



**west virginia department of environmental protection**

Division of Air Quality  
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**ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

Application No.: R13-2613C  
Plant ID No.: 041-00055  
Applicant: Dominion Transmission Inc. (Dominion)  
Facility Name: Wolf Run Station  
Location: near Churchville, Lewis County  
NAICS Code: 486210  
Application Type: Modification  
Received Date: March 6, 2014  
Engineer Assigned: David Keatley  
Fee Amount: \$1,000  
Date Fee Received: March 11, 2014 and March 27, 2014  
Complete Date: May 2, 2014  
Due Date: July 31, 2014  
Applicant Ad Date: April 2, 2014  
Newspaper: *The Western Democrat*  
UTM's: Easting: 534.148 km Northing: 4,332.32 km Zone: 17  
Description: Installation and operation of one (1) 220 MMscf/day TEG dehydration unit, one (1) associated 4.4 MMBTU/hr reboiler, and one (1) 5.8 MMBTU/hr flare. Removal of one (1) existing flare and one (1) existing reboiler.

**DESCRIPTION OF PROCESS**

This facility is for natural gas transmission, storage, and distribution. Natural gas will be stored in underground storage wells during periods of low demand and pumped out of storage to the natural gas pipeline system when demand is high. This facility has four (4) existing Caterpillar G3606 LE natural gas fired compressor engines and nine (9) existing Capstone C65 microturbines which will be used for compression. When the natural gas is taken out of storage it will go through a TEG dehydration unit to reduce the water content of the natural gas stream. The 220 MMscf/day of natural gas will flow countercurrent to circulating triethylene glycol (TEG) in a contactor. The natural gas will then exit the facility via a transmission pipeline. The rich TEG will be sent to a flash

tank to reduce the volatile hydrocarbons. The vapors from the flash tank will be used as fuel in reboiler RB2. The reboiler will control 99.5% of the flash tank VOCs. After the flash tank the rich TEG will go to the regenerator to reduce the water content. A 4.4 MMBTU/hr reboiler RB2 will heat the regenerator. The regenerator will have 50 scf/min of dry natural gas as a stripping gas to encourage more water to vaporize. The vapors from the regenerator exit through a still vent which will be controlled by a 5.8 MMBTU/hr flare F2. Flare F2 will have a 95% destruction efficiency.

SITE INSPECTION

Mike Rowe from the DAQ's Compliance and Enforcement Section performed a site visit on January 22, 2014. The facility was operating and in compliance.

Directions: From I79 take exit 99 and turn onto US 33 West. Take US 33 until CR9. Take CR9 North toward Churchville. After going through Churchville, take a right onto Oil Well Road. Turn left onto Right Fork Freemans Creek Road CR 9/5. The facility is on the right approximately one mile from Doddridge County.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

CO<sub>2</sub>e emissions were estimated using 40CFR98 with the exception of DEHY2. All air emissions from DEHY2 are estimated with GRI-GLYCalc 4.0. The rest of the air emissions from reboiler RB2 are estimated with AP-42 emission factors.

Table 1: Proposed Estimated Modified Maximum Controlled Emissions

Emission Point	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
F2	TEG Dehydrator Still Vent Controlled by Flare and Flare Pilot 220 MMSCF/day	Nitrogen Oxides	0.44	1.92
		Carbon Dioxide	0.37	1.61
		Volatile Organic Compounds	1.92	8.39
		Benzene	0.11	0.49
		Ethylbenzene	0.28	1.21
		Toluene	0.18	0.80
		Xylenes	0.37	1.61
		n-Hexane	0.01	0.04
		Carbon Dioxide Equivalents	3,311	14,501

RB2	Regenerator Reboiler 4.4 MMBTU/hr	Nitrogen Oxides	0.55	2.43
		Carbon Monoxide	0.37	1.61
		Volatile Organic Compounds	0.02	0.11
		PM <sub>10</sub>	0.03	0.15
		Sulfur Dioxide	<0.01	0.01
		Carbon Dioxide Equivalents	533	2,332

Table 2: Proposed Estimated Maximum Controlled Total Facility Emissions

Pollutant	Existing Maximum Annual Facility Wide Emissions (tons/year)	Proposed Maximum Annual Facility Wide Emissions (tons/year)	Increase
Nitrogen Oxides	52.72	55.83	3.11
Carbon Monoxide	22.60	24.81	2.21
Volatile Organic Compounds	48.33	49.86	1.53
Total Particulate Matter	2.53	2.64	0.11
PM <sub>10</sub>	2.53	2.64	0.11
Sulfur Dioxide	25.01	25.02	0.01
Formaldehyde	5.61	5.61	0
Acetaldehyde	1.06	1.06	0
Acrolein	0.41	0.41	0
Benzene	0.47	0.72	0.25
Ethylbenzene	0.63	1.22	0.59
Toluene	1.87	2.28	0.41
Xylenes	0.88	1.68	0.80
Total HAPs	10.93	12.98	2.05
Carbon Dioxide Equivalent	35,713	51,885	16,172

## REGULATORY APPLICABILITY

The modification of this transmission natural gas compression/dehydration station is subject to the following rules and regulations:

### 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 heat input of all of the proposed fuel burning unit RBV-1 is below 10 MMBTU/hr. Therefore, this unit are exempt from the aforementioned sections of 45CSR2. However, RBV-1 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*

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.

### 45CSR6 *Control of Air Pollution From Combustion of Refuge*

From section 2.7 this facility's proposed flare F2 meets the definition of an incinerator and is subject to applicable Rule 6 requirements. The incinerator capacity is 1,380 lb/hr. From section 4.1 the maximum allowable total particulate matter emission rate is 3.75 lb/hr. This facility's potential to emit of total particulate matter (0.03 lb/hr) is below this allowable value. The opacity limit due to this rule is 20%.

45CSR13 *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation*

This facility does not exceed the thresholds to be a modification as seen in Table 2, but Dominion has proposed installing a flare as a control device.

45CSR22 *Air Quality Management Fee Program*

This facility is subject to the requirements of 45CSR22. This facility is a minor source as can be seen in Table 2 and not subject to 45CSR30. Since this facility has a total reciprocating engine capacity greater than 1,000 hp this facility is subject to 8D with an annual fee of \$200. Dominion is required to keep their Certificate to Operate current.

This modification of this natural gas compression/dehydration station is NOT subject to the following rules and regulations:

45CFR63 *Subpart HHH*

This facility is proposing to install a TEG dehydration unit, however as seen in Table 2 this facility this facility is not a major source of air pollutants (as can be seen in Table 2) and is not subject to this regulation.

## TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various regulated hazardous air pollutants emitted from the operation of this facility as seen in Table 1. The facility is a minor source of HAPs as can be seen in Table 2. If you want to obtain additional information about certain hazardous air pollutants feel free to visit [<http://www.epa.gov/ttn/atw/hlthef/hapindex.html>].

## 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.

## CHANGES TO PERMIT R13-2613C

Permit R13-2613C will supersede and replace R13-2613B. Installation and operation of one (1) TEG dehydration unit and one (1) flare. Removal of one (1) flare and one (1) reboiler.

Fact Sheet R13-2613C  
Dominion Transmission Inc.  
Wolf Run

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 Dominion Transmission Inc. should be granted a 45CSR13 Modification permit for Wolf Run Station.

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David Keatley  
Permit Writer - NSR Permitting

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May 9, 2014  
Date