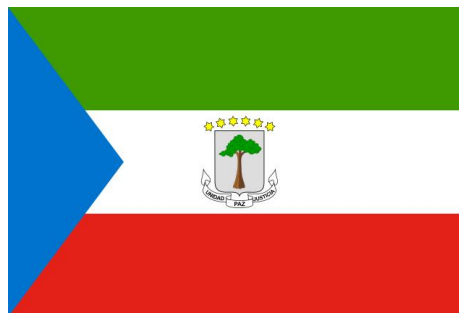


# BEOs

AAPG | GESGB  
Business  
& Exploration  
Opportunities  
Show



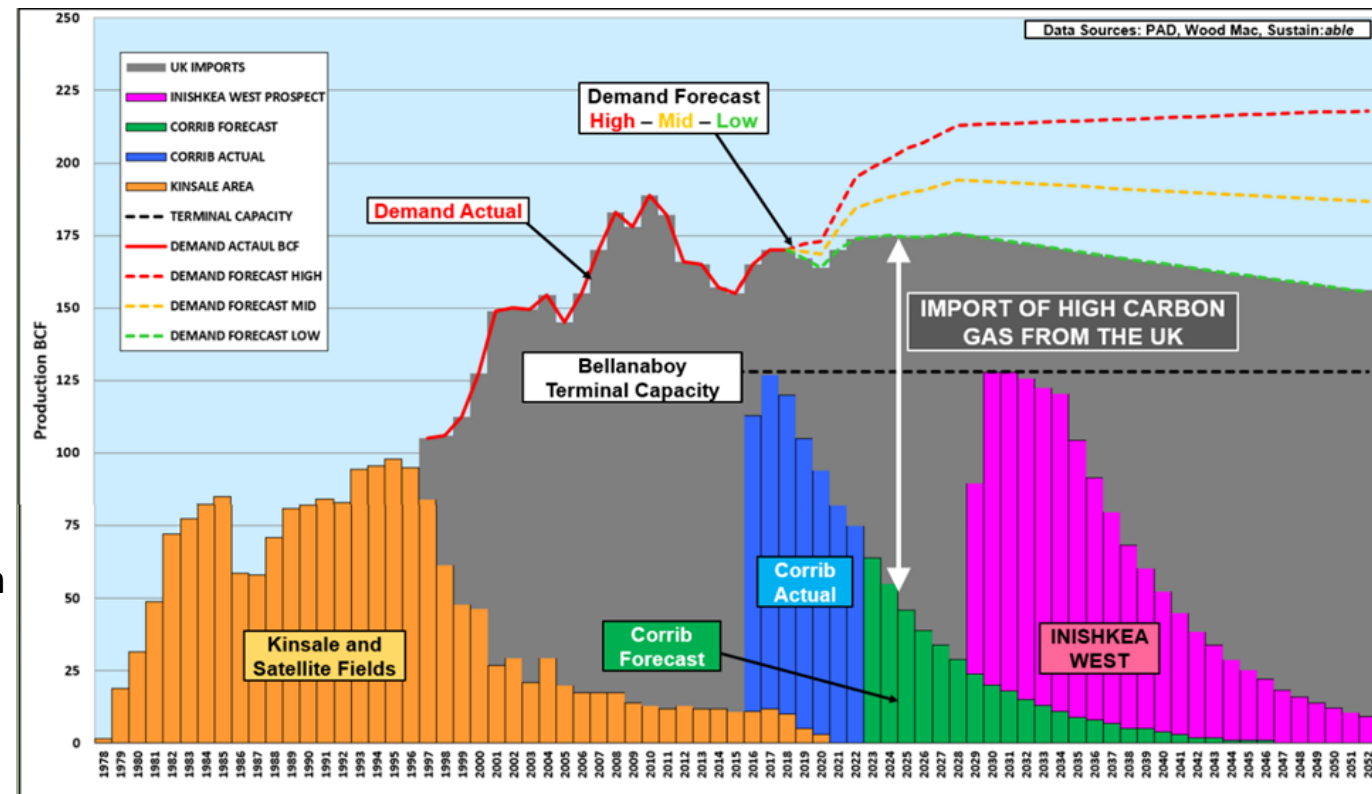
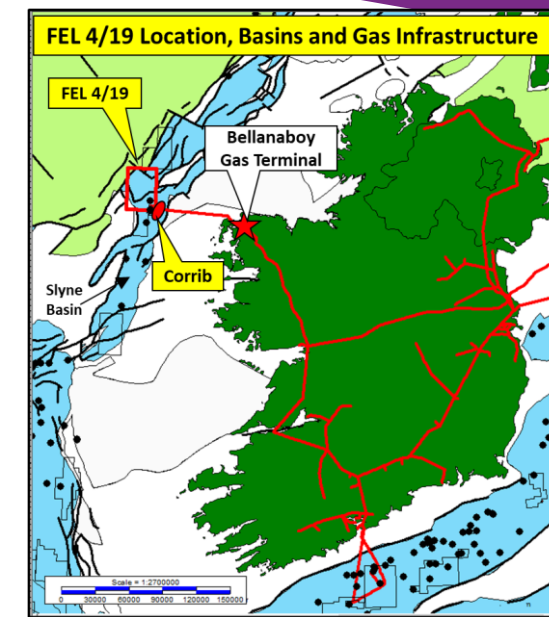
**Infrastructure Led Gas Exploration in Equatorial Guinea & Ireland, helping supply much needed gas to the European market. Block FEL 4/19 in Ireland and EG-08 in Equatorial Guinea**



**By Jamie White  
Europa Oil and Gas**

# Ireland Overview – Government & Key Players

- FEL 4/19 is operated by Europa Oil and Gas with 100% equity.
- 1 Large Corrib Lookalike structure called Inishkea West.
- Currently almost one third of Ireland's overall energy needs, and over half its electricity, comes from natural gas (Source: [www.gov.ie](http://www.gov.ie))
- The Corrib gas field provides c.30% of Ireland's annual natural gas requirement and has a world class low emission profile however the field is in terminal decline.
- As Corrib production declines and approaches COP, there will be an obvious shortfall of domestically produced gas in Ireland.
- Irish fiscal terms:
  - 25% Corporation tax
  - Petroleum Production Tax (PPT) on R factor (Field's cumulative gross revenues divided by its cumulative field costs)
  - PPT ranges between a minimum of 5% up to a maximum of 40%.

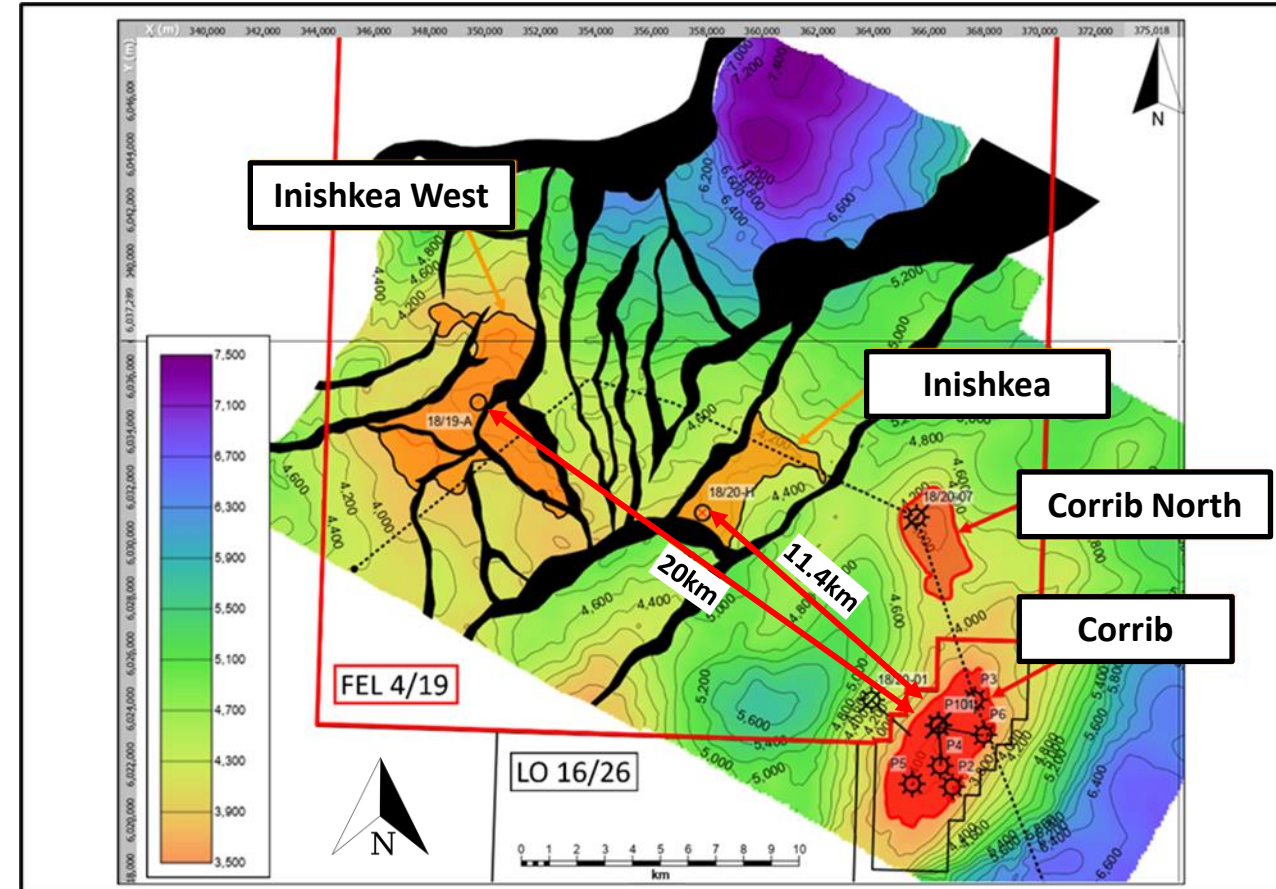


## • Play

- Both prospects considered low/moderate risk within the same world class Triassic gas play as the Corrib and Morecambe Bay gas fields
- Triassic Sandstone reservoir, gas charged by Carboniferous coals, sealed by Triassic halite

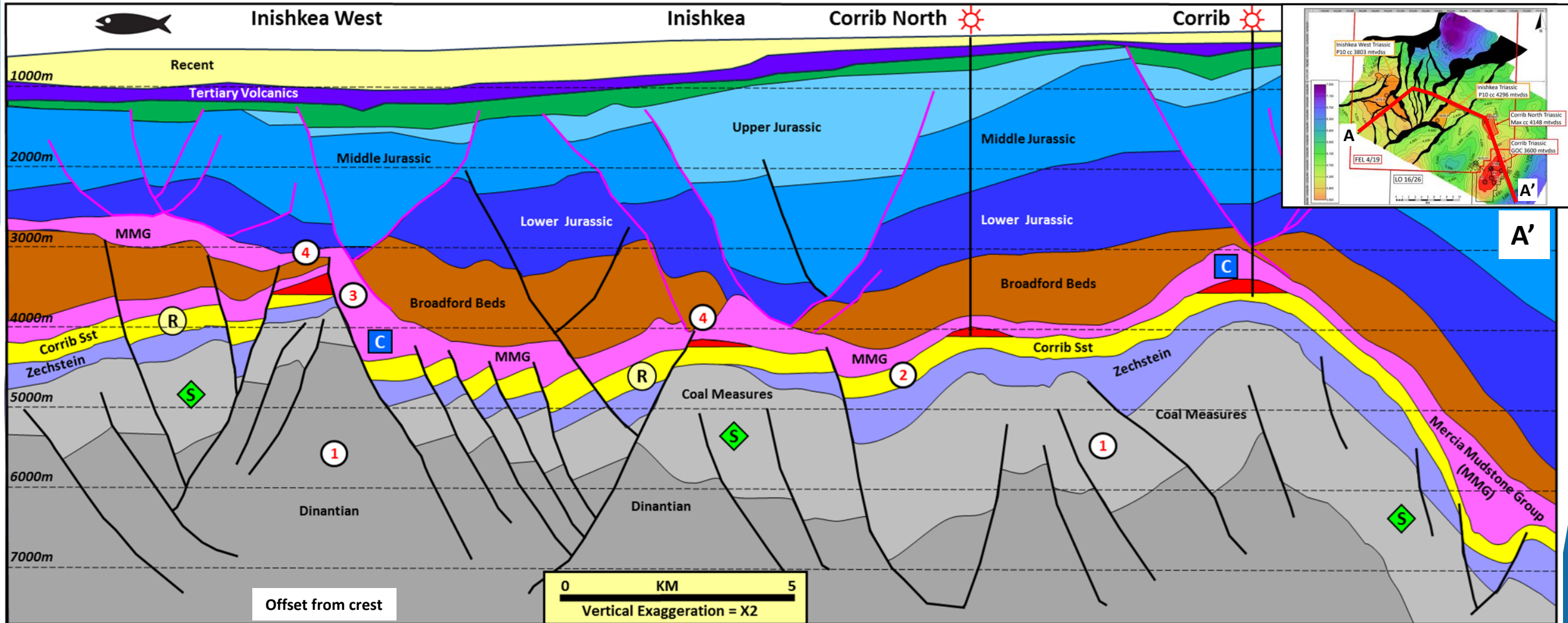
## • Inishkea West Prospect

- Well defined upthrown Triassic faulted anticlinal structure immediately west of the Inishkea prospect in 715m of water
- Identical play elements to Corrib
- 1.5 TCF of mean prospective resources with P10 volumes of 3 TCF
- Good porosities expected on account of its relatively shallow depth of burial





