

Nova Scotia, Canada

Activities and Opportunities

Offshore and Onshore

AAPG INTERNATIONAL PAVILION TALK

MAY, 2019

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Nova Scotia Department of Energy and Mines



Agenda

Offshore

- Previous Geoscience Initiatives
- Offshore Call for Bids
- Current Developments
- Current Geoscience Initiatives

Onshore

- Exploration
- Onshore Petroleum Atlas

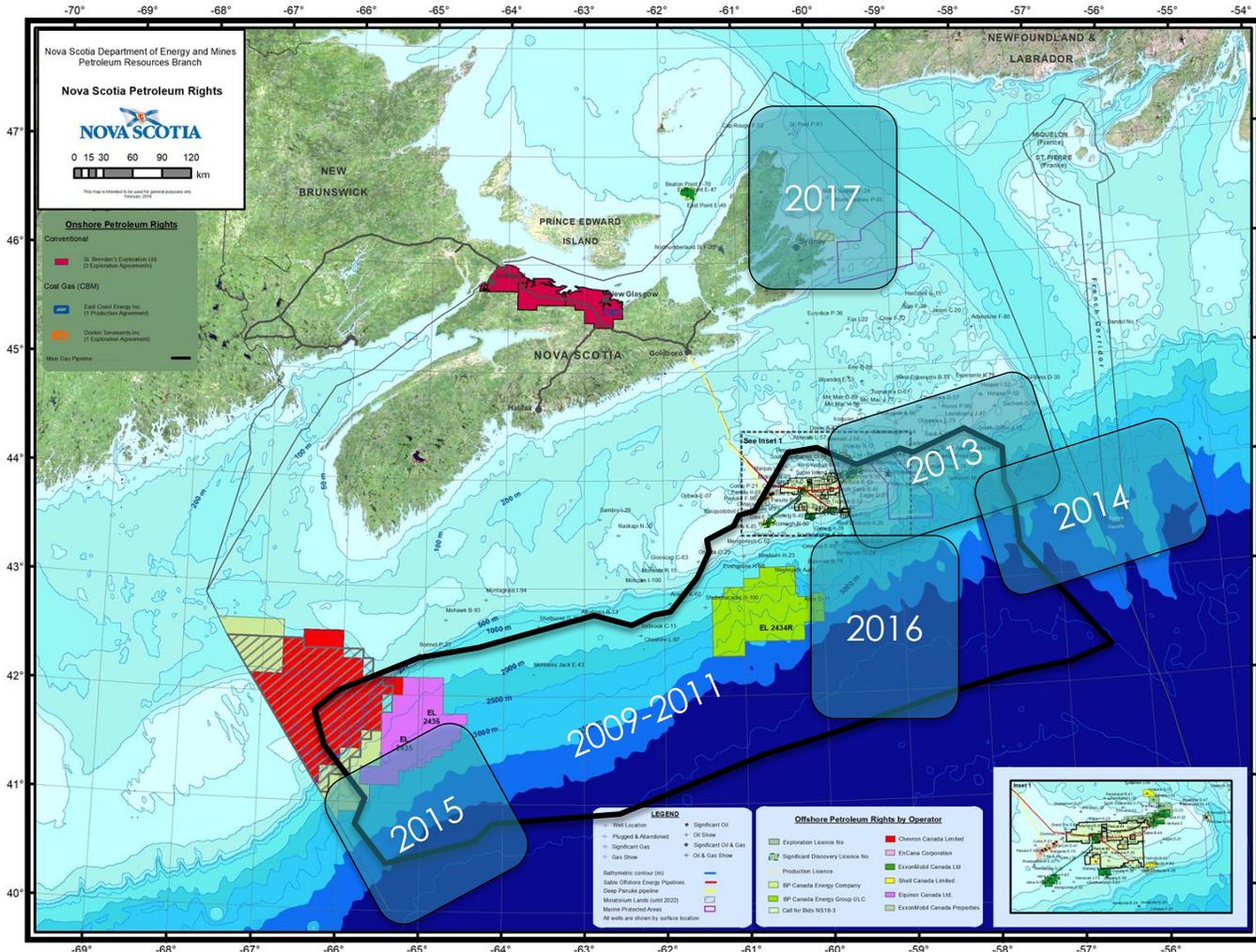


Nova Scotia

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Previous Geoscience Initiatives



