



CANADA-NOVA SCOTIA
OFFSHORE PETROLEUM BOARD

Exploration Opportunities Offshore Nova Scotia, Canada

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Director, Resources
Canada Nova Scotia Offshore Petroleum Board

February 5, 2013



Outline

- Canada Nova Scotia Offshore Petroleum Board Mandate
- Exploration & Production Overview
- Regional Geology
- Exploration Opportunities
- Geoscience Study Areas
- Summary



CNSOPB Mandate

- Health & safety of offshore workers
- Protection of the environment
- Management & conservation of petroleum resources
- Employment & industrial benefits
- Issuance of offshore licences
- Resource evaluation, data management & distribution



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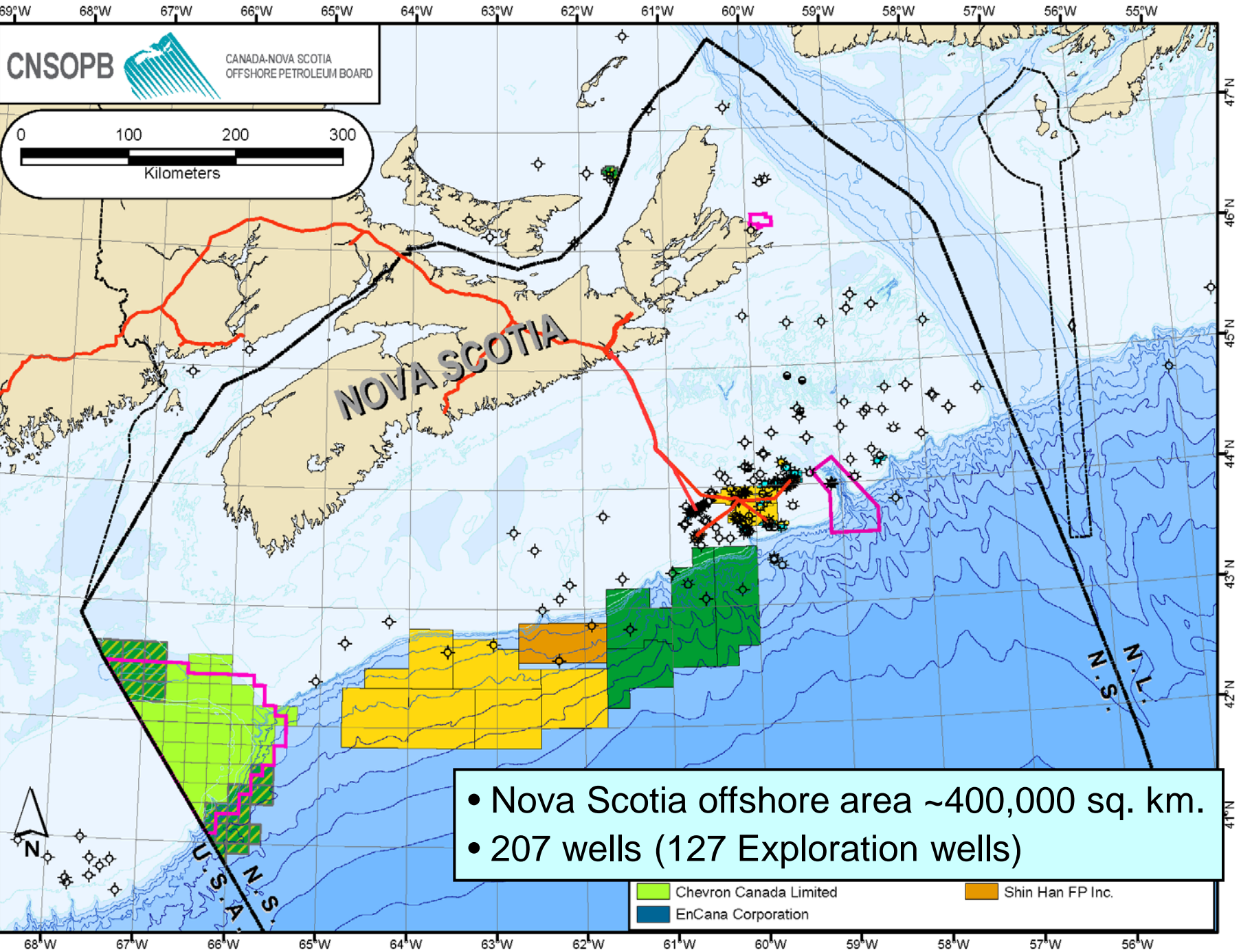
CNSOPB Jurisdictional Area



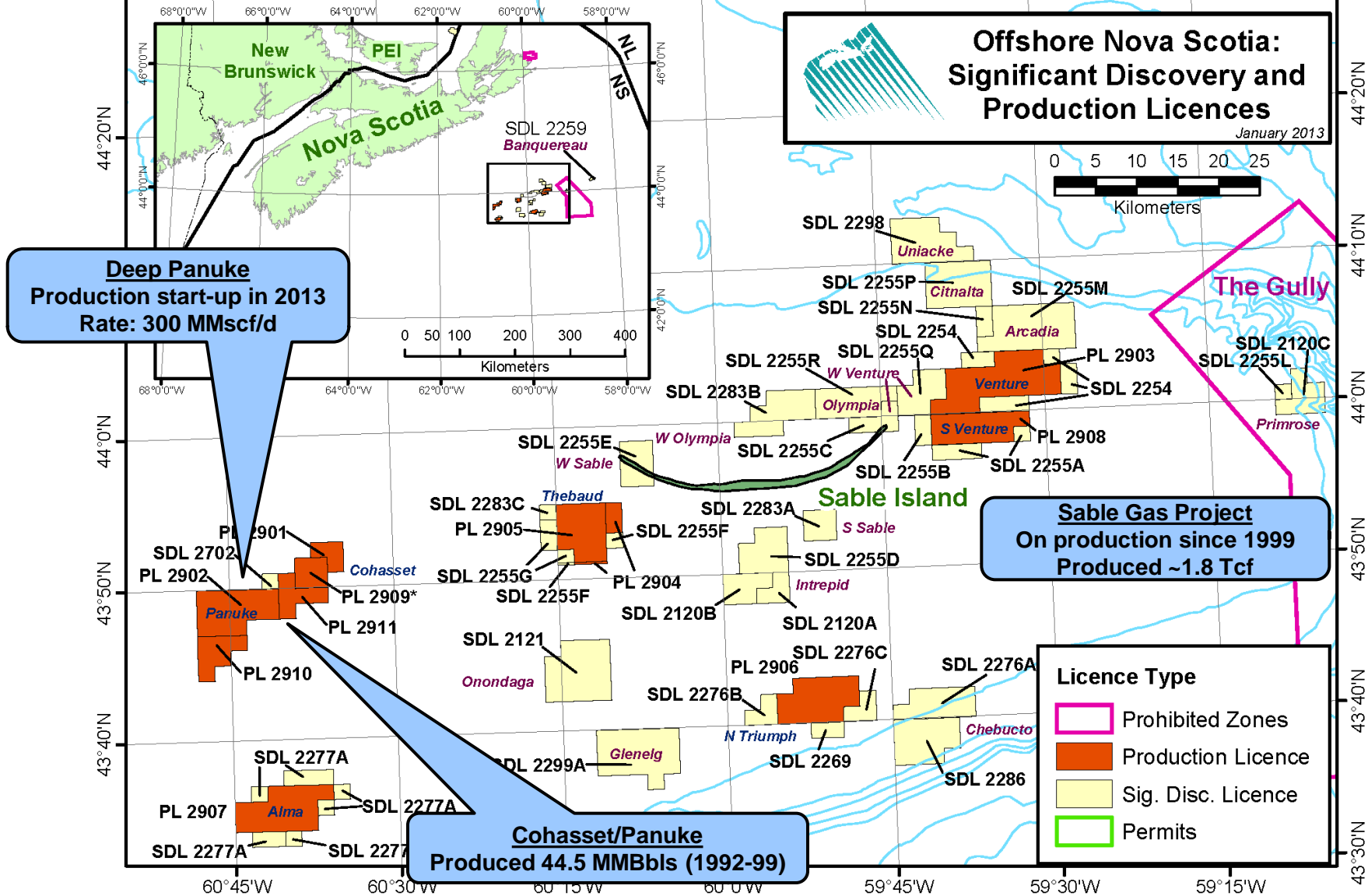


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Exploration & Production Overview



