ASX ANNOUNCEMENT

4 June 2024

SIGNIFICANT HELIUM DISCOVERY AT STATE 16 WELL

GALACTICA PROJECT

Highlights

- Significant helium discovery confirmed at the State 16 SWSE 3054 development well.
- Laboratory analysis of reservoir samples show air corrected helium concentrations up to 1.90%, consistent with offset discovery wells.
- Peak flow rates as high as 313 Mcfd, stabilised at 285 Mcfd, consistent with adjacent Red Rocks commercialised development.
- CO_2 approaching 70% concentration has potential to contribute significant revenues.
- Results are being analysed by the Company's independent engineering consultants where a maximum stabilised rate and drawdown will be modelled for incorporation into development planning and economics
- The Company has filed a new OGDP for 5 additional development wells and is progressing the helium processing plant site permitting.

Blue Star Helium Limited (ASX:BNL, OTCQB:BSNLF) (**Blue Star** or the **Company**) is pleased to announce a significant helium discovery at the State 16 SWSE 3054 development well at its Galactica helium project in Las Animas County, Colorado.

State 16 well preliminary results

Drilling results

The well encountered the Lyons formation at a depth of 1,111.5 feet and was completed at its planned TD at the base of the upper sand of the Lyons formation at 1,211 feet.

Significantly, no water was encountered during drilling. Wireline logs confirmed this and show approximately 96 feet of high-quality sands in the upper Lyons production section (1,111.5 to 1,211 feet) to be gas saturated. The well flowed naturally during drilling.

Flow testing

A flow test has been undertaken comprising a 12-hour natural flow period followed by a 12-hour flow period under vacuum compression after which a 48-hour pressure build up was performed. The data is currently being evaluated by the Company's engineering consultants.

Positively, results during testing showed that the well will naturally flow at a sustained rate of 150 Mcfd with 5.5 psig flowing well head pressure, starting at a rate of 208 Mcfd and 6.5 psig flowing pressure.

During the flow test with vacuum compression a draw down to atmospheric pressure (0 psig) at the well head was maintained with rates of 285 Mcfd starting as high as 313 Mcfd with 2.5 psig flowing pressure.

Immediately after testing the wellhead pressure quickly built up to 8 psig, higher than previously seen when the well was shut in post drilling. These results indicate strong pressure and reservoir communication due to the high quality and highly permeable Lyons formation.

Significantly a larger compressor would be required to draw the well down to lower vacuum pressure due to the natural deliverability of the well. It is believed, based on these preliminary results, that increasing the draw down will significantly increase the sustainable flow rate.

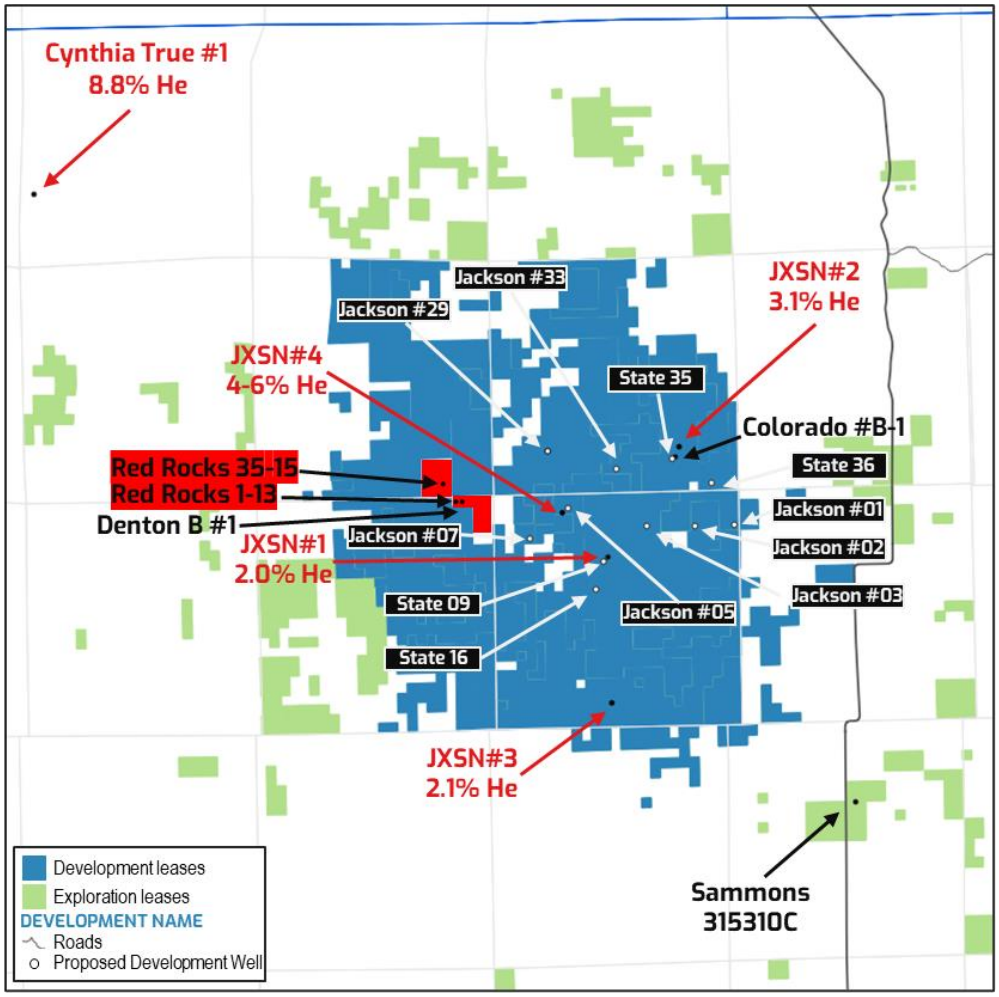
The Company's independent engineering consultants are evaluating the data from the flow test and pressure build up to determine a maximum stabilised rate and drawdown for the well which will be modelled for incorporation into development planning and economics.

