

# Atlantic Ireland 2019

## Newfoundland and Labrador Update: Emerging Plays



# Acknowledgements



Thank you to the co-authors and members of the Oil and Gas team at Nalcor for their help with preparing this talk.



Thank you to our partners TGS and PGS for allowing us to show images of data acquired offshore Newfoundland and Labrador.



Thank you to Fugro for allowing seabed coring work to be shown.



Thank you to Beicip Franlab for preparing images from their Independent Resource Assessment.

# Nalcor's Exploration Role

## Upstream Exploration/Development Cycle

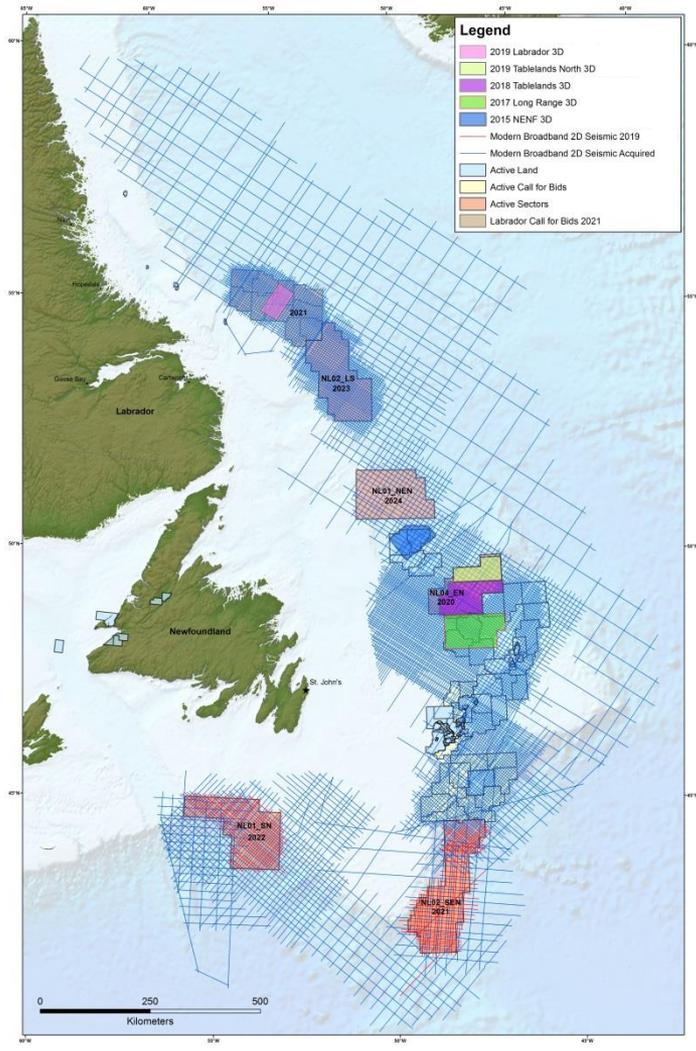


### Pre-Competitive Phase



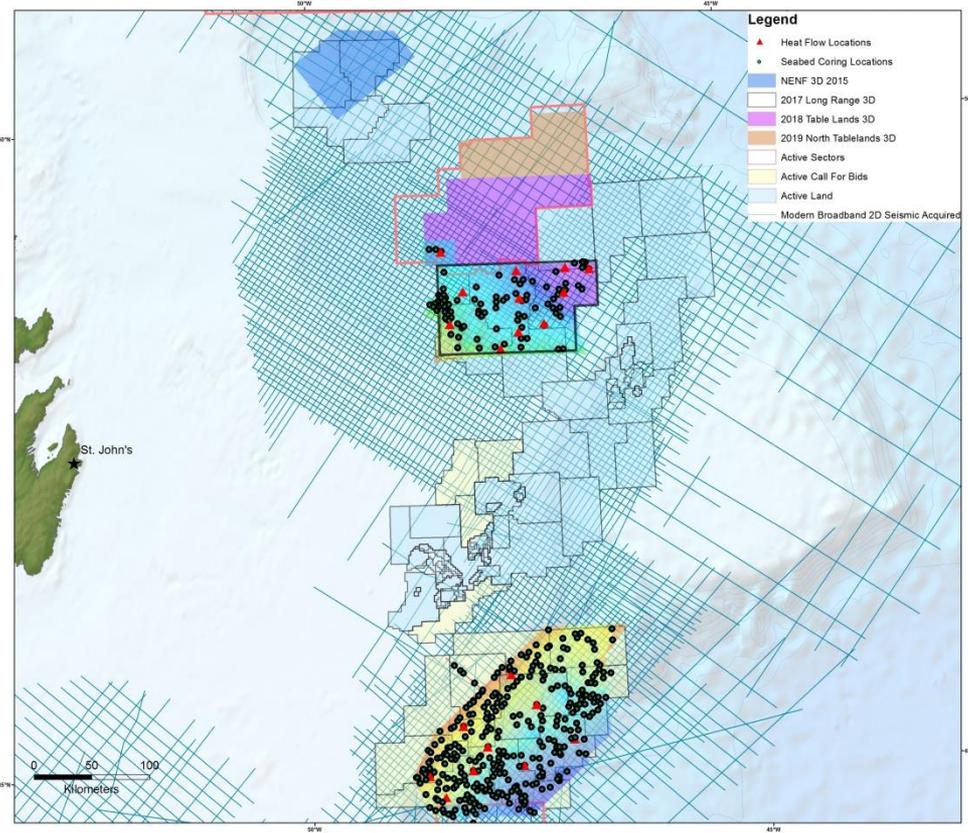
Nalcor is the State Energy Company of Newfoundland and Labrador

# NL Seismic Data Investment



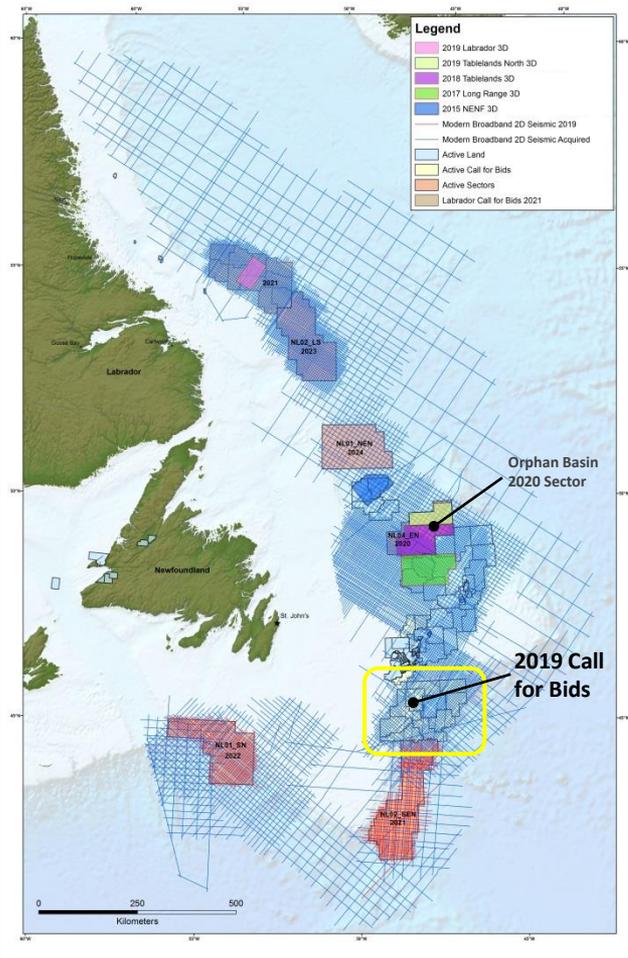
- Since 2011 Nalcor has invested in a TGS/PGS regional 2D seismic program.
- The objective is to identify and quantify the resource potential of our frontier basins.
- 186,000 line kms of long offset broadband 2D data has been acquired.
- 31,000 km<sup>2</sup> of long offset broadband 3D data.

# Multibeam, Heatflow and Seabed Coring Programs



- 2017 ~ 10 500 km<sup>2</sup>
- 11 heat flow locations.
- 99 core locations.
  
- 2018 ~ 18 000 km<sup>2</sup>
- 10 heat flow locations.
- 104 core locations.
  
- Multibeam bathymetry data was used in conjunction with seismic data to determine optimal placement of coring locations.

# NL Seismic Data Investment



- The addition of the 2019 2D and 3D programs continued to increase offshore coverage. It is one of the largest data programs globally.
- The parcels highlighted in yellow are the licenses offered in this year's Call for Bids.
- This round closes on November 6th, 2019.

# Regional Overview

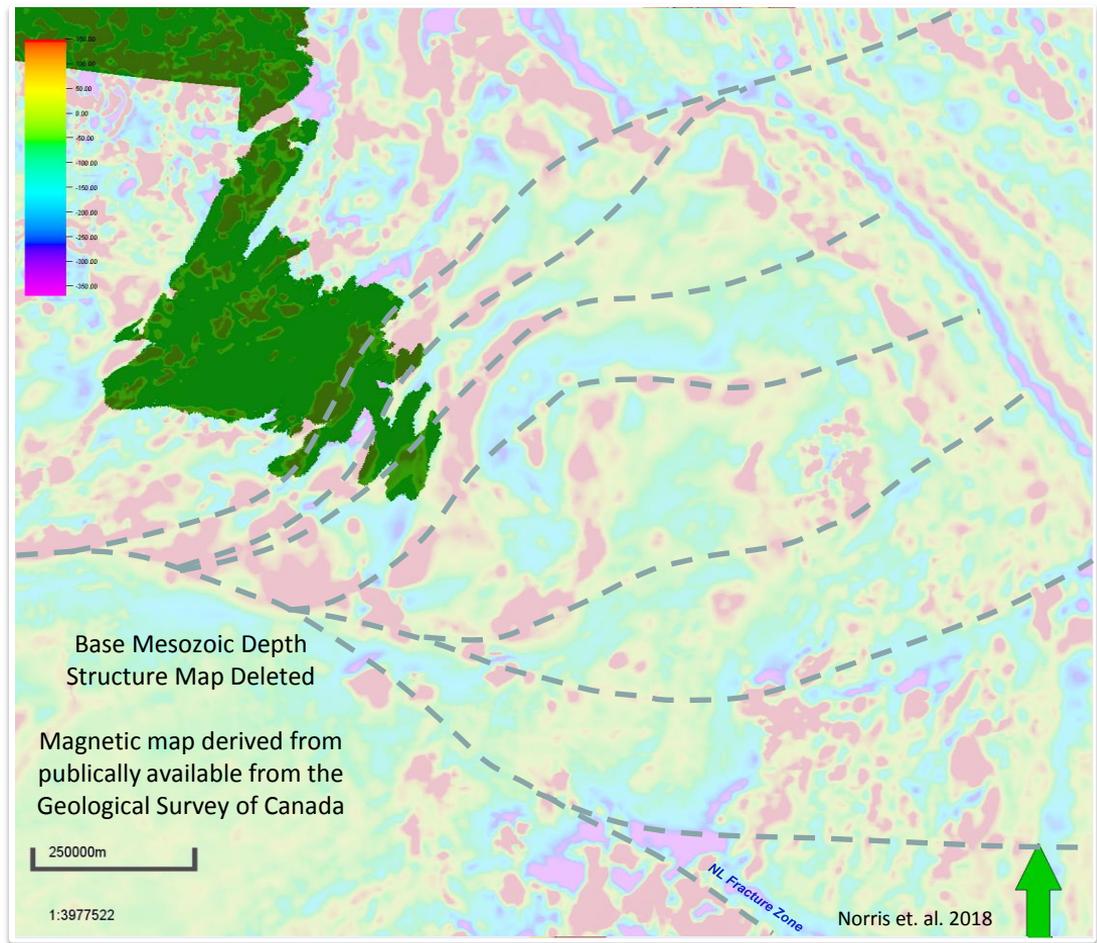
- Base Mesozoic depth structure Map
- Regions of similar structural fabric
- What is the cause of this differentiation?