# Geoseismic Line from Inishkea West to Corrib

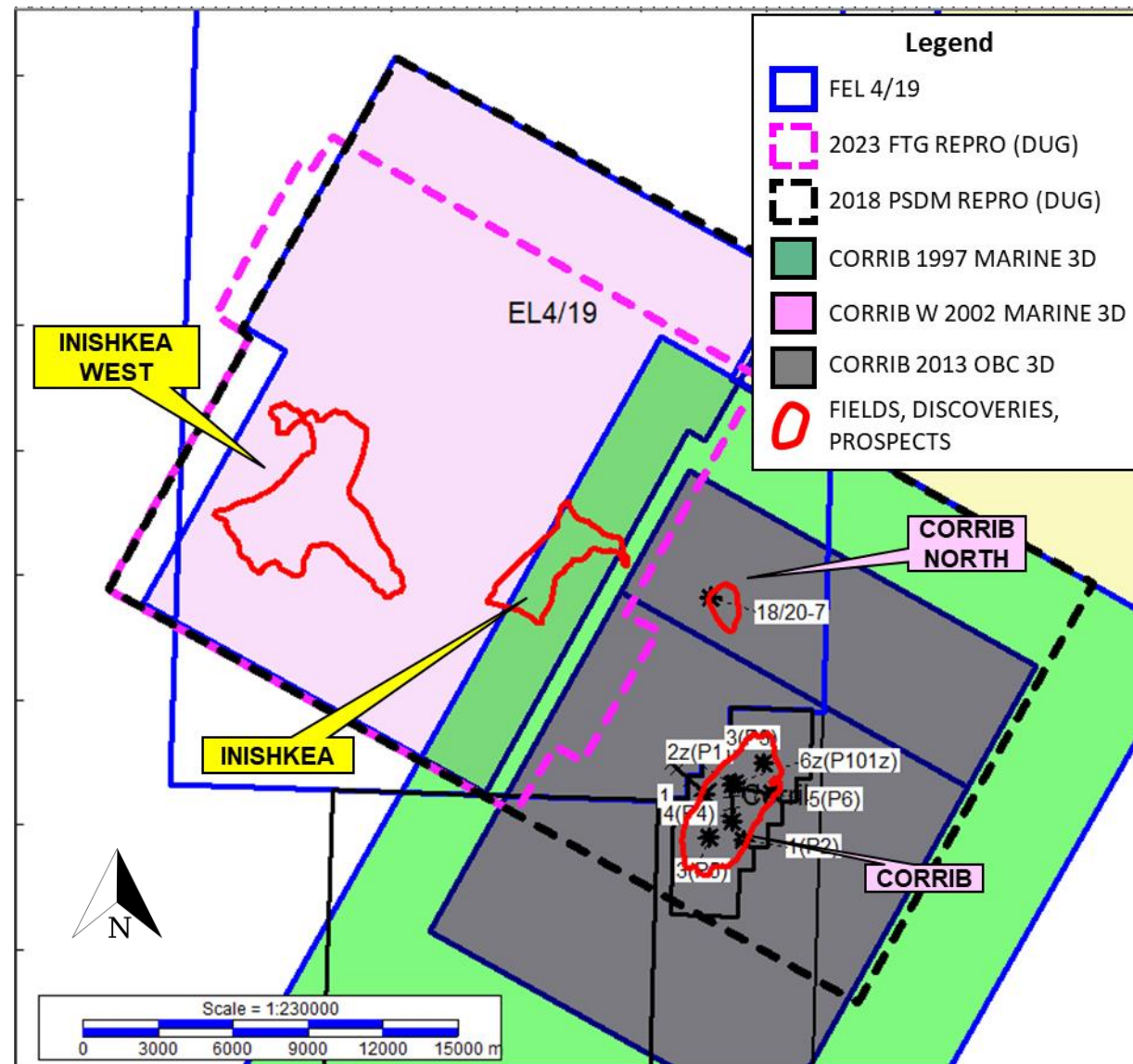


1. Source – well data supports the widespread presence of gas mature Carboniferous coals and shales in the Slyne Basin. Seismic data supports a continuous Carboniferous sequence between Corrib and Inishkea West.
2. Reservoir – reservoir presence and quality established at Corrib appraisal and development wells. Inishkea West is at a somewhat shallower depth of burial, Inishkea somewhat deeper (relative to Corrib).
3. Seal – clear evidence of Mesozoic faults (pink) detaching onto halite, within the Mercia Mudstone group (MMG) over the Inishkea and Inishkea West structures. Well data supports presence of halite in this part of the central Slyne Basin.
4. Structure – Inishkea and Inishkea West structures mapped on new reprocessed 3D seismic and tied to high quality Corrib OBC seismic.

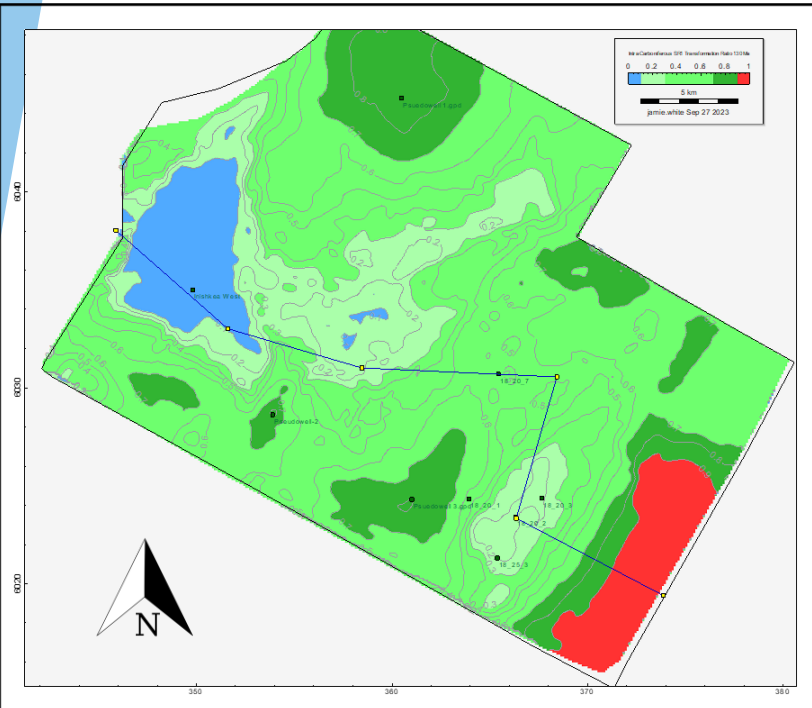
# 3D Seismic Data what has changed.....

## • Extensive Seismic Database

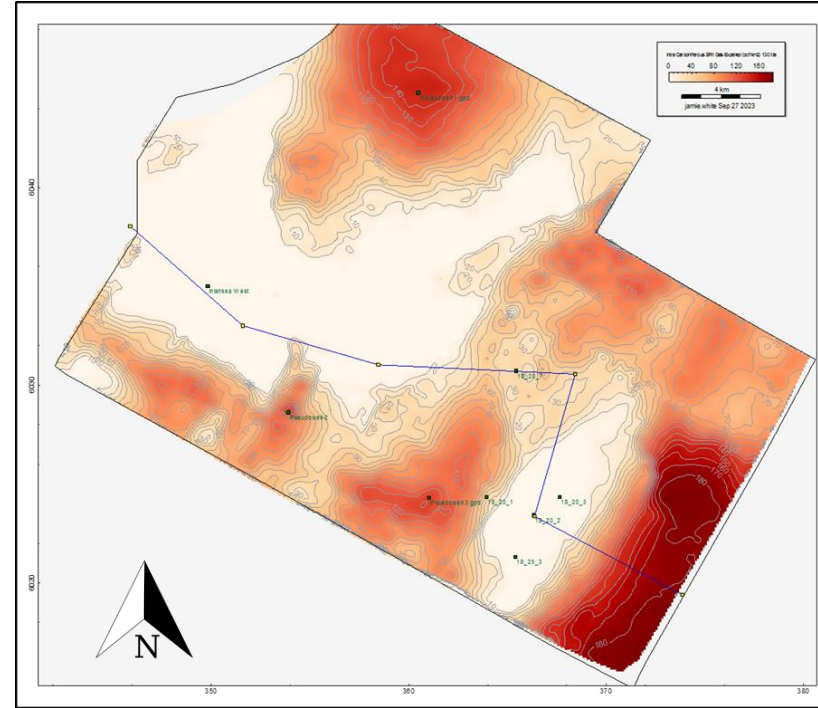
- 5000km of regional 2D seismic and two 3D seismic surveys (1997 & 2002)
- OBC data over Corrib (2013)
- 2018 Kirchhoff PSDM of 1997 and 2002 surveys
- 2023 reprocessing carried out by DUG. Update to velocity field with D-FWI, advanced imaging with RTM and R-FWI (Reflection Full Waveform Inversion). 20 Hz volume created to improve imaging and help reduce trap risk
- 30 Hz volume also completed and interpreted
- Inishkea now higher risk and smaller due to better imaging of fault patterns between the Inishkea and Inishkea West structure.
- Inishkea West now larger and lower risk due to better imaging of the structure and shallower depth of burial.



