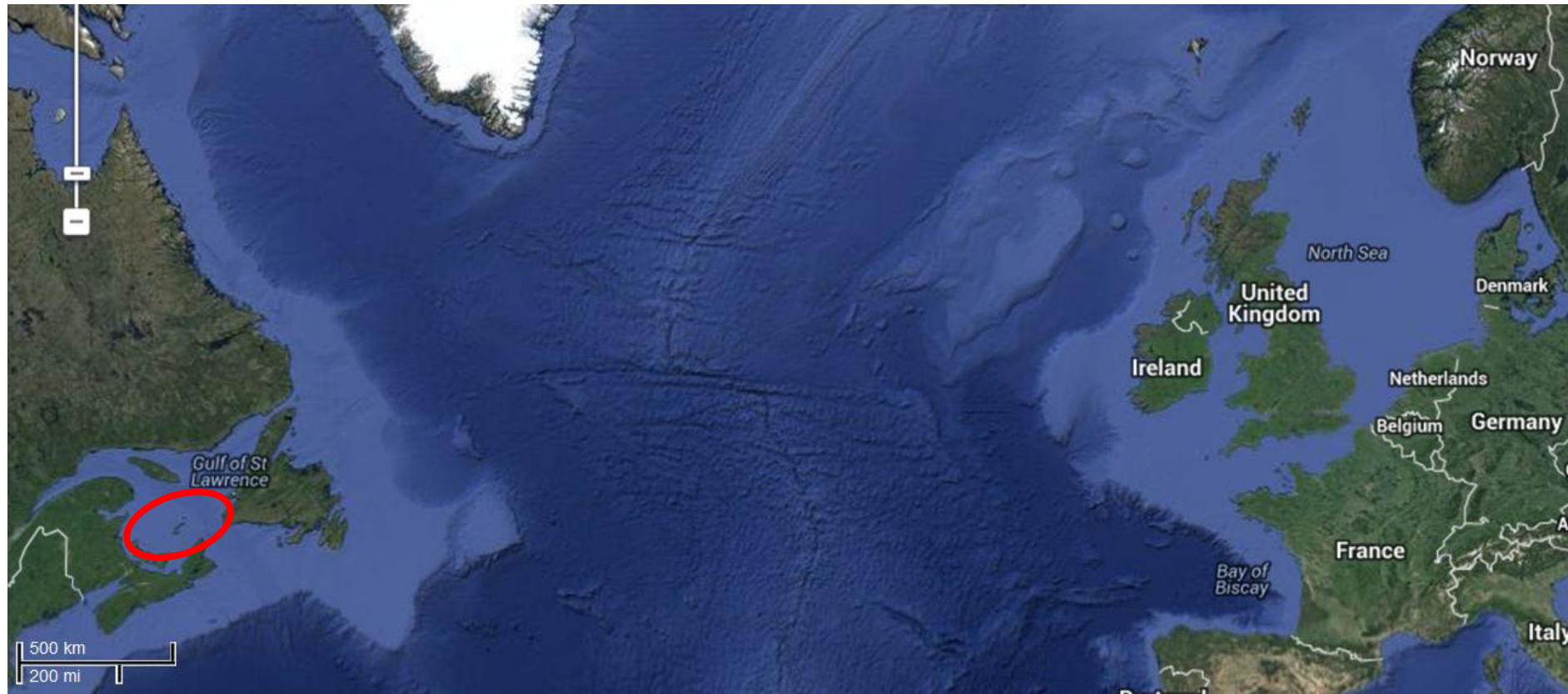




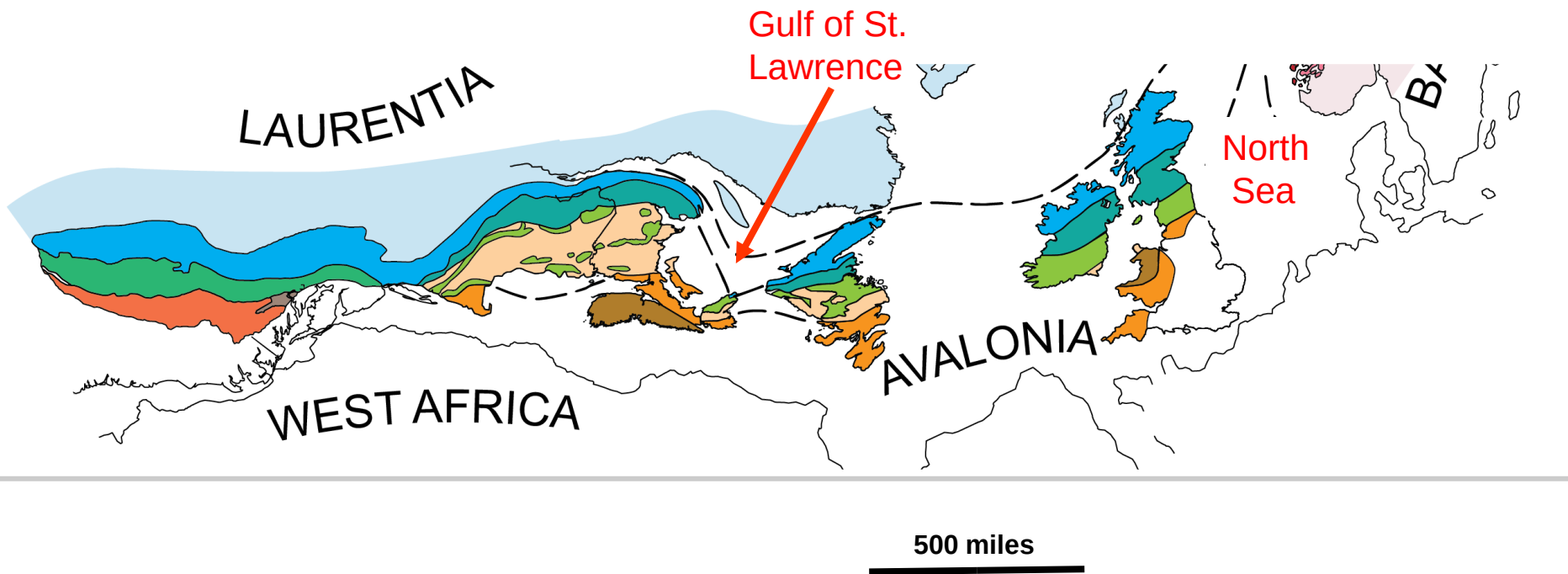
The Giant Old Harry Structure, an Ideal CSEM Candidate, Eastern Canada

