

Deep Penobscot, An Analogue to Deep Panuke – Are more Jurassic Reefs Lurking Offshore Nova Scotia?

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August 24, 2012



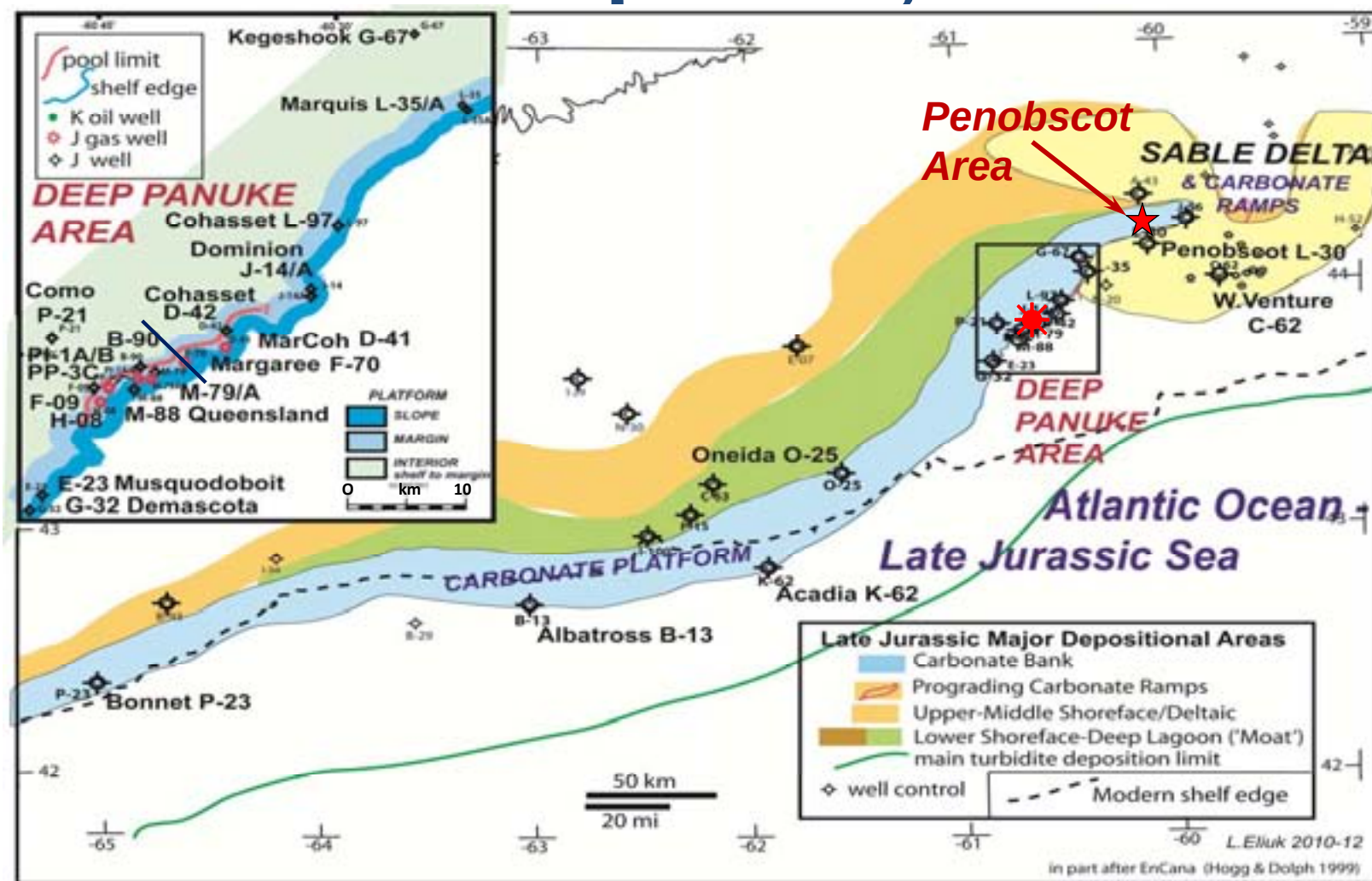
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Halifax

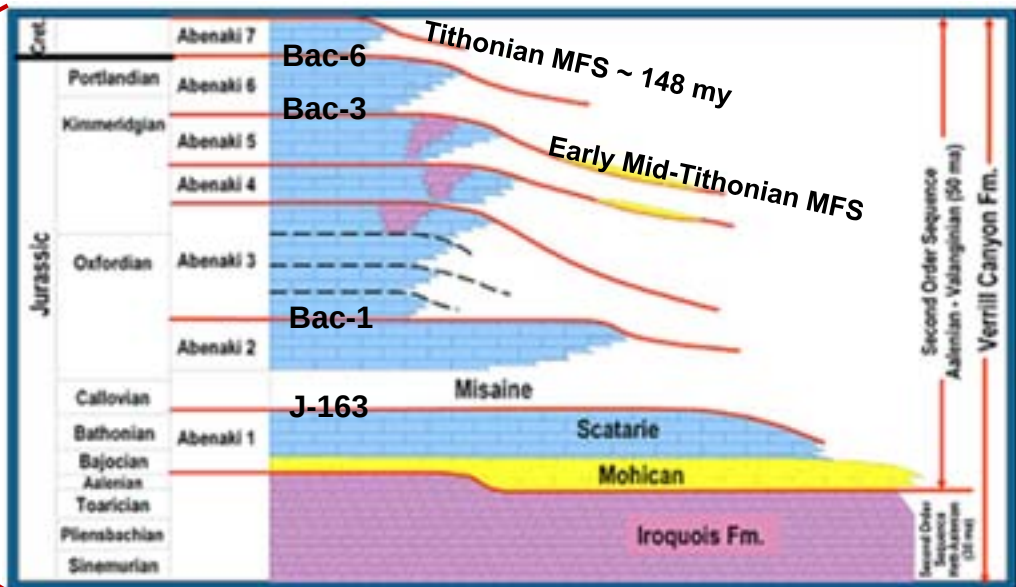
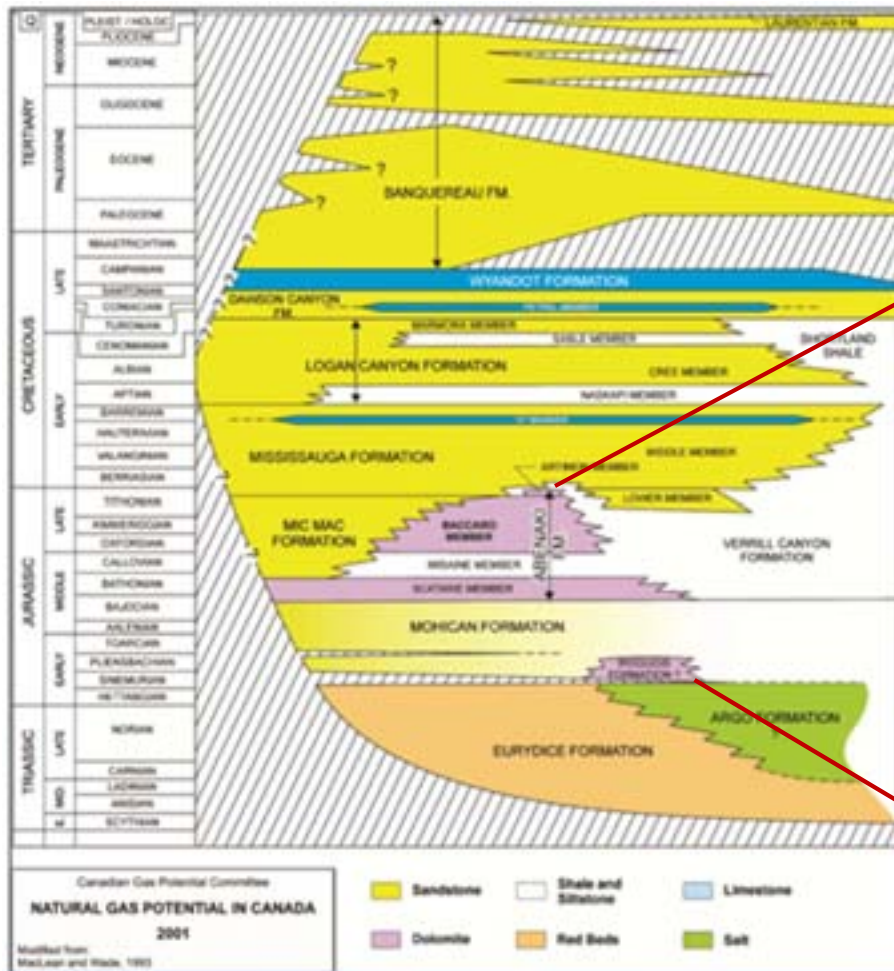
285 km

