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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3282
Plant ID No.:	095-00066
Applicant:	Williams Ohio Valley Midstream LLC (Williams)
Facility Name:	Ball Dehydration Station
Location:	Middlebourne, Tyler County, West Virginia
NAICS Code:	213112
Application Type:	Construction
Received Date:	November 25, 2015
Engineer Assigned:	David Keatley
Fee Amount:	$3,500
Date Fee Received:	December 1, 2015
Complete Date:	January 20, 2016
Due Date:	April 19, 2016
Applicant Ad Date:	November 20, 2015
Newspaper:	*Tyler Star News*
UTM's:	Easting: 521.09 Northing: 4,372.95 Zone: 17
Description:	Installation and operation of one (1) 55-mmscfd triethylene glycol (TEG) dehydration unit with flash tank, one (1) 1.0-mmBtu/hr BTEX burner, one (1) 1.50-mmBtu/hr reboiler, and one (1) 65-KW Microturbine.

DESCRIPTION OF PROCESS

This facility will dehydrate the incoming natural gas received via pipeline to meet pipeline specifications. Natural gas will flow countercurrent to triethlyene glycol (TEG) in a contactor tower at a maximum rate of 55.0 mmscfd. The dehydrated natural gas will exit the facility via pipeline. The rich TEG will first go to a flash tank which reduces the pressure of the rich TEG allowing volatile hydrocarbon to be liberated. The flash gas will be used as fuel in the reboiler (minimum 50%). The rich TEG from the flash tank (DFT-01) will then go to the regenerator. The regenerator heats the rich TEG to boil off the water. The regenerator is heated by one (1) 1.5-mmBtu/hr reboiler (RBV-01). The vapors from the regenerators' still vent (DSV-01) go to a NATCO BTEX buster

(condenser) and then will be used as fuel in the reboiler. The NATCO BTEX buster will be heated by one (1)
1.0-mmBtu/hr BTEX burner. One (1) 65-KW Capstone C65 microturbine (CT-01) will be used to generate and provide electrical power for the facility.

SITE INSPECTION

James Robertson of DAQ's Compliance and Enforcement Section performed a site visit on December 9, 2015. The proposed site is on top of a hill in a remote area of Tyler County. The site is located well away from most building.

From the intersection of WV 18 and WV 180, travel north on WV 180 for approximately 0.2 miles and turn right onto CR 11 (Elk Fork Road). Travel CR 11 for approximately 7.7 miles and turn right onto CR 42 (Scales Run Road). Travel on CR 42 for approximately 0.7 miles to the ball station access gate which will be on the left. Follow the access road up the hill to the facility.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

All CO_2e emissions were estimated using emission factors from 40CFR90. Emissions from the flash tank and still will be estimated using GRI-GLYCalc 4.0 using a gas analysis from Statoil's Ball Station and a 20% increase due to the variability of the gas composition. The glycol pump will be electric. The efficiency for the flash tank will be 50% reduction and 95% reduction for the still vent. Emissions for the reboiler and BTEX burner were estimated using AP-42 emission factors. Emissions for the microturbine were estimated with manufacturer emission factors for NOx, CO, and VOC the rest where estimated using AP-42 emission factors. Fugitive emissions were estimated using the EPA's *Protocol for Equipment Leak Emission Estimates*.

Table 1: Estimated Maximum Controlled PTE

Point ID	Unit ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
1	DFT-1	Flash Tank	Volatile Organic Compounds	9.55	41.83
			Benzene	0.01	0.03
			Toluene	0.01	0.04
			Xylenes	<0.01	0.01
			n-Hexane	0.27	1.16
			CO_2e	147	645

