

## ASX ANNOUNCEMENT

7 June 2022

### HIGH HELIUM CONCENTRATION AT JXSN#3 DISCOVERY GALACTICA/PEGASUS PROSPECTS

#### Highlights

- Helium concentration of 2.14% in larger than expected gas column in the Lyons formation at JXSN#3.
- Flow rates consistent with data reported from the historic Model Dome field.
- Four (4) helium well drilling applications currently pending COGCC approval as immediate follow-ups to the Galactica/Pegasus discoveries.
- A further 29 helium wells for Galactica/Pegasus currently in various stages of the permitting pipeline.
- Sproule currently upgrading Galactica/Pegasus resource estimates, with a declaration of at least contingent resources expected.
- Consulting engineers, SIGIT, currently preparing a plan of development for Blue Star's Las Animas acreage, including front-end engineering and design studies on processing facilities at Voyager and Galactica/Pegasus.

Blue Star Helium Limited (ASX:BNL, OTCQB:BSNLF) (**Blue Star** or the **Company**) provides an update on the progress of its key helium exploration activities in Las Animas County, Colorado.

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

*"We are happy to confirm high helium concentrations from the JXSN#3 well to round out an exceptionally successful initial exploratory water well program at our Galactica/Pegasus prospects which saw high helium concentrations being discovered in each of the three wells drilled."*

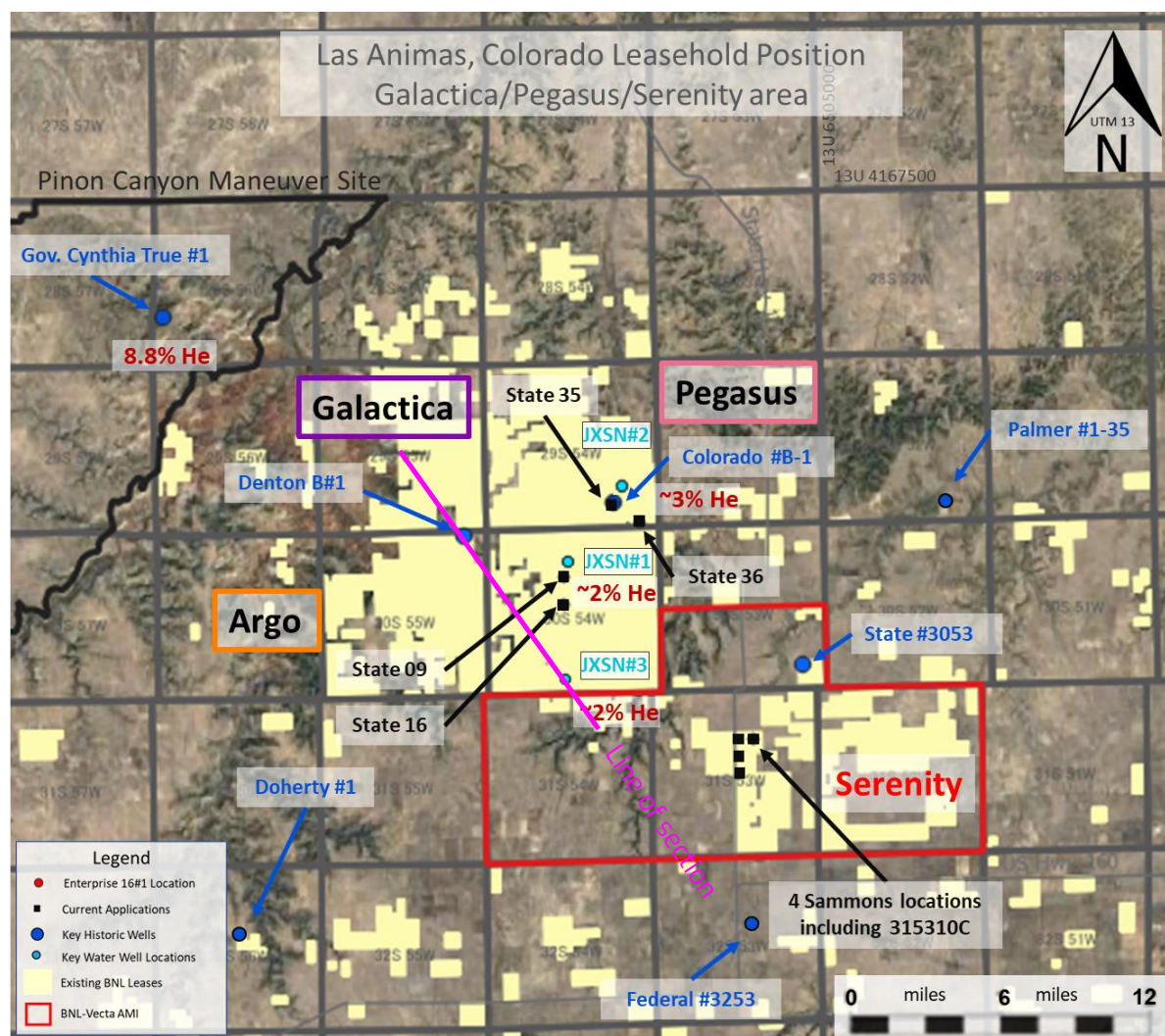
*"The gas column in JXSN#3 is located outside the Galactica P50 prospective resource contour and is larger than expected. JXSN#3 is located approximately 6.4 miles southeast of the Denton B#1 well, where Blue Star had previously interpreted gas to be present on historic logs. These two wells show that the Lyons formation is helium bearing across a large part of the Galactica structure where Blue Star has a dominant/extensive acreage coverage."*

