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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3264
Plant ID No.:	051-00206
Applicant:	Williams Ohio Valley Midstream
Facility Name:	McClain Dehydration Station
Location:	Moundsville, Marshall County, WV
SIC Code:	1381 (Drilling Oil and Gas Wells)
NAICS Code:	213112 (Support Activities for Oil and Gas Operations)
Application Type:	Construction
Received Date:	August 10, 2015
Engineer Assigned:	Caraline Griffith
Fee Amount:	$3,500
Date Received:	August 11, 2015
Complete Date:	August 31, 2015
Due Date:	December 1, 2015
Applicant Ad Date:	August 6, 2015
Newspaper:	*Moundsville Daily Echo*
UTM's:	Easting: 525.97 km Northing: 4,419.74 km Zone: 17S
Description:	Construction permit for the existing facility that had previously been deemed exempt. The equipment at the site are one (1) 5.0 MMscfd Tri-Ethylene Glycol (TEG) Dehydrator comprised of one TEG Dehydrator Flash Tank (DFT-01)(1E) and one TEG Dehydrator Regenerator/Still Vent (DSV-01)(2E), and one 0.22 MMBtu/hr TEG Reboiler (RBV-01)(3E). There are also two tanks on-site: one (1) 325 gallon Methanol storage tanks and one (1) 200 gallon Glycol storage tank.

DESCRIPTION OF PROCESS

Project Overview:

Williams Ohio Valley Midstream, LLC (OVM) has submitted an application for a 45CSR13 New Source Review (NSR) Construction Permit for the existing (but previously determined exempt) OVM McClain Dehydration Station (DS), located approximately 1.5 miles east of Moundsville, in Marshall County, West Virginia.

The application requests authorization for continued operation of the facility, as follows:
- One (1) 5.0 Mmscfd TEG Dehydrator (DFT-01 and DSV-01)(1E and 2E)
- One (1) 0.22 MMBtu/hr TEG Reboiler (RBV-01)(3E)
- Fugitive Emissions (Fug)(4E)

Tri-Ethylene Glycol (TEG) Dehydrator (DFT-01 and DSV-02)(1E and 2E):

One (1) Tri-Ethylene Glycol (TEG) Dehydrator is utilized at the facility. The dehydrator is comprised of a Contactor/Absorber Tower (no vented emissions), Flash Tank (DFT-01), and Regenerator/Still Vent (DSV-01).

The TEG 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. Whenever practical, the lighter end hydrocarbons are routed from the flash tank to the reboiler for use as fuel; otherwise these off-gases are vented to the atmosphere.

The rich glycol is then sent from the flash tank to the regenerator/still vent where the TEG 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.

Reboiler (RBV-01)(3E):

One (1) 0.22 MMBtu/hr Reboiler (RBV-01) is utilized to supply heat for the Tri-Ethylene Glycol (TEG) Regeneration/Still Vent (DSV-01).

Fugitive Emissions (FUG)(4E):

During routine operation of the facility there will be leaks from the process piping components such as valves, flanges, connectors, etc. Leaks from the process piping components results in VOC and HAP emissions to the atmosphere.

Emission Units Table:

Emission Unit ID	Emission Point ID	Description	Installed	Capacity	Type of Change	Control
DFT-01	1E	5.0 Mmscfd Dehydrator - Flash Tank	2012	5.0 MMscfd	Existing	NA
DSV-01	2E	5.0 Mmscfd Dehydrator - Regenerator/Still Vent	2012	5.0 MMscfd	Existing	NA
RBV-01	3E	0.22 MMBtu/hr Reboiler Vent	2012	0.22 MMBtu/hr	Existing	NA

SITE INSPECTION

The writer did not inspect the site. The site was inspected by James Jarrett, an inspector with Compliance and Enforcement, on January 22, 2015. The site has a TEG dehydrator that is collocated with Chevron's McClain well site. If Chevron's wells are shut-in then Williams' dehydrator does not dry any natural gas. The dehydrator has the following: 2 glycol pumps rated at 50 gph each, flash tank was operating at 124F & 98psig, reboiler BTU rating is 200,000; flash tank gas is routed to reboiler for fuel. Leaks were observed with an FLIR camera. After inquiry with the contact it was concluded that these leaks were misidentified, actually being the flash tank emissions, as they have a 50% VOC/HAP emission reduction. It was also inquired as to how Williams plans to demonstrate compliance with their 50% VOC/HAP emission reduction limitations. They said that Williams will monitor the flash tank pressure quarterly and that can be used to check if it exceeds the pressure relief device setting. The Inspector asked Williams to check and see if the pressure relief device seated properly after a gas release and to check and see if it was sized properly. Williams checked and assured that it was. The dehydrator has natural gas actuated pneumatic controllers. There is a 200 gallon TEG tank and a 325 gallon methanol tank onsite.

