

To: File
From: John Legg
Date: October 7, 2015

John Legg
10/7/15

Subj: R13-2695B - Class II Administrative Update
Dominion Transmission, Inc. (Dominion)
Smithburg Station, Smithburg, Doddridge County, WV
Plant ID: 017-00002; R13-2695B

Summary

This Class II Administrative Update was submitted by Dominion to increase the Vapor Incinerator's VOC and HAP emission limitations by +2.95 lb/hr and +12.89 ton/yr and +0.33 lb/hr and +1.46 ton/yr, respectively, based on actual operating conditions rather than vendor information provided at the time the original application (R13-2695) was submitted (5/20/10). The Vapor Incinerator (I1) is the control device for the Dehydrator (DEHY01) Glycol Regenerator/Reboiler Still Vent (RBRO1).

Background Information

Dominion's permit application (R13-2695B) was received on 6/3/15. The \$2,800.00 application fee was paid on 6/5/15. That same day Sandy Adkins (DAQ) sent a completeness status email to the company notifying them that their legal ad needed to be republished, that the permit application was for a Class II Administrative Update, but their legal ad (6/2/15) stated it was for a modification.

On 6/17/15 the DAQ received the original affidavit for the first legal ad. On 7/17/15, Rebekah J. Remick (Dominion) agreed to re-run the company's legal ad as an administrative update. On 8/11/15, the second/corrected legal ad ran in the *Herald Record*. The affidavit of publication for the second/corrected legal ad was received at the DAQ on 9/2/15.

Process Description

The following process description came from Attachment G in the permit application:

Natural gas comes into the facility and is compressed by one reciprocating internal combust engine (E1) which burns natural gas.

The compressed natural gas then proceeds to the dehydration unit. The purpose of the dehydration unit is to remove moisture from the gas stream to comply with gas quality specifications.

The process to remove the moisture begins with the incoming gas being passed through a triethylene glycol dehydration unit (D1) consisting of a contactor bed, a reboiler (RB1), and associated equipment.

During this process, a small amount of hydrocarbons are extracted from the gas stream. The wet gas enters the contactor where moisture and some hydrocarbons are absorbed into the

lean glycol. The glycol, which has become rich with absorbed moisture and hydrocarbons, is regenerated by heat in the natural gas-fired reboiler (RB1) to liberate the moisture and hydrocarbon vapors.

The regenerator vapors are vented to a vapor incinerator (I1) to combust the hydrocarbons prior to release to the atmosphere. The compressed, dehydrated gas then enters the pipeline.

Update (R13-2695B) Discussion

R13-2695 submitted by Dominion on May 20, 2010 specified the Contactor’s pressure (200 psi) and temperature (65F) based on design criteria provided to Dominion by the vendor. These parameters were used in GLYCalc™ to estimate the emissions the DAQ would incorporate into the permit as limits in section 7.1.2. Actual operating data indicate that the Contactor pressure ranges between 160 and 355 psi, while the temperature ranges between 60F and 120F. While the design data are within the range of actual operating data, those operating data are arguably not “representative of actual operating data” as required by 40 CFR 63 Subpart HH.

To ensure that the limits in section 7.1.2 reflect GLYCalc™ using inputs that are representative of actual operating data, Dominion is requesting that the limits in section 7.1.2 be revised to address the variability in actual operating conditions. More specifically, Dominion is requesting that that the emission limits in section 7.1.2 be amended to reflect the GLYCalc™ calculations using the upper range of the actual operating conditions, i.e., a contactor pressure of 355 psi and a temperature of 120F.

| Pollutant | Old - R13-2695A Maximum Emissions | | New - R13-2695B** Maximum Emissions | | Delta Change in PTE Emissions | | |
|--------------|--------------------------------------|----------------------|--|----------------------|----------------------------------|-------------------|--------------------|
| | Hourly (lb/hr) | Annual (ton/year) | Hourly (lb/hr) | Annual (ton/year) | Hourly (lb/hr) | Daily (lb/day) | Annual (ton/yr) |
| VOC | 0.85 | 3.74 | 3.80 | 16.63 | +2.95 | +70.8 | +12.89 |
| Benzene | 0.01 | 0.05 | 0.05 | 0.22 | +0.04 | +0.96 | +0.17 |
| Ethylbenzene | 0.03 | 0.13 | 0.02 | 0.10 | -0.01 | -0.24 | -0.03 |
| n-Hexane | 0.01 | 0.05 | 0.05 | 0.23 | +0.04 | +0.96 | +0.18 |
| Toluene | 0.05 | 0.21 | 0.15 | 0.67 | +0.1 | +2.4 | +0.46 |
| Xylene | 0.06 | 0.26 | 0.22 | 0.95 | +0.16 | +3.84 | +0.69 |
| Total HAPs | 0.16 | 0.7 | 0.49 | 2.16 | +0.33 | +7.92 | +1.46 |

