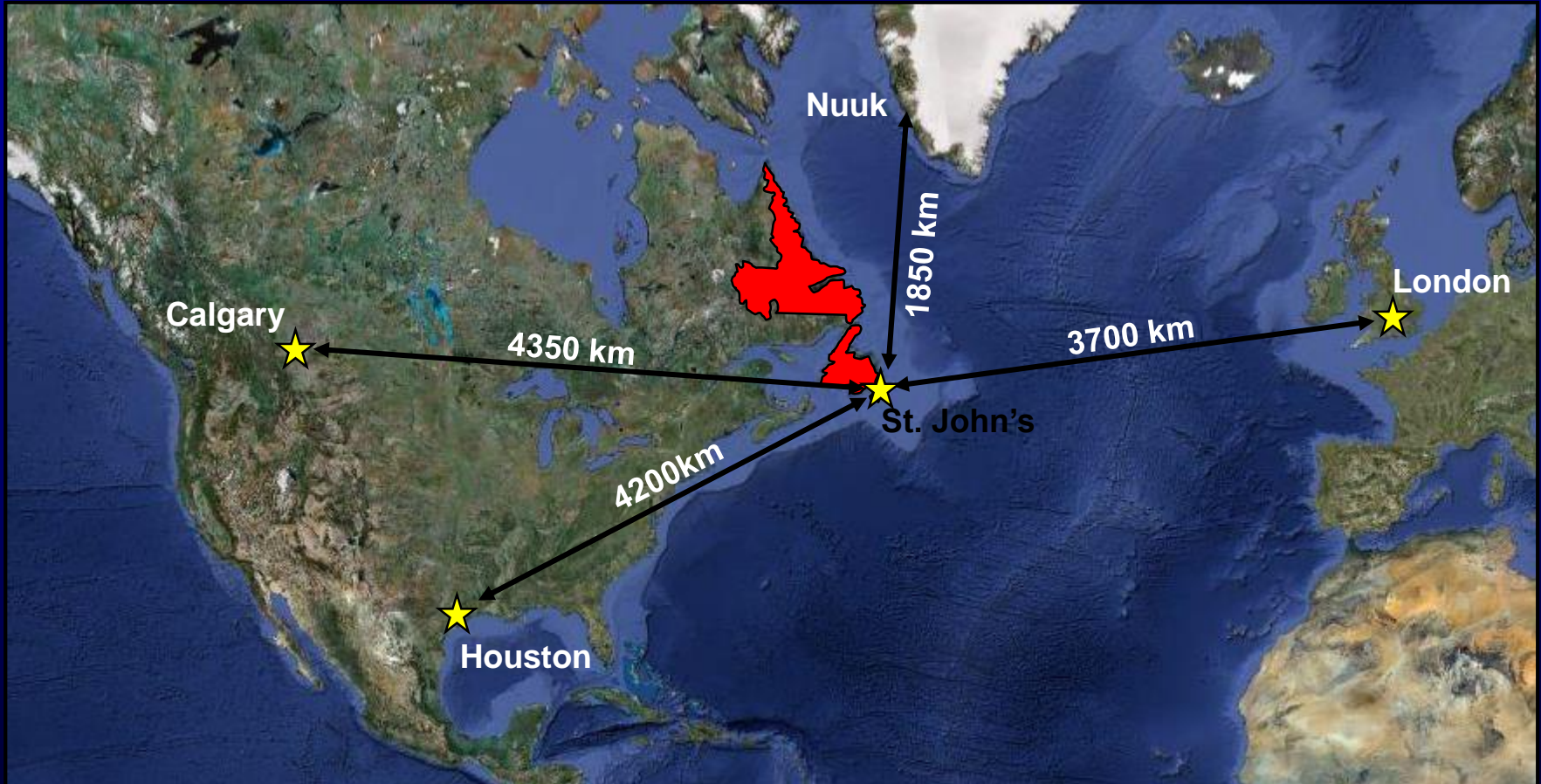




# **Newfoundland and Labrador Resource Opportunities: 2013 Licensing Round and Beyond**

**David Middleton  
Director of Petroleum Geoscience  
Department of Natural Resources  
Government of Newfoundland and Labrador, Canada**