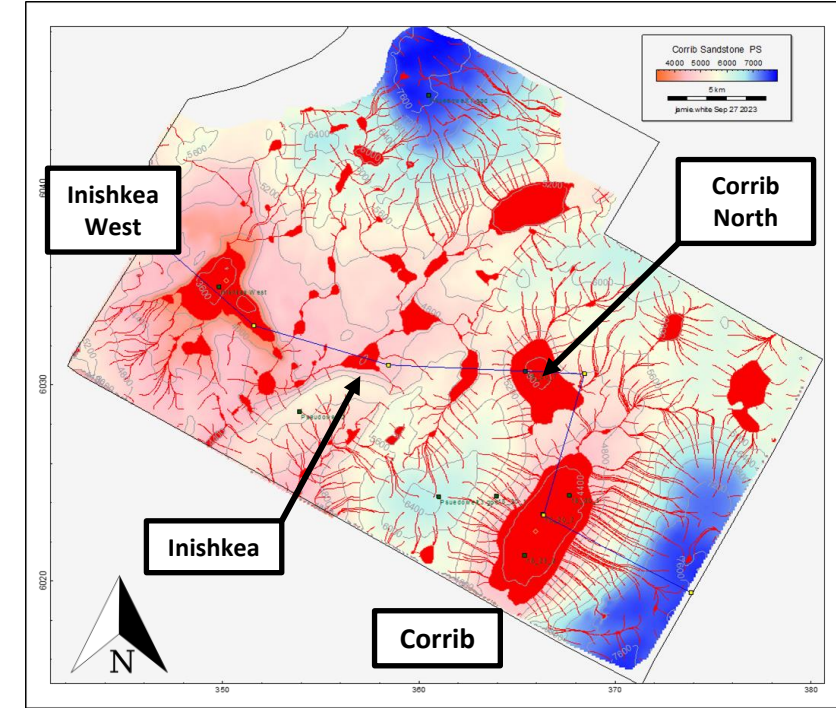




Carboniferous Transformation  
Ratio at 130MA



Carboniferous Gas volumes  
expelled at 130MA

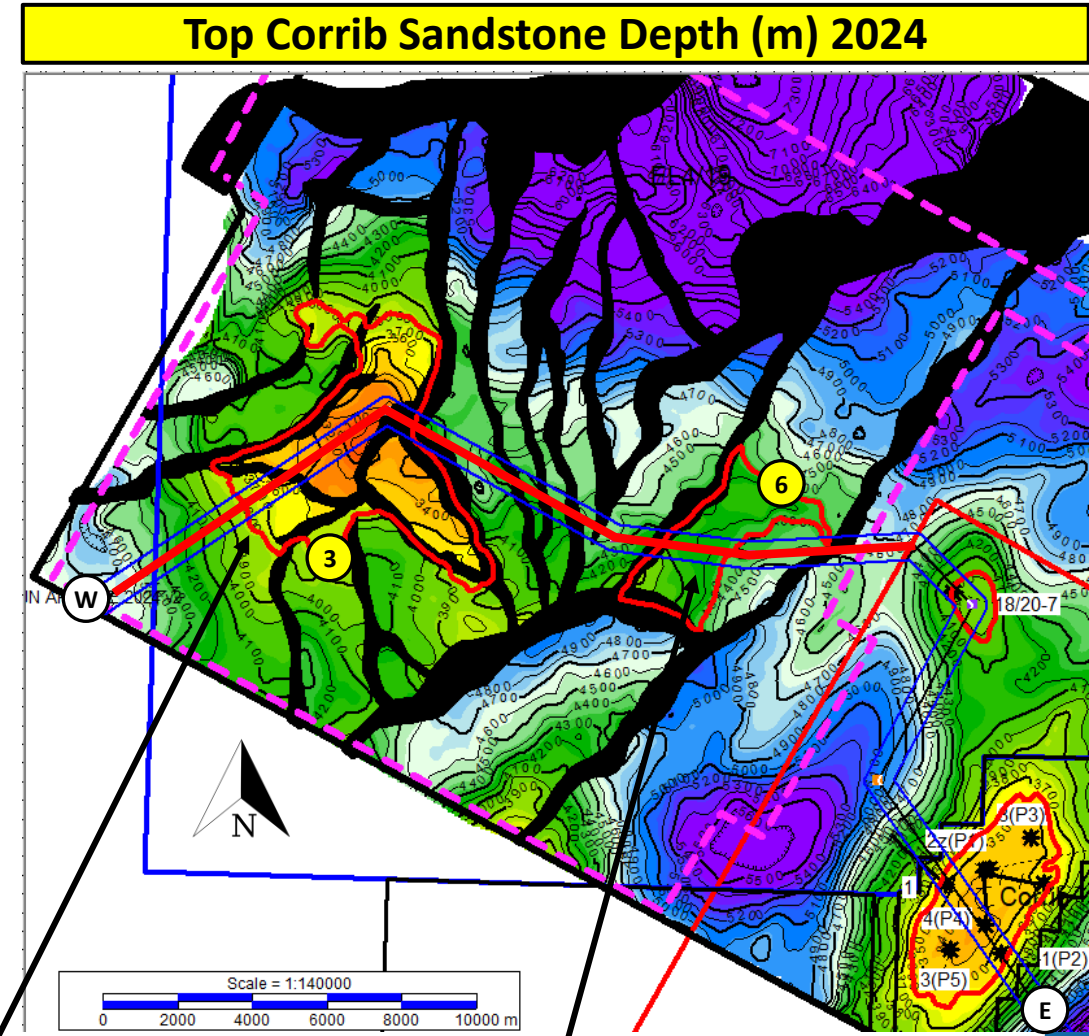
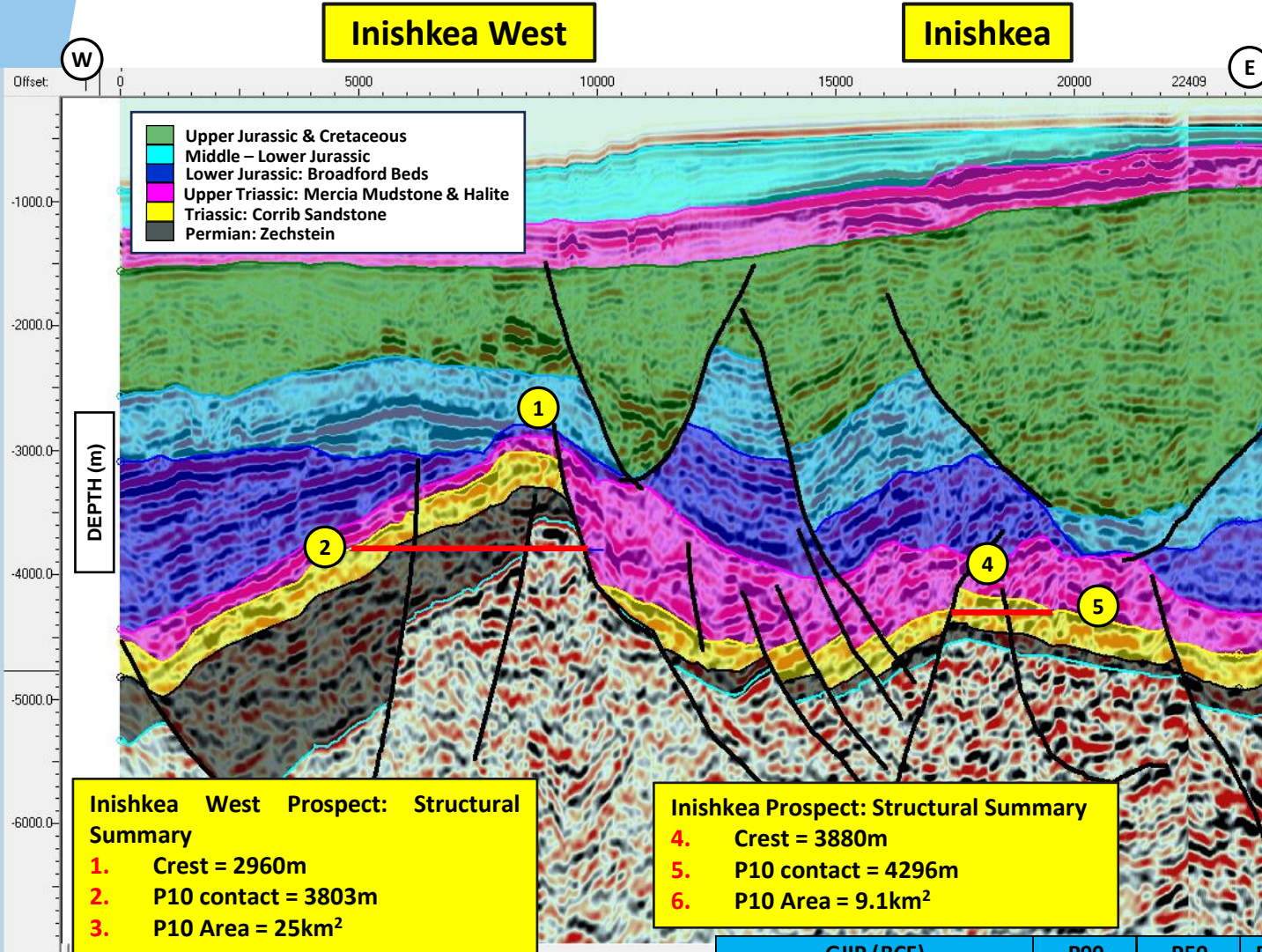


Spider Plot on the Corrib  
Sandstone at 130 MA

Full 1D and 3D Basin Model Carried out  
Areas in dark green/red are expelling large volumes of gas. Large amounts of gas expelled from the northern area, with modest volumes from southern area. Main expulsion from kitchen to the east of the Corrib field.  
All the main structures would be filled.



# Seismic Line through the prospects & volumetrics



X:343456.80, Y:6031099.37 Meters, Inline:2672.0, Crossline:1295.0, Subsea:-4772.6 (m), FEL 419 DUG REPRO 23

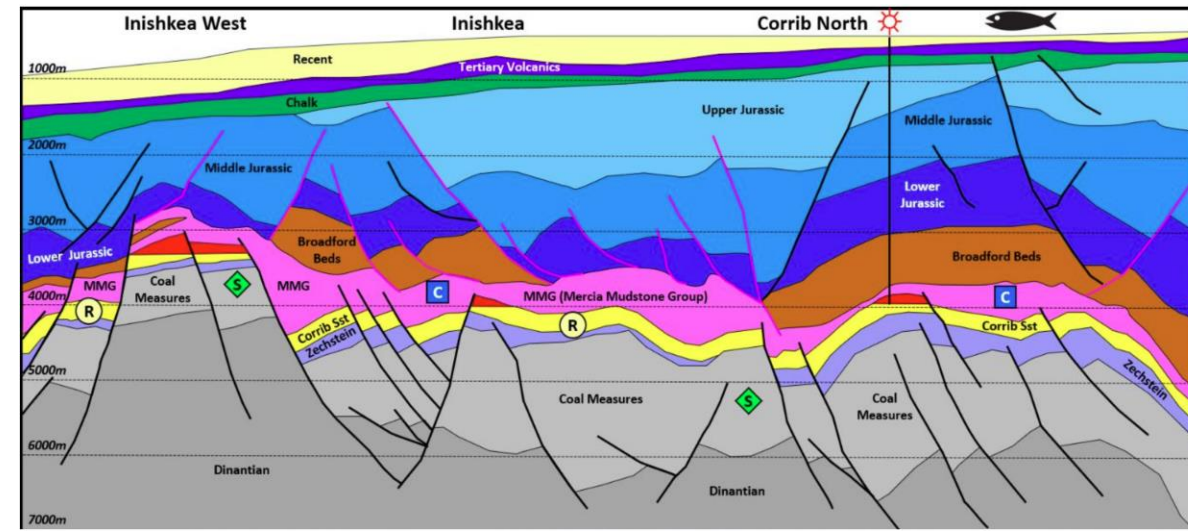
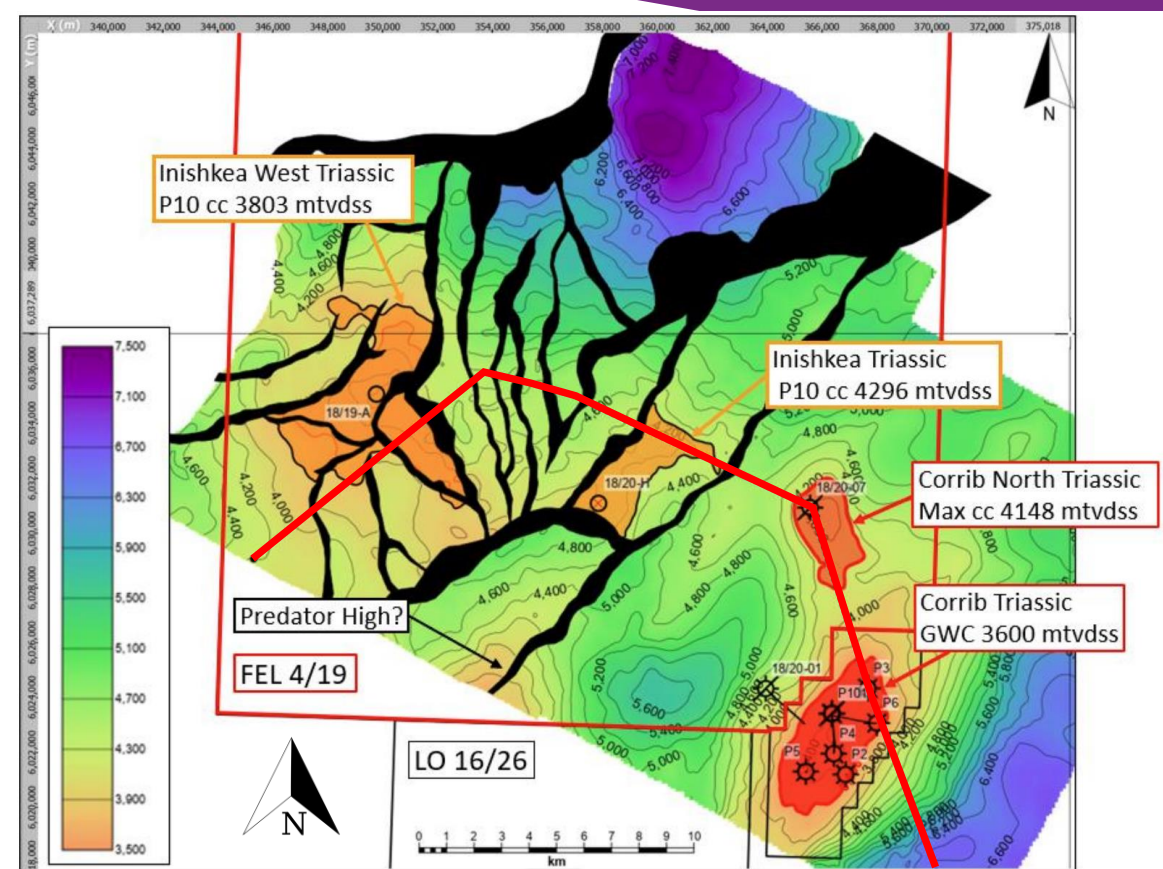
GIIP (BCF)	P90	P50	Pmean	P10
Inishkea West	440	1920	2219	4336
Prospective Resource (BCF)	P90	P50	Pmean	P10
Inishkea West	307	1336	1554	3044

GIIP (BCF)	P90	P50	Pmean	P10
Inishkea	43	156	227	510
Prospective Resource (BCF)	P90	P50	Pmean	P10
Inishkea	27	100	148	330



# Ireland Summary

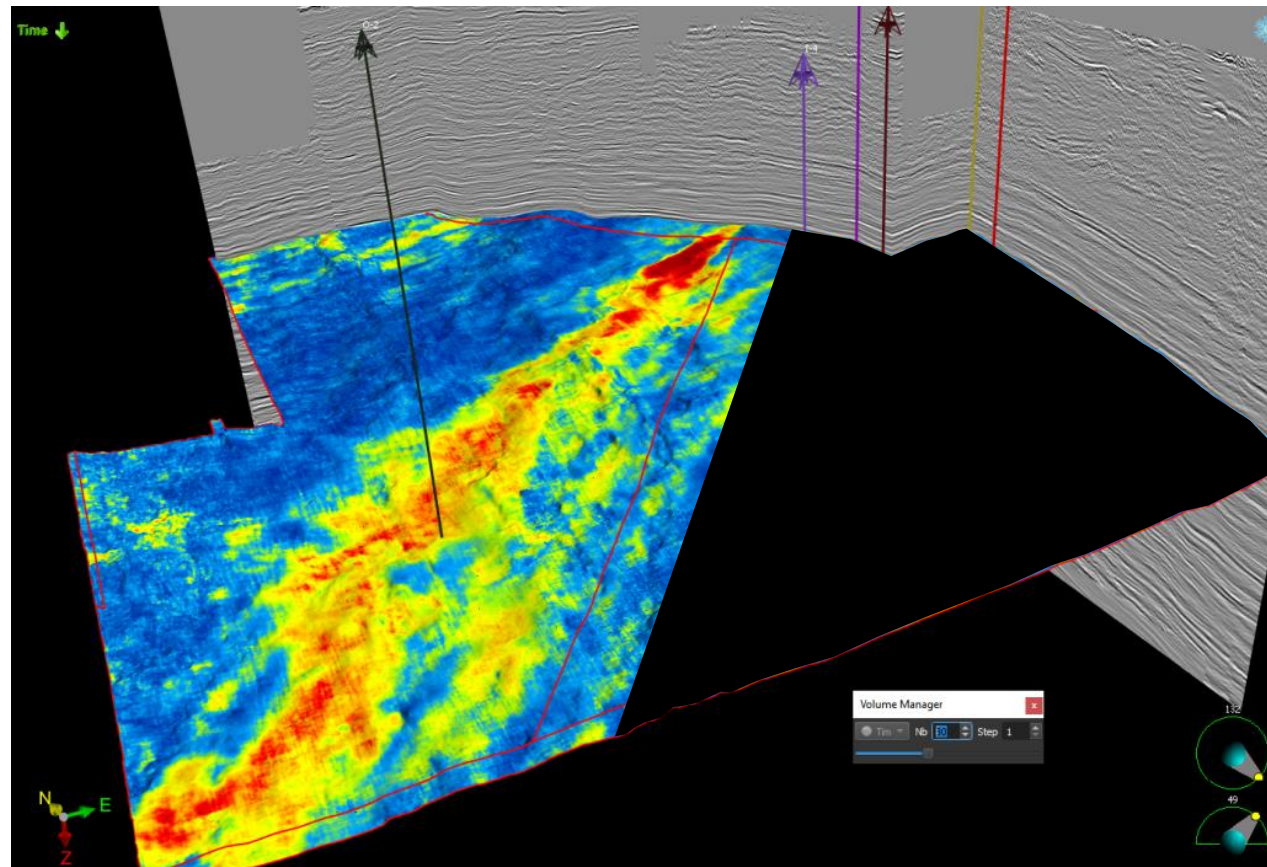
- Europa Oil & Gas has a 100% operated interest in FEL 4/19 with a material position available
- Europa is seeking a carry on the drilling of the Inishkea West prospects plus back-costs
- One main prospect considered low-risk within the same world-class Triassic gas play as the Corrib and Morecambe Bay gas fields
- Large gas prospects that are in easy tie-back range (20km) to the Vermilion operated Corrib Field
  - Inishkea West: 1.5 TCF - (Pmean) mapped structural high immediately west of Inishkea
- Stunning economics
  - Inishkea West has a P50 post-tax NPV10 of \$2.35 billion and \$0.6 billion respectively for the P90 prospective resource cases
  - Minimum economic field size <100 BCF



