

# CENTRAL TARGETS PIPELINE

11 - 18 September 2014

(ASX:CTP)



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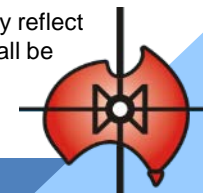
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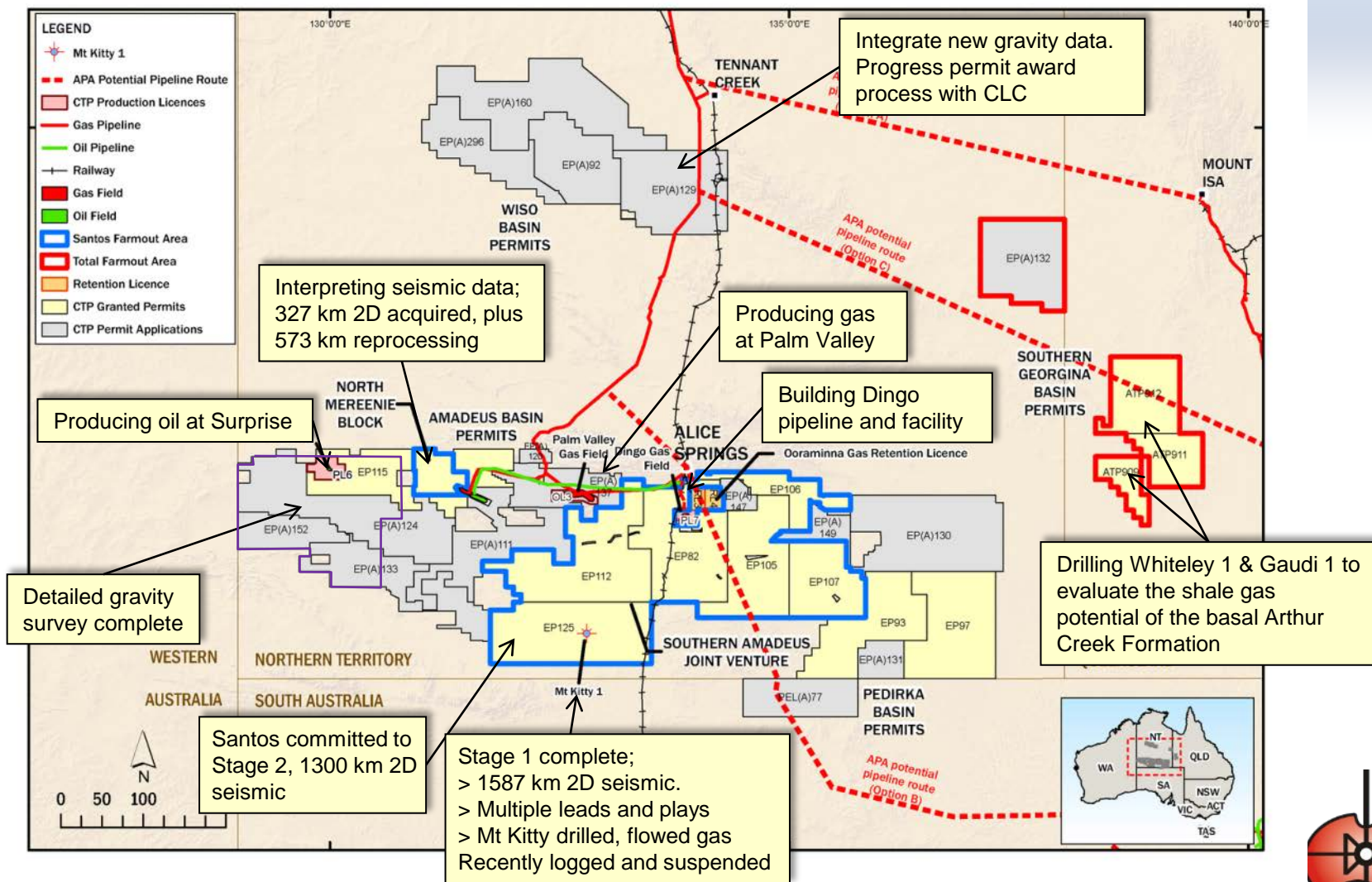
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# Activity update



# Overview

- Australia's domestic gas market facing supply shortfall in next 5 years
- Golden opportunity for Northern Territory (NT) to be a 'key' supplier of domestic east coast markets
  - Comparable to QLD's gas exploration boom displacing the PNG pipeline
- Aggregated gas supplies include existing on- and off-shore reserves to underpin NT - East Coast pipeline for domestic market
- Price signals and open markets will drive exploration and supply, creating Gas Revolution for NT Requires Government endorsement.
- Central can be a major player in the solution through;
  - Targeting 200 PJs available reserves for sale into the inter-connected domestic market
  - Gas storage at Palm Valley in lead-up to pipeline completion
- Local communities and Traditional Owners would benefit from NT gas industry through royalties and employment – over 30% of Central's production workforce are Traditional Owners



# Central's Strategic Plan

## Short Term

### **Develop resources, production capability, infrastructure and cash flow**

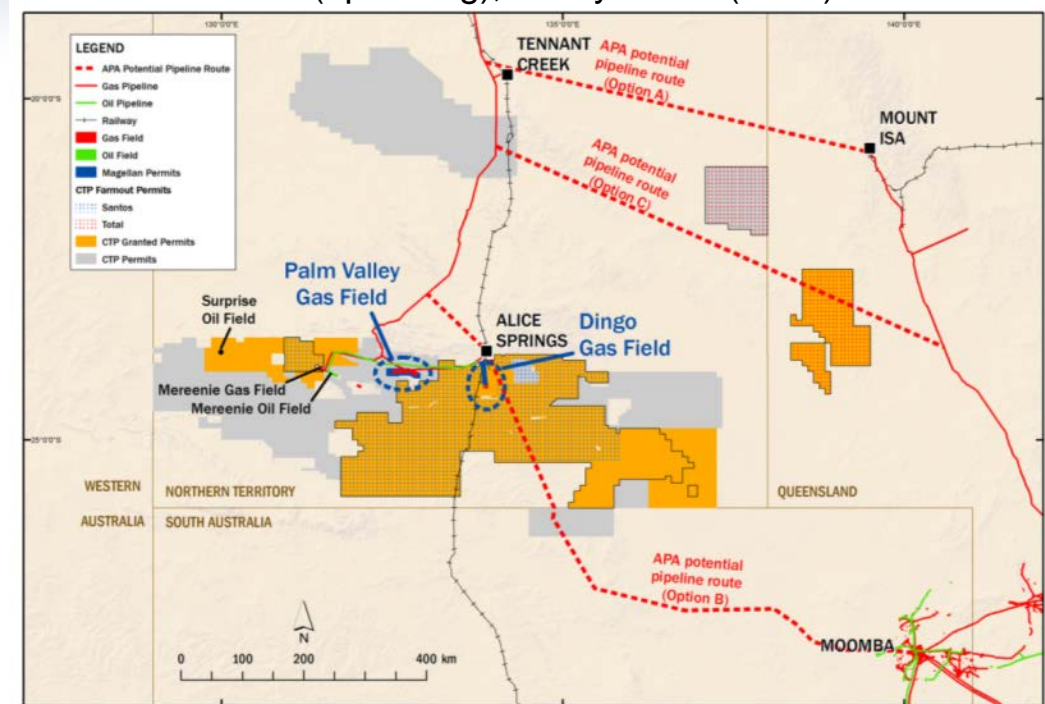
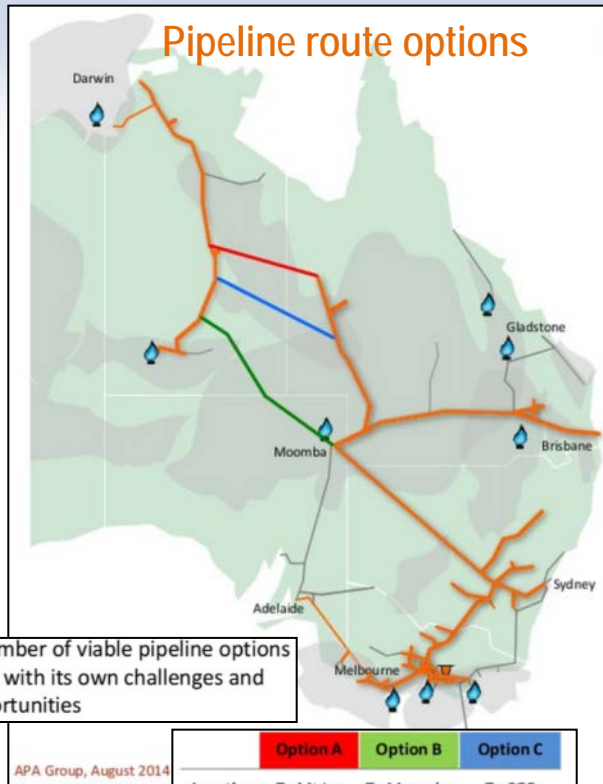
- Purchase of Dingo and Palm Valley - Done
- Reacquire Ooraminna - Done
- 100% owned fields have exploration opportunities to triple available gas
- Target 200 PJ of exploration and appraisal opportunities, serviced by infrastructure existing or being built
- Key objective is to connect NT with the Eastern States to supply the critical domestic gas market shortfall
- Identify opportunities to increase oil reserves, accelerate revenue
- Collaborate to accelerate progress in the Santos and Total farm-in areas



# Pivotal Location Could Re-Rate Central Assets

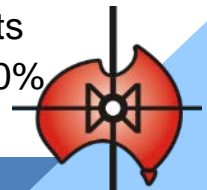
## Existing gas pipelines available for NT Market

- Major users Territory Generation / mining and industrial
- Darwin LNG (operating), Ichthys LNG (2016)



## Pipelines being considered to connect NT with East Coast

- APA feasibility underway (3 alternatives identified)
- Likely routes run through Centrals exploration permits
- Market pricing ex-field would increase by 50% to 100% from average pricing currently being obtained



# Building on solid foundations

## Oil and gas in production

- ✓ Palm Valley Gas and Surprise Oil Field in production
  - ✓ Year 1 revenue >\$12M
- ✓ Dingo Gas Field on target for production commencing in H1 2015
- ✓ Operating footprint and key infrastructure established in heart of Centrals exploration tenements





