

COMMON WEALTH OF PENNSYLVANIA
Department of Environmental Protection
Southwest Regional Office

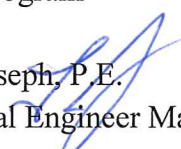
MEMO

TO Air Quality Permit File TVOP-04-00490

FROM Jesse S. Parihar
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Air Quality Program



THROUGH Thomas J. Joseph, P.E.
Environmental Engineer Manager
Air Quality Program



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Program Manager
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DATE April 03, 2017

RE: Review of Title V Operating Permit Application
Dominion Transmission, Inc.
Beaver Compressor Station
North Sewickley Township, Beaver County
AUTH #827904, APS #716083, PFID #251644 (Renewal)
AUTH #1158755, APS #927159, PFID #251644 (Modification)

BACKGROUND:

Dominion Transmission Inc. ("DTI") operates facilities in southwestern Pennsylvania used for production, storage, and distribution of natural gas. Beaver Compressor Station ("Beaver CS") located at 398 Thompson Run Road in Beaver Falls North Sewickley Township, Beaver County and involves in various sources of air contaminants. Beaver CS is a natural gas transmission compressor station with four (4) internal combustion engines, an auxiliary generator, and two (2) small boilers. Beaver CS is a major stationary source as defined in Title I, Part D of Clean Air Act Amendments because the potential to emit NO_x is greater than 100 tpy, CO is greater than 100 tpy, and VOC is greater than 50 tpy. As such, the facility is subject to the Title V permitting requirements adopted at 25 Pa Code Chapter 127, Subchapter G.

DTI is primarily a provider of gas transportation, storage services, and as noted operates one of the largest underground natural gas storage systems with links to other major pipelines and to markets in the Midwest, Mid-Atlantic and Northeast regions DTI maintains 7,800 miles of pipeline in six states, stores and transports large quantities of natural gas for customers, including major utilities and power plants. Natural gas may also be delivered to other regional markets

through multiple interconnects to other natural gas transmission systems. Beaver CS functions as one of a series of compressor stations along this transmission system which boost pressure to maintain flow of the natural gas.

Permit Modification:

Beaver CS is a major NO_x and VOC emitting facility and is subject to PA RACT II § 129.96 and §129.97. The engines, heaters, boiler, and auxiliary generator at Beaver CS will all comply with the presumptive RACT requirements contained in §129.97 as described in following Table 1 on page 6 of this memo. Fugitive VOC emissions do not have an applicable presumptive PA RACT II requirement or emission limitation under the rule. Facility-wide fugitive VOC emissions are estimated less than 2.7 ton per year and therefore; not subject to the presumptive PA RACT II requirements.

On July 23, 1998, the original Title V Operating Permit was issued which expired on July 23, 2003. On October 25, 2005, the Department renewed the TVOP-04-00490, and was set to expire on October 25, 2010. On March 18, 2010, DTI submitted a Title V Operating Permit Renewal Application (TVOP-04-00490) which was pending for the Department's approval. The operating permit was placed under the "Department's backlog permit list".

On October 14, 2016, DTI submitted an updated operating permit modification application which includes a proposal to comply with RACT II requirements. Both these applications are being processed together in this memo. The applications were deemed timely and administratively complete as received. An application shield as described in 25 PA Code Section 127.505 was granted at that time.

On March 18, 2010, in the Title V Operating Permit Renewal Application, DTI requested the Department to include the following changes while renewing the permit:

- Clarify that VOC limits in the permit refer to non-methane, non-ethane hydrocarbons as determined by EPA Method 18/25A (or equivalent) and do not include formaldehyde;
- Include a parts washer that was missed in the previous Title V Permit for this facility; and
- The RACT Permit conditions requiring the facility to conduct stack testing during ozone season be removed from the permit to allow for testing during periods when the engines at this facility are in operation.

The above requested modifications reflect in the proposed permit application. The Beaver CS is currently operating under permit shield per 25 Pa Code §127.505 for Title V Operating Permit # TVOP-04-00490, issued on October 25, 2005, and expired on October 25, 2010.

