

ASX:EEG

## Beetaloo Operations Update

11 August 2022



Level 17, 123 Pitt Street  
Sydney NSW 2000

# Carpentaria-2H Generates Strong Initial Gas Flow Rates

- 2.6 million standard cubic feet (mmscf) per day sustained initial flow rate achieved over the first 91 hours of flow testing with minimal decline in gas flow rate over this period
- Flow rate was achieved from 927m effective stimulated horizontal length indicating a normalized rate of 2.8 mmscf per day per 1,000m of horizontal section
- 27.8% of injected fluids recovered while strong gas rates sustained without any artificial lift required (e.g. no nitrogen injection) demonstrating strong reservoir drive
- These early results provide Empire management with materially enhanced confidence that the project can be commercialized
- Flow testing is continuing. Data being collected and analysed by Empire's technical team will be incorporated into the completion design for the upcoming Carpentaria-3H

### Comments from Managing Director Alex Underwood:

"This is an outstanding result for Empire and our shareholders, and a historic moment in the advancement of the Beetaloo Basin. To our knowledge, this is the highest sustained gas flow rate of any well drilled in the Beetaloo Basin to date.

As previously announced, the primary goal of the Carpentaria-2H stimulation and flow testing program is not to achieve maximum flow rates but rather to assess which of the four fluid systems trialed (crosslink, HVFR, hybrid and slickwater) is likely to provide the best production performance in the Beetaloo Basin's shales and to optimise our completion methodology. Our successful stimulation of 21 stages using these various fluid systems and the placement of the entire planned quantity of proppant in those stages was a crucial first step.

Since then, strong and stable gas production rates, coupled with slowing water production, have given the Empire team enhanced confidence that we are rapidly approaching demonstration that the project is commercially viable, particularly given the significant cost advantage compared to other parts of the basin.

We don't yet know which of the 21 stages is giving us the strongest production rates, and therefore which fluid system will drive optimal production and cost performance in development scenarios. We will gather and analyse this data in the coming weeks and months. However, our preliminary view is that it is highly likely that some stages are generating more production than others.

These learnings, to be incorporated into our completion design for Carpentaria-3H, are likely to drive even stronger production rates in that well and future wells, consistent with the learning curves that were achieved across the major US shale basins.

Thank you to our team and shareholders for your support. I look forward to providing further updates as C-2H flow testing continues and we commence the next phases of the 2022 program."

Empire Energy Group Limited (“Empire”) is pleased to provide shareholders with an update regarding the ongoing flow testing of the Carpentaria-2H (“C-2H”) well in Empire’s 100% owned and operated EP187 tenement, located in the Northern Territory’s Beetaloo Sub-basin.

Fluid flowback from C-2H has progressed, with 27.8 per cent of placed fluids recovered to date and water rates declining as the well continues to “clean up”. It is particularly encouraging that C-2H was able to “clean up” (i.e. lift the injected fluids through the well bore to surface) through 4 ½” casing without the need for installation of smaller diameter 2 7/8” production tubing or any artificial lift assistance such as nitrogen enhancement.

Gas flow from C-2H commenced on 5 August 2022 at significant but unmeasurable rates due to slug flow<sup>1</sup>. Measured gas flow commenced at 10am on 7 August 2022 and has stabilised at an average rate of 2.6 mmscf per day across the stimulated horizontal section of 927 metres (a normalised rate of 2.8 mmscf per day per 1,000 metres) with minimal decline in production rate seen to date over the first 91 hours. The well is currently flowing at 2.5 mmscf per day.

Empire successfully placed 6,283,200 pounds of proppant across the 927 metre (3,041 foot) stimulated horizontal section, representing proppant concentration of 2,066 pounds per foot.

As previously announced, Empire is testing four different fluid systems. The trialling of systems included the successful placement of seven slickwater stages without ‘screening out’ which represents a first for any operator in the Beetaloo Sub-basin. Slickwater stimulation fluids may have significant positive cost reduction benefits in a future development scenario.

Empire expects that there will be differing rates of production across the 21 stages because of the fluid systems and perforation strategies tested, which will be determined by 11 gas tracers and 17 water tracers that have been placed across the C-2H horizontal section. Empire is collecting gas and water samples for gas composition and stage contribution analysis. The technical data collected will assist Empire with future completion design to drive optimised well production performance. Empire intends to apply the most productive system(s) when stimulating the Carpentaria-3H well to be drilled later in 2022.

Flow testing continues at C-2H.

This ASX release has been authorised by the Board of Directors

For queries about this release, please contact:

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<sup>1</sup> Slug flow is a common occurrence in the early stages of gas well production characterised by an alternating flow of liquid (in this case water) and gas resulting in an unsteady flow behaviour of the fluid

## Carpentaria-2H Achieves Strong Initial Gas Flow Rates



Flow testing underway at Carpentaria-2H in EP187

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### Disclosures under ASX Listing Rule 5

- LR 5.30 (a)** Carpentaria-2H is a shale gas well
- LR 5.30 (b)** Carpentaria-2H is located in Empire's wholly owned and operated EP187 tenement, located in the Beetaloo Sub-basin in the Northern Territory
- LR 5.30 (c)** Empire holds a 100% working interest and operatorship in Carpentaria-2H
- LR 5.30 (d)** N/A
- LR 5.30 (e)** The Carpentaria-2H horizontal section has been drilled in the B Shale of the Velkerri Formation
- LR 5.30 (f)** The depths of zones tested range from 1,585 to 1,594 metres True Vertical Depth (TVD) referenced to Rotary Table (6.9 m above ground level). The zones tested are along a 927-metre stimulated horizontal section
- LR 5.30 (g)** Flow testing of the well following the hydraulic stimulation of Carpentaria-2H. 91 hours duration to date (as at 5am Australian Central Standard Time on Thursday 11<sup>th</sup> August 2022) with flow testing ongoing
- LR 5.30 (h)** Hydrocarbon phases have not yet been assessed as gas composition will take several weeks to analyse, however mud log data indicates that methane is the dominant hydrocarbon phase of produced gas
- LR 5.30 (i)** 23,331 barrels of flowback fluid has been recovered to date, representing 27.8% of total injected water. During the 91 hours of measured gas flow, the rate of fluid flowback has declined from ~1,500 bbl / day to ~600 bbl / day and continues to decline
- LR 5.30 (j)** The orifice plate size is 2 1/8"
- Gas flow from Carpentaria-2H has stabilised at an average rate of 2.6 mmscf per day across the stimulated horizontal section of 927 metres with minimal decline in production rate to date (a normalised rate of 2.8 mmscf per day per 1,000m) over the first 91 hours. The well is currently producing at 2.5 mmscf per day
- LR 5.30 (k)** Wellhead pressure has ranged from 190 psi – 382 psi. Test duration 91 hours to date (as at 5am Australian Central Standard Time on Thursday 11<sup>th</sup> August 2022). Flow testing is ongoing
- LR 5.30 (l)** 21 stages along an effective stimulated horizontal length of 927 metres (3,041 ft). 7 slickwater stages, 8 crosslink stages, 4 hybrid stages and 2 HVFR stages were executed with a total of 6,283,200 lbs of proppant (sand) placed representing proppant concentration of 2,066 pounds per foot
- LR 5.30 (m)** Gas samples are being taken and will be analysed for gas composition including total inerts. Empire expects inert gas composition to be in line with Carpentaria-1 data which had ~3% inerts including <1% CO<sub>2</sub>