## Building Blocks - Completed

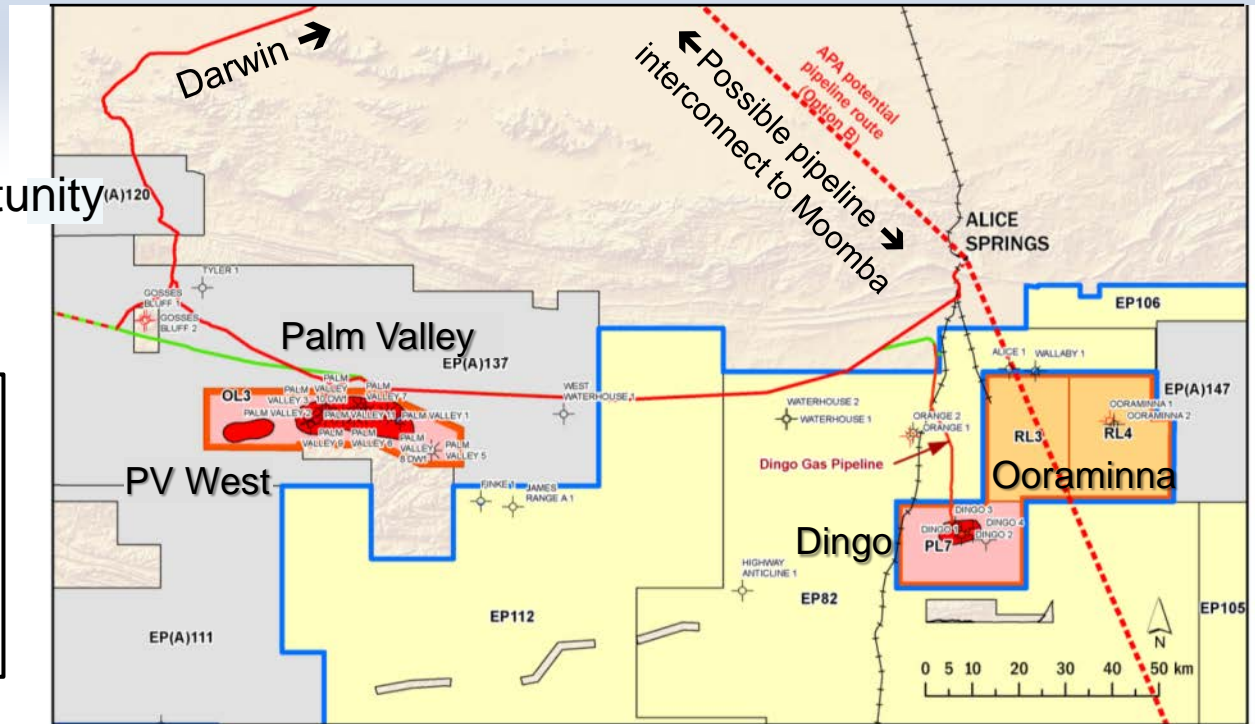
- ✓ Strengthen Board
- ✓ First class management team
- ✓ Cost control and fiscal management
- ✓ Strategic partnering through farm-outs to cap expenditure
- ✓ Prioritise exploration acreage and targets (technical review)
- ✓ Commence exploration of unconventional plays



# Near Term Exploration

- ✓ Within / adjacent Central infrastructure
- ✓ Poised for market opportunity (A)120
- ✓ Meaningful targets

|  |                              |
|--|------------------------------|
|  | Central – production licence |
|  | Central – retention licence  |
|  | Central – Santos JV area     |
|  | Central application area     |



| Reservoir \ Field | Palm Valley West | Palm Valley Field | Dingo Field | Ooraminna Field |
|-------------------|------------------|-------------------|-------------|-----------------|
| Pacoota Sst       | Target           | Proven            | (absent)    | (absent)        |
| Arumbera Sst      | Target           | Target            | Proven      | Gas flared      |
| Pioneer Sst       | Too deep         | Too deep          | ?Target?    | Proven          |





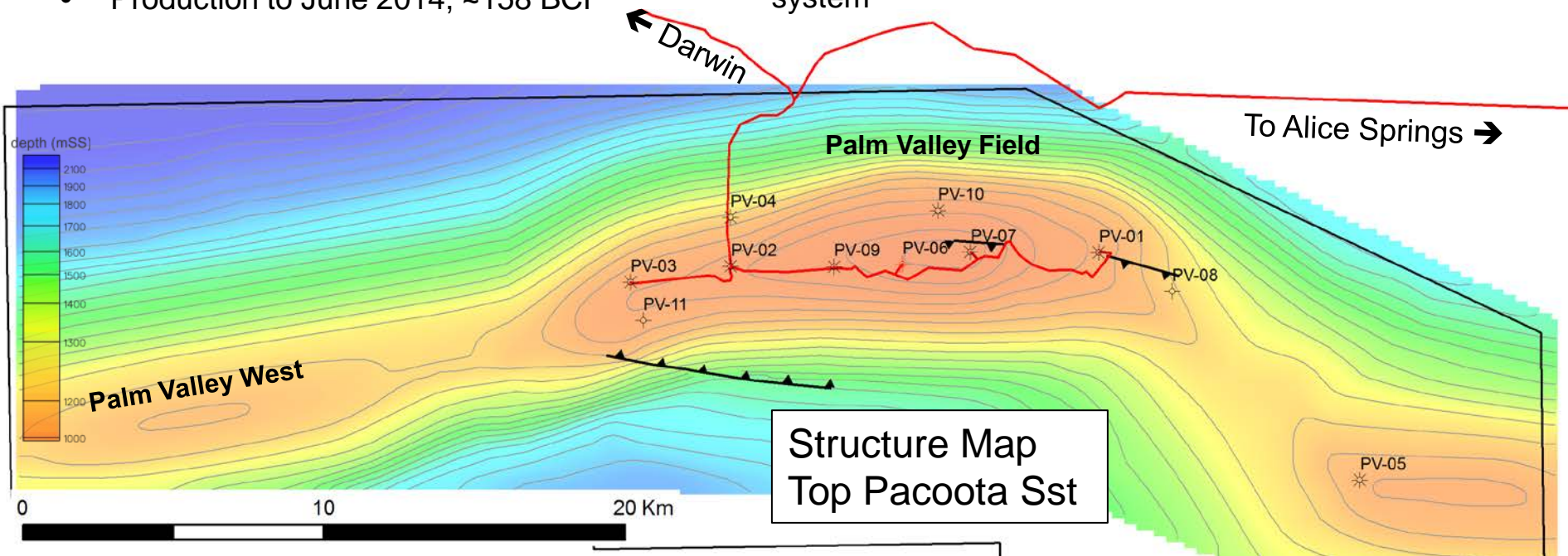
# Palm Valley overview

## History

- Discovered 1965
- Lease OL 3 granted 1982
- Gas delivered to Alice Springs from 1983, to Darwin from 1986 to 2012
- 11 wells, 5 producing, 1 brine disposal
- Last well drilled in 2004
- Variable and low water rates
- Production to June 2014, ~158 BCF

## Description and upside

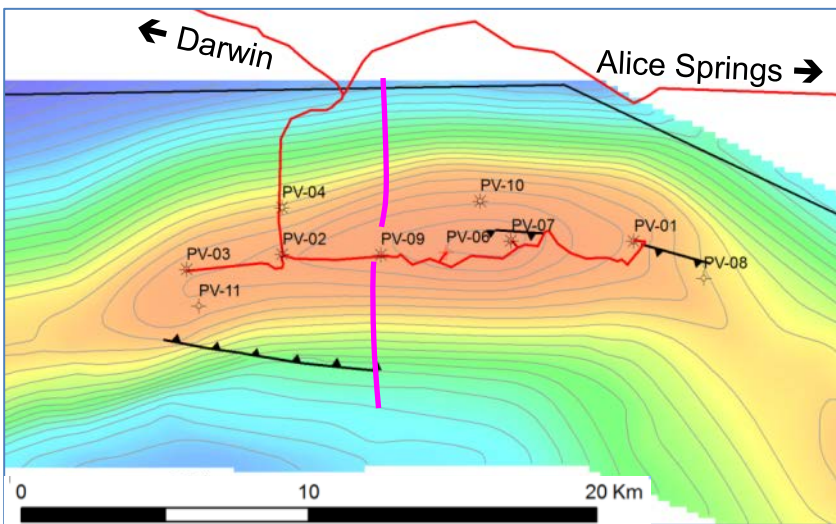
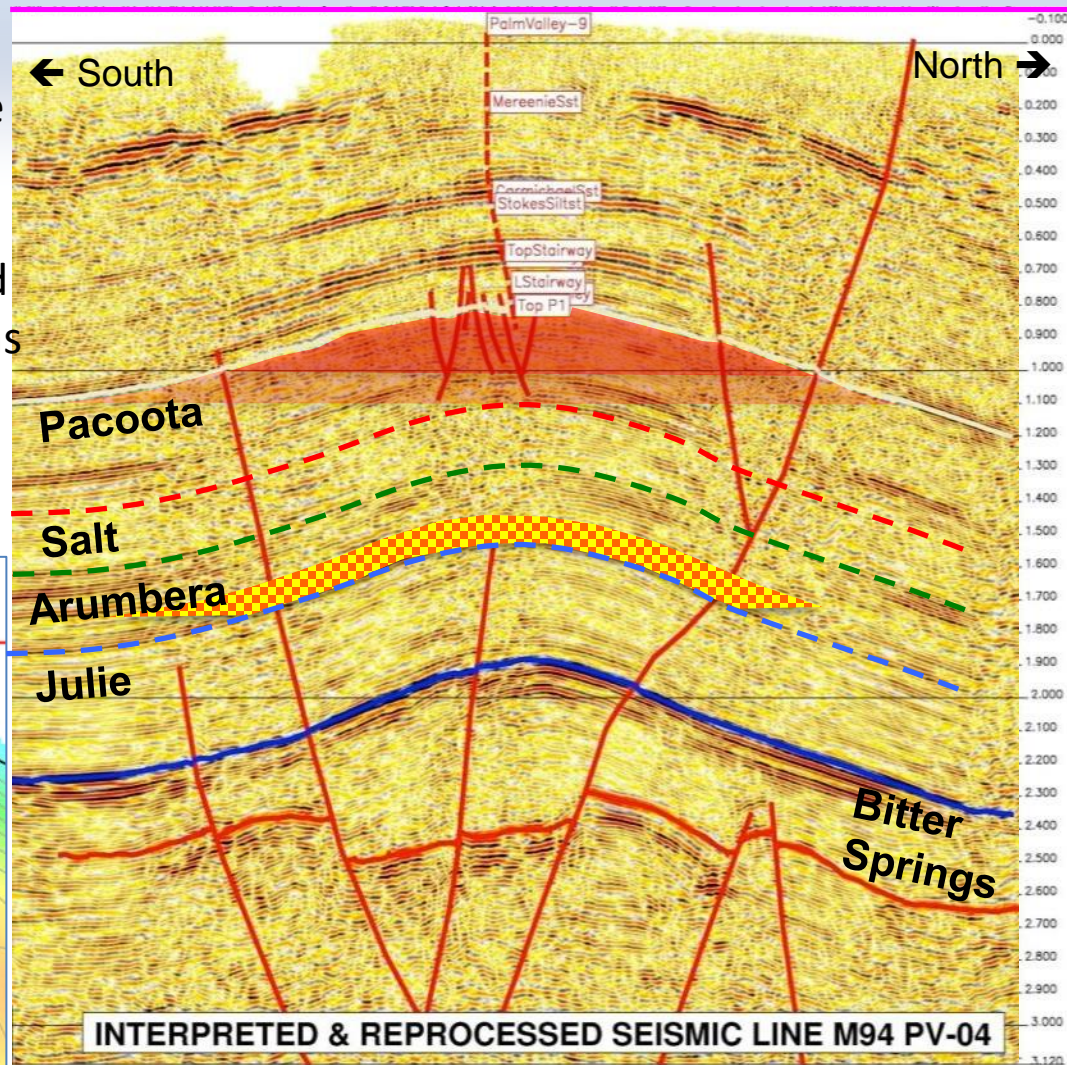
- Area >200 km<sup>2</sup>
- Gross hydrocarbon column up to 670 m
- Production primarily from natural fractures
- Large volumes of gas present in tight matrix of the Pacoota and Stairway Sandstones, Horn Valley Siltstone
- Significant upside potential lies within low permeability matrix, recently proven to be recharging the fracture system