*"Helium prices are at all-time highs with a number of commentators reporting helium sales of up to US\$600/mcf and anecdotally helium spot sales at between US\$2,000 and US\$3,000 per mcf. Naturally, we are keen to sell helium into this market as soon as possible."*

*"Our consulting engineers, SIGIT, are preparing a plan of development for our Las Animas prospects. Following the discoveries at Galactica and Pegasus, they will now also commence an additional FEED study on a processing facility to be located in the Galactica/Pegasus/Serenity area."*

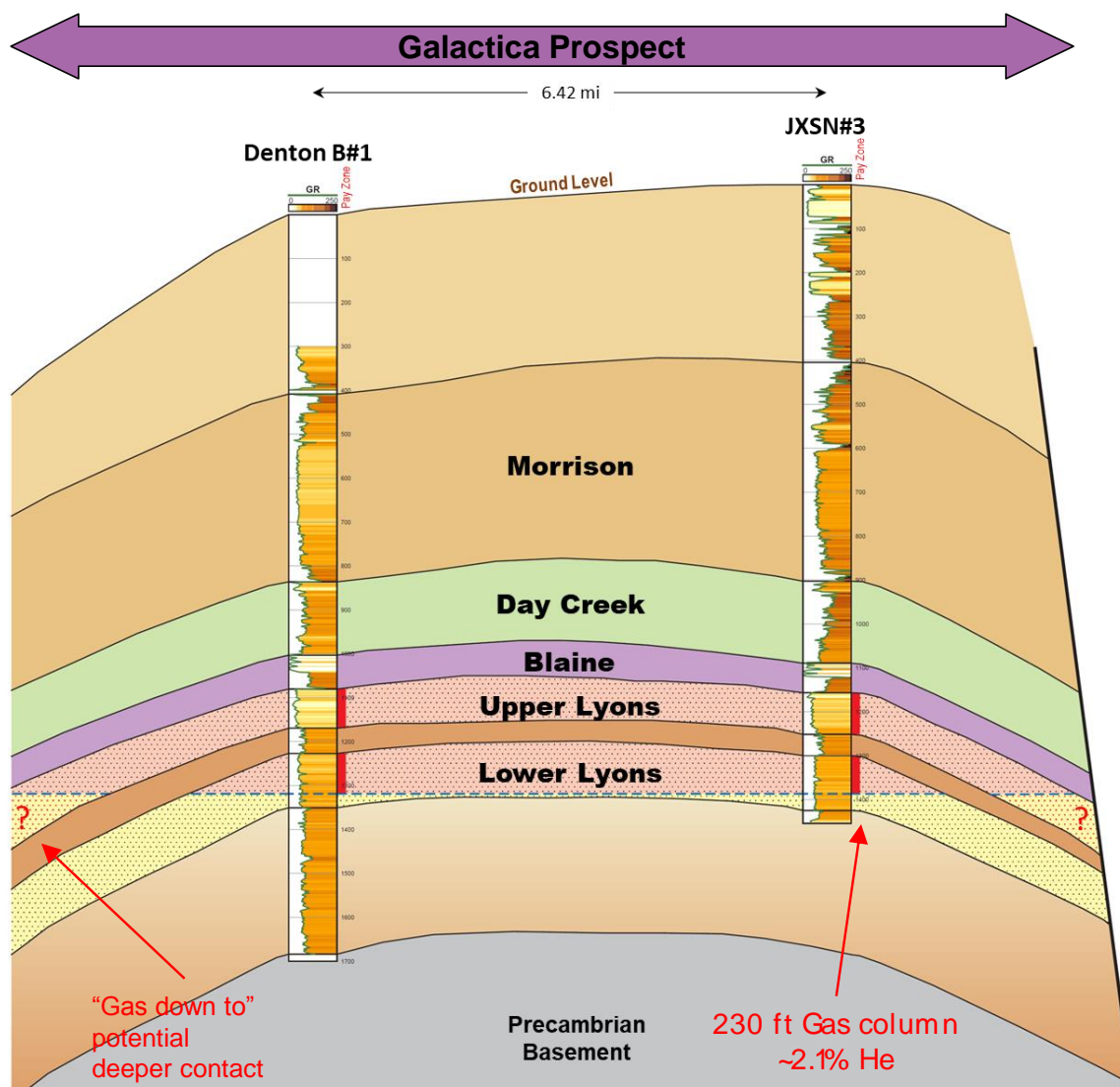
*"This is in addition to the FEED study we announced previously for a facility to be located at Voyager, which is similar to the Model Dome field that produced in the 1930s and lies 6 miles to*

the south-east. Helium bearing gas (~8% He) was discovered at the BBB#1 well during our first exploratory water well campaign last year, triggering the plan of development and FEED study at Voyager.”



**Figure 1: Blue Star's Las Animas County lease holdings in the Galactica/Pegasus area and key well locations**

JXSN#3 is shown on Figure 2 below which highlights the correlation and structurally coincident gas water contact interpreted from historic logs in the Denton B#1 well defining the Galactica prospect. The wells are over 6 miles