



Reid's Dome Gas Project: Technical Update Presentation

March 2019

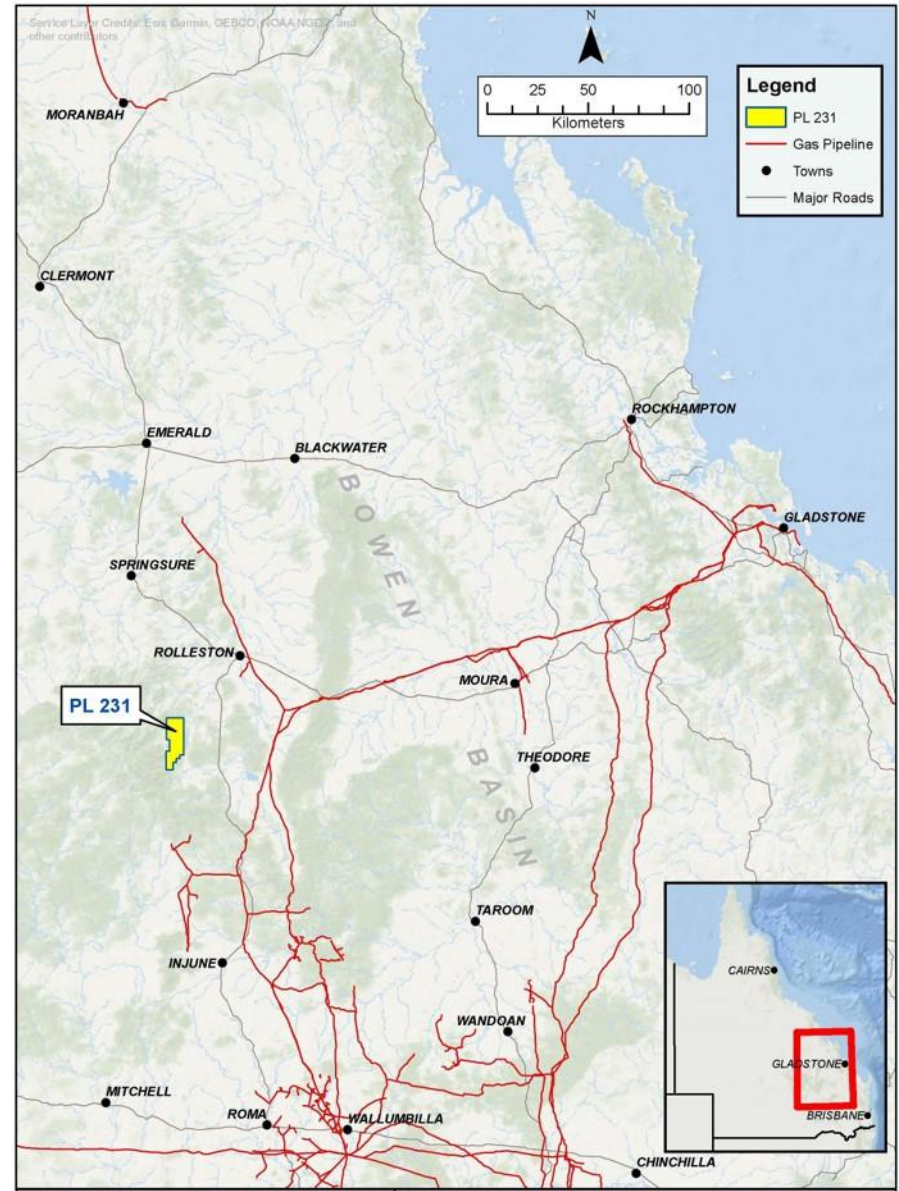
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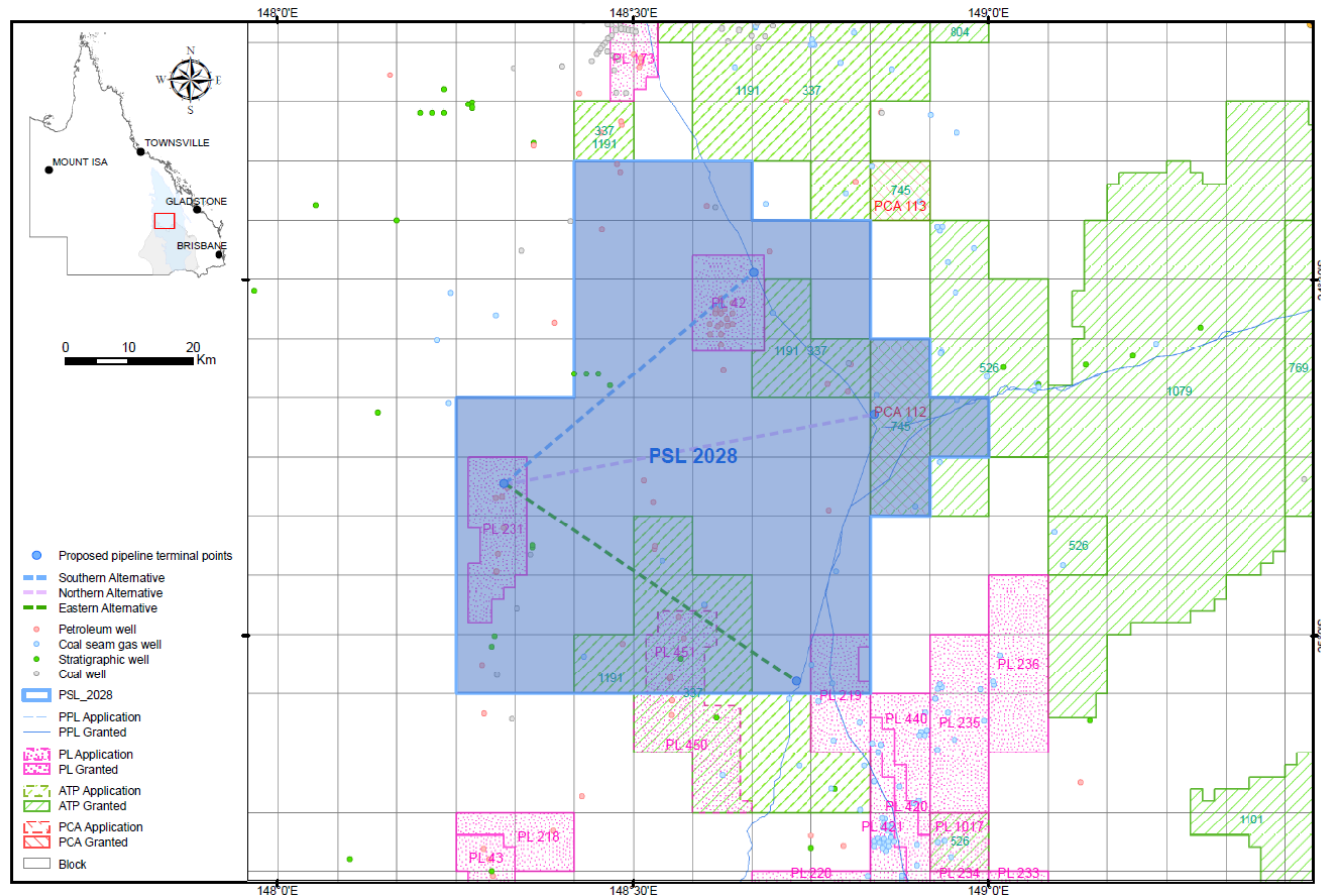
Gas at Reids Dome



PRODUCTION LEASE & PIPELINE SURVEY LICENCE	• PL-231 is located in central Queensland, granted under the 1923 Act over 181 km² over Reid's Dome anticline for a 30 year term from 15/12/2005. Pipeline Survey Licence PSL-2028 was granted for a 2 year term from 01/08/2018
OWNERSHIP	• State Gas is Operator with 80% of PL-231 – transitioning to 100%
PROVEN GAS FLOWS	• 17 wells drilled 1954 – 2018. Gas flows from sandstone reservoirs in the Cattle Creek Formation and Reid's Dome Beds
NEW PROVINCE - LARGE CSG PROJECT	• Permian Reid's Dome coal measures are extensive throughout the entire PL-231
CONVENTIONAL/ TIGHT GAS	• Cattle Creek Formation; 3-way dip closed structural traps, over-pressured. Primero West-1 discovery in 2018 • Reid's Dome Beds: ~1500m thick section with multiple prospective sandstone reservoirs in anticlinal setting. Also over-pressured.
CSG CONFIRMED IN 2018 DRILLING	• Nyanda-4 (2018) was the first CSG well drilled in Reid's Dome/PL 231 • Nyanda-4 first modern suite of core and logs over Reid's Dome Beds
LOCATION	• PL-231 is well placed for access to infrastructure and has a significant advantage over a number of projects in the Galilee and Bowen Basins

- **PL-231** lies ~50 km south west of Rolleston in central Queensland
- Granted under the 1923 Petroleum & Gas Act for a 30 year term from 15/12/2005.
 - Field activities only require 10 days notice to Land-owners and DNRM
- Permit area ~181 km² over Reid's Dome anticline
- Pipeline Survey Licence **PSL-2028** was granted for a 2 year term from 01/08/2018

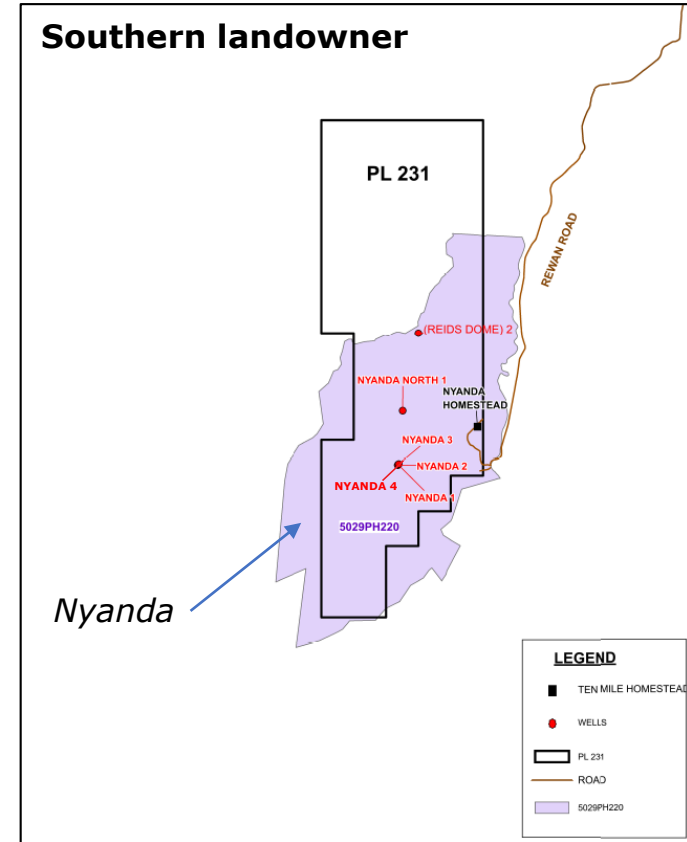
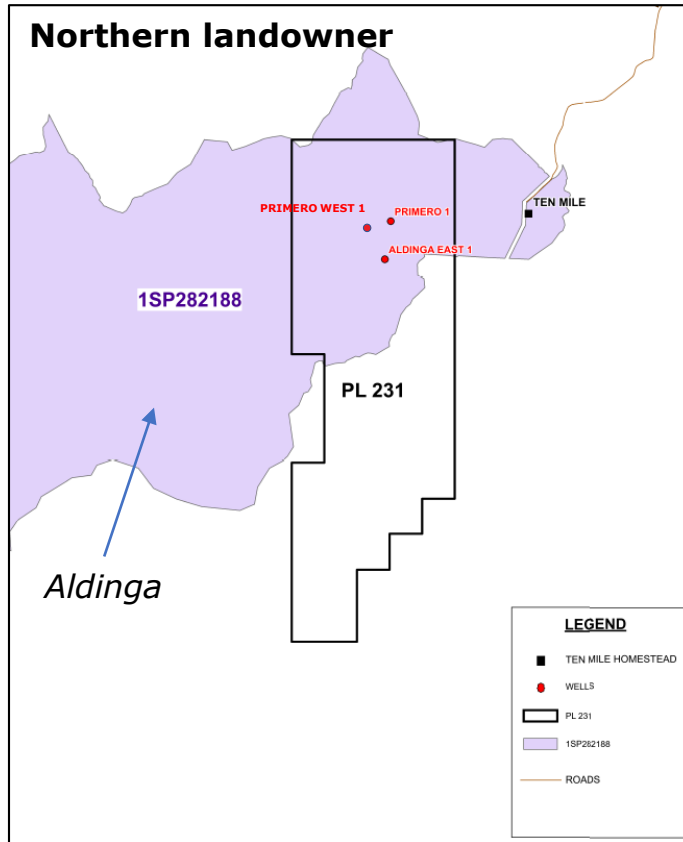