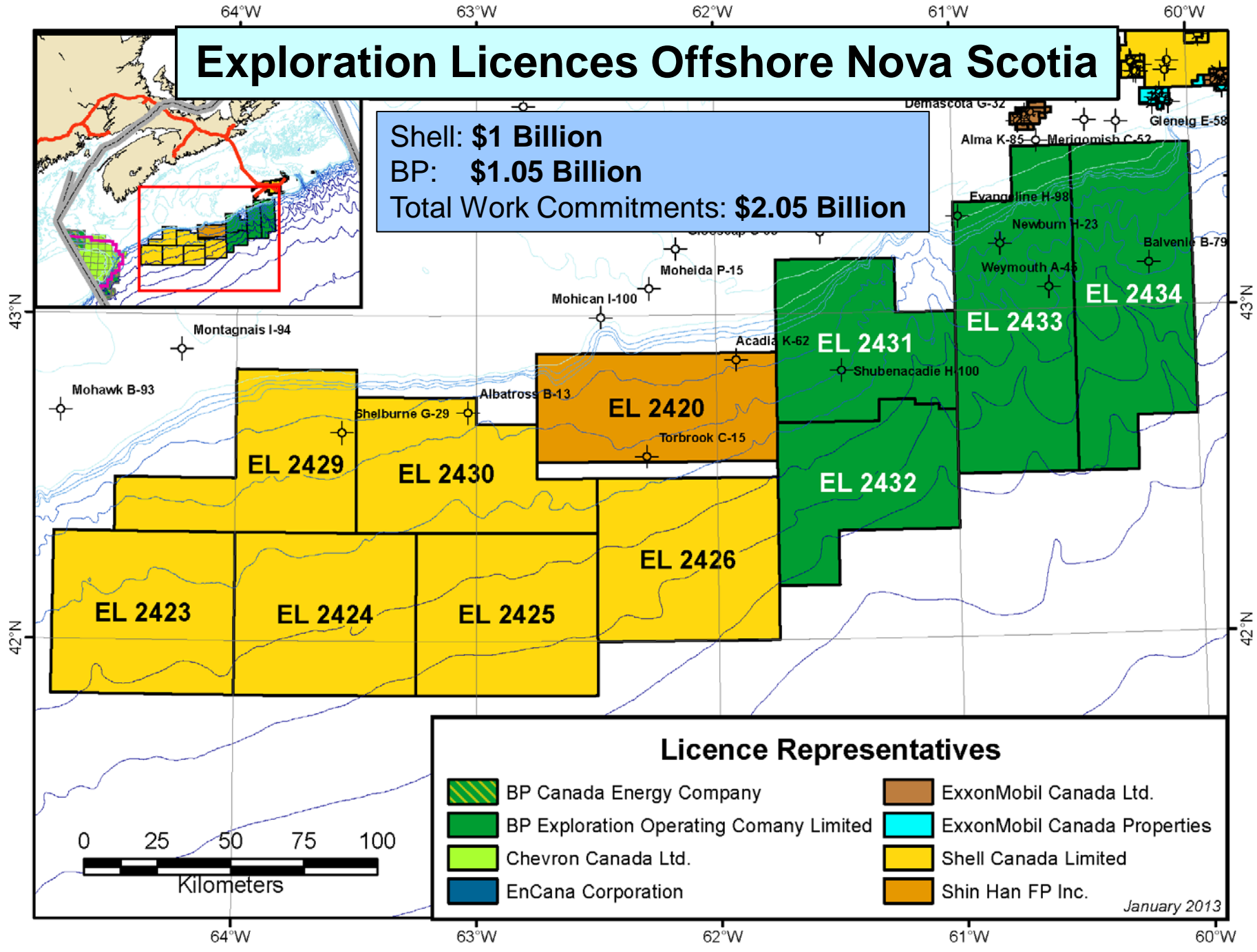
23 Significant Discoveries Offshore Nova Scotia



*PL 2909 is stratigraphically restricted to zones below the base of the Cretaceous and underlies part of PL 2901

Exploration Licences Offshore Nova Scotia

Shell: \$1 Billion
 BP: \$1.05 Billion
 Total Work Commitments: \$2.05 Billion



Licence Representatives

- | | |
|--|--|
|  BP Canada Energy Company |  ExxonMobil Canada Ltd. |
|  BP Exploration Operating Company Limited |  ExxonMobil Canada Properties |
|  Chevron Canada Ltd. |  Shell Canada Limited |
|  EnCana Corporation |  Shin Han FP Inc. |

