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**west virginia department of environmental protection**

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Division of Air Quality  
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Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
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**ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

Application No.: R13-3007D  
Plant ID No.: 103-00049  
Applicant: Eureka Hunter Pipeline, LLC  
Facility Name: Carbide Site  
Location: Wetzel County  
NAICS Code: 211111  
Application Type: Class II Administrative Update  
Received Date: February 11, 2016  
Engineer Assigned: David Keatley  
Fee Amount: \$2,000  
Date Fee Received: February 16, 2016  
Complete Date: March 31, 2016  
Due Date: May 30, 2016  
Applicant Ad Date: March 9, 2016  
Newspaper: *Wetzel Chronicle*  
UTM's: Easting: 528.737 km Northing: 4,376.709 km Zone: 17  
Description: Permit R13-3007D will supersede and replace permit R13-3007C. With this application the permittee proposes installation and operation of: one (1) 4.0-mmBtu/hr line heater and one (1) 2.0-mmBtu/hr line heater. Typographical errors were also corrected and addition of de minimus storage tanks.

**DESCRIPTION OF PROCESS**

This facility compresses/dehydrates natural gas. Raw gas and produced liquids will be received from local production wells via three pipelines (two (2) gas pipelines and one (1) liquid pipeline) entering the facility. The low pressure gas pipeline (12") will be passed through a slug catcher. The liquid from the slug catcher is sent to a three-way separator. The gas from the three-way separator is sent to the flash gas compressor. The flash gas compressor is powered by S6A which is a Caterpillar 3306 NA (DOM September 28, 1993) four-stroke rich-burn 215 bhp natural gas fired compressor engine which provides power for the compressor which compresses the flash emissions

from the condensate tanks and is equipped with a Miratech Catalyst. The catalyst associated with engine S6A will have the following reductions in emissions: NO<sub>x</sub>, 94%; CO, 94%; VOC, 50%; and formaldehyde, 50%. The slug catchers and separators create a velocity drop in which liquids fall out of the natural gas stream. From the three-way separator water is sent to a brine water tank (T05). The condensate from the three-way separator is sent to one (1) proposed 2-mmBtu/hr heater (S17-B).

High pressure gas will be received by a 20" pipeline and will go to a slug catcher. The liquid from the slug catcher will go to the three-way separator. Gas from the three-way separator will be sent to the flash compressor. Water from the three-way separator is sent to a brine water tank (T05). Condensate from the three-way separator will be heated by one (1) proposed 4-mmBtu/hr heater (S17-A) to encourage phase separation and sent to a two-way separator.

Produced liquids enter the facility via a 8" pipeline and go to a two-way separator. Gas from the two-way separator is sent to the flash gas compressor. The liquids from the two-way separator will be heated by heater S17-B and combined with the liquids from heater S17-A and sent to an additional two-way separator. The gas from the additional two-way separator is sent to a vapor recovery unit (VRU). The engine that provides power for the VRU is a Caterpillar 3406 NA (DOM September 22, 2005) four-stroke rich-burn 215 bhp natural gas fired compressor engine equipped with a Miratech Catalyst. The catalyst for associated with engine S5A will have the following reductions in emissions: NO<sub>x</sub>, 94%; CO, 94%; VOC, 50%; and formaldehyde, 50%. Condensate from the additional two-way separator is sent to ten (10) condensate tanks (T12 - T22).

The gas streams that come from the slug catchers, compressed condensate flash vapors, and compressed three-way separator vapors are combined and compressed. S1 - S4 and S8 - S11 are Caterpillar 3516B four-stroke lean-burn 1,380 bhp natural gas fired compressor engines which power the associated compressors to compress the combined natural gas stream. The compressor engines are equipped with an EMIT oxidation catalyst which reduces emission of: carbon monoxide, VOCs, and formaldehyde. This facility installing one (1) four-stroke lean-burn 2,370-bhp Caterpillar 3608 natural gas fired engine equipped with a DCL oxidation catalyst. After compression the natural gas stream is sent to the dehydration unit. In the contactor the natural gas stream will flow countercurrent to circulating lean TEG. The rich TEG from the contactor will be sent to the regenerator where TEG is heated by a 1.5 MMBTU/hr reboiler (S7) to remove the moisture. The maximum dry natural gas flow rate is 80 mmcf/day. The vapors from the regenerator are sent to a condenser. The liquids from the condenser are sent to the condensate tanks. The vapors from the condenser are sent to the reboiler S7 to achieve a 95% combustion efficiency.

