ASX ANNOUNCEMENT

19 December 2022

LAS ANIMAS PLAN OF DEVELOPMENT: KEY OUTCOMES

Highlights

- **Initial Plan of Development completed for Blue Star's world-class Las Animas helium project.**
  - First helium output and sales targeted for H2 CY2023 from Voyager.
  - Low capex of US$2.9M for initial development at Voyager.
  - Targeting short-term contract market and spot sales to capitalise on premium pricing dynamics.
  - Permitting of production wells underway ahead of first production guidance.
- **Voyager – low capital intensity development of high-grade discovery**:
  - Initial 3-4 development wells planned.
  - Contract negotiations underway for processing facility to be leased from and operated by an experienced US mid-stream party with expected delivery during H2 CY2023.
  - Nameplate (Pressure Swing Adsorption (PSA) plant) raw gas throughput of 2 mmcf/day for expected helium product gas output (98.0%+ purity) and targeted helium production of 38 mmcf net to Blue Star in first full capacity year.
  - Forecast pre-production capex of approximately US$2.9M (drilling of US$1.5M plus gathering system and site works of US$1.4M) and unit operating cost after ramp up of approximately US$84/mcf He product gas.
  - Targeting short-term contract market and spot sales to capitalise on premium pricing dynamics; leasing plant eliminates need for price-concession offtake agreement.
  - Current tube trailer price estimates in the U.S. short-term contract and spot markets are understood to be US$750 – 3,000/mcf He product gas.
  - Output expansion potential via addition of membrane module and/or tie in of offsetting discoveries and addition of second PSA plant.
- **Galactica/Pegasus – larger-scale helium project development with additional potential CO_2 product stream:**
  - Range of development pathways under consideration, including leased plant option.
  - Expected CO_2 extraction route and by-product stream.
  - Further study work underway to refine initial planned development configuration and forecast helium production and cost estimates.
- **Both facilities to be permitted in parallel and a final decision on the Galactica/Pegasus plant configuration is expected during H1 CY2023.**
- **Confirmation of Voyager process facility lease agreement with mid-stream operator expected in Q1 CY2023.**

Blue Star Helium Limited (ASX:BNL) (**Blue Star** or the **Company**) advises of the key outcomes from the initial Plan of Development for its Las Animas Helium Project in Colorado, U.S.A.

Blue Star Managing Director and CEO, Trent Spry, commented:

"We have evaluated multiple options for our initial project developments in Las Animas. These included new builds, the purchase and refurbishing of used facilities, and lease options. The work covered pressure swing adsorption (PSA) only plants, membrane only processing facilities, membrane and PSA combination plants, and various CO_2 gas removal and concentration options. Market research was also conducted covering potential offtakers, helium purity, tolling (liquification), and transport options to inform the selection of the initial development phases and further optimisation and expansion potential.

"For the initial development at Voyager, we have selected the leased and third party operated plant option with a helium purity output of over 98%. This will allow plant tailgate sales as well as tolling arrangements through surrounding liquefiers. The plant can be expanded via the addition of a modular membrane unit to produce higher purity product and increased helium output in the future. With additional high helium raw gas contribution from surrounding discoveries the facility can also be further expanded with the addition of a second PSA plant.

"The leased plant option eliminates any requirement for price-concession offtake agreements, allowing us to target the premium pricing available in short-term contract markets and spot sales, as well as allowing flexibility and ramp up at the start-up phase of the facility. The current helium market affords us the ability to maximise these opportunities. Once both plants are operational, and in line with the helium market at the time, we may then seek to enter longer term offtake arrangements."

Las Animas Helium Field: Plan of Development

Blue Star is pursuing a mid-stream solution for its initial facility, which is to be located at the high-grade Voyager discovery. This involves a mid-stream company supplying and operating the facility for Blue Star in return for a monthly lease payment. This solution is attractive as it minimises Blue Star's up-front capital commitments while still delivering highly attractive returns, enabling low-risk access to premium-priced spot helium markets, and bringing an experienced helium facility operator to the Company's first development.

Blue Star is currently negotiating contracts with its preferred provider. The selected provider is a midstream company that owns and operates gathering, compression, dehydration, NGL processing, condensate removal and gas treating facilities and deploys proprietary nitrogen rejection and helium recovery units. It currently operates helium processing facilities in North America.

The Company received a progressive series of reports from its consulting engineers, SIGIT, regarding the plan of development for its Voyager and Galactica/Pegasus fields. SIGIT's engagement included identification of a facility plan for the processing of raw gas from the dedicated acreage and design of a drilling plan and gathering system to effectively optimise capital and operating cost structures. The Company has also received proposals for helium and CO_2 processing plants from another provider. These proposals remain under consideration for Galactica/Pegasus.

Voyager development

Location and existing resource

The Voyager field is located in Las Animas County, Colorado.