Base Mesozoic Depth  
Structure Map Deleted

Norris et. al. 2018

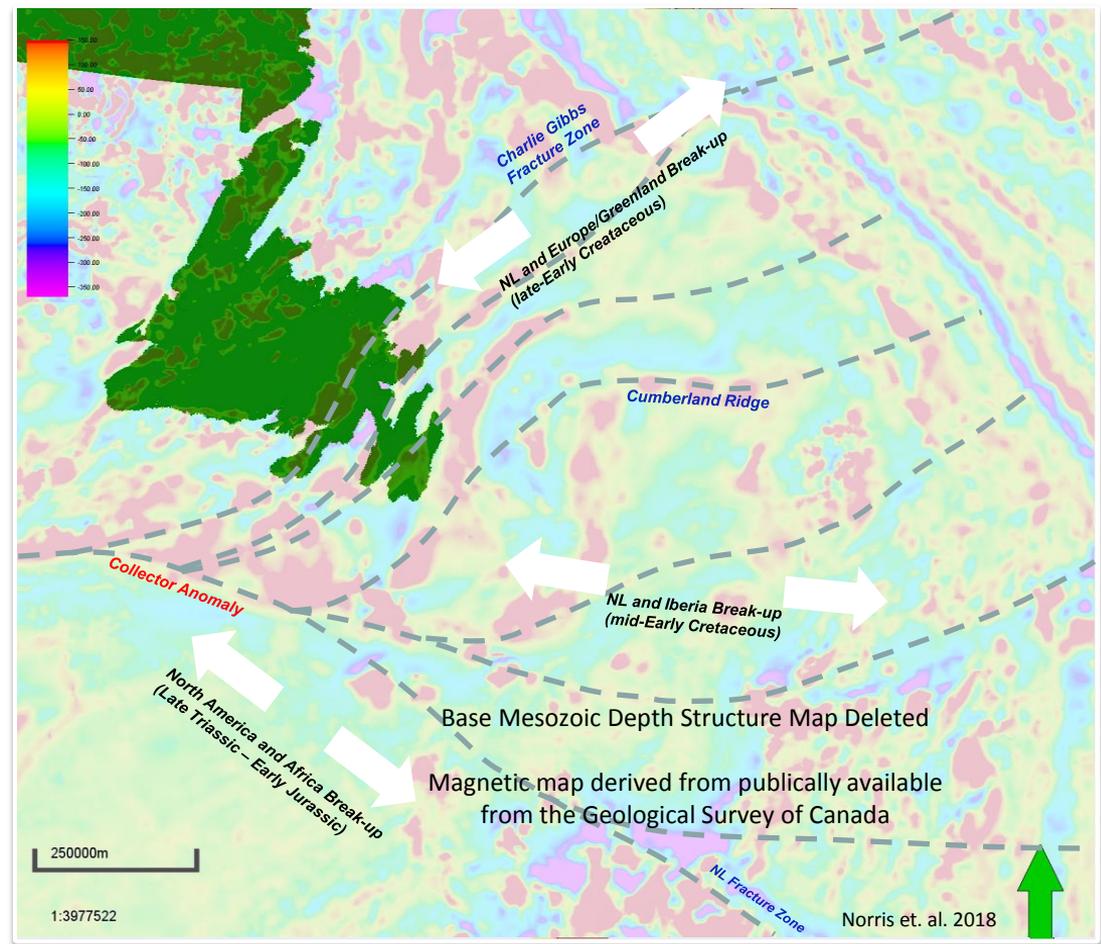
# Regional Overview

- Regional Aeromagnetic data define crustal scale lineaments that separate the regions of similar structural fabric.
- Tectonic response to strike-slip motion along lineaments evident in regional structural mapping.

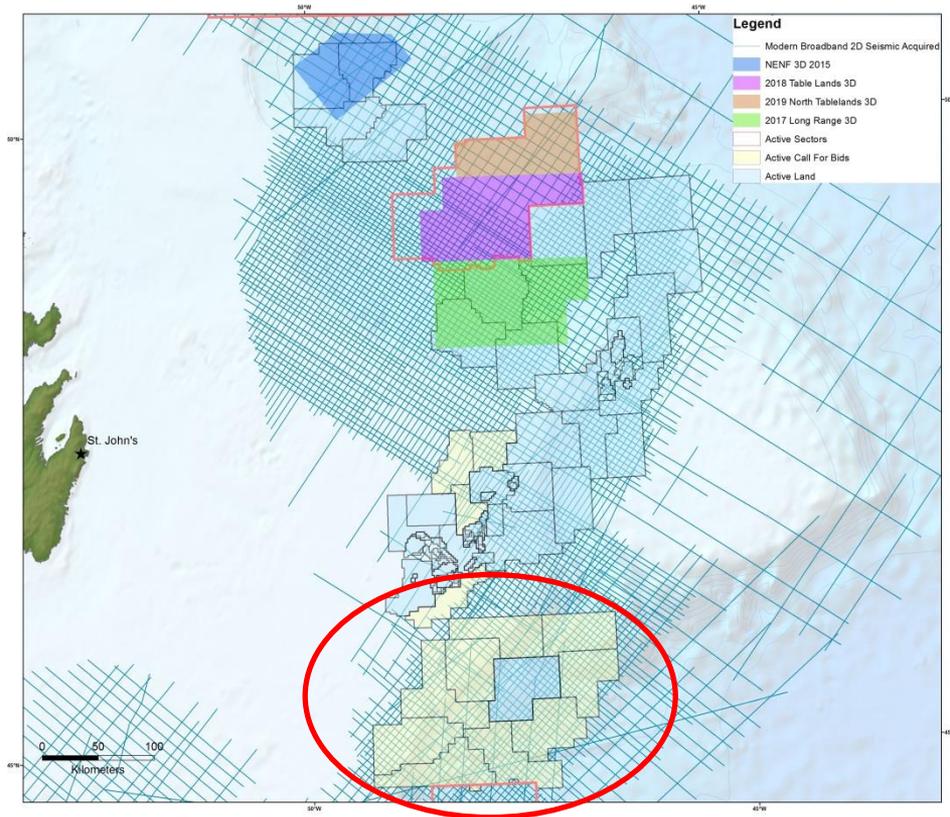


# Regional Overview

- Charlie Gibbs Fracture Zone (CGFZ) defines the northern extent of Jurassic deposition.
- Cumberland Ridge (CR) appears to define the extent of Late Triassic-Early Jurassic deposition.
- Lineaments in the Orphan Basin between CR and CGFZ appear to exhibit structural variation.



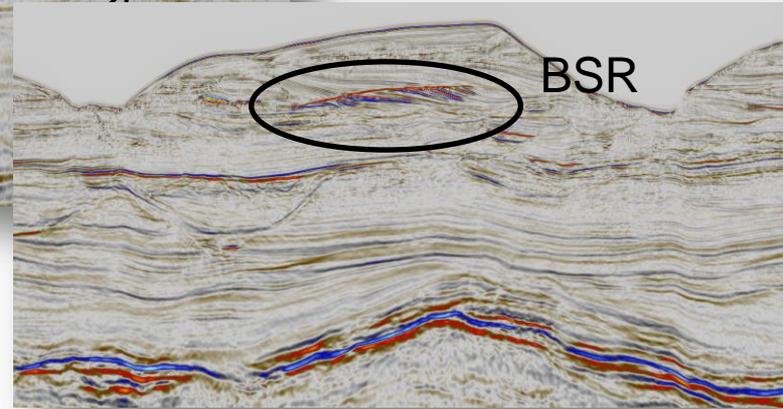
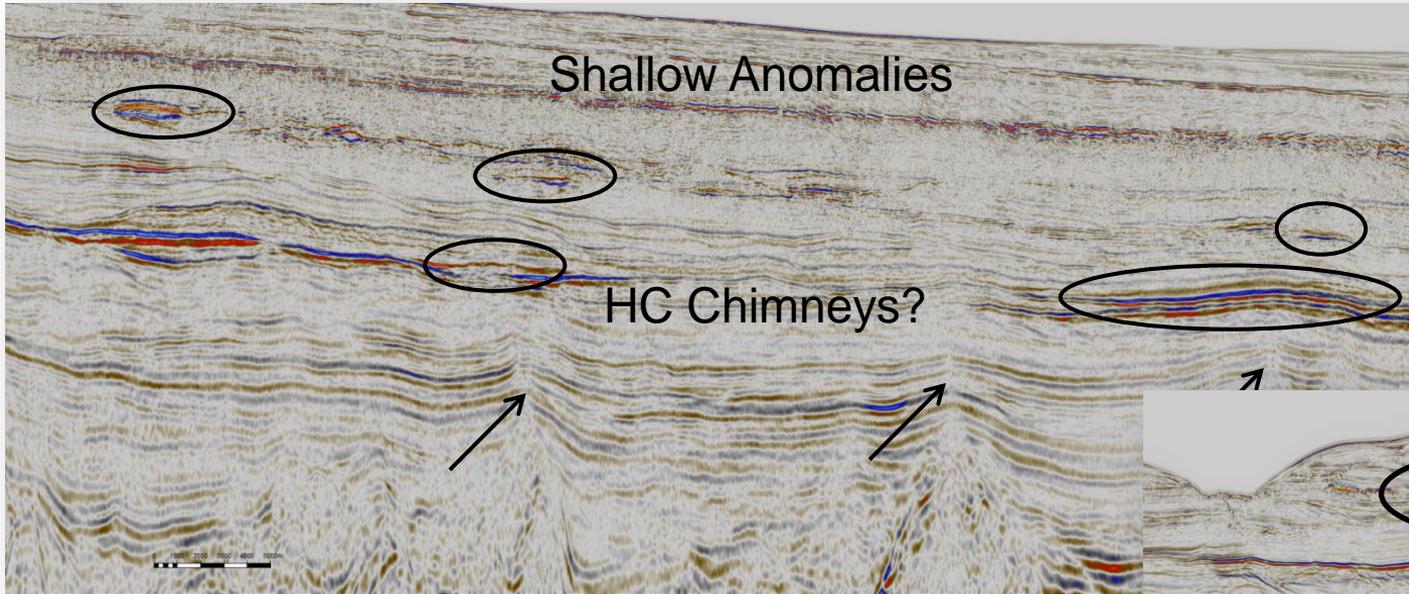
# 2019 Call for Bids Area