Directions from Wheeling Ave in Moundsville:

Head southeast onto Jefferson Ave for 0.7 miles. Turn left onto 1st Street for 0.8 miles. Turn left onto US-250/Waynesburg Pike for 2.4 miles. Turn right onto Beams Lane for 0.8 miles. Take a slight left onto the gravel access road for 0.1 miles. Entrance to the site is straight ahead.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

New potential emission calculations were reviewed and verified by the writer. Emissions were calculated with the method provided in the emissions summary table. As needed, additional explanation follows. The TEG dehydration potential emissions include a 20% contingency that has been added to the GRI-GLYCalc model results

[DFT-01, DSV-01] to account for potential future changes in gas quality. The Reboiler (RBV-01) emissions estimates were calculated using AP-42, Chapter 1.4-3.

Emissions Summary Table:

Emission Unit ID	Emission Point ID	Control Device	Regulated Pollutant	Controlled Potential Emissions		Calculation Method
				lb/hr	tpy	
DFT-01	1E	None	VOC	6.31	27.64	GlyCalc
			n-Hexane	0.15	0.66	GlyCalc
			Benzene	0.01	0.06	GlyCalc
			Toluene	0.03	0.13	GlyCalc
			Ethylbenzene	<0.01	<0.01	GlyCalc
			Xylenes	0.02	0.09	GlyCalc
			Total HAP	0.21	0.93	GlyCalc
			CO_2e	357	1565	40CFR98
DSV-01	2E	None	VOC	2.30	10.08	GlyCalc
			n-Hexane	0.05	0.23	GlyCalc
			Benzene	0.13	0.58	GlyCalc
			Toluene	0.40	1.75	GlyCalc
			Ethylbenzene	0.01	0.05	GlyCalc
			Xylenes	0.53	2.34	GlyCalc
			Total HAP	1.13	4.94	GlyCalc
			CO_2e	4.47	19.58	40CFR98
RBV-01	3E	None	NO_X	0.02	0.10	AP-42
			CO	0.02	0.08	AP-42
			VOC	<0.01	0.01	AP-42
			SO_2	<0.01	<0.01	AP-42
			$PM_{10}/PM_{2.5}$	<0.01	0.01	AP-42
			Formaldehyde	<0.01	<0.01	AP-42
			n-Hexane	<0.01	<0.01	AP-42
			Benzene	<0.01	<0.01	AP-42
			Toluene	<0.01	<0.01	AP-42
			Total HAP	<0.01	<0.01	AP-42

			CO2e	26	114	40CFR98

Fugitive Emissions Table:

Fugitive Emission Source	Emission Point ID	Regulated Pollutant	Maximum Potential Emissions	
			lb/hr	tpy
Equipment Leaks - Gas/Vapor	4E	VOC	0.77	3.39
		n-Hexane	0.01	0.06
		Benzene	<0.01	<0.01
		Toluene	<0.01	<0.01
		Ethylbenzene	<0.01	<0.01
		Xylenes	<0.01	<0.01
		Total HAP	0.01	0.06
		CO_2e	88	385

Total Facility PTE:

Regulated Pollutant	Proposed Maximum Potential to Emit (TPY) without fugitives	Proposed Maximum Potential to Emit (TPY) with fugitives
NO_X	0.10	0.10
CO	0.09	0.09
VOC	37.73	41.12
SO_2	<0.01	<0.01
$PM_{10}/PM_{2.5}$	0.01	0.01
Formaldehyde	<0.01	<0.01
n-Hexane	0.90	0.96
Benzene	0.64	0.64
Toluene	1.88	1.88
Ethylbenzene	0.06	0.06
Xylenes	2.41	2.41
Total HAP	5.07	5.13
CO_2e	1698.58	2083.58

AGGREGATION DISCUSSION

To determine major source status, a three-part analysis is used to determine whether emissions from two or more facilities should be aggregated and treated as a single source. The three prongs include: belonging to the same major industrial grouping; and are located on one or more contiguous or adjacent properties; and are under common control.

