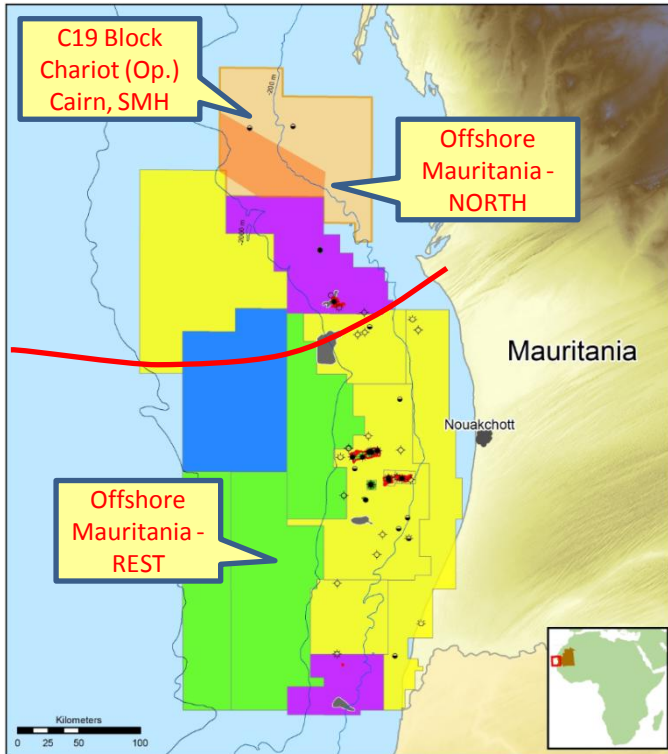




CHARIOT
OIL & GAS



Mauritanides Conference, Nouakchott

14 - 15th October 2014

Comparing and Contrasting Exploration and Play Potential in the North versus the rest of Offshore Mauritania

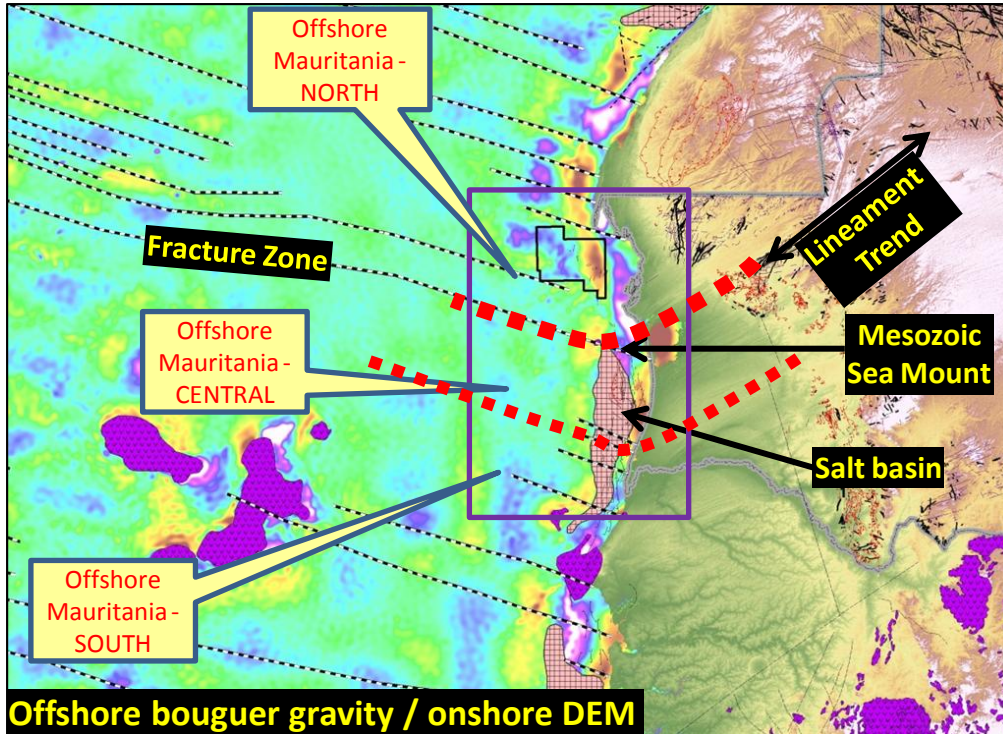
Matthew Taylor and Julia Kemper,
Chariot Oil & Gas Ltd.

Acknowledgements

Chariot would like to acknowledge the support and help of our joint venture partners, Cairn Energy (Capricorn), SMH, and of the Ministry of Petroleum and Energy in undertaking the work programme to date. Chariot is responsible for the contents and preparation of this presentation.

Offshore Mauritania

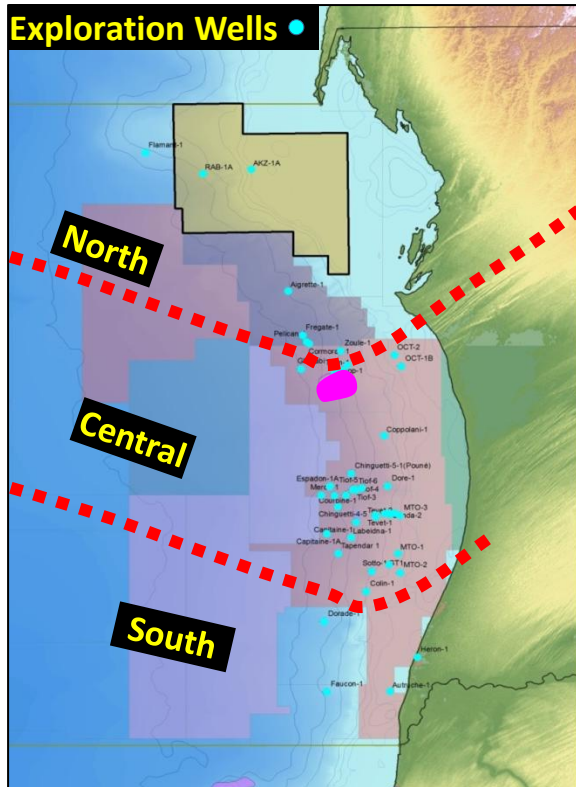
- Geologically Segmented



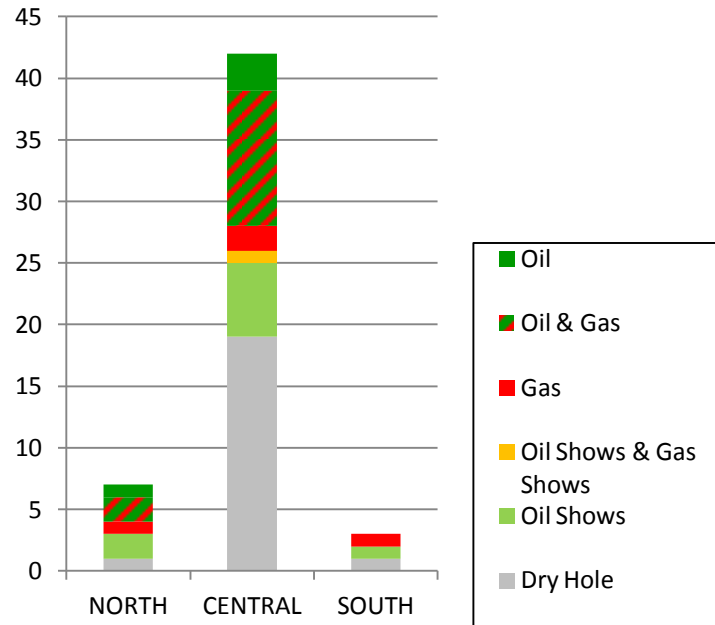
- Oceanic Fracture Zones link to continental lineaments
- Continental margin is segmented
- Offshore NORTH;
 - Tectonically separate province
 - No salt basin
 - Structured hinterland