apart with JXSN#3 being outside of the P50 contour of Galactica as previously mapped confirming the expectation that the Galactica prospect represents a significant structural closure on the great structural high.



**Figure 2: Structural schematic cross section from JXSN#3 to Denton B#1**

## Recent exploration results

Blue Star has recovered high concentrations of helium from each of the JXSN#1, JXSN#2 and JXSN#3 exploratory water wells drilled in the Company's Galactica/Pegasus prospects (as shown in Figure 1 below). Blue Star declared a discovery at each of these wells (see BNL ASX announcement dated 17 May 2022).

The key results from the wells are summarised in Table 1 below.

**Table 1: Key results from recent Galactica/Pegasus exploratory water wells**

Key parameter	JXSN#1	JXSN#2	JXSN#3
Helium concentration (%)	1.98	3.14	2.14
Gas column in Lyons formation (ft)	217.5	101+	230
Net pay in Lyons formation (ft)	143.5	101	153.5
Stabilized initial flow rate (mcf/d)	412	202	412



## Helium Concentrations

Samples most representative of the reservoir gas were selected for air-free calculation and normalisation yielding 1.98% helium at JXSN#1 (nitrogen 23.9%, CO<sub>2</sub> 74.13%); 3.14% helium at JXSN#2 (nitrogen 22.76%, CO<sub>2</sub> 74.10%) and 2.14% helium at JXSN#3 (nitrogen 42.50%, CO<sub>2</sub> 55.36%).