# Location





# Location



# Overview

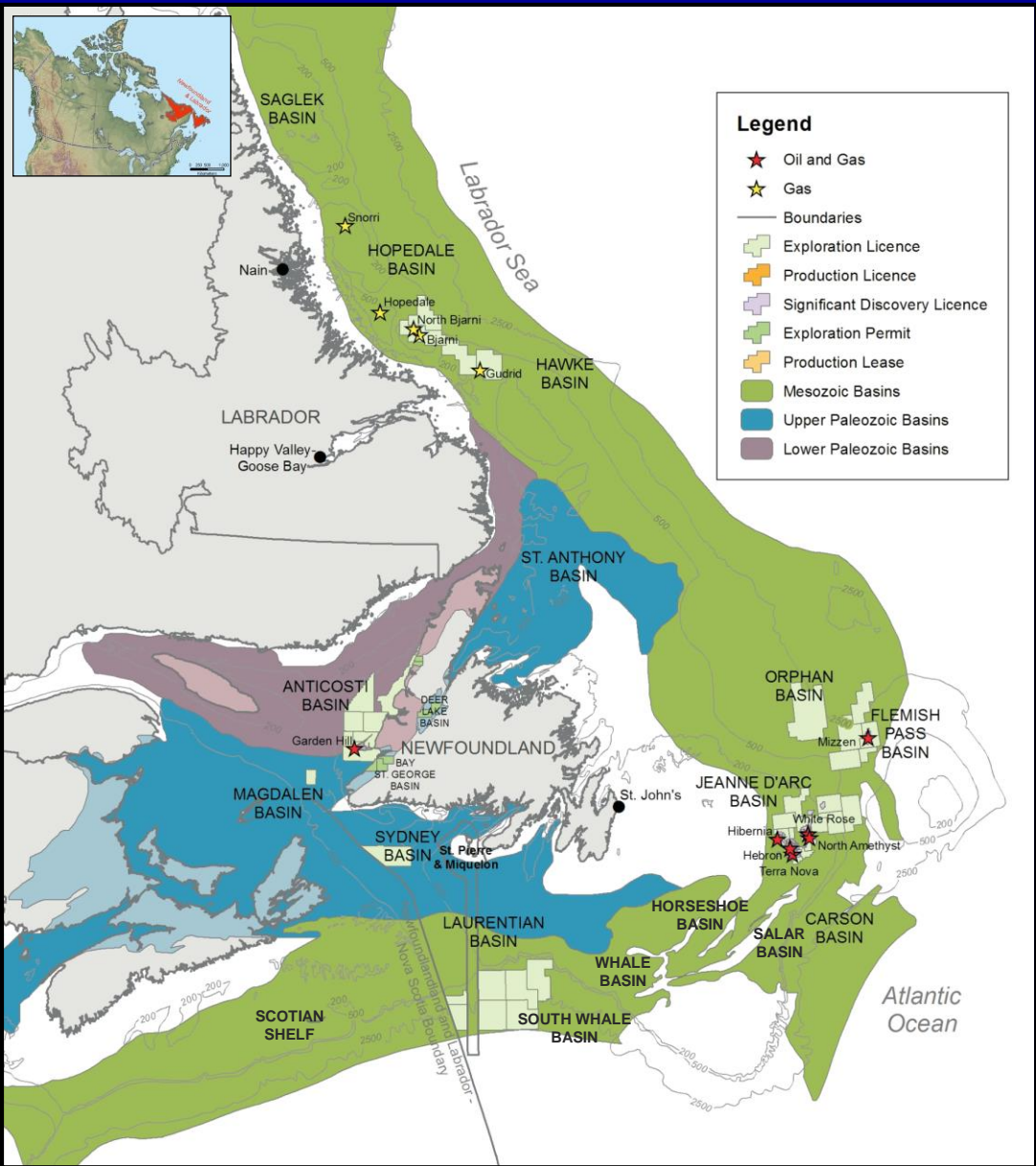


- Total Land Area in excess of 800,000km<sup>2</sup> (200 Million acres). Average Block size 100x the size of US Gulf of Mexico Blocks.
- Numerous sedimentary basins, very underexplored.
- >3 Billion barrels oil, >11 Tcf gas & >500MM barrels NGLs discovered so far. Undiscovered estimated at 6 Bbbl oil and 60 Tcf. 1.3 Billion barrels produced to date.
- NL accounts for >10% of Canada's total oil production and approx 1/3 of Canada's conventional light crude output.
- One producing basin so far, Jeanne d'Arc, averaging 275,000 bopd production. Significant Discovery now in Flemish Pass.