Offshore Mauritania

- Highly Variable Intensity of Exploration

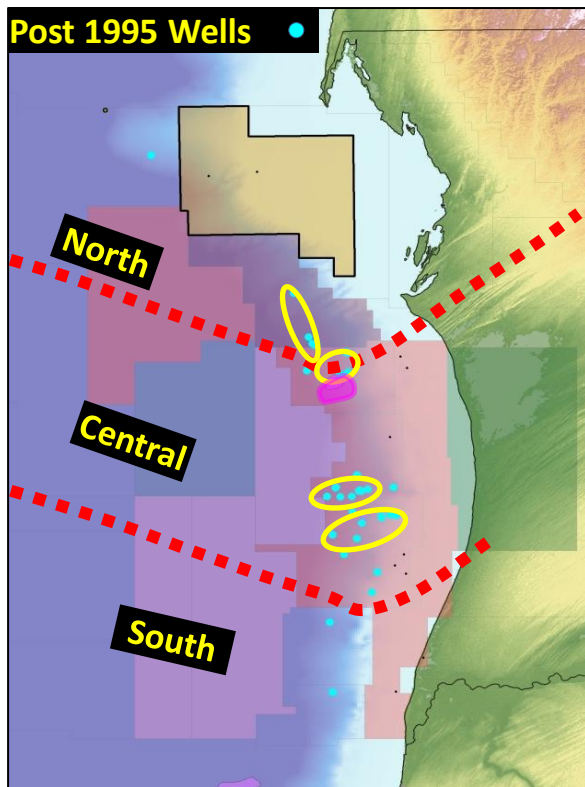


- Offshore Mauritania – 52 exploration wells drilled to date



Offshore Mauritania

Exploration is very Localised, Few Themes

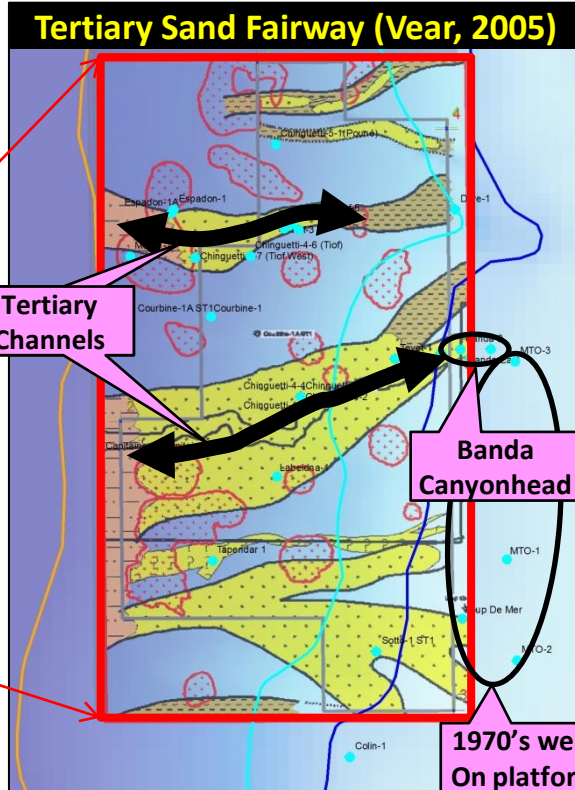
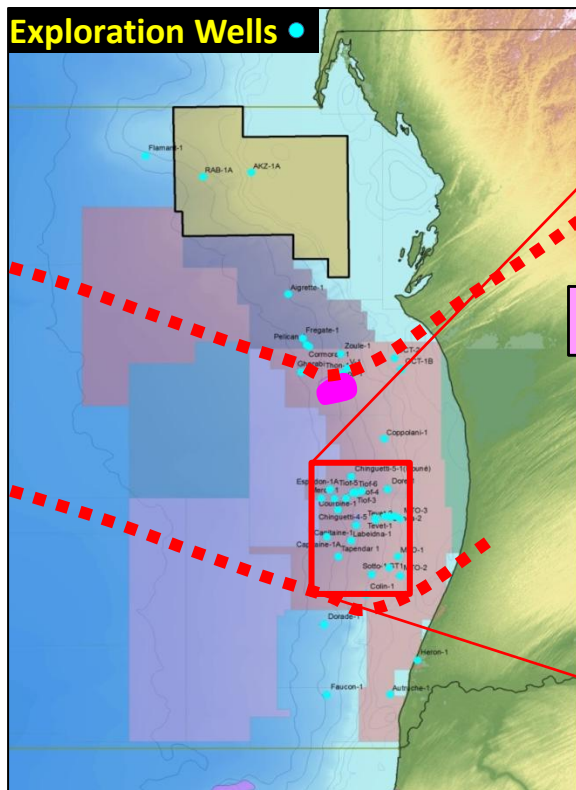


Since 1995 drilling has focussed on a few specific areas and trap types, partly driven by 3D seismic “patchwork”:

- Tertiary channel systems in structural / combination traps around salt structures
- Combinations traps around structure provided by seamount
- Structural traps at Cretaceous level provided by low relief foot of slope ridge
- Exploration focus has been very localised and driven by structure trap components although largest trap found is stratigraphic (Banda)

Offshore Mauritania Exploration

- The Tertiary Play



52 exploration wells drilled to date, 33 (64%) in this area

Approximately 27 of 33 (82%) wells targeted Tertiary sands around salt structures

Banda Field is the largest trap found (60km²); a non-salt “canyonhead” trap

Tertiary Channels

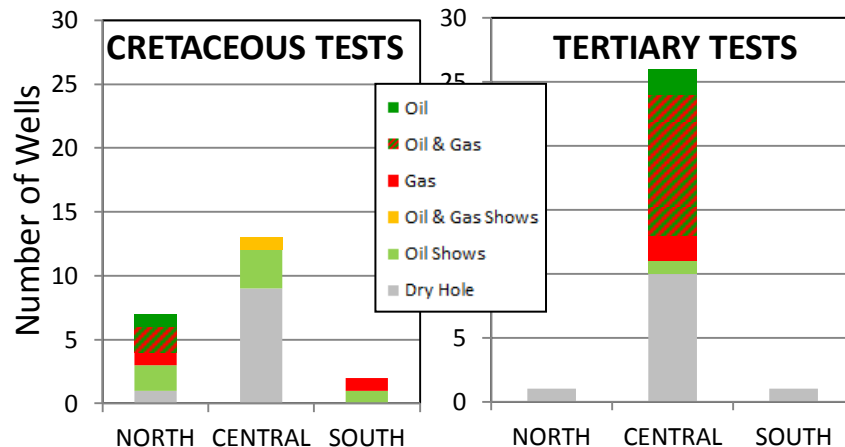
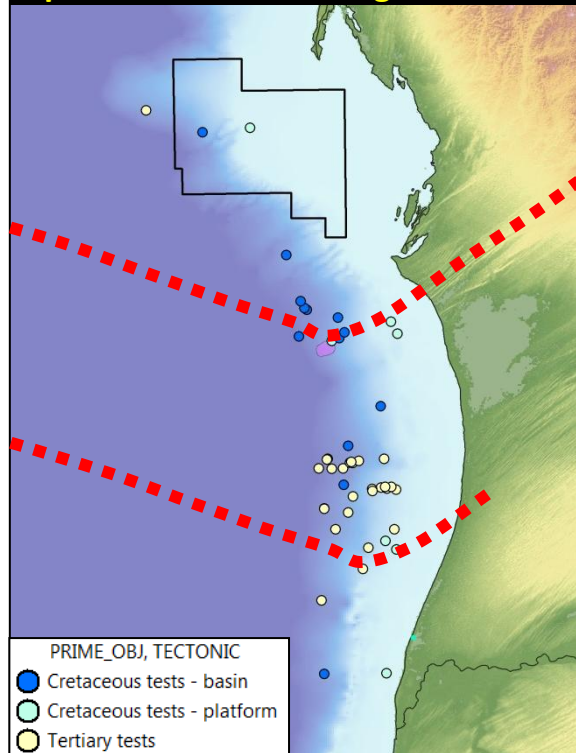
Banda Canyonhead

