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RESOURCES

NYSE: TBN, ASX: TBN

Tamboran's Exploration and Appraisal of the Velkerri Shale Unconventional Gas Play, NT, Australia

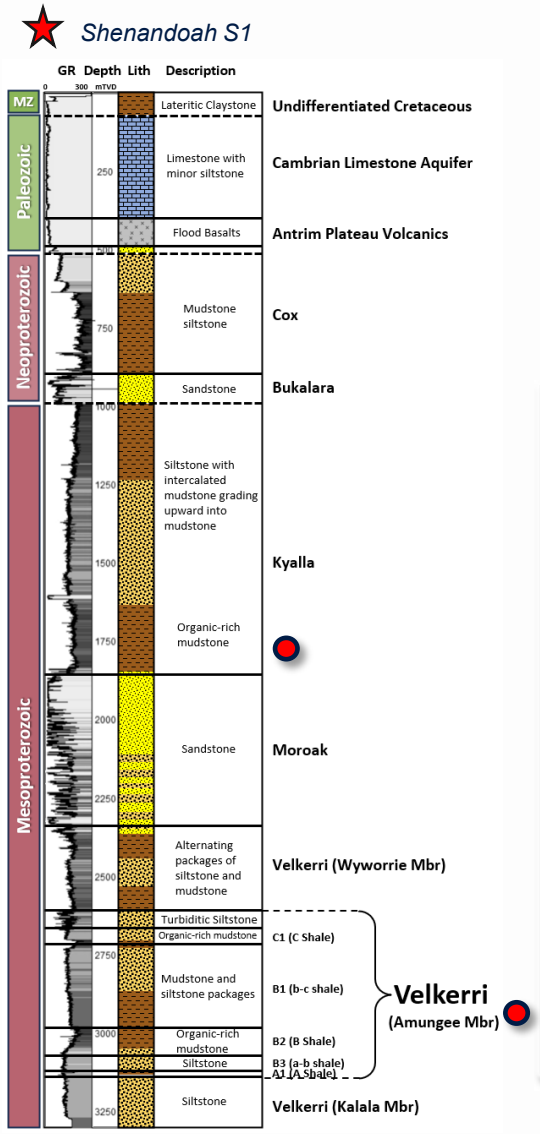
AGES 2026

Donny Loughry

SHENANDOAH SOUTH 2 WELLPAD, NORTHERN TERRITORY, AUSTRALIA

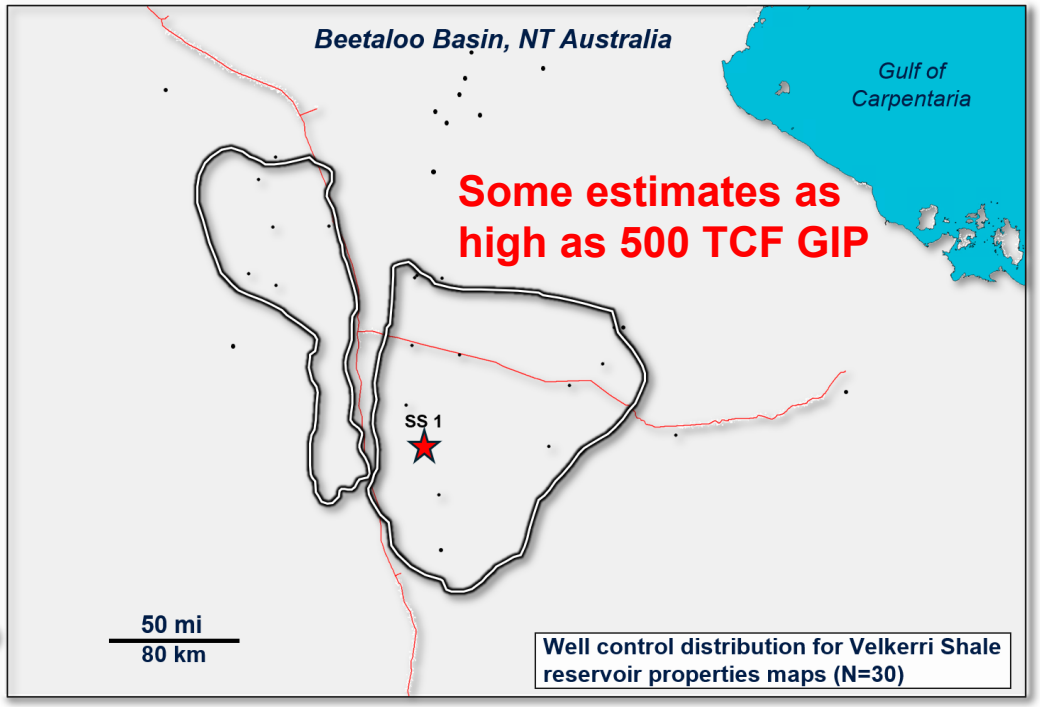
What is the Beetaloo Sub-basin?

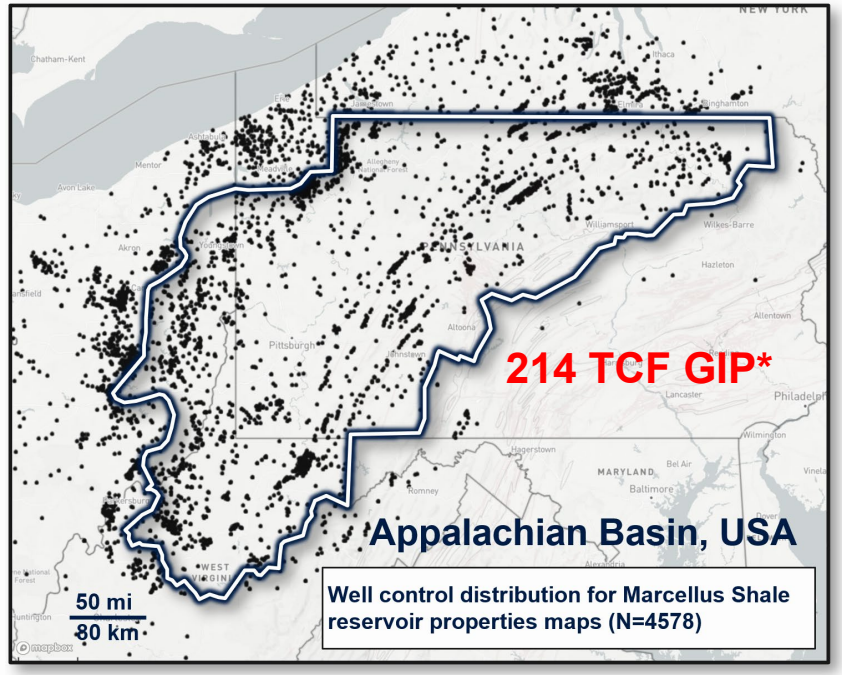
Potentially home the next world-class shale play