- ~47 km to Queensland Gas Pipeline network connection options to the north-east and south-east
- Favourable location for connection with east coast pipeline network

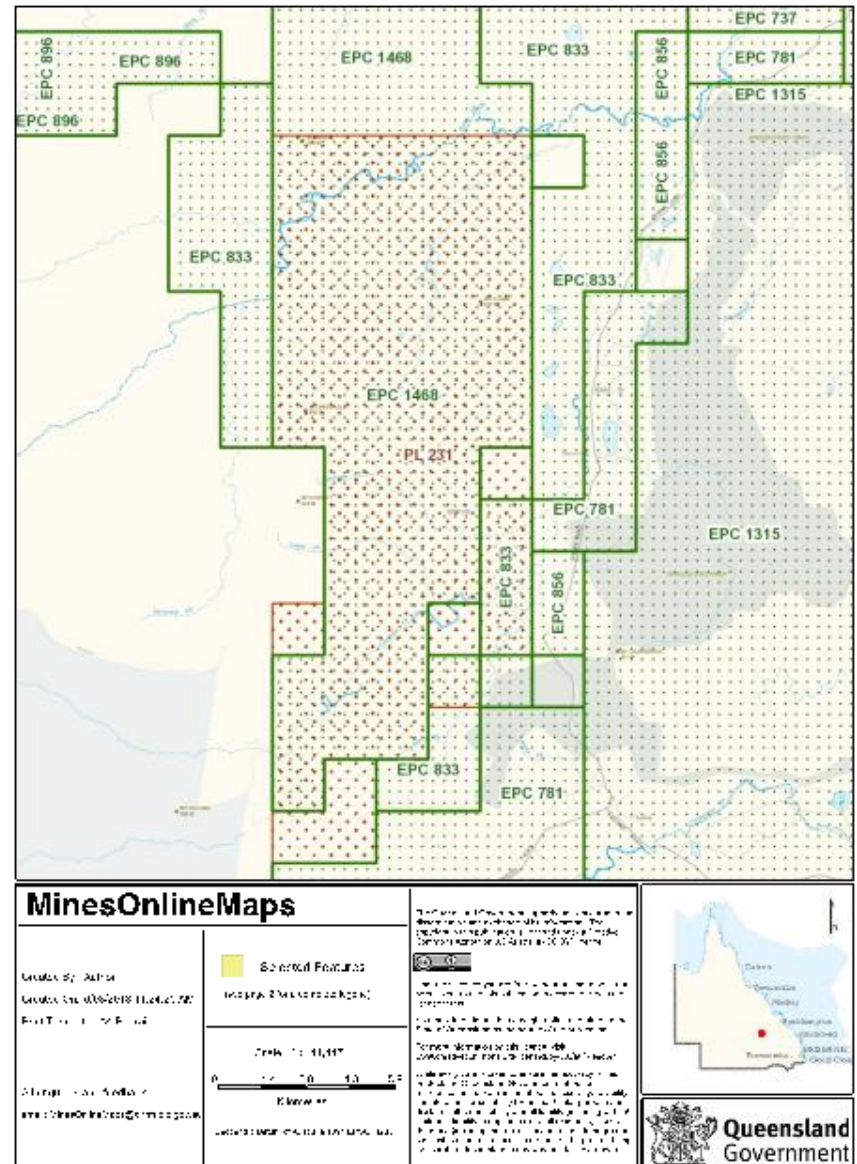
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- Topographic map of the Mt Saddleback area, Queensland, Australia. The map shows various land parcels, roads, and geographical features. A scale bar indicates 20 km. The map is titled "Topographic map of the Mt Saddleback area, Queensland, Australia".

Simplicity of Land Ownership



- Two Land-owners
- Framework established for land-owner agreements (used for 2018 drilling program)
- Freehold land with no native title

- Two overlapping tenures,
 - EPC 833, Peabody
 - EPC 1408, Matilda Coal
- Joint Interaction Management Plans (JIMP) in place
- No minable coal defined within the PL-231 area
- Coal seams typically 1 – 4 m thick and deeper than 390m, unlikely to be suitable for mining

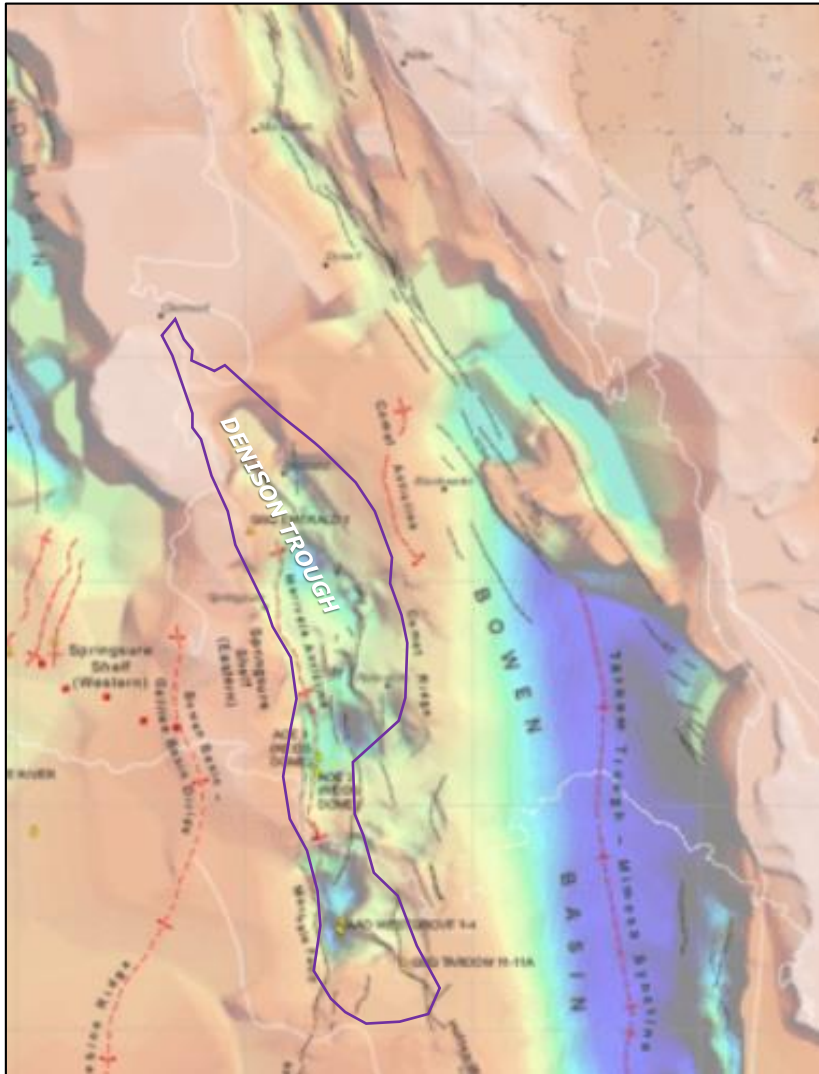


An Important Strategic Juncture

- State Gas operates successfully with a small, focused team
- State Gas has received approaches and interest from experienced industry participants to progress the Reid's Dome Gas Project
 - Corporate (company-level) or partnering (asset-level) transactions
- Highbury Partnership appointed as advisor to assess opportunities and coordinate the process

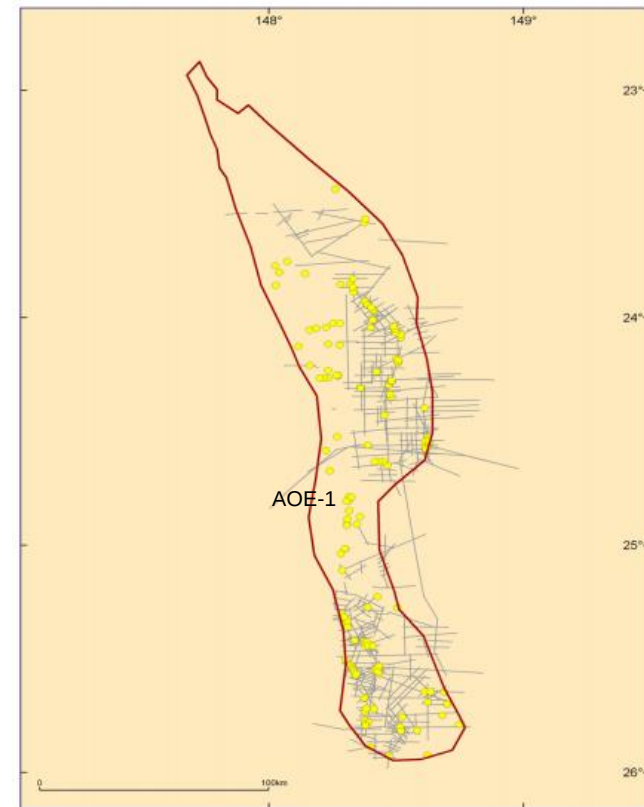
Next Steps

- Finalise analytical laboratory data from 2018 drilling program
 - e.g. receive final gas content data following complete desorption of gas from samples
- Complete the transition to 100% ownership of PL 231
 - Offer/Acceptance Notices for remaining 20% were issued December 2018
- Continue discussions with interested parties regarding possible transactions
- Consider the available risk/return-based outcomes for State Gas shareholders



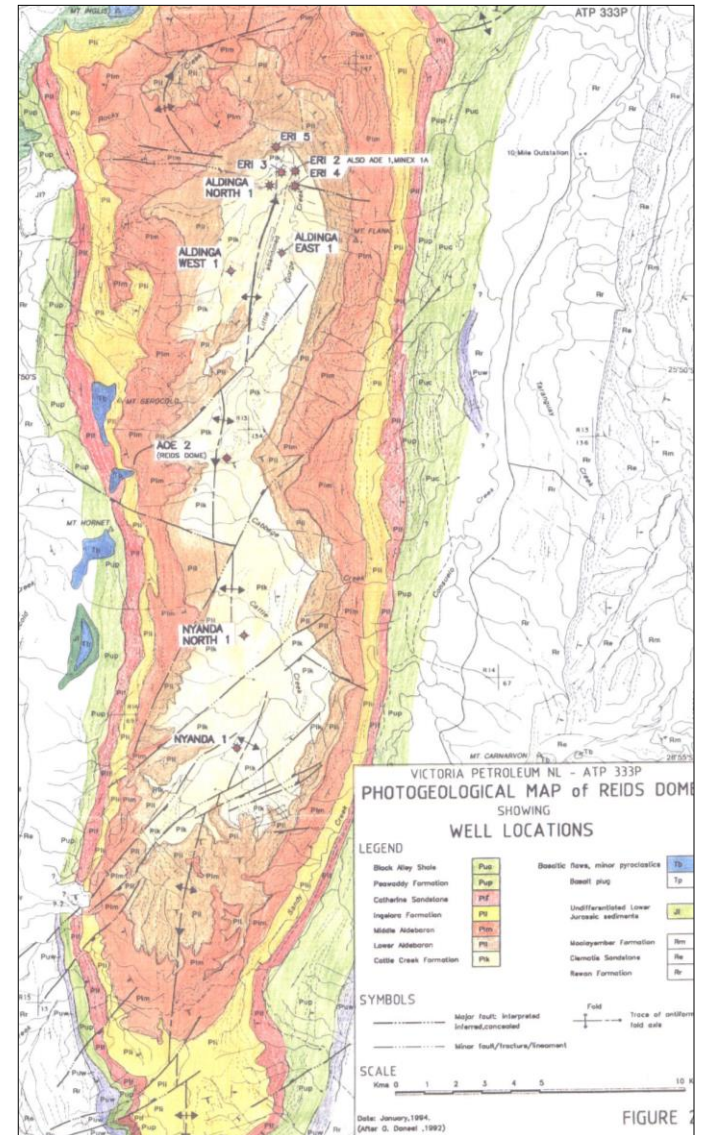
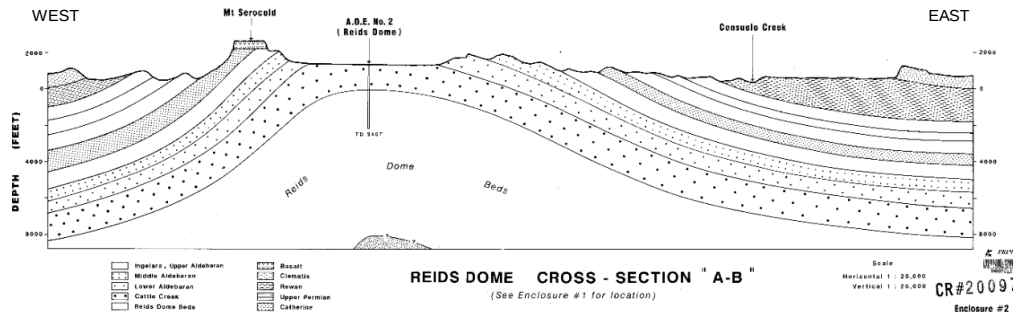
Denison Trough structural elements