EL #2417

Late Jurassic Deposition, Scotian Shelf

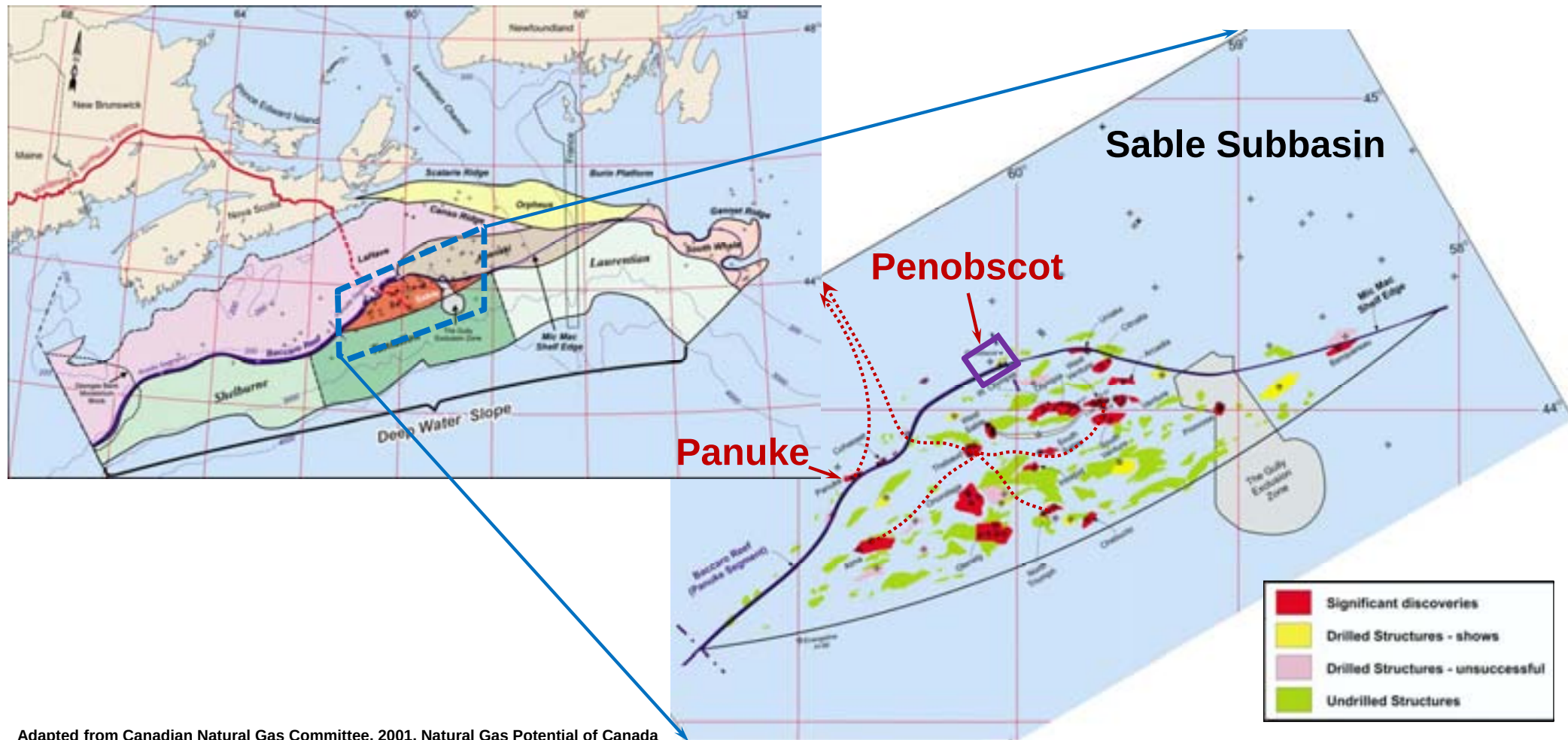


Jurassic Baccaro Reef Stratigraphy



Modified from: Deep Panuke Development Plan – EnCana 2006

Where are we?



Adapted from Canadian Natural Gas Committee, 2001, Natural Gas Potential of Canada

Deep Panuke Field

F-70

SE

NW

O Marker

L. Missisauga

Gas Pool

Top Carbonate
Abenaki 5
Abenaki 4

Scatarie

Margaree F-70
LITHOFACIES



Proprietary data of Encana Corporation, subject to license agreement.,
Lithofacies after Eliuk, 2003/2005