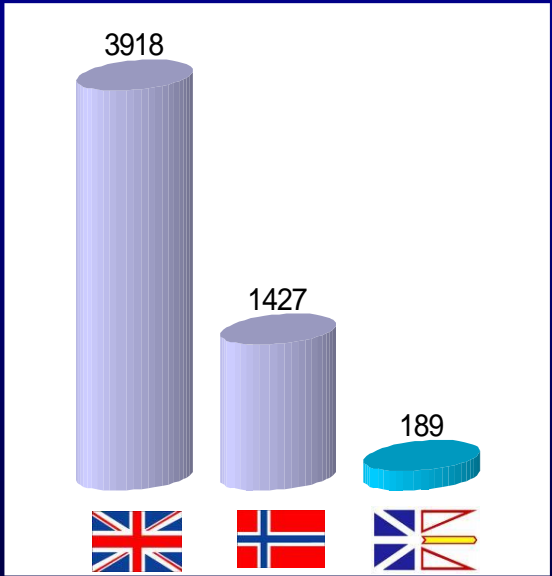
**< 10% currently held under licence**



# Underexplored Proven Petroleum Region



## Exploration and Appraisal Wells



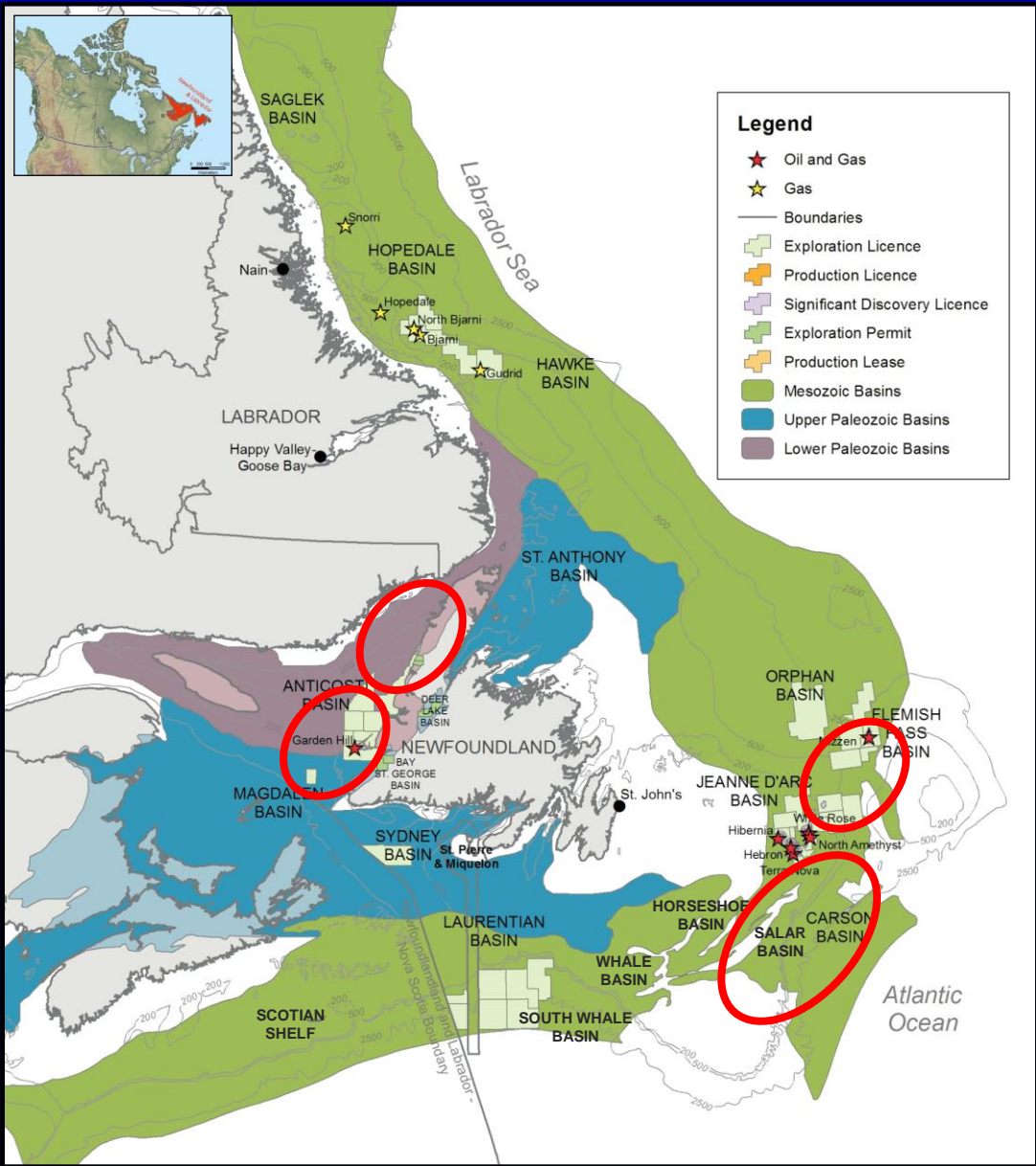
1 well per 139 km²

1 well per 461 km²

1 well per 4,203 km²

Source: WoodMackenzie 2010, CNLOPB 2009

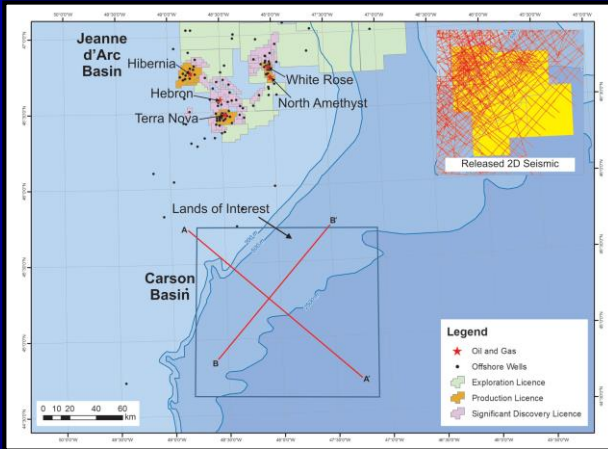
# Lands of Interest – Call For Bids Expected



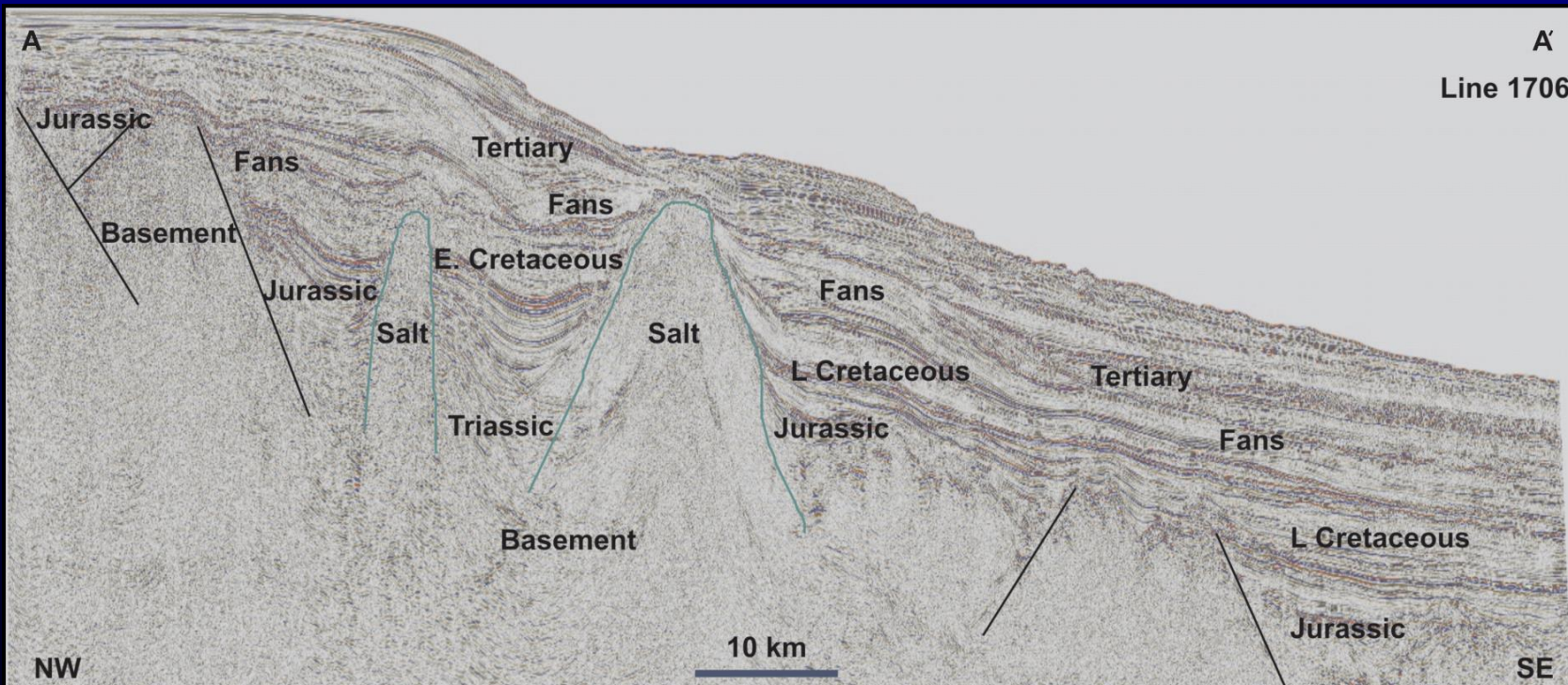
• 2013 Offshore Call for Bids expected soon. Parcels in frontier Carson-Salar Basin, Flemish Pass Basin, Anticosti Basin and Magdalen Basin.



# Lands of Interest - Carson Basin



- Large area totaling 12,000 km<sup>2</sup> (2.8MM Acres), shallow to deepwater.
- Late Triassic to Quaternary with thick Jurassic and Cretaceous sections.
- 4 Exploration Wells drilled on shelf. Slope and deepwater areas completely unexplored.
- Seismic interpretation on current 2D grid indicates several large undrilled structures 50-150 km<sup>2</sup> (12350-37000 acres).

