west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Jim Justice, Governor
Austin Caperton, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3340
Plant ID No.:	039-00674
Applicant:	Cranberry Pipeline Corporation
Facility Name:	Witcher Creek
Location:	Near Belle, Kanawha County, West Virginia
NAICS Code:	211111
Application Type:	Construction
Received Date:	August 21, 2016
Engineer Assigned:	David Keatley
Fee Amount:	$3,500
Date Fee Received:	August 22, 2016
Complete Date:	January 12, 2016
Due Date:	April 12, 2016
Applicant Ad Date:	September 29, 2016
Newspaper:	*The Charleston Gazette*
UTM's:	Easting: 458.581 km Northing: 4,233.019 km Zone: 17
Description:	Grandfathered facility which a new gas analysis shows that the triethylene glycol (TEG) dehydration unit now needs to be permitted.

DESCRIPTION OF PROCESS

This facility compresses and dehydrates natural gas. Natural gas enters the facility via pipeline. The natural gas first gets compressed to a higher pressure. The compressor is powered by one (1) 225-bhp four-stroke rich-burn Caterpillar G-342NA natural gas fired engine. The compressed natural gas goes to a contractor. In the contactor natural gas at a maximum rate of 0.85 mmscfd flows countercurrent to TEG. The compressed dehydrated natural gas exits the facility via pipeline. The rich TEG from the contactor goes to a regenerator. In the regenerator the water is boiled through the still vent (E02). The regenerator is heated by one (1) 0.3-

mmBtu/hr reboiler (E01). This facility also has two (2) 2,100 gallon tanks for pipeline liquids. The pipeline liquids will be loaded into trucks at a maximum rate of 153,300 gallons/year.

SITE INSPECTION

The permit writer performed a site visit on November 4, 2016. The site is an existing facility that is now being permitted.

Travelling east on US 60 from Charleston, turn left onto east 21st St. in Belle. Travel on 21st St. which becomes Witcher Creek Rd. (CR 70). Travel on CR 70 for approximately three miles and turn right on access road to station.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions for the reboiler (E01) were estimated using AP-42 emission factors except for CO_2e being estimated by 40CFR98 emission factors. All emissions for the TEG dehydration units still vent emissions (E02) were estimated by GRI-GLYCalc using the average of the gas composition samples for HAPs and the most recent gas analysis for the remainder of VOCs. Other emission units were not modified and will not be included in Table 1. Table 1 lists the PTE for the TEG dehydrator, however the glycol pump is oversized and the actual average benzene should be below 1.0 TPY. The permit has a 1.0 TPY limit to help ensure compliance.

Table 1: Estimated Modified Maximum Controlled Point Source PTE

Emission Point ID	Emission Unit ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
E02	RSV-1	TEG Dehydrator - Still Vent 0.85 mmscfd	Volatile Organic Compounds	9.82	42.98
			Benzene	0.47	2.06
			Toluene	0.73	3.18
			Xylenes	0.89	3.90
			n-Hexane	0.39	1.69
			CO_2e	17	74
E01	RBV-1	TEG Dehydrator - Reboiler 0.37725 mmBtu/hr	Nitrogen Oxides	0.04	0.16
			Carbon Monoxide	0.03	0.14
			Volatile Organic Compounds	<0.01	0.01
			PM_{10}	<0.01	0.01
			CO_2e	45	194

Table 2: Facility Wide PTE

Pollutant	Annual Emissions (tons/year)
Nitrogen Oxides	15.96
Carbon Monoxide	26.72
Volatile Organic Compounds	45.98
Particulate Matter-10	0.16
Sulfur Dioxide	0.01
Formaldehyde	0.15
Benzene	2.07
Ethylbenzene	0.39
n-Hexane	1.70
Toluene	3.18
Xylenes	3.91
Total HAPs	11.47
Carbon Dioxide Equivalent	1,124

REGULATORY APPLICABILITY

The following rules and regulations apply to the modification of this facility:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

The purpose of 45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers) is to establish emission limitations for smoke and particulate matter which are discharged from fuel burning units.

45CSR2 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 4 (weight emission standard), 5 (control of fugitive particulate matter), 6 (registration), 8 (testing, monitoring, recordkeeping, reporting) and 9 (startups, shutdowns, malfunctions). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of the proposed fuel burning unit (RBV-1) is below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR2. However, this facility would be subject to the opacity requirements in 45CSR2, which is 10% opacity based on a six-minute block average.

45CSR4 (To Prevent and Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to an 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.

45CSR10 (To Prevent and Control Air Pollution from the Emissions of Sulfur Oxides)

45CSR10 states that any fuel burning unit that has a heat input under ten (10) million B.T.U.'s per hour is exempt from sections 3 (weight emission standard), 6 (registration), 7 (permits), and 8 (testing, monitoring, recordkeeping, reporting). However, failure to attain acceptable air quality in parts of some urban areas may require the mandatory control of these sources at a later date.

The individual heat input of all of the proposed fuel burning units (RBV-1) are below 10 MMBTU/hr. Therefore, these units are exempt from the aforementioned sections of 45CSR10.