78.3m

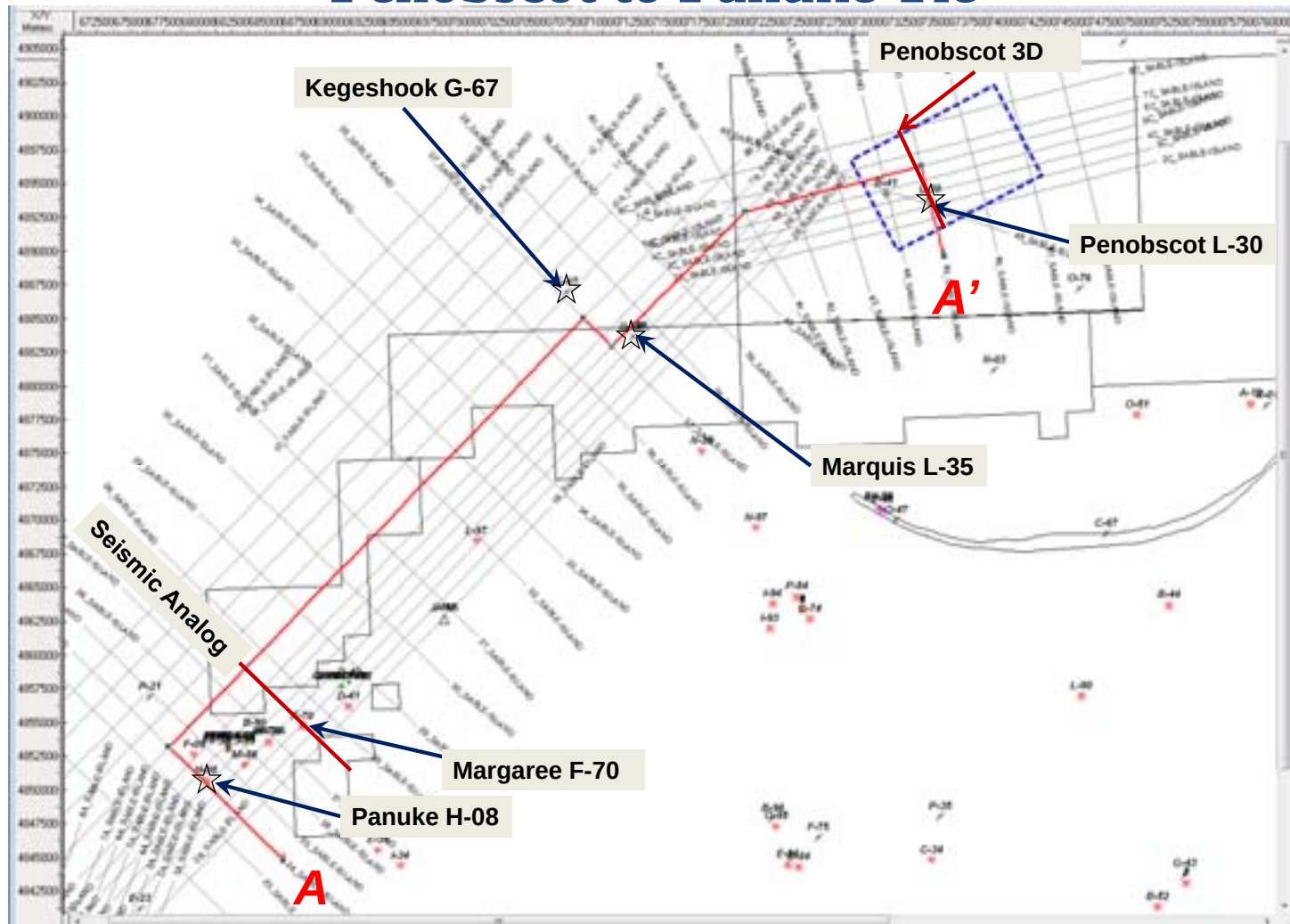


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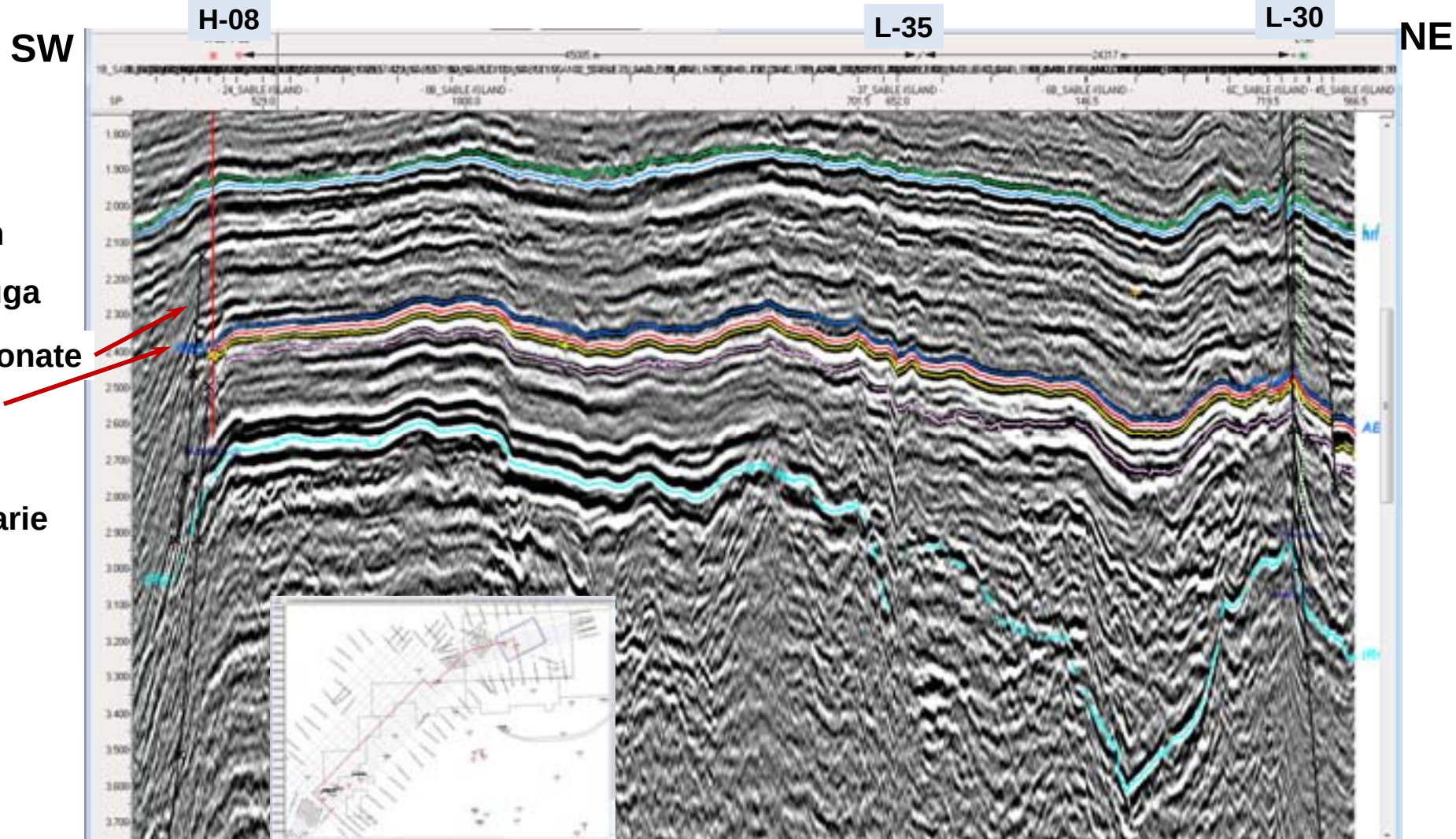
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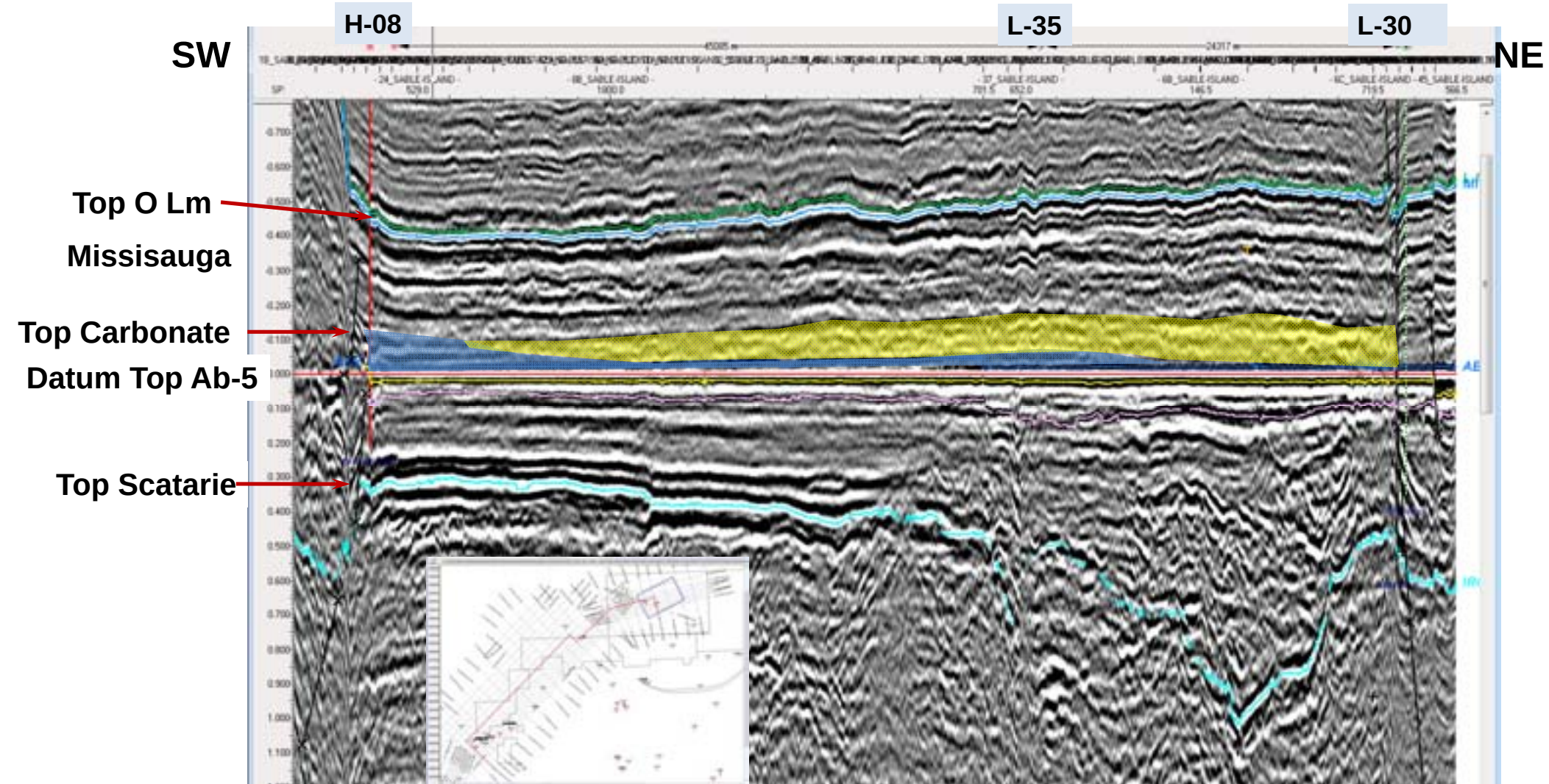
Penobscot to Panuke Tie