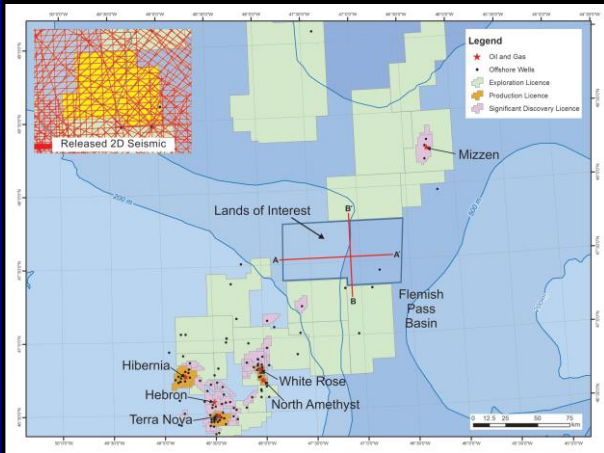


After Enachescu, 2013

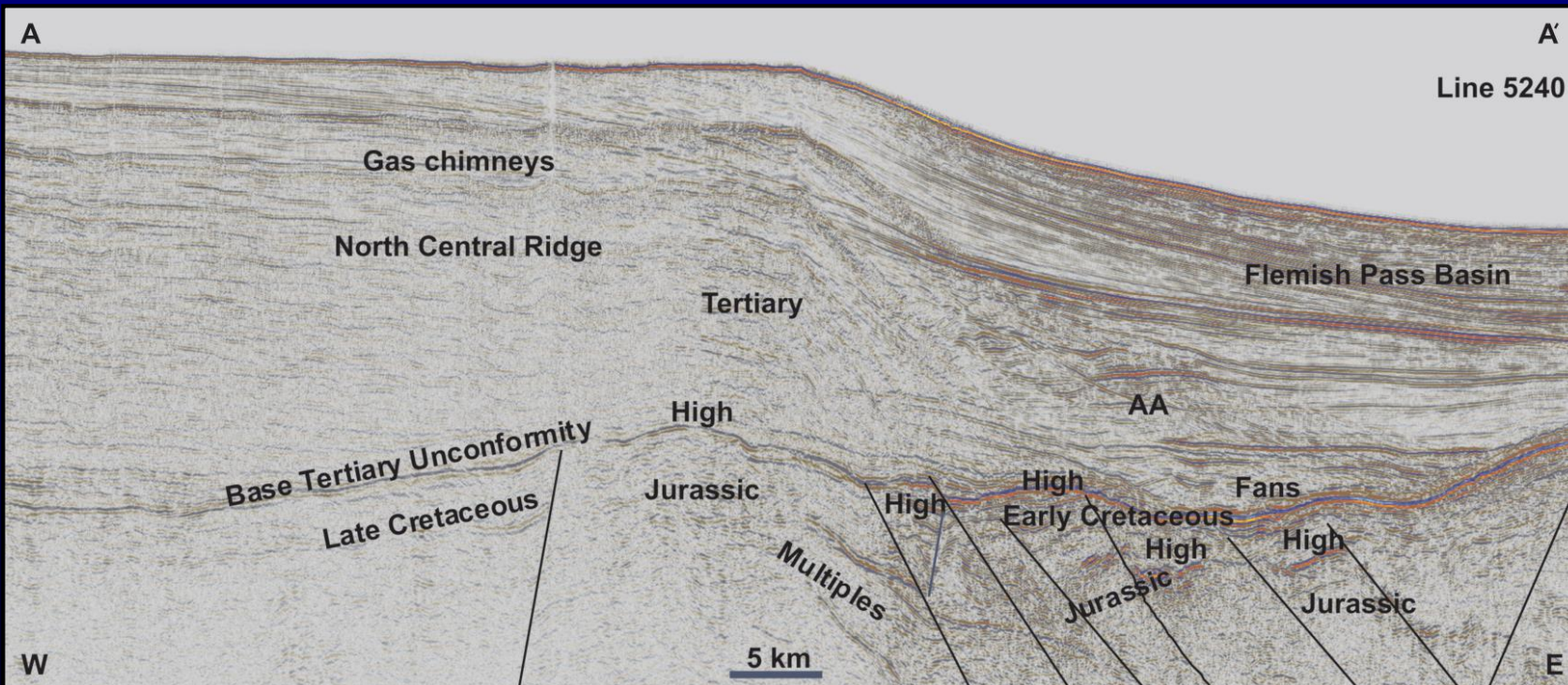
Source: C-NLOPB



# Lands of Interest – Flemish Pass Basin



- Large area totaling 3,000 km<sup>2</sup> (720,000 Acres).
- Late Triassic to Quaternary with thick Jurassic and Cretaceous sections.
- 100km away from Mizzen, first Significant Oil Discovery in NL offshore outside of heartland Jeanne d’Arc Basin. Mizzen estimated at 100-200 MMbbl recoverable.
- Undiscovered resources in Flemish Pass Basin estimated by C-NLOPB at 1.7 Bbbls (50% probability).

