APPENDIX 1
RECENT OFFSHORE DRILLING RESULTS

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Kilometers
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CHS, Esri, GEBCO, DeLorme, NaturalVue

Recent Offshore Drilling Results

Scotian Basin Integration Atlas 2023 – CANADA – June 2023

RECENT EXPLORATION

There have been two 3D wide azimuth seismic surveys acquired and 3 exploration well drilled since the development of the first Play Fairway Analysis in 2011. These provided new well control and deeper 3D imaging that allowed for major uplift in our deepwater understanding. The new data are as follows:

Seismic

Survey Number	Survey Name	Size	Year
NS24-B071-001E 3D	Tangier	7,826 km²	2014
NS24-S006-003E 3D	Shelburne	10,363 km²	2013

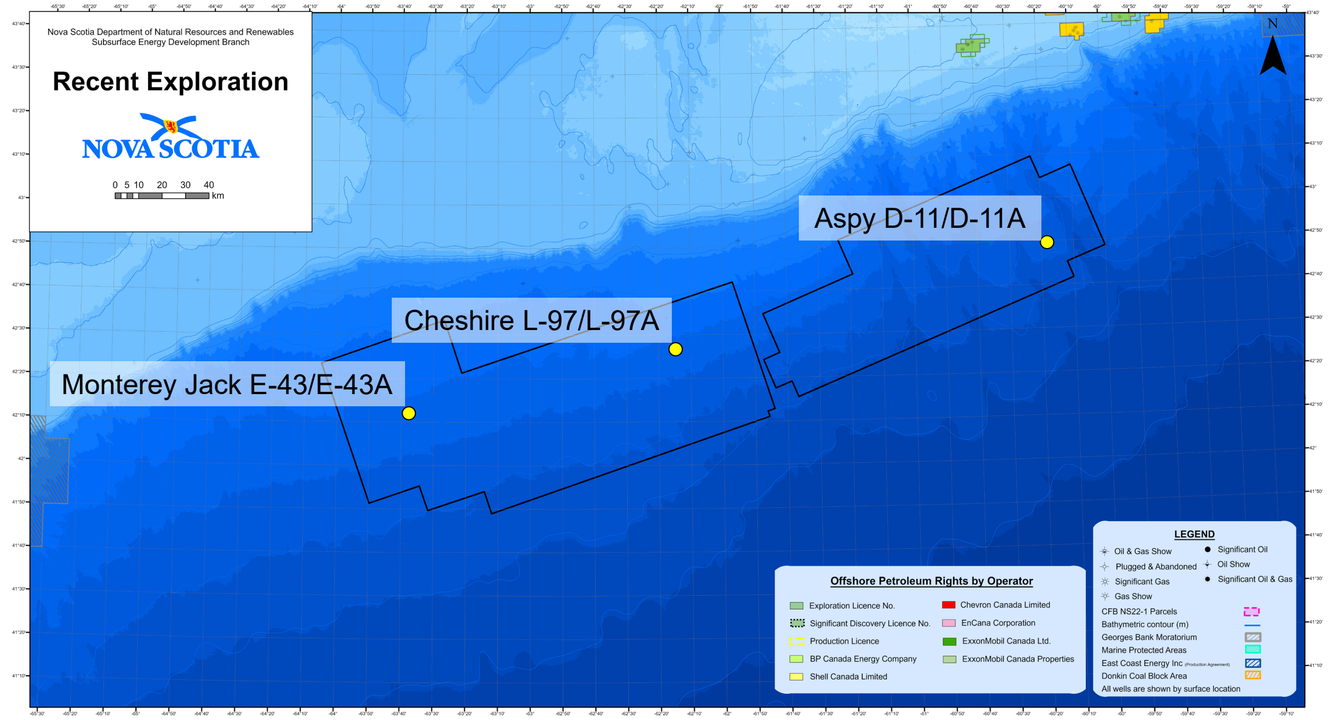
Wells

Well Name	Operator	Status
Cheshire L-97/L-97A	Shell	Dry Hole
Monterey Jack E-43/E-43A	Shell	Dry Hole
Aspy D-11/D-11A	BP	Dry Hole with Gas Shows*