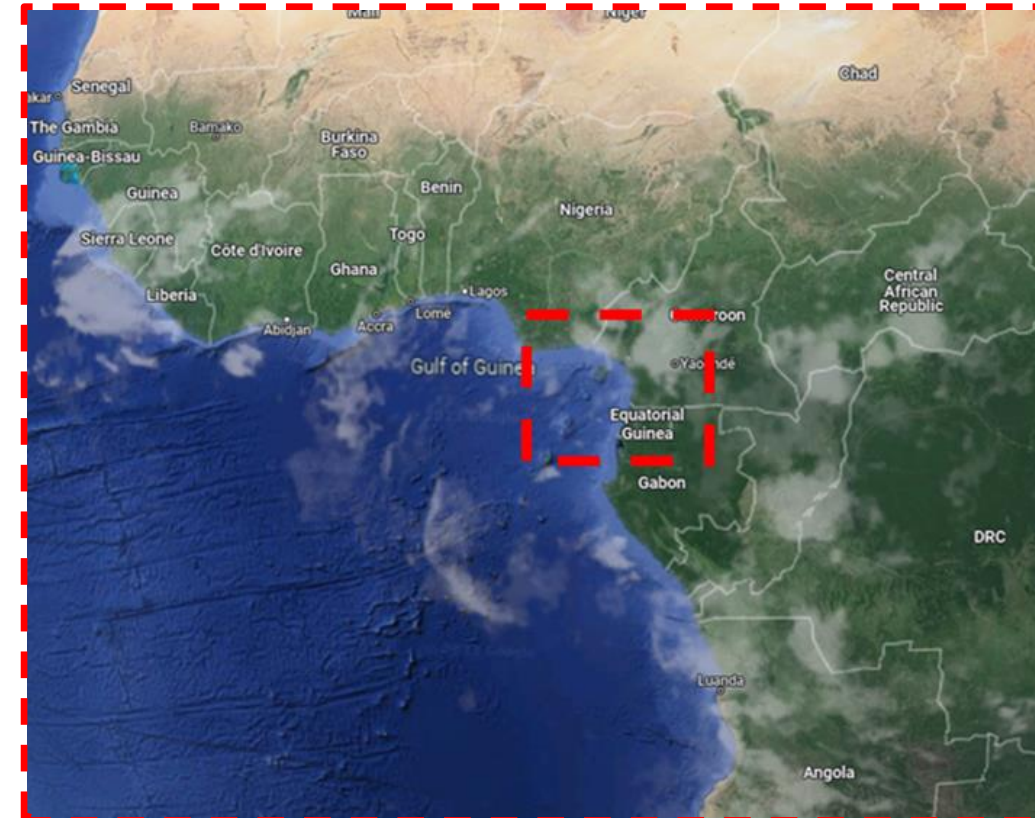
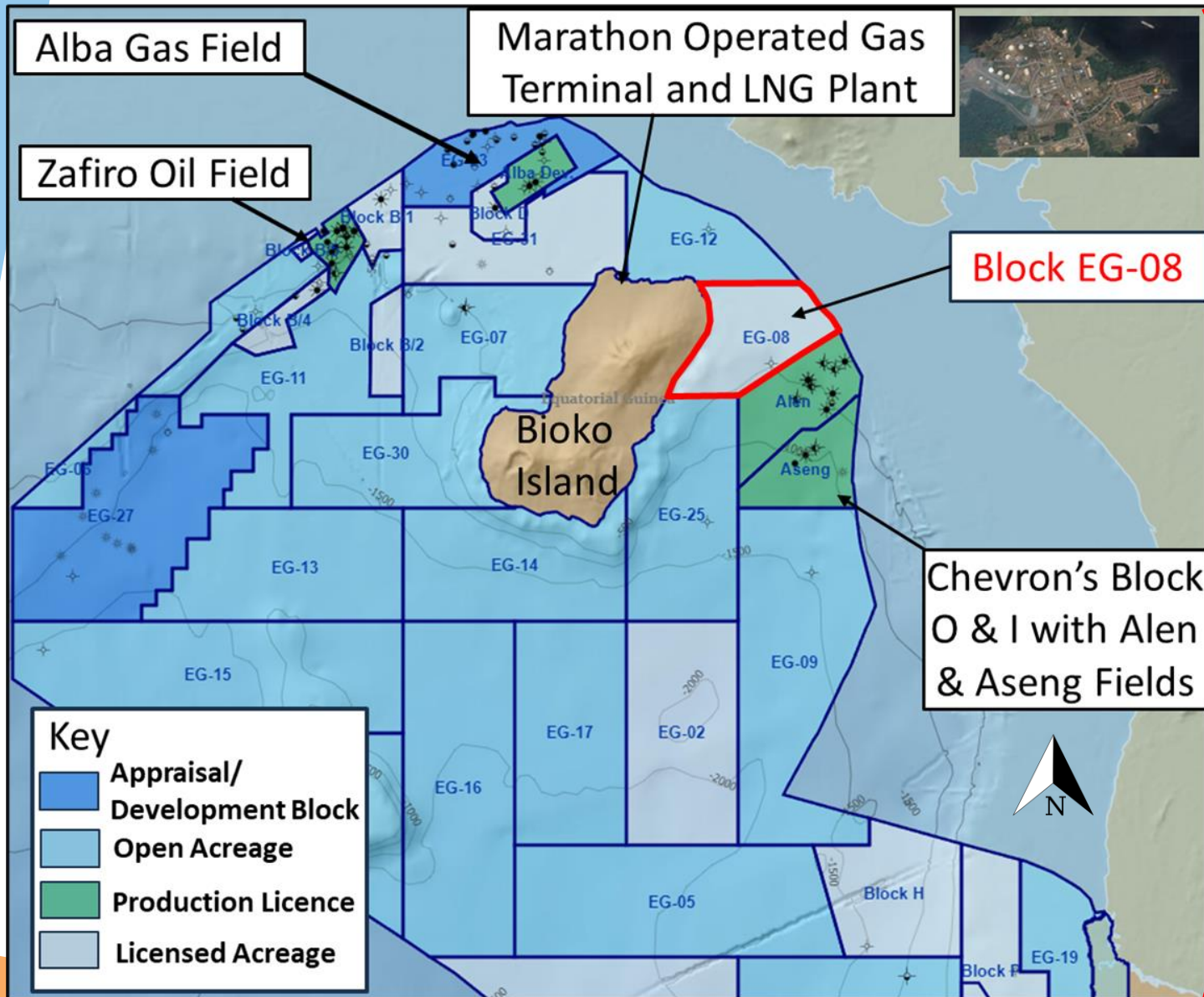


# Equatorial Guinea Block EG-08

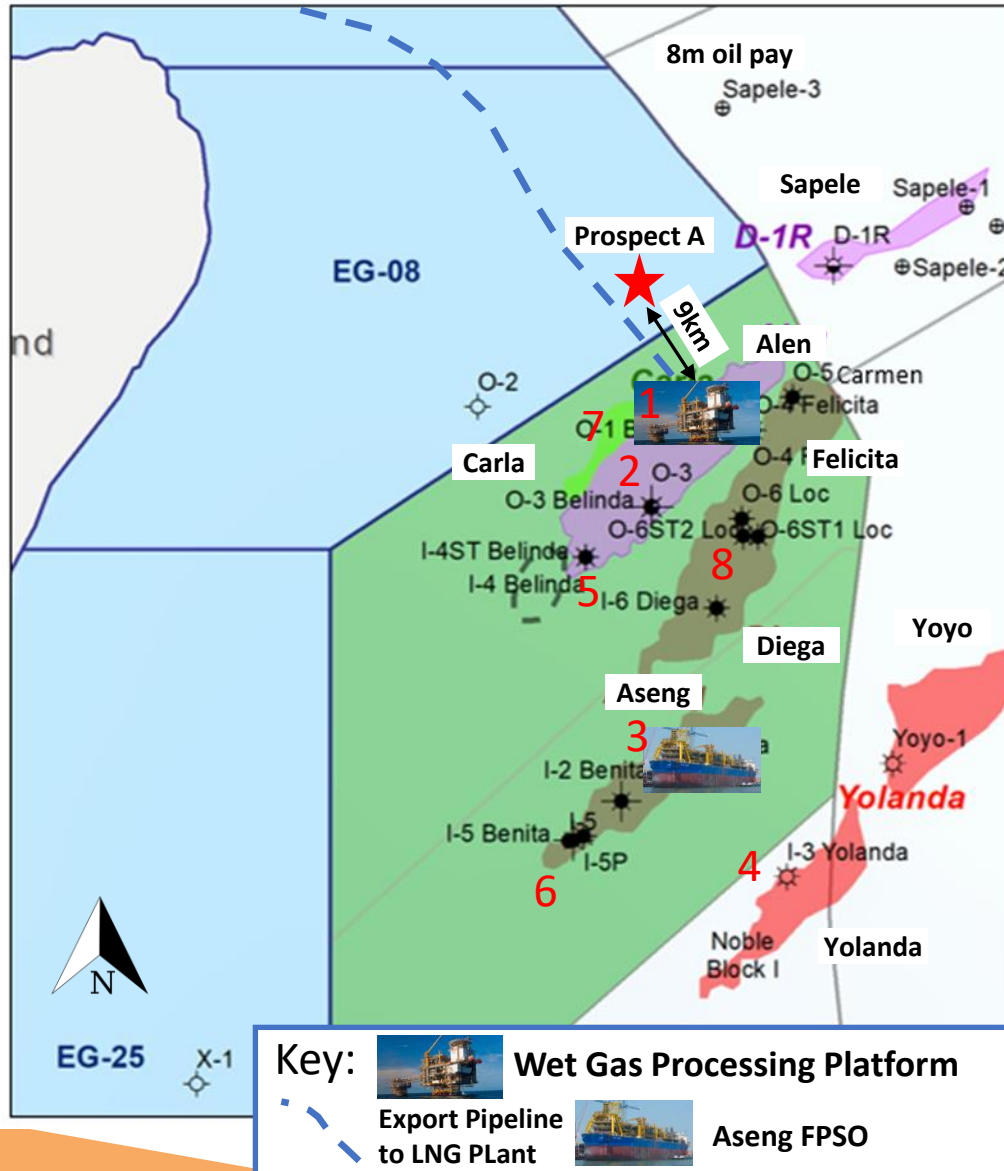
AVO led exploration adjacent to a producing host.



