ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF AIR
PERMIT SECTION

APRIL 12, 2012

RESPONSES TO COMMENTS ON THE DRAFT CAAPP OPERATING PERMIT FOR PANHANDLE EASTERN PIPE LINE COMPANY, WAVERLY COMPRESSOR STATION, OPERATED IN WAVERLY, ILLINOIS

SOURCE IDENTIFICATION NO.: 137867AAA
APPLICATION NO.: 95120063

I. BACKGROUND

On June 24, 2009, the Illinois EPA, Bureau of Air received a CAAPP operating permit renewal application from Panhandle Eastern Pipe Line Company, Waverly Natural Gas Compressor Station, for its Clean Air Act Permit Program (CAAPP) permit in Waverly, Illinois.

The Illinois EPA has completed a public comment period on March 15, 2012 the draft of a renewed CAAPP permit. Comments were received from USEPA, Region 5, on March 19, 2012. The Illinois EPA has prepared this document, which addresses these comments to accompany the submittal of the Proposed CAAPP Permit.

II. COMMENTS WITH RESPONSES

USEPA Comments #1 and #2:

1. Section 2.5 of the Statement of Basis references conditions in the permit which restrict hazardous air pollutants (HAPs) so that the source is not considered to be a major source of HAPs. The referenced conditions appear to restrict hours of operation. It is not clear how the restriction of hours of operation limits HAPs from the source to levels below the major source thresholds. Please provide a discussion within the Statement of Basis that explains how the proposed restrictions on hours of operation assure that the source will not be a major for HAPs. The source's status as a major source or area source of HAPs is especially important for determining the applicable standards under the Maximum Achievable Control Technology (MACT) Standard for Reciprocating Internal Combustion Engines (RICE), 40 CFR 63 Subpart ZZZZ.

2. Additionally, the method used to limit HAP emissions from the facility, such that it achieves area source status for applicability of the RICE MACT Standard, must include the necessary associated monitoring methods for demonstrating compliance.

IEPA Response:

The correct conditions that should have been reference in Section 2.5 of the Statement of Basis are Conditions 4.1.2(d)(i)(B), 4.2.2(c)(i)(A), and 4.3.2(b)(i)(B) [not 4.3.2(c)(i)(B)]. Condition 3.4 of the Proposed CAAPP Permit also incorrectly identified these 3 conditions. Therefore, Condition 3.4 has been changed in the updated Proposed CAAPP permit to correctly identify these 3 conditions.

Conditions 4.1.2(d)(i)(B), 4.2.2(c)(i)(A), and 4.3.2(b)(i)(B) restrict the hours of operation of the engines, the dehydration plant, and the desulfurization reboiler respectively. Condition 4.1.2(d)(i)(B) restricts operating hours of each engine to 8,000 hours/year. Condition 4.2.2(c)(i)(A) restricts operating hours of the dehydration plant to 7,500 hours/year. Condition 4.3.2(b)(i)(B) restricts operating hours of the desulfurization reboiler to 8,000 hours/year. These 3 conditions restricting hours of operation limits HAPs from the source to levels that make them an area source of HAPS as discussed below:

HAP Discussion – All HAP Emitting Emission Units at the Source

- **Engines (8,000 hr/yr)**

# of Units	Rating (mmBtu/hr)	Type	HAP Emission Factors Total (lb/mmBtu)	HAP Emission Factors Individual* (lb/mmBtu)	HAP Emissions Total (ton/yr)	HAP Emissions Individual* (ton/yr)
2	5.38	4-Cycle Rich	3.24e-2	2.05e-2	1.40	0.88
2	8.63	4-Cycle Rich	7.22e-2	5.28e-2	4.98	3.65
1	12.11	2-Cycle Lean	7.95e-2	5.52e-2	3.85	2.67
1	10.11	4-Cycle Lean	7.22e-2	5.28e-2	2.92	2.14
1**	2.07	(Diesel)	3.79e-2	1.18e-3	0.001	0.0006
1***	0.25	4-Cycle Lean	7.22e-2	5.28e-2	0.005	0.003
				Subtotal	13.156	9.3436

* - Individual HAP is listed as Formaldehyde
** - Engine identified as Insignificant Activities in Section 6.1 (500 hr/yr for emergency engines)
*** - Engine identified as Insignificant Activities in Section 6.2 (500 hr/yr for emergency engines)

- **TEG Units (7,500 hr/yr)**

# of Units	Rating (mmBtu/hr)	Type	HAP Emission Factors Total (lb/mmscf)	HAP Emission Factors Individual* (lb/mmscf)	HAP Emissions Total (ton/yr)	HAP Emissions Individual* (ton/yr)
2	1.5	NG Reboiler	1.88	7.5e-2	0.02	0.0008
1**	---	Combined TEGs	---	---	11.44	***
				Subtotal	11.46	0.0008

* - Individual HAP is listed as Formaldehyde
** - Emissions from 2 TEG units combined determined from GRI-GLYCalc as submitted in App.
*** - Emissions from TEG units consist of BTEX

- **Desulfurization Reboiler (8,000 hr/yr)**

# of Units	Rating (mmBtu/hr)	Type	HAP Emission Factors Total (lb/mmscf)	HAP Emission Factors Individual* (lb/mmscf)	HAP Emissions Total (ton/yr)	HAP Emissions Individual* (ton/yr)
1	2.0	NG Reboiler	1.88	7.5e-2	0.02	0.0006

* - Individual HAP is listed as Formaldehyde

- **Insignificant Boilers (8,760 hr/yr)**

# of Units	Rating (mmBtu/hr)	Type	HAP Emission Factors Total (lb/mmscf)	HAP Emission Factors Individual* (lb/mmscf)	HAP Emissions Total (ton/yr)	HAP Emissions Individual* (ton/yr)
1**	5.225	Combined Blrs	1.88	7.5e-2	0.04	0.0017

* - Individual HAP is listed as Formaldehyde
* - 8 Various sized boilers totaling 5.225 mmBtu/hr

Total	24.676	9.3467

The calculations above are determined by the respective operating restrictions and emission factors from AP-42 and GRI-GLYCalc™.