March, 2017

Gulf of St. Lawrence



Conjugate Basin to the Southern North Sea Carboniferous

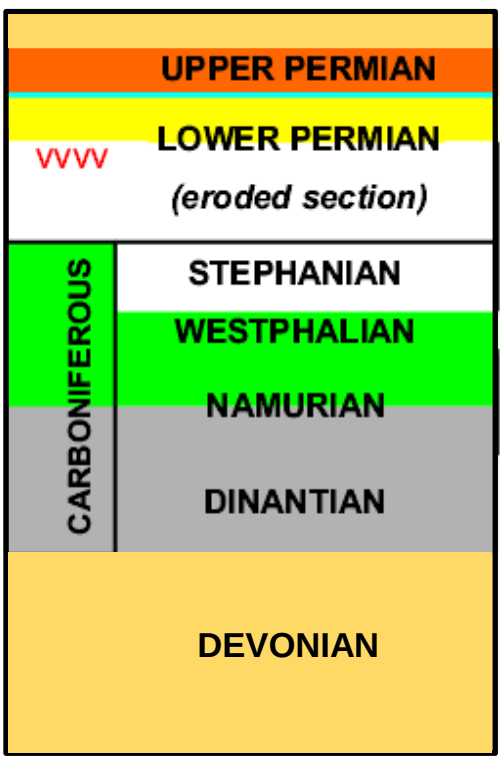
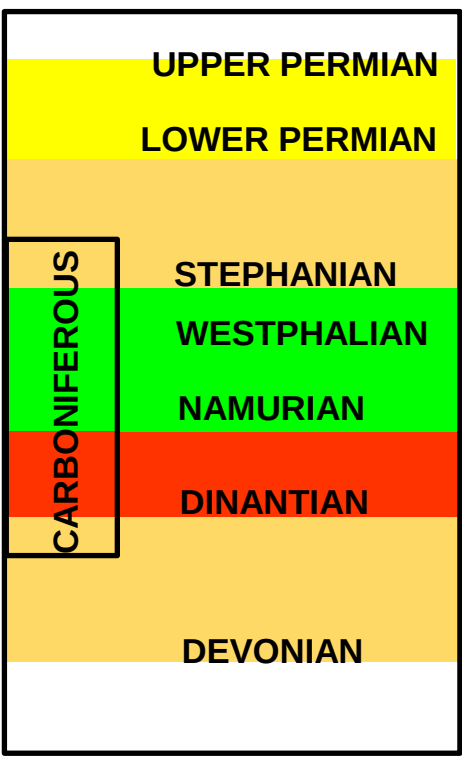


Canada-North Sea Comparison



GULF OF St. LAWRENCE

SOUTHERN NORTH SEA



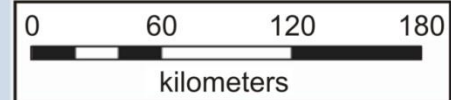
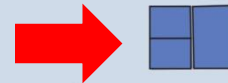
Licence Holdings

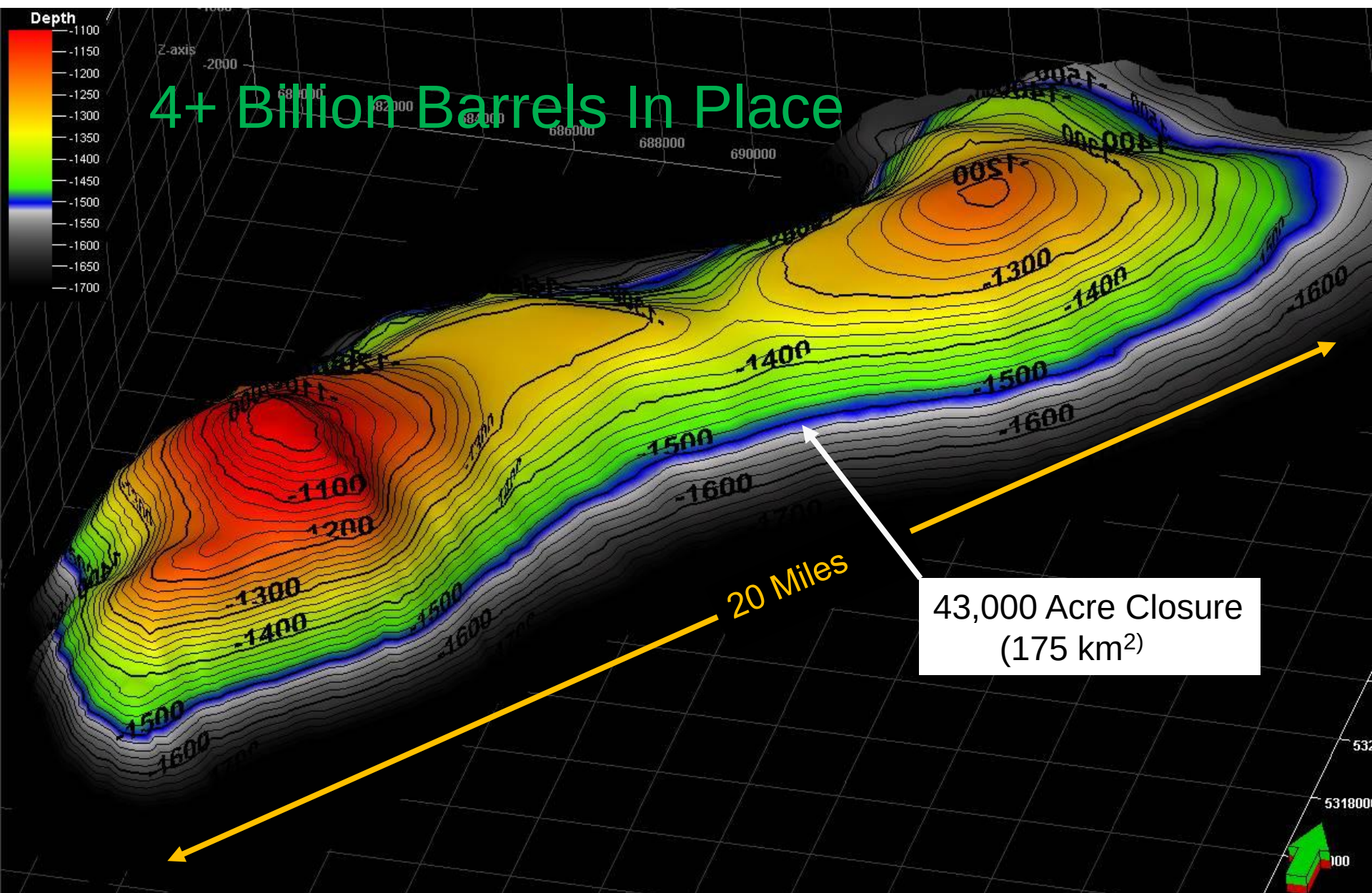
Corridor (100 %) 