# Palm Valley Deep – large potential

## Opportunity

- Attractive volume estimates, indicative 5x remaining reserves
- Arumbera A1 Sst - primary target
- Natural fracture development required
- Attractive target beneath producing gas field, plant, export pipeline

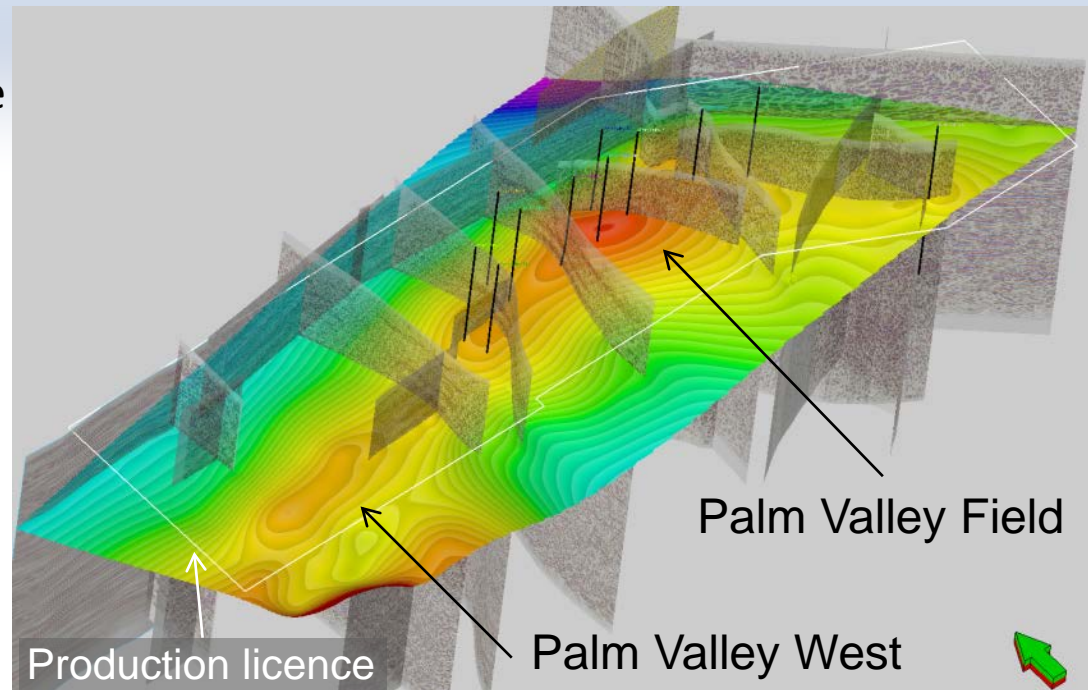


Reprocessed ~2002

# Palm Valley West – exploration

## Opportunity

- Additional data have upgraded the structural target
- Pacoota Sst – primary target
- Arumbera Sst – secondary target
- Natural fracture development similar to Palm Valley is required
- Adjacent to producing gas field, plant, export pipeline
- Further mapping is scheduled to mature the opportunity



# Ooraminna Field – close to Dingo pipeline

## Ooraminna 2, drilled 2010

### Pioneer Sst

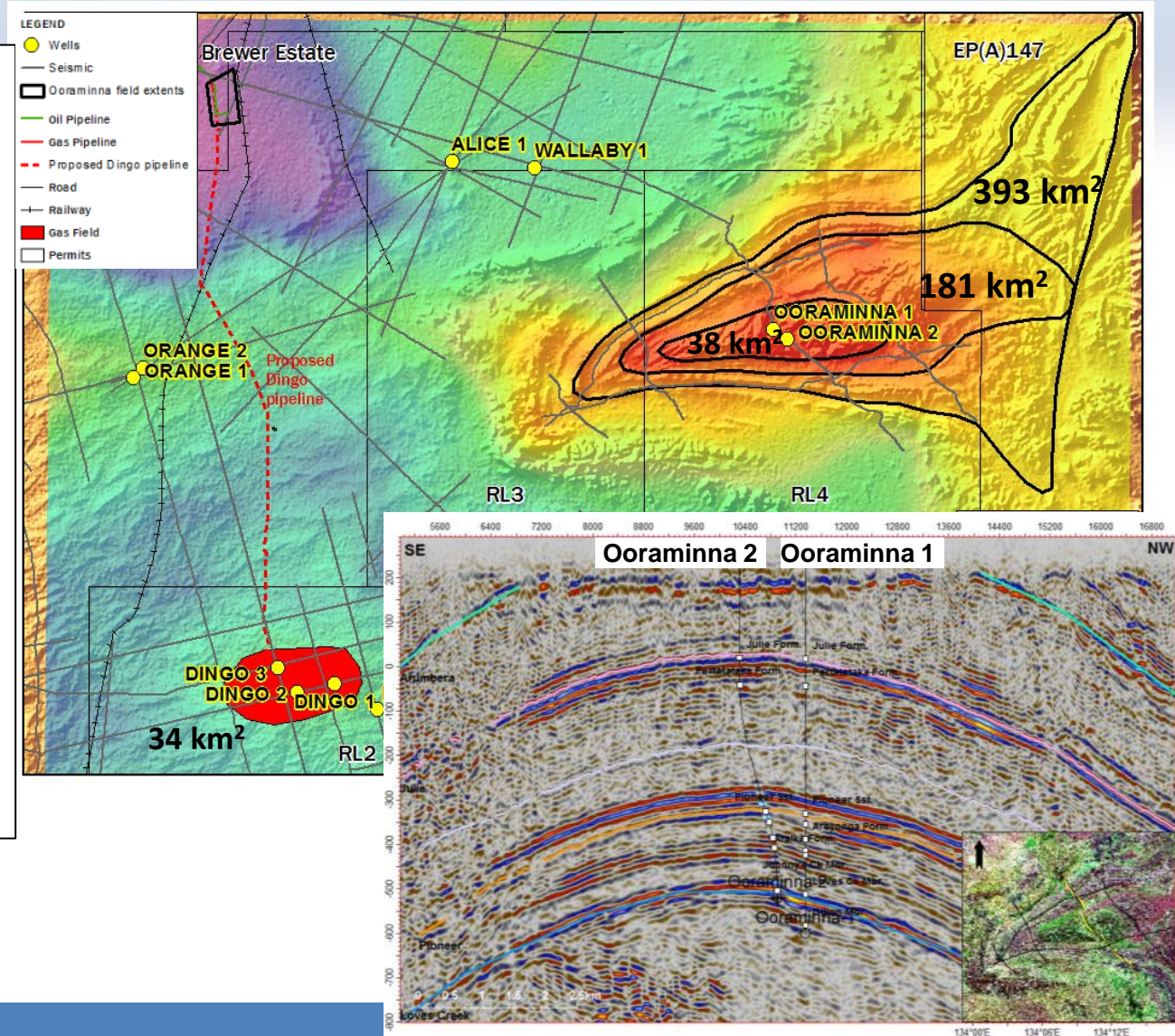
- Flowed gas up to 0.15 MMcfd
- High angle fractures

### Arumbera Sst

- Gas flares observed whilst drilling from 470 mKB in A1 member (Dingo Field)

### Ooraminna opportunity

- Large feature
- Significant upside
- Under explored
- More fractured location and/or horizontal wells sought to increase flow rates
- Close to Dingo pipeline



# Maturing leads in proximity of the Dingo Gas Field

## Leads:

- Dingo North
- Dingo NW on-trend with Dingo
- Seismic recommended
- Charge model required

**Orange-2:** Arumbera Sst flowed 0.4 MMcfd, 50% N<sub>2</sub>, 20% CO<sub>2</sub>  
**Ooraminna-2:** Pioneer Sst flowed 0.15 MMcfd