1970's wells On platform

Offshore Mauritania

Drilling Outcomes by Play

Exploration Wells testing Cretaceous



Cretaceous

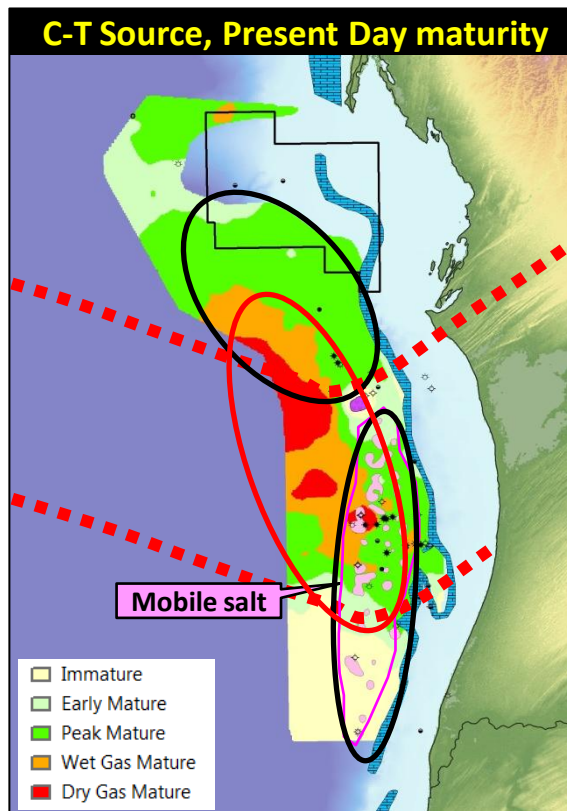
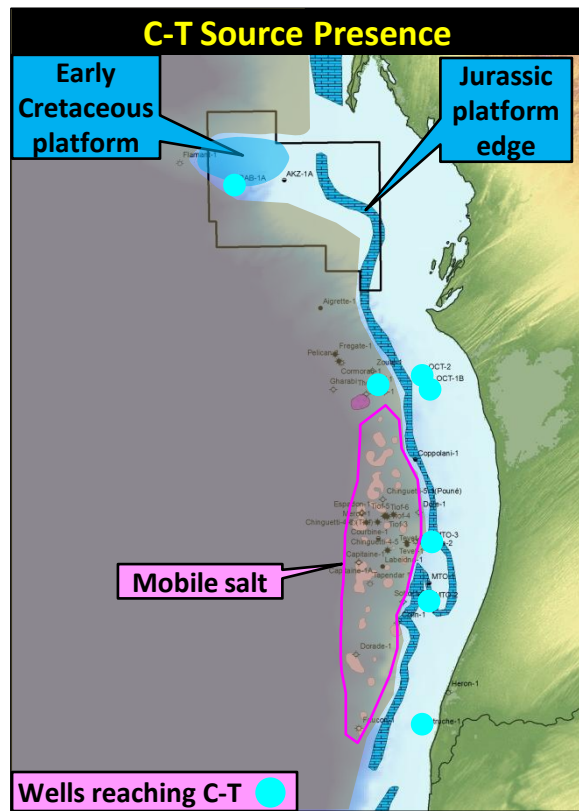
- North; 4 discoveries from 7 wells, multiple reservoirs
- Central; Oil and gas shows, lack of reservoir
- South; Gas (deep source?)

Tertiary

- North; one (carbonate) test
- Central; Oil and gas fields, C-T and deep source access via salt diapirs?

The Principal Source System

-Cenomanian-Turonian Source Rocks



C-T (Cenomanian to Turonian) source widely developed in the basin

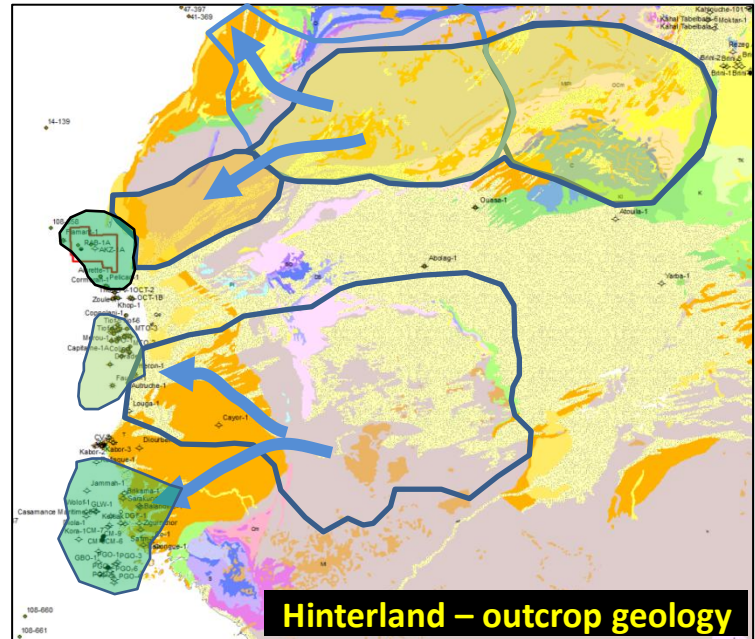
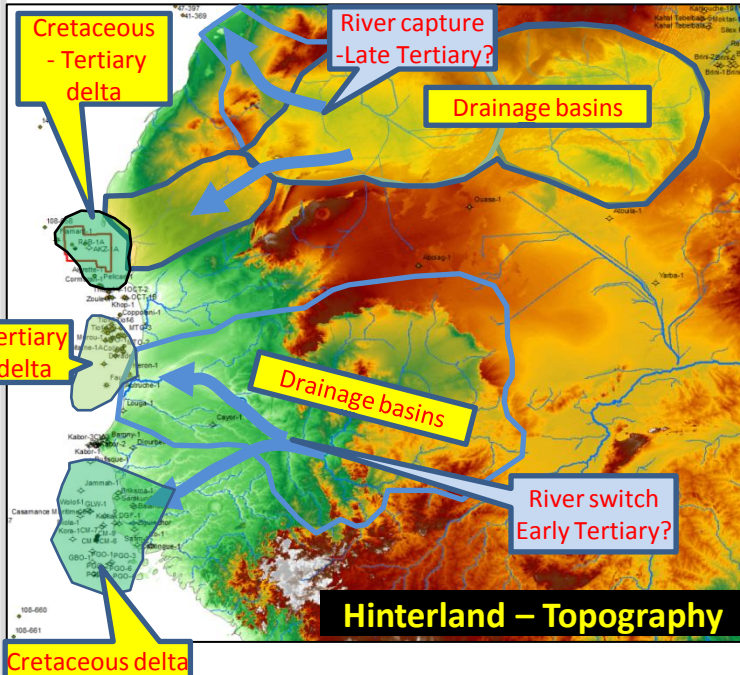
Fetch areas small in complex salt area – charge limiting

Fetch areas large in North-unlimited charge

Areas with gas risk (overmature C-T and deep charge access)

