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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3234
Plant ID No.:	103-00101
Applicant:	Williams Ohio Valley Midstream, LLC
Facility Name:	Anderson Dehy Station
Location:	Smithfield, Wetzel County
NAICS Code:	213112
Application Type:	Construction
Received Date:	February 3, 2015
Engineer Assigned:	Roy F. Kees, P.E.
Fee Amount:	$4,500
Date Received:	February 9, 2015
Complete Date:	March 9, 2015
Due Date:	June 9, 2015
Applicant Ad Date:	February 3, 2015
Newspaper:	*Moundsville Daily Echo*
UTM's:	Easting: 533.490 km Northing: 4,367.610 km Zone: 17
Description:	Application for a natural gas dehydration facility consisting of two (2) dehydration units with flash tanks and reboilers, one produced water tank, one generator and truck loading.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3234:

Williams Ohio Valley Midstream, LLC is proposing to construct and operate the new Anderson Dehy Station. The facility will receive natural gas from local production wells, then dehydrate the gas for delivery to a gathering pipeline.

Two TEG dehydrators (one 12.5 mmscf/day and one 35.0 mmscf/day) will be utilized at the facility. The dehydrator is used to remove water vapor from the inlet wet gas stream to meet pipeline specifications. In the dehydration process, the wet inlet gas stream flows through a contactor tower where the gas is contacted with lean glycol. The lean glycol absorbs the water in the gas stream and becomes rich glycol, laden with water and trace amounts of hydrocarbons. The rich glycol is then routed to a flash tank where the glycol pressure is reduced to liberate the

lighter end hydrocarbons for use as fuel in the reboiler. The rich glycol is then sent to the regenerator/still vent where the glycol is heated to drive off the water vapor and any remaining hydrocarbons. Once boiled, the glycol is returned to a lean state and used again in the process.

One 13.8 kW natural gas-fired generator engine (GEN) will be used to provide power for various activities at the site.

The 210 bbl produced water tank (TKS) receives liquids from the dehydrator and inlet separator. Liquids removed through the dehydration process are cooled, condensed, and sent to the atmospheric storage tank. The inlet separator removes entrained fluids (primarily water) and these liquids are also sent to the atmospheric storage tank.

Loading of produced water into tanker trucks (TLO) will produce small quantities of VOC emissions from the displacement of vapors inside the tanker trucks.

SITE INSPECTION

A site inspection was not deemed necessary due to this being an existing facility.

From Price Fork Road in Smithfield, head north on WV20 for approximately 1.9 miles. Turn left onto Slab Camp Road and travel approximately 3.2 miles. Turn right onto Slabcamp Run road for 1.2 miles and the facility entrance is on the left.

Latitude: 39.4574
Longitude: -80.6108

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this application consist of the dehydration unit (RSV-01), flash tank (RFT-1), reboilers (RBV-01), generator (GEN), produced water tank (TK-01) truck load out (TLO) and fugitive emissions (FUG). The following table indicates which methodology was used in the emissions determination:

Emission Unit ID#	Process Equipment	Calculation Methodology
RSV-01, 2 & RFT-01, 2	Dehydration Still Vent & Flash Tank	GRI-GlyCALC
RBV-01, 2	Reboiler	EPA AP-42, 40CFR98
GEN-01	Generator	Man. Data, AP-42, 40CFR98
TKS	Produced Water Storage Tank	Tanks 4.0 & Hysys
TLO	Produced Water Truck Loading	EPA AP-42 Emission Factors

Maximum controlled point source emissions were calculated by Williams and checked for accuracy by the writer and are summarized in the table below.

Emission Point ID	Emission Unit ID	Process Unit	Pollutant	Maximum Controlled Emission Rate	
				Hourly (lb/hr)	Annual (ton/year)
DSV-01 & DFT-01	1E & 2E	12.5 mmscf/day Dehydrator Flash Tank and Regenerator Still Vent	Volatile Organic Compounds	2.45	10.73
			n-Hexane	0.02	0.12
			Benzene	0.04	0.21
			Toluene	0.21	0.95
			Ethylbenzene	<0.01	0.03
			Xylenes	0.79	3.49
			Total HAPs	1.09	4.80
			Carbon Dioxide Equivalent	108	472
RBV-01	3E	0.50 MMBtu/hr Reboiler	Nitrogen Oxides	0.05	0.24
			Carbon Monoxide	0.05	0.20
			Volatile Organic Compounds	<0.01	0.01
			Carbon Dioxide Equivalent	65	284

DSV-02 & DFT-02	4E & 5E	35.0 mmscf/day Dehydrator Flash Tank and Regenerator Still Vent	Volatile Organic Compounds	11.09	48.60
			n-Hexane	0.21	0.92
			Benzene	0.09	0.39
			Toluene	0.16	0.70
			Ethylbenzene	<0.01	0.01
			Xylenes	0.17	0.71
			Total HAPs	0.62	2.72
			Carbon Dioxide Equivalent	1,167	5,114
RBV-02	6E	1.00 MMBtu/hr Reboiler	Nitrogen Oxides	0.11	0.48
			Carbon Monoxide	0.09	0.40
			Volatile Organic Compounds	<0.01	0.03
			Carbon Dioxide Equivalent	130	569
GEN	7E	Kohler 6VSG 13.8kW Generator	Nitrogen Oxides	0.24	0.12
			Carbon Monoxide	18.56	9.28
			Volatile Organic Compounds	0.24	0.12
			Total HAPs	0.01	0.05
			Carbon Dioxide Equivalent	20	10
TKS	8E	210 bbl Produced Water Tank	Volatile Organic Compounds	0.01	0.08
			Total HAPs	<0.01	0.01
TLO	9E	Truck Loading	Volatile Organic Compounds	----	0.26
			Total HAPs	----	0.06
FUG	FUG	Fugitive Emissions	Volatile Organic Compounds	0.39	1.69
			Total HAPs	0.01	0.03