Orange Gas Field

Ooraminna Gas Field

gas pipeline

Dingo North Lead

Dingo NW Lead

Dingo gas field

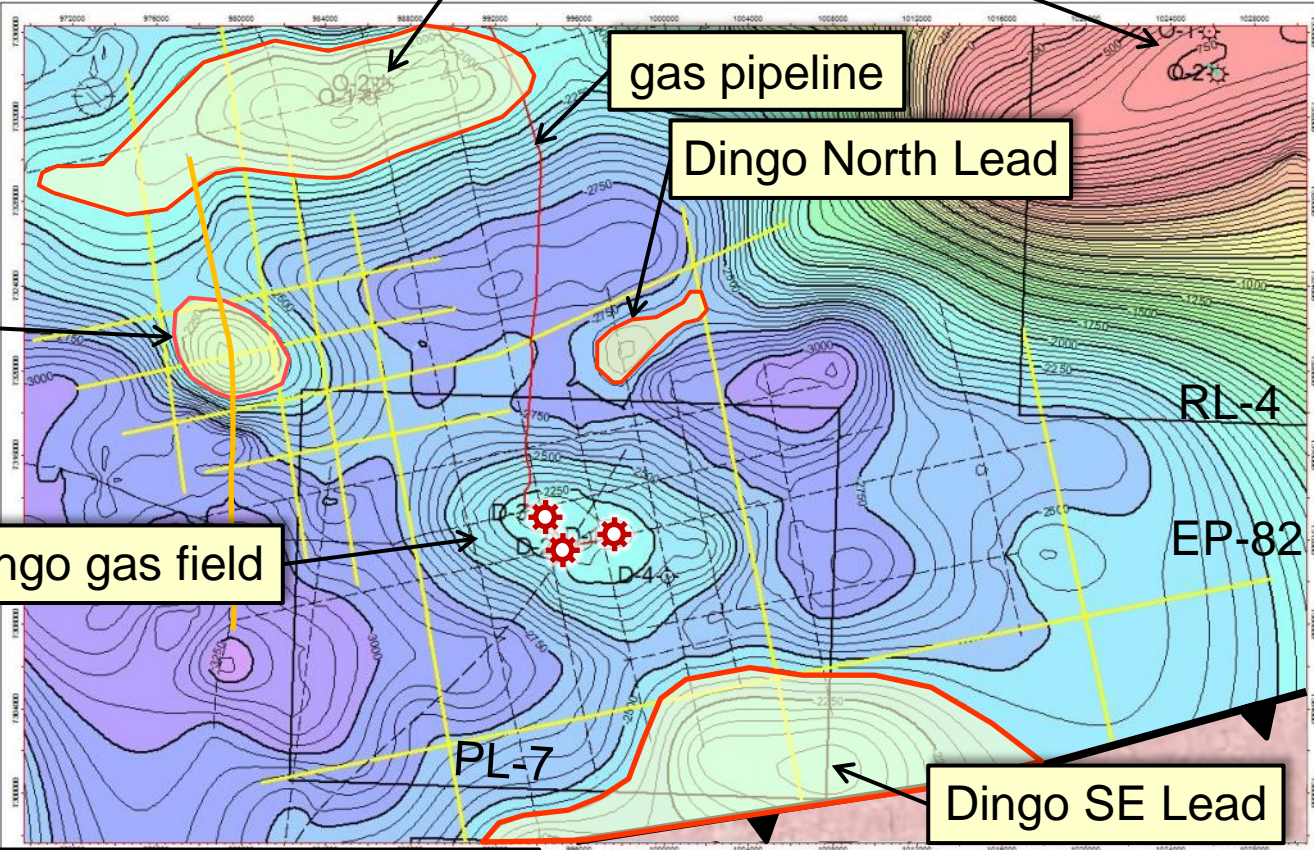
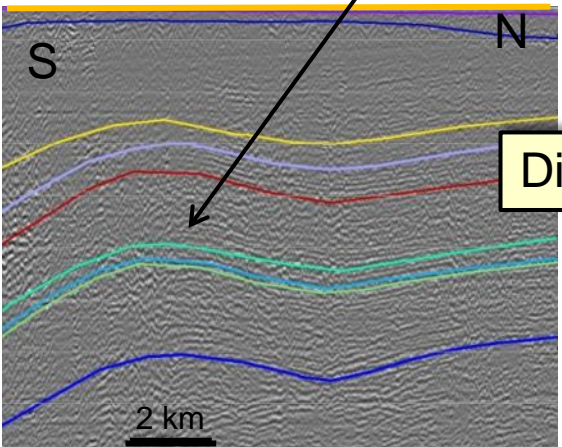
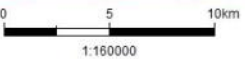
RL-4

EP-82

PL-7

Dingo SE Lead

Depth Structure, Top Arumbera Sst



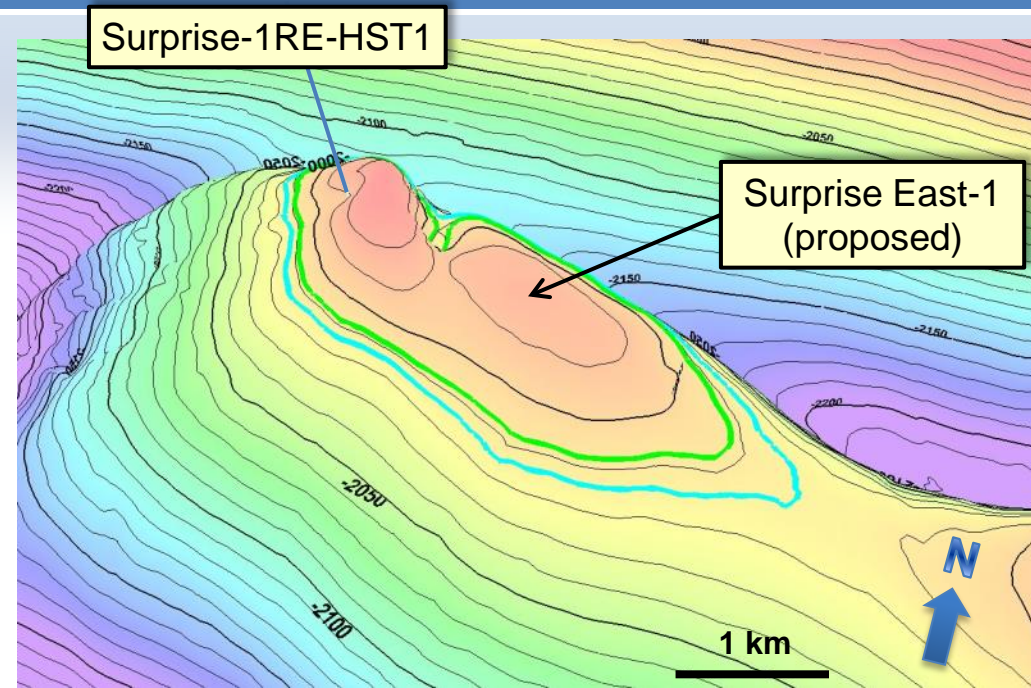
# Surprise Oil Field

## Status

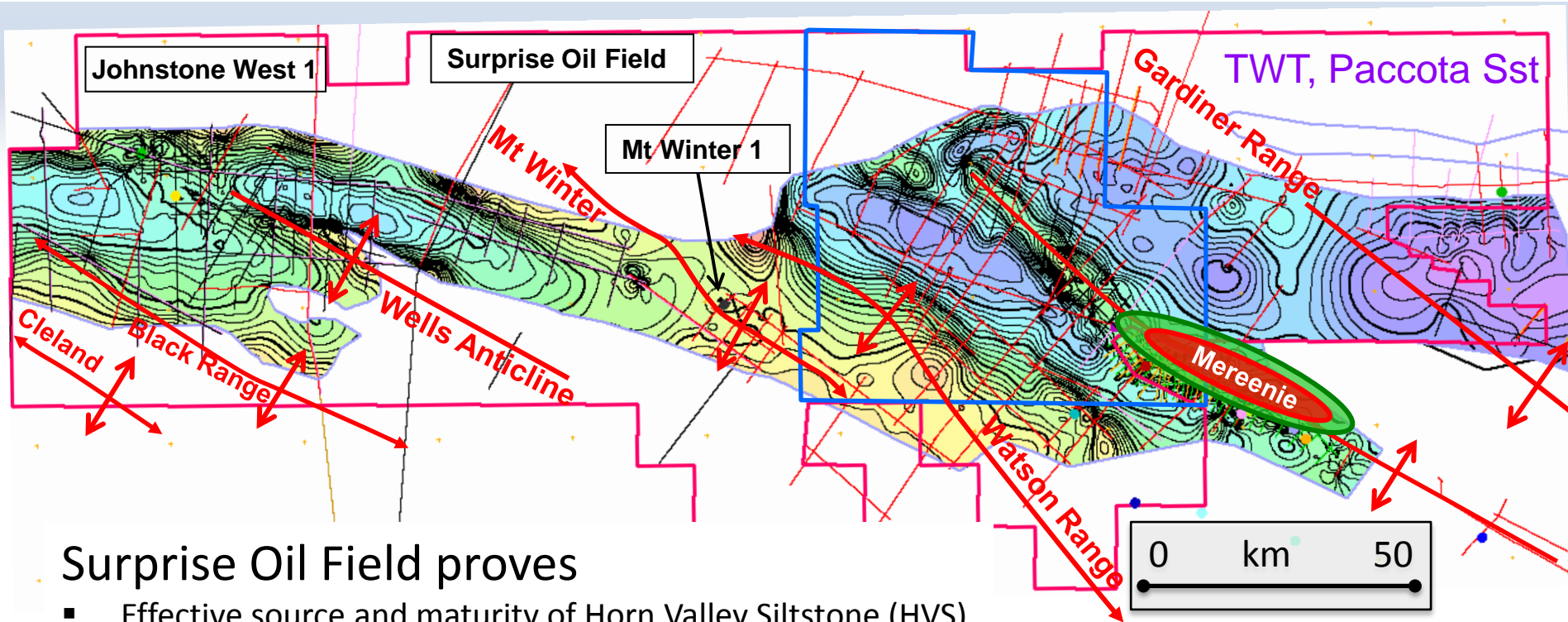
- Production commenced 1<sup>st</sup> April
- Oil trucked to Port Bonython
- 180 BOPD

## Objectives

- Develop eastern closure
- Increase recovery efficiency
- Technical evaluation;
  - Optimised well design for Surprise East
  - Pressure support options



