

## **CARPENTARIA-2H FLOW TESTING COMPLETE FOLLOWING CONTINUED STRONG GAS RATES**

- **Carpentaria-2H (“C-2H”) has produced a total of 323 Terajoules (“TJ”) (281 mmscf) over 127 days**
- Gas composition has remained consistent with high calorific value and extremely low CO<sub>2</sub>
- This equates to a normalized rate of **2.75 TJ (2.4 mmscf) per day per 1,000 metres for the entire test period**
- **The post-soak 2023 IP30 is now confirmed at 3.5 TJ (3.0 mmscf) per day per 1,000 metres** following updated gas composition analysis
- C-2H has been shut-in for availability as a future gas producer
- Carpentaria-3H (“C-3H”) will be reopened for flow testing once the soak period concludes
- Development planning for pilot project final investment decision continues. Multiple parties are expressing strong interest in purchasing Empire’s Beetaloo gas in both the pilot phase and full development phase
- NSAI updated resources report on track to be released prior to 30 May 2023 AGM

### **Comments from Managing Director Alex Underwood:**

"We are pleased to share the continued strong gas flow rates achieved at C-2H as they provide further confidence that an economic development in EP187 may be achievable.

The cumulative production of 323 TJ over 127 days from C-2H would equate to over 1,000 TJ cumulative production for an equivalent 3km horizontal development well over the same period. This is despite the unoptimized nature of the C-2H well that has tested multiple completion methodologies. If we assumed a gas price of \$10 / GJ, which is less than half the spot price at Wallumbilla on 22<sup>nd</sup> May 2023, on this basis an equivalent 3km development well could generate over \$10 million in gross revenue (before royalties) over an equivalent first 127 days of commercial production without any further well optimization (see Appendix B for further details). Such a level of gross revenue so early in the life of development wells may support field level economics.

Following recent regulatory implementation by the NT Government giving the Beetaloo a ‘green light’ to move into commercial production, and an extremely tight domestic gas market, line of sight towards commercialisation is getting clearer by the day."

## Carpentaria-2H Flow Rates

C-2H has flowed for 76 days following re-opening for ongoing extended production testing (“EPT”). During this period the well produced high calorific gas at an average rate of 2.55 TJ per day (2.2 mmscf per day), with a final rate of 1.85 TJ per day (1.6 mmscf per day). These flows were through 4 ½” casing and the well has not required production tubing or artificial lift at any time during testing.

Earlier in the testing period, Empire announced a material increase in C-2H average flow rate over 30 days (“IP30”) to 2.81 mmscf per day, which was 17% higher than the IP30 achieved during the initial 51-day EPT undertaken during Q3 2022. Prior to re-opening C-2H, the well had been shut-in for 5 months for C-3H drilling and stimulation operations, soaking and pressure build up.

The purposes of re-opening the well for continued EPT were multifold:

- to examine the benefits of “soaking” in the Beetaloo;
- to further refine the production type curves for pilot project planning and final investment decision; and
- to better understand the flow characteristics of the Velkerri B shale for future completion design.

These objectives have been fulfilled with positive results and Empire continues advancing its Beetaloo specific learning curve.

The table below summarises all of the C-2H results to date in both mmscf and TJ.

Empire intends to commence reporting gas volumes in Terajoules (“TJ”) and Petajoules (“PJ”) going forward, reflecting the basis on which Australian gas contracts are negotiated. Empire expects the high calorific value of its gas to attract a price premium over dry gas (i.e. methane only).

<b>Initial Production Measures</b>	<b>Average TJ per day</b>	<b>Average TJ per day (per 1,000m)</b>	<b>Average mmscf per day</b>	<b>Average mmscf per day (per 1,000m)</b>
Pre-Soak 2022 IP30	2.8	3.0	2.4	2.6
Post-Soak 2023 IP30	3.2	3.5	2.8	3.0
Combined IP90*	2.8	3.0	2.4	2.6
Duration of Testing - IP127*	2.6	2.8	2.2	2.4

\* Initial production period spanned a period of shut-in and pressure build-up

## Carpentaria Gas Composition

C-2H gas composition data has been obtained from gas sampled at the surface gas and water separator. The gas samples taken are from the combined flow from all the 21 hydraulic stimulation stages located within the Velkerri B shale. The gas composition data has remained stable across the testing periods.

Following compositional analysis, a conversion factor of 1.15 TJ per mmscf has been determined reflecting the high calorific value of Empire’s EP187 gas.

The conversion factor for dry gas is 1.055 TJ per mmscf.