January 2013

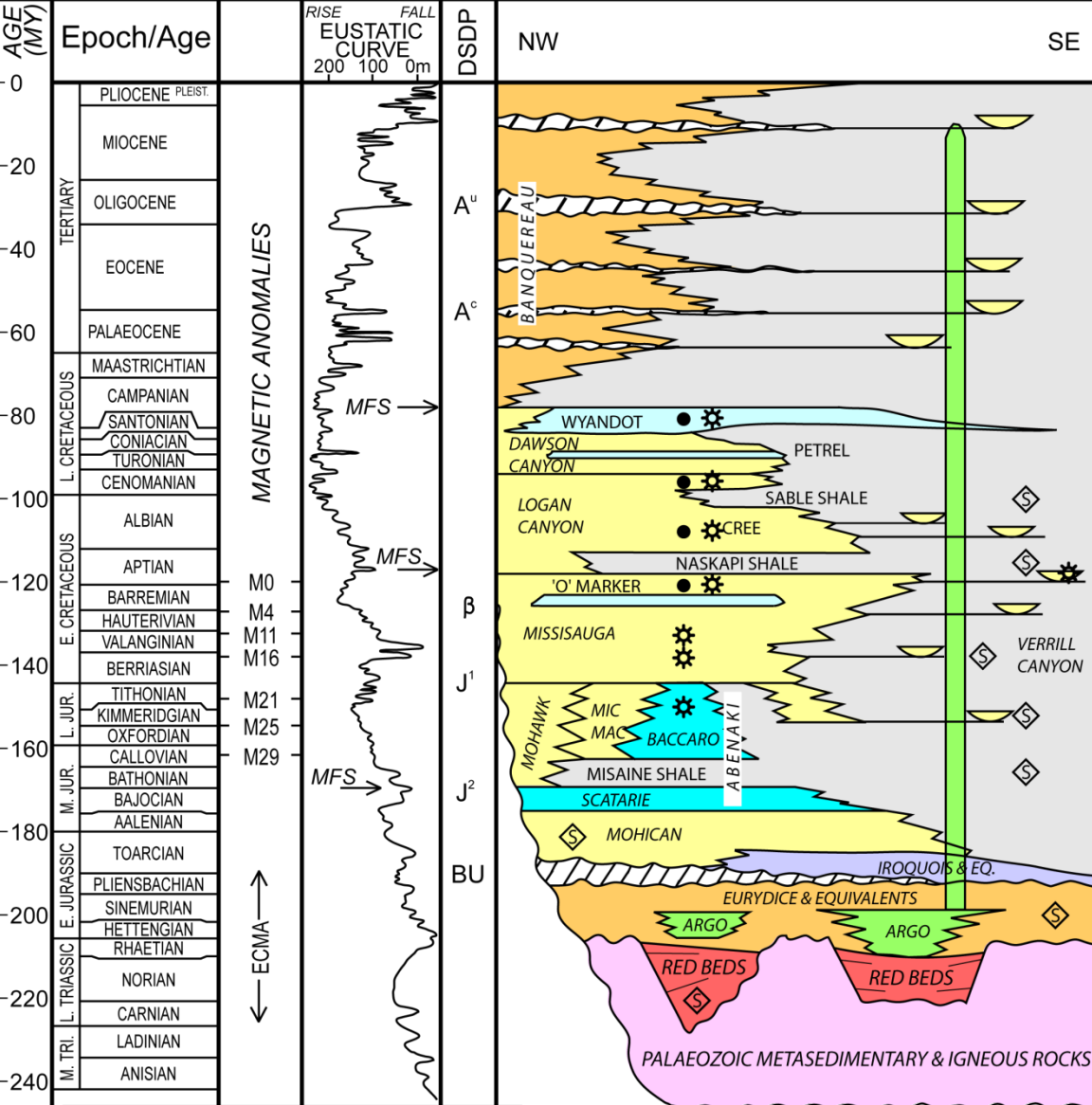


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Regional Geology

Offshore Basins - Nova Scotia





- Gas discoveries: L. Jur. – L. Cret.
- Oil discoveries: E. Cret. – L. Cret.

