



**west virginia** department of environmental protection

Division of Air Quality  
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Earl Ray Tomblin, Governor  
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**ENGINEERING EVALUATION / FACT SHEET**

BACKGROUND INFORMATION

Application No.: R13-2834A  
Plant ID No.: 051-00131  
Applicant: Dominion Transmission, Inc. (DTI)  
Facility Name: Burch Ridge Compressor Station  
Location: Proctor, Marshall County  
NAICS Code: 486210  
Application Type: Modification  
Received Date: April 14, 2011  
Engineer Assigned: Jerry Williams, P.E.  
Fee Amount: \$1,000.00  
Date Received: April 14, 2011  
Complete Date: May 13, 2011  
Due Date: August 11, 2011  
Applicant Ad Date: April 19, 2011  
Newspaper: *Moundsville Daily Echo*  
UTM's: Easting: 518.61 km      Northing: 4399.92 km      Zone: 17  
Description: Modification of a natural gas compressor station consisting of the change of the make/model of the auxiliary generator and the boiler.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-2834A:

This modification application is to reflect minor changes from the original design for proposed sources to be operated at the Burch Ridge Compressor Station. The specific changes include the following:

1. The proposed natural gas fired auxiliary generator, denoted as Emission Unit ID 002-01, will be changed from a Caterpillar Model G3412 SITA, rated at 656 hp to a Cummins Model KTA19SLB, 4SLB natural gas fired generator set, rated at 530 HP.
2. The proposed natural gas fired boiler, denoted as Emission Unit ID 003-01, will be changed from an Ajax Inc. Model WRF-2100, rated at 5.125 MMBtu/hr to a Bryan Steam Corp. Model RV 400W-FDG natural gas fired boiler, rated at 4.0 MMBtu/hr.

The Solar Centaur 50 Turbine, denoted as Emission Unit ID 001-01 will remain unchanged.

SITE INSPECTION

A site inspection was conducted on May 12, 2010 by the writer. The facility had not been constructed at that time. The writer did not see any issues with the proposed location of this facility.

Directions as given in the permit application are as follows:

*177N to WV2N. Turn left off of WV2 on Burch Ridge Road and travel approximately 5 miles.*

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled point source emissions from DTI's Burch Ridge Compressor Station are summarized in the table below.

Before R13-2834A

Emission Point ID	Emission Unit ID	Process Unit	Pollutant	Maximum Controlled Emission Rate	
				Hourly (lb/hr)	Annual (ton/year)
TB01	001-01	Solar Centaur 50 Turbine 6446 hp	Particulate Matter-10	0.10	0.44
			Sulfur Dioxide	0.18	0.78
			Nitrogen Oxides	5.26	23.04
			Carbon Monoxide	6.40	28.03
			Volatile Organic Compounds	1.83	8.02
			Total Hazardous Air Pollutants	0.06	0.24
EN01	002-01	Caterpillar G3412 SITA Auxiliary Generator	Particulate Matter-10	0.01	0.01
			Sulfur Dioxide	0.01	0.01
			Nitrogen Oxides	2.89	0.73
			Carbon Monoxide	2.75	0.69
			Volatile Organic Compounds	7.80	1.95
			Total Hazardous Air Pollutants	0.33	0.09

BR01	003-01	Ajax Boiler 5.125 MMBtu/hr	Particulate Matter-10	0.01	0.01
			Sulfur Dioxide	0.01	0.01
			Nitrogen Oxides	0.48	2.11
			Carbon Monoxide	0.41	1.80
			Volatile Organic Compounds	0.03	0.14
			Total Hazardous Air Pollutants	0.01	0.04
FUG	FUG	Total Fugitive Emissions	Volatile Organic Compounds	NA	5.47

After R13-2834A

Emission Point ID	Emission Unit ID	Process Unit	Pollutant	Maximum Controlled Emission Rate	
				Hourly (lb/hr)	Annual (ton/year)
TB01	001-01	Solar Centaur 50 Turbine 6446 hp	Particulate Matter-10	0.10	0.44
			Sulfur Dioxide	0.18	0.78
			Nitrogen Oxides	5.26	23.04
			Carbon Monoxide	6.40	28.03
			Volatile Organic Compounds	1.83	8.02
			Total Hazardous Air Pollutants	0.06	0.24
EN01	002-01	Cummins KTA19SLB Auxiliary Generator 530 hp	Particulate Matter-10	0.01	0.01
			Sulfur Dioxide	0.01	0.01
			Nitrogen Oxides	1.70	0.43
			Carbon Monoxide	1.76	0.44
			Volatile Organic Compounds	0.21	0.06
			Formaldehyde	0.22	0.06
			Total Hazardous Air Pollutants	0.31	0.08
		Bryan	Particulate Matter-10	0.01	0.04
			Sulfur Dioxide	0.01	0.01

BR01	003-01	Boiler 4.0 MMBTU/hr	Nitrogen Oxides	0.38	1.65
			Carbon Monoxide	0.32	1.39
			Volatile Organic Compounds	0.02	0.09
			Total Hazardous Air Pollutants	0.01	0.03
FUG	FUG	Total Fugitive Emissions	Volatile Organic Compounds	NA	5.47
			Total Hazardous Air Pollutants	NA	0.55

The maximum emissions from the total facility are summarized in the following table:

Pollutant	Maximum Annual Emissions (tons/year)
Particulate Matter-10	0.50
Sulfur Dioxide	0.80
Nitrogen Oxides	25.12
Carbon Monoxide	29.86
Volatile Organic Compounds	13.64
Formaldehyde	0.20
Total Hazardous Air Pollutants	0.90

The following decrease in potential emissions will be authorized by this permit action: Oxides of Nitrogen, 0.76 TPY; Carbon Monoxide, 0.64 TPY; Volatile Organic Compounds, 1.93 TPY; Total Hazardous Air Pollutants, 0.02 TPY.

