Coal Gas Transportation, LLC
Case No. 14-1515-EL-REN
Response to Staff Interrogatories – Second Set

1. **Please clarify when the facility began collecting abandoned coal mine methane from Nelms #2. The application (G.1) indicates that methane extraction began at Nelms #2 in the early 2000s, while the responses to Staff's first set of questions (Question 1) indicates that extraction at Nelms #2 began in 1992.**

Part of Coal Gas Transportation LLC (CGT)'s response to Question G.1 on the application indicates that the prior owners of the facility began extracting methane from the Nelms #2 mine in the early 2000's. In an effort to provide fulsome answers to the staff's interrogatories, CGT delved further into the history of the facility and the activities of the prior owners and determined that in fact, the prior owners actually began extracting methane from the Nelms #2 mine in 1992. The prior owners did expand and modify the facility, including the wells producing from the Nelms #2 mine, in the early 2000's. After taking over operations in 2005, CGT centralized production in one combined system.

As noted in CGT's response to Question 1 of the Staff's first set of questions, CGT defines its facility as the unified methane gas production and transportation system it operates and oversees, which draws methane from three adjacent mines. This facility was placed in-service before January I, 1998, and since that date, has been significantly modified and retrofitted, as described in CT's response to Question 1 of the Staff's first set of questions, to make it the whole functioning facility it is today.

2. **Given the facility's existing well meters, it appears that it would be possible to meter the mine-specific methane output from Nelms #1, Nelms #2, and Hopedale Cadiz respectively. Is that correct?**

Measurements are taken by Barton and/or Silversmith meters at each well head or group of well-heads; methane gas production output is not measured by mine. As noted, CGT operates the methane extraction facility as a whole unified operation. A facility-wide pipeline system gathers methane drawn from all three mines while centralized compression and blending stations process and pump the gas from all three mines. The most simple and accurate way to obtain a clear measurement of the output of the facility is by taking the measurement of total output of blended methane and natural gas exiting the facility at DEO's pipeline, TPL, as recorded by Meter B, and subtracting from that amount the total volume of third party natural gas that enters the facility system, at Rosevalley, as recorded by Meter G. The difference between the measurements taken at the end of the system and the start of the system is equivalent to the total output of mine methane for the facility.

3. **In the responses to Staff's first set of questions (Question 6), the Applicant indicated that the proposed heat content conversion factor is based on an analysis conducted in 2013. Are similar analyses conducted regularly, and if so, how often are these analyses performed? What is the cost of performing such an analysis?**

CGT occasionally takes its own informal field spot samples, but only rarely requests third party analyses of its gas samples. The cost for third party analysis of one sample of methane gas currently costs approximately $150.

In reviewing its response to Question 6, CGT believes it inadvertently made an error in the conversion of its energy equivalent value of its gas. Therefore, CGT would like to correct and clarify its response to Question 6, as follows:

CGT conservatively estimates the heat content of the methane its facility produces is 700,000 BTU's per one 1 MCF of methane, or 7,000,000 BTU's per 1,000 MCF of methane. That estimate is based on an analysis conducted by Gas Analytical Services in April and May of 2013 of spot samples of methane produced by the facility (**Attachment C**), indicating an average heat content in the range of 749-755 BTU's per 1 standard cubic foot (SCF) of facility gas. Extrapolating from these results, 1 MCF of CGT's gas would have an average energy equivalent in the range of 749,000-755,000 BTU's. To account for the potential that increased production by the facility could produce methane gas of a slightly lower energy equivalent, CGT rounds down the approximate heat content of 1 MCF of facility gas to 700,000 BTU's.

4. **In the responses to Staff's first set of questions (Question 3), the Applicant indicated that approximately 4,874.49 MCF of the facility's methane would be equivalent to 1 MWH of electricity. However, given the proposed conversion factors, it appears that this figure should be 4.87 MCF = 1 MWH. (4.87 = 3,412,142/700,000) Please confirm or clarify.**

The Staff is correct. Reviewing its response to Question 3, CGT believes it inadvertently made an error in the conversion of its energy equivalent value of its gas. Therefore, CGT would like to correct its response to Question 3, as follows:

Per the language of the recently adopted S.B. 310, O.R.C. Section 4928.645 (B)(1) has been amended to reflect that "for purposes of converting the quantity of energy derived from biologically derived methane gas to an electricity equivalent, one megawatt hour equals 3,412,142 British thermal units." Extrapolating from the fact that one cubic foot (cf) of the facility's methane has an energy equivalent of 700 british thermal units (BTU), one thousand cubic feet (1 MCF) of the facility's methane has an energy equivalent of 700,000 BTU's. It is CGT's understanding that, per the language of the Ohio Revised Code, 4.87 MCF of the facility's methane would be equivalent to 1 megawatt hour (MWH) of electricity (3,412,142/700,000 = 4.87).