Corridor (50 %) 

Corridor (21.67 %) 

250,000 Acres



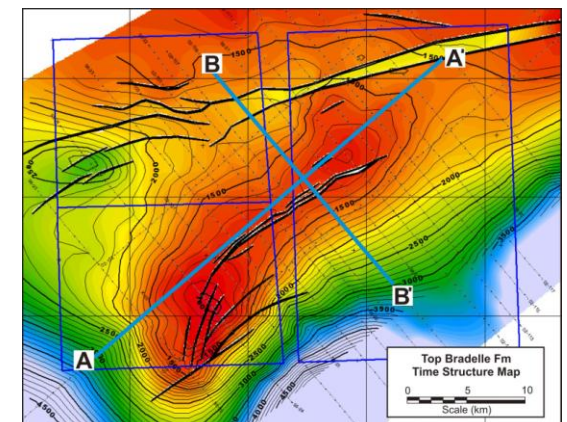
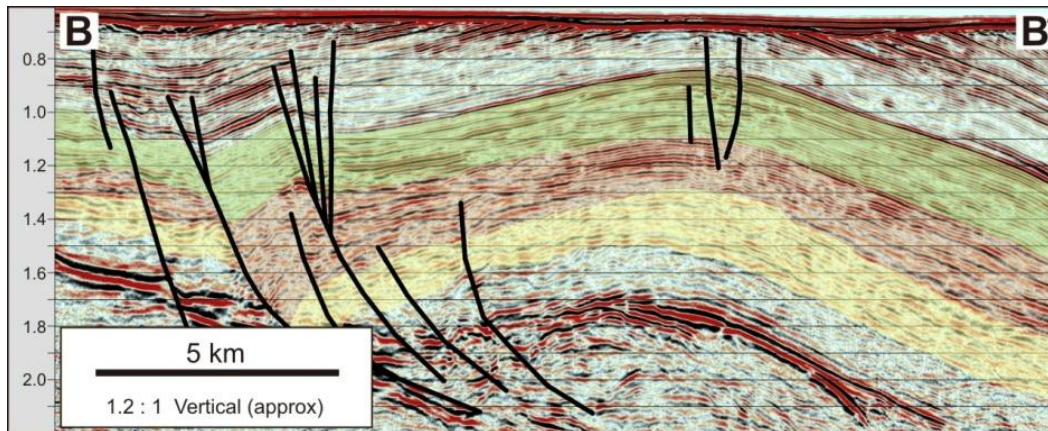
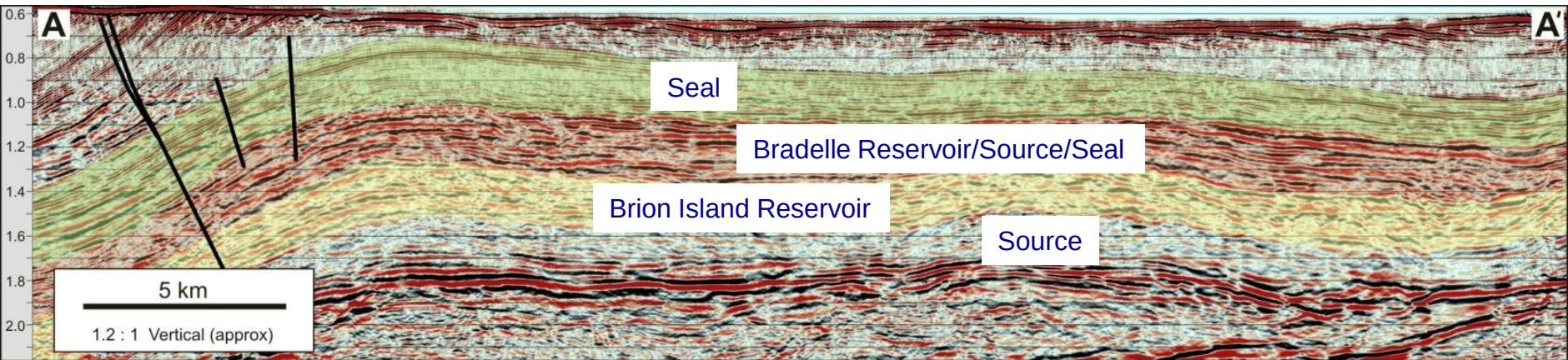