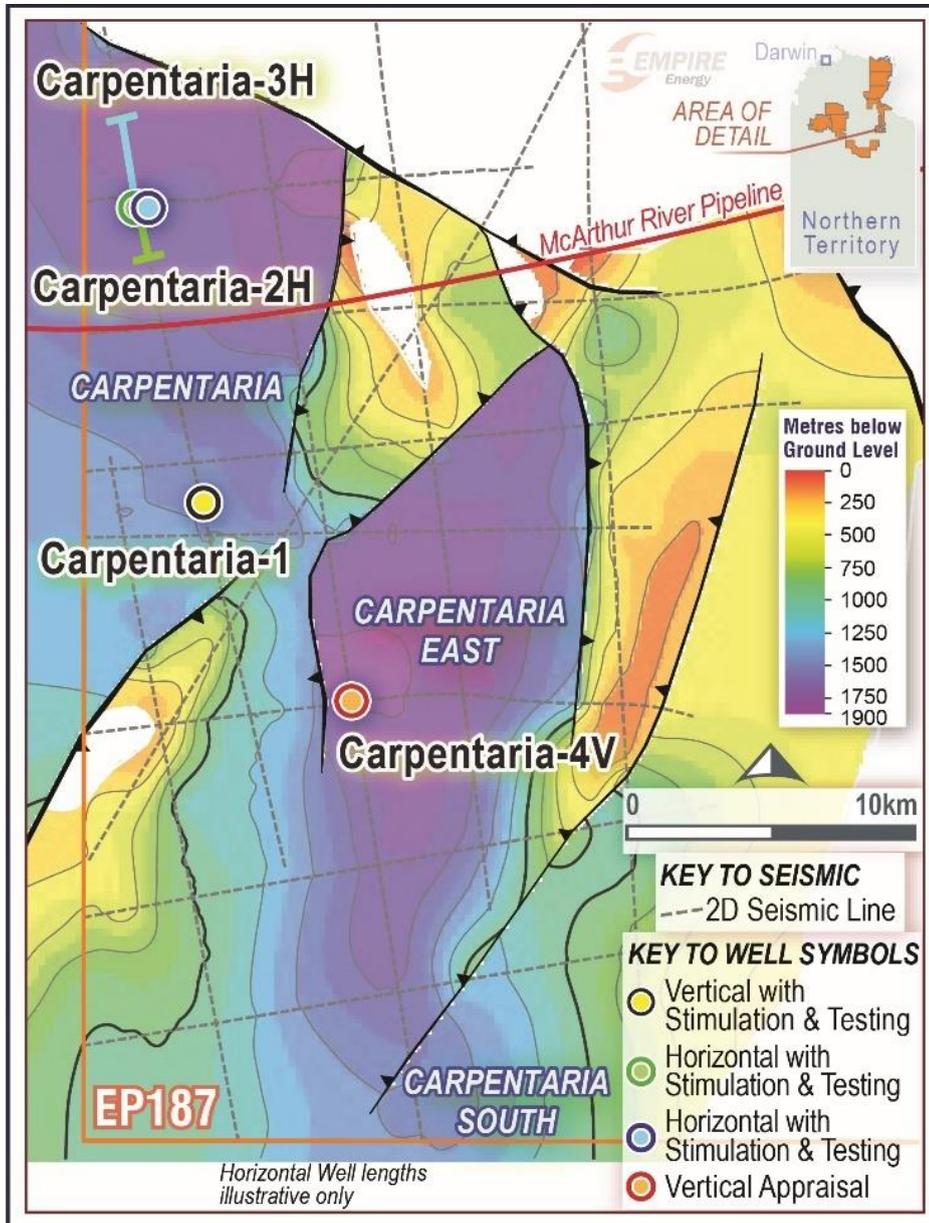
Gas Composition - Mole %				
Component			Q3 2022 Testing	Q1-Q2 2023 Testing
C <sub>1</sub>	Methane	Hydrocarbons	83.17	82.80
C <sub>2</sub>	Ethane		11.95	12.40
C <sub>3</sub>	Propane		1.47	1.50
C <sub>4</sub>	Butane		0.30	0.30
C <sub>5+</sub>	Pentane and Higher		0.06	0.06
He	Helium	Inerts	0.16	0.12
CO <sub>2</sub>	Carbon Dioxide		0.88	0.91
N <sub>2</sub>	Nitrogen		2.01	1.91
<b>Total Gas Composition</b>			<b>100.00</b>	<b>100.00</b>

*Compositional analysis of Carpentaria-2H gas during production testing*

Water and gas samples have been collected throughout the flow testing period for tracer analysis to determine stage contribution. This data is being modelled with existing stage contribution analysis from both C-2H and C-3H to further optimise Empire’s well completion strategy.

Preliminary tracer analysis indicates that some stimulated stages are generating a greater proportion of overall gas production than others, providing an opportunity for future optimization.

C-2H and C-3H are both currently shut-in and front-end engineering and design (“FEED”) for the Carpentaria Pilot Project final investment decision is ongoing.