- NNW rift basin initiated in the Early Permian characterized by linked pull-apart half-grabens
- Triassic – Jurassic compression led to creation of large inversion anticlines



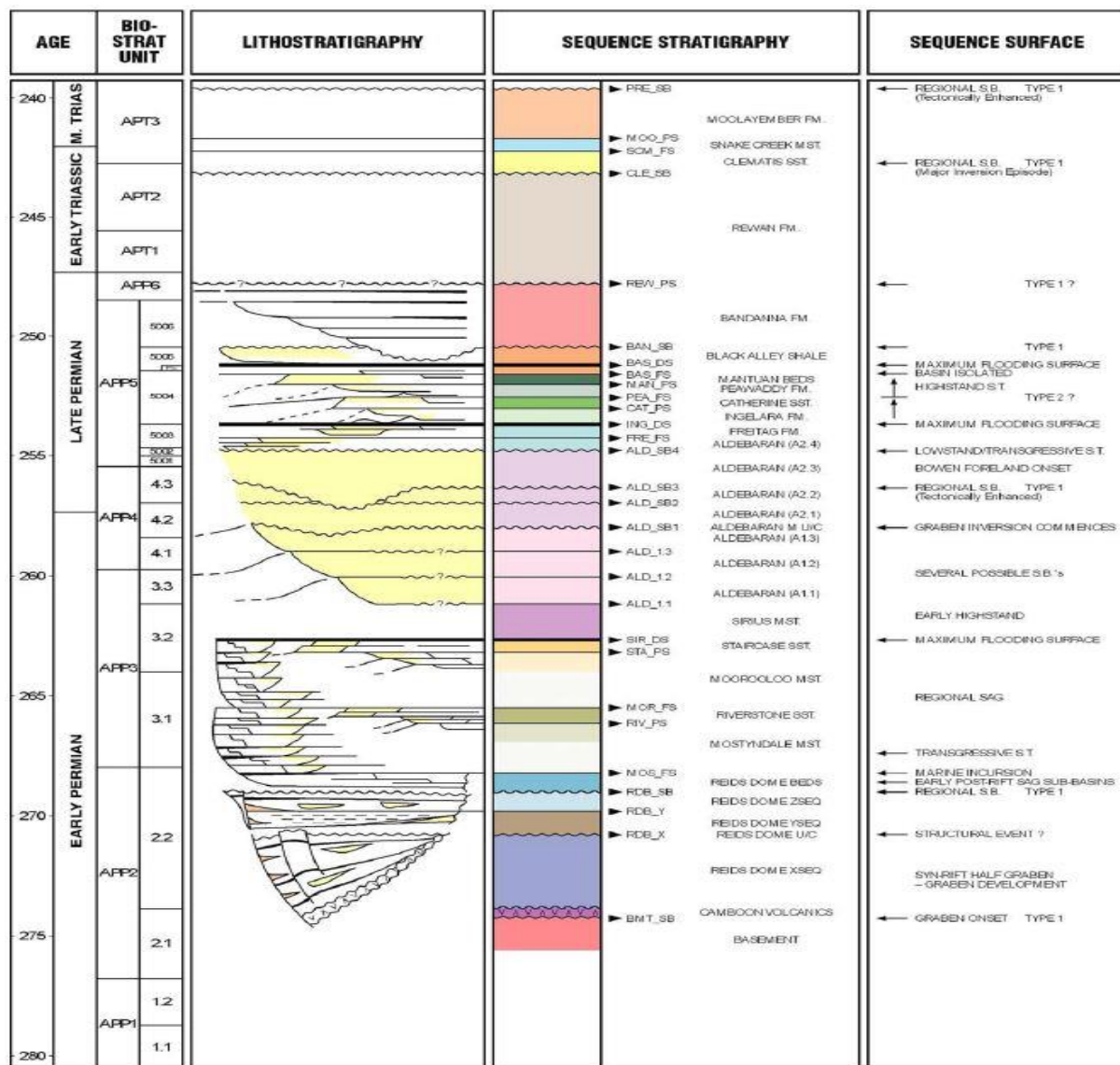
Denison Trough wells and seismic data

- Surface geological mapping of the Reid's Dome area indicates strike of NNE – SSW with trans-tensional offset in the central region
- The **Sericold Anticline** plunges gently to the north and south within the permit area. The western limb dips slightly more steeply than the eastern limb
- Several faults are mapped at surface but the presence of over-pressured gas in conventional reservoirs indicate they are sealing
- Elsewhere in the Bowen Basin, anticlines have favourable permeability characteristics for CSG (e.g. Scotia/Peat, Fairview, Spring Gully)



Denison Trough Stratigraphy

- Proven petroleum system
- Permian reservoirs, source rocks and seals
- Structural and stratigraphic traps
- Conventional and unconventional plays



Location

- **PL-231** lies ~50 km south west of Rolleston in central Queensland
- Permit area ~ 181 km² over Reid's Dome anticline
- Pipeline Survey Licence **PSL-2028** was granted for a 2 year term from 01/08/2018
- Only two landowners within permit area
- Freehold land with no native title

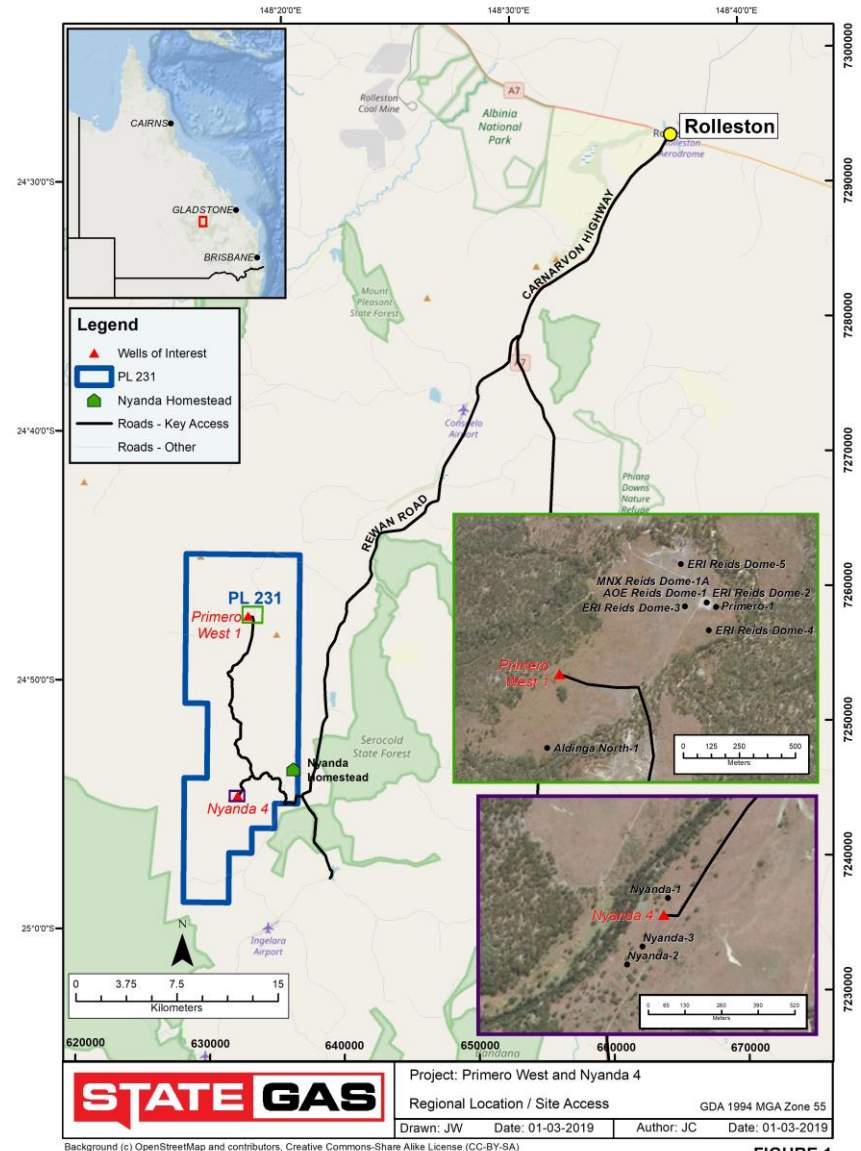
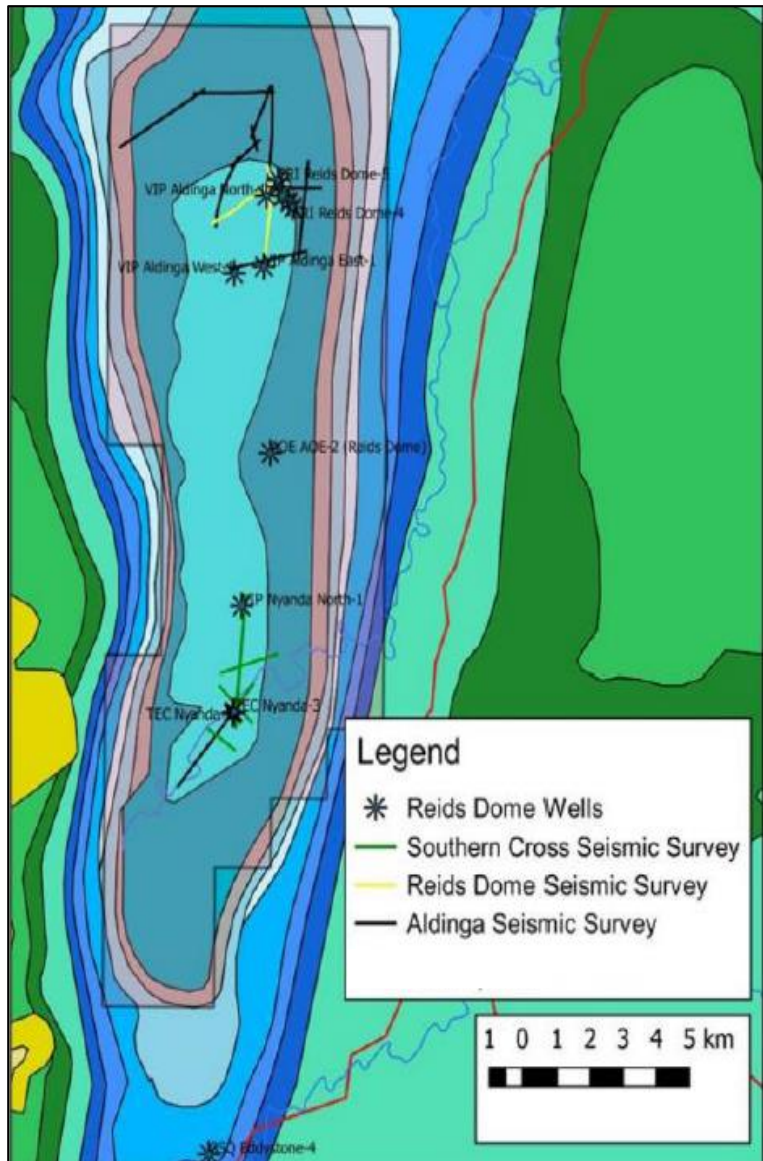


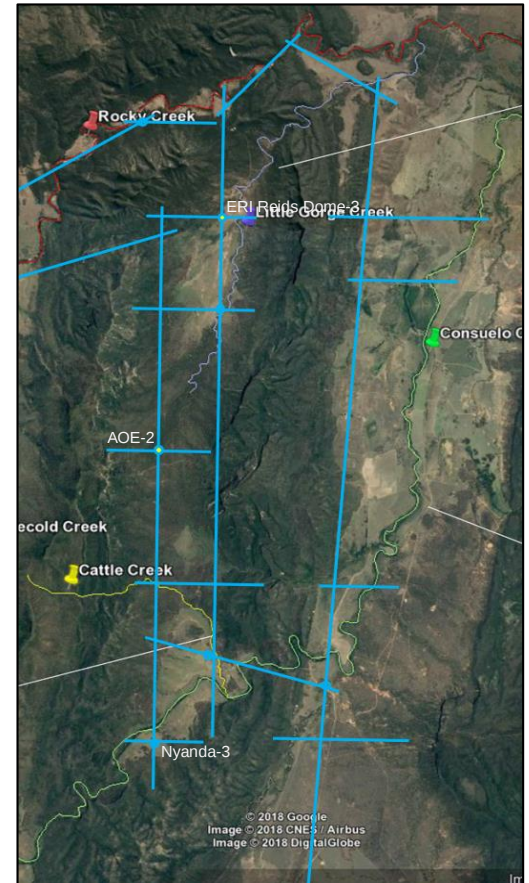
FIGURE 1



LEFT: existing seismic data, short lines, multiple vintages, 0.5 – 3.0 sec.