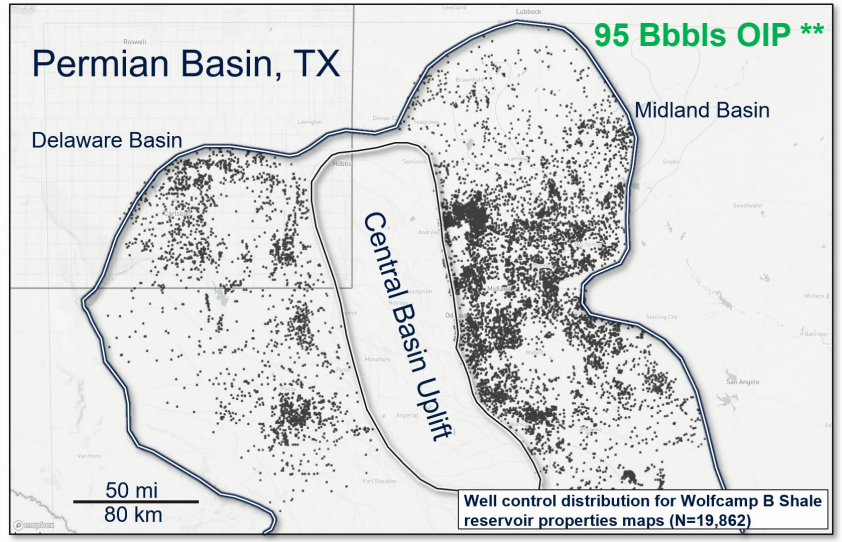


Getting up the learning curve quickly requires:

- Intimate knowledge of analog plays
- Differentiating between what you *can know* from your data vs. what you *want to know*
- Understanding that your <u>data</u> distribution <u>dictates</u> the <u>scale</u> at which you can observe (and predict)





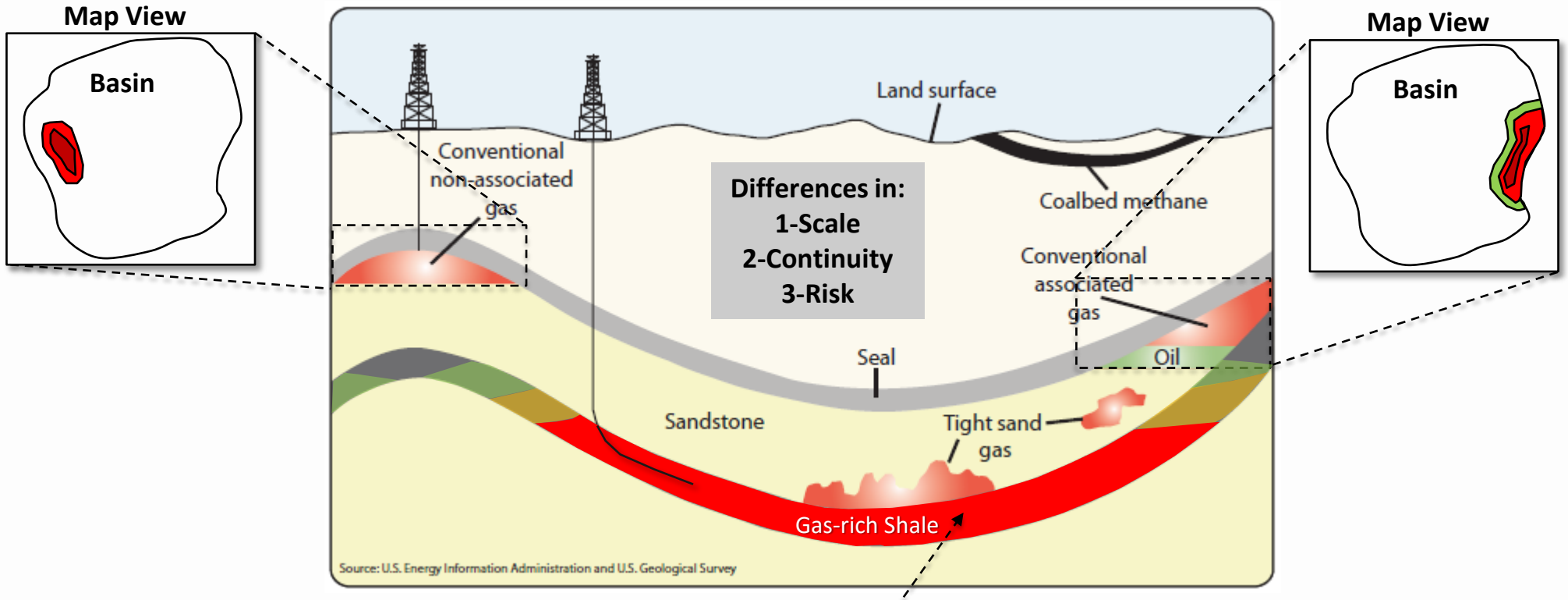


*USGS (2019). USGS Estimates 214 trillion cubic feet of Natural Gas in Appalachian Basin Formations

**DOE (2006) Basin Oriented Strategies for C02 Enhanced Oil Recovery: Permian Basin : netl.doe.gov/sites/default/files/2021-03/Permian.pdf

Conventional vs Resource "Continuous" Plays

Shale plays have lower geologic risk



Geologic Risks Conventional Plays

- Reservoir (por/perm)
- Source (org-rich shale)
- Trap/Seal
- Maturity
- Timing of HC Migration
- Migration Pathway