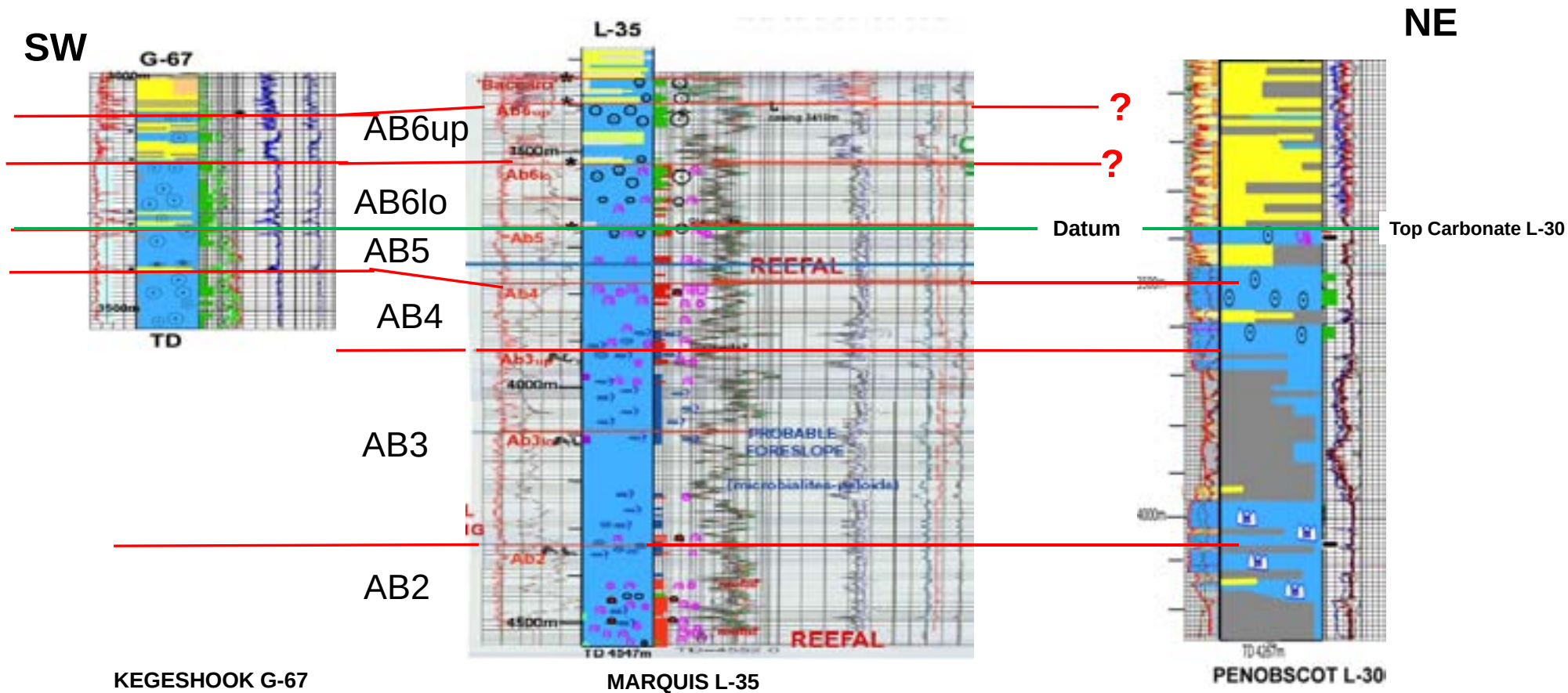
Correlating Deep Panuke Field to Penobscot



Deep Panuke to Penobscot Flattened on Ab-5



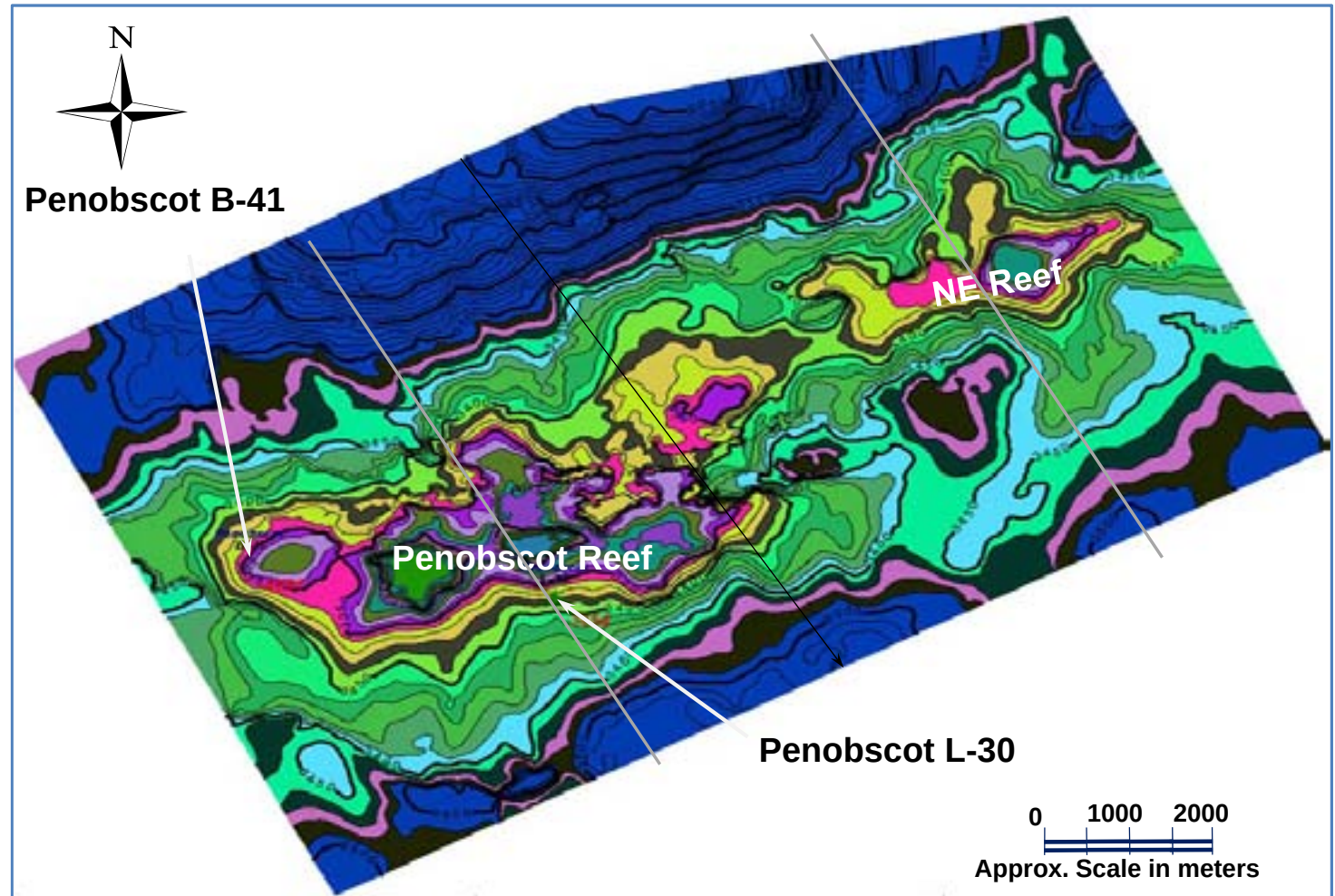
Kegeshook G-67 - Marquis L-35 - Penobscot L-30 Stratigraphy