# EP 115 and PL 6 – targeting oil



## Surprise Oil Field proves

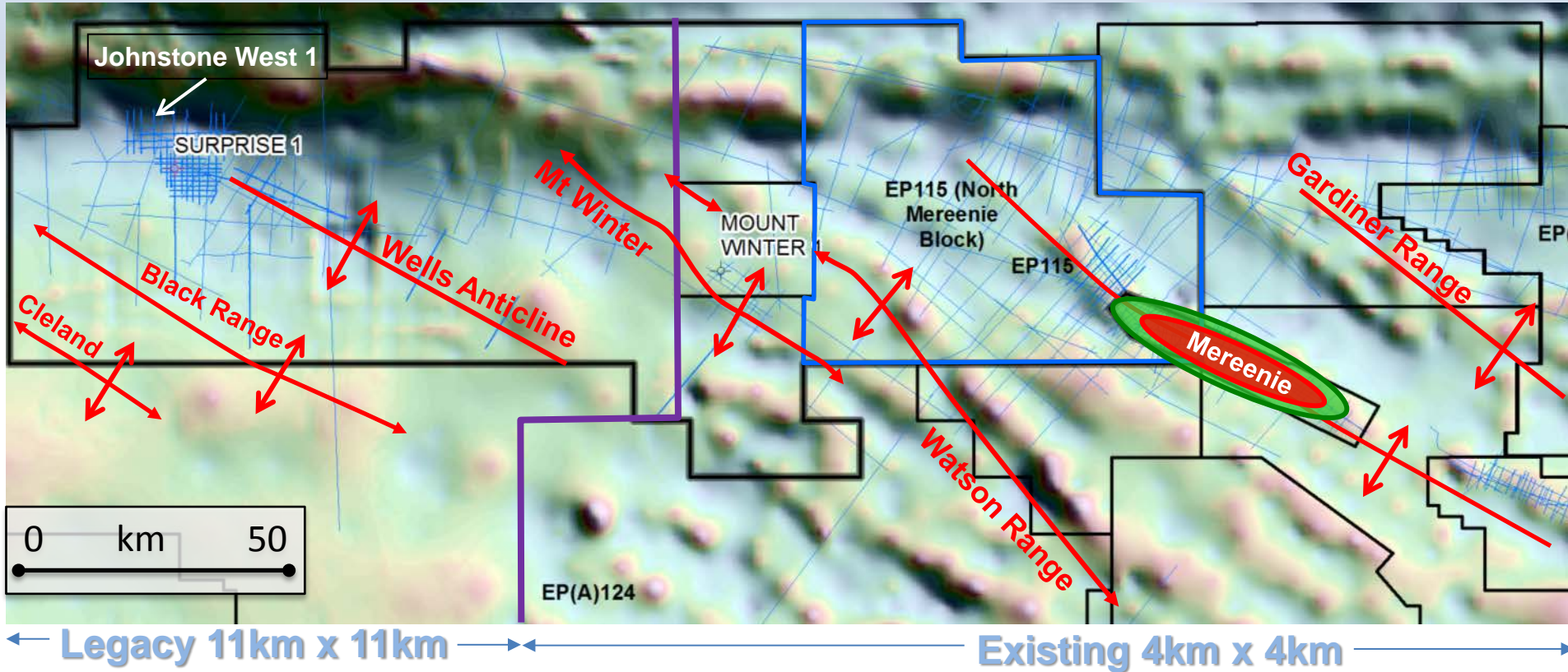
- Effective source and maturity of Horn Valley Siltstone (HVS)
- Seal, reservoir and timing are effective

## Exploration Strategy

- Delineate traps along the many structural lineaments
- Acquire more seismic
- Challenge; prudent deployment of seismic line layout



# EP 115 and PL 6 – targeting oil



## Structural definition

- Detailed gravity survey - complete, now in processing and interpretation
- Resolves structural trends
- Basis for seismic acquisition design





# Strategic objectives

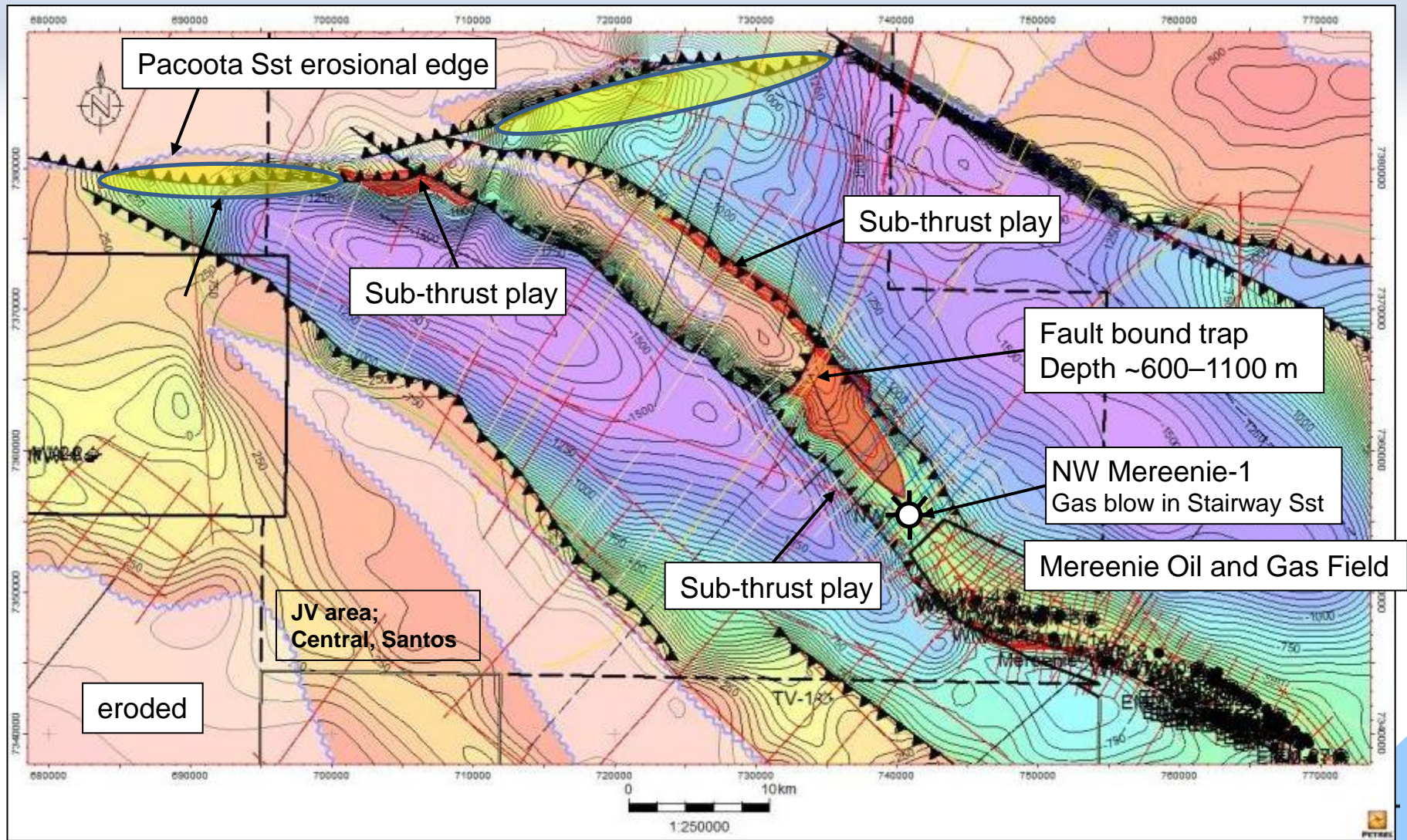
## Medium Term

### **Expand gas supply capability by exploring and developing identified opportunities utilising established revenue flow**

- Southern Amadeus Stage 2 with Santos proceeding following Mt Kitty's confirmation of hydrocarbons being present, with 1300 km future Seismic acquisition agreed
- Continue to progress unconventional shale gas in Arthur Creek Fm in South Georgina Basin with TOTAL
- Explore the unconventional Horn Valley Siltstone target in Amadeus Basin
- Early look at frontier areas; map structure with new gravity and magnetics



# North Mereneie Block - opportunities



# Mt Kitty – plugged and suspended

## Results

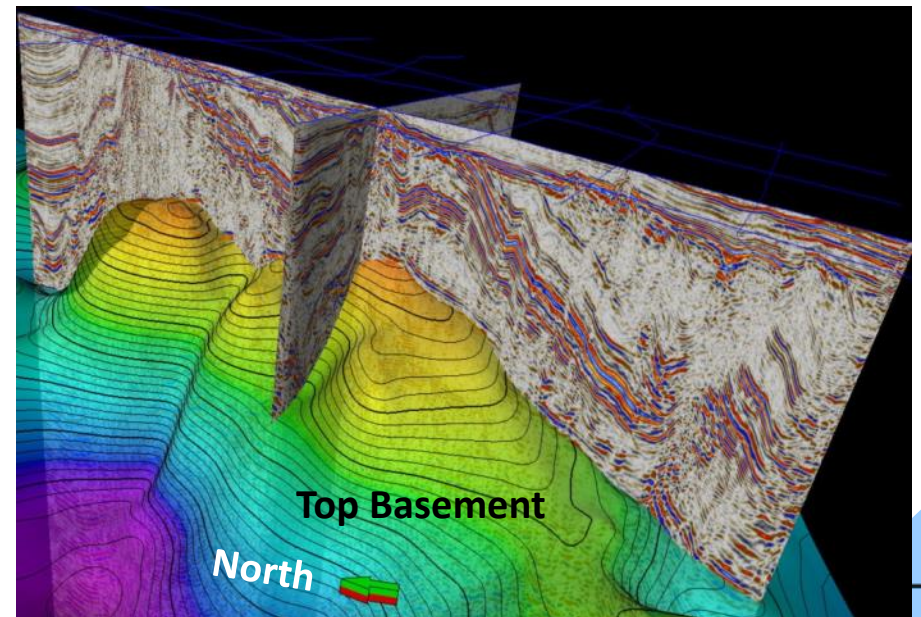
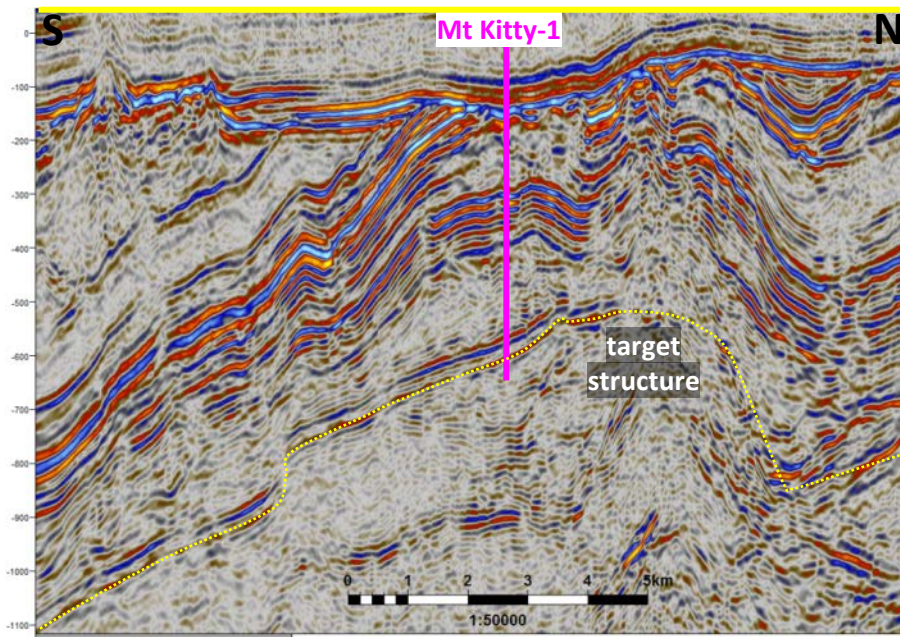
- Flowed mixed gas at rates up to 500,000 cf/d
- Confirmed presence of hydrocarbons
- Includes valuable Helium up to 9%
- Wireline logging now completed
- Confirmed gas flowed from basement which is extensively fractured
- Structural closure over 165 km<sup>2</sup>
- Wellbore “plugged and suspended”

## Outlook

- An oriented sidetrack could be considered to take advantage of the extensive fracturing observed
- Well design would contemplate fracture orientation