Same Industrial Grouping:
The subject facility will operate under SIC code 1321 (Natural Gas Liquids Extraction). The upstream gas production wells operate under SIC code 1311 (Crude Petroleum and Natural Gas). Therefore, the subject facility shares the same two-digit major SIC code of 13 as the upstream gas production wells.

Contiguous or Adjacent:
The determination of whether two or more facilities are "contiguous" or "adjacent" is made on a case-by-case basis. The term contiguous is defined in the dictionary as being in actual contact; touching along a boundary or at a point. The term adjacent is defined in the dictionary as not distant, nearby, having a common endpoint or border.

The location of the subject facility was chosen because of suitable characteristics for construction and operation, such as the availability of a reasonably flat grade and accessibility for large trucks and equipment. Williams' business model is to construct scalable capacity that contemplates additional production from multiple operators and the initial configuration is merely a foundation for additional opportunities in the area. Although the location of the subject facility is in close proximity to one or more nearby upstream production sources, the subject facility does not need to be located in the immediate vicinity of the nearby wells in order to operate properly and was selected for reasons unrelated to the location of the production wells.

Common Control:
Williams OVM operates under its parent company The Williams Companies, Inc. (Williams) and is the sole operator of the subject facility. The closest Williams operated facility to the subject facility is the Witzgal Dehydration Station (DS), which is located approximately 0.5 miles to the east. The production wells that send natural gas to the subject facility are owned and operated by other companies, which are unaffiliated with Williams. Williams has no ownership stake in the production wells that may send natural gas to the subject facility.

Furthermore, neither Williams OVM, nor Williams, exercise operational control over any equipment owned or operated by an natural gas producer upstream of the subject facility. All employees at the subject facility are under the exclusive direction of Williams and are not under the control of any other entity. Similarly, Williams has no authority over employees of the production wells. These companies operate wholly

independent of one another. No employees are expected to shuttle back and forth between the subject facility and any production well.

At this time, contracts are in place for the subject facility to process natural gas produced from multiple upstream production wells located throughout the region. As future commercial opportunities are identified, the subject facility will potentially receive gas from other producers. Williams will not have ownership or control of any future wellhead facilities. The producers are, and will be responsible for, any decisions to produce or shut-in wellhead facilities and have no control over the equipment installed, owned, and operated by Williams. Similarly, Williams cannot control the installation or operation of any equipment located at a well site that may be considered an air contamination source.

Conclusion:
The three-prong test has not been met. There is no common control with any of the upstream wells. Additionally, the subject facility and the upstream production wells, considered together, do not meet the common sense notion of a plant because the subject facility is expected to service multiple production wells and because the facility was selected for reasons unrelated to the location of the production wells. Therefore, the facilities should not be aggregated to determine major source status. Williams OVM, McClain Dehydration Station should continue to be treated as a single source.

REGULATORY APPLICABILITY

Applicable State Regulations. The following regulations apply to the modified facility. If the modification did not impact existing applicability, it is not addressed.

45CSR2 TO PREVENT AND CONTROL PARTICULATE AIR POLLUTION FROM COMBUSTION OF FUEL IN INDIRECT HEAT EXCHANGERS

The applicant is not subject to the weight emission standard for particulate matter set forth in 45 CSR2-4.1 because the Reboiler [RBV-01] is less than 10 MMBtu/hr; however, they are subject to the 10% opacity based on a six minute block average. Compliance will be demonstrated by complying with permit requirements. The applicant is using natural gas as fuel; therefore, meeting the 10% opacity requirements should not be a problem.

45CSR4 TO PREVENT AND CONTROL THE DISCHARGE OF AIR POLLUTANTS INTO THE OPEN AIR WHICH CAUSES OR CONTRIBUTES TO AN OBJECTIONABLE ODOR

The applicant is subject to this rule. It states that 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. The applicant does not foresee any objectionable odors being present at this site now or in the future.