Offshore Petroleum Geoscience Research

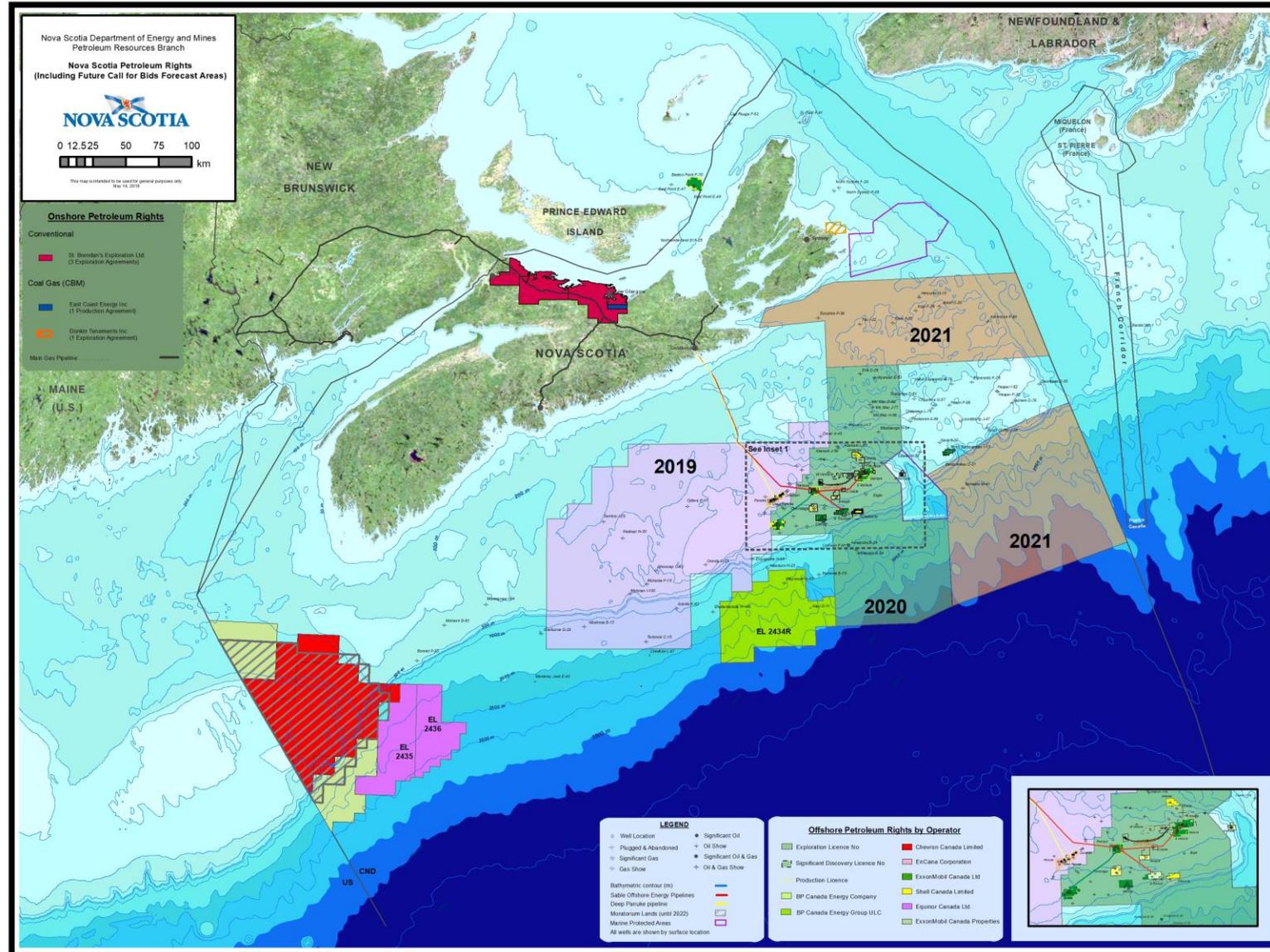
- 2009-11: Scotian Shelf PFA
- 2013: Northeast Shelf
- 2014: Laurentian Subbasin PFA
- 2015: Shelburne Subbasin PFA
- 2016: Central Slope PFA
- 2017: Sydney Basin PFA

As of March 2019, over \$32 M has been spent on geoscience.

The results to date are > 8 Bbbls oil and 120 tcf gas potential, risked.

Over \$2 billion in Exploration Commitments Since 2011

Offshore Call for Bids Forecasted Areas



Current Developments

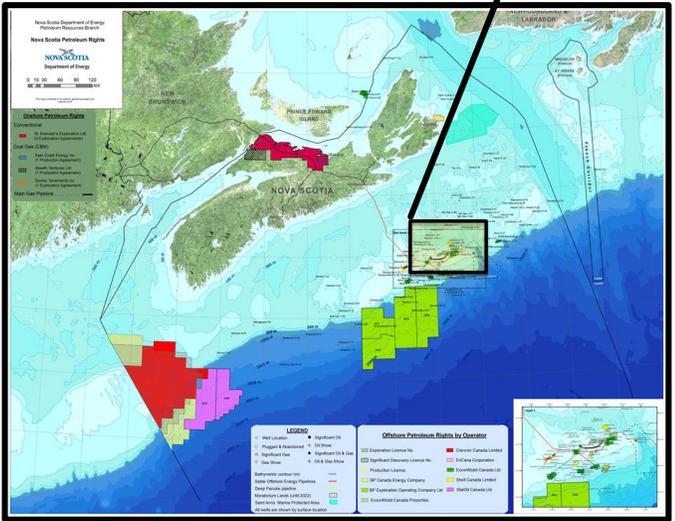
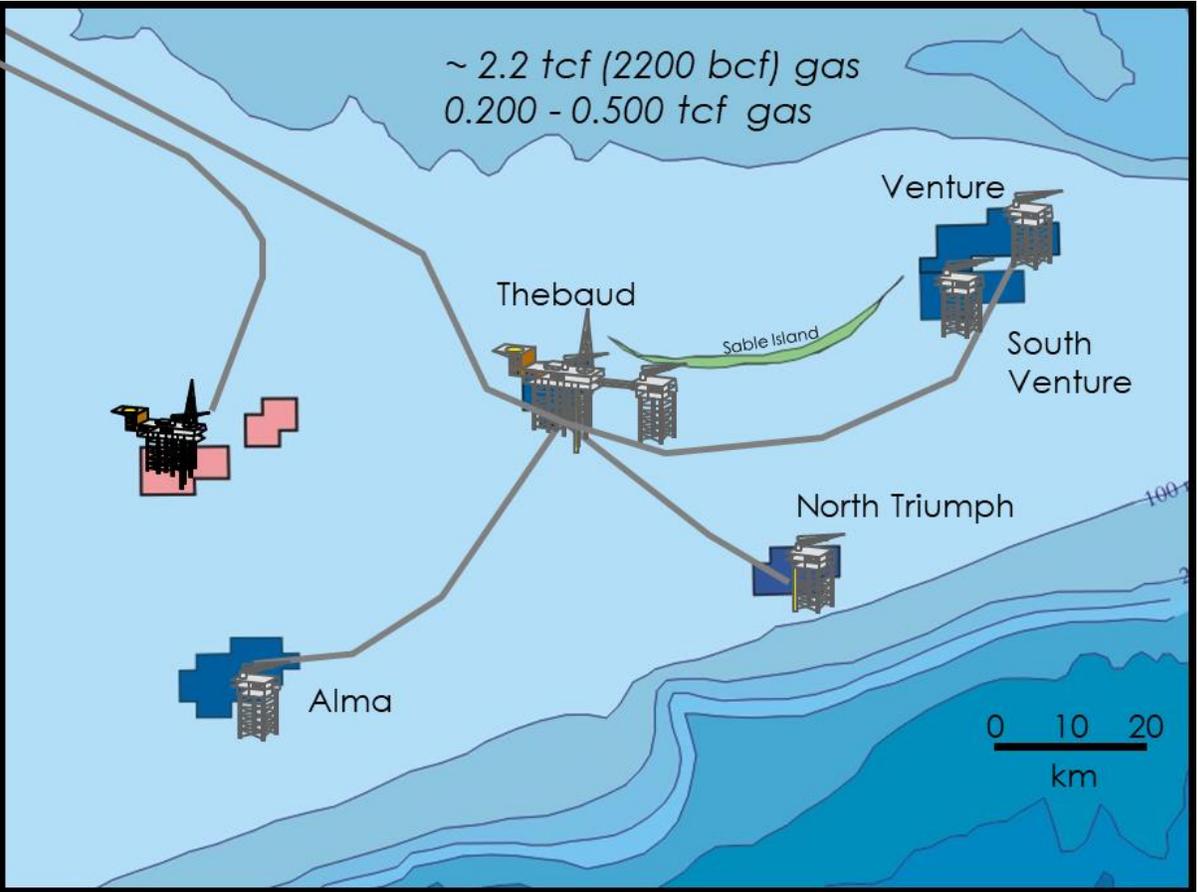
210 Offshore Wells