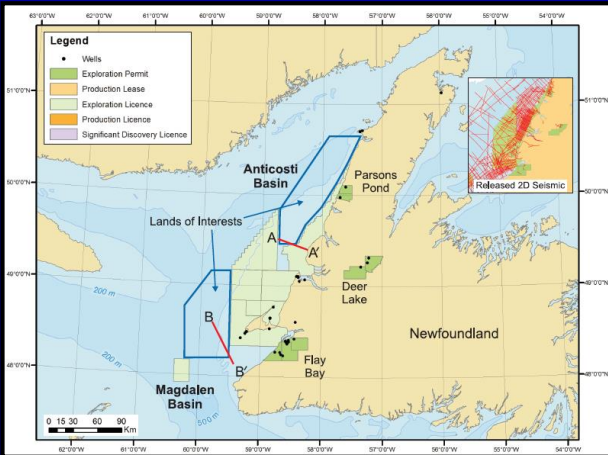


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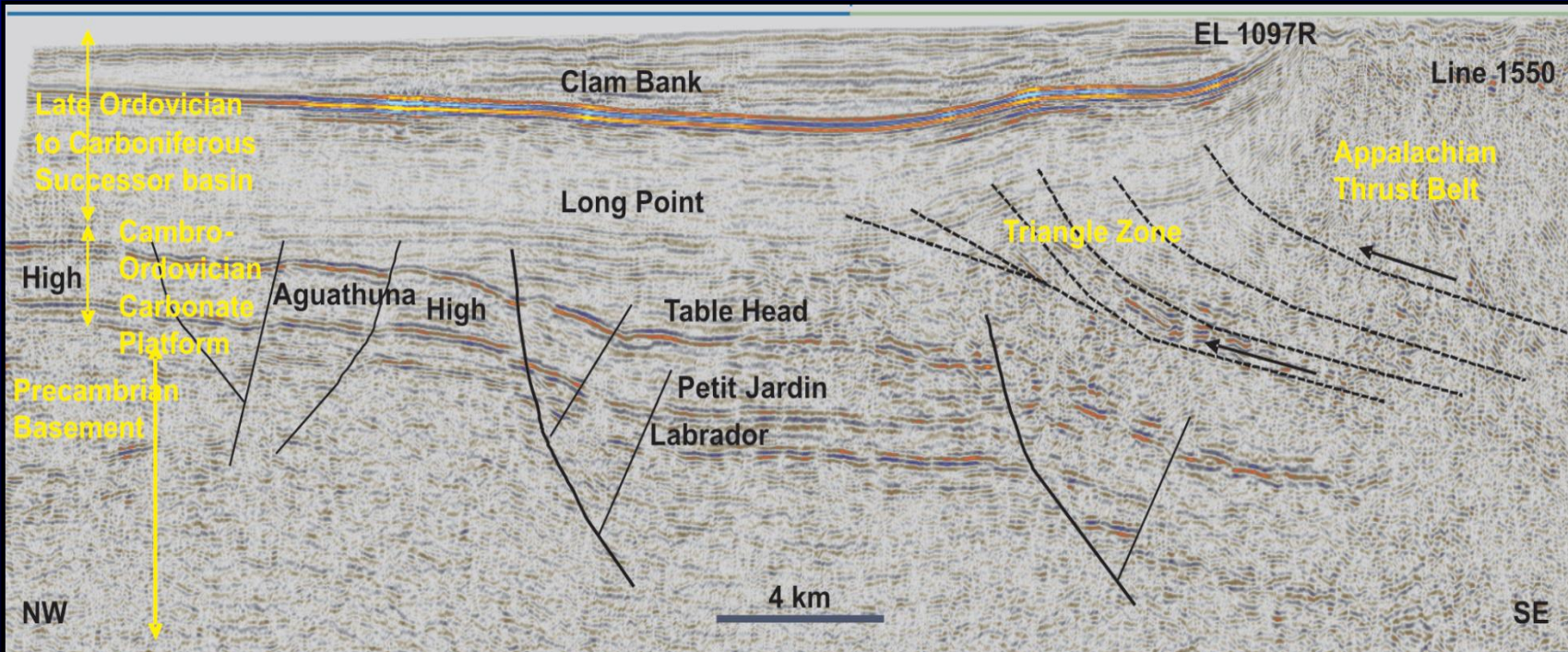
Source: C-NLOPB



# Lands of Interest – Western Newfoundland



- Large area totaling 10,638 km<sup>2</sup> (2,600,000 Acres).
- Cambro-Ordovician platform carbonates overlain by Ordovician to Devonian clastics in Anticosti Basin. Overlain again by Carboniferous to Permian clastics in Magdalen Basin.
- One Significant Oil Discovery (Garden Hill) is currently under production lease. Very little focussed exploration in offshore.
- Seismic interpretation indicates several large undrilled leads of 25-100 km<sup>2</sup> (6,200-25,000 Acres) are present.