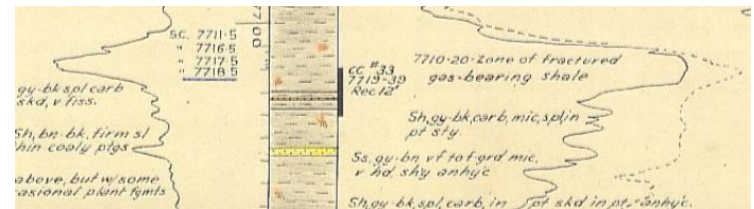
Images at same scale

RIGHT: incomplete WOWCO 1980 seismic data estimated location (lost navigation data)

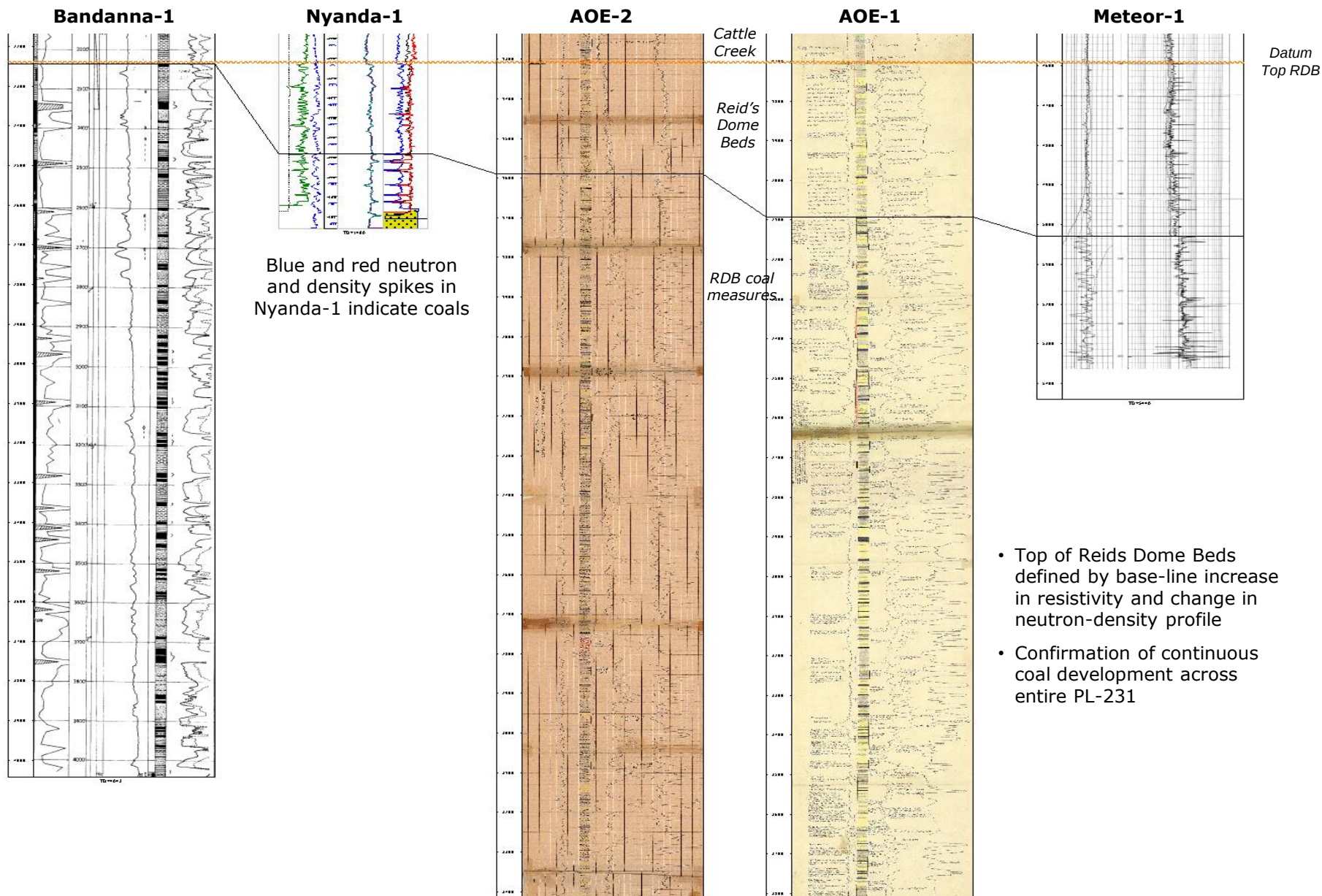


Southern Cross, Reids Dome and Aldinga seismic surveys reprocessed for State Gas by Down Under Geophysical in 2018.

- Thick carbonaceous shales
 - Gas-bearing shale at 2350m (+ve flame test)
 - Significant thickness of highly resistive mixed lithology (unconventional reservoir potential)
 - Open fractures evident in core



Reids Dome Beds Pre-Drill Well Correlation



- 17 wells, drilled 1955 – 2018
 - AEO-1, AOE-2, Aldinga North-1, Aldinga East-1, Aldinga West-1, ERI Reids Dome-2, ERI Reids Dome-3, ERI Reids Dome-4, ERI Reids Dome-5, MNX Reids Dome-1A, Nyanda-1, Nyanda-2, Nyanda-3, Nyanda-4, Nyanda North-1, Primero-1, Primero West-1
 - 13 to evaluate Cattle Creek Fm gas sands
 - 4 to evaluate Reids Dome Beds (RDB)
- 10 wells with partial to complete digital logs
 - AOE-2, Aldinga North-1, Aldinga East-1, Aldinga West-1, Nyanda-1, Nyanda North-1, Nyanda-4, Primero-1, Primero West-1
- 3 wells with gas logs
 - Primero-1, Nyanda-1, Nyanda-4
- 4 wells with cores (minimal core analyses)
 - AOE-1, AOE-2, Nyanda-3, Nyanda-4
- Photo-geological interpretation and outcrop mapping

2018 Drilling Program

(November – December 2018)

2018 Drilling Program (November-December)

Two wells successfully drilled, demonstrating State Gas' operating ability to undertake a drilling program from new target identification/inception to completion in under 4 months

- Shallow conventional over-pressured gas
- Located ~650m southwest of AOE-1 (1955 discovery well) to test the south-western extent of the Cattle Creek gas sand
- TD: 250m, P&A'd as planned after acquisition of wireline logs and flow data

- RDB Coal Seam Gas and Tight Gas Sands Target
- Located approximately 50m southwest of Nyanda-1 (drilled in 1987) to test the hydrocarbon potential of the Reid's Dome Beds
- TD: 1,200m
- Coal measures were not evaluated in prior wells drilled at Reid's Dome and represent a new play in the Denison Trough

Nyanda-4 Results

- Reid's Dome Beds CSG and Tight Gas Sands objectives
- Total depth: 1,200m
- Cored-zone: 150m of coring from 394m
- Gas bubbling from coal core, sandstones hissing

Net coal in core: 11.3m

Net coal in well 40.4m

Carbonaceous shales: 25m

Total: 65m

- **Average Gas content: 11.6 m³/t** (desorption to date). Gas content for thickest seams ~**13 m³/t**
- **Permeability:** DSTs indicate permeability in coal seams in cored zone of Reid's Dome Beds
- **Pressure:** DST data indicates the Reids Dome Beds are ~100 psi over-pressured with respect to hydrostatic
- **Correlation with AOE-1 indicates additional coal below 1200m**



- **Well-cleated coal and shale zones with open fractures**



Coal core and carbonaceous shale samples from upper Reid's Dome Beds within Nyanda-4

Coal is generally bright black, and well cleated

Coal occurs within dark grey carbonaceous claystone, with sharp upper and basal contacts

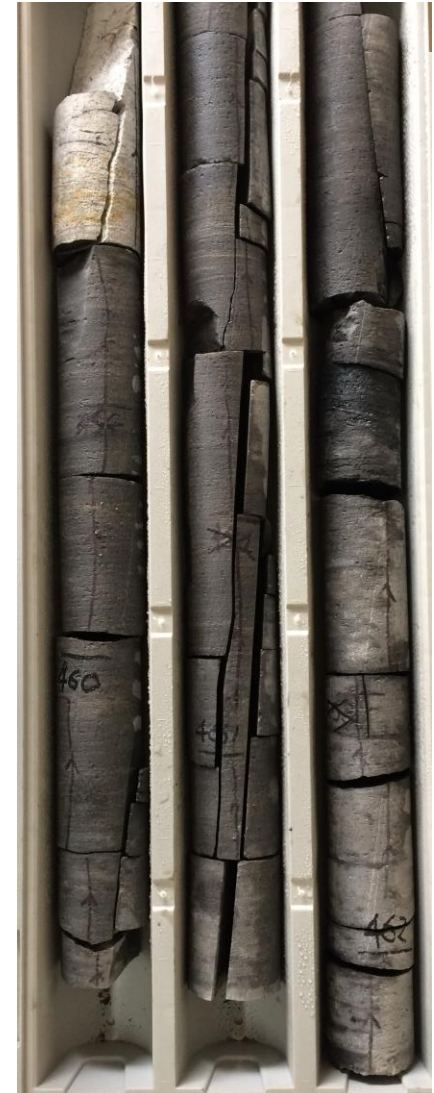
Minor pyrite and sulphur crystals

Background sediments mostly fine grained heterolithic sandstone, siltstone and shale

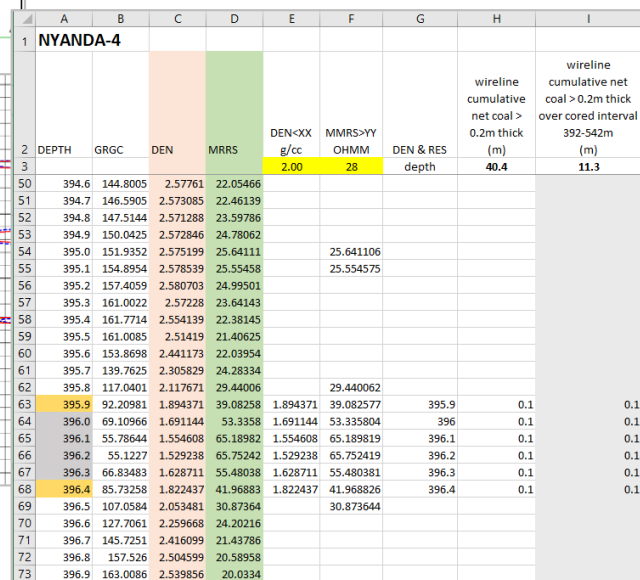
Open fractures

Highly mature sediments most likely deposited within lower coastal plain to estuarine conditions