Legend

MFS - Maximum Flooding Surfaces

A^u - Deep sea stratigraphic markers

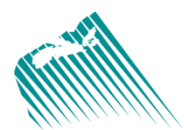
BU - Breakup Unconformity

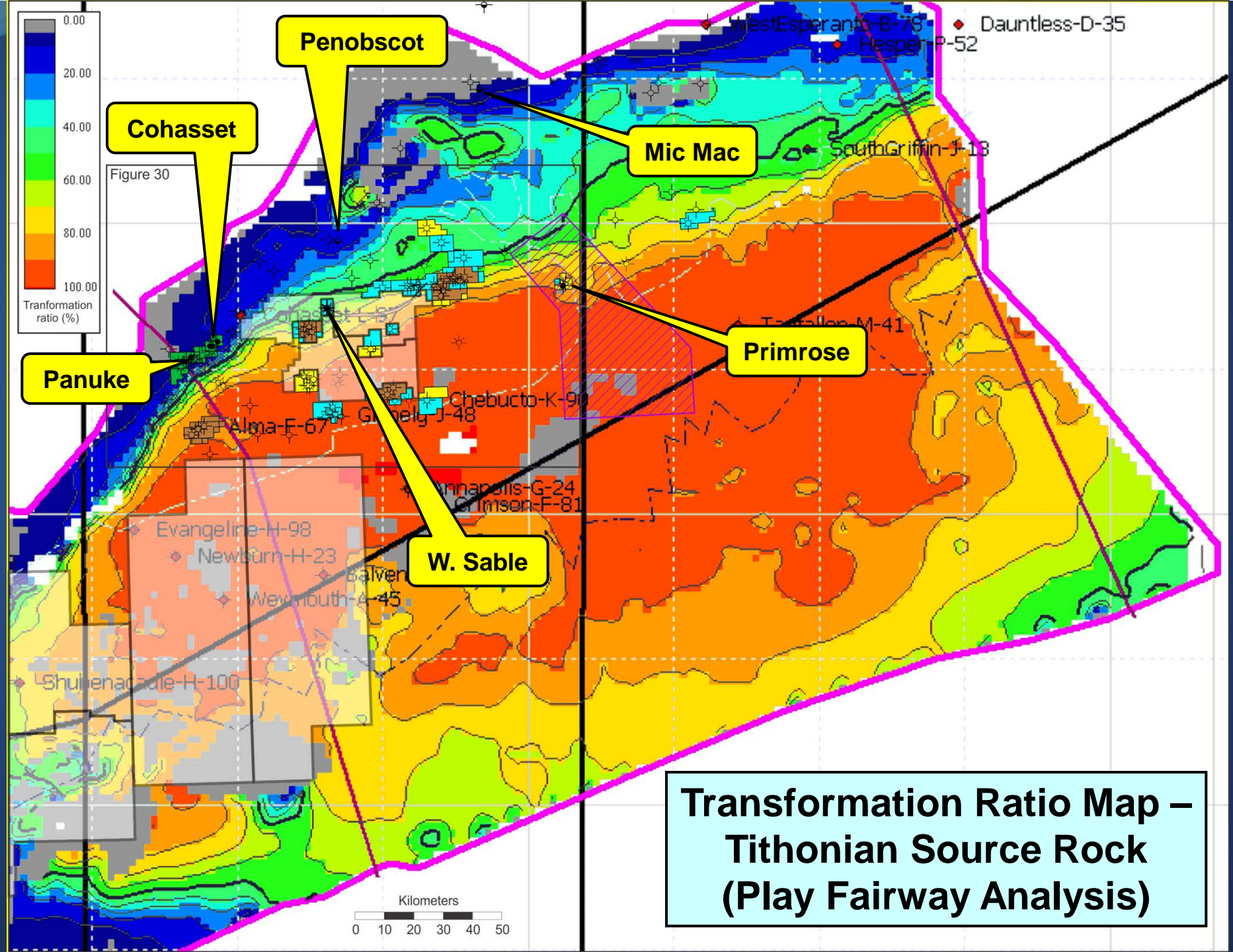
⚙ - Gas ● - Oil

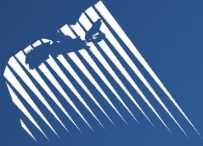
🏔 - Deepwater turbidite

◇ - Source Rock Intervals

ECMA - East Coast Magnetic Anomaly












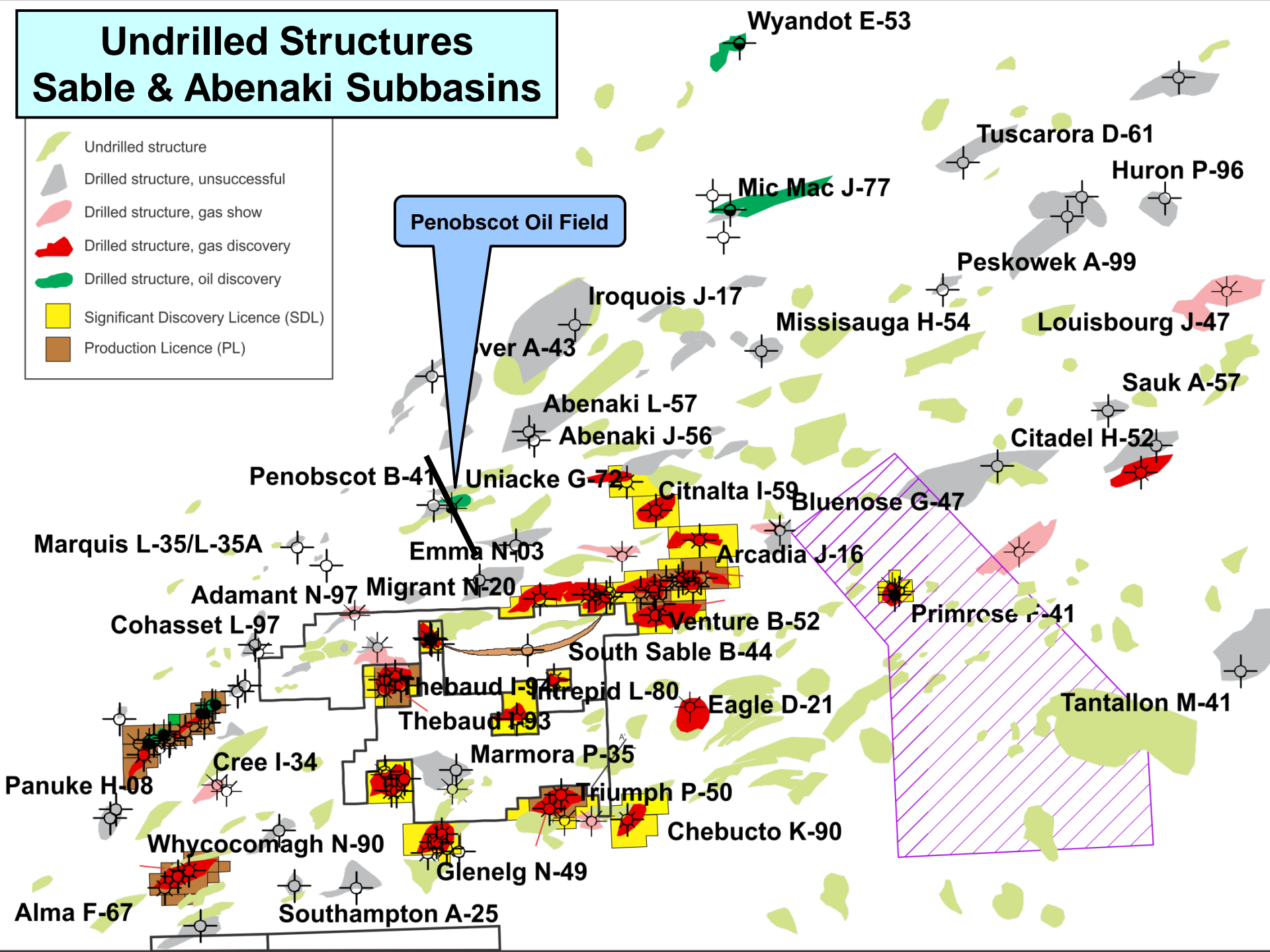


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Exploration Opportunities

Undrilled Structures Sable & Abenaki Subbasins

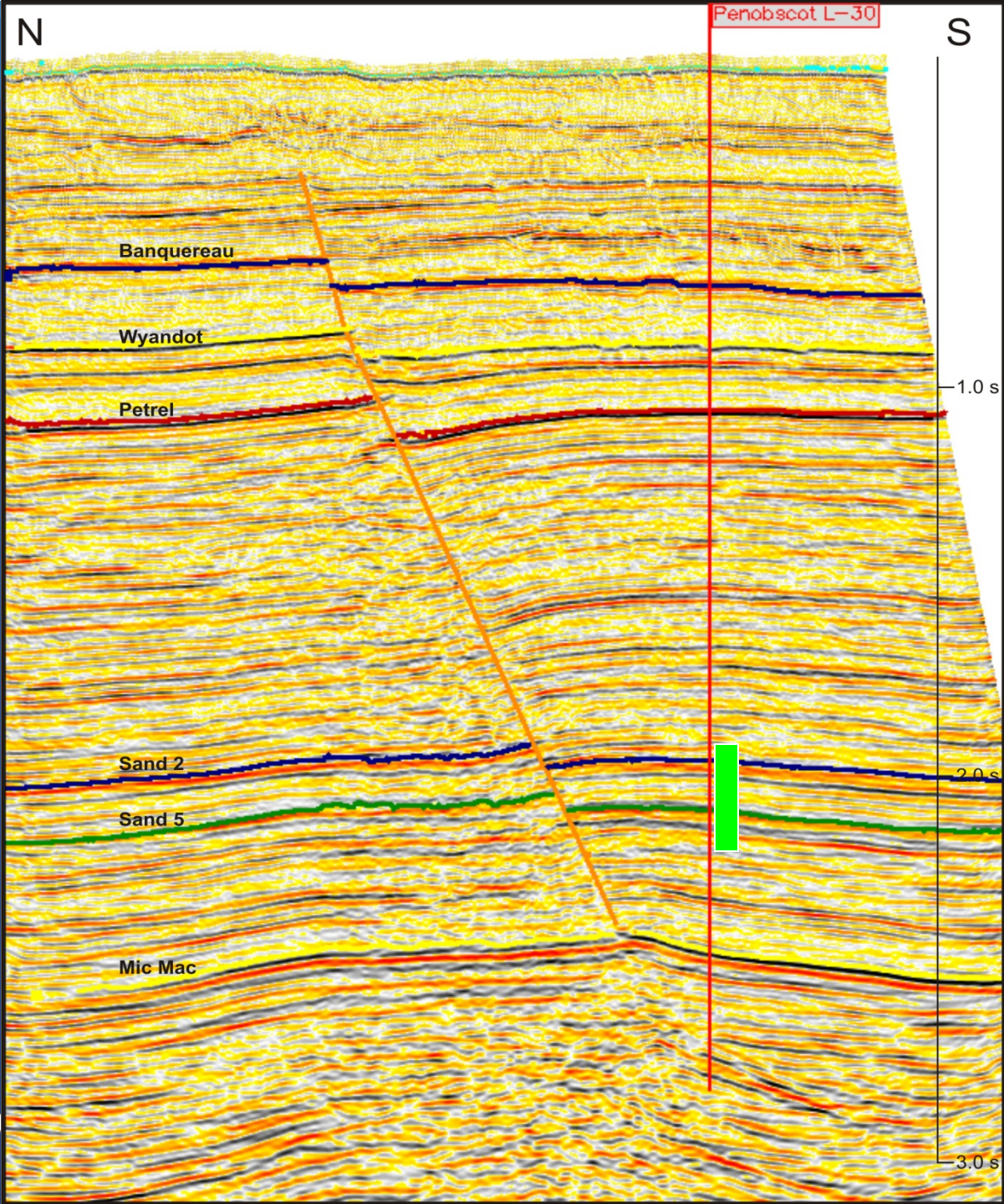
-  Undrilled structure
-  Drilled structure, unsuccessful
-  Drilled structure, gas show
-  Drilled structure, gas discovery
-  Drilled structure, oil discovery
-  Significant Discovery Licence (SDL)
-  Production Licence (PL)





Petrocan Penobscot L-30

- Spudded July 18, 1976
- Over 12 m oil pay in Lower Missisauga sands
- Sands trapped in 4-way closure in low relief rollover anticline





