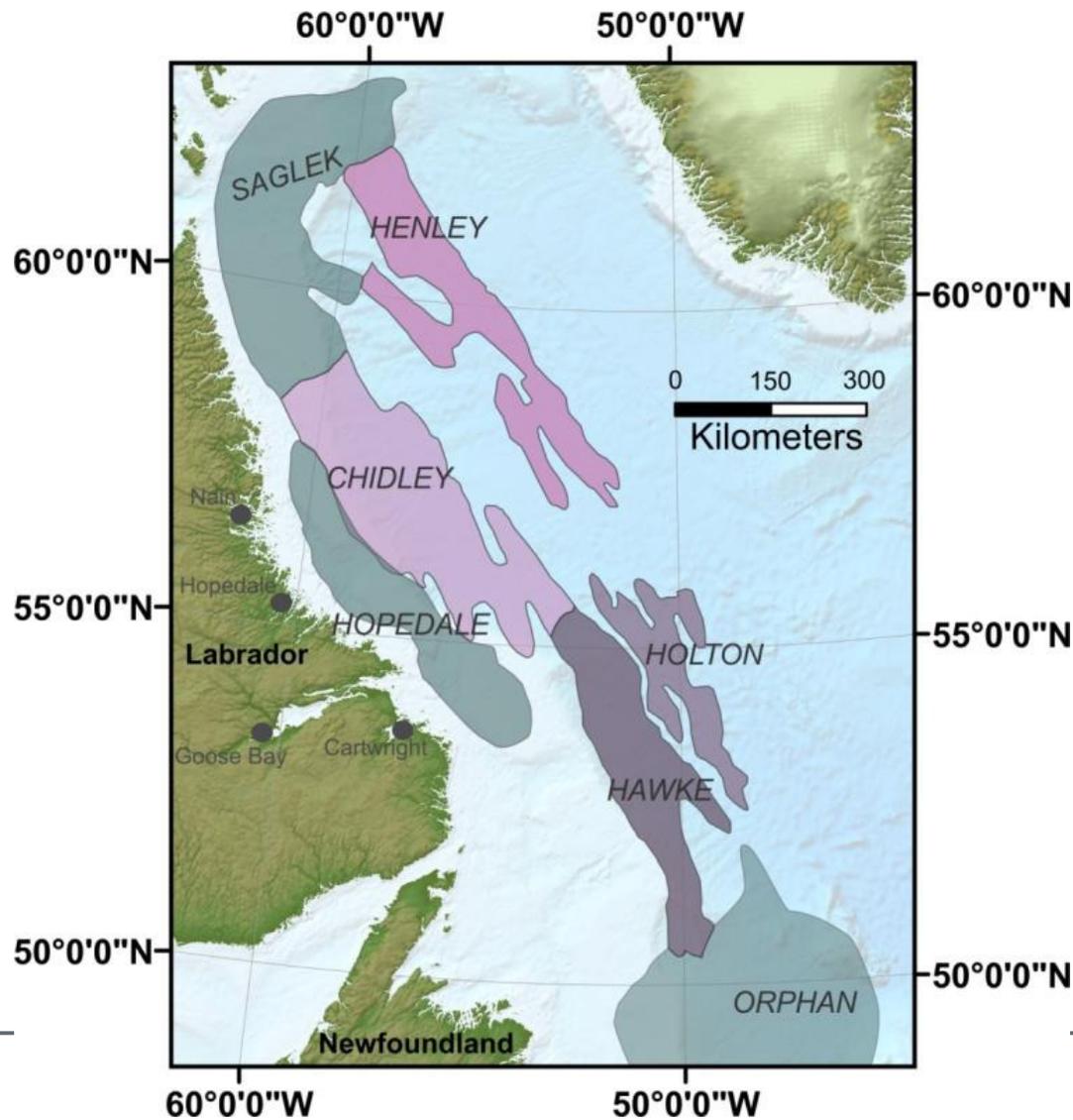


Newfoundland and Labrador Exploration Update: New Basins



Basin configuration – 1970s - recent

Newfoundland and Labrador Exploration Update: New Basins



New basins found as a result of Nalcor survey (Jan 2013)

Newfoundland and Labrador Exploration Update: New Geoscience Data, New Plays

Seismic line image deleted:

The seismic line shown at the Atlantic Ireland 2013 Conference was a near trace stack section with a Cretaceous deep water fan imaged.