Source - Reservoir - Seal

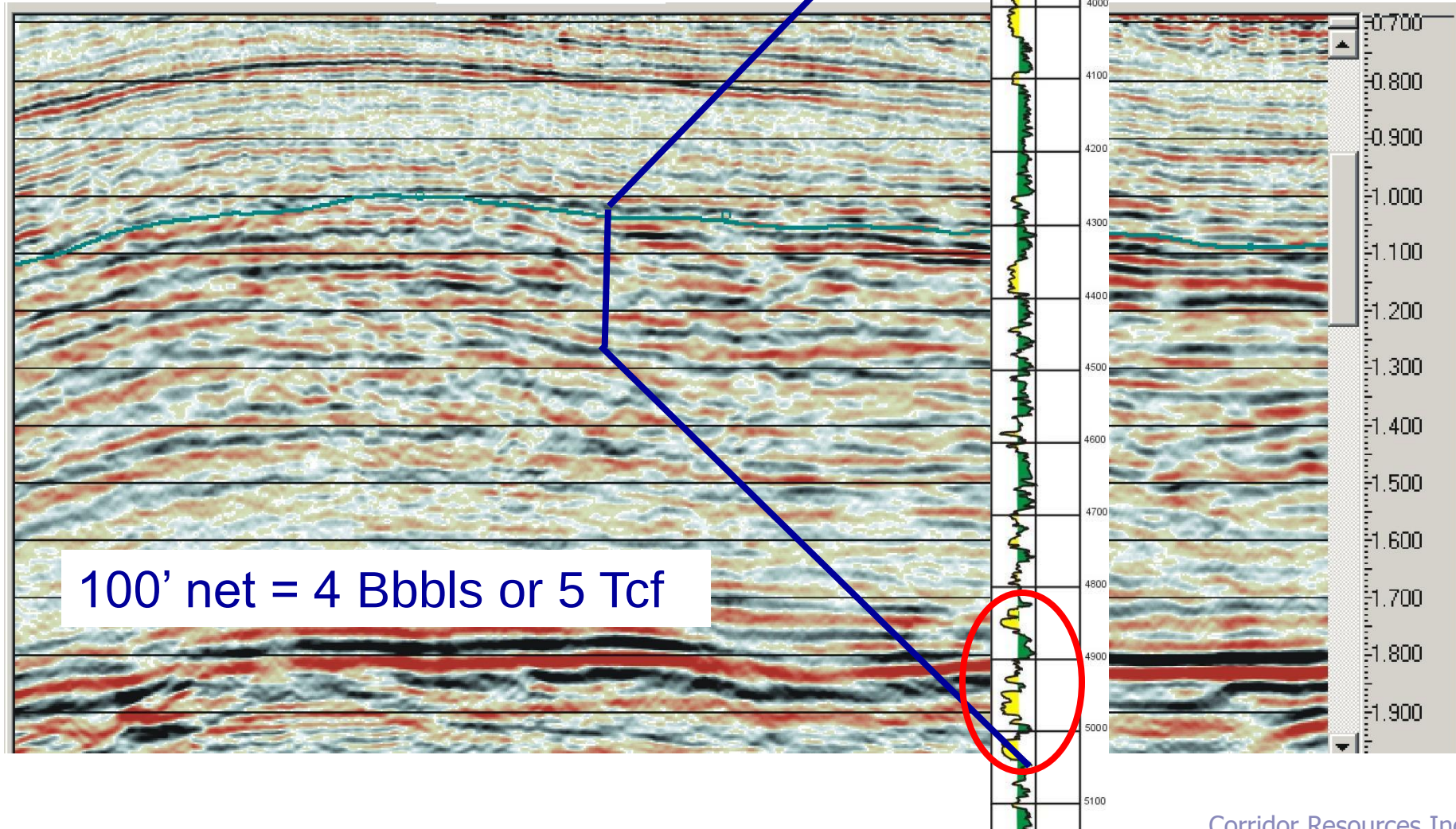


- Source Rocks
 - Thick, (light) oil-prone source rocks within the oil window
- Reservoir Rocks
 - Nearest well has 100' of 30 md Bradelle sandstones with capacity to produce 20,000 bbls/d from a vertical well
 - Also has 550' of lesser quality Brian Island sandstones
- Seal Rocks
 - 1,000' of shale overlies the Bradelle sands, in addition to the thick organic shales within the Bradelle