Fractured shale from Nyanda-4



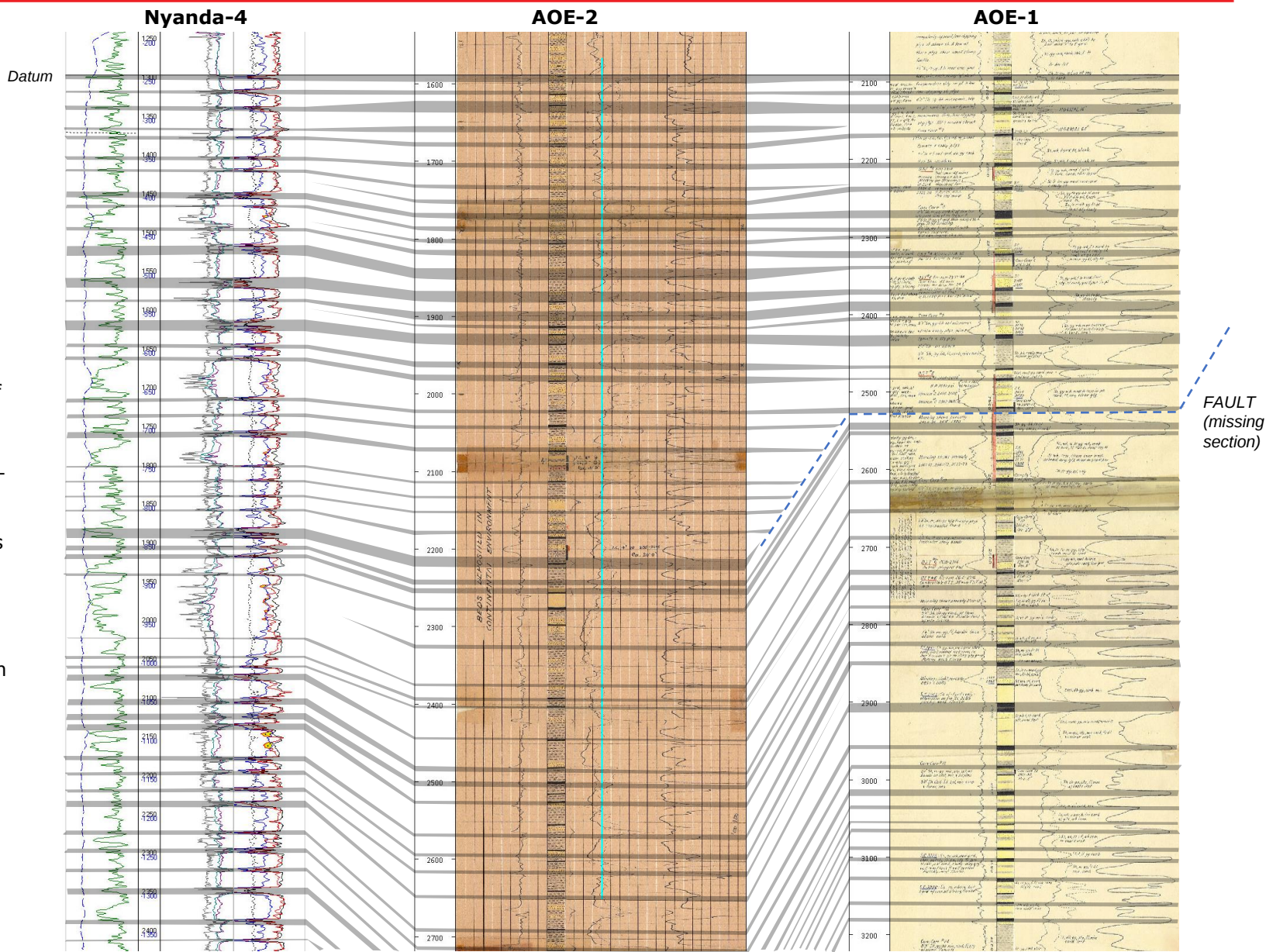
STATE GAS



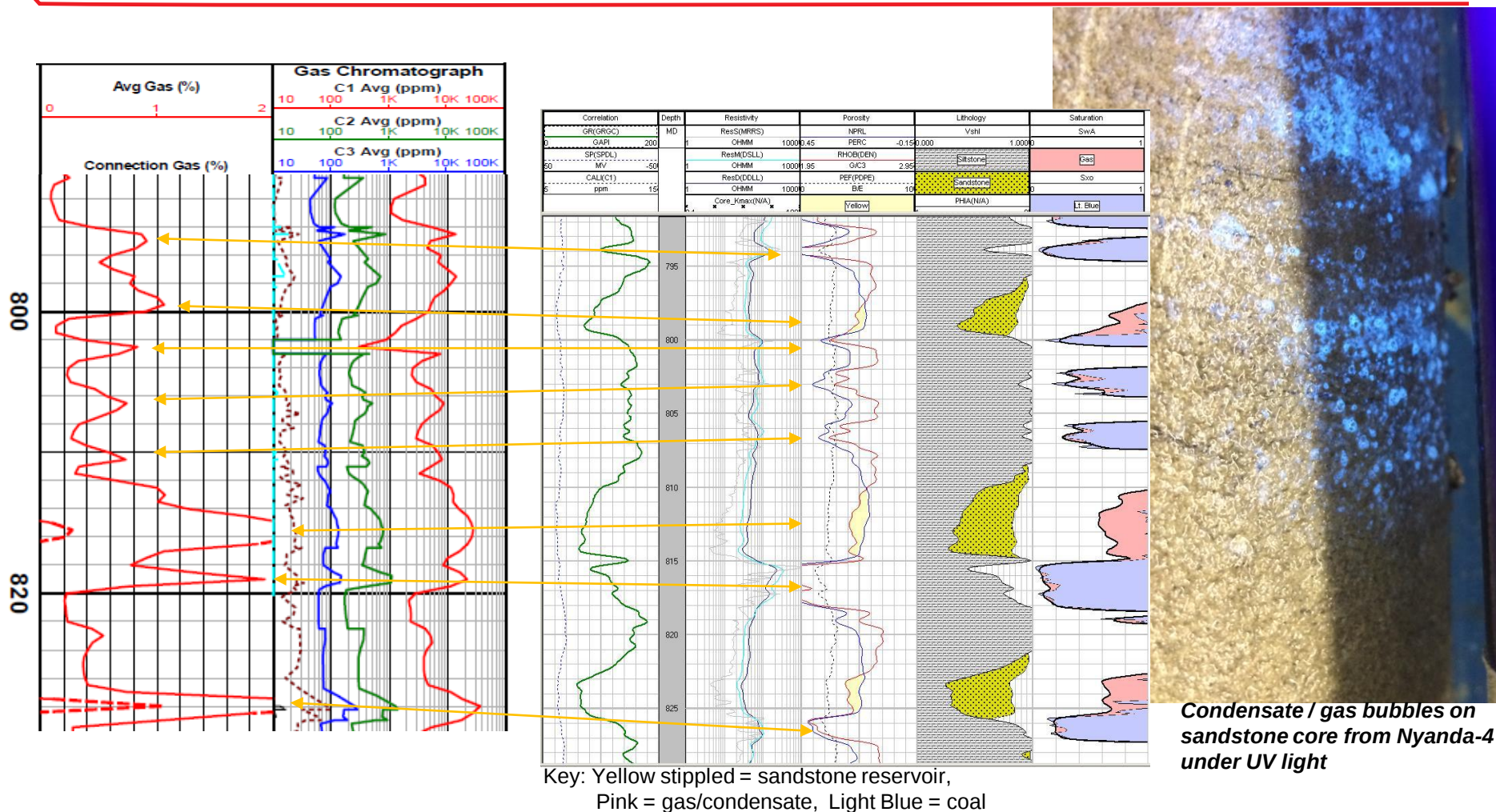
1. Core described to determine net coal-bearing intervals (11.3m)
2. Core-to-log correlation
3. Determine relationship of wireline logs to actual coal beds for cored interval
4. Apply relationship to entire Reid's Dome Beds interval

RDB PL-231 Well Correlation, Coal Seams

- Core descriptions from Nyanda-4 indicate low energy lower coastal plain to estuarine environment of deposition
- Coals probably formed in wide-spread lagoons and back-barrier swamps leading to **laterally continuous coals**
- Coals defined in AOE-1,2 by little or no SP deflection combined with significant increase in resistivity

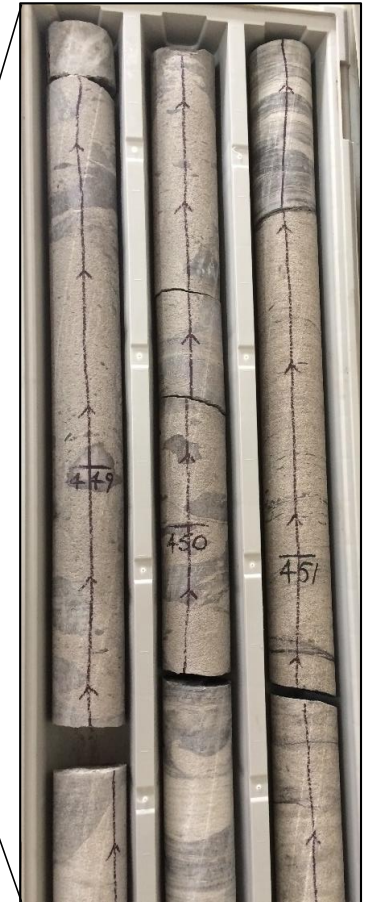
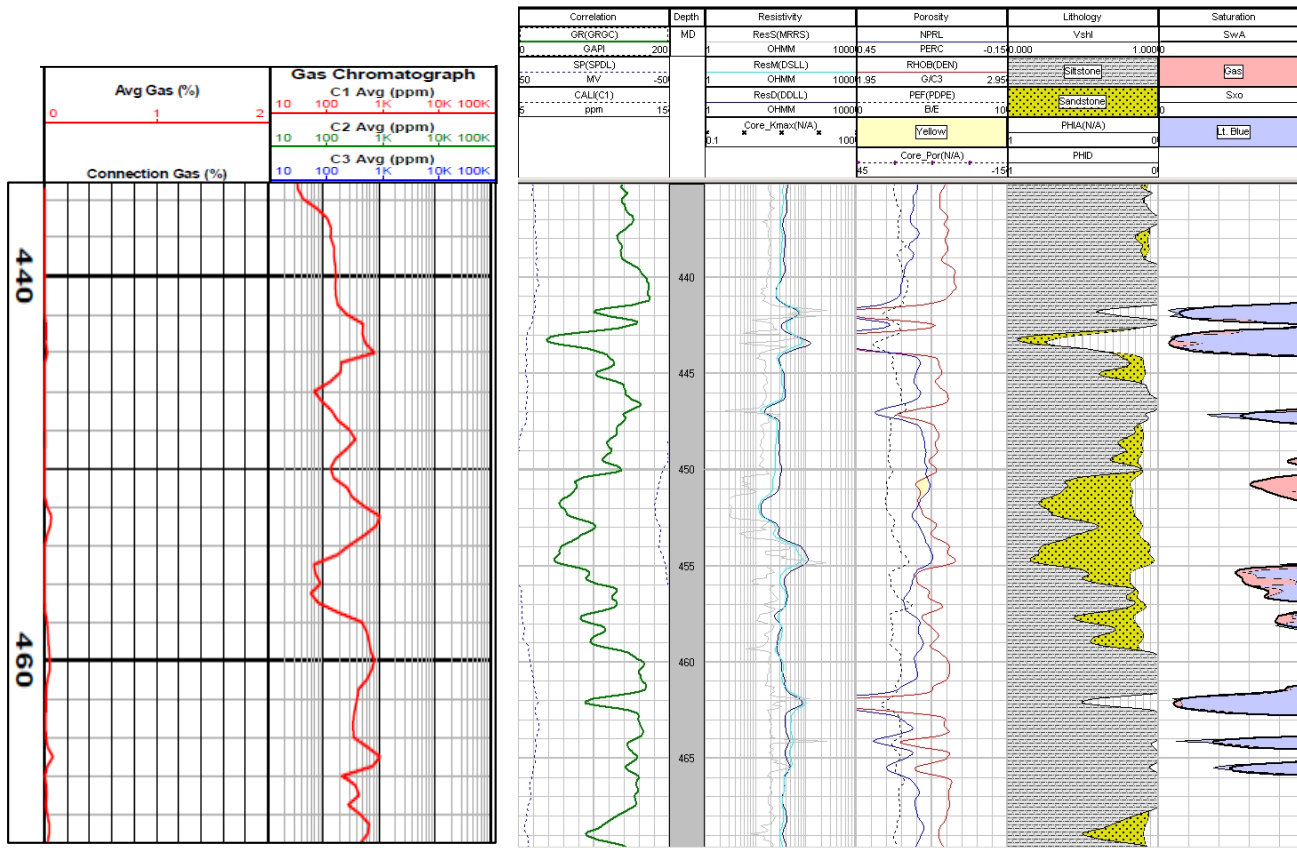


Nyanda-4 Conventional Gas



- **Conventional gas:** Gas and condensate noted bubbling and hissing from sandstones in Nyanda-4 core samples
- **Numerous gas peaks in logs:** Associated with both coals and sandstones

Nyanda-4 Log Analysis



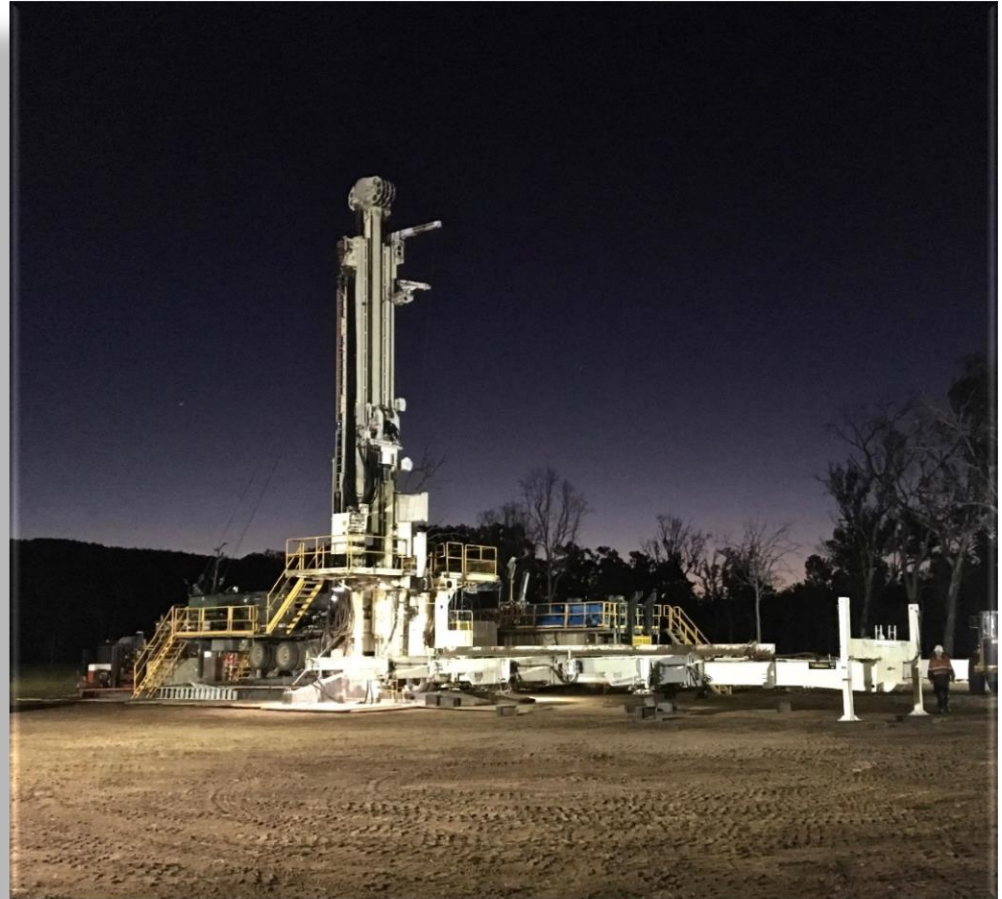
- Complicated petrophysics,
 - Shale clasts masking sand response
 - minor pyrite masking coal response
- RCA, SCAL, SEM etc. required