# Equatorial Guinea EG-08



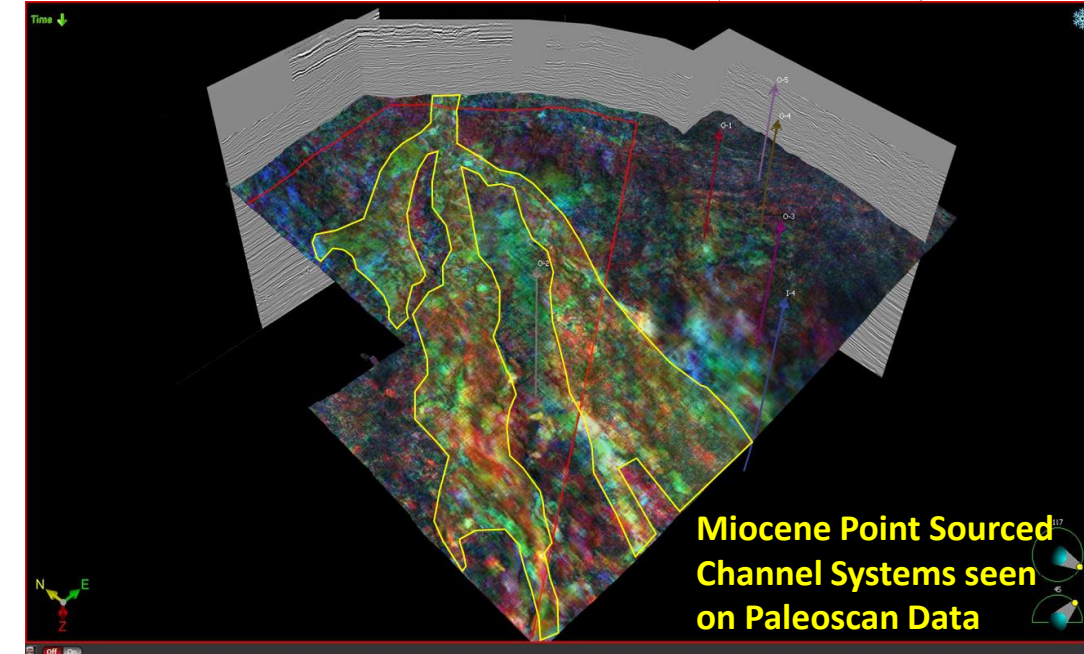
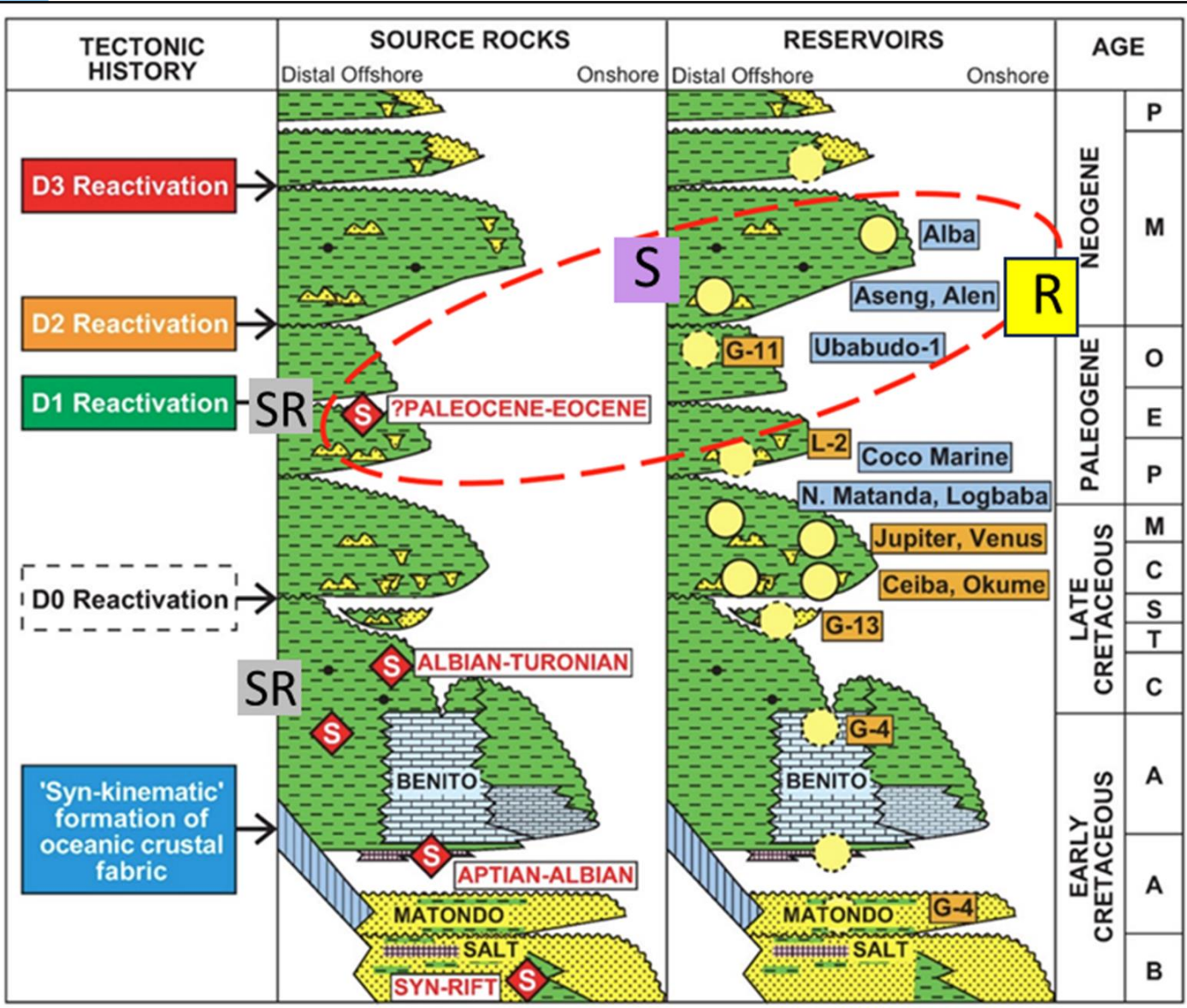




- |   |                              |   |                              |
|---|------------------------------|---|------------------------------|
| 1 | 0-1 – 26 MMSCF/D & 1270 BCPD | 5 | I-4 – 29 MMSCF/D & 1634 BCPD |
| 2 | 0-3 – 30 MMSCF/D & 1540 BCPD | 6 | I-5 – 6250 BOPD & 5.4 MMSCFD |
| 3 | I-1 – 34 MMSCF/D & 1088 BCPD | 7 | 0-7 – 2650 BOPD & 4.7 MMSCFD |
| 4 | I-4 – 36 MMSCF/D & 331 BCPD  | 8 | I-8 – 7300 BOPD EWT          |

**Since 2007 7 out of 8 exploration wells have found commercial volumes of hydrocarbons based on AVO response. Very high Chance of Success. All Appraisal/Development well successfully placed on AVO anomaly (>20 wells). Very high flow rates on test.**

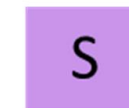
# Petroleum System



Reservoir = Miocene Turbidites  
20-30% Porosity. Clean, homogeneous. 1-8 Darcies



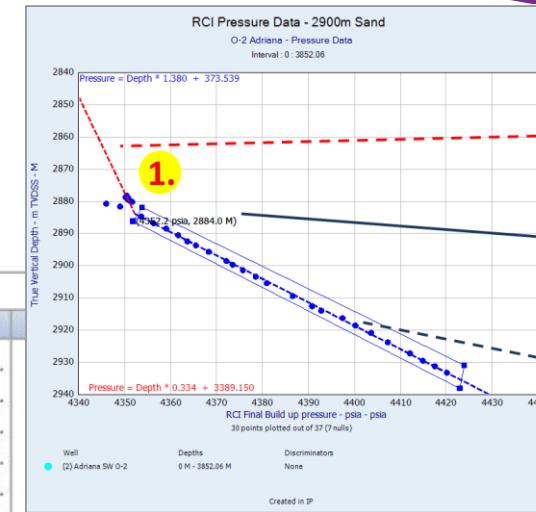
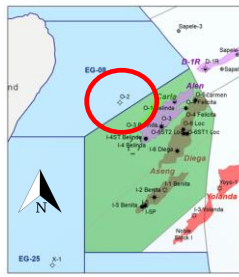
SR is mixed. Some gas from Albian Turonian but most of the wet gas from the Paleocene/Eocene SR that is gas condensate prone. Also some biogenic gas



Mud prone succession provide the seal. The traps are stratigraphic in nature with the channel sands encased in shale



# 0-2 Well

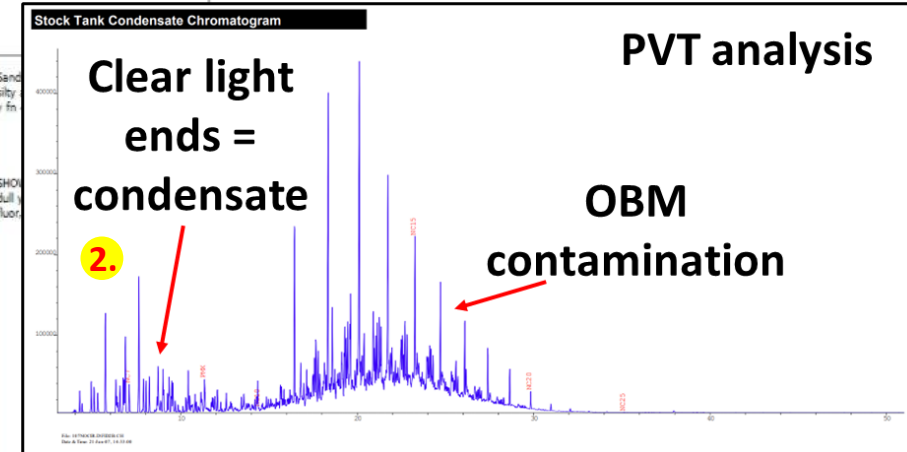
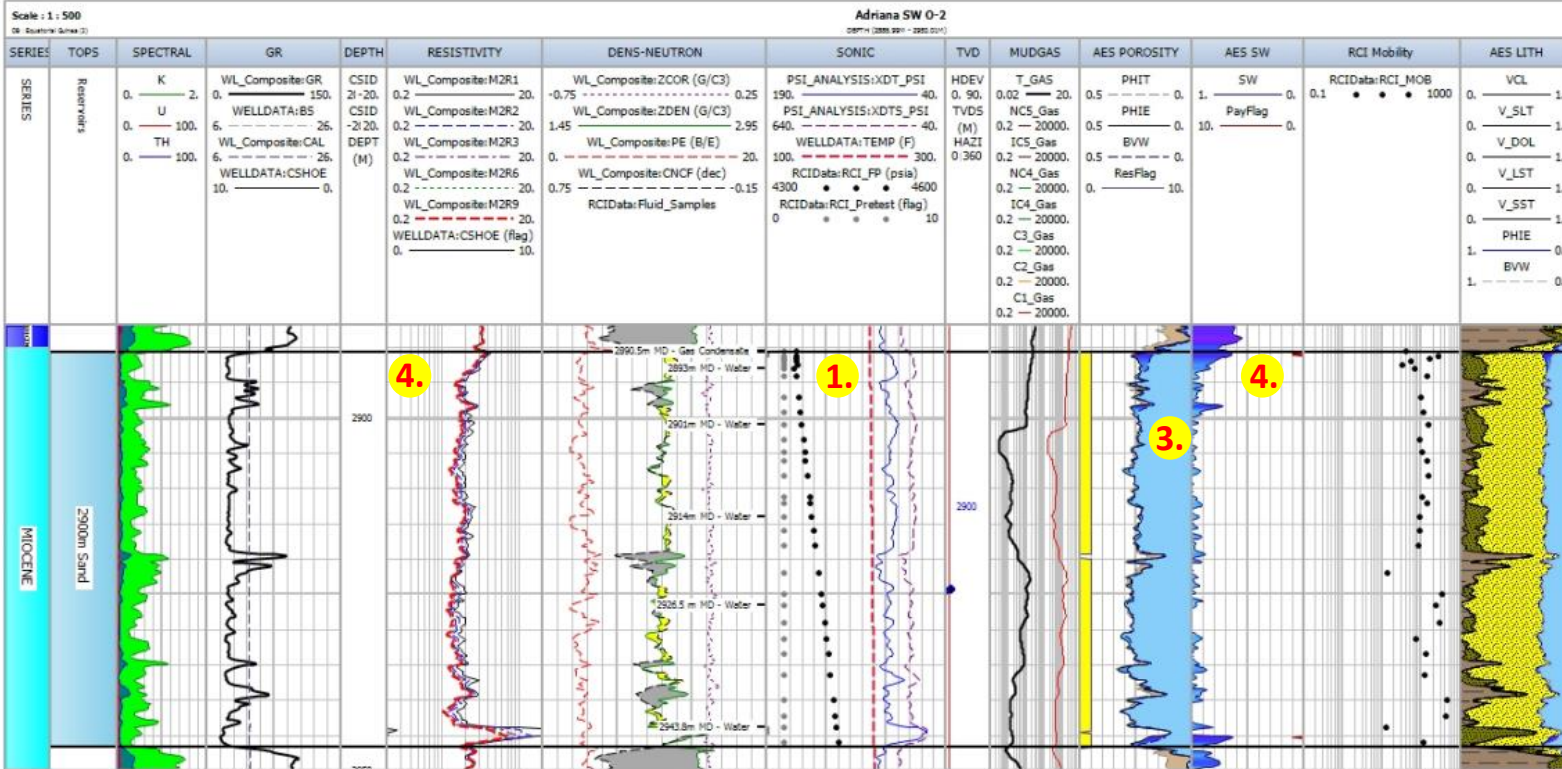


## Pressure Data

Gas gradient from O-1  
0.3393 psi/m (0.235 gm/cc)