The following table represents the total facility emissions:

Pollutant	Facility Wide Emissions (tons/year)
Nitrogen Oxides	0.84
Carbon Monoxide	9.88
Volatile Organic Compounds	64.01
Total HAPs	10.14
Carbon Dioxide Equivalent	6,853

REGULATORY APPLICABILITY

The following rules apply to the facility:

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

The permittee is 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)

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. No odors have been deemed 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)

45CSR13 applies to this source due to the fact that Williams exceeds the regulatory emission threshold for criteria pollutants of 6 lb/hr and 10 ton/year. Williams paid the $1,000 application fee, $1,000 NSPS fee and $2,500 NESHAP fee. Williams also placed the required legal ad in *The Moundsville Daily Echo* on February 3, 2015.

45CSR22 (Air Quality Management Fee Program)

This facility is a minor source and not subject to 45CSR30. Williams is required to keep their Certificate to Operate current.

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

EPA published in the Federal Register new source performance standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 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 is one (1) 210 bbl produced water tank at the Anderson facility that has a potential to emit less than 6.0 tons per year of VOCs. Therefore the tank is not subject to 40CFR60 Subpart OOOO. There are no compressors at the facility and the pneumatic controllers each have a bleed rate of $\leq$6 scfh, are located between the wellhead and a point of custody transfer, are are not located at a natural gas processing plant.

The following rules do not apply to the facility:

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

As shown in the table below, Williams is not subject to 45CSR14 or 45CSR19 review.

Pollutant	**PSD (45CSR14) Threshold (tpy)**	**NANSR (45CSR19) Threshold (tpy)**	**Anderson PTE (tpy)**	**45CSR14 or 45CSR19 Review Required?**
Carbon Monoxide	250	NA	9.88	No
Nitrogen Oxides	250	NA	0.84	No
Sulfur Dioxide	250	NA	<0.01	No
Particulate Matter 2.5	250	NA	0.06	No
Ozone (VOC)	250	NA	64.01	No
Greenhouse Gas (CO_2e)	100,000	NA	6,853	No

40CFR63 Subpart HH (National Emission Standards for Hazardous Air Pollutants for Oil and Natural Gas Production Facilities)

Subpart HH establishes national emission limitations and operating limitations for HAPs emitted from oil and natural gas production facilities located at major and area sources of HAP emissions. The glycol dehydration units at the Anderson Facility are subject to the area source requirements for glycol dehydration units. However, because the facility is an area source of HAP emissions and the actual average benzene emissions from the glycol dehydration unit is below 0.90 megagram per year (1.0 tons/year) it is exempt from all requirements of Subpart HH except to maintain records of actual average flowrate of natural gas to demonstrate a continuous exemption status.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

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

AIR QUALITY IMPACT ANALYSIS

Modeling was not required 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 seen in the table listed in the Regulatory Discussion Section.

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.

The Anderson Facility is located in Wetzel County and will be operated by Williams Ohio Valley Midstream, LLC, who is partial owner and operator. Several different entities are involved in the production, gathering, and transmission of gas. The Operators are the parties who drill and operate the wells. The Shippers are the owners of the gas who may or may not be the same entity as the Operator. There are also parties who own and operate the gathering system pipelines and compression station, called Gatherers. In addition, there are parties that own and operate the gas processing plants.

1. The Anderson Facility will operate under SIC code 1389 (Oil and Gas Field Services, Not Elsewhere Classified). The upstream gas production wells will operate under SIC code 1311. Therefore they share the same two-digit major SIC code of 13 for oil and gas exploration and production. Therefore, the Anderson Facility does share the same SIC code as the upstream gas production wells.

2. "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.

   The subject facility may be located in close proximity to the initial production well. The location from the subject facility was chosen because of the suitable characteristics for construction, such as availability of reasonably flat grade and accessibility for large trucks and equipment. The subject facility does not need to be located in the immediate vicinity of the wells to operate properly. The subject facility could be moved; and therefore; aggregation with the production wells does not meet the common sense notion of a plant. The closest other Williams facility to the Anderson facility is over one half (1/2) mile away. Therefore, the properties in question are not considered to be on contiguous or adjacent property.

3. Williams OVM operates under their parent company The Williams Companies, Inc. (Williams) and is the sole operator of the subject facility. The production wells that send natural gas to the subject facility are owned and operated by other companies unaffiliated

with Williams. Williams has no ownership stake in any production well that may send natural gas to the subject facility.

Because the facilities are not considered to be on contiguous or adjacent properties and are not fully under control of the same person, the emissions from the Anderson facility should not be aggregated with other facilities in determining major source or PSD status.

MONITORING OF OPERATIONS

Williams will be required to perform the following monitoring associated with this permit application:

1. Monitor and record quantity of natural gas consumed in each reboiler and generator.
2. Monitor opacity from all fuel burning units.
3. Monitor the quantity of wet natural gas processed through the dehydration units.
4. Monitor the quantity of liquids produced and sent to the tank.

Williams will be required to perform the following recordkeeping associated with this modification application:

1. Maintain records of the amount of natural gas consumed in each generator and reboiler.
2. Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
3. Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
4. Maintain records of the visible emission opacity tests conducted per the permit.
5. Maintain records of liquids produced, stored and loaded into trucks.
5. Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
6. The records shall be maintained on site or in a readily available off-site location maintained by Williams for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the construction application indicates Williams' Anderson facility meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Wetzel County location should be granted a 45CSR13 construction permit for their facility.

Roy F. Kees, P.E.
Engineer

3/10/15
Date