Pyrite in coal
from Nyanda-4



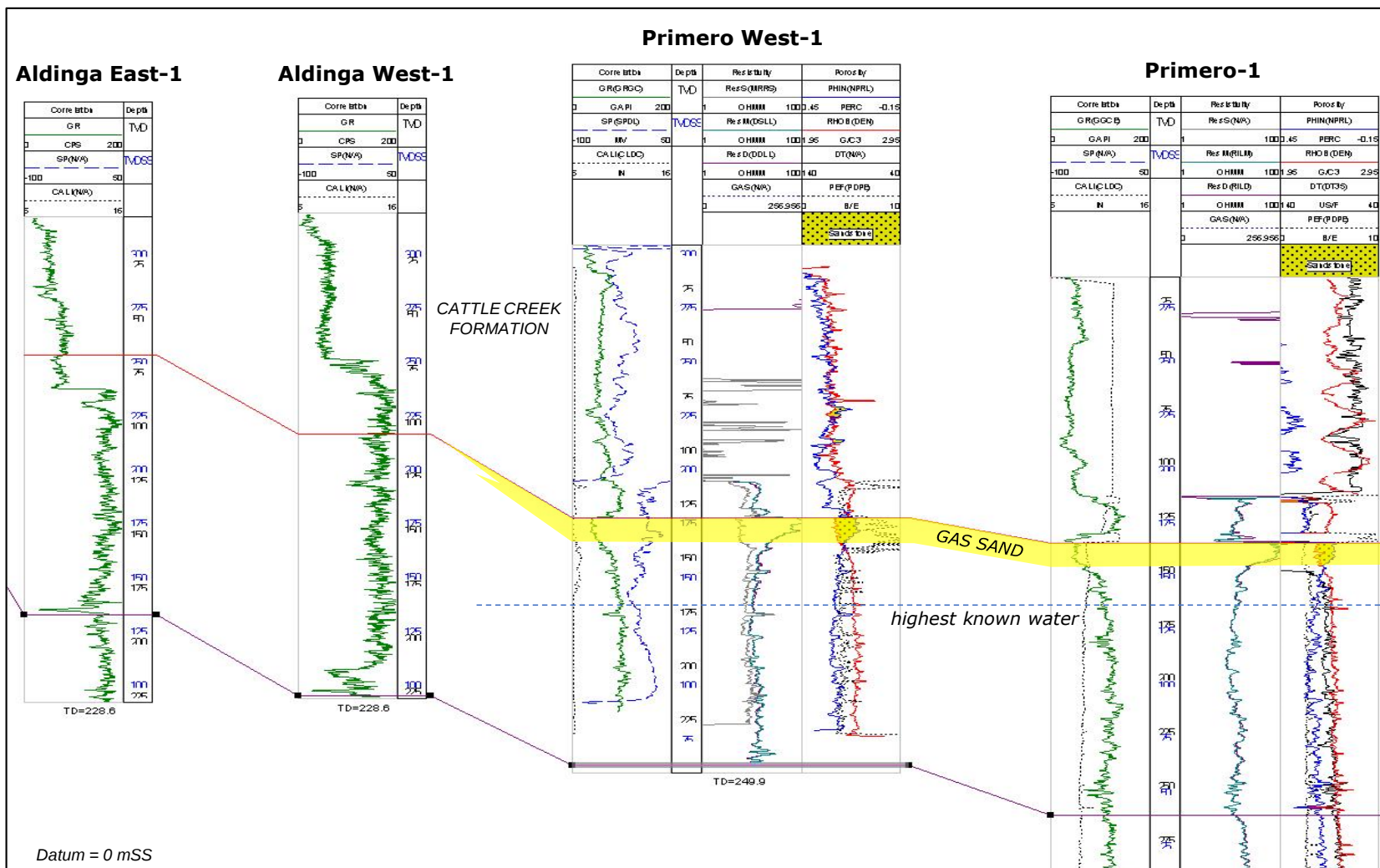
Primero West-1 Results

- Successfully drilled in accordance with the requirements of the Joint Operating Agreement to appraise the “Primero Gas Sand” in the Cattle Creek Formation
- Located ~650m west of AOE-1
- Shallow conventional reservoir, TD 250m
- Challenging drilling with over-pressure at shallow depth
- Gas sand encountered close to prognosis.
- Gas flow of 0.436 mmscf/d in line with expectations
- Gas composition similar to offset well data, with 96.7% methane
- Geological and reservoir engineering review ongoing



SCD Rig-25 on location at Primero West-1

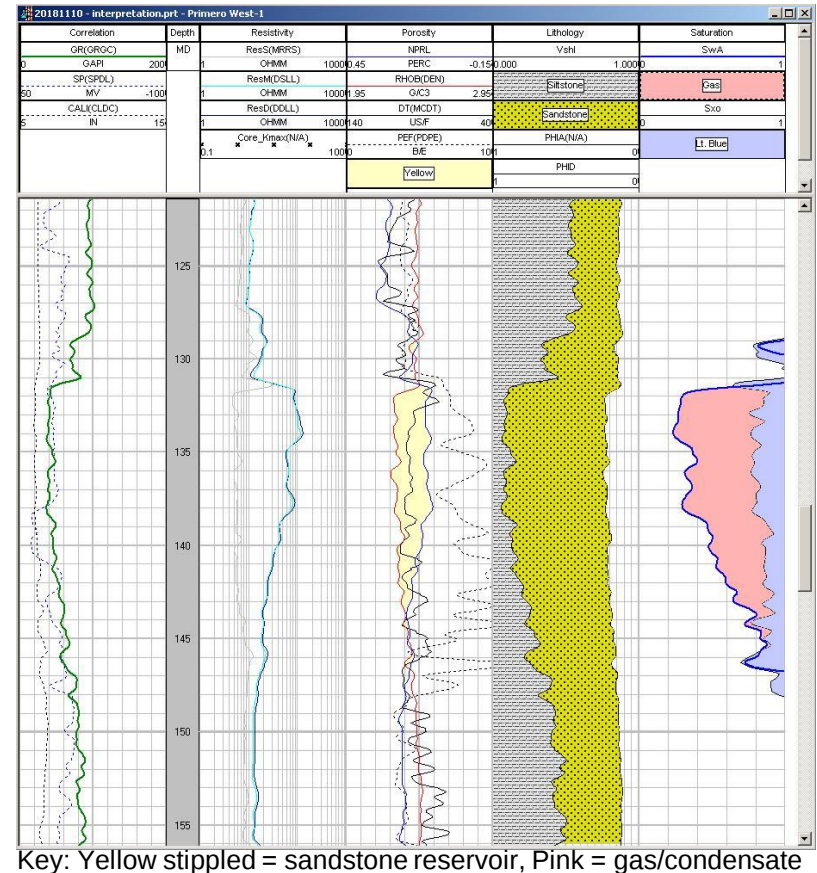
Primero West-1 Well Correlation



Primero West-1 Drilling Results

Cattle Creek Formation conventional play:

- Gas encountered from 131.5m within the Cattle Creek Formation
- Average porosity ~20%
- Average Sw ~ 40% (petrophysical uncertainty on Rw, a, m and n)
- Net gas-bearing zone of up to 12.5m
- Maximum gas flow rate of 0.436 mmscf/d through a 48/64" choke
- Shut-in wellhead pressure of 165 psi
- Reservoir pressure ~100 psi over hydrostatic
- Methane content: 96.75%, similar to AOE-1



Quick-look
petrophysics



"Primero"
sandstone

CSG Volumetrics

- **Average Raw Gas content: 11.6 m³/t** (to date). Gas content for thickest seams currently ~**13 m³/t**. Reids-1 data indicate 7.1 – 14.6 m³/t with average 11.8 m³/t. Other Bowen Basin CSG projects have approximately 7 – 14 m³/t.
- **DAF values***: State Gas have raw gas rather than DAF. Reids-1 raw gas to DAF indicates average uplift of 135%.
- **Ash content* (1 - Pure Coal Mass Fraction)**: Reids-1 data indicate Ash of 15.5 – 42.6% with average of 25.3%. State Gas have assumed average 1 – 15% with average 9%. This offsets the DAF values
- **Density***: The density of one Nyanda-4 coal sample was measured in the field using Archimedes principle and resulted in 1.40 g/cc. Reids-1 coal density ranges from 1.29 – 1.62 g/cc and averages 1.43 g/cc
- **Vertical Net to Gross**: The range of values is estimated from the measured core descriptions. **Aerial Net to Gross**: The range of values is somewhat arbitrary by takes into account analogues from the Bowen Basin and the variation seen between Nyanda-4, AOE-2 and AOE-1
- **Pressure**: DST data indicates the Reids Dome Beds are ~100 psi over-pressured with respect to hydrostatic. This is favourable for gas saturation

** Pending final lab data*

Basis of CSG Volumetrics; 2

- **Area:**

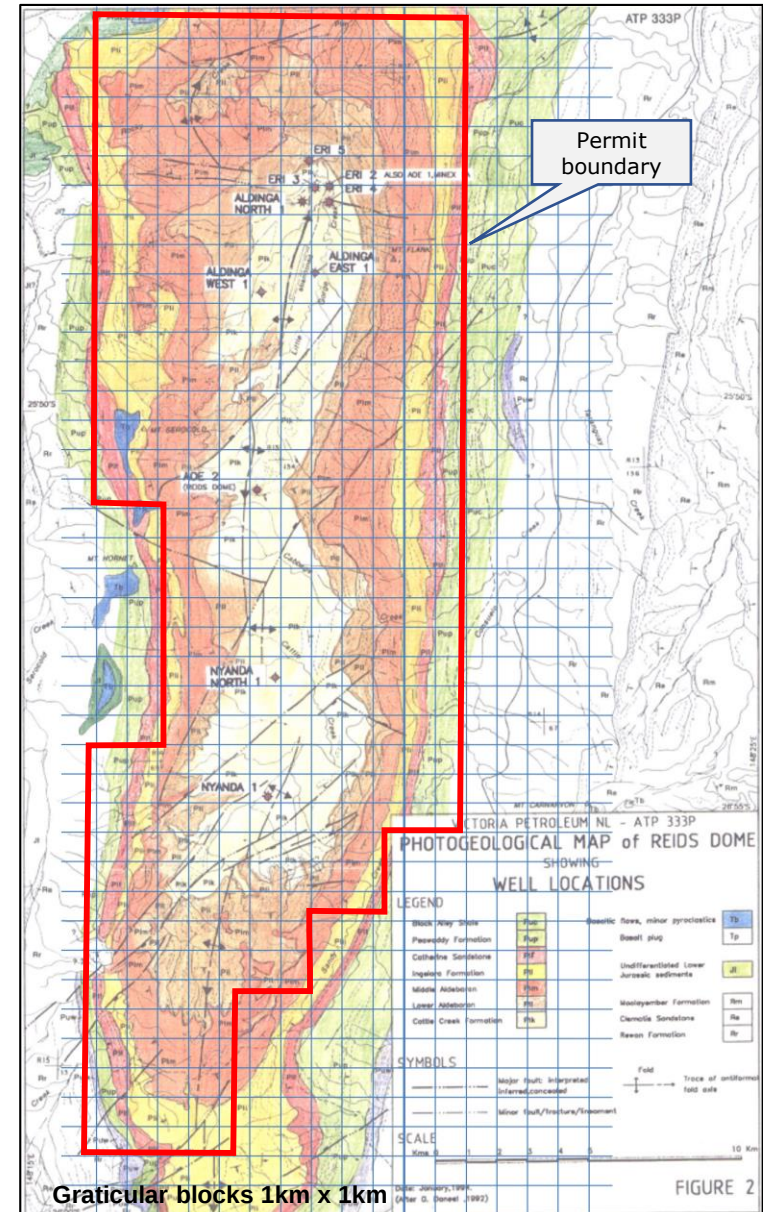
- Well correlations used to establish extent of coal seams
- Geological map overlain with 1 km² grid
- Area of Lower Aldebaran Sst outcrop assumed to mimic the maximum limit of viable CSG (P1=120 km²). Minimum area (P99=60 km²) assumed to be less than area of Cattle Creek Fm outcrop (~80 km²)
- Mean area (~85 km²) to be accessed with vertical or slightly deviated wells
- P10 area (~103 km²) to be accessed with deviated wells drilled from outside the dome, i.e. well-pads on the flanks of the dipping Aldebaran Sst