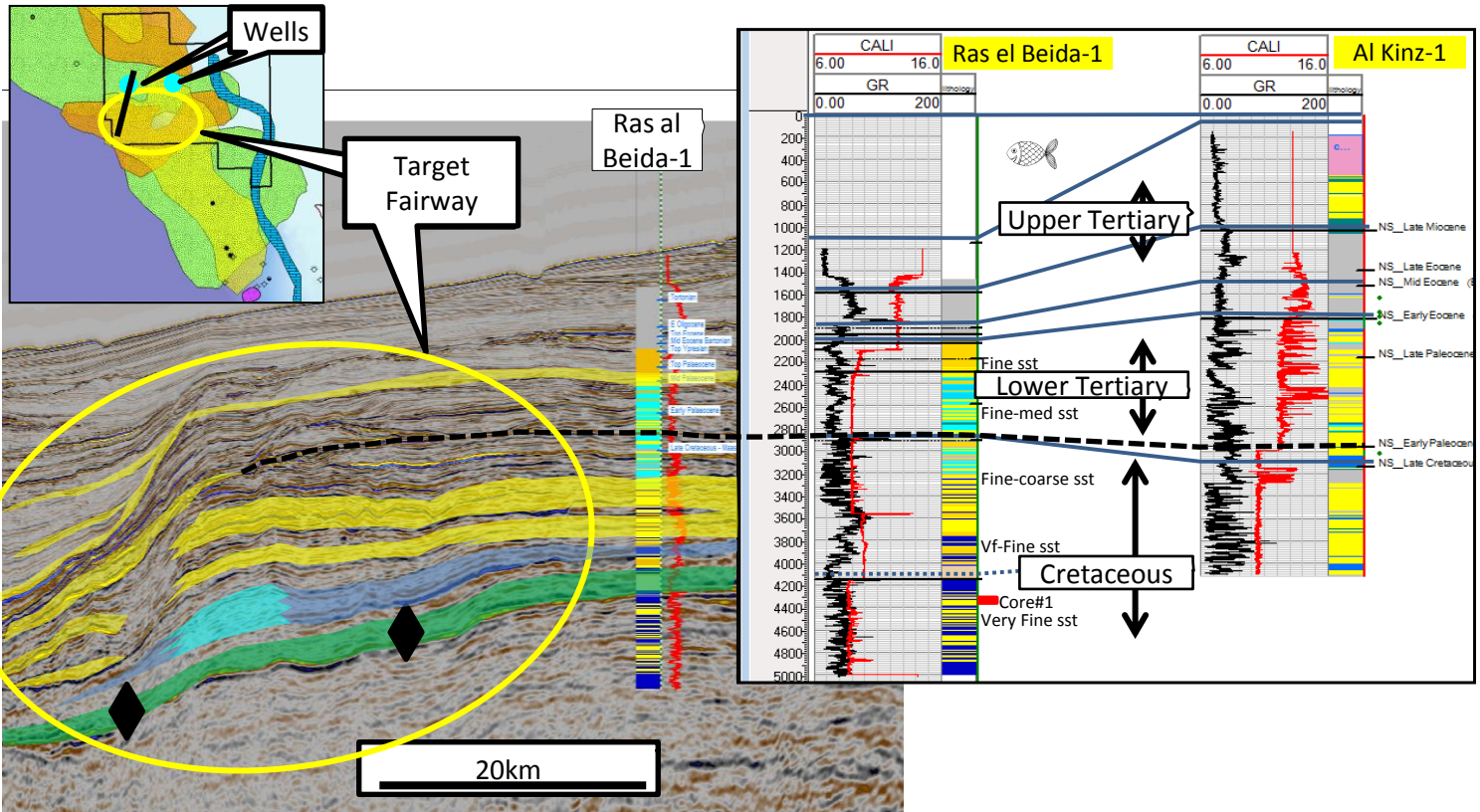
Reservoir Development Rivers, Drainage and Hinterland Geology

Well developed drainage basins – higher rainfall in past

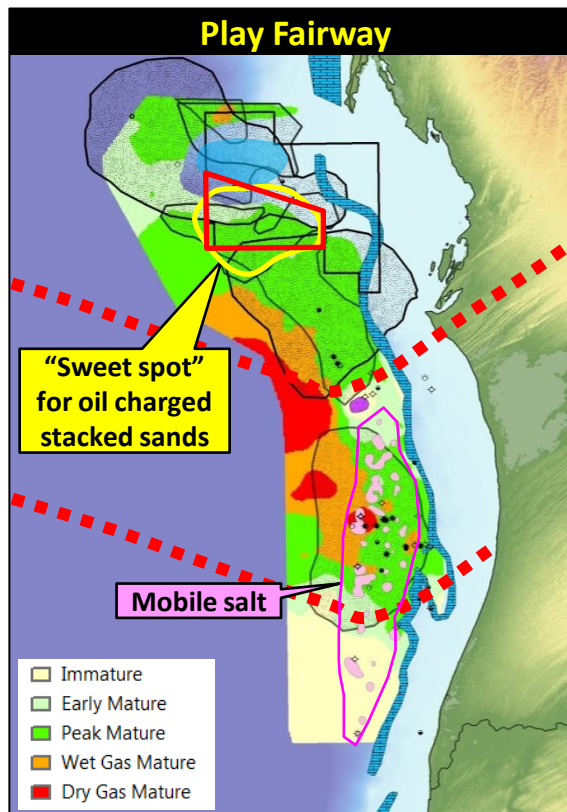
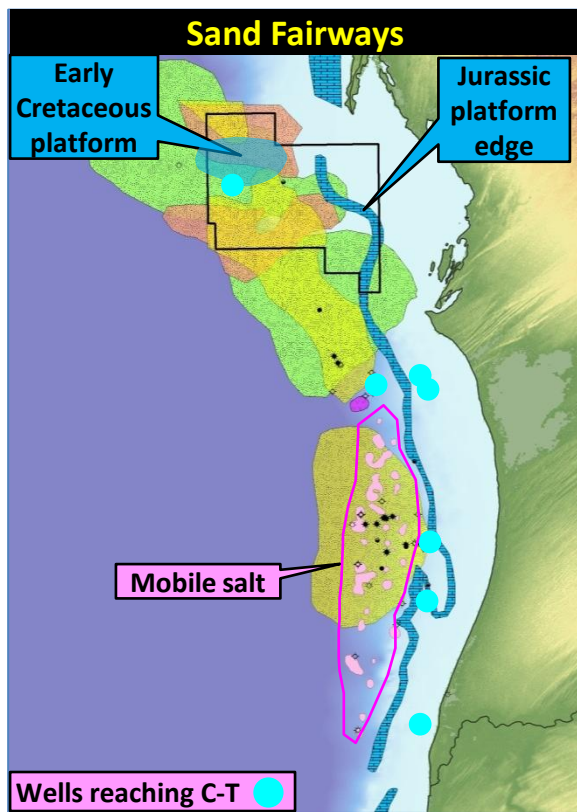


