ASX:EEG

Carpentaria-1 Drilling Update
Liquids Rich Gas Intersected

12th October 2020

Level 19, 20 Bond Street
Sydney NSW 2000 Australia

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Highlights

Empire Energy Group Limited ("Empire" or the "Company") is pleased to provide shareholders with an operational update on its 100% owned and operated Carpentaria-1 exploration well in EP187, located on the eastern side of the Northern Territory's Beetaloo Sub-basin.

Highlights include:

- **Empire has intersected an extensive interval of liquids rich gas in the Velkerri Shale based on mud gas liquids readings**
- **The proportion of liquids rich gas intersected in the Velkerri dramatically exceeds that of analogue wells previously drilled across the Beetaloo Basin and materially exceeds Empire's pre-drill expectations**
- **The Velkerri Formation in Carpentaria-1 is nearly 1,000m thick**
- **The substantial proportions of heavier end, higher value liquid hydrocarbons indicated in the target Velkerri Shale will materially enhance the economics of any future EP187 production because liquid hydrocarbons attract higher oil linked market pricing than dry gas, opening up additional commercialisation options for Empire**
- **The Velkerri Shale interval in EP187 is shallower than analogue wells in other parts of the Beetaloo Basin with equivalent thickness and gas shows, resulting in reduced drilling costs**
- **Appraisal of the liquids-rich gas Velkerri Shale targets is planned for early in the 2021 Dry Season including fracture stimulation and flow testing**
- A shareholder briefing call will be conducted at 2pm AEDT today. Details can be found below.

Comments from Managing Director Alex Underwood:

We are delighted to announce that we have intersected liquids-rich gas across a thick and contiguous Velkerri Shale section in Carpentaria-1, Empire's first exploration well in its highly prospective Northern Territory petroleum acreage.

This result has pleased the Empire team. In the pre-drill planning we have worked with various seismic interpretations and our 'most likely' model was that we would encounter the Velkerri Shale at greater depth, and that it would tend to drier gas. This had been the experience of the wells drilled across the Beetaloo Basin that have targeted the Velkerri Shale.

The presence of high levels of associated gas liquids in the target shales is encouraging for future commercial production scenarios because high-value liquids from produced gas can significantly enhance economics.

The shallower depths at which we have intersected the Velkerri Shale will reduce development costs in future drilling programs.

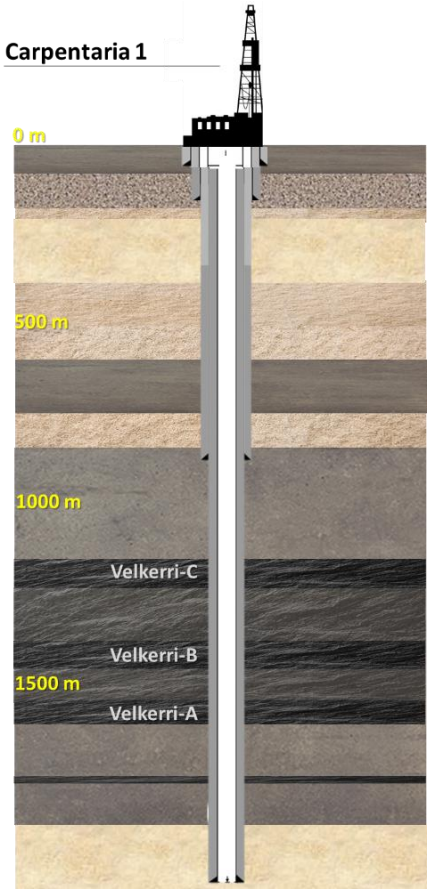
We will now further appraise the Velkerri Shale sequences with an extensive formation evaluation program commencing within the week. Fracture stimulation and flow testing is scheduled for Q2 2021, which in the success case will allow Empire to book maiden contingent resources including higher value liquid hydrocarbons not previously expected.

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Geological Update

The Velkerri Shale was intersected from 833m MD to 1,831m MD (top of the Upper Velkerri Shale to top of the Bessie Creek Sandstone). This was intersected at a shallower depth than pre-drill prognosis. Such a reinterpretation of stratigraphy is not uncommon in frontier exploration plays with sparse 2D seismic coverage. The nearest control well is more than 60km away.

