ASX: EEG

BEETALOO OPERATIONS UPDATE **6 MARCH 2023**

BEETALOO OPERATIONS UPDATE – SOLID PROGRESS BEING MADE TOWARDS COMMERCIALISATION

- Carpentaria-3H ("C-3H") has been flow tested for 27 days and is currently shut in for soaking (the practice of shutting in a well for a period following fracture stimulation to maximise long-term productivity). Gas production rate has ranged between 2.3 million standard cubic feet per day ("mmcf / day") and 5.7 mmcf / day with an average of 2.6 mmcf / day. Flow rates are yet to be optimized by the shut-in and soaking. Empire believes that higher flow rates will be achieved when the well is reopened.
- Carpentaria-2H ("C-2H") has been brought back online to test the benefit of soaking with **excellent results**. A sustained average gas flow rate of **3.24 mmcf / day over eight days ("IP8")** has been achieved over the 927-metre stimulated horizontal section, **approximately 21% higher** than the initial IP8 with a lower rate of decline.
- **This is a normalised flow rate of 3.5 mmcf / day per 1,000 metres at C-2H**, demonstrating that soaking has had a material beneficial impact on flow rates, consistent with productivity improvements seen in other wells in the Beetaloo Sub-basin and in US shale gas basins.
- Empire intends to continue flow testing C-2H to develop an early production type curve that will be incorporated into Empire's ongoing Front-End Engineering and Design ("FEED") process. Management is working towards pilot project Final Investment Decision ("FID") this year (subject to financing, gas sales agreement, regulatory approvals and Board approval).
- Petrophysical interpretation of Carpentaria-4V ("C-4V") data has confirmed that net pay in the Middle Velkerri B is 20% greater and ~150 metres deeper than at the C-2H / C-3H location. C-4V formation evaluation results are being incorporated into the updated independent resource assessment that is expected to be complete in the coming weeks.
- Current cash balance is $18.2 million with recent drilling and stimulation projects coming in well under budget. The $15 million credit facility is available but undrawn. Final Beetaloo Cooperative Drilling Program progress payment of ~$7.6m is expected to be received soon.
- An investor webinar including Q&A will be conducted today at 11am AEDT during which Managing Director Alex Underwood will provide an overview of these results and investors can ask questions. Dial in details can be found below.

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Comments from Managing Director Alex Underwood:

"The Empire team is highly encouraged by the stabilised flow rates we have achieved at C-2H. At this stage, the rates appear to exceed thresholds that others in the Beetaloo have proposed as being commercial. Empire has high earnings leverage due to the reduced capital costs we enjoy at shallower depths than other parts of the Beetaloo and high net revenue interest (working interest adjusted for royalties) in our Beetaloo properties.

This result has significantly de-risked EP187 and propels us towards a final investment decision on our pilot project later this year. We are rapidly optimising how to drill, stimulate and complete the Middle Velkerri B shale, and expect further improvements as we drill future pilot wells that, along with C-2H and C-3H, will generate production revenue (subject to FEED, sales and transportation agreements, financing, regulatory approvals and FID).

Netherland, Sewell & Associates are due to upgrade our EP187 Contingent Resources including our recent C-4V results. We anticipate a material increase.

C-3H has remaining fluid that the Empire team wants to remove to see the full C-3H well result. We expect soaking to reduce water saturation and to increase gas pressure that will help to remove the remaining fluid, in addition to providing the other matrix gas benefits seen in C-2H.

The global gas market remains in serious structural deficit. **New sources of responsibly sourced, low CO2 gas are urgently required to avoid more seasonal price spikes.** The IEA recently forecast that LNG demand from the world's largest importer, China, is expected to increase by up to 35% this year as its economy reopens, but new sources of supply are not coming onstream quickly enough. The NT gas market is undersupplied due to production issues at legacy fields, so our short-term opportunity is to support the NT Government to ameliorate forecast gas shortfalls by bringing our pilot project online quickly.

These flow testing results reinforce our commercialisation strategy."

CARPENTARIA-2H UPDATE

C-2H was reopened on Friday 24th February after ~5 months of shut in to soak. Soaking is the practice of shutting in a shale gas well for a period following fracture stimulation to seek to improve long-term productivity through redistribution and / or interaction of the residual water with the rock. Productivity improvements have been achieved at other Beetaloo wells and in analogous US shale basins following the execution of such a strategy.

After reopening C-2H, production quickly built to over 3 mmcf / day and is now flowing at 3.25 mmcf / day. This represents a 33% increase compared to the corresponding flow rate after the first 8 days of pre-shut-in initial flow, a material improvement.

The well has been reopened with a restricted choke, with a current wellhead pressure of over 336 psi, which is double the wellhead pressure after the previous corresponding IP8 period. While lowering this flowing wellhead pressure would produce higher short term gas flow rates, Empire is maintaining a high back pressure and carefully managing the flowback to ensure full fracture connectivity is maintained. The gas is being produced up the 4 ½" casing without any artificial lift. No well intervention or optimisation was undertaken prior to restart, as the gas rate is sufficient to lift wellbore fluids in 4 ½" casing.