Similarly, reviewing its response to Question 12, CGT believes it inadvertently made an error in the conversion of its energy equivalent value of its gas. Therefore, CGT would like to correct its response to Question 12, as follows:

CGT estimates the facility will produce approximately 365,000 MCF of methane gas annually. The facility has the capacity to produce this amount of methane gas, and the availability of REC credits for production will make such production economically feasible. Pursuant to CGT's proposed conversion formula and estimated production volume, the facility would produce approximately 74,948.67 MWH equivalents per year (365,000/4.87 = 74,948.67).

ATTACHMENT C

Gas Analytical Services, Inc.
P.O. Box 1028
Bridgeport, WV 26330-0461
Phone: (304) 623-0020
FAX: (304) 624-8065

Analysis#:	104262
Run Date:	4/29/2013
Run Time:	13:07
Cylinder#:	

FRACTIONAL ANALYSIS

Customer:	CBM-Ohio	Sample Date:	4/25/2013
Field:		Sample Time:	13:07
Station:	8 Line	Sample Collected By:	BOB GRIFFIN
Meter:		Effective Date:	4/25/2013
		Sample Pressure:	53.00 PSIG
Sample Type:	Spot	Sample Temp. (°F):	N/G

Component	MOL%	GPM
Methane	72.5289	
Ethane	0.7640	0.20
Propane	0.0000	
I-Butane	0.0000	
N-Butane	0.0000	
I-Pentane	0.0000	
N-Pentane	0.0000	
Nitrogen	22.2376	
CO2	4.2050	
Oxygen	0.2645	
Hexanes+	0.0000	
Total:	100.0000	0.20

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	749.0062
BTU/SCF (Saturated):	736.8911
PSIA:	14.7300
Temperature (°F):	60.00
Z Factor (Dry):	0.99838
Z Factor (Saturated):	0.99832

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	749.0062
BTU/SCF (Saturated):	736.8911
PSIA:	14.7300
Temperature (°F):	60.00
Z Factor (Dry):	0.99838
Z Factor (Saturated):	0.99832

Calculated Specific Gravities			
Ideal Grav.:	0.6915	Real Grav.:	0.6923
Molecular Weight:			20.0303

Gross Heating Values are Based
on GPA 2145-09, 2172, 2261.
Compressibility is Calculated using AGA-8.

Gas Analytical Services, Inc.
P.O. Box 1028
Bridgeport, WV 26330-0461
Phone: (304) 623-0020
FAX: (304) 624-8065

Analysis#:	105821
Run Date:	5/31/2013
Run Time:	16:07
Cylinder#:	

FRACTIONAL ANALYSIS

Customer:	CBM-Ohio	Sample Date:	5/30/2013
Field:		Sample Time:	14:40
Station:	8 Line	Sample Collected By:	BOB GRIFFIN
Meter:		Effective Date:	5/30/2013
		Sample Pressure:	52.00 PSIG
Sample Type:	Spot	Sample Temp. (°F):	N/G

Component	MOL%	GPM
Methane	72.9614	
Ethane	0.7537	0.20
Propane	0.0294	0.01
I-Butane	0.0000	
N-Butane	0.0000	
I-Pentane	0.0000	
N-Pentane	0.0000	
Nitrogen	21.8302	
CO2	4.1571	
Oxygen	0.2421	
Hexanes+	0.0261	0.01
Total:	100.0000	0.22

Analytical Results at Base Conditions (Real)	
BTU/SCF (Dry):	755.3058
BTU/SCF (Saturated):	743.0812
PSIA:	14.7300
Temperature (°F):	60.00
Z Factor (Dry):	0.99836
Z Factor (Saturated):	0.99831

Analytical Results at Contract Conditions (Real)	
BTU/SCF (Dry):	755.3058
BTU/SCF (Saturated):	743.0812
PSIA:	14.7300
Temperature (°F):	60.00
Z Factor (Dry):	0.99836
Z Factor (Saturated):	0.99831

Calculated Specific Gravities			
Ideal Grav.:	0.6902	Real Grav.:	0.6910
Molecular Weight:			19.9915

Gross Heating Values are Based
on GPA 2145-09, 2172, 2261.
Compressibility is Calculated using AGA-8.

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Case No(s). 14-1515-EL-REN

Summary: Response to Second Set of Staff Interrogatories electronically filed by Mr. Daniel Sullivan on behalf of Coal Gas Transportation, LLC