**Note: The potential to emit (PTE) calculations for the dehydration unit were updated to represent actual operations at worst case scenarios: Contactor pressure @ 355 psi and temperature @ 120F. A new GLYCalc run was produced and a 20% safety factor has been included to the VOC and HAP limits to help with variability in operating parameters and wet gas samples. For example:
VOC
GLYCalc = 13.8544 ton/yr
PTE Limits = 13.8544 * 1.2 = 16.63 ton VOC/yr

This revision does not affect the facility’s status as an area source of hazardous air pollutants or its exemption from 40 CFR 63, Subpart HH, because the facility still complies with the applicable limits in Section 4.1.2 and 8.1.1 using values from high end of the actual operating data as inputs to GLYCalc™.

Regulatory Discussion

Dominion's Smithburg Compressor Station is located near Smithburg, Doddridge County, WV. The area is classified as attainment with respect to the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants.

PSD

WV's PSD regulations are found in 45 CSR 14. The PSD program is a new source review process used to ensure that a new source will not cause a significant deterioration of local ambient air quality. PSD applies only to "major" new sources or "major" modifications to an existing source located in attainment areas. A "major" stationary source is defined as one of the 28 source categories identified in 40 CFR 52.21, which has a potential to emit of 100 tons or more per year of any regulated pollutant, OR any other stationary source which has the potential to emit 2550 tons or more per year of a regulated pollutant.

Dominion's Smithburg Compressor Station is not one of the 28 categories identified in 40 CFR 52.21 and has potential emissions below 250 tons per year of all regulated pollutants. Therefore, is not classified as a major source and the PSD regulations do not apply.

Non-attainment New Source Review

Doddridge County, WV is currently classified as attainment with respect to NAAQS for all criteria pollutants. Therefore, the nonattainment regulations are not applicable.

45 CSR 13 – WV Minor Source Permitting

Rule 13 (Permits for Construction, Modification, Relocation, and Operation of Stationary Sources of Air Pollutants) is applicable to new source or modifications that result in an emissions increase of:

- 6 lb/hr and 10 ton/yr of any regulated pollutant, or
- 144 lb/day of any regulated pollutant, OR
- 2 lb/hr or 5 ton/yr of HAPs

Since the proposed increase in emissions from the dehydration unit is not above these threshold levels, the permit action is a Class II Administrative Update to a Rule 13 permit.

NESHAP Subpart HH

Section 112 of the Clean Air Act provides the EPA with a vehicle for developing standards for potentially hazardous air pollutants (HAPs) for specific categories of sources. The regulations have been developed to implement Section 112(b) and are presented in 40 CFR 63: National

Emission Standards for Hazardous Air Pollutants (NESHAP). Sources located at a facility with potential emission levels of 10 ton/yr of any single HAP or 25 ton/yr total HAPs are potentially subject to these requirements.

On June 17, 1999 the USEPA issued the NESHAP for Oil and Natural Gas Production facilities (Subpart HH). These rules contain air pollution emission control and monitoring requirements for new and existing glycol dehydration units.

On January 3, 2007 the USEPA amended Subpart HH, promulgating standards for area sources. Area sources are facilities that have potential emission levels of less than 10 ton/yr of any single HAP and less than 25 ton/yr total HAPs. Dominion's Smithburg Compressor Station, having the existing thermal oxidizer permitted for control efficiency, is considered an area source and thus is subject to the requirements of Subpart HH. The unit is exempted under §63.764(e)(1)(ii) from the requirements of the Subpart due to actual benzene emissions being less than 1 ton/yr as shown by the potential to emit for the unit.

Discussion Concerning Dominion's New GLYCalc™ Run

The writer consulted with Jamie Jarrett (DAQ) about Dominion's revised GLYCalc™ run (@355psi and 120F). Jamie reviewed Dominion's inputs to the GLYCalc™ program, found no obvious problems with the values used and was able to duplicate the same VOC/HAP emission result. Additional runs were made using contactor pressures and temperatures less than worst case to determine if the revised run truly produced the highest VOC and HAP emissions. For the most part, this seemed to be true. For contractor pressures at the lower end of the range, i.e., 160 psi, there was one case where VOC/HAP emissions increased. This seemed to go against what would be expected based on Jamie's past experiences with the program. Because of this finding, the writer recommends that actual contractor pressures, temperatures, and lean glycol flows be recorded during future inspections and that the program be run following an inspection to determine if VOC/HAP emissions are less than the limitations given in section 7.1.2 of the permit (R13-2695B).

Changes to R13-2695A

A compare file was run to show the changes made to R13-2695A to arrive at R13-2695B. Pages of the compare file where changes were made are attached to this evaluation.