Emission Sources:

The following sources are the primary emission sources at the facility:

- Four (4) natural gas-fired Dresser Rand internal combustion engines (Sources 101 thru 104); 2SLB; Model # TLAD-8; each engine is rated at 3,200 bhp; Source 101 was installed on June 01, 1992, whereas sources 102 thru 104 were installed on June 01, 1989.
- One (1) natural gas-fired Caterpillar 3512 SITA auxiliary generator (Source 035) rated at 778 bhp, and was installed on June 01, 1992;
- One (1) natural gas-fired boiler Ajax Atlas, Model A300 (Source 036A), rated at 3.0 MMBtu/hr;
- One (1) natural gas-fired boiler, P-K Thermific, Model N1500-2, (Source 036B), and rated at 1.5 MMBtu/hr;
- One (1) fugitive source (Source 105) is included in the permit to encompass all fugitive emissions from various vents, compressor blowdowns, pumps, valves, and flanges; and
- One (1) parts washer (Source 106); 30-gallon capacity. This is an existing source which was forgotten to be included in the previous permit.

Auxiliary Generator:

In the original Title V permit, the auxiliary generator was categorized as a combustion unit, but the unit is a process per the definition in 25 Pa Code §121.1. The Department has updated the AIMS inventory to include the proper sub facility type in the database. The new permit contains requirements for this source from Chapter 123 that are appropriate for process rather than combustion units.

Miscellaneous Sources:

The site has multiple small sources, which the Department determined were trivial during the previous Title V operating permit review. These sources include a natural gas-fired Rheem 21VP40-1 water heater rated at 0.04 MMBtu/hr and six (6) small storage tanks ranging in size from 2000 to 8,000 gallons as detailed below:

- 8,000-gallon lube oil tank
- 2,000-gallon reclaim oil tank

- 5,000-gallon ethylene glycol tank
- 2,000-gallon waste oil tank
- 2,000-gallon waste water tank
- 2,000-gallon pipeline fluids tank

As noted, VOC in the storage tanks have vapor pressure less than 1.5 psia, under actual storage conditions, as such, the tanks are not subject to 25 Pa Code §129.57.

RACT II Regulation:

The permitted emission sources at the Beaver CS include four (4) natural gas-fired engines, an auxiliary generator, two small boilers, and area fugitive emission sources. RACT is defined in 25 Pa Code §121.1 as “the lowest emission limit for VOC or NO_x that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.” The RACT II regulation provides three options for compliance, as applicable:

- Presumptive RACT pursuant to 25 Pa Code §129.97;
- Facility-wide NO_x averaging pursuant to 25 Pa Code §129.98; and
- Alternative proposal pursuant to 25 Pa Code §129.99.

As required by the 1990 Clean Air Act to incorporate 25 Pa Code § 129 RACT II requirements for units at its Beaver CS, DTI has summarized the proposed requirement on page 6 in the Table 1.

On April 23, 2016, the Department published 25 Pa Code §129: Standards for Sources – Additionally Reasonably Available Control Technology (RACT) requirement for Major Sources of NO_x and VOC (the “RACT II Rule”) in 46 Pa. Bulletin 2036. The RACT II standards apply to the existing major NO_x and/or VOC emitting facilities throughout Pennsylvania. Existing major facilities include those facilities which are major sources of NO_x and/or VOC that were existing on or before July 20, 2012, and existing minor facilities which become major sources of NO_x and/or VOC after July 20, 2012. The Beaver CS is subject to certain provisions of this regulation, including the requirement to develop an alternative RACT proposal for those affected units which are either unable to meet the presumptive RACT limits in the rule, or are not subject to presumptive RACT and have potential emissions that exceed 5 tpy of NO_x or 2.7 tpy of VOC.

As a major NO_x and VOC emitting facility, Beaver CS is subject to the NO_x and VOC requirements of the RACT II Rule.

The Department finalized rulemaking to amend 25 Pa Code Section 129 regulations for control of major sources on NO_x and VOC (referred to as “RACT II”) as published in the Pennsylvania Bulletin on April 23, 2016. Table 1 below provides a listing of permitted emission sources at the Beaver CS that are potentially subject to RACT II regulation.