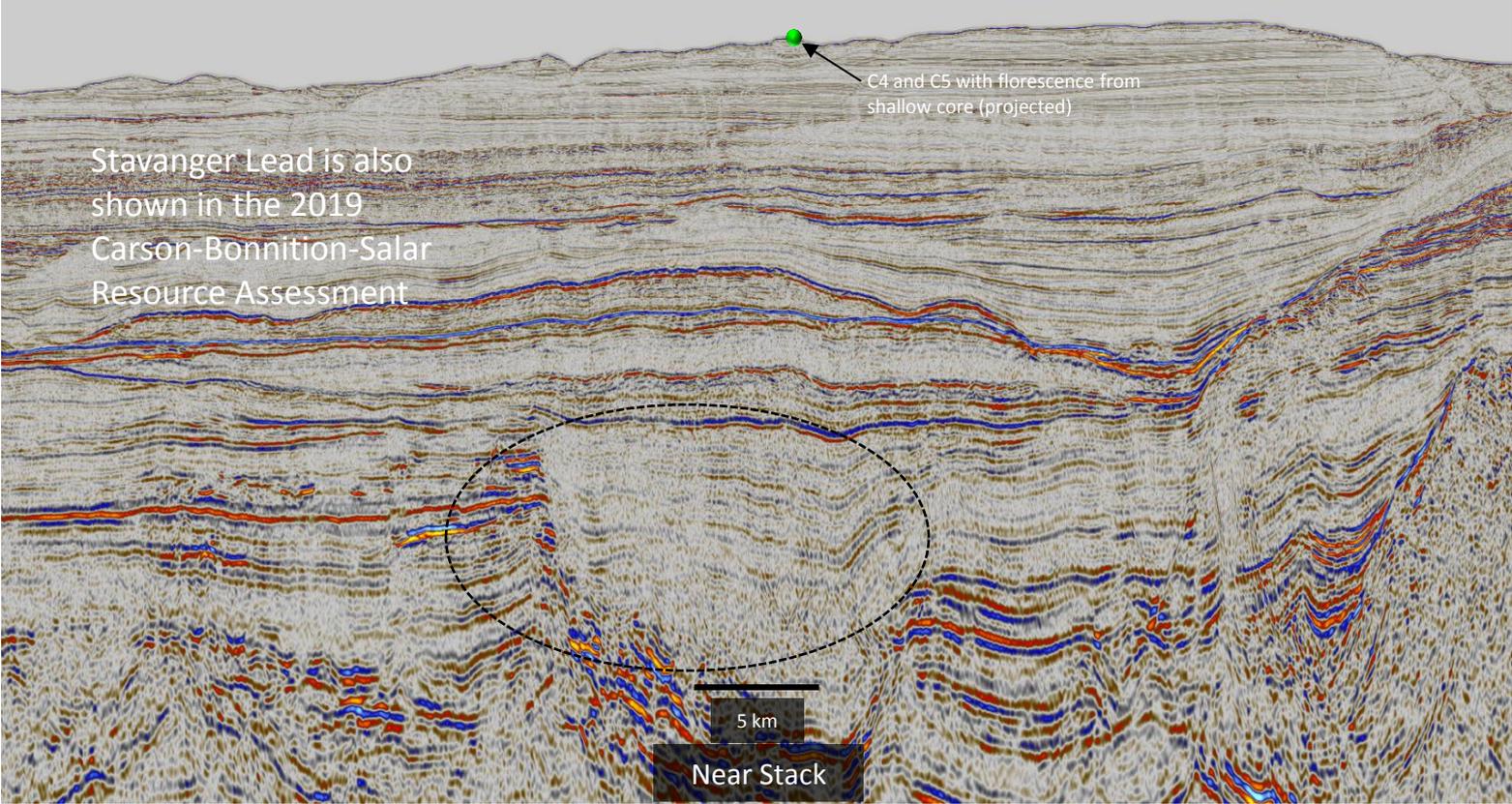
Three main Basins:

- Carson
- Bonniton
- Salar

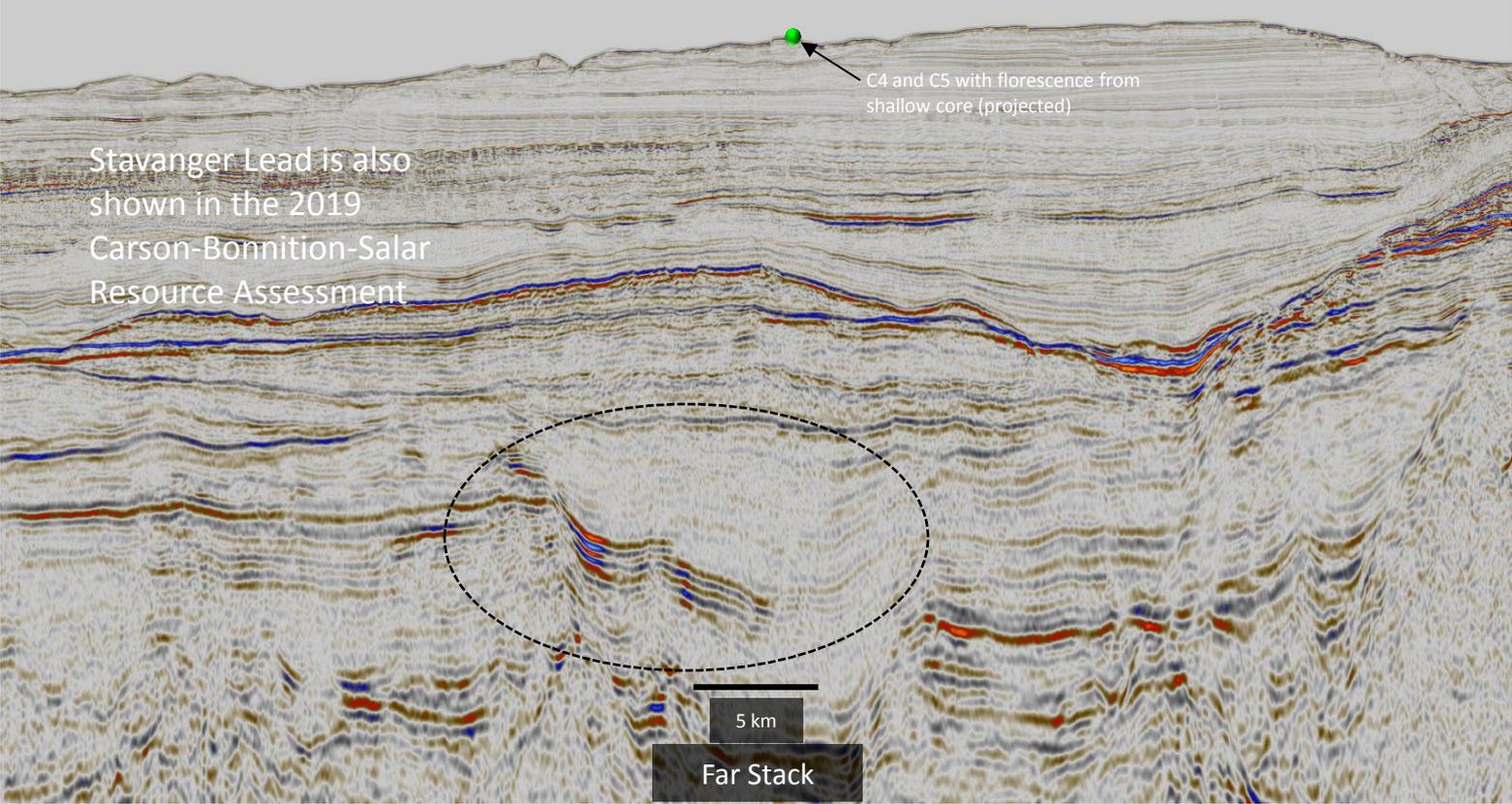
# 2019 Call for Bids Area



# 2019 Call for Bids Area – Stavanger Lead



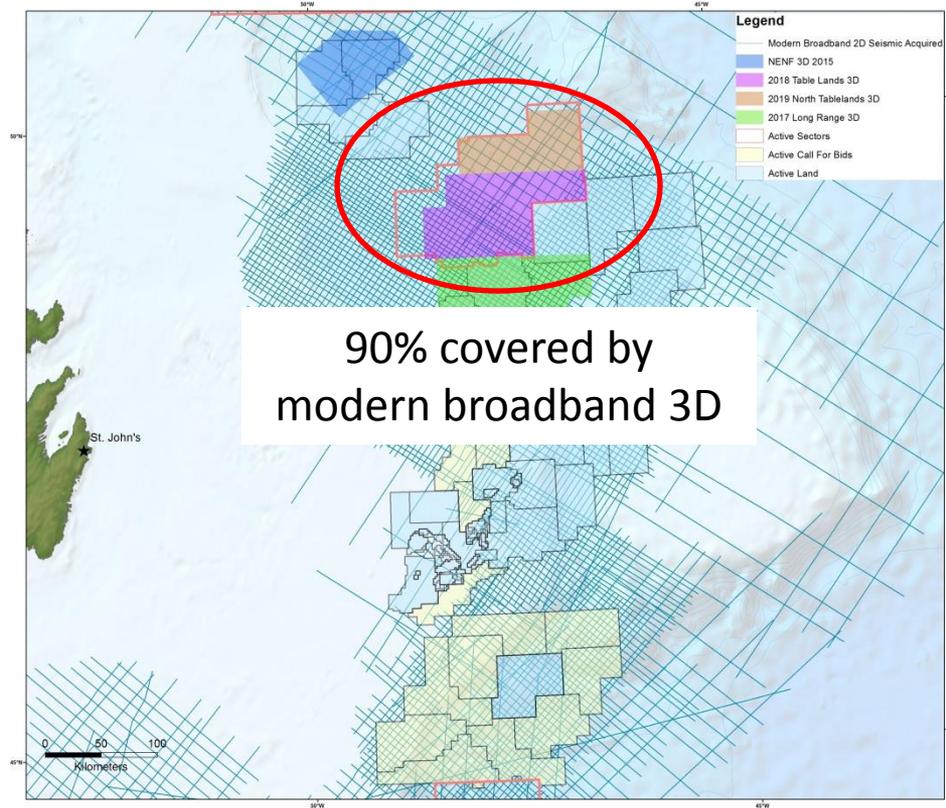
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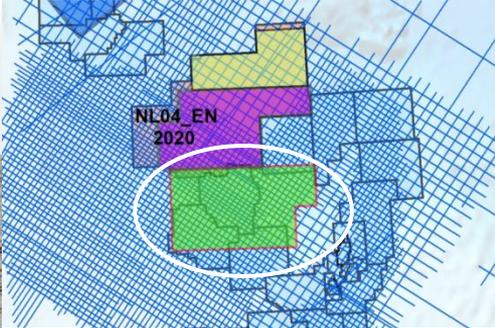
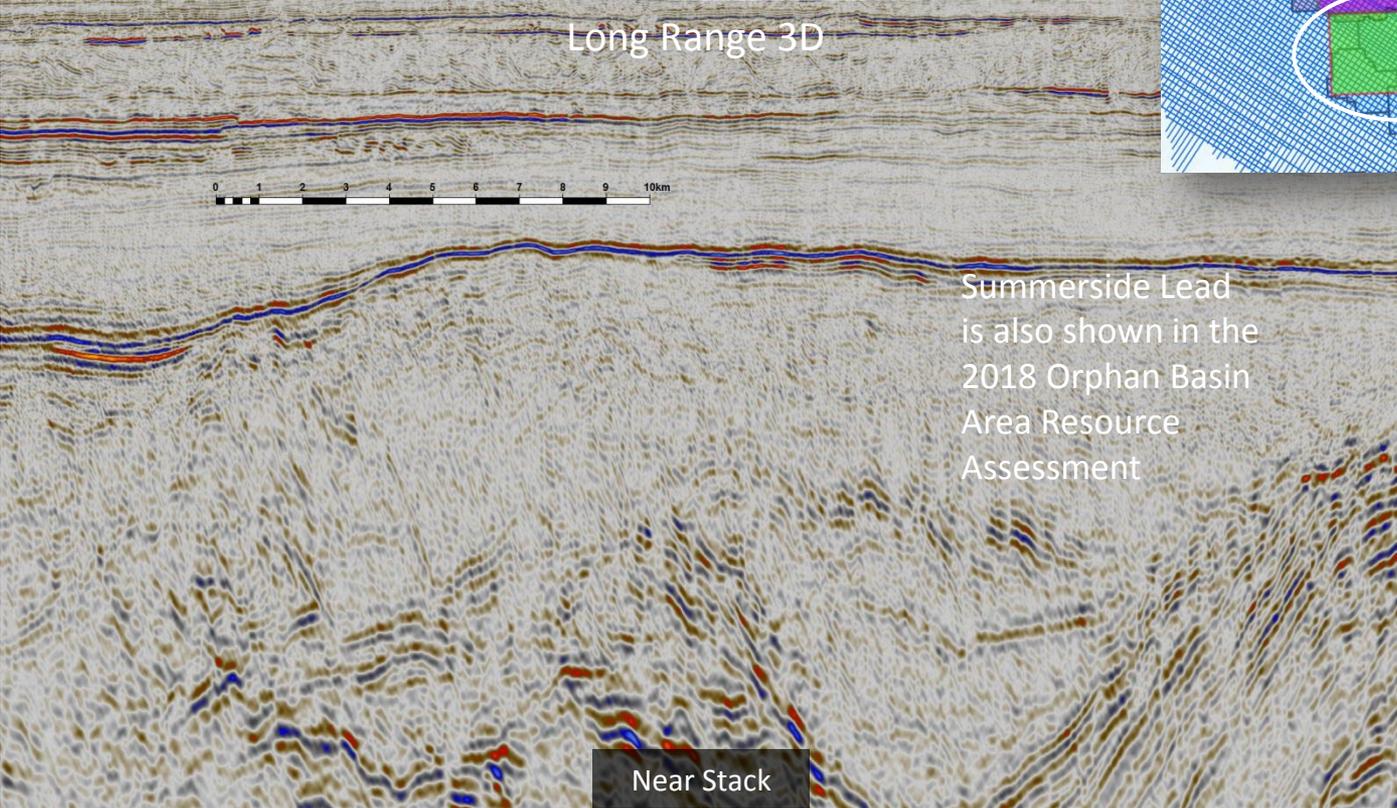
# 2019 Call for Bids Area

Additional Lead Slides Have Been Removed

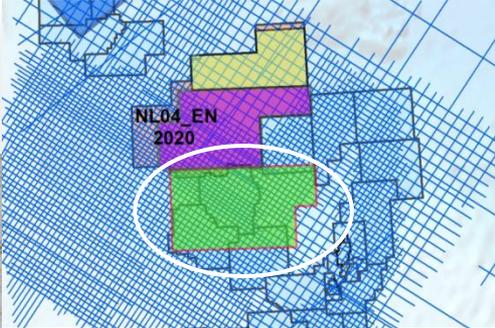
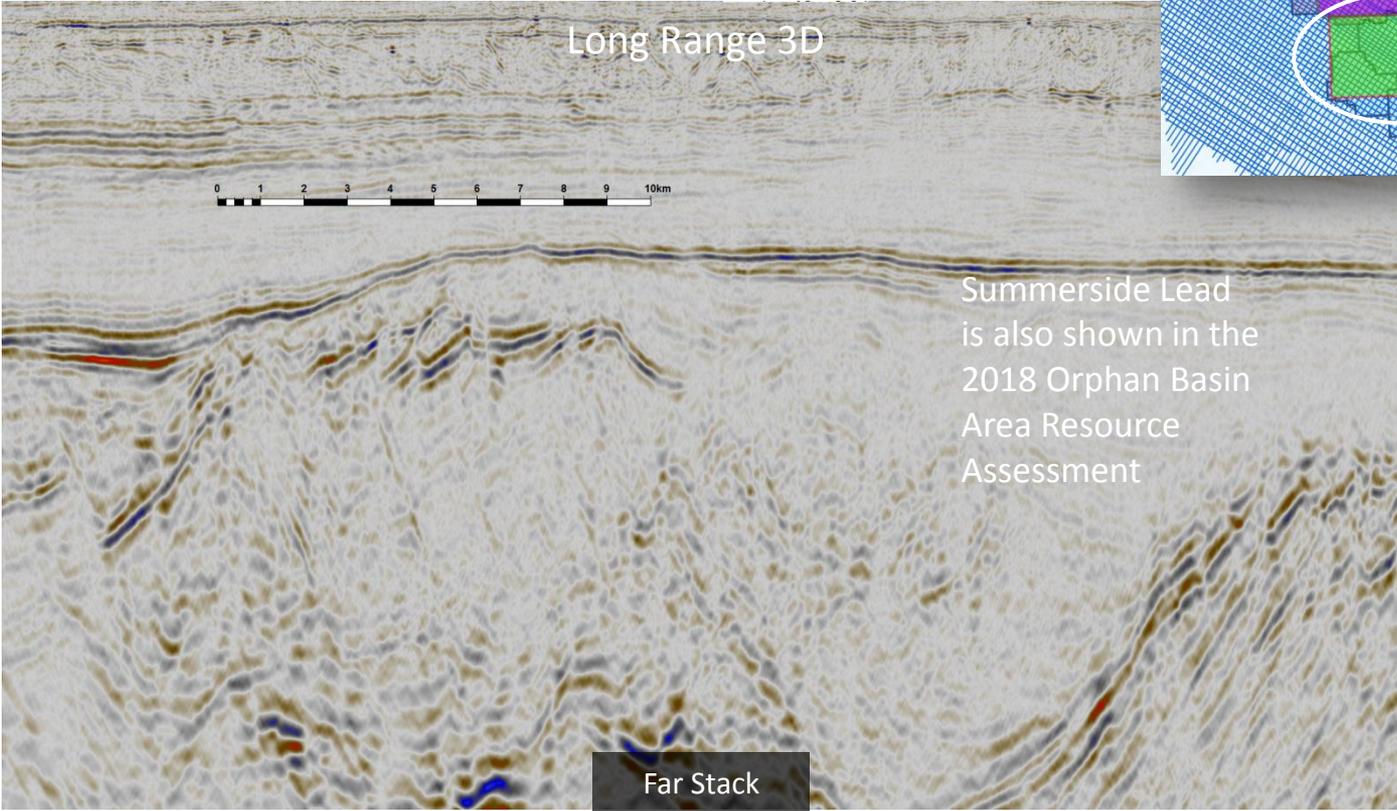
# Orphan Basin 2020 Sector



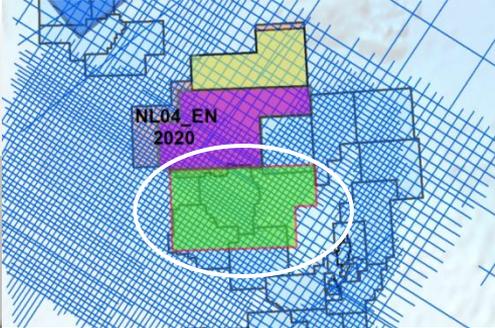
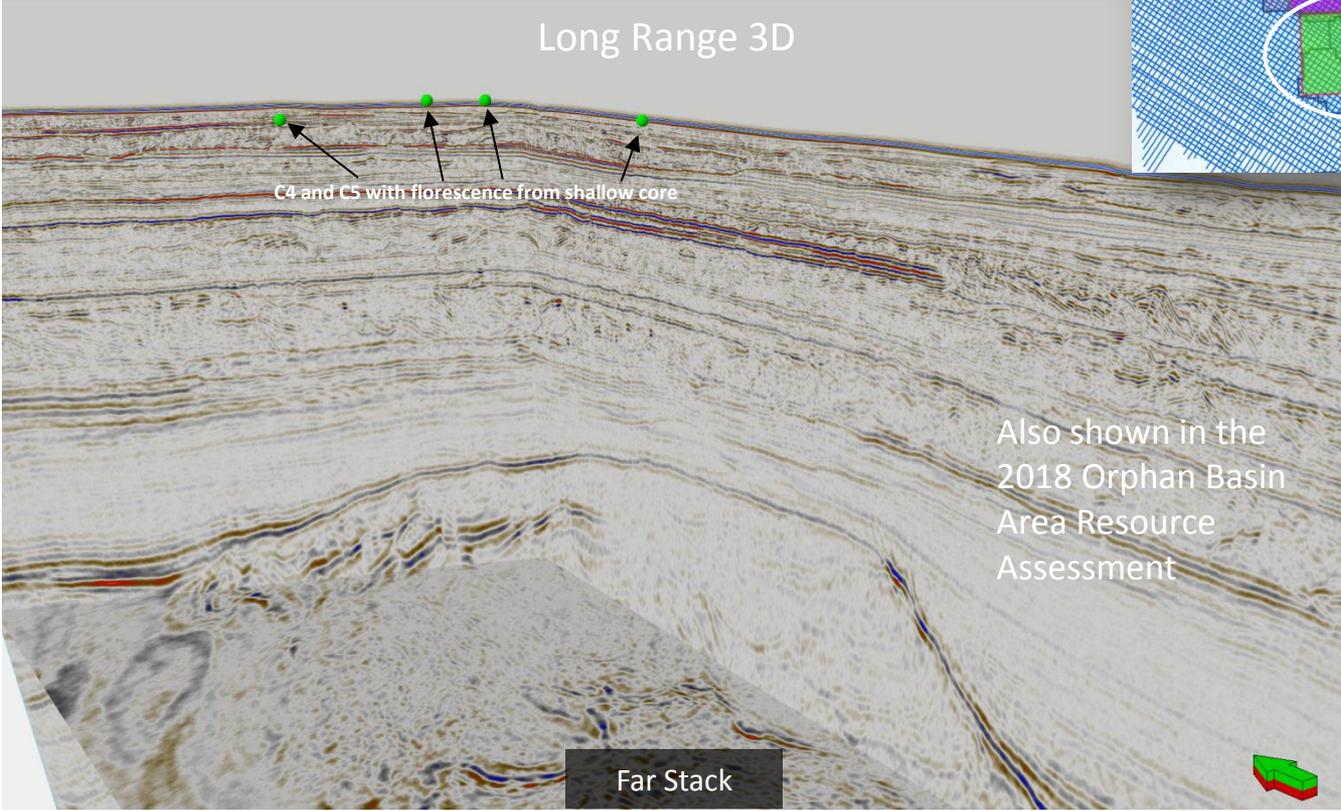
# Learnings from 2018 Call-for-Bids