- **Permeability floor:**

- Assumed to be analogous to Reids-1 (10-20 mD @ 1139 – 1163 m)

- **Net Coal:**

- Data ground-truthed at Nyanda-4
- SP and Resistivity-defined coal at AOE-1,2
- Discount applied for tight seams and edge effects



Trends:

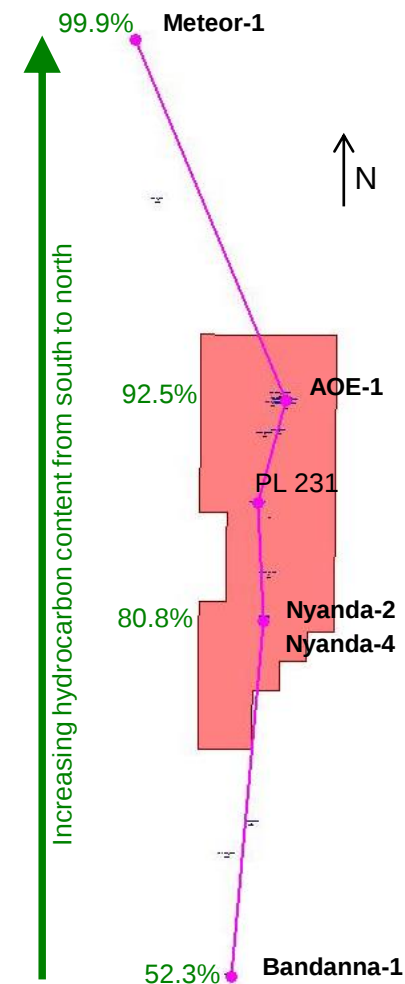
- CO₂ content generally reducing with depth: AOE-1 and Westgrove-3, which showed <3% CO₂ at 3,750m
- CO₂ diminishing from south to north across PL-231 area
- Variability most likely related to stratigraphy and geologic domains

	Methane (%)	Ethane (%)	Propane (%)	Higher hydrocarbons (%)	CO ₂ (%)	N ₂ , O ₂ (%)
Meteor-1 (RDB coal)	82.2	13.7	2.0	0.0	0.1	0.0
AOE-1 (RDB sandstone, 822m)	82.7	11.8	NR	NR	5.6	1.9
AOE-1 (RDB sandstone 1365m)	83.6	15.6	NR	NR	0.7	0.1
Nyanda-2 (Cattle Creek sandstone)	80.8	0.0	0.0	0.0	18.3	0.9
Nyanda-4 (well-head sample 14 Feb)	99.8	0.0	0.0	0.0	0.0	0.04
Bandanna-1 (RDB sandstone)	45.0	5.1	2.2	1.3	45.6	0.9

Nyanda-4 desorbed gas latest results (cored-zone):

- Weighted Average: 80% Methane, 20.1% CO₂
- Thickest seam: 87.6% Methane, 12.4% CO₂

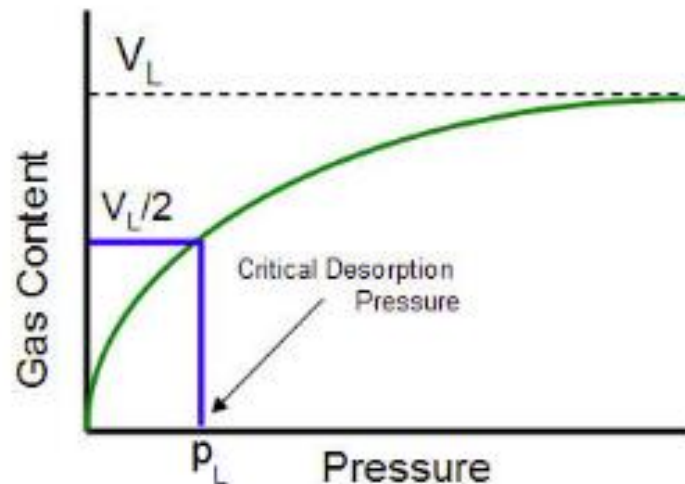
Hydrocarbon Content Trend



The volume and rate of CSG water production at Reids Dome is currently unknown, however:

- Nyanda-4 DST#3 indicates ~ 100 psi over-pressure
- Over-pressure means that the reservoir is closer to the desorption isotherm, and less de-watering is required to commence gas production. Alternatively, if the coals are saturated with respect to gas, there will be a greater volume for a given depth.
- Late-time derivative data from DST#3 in Nyanda-4 suggests desorption occurred during testing. Therefore under production conditions, gas will be produced with little if any de-watering of the coals.
- Bowen Basin coals historically have produced less water than initially anticipated

All of which indicate the possibility for low water production at Reids Dome



Schematic Langmuir Isotherm

RDB Tight-gas Volumetrics

Regional Analogues: APLNG's Merivale Gasfield and Westgrove Deep Gas Play (PL-44)

- **Merivale gasfield:**
 - Regional anticline located on-trend 40 km south of PL-231
 - Reid's Dome Beds conventional sandstone below 1492 m
 - **Merivale-2, 5, 6 & 8; DST and Production Tests flowed gas at 0.33 – 1.78 mmscfd from RDB** (Post fracture stimulation rates purported to be 2.5 – 4 times test rates.)
 - **Merivale-7; DST's in RDB flowed at RTSTM. Post fracture stimulation, flow was 0.8 mmscfd**
- **Westgrove Deep tight gas play:**
 - Located beneath Merivale
 - Reservoir: Reid's Dome Beds tight sandstones
 - Gas column penetrated by Westgrove-3 (1963), gas to surface from ~3750 m
 - 200m gross gas column penetrated (thought to be only partially penetrated)
 - Gas composition of 97% methane with ~3% inert components
 - Westgrove-9 appraisal well recently drilled by APLNG

- AOE-1 tested gas at low rates from two sandstones in the Reids Dome Beds (RDB)
- Prospective section: >2500m (450 – 3000 m+)
- Continuing gas shows at TD in Nyanda-4 indicate strong likelihood of a deeper tight gas play >1200m

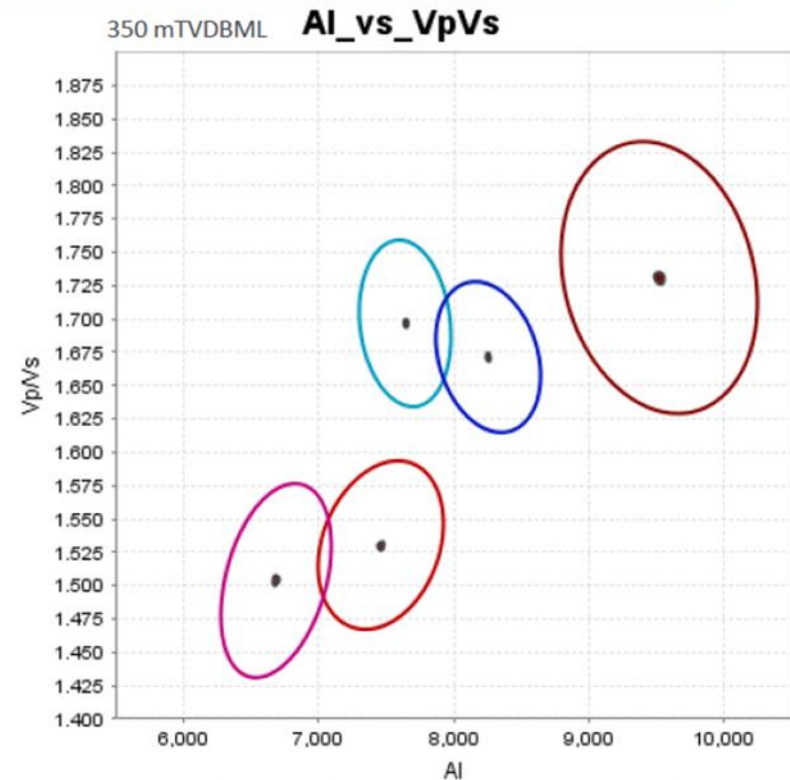
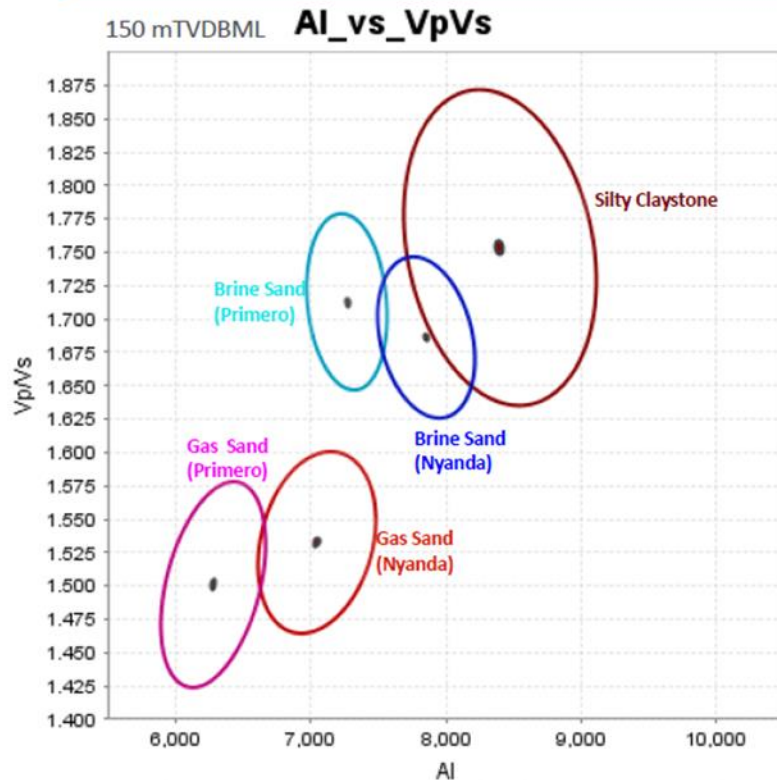
Monte Carlo Assessment	90% prob.	Mean prob.	10% prob.
Area (km ²)	3.0	48.4	130
Net Pay (m)	15	30	50
Porosity (%)	8.0	11.0	14.0
Gas saturation (%)	50	60	70
FVF	120	149	180
GIIP (bcf)	Yet to be independently verified		
Surface Losses* (%)	10	25	45
Recovery Factor (%)	Yet to be independently verified		
Potential Sales Gas (PJ)	Yet to be independently verified		

* Surface Losses assumed to be fuel gas plus CO₂

Cattle Creek Formation Exploration Opportunity at PL-231 Reids Dome

Sandstone Nyanda and Sandstone Primero

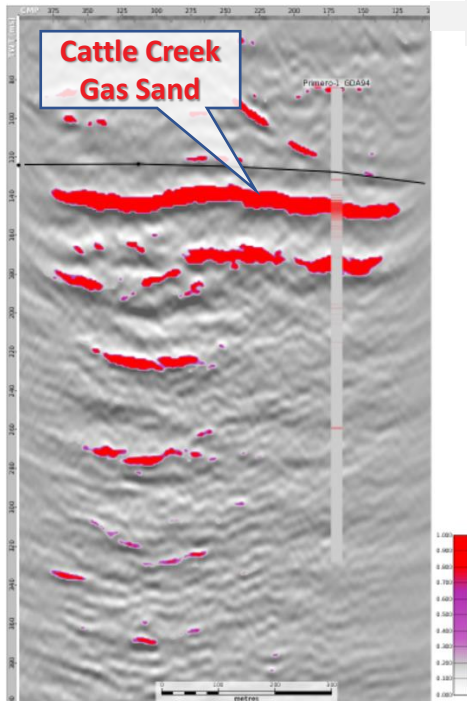
Vres = 80%, Mixing lithology = Silty Claystone



- Lithology discrimination between both Sandstones (Nyanda and Primero) with Silty Claystone is generally good at the shallow depth and it significantly improves with increasing depth, in particular at 350 mTVDBML.
- Fluid discrimination in the same sand trend is generally good at all modelled depth ranges. However, Sandstone Nyanda gas case has similar AI ranges compared with the Sandstone Primero brine case, however they are well discriminated using the VpVs value.