Northern Mauritania

A Sand Rich environment, multiple levels

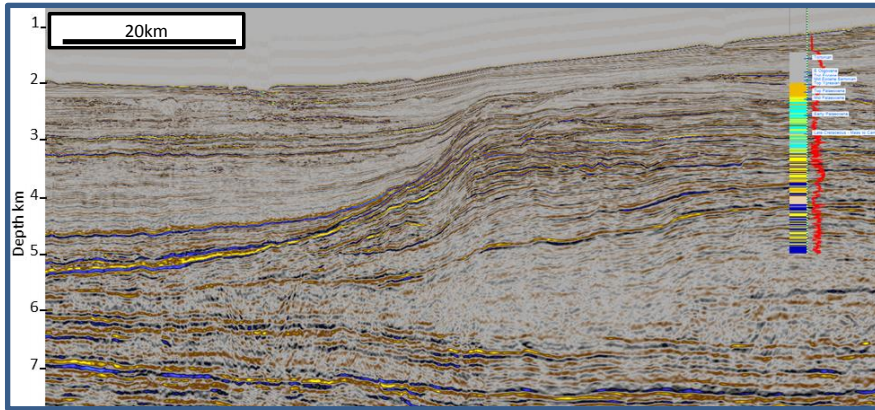


Reservoir Development and Play Definition

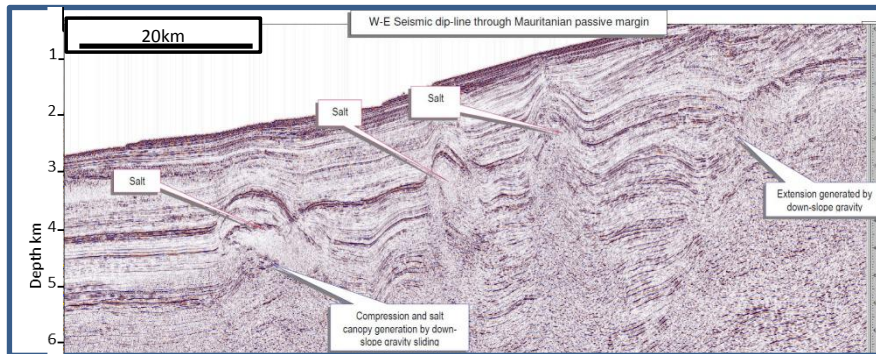


Location of Chariot 3D seismic survey shot in 2012

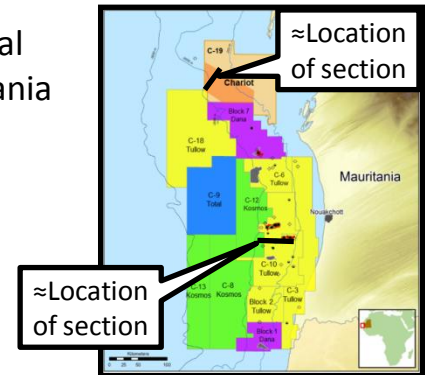
Comparison Sections (Same scales)



Northern
Mauritania

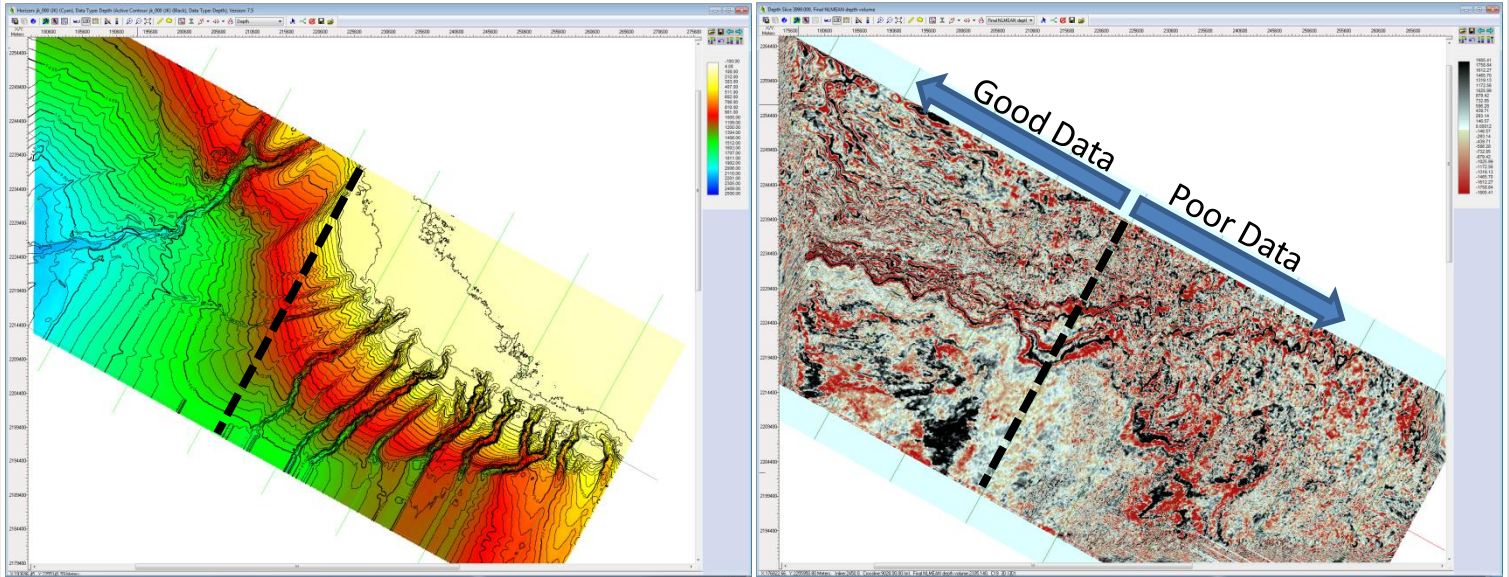


Central
Mauritania



Chariot 3D Seismic Processing

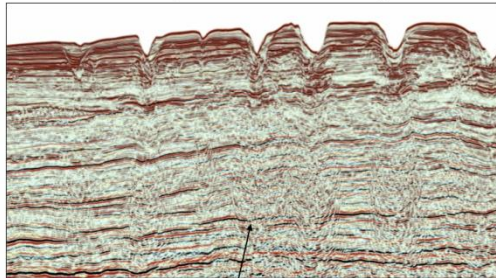
Seabed canyons - The main imaging problem



Chariot 3D Seismic Processing (3500km²) - A Two Year Labour of Love!!

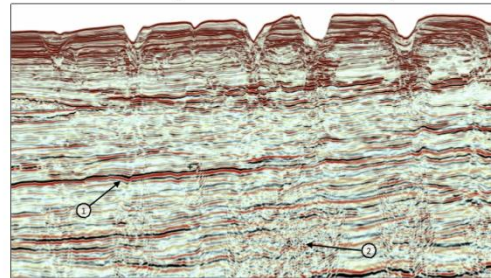


PSDM (6 MONTHS PROCESSING)



SIGNIFICANT DIFFRACTION PUSH DOWN AND NOISE THROUGHOUT THE DATA BELOW CANYONS

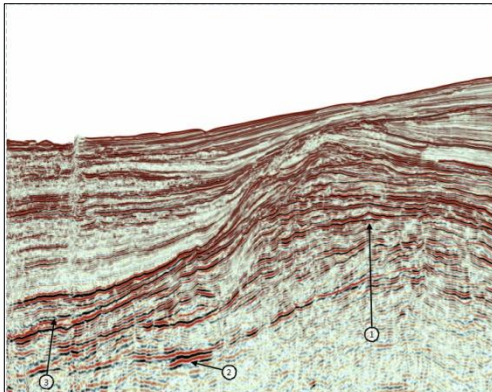
PSDM (12 MONTHS PROCESSING)



(1) AFTER FINAL RANDOM NOISE ATTENUATION REFLECTORS ARE MORE COHERENT AND CONTINUOUS.