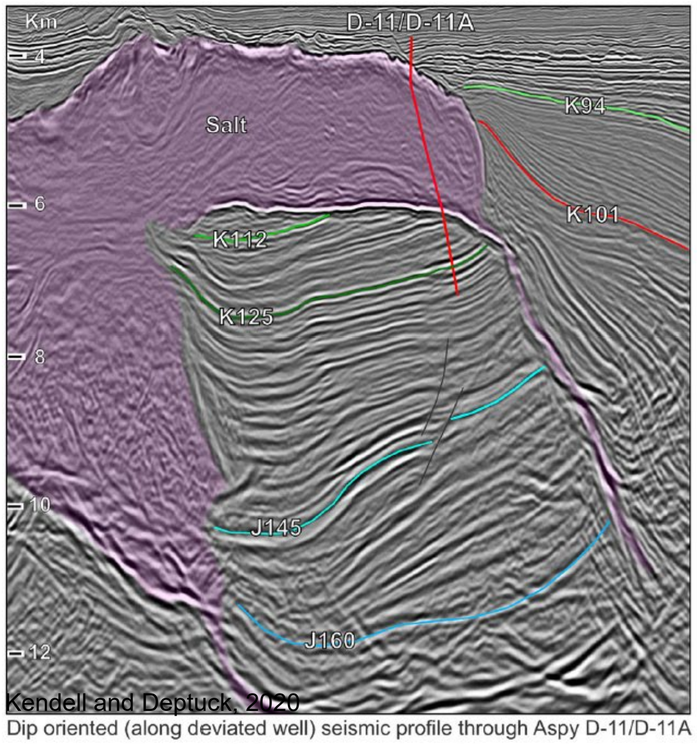
BP Well History Report describes Aspy D-11/D-11 as a dry hole with gas shows (BP, 2019)

Well sections from the Scope Atlas (Kendell and Deptuck, 2020). Well results available on CNSOPB DMC:

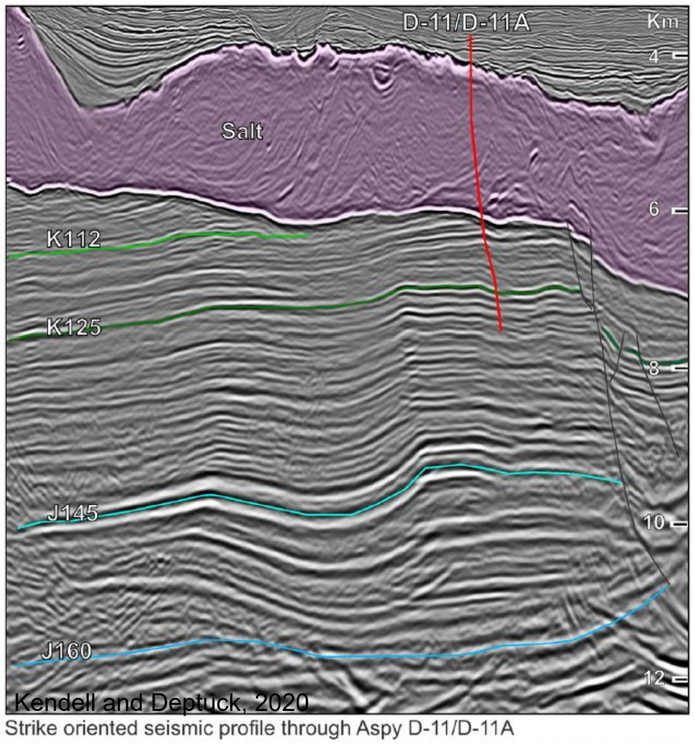
- Shell, 2016
- Shell, 2017
- BP, 2019



Well Overviews



Dip oriented (along deviated well) seismic profile through Aspy D-11/D-11A



Strike oriented seismic profile through Aspy D-11/D-11A

Aspy D-11

Play Type:
Lower Cretaceous turbidite fan forming a broad, low relief evacuation structure with salt onlap

Depositional Setting:
Lower Slope

Spud: Nov 2018

TD: 7,068 m

Pre-drill Objective:
Aspy targeted the sands in the Early Cretaceous Logan Canyon and Missisauga Members in a large 3-way structure against salt. migrating into the trap since the early Cretaceous. Primary seismic targets were the K120, K130, and K144 intervals.

Outcome: The top of the Logan Canyon target was penetrated predominantly claystone with no shows. The K130 section highlighted a transition from Aptian to Barremian Missisauga Formation reservoirs. The first reservoir encountered was a 19 m thick coarsening upward sequence with interbedded shales and silts defined as three sands with the upper most sand being the best quality. The second reservoir encountered was a single 3 m sand. The BP EOWR indicates mud gas samples showing a mixed biogenic & thermogenic signature in their zone of interest. Additionally, 6330-6445 m MD was noted to exhibit moderate/fair show. Gas wetness values increased to 49.76 and milky white streaming fluorescence was observed within described interval (BP, 2019).

