west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3122
Plant ID No.:	051-00164
Applicant:	Williams Ohio Valley Midstream, LLC
Facility Name:	Doman Dehy station
Location:	Marshall County
NAICS Code:	211111
Application Type:	Construction
Received Date:	September 12, 2013
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	$3,500
Date Received:	September 16, 2013
Complete Date:	October 10, 2013
Due Date:	January 8, 2014
Applicant Ad Date:	September 25, 2013
Newspaper:	*Moundsville Daily Echo*
UTM's:	Easting: 539.8 km Northing: 4,416.2 km Zone: 17
Description:	After the fact construction of a glycol dehydration unit.

DESCRIPTION OF PROCESS

The facility (which began operating in January of 2013) receives natural gas from local production wells then dehydrates the gas for delivery to a gathering pipeline. A tri-ethylene glycol (TEG) dehydrator is utilized at the facility. The dehydrator removes 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 (aka absorber) 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.

SITE INSPECTION

A site inspection of the facility was performed by the writer on January 9, 2014. The facility has been constructed adjacent to Trans Energy Incorporated's Doman Drilling Pad. The facility is located in a rural area of Marshall county approximately 3/4 mile from the WV-PA line. To get to the facility take I-77 north to exit 179. Then take State Route 2 north for 68.6 miles. Next, turn right on 12th st./Co. Rt. 17 and follow it for 13.6 miles. When the road dead ends onto US Route 250 turn right and go approximately 2.1 miles. Then turn left on Route 891 and go approximately 1.4 miles. Then turn left on County Route 48 and proceed approximately 1.6 miles and the entrance to the facility is on the right. GPS coordinates taken at the facility were 39° 53' 43" N and 80° 31' 59" W The following are pictures taken at the facility during the site inspection.

Trans Energy
INCORPORATED
REPUBLIC ENERGY VENTURES LLC.
A local
DOMAN DRILLING PAD
company drilling for natural gas in Cameron District, Marshall County
NATURAL GAS IS...
Abundant
Affordable
American
Phone
304-684-7053
API:47-051-01518 #1H
API:47-051-01519 #2H

For Info on
NPDES Stormwater Permit
To comment on Sediment Control Plan
Call: (800) 654.5227
or
Email: DEP PLAN@wv.gov
DEP 601 57th Street SE. Charleston,
WV 25304
Application date: 12/27/2012
Williams Ohio Valley Midstream
Martinez Natural Gas
Pipeline
(412) 865.7682

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from this facility come from the dehydrator (both the regenerator and flash vent and the reboiler) and process piping fugitives. Emissions from the regenerator and flash vent were calculated by GRI-GLYCalc 4.0. Emissions from the reboiler were calculated using AP-42 Table 1.4-2. Fugitive emissions were calculated using EPA document 453/R-95-017.

Criteria emissions from the facility will be limited to the following:

	NOx		CO		VOC		SO_x		$PM/PM_{2.5}$	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
RSV-01	--	--	--	--	8.28	36.28	--	--	--	--
RBV-01	0.05	0.24	0.05	0.20	0.01	0.01	0.01	0.01	0.01	0.02
Fugitive	--	--	--	--	0.50	2.21	--	--	--	--
Total	**0.05**	**0.24**	**0.05**	**0.20**	**8.79**	**38.50**	**0.01**	**0.01**	**0.01**	**0.02**

HAP emissions from the facility will be limited to the following:

	RSV-01		RBV-01		Fugitives		**Total**	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Formaldehyde	--	--	0.01	0.01	--	--	0.01	0.01
n-Hexane	0.18	0.80	0.01	0.01	0.01	0.03	0.19	0.83
Benzene	0.03	0.12	0.01	0.01	0.01	0.01	0.03	0.12
Toluene	0.09	0.38	0.01	0.01	0.01	0.01	0.09	0.38
Ethylbenzene	0.01	0.05	--	--	0.01	0.01	0.01	0.05
Xylenes	0.18	0.79	--	--	0.01	0.01	0.18	0.80
Total HAPs	0.49	2.14	0.01	0.01	0.01	0.04	0.50	2.19

REGULATORY APPLICABILITY

The following state and federal rules apply to the facility:

STATE RULES:

45CSR2: To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers

The GDU Reboiler has been determined to meet the definition of a "fuel burning unit" under 45CSR2 and is, therefore, subject to the applicable requirements therein. However, pursuant to the exemption given under §45-2-11, as the MDHI of the GDU Reboiler is less than 10 mmBtu/hr, the unit is not subject to sections 4, 5, 6, 8 and 9 of 45CSR2. The only remaining substantive requirement is under Section 3.1 - Visible Emissions Standards.