Three Legacy Offshore Projects

- Cohasset – Panuke (Oil) → 1992 to 1999
- Deep Panuke (Natural Gas) → 2013 to 2019
- Sable Offshore Energy Program (Natural Gas and Condensate) → 1999 to 2019

Three Recent Exploration Wells

- Cheshire L-97 → 2015
- Monterey Jack E-48 → 2016
- Aspy D-11 → 2018



Cheshire L-97

Play Type:

- Lower Cretaceous turbidite fan forming a broad, low relief evacuation structure with salt onlap

Depositional Setting:

- Lower Slope

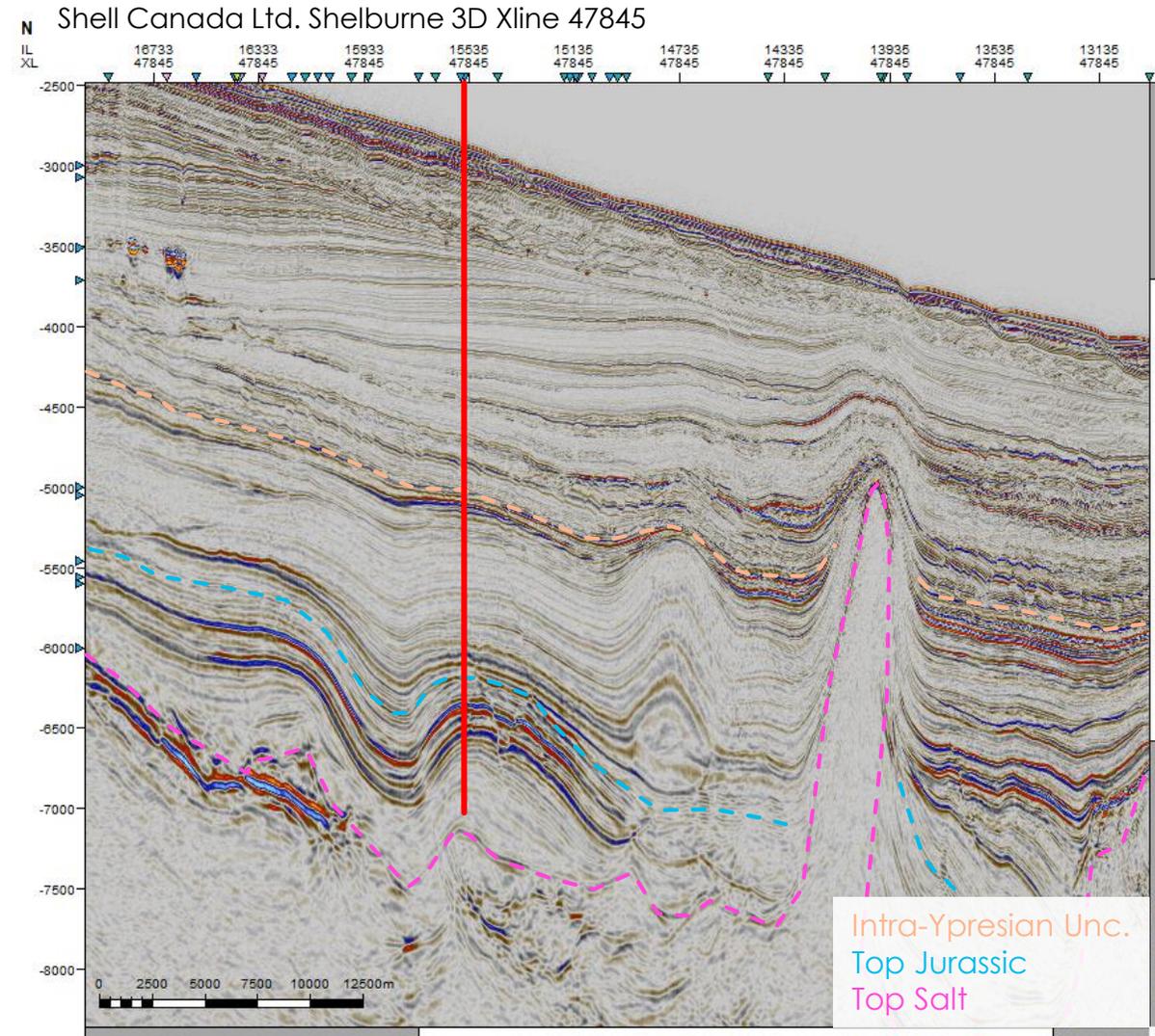
Lithology:

- Claystone and marls encountered

Spud: Oct 2015

ID: 7,068 m

Plugged & abandoned in Sept 2016



Monterey Jack E-48

Play Type:

- Lower Cretaceous turbidite reservoir ponded between salt bodies with flank onlap.