## REGULATORY APPLICABILITY

The following rules apply to the facility:

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

DTI 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)

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 DTI subject to a substantive requirement of an emission control promulgated by the Secretary.

### **45CSR16** (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of, 40CFR60, Subpart KKKK, and 40CFR60, Subpart JJJJ. DTI is subject to the recordkeeping, monitoring, and testing required by 40CFR60, Subpart KKKK, and 40CFR60, Subpart JJJJ.

### **45CSR30** (Requirements for Operating Permits)

This permit does not affect 45CSR30 applicability. The source is a nonmajor source subject to 45CSR30.

### **40CFR60 Subpart JJJJ** (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines)

DTI's auxiliary generator (EN01) is subject to 40CFR60 Subpart JJJJ, which sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine. 40CFR60 Subpart JJJJ is applicable to owners and operators of new emergency engines manufactured after January 1, 2009. The emission limits for the subject engine (EN01) are the following: NO<sub>x</sub> – 2.0 g/hp-hr (2.34 lb/hr); CO – 4.0 g/hp-hr (4.67 lb/hr); and VOC – 1.0 g/hp-hr (1.17 lb/hr). Based on the manufacturer's specifications for these engines, the emission standards will be met. Because the engine be certified by the manufacturer to meet the standards of this rule (40CFR60.4243(b)(1), DTI will not be required to conduct performance testing.

**40CFR60 Subpart KKKK** (Standards of Performance for Stationary Combustion Turbines)

This subpart establishes emission standards and compliance schedules for the control of emissions from stationary combustion turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour that commenced construction, modification or reconstruction after February 18, 2005. DTI will be required to operate and maintain the stationary combustion turbine, air pollution control equipment, and monitoring equipment in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunction.

The emission limits associated with this rule include a NO<sub>x</sub> limit of 25 ppm at 15% O<sub>2</sub>, or 1.2 lb/MWh, and a SO<sub>2</sub> limit of 0.90 lb/MWh, or 0.060 lb/MMBTU. According to the specification sheet submitted by DTI, these limits will be met.

DTI will be required to perform an initial performance test within 180 days from startup, and annual performance testing based on the NO<sub>x</sub> emission limit.

The following regulations do not apply to the facility:

**45CSR14** (Permits for Construction and Modification of Major Sources of Air Pollution for the Prevention of Significant Deterioration)

The construction of the Burch Ridge Compressor Station does not constitute a major modification under 45CSR14. The increased potential emissions associated with the Burch Ridge Compressor Station are less than the significant amounts set forth in 45CSR14. Therefore, the facility is not a major source under 45CSR14.

**40CFR60 Subpart Dc** (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units)

The proposed boiler that DTI will install has a maximum design heat input less than 10 MMBTU/hr. Therefore, DTI is not subject to this rule.

**40CFR63 Subpart ZZZZ** (National Emission Standards for Reciprocating Ignition Internal Combustion Engines)

**40CFR63 Subpart HH** (National Emission Standards for Hazardous Air Pollutants: Oil and Natural Gas Production and National Emission Standards for Hazardous Air Pollutants: Natural Gas Transmission and Storage)

**40CFR63 Subpart HHH** (National Emission Standards for Hazardous Air Pollutants: Natural Gas Transmission and Storage)

WVDEP DAQ did not determine whether the permittee is subject to an area source air toxics standard requiring Generally Achievable Control Technology (GACT) promulgated

after January 1, 2007 pursuant to 40 CFR 63, including the area source air toxics provisions of 40 CFR 63, Subpart HH and 40 CFR 63, Subpart ZZZZ.

These promulgated national emission standards for hazardous air pollutants (NESHAP) limit emissions of hazardous air pollutants (HAP) from oil and natural gas production and natural gas transmission and storage facilities. These final rules implement section 112 of the Clean Air Act (Act) and are based on the Administrator's determination that oil and natural gas production and natural gas transmission and storage facilities emit HAP identified on the EPA's list of 188 HAPs.

### TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Various non-criteria regulated pollutants are emitted from the incomplete combustion of natural gas. However, these emissions should not adversely impact the quality of the surrounding ambient air at the concentrations, discharge rates, and point of introduction into the atmosphere as described in the permit application.

### AIR QUALITY IMPACT ANALYSIS

The changes to this facility do not constitute a major modification under 45CSR14. Based on the nature of the emissions and the annual emission rate, no air quality analysis was performed. However, air dispersion modeling will be required if the Director finds existing circumstances and/or submitted data that provide cause for an assessment to be made concerning whether this facility may interfere with attainment or maintenance of an applicable ambient air quality standard or cause or contribute to a violation of an applicable air quality increment.

### MONITORING OF OPERATIONS

DTI will be required to perform the following monitoring:

1. Monitor and record quantity of natural gas consumed for all combustion sources.

DTI will be required to perform the following recordkeeping:

1. Maintain records of the amount of natural gas consumed in each combustion source.
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 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 DTI for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates DTI's Burch Ridge Compressor Station meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Marshall County location should be granted a 45CSR13 modification permit for their facility.

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Jerry Williams, P.E.  
Engineer

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Date