Geologic Risks Resource Plays

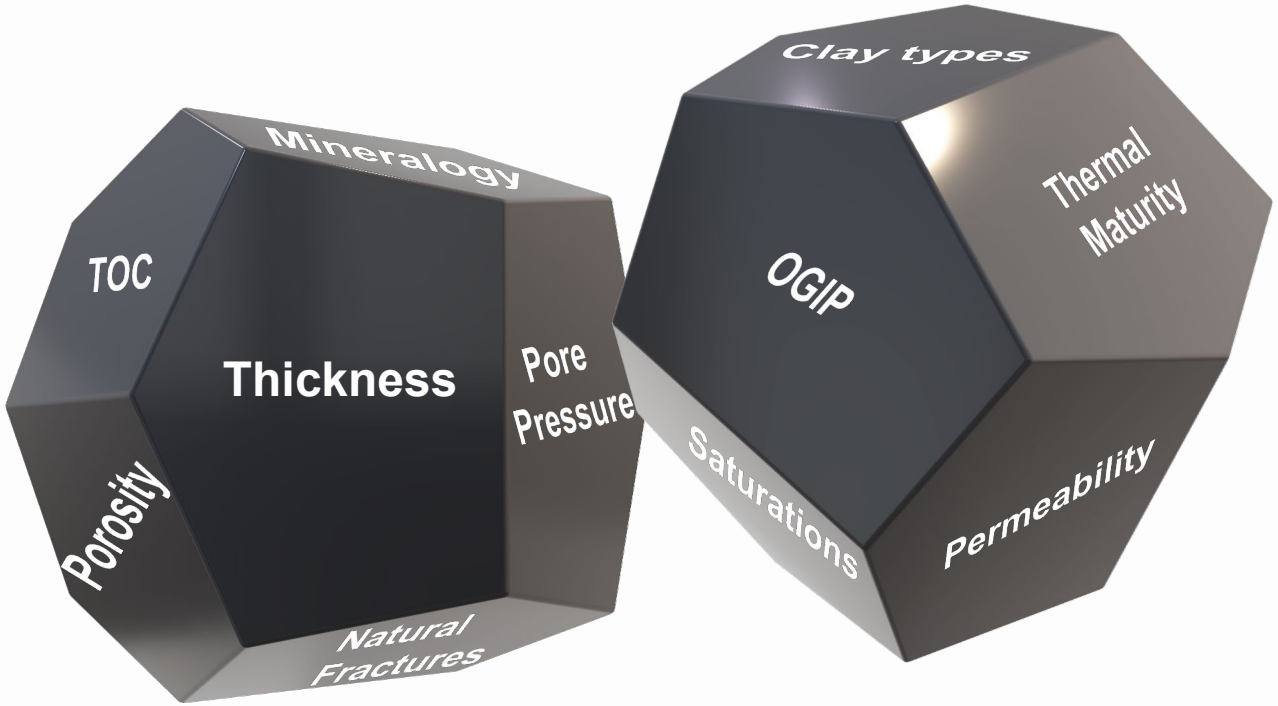
- Reservoir (por/perm) } Combined
- Source (org-rich shale) } Combined
- Trap/Seal
- Maturity/Pressure
- Timing of HC Migration
- Migration Pathway

Figure Source: US EIA/USGS, modified

Rock and Reservoir Properties in Shale Plays–What Really Matters?

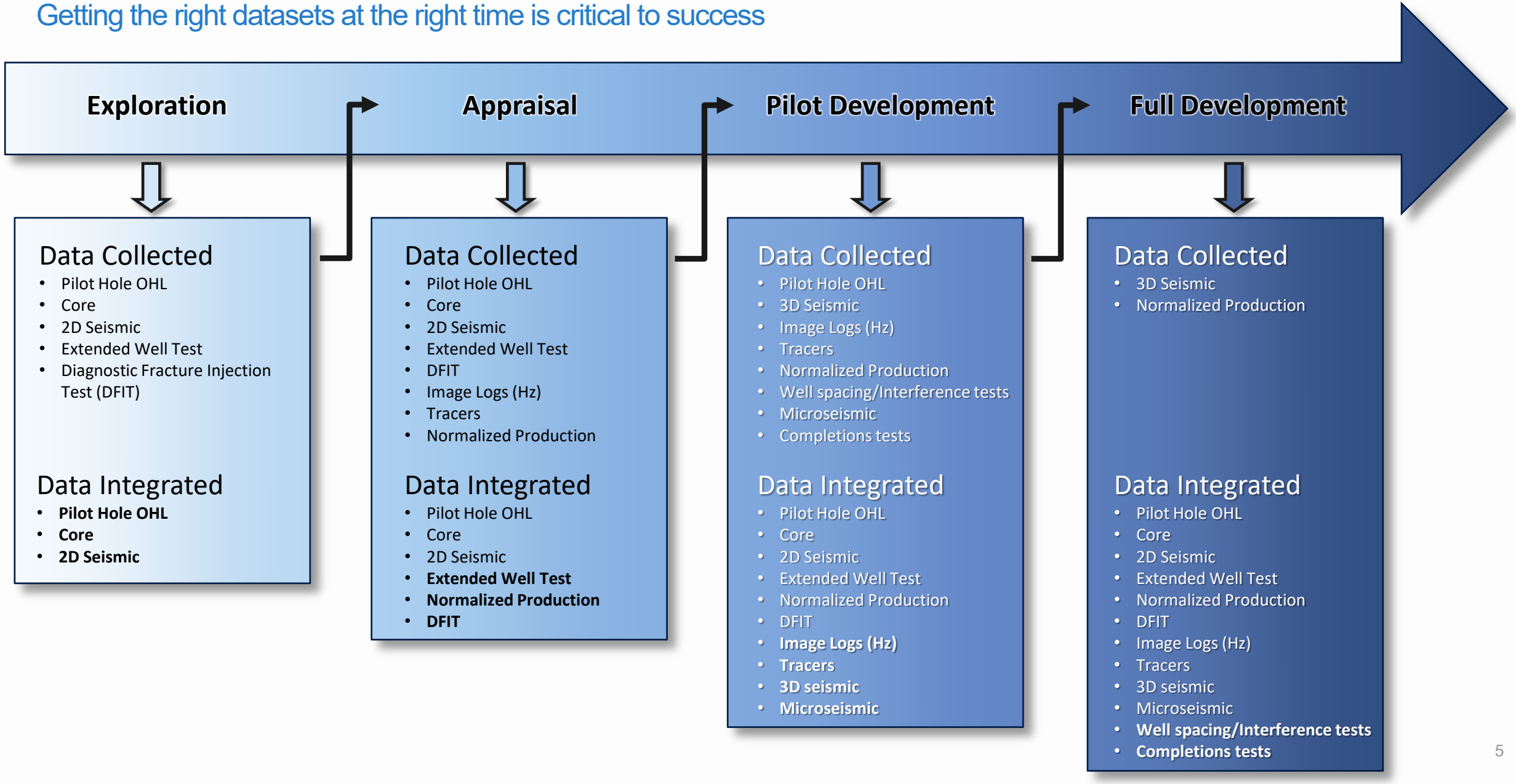
Do all properties have equal importance?

Depends on the spatial distribution of the data….
and the scale of observation……



Data Collection/Integration in Shale Plays by Development Phase

Getting the right datasets at the right time is critical to success



Exploration Phase

Define the Play Boundaries; Identify the Play Fairway

Exploration

Data Collected

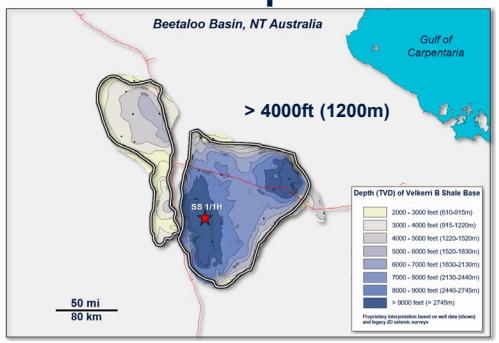
- Pilot Hole OHL
- Core
- 2D Seismic
- Extended Well Test
- Diagnostic Fracture Injection Test (DFIT)

