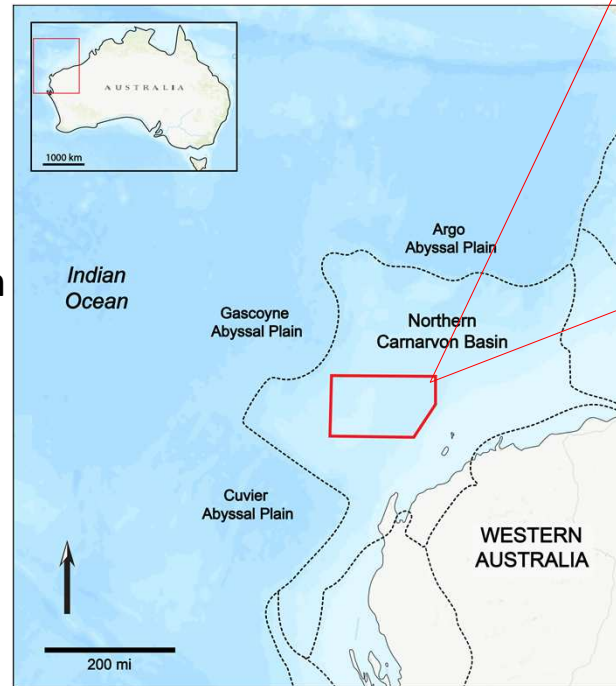
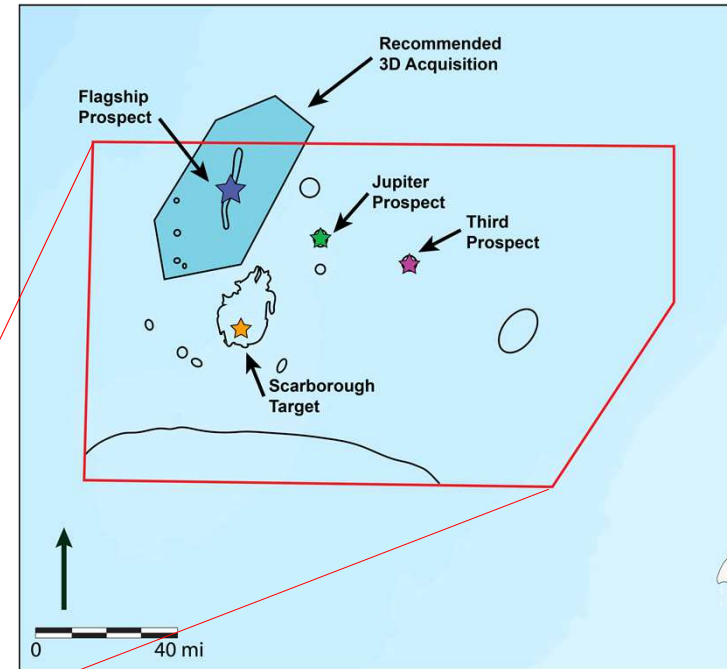


Project 1 (Imperial Barrel Award by AAPG) :



Assessment of Petroleum Potential of the Offshore Carnarvon Basin in Western Australia



- Field is located within the Northern Carnarvon Basin
- Part of the North West Shelf region of Western Australia, 200 km (125 mi) from WA shoreline
- Offshore setting with water depths of 800 to 2000 m (2600 to 6500 ft)
- Area covers 37,000 km² (9,100 mi²)

Executive Summary



Identified:

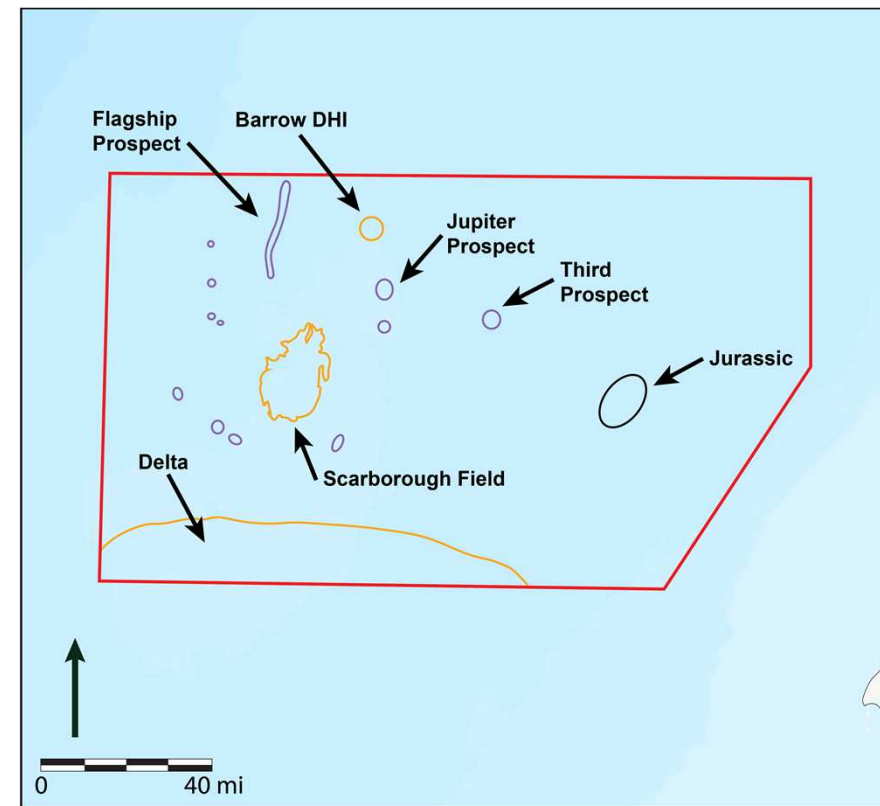
- Three new prospects in Late Triassic Mungaroo Play of frontier offshore Northern Carnarvon Basin
- Key development target for Scarborough gas field
- Mean estimated volumetric recovery:
- Flagship prospect: % chance of success

Mungaroo Play

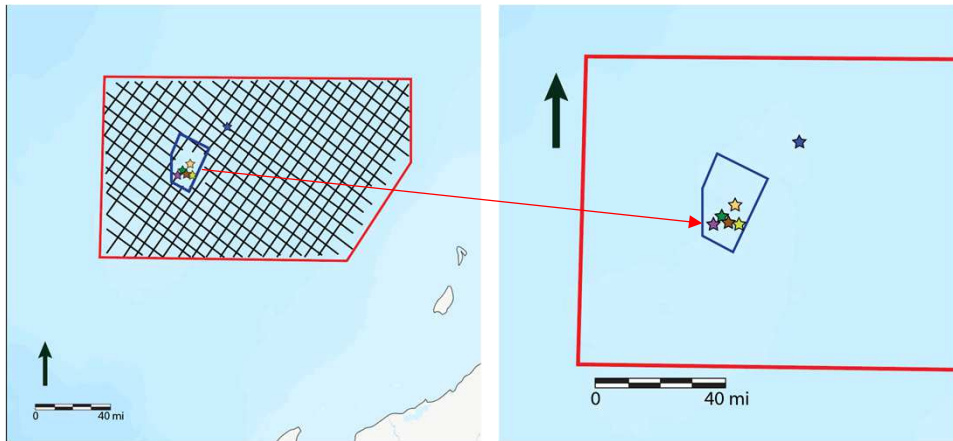
- Source: regional, mature, high quantity, gas-prone
- Reservoirs: 55% N/G & 10% mean porosity
- Seal: regional marine shales
- Play concept: % chance of success

Recommendations

- Secure drilling rights and obtain 3D seismic data over flagship prospect
- Test prospect viability with exploration drilling program
 - Acquire well data to constrain reservoir quality



Available Data



- Grid of 2D seismic data (53 lines)
- One 3D seismic survey
- Technical summaries (9 wells)
- Wireline logs (GR, DT, RES, RHOB, NPHI)
- Formation tops, velocity surveys, and time-depth data
- Engineering logs, core reports, mud logs, paleo, and geological reports



Jupiter-1 (1979)

- P&A, 16m (52ft) net gas



Scarborough-1 (1979)

- P&A, 49m (160ft) gas column, 36m (120ft) net



Scarborough-2 (1996)

- P&A, 73m (240ft) gas column, 27m (90ft) net



Scarborough-3/3CH (2004)

- P&A, 54m (177ft) gas column, 18.3m (60ft) net



Scarborough-4/4A/4ACH (2005)