Depositional Setting:

- Lower Slope

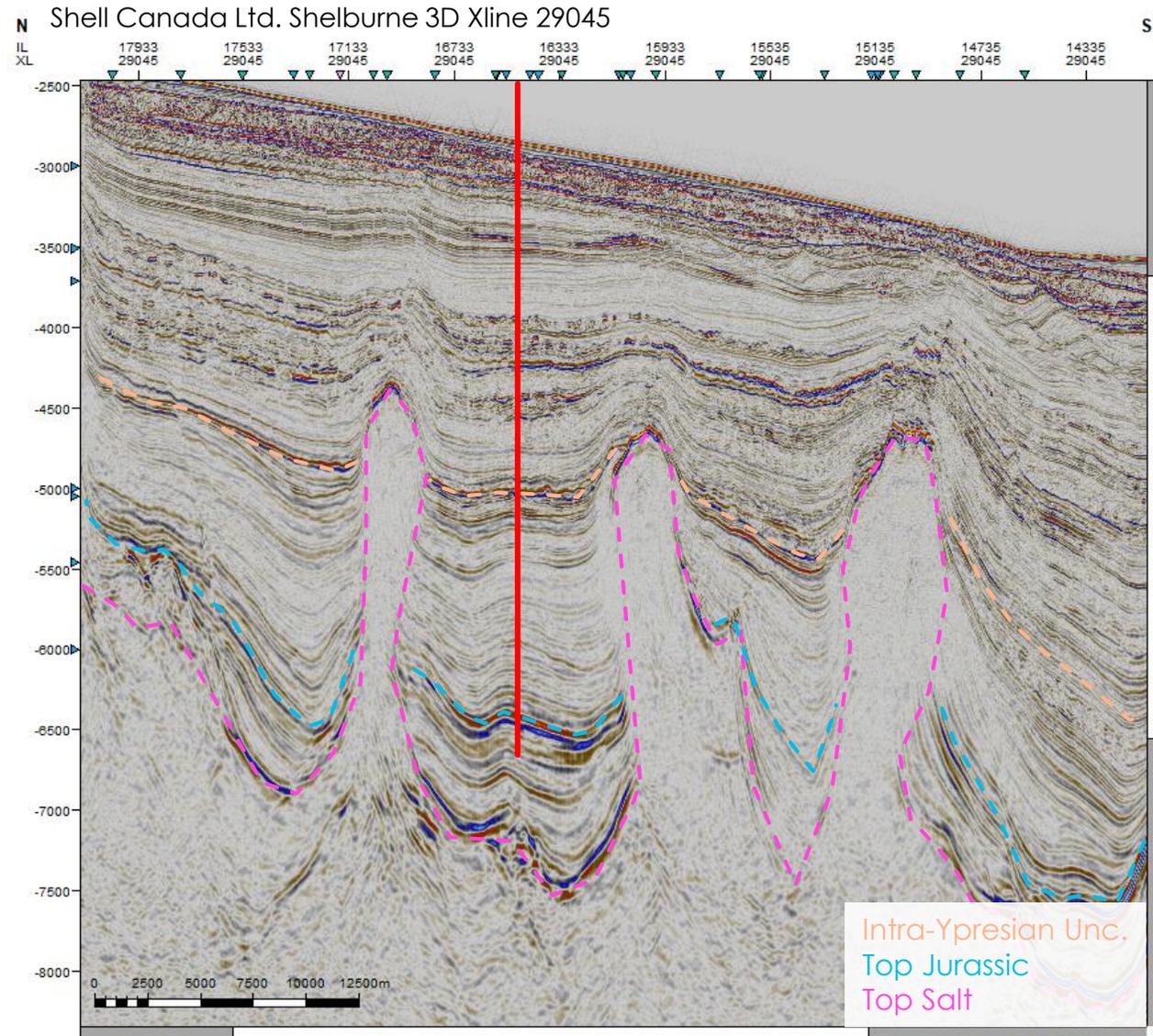
Lithology:

- Claystone, marls, and rare dolomites encountered

Spud: Sept 2016

ID: 6,692 m

Plugged & abandoned in Jan 2017



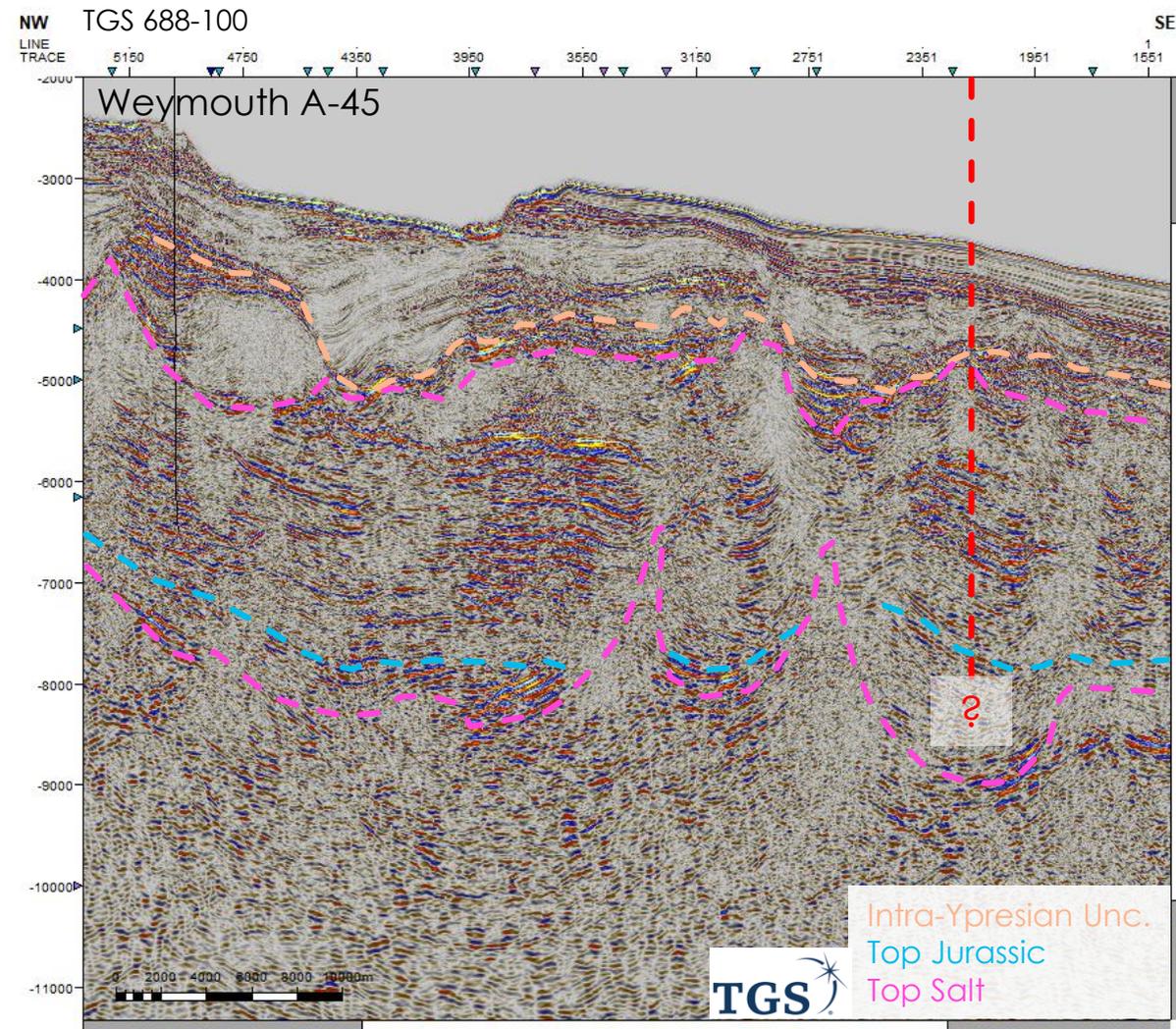
Aspy D-11

Spud: April 22, 2018

Completed: Dec 11, 2018

Disclosure Date: Dec, 2020

Plugged and Abandoned



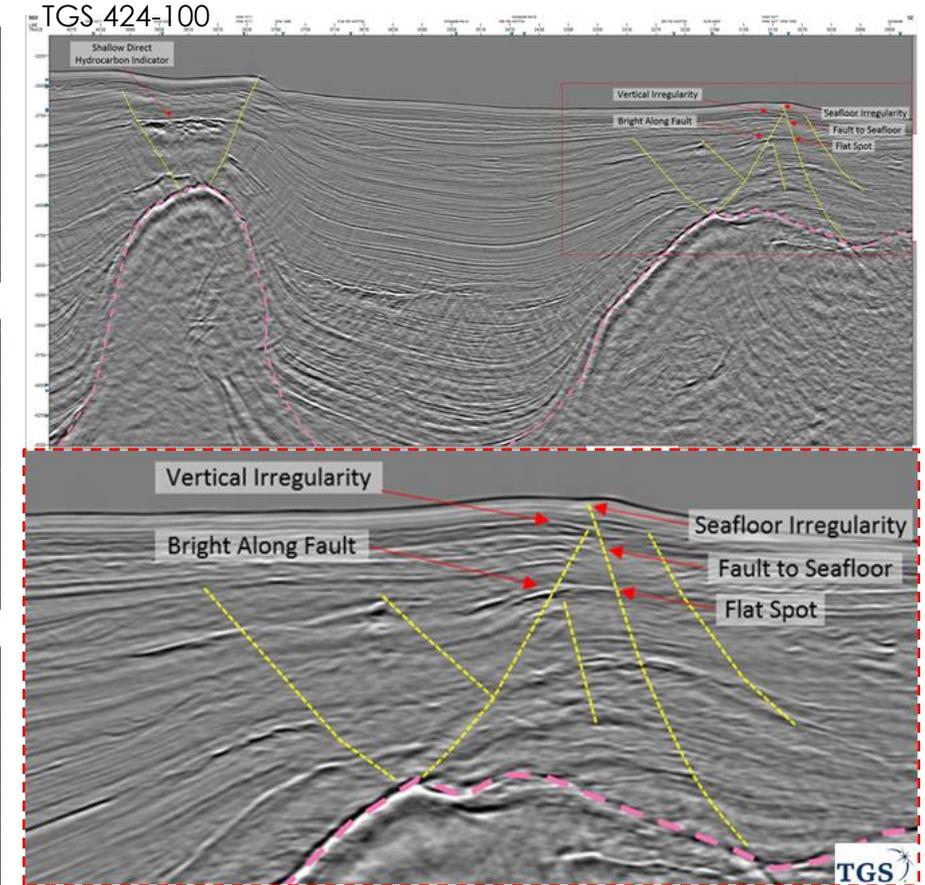
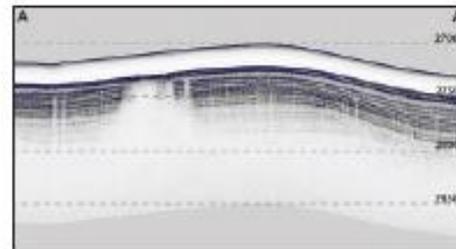
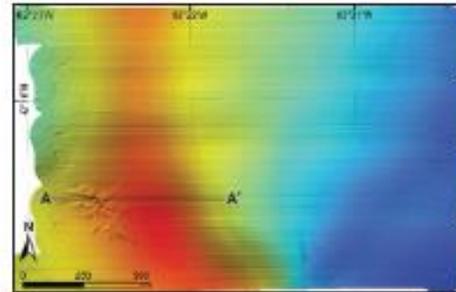
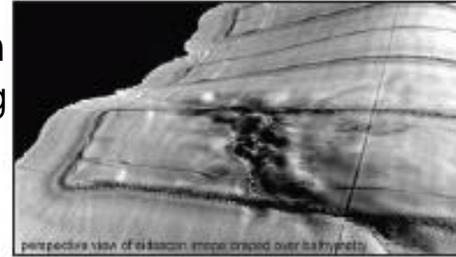
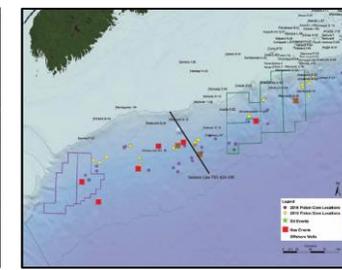
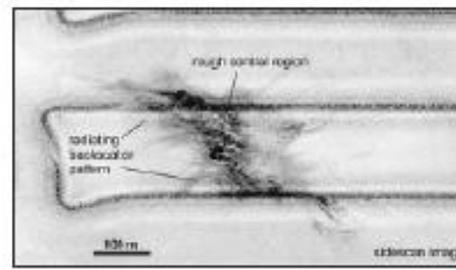
Offshore Piston Coring

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Results with Potential Hydrocarbon Seep

Piston Core work has produced evidence that indicates the presence of thermogenic hydrocarbon in the deepwater offshore Nova Scotia, thus implying there is a working petroleum system.