Data Integrated

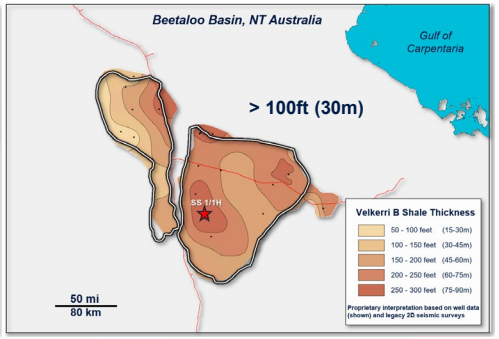
- **Pilot Hole OHL**
- **Core**
- **2D Seismic**

Loughry D, 2025. A hierarchical application of 20+ years of learnings from North American unconventional exploration and appraisal activities to delineate a 1MM-acre 'sweet spot' in the Beetaloo Basin shale gas play, Northern Territory, Australia. *Australian Energy Producers Journal* **65**. doi:10.1071/EP24134

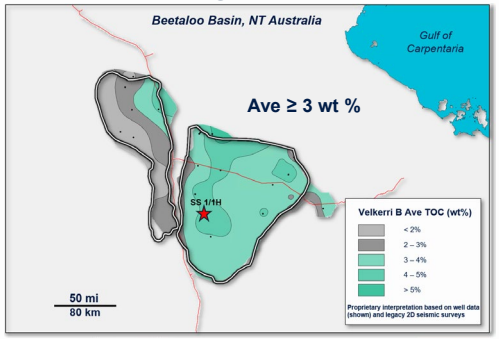
Depth



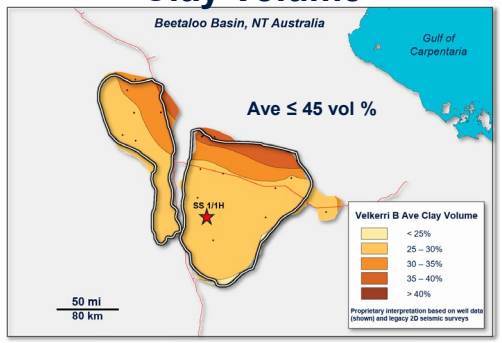
Thickness



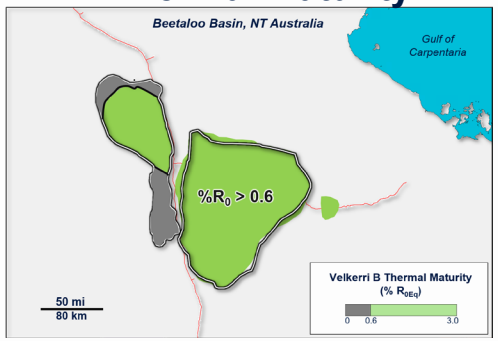
Total Organic Carbon



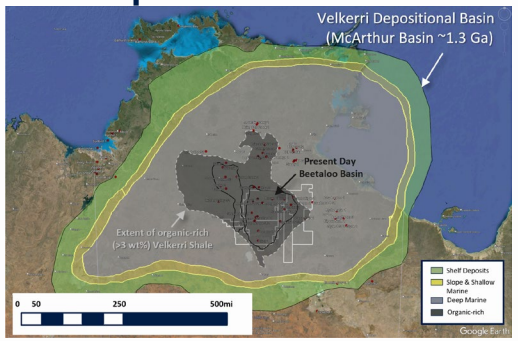
Clay Volume



Thermal Maturity



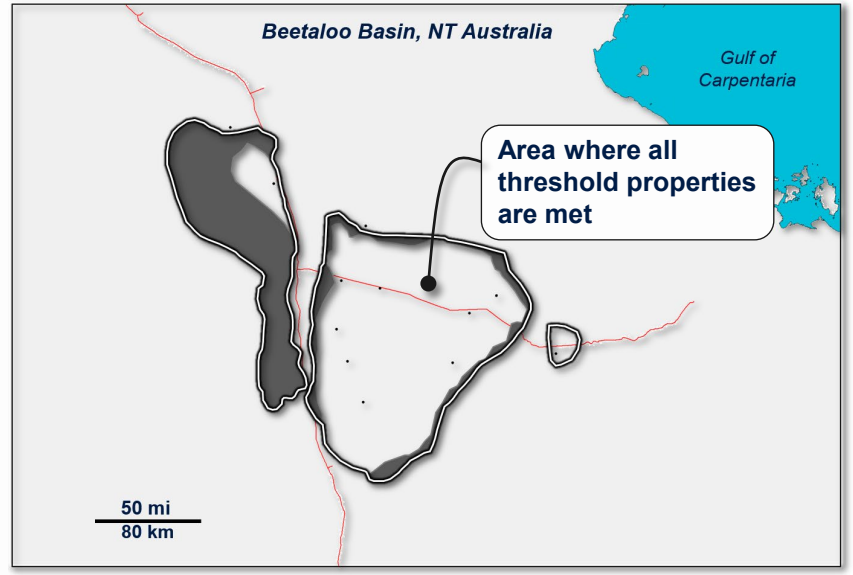
Depositional Facies



Beetaloo map data source: Proprietary and public data

Velkerri B Shale Facies Distributions inferred from Crombez et al. (2023), AAPG Bulletin, v. 107, No. 12, pp. 1901-1932

Play Fairway



Appraisal Phase

Illuminate likely Sweet Spots; Delineate Pilot Development Scale

Appraisal

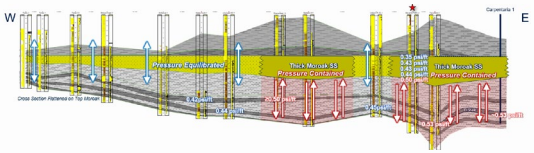
Data Collected

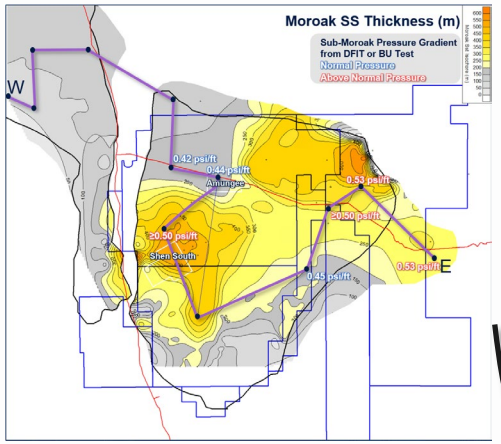
- Pilot Hole OHL
- Core
- 2D Seismic
- Extended Well Test
- DFIT
- Image Logs (Hz)
- Tracers
- Normalized Production