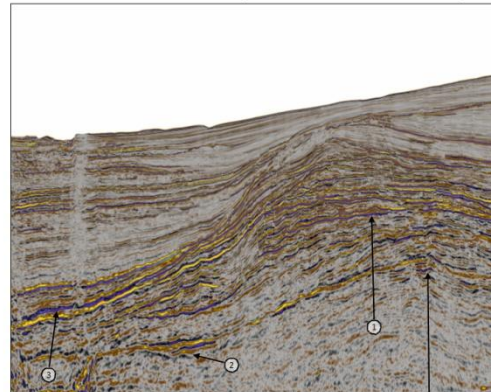
(2) CANYONS ARE STILL CAUSING SOUND DISTURBANCE AND NOISE IN THE DATA

PSDM (12 MONTHS PROCESSING)



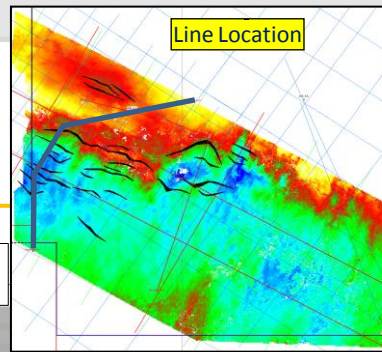
SEISMIC DATA PACKAGES EASIER TO MAP ON RELATIVE IMPEDANCE DATA (1-3)

RELATIVE IMPEDANCE (18 MONTHS PROCESSING)

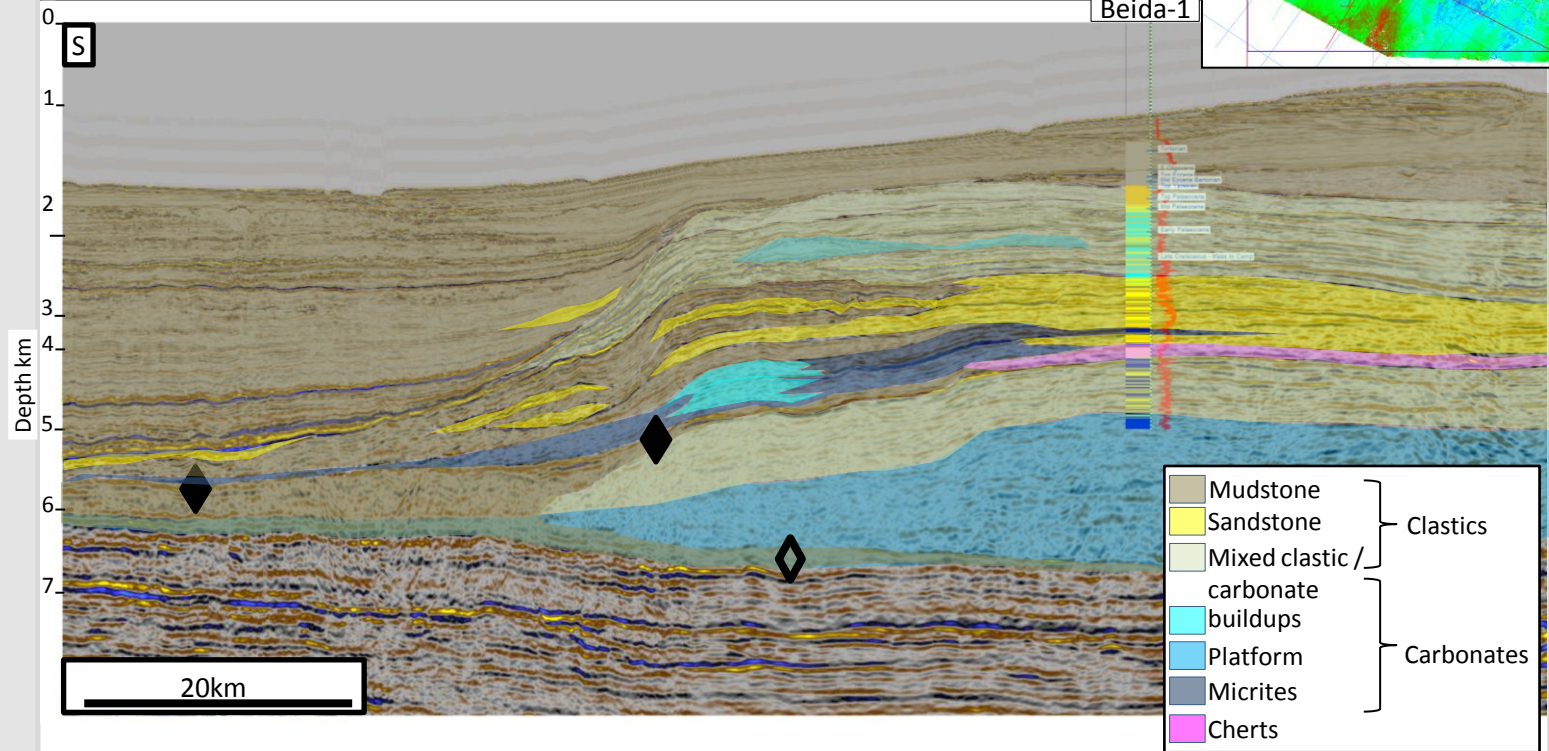


REFLECTORS ARE MORE CONTINUOUS IN RELATIVE IMPEDANCE DATA

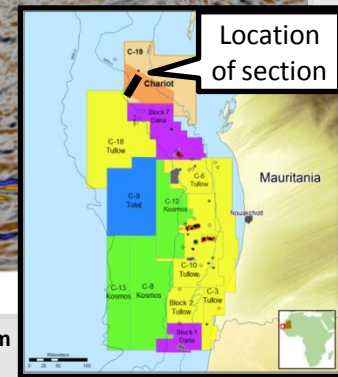
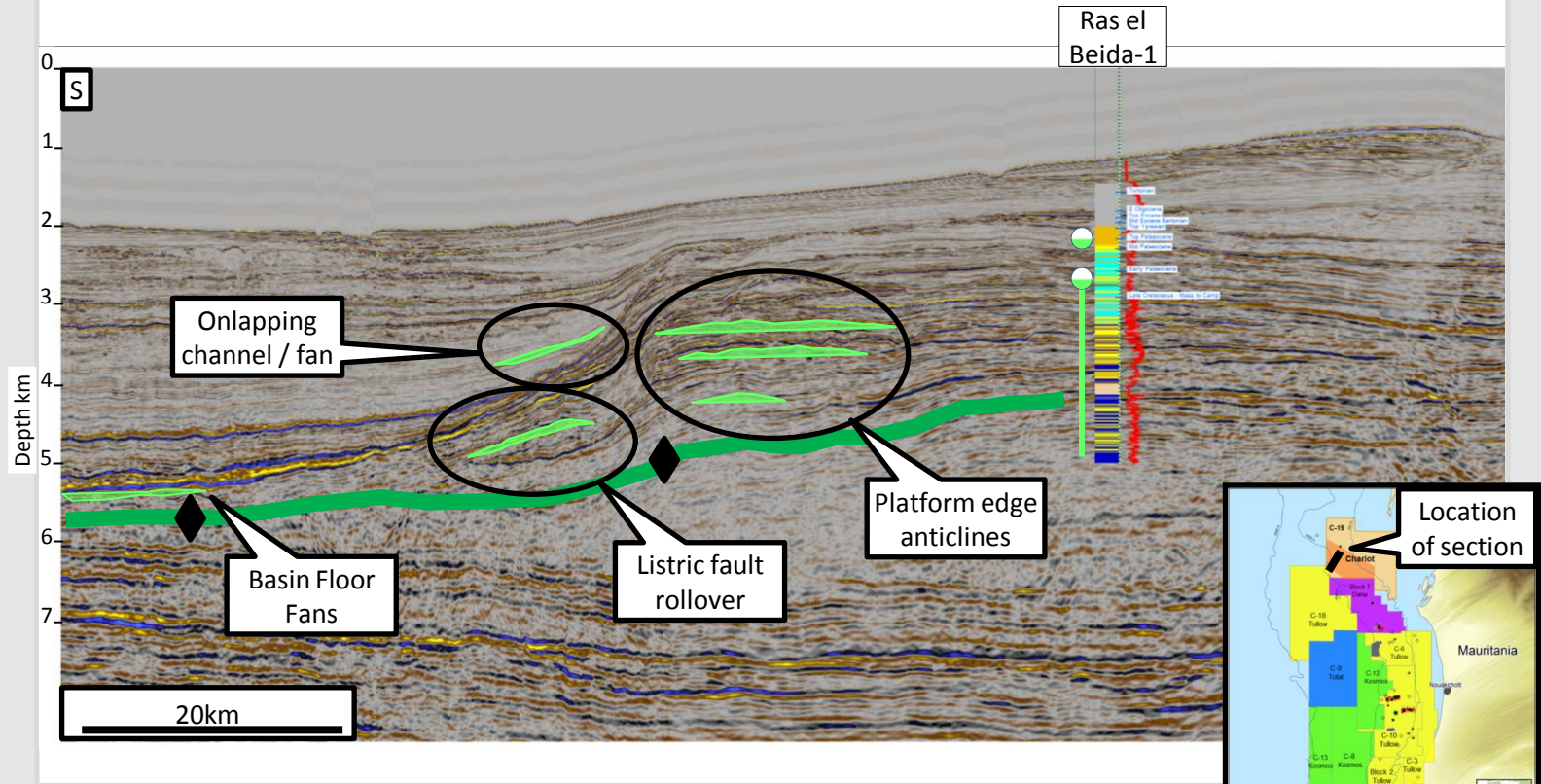
Geoseismic Section along 3D Seismic Line tied to Platform Well