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)

The VOC PTE for the proposed change exceeds the thresholds of 6 lb/hr and 10 tons/year and therefore this facility requires a construction permit. The applicant paid a $1,000 permit fee and $2,500 NESHAP fee. The applicant published their Class I legal advertisement in a paper of general circulation.

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source as can be seen in Table 2 and not subject to 45CSR30 since the regulations this facility is subject to are exempt from the obligation to obtain a permit under 40 CFR part 70 or 40 CFR part 71. This facility has a total reciprocating engine capacity less than 1,000 hp and is an 9M source and is required to pay a $200 annual fee. Cranberry Pipeline Corporation is required to keep their Certificate to Operate current.

40 CFR 63 Subpart HH (National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities)

On June 1, 2013, the DAQ took delegation of the area source provisions of 40 CFR 63, Subpart HH. This facility is a natural gas production facility that processes, upgrades, or stores natural gas prior to transmission. This facility is an area source of HAPs as can be seen in Table 2.

Pursuant to §63.760(b)(2), each glycol dehydration unit (GDU) located at an area source that meets the requirements under §63.760(a)(3) is defined as an affected facility under Subpart HH. The requirements for affected sources at area sources are given under §63.764(d). However, for a GDU, exemptions to these requirements are given under §63.764(e)(2) "actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram [1 TPY] per year."

40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. This facility is a minor source as seen in Table 2 and subject to the area source requirements for non-emergency spark ignition engines.

The grandfathered engine is an "Existing Stationary RICE" source at an area source of HAPs and is an affected source because construction commenced before June 12, 2006 [63.6590(a)(1)(iii)].

This engine must comply with the applicable emission limitations, operating limitations, and other requirements no later than October 19, 2013. The engine has oil, oil filter, spark plug, hose, and belt maintenance requirements.

The following rules and regulations do not apply to the facility:

40CFR60 Subpart Kb (Standards of Performance for VOC Liquid Storage Vessels)

40CFR60 Subpart Kb does not apply to storage vessels with a capacity less than 75 cubic meters. The pipeline liquid tanks at this facility are less than 75 cubic meters and therefore these tank is not subject to this regulation.

40CFR60 Subpart OOOO (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

EPA issued its new source performance standards (NSPS) and air toxics rules for the oil and gas sector on April 17, 2012. 40CFR60 Subpart OOOO establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from affected facilities that commence construction, modification or reconstruction after August 23, 2011. There are no affected sources which commence construction, modification or reconstruction after August 23, 2011 at this facility, so this facility is not currently subject to this regulation.

40CFR60 Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution)

This subpart establishes emission standards and compliance schedules for the control of the pollutant greenhouse gases (GHG). The greenhouse gas standard in this subpart is in the form of a limitation on emissions of methane from affected facilities in the crude oil and natural gas source category that commence construction, modification, or reconstruction after September 18, 2015. This subpart also establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO2) emissions from affected facilities in the crude oil and natural gas source category that commence construction, modification or reconstruction after September 18, 2015. The effective date of the rule is August 2, 2016.

No potential affected facility under this subpart was constructed or modified after September 18, 2015 and therefore this facility is not subject to this subpart.

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE))

40CFR60 Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the date of construction, date of manufacture, and horsepower (hp) of the spark ignition internal combustion engine. The existing engine at this facility commenced construction before a June 12, 2006 and therefore this engine is not subject to this regulation.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The majority of non-criteria regulated pollutants fall under the definition of HAPs which, with some revision since, were 188 compounds identified under Section 112(b) of the Clean Air Act (CAA) as pollutants or groups of pollutants that EPA knows or suspects may cause cancer or other serious human health effects. The following HAPs as emitted in substantive amounts: Benzene, Ethylbenzene, n-Hexane, Toluene, Formaldehyde, and Xylenes. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

Table 3: Potential HAPs - Carcinogenic Risk

HAPs	Type	Known/Suspected Carcinogen	Classification
Benzene	TAP/HAP/VOC	Yes	Category A - Known Human Carcinogen
Formaldehyde	TAP/HAP/VOC	Yes	Category B1 - Probable Human Carcinogen
n-Hexane	HAP/VOC	No	Inadequate Data
Ethylene	HAP/VOC	No	Category D - Not classifiable as to human carcinogenicity
Toluene	HAP/VOC	No	Inadequate Data
Xylenes	HAP/VOC	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health effects may be associated with a wide range of ambient concentrations and exposure times and are influenced by source-specific characteristics such as emission rates and local meteorological conditions. Health impacts are also dependent on multiple factors that affect variability in humans such as genetics, age, health status (e.g., the presence of pre-existing disease) and lifestyle. As stated previously, *there are no federal or state ambient air quality standards for these specific chemicals*. This facility is a minor source of HAPs as can be seen in Table 2. For a complete discussion of the known health effects of each compound refer to the IRIS database located at *www.epa.gov/iris*.

AIR QUALITY IMPACT ANALYSIS

Changes made as part of this application will not affect the major source status as defined by 45CSR14, so no air quality impact analysis was performed.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates compliance with all state and federal air quality requirements will be satisfied. Therefore, it is recommended to the Director of Air Quality the issuance of a construction permit to operate an existing natural gas compressor/dehydration station near Belle, WV to Cranberry Pipeline Corporation.

David Keatley
Permit Writer – NSR Permitting

February 24, 2017

Date