Penobscot XSection

- 7 oil zones
- Porosity: avg. 20%, max. 32%
- Perm: avg. 120 mD, max. >1000 mD

Penobscot B-41

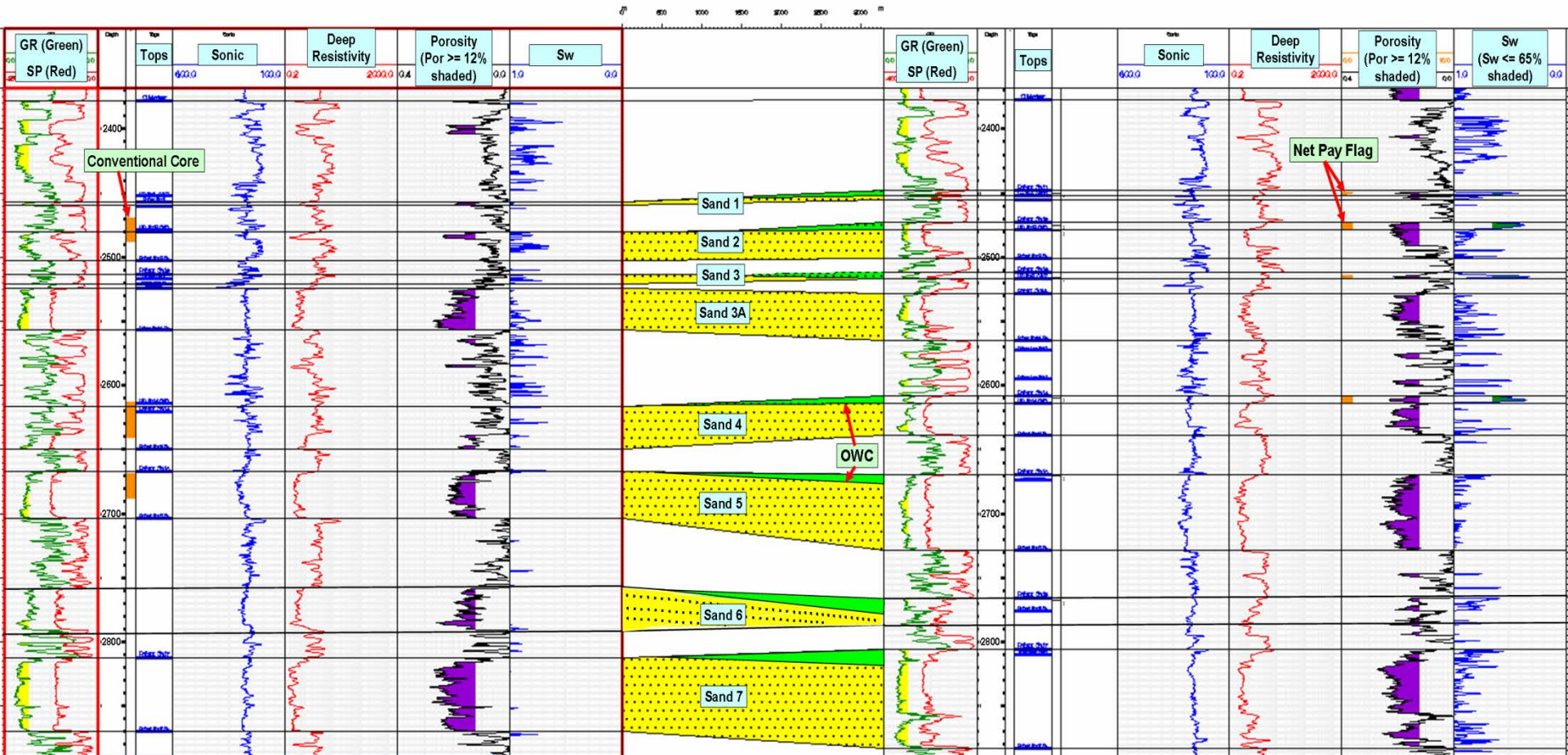


TD 3444.24 m
KB 29.90 m

Penobscot L-30

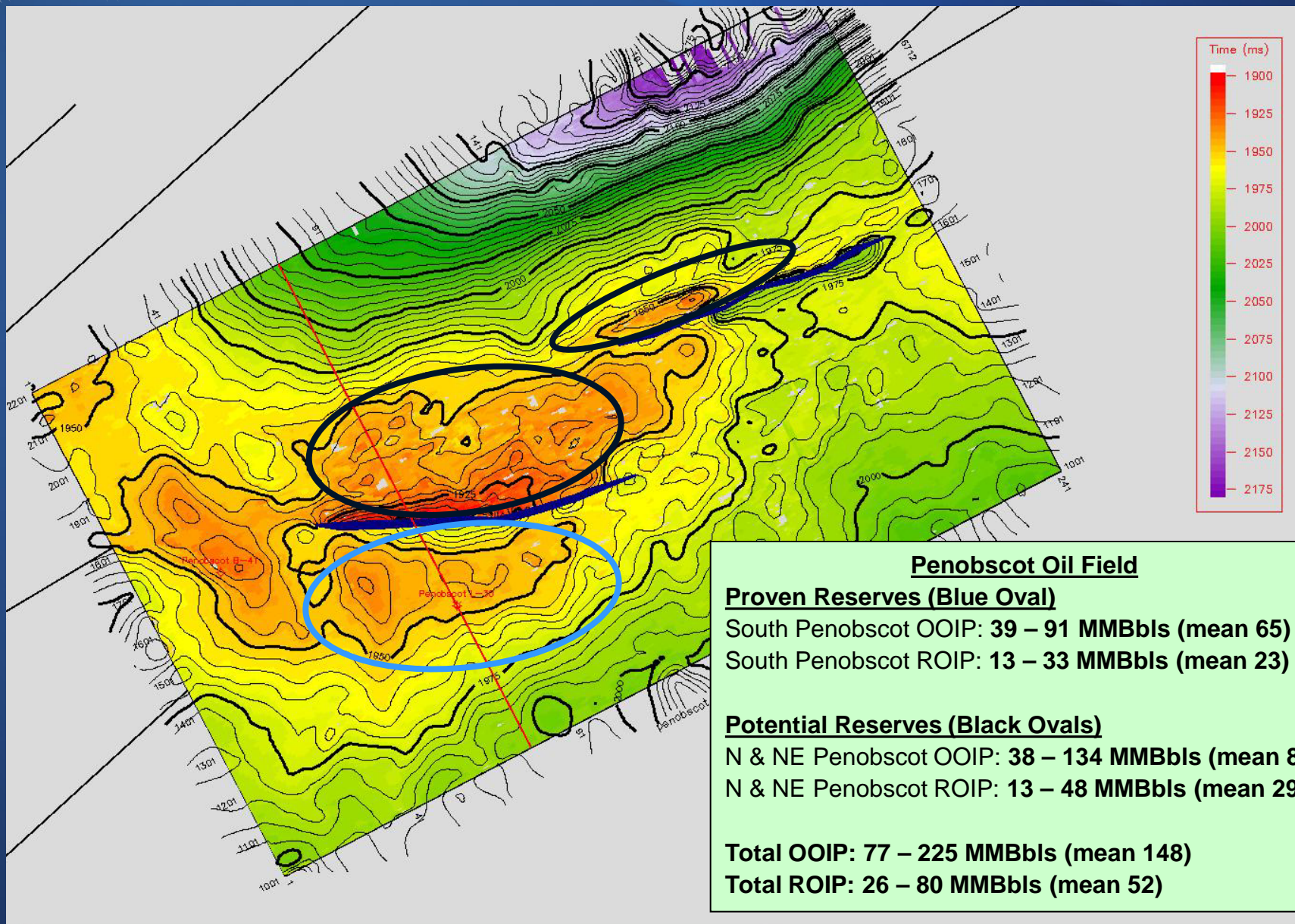


TD 4251.06 m
KB 29.90 m










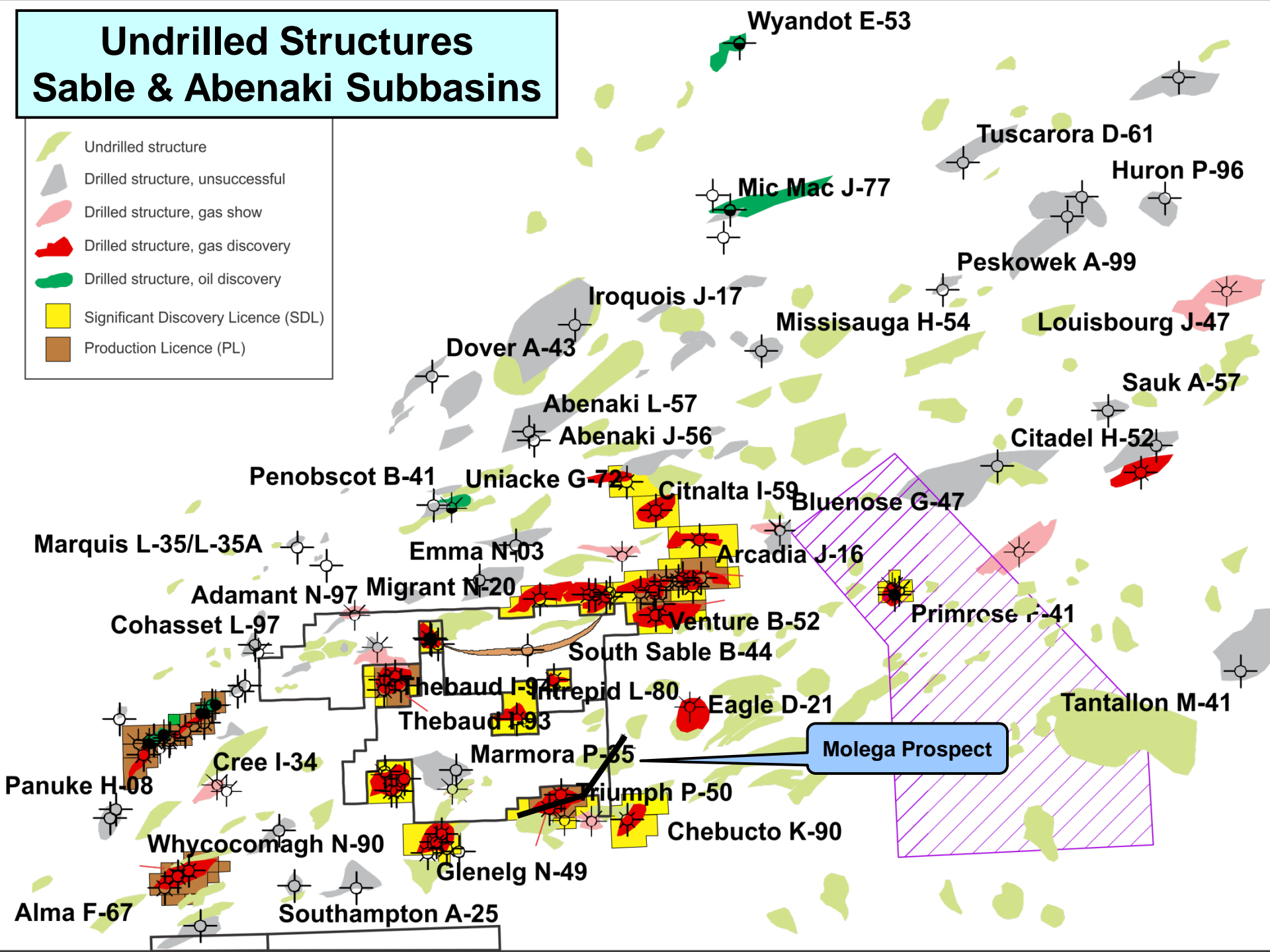