Newfoundland and Labrador Exploration Update: New Geoscience Data, New Plays

Seismic line image deleted:

The seismic line shown at the Atlantic Ireland 2013 Conference was a far trace stack section of the previous image. The fan shows considerable brightening on the far traces

Newfoundland and Labrador Exploration Update: New Geoscience Data, New Plays

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The seismic line shown at the Atlantic Ireland 2013 Conference was a near trace stack section of another Cretaceous deep water fan.

Newfoundland and Labrador Exploration Update: New Geoscience Data, New Plays

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The seismic line shown at the Atlantic Ireland 2013 Conference was a far trace stack section of the previous image. The fan shows considerable brightening on the far traces. A zoomed image of a potential flatspot was highlighted.

Newfoundland and Labrador Exploration Update: New Geoscience Data, New Plays

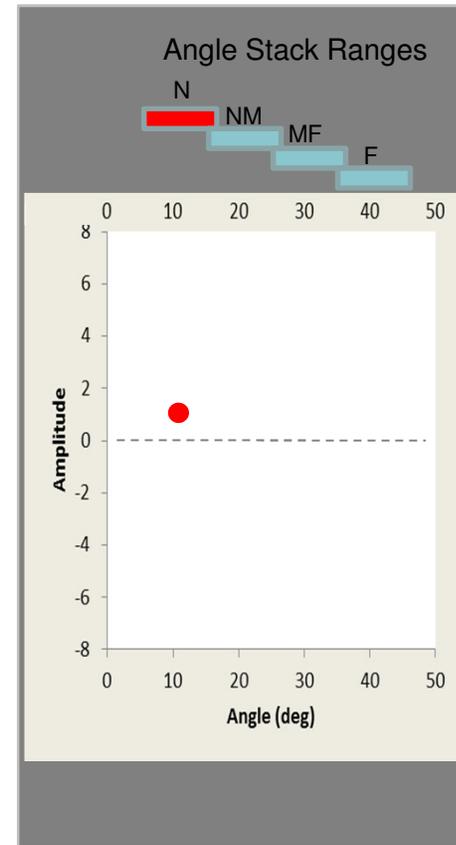
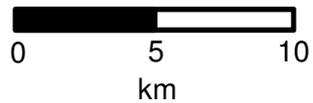
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The next two slides showed near and far trace images of the Mizzen structure in the Flemish Pass Basin.