Status: Plugged & abandoned in December 2018

Recent Offshore Drilling Results

Cheshire L-97

Play Type:
Lower Cretaceous turbidite fan forming a broad, low relief evacuation structure with salt onlap

Depositional Setting:
Upper Slope

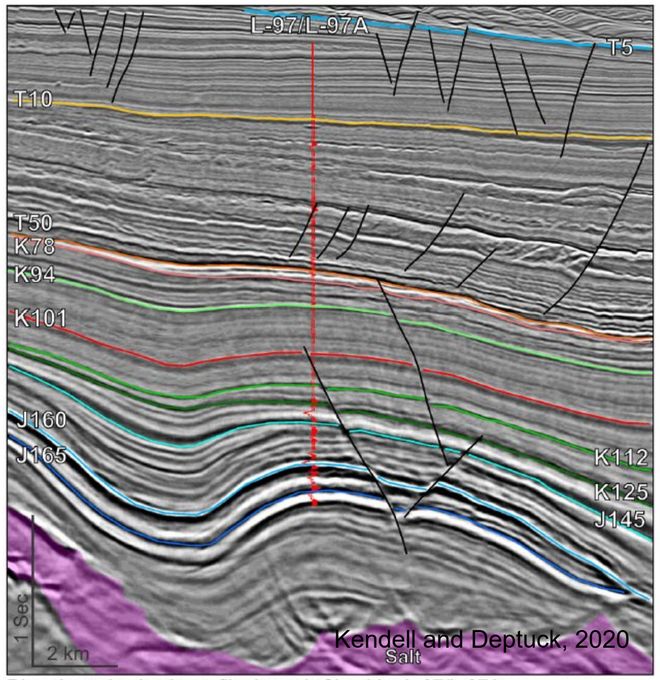
Spud: Oct 2015

TD: 7,068 m

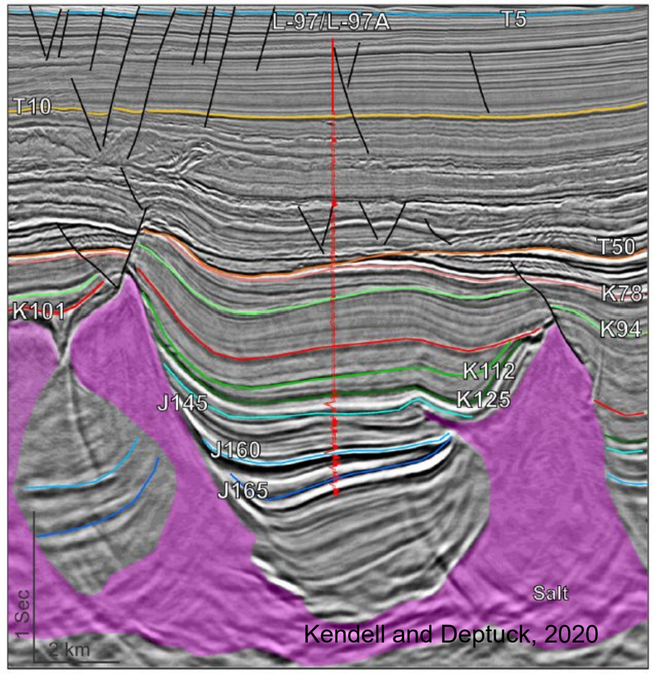
Pre-drill Objective:
Lower Cretaceous turbidities (Missisauga equivalent) onlapping salt to the east and with a west-plunging nose under a salt overhang. Secondary objective to test Jurassic sediments of the time equivalent Mohawk/Mic Mac and Mohican formations.

Outcome: Encountered predominantly claystones and marls in the targeted Missisauga section. No hydrocarbon bearing zones or reservoirs met. Gas and fluid inclusions within the Scaterie Formation (~6820 m) suggested possible migrated petroleum liquid, however testing completed by APT International (for NRR) indicate evidence does not support staining by migrated hydrocarbons (Gulbrandsen et al., 2018).