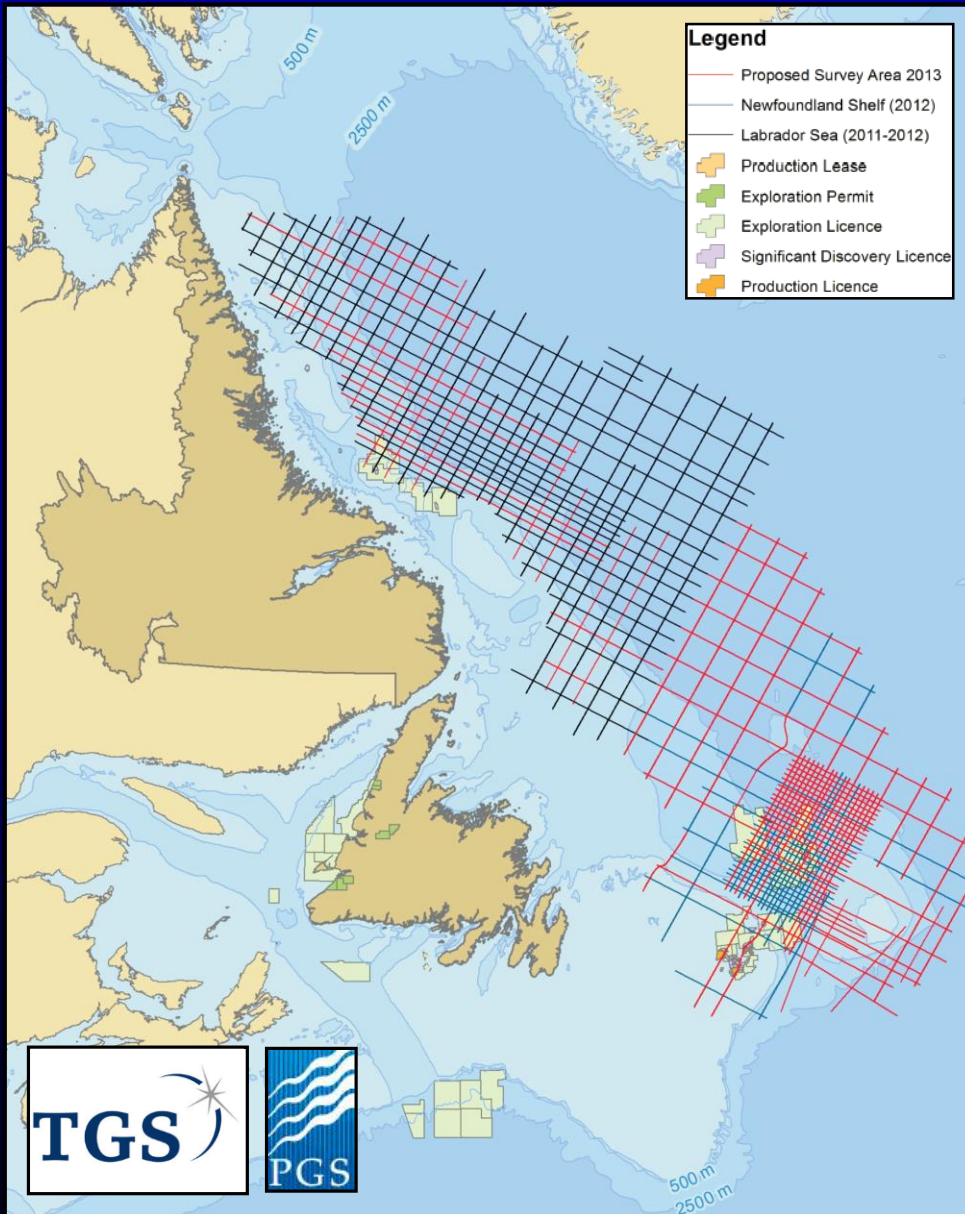
After Enachescu, 2013

Source: C-NLOPB





# MKI Seismic: Offshore NL 2D Program

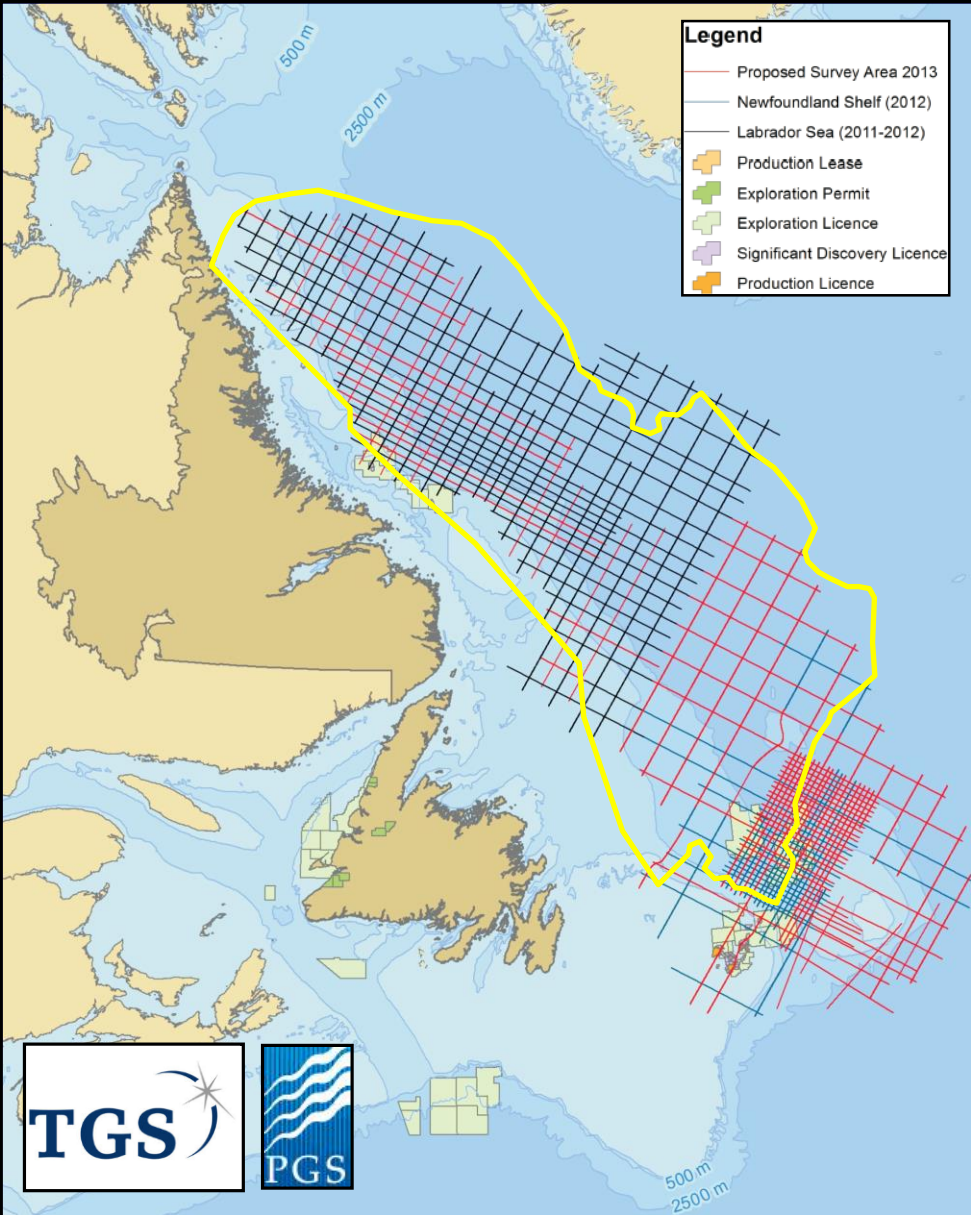


- Partnership of Seismic Operators PGS and TGS.
- Huge seismic survey using state-of-the-art Geostreamer technology. One of the largest surveys on a global scale in recent years.
- Game-changer on visualising the Labrador shelf, slope and deepwater, including identification of new, previously unknown basins.
- c.52000 line km minimum on project completion.