These results are in-line with the Company's ongoing development planning and economic modelling and are consistent with the results from the adjacent commercialised helium development at Red Rocks (see map below).

Gas Composition

Lab analysis of representative reservoir samples taken during flow testing contained an average helium percentage of 1.65% and up to 1.90% when air-corrected. Reservoir gas compositions being approximately 1.65% helium, 28.05% nitrogen and 70.29% carbon dioxide from the lab analysis and 1.90% helium, 28.54% nitrogen and 69.56% carbon dioxide when air-corrected. These results are in line with offset wells and the Company's geologic model. Helium concentration is modelled to increase to the southwest where the Company is permitting further development wells and where the proposed helium processing site is to be located. Importantly the CO_2 content allows for this additional product stream to be captured, purified and sold, significantly contributing to revenues.

The well is currently completed for tie-in to production facilities. Commercial discussions with interested buyers for purified product have been ongoing since Q423.



Galactica/Pegasus Developments

Background

The Galactica project is part of the greater Galactica/Pegasus development, discovered by Blue Star in 2022. The Galactica/Pegasus development is a large-scale project with multiple potential product streams. Four existing Blue Star discoveries at Galactica/Pegasus via exploration wells JXSN#1 to JXSN#4 delivered gas flowing at 125 - 412 mcf/d and high air-corrected concentrations of 2.0 - 6.1% helium (see Table 1 and BNL ASX releases dated 7 June 2022, 29 September 2022 and 5 October 2022). The State 16 results are included in the table.

Table 1: Key results from recent Galactica/Pegasus State 16 and exploratory wells

Key parameters	JXSN#1	JXSN#2	JXSN#3	JXSN#4	State 16
Helium concentration (%)	1.98	3.14	2.14	4.20 & 6.06	1.90
Gas column in Lyons formation (ft)	217.5	101+	230	233.5	96+
Net pay in Lyons formation (ft)	143.5	101	153.4	133.5	96
Stabilized initial flow rate (Mcfd)	412	202	412	125	285

Development Planning

The Galactica/Pegasus development is further de-risked by the successful third-party commercialisation of adjoining Red Rocks helium project, via an IACX midstream leased process facility arrangement.

There are currently a range of development and commercialisation pathways under review, including a leased plant and third party operated option. The final development is expected to include a CO_2 production stream, in addition to helium revenues. Engineering and market work continues to refine the development configurations, forecast production and cost estimates.

The Company has filed a new OGDP for 5 additional development wells and is progressing the helium processing plant site permitting.

This ASX Announcement has been authorised for release by the Board of Blue Star Helium Limited.