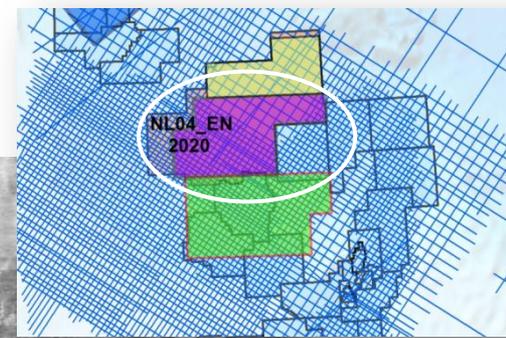
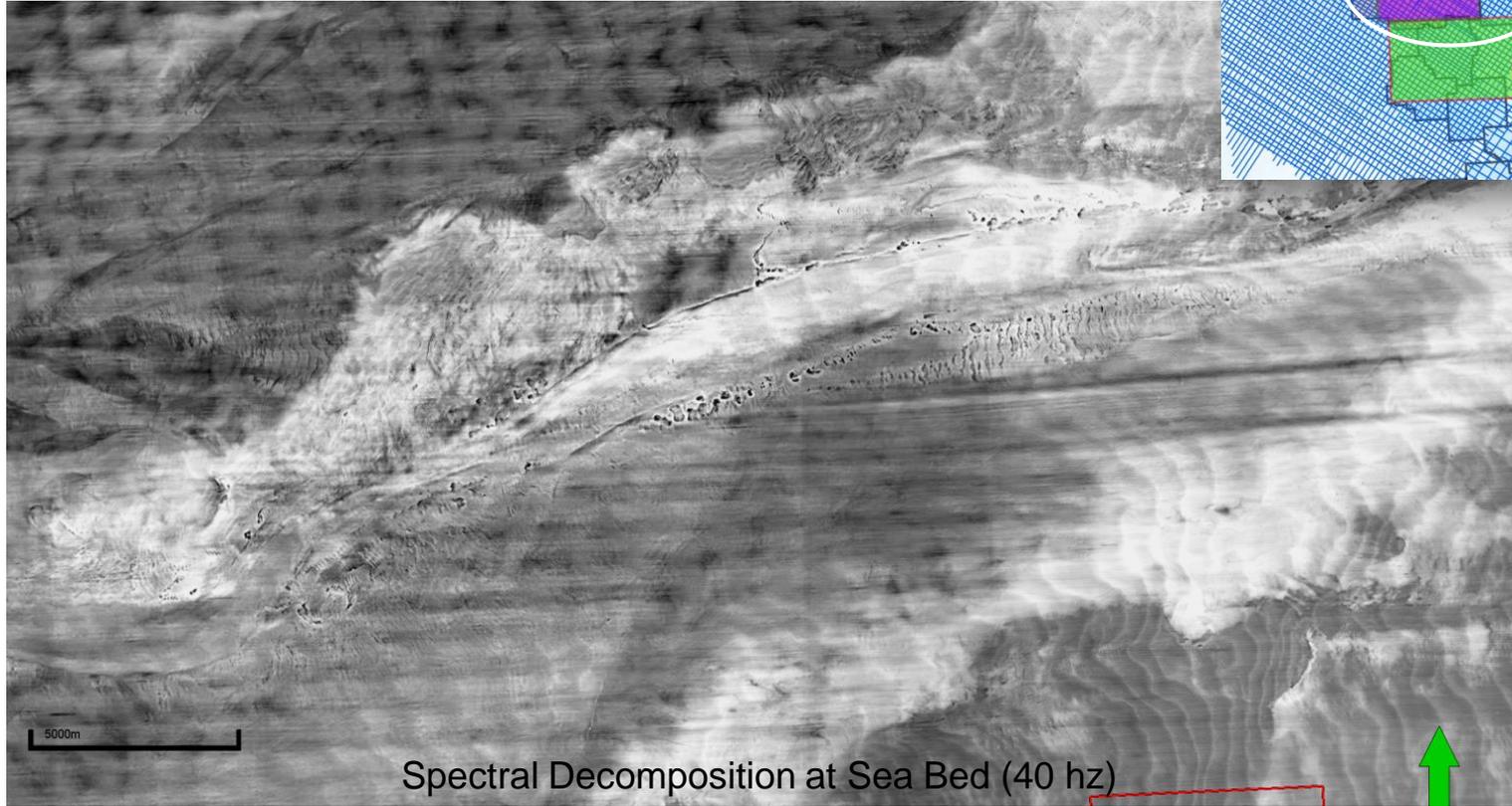
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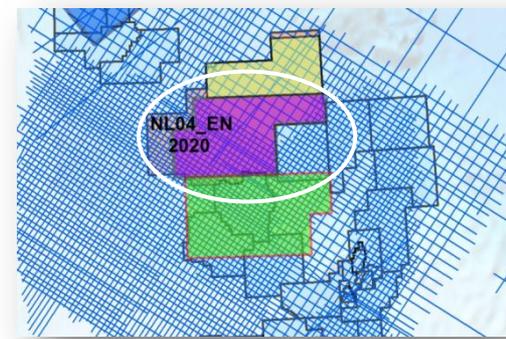
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# Sea Bed Features – Tablelands 3D



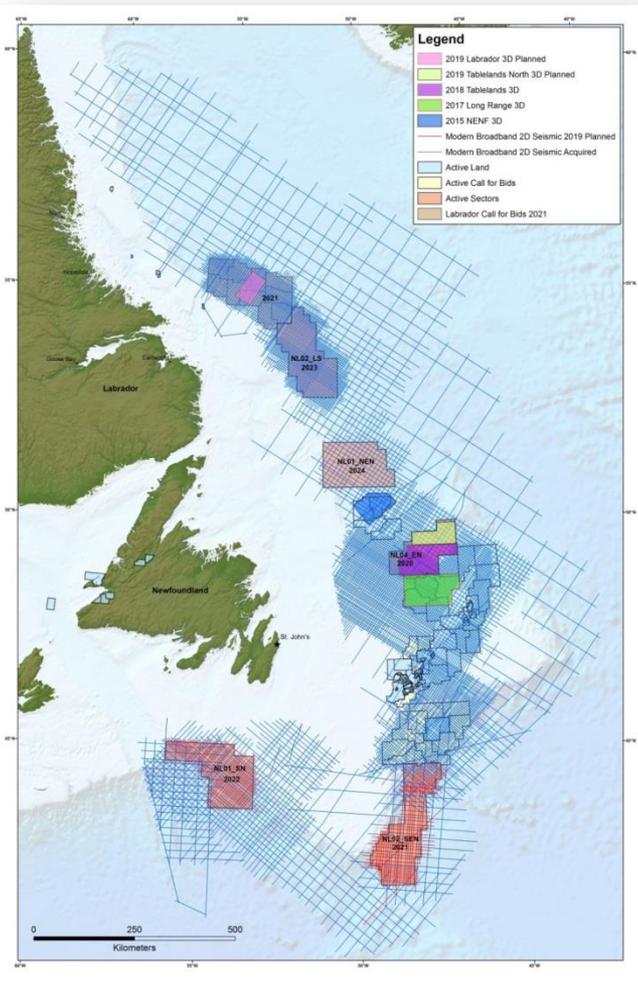
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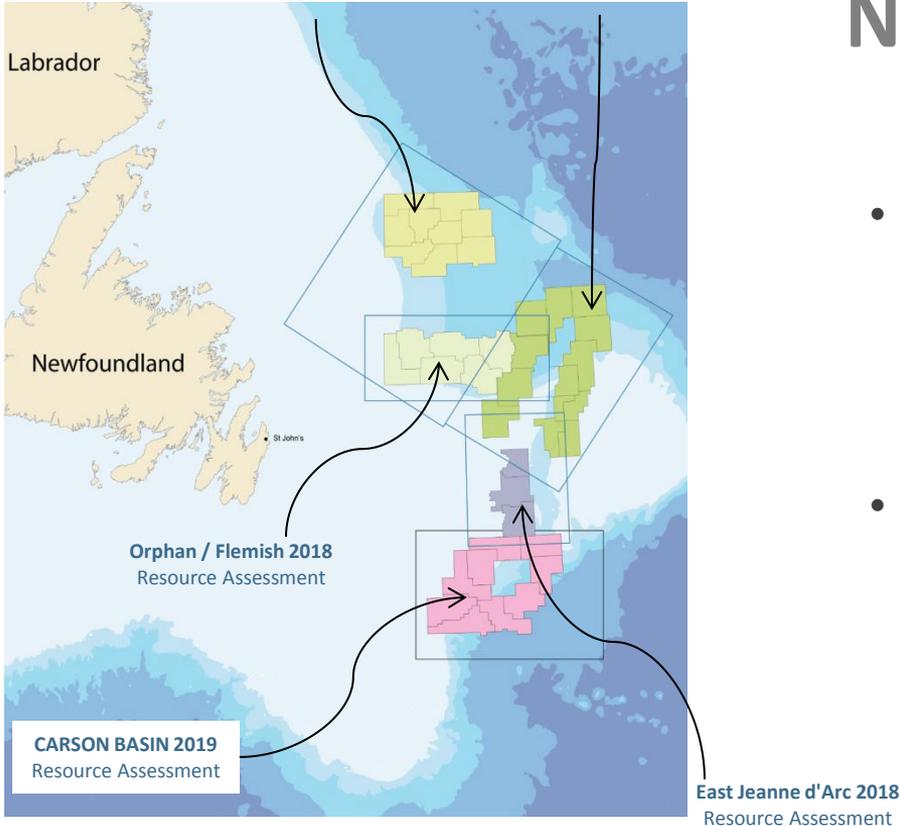


Additional Lead Slides Have Been Removed

# NL Resource Assessments

- New data insights highlighted need for new NL Resource Assessment.
- Integration of new data analyzed with scientific objectivity is key.
- Large offshore area demands systematic approach.