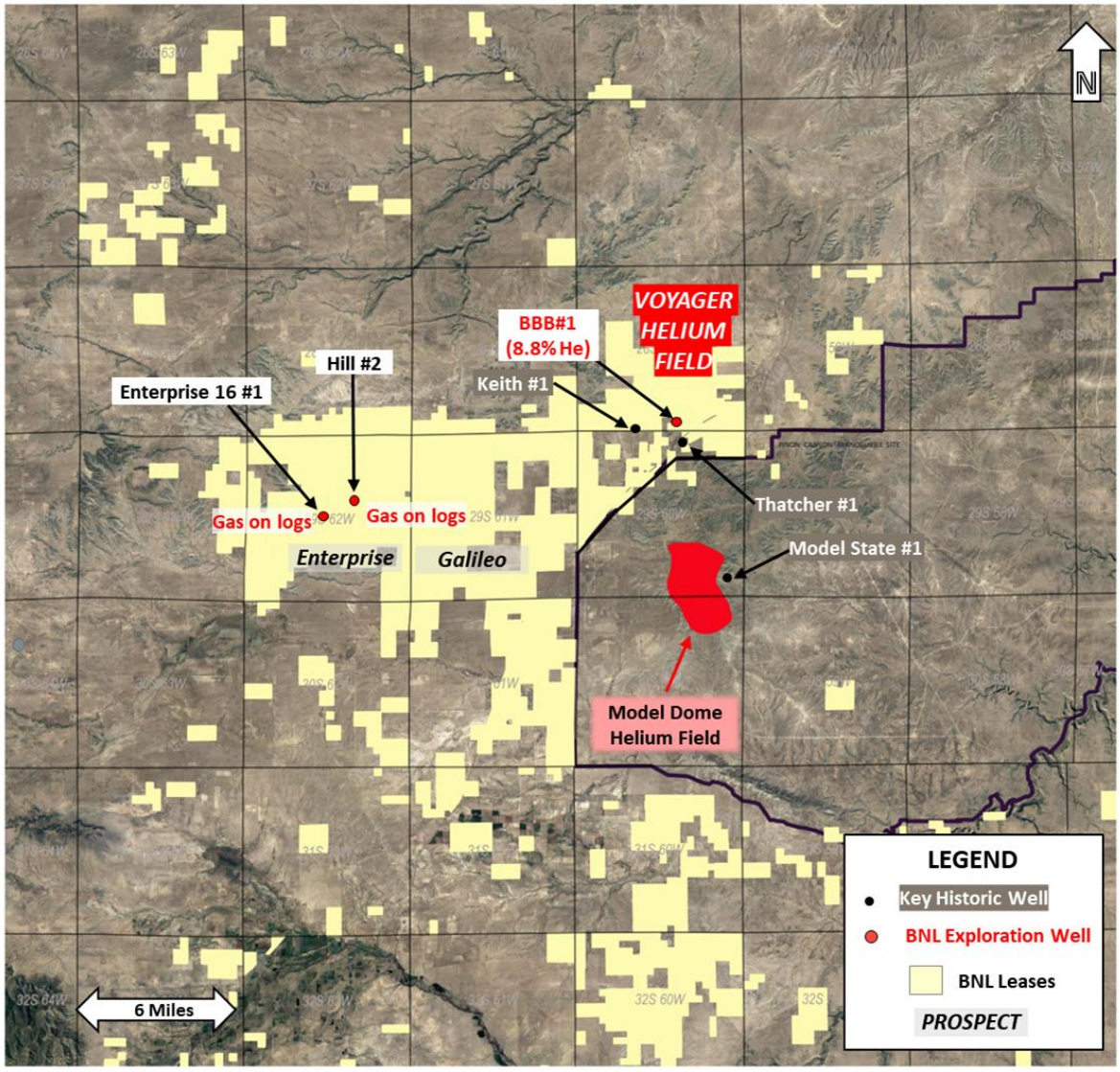
Table 1: Voyager Field Resource Estimates:

Voyager Field			
	1C	**2C**	**3C**
Net Recoverable Helium (mmcf)	299	643	1,228

Notes to table above:

1. The estimates are reported as at an evaluation date of 1 August 2022.
2. The estimates have been prepared using the probabilistic method and are presented on an unrisked basis.
3. The estimates are presented on a net entitlements basis and represent Blue Star group's net economic interest in the contingent recoverable helium volumes after deductions for the volume weighted royalty burden.
4. The estimates were first published by the Company's market announcement of 27 September 2022. The Company is not aware of any new information or data that materially affects the information included in that announcement and all material assumptions and technical parameters underpinning the estimates in that announcement continue to apply and have not materially changed.

Figure 1: Voyager field plan view



Initial development outline and projections

The preferred facility has the targeted physical capabilities outlined in Table 2.