The liquids from the condensate tanks will be trucked off site and the liquids from the brine tank will be used for the development of other wells. During truck loading a 2.4 MMBTU/hr vapor combustor will be used to control emissions. Truck loading will be limited to 4,380 hours per year. The flash vapors from the condensate tanks are compressed and sent to the inlet side of the compressor engines. To help ensure complete combustion auxiliary fuel will be included for combustion S15-A.

## SITE INSPECTION

Doug Hammell from the DAQ's Compliance and Enforcement Section performed a site visit of this facility on February 3, 2016 and the facility was deemed in compliance.

Directions: From the intersection of SR 2 and SR7. Take SR7 east until you reach SR 20. Take SR 20 east until approximately two miles past Hastings. Turn right onto Union Carbide Road (gravel). Travel on Union Carbide Road for approximately 1 mile and the facility is on the right.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from line heaters S17-A and S17-B were estimated with AP-42 emission factors.

Table 1: Estimated Modified Maximum Controlled PTE

Emission Point	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
E17-A	Line Heater 4-mmBtu/hr	Nitrogen Oxides	0.40	1.75
		Carbon Monoxide	0.34	1.47
		Volatile Organic Compounds	0.02	0.10
		Sulfur Dioxide	<0.01	0.01
		PM <sub>10</sub>	0.03	0.13
		CO <sub>2e</sub>	483	2,116
E17-B	Line Heater 2-mmBtu/hr	Nitrogen Oxides	0.20	0.88
		Carbon Monoxide	0.17	0.74
		Volatile Organic Compounds	0.01	0.05
		PM <sub>10</sub>	0.02	0.07
		CO <sub>2e</sub>	242	1,058

Table 2: Total Facility Wide PTE

Pollutant	Proposed Maximum Facility Wide Air Emissions (tons/year)	Increase in Facility Wide PTE (tons/year)
Nitrogen Oxides	72.73	2.63
Carbon Monoxide	33.55	2.21
Volatile Organic Compounds	49.51	0.14
Total Particulate Matter	4.90	0.20
Sulfur Dioxide	0.29	0.02
Formaldehyde	8.35	0
Acetelydehyde	2.22	0
Benzene	0.16	-0.01
n-Hexane	0.92	0.05
Toluene	0.14	0
Xylenes	0.08	0
Total HAPs	14.77	0.05
Carbon Dioxide Equivalent	70,613	3,174

**REGULATORY APPLICABILITY**

The following rules were reviewed for this modification.

**45CSR2 - *To Prevent and Control Particulate Air Pollution From Combustion of Fuel in Indirect Heat Exchangers***

The proposed line heaters (S17-A and S17-B) at this facility meets the definition for fuel burning unit (section 2.10). This heater is less than 10 MMBTU and is exempt from the following sections: 4,5,6,8, and 9.

The proposed line heaters are subject a 10% opacity limit.

**45CSR4 - *To Prevent an Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to the Objectionable Odor or Odors***

This facility shall not cause the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public. 45CSR4 states that an objectionable odor is an odor that is deemed objectionable when in the opinion of a duly authorized representative of the Air Pollution Control Commission (Division of Air Quality), based upon their investigations and complaints, such odor is objectionable.

**45CSR13 - Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation**

This facility qualifies for a Class II Administrative Update because this facility does not have decreases in all air pollutants, but did not require a modification because the thresholds were not surpassed and a substantive requirement is not required.

**45CSR22 - Air Quality Management Fee Program**

This facility is subject to 45CSR22. This facility is a minor source for all regulated air pollutants as seen from the proposed facility wide air emissions column in Table 2. This facility is also not subject to 45CSR30 because the NSPS are Title V exempt. Since this facility has a total reciprocating engine capacity of greater than 1,000 hp this facility is a 8D source with an annual fee of \$500. The permittee will be required to keep their Certificate to Operate current.

**TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS**

There will be small increase in amounts of various non-criteria regulated pollutants emitted from the combustion of natural gas. However, due to the negligible concentrations emitted, detailed toxicological information is not included in this evaluation.

**RECOMMENDATION TO DIRECTOR**

The information provided in this facility's permit application indicates that compliance with all state and federal air quality requirements will be achieved. It is recommended that Eureka Hunter should be granted a 45CSR13 Class II permit for their Carbide Site facility.



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David Keatley  
Permit Writer - NSR Permitting

April 5, 2016

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Date

Fact Sheet R13-3007D  
Eureka Hunter Pipeline, LLC  
Carbide Site