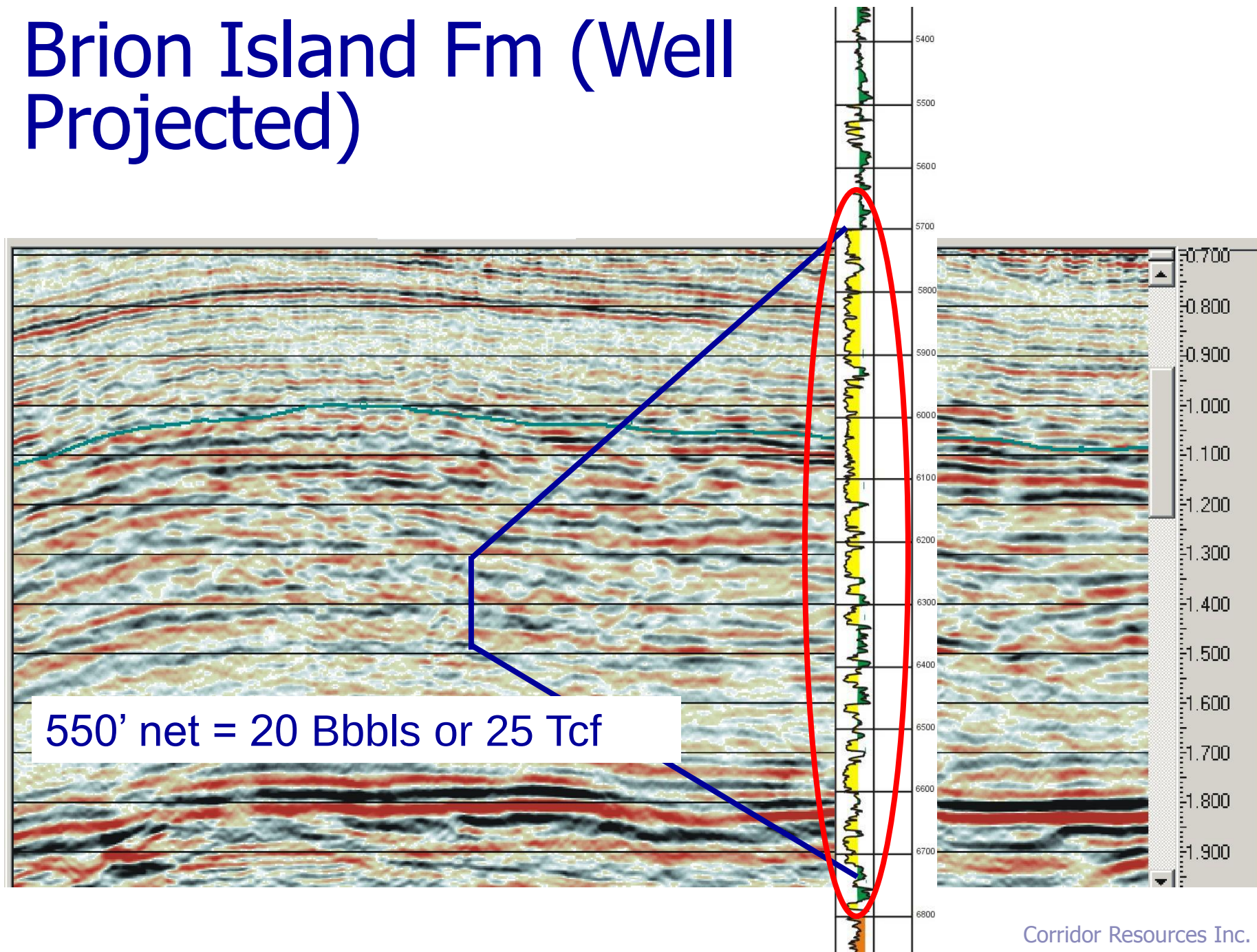
Strike and Dip Lines



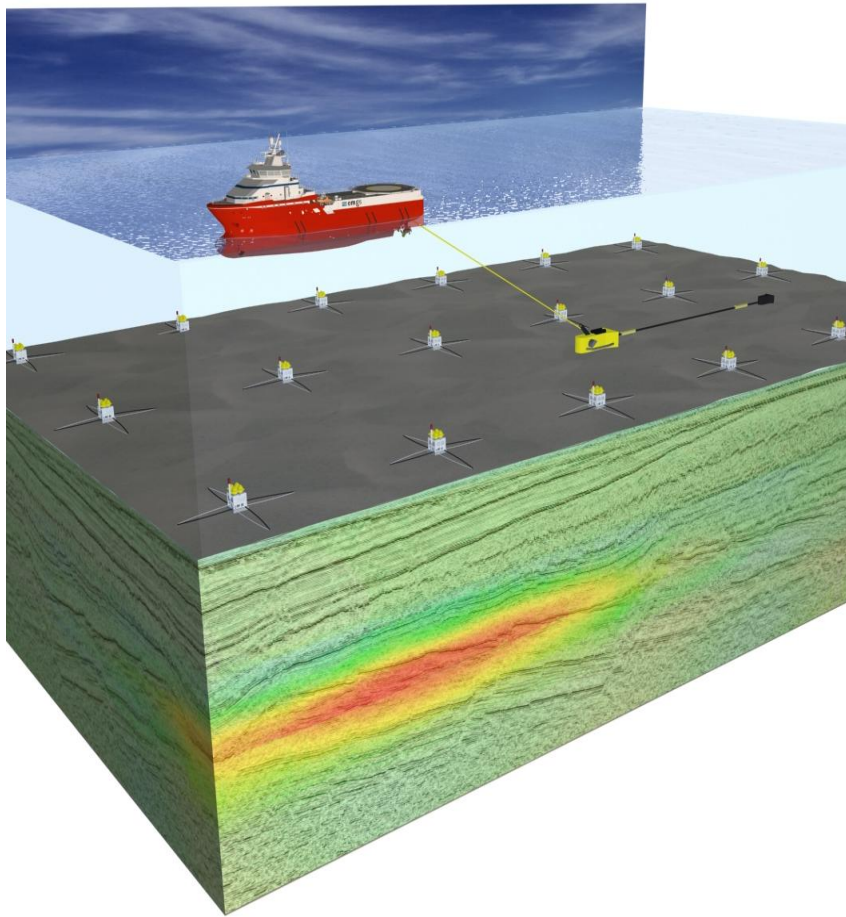
Bradelle Fm (Well Projected)



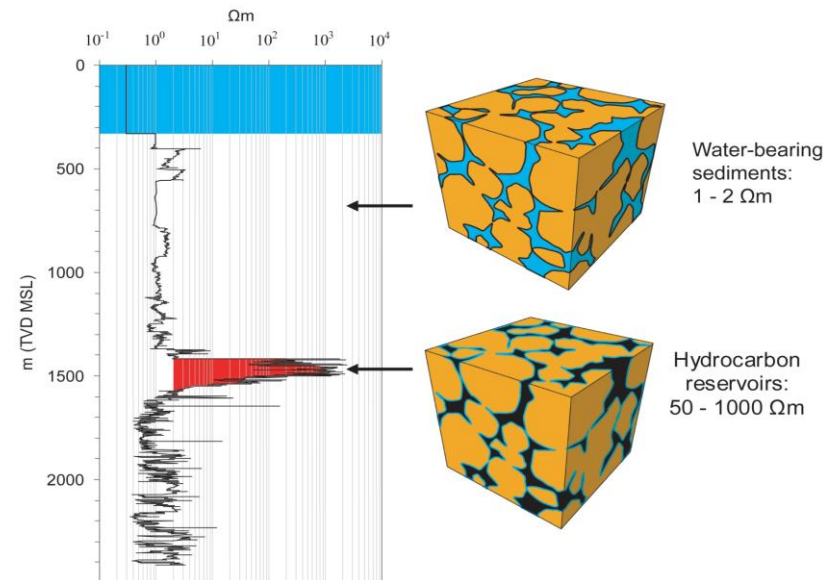
Brion Island Fm (Well Projected)



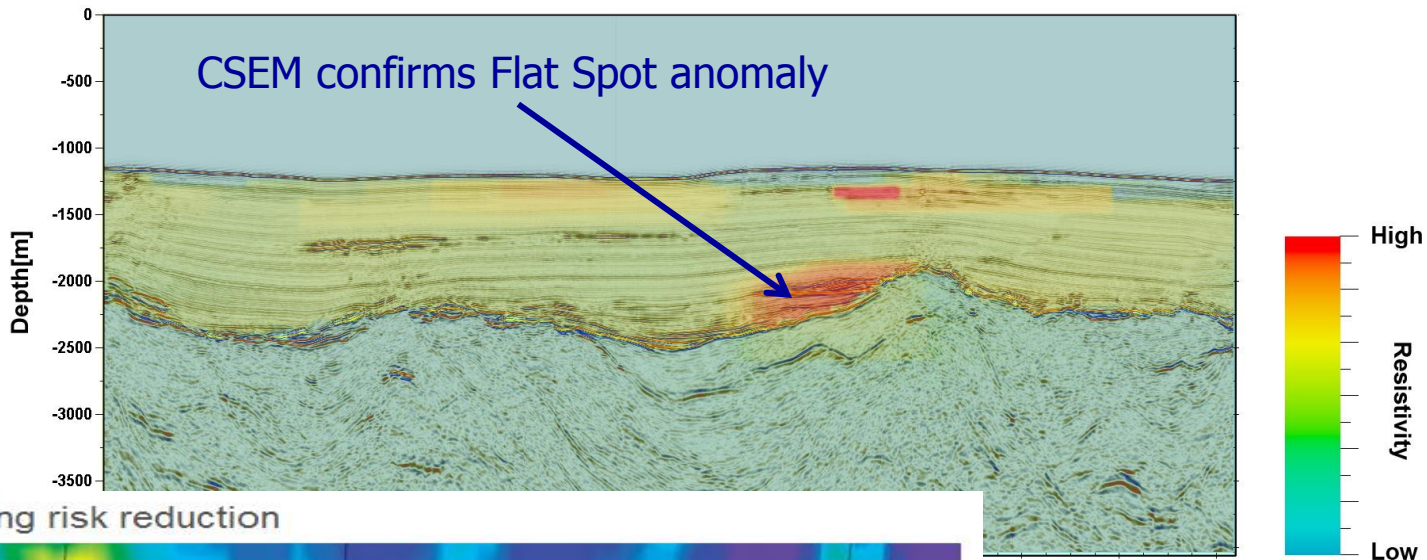
CSEM Provides Subsurface Resistivity Measurements