Apparent FWL @ 2884 m  
TVDSS

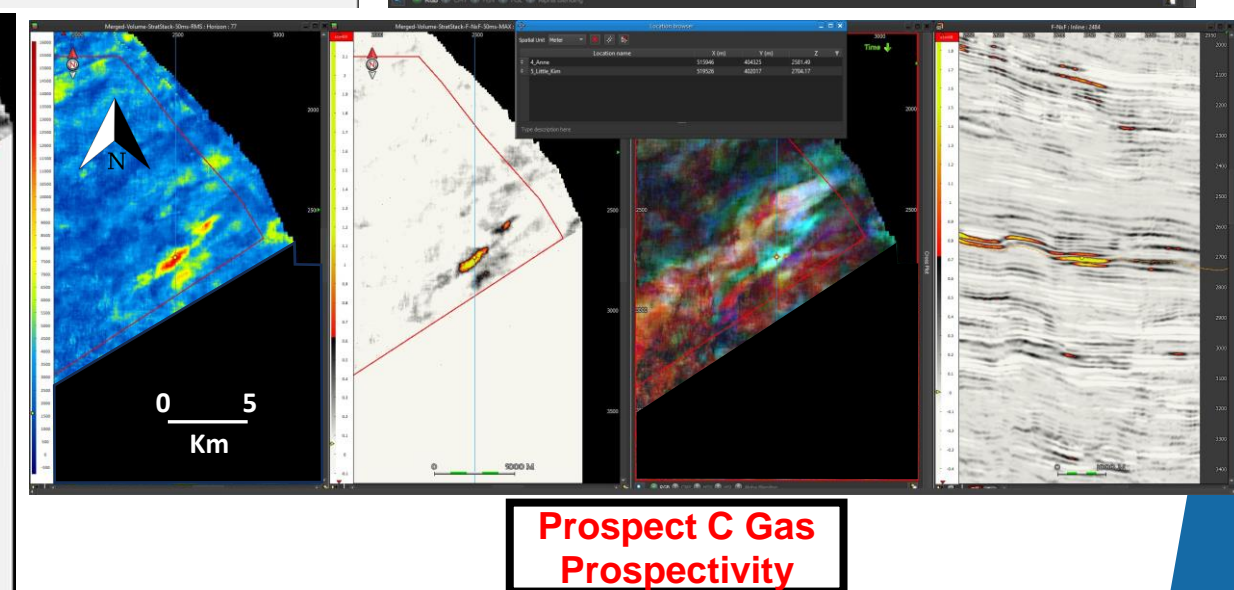
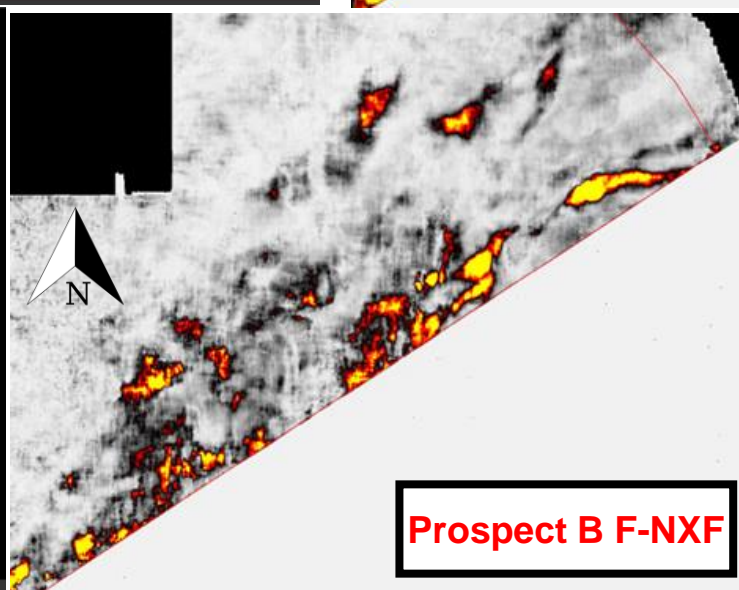
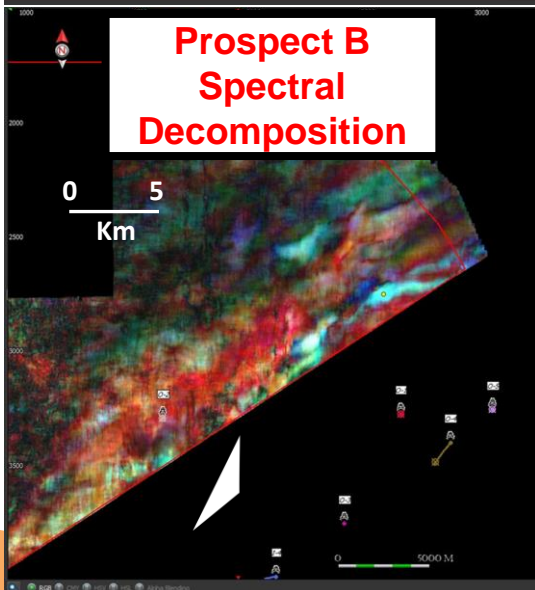
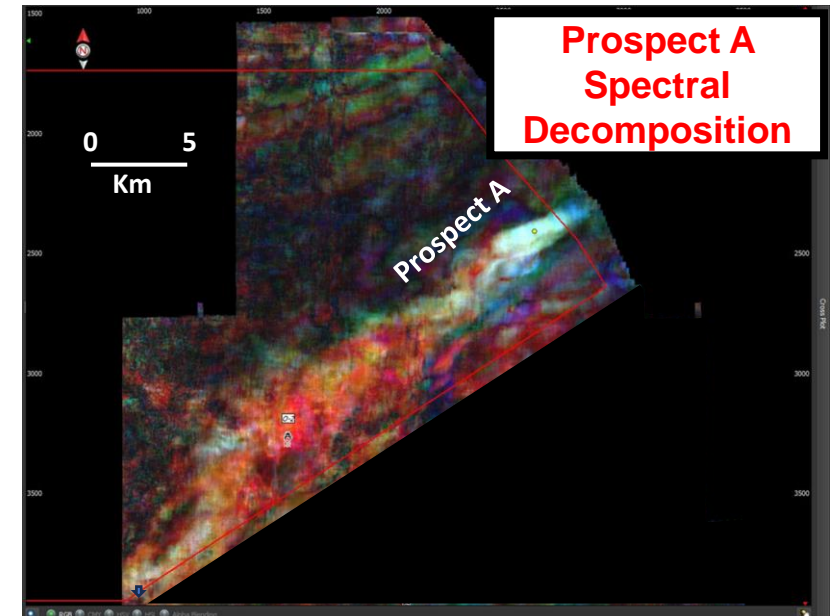
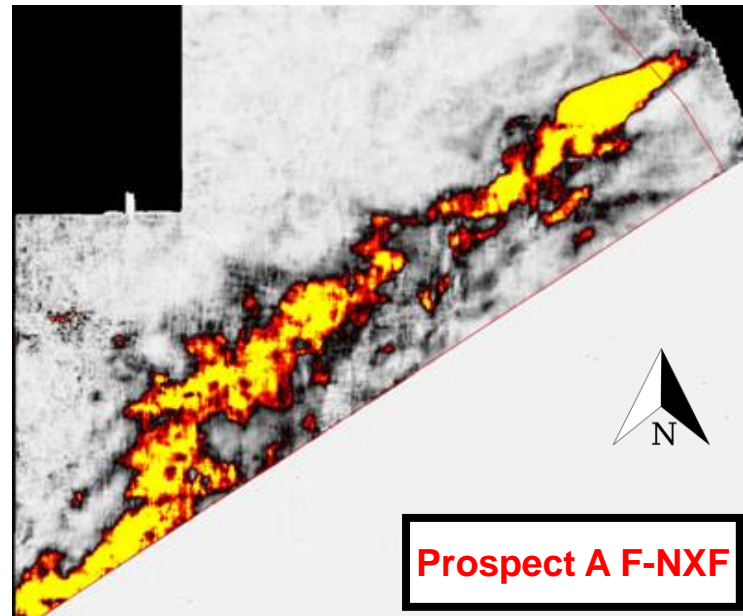
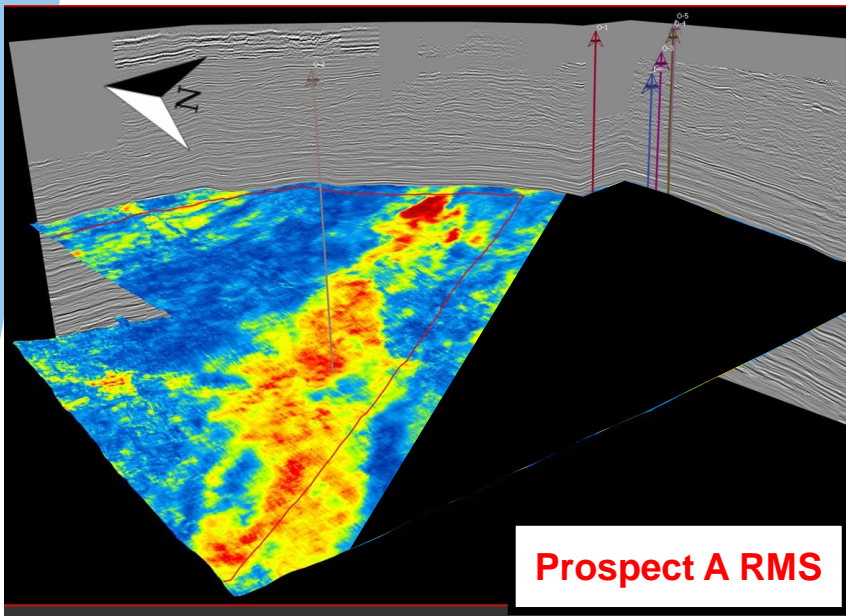
Water gradient from O-2  
1.3796 psi/m (0.97 gm/cc)



## PVT analysis

1. Wireline Pressure data indicate a short gas column in the upper 6m of the sand but the remainder of the sand is water bearing. Assuming gas properties to the O-1 Belinda sand then a FWL at 2884.1 m TVDSS is noted.
2. Samples of gas/gas condensate were recovered by wireline (RCI) at the top of the sand
3. Porosities average 25% across the sand. Excellent Permeability – up to multi Darcy.
4. Petrophysical interpretation indicates increasing hydrocarbon saturation above 2880.6m TVDSS

# Paleoscan Analysis

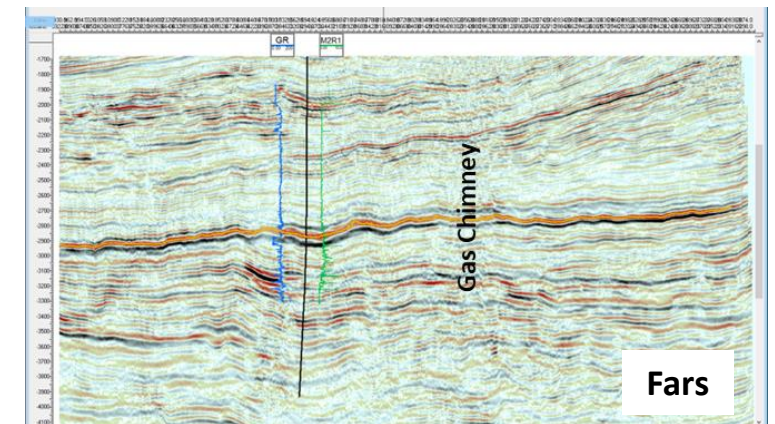
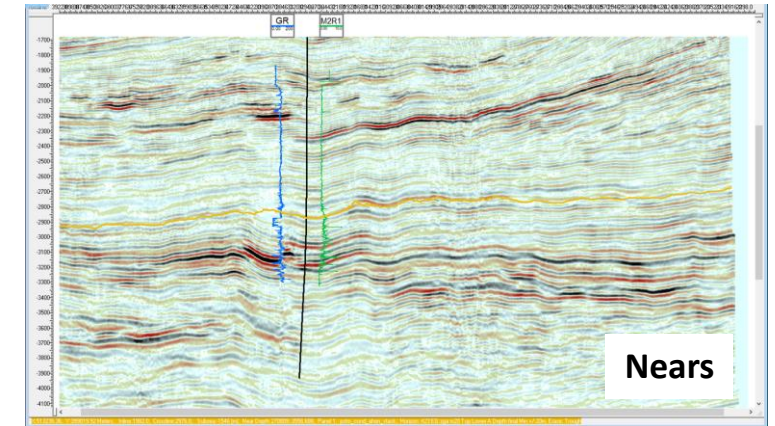
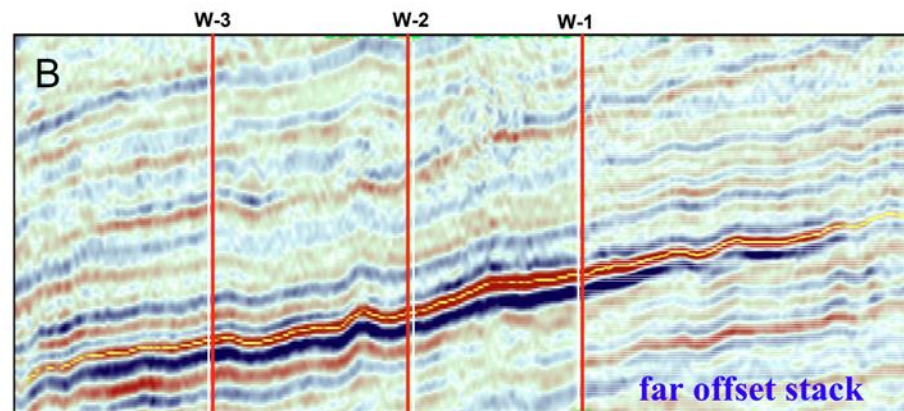
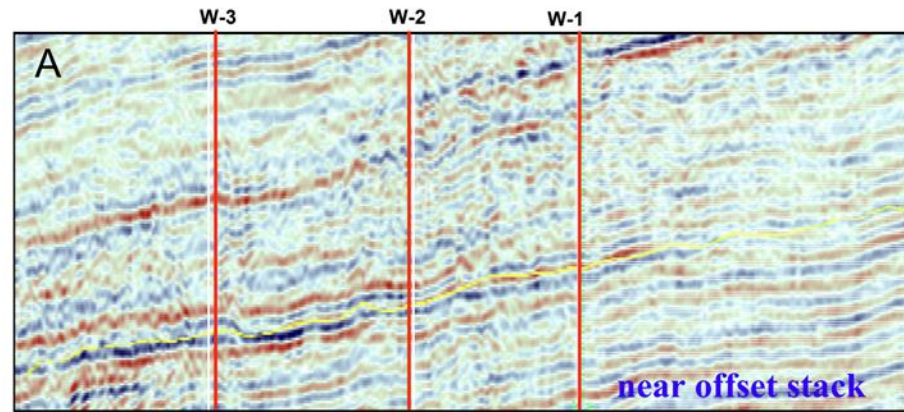
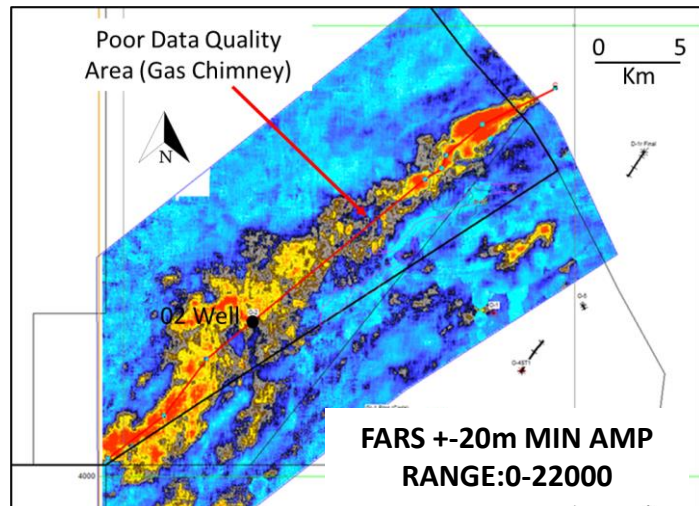
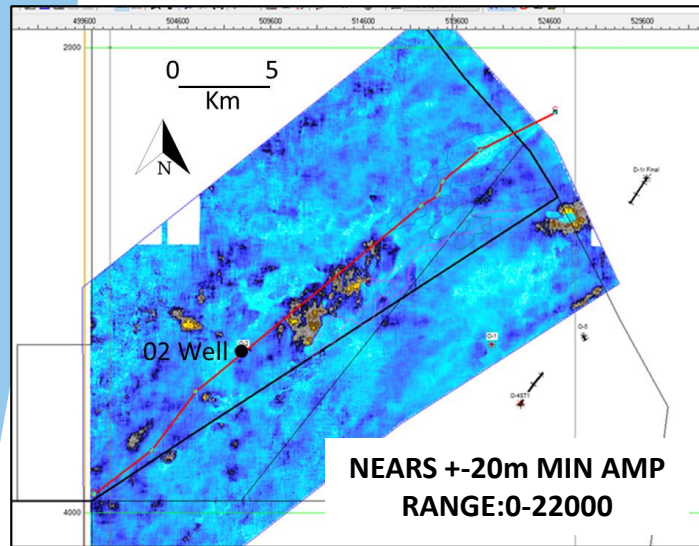