Newfoundland and Labrador Exploration Update: New Geoscience Data, New Plays



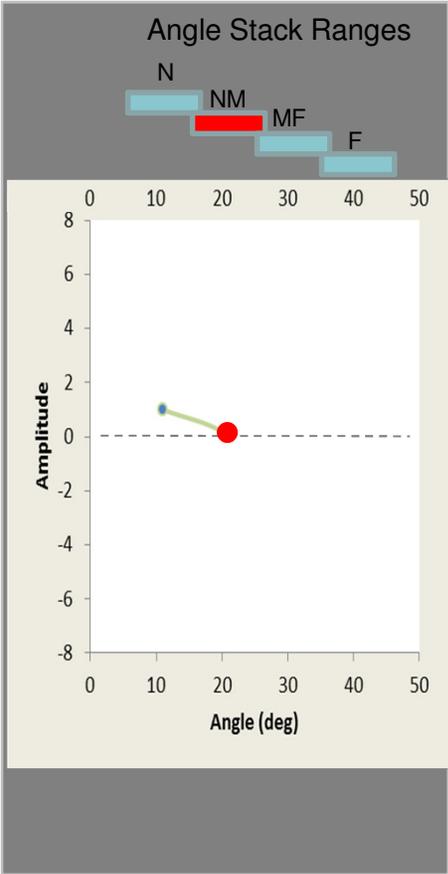
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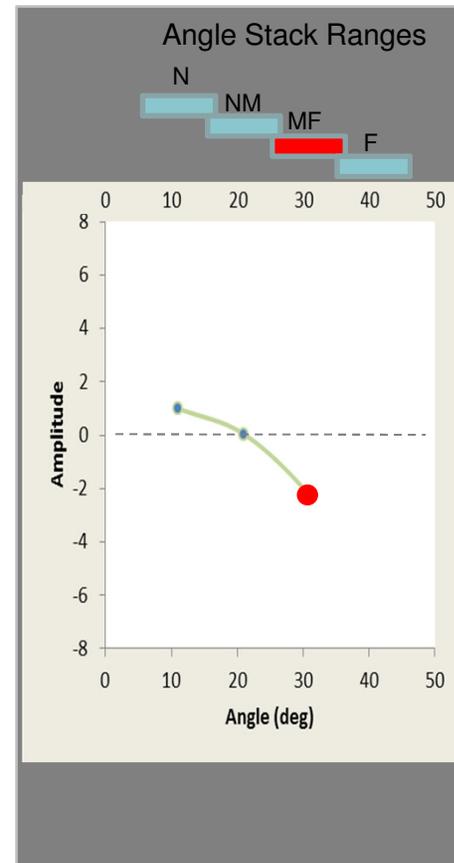
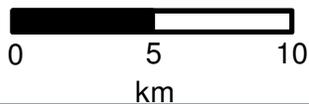
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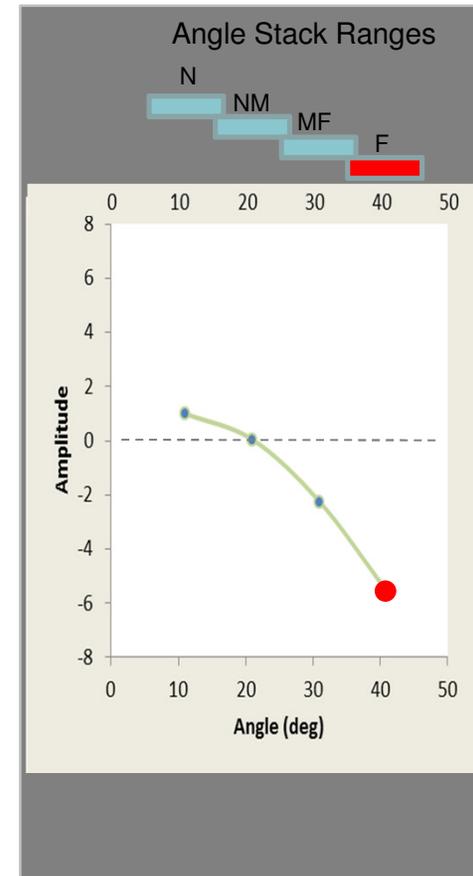
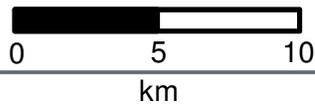
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Newfoundland and Labrador Exploration Update: New Geoscience Data, New Plays



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Newfoundland and Labrador Exploration Update:

New Geoscience Data, New Basins, New Plays

Initiative	Completion
Satellite Slick Mapping	2011
Regional Pore Pressure Study	2013
Seabed Core Analysis	2013
Biostratigraphic Analysis	2013
Regional Rock Physics Study	2013
Source Rock Studies	2014
Metocean Study	2014

Approximately \$30MM has been invested in Geoscience over 4 years (Province/Nalcor)

Nalcor has partnered with Global Industry Leaders

Nalcor will continue to build and grow our partnership with Irish researchers under NAPSA

nalorenergy.com/exploration

Acknowledgements



For permission to show
seismic data



For support and
assistance

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