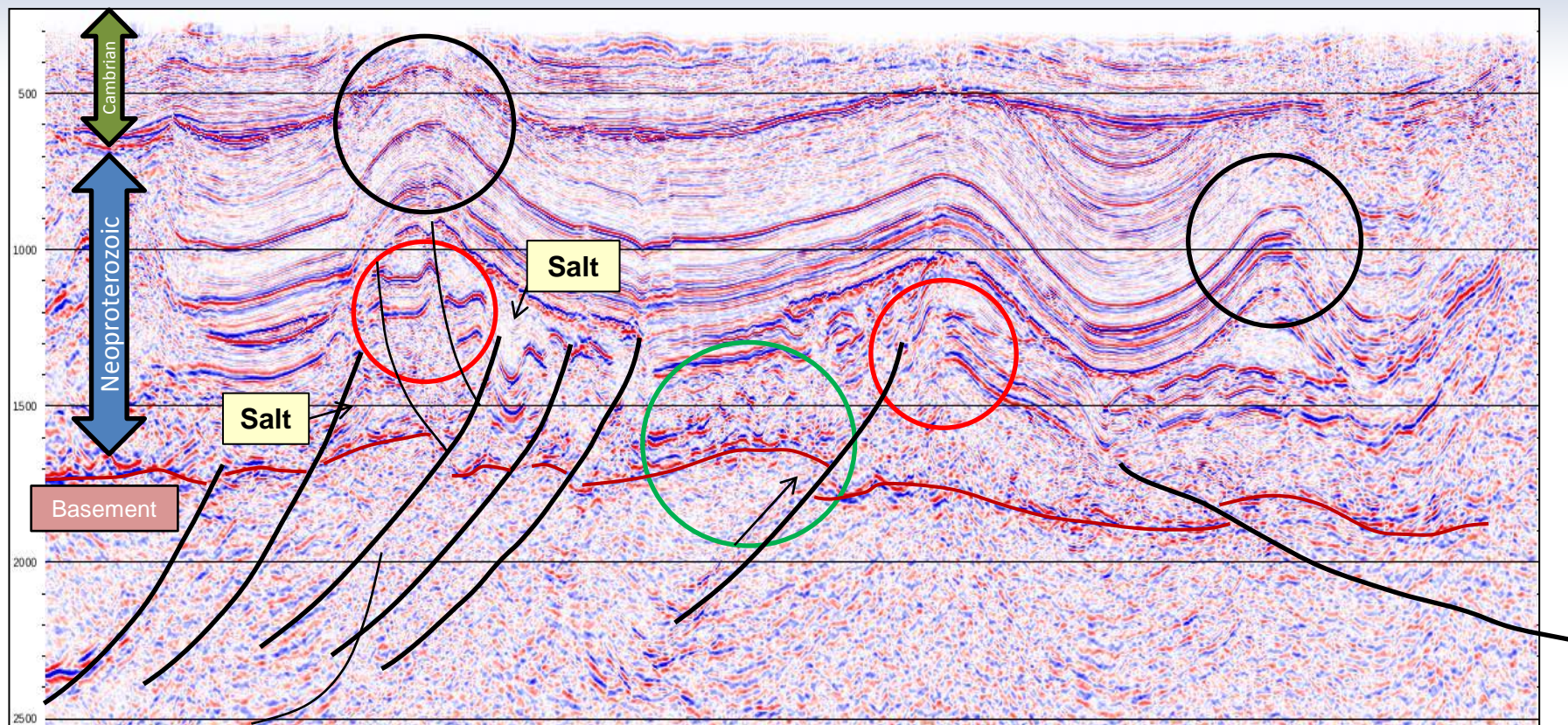
## Analogues

- Fractured granite basement fields are known in Canada, USA, China, Gulf of Suez, India, SE Asia
- Oil fields in Vietnam are a possible analogue



# Southern Amadeus – Stage 1 results

Representative Seismic Section showing major play types



○ Untested Salt-cored Anticlines

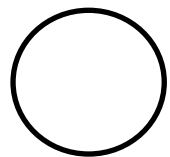
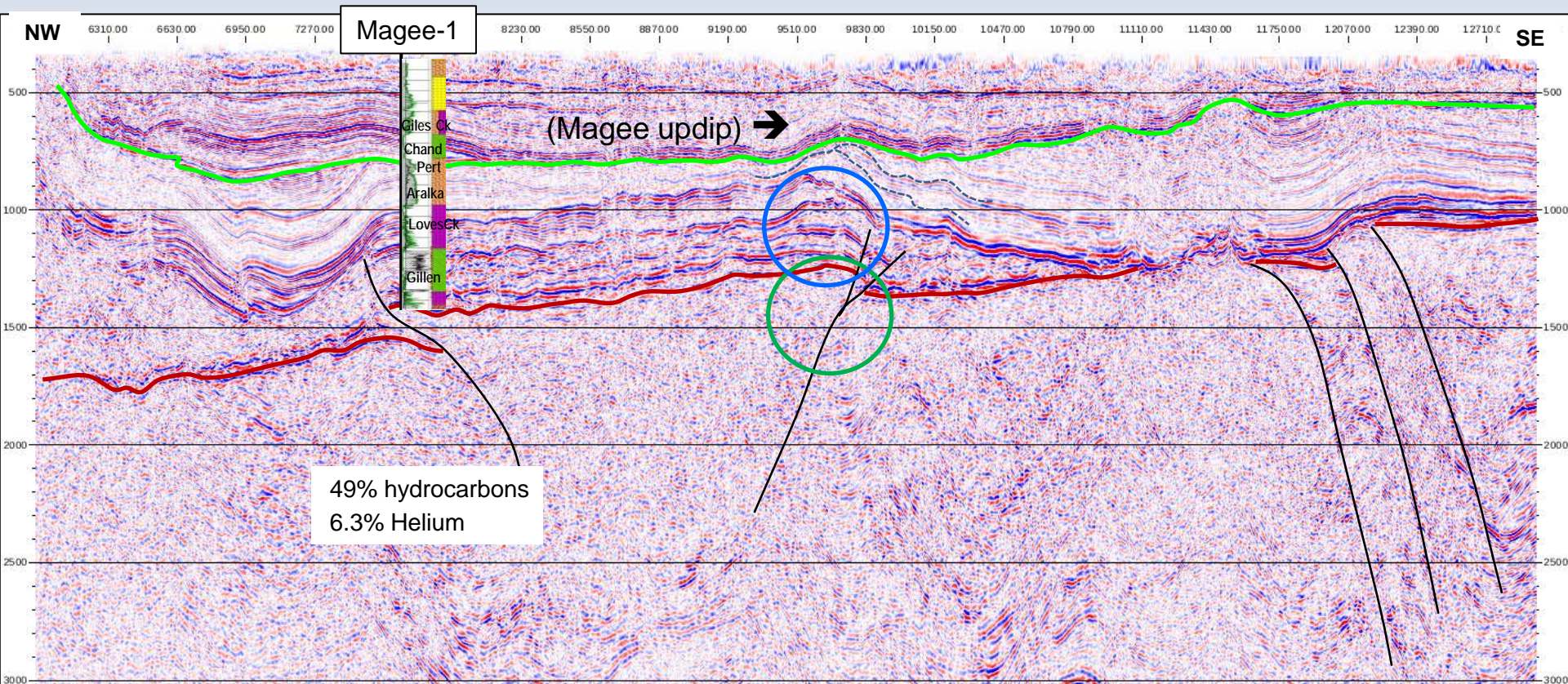
○ Untested Intra-Salt fault blocks

○ Untested Sub-Salt Basement Highs

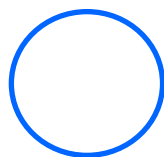


# Southern Amadeus – up dip Magee

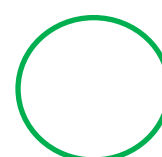
Further seismic is required to delineate this updip lead