Pursuant to 45CSR2, Section 3.1, the reboiler is subject to an opacity limit of 10%. Proper maintenance and operation of the reboiler (and the use of natural gas as fuel) should keep the opacity of the unit well below 10% during normal operations.

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 proposed construction of the Doman Dehy Station has a potential to emit in excess of six (6) lbs/hour and ten (10) TPY of a regulated pollutant and, therefore, pursuant to §45-13-2.24, the construction is defined as a "stationary source" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Williams is required to obtain a permit under 45CSR13 for the construction and operation of the facility.

As required under §45-13-8.3 ("Notice Level A"), Williams placed a Class I legal advertisement in a "newspaper of *general circulation* in the area where the source is . . . located." The ad ran on September 25, 2013 in the *Moundsville Daily Echo* and the affidavit of publication for this legal advertisement was submitted on October 2, 2013.

45CSR30: Requirements for Operating Permits - (NON APPLICABILITY)

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The Doman Dehy Station does not meet the definition of a "major source under §112 of the Clean Air Act" as

outlined under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b. The proposed facility-wide PTE of any regulated pollutant does not exceed 100 TPY (and, in the case of CO_2e, does not exceed 100,000 TPY). Additionally, the facility-wide PTE does not exceed 10 TPY of any individual HAP or 25 TPY of aggregate HAPs.

However, as the facility is subject to a Maximum Achievable Control Technology (MACT) rule - 40 CFR 63, Subpart HH, the facility would, in most cases, be subject to Title V as a “deferred source.” However, pursuant to §63.760(h) as a non-major “area source,” Williams is not required to obtain a Title V permit for the proposed facility. Therefore, the Doman Dehy Station is not subject to 45CSR30.

FEDERAL RULES:

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. Pursuant to §63.760(a)(3), as the Doman Dehy Station - an area source of HAPs (see Table 12) - "process[es], upgrade[s], or store[s] natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user," it is defined as an area source subject to the applicable provisions under Subpart HH.

Pursuant to §63.760(b)(2), each TEG 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): if (1) "actual annual average flowrate of natural gas to the glycol dehydration unit is less than 85 thousand standard cubic meters [3 mmscf/day] per day" or (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 shown in Table 12 above, the maximum PTE of benzene emissions from the GDU process vent is 0.12 TPY. Therefore, the GDU is exempt from the Subpart HH requirements given under §63.764(d).

CFR 60, Subpart OOOO: Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution - (NON APPLICABILITY)

On April 27, 2012, the USEPA issued a final rule (Federal Register Date: August 16, 2012) that consists of federal air standards for natural gas wells that are hydraulically fractured, along with requirements for several other sources of pollution in the oil and gas industry that currently are not regulated at the federal level.

This rule does not apply to the facility. There are no storage vessels with the potential to emit more than 6 TPY of VOC, there are no compressors, and the pneumatic controllers each have a bleed rate of less than 6 scfh, are located between the wellhead and point of custody transfer and are not located at a natural gas processing plant.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the Doman Dehy station and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) standards promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

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. Williams included the HAPs listed in the following table as emitted in substantive amounts (at least 0.01 lb/hr or 0.01 tpy) in their emissions estimate. The following table lists each HAP's carcinogenic risk (as based on analysis provided in the Integrated Risk Information System (IRIS)):

HAPs	Type	Known/Suspected Carcinogen	Classification
Benzene	VOC	Yes	Category A - Known Human Carcinogen
Ethylbenzene	VOC	No	Category D - Not Classifiable as to Human Carcinogenity

Formaldehyde	VOC	Yes	Category B1 - Probable Human Carcinogen
n-Hexane	VOC	No	Inadequate Data
Toluene	VOC	No	Inadequate Data
Xylene	VOC	No	Inadequate Data

AIR QUALITY IMPACT ANALYSIS

Since this permit addresses the construction of a minor source as defined in 45CSR14, no modeling was performed.

MONITORING OF OPERATIONS

Daily wet gas throughput to the Dehy shall be monitored and recorded.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-3122 for the construction of the Doman Dehy Station near, Cameron, Marshall County, be granted to Williams Ohio Valley Midstream, LLC.

Steven R. Pursley, PE
Engineer

December 30, 2013