2	DSV-01	Still Vent	Volatile Organic Compounds	1.98	8.65
			Benzene	0.08	0.33
			Ethylbenzene	0.02	0.09
			Toluene	0.21	0.92
			Xylenes	0.17	0.73
			n-Hexane	0.1	0.43
			CO_2e	1	39
3	RBV-01	Reboiler 1.5 mmBtu/hr	Nitrogen Oxides	0.15	0.64
			Carbon Monoxide	0.12	0.54
			Volatile Organic Compounds	0.01	0.04
			PM_{10}	0.01	0.05
			CO_2e	178	778
4	HTR-01	BTEX Burner 1.0 mmBtu/hr	Nitrogen Oxides	0.1	0.43
			Carbon Monoxide	0.08	0.36
			Volatile Organic Compounds	0.01	0.02
			PM_{10}	0.01	0.03
			CO_2e	118	515
5	CT-01	Microturbine (65 kW)	Nitrogen Oxides	0.06	0.26
			Carbon Monoxide	0.16	0.71
			Volatile Organic Compounds	0.01	0.03
			Sulfur Dioxide	<0.01	0.01
			PM_{10}	<0.01	0.02
			CO_2e	99	435
Fugitive Emissions	SSM (Startup, Shutdown, and Maintenance)	Fugitive Sources	Volatile Organic Compounds	-	9.3
			Benzene	-	0.04
			Ethylbenzene	-	0.04
			Toluene	-	0.04
			Xylenes	-	0.04
			n-Hexane	-	0.04
			CO_2e	-	517

Table 2: Proposed Estimated Maximum Controlled Facility Wide Title V PTE

Pollutant	Facility Wide PTE (tons/year)
Nitrogen Oxides	1.34
Carbon Monoxide	1.61
Volatile Organic Compounds	59.88
Particulate Matter-10	0.11
Sulfur Dioxide	0.02
n-Hexane	1.68
Benzene	0.42
Toluene	1.02
Ethylbenzene	0.16
Xylenes	0.80
Total HAPs	4.15
Carbon Dioxide Equivalent	3,171

REGULATORY APPLICABILITY

The following rules and regulations apply to the 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 all of the proposed fuel burning units (RBV-01 and HTR-01) are 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 (RVB-01 and HTR-01) 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 (17.14 lb/hr and 84.38 tons/year) exceed the thresholds of 6 lb/hr and 10 tons/year and therefore this facility requires a permit.

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 maximum horsepower capacity less than 1,000 hp (86 hp) and is a 9M source and is required to pay a $200 annual fee. Williams 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 refer to the previous facility wide emissions table.

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."

As can be seen above in Table 1, the maximum PTE of benzene emissions from the GDU process vents is 0.36 TPY. Therefore, the GDU is exempt from the Subpart HH requirements given under §63.764(d).

The following regulations do not apply to the facility:

40 CFR 60 Subpart KKKK (Stationary Combustion Turbines)

Since the proposed microturbine's (CT-01) MDHI is less than 10 mmBtu/hr (0.842 mmBtu/hr) this facility 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. Antero included the following HAPs as emitted in substantive amounts (0.01 tons/year) in their emissions estimate: Benzene, n-Hexane, Toluene, 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
n-Hexane	VOC/HAP	No	Inadequate Data
Benzene	VOC/HAP	Yes	Category A - Known Human Carcinogen
Ethylbenzene	VOC/HAP	No	Category D - Not classifiable as to human carcinogenicity
Toluene	VOC/HAP	No	Inadequate Data
Xylenes	VOC/HAP	No	Inadequate Data

All HAPs have other non-carcinogenic chronic and acute effects. These adverse health affects 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

Modeling was not performed of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as can be seen in Table 2.

SOURCE AGGREGATION

"Building, structure, facility, or installation" is defined as all the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous and adjacent properties, and are under the control of the same person.

Same SIC code. Ball Dehydration Station will share the same first two-digit SIC code of 13 as StatOil Ball Station which will be colocated.

"Contiguous or Adjacent" determinations are made on a case by case basis. These determinations are proximity based, and it is important to focus on this and whether or not it meets the common sense notion of a plant. The terms "contiguous" or "adjacent" are not defined by USEPA. Contiguous has a dictionary definition of being in actual contact; touching along a boundary or at a point. Adjacent has a dictionary definition of not distant; nearby; having a common endpoint or border.

There are no Williams properties in question that are considered to be on contiguous or adjacent property with Ball Dehydration Station. There is a Statoil facility which would be considered adjacent.

Common control. The co-located Ball Station will be operated by StatOil.

No facility meets the three-prong test. In addition Williams will contemplate additional natural gas from multiple producers and therefore one facility has the potential to not be depend on the other. Therefore StatOil's Ball Station facility does not meet the definition of being a support facility and the air emissions from this facility should not be aggregated with any other facility.

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 Williams should be granted a 45CSR13 Construction permit for their proposed Ball Dehydration Station.

David Keatley

David Keatley
Permit Writer - NSR Permitting

January 20, 2016

Date