Untested Salt-cored Anticlines



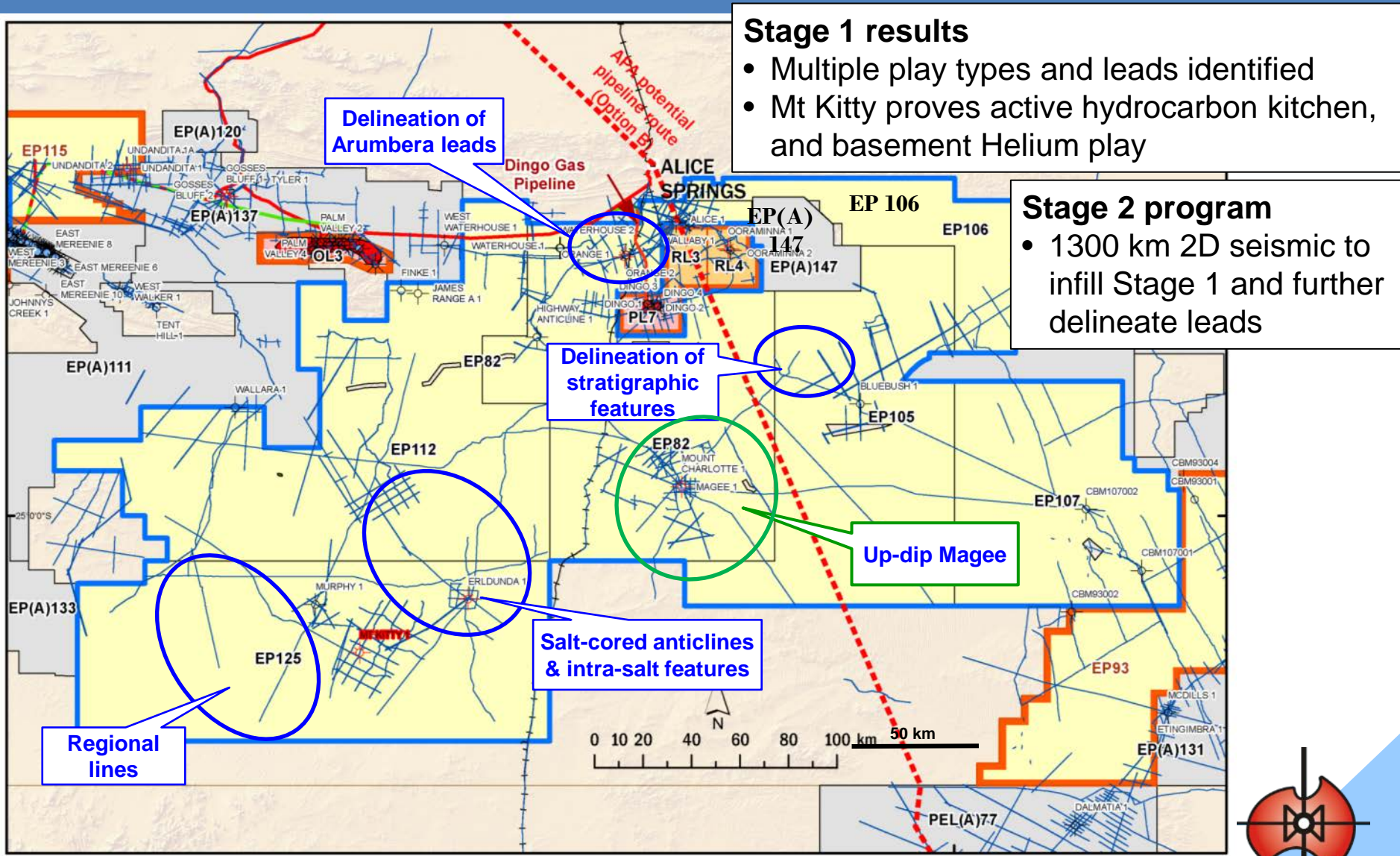
Untested mounded features



Untested Sub-Salt Basement Highs



# Stage 2 seismic program – focus areas



# Specific data gathering requirements when pursuing an unconventional play

Georgina Basin

Regional seismic has been acquired

Drilling has commenced

## Evaluate

- Organic Shale Interval
  - Petroleum System
- Review of data
  - Seismic
  - Geological
  - Geomechanical
  - Geochemical
- Petrophysical
  - Mineralogy,  $\Phi$ , TOC,
  - Ro, Brittle, k
  - Thickness
  - Fluid typing
- Identify data gaps
  - Seismic, core, well log etc.
- First pass – SRR analogs
- Hydraulic fracturing
  - Wells
  - Identify production potential
- Production Well Test
  - Initial Production
  - PTA & Decline Curve analysis

## Appraise

- Reservoir Extension
  - Seismic Delineation
  - Estimation of Mechanical Properties
- Properties
  - Estimated Principal Stress Directions
  - Identification of Natural Fractures
- Geochemical Properties
  - Geochemical Properties
  - Petrophysical Properties
  - Estimated Mineralogy
  - Geochemical log
  - Chemostratigraphy
  - Cores XRD
- DFIT Analysis
- Refine SRR Analog

- Sweet Spot Selection
  - Thickness > 200'
  - TOC > 1%,
  - Free porosity > 4%
  - Ro (Gas Chromatograph)
  - Permeability > 100nD
  - Brittleness index > 25%
  - Pressure gradient
- Hydraulic Fracturing
  - Completion
  - Perforation Strategy
  - Operational Execution
  - Material Selection
    - Fluids & Proppant
  - Stimulation Design
    - Job Size, HHP
    - Logistics
    - Environmental Impact
- Evaluation
  - Production Potential
  - Frac Monitoring
- Production History Match
  - Flowing Tubing Pressure
  - Production Rate
  - Fluid Production

## Development

- Lessons Learned / What works
- Areal Continuity and extent
  - Seismic
  - Pilot Wells
- Evaluation
- Production History Match
- Fine tune field development analog
- Well Placement
  - Reservoir drainage
- Well architecture to maximize production
  - Vertical / high angle
  - Horizontal
  - Multilateral
- Water Management
- Logistics
- HSE

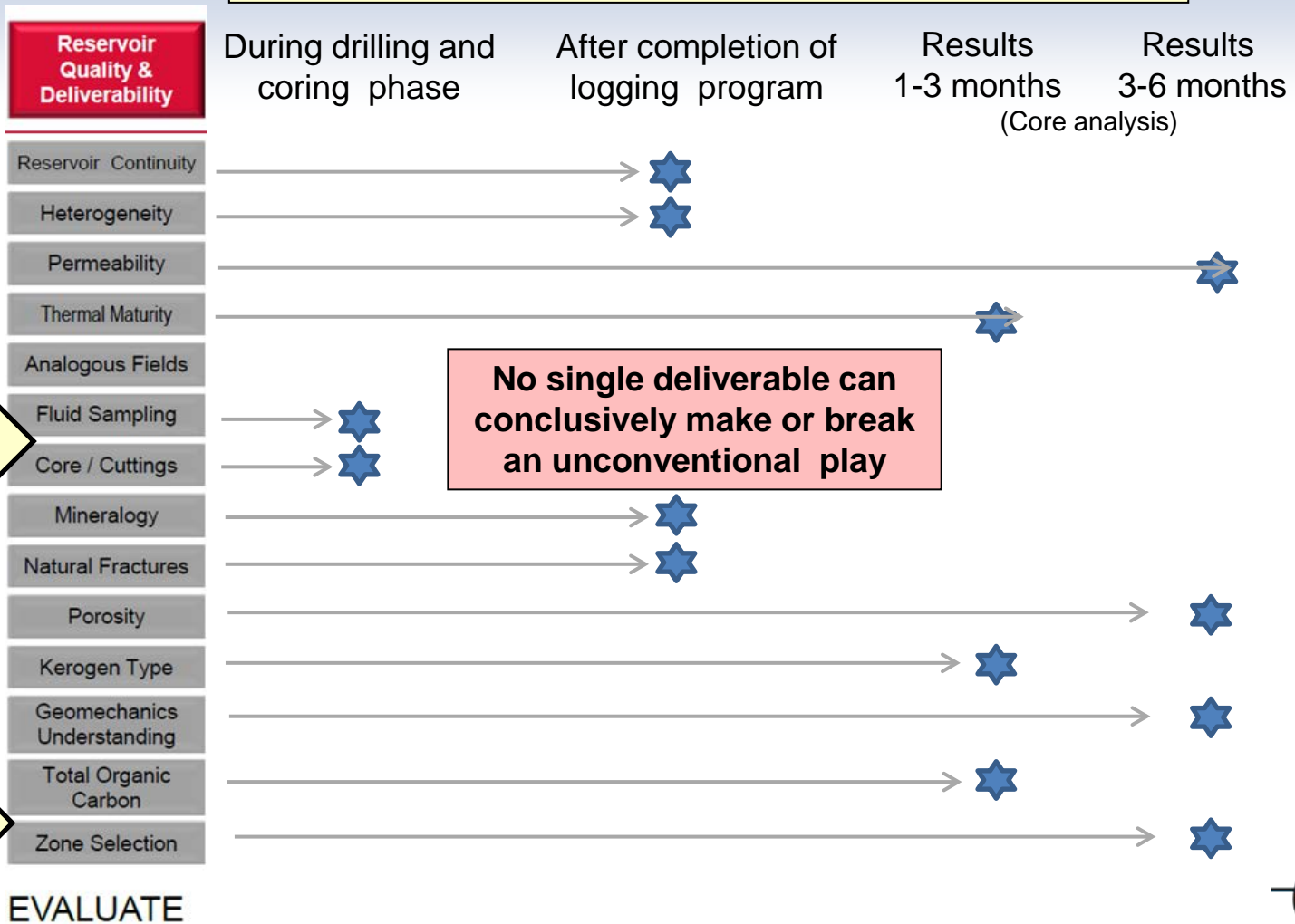
–Data requirements check list for each Lifecycle stage.

after Halliburton



# Key deliverables to proceed to the appraisal phase

Timeline of results from Whiteley 1 and Gaudi 1



Gas shows during drilling

Frac stim design





# Strategic objective

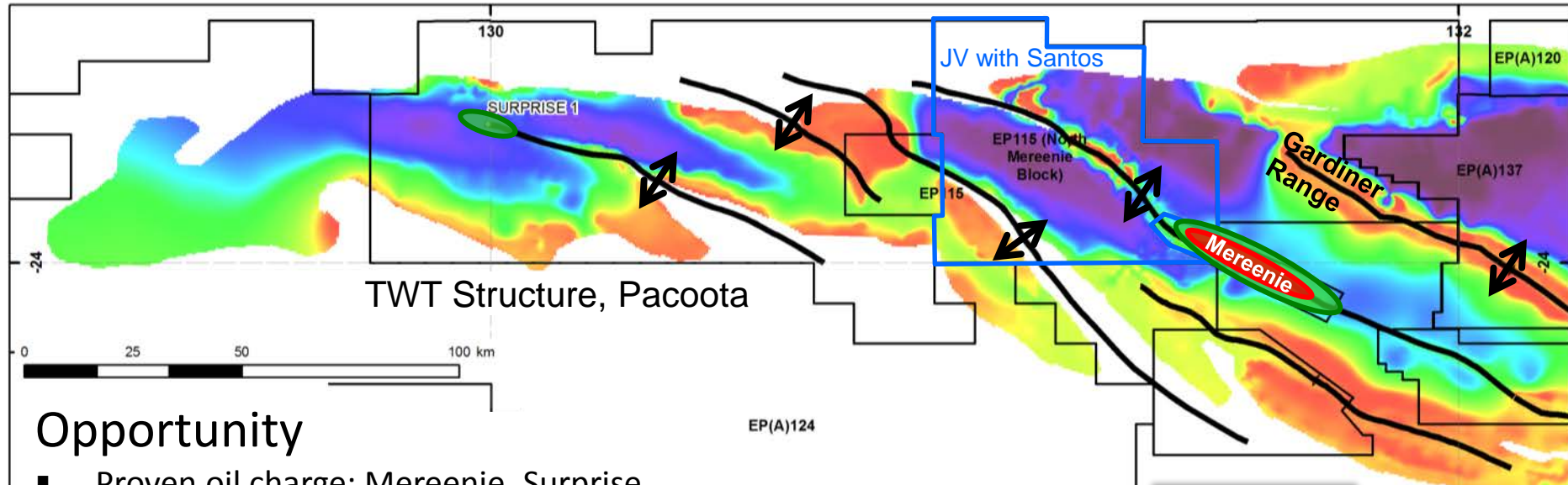
## Long Term

### Development of 'next generation' assets

- The Western Amadeus – create an opportunity pipeline as infrastructure and market dynamics open adjacent areas
  - Detailed Gravity data to define trends prior to seismic
  - Drill conventional targets, collect core data in HVS unconventional play
- Wiso Basin – explore close to infrastructure



