Play Fairway Analysis
Reservoir De-risking Seminar
Isotope distribution - oils

Sofer diagram

Nova Scotia oils

Piston core oil seeps

WELLS
1 Arcadia J-16
2 Bluenose 2G-47
3 Penobscot L-30
4 Venture H-22
5 Alma F-67
6 Alma F-67
7 Arcadia J-16
8 Banquereau C-21
9 Chebucto K-90
10 Citnalta I-59
11 Cohasset A-52
12 Cohasset A-52
13 Cohasset D-42
14 Cohasset D-42
15 Glenelg J-48
16 Glenelg J-48
17 N. Triumph B-52
18 N. Triumph G-43
19 Olympia A-12
20 Olympia A-12
21 Panuck B-90
22 Primrose A-41
23 Primrose N-90
24 Sable Is. E-48
25 Sable Is. E-48
26 Sable Is. 3H-58
27 S. Venture O-59
28 S. Venture O-59
29 Thebaud C-74
30 Thebaud C-74
31 Venture B-52
32 Venture B-13
33 Venture B-43

Piston
Lower Jurassic source rock indications

Salt distribution

ECMA reconstruction (end of rifting) (Sinemurian/Pliensbachian limit, 190 Ma)
- Gammacerane

North America
- Outlines of salt structures (Beicip, Davison, Edwards, Wade et McLean)
- Extent of halite (Labails)
- Autochtonous salt (Albertz)
- Salt and fault (Beicip, preliminary)

Africa, Meseta and Iberia
- Outlines of salt structures (Tari & Molnar, Maillard, Davison, Matias)
- Rafts and isolated diapirs (T&M)
- Diapirc salt and turtle structures (T&M)
- Canopy salt (T&M)
- Toe-thrust zone (T&M)
- Allochtonous salt (Hafid)
- Salt pillow (Hafid)
- Extent of halite (Labails)
- Extent of halite (Nemcok)

Well 547b, no gammacerane in Lower Jurassic rock extract
2 very different petroleum provinces

Mesozoic sediments total thickness - T200 ➔ Seabed

Northeastern province: more than 15 km of sediments large clastic supply

Southwestern province: less than 9 km of sediments less clastic supply
Offshore novascotia

High sedimentation rate ➔ Salt tongues and canopies

Low sedimentation rate ➔ vertical diapirs
Jurassic modeling results: GDE maps dress-up for key stratigraphic intervals.

CALLOVIAN TRANSGRESSION - SCATARIE - MISAINE FORMATIONS

EARLY JURASSIC DEPOSITS – IROQUOIS – MOHICAN FORMATIONS
Stratigraphy of the Middle Jurassic

Depositional architecture for each sequence:
1. Prograding clastics, ending up with shallow marine carbonates
2. Expansion of shallow marine carbonate through time (1st order transgression)
Cretaceous modeling results: GDE maps for key stratigraphic intervals

- APTIAN TRANSGRESSION
  - 117.5 Ma

- BARREMIAN FORCED REGRESSION
  - 130 Ma

- HAUTERIVIAN MFS
  - 130.5 Ma

- BCU FORCED REGRESSION
  - 136.5 Ma
Middle Missisauga seismic facies and geometries

K137 → K130 thickness map

J150 → K137 isopach map
Cretaceous modeling results: GDE maps dress-up for key stratigraphic intervals.
K130 ▶ K101 isopach map
Source Rocks Modeling – Transformation Ratio

PLIENBACHIAN SR

- APTIAN SR
- VALANGINIAN SR
- TITHONIAN SR
- CALLOVIAN SR
- PLIENBACHIAN SR

% TRANSFORMATION RATIO

NEW GEOSCIENCE. NEW OPPORTUNITY.
Source Rocks Modeling – Transformation Ratio

TITHONIAN SR

| APTIAN SR |
| VALANGINIAN SR |
| TITHONIAN SR | ** highlight ** |
| CALLOVIAN SR |
| PLIENBACHIAN SR |
Jurassic and Cretaceous systems

Jurassic carbonate system 1
J150 - J185

Late Albian Lowstand system 4
K94 – K101

Late Albian Growth fault systems 4

Jurassic deltaic system 1
J150 – J200

Basement high

Autochthonous salt

Salt diapirism

Early Cretaceous Delta 3
K94 – K137

Berriasian / Valanginian “lowstand” delta 2
K137-K147

Salt Canopies

Banquereau Detachment Zone

NEW GEO SCIENCE. NEW OPPORTUNITY.
Early Jurassic source

Presence

Presence*maturity

Maturity

Presence*maturity*migration
Tithonian source

- Presence
- Presence*maturity
- Maturity
- Presence*maturity*migration
Upper Jurassic carbonate play
Upper Jurassic sands play
Valanginian-Hauterivian sands play (1)
Barremian sands play (1)
Albian sands play (1)
Late Albian Lowstand sands play (2)
2 very different petroleum provinces

Mesozoic sediments total thickness - T200

Salt diapirs at K101
Salt canopies at K101
Base ment faults
Continental sub-basins

Adam
Brent
Mark

Legend

Contour interval: 200 m