- 2015 captured 29 locations
 - positive results for hydrocarbon in two samples
 - *operational and technical issues
- 2016 captured 50 locations
 - positive results for hydrocarbon in ten samples
 - good evidence differentiating gas and oil
- 2018 AUV work to define seabed sites for 2020
- 2020 ROV work to sample in-situ hydrocarbon seeps



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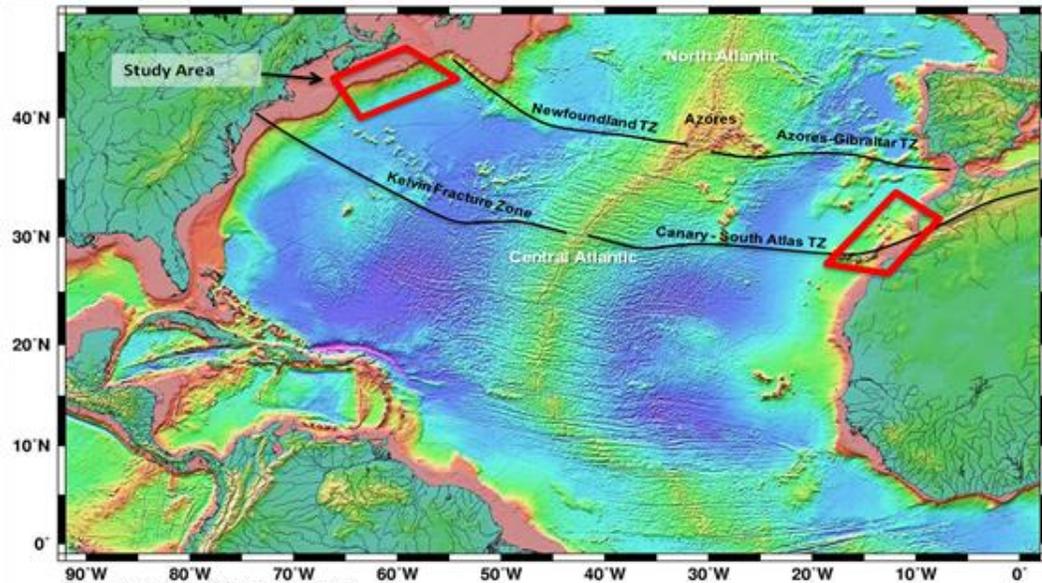


Collaborative Conjugate Margin Agreement → Morocco and Nova Scotia

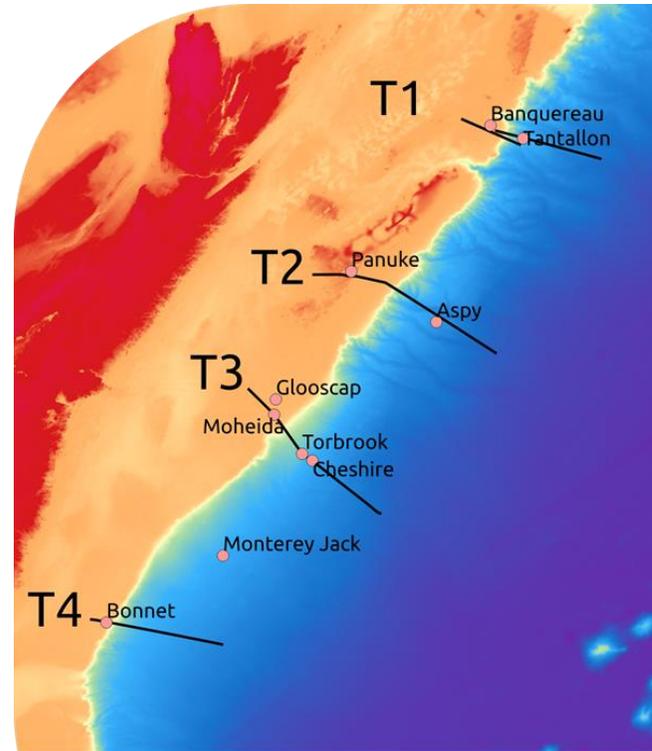
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ONHYM (Moroccan NOC) and Offshore Energy Research Association (OERA)

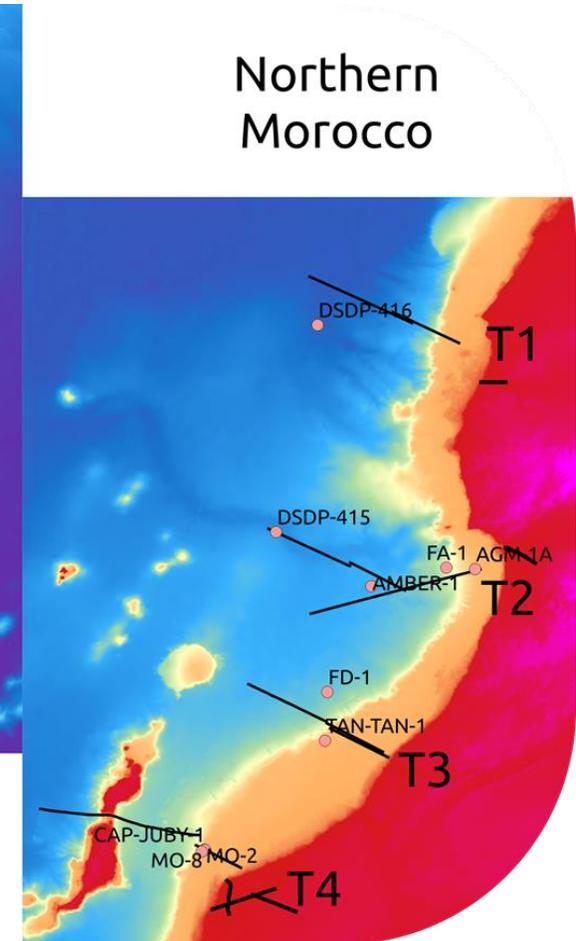
- Seismic Reconstruction
- Tectonic Study
- Geochemistry Analysis
- Comparative Biostratigraphy