# EP-115; multiple targets and play types

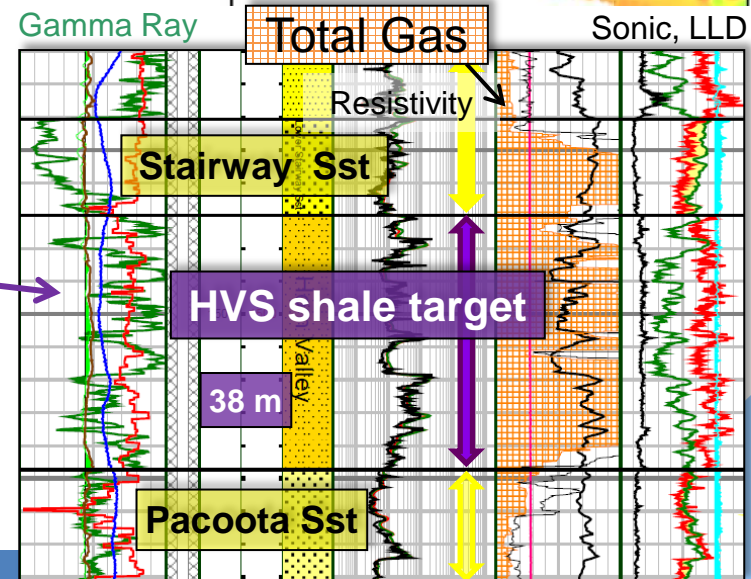


## Opportunity

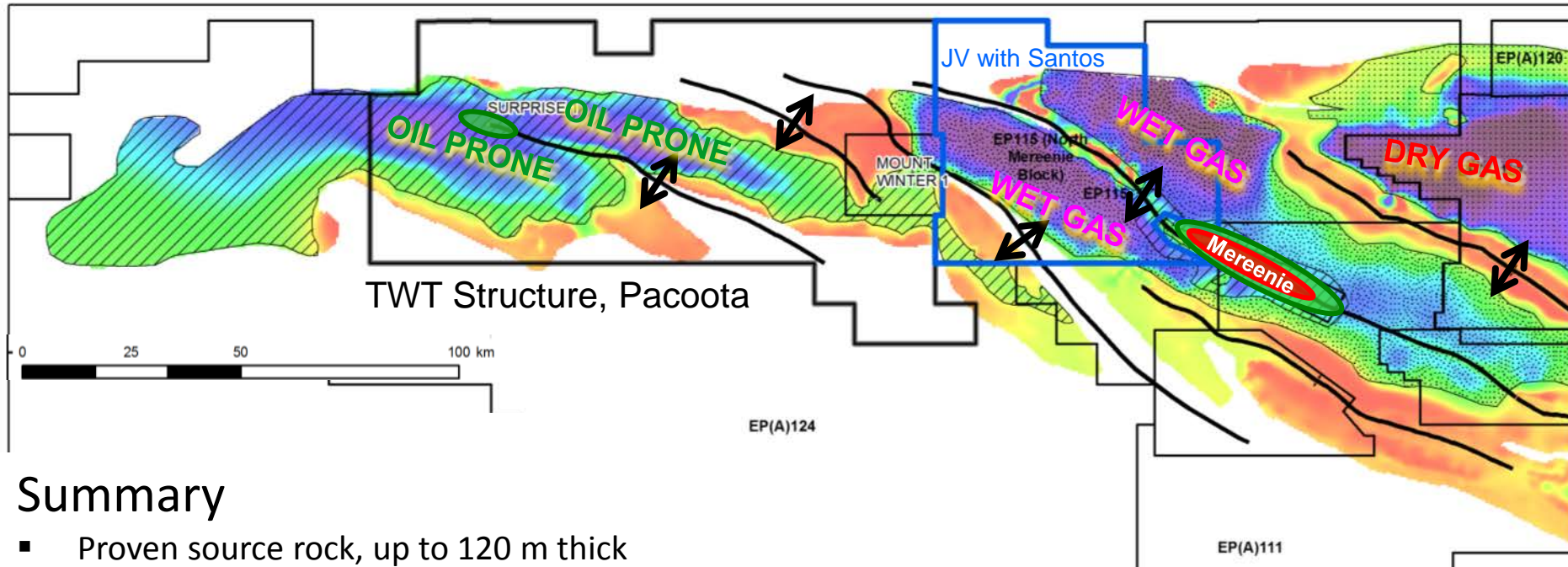
- Proven oil charge; Mereneie, Surprise
- **Conventional reservoirs**; Stairway Sst, Pacoota Sst.
- Sparse seismic, mapped trends → opportunities
- Multiple plays; structural, salt related, fractured
- HVS is a proven source rock with characteristics encouraging for an **unconventional reservoir**

## Outlook

- **Acquire & process gravity** – now underway
- **Interpret gravity & magnetics**
- Acquire 2D seismic, mature prospects



# EP-115 - HVS unconventional potential

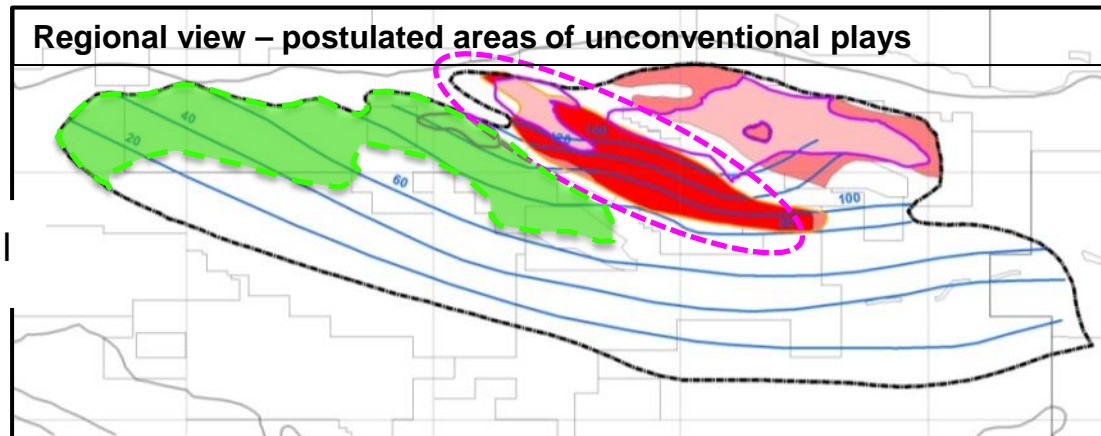


## Summary

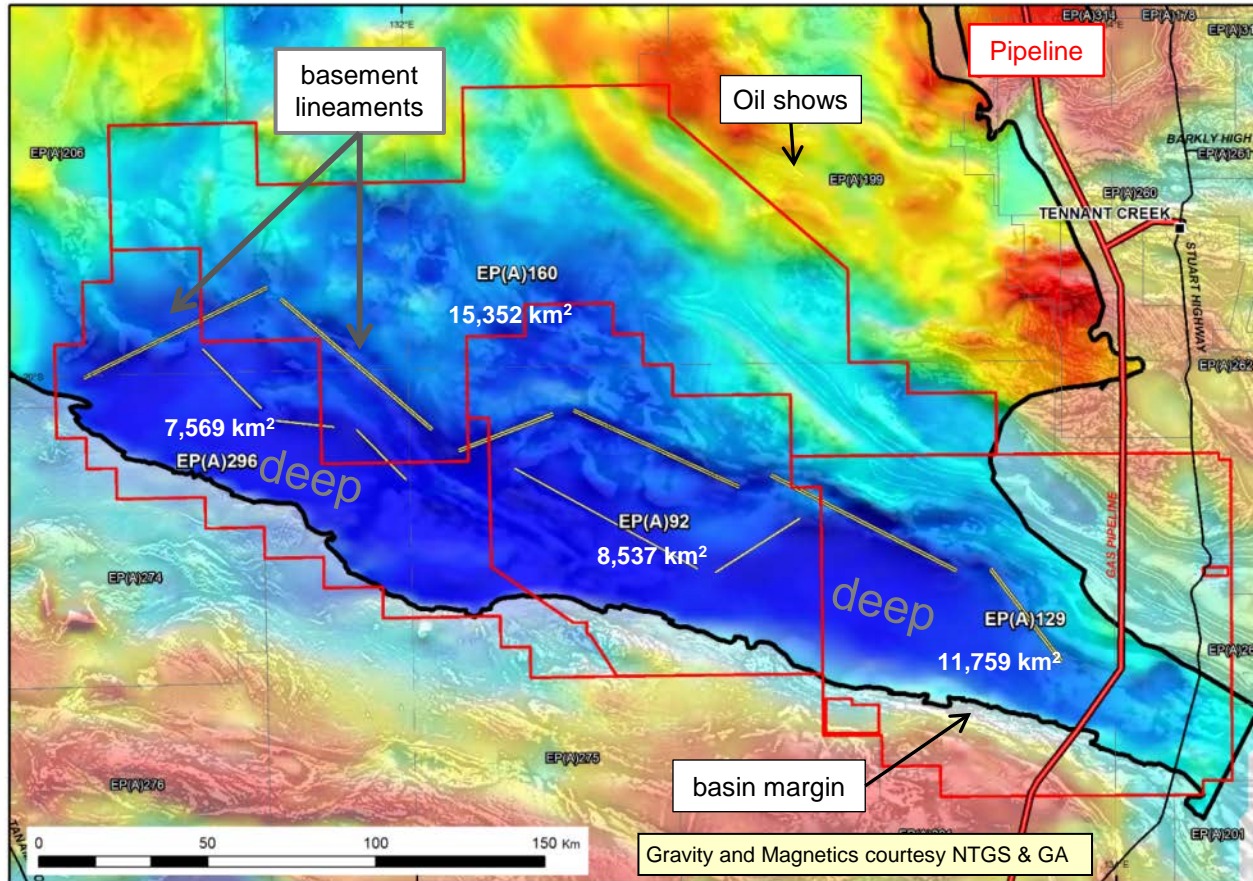
- Proven source rock, up to 120 m thick
- Excellent gas shows whilst drilling
- Varying maturity may open different play types in discrete areas →

## Outlook

- Obtain cores whilst drilling conventional targets – to advance the play



# Wisconsin Basin – conventional and unconventional



## Material growth opportunity

- Total area 43,217 km<sup>2</sup>
- Analogous geology to SGB
- Oil shows in Cambrian carbonates, stratigraphic wells
- Potential for conventional and unconventional plays
- Overlain by pipeline with 3<sup>rd</sup> party access

- Gravity and magnetics data reveals structural lineaments
- Possible traps adjacent to trough
- Basin deeps estimated at 3 to 5 km



# Areas of Activity

## Oil and Gas Production

- Surprise
- Palm Valley
- Dingo

## Exploration areas

- Palm Valley gas
- Dingo gas
- Southern Amadeus gas
- Western Amadeus wet gas to oil
- Pedirka Basin

## Frontier Exploration

- Wiso Basin
- West Amadeus



# Summary

- Central is rapidly advancing the exploration and development of substantial acreage
- Australia's domestic gas market supply shortfall creates '*Golden Opportunity*' for NT to be 'key' suppliers
- Opportunity to aggregate existing gas supplies to underpin NT - East Coast pipeline for domestic market
- Domestic markets can drive exploration and supply
- Central assets in key location for supply and storage opportunities in NT, Eastern States and export markets



# Contact Details



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