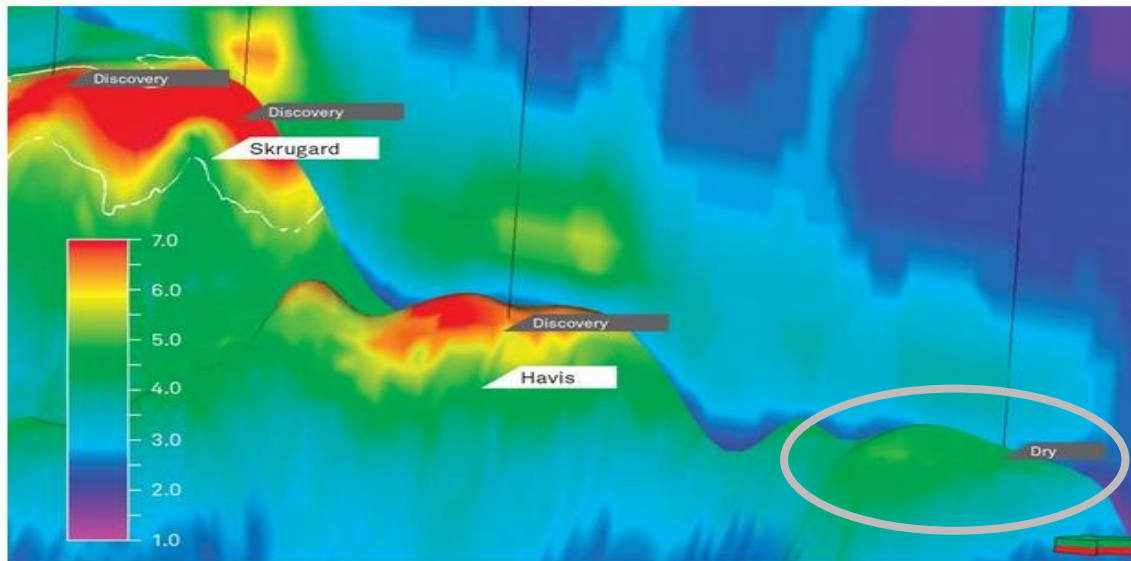
- CSEM – Controlled Source Electro-Magnetic survey
- Recording instruments are placed on the seafloor and an electro-magnetic (EM) source is towed behind a vessel (see left).
- Signals from the EM source travel through the rock formations to the receivers. Anomalous resistive layers (hydrocarbons) will stand-out against a non-resistive background (see below and left).



Two Examples of CSEM Hydrocarbon Anomalies



■ Pre-drilling risk reduction



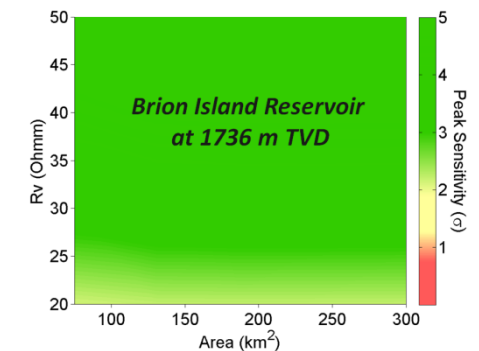
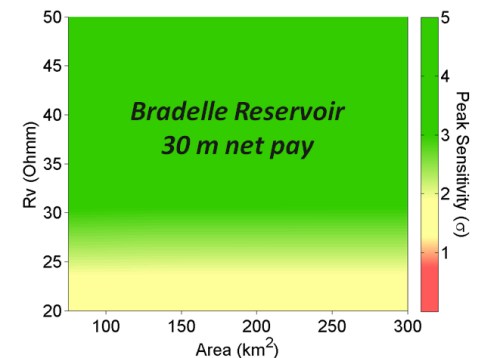
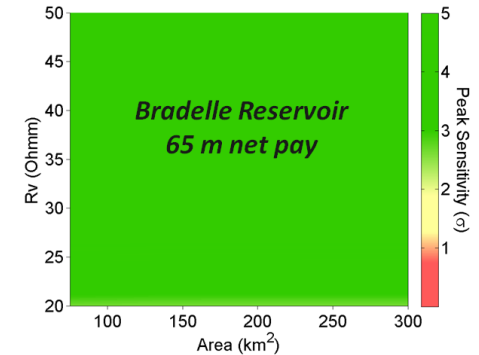
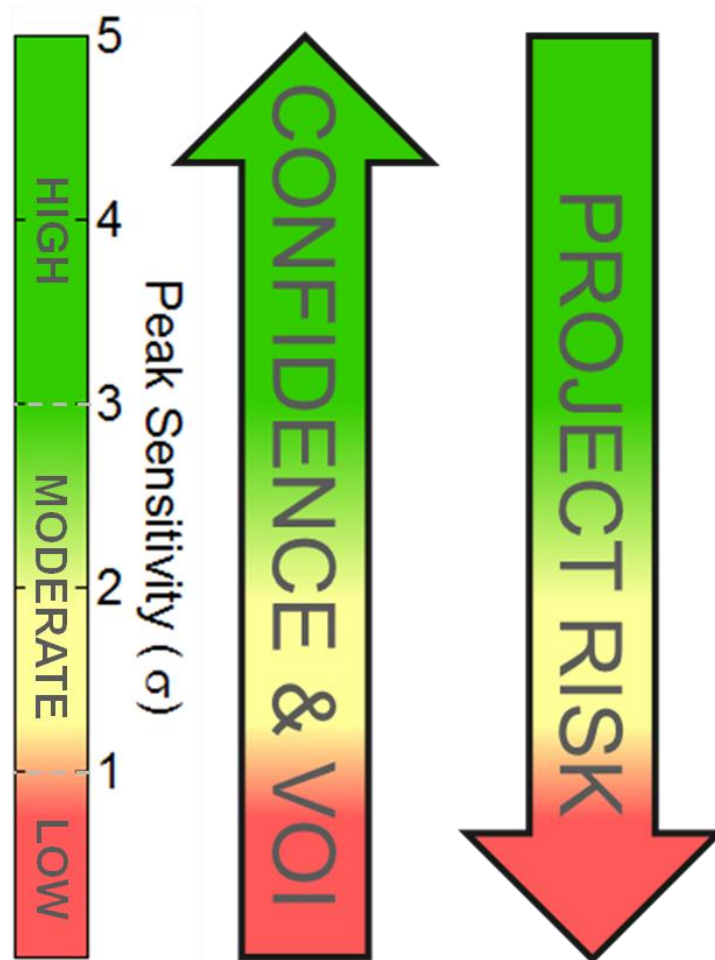
Note in the image at left that the two discoveries show CSEM anomalies, whereas the dry hole does not.