Seismic Grid courtesy of TGS and PGS  
Seismic grid yet to be acquired subject to change



# MKI Seismic: GOM Size Comparison



Size comparison to US Gulf of Mexico (1:1 scale)

Seismic Grid courtesy of TGS and PGS  
Seismic grid yet to be acquired subject to change



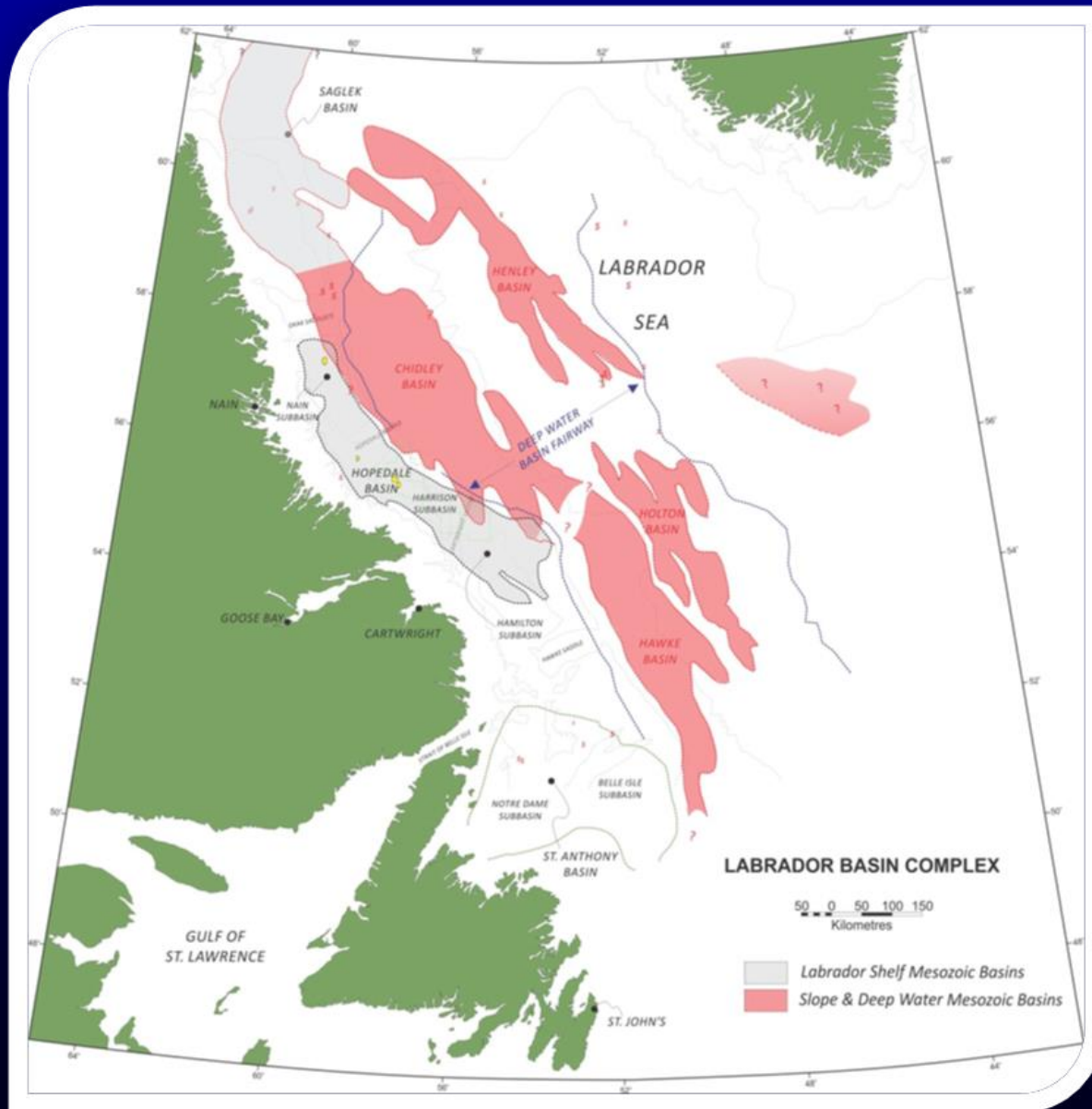
# MKI Seismic: New Labrador Basins Revealed