Penobscot - Reserves

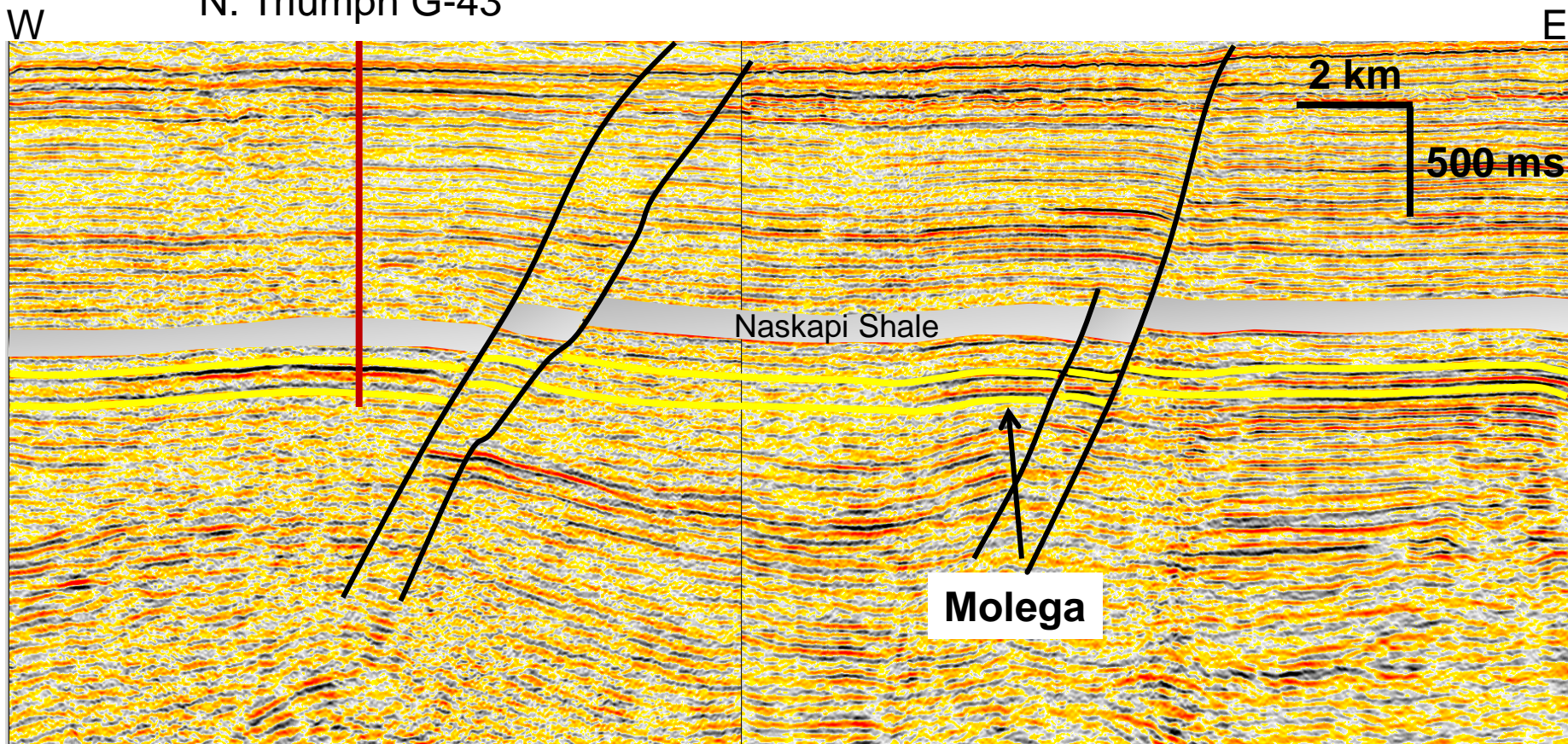


Undrilled Structures Sable & Abenaki Subbasins

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N. Triumph G-43










North Triumph Gas Field

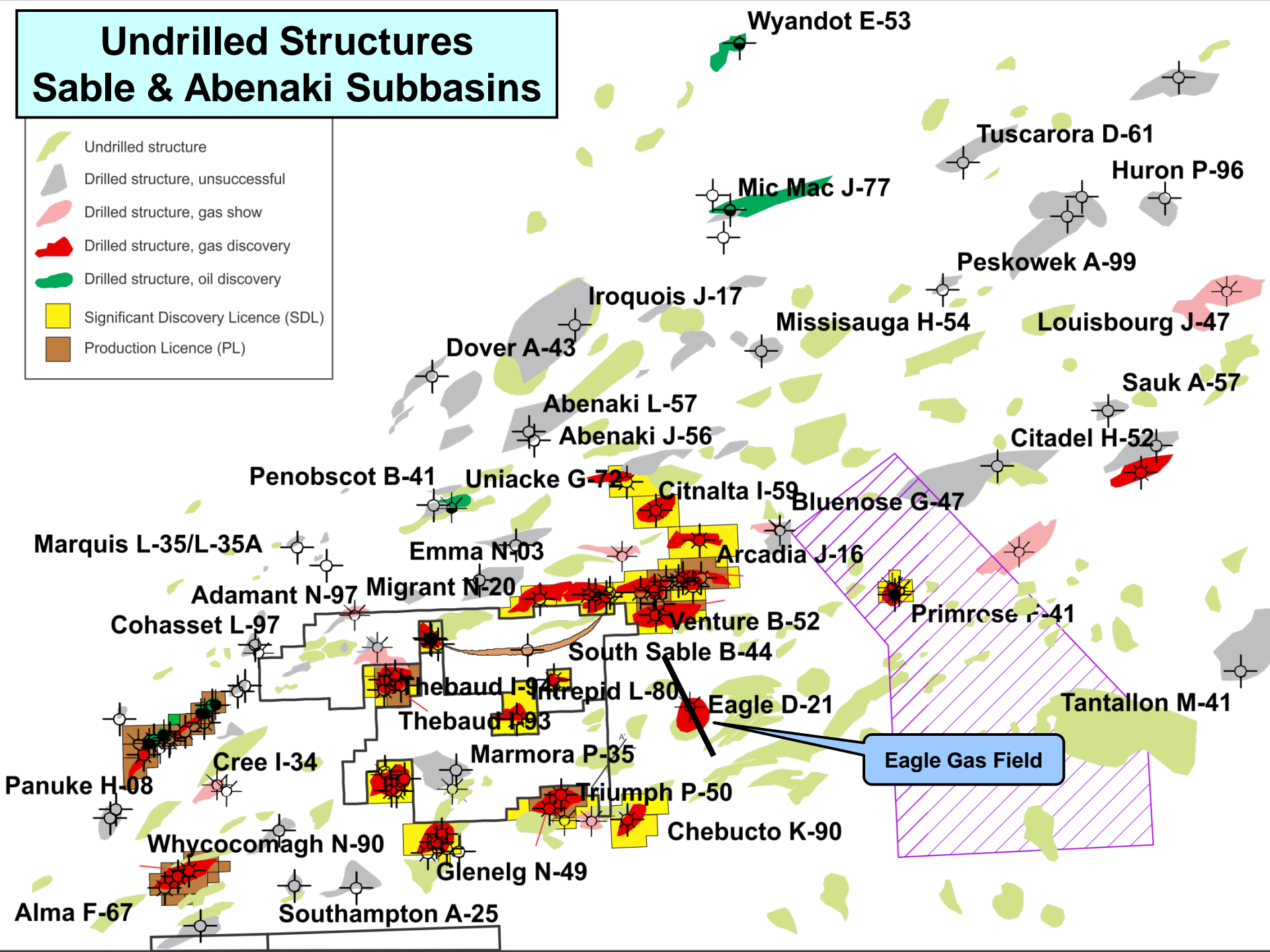
- Producing field within the Sable Gas Project
- 42 m of gas pay in Upper Missisauga sandstones