Table 2: Voyager development plant metrics

Key metric	Unit	Value
Nameplate raw gas input	mmcf/d	2.0
Raw gas He concentration	% He	8.0%
Helium recovery	%	90
Helium product purity	% He	98
Plant run time	%	95
Tailgate helium product gas output	mmcf pa	44.4
Net helium product gas output	mmcf pa	37.7

Notes to table above:

1. The tailgate helium product gas output is the helium volume at the facility tailgate after applying the recovery, product purity and plant run time factors. It is calculated in respect of the first 12 months of operation after a 6 month ramp up period.
2. The net helium product gas output is net to Blue Star after deduction of royalties and after applying the recovery, product purity and plant run time factors. It is calculated in respect of the first 12 months of operation after a 6 month ramp up period.

Blue Star will install and operate a gathering system and compression. The gathering system will be a capital expenditure while the compression will be leased.

The facility will start up on site generated power while the availability of grid power is evaluated. The operating cost projection below assumes site power generation.

The preferred development pathway for Voyager delivers the key capital and operating cost projections outlined in Table 3 (based on 8% helium concentration in the raw gas input of up to 2.0 mmcf/d).

Table 3: Voyager development cost projections

Key metric	Unit	Value
Pre-production capital expenditure (site works and gathering system)	US$M	1.4
Pre-production capital expenditure (drilling of four development wells)	US$M	1.5
Operating cost (per mcf He product gas) (including process facility and compression lease costs)	US$/mcf	84

Notes to table above:

1. Basis of estimation: operating cost per mcf He net to Blue Star (after deduction of royalties and after applying the recovery, product purity and plant run time factors stated in Table 2) in respect of the first 12 months of operation after a 6 month ramp up period. The comparable figure including the ramp up period is US$91/mcf.
2. Pre-production capital expenditure estimates prepared to an accuracy of ± 20%.
3. Pre-production capital expenditure does not include the cost of drilling additional wells over the project's operating life. Blue Star has modelled the drilling of a further 7 wells over the project life at a projected cost of US$375,000 per well drilling and completion plus gathering system costs of US$210,000 per well.

Blue Star has assumed that each well will have an initial production rate of 350 mcf/d and a decline rate of 33% per annum. The Company notes that the first Model Dome field well reported an initial production rate of 2,000 mcf/d.

Helium marketing

Helium volumes are planned, at least initially, to be sold via premium short term contracts or in the spot market. Short term helium sales contracts are currently priced at a significant premium to long term contracts and this differential is expected to persist.

Leasing the process facility enables Blue Star to avoid the requirement for any substantial debt funding, which would have necessitated the execution of long term offtake contracts, rather than delivering the ability for immediate sales into the premium priced spot market. The spot market also provides flexibility around delivery schedules and volumes which is naturally advantageous as production at the initial facility is progressively ramped up.

Current tube trailer pricing estimates in the U.S. short-term contract and spot markets are understood to be US$750 – 3,000/mcf helium product gas .

The Company's helium marketing strategy does however contemplate a proportion of production being sold on long-term contracts after both the Voyager and Galactica/Pegasus plants are operational, providing supply redundancy and thus greater commercial assurance in offtake discussions. Long-term contract pricing is lower than the short-term contract and spot market pricing but long-term contractors keep their offtake prices confidential.

Blue Star currently has proposals from three gas marketers, all with helium marketing expertise. The Company plans to utilise an agent(s), as well as retain the right to market gas directly during the initial phases of the development.

Modular expansion optionality

The facility processing capacity is readily scalable at modest incremental capital by the addition of membranes and/or further PSA units.

Development timeline

Blue Star's selected mid-stream supplier and operator expects to deliver, install and commission the facility during H2 CY2023, subject to receipt of all necessary permits, surface use and access agreements. Product sales are expected to commence promptly after commissioning is complete.

Galactica/Pegasus development

Sproule is currently finalising a resource update for Galactica/Pegasus, which is expected to result in the declaration of contingent helium and CO_2 resources.

The Galactica/Pegasus development is a larger-scale project with multiple potential product streams. Further engineering and market work is underway to refine the initial planned development configuration and forecast helium and CO_2 production and cost estimates.

There are currently a range of development pathways under consideration, including a leased plant and third party operated option. The final development is expected to include a CO_2 extraction route and by-product stream.

The Galactica/Pegasus facilities are planned to be permitted in parallel with the Voyager development. A final decision on the initial Galactica/Pegasus plant configuration is expected in H1 CY2023.

Terminology

In this announcement the following abbreviations are used:

mcf	thousand cubic feet
mmcf	million cubic feet
US$M	million US dollars

Cautionary Statement

This announcement contains forward-looking statements. Forward-looking statements are subject to known and unknown risks and uncertainties that may cause Blue Star's actual results, performance or achievements, to differ materially from those expressed or implied in any of the forward-looking statements, which are not guarantees of future performance. Actual results may differ materially from those in the statements in this announcement.

Investors are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date they are made

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

For further information, please contact:
Trent Spry
Managing Director & CEO
info@bluestarhelium.com
+61 8 9481 0389

About Blue Star Helium:

Blue Star Helium Ltd (ASX:BNL) is an independent helium exploration and production 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.