## Flow Rates

As previously announced, initial flow rates exceeding 400 mcf/d is a very strong result and consistent with data reported from the historic Model Dome field (see BNL ASX announcement dated 17 May 2022).

The wells were drilled by the rancher as water wells. Consequently, they were not cased to the Lyons formation as the Company would have done if it were drilling a helium appraisal and development well.

Moreover, the wells were deliberately drilled into the underlying water which will have reduced potential pressure and flow rates from the wells. The open borehole above the Lyons formation is also likely to have reduced certainty around pressure and flow data. Observations while drilling showed that the formations in open hole above the Blaine formation seal (just above the Lyons formation) are prone to washout and instability, this was particularly the case while drilling JXSN#2. These conditions are likely to negatively affect later pressure and flow tests from the wells.

Dedicated appraisal and production wells are to be completed in the gas column in order to maximise flow rates, which are therefore naturally expected to be higher on an equivalent basis.

## Gas Columns

### *JXSN#1*

Analysis of the log data has confirmed intersection of the top of the Lyons formation at 1,187 ft depth, with wireline logs confirming a gas column in high quality reservoir from the top of the Lyons formation to a depth of 1,404.5 ft (217.5 ft gas column) across the upper and lower Lyons sands (gross thickness 261 ft). Gross sand across both the upper and lower Lyons sands is 164 ft with net pay in the well of 143.5 ft. The well TD'ed at 1,456 ft in the lower Lyons formation.

### *JXSN#2*

Analysis of the log data has confirmed intersection of the top of the Lyons formation at 1,123 ft depth, with wireline logs confirming a gas column in high quality reservoir from the top of the Lyons formation to a depth of 1,224 ft (101 ft gas column, gas down to) within the upper Lyons sand. The upper and lower Lyons sand interval is 191 ft thick with gross sand across both the upper and lower Lyons sands being around 150 ft. Net pay in the well in the upper Lyons sand with gas down to base of the sand at 1,224 ft is 101 ft. The well TD'ed at 1,321 ft in the lower Lyons formation.

### *JXSN#3*

Analysis of the log data has confirmed intersection of the top of the Lyons formation at 1,152 ft depth, with wireline logs confirming a gas column in high quality reservoir from the top of the Lyons formation to a depth of 1,382 ft (230 ft gas column) across the upper and lower Lyons sands (gross thickness 274.5). Gross sand across both the upper and lower Lyons sands is 198 ft with net pay in the well of 153.5 ft. The well TD'ed at 1,454 ft in the lower Lyons formation.

## Galactica/Pegasus Structural Cross Section

The Company previously interpreted gas from historic log data from the Colorado #B-1 well located in the Pegasus prospect. The JXSN#2 discovery well has confirmed gas in the prospect with a correlation shown in Figure 3 below. The interpreted gas water contact in Colorado #B-1 is shown to coincide with the shale between the upper and lower Lyons sands in JXSN#2. There is also a possibility that the upper and lower Lyons sands are isolated in which case the gas down to seen in JXSN#2 could extend further down structure, as shown in Figure 3.

The JXSN#1 water well is also shown in Figure 3 and highlights the significant amount of gas trapped on the greater Galactica/Pegasus structural high. The well shows a different gas water contact to that seen in Colorado #B-1 and JXSN#2 (Pegasus) and JXSN#3 (Galactica).