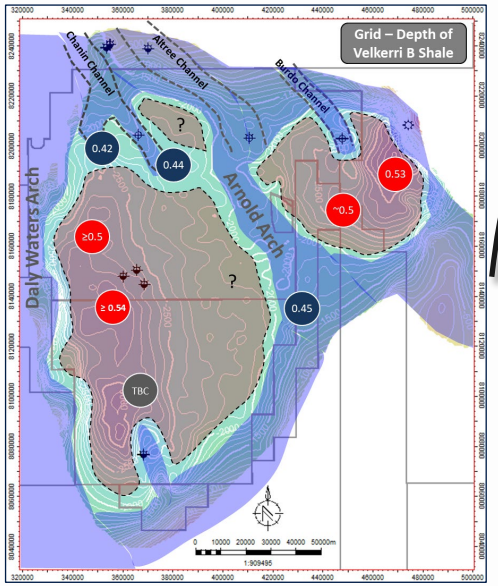
Data Integrated

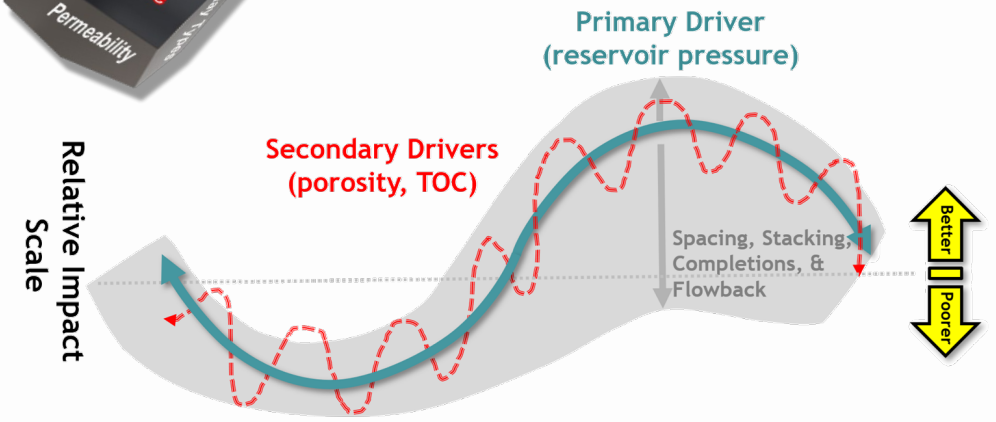
- Pilot Hole OHL
- Core
- 2D Seismic
- **Extended Well Test**
- **Normalized Production**
- **DFIT**

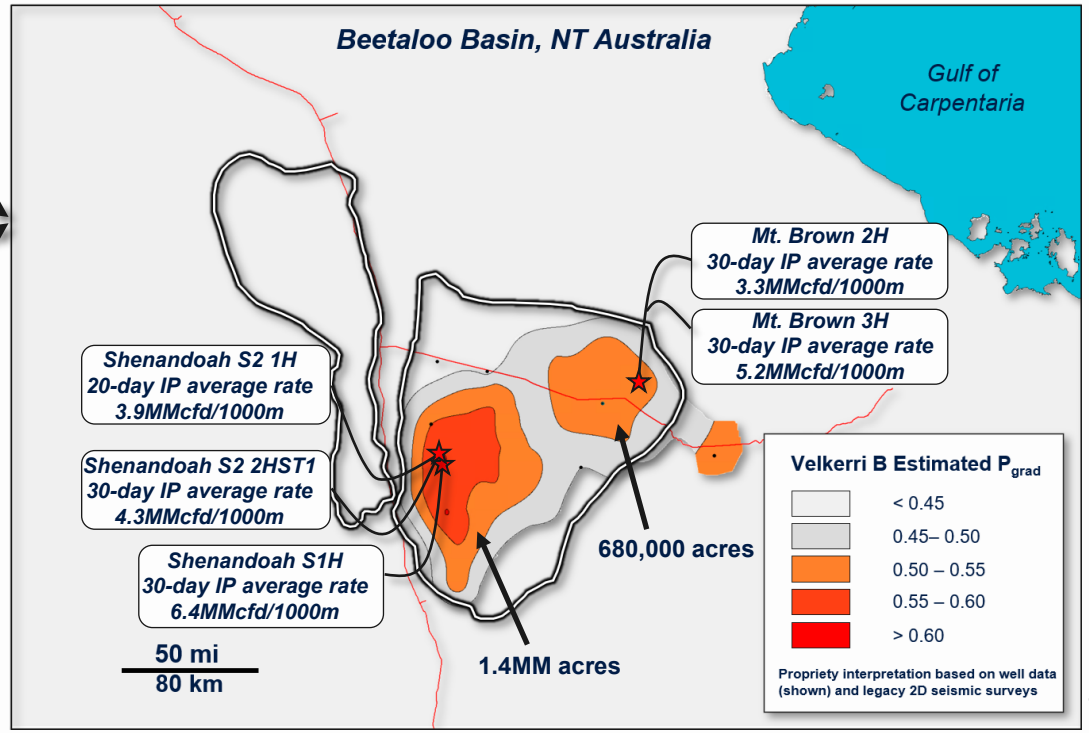
Pore Pressure Models Integrating Geological and Well Test data (DFITs)