Penobscot Abenaki Reef Structures

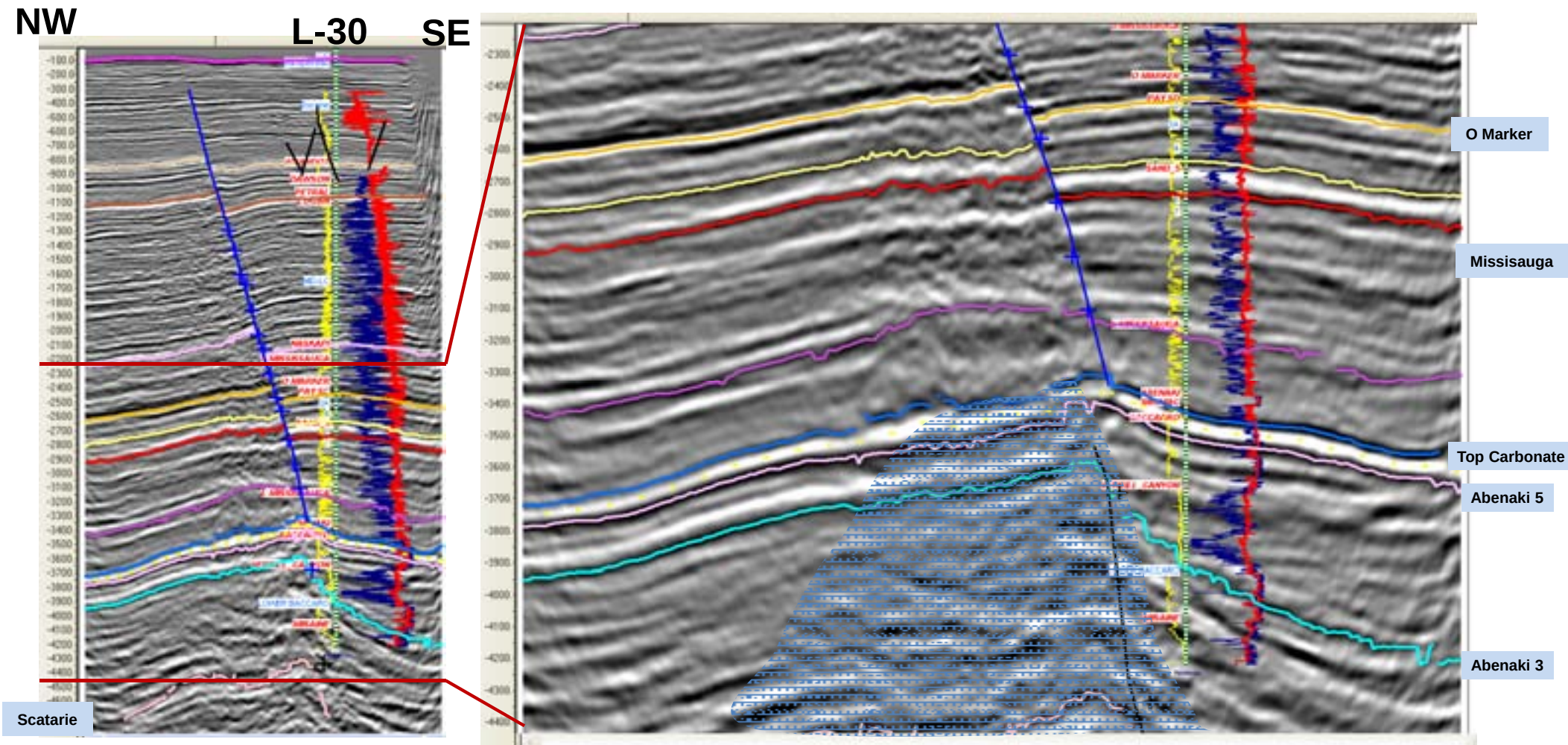
**Mean Recoverable
Resource**

1.1 TCF



Penobscot PSDM

Well L-30

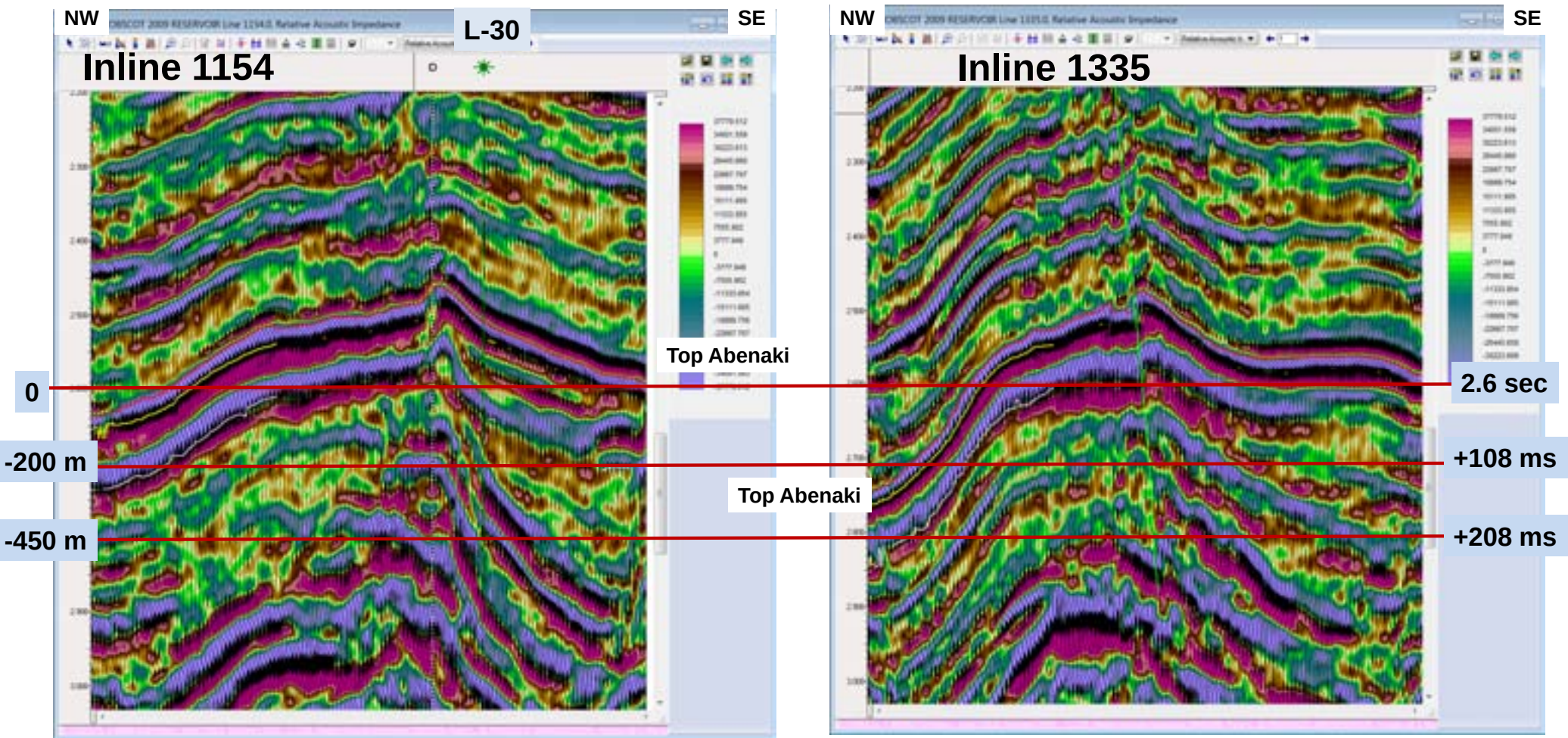