45CSR10 TO PREVENT AND CONTROL AIR POLLUTION FROM THE EMISSION OF SULFUR OXIDES

The Reboiler [RBV-01] has a maximum design heat input of less than 10 MMBtu/hr and are therefore exempt from sections 3, 6, and 8.

45CSR13 PERMITS FOR CONSTRUCTION, MODIFICATION, RELOCATION AND OPERATION OF STATIONARY SOURCES OF AIR POLLUTANTS, NOTIFICATION REQUIREMENTS, ADMINISTRATIVE UPDATES, TEMPORARY PERMITS, GENERAL PERMITS, PERMISSION TO COMMENCE CONSTRUCTION, AND PROCEDURES FOR EVALUATION

The applicant is subject to this rule because the facility's aggregate HAP emissions exceed the construction threshold of 5 tons per year.

Williams has demonstrated compliance with 45CSR13 by submitting a complete modification permit application, placing a legal advertisement in the *Moundsville Daily Echo* on August 6, 2015, and paying the applicable fees.

45CSR22 AIR QUALITY MANAGEMENT FEE PROGRAM

The applicant has paid the $1,000 application fee and the $2,500 NESHAP fee as required by section 3.4.b of this rule because they are subject to NESHAP requirements as described in this regulatory review section.

Additionally, the source is required to maintain their certificate to operate.

45CSR34 EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The facility is subject to 45CSR34 by reference of 40 CFR 63, Subparts HH.

Applicable Federal Regulations. The following regulations apply to the construction of the facility.

40 CFR63, SUBPART HH NATIONAL EMISSIONS STANDARDS FOR HAZARDOUS AIR POLLUTANTS FROM OIL AND NATURAL GAS PRODUCTION FACILITIES

Subpart HH establishes national emission limitations and operating limitations of HAPs emitted from oil and natural gas production facilities located at major and area sources of HAP emissions. For area source applicability, the affected source includes each trietheylene glycol (TEG) dehydration unit located at a facility that meets the criteria specified in §63.760(a).

The glycol dehydration unit [DFT-01 and DSV-01] is a TEG dehydration unit located at an area source of HAPs and thus is subject to this subpart. Because the potential benzene emissions are less than 1 tpy, the units are only subject to the recordkeeping requirements that demonstrate exemption from the control requirements of this rule.

Based on the PTE emissions, the applicant will be in compliance with the benzene exception from § 63.764(d) and further compliance will be demonstrated by demonstrating compliance with the recordkeeping requirements provided in the permit.

Non-applicability determinations. It has been determined that the applicant is not subject to the following rules.

45CSR6 TO PREVENT AND CONTROL AIR POLLUTION FROM THE COMBUSTION OF REFUSE

The applicant has no combustors on site and will not have the combustion of any refuse.

45CSR14 PERMITS FOR CONSTRUCTION AND MAJOR MODIFICATION OF MAJOR STATIONARY SOURCES OF AIR POLLUTION FOR THE PREVENTION OF SIGNIFICANT DETERIORATION

The McClain Dehydration Facility is not a major source as defined in § 2.3b because it does not emit or have the potential to emit 250 tpy or more of any regulated NSR pollutant. The facility also does not meet the definition of a major modification as defined in § 2.40 because it is not a major source.

45CSR16 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES PURSUANT TO 40 CFR PART 60

The McClain facility is not subject to this rule because the facility is not subject to an NSPS 40CFR60 rules.

45CSR30 REQUIREMENTS FOR OPERATING PERMITS

The McClain Dehydration Facility is a single stationary source for determining Title V applicability as discussed in the aggregation discussion of this evaluation. The McClain Dehydration Facility does not meet the definition of a major source defined in 45CSR30 § 2.26.a because the facility PTE does not include any individual HAP that emits 10 tpy or more nor a combination of HAPs that emit 25 tpy or more.

The McClain Dehydration Facility does not meet the definition of a major source defined in 45CSR30 § 2.26.b because there is not any air pollutant subject to regulation that has a PTE of 100 tpy or more. The fugitive emissions of a stationary source shall not be considered in determining whether it is a major stationary source unless it belongs to one of the source categories of listed in 2.26.b.