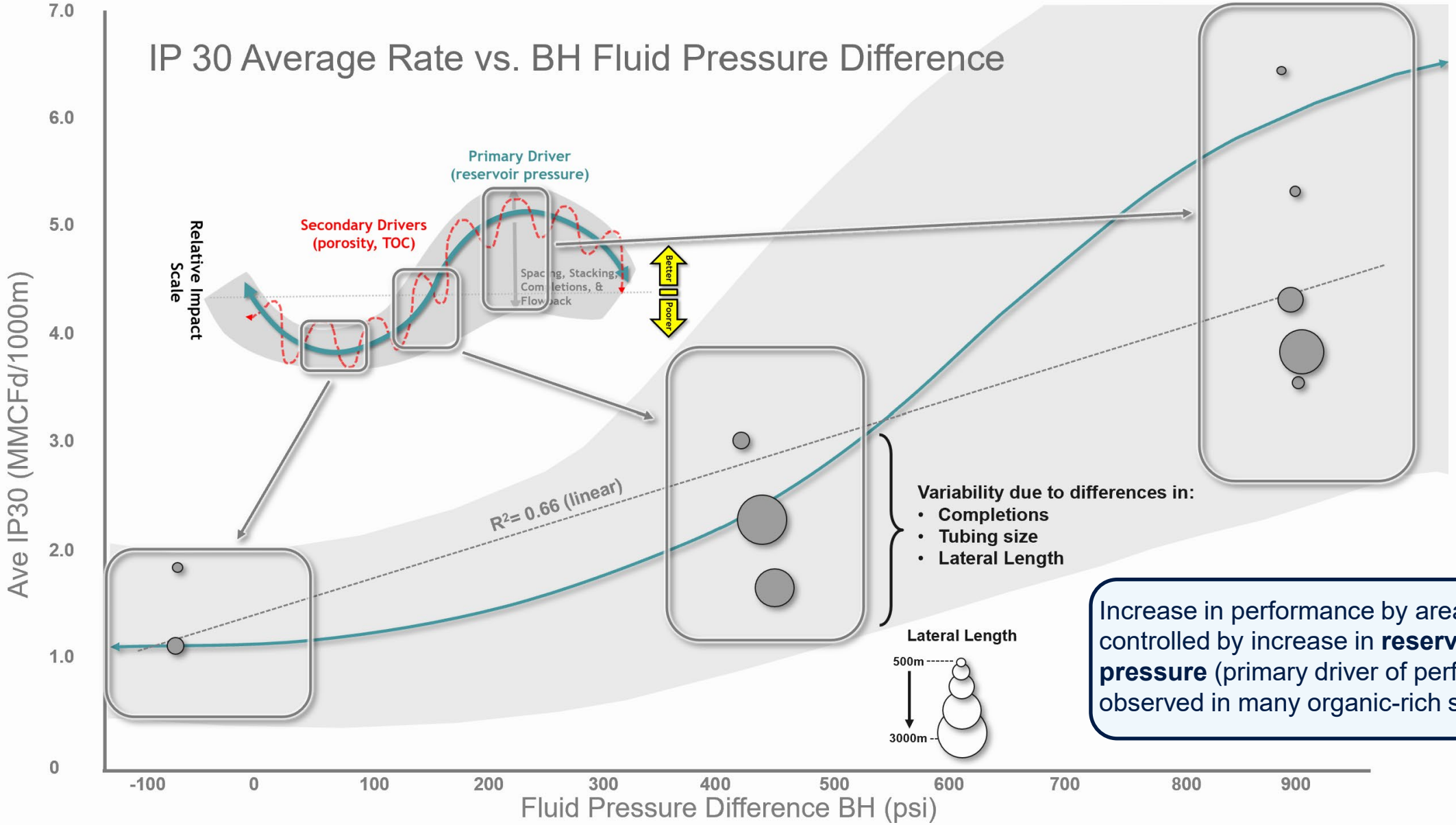




Beetaloo map data source: Proprietary and public data

Appraisal Phase

Verify with feedback from wells



Increase in performance by area largely controlled by increase in **reservoir pressure** (primary driver of performance observed in many organic-rich shale plays)

Pilot Phase

Demonstrate Repeatability—Image log interpretation for well planning

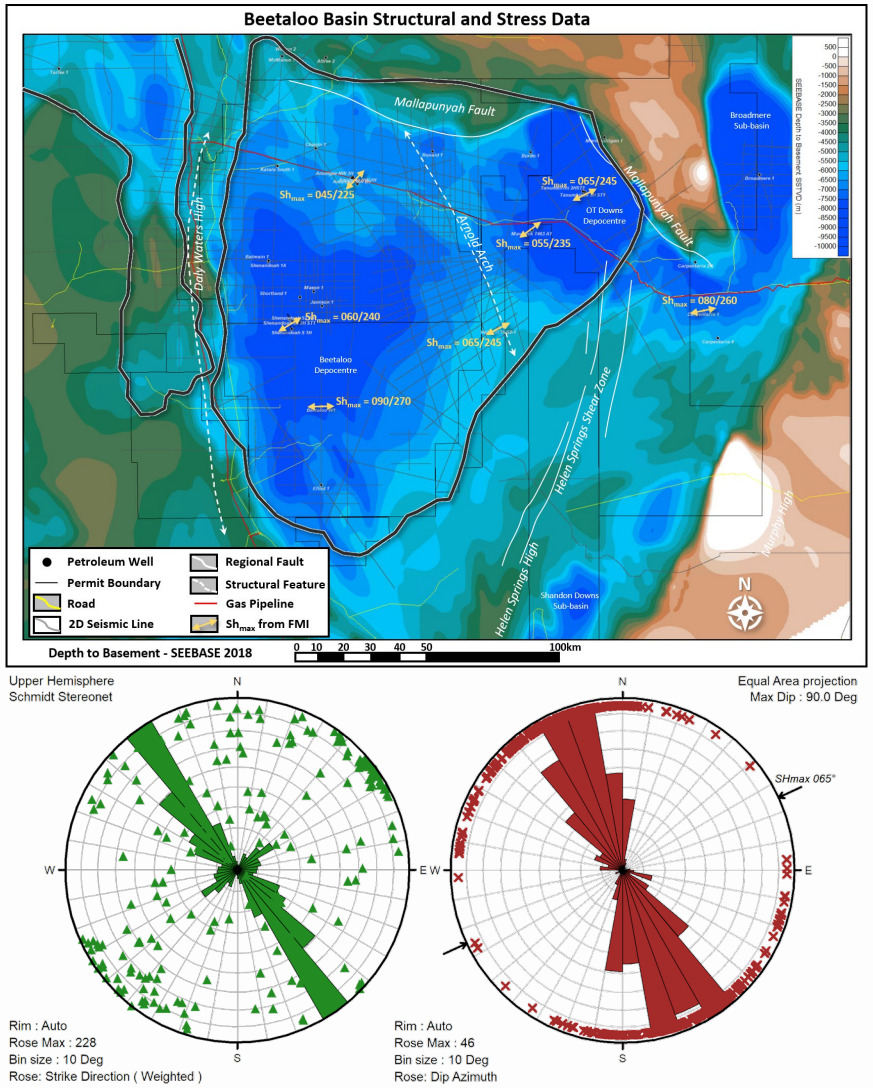
Pilot Development

Data Collected

- Pilot Hole OHL
- 3D Seismic
- Image Logs (Hz)
- Tracers
- Normalized Production
- Well spacing/Interference tests
- Microseismic
- Completions tests

Data Integrated

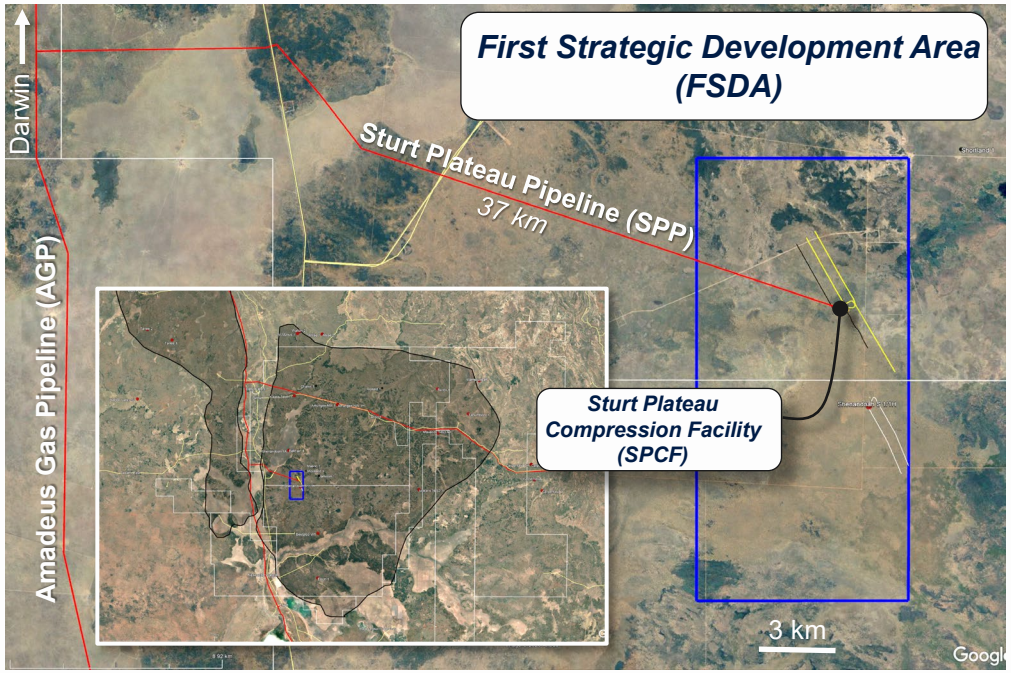
- Pilot Hole OHL
- Core
- 2D Seismic
- Extended Well Test
- Normalized Production
- DFIT
- **Image Logs (Hz)**
- **Tracers**
- **3D seismic**
- **Microseismic**