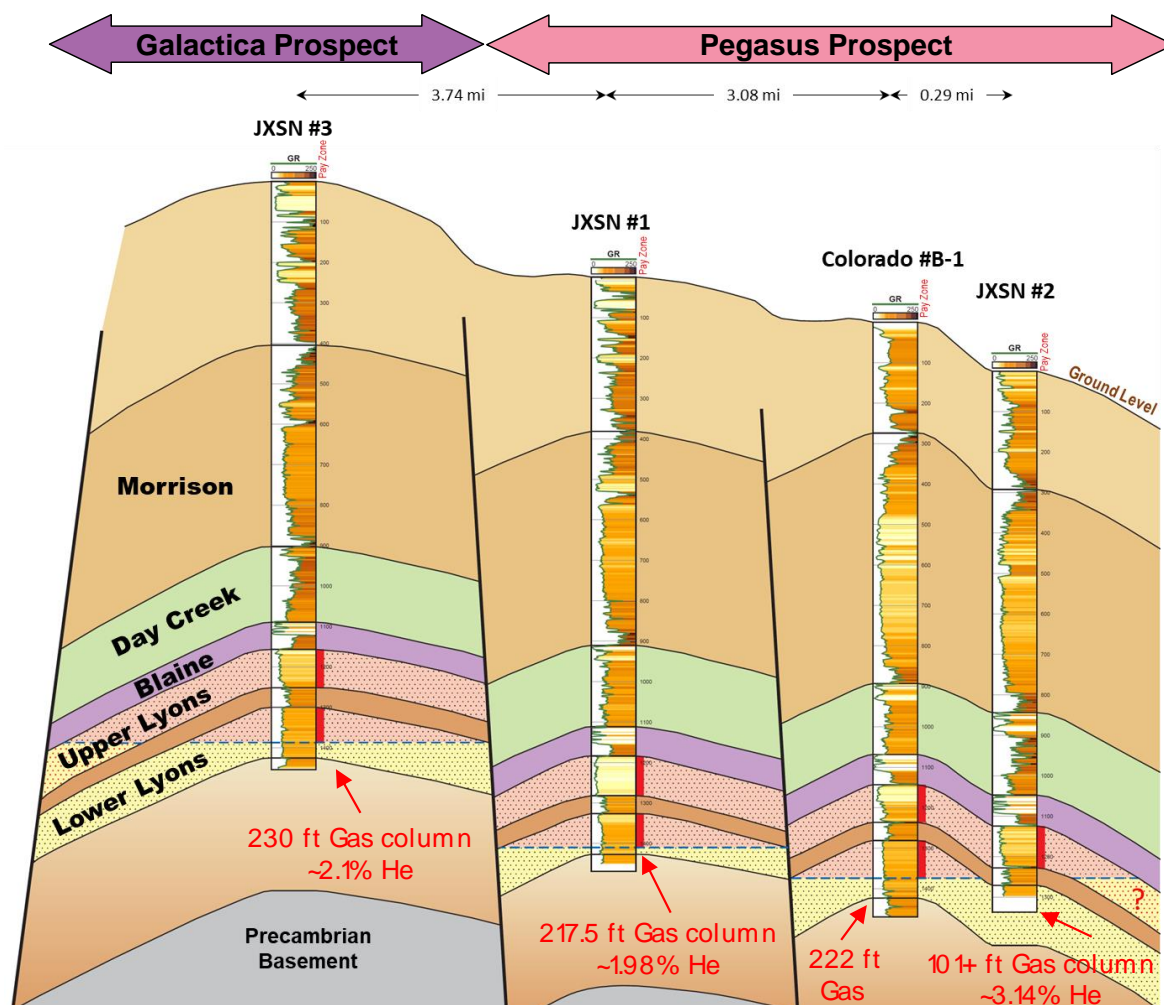


Figure 3: Structural schematic cross section from JXSN#3 to JXSN#2

## Plan of Development and FEED, further resource assessment

As previously announced, Blue Star recently appointed consulting engineers, SIGIT, to prepare a plan of development including Front-End Engineering and Design (**FEED**) for an initial processing facility at the Voyager prospect (see BNL ASX announcement dated 10 May 2022). SIGIT is now set to also prepare a FEED for a second processing facility at the Galactica/Pegasus/Serenity prospects.