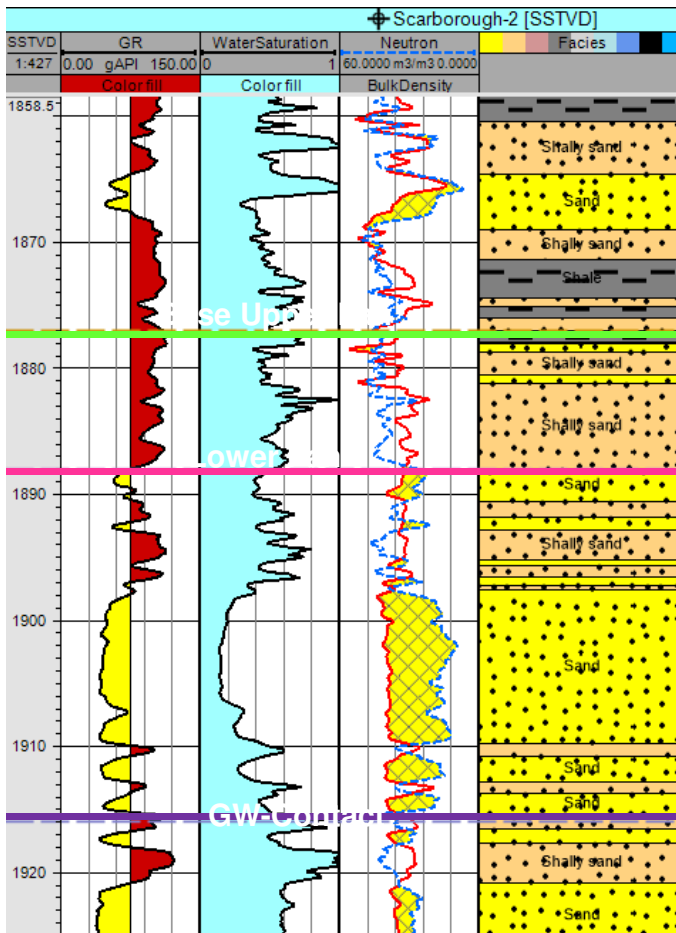
- P&A, 84.7m (278ft) gas column, 44.6m (150ft) net



Scarborough-5 (2005)

- P&A, 97.5m (320ft) gas column, 42.2m (140ft) net

Scarborough Field: Basin-floor Fan Prospect



Reservoir: Early Cretaceous Barrow Group

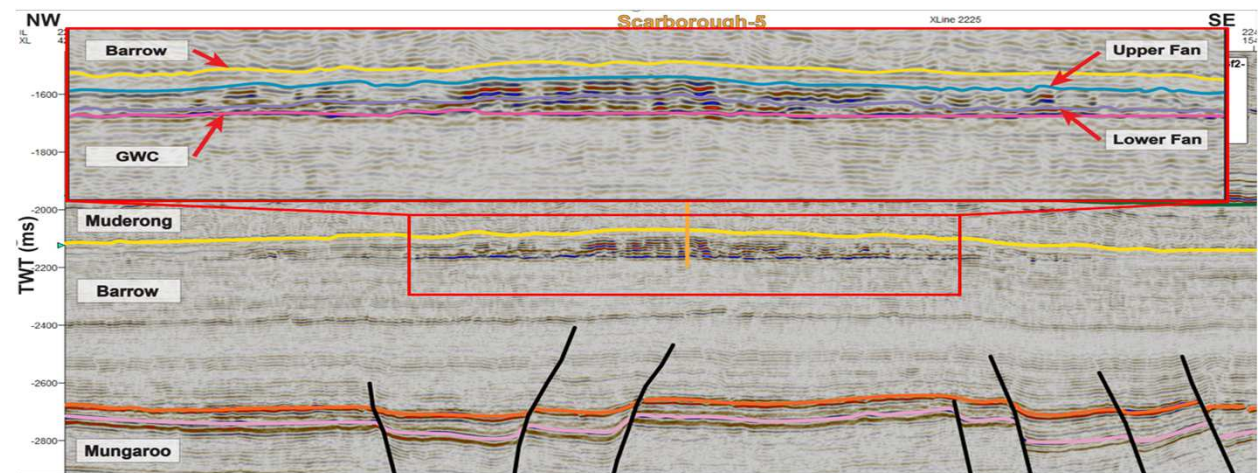
- Fine- to coarse-grained deltaic & turbidite sandstones
- Sourced from delta-front complex 80 km to SW
- Amalgamated sandstones and high-density turbidites (HDT)
- Pressure gradients indicate minimal compartmentalization

Upper Fan:

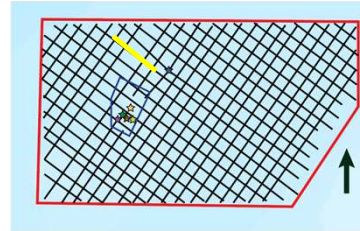
- Mean eff. porosity: ~20%
- Mean permeability: <10 - 1000
- Mean water saturation: ~50%

Lower Fan:

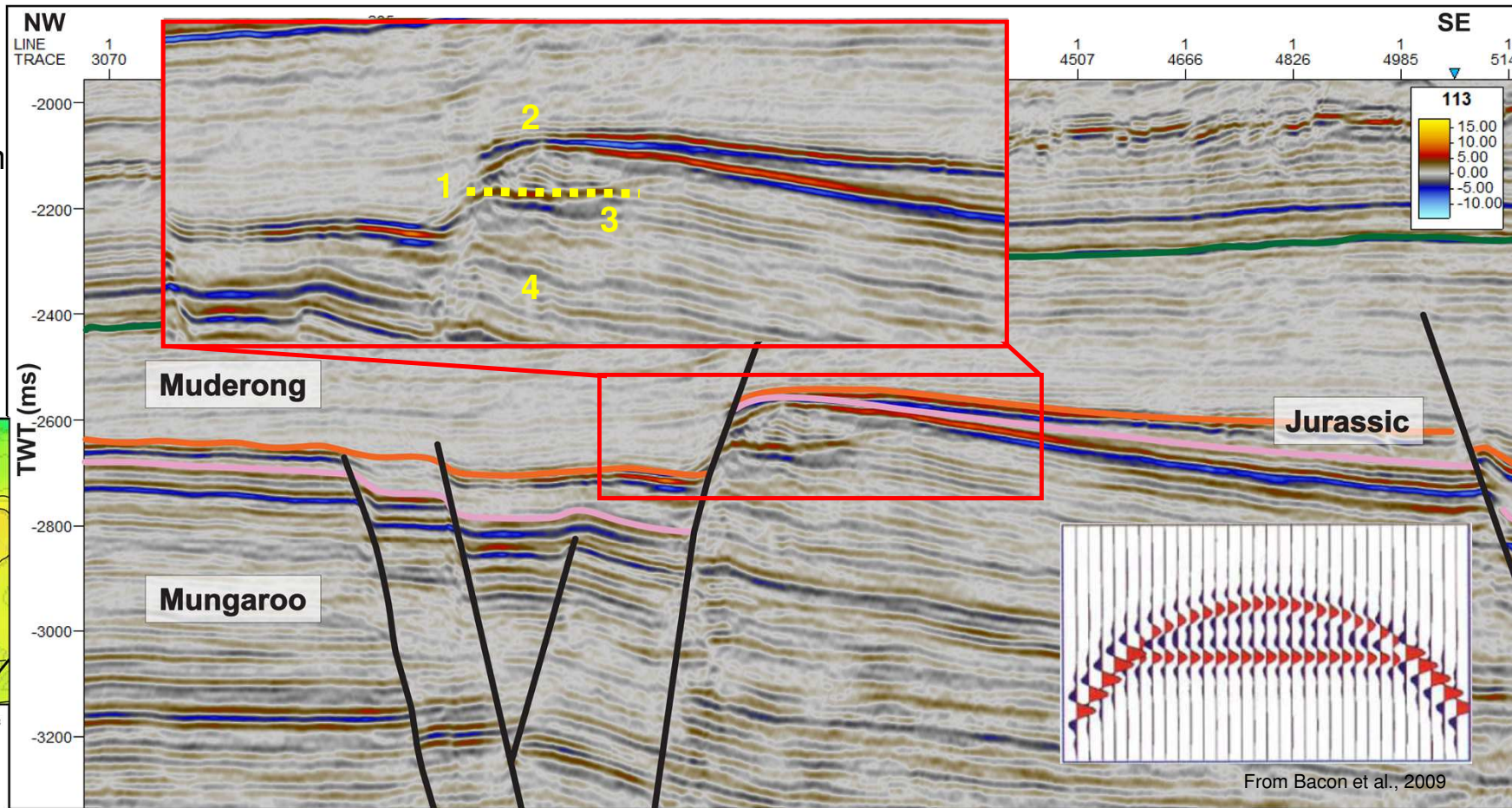
- Mean eff. porosity: ~26%
- Mean permeability: 1000 - 5000
- Mean water saturation: ~30%