Alternative Compliance Schedule:

There are no control devices on the engines at the facility, however, all the four (4) natural gas-fired Dresser Rand reciprocating engines are equipped with OEM (Original Equipment Manufacturer) lean burn combustion systems.

PA RACT II Regulation of 25 Pa Code §129.97(k) allows requests for an alternative compliance schedule for sources that cannot meet the applicable presumptive RACT emission limitation without the installation of an air cleaning device. To achieve the PA RACT II limits, DTI has taken voluntary emission limit of 3.0 grams NO_x/bhp-hr and 1.0 gram VOC/bhp-hr. This permit modification application reflects these new PA RACT II requirements, and removal of permit conditions specific to the RACT I regulation which are now superseded by RACT II.

According to §129.97(k)(1), the petition for an alternative compliance schedule must be submitted no later than October 24, 2016. This submittal, as part of the Permit Modification, meets that requirement.

**Table: 1
Emission Sources at the Beaver CS**

Source Unit ID	PA RACT II Requirement
<p>Natural gas fired Engine 1 – ID 101 – 3,200 bhp, four Stroke lean burn;</p> <p>Natural gas fired Engine 2 – ID 102 – 3,200 bhp, four Stroke lean burn</p> <p>Natural gas fired Engine 3 – ID 103 – 3,200 bhp, four Stroke lean burn</p> <p>Natural gas fired Engine 4 – ID 104 – 3,200 bhp, four Stroke lean burn</p>	<p>Per 25 Pa Code §129.97(g)(3)(i)(A)&(B).</p> <p>Presumptive RACT requirements: (g)(3) A stationary internal combustion engine:</p> <p>(i) For a lean burn, stationary internal combustion engine with a rating equal to or greater than 500 bhp fired with:</p> <p>(A) Natural gas or a noncommercial gaseous fuel, 3.0 grams NO_x/bhp-hr.</p> <p>(B) Natural gas or a noncommercial gaseous fuel, liquid fuel, or duel-fuel, 1.0 gram VOC/bhp-hr excluding formaldehyde.</p>
<p>Natural gas fired Engine 1 – ID 101 – 3,200 bhp, four Stroke lean burn;</p> <p>Natural gas fired Engine 2 – ID 102 – 3,200 bhp, four Stroke lean burn</p> <p>Natural gas fired Engine 3 – ID 103 – 3,200 bhp, four Stroke lean burn</p> <p>Natural gas fired Engine 4 – ID 104 – 3,200 bhp, four Stroke lean burn</p> <p>Natural gas fired Caterpillar Auxiliary Generator 1 – ID 035 – 778 bhp,</p> <p>Natural gas-fired Ajax and P-K Thermific Boiler – ID 036, combined rating of both is 4.5 MMBtu/hr.</p>	<p>The Presumptive RACT requirements for all sources in the left column per 25 Pa Code §129.97(c), are:</p> <p>The owner and operator of a source specified in this subsection, which is located at a major NO_x emitting facility or major VOC emitting facility subject to §129.96 shall install, maintain, and operate the source in accordance with the manufacturer’s specifications and with good operating practices.</p> <p>The hours of operation of the Caterpillar auxiliary generator are limited to less than 250 during any consecutive 12-month period. NO_x < 5 tpy and VOC < 2.7 tpy.</p>
<p>Fugitive VOC Emissions from emergency gas blowdown, storage tank relief valves, fuel gas and crankcase vents, and engine transition vents.</p>	<p>Fugitive VOC emissions do not have an applicable presumptive PA RACT II requirement or emission limitation under the rule. Potential fugitive emissions for each source are estimated to be less than 2.7 tpy.</p>

Presumptive RACT requirements per 25 Pa Code §129.97(c) for the Caterpillar Auxiliary Generator and Boilers are explained as below:

Caterpillar Auxiliary Generator (Source 035):

Per 25 Pa Code §129.97(c) the owner and operator of Auxiliary Generator unit #1 rated at 778 bhp which is located at a major NO_x emitting facility or major VOC emitting facility subject to §129.96 shall install, maintain, and operate the source in accordance with the manufacturer's specifications and with good operating practices.

- A NO_x air contamination source that has the potential to emit less than 5 tpy of NO_x.
- A VOC air contamination source that has the potential to emit less than 2.7 tpy of VOC.