- 558 Bcf in place

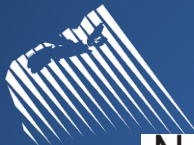
Molega Prospect

- Direct analogue to North Triumph gas field
- Target Zone: Upper Missisauga (Estimated: 500 Bcf in place)
- Amplitude response

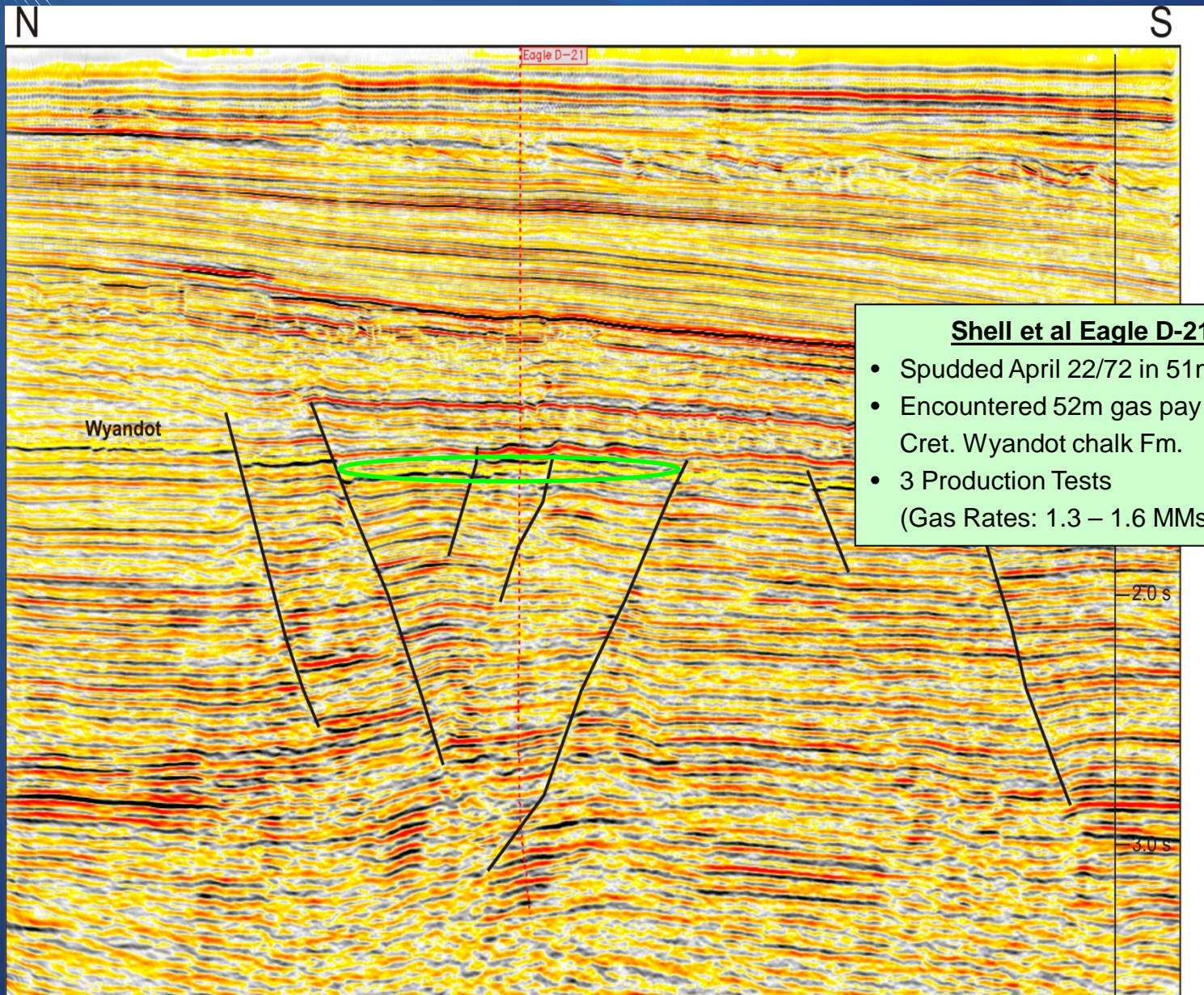
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Eagle - Dip line