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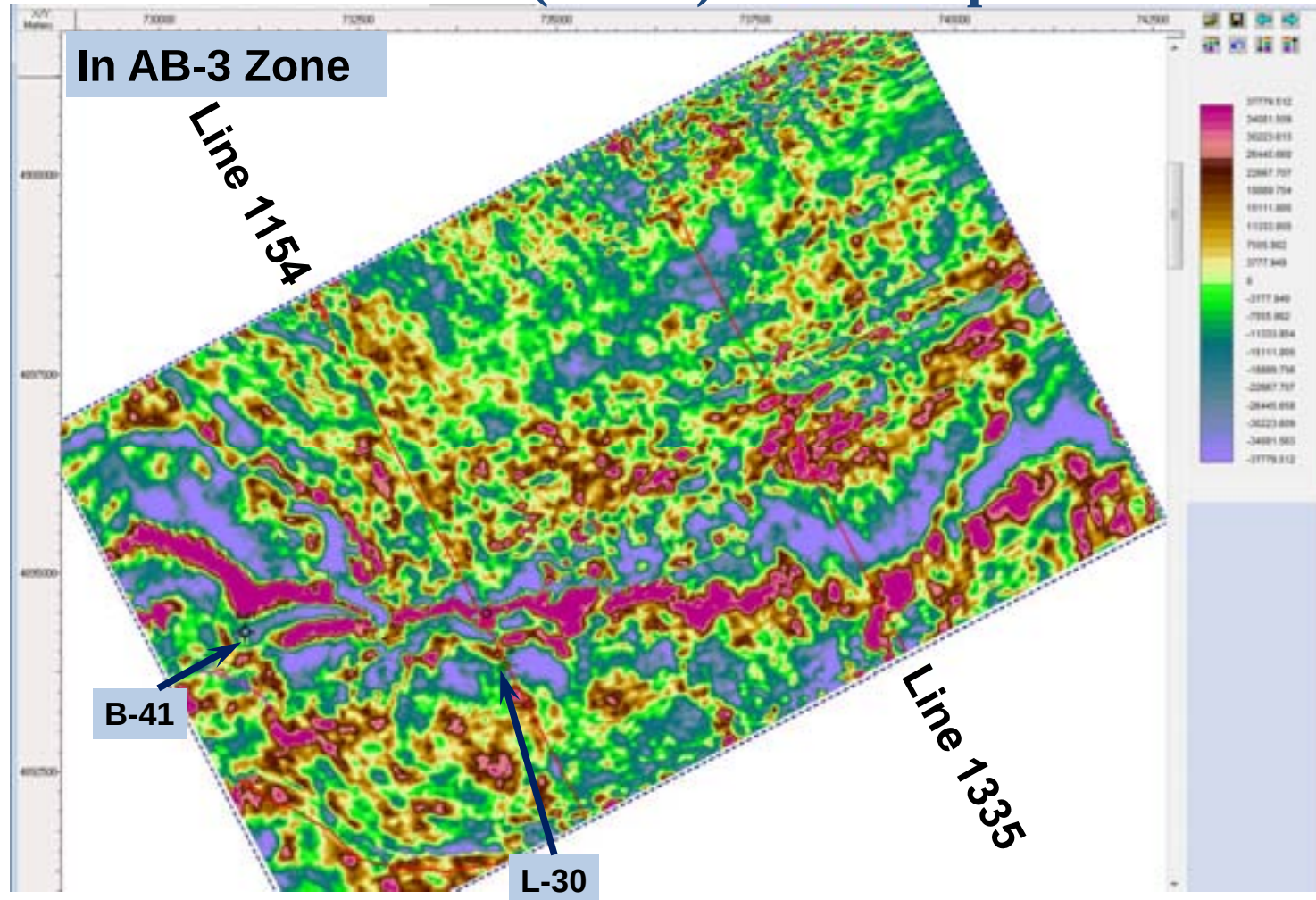
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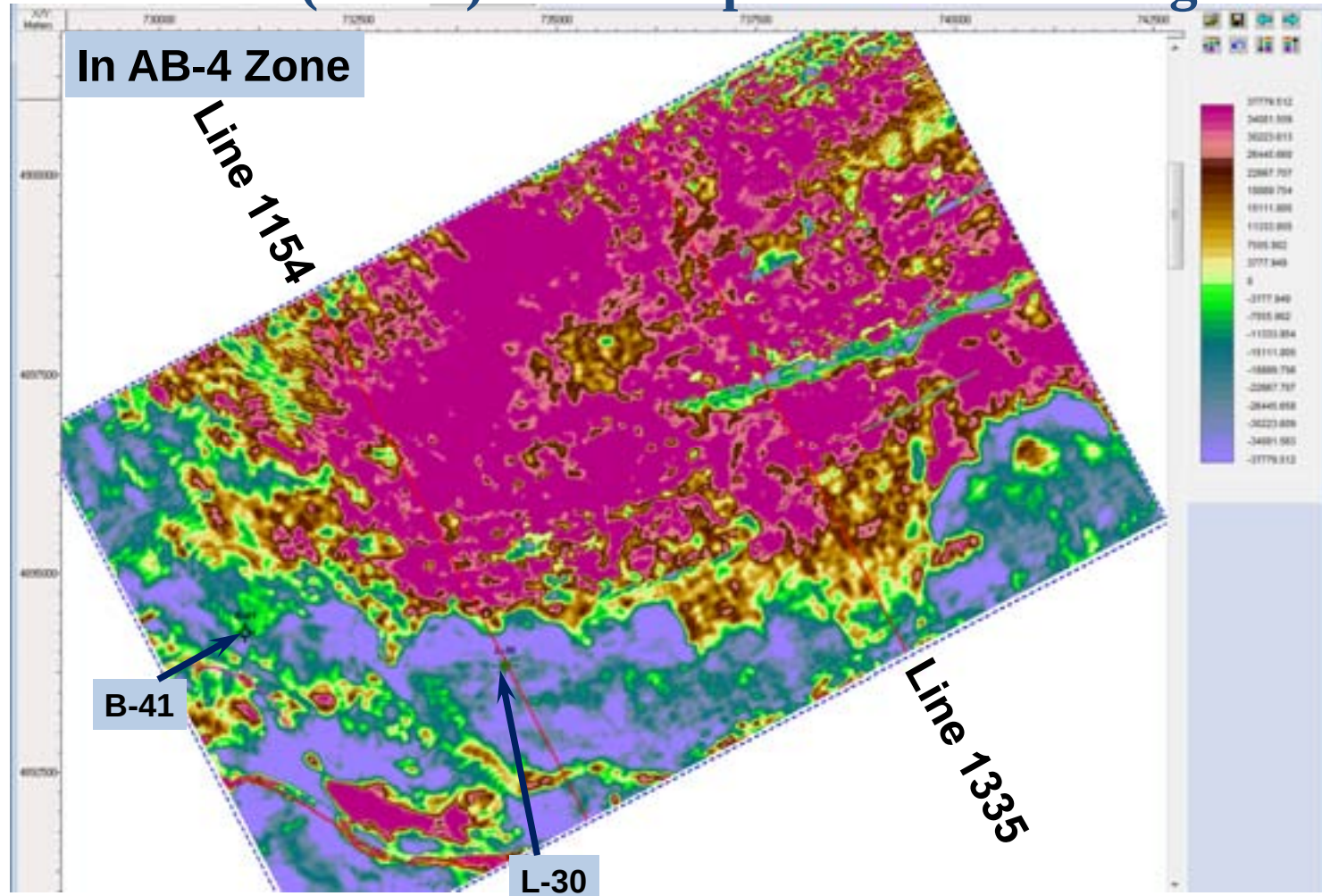
Relative Acoustic Impedance Seismic through Reefs