Structural Reconstruction - Early to Middle Jurassic



Nova Scotia



Northern Morocco

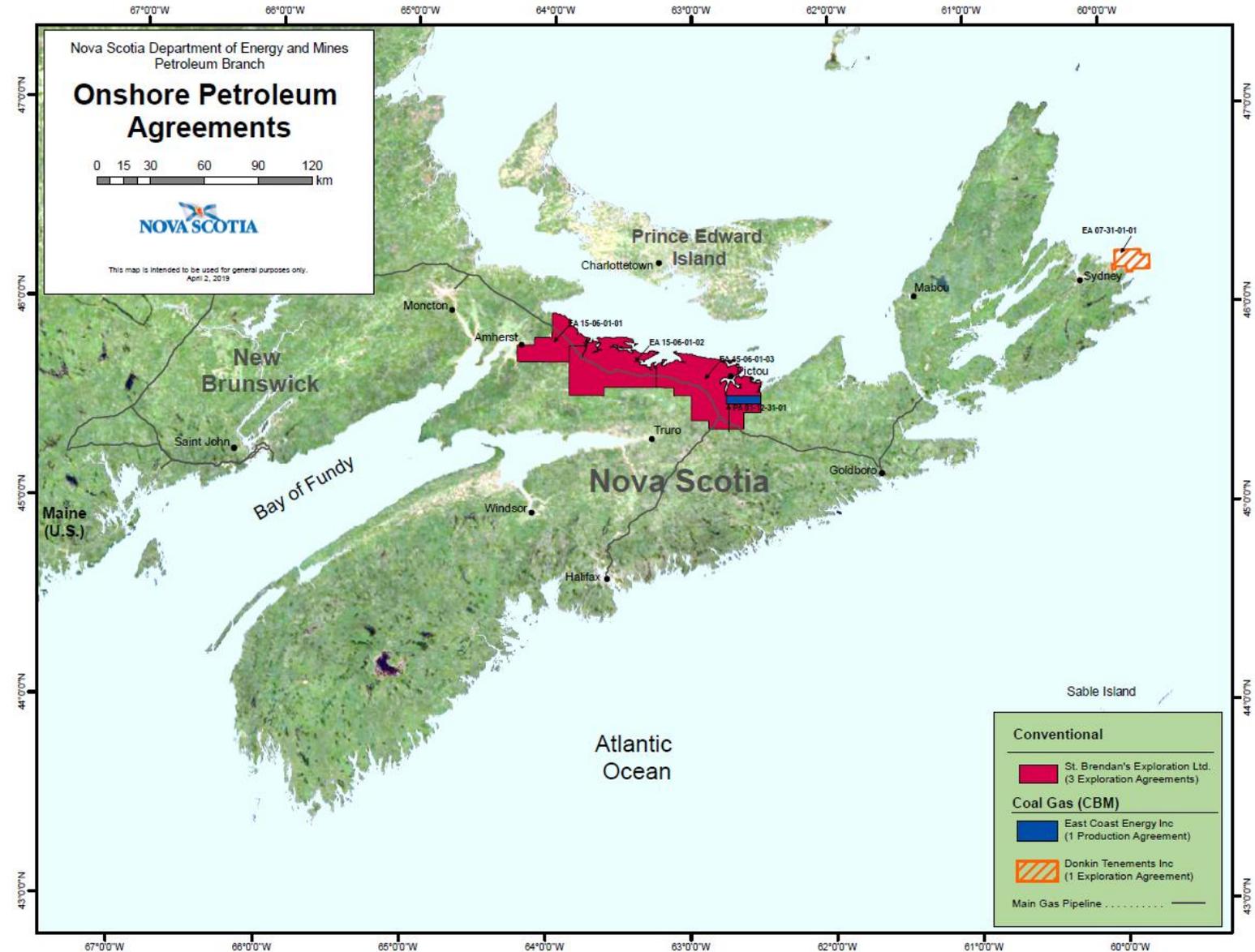
Onshore Petroleum Agreements

Accepting Land Nominations

- Lands may be nominated by industry at any time
- Usually results in a competitive Call for Exploration Proposals

Operating Companies

- East Coast Energy Inc.
- St. Brendan's Exploration Ltd.
- Donkin Tenements Inc

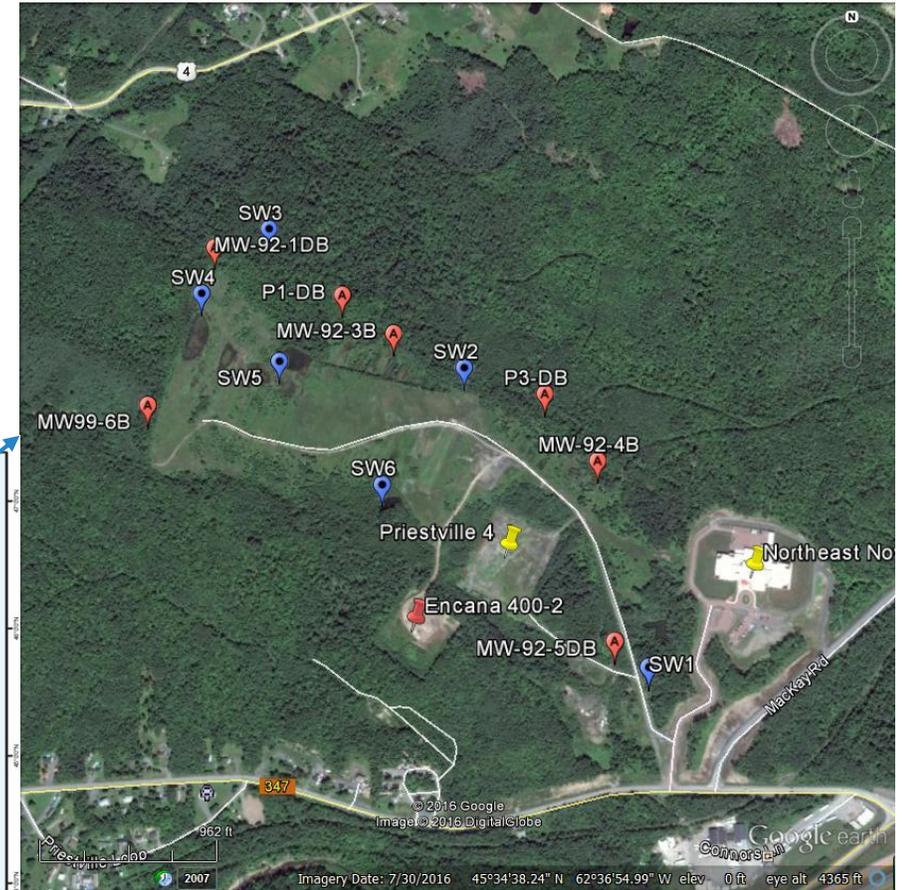
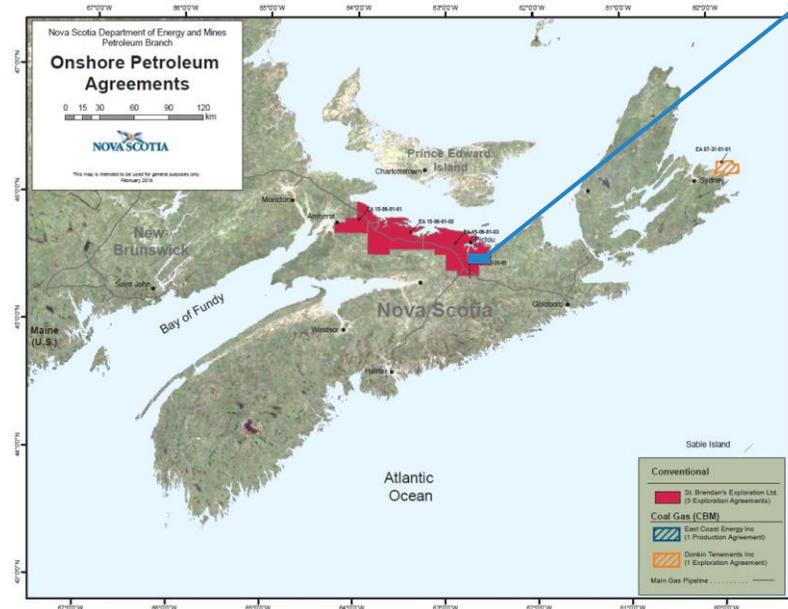