As previously announced, the Company has also engaged independent geological and engineering consultant, Sproule, to update the Galactica/Pegasus resource estimate. This is

expected to result in the declaration of at least contingent resources for Galactica/Pegasus (see BNL ASX announcement dated 17 May 2022).

In addition, Sproule has been engaged to prepare the first independent resource assessment for the Voyager prospect. Blue Star's current Las Animas P50 net unrisked prospective helium resource of 13.4 Bcf does not include an estimate for the Voyager prospect (see BNL ASX releases dated 16 November 2020 and 10 June 2021).

### **Helium Appraisal and Development Wells**

These exploratory water wells were strategically planned to front run helium exploration, appraisal, and production drilling at the Galactica/Pegasus prospects, where there are 4 helium well drilling applications set for approval hearing on 19 July 2022 as immediate follow ups to these discoveries.

A further potential 29 helium exploration well locations at Galactica/Pegasus are in the permitting pipeline (see BNL ASX announcement dated 23 May 2022).

Further details are set out in the Appendix.

The water wells are drilled by a contractor pursuant to a drilling contract between the contractor and the rancher. Neither the Company nor its subsidiaries are a party to this contract. The well is the property of the rancher and the Blue Star group does not have an economic interest in it. The Company will agree to fund water wells if the rancher selects a location that may be of interest to the Company, the Company has leased the underlying minerals and the rancher agrees to let the Company obtain any available data from the drilling program. Water wells are drilled for the purpose of producing water for use by the rancher. Water wells may not produce helium and may not be converted into producing helium wells.

*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 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](http://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

### JXSN well details

The JXSN#1 water well is located in Township 30 Range 54 Section 9, the JXSN#2 water well is located in Township 29 Range 54 Section 26 and the JXSN#3 water well is located in Township 30 Range 54 Section 33 (see Figure 1). The minerals are the subject of four mineral leases entered into between Blue Star's wholly owned subsidiary, Las Animas Leasing Inc (**LAL**), and a private mineral owner. The leases have an effective date of 22 January 2022, the total area of the leases is 16,303 gross acres (11,090 net acres), the term is 5 years from the effective date, the rental is payable annually, the royalty is 17.5% and LAL's working interest in the leases is 100%.

The JXSN#1, JXSN#2 and JXSN#3 water wells were tested as described below. The Company ran a suite of logs including gamma ray, resistivity (induction), density and neutron logs.

JXSN#2 will not be completed as a water well as it did not encounter material water to TD. However, the results and determination of a free water level in the Lyons formation will be used for locating any future water wells by the rancher. JXSN#1 and JXSN#3 are likely to be completed as water wells.

The exploratory water wells provide structural information, modern wireline logs, define water contacts and are lower cost and considerably quicker to advance from planning through to drilling than helium exploration wells. In some cases, as described above, these wells can return gas compositional data and critical validity results that allow acceleration of appraisal and development helium well location selections.

### Sampling methodologies

#### Gas Sampling

Gas samples are pumped from a 2" nipple directly on top of the flow line on the rig. The 2" nipple reduces down to 1/4" polytube which runs to the pump system. The total length of polytube is approximately 20' maximum. That sample is then fed to the onsite mass spec (Inficon/Future Mass Spectrometer) at a continuous flow rate of ~1.5 SCFH.

Cali-5-Bond sample bags are filled from the same pump system that feeds the onsite mass spec. A 100mL syringe is connected to 1/4" polyline with a screw-on connection. The syringe is filled not by pulling the plunger but letting the pump push a sample into it. The syringe is then sealed and a needle is screwed onto the same fitting. The needle is then inserted through the rubber stopper on the sample bag and ~80mL is filled.

#### Laboratory methodology

Gas samples were analysed by Dolan Integration Group of 11025 Dover Street, Suite 800, Westminster, Colorado.

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 Singer-American Meter SN:169623 with an orifice plate tester. Specific gravity of the gas was calculated using data obtained from an Inficon/Future Mass Spectrometer. Tests were conducted over a 24 hour period flowing through a 1.25" orifice plate to atmospheric pressure at approximately 60° F.