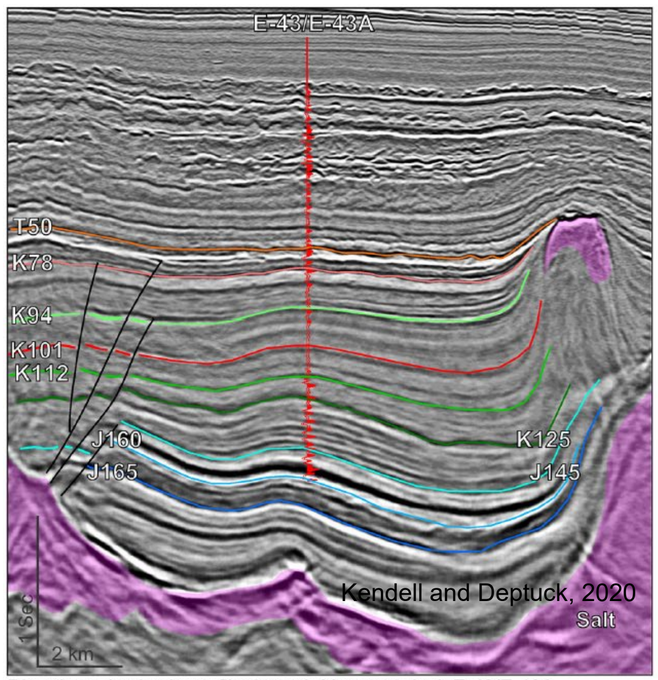
Status: Plugged & abandoned in Sept 2016



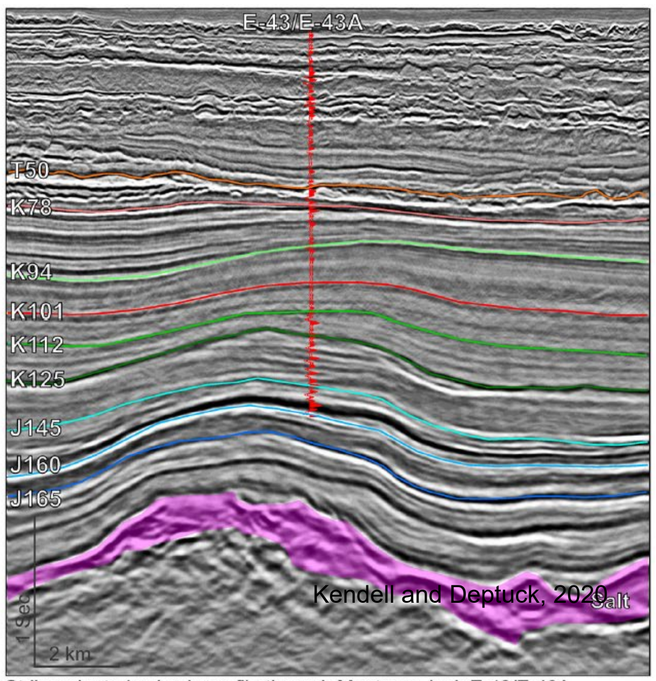
Dip oriented seismic profile through Cheshire L-97/L-97A



Strike oriented seismic profile through Cheshire L-97/L-97A



Dip oriented seismic profile through Monterey Jack E-43/E-43A



Strike oriented seismic profile through Monterey Jack E-43/E-43A

Monterey Jack E-48

Play Type:
Lower Cretaceous turbidite reservoir ponded between salt bodies with flank onlap

Depositional Setting:
Upper Slope

Spud: Sept 2016

TD: 6,692 m

Pre-drill Objective:
Lower Cretaceous turbidities (Missisauga equivalent) onlapping salt to the south and forming a simple north-plunging nose with a simple 4-way closure. Secondary objective to test Jurassic sediments of the time equivalent Mohawk/Mic Mac and Mohican formations.

Outcome: Encountered predominantly claystones, marls, and shales in the targeted Missisauga section with no hydrocarbon bearing zones or reservoirs met. A possible “fluid facies” were suggested in the sandstones between ~5907-5922 m, based on fluid inclusion data. Additional testing completed by APT International (for NRR) indicated again that the evidence did not support staining by migrated hydrocarbons (Gulbrandsen et al., 2018).

Status: Plugged & abandoned in January 2017

In 2018, the OERA and Nova Scotia Department of Natural Resources and Renewables commissioned Beicip Franlab to do a lookback of the 2011 PFA and post-well analysis to update the understanding and modeling of the Shelburne Sub-Basin. The analysis can be found https://oera.ca/research/shelburne-sub-basin-play-fairway-analysis-update. Further work completed by Deptuck and Kendall in 2020 furthered the understanding of sediment deposition in this area of the margin and shed light on to the Monterey Jack and Cheshire findings. This work is summarized in Chapter 1.1.

Well and Seismic Data