Old Harry is CSEM Compatible



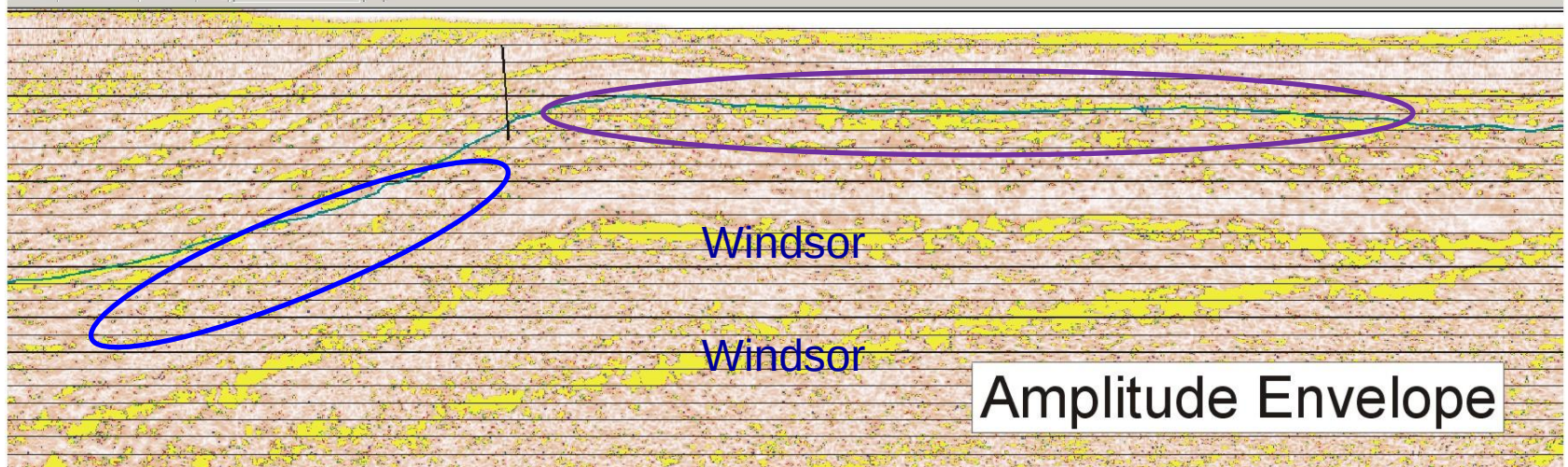
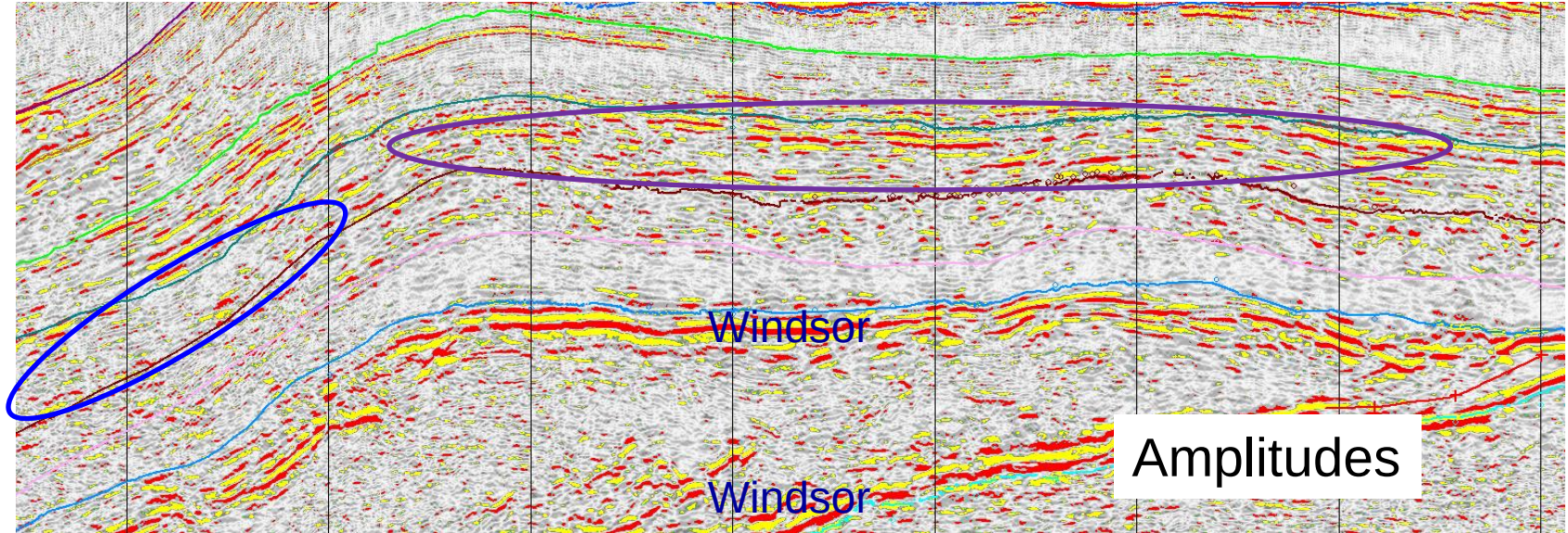
- CSEM works best in large, shallow, thick reservoirs with no resistive beds for false negatives
- Old Harry is:
 - Large - 43,000 acres
 - Shallow – Bradelle is between 2,400' and 4,400' below sea floor
 - Bradelle sands are 100' thick and Brion Island are 550' thick
 - No resistive volcanics or carbonates occur within this clastic sequence
- CSEM can be used to validate DHI's (Direct Hydrocarbon Indicators)
 - EM anomalies that correspond to indicators such as amplitude and frequency anomalies and structural closure would be very powerful