Third party flowback analysis carried out by Subsurface Dynamics Inc, an independent advanced reservoir engineering and geoscience firm based in North America, indicates that the material improvement in C-2H flow rate has resulted from reduced fractured area water saturation following water imbibition into the surrounding reservoir, removing water blockages to gas flow.

This confirms that Empire's soaking strategy has been effective and is improving gas flow rates which is likely to improve total gas recovery over the life of the well. It also confirms that the increased C-2H flow rate can be used to infer greater well productivity in development well planning.

C-2H well testing is continuing to confirm the longer-term benefits of soaking and to develop an upgraded IP30 type curve.

Gas flare at Carpentaria-2H

CARPENTARIA-3H UPDATE

C-3H has flowed at rates of up to 5.7 mmcf / day with an average production rate over the first 27 days of over 2.6 mmcf / day. The initial flow period showed an even shallower level of rate decline than seen on the initial C-2H flowback, indicating that the well is still cleaning up.

C-3H flowed up 4 ½" casing without the need for production tubing or artificial lift.

C-3H is now shut-in to test whether soaking, now demonstrated as highly effective at C-2H on the same well pad, will improve productivity.

The soaking of C-3H is expected to provide the fractured area matrix improvements seen in C-2H and in addition remove water by imbibition which will reduce the flowing bottom hole pressure and likely improve gas flow rates.

Higher water production during the initial flowback (due to pumping twice as much water to place twice as many fracture stimulation stages) created an estimated 20% higher bottom hole flowing pressure at the heel of the well compared to C-2H due to the density of the fluid lifted, which has impacted gas flow rates. In addition, the long undulating horizontal section in C-3H resulted in fluid and pressure surges during production ("slugging"). This slugging is likely to have created additional back pressure along the wellbore which has also contributed to gas production limitations.

While Empire expects the shut-in period and soaking to remove remaining fluids, there are alternative intervention options that are available if required. Any such intervention would be funded from cash at bank.

Early chemical tracer data from the international testing laboratories shows that the whole wellbore is contributing to gas flow.

Flowback analysis has been performed by Subsurface Dynamics Inc on the initial flow data that demonstrates that the connected fracture area is twice the size of C-2H stimulated area and that the majority of the fracture stages appear to be contributing along the wellbore based on the total stimulated reservoir (rock) volume.

C-3H was drilled and stimulated through a range of rock qualities within the Middle Velkerri B Shale and tracer data confirms that the higher graded rocks have produced at higher rates providing further definition over the future target reservoir window to optimise production.

C-3H trialed several fluid systems and ongoing tracer analysis is expected to provide further evidence on fluid selection and optimization.

C-3H was drilled and completed for $5.9 million below the risked budget.

Gas flare at Carpentaria-3H

CARPENTARIA-4V UPDATE

Early petrophysical interpretation indicates the net pay at the recently drilled C-4V well within the Carpentaria East Area is materially greater than the earlier drilled C-1V, C-2H and C-3H wells.

The greater depth of formation at C-4V is expected to improve gas in place and reservoir pressure. Porosity, gas saturation, and gross thickness are interpreted to be highly uniform between the drilled locations.

Further work will be carried out to determine whether the increased pay within the Carpentaria East area is due to lateral depositional changes or through post-deposition processes. This will help resolve lateral reservoir improvements throughout the permit. Sidewall cores taken from the Middle Velkerri A, Intra A/B, B and C shales during drilling have arrived in the USA and will be used for further calibration analysis.

BEETALOO COOPERATIVE DRILLING PROGRAM

Empire's wholly owned subsidiary, Imperial Oil & Gas Pty Limited, has three replacement grant agreements with the Australian Government under the Beetaloo Cooperative Drilling Program (the "Program"). Total grant funding of up to $19.4 million is being provided which offsets 25% of the cost of seismic acquisition and the drilling, hydraulic stimulation and flow testing of three horizontal wells (C-2H, C-3H and C-4V) in EP187.

Empire has submitted its final progress reports under the Program and expects to receive final grant funding under the Program of ~$7.6 million (ex-GST) in the coming weeks.

CONFERENCE CALL AND WEBCAST AT 11AM (AEDT) TODAY

Managing Director Alex Underwood will present via conference call and webcast commencing at 11am AEDT today. Details are as follows:

For Participants

Pre-Registration Link:

https://registrations.events/direct/OCP60701

Conference Call:

The conference call can be accessed by the telephone numbers below and quotation of the specified Conference ID number.