# Equatorial Guinea Prospect A Nears vs Fars

Discovery to the south of EG-08.  
Believed to be Diega

Nears vs Fars Prospect A



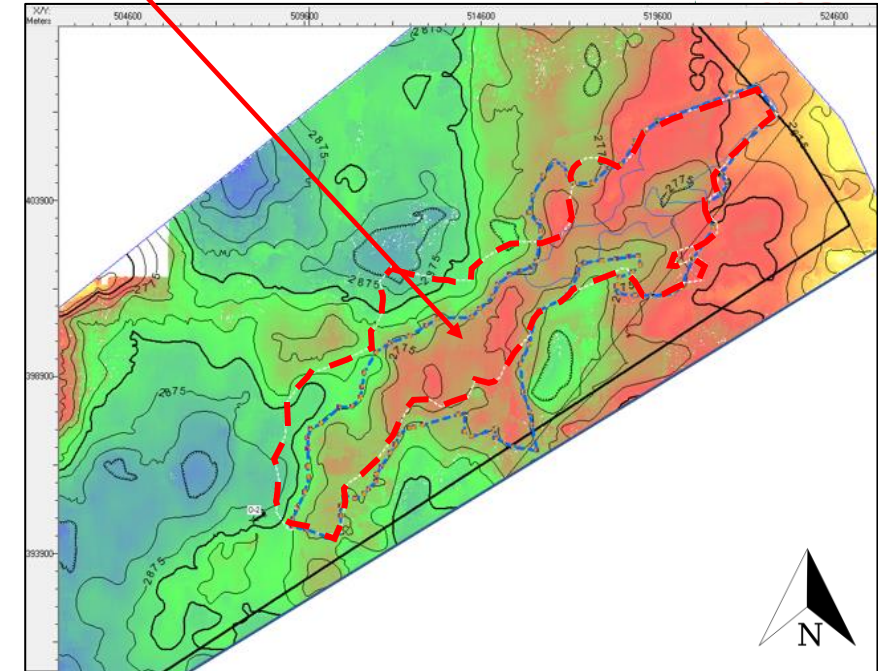
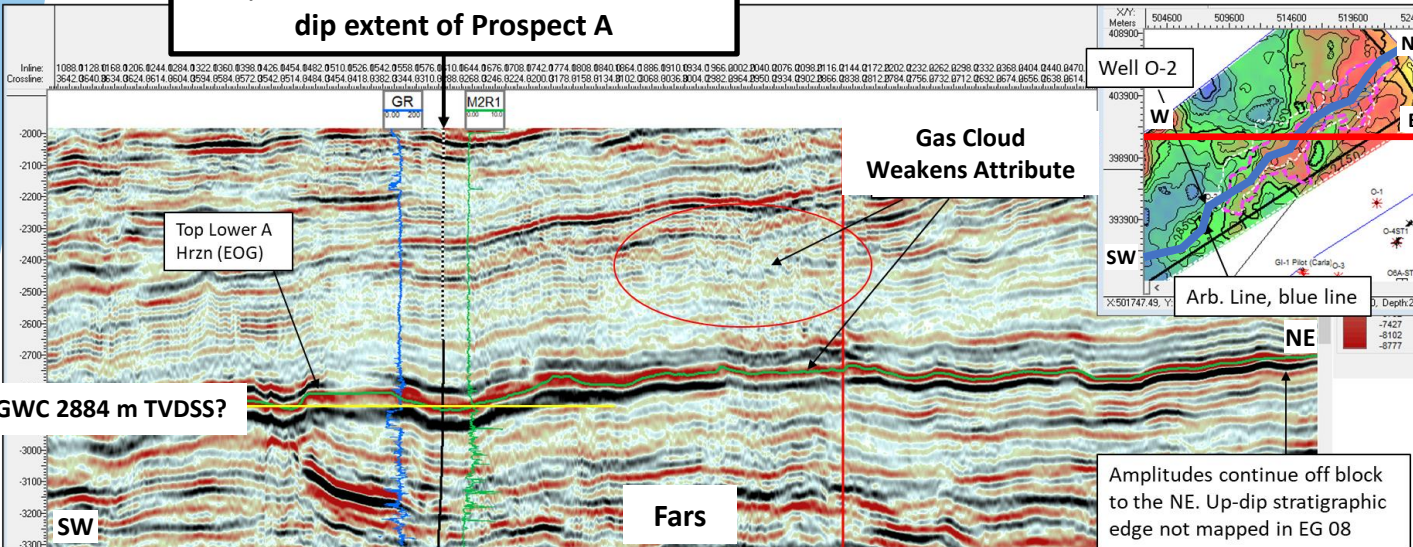
Zuo et al. Multiple Seismic Attributes Quantitative  
Analysis to Detect Hydrocarbon in Deepwater  
Sedimentary Reservoir. 75<sup>th</sup> EAGE Conference & Exhibition  
incorporating SPE EUROPEC 2013 London, 10-13<sup>th</sup> June 2013



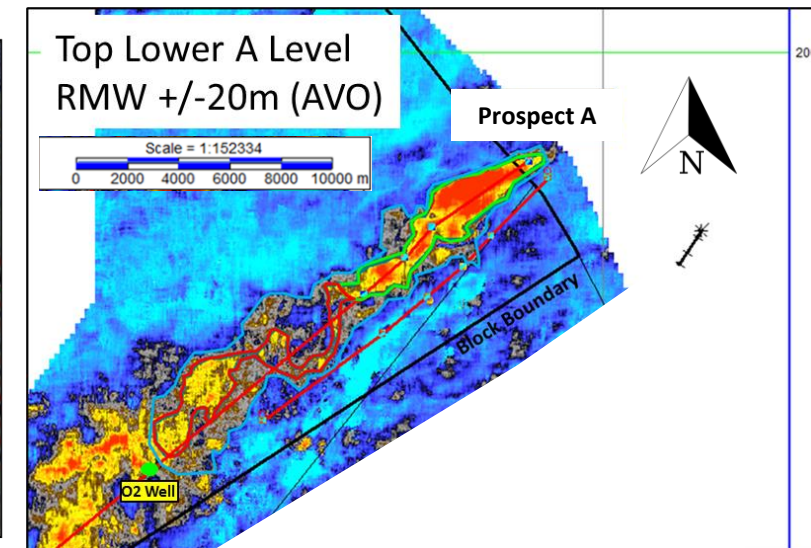
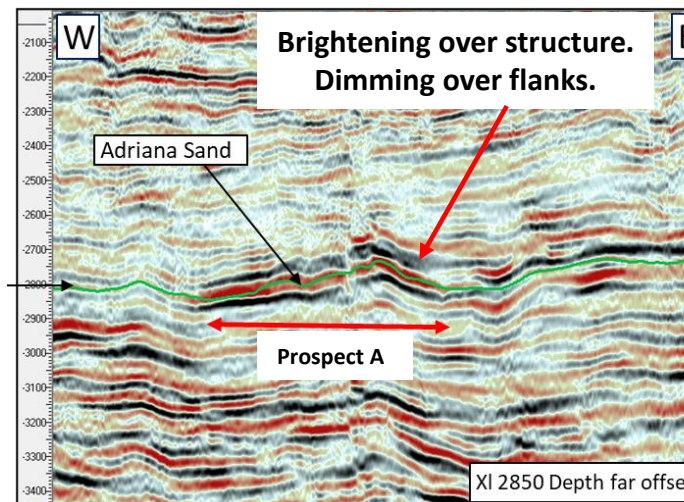
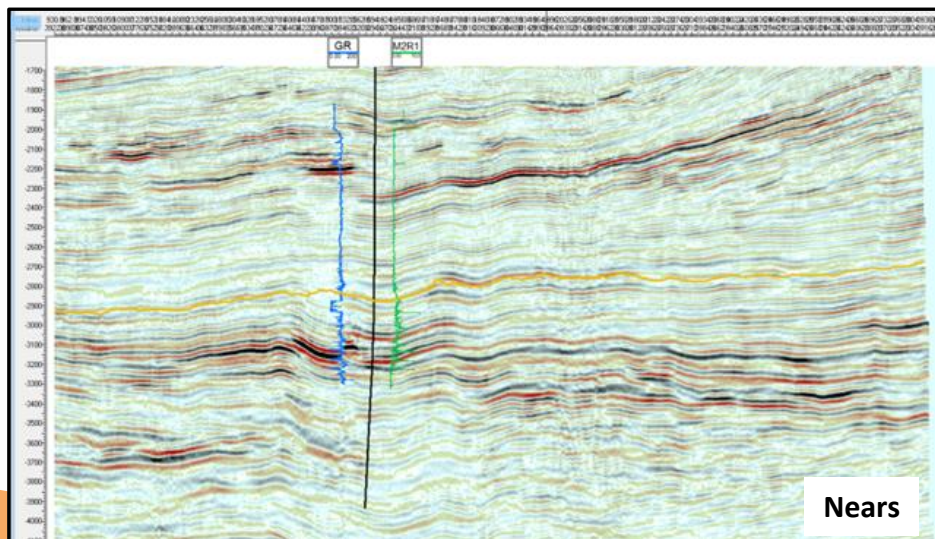
# Prospect A

Well O-2, well developed sand, note  
GR, condensate shows defines down  
dip extent of Prospect A