Sensitivity Analysis Concludes that Old Harry is Well Suited

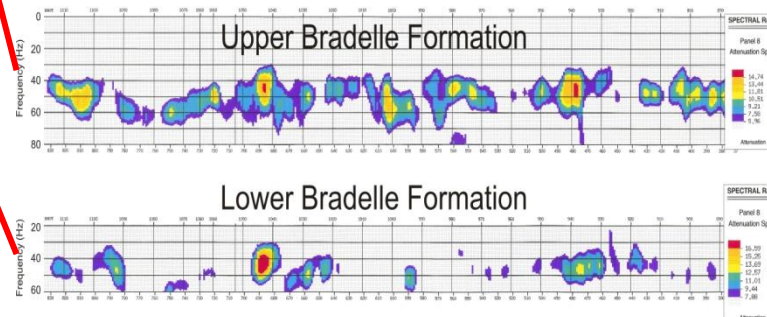
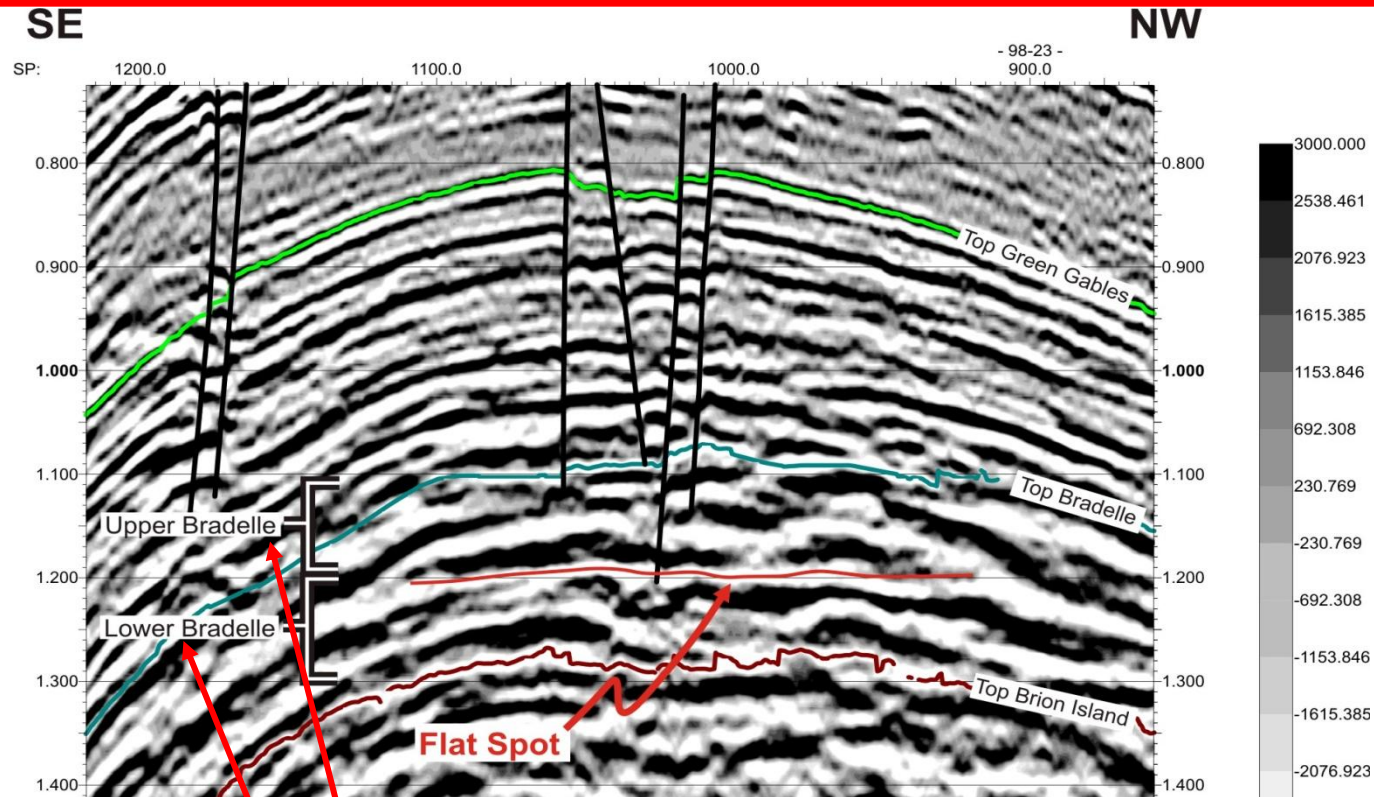


Bradelle Formation Amplitude Anomalies

- Amplitudes are strongest within the Old Harry structure (purple) and absent off structure (blue)



Frequency Attenuation Above Flat Spot



Strong Attenuation

Weak Attenuation

Summary



- Old Harry is a large undrilled structure in a basin with proven hydrocarbon system
- The structure has a number of overlapping direct hydrocarbon indicators
- A positive CESM anomaly would strengthen the validity of those DHIs
- Old Harry is ideal for the CSEM method as it is large, shallow, has thick reservoirs and lacks high resistivity carbonates or volcanics
- We are seeking a partner to pay for the CSEM and take a drilling option following the results of the survey

BOOTH 67

Billion bbl prospect showing bright reflectors that are coincident with the interpreted closure