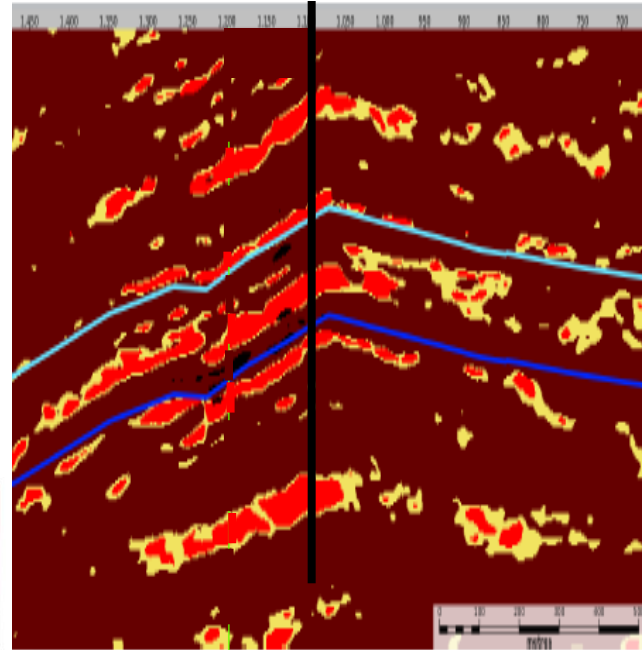
Cattle Creek Prospectivity

Far stack with probability of gas sand overlay

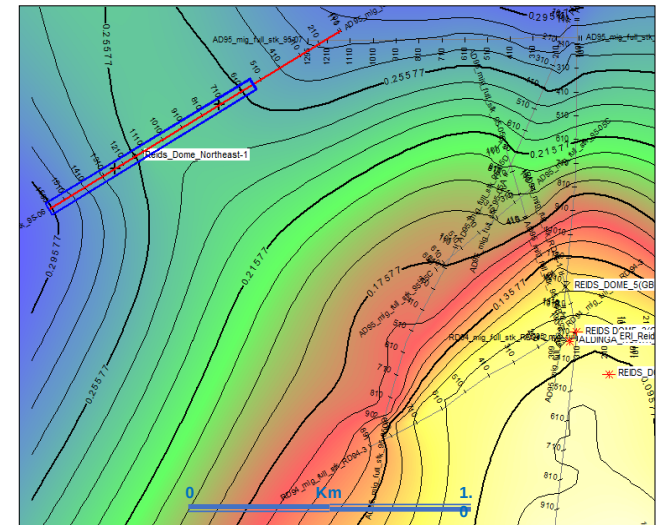


AD95-06

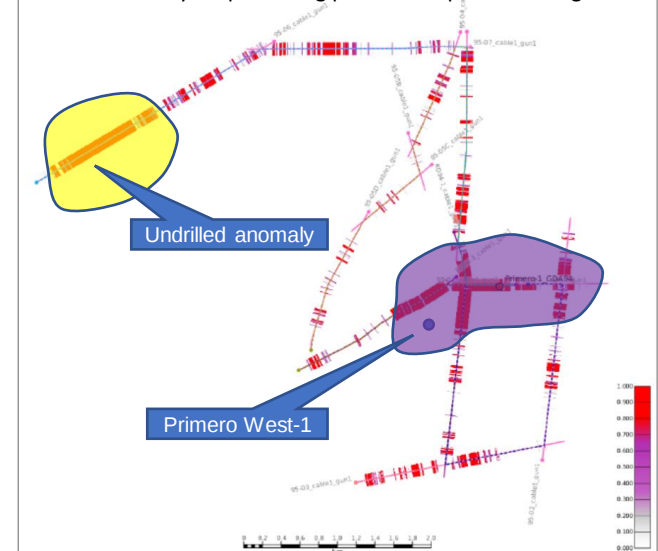
Possible location
Reids Dome NW-1



Cattle Creek Gas sand time structure map



Gas Probability Map showing potential exploration target



Cattle Creek Leads

- Primero West-1 confirmed reprocessed seismic signature
- Good quality conventional sandstone with ~100 psi over-pressure
- Depth to targets 200 – 500 m
- Components exist of both structural and stratigraphic traps
- Estimated prospect size 1 – 10 bcf each
- Additional seismic required to define and delineate

Development Scenario

PHASE-1:

- Reprocess WOWCO seismic survey
- Nyanda-4 conventional and CSG flow test
- 2 x RDB vertical appraisal CSG wells with extensive cores and multiple DST's
- Review results and conduct scoping economics

PHASE-2:

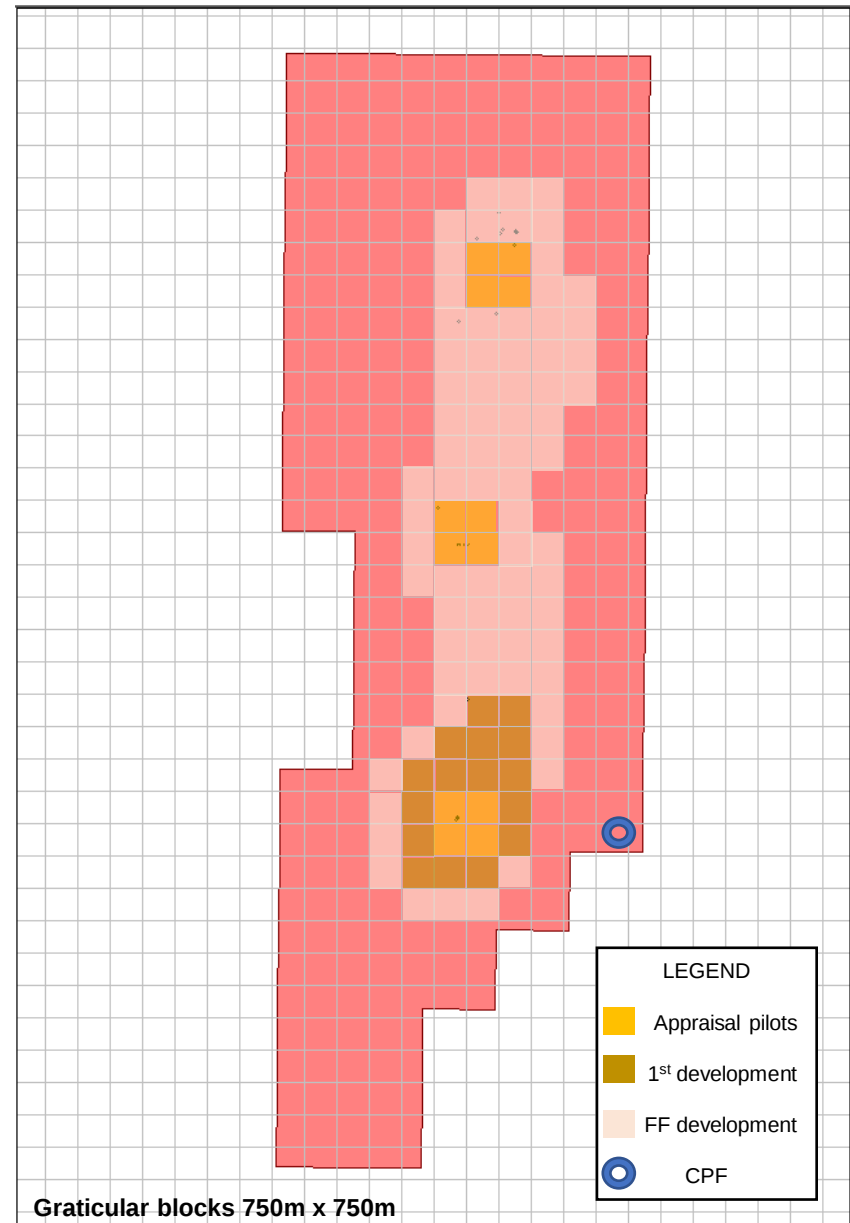
- RDB CSG production pilots, 6-12 vertical production wells surrounding appraisal wells (3 or 5 spot pattern)
- 1 x Cattle Creek exploration well
- Pipeline route studies
- Review results, engineering studies and conduct scoping economics

PHASE-3:

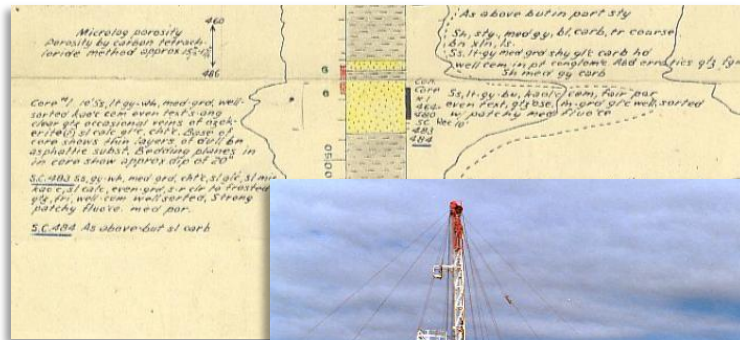
- FEED and economic review leading to FID
- 80 km² 3D seismic
- Install Primero area Cattle Creek gas sand surface facilities and initial CSG gathering to CPF location
- Expand Tier-I pilot with 16 well initial development
- Install surface facilities and pipeline underpinned by Cattle Creek conventional development.
- Review results

PHASE-4:

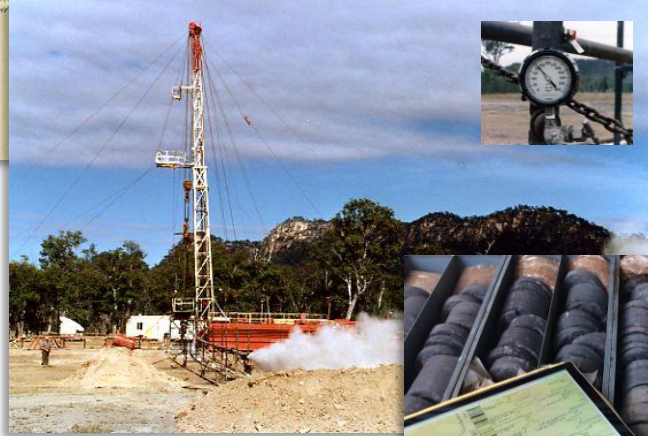
- Full-field Development, 100-150 wells
- Central Processing Facility (CPF) with gas processing, water & condensate handling
- Compression
- Export pipeline



Reids Dome Time-Line



1954: gas discovered by AOE Reids Dome-1



1975-2006: 13 wells drilled to appraise Cattle Creek gas sand



Jul. 2018: State Gas reviews historic data



2018: Large new CSG play discovered



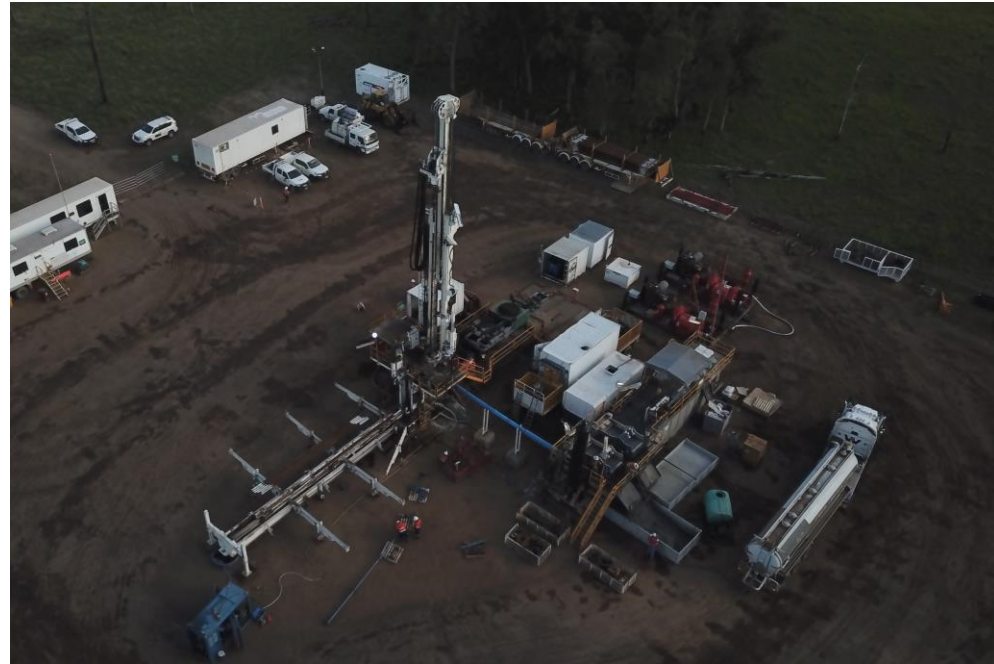
Nov 2018: drilling

Shareholder	Shares Held	%
Founders, Directors & related entities	80.8 million	60%
Public	54.6 million	40%
TOTAL*	135.4 million	100%

*Excludes 7 million management options exercisable between \$0.20 and \$0.60 with vesting conditions and 2.5 million performance shares issued to Highbury Partnership vesting on various transaction conditions and pricing hurdles between \$1.10 and \$2.00 per share

Contacts

Silver City Rig-
25 drilling
Nyanda-4 during
November 2018



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