Map showing depth to base of Velkerri B shale across the Greater Carpentaria project area

This ASX release has been authorised by the Managing Director

For queries about this release, please contact:

Alex Underwood, Managing Director

Ph: (02) 9251 1846

info@empiregp.net

## APPENDIX A

### DISCLOSURES UNDER ASX LISTING RULE 5

Carpentaria-2H	
LR 5.30 (a)	Shale gas well
LR 5.30 (b)	EP187 tenement, within the Beetaloo Sub-basin, Northern Territory
LR 5.30 (c)	Empire holds a 100% working interest and operatorship
LR 5.30 (d)	Not applicable
LR 5.30 (e)	Horizontal section has been drilled in the B Shale of the Velkerri Formation
LR 5.30 (f)	The depths of the 927 metre (3,041 feet) fracture stimulated horizontal section tested range from 1,585 to 1,594 metres (5,200 feet to 5,232 feet) True Vertical Depth (TVD) referenced to Rotary Table (6.9 metres (22.6 feet) above ground level).
LR 5.30 (g)	Extended production testing following fracture stimulation. <i>Phase-1 (pre-soak)</i> 51 days duration (to 6am ACST on Thursday 29th September 2022). <i>Phase-2 (post-soak)</i> 76 days duration (to 10:30 am ACST on Friday on 12th May 2023).
LR 5.30 (h)	Gas recovery - mole %: Methane 82.8, Ethane 12.4, Propane 1.5, Butane 0.3, Pentane and Higher 0.06
LR 5.30 (i)	<i>Phase-1 (pre-soak)</i> . 31,880 barrels of flowback fluid (including coiled tubing cleanout volume) recovered, representing 38% of total injected water. During the 51 days of measured gas flow, the rate of fluid flowback declined from ~1,500 bbl. / day to ~80 bbl. / day. <i>Phase-2 (post-soak)</i> . 4,761 barrels of incremental flowback fluid recovered, representing 5.67% of total injected water. The rate of fluid flowback declined from ~110 bbl / day to ~30 bbl / day
LR 5.30 (j)	Stimulated horizontal section of 927 metres (3,041 feet) <i>Phase-1 (pre-soak)</i> Choke size 64/64" to 68/64". Gas flow averaged 2.2 mmscf per day over the first 51 days (day 51 rate 1.82 mmscf per day). <i>Phase-2 (post soak)</i> Choke incrementally opened to 100/64". Gas flow averaged 2.2 mmscf per day over the 76 days flow (day 76 rate 1.6 mmscf per day).
LR 5.30 (k)	<i>Phase-1 (pre-soak)</i> Wellhead pressure range from 1,275 psi - 117 psi (Upper pressure relates to first flow through separator). Test duration 51 days (to 6am ACST on Thursday 29th September 2022). <i>Phase-2 (post soak)</i> Wellhead pressure range 1771 psi – 95 psi during the 76 days (to 10:30 am ACST on Friday on 12th May 2023).
LR 5.30 (l)	21 stages along an effective stimulated horizontal length of 927 metres (3,041 feet). 8 Crosslink, 7 Slickwater, 4 hybrid and 2 high viscosity friction reducer (HVFR) stages executed with a total 6.3 million lbs of proppant (sand) placed at an average proppant concentration of 2,066 lbs per foot
LR 5.30 (m)	Mole %: Helium 0.12%, Carbon Dioxide 0.91% and Nitrogen 1.91%
LR 5.30 (n)	Not applicable

## APPENDIX B

<b>C-2H Test Period</b>	<b>days</b>	<b>127</b>
<b>Cumulative Gas Produced</b>	<b>mmscf</b>	<b>281</b>
<b>Energy Conversion Factor</b>	<b>TJ/mmscf</b>	<b>1.15</b>
<b>Total Energy Produced</b>	<b>TJ</b>	<b>323</b>
<b>C-2H Stimulated Length</b>	<b>metres</b>	<b>927</b>
<b>Future Development Well Length</b>	<b>metres</b>	<b>3,000</b>
<b>Potential Gas Production over 127 days (Future 3km Well)</b>	<b>TJ</b>	<b>1,044</b>
<b>Assumed Gas Price</b>	<b>A\$/GJ</b>	<b>\$10.00</b>
<b>Potential Gross Revenue over 127 days (Future 3km well) excluding royalties</b>	<b>A\$</b>	<b>\$10,440,000</b>

*Total Energy Produced = Cumulative Gas Produced \* Energy Conversion Factor*

*Potential Gas Production over 127 days (Future 3km Well) = (Future Development Well Length / C-2H Stimulated Length) \* Total Energy Produced*

*Potential Gross Revenue over 127 days (Future 3km Well) = Potential Gas Production over 127 days (Future 3km Well) \* Assumed Gas Price*

*1 TJ = 1,000 GJ*