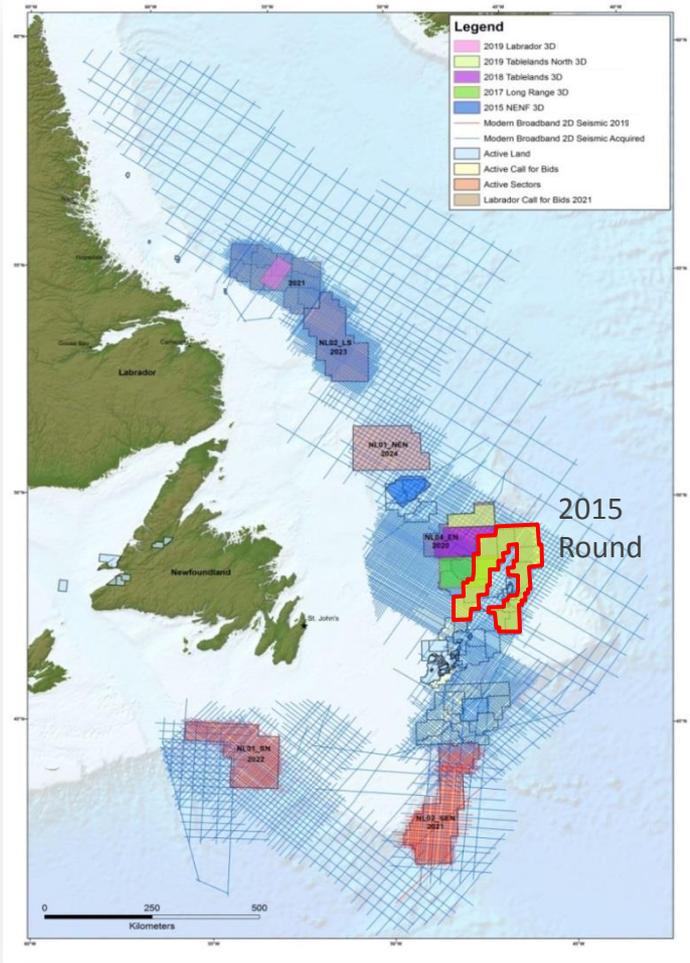




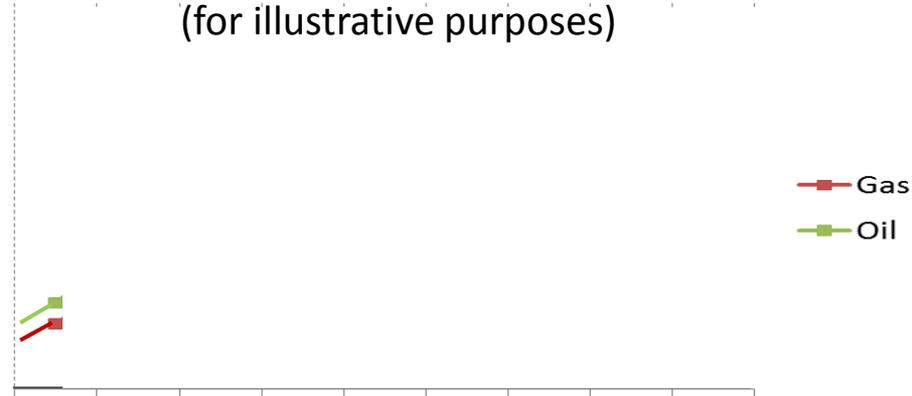
Locations of Previous and Present Studies

# NL Resource Assessments

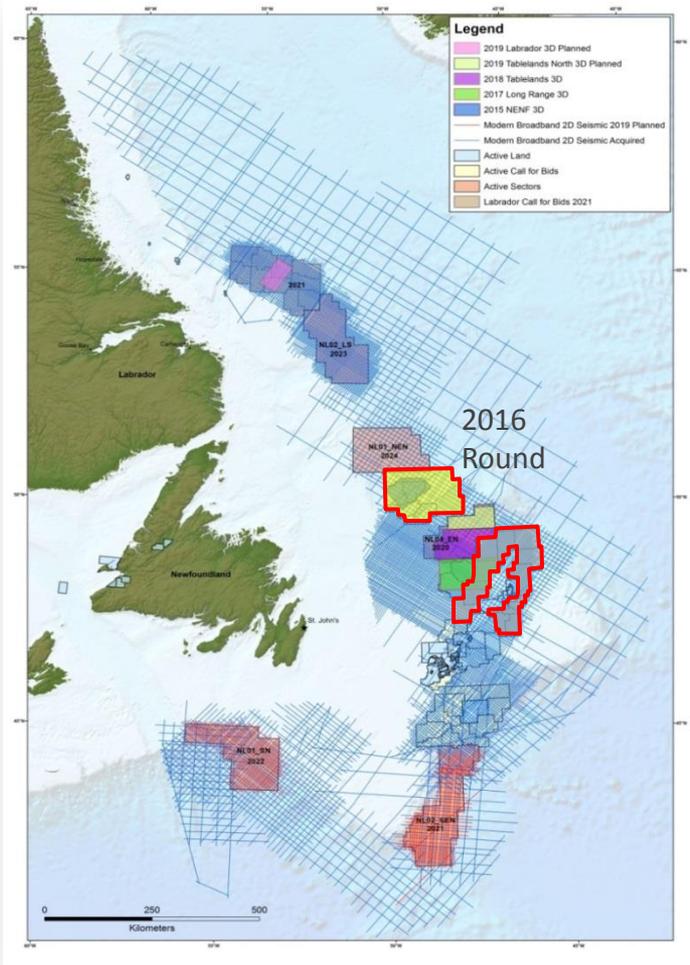
- Five resource assessments have been completed by Beicip Franlab ahead of the scheduled land sales.
- Nalcor will continue to conduct resource assessments and release the results ahead of coming land sales.



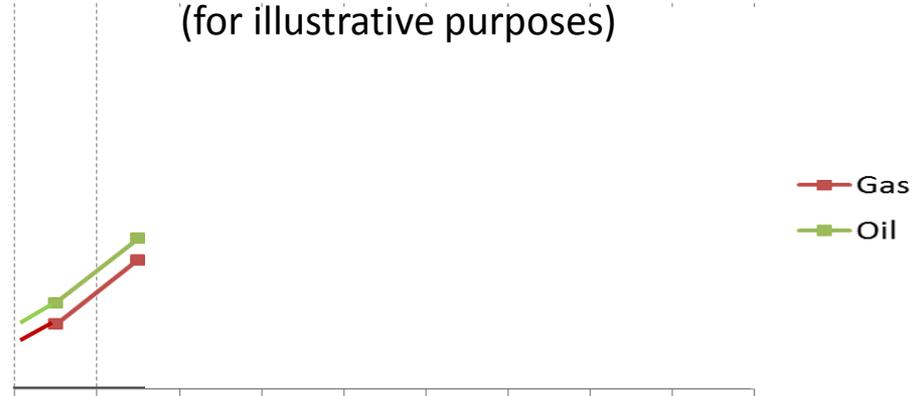
## Cumulative NL Frontier Resource Assessment (for illustrative purposes)



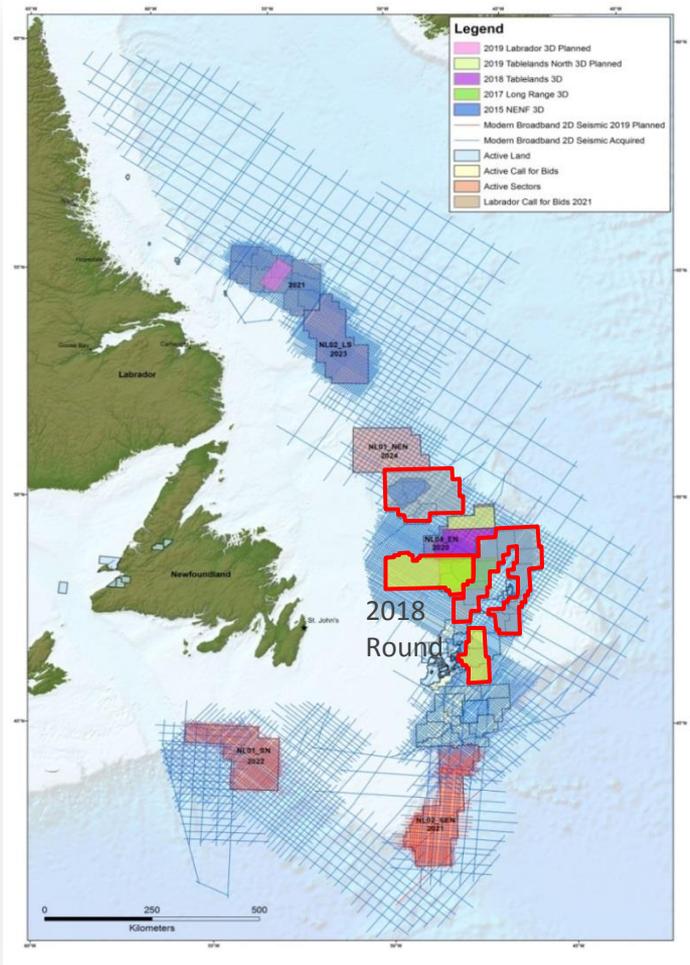
Scheduled License Round/  
Call for Bids Areas