Background mudlog gas chromatograph readings were elevated across the Velkerri Formation with peak mudlog gas readings over the Middle Velkerri C[1] (from ~1,105m MD to ~1,160m MD), Middle Velkerri B[1] (from ~1,320m MD to ~1,372m MD) and Middle Velkerri A[1] (from ~1,490m MD to ~1,544m MD). Strong mud gas readings were also observed in the interval between the Middle Velkerri B and the Middle Velkerri A Shales.

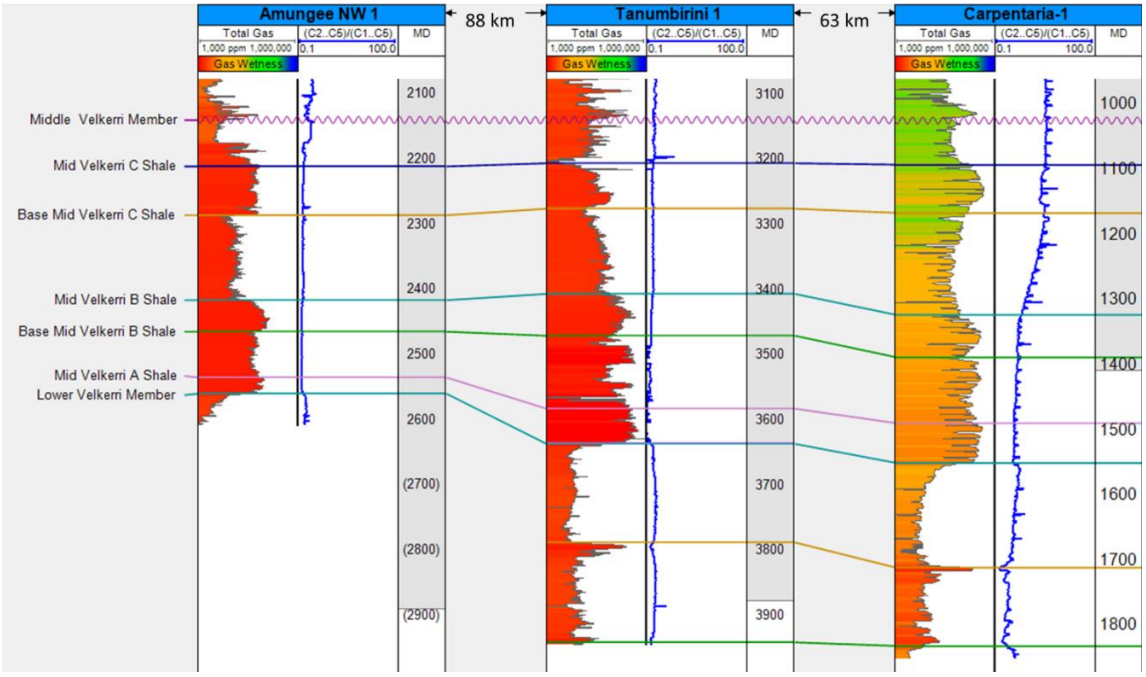


Carpentaria-1 well schematic utilising new well control

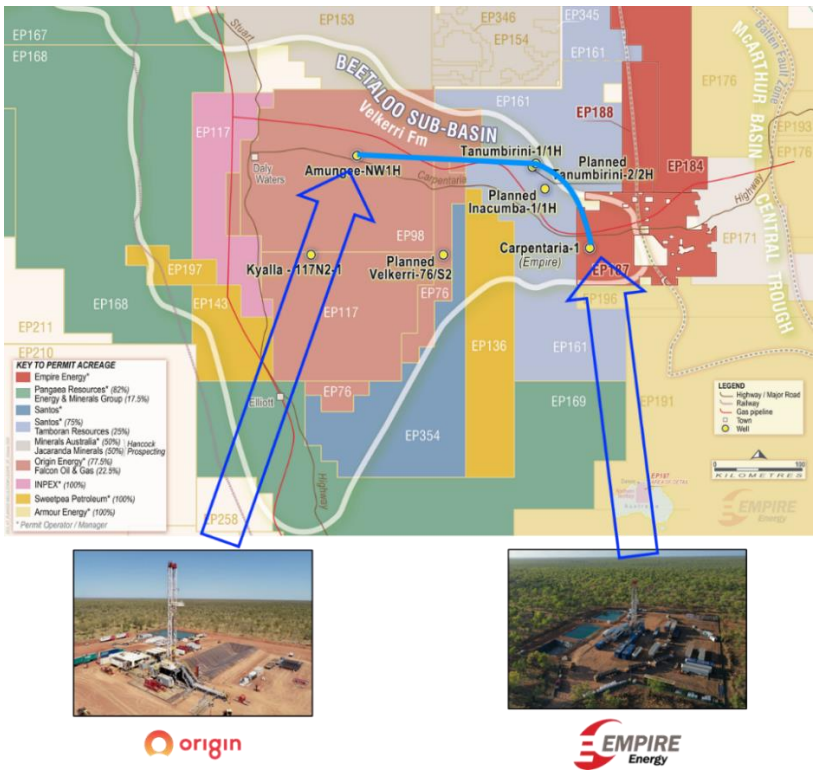
The Velkerri Shale intersected in Carpentaria-1 has comparable thickness to other wells in the Beetaloo Basin including Santos' Tanumbirini-1 vertical well where equivalent elevated gas shows were recorded. Tanumbirini-1 was flow tested across these intervals earlier this year following a vertical fracture stimulation with peak flow rates of over 1.2 mmcf / day which, according to Santos, exceeded initial expectations. Santos' preliminary gas