East Coast Energy Inc.



Recent Activity

- ECE 400-2
 - Stimulation and evaluation through 2018
 - Significant improvement in production
- Plans to drill and stimulate 4 more wells in area by 2020



Onshore Petroleum Overview

2 Key Study Areas (30% of Area of Interest)

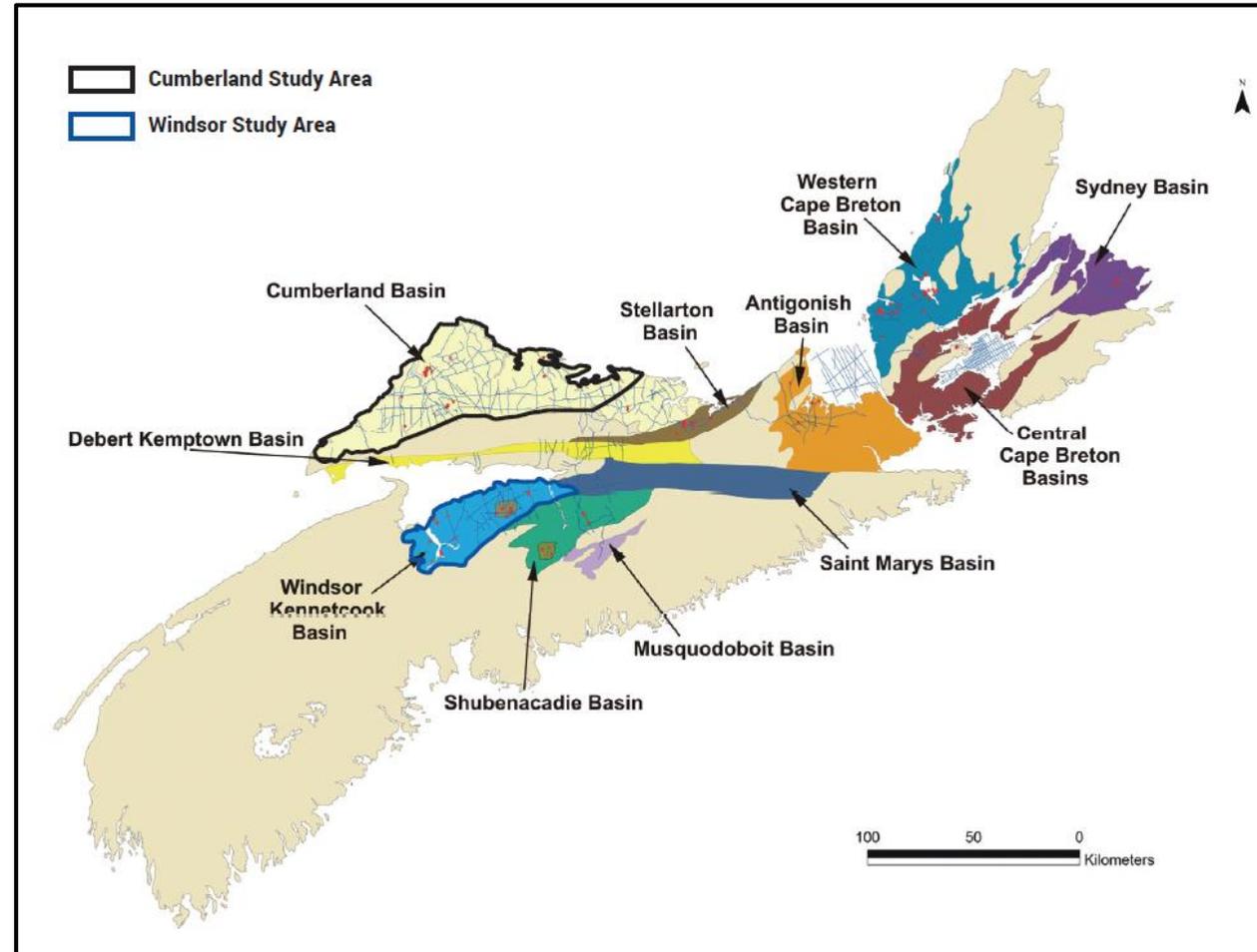
- Cumberland Subbasin
- Windsor Subbasin

3 Key Play Types

- Conventional
- Coal Bed Methane (CBM)
- Shale Gas

In-Place Gas Potential (36 tcf)

- Conventional (1.5 tcf)
- Coal Bed Methane (3 tcf)
- Shale Gas (32 tcf)



Nova Scotia Natural Gas Infrastructure



Thank You!

Come see us for further information or to discuss opportunities!

International Pavilion
Nova Scotia Department of Energy and Mines
Booth Number 129