A natural gas processing plant (gas plant) means any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both.The McClain Dehydration Facility is not considered a natural gas processing facility (2.26.b.38) and therefore, fugitive emissions are not considered when determining major source status. The VOC PTE without considering fugitive emissions is 37.71 tpy and is less than the 100 tpy threshold.

NSPS, Subpart GG STANDARDS OF PERFORMANCE FOR STATIONARY GAS TURBINES

This subpart does not apply because there are no stationary turbines at this site.

40CFR60, SUBPART Kb STANDARDS OF PERFORMANCE FOR VOLATILE ORGANIC LIQUID STORAGE VESSELS (INCLUDING PETROLEUM LIQUID STORAGE VESSELS) FOR WHICH CONSTRUCTION, RECONSTRUCTION, OR MODIFICATION COMMENCED AFTER JULY 23, 1984

Subpart Kb establishes control requirements, testing requirements, monitoring requirements, and recordkeeping and reporting requirements.
Subpart Kb applies to any storage vessel with a capacity greater than 19,313 gallons that is used to store volatile organic liquids except that it does not apply to storage vessels with a capacity greater than 39,890 gallons storing a liquid with a maximum true vapor pressure less than 3.5 kPa or with a capacity greater than 19,813 gallons but less than 39,890 gallons storing a liquid with a maximum true vapor pressure less than 15.0 kPa.

This subpart does not apply to vessels with a design capacity less than or equal to 419,204 gallons used for petroleum or condensate stored, processed, or treated prior to custody transfer.

40CFR60, SUBPART KKK LEAKS FROM NATURAL GAS PROCESSING PLANTS

The facility is not affected by this rule because the McClain facility is not a natural gas processing plant.

40CFR60, SUBPART LLL ONSHORE NATURAL GAS PROCESSING: SO2 EMISSIONS

The facility is not affected by this rule because not only is this facility not a natural gas processing plant, but there is no gas sweetening operation at this facility.

40CFR60, SUBPART OOOO CRUDE OIL AND NATURAL GAS PRODUCTION

This rule does not apply to the pneumatic controllers at this facility because they are located between the wellhead and the point of custody transfer, are not located at a natural gas processing plant, and their bleed rate is less than, or equal to, 6 scfh.

40CFR63, SUBPART HHH NATURAL GAS TRANSMISSION AND STORAGE FACILITIES

The facility is not a natural gas transmission or storage facility transporting or storing natural gas prior to local distribution, therefore this facility is not subject to this rule.

40CFR63, SUBPART JJJJJJ INDUSTRIAL, COMMERCIAL, AND INSTITUTIONAL BOILERS AND PROCESS HEATERS - AREA SOURCES

This facility is not subject to this rule because gas-fired boilers are not subject to the requirements of this rule. Specifically, "boiler" is definied as an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam and/or hot water.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANT

TEG is used by the oil and gas industry to dehydrate natural gas. It may also be used to dehydrate other gases, including CO_2, H_2S, and other oxygenated gases. It is necessary to dry natural gas to a certain point, as humidity in natural gas can cause pipelines to freeze, and create other problems for end users of the natural gas. Triethylene glycol is placed into contact with natural gas, and strips the water out of the gas. Triethylene glycol is heated to a high temperature and put through a condensing system, which removes the water as waste and reclaims the TEG for continuous reuse within the system. The waste TEG produced by this process has been found to contain enough benzene to be classified as hazardous waste (benzene concentration greater than 0.5 mg/L). This substance/agent has not undergone a complete evaluation and determination under US EPA's IRIS program for evidence of human carcinogenic potential.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required for this source due to the fact that the facility is not considered a "major source" according to 45CSR 14 or 45CSR19.

MONITORING OF OPERATIONS

The following monitoring requirements are included in the permit :

1. Records to demonstrate facility wide minor source status on an annual basis
2. Opacity requirements for RBV-01
3. Throughput and other monitoring of the dehydration unit
4. Monitoring requirements in Subpart HH for the TEG dehydration unit

RECOMMENDATION TO DIRECTOR

It is recommended that permit R13-3264 be granted to Williams Ohio Valley Midstream LLC; McClain Dehydration Facility located in Moundsville, Marshall County. Based on the information provided in the application, including all supplemental information received, the applicant should be in compliance with all applicable state and federal air regulations.

Caraline Griffith

Caraline Griffith
Permit Engineer

11/4/15

Date