The *Auxiliary Caterpillar Generator* internal combustion engine is limited to less than 250 operational hours during any consecutive 12-month period per current Operating Permit (TVOP-04-00490), Condition #006, Section D. This engine complies with RACT work practices.

Ajax Atlas Boiler and P-K Thermific Boiler (Source 036):

Ajax Atlas Boiler and P-K Thermific Boiler rated at 3.0 MMBtu/hr and 1.5 MMBtu/hr respectively. Both these small boilers with gross heat input of 4.5 MMBtu/hr are located at a major NO_x emitting facility and major VOC emitting facility and are subject to the RACT II requirement.

Per 25 Pa Code §129.97(c) the owner and operator of a source specified in this subsection, which is located at a major NO_x emitting facility or a major VOC emitting facility subject to §129.96 shall install, maintain, and operate the source in accordance with the manufacturer's specifications and with good operating practices:

- A boiler or other combustion source with an individual rated gross heat input less than 20 MMBtu/hr.

RACT Summary for four (4) Dresser Rand Engines (Source ID #101 thru 104):

Per 25 Pa Code §129.97(g)(3)(i)(A)&(B).

- Presumptive RACT requirements: Per 25 Pa Code §129.97(g)(3); A stationary internal combustion engine:
 - (i) For a lean burn, stationary internal combustion engine with a rating equal to or greater than 500 bhp fired with:
 - (A) Natural gas or a noncommercial gaseous fuel, 3.0 grams NO_x/bhp-hr.
 - (B) Natural gas or a non-commercial gaseous fuel, liquid fuel, or dual-fuel, 1.0 gram VOC/bhp-hr excluding formaldehyde.

The owner/operator shall operate each engine so as not to exceed the following emission limit requirements as established in the current permit:

- NO_x emission is limited to 14.1 pounds in any given hour and 61.8 tons in any consecutive 12-month period.
- CO emission is limited to 18.3 pounds in any given hour and 80.3 tons in any consecutive 12-month period.
- VOC emission is limited to 5.6 pounds in any given hour and 24.6 tons in any consecutive 12-month period.
- A portable analyzer emission test is required annually for each engine for NO_x, CO, and VOC. The test is required twice a year if the engine operated greater than 750 hours during the previous ozone season.

Record Keeping:

The permittee shall maintain the following records for five years, and shall be made available to the Department on request.

- Daily hours of operation for each engine;
- Daily natural gas consumption rate for each engine;
- Total natural gas consumption on annual basis for each engine;
- All maintenance and repair operations performed on each equipment;
- Emission rates for NO_x, CO, and VOC in tons per year; and
- The results of any stack tests.

Ajax Atlas Boiler and P-K Thermific Boiler (Section D-Source 036A and 036B):

Ajax Atlas boiler, source 036A, rated at 3.0 MMBtu/hr and P-K Thermific boiler, source 036B, rated at 1.5 MMBtu/hr are subject to the following RACT requirements:

Per §129.97(c)(3); Presumptive RACT requirements for NO_x – For a boiler or other combustion source with an individual rated gross heat input less than 20 MMBtu/hr when firing with natural gas as follows:

- The owner and operator shall install, maintain, and operate the source in accordance with the manufacturer's specification and with good operating practices;
- NO_x emission is limited to 1.5 pounds in any given hour and 6.6 tons in any consecutive 12-month period;
- CO emission is limited to 0.13 pounds in any given hour and 0.6 tons in any consecutive 12-month period; and
- VOC emission is limited to 0.04 pounds in any given hour and 0.2 tons in any consecutive 12-month period.

Caterpillar Auxiliary Generator, rated at 778 bhp (Section D-Source 035):

Per §129.97 (c)(8); Presumptive RACT requirements for NO_x – For an auxiliary generator as follows:

- The owner and operator shall install, maintain, and operate the source in accordance with the manufacturer's specification and with good operating practices;
- The owner and operator shall not operate the auxiliary generator greater than 250 hours in a 12-month rolling period for non-emergency usage; and
- The record of the operational hours per month and 12-month rolling sums of hours shall be kept at site and made available to the Department on request.