West Virginia Department of Environmental Protection
Joe Manchin, III
Governor

Division of Air Quality

Randy C. Huffman
Cabinet Secretary

Class II Administrative Update



R13- ~~2695A~~2695B

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§22-5-1 et seq.) and 45 C.S.R. 13 – Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the above-referenced facility is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Dominion Transmission, Inc.
Smithburg Station
017-00002

John A. Benedict
Director

Issued: ~~June 29, 2010~~ • ~~Effective: June 29, 2010~~

This permit will supercede and replace Permit R13-2695.

Facility Location: Smithburg, Doddridge County, West Virginia
Mailing Address: 445 West Main Street, Clarksburg, WV 26301
Facility Description: Natural Gas Compressor Station
SIC Codes: 4922
UTM Coordinates: 522.90 km Easting • 4348.11 km Northing • Zone 17
Permit Type: Class II Administrative Update

Description of Change: ~~Increase in throughput to the glycol dehydration unit. In addition, due to changes in gas composition, VOC and HAP emissions will decrease.~~ Class II Administrative Update to increase the emission limitations (in section 7.1.2) for the Dehydration Unit's (DEHY01) Vapor Incinerator (I1) based on actual operating conditions rather than vendor information provided at the time the original application was submitted (5/20/10):

| | | |
|------------------------------------|------------------|----------------|
| <u>Vendor Info (Old – 5/20/10)</u> | <u>@ 200 psi</u> | <u>@ 65F</u> |
| <u>Actual Operating Info (New)</u> | <u>@ 355 psi</u> | <u>@ 120 F</u> |

Forma

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

The source is not subject to 45CSR30.

Unless otherwise stated 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.

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2.3. Authority

This permit is issued in accordance with West Virginia air pollution control law W.Va. Code §§ 22-5-1. et seq. and the following Legislative Rules promulgated thereunder:

- 2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation;*

2.4. Term and Renewal

- 2.4.1. This permit supersedes and replaces previously issued Permit R13-~~2695~~2695A. This Permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any other applicable legislative rule;

2.5. Duty to Comply

- 2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit ~~Application~~Applications R13-2695, R13-2695A, R13-2695B and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to;
[45CSR§§13-5.11 and -10.3.]
- 2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;
- 2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;
- 2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies; i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

7.0. Source-Specific Hazardous Air Pollutant Requirements (Natural Gas Dehydration Units (DEHY01) Not Subject to MACT Standards and being controlled by a Flare Control Device (F1))

7.1. Limitations and Standards

7.1.1. Maximum Throughput Limitation. The maximum wet natural gas throughput to the Q.B. Johnson Mfg. Dehydration Unit (D1) shall not exceed 7.75 mmscf/day. Compliance with the Maximum Throughput Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the monthly throughput at any given time during the previous twelve consecutive calendar months.

7.1.2. Maximum emissions from the Q.B. Johnson Mfg. Vapor Incinerator (I1) shall not exceed the following limits:

| Pollutant | Maximum Hourly Emissions (lb/hr) | Maximum Annual Emissions (ton/year) |
|----------------------------|----------------------------------|-------------------------------------|
| Volatile Organic Compounds | 0.853 0.80 | 3.74 16.63 |
| Benzene | 0.0405 | 0.0522 |
| Ethylbenzene | 0.0302 | 0.1310 |
| n-Hexane | 0.0405 | 0.0523 |
| Toluene | 0.0515 | 0.2167 |
| Xylene | 0.0622 | 0.2695 |

7.1.3. For purposes of determining potential HAP emissions at transmission and storage facilities to comply with the requirements in Section 4.1.2, the methods specified in 40 CFR 63, Subpart HHH shall be used. For purposes of determining potential HAP emissions at production-related facilities, the methods specified in 40 CFR 63, Subpart HH (i.e. excluding compressor engines from HAP PTE) shall be used.

7.1.4. Q.B. Johnson Mfg. Vapor Incinerator (I1) subject to this section shall be designed and operated in accordance with the following:

- a. The vapor incinerator (I1) shall be air-assisted.
- b. The vapor incinerator (I1) shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.
- c. The vapor incinerator (I1) shall be operated, with a flame present at all times whenever emissions may be vented to them, except during SSM (Startup, Shutdown, Malfunctions) events.
- d. A vapor incinerator shall be used only where the net heating value of the gas being combusted is 11.2 MJ/scm (300 Btu/scf) or greater if the vapor incinerator is steam-assisted or air-assisted; or where the net heating value of the gas being combusted is 7.45 MJ/scm (200 Btu/scf) or greater if the vapor incinerator is non-assisted. The net heating value of the gas being combusted in a vapor incinerator shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^n C_i H_i$$

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