For purposes of individual HAPS, use of these emission factors is acceptable. The emission factors for natural gas fired engines are rated “A” for Formaldehyde, which is the largest individual HAP from natural gas combustion. The Formaldehyde emissions from the engines comprise of 99.96% of the total Formaldehyde emissions from the source, i.e., 9.343 tons out of 9.3467 tons are Formaldehyde emissions derived from “A” rated factors. Of the remaining 0.0037 tons of Formaldehyde emissions, 83.78% are derived from “B” rated Formaldehyde emission factors from natural gas fired boilers. This leaves just 0.0006 tons of Formaldehyde from the diesel engine which are not rated. HAPs from the TEG units consist

primarily of BTEX (benzene, toluene, ethylbenzene, and xylene) but individually are less than Formaldehyde from this source, therefore that is why Formaldehyde is the only individual HAP discussed above.

For purposes of total HAPS, emission calculations for TEG units are determined by the use of GRI-GLYCalc™ (version 3.0 or higher), the GLYCalc™ manual, and GLYCalc™ procedures, as referenced in the Proposed CAAPP Permit. This is the same preferred method NESHAP HHH uses to calculate emissions. Total HAPs from all the natural gas sources consist of small amounts of at least 42 individual HAPs, therefore by restricting Formaldehyde, the total HAP emissions from the natural gas combustion is restricted to 13.216 tons from the 42 individual HAPs.

As the source status is an area source of HAPs, the engines are subject to the NESHAP ZZZZ and all the control and monitoring requirements of the NESHAP. If the engines where located at a major source the engines would be exempt from the NESHAP ZZZZ and all the control and monitoring requirements of the NESHAP. Since the source is subject to the NESHAP ZZZZ, emissions from the engines will be substantially reduced below the emissions discussion above.

The monitoring required to demonstrate that the source status is an area source include: records of operating hours on a running 12 month total, monthly inspections of the equipment, emission calculations on a running 12 month total from the TEG units, and the engines becoming subject to the control and monitoring requirements of NESHAP ZZZZ. Therefore, by limiting the hours of operation and the monitoring requirements listed above, the Proposed CAAPP Permit does truly make the source status an area source.

USEPA Comments #3:

3. Condition 4.2.2.b.ii.A contains monitoring required for demonstrating compliance with Volatile Organic Material (VOM) Requirements for the Triethylene Glycol Dehydration Plant. The applicable limit for VOMs is 8 lb/hr. However, the condition requires calculation of emissions using a model, GRI-GLYCalc, only once per year. Section 39.5.7.d.ii of the Illinois Environmental Protection Act states, "Where the applicable requirements does not require periodic testing or instrumental or noninstrumental monitoring (which may consist of recordkeeping designed to serve as monitoring), require periodic monitoring sufficient to yield reliable data from the relevant time period that is periodic monitoring sufficient to yield reliable data from the relevant time period that is representative of source's compliance with the permit, as reported pursuant to paragraph(f) of this subsection. The Agency may determine that recordkeeping requirements are sufficient to meet the requirements of this subparagraph."We recommend frequency of the calculation de increased significantly, in order to sufficiently monitor emissions in light of an 8 lb/hr limit.

IEPA Response:

The recommendation of increasing periodic monitoring is accepted. The condition 4.2.2.b.ii.A will be updated from once per year to monthly by using a model, GRI-GLYCalc, in order to sufficiently monitor emissions in light of an 8lb/hr limit.

USEPA Comments #4:

4. Condition 4.1.2.b.i.A limits emissions of Sulfur Dioxide (SO_2)to 2,000 ppm. The operational and production requirements section includes a condition (4.1.2.d.i.A) which restricts the facility to using "pipeline quality natural gas" as the means of demonstrating compliance with the 2,000 ppm SO_2 limit. The permit/permit record is not clear on how the strict use of "pipeline quality natural gas" will result in compliance with SO_2 limit. Please provide a discussion in the permit record and/or clarify the permit as necessary.

IEPA Response:

Condition 4.1.2.b.i.A: emissions from Natural Gas Fired Engines

Pursuant to 40 CFR 72.2 to be considered Pipeline quality natural gas it must contain 0.5 grains or less of total sulfur per 100 standard cubic feet (less than 1 ppm (0.8ppm)). Content limited that would result in SO_2 emission less than the limit 2,000 ppm. It should also be noted that the source is also required to maintain the type of fuel used, maintain inspection records, and maintain maintenance and repair logs of the natural gas engines. These records would help the Illinois EPA determine if the natural gas engines are being operated properly and therefore would result in SO_2 being minimized.

40 CFR 72.2 "*Pipeline natural gas* means a naturally occurring fluid mixture of hydrocarbons (e.g., methane, ethane, or propane) produced ***in*** *geological* formations beneath the Earth's surface that maintains a gaseous state at standard atmospheric temperature and pressure under ordinary conditions, and which is provided by a supplier through a pipeline. Pipeline natural gas contains 0.5 grains or less of total sulfur per 100 standard cubic feet. Additionally, pipeline natural gas must either be composed of at least 70 percent methane by volume or have a gross calorific value between 950 and 1100 Btu per standard cubic foot."

III. ADDITIONAL INFORMATION

Questions about the public comment period and permit decision should be directed to:

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