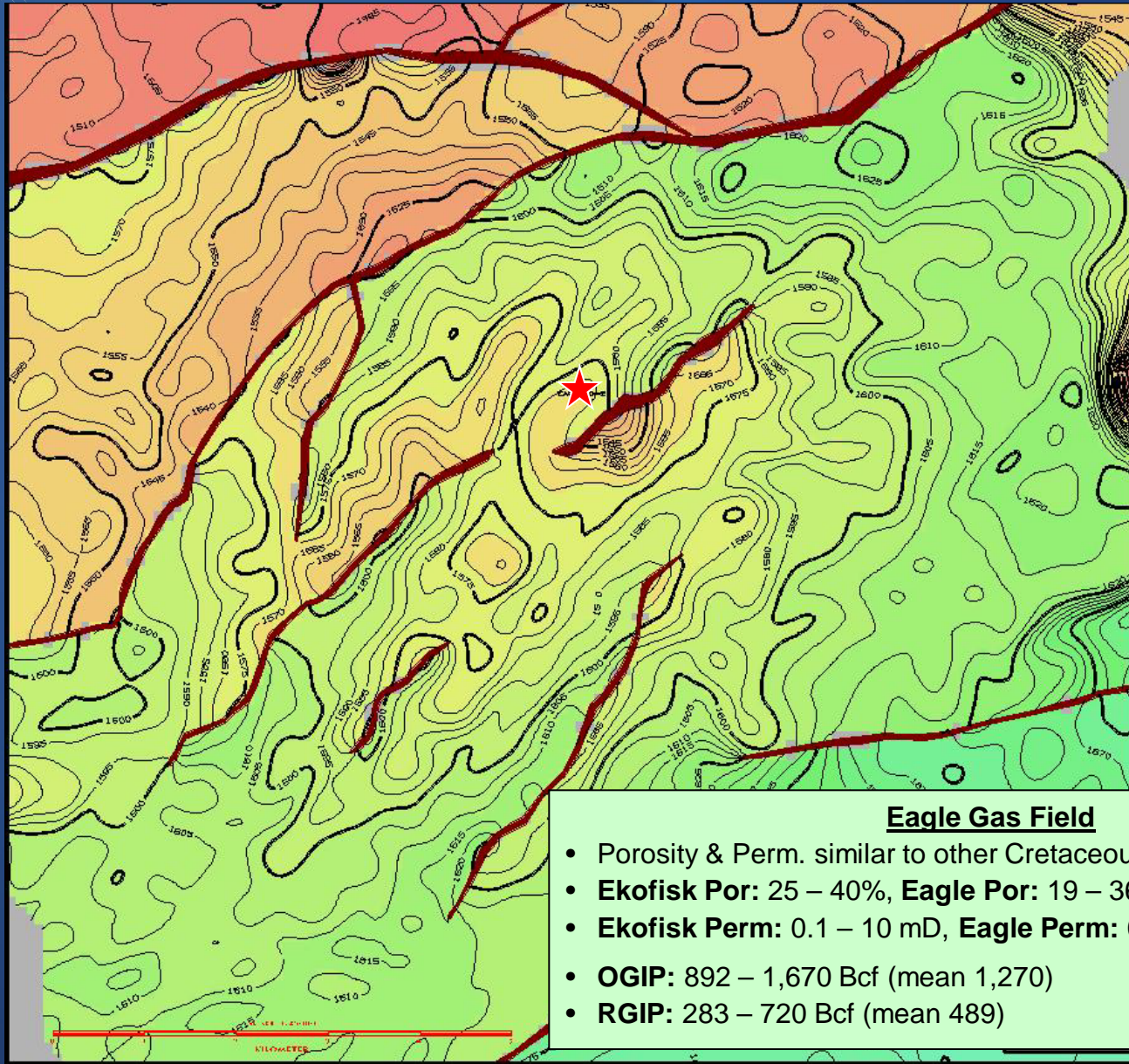


Shell et al Eagle D-21

- Spudded April 22/72 in 51m WD
- Encountered 52m gas pay in late Cret. Wyandot chalk Fm.
- 3 Production Tests
(Gas Rates: 1.3 – 1.6 MMscf/d)



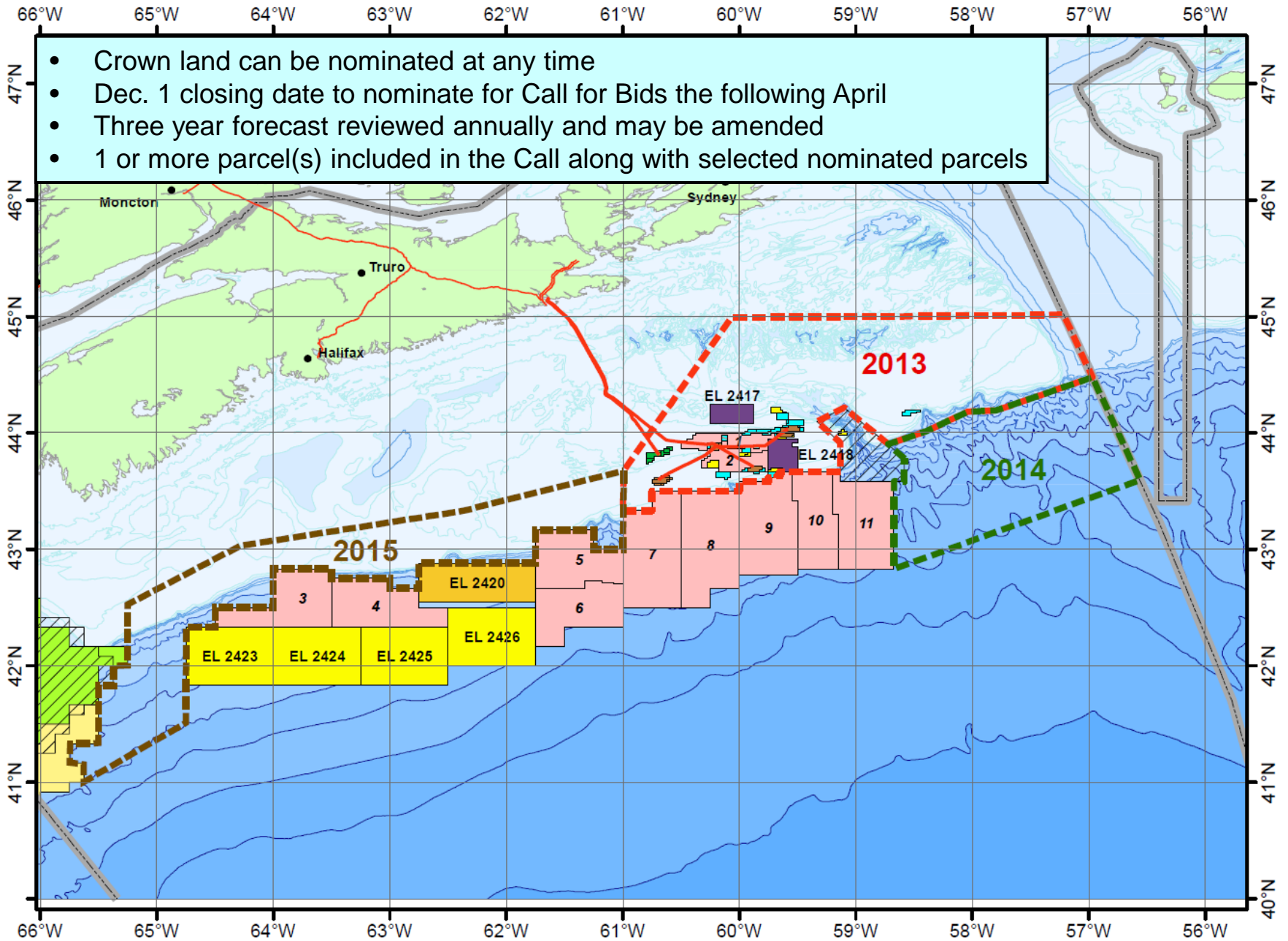
Eagle - Reserves



Eagle Gas Field

- Porosity & Perm. similar to other Cretaceous chalks (e.g. Ekofisk)
- **Ekofisk Por: 25 – 40%, Eagle Por: 19 – 36%**
- **Ekofisk Perm: 0.1 – 10 mD, Eagle Perm: 0.2 – 1.4 mD**
- **OGIP: 892 – 1,670 Bcf (mean 1,270)**
- **RGIP: 283 – 720 Bcf (mean 489)**

CNSOPB Geoscience Study Areas





Summary

- Significant oil & gas opportunities located in shallow water on the Scotian Shelf
- PFA geochem. studies have improved our understanding of oil source rocks (“oil rim”)
- **Penobscot**: proven oil field with mean recoverable of 23 MMBbls (Additional potential mean rec. 29 MMBbls)
- **Eagle**: proven gas field mean IGIP 1.3 Tcf (RGIP: 489 Bcf)
- Additional oil & gas opportunities have also been identified
- Dec. 1st deadline for nominations
- Next Call for Bids will be announced in April 2013



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Thank-you

Please visit us at Booth# 949 in the International Pavilion