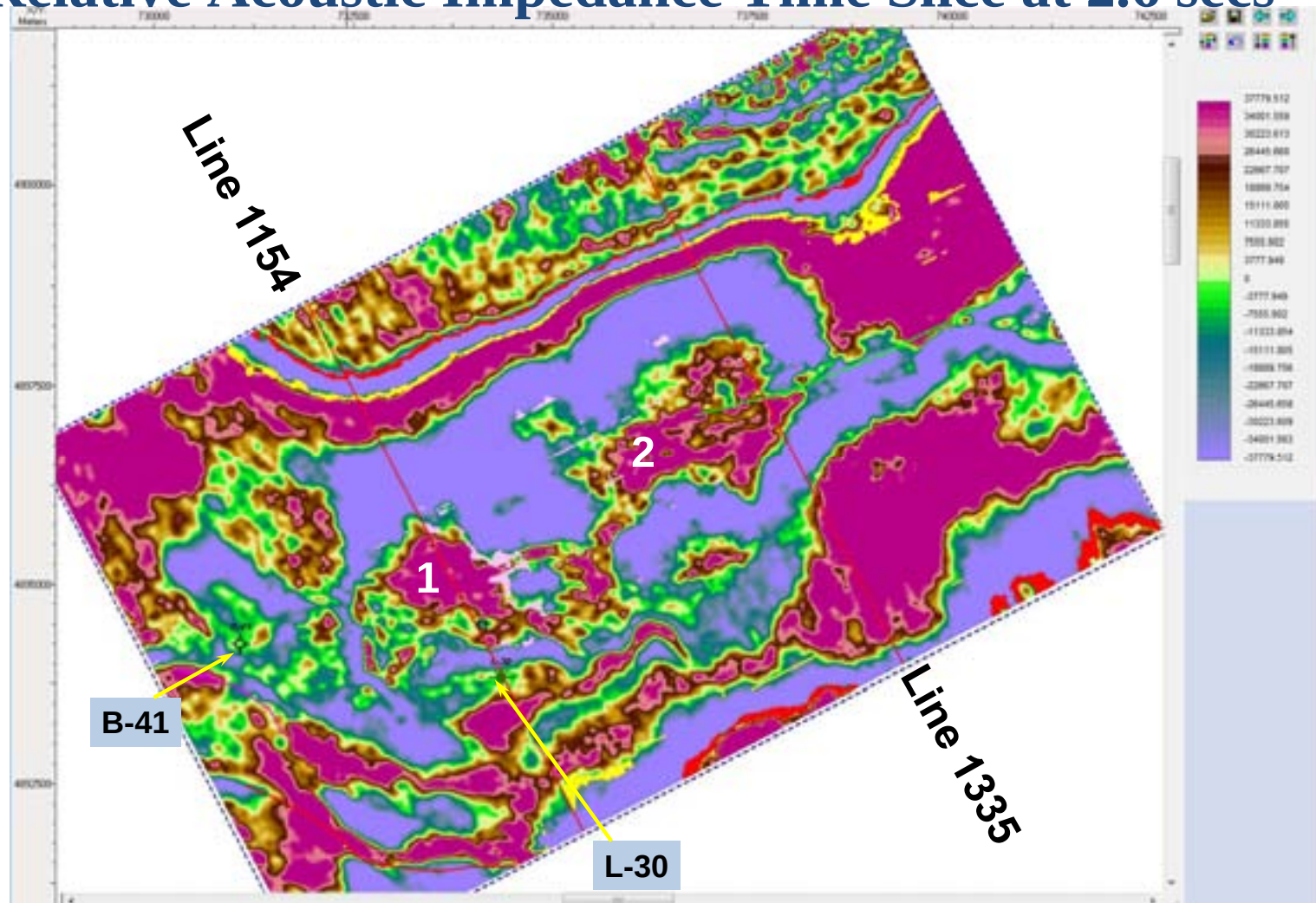
Relative Acoustic Impedance Flattened on Top Abenaki Time Slice 208 ms (450 m) below Top Abenaki



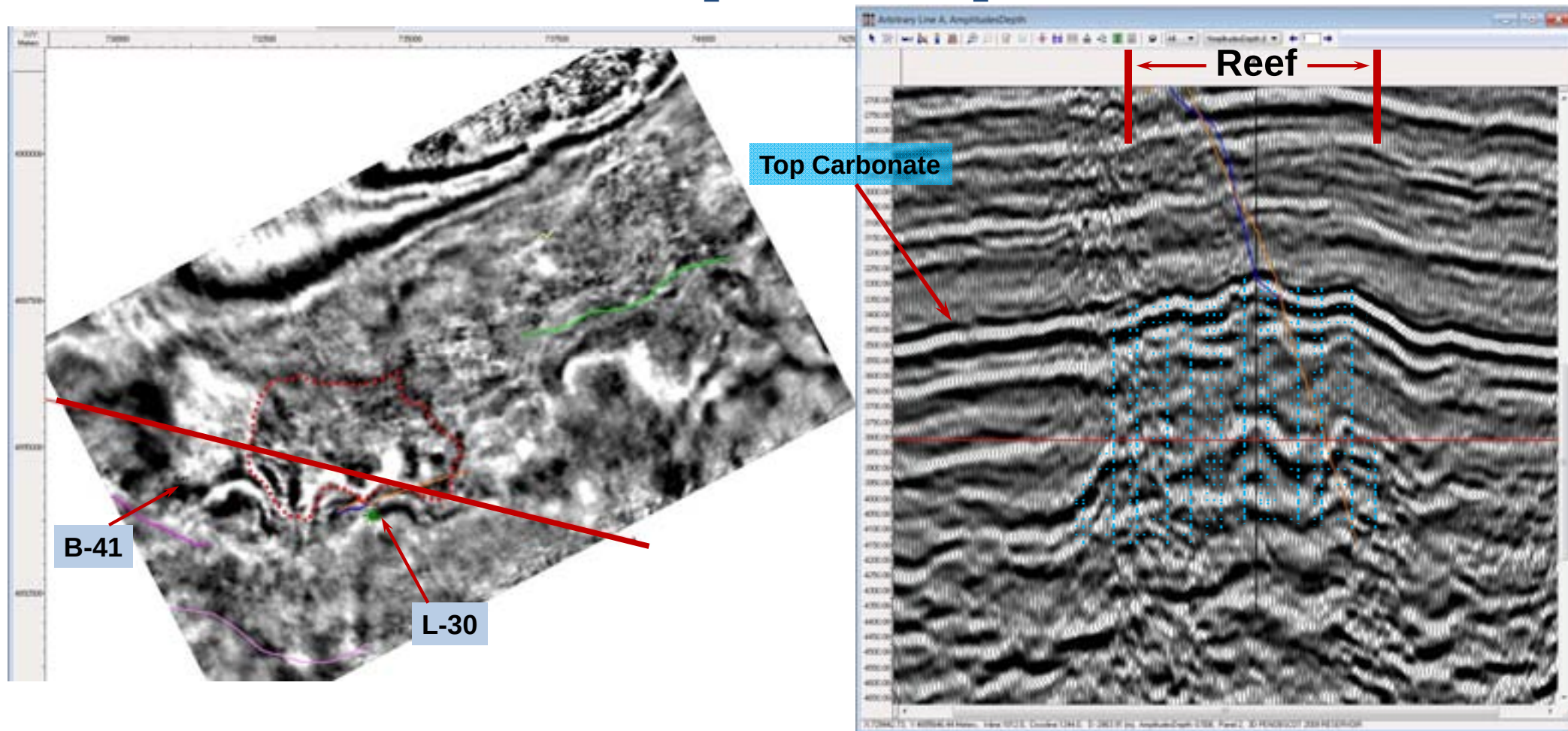
Relative Acoustic Impedance Flattened on Top Abenaki Time Slice 108 ms (200 m) below Top Abenaki Showing Reef Front



Relative Acoustic Impedance Time Slice at 2.6 secs



Penobscot Reef Development: Depth Slice at 3810 m



Deep Panuke Reef

F-70

SE

NW

O Marker

L. Missisauga

Gas Pool

Top Carbonate
Abenaki 5
Abenaki 4

Scatarie

BASIN

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Lithofacies after Eliuk, 2003/2005