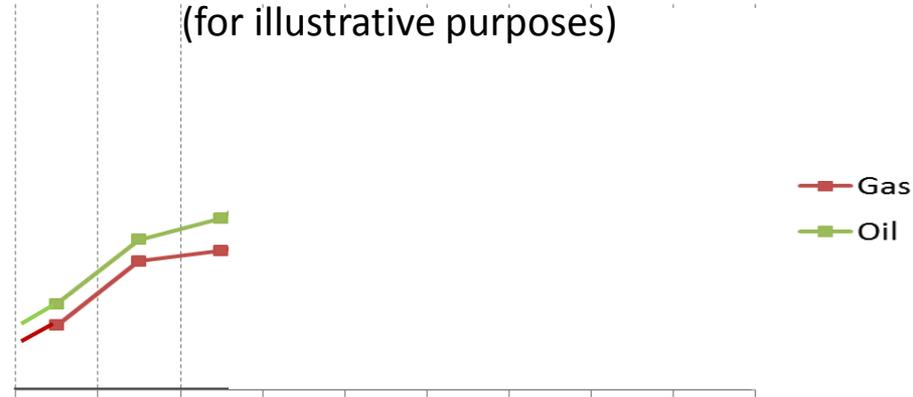
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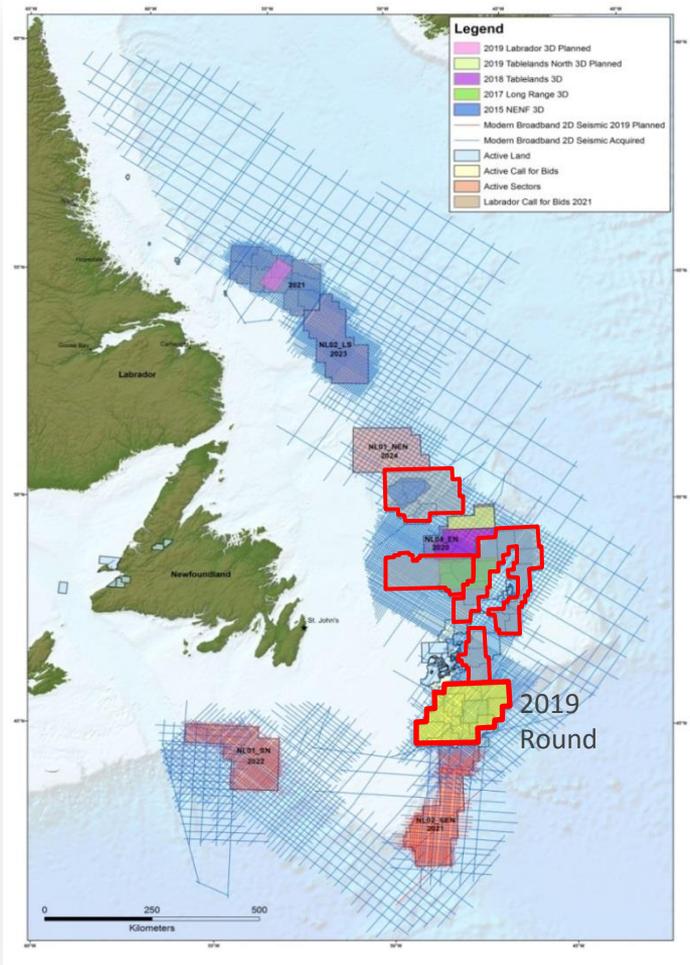
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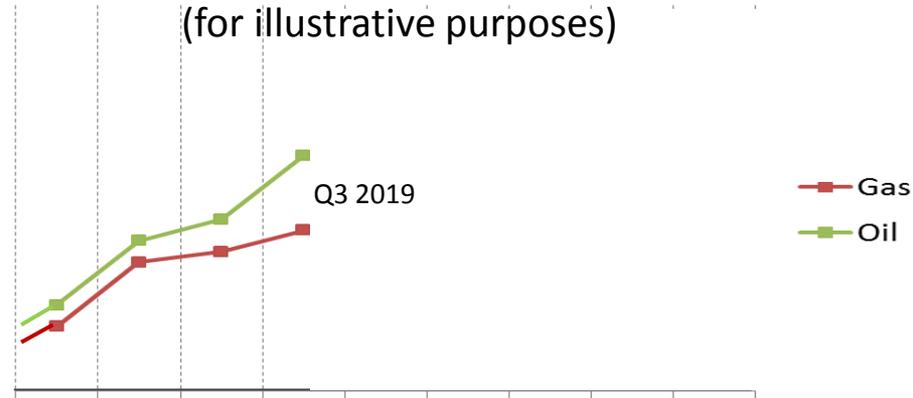
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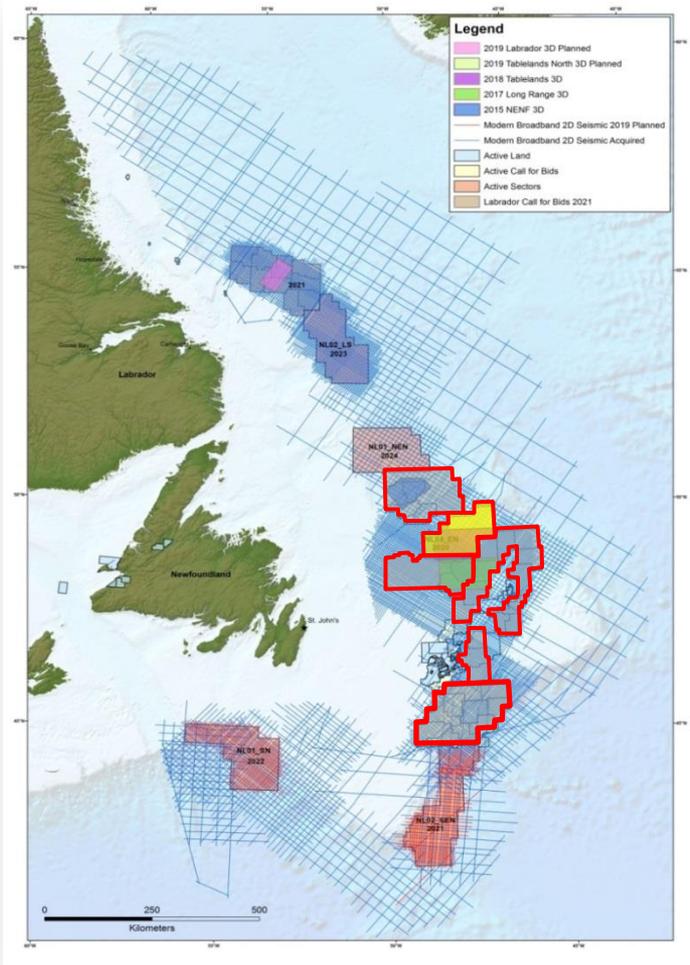
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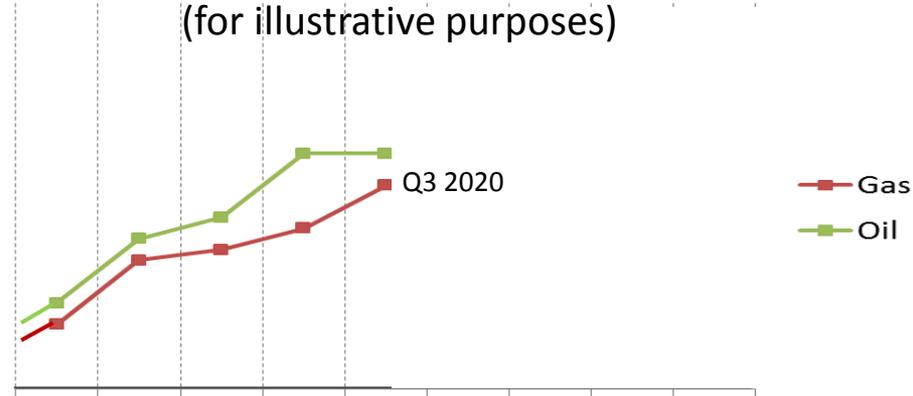
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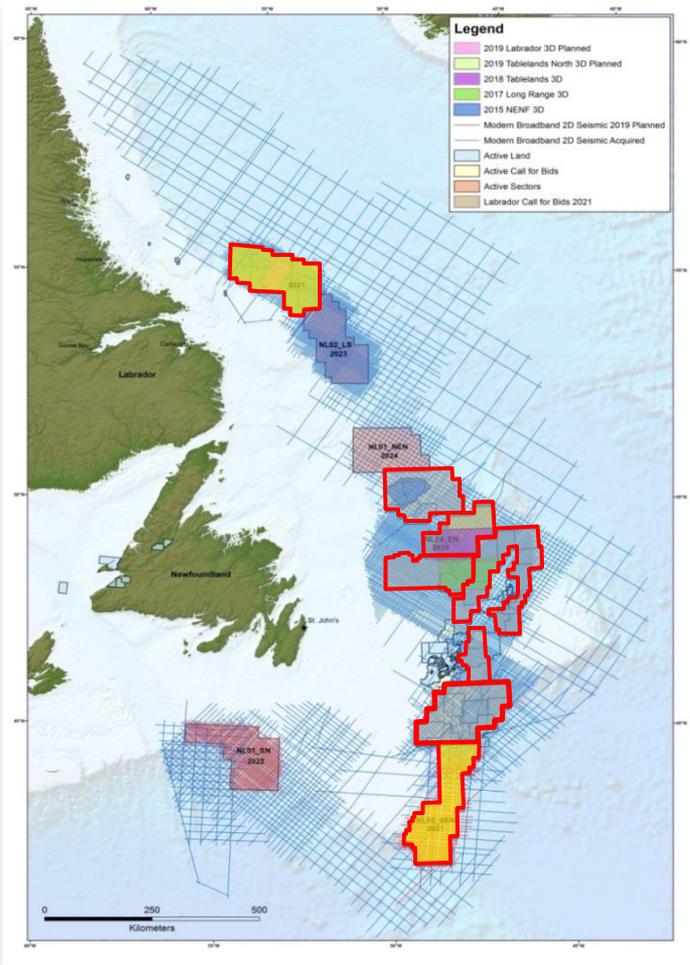
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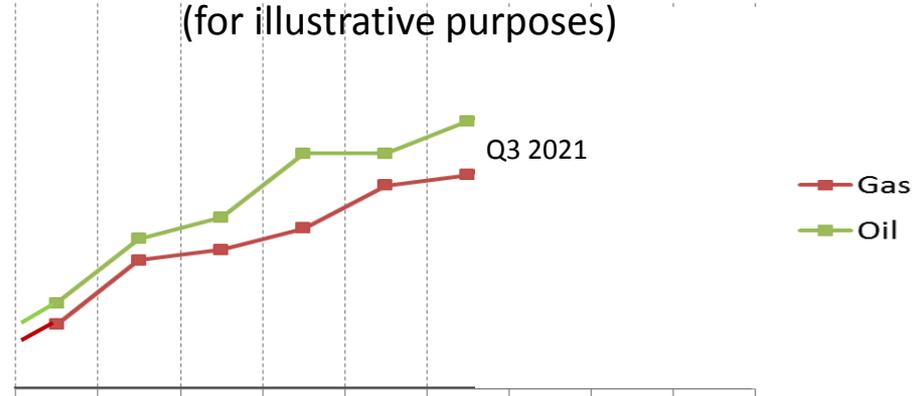
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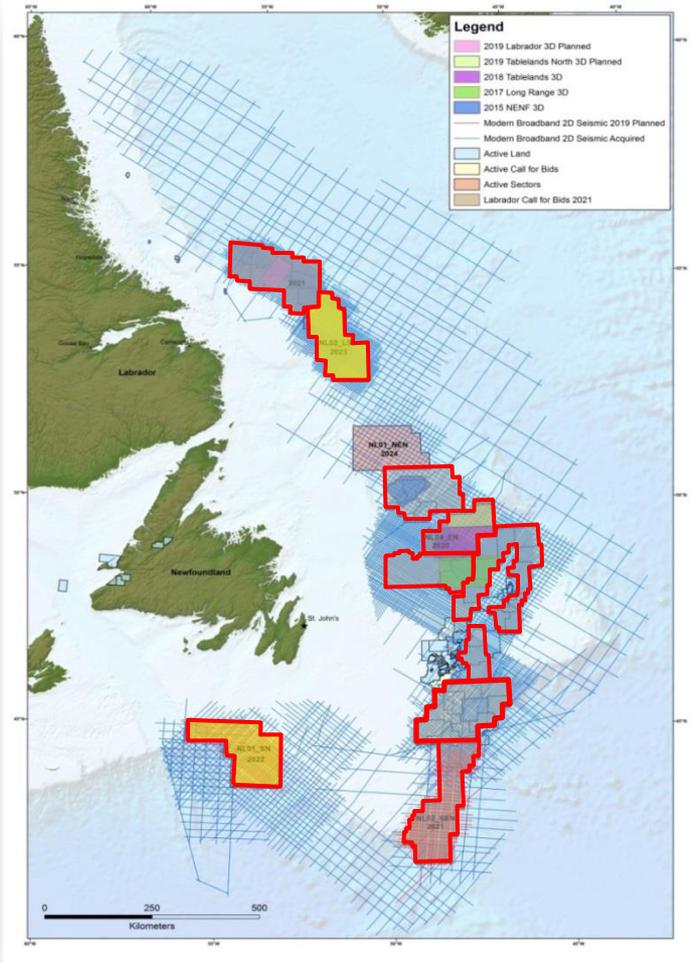
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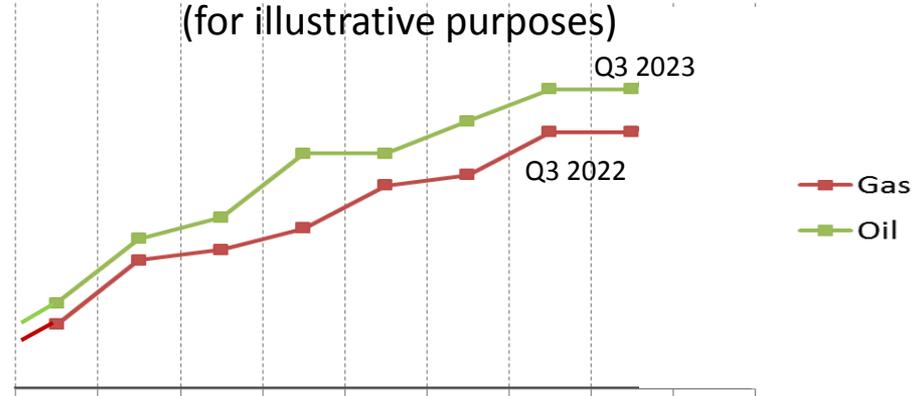