Area Fugitive Sources (Section D-Source 105):

- The owner and operator is required to adopt good operational practices to minimize fugitive emissions, good housekeeping, using necessary equipment to curb the fugitive emissions, monitoring the emission sources, record keeping, and taking necessary required steps to minimize fugitive emissions.

Additional Special Conditions:

As requested by the applicant the current permit conditions are revised as follows:

1. Section C, Condition # 016; Volatile Organic Compounds and VOCs as used in this permit refers to non-methane, non-ethane hydrocarbons as determined by EPA Method 18/25A (or equivalent), not including formaldehyde.

2. Section D, Source ID 105, Area Fugitives; New Condition #1; The total VOC fugitive emissions from emergency gas blowdown, storage tank relief valves, fuel gas and crankcase vents, and engine transition vents shall not be equal to or exceed than 2.7 tons per year.
3. Section E, Condition #008; Testing Requirements is revised as follows:
 - (a) Unless and until a new RACT operating permit is incorporated into Pennsylvania's SIP in 40 CFR Part 52 Subpart NN, the permittee shall comply with Conditions #7 through #11 established in RACT Operating Permit #04-000-490 requiring stack testing using EPA methods be performed on the exhaust from each Dresser Rand TLAD-8 engine to verify the emission rates of NO_x (as NO₂), CO and VOC_s at least once every five (5) years.
 - (i) Fuel consumption rate, engine operation parameters, and portable analyzer readings shall be recorded during the duration of the stack test.
 - (ii) Test shall be conducted while the engines are running at full load.
 - (iii) Stack testing shall be performed in accordance with 25 Pa. Code, Chapter 139 and the Department's Source Test Manual.
 - (iv) The permittee shall submit a pre-test protocol to the Department for review at least 60 days prior to the performance of stack tests.
 - (v) The permittee shall notify the Department at least two weeks prior to each stack test so that an observer may be present at the time of the stack test.
 - (vi) The permittee shall submit two copies of the stack test results to the Department within sixty days of the tests.
 - (b) If a revised RACT operating permit for this facility is incorporated into Pennsylvania's SIP in 40 CFR Part 52 Subpart NN, the permittee shall comply with the stack testing requirements in the revised RACT operating permit.
4. Section C; A new condition is being added per § 121.7: No person may permit air pollution as that term is defined in the act.
5. Section C; The existing malfunction reporting condition has been replaced with the following revised condition:

Malfunction reporting shall be conducted as follows:

- a. For the purpose of this condition, a malfunction is defined as any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment or source to

operate in a normal or usual manner that may result in an increase in the emission of air contaminants. Examples of malfunctions may include, but are not limited to: large dust plumes, heavy smoke, a spill or release that results in a malodor that is detectable outside the property on whose land the source is being operated.

- b. When the malfunction poses an imminent and substantial danger to the public health and safety, potential harm to the environment, the Owner/Operator shall report the incident to the Department within one hour of discovery. The Owner/Operator shall also notify the Department within one hour, when corrective measures have been accomplished.

All other malfunctions shall be reported to the Department no later than the next business day.

- c. Initial reporting of the malfunction shall identify the following items to the extent known:

- i. Name and location of the facility;
- ii. Nature and cause of the malfunction;
- iii. Time when the malfunction or breakdown was first observed;
- iv. Expected duration of increased emissions; and
- v. Estimated rate of emissions.

- d. Malfunctions shall be reported to the Department by e-mail (addresses will be provided by the Department) or by regular mail at the address below:

PA DEP
Office of Air Quality
400 Waterfront Drive
Pittsburgh, PA 15222-4745

412-442-4000

- e. If requested by the Department, the Owner/Operator shall submit a full written report to the Department including final determinations of the items identified in c. and the corrective measures taken on the malfunction. The report shall be submitted within 15 days of the Department's request or accomplishing corrective measures, whichever is later.

- 6. Section D, Source ID 106: A 30-gallon capacity "Parts Washer" has been added in the proposed permit.