7.5 km

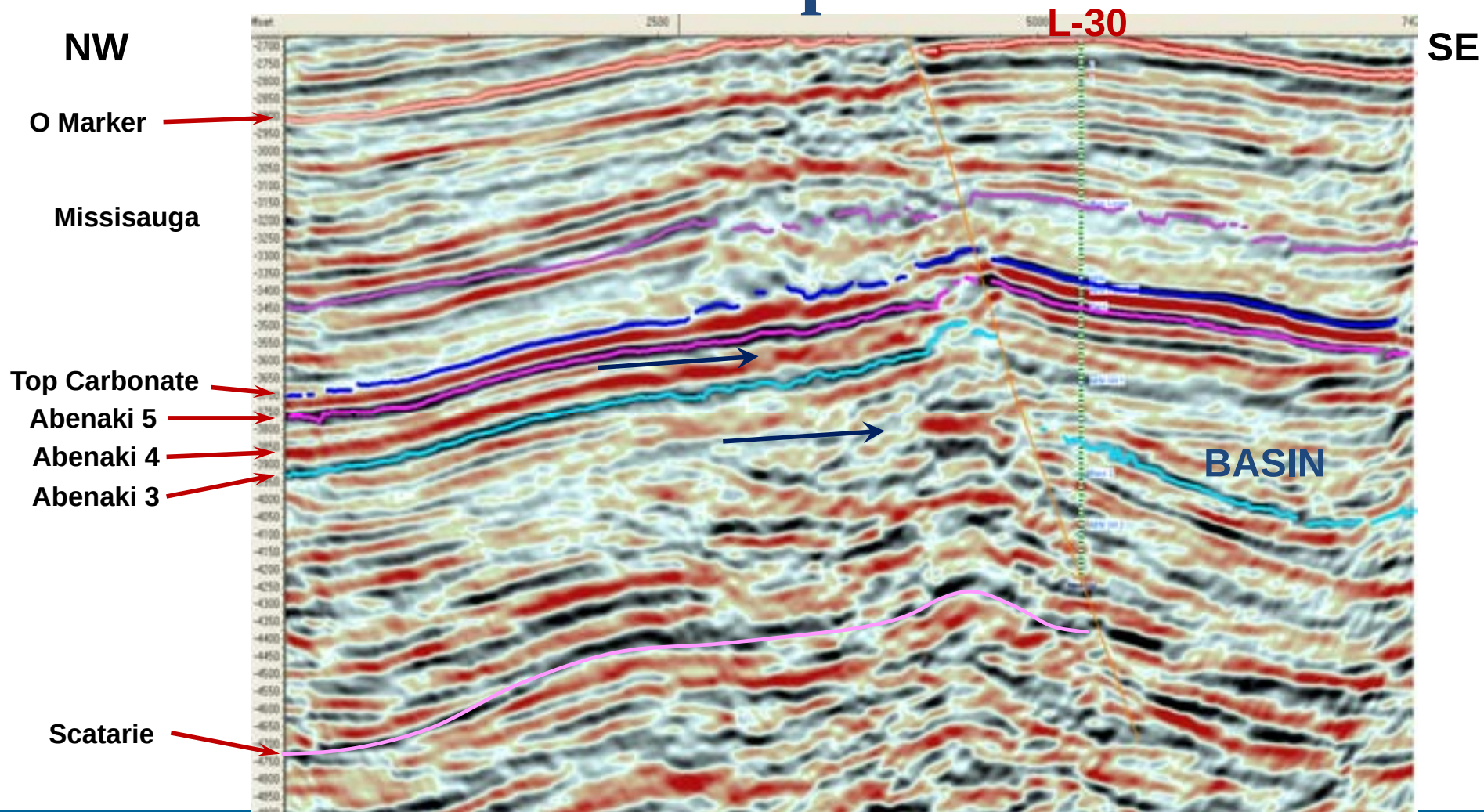


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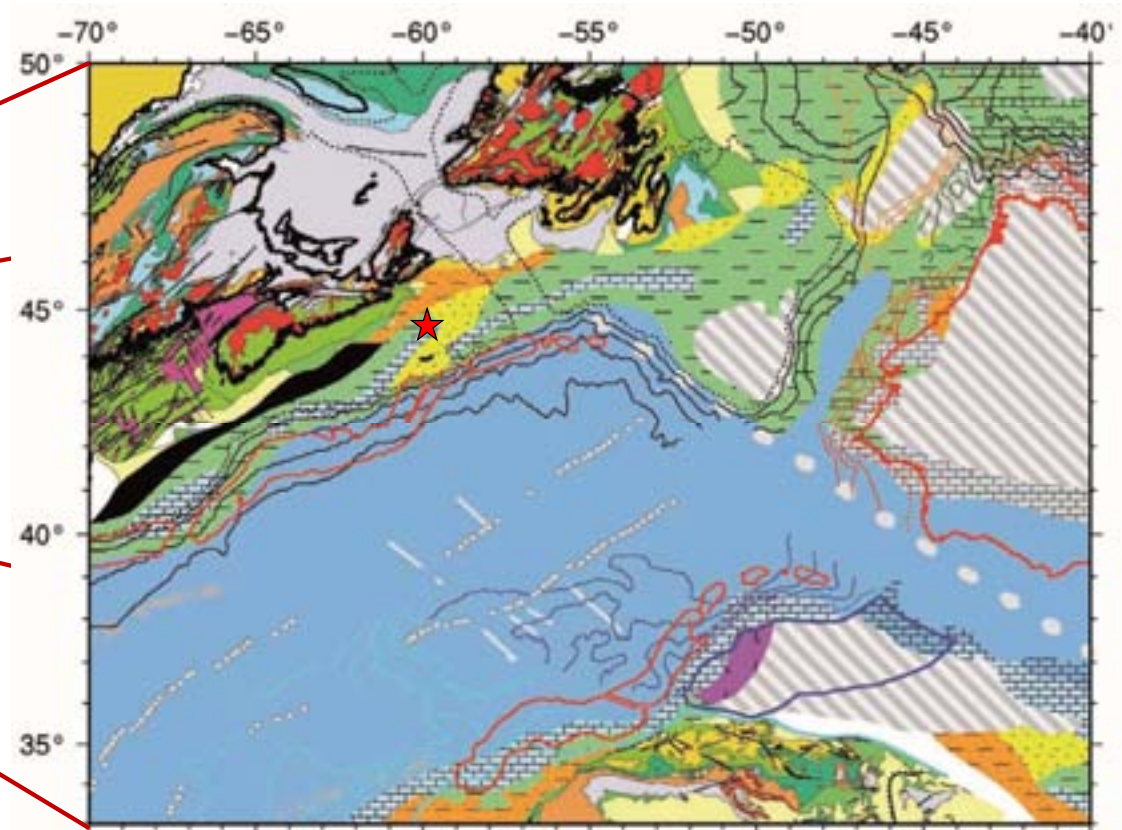
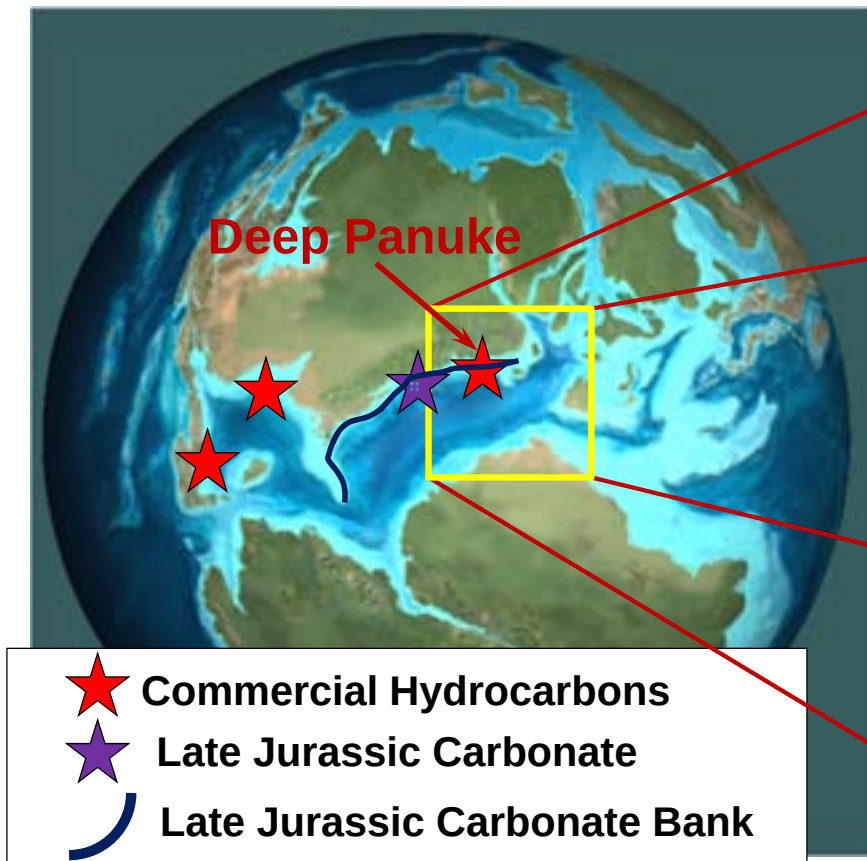
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Penobscot Reef Amplitude Anomalies



Jurassic Atlantic about 150 ma



From: Sibuet, Jean-Claude, Rouzo, S., and Srivastava, S., 2011, Paleogeographic maps of the central and North Atlantic oceans: Search and Discovery Article #30196,

Adapted from: Blakely, R., <http://jan.ucc.nau.edu/~rcb7/globaltext2.html>

Summary

- **Seismic suggests Penobscot Reef has porosity, likely associated with dolomitization**
- **Porosity is independent of the age of the carbonates and associated with faults**
- **Likely source rock for the hydrocarbons is Jurassic**
- **Migration pathways and seal are critical elements to consider**
- **More productive Jurassic reefs are likely “lurking” on the Atlantic Margin**

Deep Panuke is not Alone!

Thanks to:

Skip Hobbs
Les Eliuk & Grant Wach
John Hogg
CNSOPB
Nova Scotia DOE
Encana
OETR

Halifax

285 km

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