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About Blue Star Helium:

Blue Star Helium Ltd (ASX:BNL, OTCQB:BSNLF) is an independent helium exploration company, headquartered in Australia, with operations and exploration in North America. Blue Star's strategy is to find and develop new supplies of low cost, high grade helium in North America. For further information please visit the Company's website at www.bluestarhelium.com

About Helium:

Helium is a unique industrial gas that exhibits characteristics both of a bulk, commodity gas and of a high value specialty gas and is considered a "high tech" strategic element. Due to its unique chemical and physical qualities, helium is a vital element in the manufacture of MRIs and semiconductors and is critical for fibre optic cable manufacturing, hard disc manufacture and cooling, space exploration, rocketry, lifting and high-level science. There is no way of manufacturing helium artificially and most of the world's reserves have been derived as a by-product of the extraction of natural hydrocarbon gas.

Appendix 1

LR 5.30	Rule Requirement	Company Statement
(a)	Name and type of well	State 16 SWSE 3054 helium well
(b)	Location of well and details of lease	Location: Section 16 SWSE Township 30 South Range 54 West (see map on previous page). Lease: Oil and Gas Lease No.112989 between the State of Colorado and Blue Star's wholly owned subsidiary, Las Animas Leasing Inc (**LAL**). The lease has an effective date of 21 November 2019, the total area of the leases is 640 gross acres (640 net acres), the term is 5 years from the effective date and so long thereafter as gas is produced in paying quantities, the rental is payable annually at a rate of $2.50 per acre per year, the royalty is 20% and LAL's working interest in the lease is 100%.
(c)	Working Interest	100%
(d)	Net pay (if gross pay reported)	Production hole section from 1,111.5 to 1,211 feet, containing approximately 96 feet of high-quality gas filled sandstone
(e)	Geological rock type of formation	Lyons sandstone
(f)	Depth of zones tested	1,111.5 to 1,211 feet
(g)	Types of tests and duration	Flow tests comprising a 12 hour natural flow period followed by a 12 hour flow period under vacuum compression after which a 48 hour pressure build up was performed.
(h)	Hydrocarbon phases recovered	Nil
(i)	Any other recovery	Helium, Carbon Dioxide, Nitrogen
(j)	Choke size, flow rates and volumes measured	Natural flow at up to 208 Mcfd through a 1" orifice plate. Vacuum flow at up to 313 Mcfd through a 1.375" orifice plate.
(k)	Pressures associated with flow and duration of test	See announcement text and paragraph (n) below.
(l)	Number of fracture stimulation stages	Nil
(m)	Material volumes of non-hydrocarbon gases	See paragraph (j) above.
(n)	Any other material information	Gas Sample Analysis While flowing gas samples were taken from a 2" nipple directly after the flow meter. The sample analysis was caried out by Gas Analysis Service, Farmington NM using a single thermal conductivity detector (TCD) for gas compositional analysis for the determination of C1-C6+ hydrocarbons, helium, nitrogen and CO2 adopted from Gas Processors Association standard 2261-00. Concentrations of the compounds are measured using thermal conductivity detectors using ultra-high purity hydrogen as a carrier gas. A number of secondary samples were also sent to Dolan Integration Group of 11025 Dover Street, Suite 800, Westminster, Colorado, for cross calibration.

		Gas compositional analysis methodology for the determination of C1-C6+ hydrocarbons and permanent gases (nitrogen, oxygen, argon, carbon dioxide, helium and hydrogen) are adopted from Gas Processors Association standard 2261-00. Concentrations of the compounds are measured using an Agilent 7890 gas chromatograph equipped with dual thermal conductivity detectors (TCD), each of which uses either ultra-high purity hydrogen or nitrogen as a carrier gas. The laboratory reports un-normalized concentrations in parts per million (ppm). The laboratory runs multiple mixed calibration gases with each sample, so it has multi-point calibration curves for each compound reported. Flow Testing Flow tests were conducted with a ABB XFC 6413 Total Flow Meter using AGA 1992 calculation method . Flow rate calculations used an assumed gas gravity of 1.3 (37.661 molecular weight) based on offset wells and a pressure base of 14.7 psia. Natural flow tests were conducted over a 12 hour period flowing through a 1" orifice plate to atmospheric pressure. Vacuum flow tests were conducted over a 12 hour period flowing through a 1.375" orifice plate to atmospheric pressure. In this announcement, Mcfd means thousand standard cubic feet per day.