Ras el Beida-1



Geoseismic Section, Northern Mauritania Showing Main Source Rock with Lead and Prospect Locations

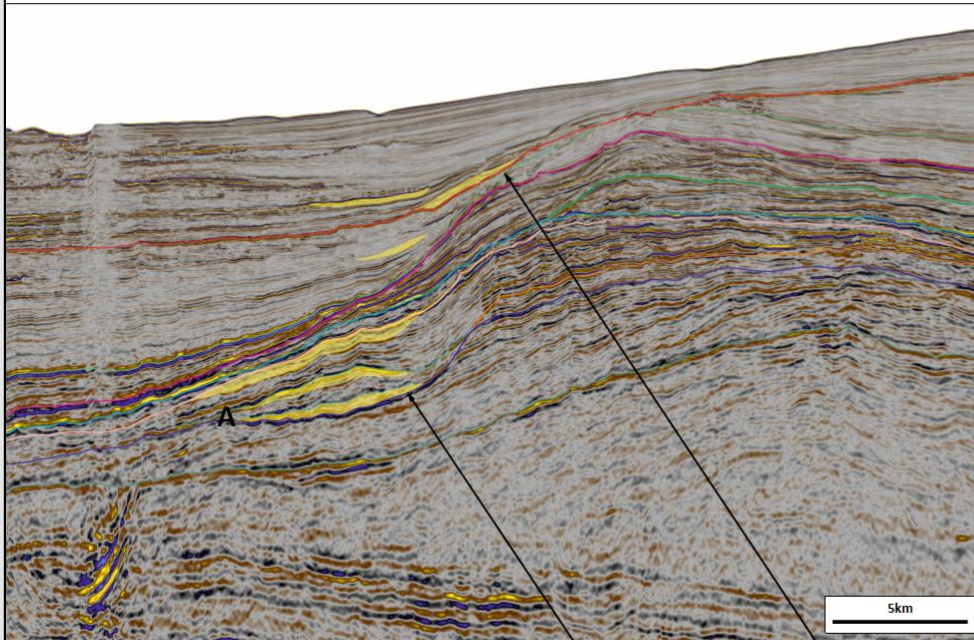


Northern Mauritania, Block C19

Example Prospects – Rollover with Clastics



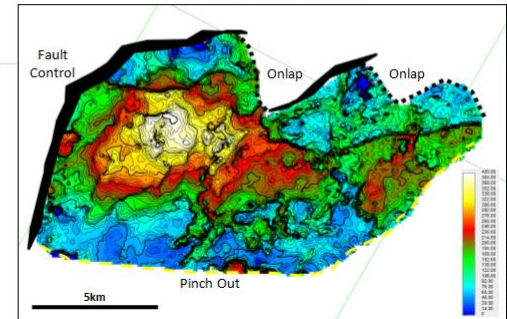
STRUCTURALLY FOCUSED STACKED SANDS



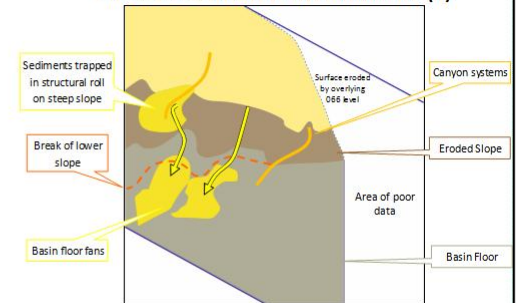
LISTRIC FAULTING CAUSES ROLL OVER OF SANDS AT BASE OF SLOPE.

MIGRATION OF HYDROCARBONS INTO TERTIARY SANDS DEFINED BY AMPLITUDE ANOMALIES

ISOPACH MAP UNIT A (SEE SEISMIC SECTION)



GROSS DEPOSITIONAL ENVIRONMENT (A)

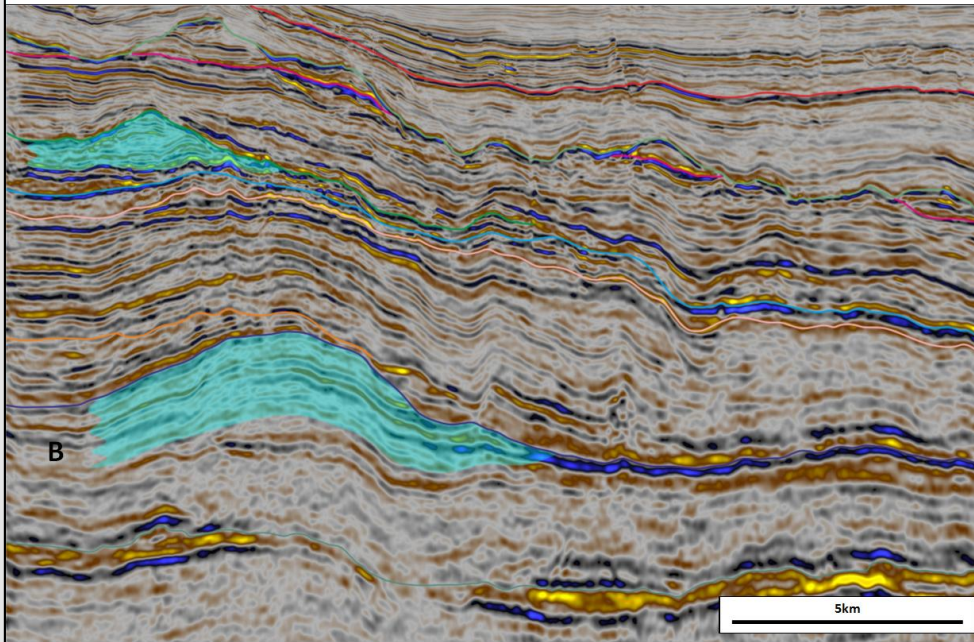


Northern Mauritania, Block C19

Example Prospects – Cretaceous Buildup

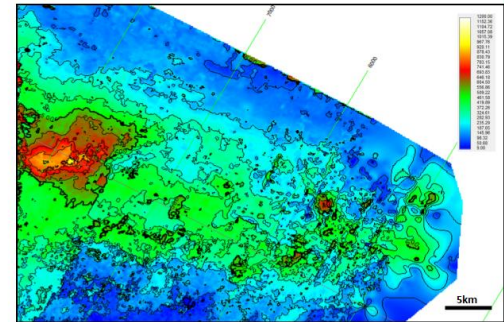


PLATFORM EDGE CARBONATE BUILD-UP

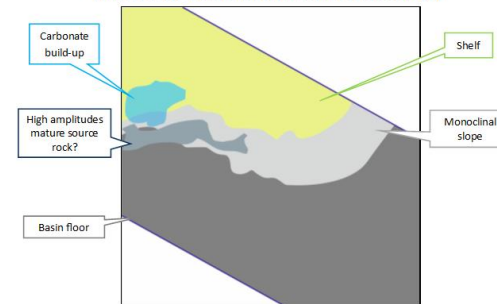


CARBONATE BUILD-UPS OCCUR AT MULTIPLE LEVELS ON THE PLATFORM MARGIN PROVIDING POTENTIAL REVERVOIR TARGETS

ISOPACH MAP UNIT B (SEE SEISMIC SECTION)