Breakouts and drilling induced tensile fractures indicate principal horizontal stress directions Sh_{min} & Sh_{max}

Tamboran's First Strategic Development Area (FSDA):

- Targeting first gas sales in Q3
- Gas Sales Agreement with NT Government for 40 TJ/day for ~15 years (8.5yrs + 6yr additional option)



Wells are drilled in the direction of Sh_{min}

Pilot Phase

Demonstrate Repeatability—3D Seismic for well planning

Example: Barnett Shale Play, Fort Worth Basin, TX, USA

Pilot Development

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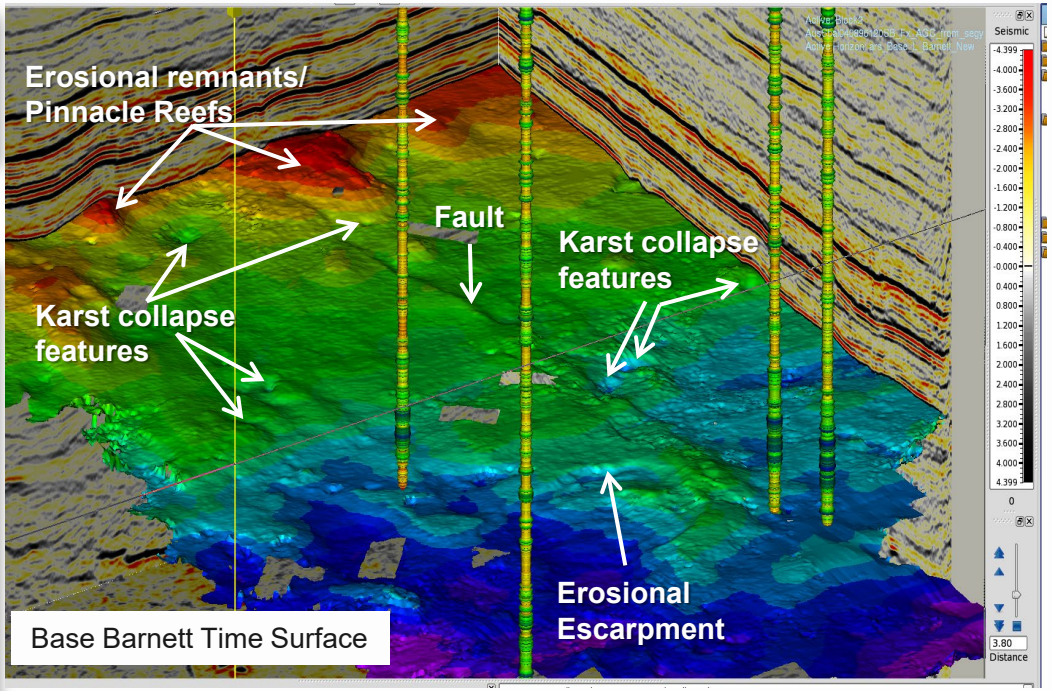
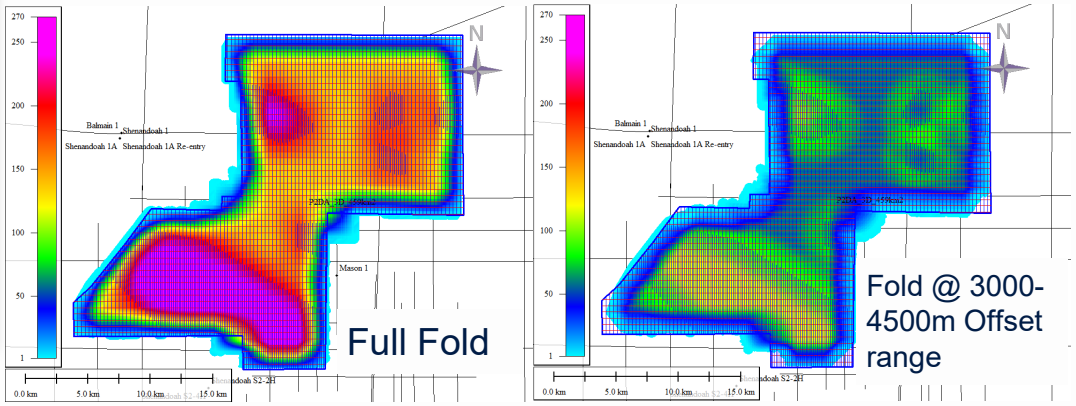
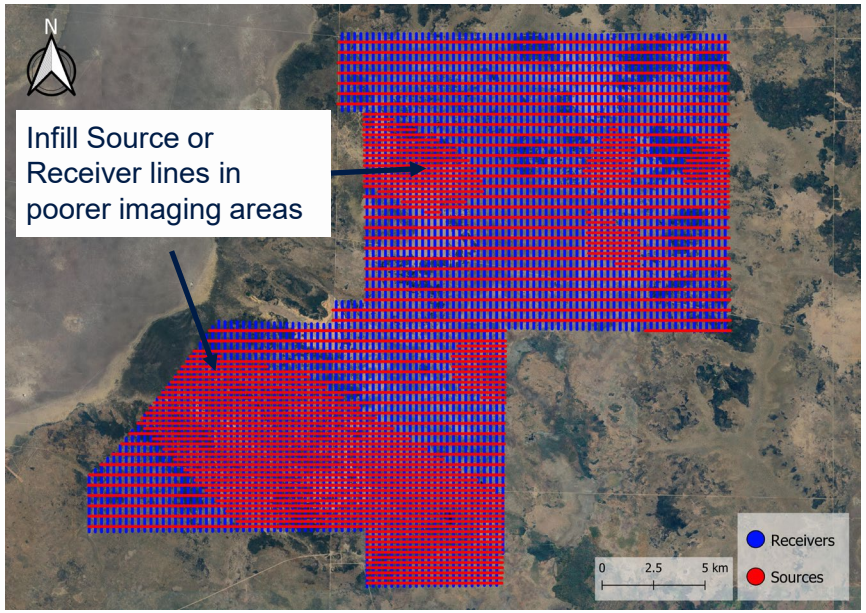