Basin Map Courtesy Nalcor Energy – Oil & Gas

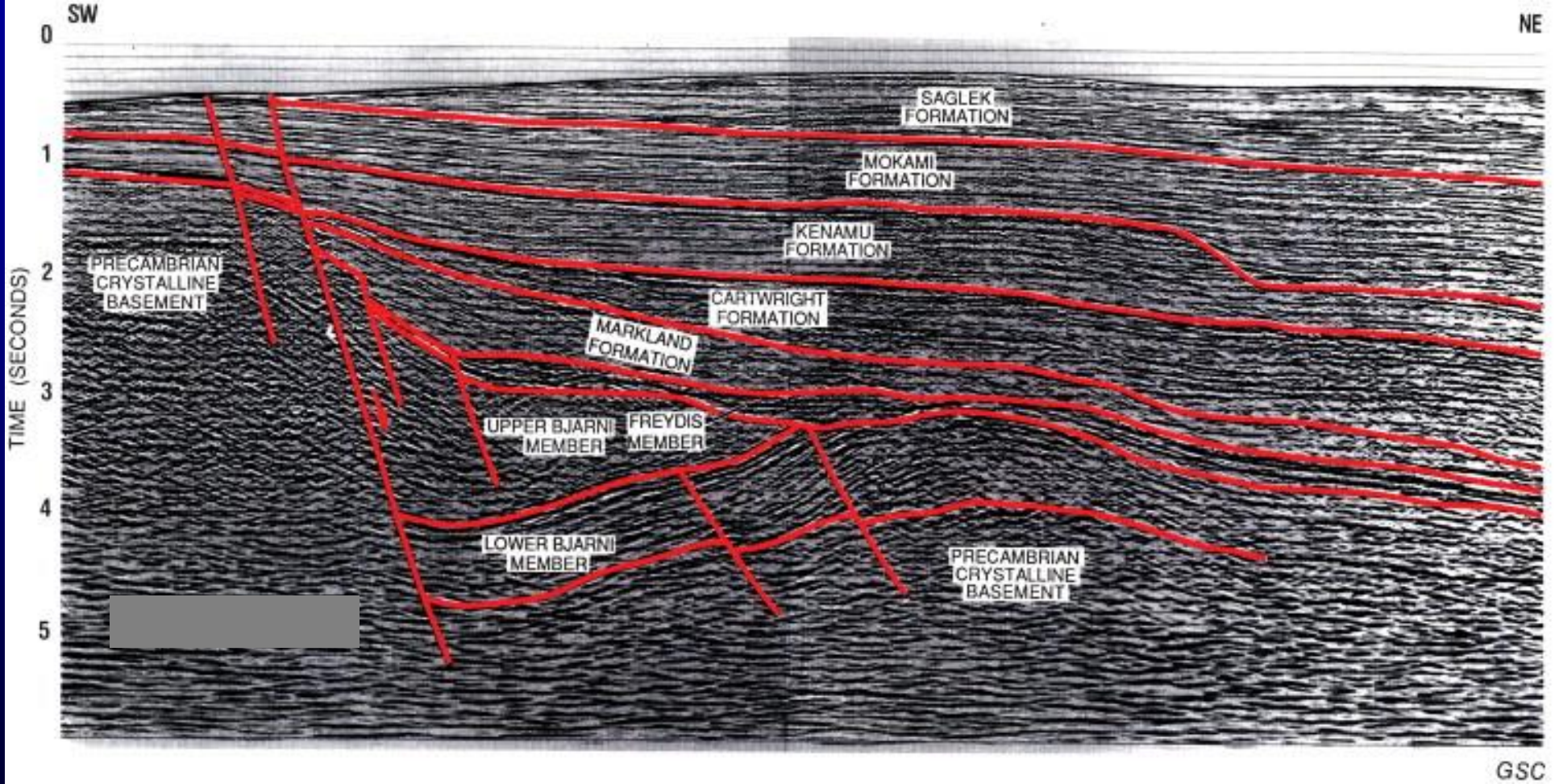


# MKI Seismic: New Labrador Basins Revealed



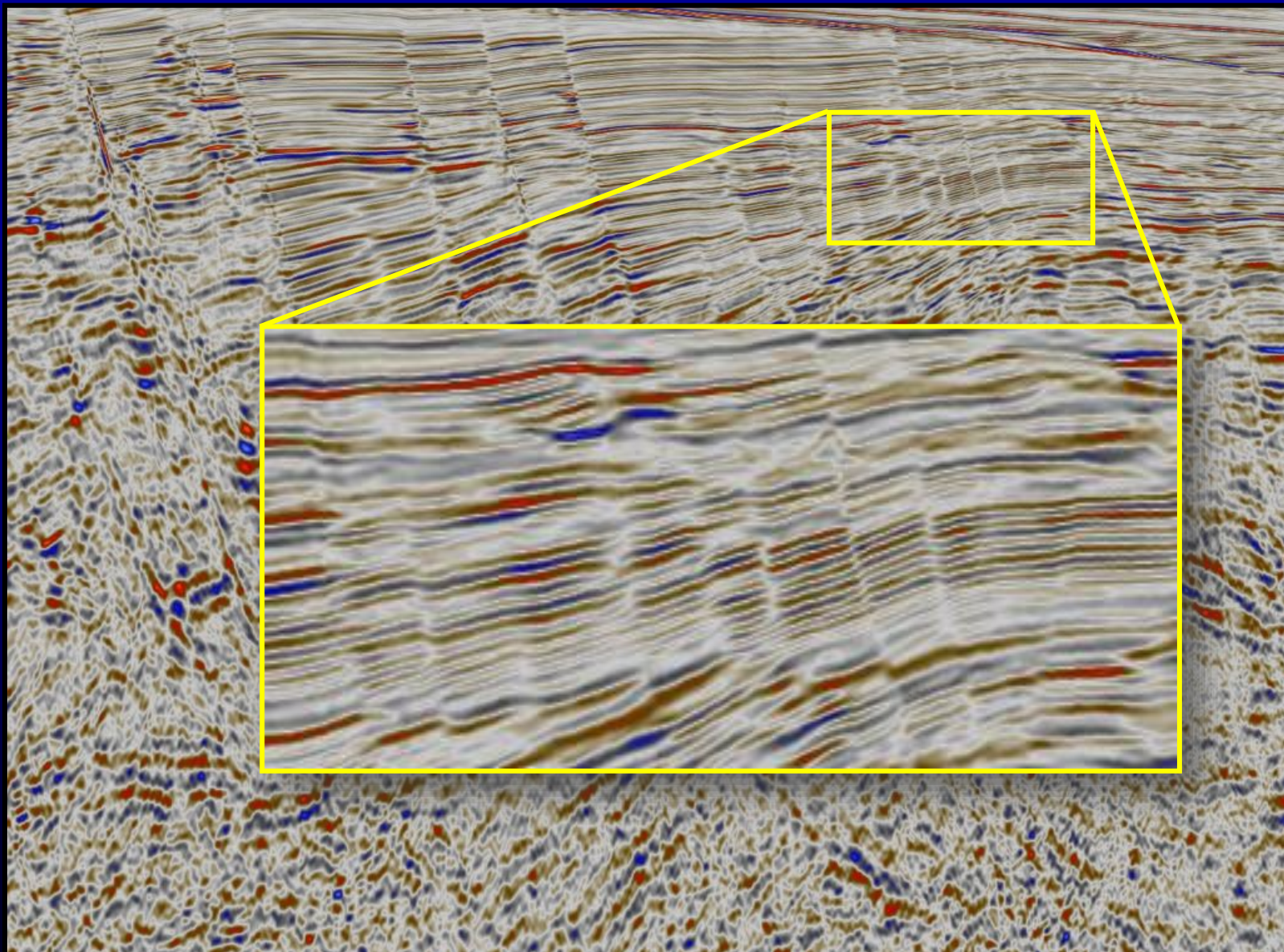
- Previously unknown basins offshore Labrador revealed by new seismic data.
- New basins named Henley, Chidley, Holton and a large extension to Hawke Basin.
- >100% increase in offshore Labrador basin area.
- Still in preliminary stage as data processing and analysis is ongoing.
- Basins appear to extend far beyond previously presumed COB at shelf edge.

# MKI Seismic: Labrador Data Quality





# MKI Seismic: Labrador Data Quality



Seismic data courtesy of TGS and PGS

# Summary

- >3 Billion bbls Oil and >11 Tcf Gas discovered to date. 1.3 Billion bbls light crude Oil produced since first oil in 1997.
- Greatly increasing exploration activity in 2013 and beyond.
- Vast area, hugely underexplored with significant undiscovered resources. Numerous prospective basins with proven petroleum systems, including new basins revealed by modern seismic.
- New seismic data shows enormous hydrocarbon potential for offshore Labrador, with strong possibility for oil plays. Work in preliminary stages, but early results look very promising.
- 2013 Call for Bids expected soon. Lands of Interest include Carson, Flemish Pass, Anticosti and Magdalen Basins.
- Favorable fiscal regime, geopolitically stable. Proximity to North American and European markets.





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International Pavilion**



**THANK YOU**





Newfoundland  
Labrador  
CANADA