Clear Structural Nose implying  
compactional drape over sand body

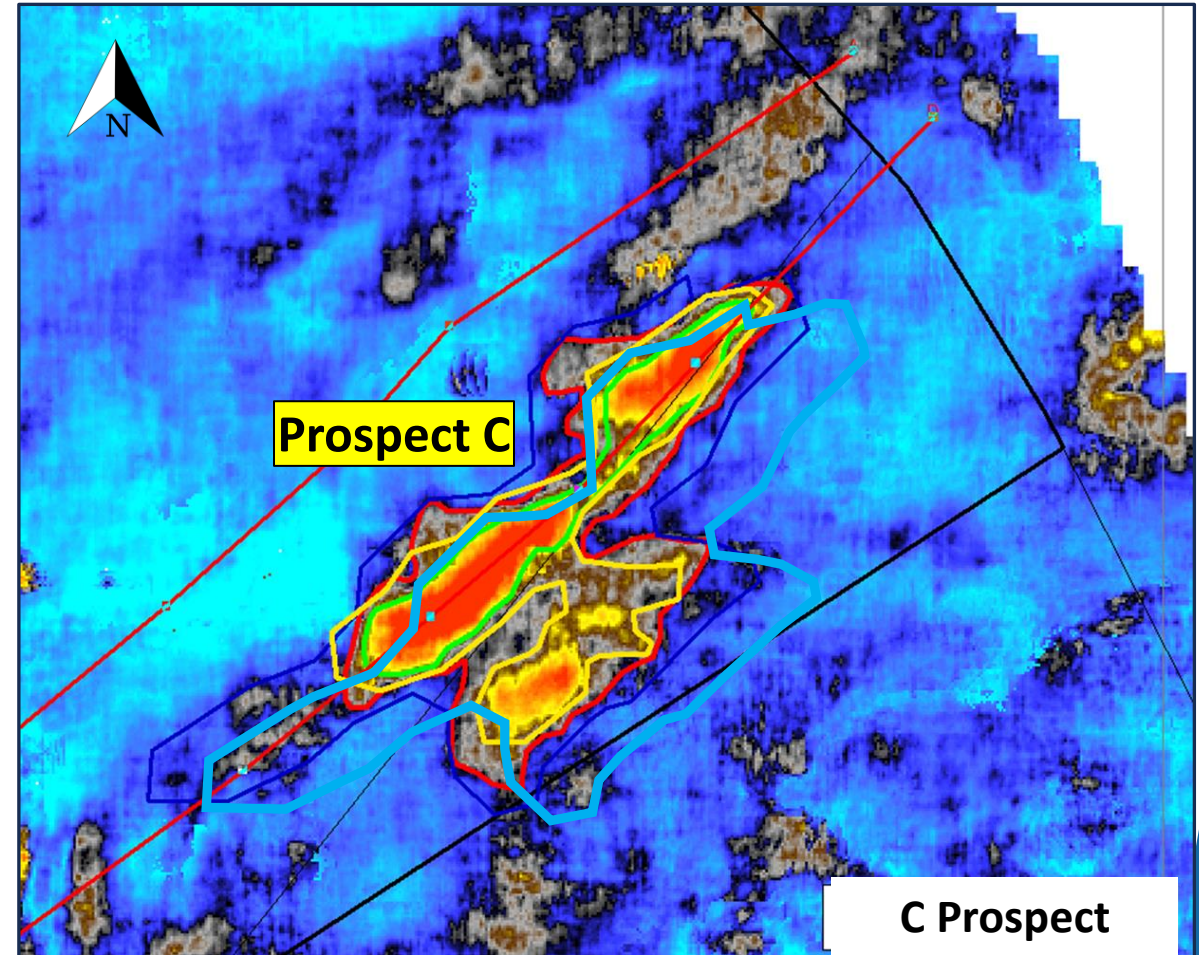
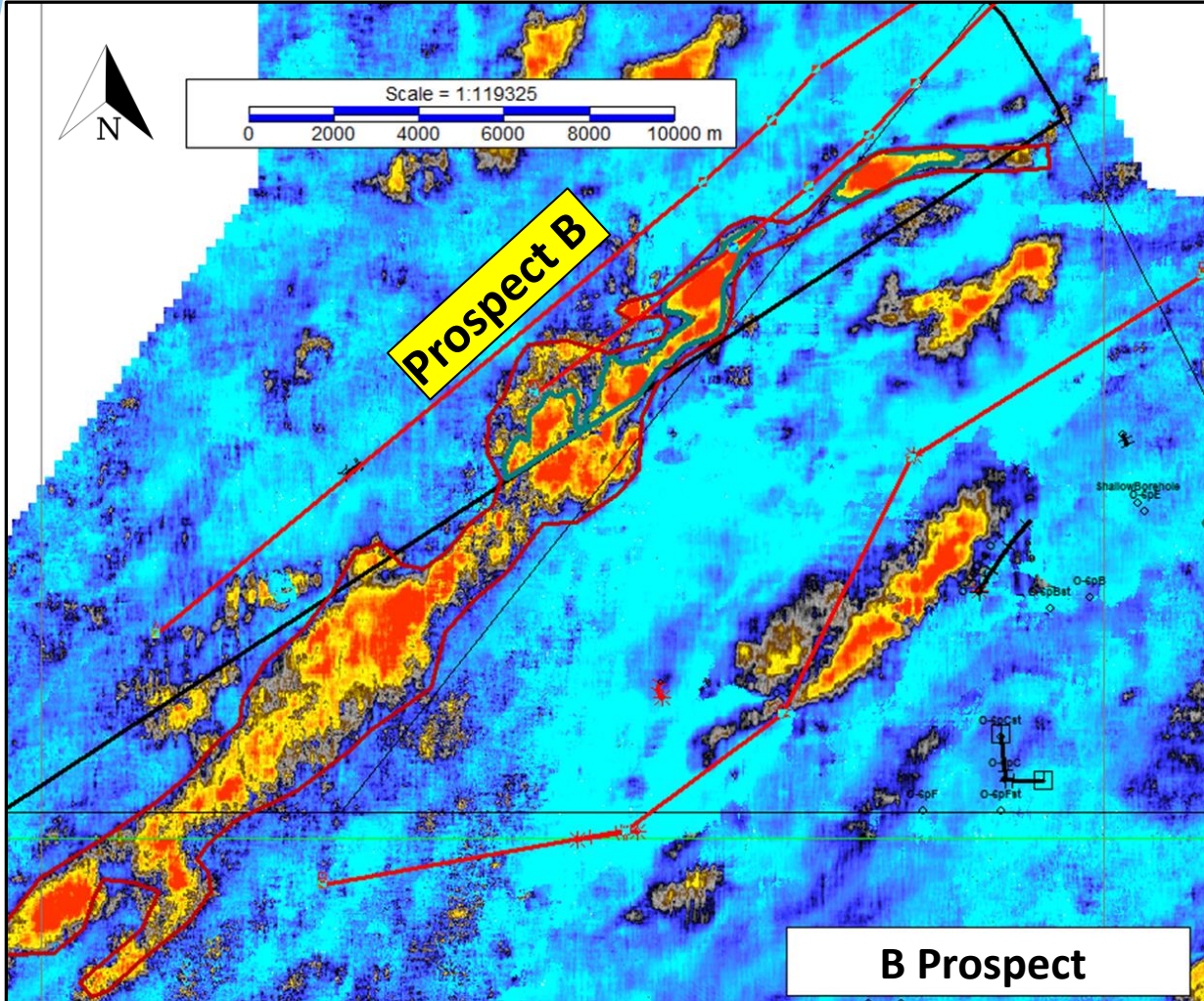


Arbitrary Dip Line along channel Far offset stack (depth domain). Line is practically all on back.





# B & C Prospect





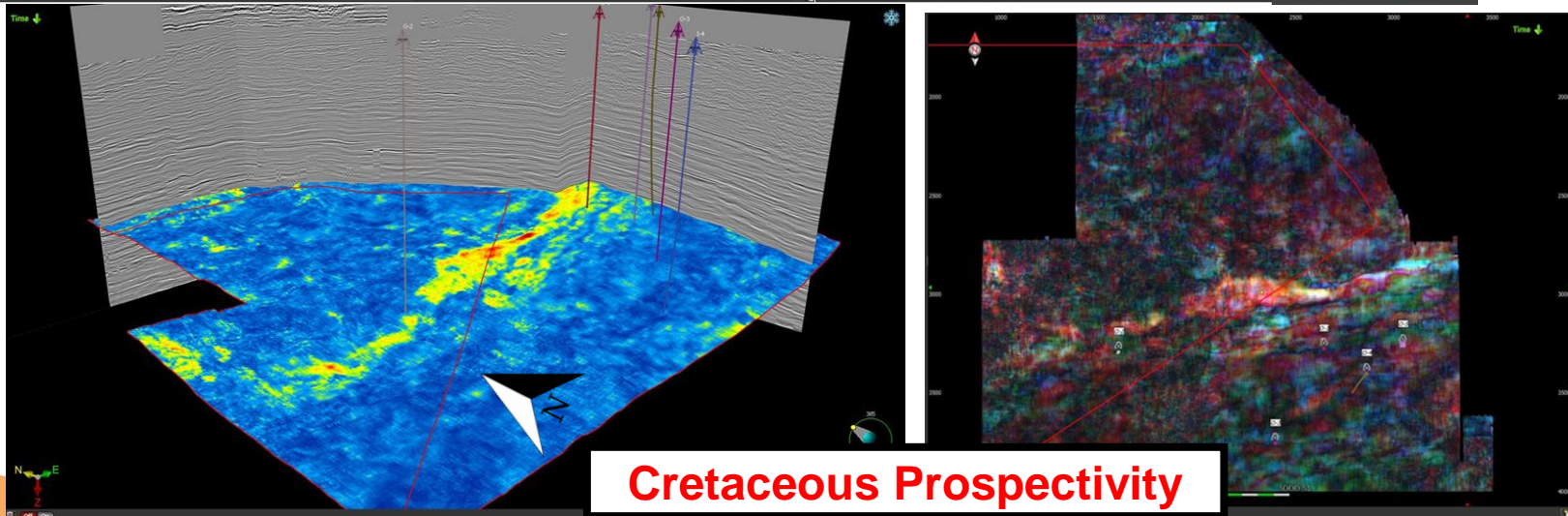
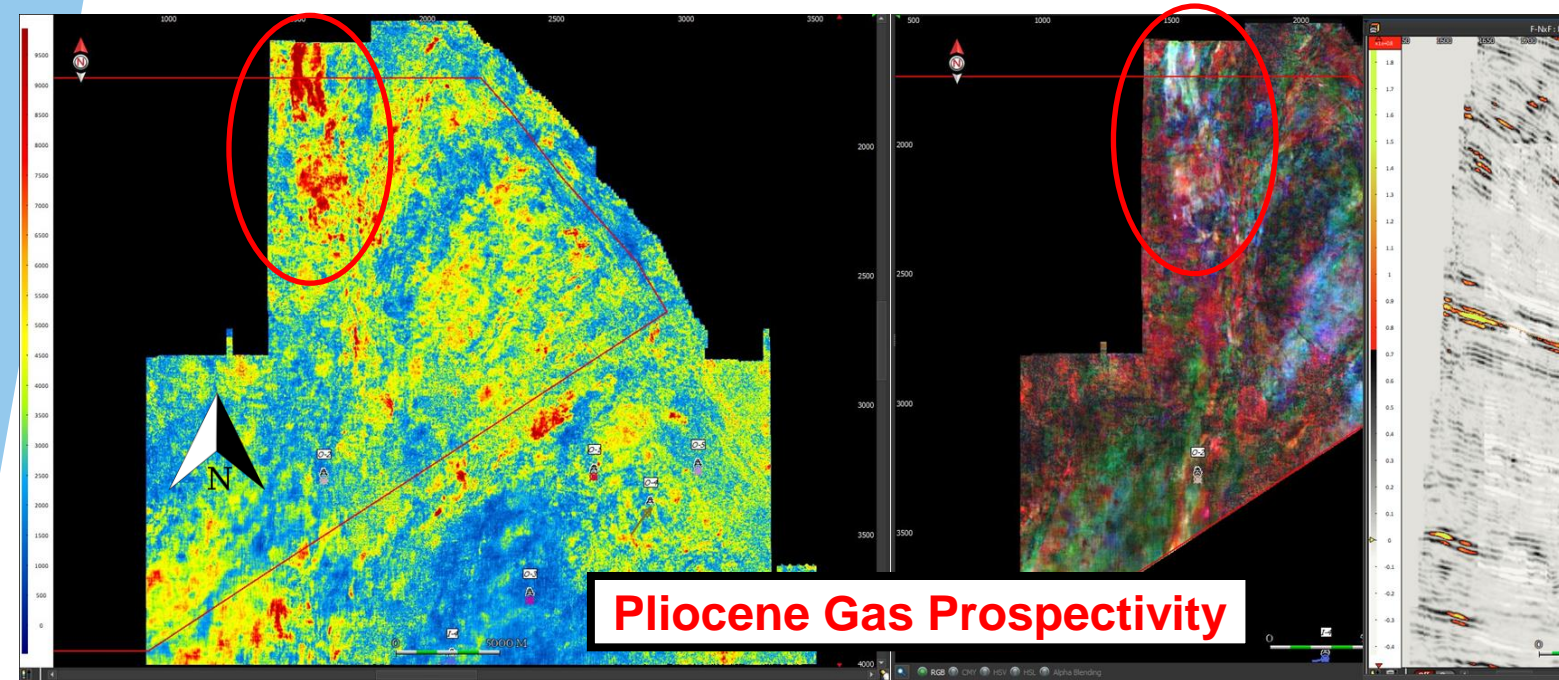
	Prospect A		Prospect B	Prospect C
	Low Case	Mid Case	Mid Case	Mid Case
P90	202	290	163	66
P50	426	686	365	186
Mean	446	779	396	211
P10	718	1,297	672	388

**Total Pmean mid case Prospective Resource = 1053-1386 BCFE**

**In block to south 21/22 wells drilled on AVO anomalies found hydrocarbons. The COS for each prospect is assessed to be 70%. The overall GCOS (the probability of at least one of the prospects works) is 97%. Mean Summed MMBOE (3 prospects) = 126 MMBOE. 91% ECOS for the three prospects assuming 38 MMBOE is the minimum economic field size.**



# Additional Prospectivity



- **Paleoscan Analysis has revealed extra prospectivity in the shallow Pliocene section and in the Cretaceous Section.**
- **These sections contain oil and gas in adjoining discoveries in Cameroon.**
- **Small additional satellites to top 3 prospects identified on block.**
- **Paleoscan data still being worked.**

# EG-08 Summary

- Opportunity to enter a PSC 80% operated by Antler Global (state company GEPetrol owns 20%). (EOG own 43% of Antler Global)
- Initial costs cover licencing of the 3D data, signature bonus, annual training fee and work program.
- Cheap drilling in shallow water – 80m water depth, no overpressure, no salt, TD around 3000m MD, soft sediments.
- High quality 3D seismic data and geology that lends itself to AVO analysis. Almost 100% success rate of wells drilled on AVO = commercial well.
- One well and 2 sidetracks could potentially access all three main prospects.
- Additional Potential Being worked.
- Very robust economics.
- Short time to production and payback.
- If oil is found a FPSO development could be planned.
- Work programme currently half completed.
- Farmout planned shortly – Q2



# Any Questions?

Please come and see us at Booth 43



Please contact Jamie White at [jamie.white@europaoil.com](mailto:jamie.white@europaoil.com) or 07766 818073