Conference ID number: 60701

Australia: +61 (2) 9133 7104 (can be used if dialing from international location)

For Listen Only

https://webcast.openbriefing.com/eeg_mu_2023/

This ASX release has been authorised by the Board of Directors

For queries about this release, please contact:

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DISCLOSURES UNDER ASX LISTING RULE 5

	Carpentaria-2H	Carpentaria-3H	Carpentaria-4V
LR 5.30 (a)	Shale gas well	Shale gas well	Shale gas well
LR 5.30 (b)	EP187 tenement, within the Beetaloo Sub-basin, Northern Territory	EP187 tenement, within the Beetaloo Sub-basin, Northern Territory	EP187 tenement, within the Beetaloo Sub-basin, Northern Territory
LR 5.30 (c)	Empire holds a 100% working interest and operatorship	Empire holds a 100% working interest and operatorship	Empire holds a 100% working interest and operatorship
LR 5.30 (d)	Not applicable	Not applicable	Net Pay: C Shale 50m (165ft), B Shale 50m (164ft), Intra A/B 75m (245ft), A Shale 59m (194ft)
LR 5.30 (e)	Horizontal section has been drilled in the B Shale of the Velkerri Formation	Horizontal section has been drilled in the B Shale of the Velkerri Formation	Vertical well drilled through the Velkerri Formation (C Shale, B Shale, Intra A/B and A Shale)
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).	The depths of the 1,989 metre (6,526 foot) fracture stimulated horizontal section tested range from 1,608 to 1,733 metres (5,275 feet to 5,685 feet) True Vertical Depth (TVD) referenced to Rotary Table (5.35 metres (17.5 feet) above ground level). 1,989 metres (6,526 feet) of the 2,632 metre (8,635 foot) horizontal section was fracture stimulated.	Not applicable – no production test undertaken
LR 5.30 (g)	Extended production testing following fracture stimulation. *Phase-1 (pre-soak)* 51 days duration (to 6am Australian Central Standard Time on Thursday 29th September 2022). *Phase-2 (post-soak)* 9 days (8 days steady) duration (as of 5:15 pm ACST on Sunday on 5th March 2023).	Extended production testing following fracture stimulation. 27.5 days duration (to 9am ACST on Friday 24th February 2023)	Not applicable – no production test undertaken

	Carpentaria-2H	Carpentaria-3H	Carpentaria-4V
LR 5.30 (h)	Gas recovery - mole %: Methane 83.17, Ethane 11.95, Propane 1.47, Butane 0.3, Pentane and Higher 0.06	Not tested, analysis undertaken on C-2H gas recovery is applicable due to proximity	Not applicable – no production test undertaken
LR 5.30 (i)	*Phase-1 (pre-soak).* 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 *Phase-2 (post soak).* 830 barrels of incremental flowback fluid has been recovered to date, representing 1% of total injected water. During the 8 days of steady gas flow, the rate of fluid flowback ranged from ~110 bbl/day to ~60 bbl/day	40,192 barrels of flowback fluid (including coiled tubing cleanout volume) recovered, representing 28.8% of total injected water. During the combined 27.5 days of measured gas flow, the rate of fluid flowback has declined from 3,600 bbl / day to 300 bbl / day	Not applicable – no production test undertaken
LR 5.30 (j)	Stimulated horizontal section of 927 metres (3,041 feet) *Phase-1 (pre-soak)* Choke size 64/64 to 68/64". Gas flow averaged 2.2 mmcf / day over the first 51 days (day 51 rate 1.82 mmcf per day). *Phase-2 (post soak)* Choke size incrementally building 16/64" to 49/64". Gas flow averaged 3.24 mmcf / day over the 8 days following steady flow (final rate on day 8 was 3.25 mmcf / day).	Stimulated horizontal section of 1,989 metre (6,526 feet) Initial flow to separator of 52/64" incrementally increasing to 128/64" during main flow Gas flow averaged 2.6 mmcf / day over the first 27 days (Day 27 rate of 2.3 mmcf per day).	Not applicable – no production test undertaken
LR 5.30 (k)	*Phase-1 (pre-soak)* Wellhead pressure range from 1,275 psi - 117 psi (Upper pressure relates to first flow through separator). Test	Wellhead pressure has ranged from 500 psi -120 psi (Upper pressure relates to first flow through separator). Test duration	Not applicable – no production test undertaken

	Carpentaria-2H	Carpentaria-3H	Carpentaria-4V
	duration 51 days (to 6am ACST on Thursday 29th September 2022). *Phase-2 (post soak)* Wellhead pressure range 1771 psi – 336 psi. Test duration 9 days (8 days steady) (as of 5:15 pm ACST on Sunday on 5th March 2023)	27.5 days (to of 9am ACST on Friday 24th February 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	40 stages along an effective stimulated horizontal length of 1,989 metres (6,526 feet). 16 Crosslink, 3 Slickwater and 21 hybrid stages executed with a total 12.8 million lbs of proppant (sand) placed at an average proppant concentration of 1,956 lbs per foot	Not applicable – no production test undertaken
LR 5.30 (m)	Mole %: Helium 0.16%, Carbon Dioxide 0.88% and other Inert volume 2.01%	Not tested, analysis undertaken on C-2H gas recovery is applicable due to proximity	Not applicable – no production test undertaken
LR 5.30 (n)	Not applicable	Not applicable	Not applicable