- 7. The following condition is added for part washer per 25 Pa Code §129.63:

(a) Cold cleaning machines. Except for those subject to the Federal National emissions standards for hazardous air pollutants (NESHAP) for halogenated solvent cleaners under

40 CFR Part 63 (relating to National emission standards for hazardous air pollutants for source categories), this subsection applies to cold cleaning machines that use 2 gallons or more of solvents containing greater than 5% VOC content by weight for the cleaning of metal parts.

- (1) Immersion cold cleaning machines shall have a freeboard ratio of 0.50 or greater.
- (2) Immersion cold cleaning machines and remote reservoir cold cleaning machines shall:
 - (i) Have a permanent, conspicuous label summarizing the operating requirements in paragraph (3). In addition, the label shall include the following discretionary good operating practices:
 - (A) Cleaned parts should be drained at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping or rotating, the parts should be positioned so that solvent drains directly back to the cold cleaning machine.
 - (B) When a pump-agitated solvent bath is used, the agitator should be operated to produce a rolling motion of the solvent with no observable splashing of the solvent against the tank walls or the parts being cleaned.
 - (C) Work area fans should be located and positioned so that they do not blow across the opening of the degreaser unit.
 - (ii) Be equipped with a cover that shall be closed at all times except during cleaning of parts or the addition or removal of solvent. For remote reservoir, cold cleaning machines which drain directly into the solvent storage reservoir, a perforated drain with a diameter of not more than 6 inches shall constitute an acceptable cover.
- (3) Cold cleaning machines shall be operated in accordance with the following procedures:
 - (i) Waste solvent shall be collected and stored in closed containers. The closed containers may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.
 - (ii) Flushing of parts using a flexible hose or other flushing device shall be performed only within the cold cleaning machine. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.
 - (iii) Sponges, fabric, wood, leather, paper products and other absorbent materials

may not be cleaned in the cold cleaning machine.

- (iv) Air agitated solvent baths may not be used.
- (iv) Spills during solvent transfer and use of the cold cleaning machine shall be cleaned up immediately.
- (4) After December 22, 2002, a person may not use, sell or offer for sale for use in a cold cleaning machine any solvent with a vapor pressure of 1.0 millimeter of mercury (mm Hg) or greater and containing greater than 5% VOC by weight, measured at 20°C (68°F) containing VOCs.
- (5) On and after December 22, 2002, a person who sells or offers for sale any solvent containing VOCs for use in a cold cleaning machine shall provide, to the purchaser, the following written information:
 - (i) The name and address of the solvent supplier.
 - (ii) The type of solvent including the product or vendor identification number.
 - (iii) The vapor pressure of the solvent measured in mm hg at 20°C (68°F).
- (6) A person who operates a cold cleaning machine shall maintain for at least 2 years and shall provide to the Department, on request, the information specified in paragraph (5). An invoice, bill of sale, certificate that corresponds to a number of sales, Material Safety Data Sheet (MSDS), or other appropriate documentation acceptable to the Department may be used to comply with this section.

RECOMMENDATIONS:

Dominion Transmission, Inc. has met the RACT II regulatory requirements associated the TVOP-04-00490 permit modification application. The facility was last inspected on March 14, 2016, by Air Quality Specialist, Scott Beaudway and found in compliance with all the applicable permit conditions. A stack test using EPA Methods is required on each engine once every five (5) years for NO_x, CO, and VOC emissions per permit condition. On March 28, 2017, Judy Fox (DTI) informed the Department via e-mail that a stack test was conducted on all four (4) engines on November 29, 2016, and each engine was found in compliance with the emission limits pending review by the Department's Source Testing Section.

As noted, all the four (4) natural gas-fired Dresser Rand internal combustion engines (Source 101 thru 104) were stack tested for NO_x, CO, and VOC using portable analyzer on May 27, 2015, August 4, 2015, May 24, 2016, November 8, 2016, and March 14, 2017. Each engine was found in compliance with the emission limits.

The “Intent to issue Notice” will be published in PA Bulletin on March 25, 2017, for 30-day public comments. A copy of the draft permit and approved review memo, will be sent to EPA for their comments.

I recommend issuance of permit renewal to TVOP-04-00490 to accommodate the proposed modification subject to the standard conditions in Section B and other conditions previously established in the operating permit along with the special conditions mentioned in this memo.