GROSS DEPOSITIONAL ENVIRONMENT (B)

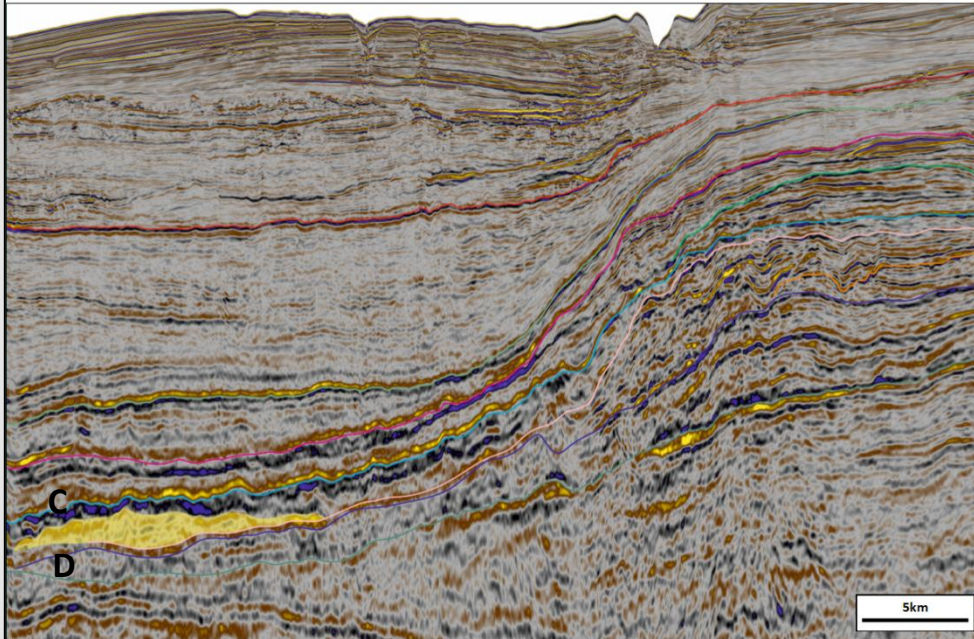


Northern Mauritania, Block C19

Example Prospects – Basin Floor Fans

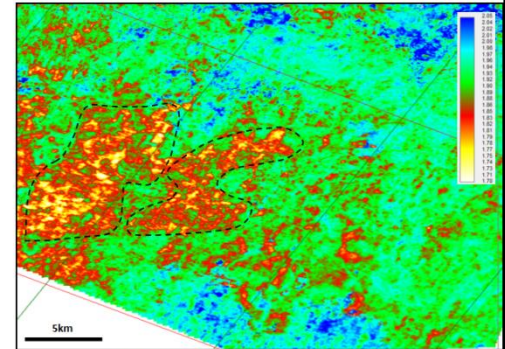


BASIN FLOOR FANS

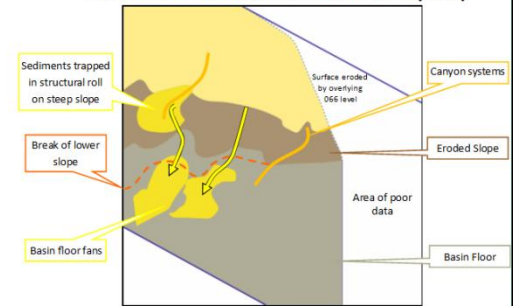


BASIN FLOOR FAN GEOMETRIES EVIDENT IN THE SEISMIC WITH RUGOSE TOP SURFACES AND LATERAL DOWNLAP

Vp/Vs AMPLITUDE EXTRACTION BETWEEN HORIZONS C-D (SEE SEISMIC SECTION)

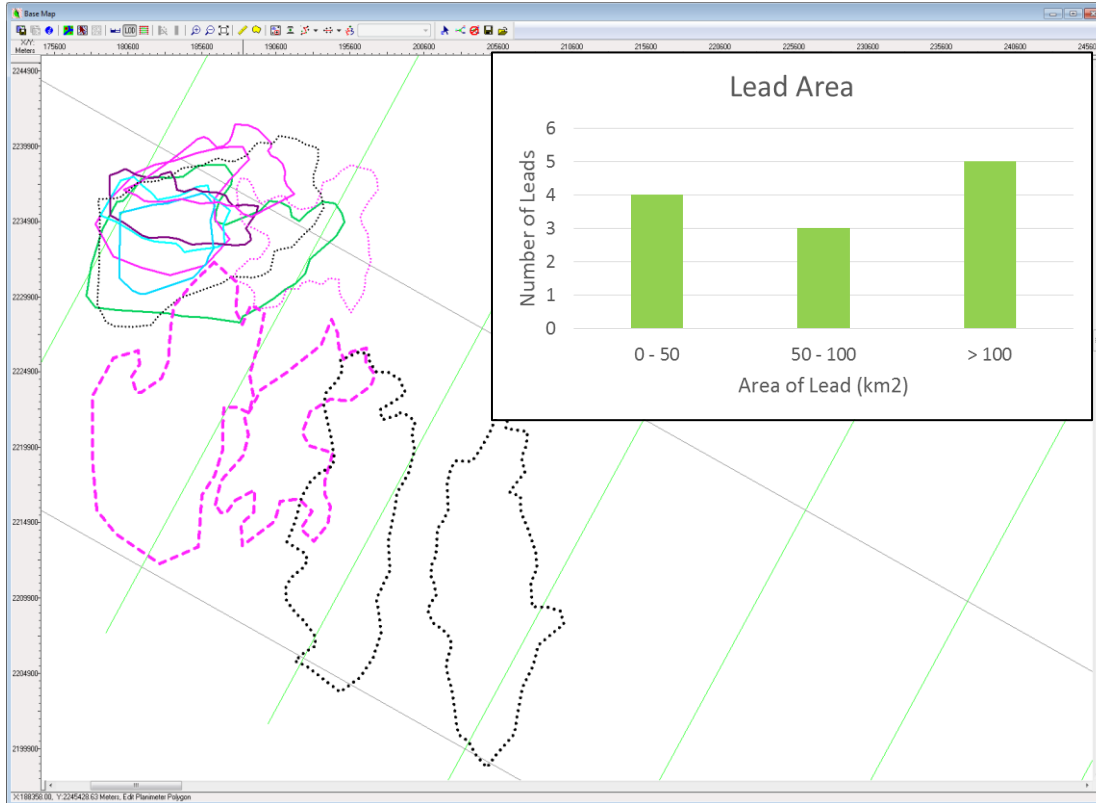


GROSS DEPOSITIONAL ENVIRONMENT (C&D)



Northern Mauritania, Block C19

Lead & Prospect – Areal Sizes



Summary



- **Offshore Mauritania exploration is localised and play specific**
- **The Northern Offshore has only been explored with modern data in one part (Fregate / Cormoran / Pelican area) which is vulnerable to gas charge**
- **The potential for oil charged sands with good sand development and large fetch cells is best in the area of Block C19 in Northern Mauritania**
- **Chariot has shot a large, 3500km² 3d seismic survey over the sweet spot and is preparing for the first exploration wells to be drilled in this area**