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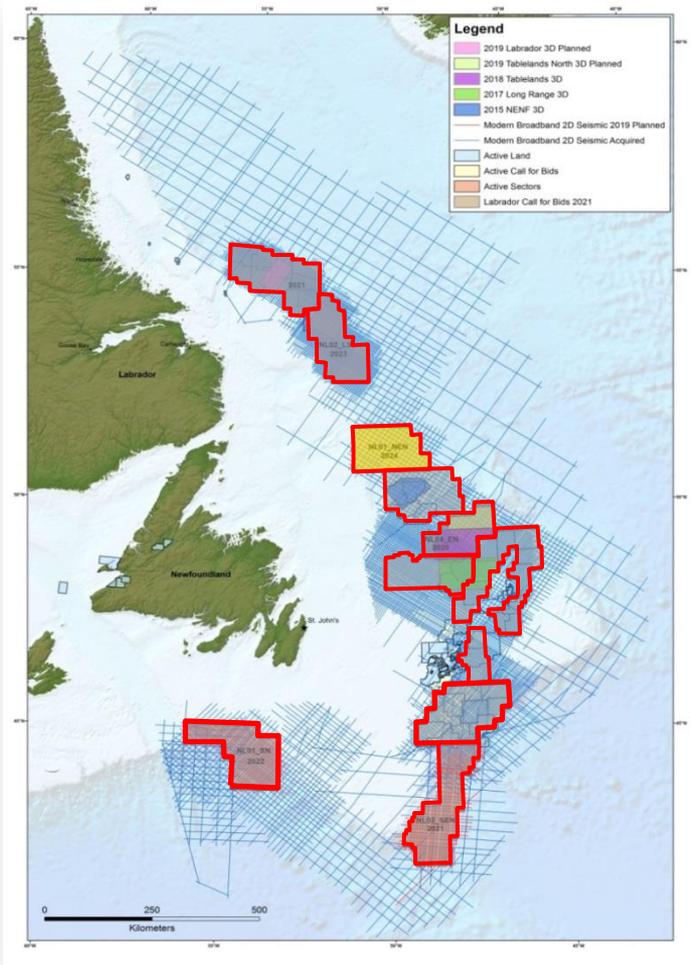
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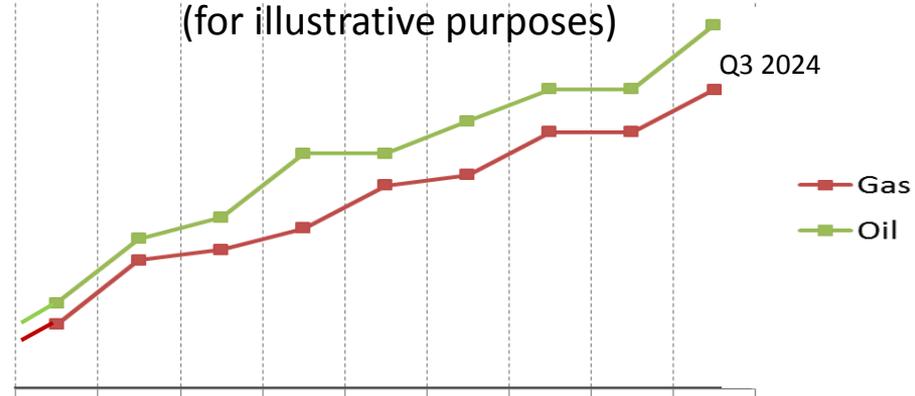
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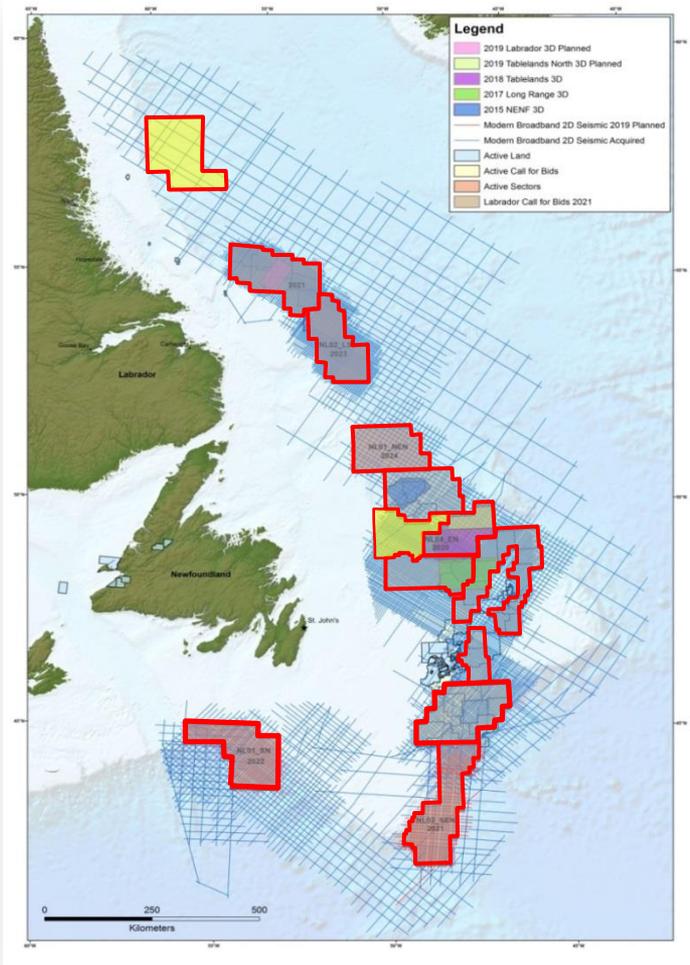
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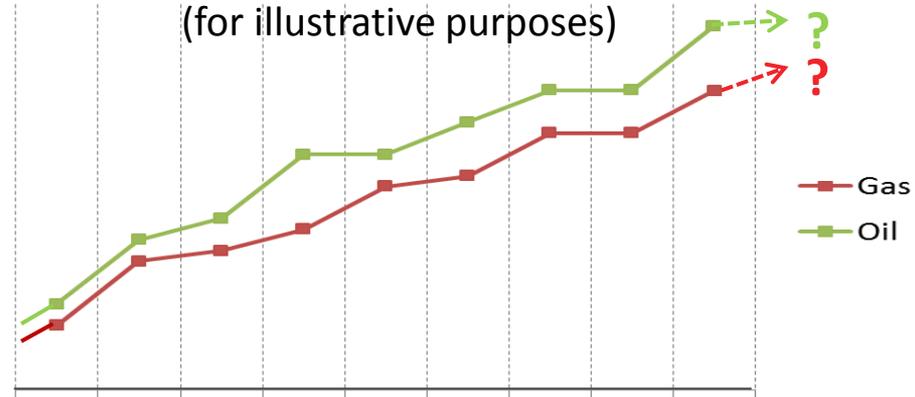
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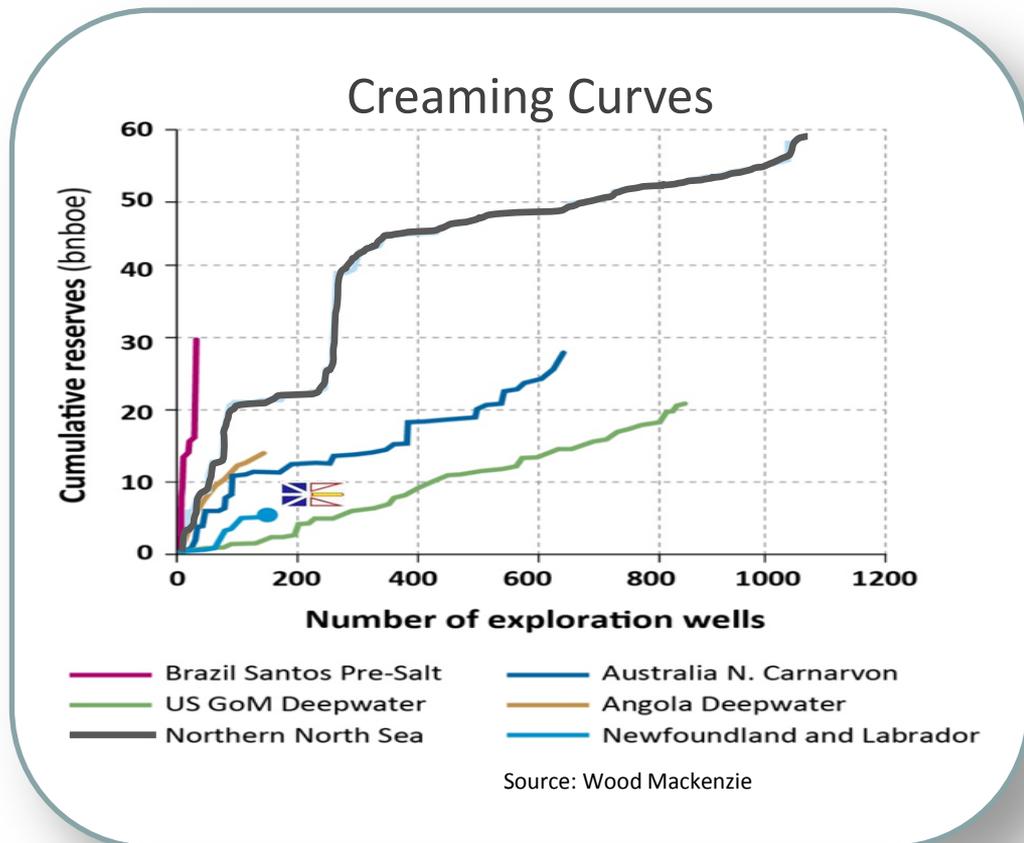
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# Summary

- NL has large underexplored frontier basins – early days.
- 650+ leads/prospects imaged to date.
- Systematic Resource Assessment underway.
- New data yielding new insights into frontiers and accelerating exploration timelines.



# Thank You



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