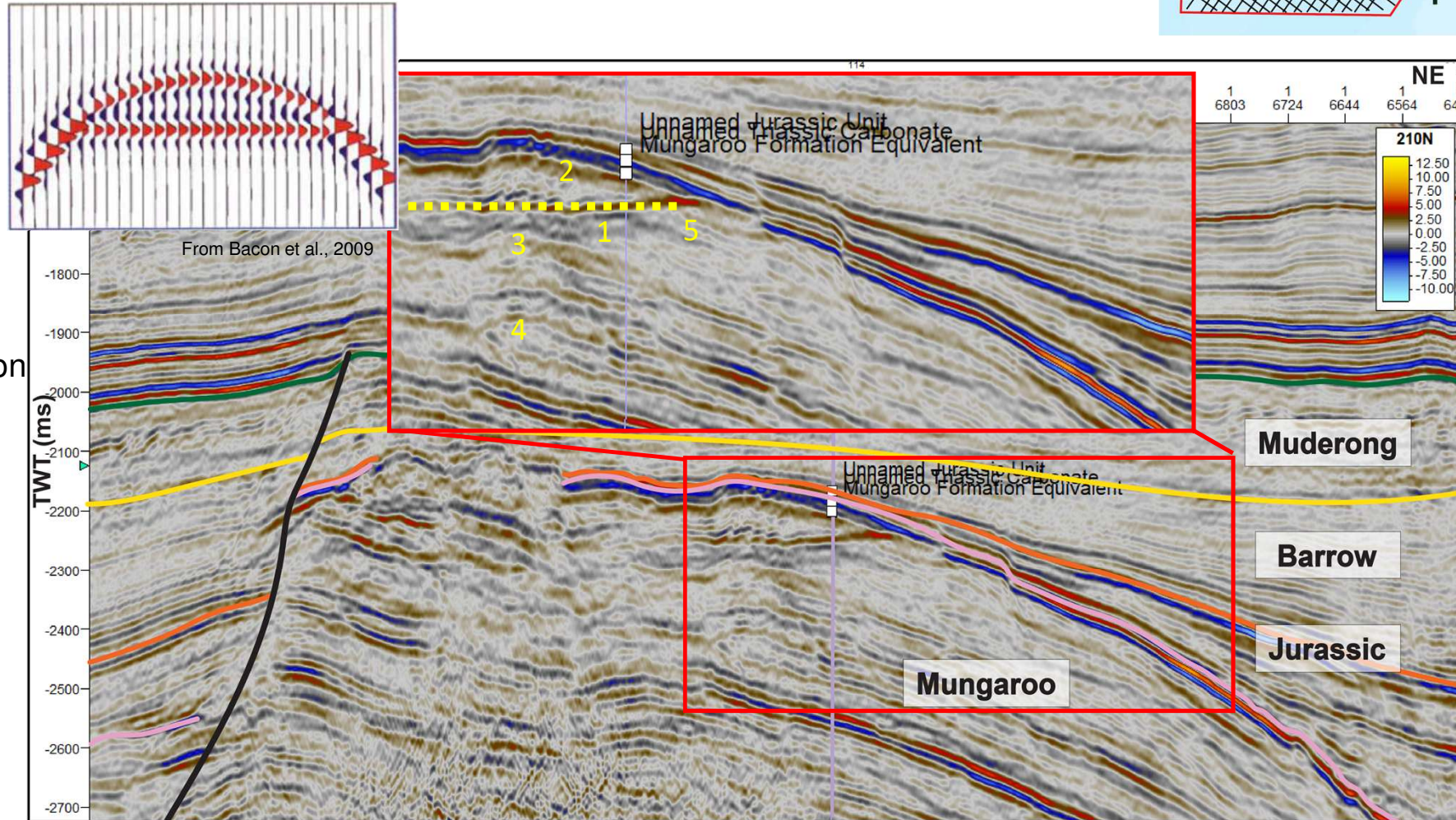
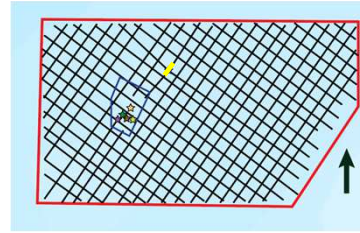
Mungaroo – Flagship Prospect



- 1. Flat spot
- 2. Dimming effect
- 3. Sag
- 4. Loss of resolution



Mungaroo – Jupiter Prospect



- 1. Flat Spot
- 2. Dimming Effect
- 3. Sag
- 4. Loss of resolution
- 5. Tuning

From Bacon et al., 2009

Unnamed Jurassic Unit
Mungaroo Formation Equivalent

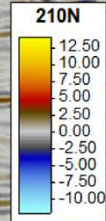
Unnamed Jurassic Unit
Mungaroo Formation Equivalent

Muderong

Barrow

Jurassic

Mungaroo



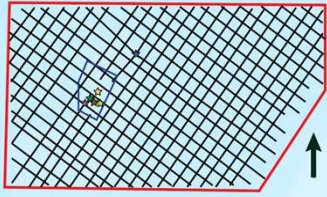
TWT (ms)

-1800
-1900
-2000
-2100
-2200
-2300
-2400
-2500
-2600
-2700

NE
1 6803 1 6724 1 6644 1 6564 1 6480



Mungaroo Play Common Risk Map



Source = 100%

Reservoir = 95%

Seal = 90%

Closure = 95%

Migration = 100%

Chance of success:

81.2%