Tamboran is designing and planning to acquire the first ever 3D seismic dataset in the basin

- Much higher resolution than 2D seismic
- Allows for characterization of smaller scale faults and geohazards pre-drill
- Performed extensive testing on low environmental impact sources to limit land clearing



Full Development Phase

Optimize and Deliver at Scale

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Full Development

Data Collected

- 3D Seismic
- Normalized Production

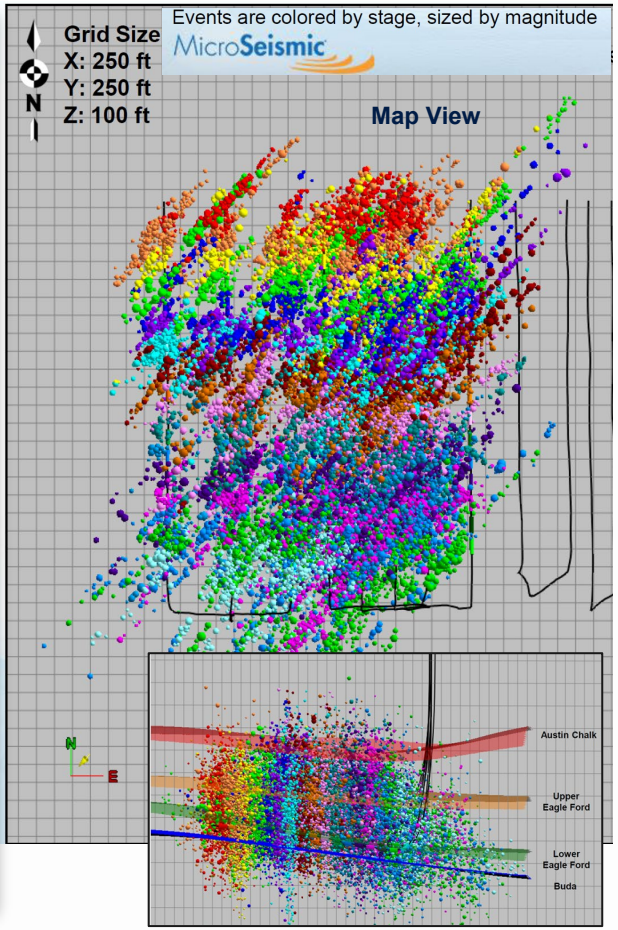
Data Integrated

- Pilot Hole OHL
- Core
- 2D Seismic
- Extended Well Test
- Normalized Production
- DFIT
- Image Logs (Hz)
- Tracers
- 3D seismic
- Microseismic
- **Well spacing/Interference tests**
- **Completions tests**

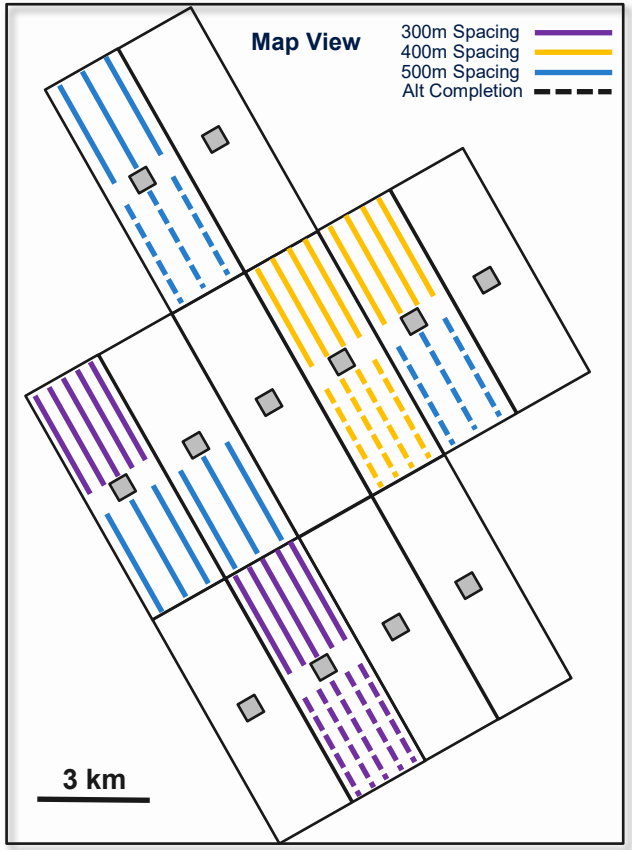
Full field development planning begins with understanding the maximum distance at which wells interact in each area

- Depends on stress orientations and magnitudes
- Can be influenced by completion sizes (volume of water pumped per foot)
- Microseismic acquisitions in combination with well spacing and well completions tests can help determine optimal development spacing

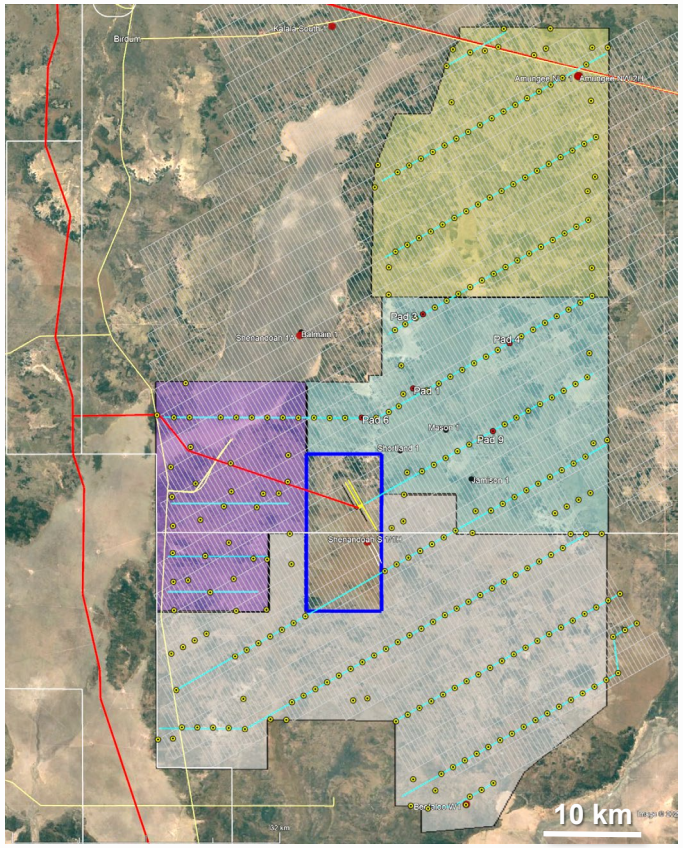
Example: Microseismic Tests



Example: Well Spacing & Completion Tests



Example: Indicative Full-Field Development



Thank You!

I would like to thank my colleagues at Tamboran for their assistance in carrying out these studies as well as the management at Tamboran for their support.

I also extend my gratitude to the organizers of this event for accepting this paper.