[1] Formation picks are preliminary and may be revised following upcoming wireline logging

composition analysis reported >90% methane and 3% ethane[2], indicating relatively dry gas in Santos' work program areas compared to Empire's mudlog recordings indicating liquids-rich gas in Carpentaria-1.



Simplified comparative log well section indicating relative thickness, total gas and gas wetness in key wells drilled in the Beetaloo Basin (Amungee NW-1, Tanumbirini-1 and Carpentaria-1). Sources: Northern Territory Geological Survey and Empire Energy data. Red colours indicate dry gas while yellow and green indicate liquid-rich gas



origin

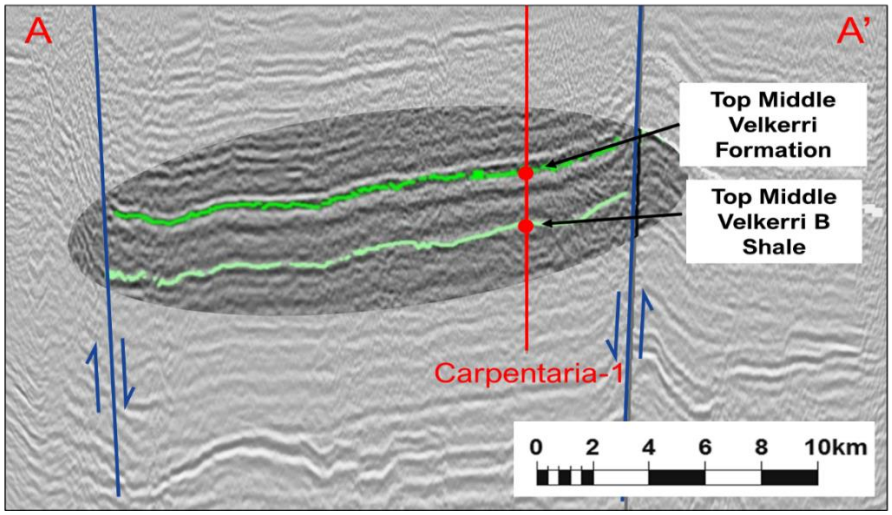
EMPIRE Energy

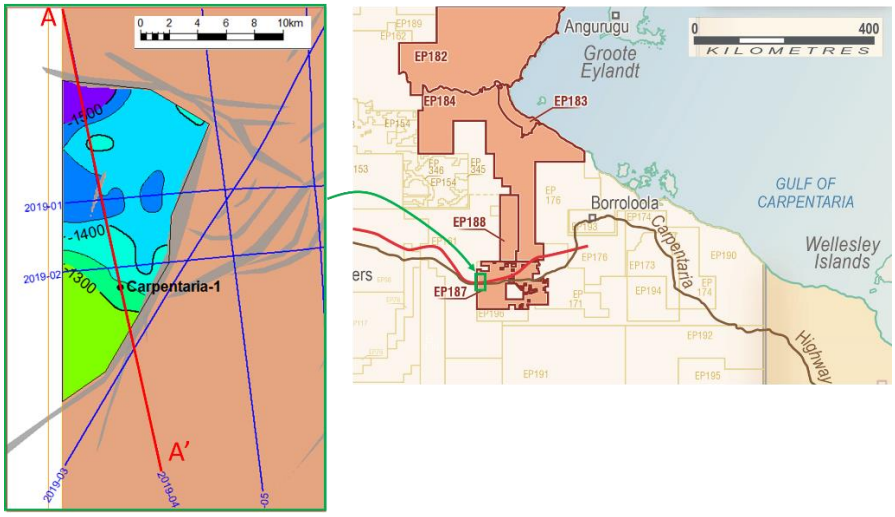
Map demonstrating line of section of the key Beetaloo Basin wells shown in the above simplified log well section

[2] Santos Ltd Fourth Quarter Activities Report, released to ASX on 22 January 2020

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Carpentaria-1 is located within a 40,000-acre (160 km^2) fault block that Empire has defined as its Phase 1 Work Program Area. Preliminary post-drill interpretation of Empire's 2019 seismic data which can now be confidently tied to Carpentaria-1 well control demonstrates that Carpentaria-1 is located shallower within the fault block, which dips and deepens to the North West of Carpentaria-1. Given the relatively gentle dip, Empire anticipates that future drilling within the Phase 1 Work Program Area is likely to also encounter liquids rich gas across the Velkerri Formation target shales.





Seismic section illustrating new interpretation of Empire's 2D seismic data tied to Carpentaria-1 well control including the position of Carpentaria-1 in Phase 1 Work Program Area. The Velkerri Formation is highlighted gently dipping gently to the Northwest.

The Kyalla shale interval was a shallow secondary target for Carpentaria-1. Empire's pre-drill subsurface mapping concluded it was restricted to a limited area in the west of EP 187. Drilling has now confirmed that the Kyalla shale is absent at the Carpentaria-1 location. Empire's pre-drill petroleum volumetrics estimates suggested that, if present at Carpentaria-1, the Kyalla shale would host a modest incremental prospective resource compared with the primary Velkerri shale target. This view was supported by Netherland, Sewell and Associates, Inc. ('NSAI') in its prospective resource report announced by Empire on 18th May 2020. NSAI attributed only 0.5% of total best estimate prospective resource across Empire's Northern Territory properties to the Kyalla Shale.

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Operational Update

As at 3pm AEDT on Sunday 11th October, 2020, Empire is currently drilling ahead as planned in the 8 ½" hole at a depth of 1,907m MD.

Given that Empire has intersected the target formations at shallower depths than initially predicted, we currently expect the final depth of the well will be reduced to ~2,200m MD, approximately 700m shallower that the pre-drill planned target depth.

Once the well reaches its final depth, an extensive formation evaluation program will be executed including logging, large diameter rotary sidewall coring and DFITs.

The well will then be cased, cemented, and suspended in preparation for re-entry after the Wet Season and the rig demobilised. The Empire team will continue preparing for the appraisal fracture stimulation and flow testing program in 2021.



Schlumberger 183 rig on location at Carpentaria-1

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Shareholder Briefing Conference Call

Empire's Managing Director, Alex Underwood, will host a conference call at 2pm AEDT today to update shareholders, investors and analysts on the drilling program results to date and forward plan. For those who are unable to attend, a recording of the call will be made available on Empire's website.

Access to the conference call is available by clicking on this link:
https://webcast.openbriefing.com/6623/

This ASX release has been authorised by the Managing Director

For queries about this release, please contact:

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APPENDIX A: DISCLOSURES UNDER ASX LISTING RULE 5.30

Name and Type of Well	Carpentaria-1, vertical exploration well
Location of Well	EP187, Northern Territory, Australia. 16°47'40"S 135°07'23"E
Working Interest	100%
Gross vs Net Pay for conventional target	N/A
Geological rock type of formation	Mesoproterozoic marine shale
Depth of zones tested	833m Measured Depth to 1,831m Measured Depth
Types of tests and duration	Gas chromatography continuously while drilling
Hydrocarbon phases	C1 – C5 (Methane, Ethane, Propane, Butane, Pentane)
Any other recovery e.g. formation water	N/A
Choke size / flow rates / volumes	N/A (to be flow tested following hydraulic fracturing in 2021)
Number of fracture stimulation stages	N/A (to be hydraulically fractured in 2021 subject to approvals)
Any other gases (e.g. CO2 / N2 / H2S, S)	<1% CO2

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